



# **NextGIS Web documentation**

***Release 3.1***

**NextGIS team**

**03-07-2025**

## CONTENTS

## INTRODUCTION

This document is a user manual for a **NextGIS Web** version 3.0 Web GIS. The manual covers general information about the software installation, configuration and usage, description of administrator interface, and an overview of basic user and administrator tasks.

This documentation is distributed under Creative Commons license “**Attribution-NoDerivs**” CC BY-ND



## **GENERAL INFORMATION**

NextGIS Web is a web mapping application designed to store, manage access and visualize geographic data.

NextGIS Web is open source software. NextGIS Web supports Open Geospatial Consortium ([OGC](http://www.opengeospatial.org/)<sup>1</sup>) open data exchange protocols and meets the modern requirements for application architecture implemented on the basis of free software (Open Source).

NextGIS Web allows:

1. Creation and display of maps.
2. Map navigation (zooming, shifting).
3. Manage the map through web-interface.
4. Vector (ESRI Shape, PostGIS etc) and raster data import.
5. Use of standart protocols (WMS, WFS-T, TMS).
6. Manage access rights for layers, groups of layers, maps and other resources.
7. Interaction through API.

Watch on [youtube](https://youtu.be/dsx-xo3McIo?si=Oo7lX8_FXiCdM2Nz)<sup>2</sup>.

NextGIS Web has server and client sides.

Server side stores and renders geodata. It's written in Python using Pyramid framework. Client side is a user interface for interactive geodata management as maps and separate resources.

Client is written in JavaScript. System's configuration is stored in a PostgreSQL database with a PostGIS extension. Page markup for user interface is written using HTML. Style for user interface is added using cascading style sheets - CSS. Queries to databases use SQL language.

NextGIS Web is a modular system with several core modules and extensions. Extensions could be enabled or disabled at the application configuration step. NextGIS Web components communicate with each other using internal API methods.

NextGIS Web is designed to operate in Linux operating system environment (Debian-based distributives are recommended, e.g. Ubuntu Server). Read more

---

<sup>1</sup> <http://www.opengeospatial.org/>

<sup>2</sup> [https://youtu.be/dsx-xo3McIo?si=Oo7lX8\\_FXiCdM2Nz](https://youtu.be/dsx-xo3McIo?si=Oo7lX8_FXiCdM2Nz)

in section *Recommended software versions* (page ??). NextGIS Web client-side works in all modern browsers. User interface with a published Web Map is shown on Fig. ??.

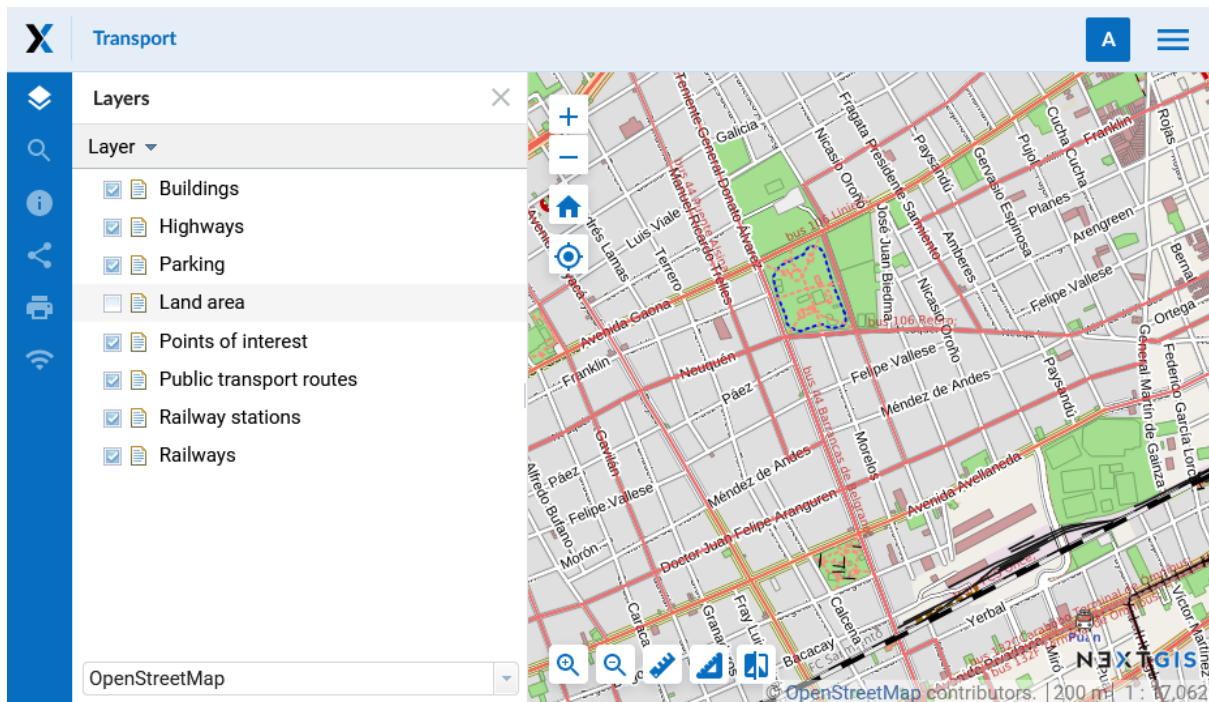


Fig. 2.1: User interface with a published Web Map

## 2.1 Key features of NextGIS Web

NextGIS Web has the following key features:

### 2.1.1 Data layers

- Creation of raster and vector layers and data upload for them using web interface.
- Creation of WMS and TMS layers and connections to existing services.
- Creation of PostGIS layers and connection to layers in external databases.
- A set of standard basemaps: OpenStreetMap and others from [QuickMapServices](https://qms.nextgis.com/)<sup>3</sup>.
- WFS service.
- WMS service.
- Dictionary (with extension).
- File set.
- “Key-value” function, support for metadata.

<sup>3</sup> <https://qms.nextgis.com/>

- Export to various formats (see [full list here](#)<sup>4</sup>).

### 2.1.2 Access management

- Detailed settings of access rights for each connected layer.
- Setting of access rights for resources and resource groups.

### 2.1.3 Rendering and symbology

- Symbology import from QGIS with automated conversion “for renderer”.
- Pluggable renderers: MapServer, QGIS (import a project from desktop software NextGIS QGIS with the same layers, styles etc.).
- Several symbology options for the single data layer.

### 2.1.4 Web Maps

- Own set of layers and layer tree management for each map.
- Reuse of the same layer representation in different maps.

### 2.1.5 User interface

- Layer tree.
- Layer groups.
- Navigation tools panel.
- Search by attributes.
- Bookmarks for fast access to some regions of the map.
- Layer description view.
- Feature table view for layer with fast switch between a table and a map.
- Annotations.

### 2.1.6 Editing

- Editing of feature attributes.
- Editing of layer description.
- Adding of photos and other attachments.
- Editing features with WFS-T.

---

<sup>4</sup> [https://docs.nextgis.com/docs\\_ngcom/source/data\\_export.html#how-to-export-data](https://docs.nextgis.com/docs_ngcom/source/data_export.html#how-to-export-data)

## 2.2 Minimum hardware

Minimum hardware requirements for NextGIS Web software:

- 4 vCPU
- 8 GiB of RAM
- 250 GB HDD (SSD would be much better)

## 2.3 Recommended software versions

- Ubuntu Server 20.04 LTS
- Python  $\geq 3.8$
- PostgreSQL  $\geq 10$
- PostGIS  $\geq 2.5$
- GDAL  $\geq 3$
- Node.js  $\geq 14.x$
- Yarn  $\geq 1.x$

Recommended browsers are:

- Google Chrome (version 118 or newer)
- Mozilla Firefox (version 115 or newer)
- Edge (version 116 or newer)
- Safari (version 17 or newer)
- Opera (version 104 or newer)

Microsoft Internet Explorer browser is not supported.

**Warning:** NextGIS Web would probably work with other versions, but this is not guaranteed.

## MAIN INTERFACE

### 3.1 Authorization

Open the Web GIS and press “Sign in” in the top right corner.

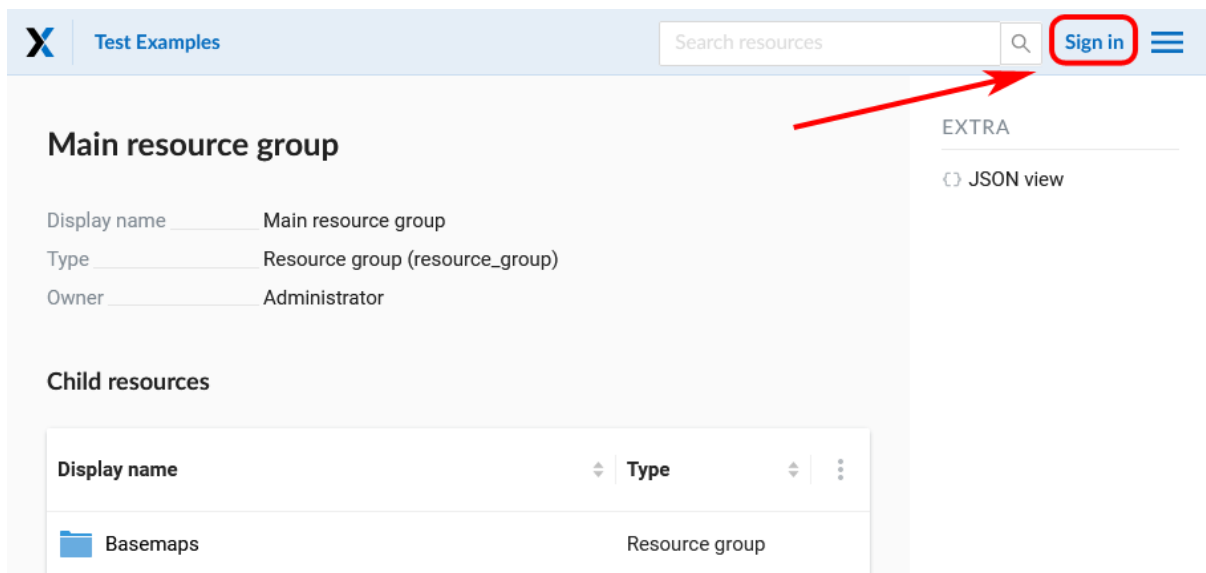


Fig. 3.1: Signing in from Web GIS main page

In the opened dialog press the blue button that reads **Sign in with NextGIS ID**.

You will be redirected to my.nextgis.com authorization page. Enter your username or email you used for registration, then on the next page enter your password.

After the authorization is completed successfully you will be redirected back to the Web GIS.

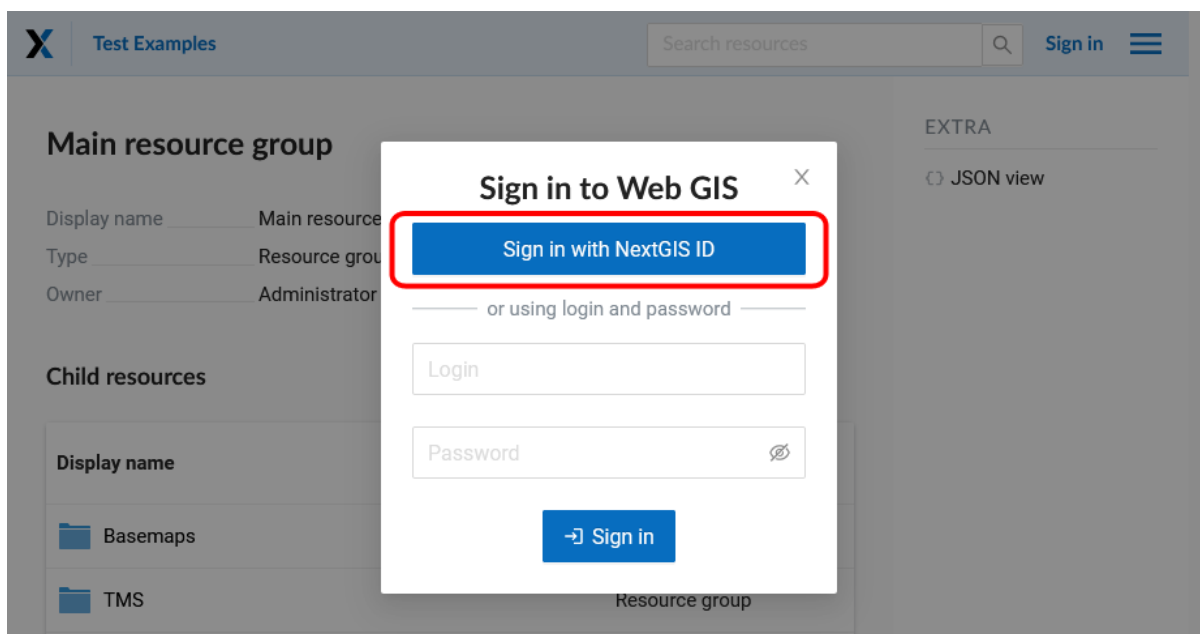


Fig. 3.2: Selecting sign-in via NextGIS

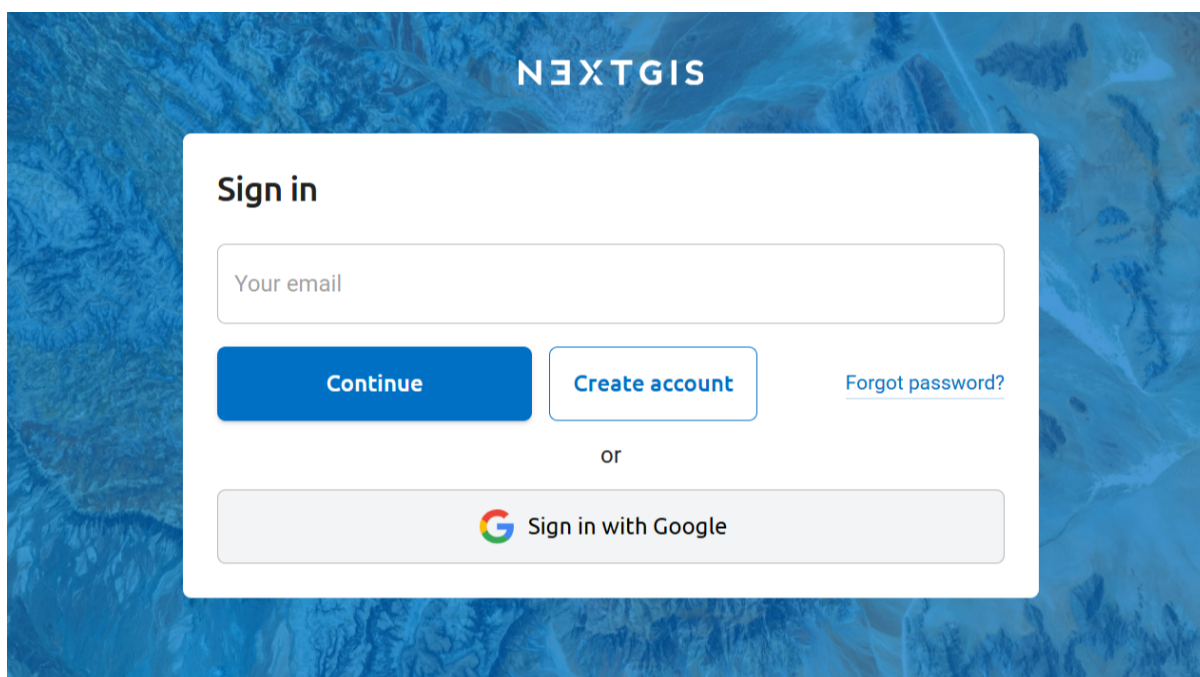


Fig. 3.3: Signing in with NextGIS

## 3.2 Home page

After login the user is taken to the home page shown on Fig. ??

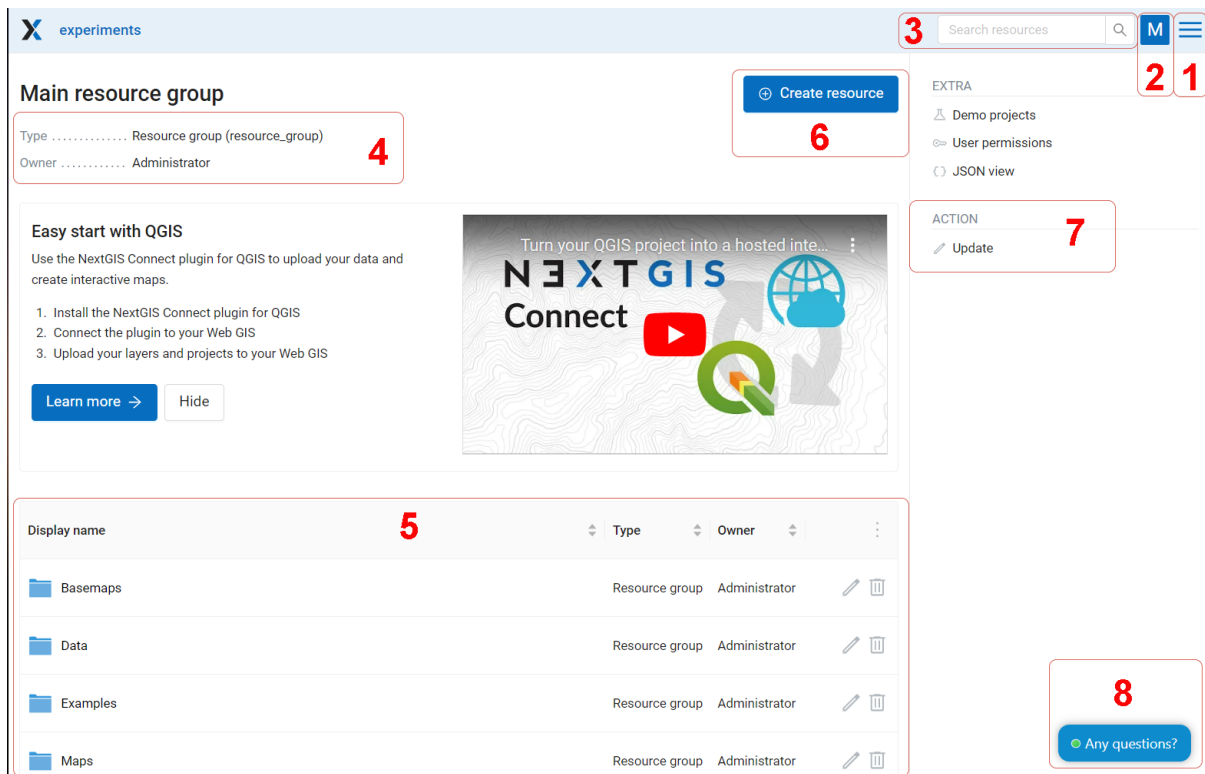


Fig. 3.4: Home page

The numbers indicate: 1 - Main menu; 2 - User settings (Exit and Change language); 3 - Resource search bar in Web GIS 4 - Main resource group description; 5 - Child resources; 6 - User permissions for main resource group; 7 - Types of items that could be added to the main resource group; 8 - Actions that could be performed with main resource group

Home page includes main menu pane, (see item 1 in Fig. ??) which has the following links (see Fig. ??):

- Resources
- Control Panel
- Help
- Account

Description pane (see item 4 in Fig. ??) displays type of resource and owner as well as description (if available).

Child resources pane (see item 5 in Fig. ??) contains a list of all resources placed in a main group. The table contains name and type of the resource and action buttons (edit, delete, for some types of resources - preview, open the attribute table).

“Create resource” button opens a pop-up window where you can choose the type of resource you want to create.

In current version it is possible to add the following types of data to the Main resource group:

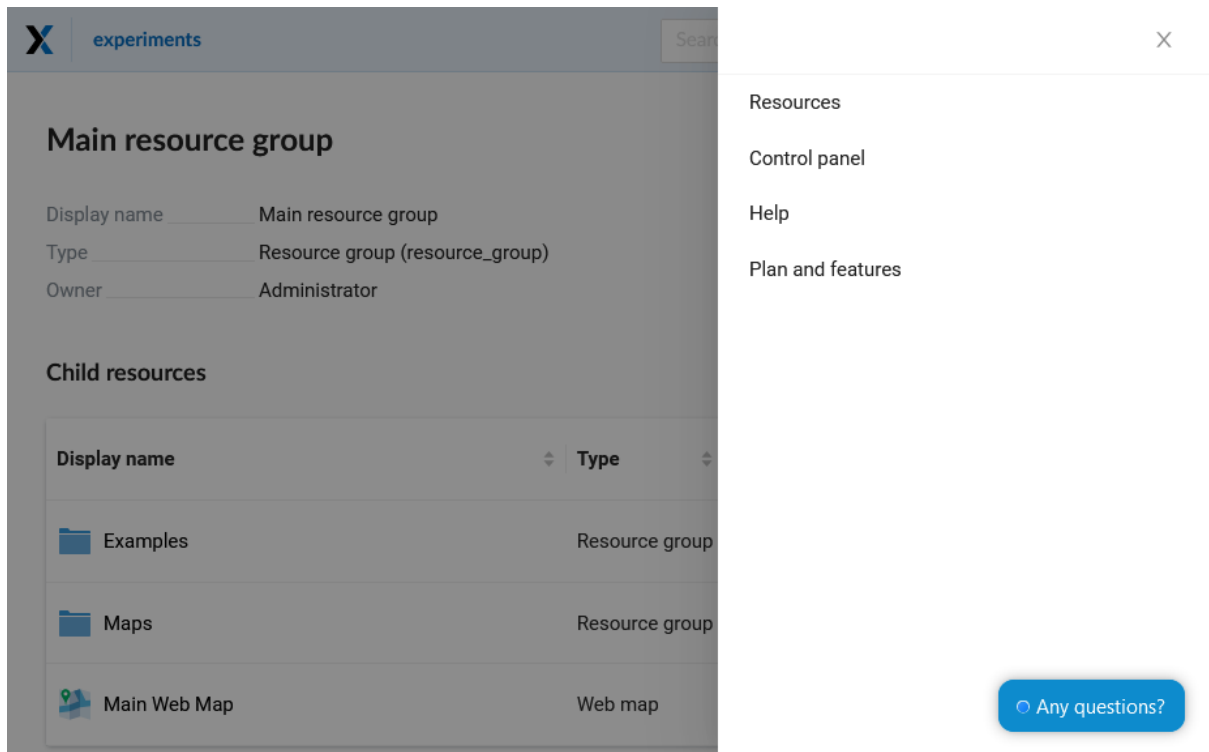


Fig. 3.5: Main menu in NextGIS Web

- Basemap
- Collector project
- Lookup table
- OGC API - Features service
- PostGIS connection
- PostGIS layer
- Raster layer
- Resource group
- TMS connection
- TMS layer
- Trackers group
- Vector layer
- Web Map
- WFS service
- WMS connection
- WMS layer
- WMS service

Depending on your NGW version you may also add:

- SVG marker library
- 3D model
- 3D scene
- 3D tileset

Actions pane (see item 7 in Fig. ??) contains tools for adding data and executing operations with the current resource. For the Main resource group the only available operation is Update (i.e. edit).

On the main page there is also a block of extra links:

- [Demo projects<sup>5</sup>](#);
- User permissions - show access rights for the logged in user. [Learn more about user permissions<sup>6</sup>](#);
- JSON view.

### 3.3 Language change

Any authorized user can switch the interface language. To do this, in the upper right corner on the user icon, go to the “Settings” section.

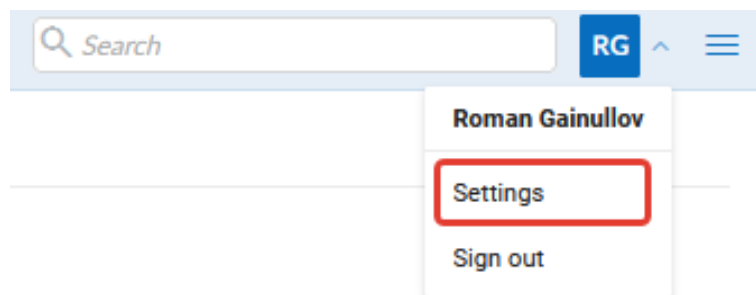


Fig. 3.6: Go to Settings bar

The following languages are available for selection (Fig. ??)

- Default browser
- Russian
- English
- Bulgarian
- Chinese
- Czech
- French
- German
- Italian

<sup>5</sup> [https://docs.nextgis.com/docs\\_ngcom/source/demoprojects.html](https://docs.nextgis.com/docs_ngcom/source/demoprojects.html)

<sup>6</sup> [https://docs.nextgis.com/docs\\_ngcom/source/permissions.html](https://docs.nextgis.com/docs_ngcom/source/permissions.html)

- Polish
- Spanish
- Portuguese

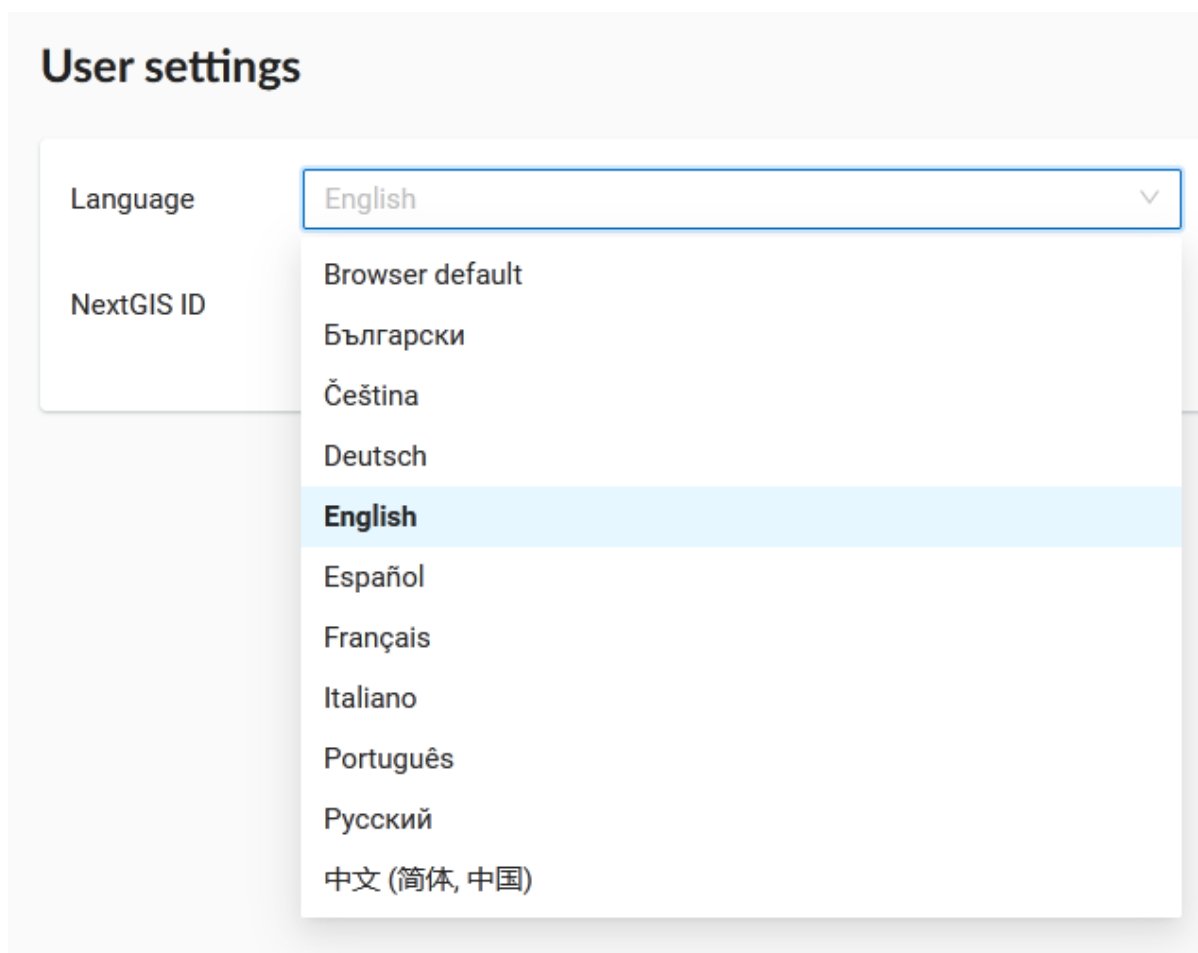


Fig. 3.7: Selecting language

## 3.4 Resource search

For easy search for resources and navigation, there is a search bar in the top bar (Fig. ??). The search is carried out in the entire existing database, regardless of which directory the user is currently in.

See how the search works in our video:

Watch on [youtube](https://youtu.be/q6h-zL4yg0c?si=FKHlTbneOmen5O5k)<sup>7</sup>.

<sup>7</sup> <https://youtu.be/q6h-zL4yg0c?si=FKHlTbneOmen5O5k>

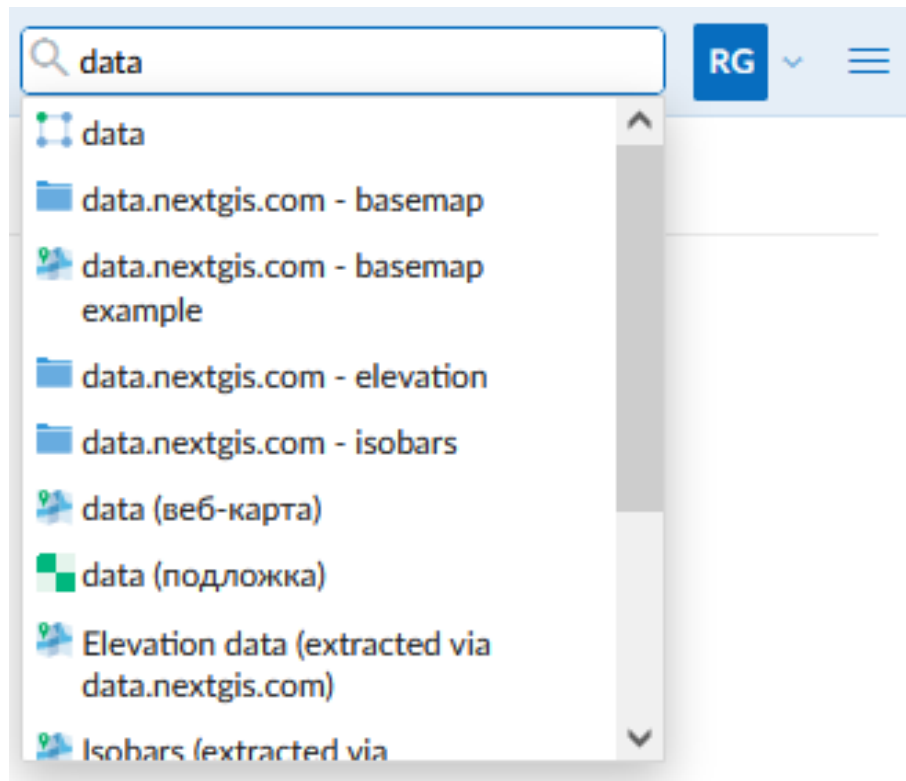



Fig. 3.8: Finding Resources in Web GIS

### 3.5 Control panel

NextGIS Web Control panel is available through the main menu. Press the  button in the top right corner (see item 1 in Fig. ??) and select “Control panel”.

Control panel has several sections, see Fig. ??.

Control panel allows to execute the following actions:

- Manage NextGIS Web groups and users<sup>8</sup>
- Display information about the system and storage<sup>9</sup>
- Access cadaster services
- Add participants of Collector projects<sup>10</sup>
- Set the name of your Web GIS<sup>11</sup>
- Configure CORS<sup>12</sup>
- Manage custom fonts<sup>13</sup>

<sup>8</sup> [https://docs.nextgis.com/docs\\_ngweb/source/users.html](https://docs.nextgis.com/docs_ngweb/source/users.html)

<sup>9</sup> [https://docs.nextgis.com/docs\\_ngweb/source/infowebgis.html](https://docs.nextgis.com/docs_ngweb/source/infowebgis.html)

<sup>10</sup> [https://docs.nextgis.com/docs\\_ngweb/source/collector.html](https://docs.nextgis.com/docs_ngweb/source/collector.html)

<sup>11</sup> [https://docs.nextgis.com/docs\\_ngweb/source/look.html#web-gis-name](https://docs.nextgis.com/docs_ngweb/source/look.html#web-gis-name)

<sup>12</sup> [https://docs.nextgis.com/docs\\_ngweb/source/cors.html](https://docs.nextgis.com/docs_ngweb/source/cors.html)

<sup>13</sup> [https://docs.nextgis.com/docs\\_ngweb/source/look.html#font-management](https://docs.nextgis.com/docs_ngweb/source/look.html#font-management)

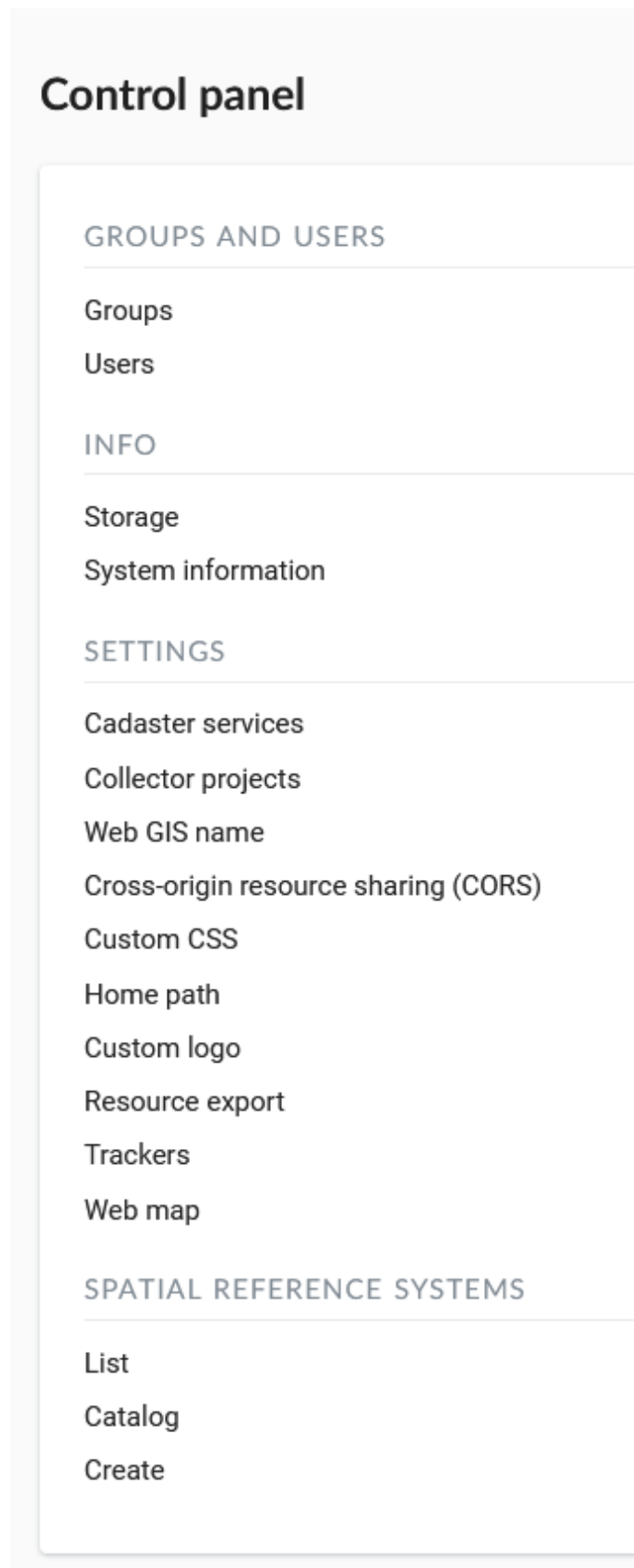


Fig. 3.9: Control panel



- Set CSS styles<sup>14</sup>
- Specify NGW start page (home path)<sup>15</sup>
- Set custom Logo (in the upper left corner)<sup>16</sup>
- Set up Analytics<sup>17</sup>
- Specify which users see the data export button<sup>18</sup>
- Customize display of Tracks<sup>19</sup>
- Customize Web Maps<sup>20</sup>
- Add spacial reference systems<sup>21</sup>
- Customize UI elements with White Label module (on-premise only)<sup>22</sup>

For more information about creation of user groups and users and granting permissions see **this section** [\\_<https://docs.nextgis.com/docs\\_ngweb/source/users.html`\\_](https://docs.nextgis.com/docs_ngweb/source/users.html).




## 3.6 Resource view

After login to administrative interface the user is taken to home page shown on Fig. ??.

The resource list allows users to perform some actions by clicking icons next to the resource name:

-  open the resource edit page
-  delete resource

Other actions can be available depending on the resource type:

-  preview
-  open (for Web Maps)
-  open feature table (for vector layers)

To open the resource page click on the corresponding row of the table. The resource page contains properties, attributes, a link for external access and a list of child resources if there are any (see Fig. ??).

Here you can also enter the resource [edit mode](#)<sup>23</sup>.

<sup>14</sup> [https://docs.nextgis.com/docs\\_ngweb/source/look.html#customize-the-design-with-css](https://docs.nextgis.com/docs_ngweb/source/look.html#customize-the-design-with-css)

<sup>15</sup> [https://docs.nextgis.com/docs\\_ngweb/source/look.html#how-to-change-the-homepage-address](https://docs.nextgis.com/docs_ngweb/source/look.html#how-to-change-the-homepage-address)

<sup>16</sup> [https://docs.nextgis.com/docs\\_ngweb/source/look.html#upload-a-logo](https://docs.nextgis.com/docs_ngweb/source/look.html#upload-a-logo)

<sup>17</sup> [https://docs.nextgis.com/docs\\_ngweb/source/analytics.html](https://docs.nextgis.com/docs_ngweb/source/analytics.html)

<sup>18</sup> [https://docs.nextgis.com/docs\\_ngweb/source/webmap\\_set.html#resource-export](https://docs.nextgis.com/docs_ngweb/source/webmap_set.html#resource-export)

<sup>19</sup> [https://docs.nextgis.com/docs\\_ngweb/source/trackers.html](https://docs.nextgis.com/docs_ngweb/source/trackers.html)

<sup>20</sup> [https://docs.nextgis.com/docs\\_ngweb/source/webmap\\_set.html](https://docs.nextgis.com/docs_ngweb/source/webmap_set.html)

<sup>21</sup> [https://docs.nextgis.com/docs\\_ngweb/source/ngw\\_srs.html](https://docs.nextgis.com/docs_ngweb/source/ngw_srs.html)

<sup>22</sup> [https://docs.nextgis.com/docs\\_ngweb/source/label.html](https://docs.nextgis.com/docs_ngweb/source/label.html)

<sup>23</sup> [https://docs.nextgis.com/docs\\_ngweb/source/edit\\_resource.html](https://docs.nextgis.com/docs_ngweb/source/edit_resource.html)

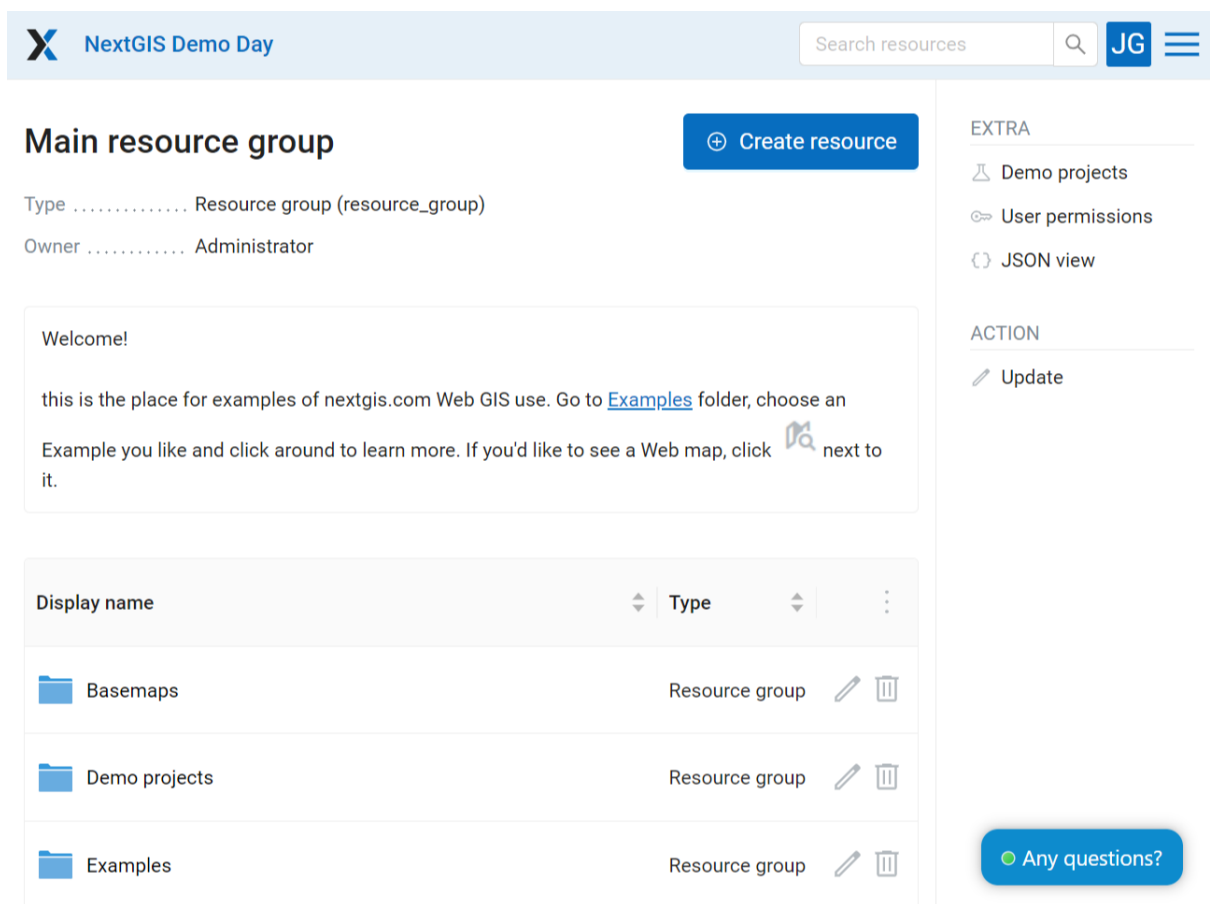


Fig. 3.10: Resource groups

NextGIS Demo Day

Search resources

QJG

Main resource group

Examples

Transportation map - Buenos Aires

Buildings

Create resource

Type

Vector layer (vector\_layer)

Spatial reference system

WGS 84 / Pseudo-Mercator (EPSG:3857)

Geometry type

Multipolygon

Feature count

41609

Owner

Administrator

Display name

Type

Buildings

QGIS vector style

External access

Use these links to plug data into external applications.

MVT Vector Tiles

https://demo.nextgis.com/api/component/feature\_layer/mvt?resource=62...

EXTRA

User permissions

JSON view

Preview

FEATURES

Save as

Table

Manage attachments

ACTION

Update

Delete

Any questions?

Fig. 3.11: Vector layer parameters

3.6. Resource view

16

## 3.7 Feature table

Some resources contain a set of features that can be viewed as a table. Press the “Table” icon opposite the resource name or select an action for a vector layer called “Table” in the features pane.

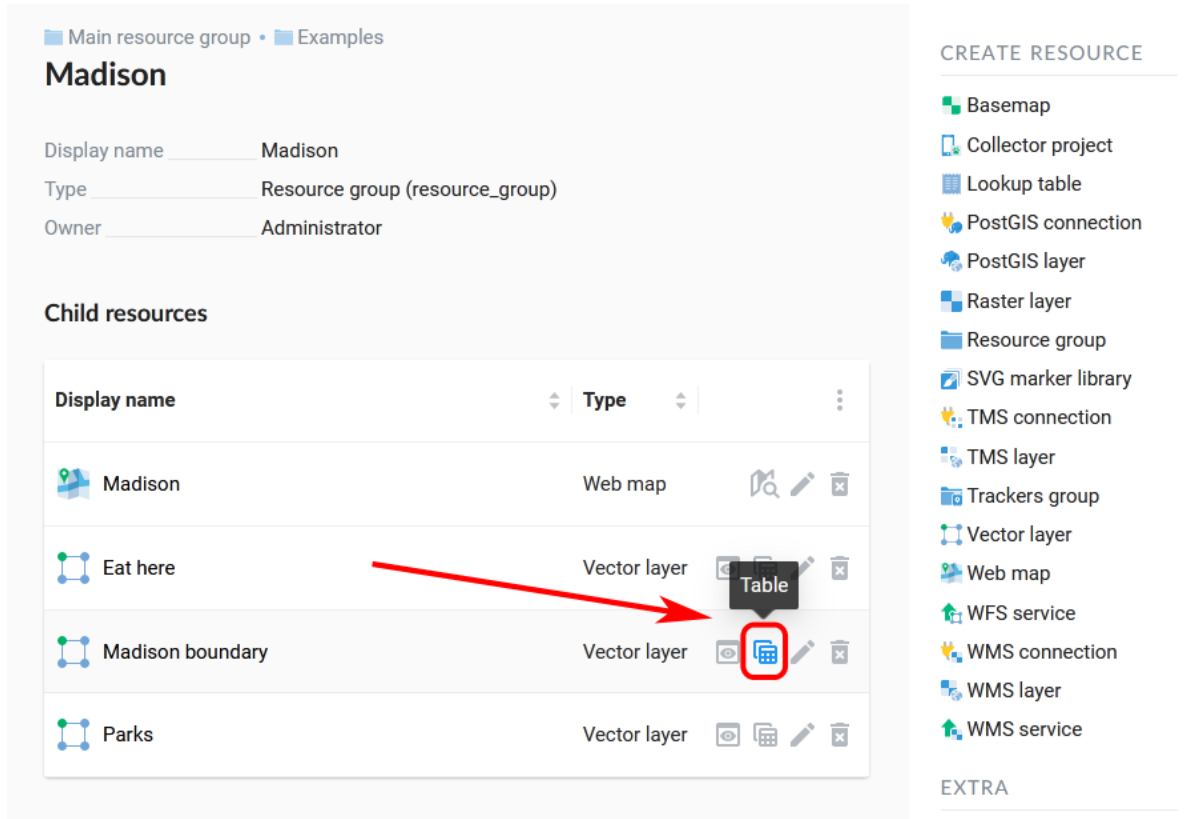


Fig. 3.12: Opening feature table from the resource list

Authorized users can [edit features](#)<sup>24</sup> from the feature table.

## 3.8 Data export

Web GIS allows to export data from Vector layers and PostGIS layer in the following formats:

- GeoPackage
- CSV and CSV for Microsoft Excel
- ESRI Shapefile
- AutoCAD DXF
- Mapinfo TAB
- MapInfo MIF/MID
- GeoJSON

<sup>24</sup> [https://docs.nextgis.com/docs\\_ngweb/source/feature\\_table.html](https://docs.nextgis.com/docs_ngweb/source/feature_table.html)

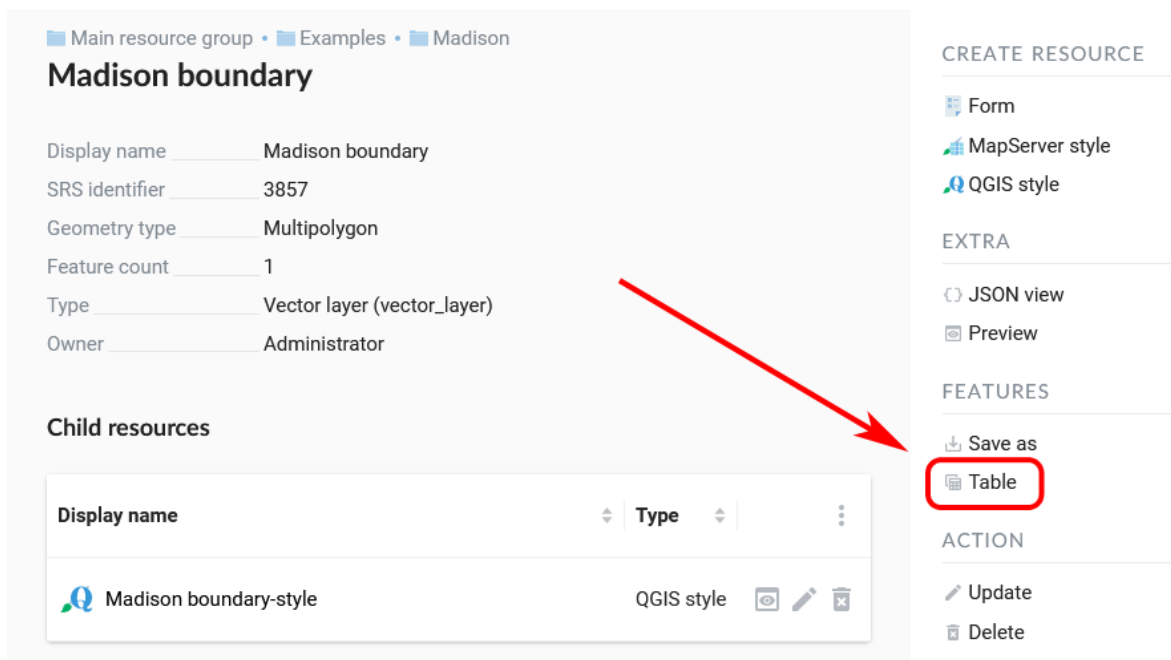


Fig. 3.13: Opening feature table from the resource page

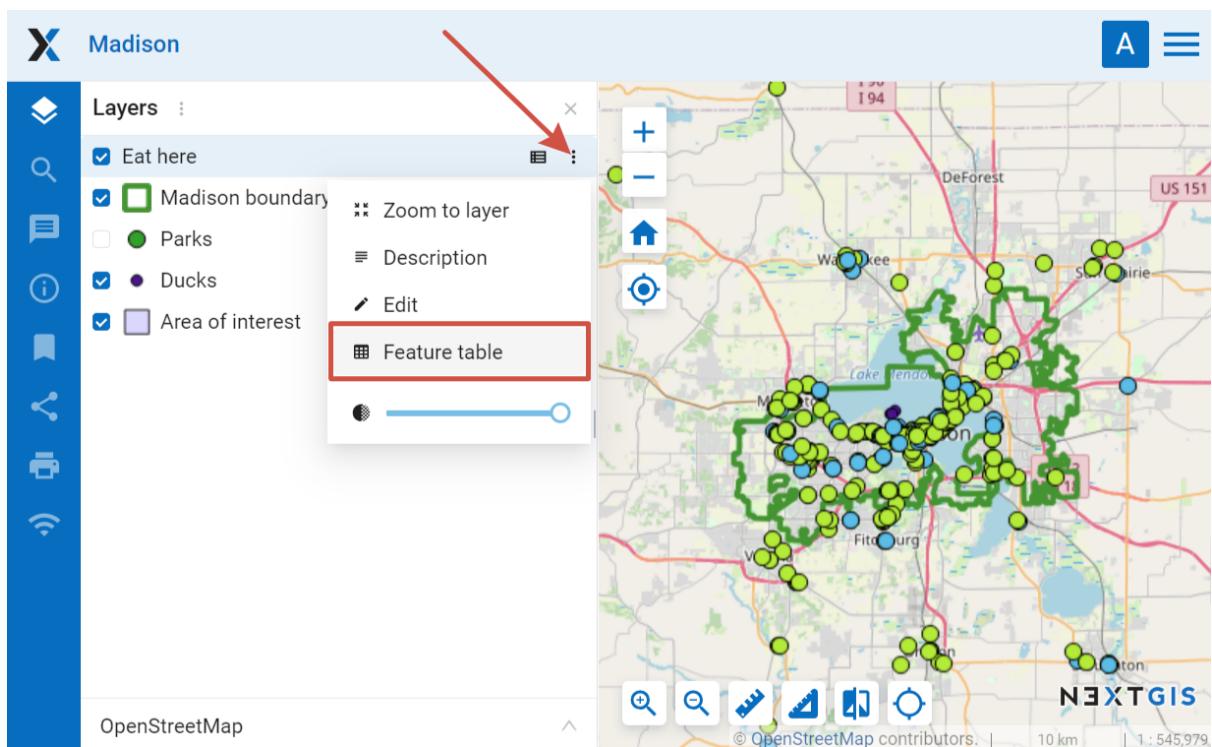


Fig. 3.14: Opening feature table from the map

- KML
- KMZ

Depending on the format, additional file components are exported making further use of the exported data more convenient. For example CSVT (field structure description) and PRJ (coordinate system description) are added to CSV and CPG (codepage) to ESRI Shapefile.

**Note:** Geometry and attributes are supported for export. Features' descriptions, metadata and images can't be exported in the described way but can be requested using NextGIS API.

To export data:

1. Open the Properties page of Vector layer or PostGIS layer from which you want to export data;
2. Select *Vector layer* → *Save as* on the right side of the page;
3. Select data format and encoding;
4. If you need to have the file archived, select *ZIP archive* (some multi-file formats are zipped by default);
5. Save the file to your device.

By default data is exported to a GeoPackage file using UTF-8 encoding with all fields included.

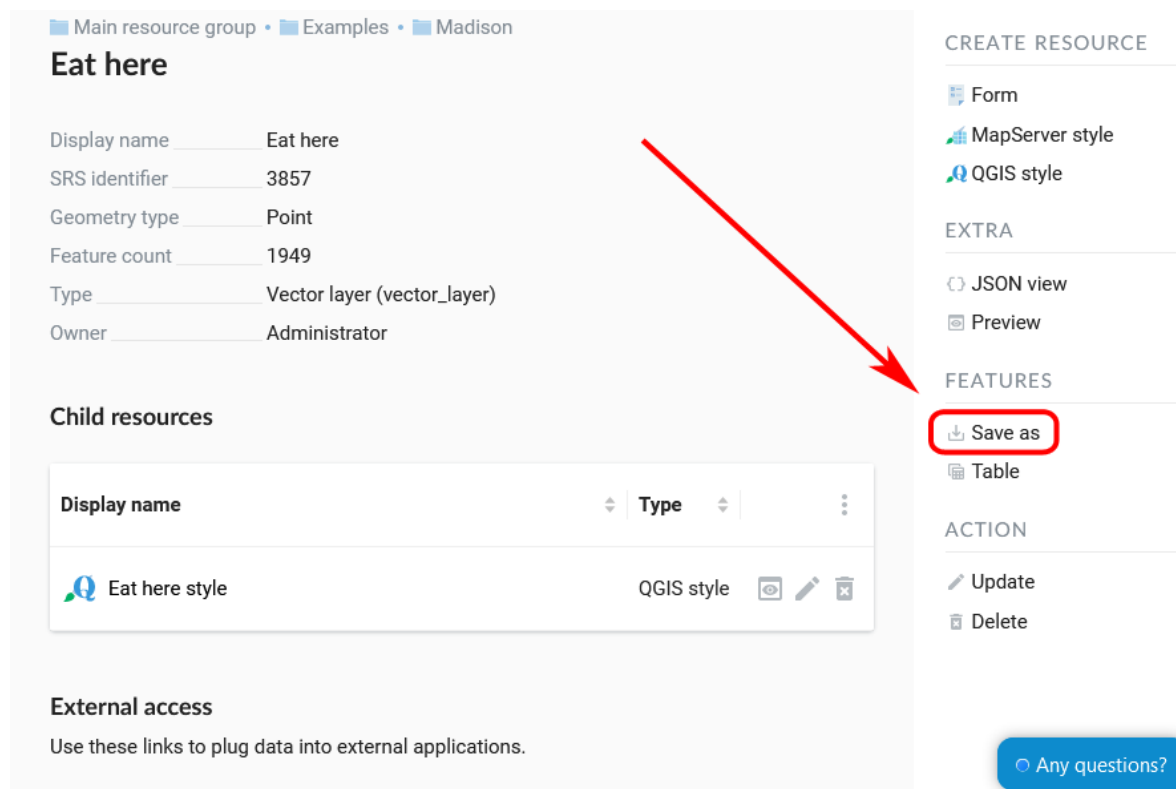


Fig. 3.15: Selecting “Save as” action to export data

Fig. 3.16: Data export in various formats

### 3.8.1 Export settings

In the *Format* field select data format you need:

In the *SRS* field (Spatial reference system) in addition to standard coordinate systems Longitude-Latitude (EPSG: 4326) and Mercator (EPSG: 3857) you can select custom coordinate systems created earlier (how to add custom SRS see [this page](#)<sup>25</sup>):

In the *Encoding* field you can choose UTF-8, Windows-1251, or Windows-1252 encoding for your data:

*FID field* is used for setting a field name to be added to a exported data where the object identifiers will be placed (the default is “ngw\_id”).

You can choose to *use field display names instead of keynames*. Keynames are technical and use only plain Latin symbols. Display names can be in any language, usually they are seen as column headers or field labels in a form (for more details see [this section](#)<sup>26</sup>).

Next you can chose which of the *fields* of the data to keep in the file. By default, all are selected. To remove a field, click on the cross by its name or untick it in the drop-down menu. To add a field again, tick it in the drop-down menu.

Watch on [youtube](#)<sup>27</sup>.

<sup>25</sup> [https://docs.nextgis.com/docs\\_ngweb/source/ngw\\_srs.html](https://docs.nextgis.com/docs_ngweb/source/ngw_srs.html)

<sup>26</sup> [https://docs.nextgis.com/docs\\_ngweb/source/layers\\_settings.html#ngw-attributes-edit](https://docs.nextgis.com/docs_ngweb/source/layers_settings.html#ngw-attributes-edit)

<sup>27</sup> <https://youtu.be/Hukt3lD-JyQ?si=c8Cbut245FWU7LMQ>

Main resource group - Switzerland - Largest lakes

## Save as

**Format**

SRS

Encoding

FID field

Use field display names  
instead of keynames

Fields

Limit by extent

Filter text

Zip archive

Save

GeoPackage (\*.gpkg)

GeoPackage (\*.gpkg)

GeoJSON (\*.geojson)

ESRI Shapefile (\*.shp)

Comma Separated Value (\*.csv)

CSV for Microsoft Excel (\*.csv)

MapInfo TAB (\*.tab)

MapInfo MIF/MID (\*.mif/\*.mid)

KML (\*.kml)

Name x Area\_km2 x Area\_m2 x

Left deg. Bottom deg. Right deg. Top deg.

Filter text

☐

Fig. 3.17: "Format" field

Main resource group - Switzerland - Largest lakes

## Save as

Format

GeoPackage (\*.gpkg)

**SRS**

WGS 84 / Pseudo-Mercator (EPSG:3857)

Encoding

WGS 84 / Lon-lat (EPSG:4326)

WGS 84 / Pseudo-Mercator (EPSG:3857)

FID field

Tahiti 52 / UTM zone 6S

Cape / UTM zone 34S

Use field display names  
instead of keynames

Tokyo / UTM zone 53N

WGS 84 / UTM zone 15N

Fields

Main: WGS 84 / Delhi

Limit by extent

Left deg. Bottom deg. Right deg. Top deg.

Filter text

Zip archive

☐

Save

Fig. 3.18: "SRS" field

Main resource group - Switzerland - Largest lakes

## Save as

Format	GeoPackage (*.gpkg) ▼
SRS	WGS 84 / Pseudo-Mercator (EPSG:3857) ▼
<b>Encoding</b>	<div>UTF-8 ▼</div> <div> <div>UTF-8</div> <div>Windows-1251</div> <div>Windows-1252</div> </div>
FID field	
Use field display names instead of keynames	
Fields	Name × Area_km2 × Area_mi2 × ▼
Limit by extent	<div>Left deg.</div> <div>Bottom deg.</div> <div>Right deg.</div> <div>Top deg.</div>
Filter text	<input type="text"/>
Zip archive	<input type="checkbox"/>
<div>Save</div>	

Fig. 3.19: “Encoding” field

Main resource group - Switzerland - Largest lakes

## Save as

Format	GeoPackage (*.gpkg) ▼
SRS	WGS 84 / Pseudo-Mercator (EPSG:3857) ▼
Encoding	UTF-8 ▼
FID field	ngw_id
Use field display names instead of keynames	<input type="checkbox"/>
<b>Fields</b>	<div> <div>Name × Area_km2 ×   🔍</div> <div> <div>Name ✓</div> <div>Area_km2 ✓</div> <div>Area_mi2</div> </div> </div>
Limit by extent	
Filter text	
Zip archive	<input type="checkbox"/>
<b>Save</b>	

Fig. 3.20: Selcting fields

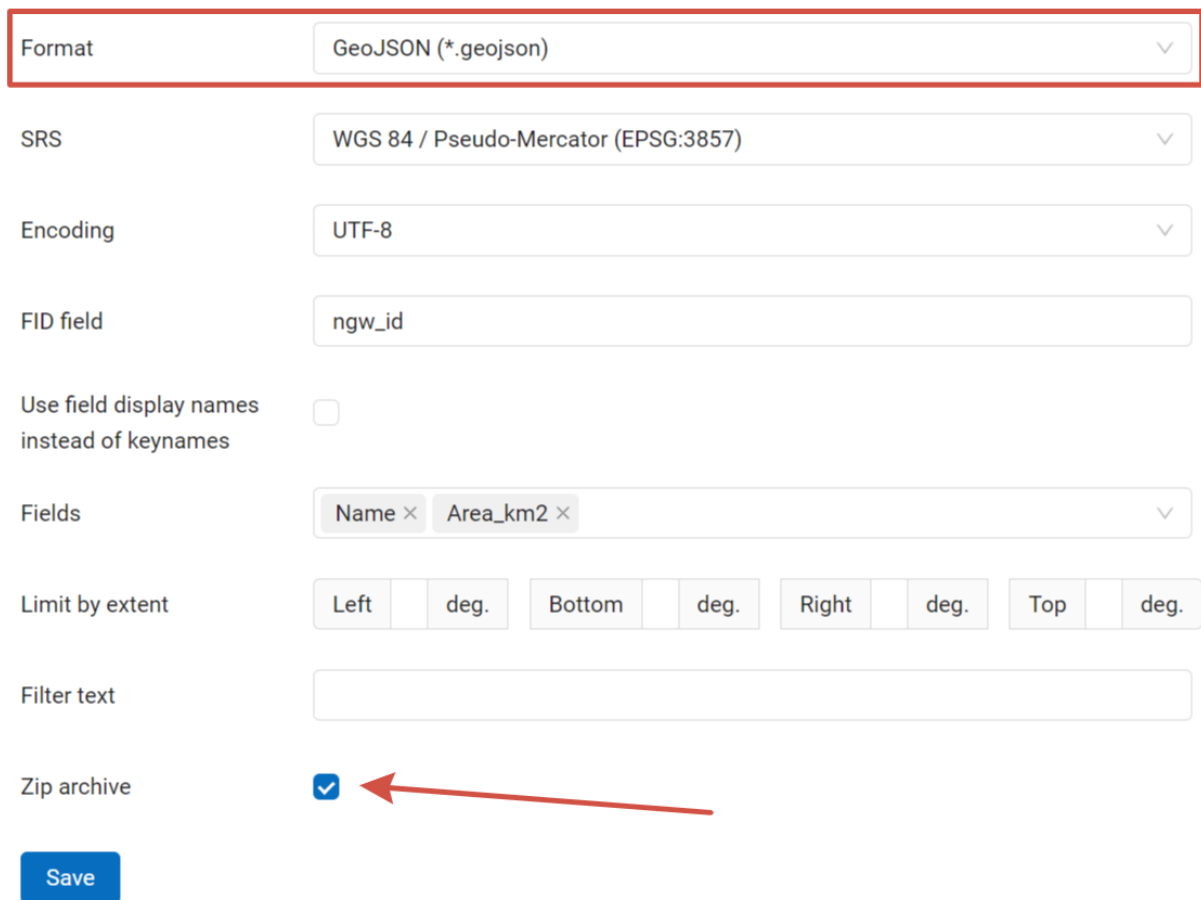
If you need to export only the features within a particular area, you can *Limit by extent*. The extent is set in degrees.

A *text filter* is also available. Search is performed in all fields that don't have [text search](#)<sup>28</sup> disabled, just like in the feature table.

Output in ESRI Shapefile or MapInfo TAB results in a Zip archive with necessary files. For single-file formats (like GeoJSON or CSV) creation of Zip archive is optional.

Main resource group · Switzerland · Largest lakes

## Save as



Format: GeoJSON (\*.geojson)

SRS: WGS 84 / Pseudo-Mercator (EPSG:3857)

Encoding: UTF-8


FID field: ngw\_id

Use field display names instead of keynames: ☐

Fields: Name × Area\_km2 ×

Limit by extent: Left deg. Bottom deg. Right deg. Top deg.

Filter text:

Zip archive: ☒ 

Save

Fig. 3.21: Creation of Zip archive selected for GeoJSON format

All export options are available through HTTP API. For example, this query will get you data in CSV format, EPSG:4326, UTF-8 encoding, zipped:

[https://demo.nextgis.com/api/resource/4077/export?format=csv&srs=4326&zipped=true&fid=ngw\\_id&encoding=UTF-8](https://demo.nextgis.com/api/resource/4077/export?format=csv&srs=4326&zipped=true&fid=ngw_id&encoding=UTF-8)

You can also export data from Vector layers using [feature table on the Web Map](#)<sup>29</sup> or with desktop app NextGIS QGIS.

<sup>28</sup> [https://docs.nextgis.com/docs\\_ngweb/source/edit\\_resource.html#edit-vector-layer-attributes-table](https://docs.nextgis.com/docs_ngweb/source/edit_resource.html#edit-vector-layer-attributes-table)

<sup>29</sup> [https://docs.nextgis.com/docs\\_ngweb/source/feature\\_table.html](https://docs.nextgis.com/docs_ngweb/source/feature_table.html)

## ADDING RESOURCES

NextGIS Web is built on a **resource-based** approach - each component of the system (layer, group, service) is a resource. One of these resources is a **layer** - a raster image or a vector file (database table).

For each layer you can create an **unlimited** number of **styles** - ways to visualize geodata on a Web Map.

Interface for adding of PostGIS layers, vector and raster layers is practically the same. First, you specify the parameters for the layer, and then you add a style that renders data on the Web Map.

To create a new resource, open the group where you want to add it and press **Create resource** button. Then in the pop-up window select the resource type. The window opens on the full list of available resource types.

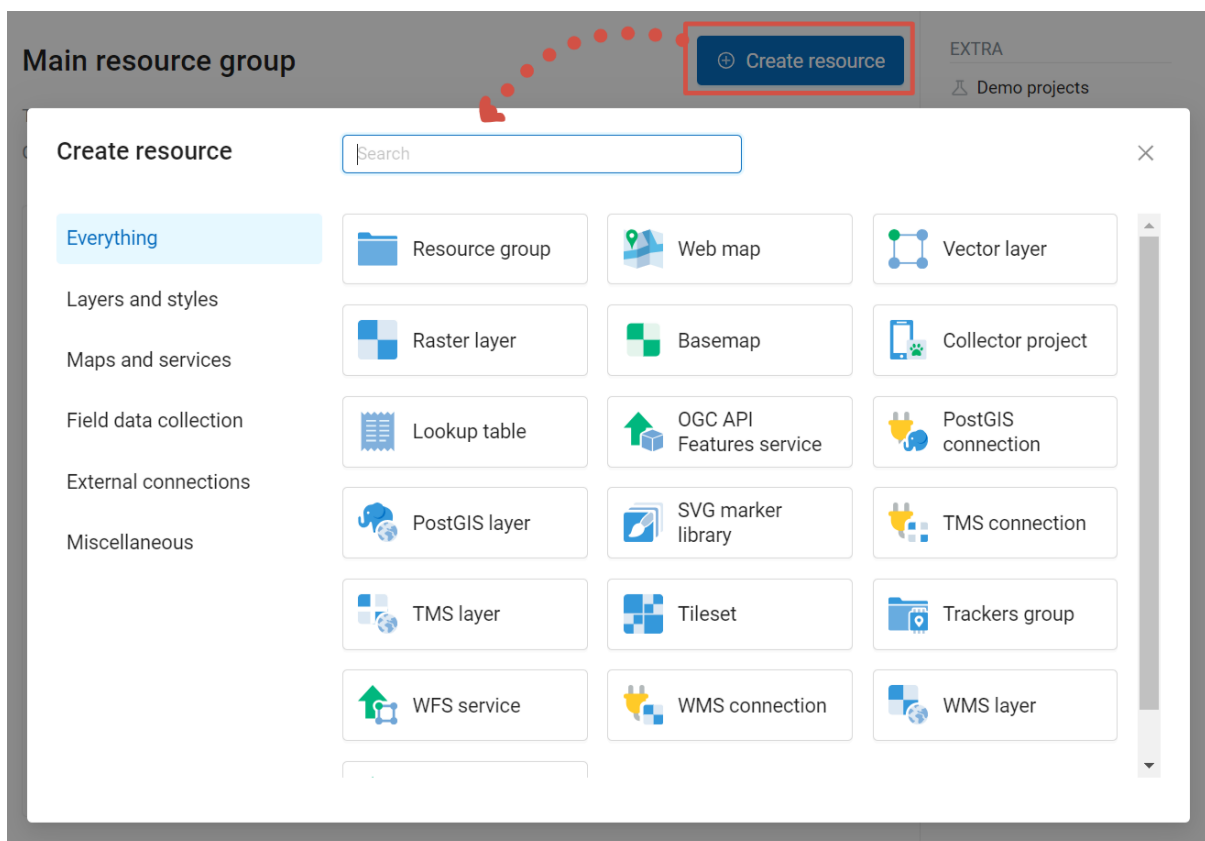


Fig. 4.1: Create resource window

To find the resource type you need faster, use the search bar.

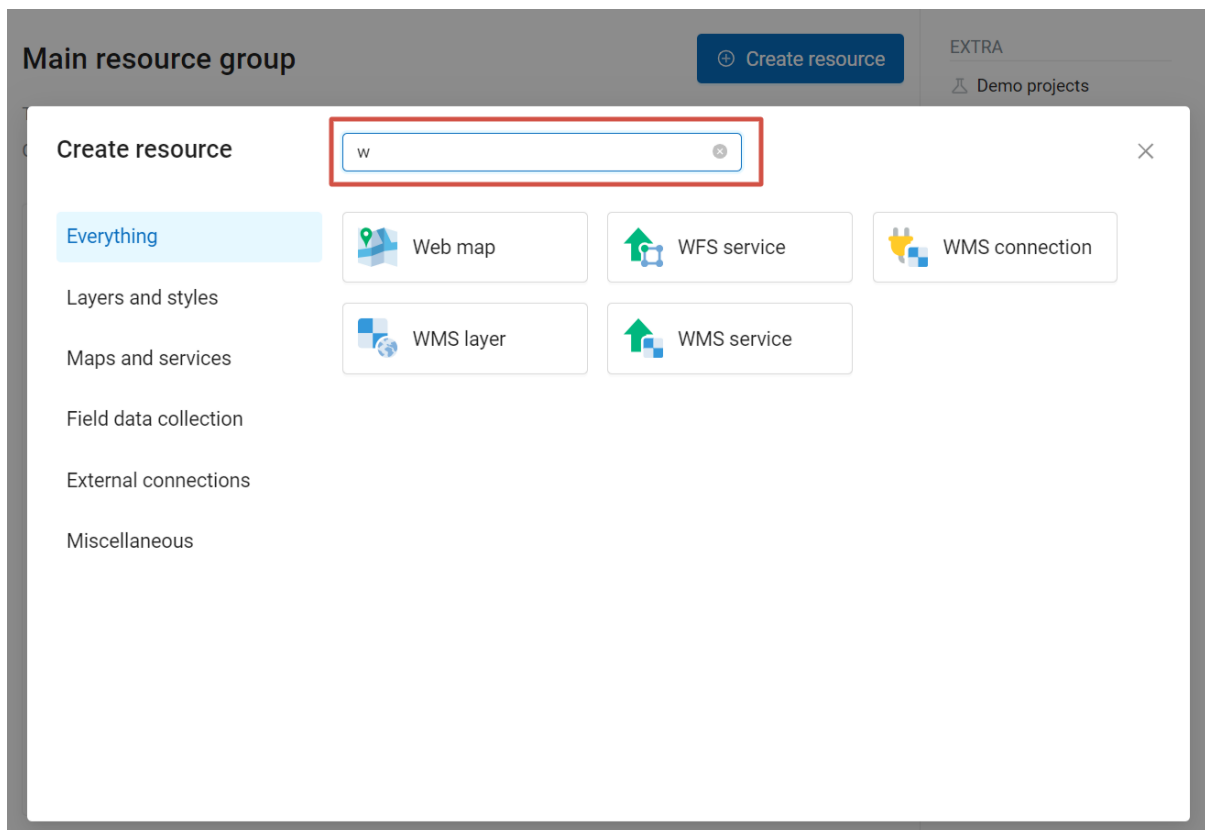


Fig. 4.2: Searching for resource type

Resource types are also grouped into categories. You can select a category from the list on the left.

- Layers and styles ([raster](#)<sup>30</sup> and [vector](#)<sup>31</sup> layers and [styles](#)<sup>32</sup>, [basemaps](#)<sup>33</sup>)
- Maps and services ([Web Map](#)<sup>34</sup>, WMS, WFS, OGC API - Features services)
- Field data collection ([tracker group](#), [tracker](#)<sup>35</sup>, [Collector project](#)<sup>36</sup>), [form for data collection](#)<sup>37</sup>
- External connections (PostGIS, TMS and WMS connections)
- Miscellaneous ([resource group](#)<sup>38</sup>, [SVG marker library](#)<sup>39</sup>, [lookup table](#)<sup>40</sup>, [file bucket](#)<sup>41</sup>)

Click on the resource type to see the detailed description of the process.

<sup>30</sup> [https://docs.nextgis.com/docs\\_ngweb/source/layers.html#ngw-create-raster-layer](https://docs.nextgis.com/docs_ngweb/source/layers.html#ngw-create-raster-layer)

<sup>31</sup> [https://docs.nextgis.com/docs\\_ngweb/source/layers.html#ngw-create-vector-layer](https://docs.nextgis.com/docs_ngweb/source/layers.html#ngw-create-vector-layer)

<sup>32</sup> [https://docs.nextgis.com/docs\\_ngweb/source/mapstyles.html](https://docs.nextgis.com/docs_ngweb/source/mapstyles.html)

<sup>33</sup> [https://docs.nextgis.com/docs\\_ngweb/source/webmaps\\_admin.html#ngw-create-basemap](https://docs.nextgis.com/docs_ngweb/source/webmaps_admin.html#ngw-create-basemap)

<sup>34</sup> [https://docs.nextgis.com/docs\\_ngweb/source/webmaps\\_admin.html](https://docs.nextgis.com/docs_ngweb/source/webmaps_admin.html)

<sup>35</sup> [https://docs.nextgis.com/docs\\_ngcom/source/tracking.html#tracking-create](https://docs.nextgis.com/docs_ngcom/source/tracking.html#tracking-create)

<sup>36</sup> [https://docs.nextgis.com/docs\\_ngweb/source/collector.html#collector-create-project](https://docs.nextgis.com/docs_ngweb/source/collector.html#collector-create-project)

<sup>37</sup> [https://docs.nextgis.com/docs\\_ngweb/source/collector.html#collector-create-form](https://docs.nextgis.com/docs_ngweb/source/collector.html#collector-create-form)

<sup>38</sup> [https://docs.nextgis.com/docs\\_ngweb/source/create\\_resource.html#ngw-resources-group](https://docs.nextgis.com/docs_ngweb/source/create_resource.html#ngw-resources-group)

<sup>39</sup> [https://docs.nextgis.com/docs\\_ngweb/source/mapstyles.html#ngw-create-svg-marker-lib](https://docs.nextgis.com/docs_ngweb/source/mapstyles.html#ngw-create-svg-marker-lib)

<sup>40</sup> [https://docs.nextgis.com/docs\\_ngweb/source/create\\_other.html#ngw-create-lookup-table](https://docs.nextgis.com/docs_ngweb/source/create_other.html#ngw-create-lookup-table)

<sup>41</sup> [https://docs.nextgis.com/docs\\_ngweb/source/create\\_other.html#ngw-create-file-bucket](https://docs.nextgis.com/docs_ngweb/source/create_other.html#ngw-create-file-bucket)

## 4.1 Create Resource group to manage data

Resources can be arranged into groups. For example, you can have special groups for base layers, satellite images and topical data.

Groups help organize the layers in the Control panel and make it easier to manage access permissions.

To create a resource group navigate to the group, where you want to create a new one (root group or another). Press **Create resource** button and select **Resource group** (see Fig. ??).

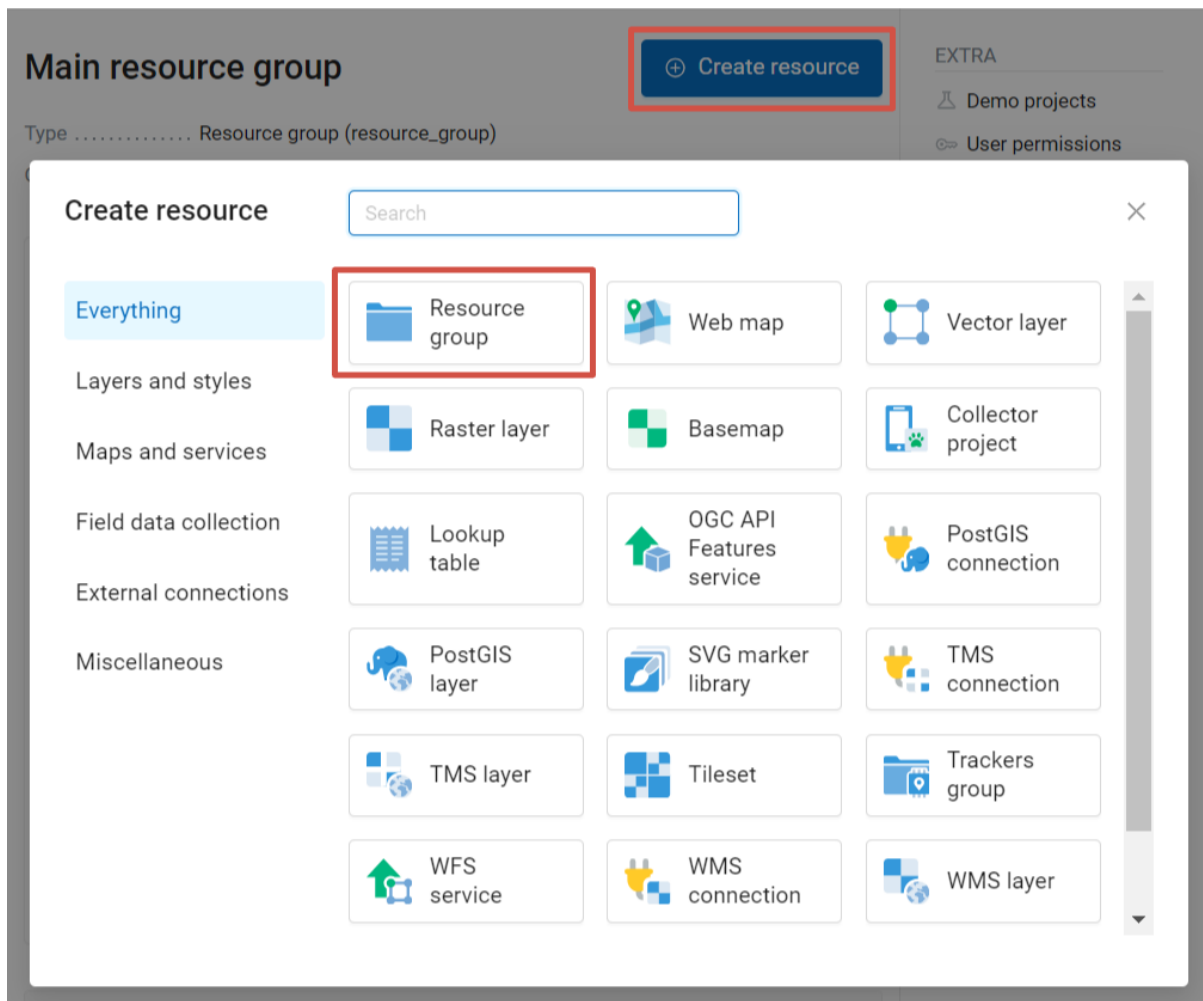


Fig. 4.3: Selection of “Resource group” resource type

Create resource dialog for resource group is presented on Fig. ??.

In the opened dialog enter the name of the resource that will be displayed in the administrator interface and in the map layer tree, and then click **Create**.

“Keyname” field is optional. You can also add resource description and metadata on the corresponding tabs. Metadata is used in external apps working with [API<sup>42</sup>](https://docs.nextgis.com/docs_ngweb_dev/doc/developer/toc.html).

Now you can access newly created Resource group and create new resources in it.

<sup>42</sup> [https://docs.nextgis.com/docs\\_ngweb\\_dev/doc/developer/toc.html](https://docs.nextgis.com/docs_ngweb_dev/doc/developer/toc.html)

Fig. 4.4: Create resource dialog for resource group

Resources can be [transferred from one group to another](#)<sup>43</sup>.


**Note:** You can also create new Resource groups in Web GIS with desktop app QGIS.

## 4.2 Data preview

The preview function allows you to see the uploaded data on the basemap or a basemap without adding it on the Web Map.

Click the “eye” icon opposite the name of the child resource you want to preview.

A visual preview of the uploaded geometries will open without the possibility of more detailed interaction (viewing attributes, identifying objects, etc).

Click  **Open in a new tab** to view a bigger preview on a separate page.

Alternatively, open the resource page and click on the **Preview** button in the right menu in the **Extra** section.

To preview a style, open the layer page and click on the eye icon next to the style subresource. The “Preview” action in the Extra tab on the right will display the preview of the resource itself, i.e. layer (Fig. ??).

<sup>43</sup> [https://docs.nextgis.com/docs\\_ngweb/source/edit\\_resource.html#move-resource](https://docs.nextgis.com/docs_ngweb/source/edit_resource.html#move-resource)

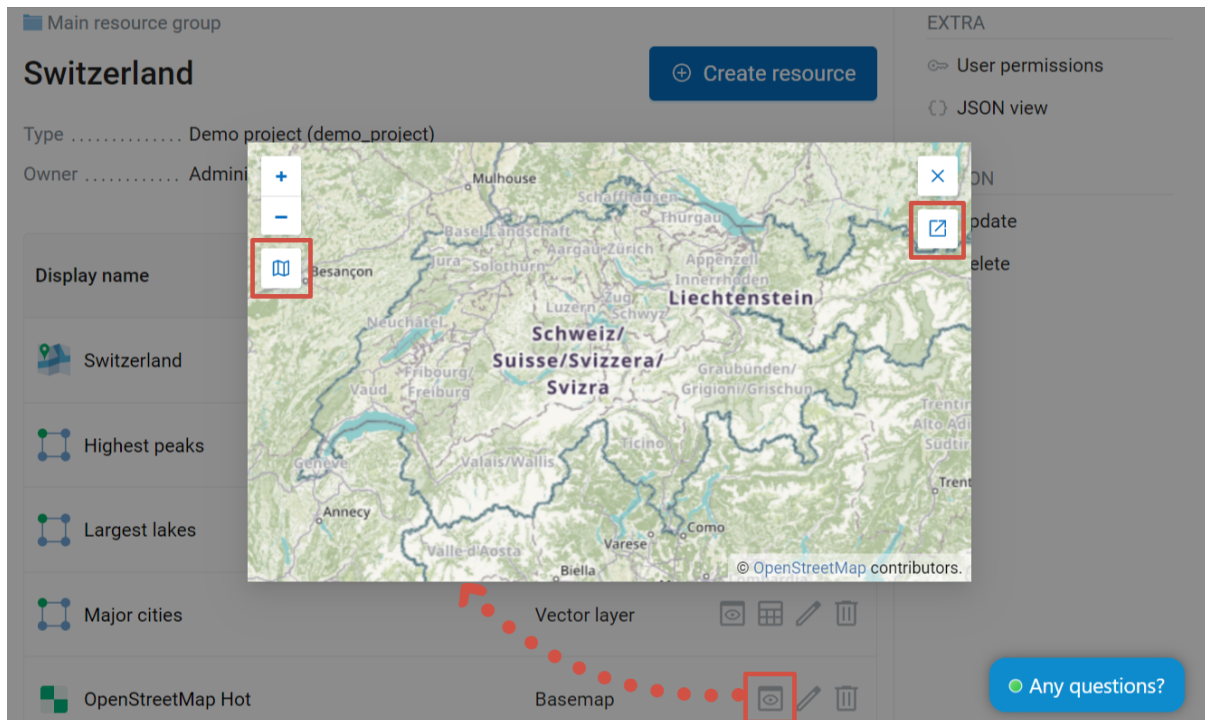


Fig. 4.5: Data preview

### 4.3 Typical structure

With NextGIS Web application experience we recommend creating separate **resource groups**<sup>44</sup> (folders) for:

- Web Maps
- Data layers
- External connections

Such structure makes it easier to manage access permissions.

Typical structure

```

Main resource group
  Web Maps
    Master Web Map
    Test Web Map
  PostGIS connections
    PostGIS on server
  Data layers
    Base data
      Borders
      Infrastructure - linear features
      Accounting area
    Thematic data
      Results of measurements on accounting area
  
```

(continues on next page)

<sup>44</sup> [https://docs.nextgis.com/docs\\_ngweb/source/create\\_resource.html#ngw-resource-group](https://docs.nextgis.com/docs_ngweb/source/create_resource.html#ngw-resource-group)

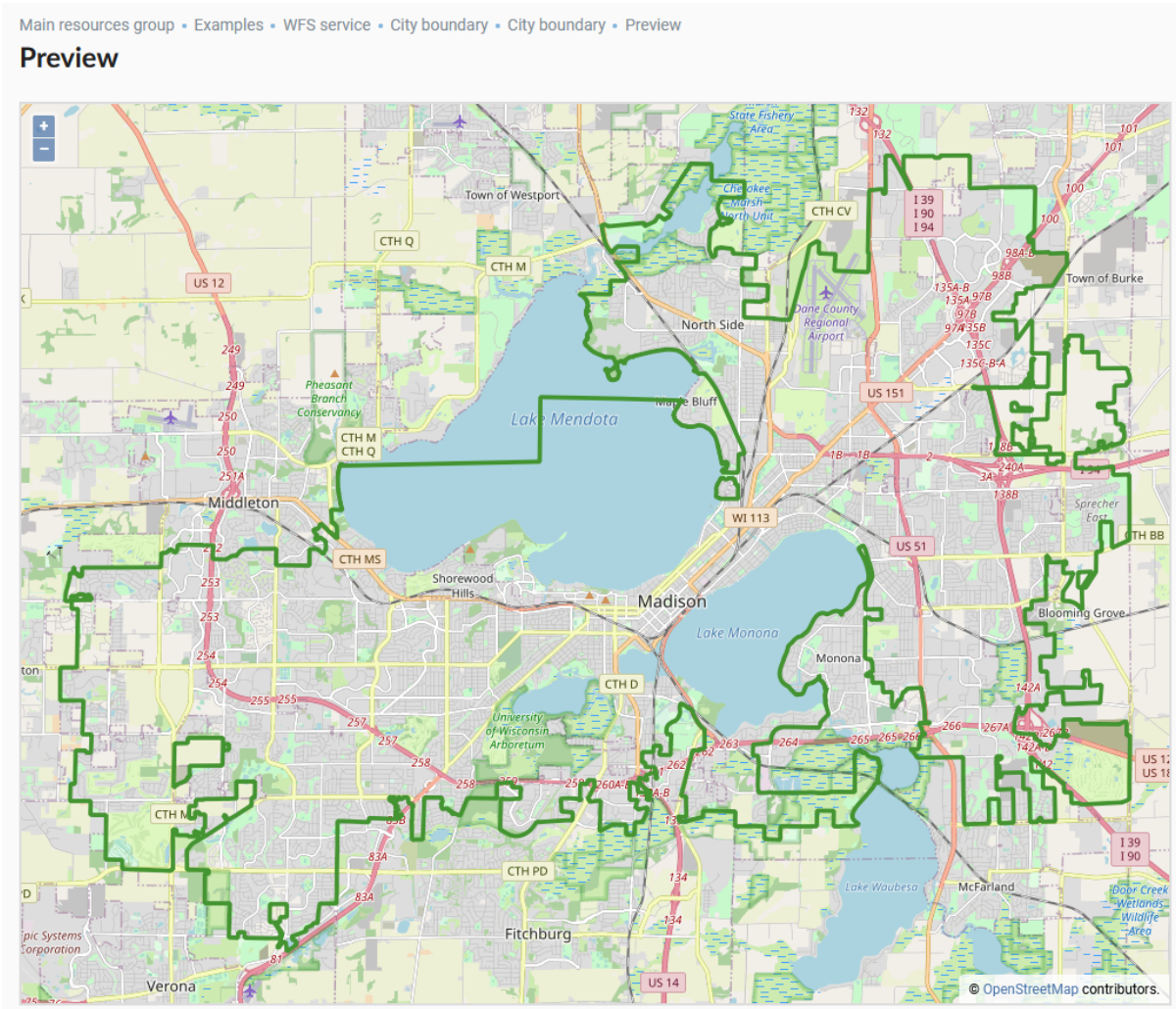


Fig. 4.6: Data preview in a separate tab

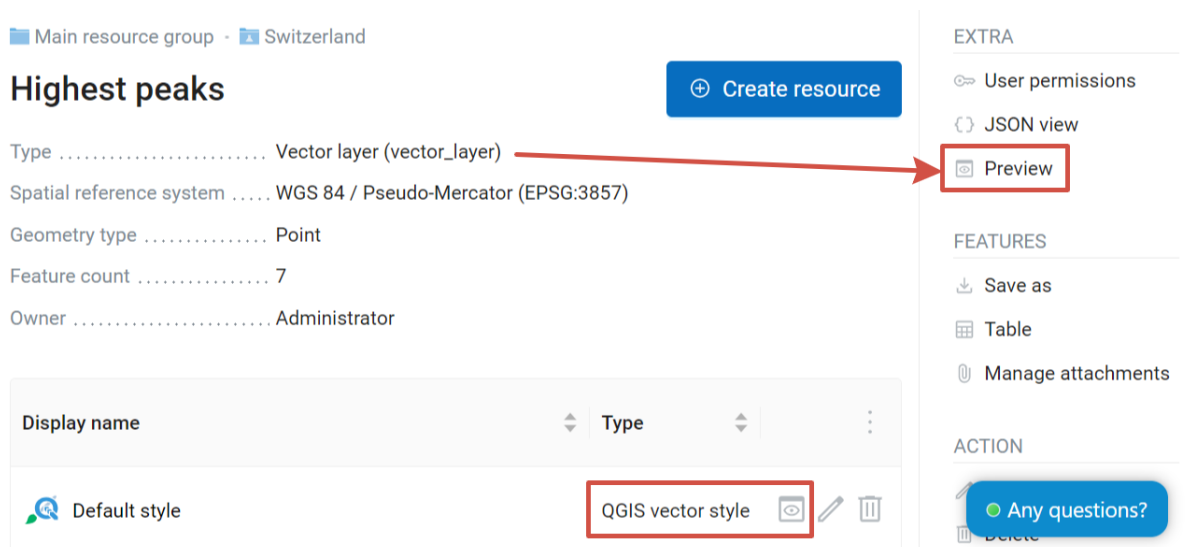


Fig. 4.7: Selecting Data Preview Function for the layer (top right) or its style (below)



Fig. 4.8: Preview of a vector layer, features marked by default round markers

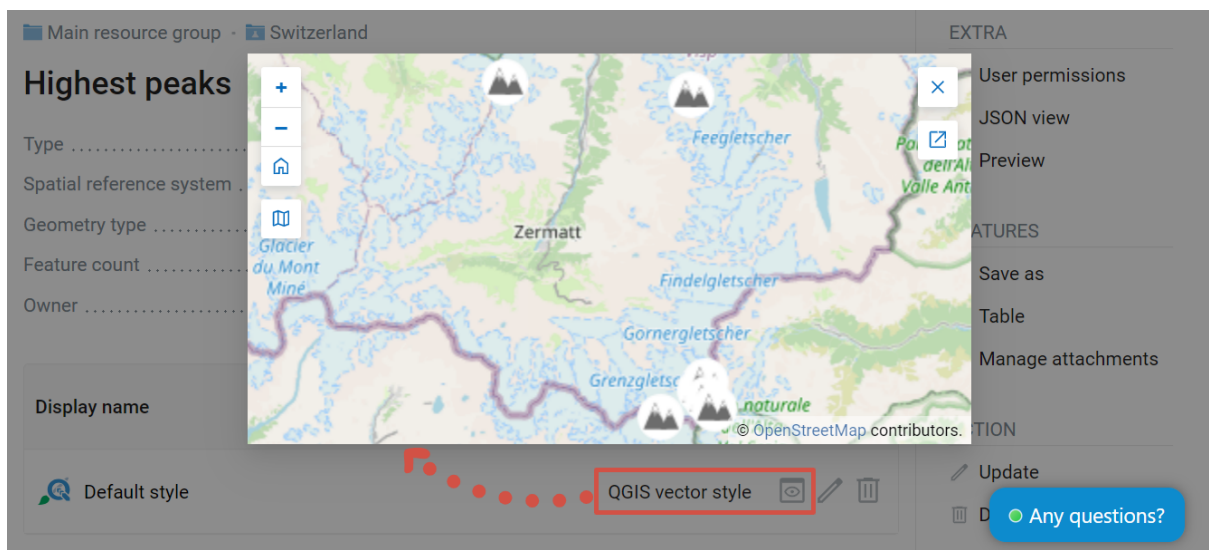


Fig. 4.9: Preview of a style, the same features marked by custom icons

(continued from previous page)

```
Results of measurements on accounting routes
Observation points for rare species

Relief
  ASTER DEM
    DEM
    Isolines
Topographic data
  Openstreetmap
    Roads
    Administrative borders
    Hydrology
    Railway stations
    Railway roads
    Landuse
1 : 100000
  M-37-015
  M-37-016
  M-37-017
Satellite imagery
  Landsat-8
  Ikonos
```

## ADD LAYERS

Raster and vector geodata are uploaded to Web GIS by creating [Raster layer](#)<sup>45</sup> and [Vector layer](#)<sup>46</sup> resources respectively.

---

**Note:** The size limit for uploaded files depends on the selected plan. For **Premium** - 2 GiB, for **Free** - 128 MiB and **Mini** - 256 MiB.

---

See other data requirements for [raster](#)<sup>47</sup> and [vector](#)<sup>48</sup> layers below.

### 5.1 Raster layer

Raster images in NextGIS Web should be loaded using the “Raster Layer” special resource.

#### 5.1.1 Requirements for uploaded files

Data must be georeferenced and have valid reference system description in GeoTIFF tags.

Supported format:

- GeoTIFF or ZIP-archived GeoTIFF;
- georeferenced JPEG or PNG in a ZIP-archive containing the image file and the \*.aux.xml file.

---

<sup>45</sup> [https://docs.nextgis.com/docs\\_ngweb/source/layers.html#raster-layer](https://docs.nextgis.com/docs_ngweb/source/layers.html#raster-layer)

<sup>46</sup> [https://docs.nextgis.com/docs\\_ngweb/source/layers.html#vector-layer-from-file](https://docs.nextgis.com/docs_ngweb/source/layers.html#vector-layer-from-file)

<sup>47</sup> [https://docs.nextgis.com/docs\\_ngweb/source/layers.html#ngw-raster-requirements](https://docs.nextgis.com/docs_ngweb/source/layers.html#ngw-raster-requirements)

<sup>48</sup> [https://docs.nextgis.com/docs\\_ngweb/source/layers.html#input-data-requirements](https://docs.nextgis.com/docs_ngweb/source/layers.html#input-data-requirements)

### 5.1.2 Creation process

To add a raster layer navigate to a group where you want to create it. Press **Create resource** button and select **Raster layer** (see Fig. ??).

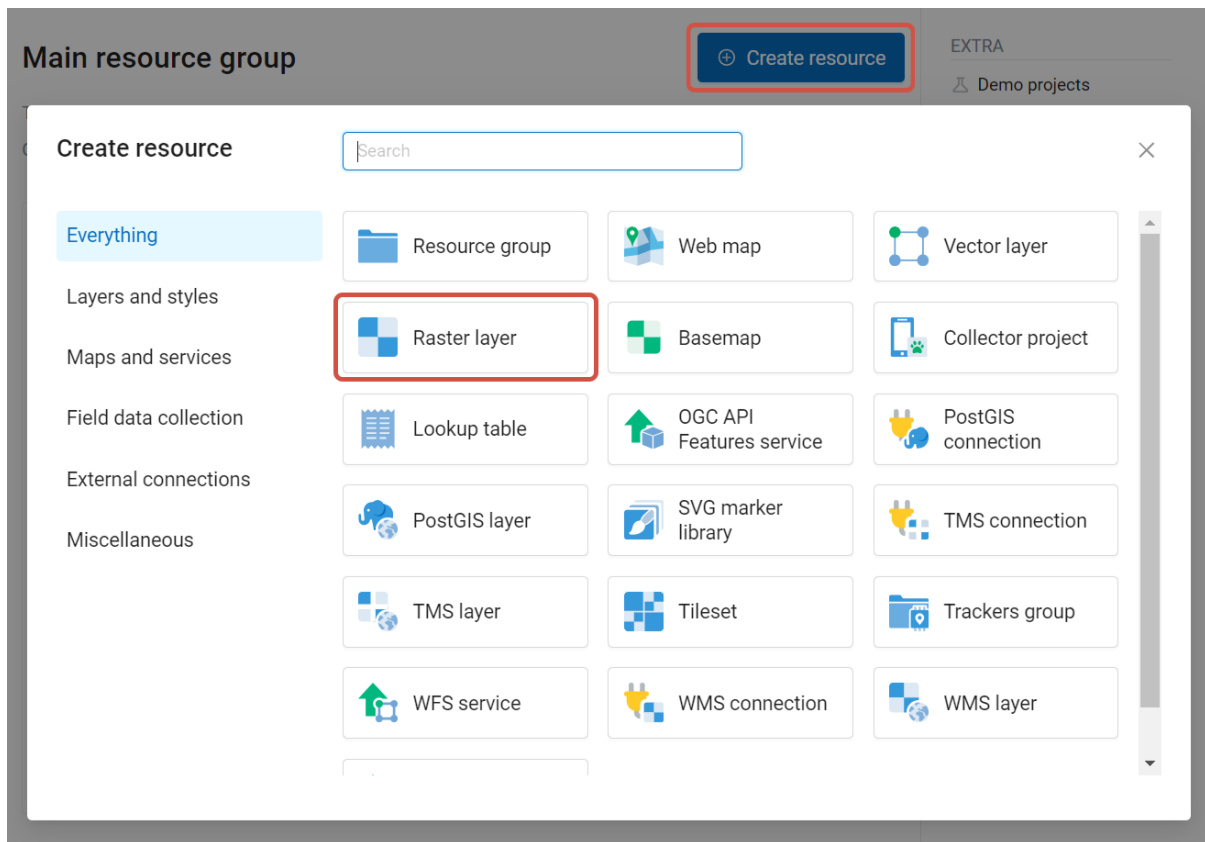


Fig. 5.1: Selection of “Raster layer” resource type

On the “Raster layer” tab you need to upload a geodata file in GeoTIFF format. The upload dialog indicates the maximum file size allowed on your subscription plan (Fig. ??).

If you plan to use this raster in QGIS directly from your Web GIS, tick the Upload as Cloud Optimized GeoTIFF (COG) checkbox. This will optimize the raster to ensure fast display.

In the “Resource” tab specify the name of the raster layer (see Fig. ??). It will be displayed in the admin interface. The “Key” field is optional.

On the “Description” tab you can add any text describing the content of this layer (Fig. ??).

In the “Metadata” tab you can enter information in the “key-value” format (Fig. ??).

To complete click the **Create** button.

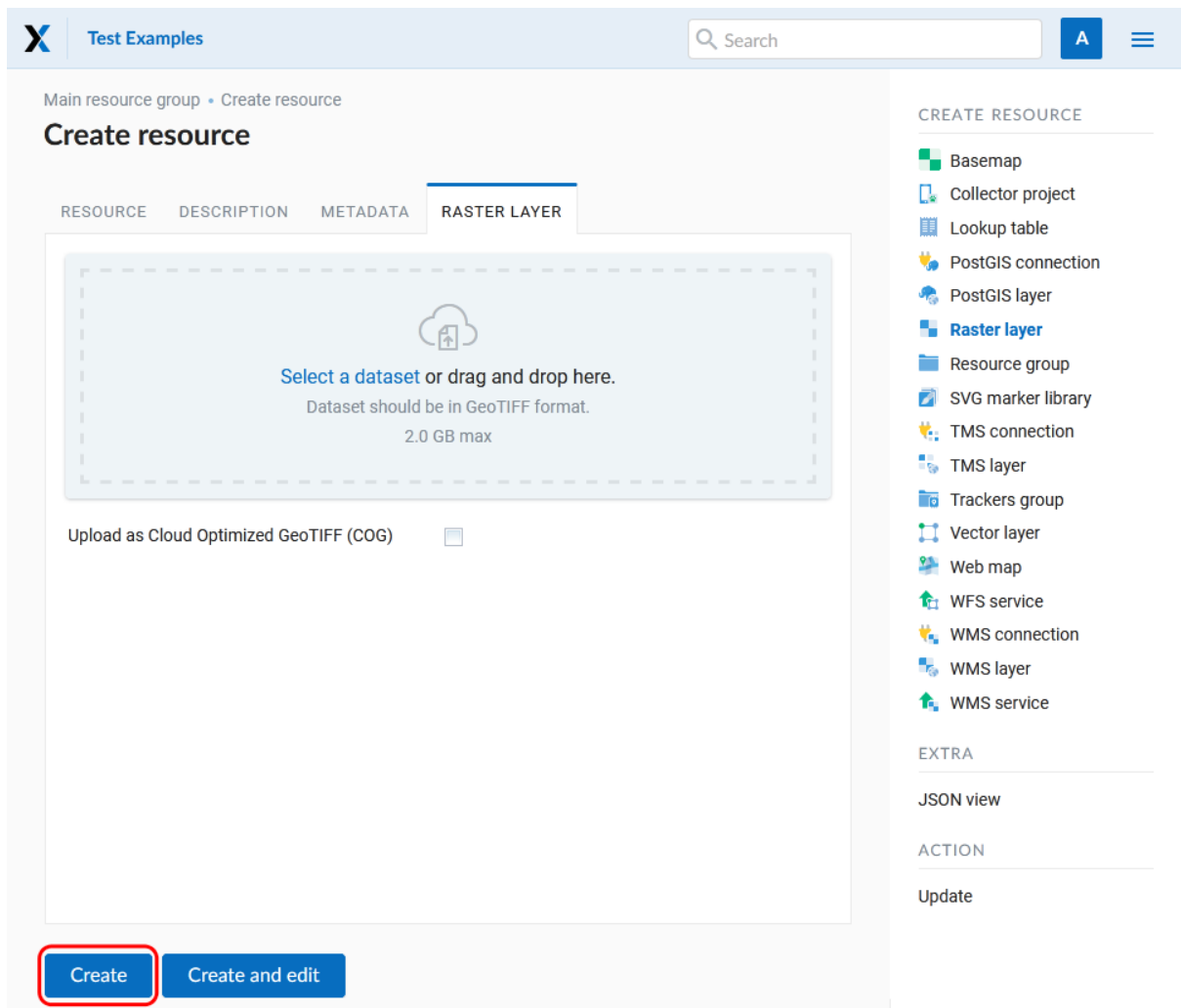


Fig. 5.2: Uploading raster file

The screenshot shows the 'Create resource' form in the NextGIS Web interface. The top navigation bar includes the 'X experiments' logo, a search bar, and a user menu. The main content area is titled 'Main resource group' and 'Create resource'. The form has four tabs: 'RESOURCE', 'RASTER LAYER' (selected), 'DESCRIPTION', and 'METADATA'. The 'RASTER LAYER' tab contains the following fields:

- Display name:** A text input field containing 'Satellite image'.
- Parent:** A dropdown menu showing 'Main resource group'.
- Owner:** A dropdown menu showing 'Administrator'.
- Keyname:** A text input field with the placeholder text 'Identifier for API integration (optional)'.

At the bottom of the form are two buttons: 'Create' and 'Create and edit'. On the right side, there is a 'CREATE RESOURCE' sidebar with a list of resource types: Basemap, Collector project, Lookup table, OGC API Features service, PostGIS connection, PostGIS layer, **Raster layer** (highlighted), Resource group, SVG marker library, TMS connection, TMS layer, Trackers group, and Vector layer.

Fig. 5.3: Raster layer name

The screenshot shows the 'Create resource' form in the NextGIS Web interface, specifically the 'DESCRIPTION' tab. The top navigation bar and the 'Main resource group' header are the same as in the previous figure. The 'DESCRIPTION' tab is selected, and it features a rich text editor. The editor's toolbar includes icons for undo, redo, paragraph selection, bold, italic, underline, strikethrough, link, image, table, quote, bulleted list, numbered list, indent, and a 'Source' button. The text area of the editor contains the text 'Satellite imagery for the area'. At the bottom of the form are the 'Create' and 'Create and edit' buttons.

Fig. 5.4: Raster layer description

Main resource group

## Create resource

RESOURCE RASTER LAYER DESCRIPTION METADATA

Key	Type	Value
bits	Number	16
Type here to add a new key...		

String  
Number  
Boolean  
Empty

Create Create and edit

CREATE RESOURCE

- Basemap
- Collector project
- Lookup table
- OGC API Features service
- PostGIS connection
- PostGIS layer
- Raster layer
- Resource group
- SVG marker library
- TMS connection
- TMS layer
- Trackers group
- Vector layer
- Web map

Fig. 5.5: Raster layer metadata

### 5.1.3 Uploading big rasters

Satellite images of high resolution and other rasters may be very large. The file size is not representative because data is compressed. The actual data size may be much bigger. To make sure that raster data is quickly rendered on a Web Map and services work fast raster files must be converted before uploading them o Web GIS.

There are three limitation for uploading big rasters:

1. Max file size - it depends on your [subscription plan](https://nextgis.com/pricing-base/)<sup>49</sup>, on Premium by default the limit is **2 GiB**. Max file size can be modified to a certain point for cloud Web GIS and indefinitely for [on-premise](https://nextgis.com/pricing-base/#storage)<sup>50</sup>;
2. Max size of extracted file in the cloud can be up to **4 GiB**. To calculate the size of he decompressed raster multiply: pixel count \* number of bands \* bytes per pixel.
3. Overall data storage - on Premium you can upload up to **50 GiB** of data (this limit [can be expanded](https://nextgis.com/pricing-base/#storage)<sup>51</sup>);

There is no time limit for uploading raster files.

<sup>49</sup> <https://nextgis.com/pricing-base/>

<sup>50</sup> <https://nextgis.com/pricing>

<sup>51</sup> <https://nextgis.com/pricing-base/#storage>

### 5.1.4 Raster layer with transparency (clip or alpha channel)

Most of utilities do not create an alpha channel and only add a NoData value. To transform NoData value to an alpha channel use the command line utility **gdal-warp**. Here is an example of this command.

```
gdalwarp -t_srs EPSG:3857 -multi -dstalpha -dstnodata none -wo \
"UNIFIED_SRC_NODATA=YES" -co COMPRESS=JPEG \
d:\temp\o\ast_20010730_010043_rgb.tif d:\temp\o\ast_20010730_010043_
→ rgba.tif
```

### 5.1.5 Uploading indexed color rasters

Indexed Color raster files are uploaded just like the RGB raster files. If the file is not in GeoTIFF format, you can convert it as follows:

```
gdal_translate madison.map madison.tif
```

## 5.2 Raster style

After a raster file is successfully uploaded and a raster layer is created, you need to create a style to display it on a Web Map. There are several ways to create a raster style:

- Create default QGIS raster style on the layer's page.
- Create default Raster style via **Create resource** button;

On the Tile cache tab you can enable cache, allow using tiles in non-tile requests, set up time after which the tiles expire (TTL) and max zoom level. To delete all previously created tiles of the style, check "Flush".

- Create QGIS raster style using **Create resource** button. In the dropdown menu you can select:
  - Style from file - select a QML or SLD file.
  - User-defined style - pick three channels, the values of these channels will be used to calculate a color in RGB model. You can set up min and max values for each channel;
  - Default style - allows to add a default QGIS style to a layer that already has styles;
  - Copy from resource - select a QGIS style of another raster layer to copy it.

You will need this style to [add the raster to a Web Map](#)<sup>52</sup>.

<sup>52</sup> [https://docs.nextgis.com/docs\\_ngweb/source/webmaps\\_admin.html#ngw-map-layers](https://docs.nextgis.com/docs_ngweb/source/webmaps_admin.html#ngw-map-layers)

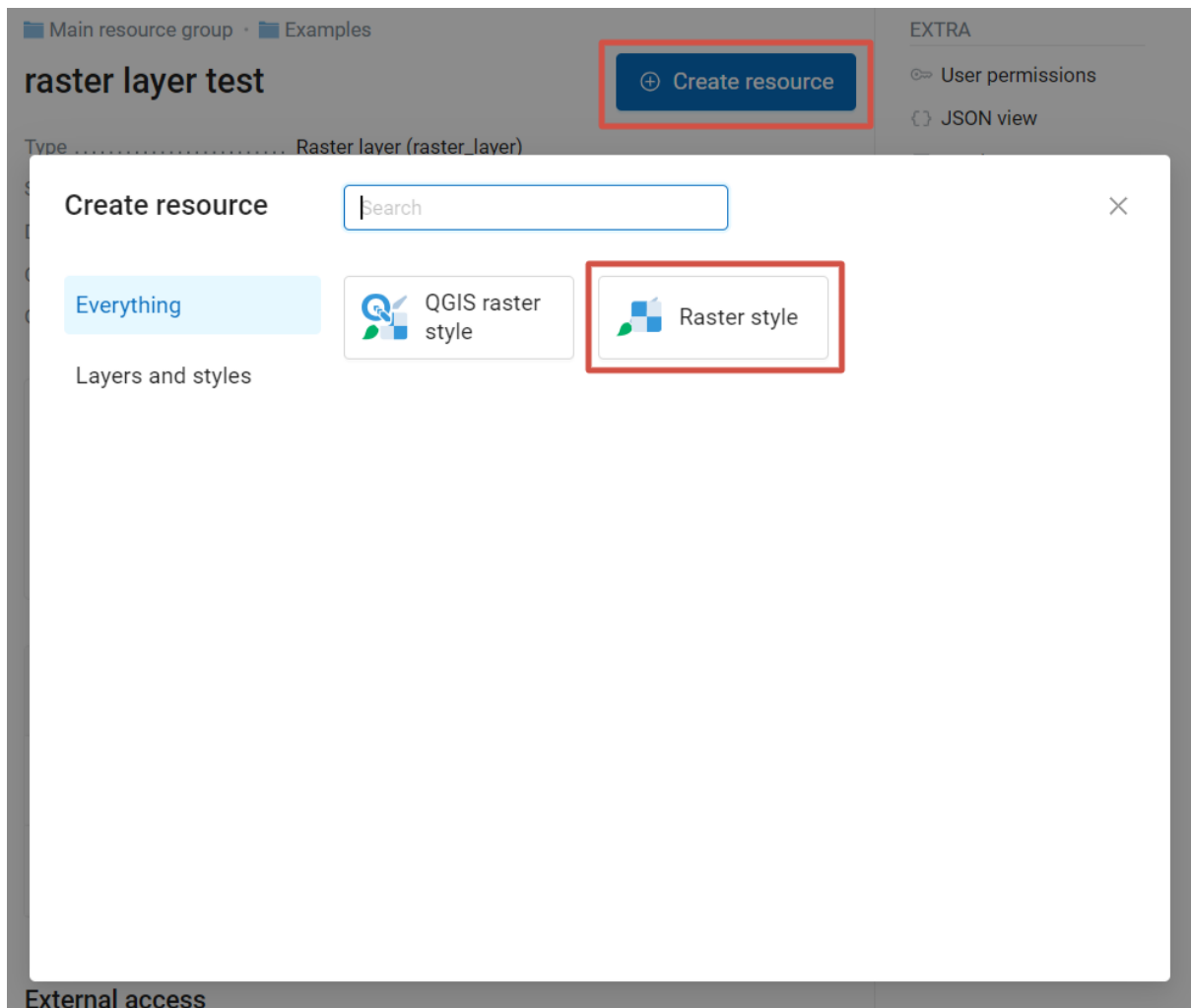


Fig. 5.6: Creating Raster style

Main resource group > Examples > raster layer test

## Create resource

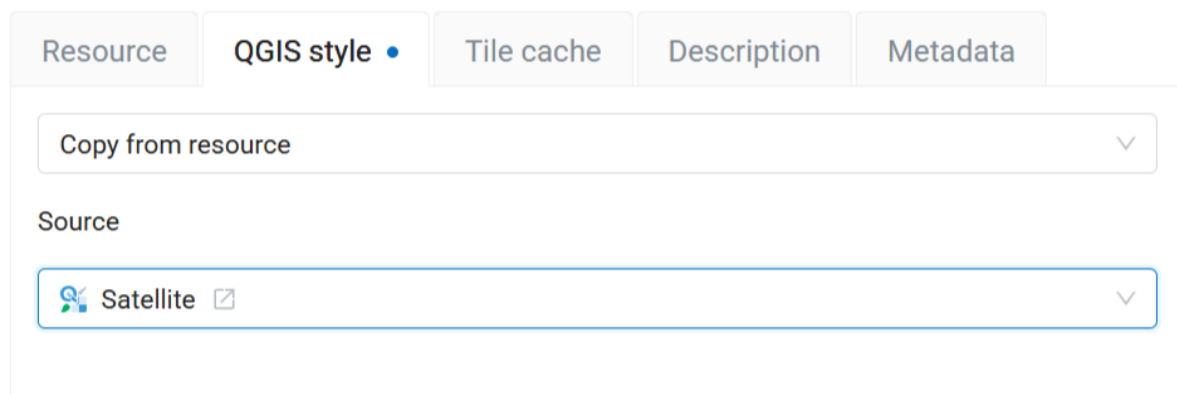


Fig. 5.7: Copying QGIS raster style

## 5.3 Vector layer from file

In NextGIS Web You can create vector layers based on various [formats](#)<sup>53</sup>, use [PostGIS connection](#)<sup>54</sup> or create an [empty vector layer](#)<sup>55</sup> that has attribute structure but no features.

### 5.3.1 Input data requirements

Source files could be in the following formats:

- ESRI Shapefile
- GeoJSON
- KML
- GML
- GeoPackage

Point layers can also be created from CSV and XLSX files, the coordinates should be in the 'lat' and 'lon' columns. Watch the process of creating such a layer in the video:

Watch on [youtube](#)<sup>56</sup>.

Use NextGIS Connect if you need to upload data in other formats.

---

**Note:** In case of ESRI Shapefile, all components (dbf, shp, shx, prj and other files) should be compressed to a zip-archive.

---

File size limits depend on your [subscription plan](#)<sup>57</sup>.

**Warning:** Avoid using Unicode symbols in data field names. While such data can be uploaded to the Web GIS and displayed on Web Maps, you can experience problems working with it in NextGIS Mobile or visualization (especially if labels are using such fields). Use plain Latin for field names and set up field aliases to show Unicode names.

If input data layer contains fields named id (ID) or geom (GEOM), they will be renamed on import. If id has meaningful identifiers, they will automatically be turned into internal FIDs.

---

<sup>53</sup> [https://docs.nextgis.com/docs\\_ngweb/source/layers.html#input-data-requirements](https://docs.nextgis.com/docs_ngweb/source/layers.html#input-data-requirements)

<sup>54</sup> [https://docs.nextgis.com/docs\\_ngweb/source/layers.html#vector-layer-from-postgis](https://docs.nextgis.com/docs_ngweb/source/layers.html#vector-layer-from-postgis)

<sup>55</sup> [https://docs.nextgis.com/docs\\_ngweb/source/layers.html#empty-vector-layer](https://docs.nextgis.com/docs_ngweb/source/layers.html#empty-vector-layer)

<sup>56</sup> [https://youtu.be/-Yb4\\_GQugfQ?si=\\_6akhHxliURO6AEL](https://youtu.be/-Yb4_GQugfQ?si=_6akhHxliURO6AEL)

<sup>57</sup> <https://nextgis.com/pricing-base/>

### 5.3.2 Creation process

Navigate to the resource group (folder) in which to create a vector layer. Press **Create resource** button and select **Vector layer** (see Fig. ??).

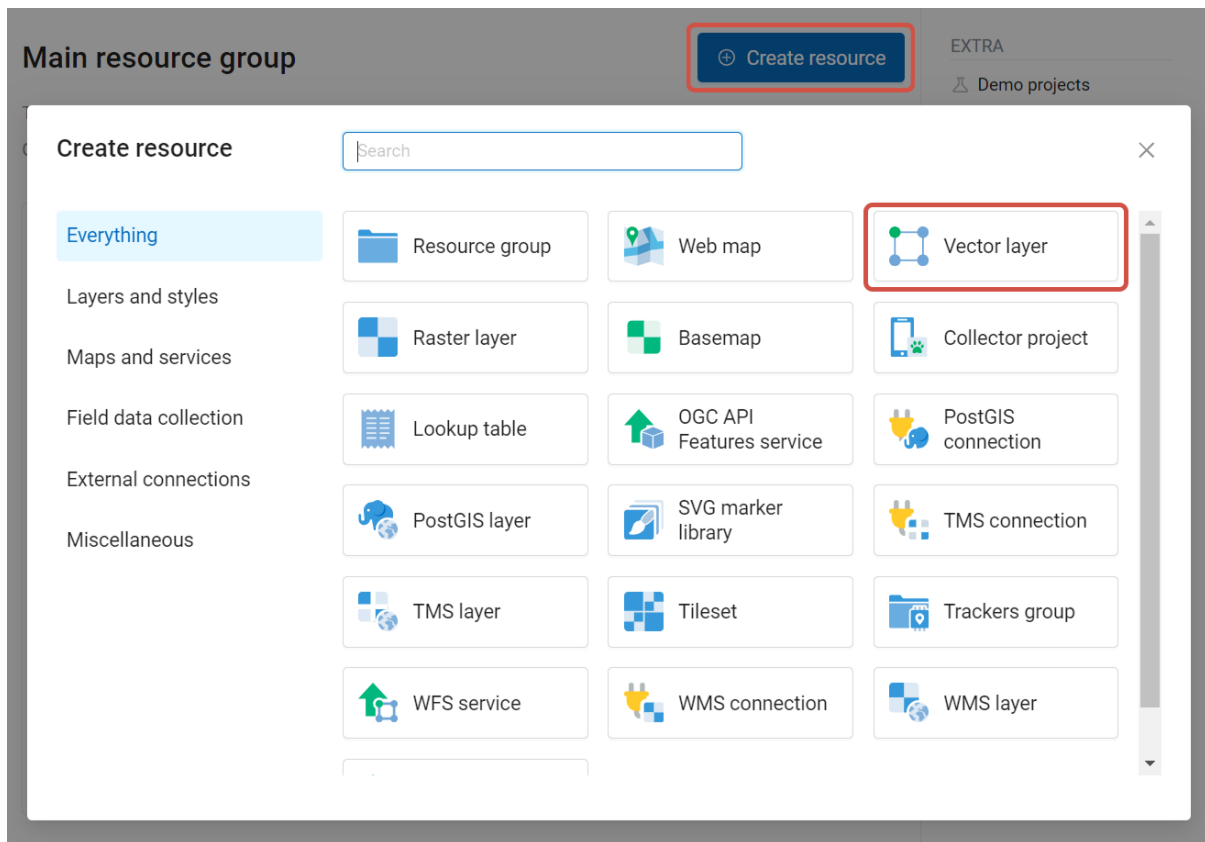


Fig. 5.8: Selection of “Vector layer” resource type

In the opened tab you need to upload a geodata file in ESRI Shapefile (zip-archive), GeoJSON, KML, GML or GeoPackage format. For CSV and XLSX only points are supported, coordinates must be put in lat and lot columns.

The upload dialog indicates the maximum file size allowed on your subscription plan (Fig. ??). Web GIS can process multi-layer datasets. If an archive contains several layers, then after it is uploaded, you will be asked to select which layer will be used for creating Vector layer resource.

Below it is proposed to define advanced options for creating a vector layer. Depending on the quality of the data you can define how to handle geometry errors when uploading a file, select the type of geometry, the presence/absence of multi-geometries, Z-coordinates and the source of the FID (FID field, determine automatically or indicate from a particular field). [More about advanced options](#)<sup>58</sup>.

In the “Resource” tab enter the name of the vector layer (Fig. ??). It will be displayed in the admin interface. The “Key” field is optional.

In the “Description” tab you can add any text describing the content of this layer (Fig. ??).

In the “Metadata” tab you can add information in the “key-value” format (Fig. ??).

<sup>58</sup> [https://docs.nextgis.com/docs\\_ngweb/source/vect\\_layer\\_upload\\_params.html](https://docs.nextgis.com/docs_ngweb/source/vect_layer_upload_params.html)

## Create resource

Resource

Vector layer

Settings

Description

Metadata

Load features from file

Select a dataset or drag and drop here

ESRI Shapefile (zip), GeoPackage, GeoJSON, GML, KML, CSV or XLSX formats are supported. For CSV and XLSX only points are supported, coordinates must be put in lat and lot columns.

2.0 GiB max

Advanced options

Fix errors:

Whenever possible

Without losing data

None

☒ Skip features with unfixable errors

Geometry type:

Auto

Point

Line

Polygon

☐ Skip features with other geometry types

Multi-geometry:

Auto

Yes

No

Z-coordinate:

Auto

Yes

No

FID source:

Auto

Sequence

Field

ngw\_id, id

Create

...

Fig. 5.9: Vector file upload tab

The screenshot shows the 'Create resource' interface. At the top, there's a header with the 'X experiments' logo, a search bar, and user controls. The main area has a 'Main resource group' breadcrumb and a 'Create resource' title. Below this are four tabs: 'RESOURCE', 'VECTOR LAYER' (selected), 'DESCRIPTION', and 'METADATA'. The 'VECTOR LAYER' tab contains four input fields: 'Display name' with the value 'Elevation', 'Parent' with a dropdown showing 'Main resource group', 'Owner' with a dropdown showing 'Administrator', and 'Keyname' with the placeholder text 'Identifier for API integration (optional)'. At the bottom of this tab are two buttons: 'Create' and 'Create and edit'. To the right, a 'CREATE RESOURCE' sidebar lists various options: Basemap, Collector project, Lookup table, OGC API Features service, PostGIS connection, PostGIS layer, Raster layer, Resource group, SVG marker library, TMS connection, TMS layer, Trackers group, and 'Vector layer' (which is highlighted in blue).

Fig. 5.10: Vector layer name

This screenshot shows the 'DESCRIPTION' tab of the 'Create resource' form. The 'RESOURCE' and 'VECTOR LAYER' tabs are visible but not selected. The 'DESCRIPTION' tab is active, showing a rich text editor. The toolbar at the top of the editor includes undo, redo, paragraph style (set to 'Paragraph'), bold (B), italic (I), underline (U), strikethrough (ABC), link, image, table, quote, bulleted list, numbered list, indent, and a 'Source' icon. The text area below the toolbar contains the text 'Relief contours'. At the bottom of the form, the 'Create' and 'Create and edit' buttons are visible.

Fig. 5.11: Vector layer description

Fig. 5.12: Vector layer metadata

On the “Settings” tab you can enable feature versioning. It allows the layer to be edited directly in QGIS via NextGIS Connect<sup>59</sup> by multiple users at once.

## Create resource

Fig. 5.13: Vector layer settings

After uploading the file and specifying the parameters, click the **Create** button.

Then you can [create a style](#)<sup>60</sup> that will later visualize the data layer on a [Web Map](#)<sup>61</sup>. You can also create a form or data collection.

<sup>59</sup> [https://docs.nextgis.com/docs\\_ngcom/source/ngqgis\\_connect.html#ngcom-ngqgis-connect-data-edit](https://docs.nextgis.com/docs_ngcom/source/ngqgis_connect.html#ngcom-ngqgis-connect-data-edit)

<sup>60</sup> [https://docs.nextgis.com/docs\\_ngweb/source/mapstyles.html#qgis](https://docs.nextgis.com/docs_ngweb/source/mapstyles.html#qgis)

<sup>61</sup> [https://docs.nextgis.com/docs\\_ngweb/source/webmaps\\_admin.html#ngw-map-create](https://docs.nextgis.com/docs_ngweb/source/webmaps_admin.html#ngw-map-create)

## 5.4 Empty vector layer

Creating an empty vector layer allows you to start a data base in your WebGIS without using a desktop app.

Navigate to the resource group (folder) in which to create a vector layer. Press **Create resource** button and select **Vector layer** (see Fig. ??).

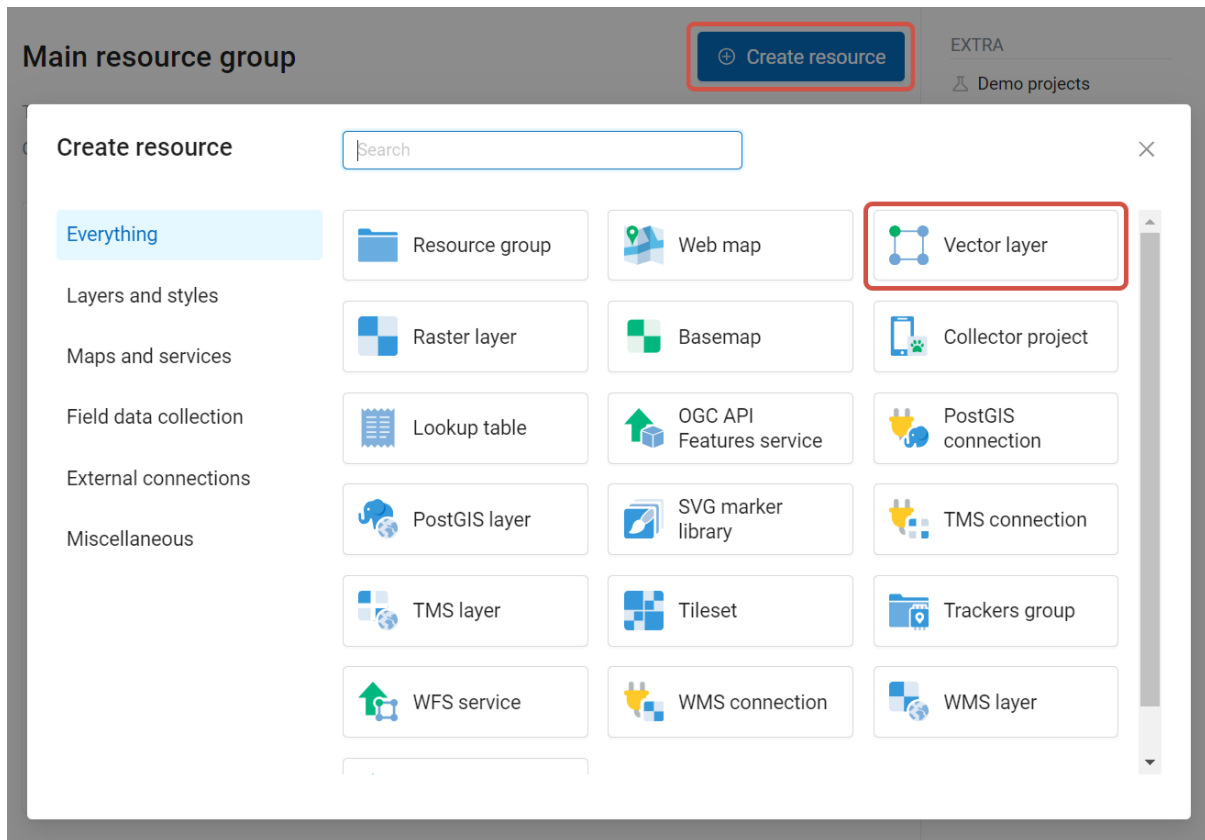


Fig. 5.14: Selecting “Vector layer” resource type

In the opened window use the dropdown menu to select “Create empty layer”. In the field below select geometry type for the layer. By default, a point layer will be created.

In the “Resource” tab enter the name of the vector layer (Fig. ??). It will be displayed in the admin interface. The “Key” field is optional.

In the “Description” tab you can add any text describing the content (Fig. ??).

In the “Metadata” tab you can add information in the “key-value” format (Fig. ??).

After uploading the file and specifying the parameters, click the Create button.

Then you can create a [style](#)<sup>62</sup> that will later visualize the data layer on a [Web Map](#)<sup>63</sup>.

To add features to the newly created layer you can use the [editing toolbar](#)<sup>64</sup>.

<sup>62</sup> [https://docs.nextgis.com/docs\\_ngweb/source/mapstyles.html#qgis](https://docs.nextgis.com/docs_ngweb/source/mapstyles.html#qgis)

<sup>63</sup> [https://docs.nextgis.com/docs\\_ngweb/source/webmaps\\_admin.html#ngw-map-create](https://docs.nextgis.com/docs_ngweb/source/webmaps_admin.html#ngw-map-create)

<sup>64</sup> [https://docs.nextgis.com/docs\\_ngcom/source/data\\_edit.html#create-a-new-feature-point-line-polygon](https://docs.nextgis.com/docs_ngcom/source/data_edit.html#create-a-new-feature-point-line-polygon)

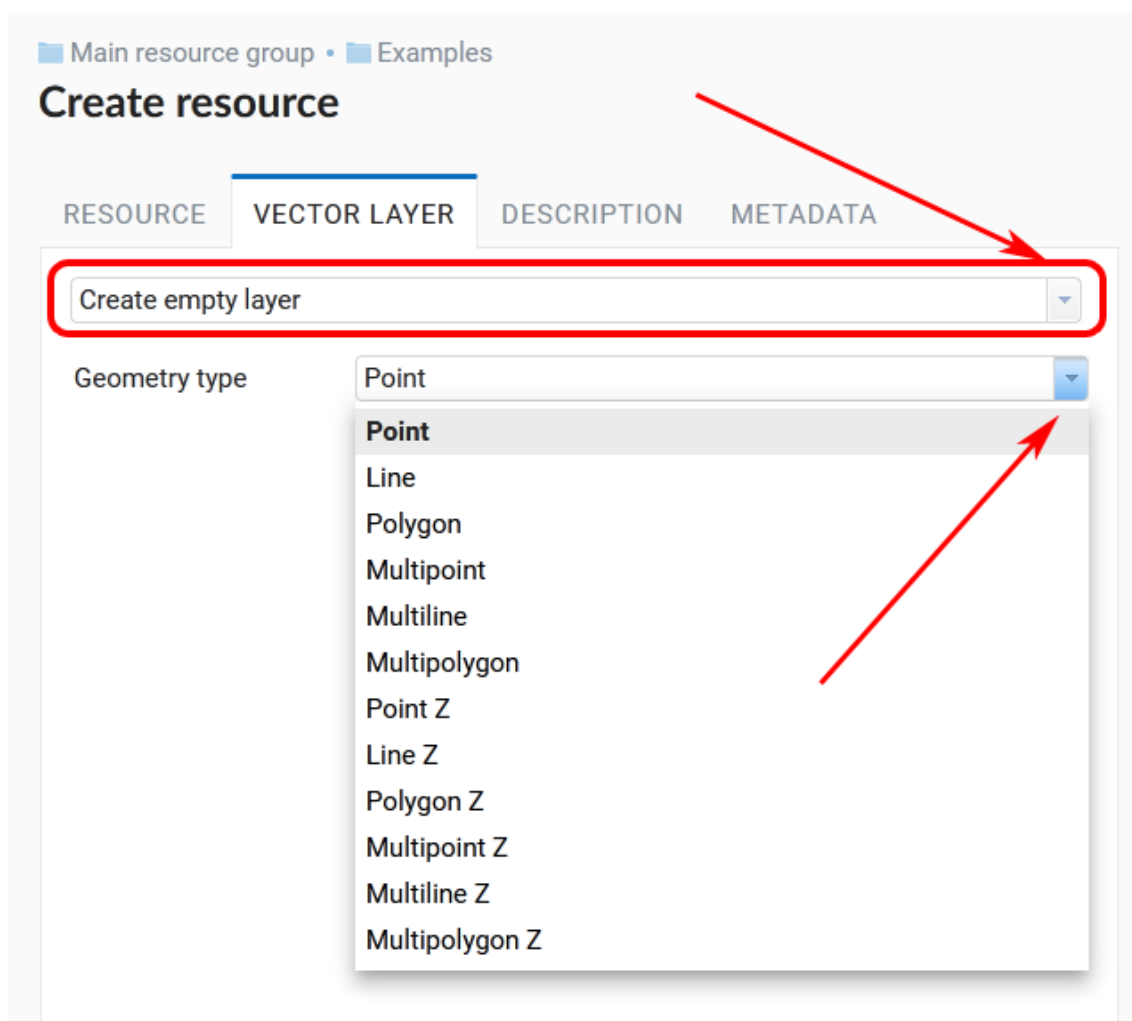


Fig. 5.15: Selecting geometry type for an empty layer

## 5.5 Vector layer from PostGIS

To add a vector layer from PostgreSQL database with PostGIS extension, you need to create a PostGIS connection resource. It is enough to create one connection.

### 5.5.1 Creating PostGIS connection

Press **Create resource** button and select **PostGIS connection** (see Fig. ??).

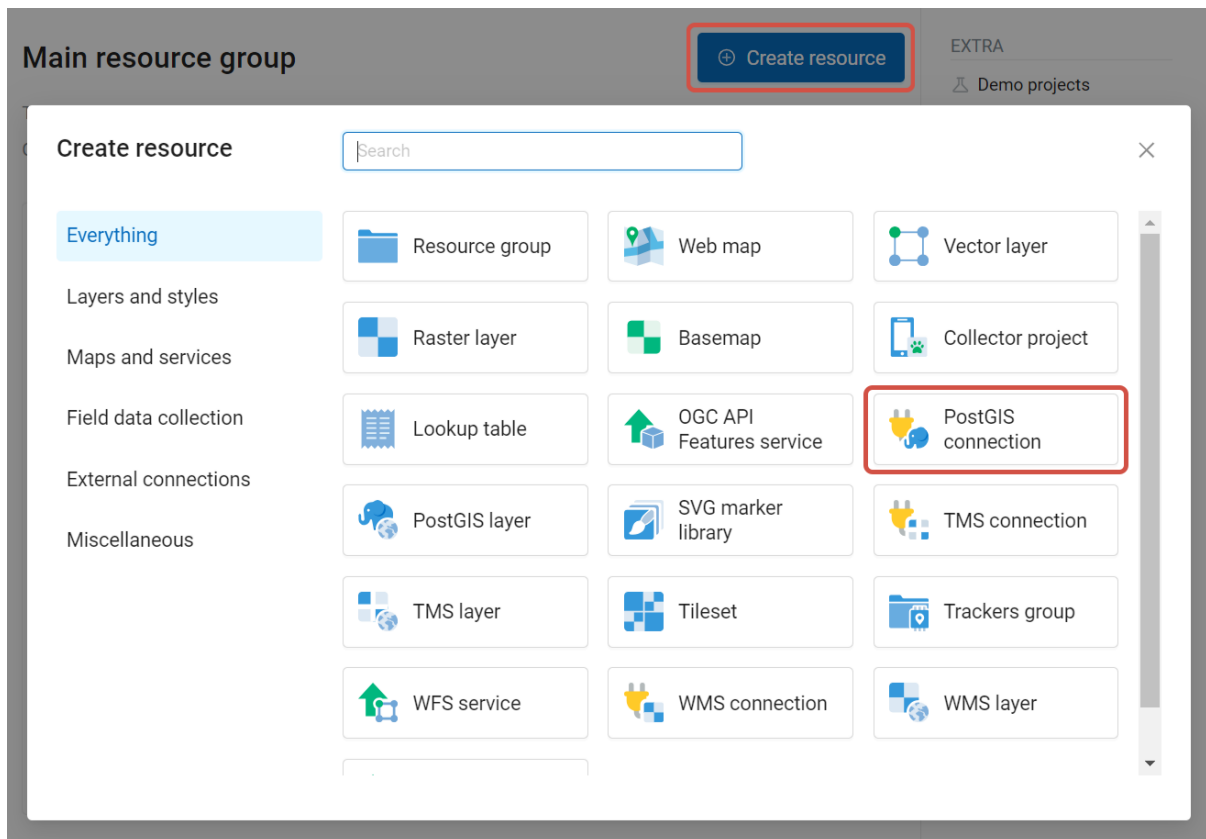


Fig. 5.16: Selection of “PostGIS connection” resource type

Enter a display name that will be visible in the administrator interface. Not to be confused with layer name in a database.

“Keyname” field is optional.

You can also add resource description and metadata on the corresponding tabs.

Switch from “Resource” to “PostGIS connection” tab, which is presented on Fig. ??.

In this tab you should enter connection parameters for the PostGIS database that you are going to take data from.

- disable - use an unencrypted connection.
- allow - attempt to connect without encryption, falling back to an encrypted connection if an unencrypted connection cannot be established.

experiments

Search resources

Main resource group

### Create resource

RESOURCE POSTGIS CONNECTION DESCRIPTION METADATA

Display name:

Parent:

Owner:

Keyname:

Create Create and edit

CREATE RESOURCE

- Basemap
- Collector project
- Lookup table
- OGC API Features service
- PostGIS connection**
- PostGIS layer
- Raster layer
- Resource group
- SVG marker library
- TMS connection
- TMS layer
- Trackers group
- Vector layer

Fig. 5.17: Create resource dialog for PostGIS connection

Main resource group

### Create resource

RESOURCE POSTGIS CONNECTION DESCRIPTION METADATA

← → Paragraph **B** *I* U Source

PostGIS connection for the **city boundaries** database, *Madison, WI*

Create Create and edit

Fig. 5.18: PostGIS connection description

Main resource group



Create resource

RESOURCE

POSTGIS CONNECTION

DESCRIPTION


METADATA


Key	Type	Value	
state	String	wisc	 
Type here to add a new key...			


Create


Create and edit


CREATE RESOURCE


 Basemap


 Collector project


 Lookup table


 OGC API Features service


 **PostGIS connection**


 PostGIS layer


 Raster layer


 Resource group

 SVG marker library

 TMS connection

 TMS layer

 Trackers group

 Vector layer


 Web map

Fig. 5.19: PostGIS connection metadata

Main resource group

Create resource

RESOURCE

POSTGIS CONNECTION

DESCRIPTION

METADATA

Host

sandbox.nextgis.com

Port

54321

SSL mode

prefer

User

admin

Password

.....

Database

demo

disable

allow

prefer

require

verify-ca

verify-full

Create

Create and edit

Fig. 5.20: PostGIS connection settings

- **prefer** - attempt to connect using encryption, falling back to an unencrypted connection if an encrypted connection cannot be established.
- **require** - require an encrypted connection and fail if one cannot be established.
- **verify-ca** - require an encrypted connection, and also perform verification against the server CA certificate.
- **verify-full** - require an encrypted connection, and also perform verification against the server CA certificate and against the server host name in its certificate.

More about [SSL modes](#)<sup>65</sup>.

After configuring all the necessary settings click **Create**.

### 5.5.2 Creating PostGIS layer

Now you can add individual PostGIS layers. Navigate to a group where you want to create layers. Press **Create resource** button and select **PostGIS layer** (see Fig. ??).

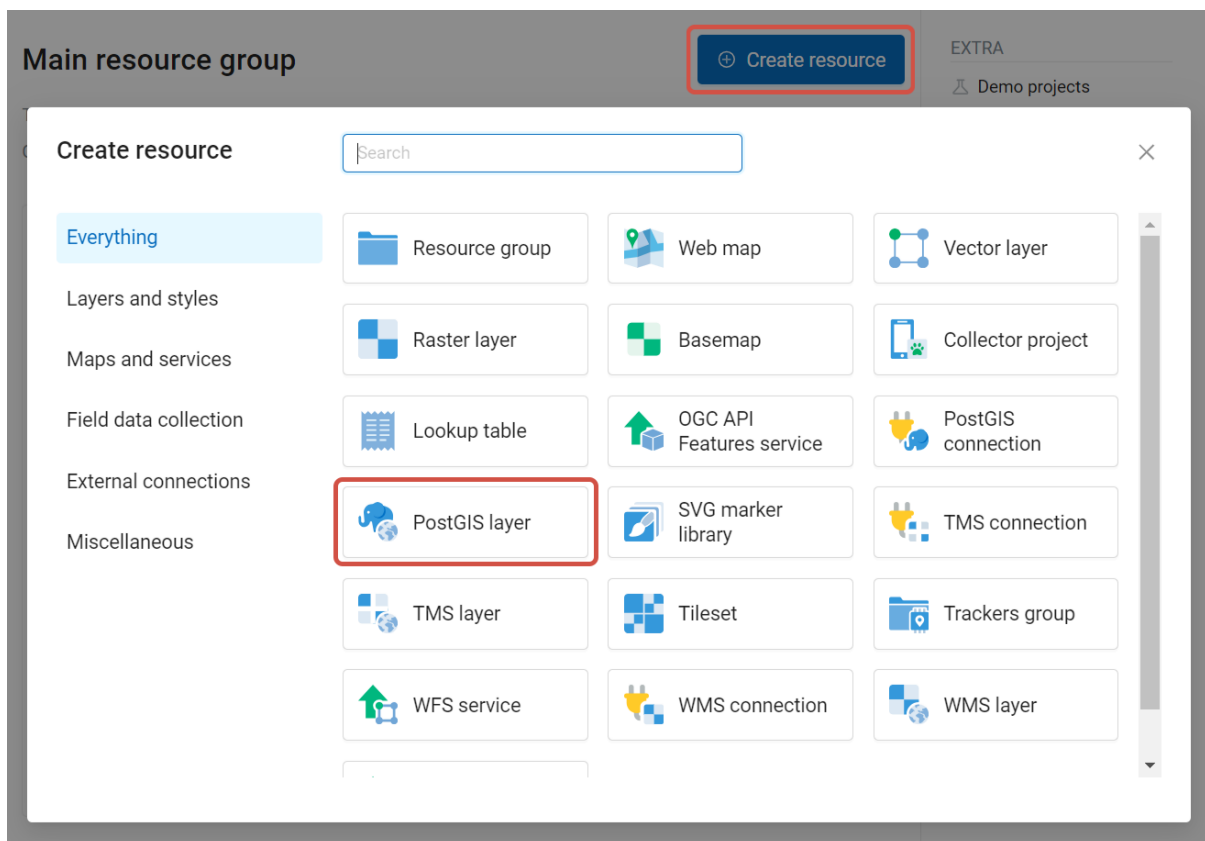


Fig. 5.21: Selection of “PostGIS layer” resource type

Enter a display name that will be visible in administrator interface and in the map layer tree.

<sup>65</sup> <https://www.postgresql.org/docs/current/libpq-ssl.html#LIBPQ-SSL-PROTECTION>

Fig. 5.22: Create resource dialog for PostGIS layer

“Keyname” field is optional.

You can also add resource description and metadata on the corresponding tabs.

Switch from “Resource” tab to “PostGIS layer” tab, which is presented on Fig. ??.

Then perform the following steps:

1. From a dropdown list select a database connection (creation of a connection is described above).
2. Select a schema of the database where layer data is stored. A single database can store multiple schemas. Each schema contains tables and views. If there is only one schema, it's called public. For more information see **PostgreSQL DBMS** manual.
3. Select the Table name (PostGIS layer). You need to know names of tables and columns in your database. Display of tables content is not a feature of NextGIS Web. You can view them using **NextGIS QGIS** or **pgAdmin** software.
4. Select an ID column. When data is loaded into PostGIS using **NextGIS QGIS** software, an `ogc_fid` column is created. If the data was loaded another way, the column name may be different. An ID column should follow rules for data type: the value type should be a number (**numeric**) and it should be a primary key.
5. Select the Geometry column (if the data was loaded to PostGIS using **NextGIS QGIS** software, usually a geometry column called `wkb_geometry` is created. If the data was loaded some other way, the name of the column may be different).
6. Parameters “Geometry type”, “Fields” and “SRID” are not required, so you can use default values.

Main resource group

## Create resource

RESOURCE POSTGIS LAYER DESCRIPTION METADATA

Key	Type	Value
level	Number	8
Type here to add a new key...		

String  
Number  
Boolean  
Empty

Create Create and edit

CREATE RESOURCE


- Basemap
- Collector project
- Lookup table
- OGC API Features service
- PostGIS connection
- PostGIS layer**
- Raster layer
- Resource group
- SVG marker library
- TMS connection
- TMS layer
- Trackers group
- Vector layer
- Web map

Fig. 5.23: PostGIS layer metadata

Main resource group - Examples

## Create resource

RESOURCE POSTGIS LAYER DESCRIPTION METADATA

Connection  connection

Schema public Table madcity

ID column id Geometry column geom

Geometry type Autodetect SRID Autodetect

Fields Update definitions from the database

Fig. 5.24: PostGIS layer tab of create resource dialog

After specifying all the necessary parameters, click **Create**.

**Important:** You need an unique integer column to attach your table to NextGIS Web. If the primary key column of the table is not integer or there is none at all, you can create an auxiliary key.

To create a key column connect to your database (for example using psql in qgis) and execute the following (replacing 'tablename' with the name of your table):

```
ALTER TABLE tablename ADD fid serial NOT NULL;
ALTER TABLE tablename ADD CONSTRAINT tablename_fid_unique UNIQUE
(fid);
```

And then use this column (fid) as an ID column in NextGIS Web.

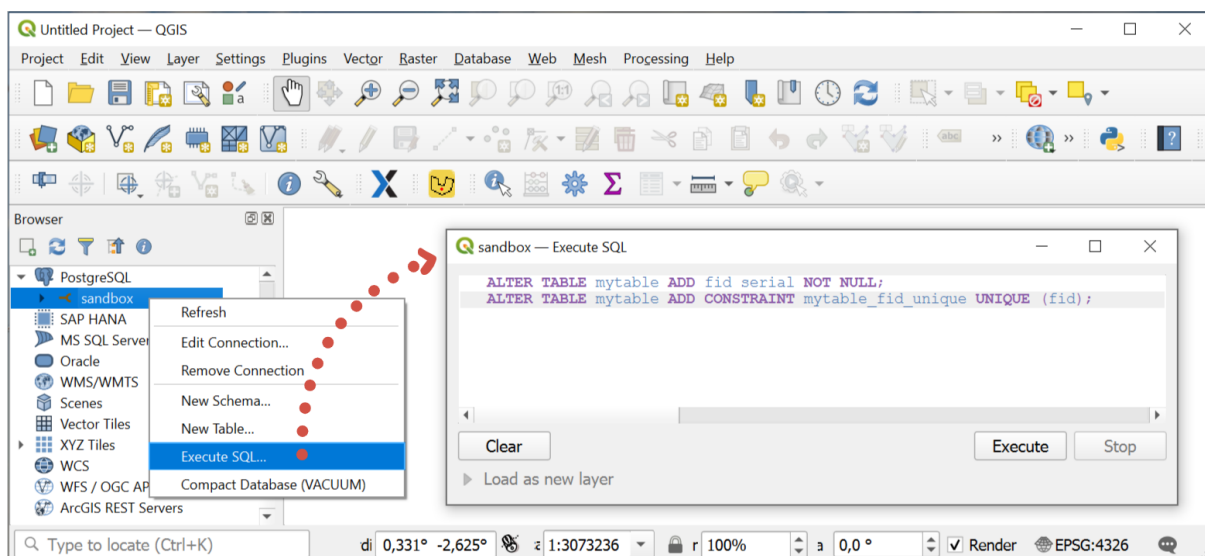


Fig. 5.25: Adding fid column in QGIS

More details about PostGIS [here](https://docs.nextgis.com/docs_ngweb/source/postgis_details.html)<sup>66</sup>.

## 5.6 WMS layer

**Note:** Currently supported WMS versions 1.1.1 and 1.3.0.

NextGIS Web is a WMS client. To connect a WMS layer you need to know its address. WMS server should be able to serve it using a coordinate system EPSG:3857. You can check if this coordinate system is available for a particular layer by making a GetCapabilities request to a server and examining the response. For example a WMS layer provided by Geofabrik (GetCapabilities), responds in EPSG:4326 and EPSG:900913. While EPSG:900913 and EPSG:3857 are technically the same, NextGIS Web requests data in EPSG:3857 and this particular server does not support that coordinate system.

<sup>66</sup> [https://docs.nextgis.com/docs\\_ngweb/source/postgis\\_details.html](https://docs.nextgis.com/docs_ngweb/source/postgis_details.html)

### 5.6.1 Creating WMS Connection

To add a WMS layer you need to create a resource called WMS connection. You may create a single connection for many layers. Press **Create resource** button and select **WMS connection** (see Fig. ??).

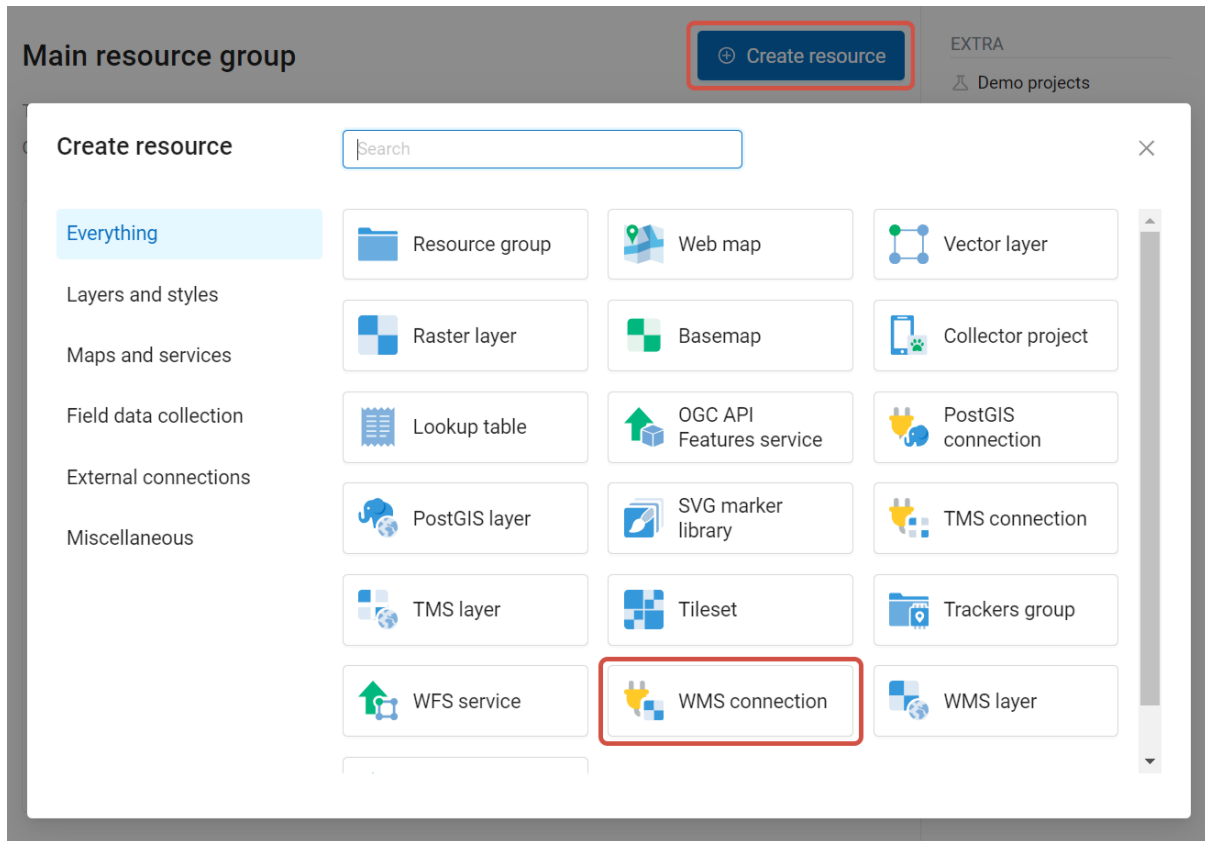


Fig. 5.26: Selection of “WMS connection” resource type

Create resource dialog for WMS connection is presented on Fig. ??.

Enter the name of the resource that will be displayed in the administrator interface. Not to be confused with layer name in a database. “Keyname” field is optional.

On the “Description” tab you can add any text describing the content of this connection.

On the “Metadata” tab you can enter information in the “key-value” format.

Switch to “WMS connection” tab, which is presented on Fig. ??.

Here enter the following WMS server connection parameters:

- URL
- Username
- Password
- Version of WMS protocol
- Capabilities (manages GetCapabilities queries to the WMS Server)

Main resource group - Examples - WMS

## Create resource

RESOURCE WMS CONNECTION DESCRIPTION METADATA

Display name

Oceans

Parent

WMS

Owner

Administrator

Keyname

Identifier for API integration (optional)

Fig. 5.27: Create resource dialog for WMS connection

Main resource group - Examples - WMS

## Create resource

RESOURCE WMS CONNECTION DESCRIPTION METADATA

↶ ↷

Heading 1

▼

**B**

*I*

U

⌂

🔗

🖼️ ▼

📅 ▼

“ ”

⋮



**General Bathymetric Chart of the Oceans**

Fig. 5.28: WMS connection description

Main resource group

## Create resource

RESOURCE WMS CONNECTION DESCRIPTION METADATA

Key	Type	Value	
country	String	Canada	 
Type here to add a new key...			

String

Number

Boolean

Empty

Create Create and edit

CREATE RESOURCE

- Basemap
- Collector project
- Lookup table
- OGC API Features service
- PostGIS connection
- PostGIS layer
- Raster layer
- Resource group
- SVG marker library
- TMS connection
- TMS layer
- Trackers group
- Vector layer
- Web map

Fig. 5.29: WMS connection metadata

Main resource group - Examples - WMS

## Create resource

RESOURCE WMS CONNECTION DESCRIPTION METADATA

URL

Username

Password

Version

Capabilities

Fig. 5.30: WMS connection tab of Create resource dialog

URL field needs to be filled, others are used when necessary. Supported versions of WMS protocol: 1.1.1, 1.3.0

After setting up all necessary parameters, click **Create**.

### 5.6.2 Creating WMS Layer

Now you can add individual WMS layers. Navigate to a group where you want to create WMS layers. Press **Create resource** button and select **WMS layer** (see Fig. ??).

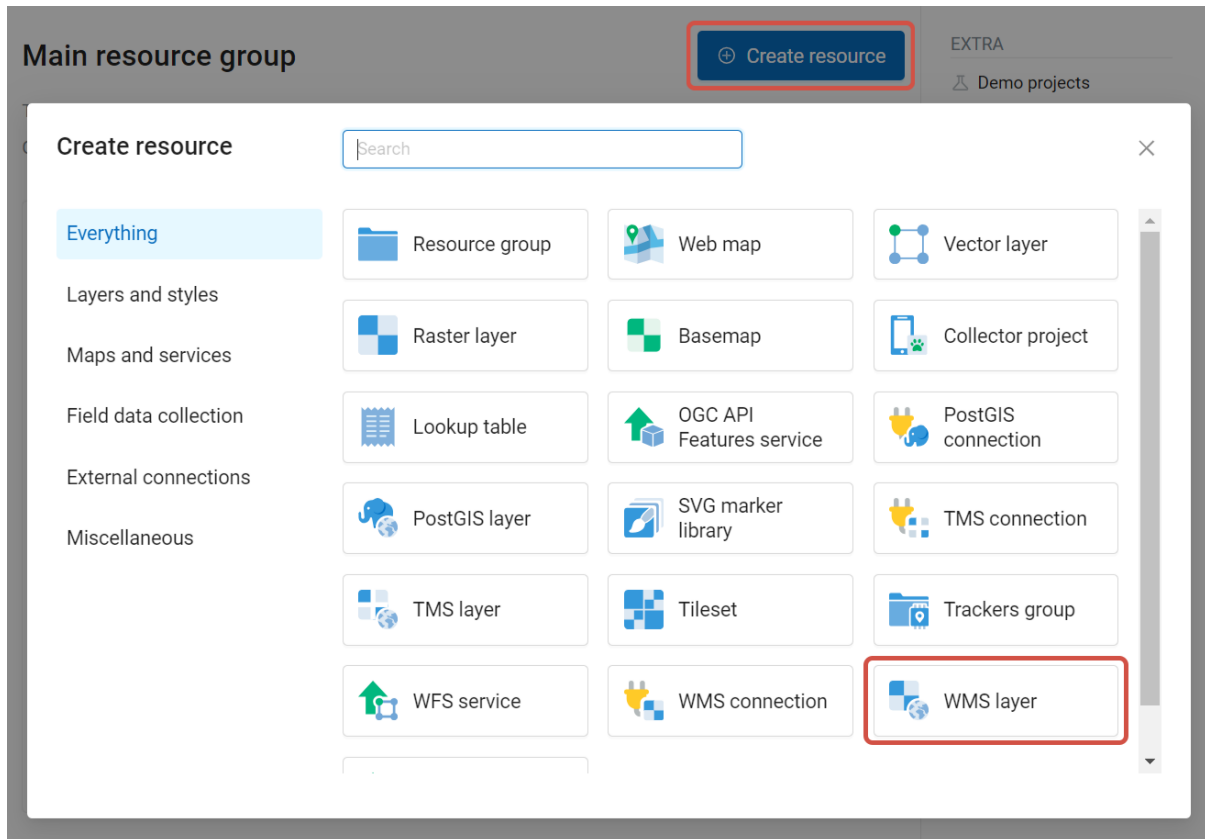


Fig. 5.31: Selection of “WMS layer” resource type

Create resource dialog for WMS layer is presented on Fig. ??

Enter display name that will be visible in administrator interface and in the map layer tree.

“Keyname” field is optional.

Tile cache settings are described in detail in [this section](https://docs.nextgis.com/docs_ngweb/source/mapstyles.html#tile-cache)<sup>67</sup>.

On the “Description” tab you can add any text describing the content of this layer.

On the “Metadata” tab you can enter information in the “key-value” format.

Switch to the “WMS layer” tab, which is presented on Fig. ?? and perform the following steps:

<sup>67</sup> [https://docs.nextgis.com/docs\\_ngweb/source/mapstyles.html#tile-cache](https://docs.nextgis.com/docs_ngweb/source/mapstyles.html#tile-cache)

Main resource group · Examples · WMS

## Create resource

RESOURCE
WMS LAYER
TILE CACHE
DESCRIPTION
METADATA

Display name

Parent

WMS

Owner

Administrator

Keyname

Fig. 5.32: Create resource dialog for WMS layer

Main resource group · Examples · WMS

## Create resource

RESOURCE
WMS LAYER
TILE CACHE
DESCRIPTION
METADATA

↩
↪

Heading 1

B
I
U
S

@

General Bathymetric Chart of the **Oceans**

Fig. 5.33: WMS layer description

Fig. 5.34: WMS layer metadata

1. Select the WMS connection that was created earlier.
2. Select the appropriate MIME-type from the dropdown list.
3. Select the required layers from the list by clicking the underlined names. You can select several layers.

In the last tab you can add vendor parameters. These are special query settings for additional functions. They vary depending on the WMS provider.

After configuring all the parameters click **Create**.

**Warning:** Identification requests to external WMS layers from Web Maps are not supported yet.

## 5.7 WMS service

NextGIS Web software can perform as WMS server. This protocol is used to provide images with a requested extent.

To deploy a WMS service you need to add a resource. Press **Create resource** button and select **WMS service** (see Fig. ??).

Create resource dialog for WMS service is presented on Fig. ??.

Enter the name of the resource that will be displayed in the administrator interface. Do not confuse this name with a name of layers in a database.

“Keyname” field is optional.

Main resource group · Examples · WMS

## Create resource

RESOURCE

WMS LAYER

TILE CACHE

DESCRIPTION

METADATA

WMS Connection


 Oceans

Image format

image/png

WMS layers

This is a WMS for the GEBCO global bathymetric grid ×

GEBCO\_LATEST\_SUB\_ICE\_TOPO ×

GEBCO\_LATEST ×

GEBCO\_LATEST TID 2 Grid ×

GEBCO\_LATEST\_2 ×

Vendor parameters

Edit vendor parameters

Fig. 5.35: WMS layer parameters tab of Create resource dialog

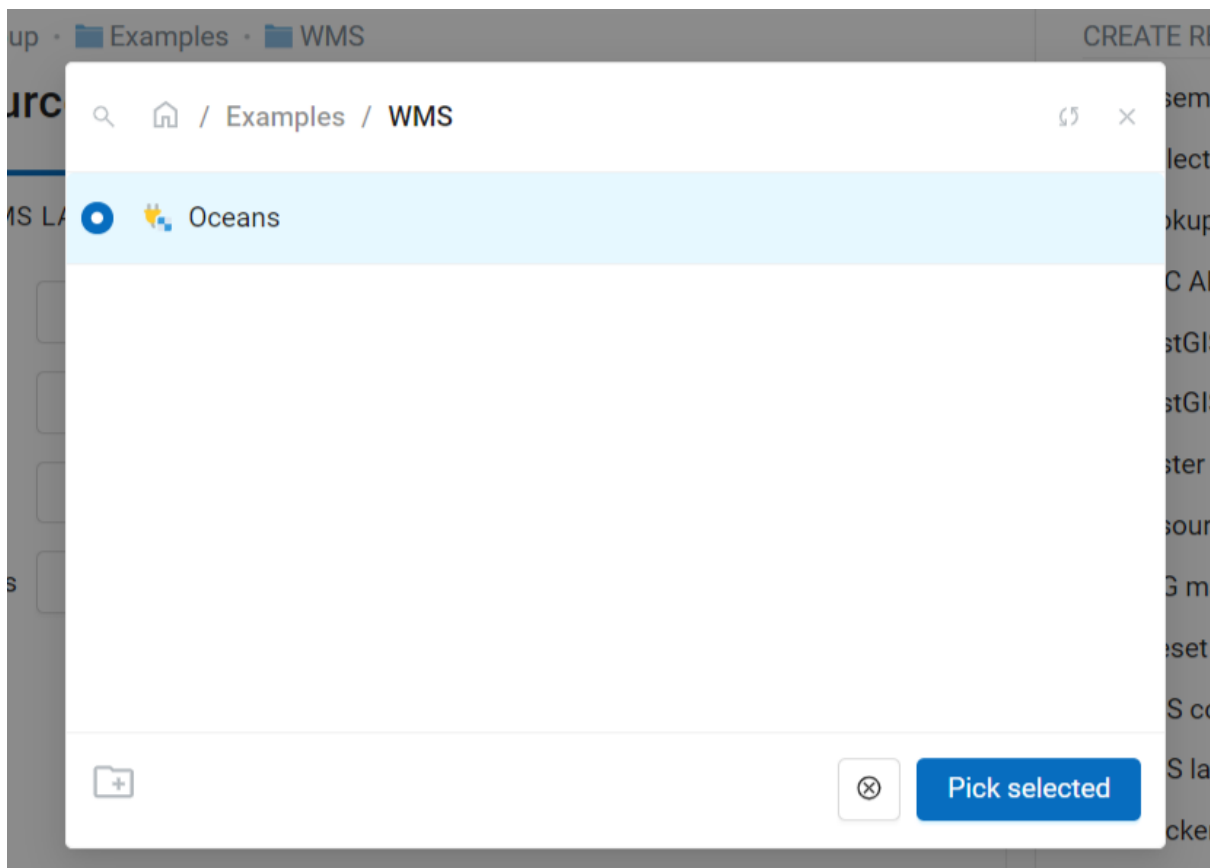


Fig. 5.36: Selecting WMS connection

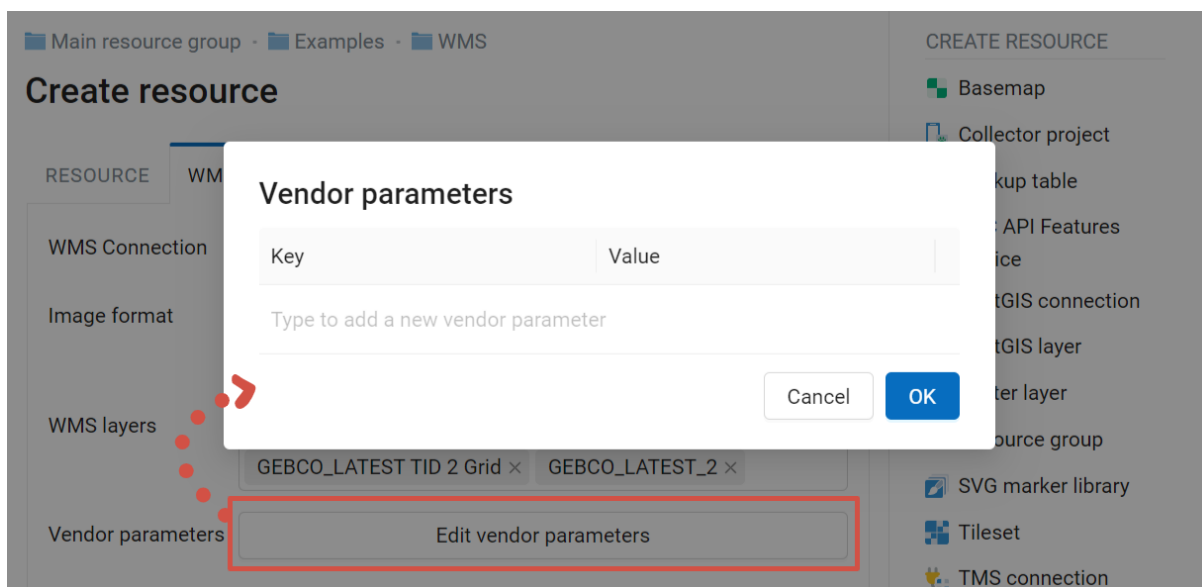


Fig. 5.37: Vendor parameters of the WMS layer

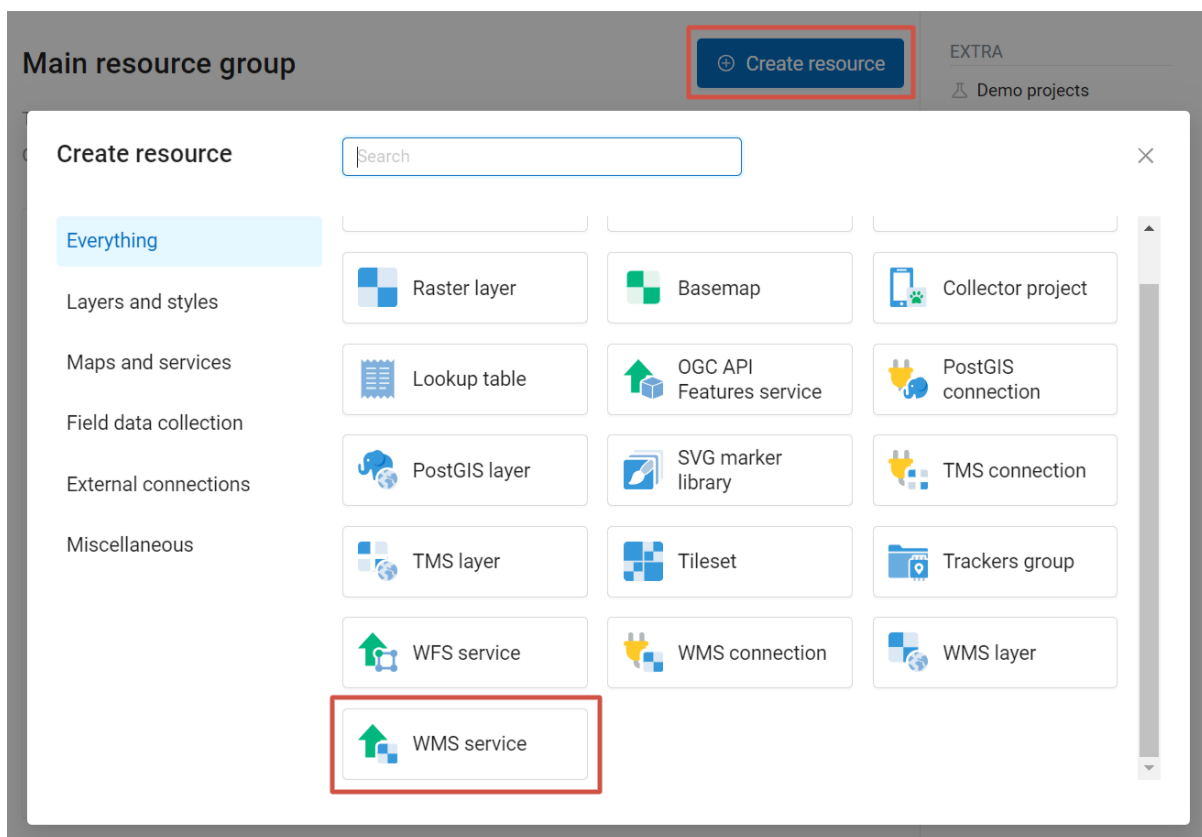


Fig. 5.38: Selection of “WMS service” resource type

Fig. 5.39: Create resource dialog for WMS service

On the “Description” tab you can add any text describing the content of this service.

On the “Metadata” tab you can enter information in the “key-value” format.

Switch to “WMS service” tab, which is presented on Fig. ???. Here add links to required layers or layer styles. You can also set the min and max scale for the data visualisation.

After the resource is created, you will see a message with the WMS service URL which you can use in other software, e.g. **NextGIS QGIS** or **JOSM**. Then you need to [set access permissions for the WMS service](#)<sup>68</sup>.

NextGIS Web layer can be added to desktop, mobile and Web GIS in different ways.

### 5.7.1 Using WMS service connection

NextGIS Web acts as a WMS server: WMS services created in NextGIS Web can be added to any software that supports WMS protocol. For that you need to know the WMS service URL. You can get it on the WMS service page. The link may look like this:

`https://demo.nextgis.com/api/resource/4817/wms?`

To use WMS service through GDAL utilities you need to create an XML file for the required layer. Enter these parameters to the `ServerUrl` string in example below. The rest remains unchanged.

<sup>68</sup> [https://docs.nextgis.com/docs\\_ngcom/source/permissions.html#ngcom-permissions-auth-wms](https://docs.nextgis.com/docs_ngcom/source/permissions.html#ngcom-permissions-auth-wms)

Main resource group

## Create resource

RESOURCE WMS SERVICE **DESCRIPTION** METADATA

↶ ↷ Paragraph **B** *I* U ~~S~~ Source

**Fire monitoring** service

Create Create and edit

Fig. 5.40: WMS service description

Main resource group

## Create resource

RESOURCE WMS SERVICE DESCRIPTION **METADATA**

Key	Type	Value
state	String	wisc
Type here to add a new key...		

String  
Number  
Boolean  
Empty

Create Create and edit

CREATE RESOURCE

- Basemap
- Collector project
- Lookup table
- OGC API Features service
- PostGIS connection
- PostGIS layer
- Raster layer
- Resource group
- SVG marker library
- TMS connection
- TMS layer
- Trackers group
- Vector layer
- Web map

Fig. 5.41: WMS service metadata

NextGIS Demo Day

Search

A

Main resource group • Create resource

Create resource

RESOURCE

DESCRIPTION

METADATA

WMS SERVICE

Add

Remove

Boundary

Forest map

Buildings-style

Keyname

Display name

Min scale

Max scale

Resource

Buildings\_style

Buildings-style

[Buildings-style](#)

Create

Create and edit

CREATE RESOURCE

Basemap

Collector project

Lookup table

PostGIS connection

PostGIS layer

Raster layer

Resource group

SVG marker library

TMS connection

TMS layer

Trackers group

Vector layer

Web map

WFS service

WMS connection

WMS layer

WMS service

EXTRA

JSON view

ACTION

Update

Fig. 5.42: WMS service tab of Create resource dialog

```

<GDAL_WMS>
  <Service name="WMS">
    <Version>1.1.1</Version>
    <ServerUrl>https://demo.nextgis.com/api/resource/4817/wms?</
    ↪ServerUrl>
    <SRS>EPSG:3857</SRS>
    <ImageFormat>image/png</ImageFormat>
    <Layers>moscow_boundary_multipolygon</Layers>
    <Styles></Styles>
  </Service>
  <DataWindow>
    <UpperLeftX>-20037508.34</UpperLeftX>
    <UpperLeftY>20037508.34</UpperLeftY>
    <LowerRightX>20037508.34</LowerRightX>
    <LowerRightY>-20037508.34</LowerRightY>
    <SizeY>40075016</SizeY>
    <SizeX>40075016.857</SizeX>
  </DataWindow>
  <Projection>EPSG:3857</Projection>
  <BandsCount>3</BandsCount>
</GDAL_WMS>

```

If you need an image with transparency (alpha channel) set <BandsCount>4</BandsCount>.

Here is an example of a GDAL command. The utility gets an image by WMS from NextGIS Web and saves it to a GeoTIFF format.

```

$ gdal_translate -of "GTIFF" -outsize 1000 0 -projwin 4143247_
↪7497160 \
4190083 7468902 ngw.xml test.tiff

```

## 5.8 TMS layer

### 5.8.1 TMS Connection

Similarly to [WMS](#)<sup>69</sup>, to add a TMS layer, you first need to create a TMS connection. Press **Create resource** button and select **TMS connection** (see Fig. ??)

Enter the connection name that will be displayed in the administrator interface (see Fig. ??).

The “Key” field is optional. If needed, you can also add a description and metadata. In the TMS connection tab you need to select the way to connect to the TMS server - custom or via NextGIS GeoServices (see Fig. ??).

In the case of a custom connection method, the user must specify the URL template, API key parameters if needed and the tile scheme used. For NextGIS

<sup>69</sup> [https://docs.nextgis.com/docs\\_ngweb/source/layers.html#wms-layer/](https://docs.nextgis.com/docs_ngweb/source/layers.html#wms-layer/)

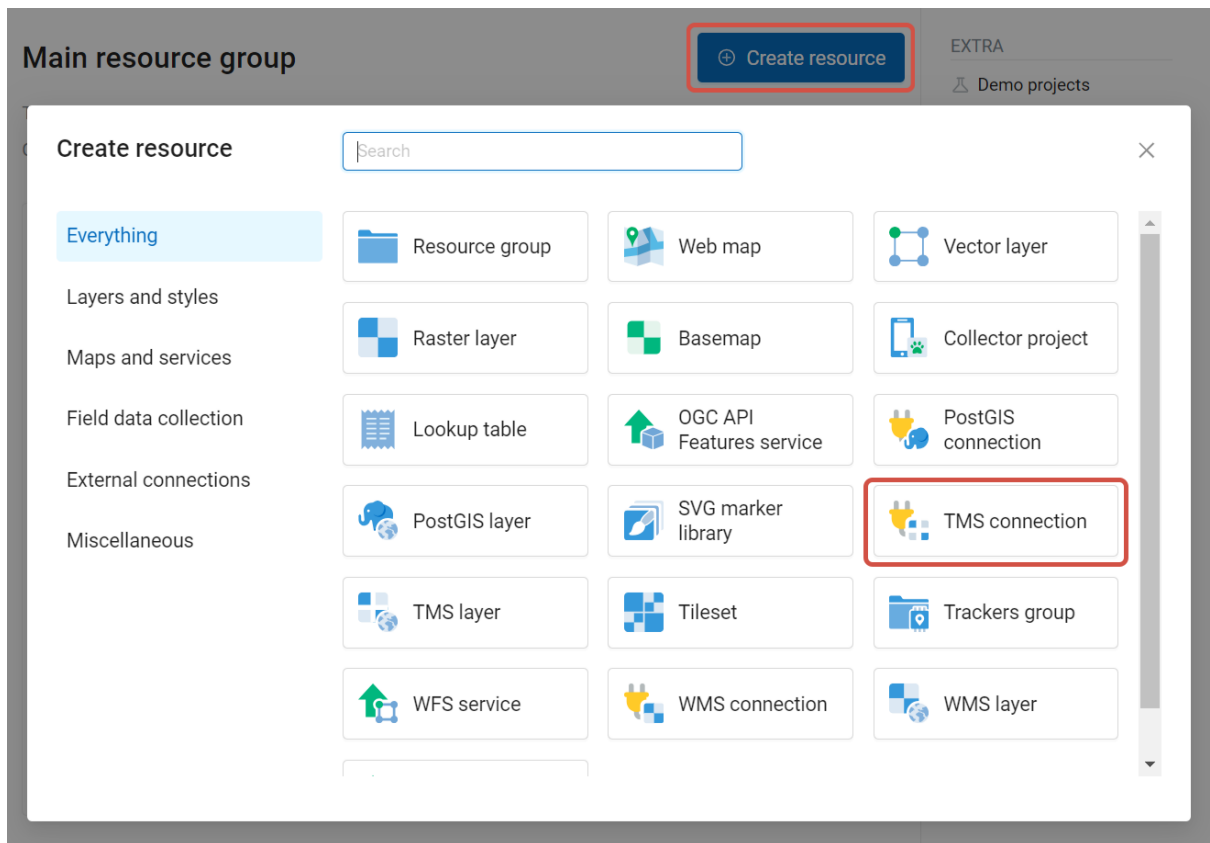


Fig. 5.43: Selecting TMS Connection resource type

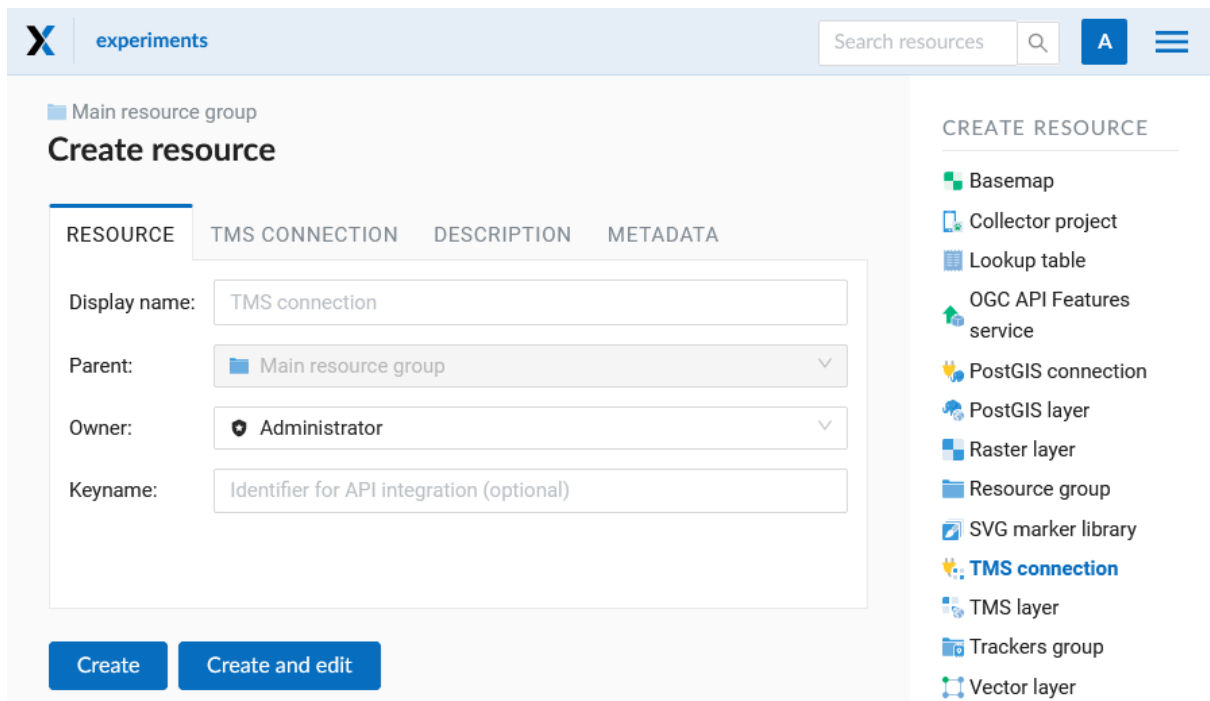


Fig. 5.44: TMS Connection Resource Name

## Create resource

RESOURCE

TMS CONNECTION

DESCRIPTION

METADATA

Type

Custom

▼

URL template

https://storage.googleapis.com/earthenginepartners-

Scheme

XYZ

▼

API key

API key param

Username

Password

🔗

☐ Skip SSL/TLS certificate verification

Create

Create and edit

Fig. 5.45: Configuring TMS Connection

GeoServices, only a custom API key is specified. After filling in all fields press **Create** to complete the process of creating a **TMS Connection** resource.

## 5.8.2 TMS layer

**TMS layer** resource is created using previously created **TMS Connection**. Press **Create resource** button and select **TMS layer** (see Fig. ??).

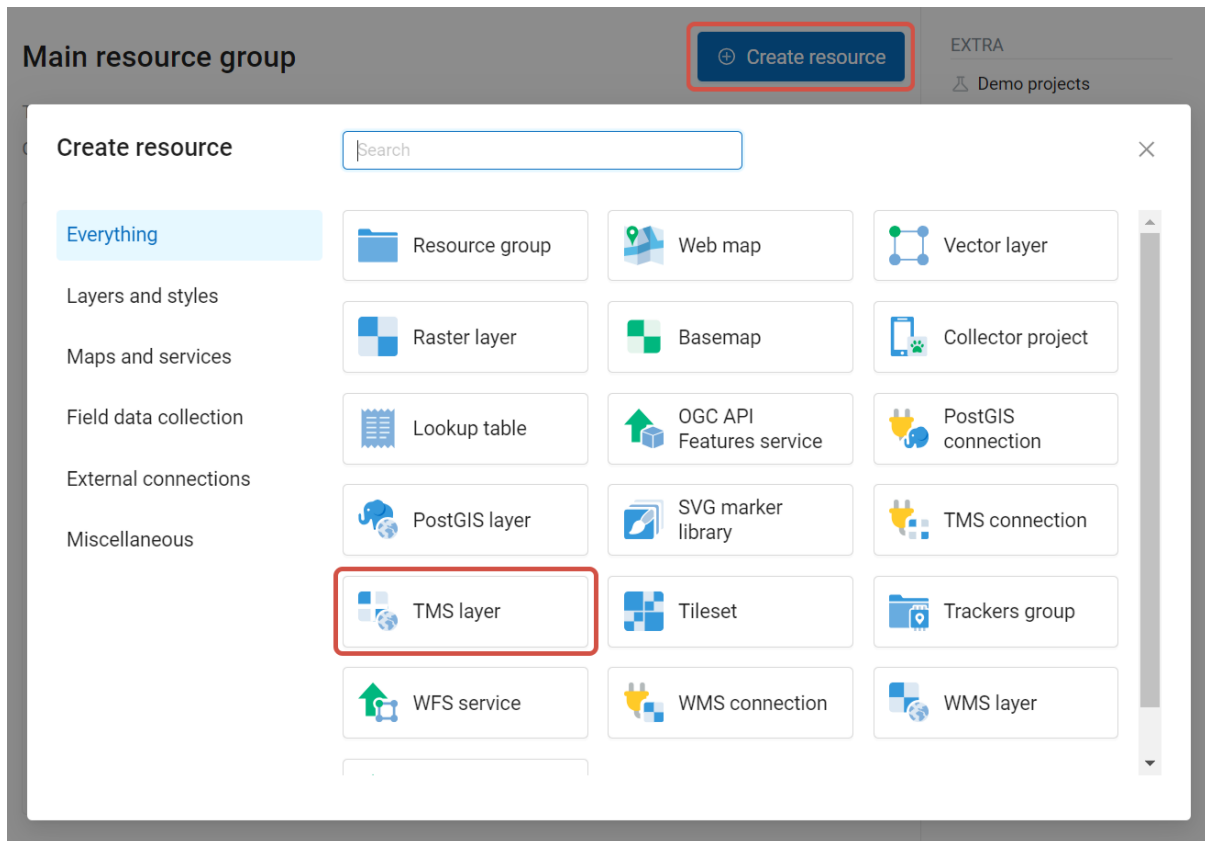


Fig. 5.46: Selecting of TMS layer resource type

Enter the name that will be displayed in the administrator interface (see Fig. ??).

Caching provides faster rendering of Web Map layers. Tile cache settings are described in details [in this section](#)<sup>70</sup>.

The main display settings are on the TMS layer tab (. Fig. ??):

- TMS connection - select a TMS connection resource that was created earlier
- The range of zoom levels for data display
- Extent in degrees or from a layer
- Tile size in pixels

After creating a TMS layer, the user can add it to the Web Map to display. No style is needed.

<sup>70</sup> [https://docs.nextgis.com/docs\\_ngweb/source/mapstyles.html#tile-cache](https://docs.nextgis.com/docs_ngweb/source/mapstyles.html#tile-cache)

experiments

Search resources

Q

A

☰

Main resource group

Create resource

RESOURCE

TMS LAYER

TILE CACHE

DESCRIPTION

METADATA

Display name:

FOREST LOSS

Parent:

Main resource group

▼

Owner:

Administrator

▼

Keyname:

Identifier for API integration (optional)

Create

Create and edit

CREATE RESOURCE

Basemap

Collector project

Lookup table

OGC API Features service

PostGIS connection

PostGIS layer

Raster layer

Resource group

SVG marker library

TMS connection

**TMS layer**

Trackers group

Vector layer

Fig. 5.47: TMS layer name

Create resource

RESOURCE

TMS LAYER

TILE CACHE

DESCRIPTION

METADATA

TMS connection

TMS connection

☑

▼

Layer

Min zoom level

0

Max zoom level

14

Tile size

256

px

Extent

From layer

West

°

South

°

East

°

North

°

Create

Create and edit

Fig. 5.48: TMS layer settings

5.8. TMS layer

70

### 5.8.3 Using TMS service

NextGIS Web is a TMS server. Layers and styles created in it can be accessed via any software supporting TMS protocol. You will need the URL for the TMS service.

The link should look like this:

```
https://demo.nextgis.com/api/component/render/tile?z={z}&x={x}&y={y}&resource=234
```

To use TMS service through GDAL utilities you need to create an XML file. You will need the TMS link. Enter these parameters to ServerUrl string in example below. The rest remains unchanged.

```
<GDAL_WMS>
  <Service name="TMS">
    <ServerUrl>https://demo.nextgis.com/api/component/render/tile?
    ↪z={z}&x={x}&y={y}&resource=234
    </ServerUrl>
  </Service>
  <DataWindow>
    <UpperLeftX>-20037508.34</UpperLeftX>
    <UpperLeftY>20037508.34</UpperLeftY>
    <LowerRightX>20037508.34</LowerRightX>
    <LowerRightY>-20037508.34</LowerRightY>
    <TileLevel>18</TileLevel>
    <TileCountX>1</TileCountX>
    <TileCountY>1</TileCountY>
    <YOrigin>top</YOrigin>
  </DataWindow>
  <Projection>EPSG:3857</Projection>
  <BlockSizeX>256</BlockSizeX>
  <BlockSizeY>256</BlockSizeY>
  <BandsCount>4</BandsCount>
  <Cache />
</GDAL_WMS>
```

## 5.9 Tileset

To add a **Tileset**, select a Tileset in the “Create Resource” block of operations.

Next, you need to enter the name of the tileset, which will be displayed in the administrative web interface.

The “Key” field is optional. On the appropriate tabs, you can add a resource description and metadata. Typically, metadata is used to develop third-party applications using APIs.

In the “Tileset” tab, you need to upload a tileset in MBTiles format or a zip archive. Tiles must be in PNG or JPEG format and have a size of 256x256 pixels.

In the “Tile Cache” tab, the user can set the caching settings:

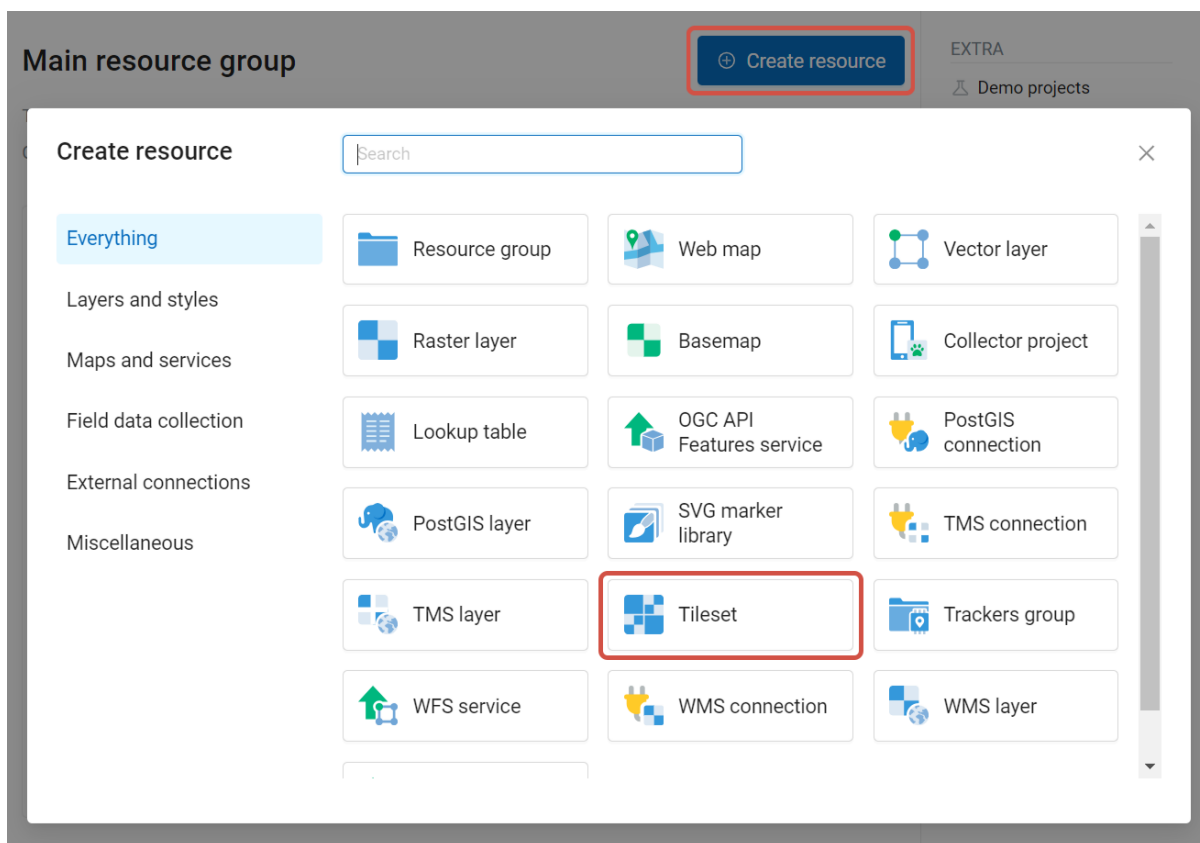


Fig. 5.49: Selecting Tileset resource type

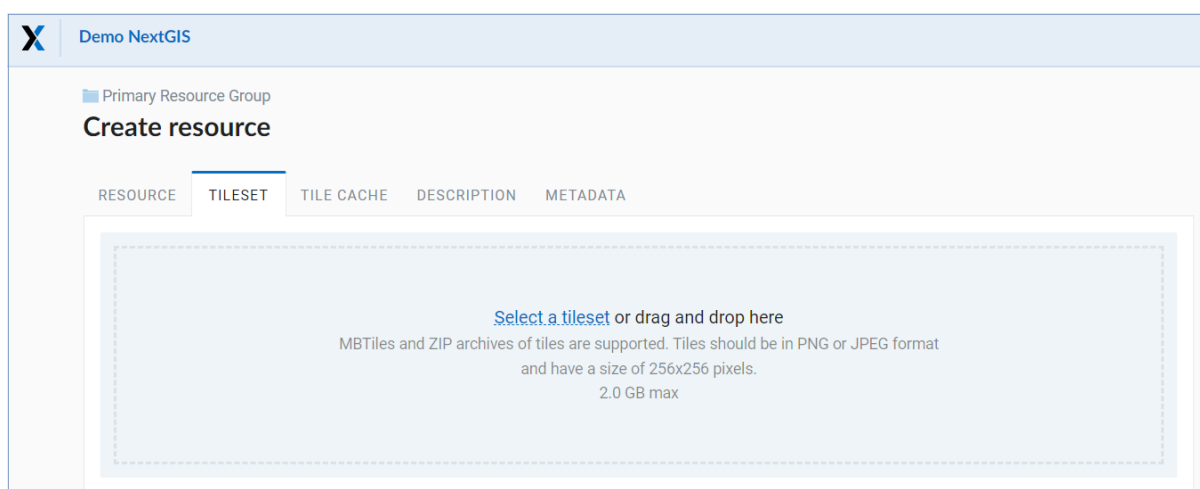
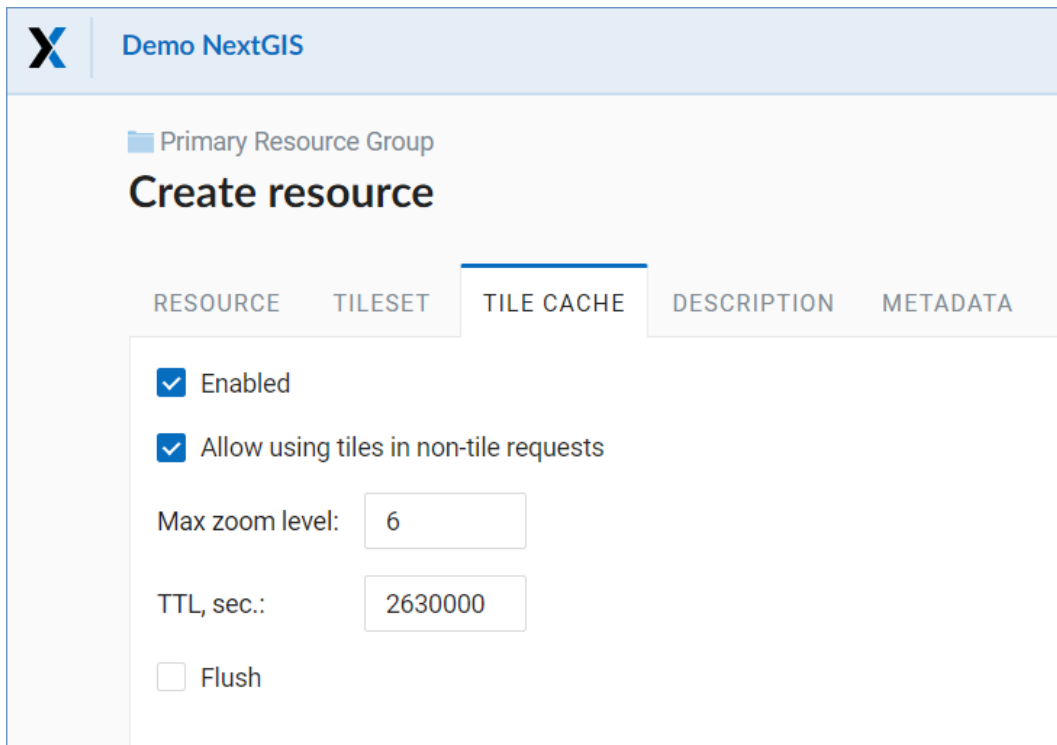


Fig. 5.50: Tileset tab

- Enable - enable/disable tile caching;
- Allow using tiles in non-tile requests - when requesting an image (not a tile), use cached tiles if available;
- Max zoom level - the threshold value above which the cache is not accessed, the map image is rendered on the fly;
- TTL, sec (Time to live) - “time to live” or storage of tiles on the server in seconds, after which the image will be re-formed at the next request. If TTL = 0, then the storage time of tiles is not limited;
- Flush - write only - clears the tile cache when saving the style.



The screenshot shows the 'Create resource' interface in the 'Tile Cache' tab. The 'Primary Resource Group' is selected. The 'Tile Cache' tab is active, showing the following settings:

- ☒ Enabled
- ☒ Allow using tiles in non-tile requests
- Max zoom level:
- TTL, sec.:
- ☐ Flush

Fig. 5.51: Tileset settings

After filling in all the fields, clicking the **Create button** completes the process of creating the resource **Tileset**.

See how to add a tileset in our video:

Watch on [youtube](https://youtu.be/eCeptUacIRM?si=AxMNJO2AtYcJS0EG)<sup>71</sup>.

<sup>71</sup> <https://youtu.be/eCeptUacIRM?si=AxMNJO2AtYcJS0EG>

## 5.10 WFS Layer

WFS allows to get data published on third-party GIS servers (arcgis, geoserver etc), apply custom styles to them and add them to Web Maps.

First you need to create a WFS connection.

### 5.10.1 WFS connection

Press **Create resource** button and select **WFS connection**.

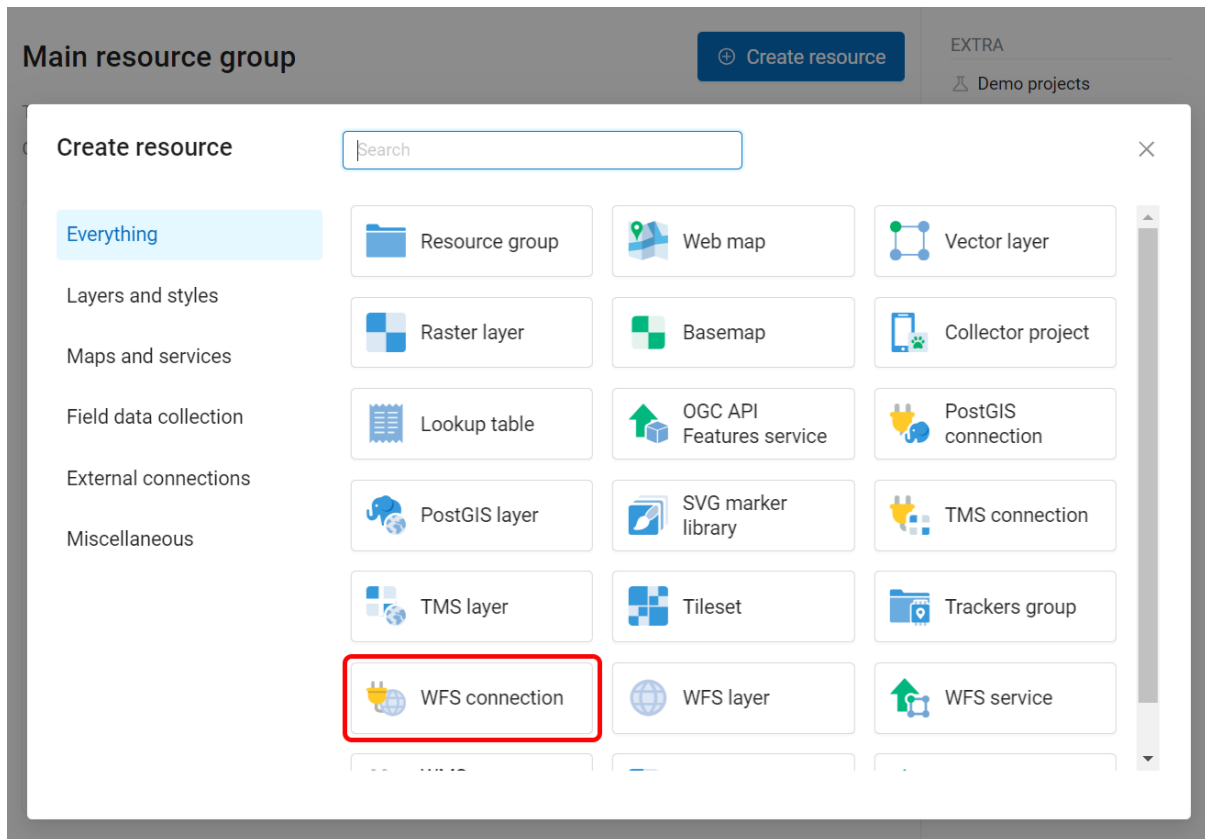


Fig. 5.52: Selection of “WFS connection” resource type

Next you can enter a custom name that will be displayed in the resource list.

“Keyname” field is optional. The “Description” and “Metadata” of the resource can be configured on the corresponding tabs.

On the “WFS connection” tab enter the parameters that will be used to connect to the **WFS server** providing the data:

- URL
- Username
- Password
- WFS version

Main resource group

## Create resource

RESOURCE

WFS CONNECTION


DESCRIPTION

METADATA


Display name

WFS connection

Parent

Main resource group 

Owner

 Administrator

Keyname

Identifier for API integration (optional)

Create

Create and edit

Fig. 5.53: Name for WFS connection

Main resource group

## Create resource

RESOURCE

WFS CONNECTION

DESCRIPTION

METADATA

URL

Username

Password

Version

Create

Create and edit

Fig. 5.54: WFS connection settings

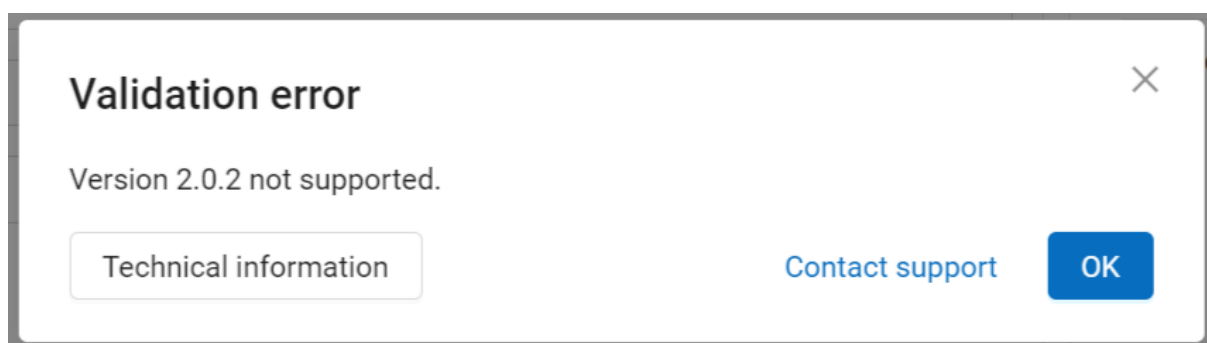


Fig. 5.55: Error message for incorrect WFS version

If the version you selected is not supported, you'll get an error message after pressing **Create**:

Next you can create WFS layer resource.

### 5.10.2 WFS Layer

**WFS Layer** is added using an existing WFS connection. Select the resource type in the **Create resource** menu.

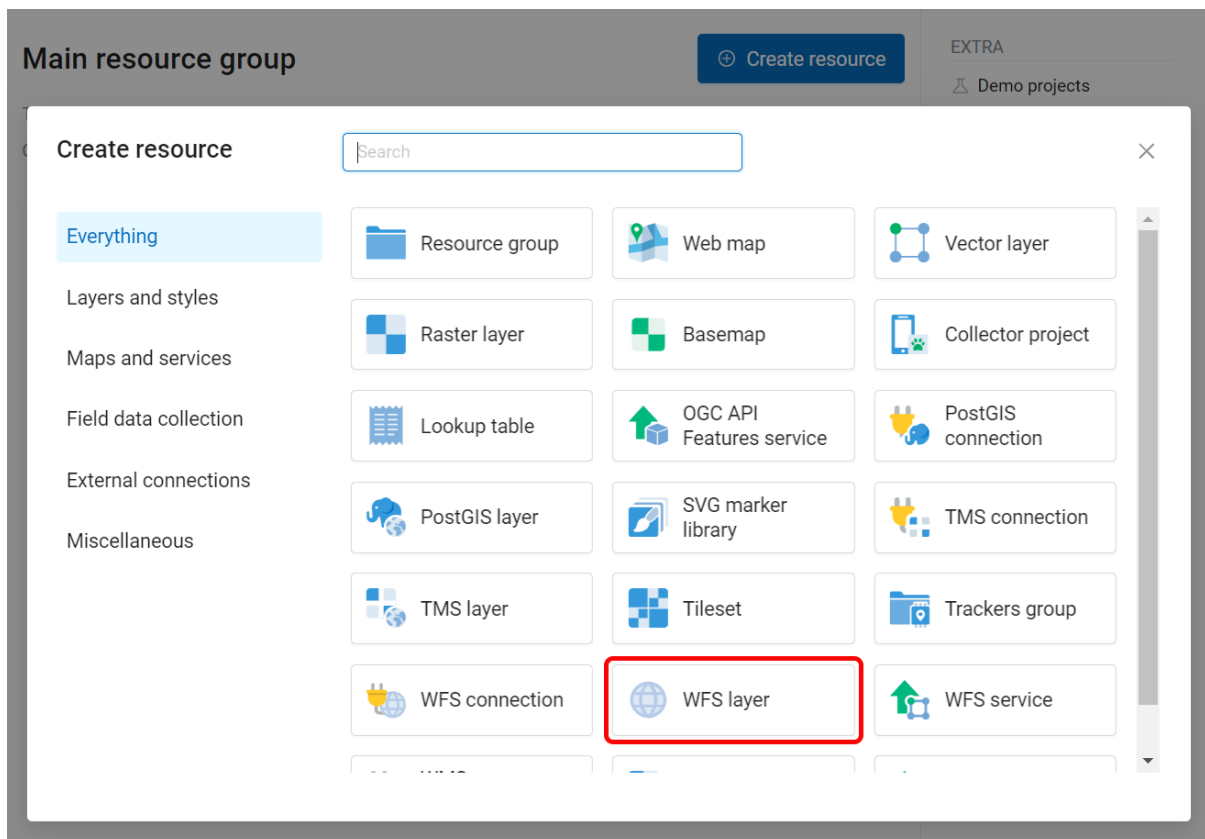


Fig. 5.56: Selection of “WFS layer” resource type

In the opened window in the “WFS layer” tab select the WFS connection you created. Next select the layer and the geometry field. SRID will be added automatically.

In the “Resource” tab you can set a custom name for the layer. You can also enter description and metadata on the corresponding tabs.

To add a WFS layer to a Web Map, you need to create a style for it. You can create a default QGIS style or a [custom QGIS or Mapserver style](https://docs.nextgis.com/docs_ngweb/source/mapstyles.html)<sup>72</sup> using “Create resource” menu.

<sup>72</sup> [https://docs.nextgis.com/docs\\_ngweb/source/mapstyles.html](https://docs.nextgis.com/docs_ngweb/source/mapstyles.html)

Main resource group

## Create resource



RESOURCE

WFS LAYER

DESCRIPTION

METADATA

Connection

 WFS connection 

Layer

ms:water\_polygons\_z5

SRID

4326

Geometry column

msGeometry

Geometry type

Autodetect

Attribute definitions

Update definitions from the server


Create

Create and edit

Fig. 5.57: WFS layer settings

Main resource group - Examples - WFS

## WFS layer

 Create resource

Type ..... WFS layer (wfsclient\_layer)

Spatial reference system ..... WGS 84 / Pseudo-Mercator (EPSG:3857)

Owner ..... Administrator

Layer created. You need a style to add it to a web map. Use the button bellow to create a default QGIS style or create a style resource using sidebar.

Create default QGIS style

Fig. 5.58: Two ways to add a style to WFS layer

## 5.11 WFS service

WFS service works similarly to WMS layer, but you add layers instead of styles.

**Note:** Currently supported filters are Intersects, ResourceId (ObjectId, FeatureId).

NextGIS Web acts as WFS server and publishes WFS services based on vector layers. Third party software can use these services to edit vector data on server. Supported WFS protocol versions are 1.0, 1.1, 2.0, 2.0.2.

To deploy a WFS service press **Create resource** button and select **WFS service** (see Fig. ??).

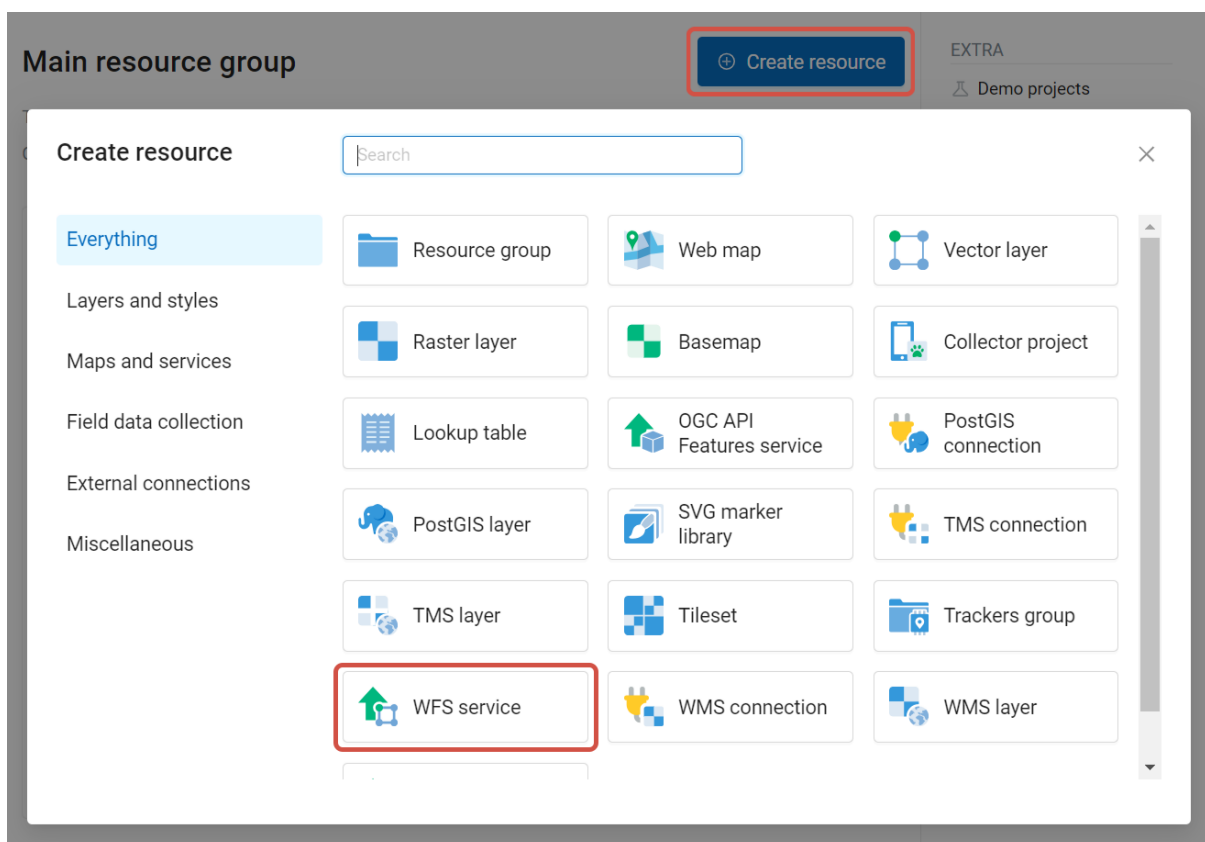


Fig. 5.59: Selection of “WFS service” resource type

On the “WFS service” tab, which is presented on Fig. ?? and add required layers to a list (see Fig. ??). For each layer you can set a limit for the number of features returned from the vector layer. By default the value is 1000. If this parameter is set to empty, the limit will be disabled and all features will be returned to the client. This may result in high server load and significant timeouts in case of large data volume.

On the “Resource” tab you can enter the name that will be displayed in the list of resources. Do not confuse this name with the names of layers in a database.

“Keyname” field is optional.

Main resource group - Examples - WFS service

## Create resource


RESOURCE	WFS SERVICE	DESCRIPTION	METADATA
<div>⊕ Add</div> <div>Buildings</div>	<div>⊞ Delete</div> <div> Display name <input type="text" value="Buildings"/> </div> <div> Keyname <input type="text" value="layer_7506"/> </div> <div> Features per request <input type="text" value="1000"/> </div> <div> Resource  <a href="#">2.5 buildings - expression</a> </div>		

Fig. 5.60: WFS service tab of Create resource dialog

On the “Description” tab you can add any text describing the content of this service.

On the “Metadata” tab you can enter information in the “key-value” format.

### 5.11.1 Using WFS service

After the resource is created, a URL for the WFS service is available. You can use it in other software, for example **NextGIS QGIS**.

You can set access permissions for WFS service if needed. See [this section](#)<sup>73</sup> for details.

WFS services can also be accessed with links of the following type ([basic auth](#)<sup>74</sup> is supported):

```
https://mywebgis.nextgis.com/api/resource/2413/wfs?SERVICE=WFS&
→TYPENAME=ngw_id_2412&username=administrator&password=mypassword&
→srsname=EPSG:3857&VERSION=1.0.0&REQUEST=GetFeature
```

<sup>73</sup> [https://docs.nextgis.com/docs\\_ngcom/source/permissions.html](https://docs.nextgis.com/docs_ngcom/source/permissions.html)

<sup>74</sup> [https://docs.nextgis.com/docs\\_ngweb\\_dev/doc/developer/auth.html](https://docs.nextgis.com/docs_ngweb_dev/doc/developer/auth.html)

Main resource group

Create resource

RESOURCE

WFS SERVICE

DESCRIPTION

METADATA

↶ ↷

Paragraph ▾

**B**

*I*

U

✂

🔗

🖼️ ▾

📊 ▾

“ ”

:≡

≡

≡

≡

🔗 Source

City development WFS service

Create

Create and edit

Fig. 5.61: WFS service description

Main resource group

Create resource

RESOURCE

WFS SERVICE

DESCRIPTION

METADATA

Key	Type	Value	
area	Number ▾	55	🗑️ ×
Type here to add a new key...	<div>String</div> <div><b>Number</b></div> <div>Boolean</div> <div>Empty</div>		

Create

Create and edit

CREATE RESOURCE

- Basemap
- Collector project
- Lookup table
- OGC API Features service
- PostGIS connection
- PostGIS layer
- Raster layer
- Resource group
- SVG marker library
- TMS connection
- TMS layer
- Trackers group
- Vector layer
- Web map

Fig. 5.62: WFS service metadata

## 5.12 OGC API Features service

The OGC API Features service is configured in the same way as for a WFS service.

NextGIS Web acts as OGC API Features server and publishes OGC API Features services based on vector layers. Third party software can use these services to edit vector data on server. Supported OGC API Features protocol versions is 1.0.0.

To deploy a OGC API Features service press **Create resource** button and select **OGC API Features service** (see Fig. ??).

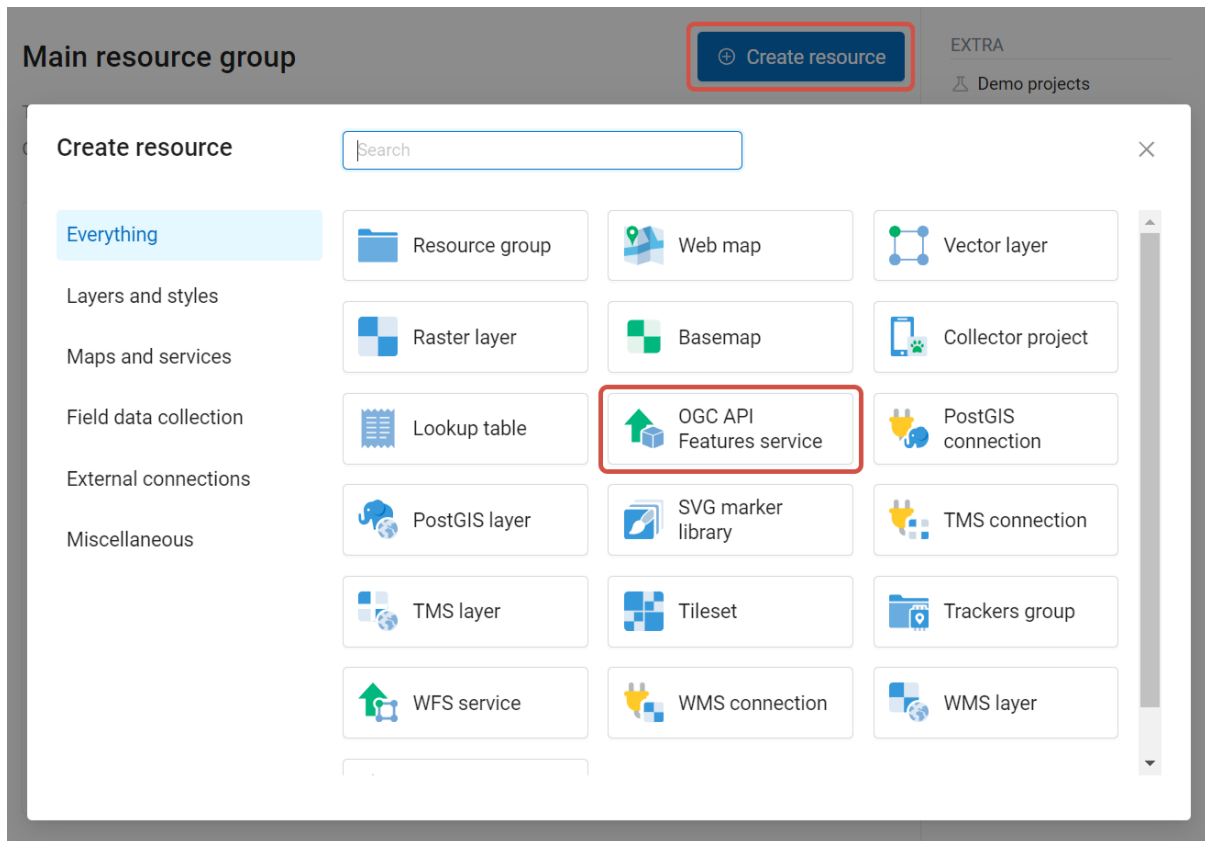


Fig. 5.63: Selection of “OGC API Features service” resource type

Create resource dialog for OGC API Features service is presented on Fig. ??.

Enter the name of the resource that will be displayed in the administrator interface. Do not confuse this name with a name of layers in a database.

“Keyname” field is optional.

On the “Description” tab you can add any text describing the content of this service.

On the “Metadata” tab you can enter information in the “key-value” format.

Switch to “OGC API Features service” tab, which is presented on Fig. ?? and add required layers to a list (see Fig. ??). For each layer you can set a limit for the number of features returned from the vector layer. By default the value is 1000. If this parameter is set to empty, the limit will be disabled and all features will be returned to the client. This may result in high server load and significant timeouts in case of large data volume.

The screenshot shows the 'Create resource' dialog in the NextGIS Web interface. The top bar includes the 'experiments' logo, a search bar, and user controls. The main area is titled 'Main resource group' and 'Create resource'. It features four tabs: 'RESOURCE' (selected), 'OGC API FEATURES SERVICE', 'DESCRIPTION', and 'METADATA'. Under the 'RESOURCE' tab, there are four input fields: 'Display name' (containing 'OGC API Features service'), 'Parent' (a dropdown menu showing 'Main resource group'), 'Owner' (a dropdown menu showing 'Administrator'), and 'Keyname' (containing 'Identifier for API integration (optional)'). At the bottom are two buttons: 'Create' and 'Create and edit'. On the right side, there is a 'CREATE RESOURCE' sidebar with a list of resource types: Basemap, Collector project, Lookup table, OGC API Features service (highlighted), PostGIS connection, PostGIS layer, Raster layer, Resource group, SVG marker library, TMS connection, TMS layer, Trackers group, and Vector layer.

Fig. 5.64: Create resource dialog for OGC API Features service

This screenshot shows the 'DESCRIPTION' tab of the 'Create resource' dialog. The breadcrumb at the top indicates the path: 'Primary Resource Group' > 'Services OGC API Features'. The 'DESCRIPTION' tab is active, showing a rich text editor with a toolbar containing icons for undo, redo, paragraph, bold, italic, underline, strikethrough, link, image, table, quote, list, and more options. The text area contains the example text 'Example OGC API Features'. The right sidebar, titled 'CREATE RESOURCE', lists the same resource types as in Fig. 5.64, with 'OGC API Features service' highlighted.

Fig. 5.65: OGC API Features service description

Primary Resource Group • Services OGC API Features

## Create resource

RESOURCE OGC API FEATURES SERVICE DESCRIPTION METADATA

Key	Type	Value
Type here to add a new key...		

CREATE RESOURCE

- Basemap
- Collector project
- Lookup table
- OGC API Features service**
- PostGIS connection
- PostGIS layer
- Raster layer
- Resource group
- SVG marker library
- TMS connection

Fig. 5.66: OGC API Features service metadata

Primary Resource Group • Services OGC API Features

## Create resource

RESOURCE OGC API FEATURES SERVICE DESCRIPTION METADATA

Add Remove

Districts	Keyname	Districts
	Display name	Districts
	Default count of returned features	1000
	Resource	<a href="#">Districts</a>

CREATE RESOURCE

- Basemap
- Collector project
- Lookup table
- OGC API Features service**
- PostGIS connection
- PostGIS layer
- Raster layer
- Resource group
- SVG marker library
- TMS connection
- TMS layer
- Trackers group
- Vector layer
- Web map
- WFS service

Fig. 5.67: OGC API Features service tab of Create resource dialog

### 5.12.1 Using OGC API Features service

After the resource is created, a URL for the OGC API Features service is available. You can use it in other software, for example **QGIS**.

You can [set access permissions for OGC API Features service](#)<sup>75</sup> if needed.

OGC API Features services can also be accessed with links of the following type ([basic auth](#)<sup>76</sup> is supported):

`hhttps://yourwebgis.nextgis.com/api/resource/208/ogcf`

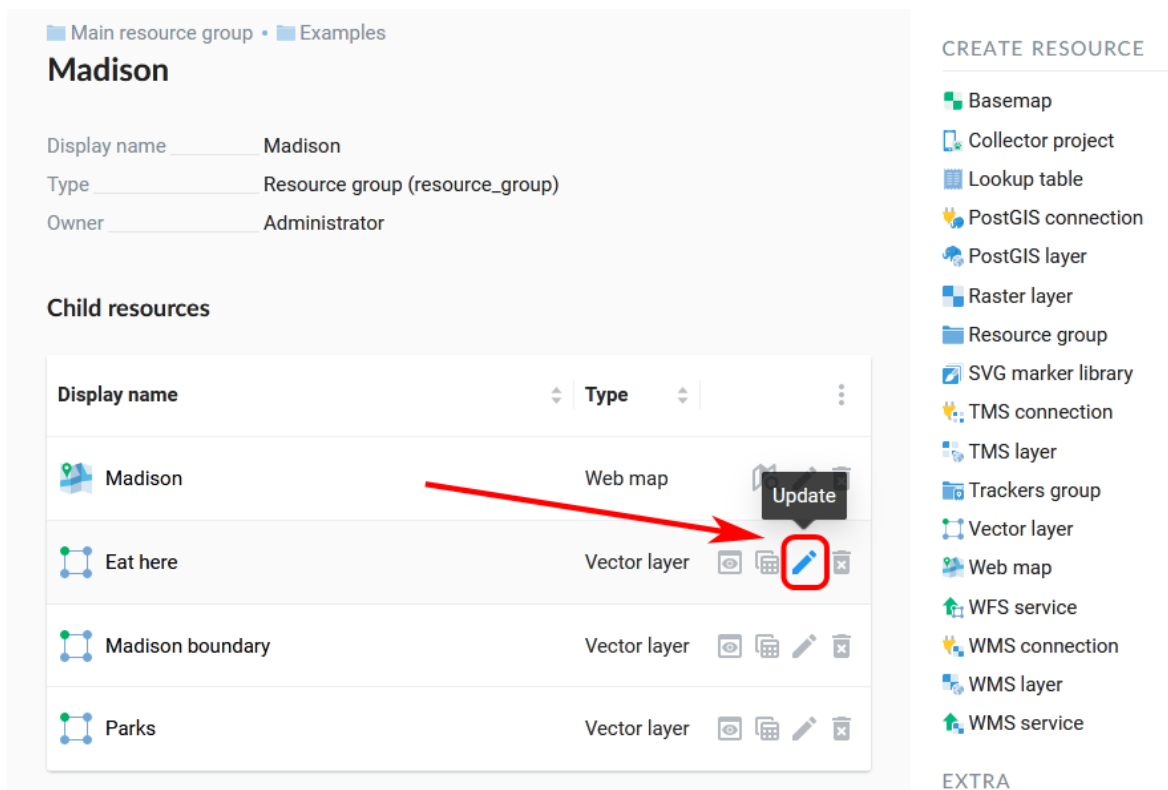
---

<sup>75</sup> [https://docs.nextgis.com/docs\\_ngcom/source/permissions.html#ngcom-permissions-auth-wms](https://docs.nextgis.com/docs_ngcom/source/permissions.html#ngcom-permissions-auth-wms)

<sup>76</sup> [https://docs.nextgis.com/docs\\_ngweb\\_dev/doc/developer/auth.html](https://docs.nextgis.com/docs_ngweb_dev/doc/developer/auth.html)

## UPDATE RESOURCE

In the group page press the pencil icon opposite the resource.



Alternatively, open the resource properties page and then select “Update” in the actions pane (see Fig. ??).

In opened window “Update resource” (see Fig. ??) you can edit parent of the selected resource, add [description](#), [metadata](#)<sup>77</sup> and configure [access permissions](#)<sup>78</sup>. Depending on the resource type there are other tabs, e.g. for vector layers you can edit [attributes](#)<sup>79</sup>.

Some tabs have grey numbers on them indicated the number of items (i.e. permission rules, layer fields etc).

Tabs that were modified are marked by blue dots.

On the first tab “Resource” you can edit the following fields:

---

<sup>77</sup> [https://docs.nextgis.com/docs\\_ngweb/source/edit\\_resource.html#edit-description-and-metadata](https://docs.nextgis.com/docs_ngweb/source/edit_resource.html#edit-description-and-metadata)

<sup>78</sup> [https://docs.nextgis.ru/docs\\_ngcom/source/permissions.html](https://docs.nextgis.ru/docs_ngcom/source/permissions.html)

<sup>79</sup> [https://docs.nextgis.com/docs\\_ngweb/source/layers\\_settings.html#edit-vector-layer-attributes-table](https://docs.nextgis.com/docs_ngweb/source/layers_settings.html#edit-vector-layer-attributes-table)

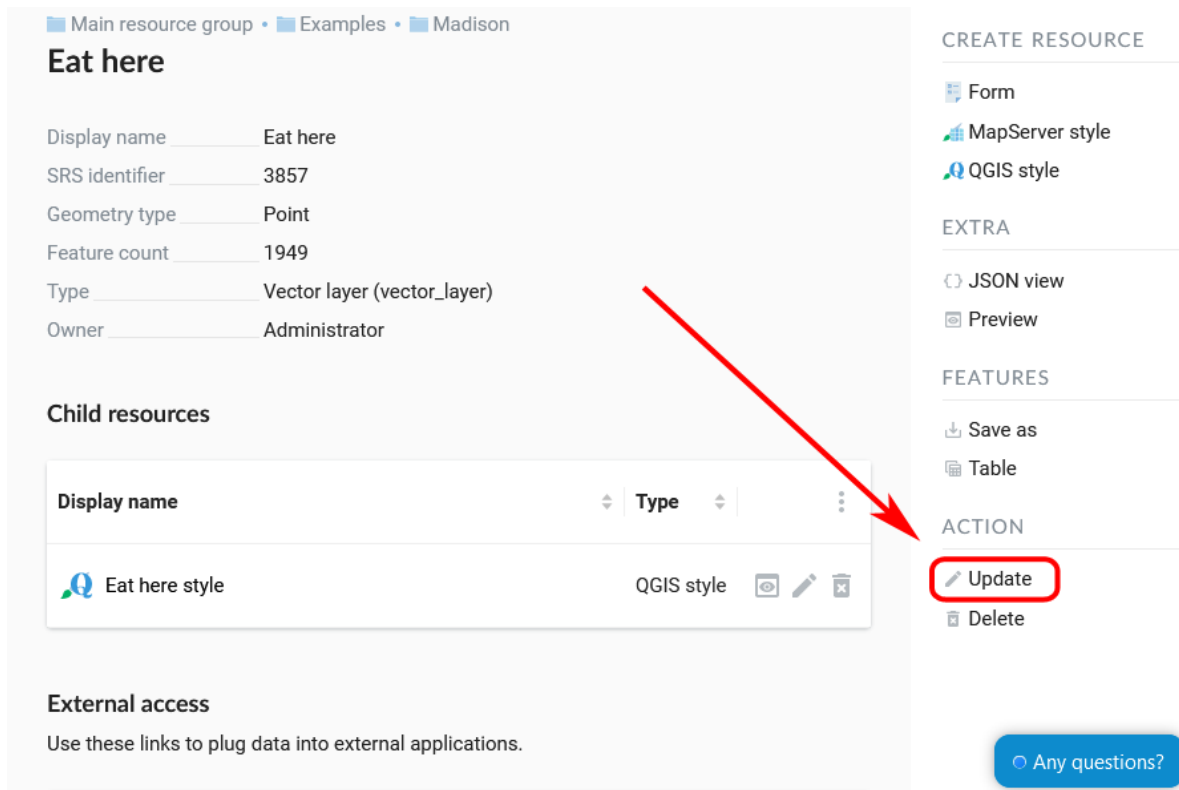


Fig. 6.1: Selection of “Update” action in the actions pane

1. Display name (you can change the resource’s name)
2. Parent (you can change the resource group through moving the resource)
3. Owner
4. Keyname

## 6.1 Move resource

You can move resources from one resource group to another.

There are two ways to do so.

### 6.1.1 Using resource update

This is a good way if you only need to move one resource.

1. Open the Properties page of a resource you want to transfer;
2. Select *Action* → *Update* on the right side of Web GIS *admin console* (page ??);
3. In the opened dialog window in the field *Parent* in *Resource* tab select Resource group you want to transfer your resource to;
4. Press *Save* button. If a resource is transferred successfully its name will appear in the new Resource group and disappear from the previous Resource group.

Main resource group - Examples - Madison - Eat here

## Update resource

Resource

Fields 11

Vector layer

Settings •

Permissions 2

...

Display name

Eat here

Parent

Madison

Owner

Administrator

Keyname

Identifier for API integration (optional)

Save

Fig. 6.2: “Update resource” window

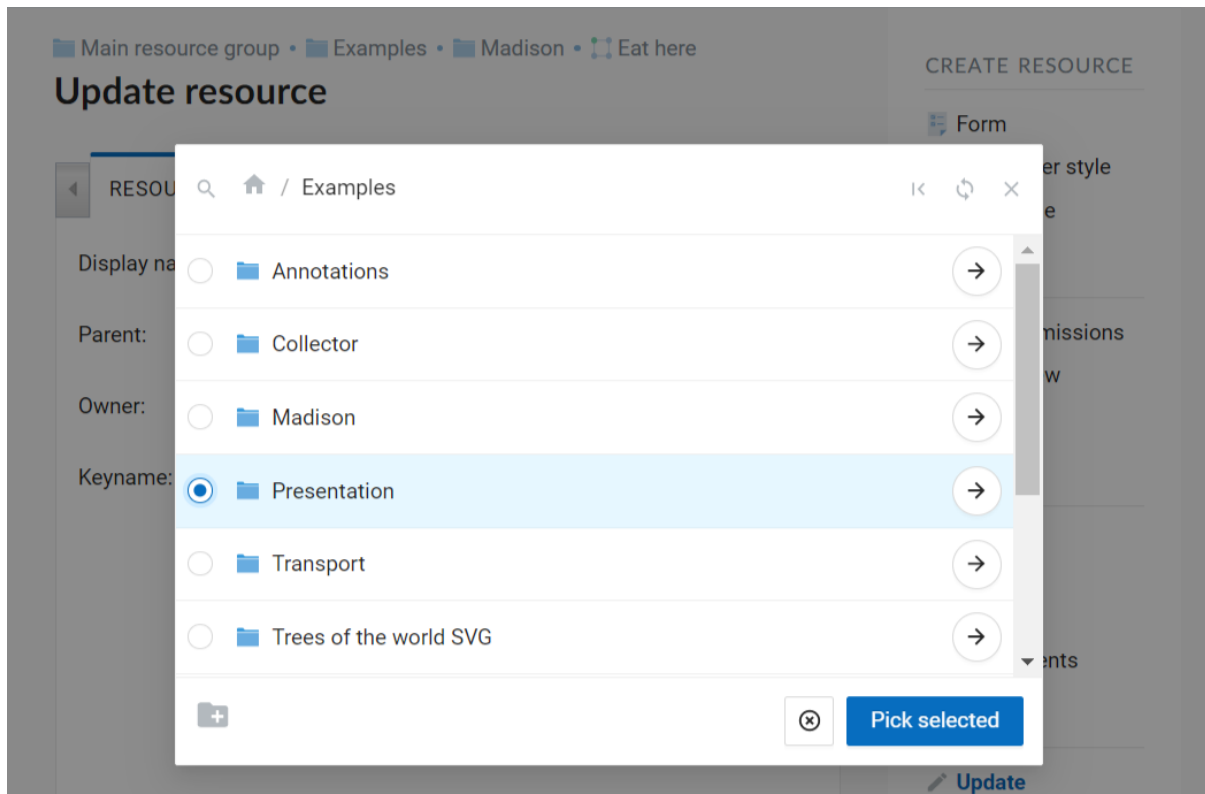


Fig. 6.3: Selecting the target group

In the same way you can transfer Styles between parent resources (Vector layers, Raster layers, PostGIS layers).

### 6.1.2 Using multiple selection

This way allows you to move several resources at once.

Open the group containing the resources you'd like to move. In the Child Resources list click the three dots in the upper right corner and in the menu press "Select multiple resources".

Boxes will appear to the right of the resource names in the list. Tick them to mark resources for transfer. If you tick the box by the "Display name" title, all resources in the list will be selected. After selecting the resources, open the menu again and press "Move".

A pop-up window of group selection will open. In this window you can use a search bar. Click the magnifying glass in the top left corner and start entering the name of the group you want to find. To go up in the resource tree, click the path indicated in the top panel of the window. To open a folder from the list, click the arrow icon on the right. If you want to return to the source group, click the icon |< in the top right corner.

To select the group as the destination, click the circle to the left of its name, a blue dot marker will appear. Then press "Move to selected group". To move resources to the main group, click on the house icon in the top panel of the pop-up window and then press "Move to this group".

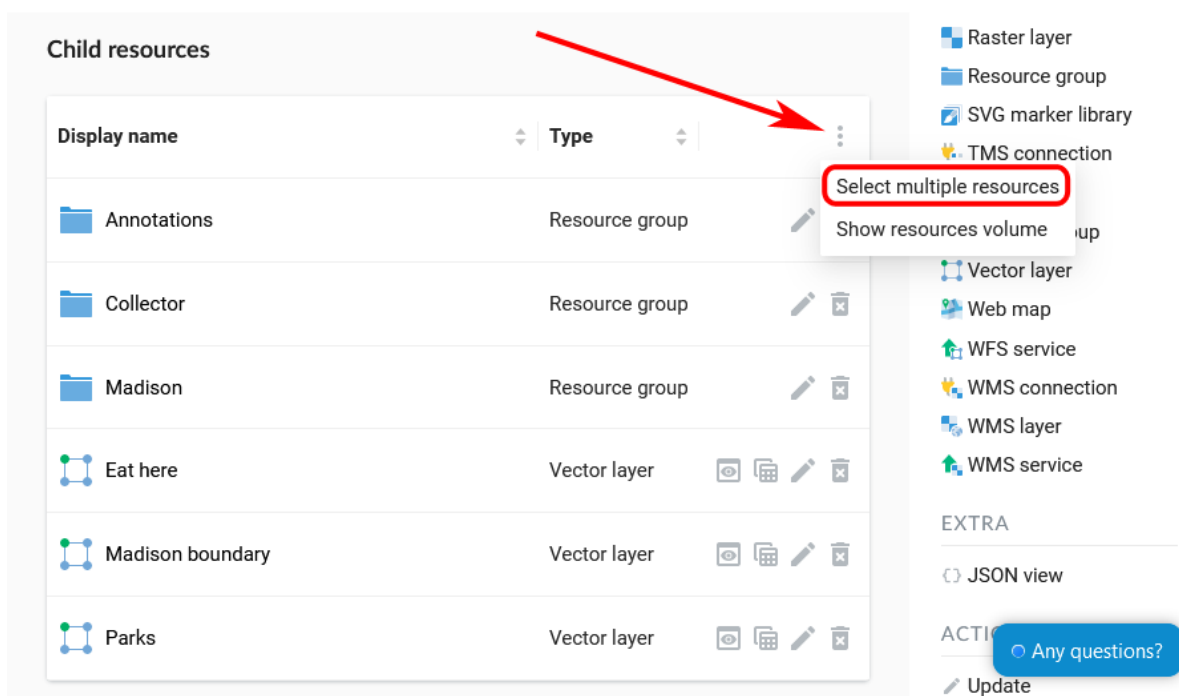


Fig. 6.4: Enabling multiple selection

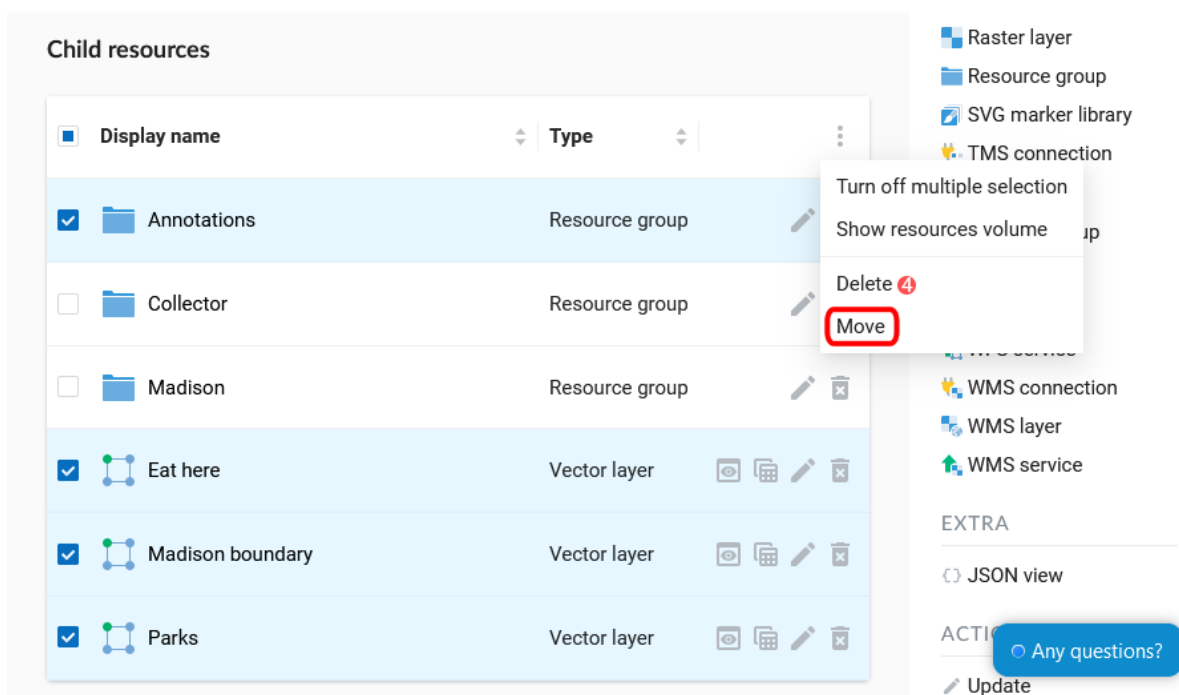


Fig. 6.5: Selecting resources to be moved

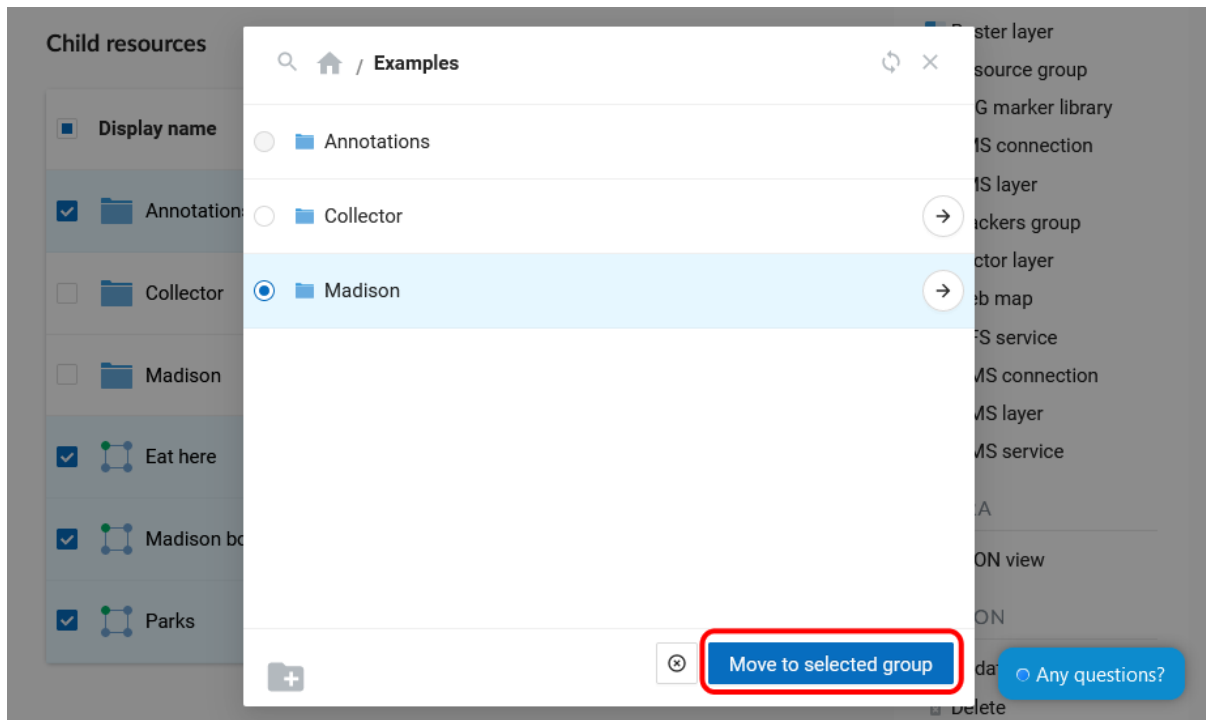


Fig. 6.6: Selecting the target group

If in the selected folder there are already resources with the same name as those you want to transfer, they will not be moved and the following message will appear:

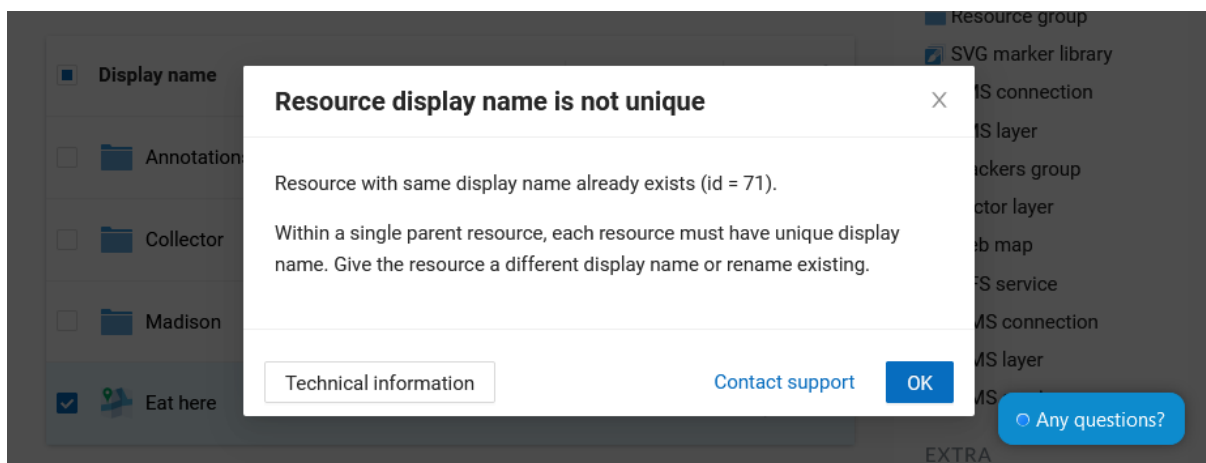


Fig. 6.7: Alert in case if the name is not unique

Close the alert window, change the name of one of the resources and try to move it again.

If a resource is transferred successfully its name will appear in the new Resource group and disappear from the previous Resource group.

See how it works in our video:

Watch on [youtube](https://youtu.be/-87-azrgakw?si=xO3STGS1DgZiiQR_)<sup>80</sup>.

<sup>80</sup> [https://youtu.be/-87-azrgakw?si=xO3STGS1DgZiiQR\\_](https://youtu.be/-87-azrgakw?si=xO3STGS1DgZiiQR_)

## 6.2 Edit description and metadata

The “Description” tab allows to add text, links and images describing the resource.

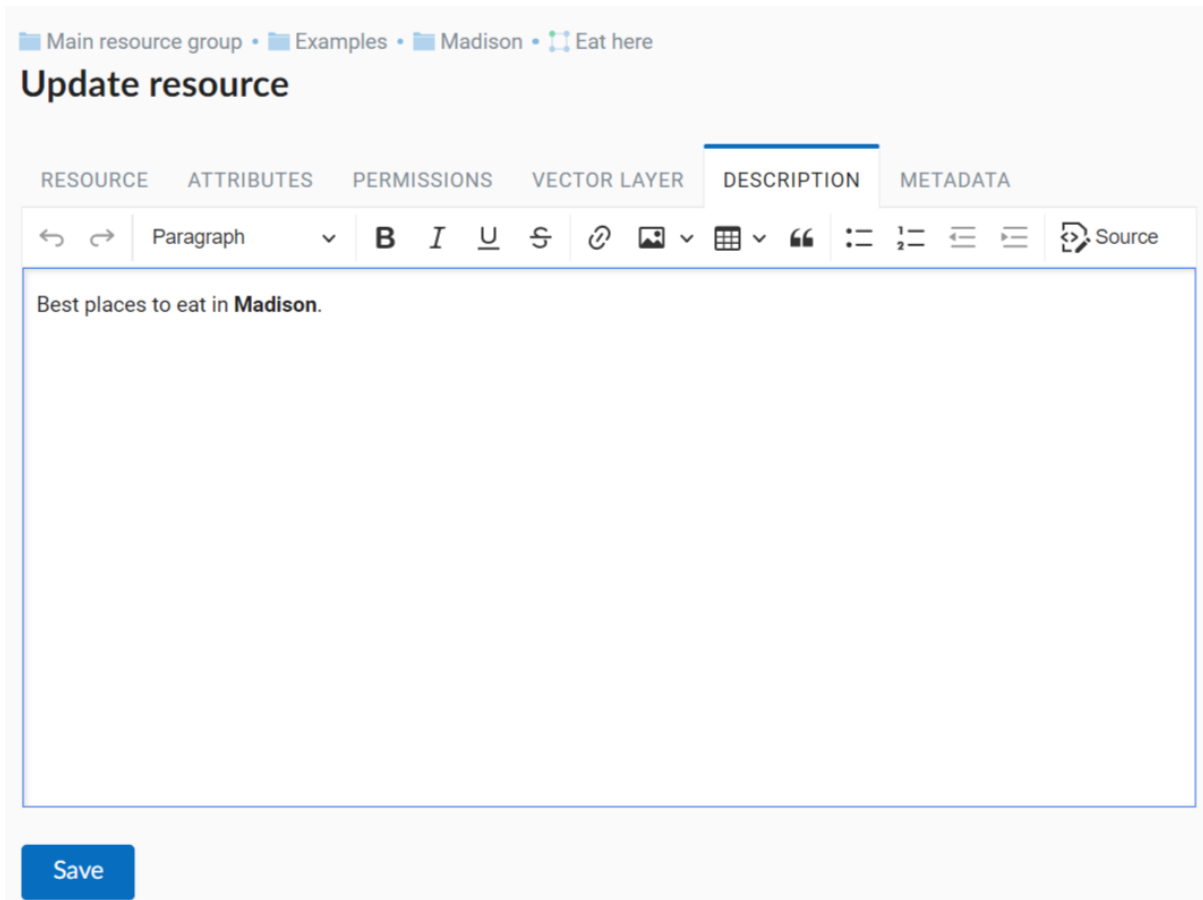


Fig. 6.8: “Description” tab

The “Metadata” tab allows to add and delete metadata, and to display them in a table using **Add** and **Remove** operations:

The table contains three columns:

1. Key. It allows to describe metadata features (author, date, version etc.)
2. Type: String, Numer, Boolean, Empty (if you select “Empty”, the value field will be cleared)
3. Value. Value corresponds to the key type

Main resource group • Examples • Madison • Eat here

## Update resource

◀ ATTRIBUTES PERMISSIONS VECTOR LAYER DESCRIPTION METADATA ▶ ▼

Key	Type	Value	
City	String ▼	Madison	✕
Version	Number ▼	3	✕
Type here to add a new key...			

String

**Number**

Boolean

Empty

Save

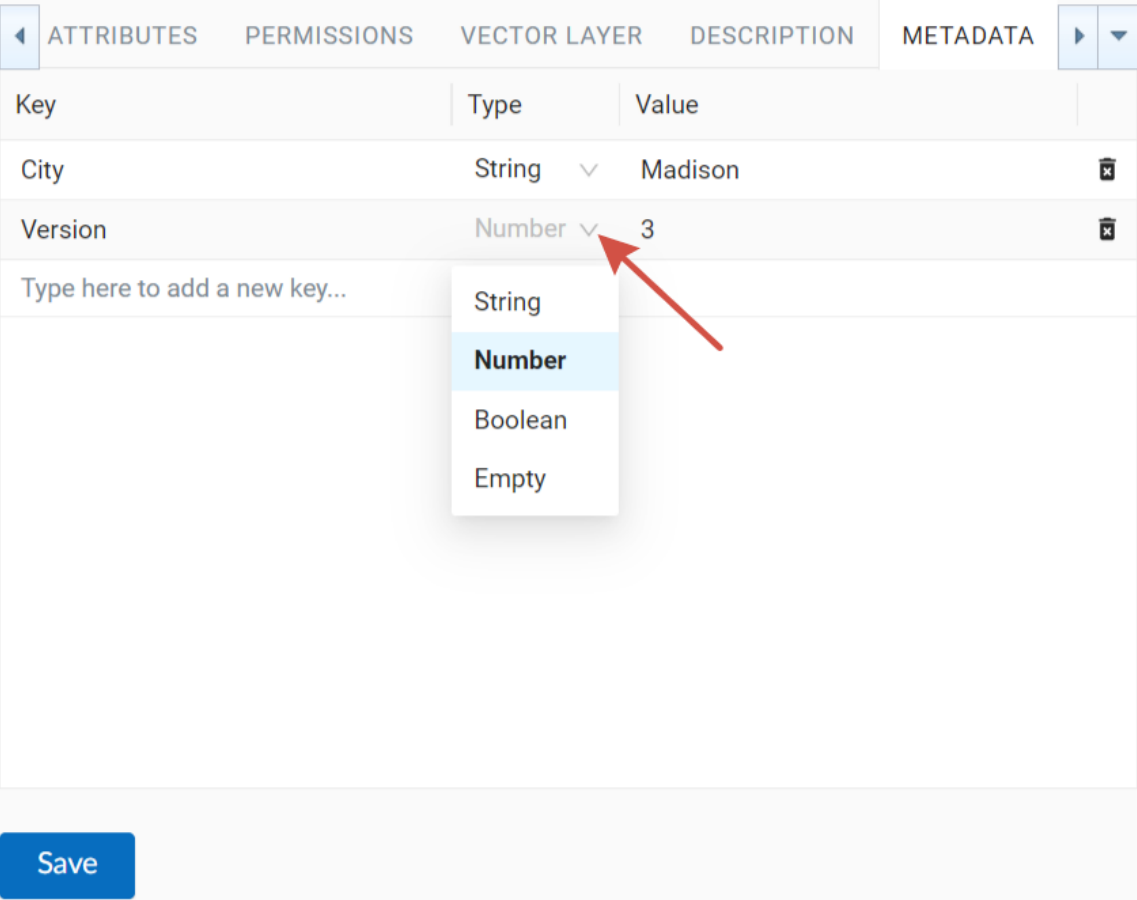


Fig. 6.9: “Metadata” tab

## 6.3 Delete resource

Web GIS allows to delete uploaded data through deleting of the corresponding resources.

In the group page press the cross icon opposite the resource.

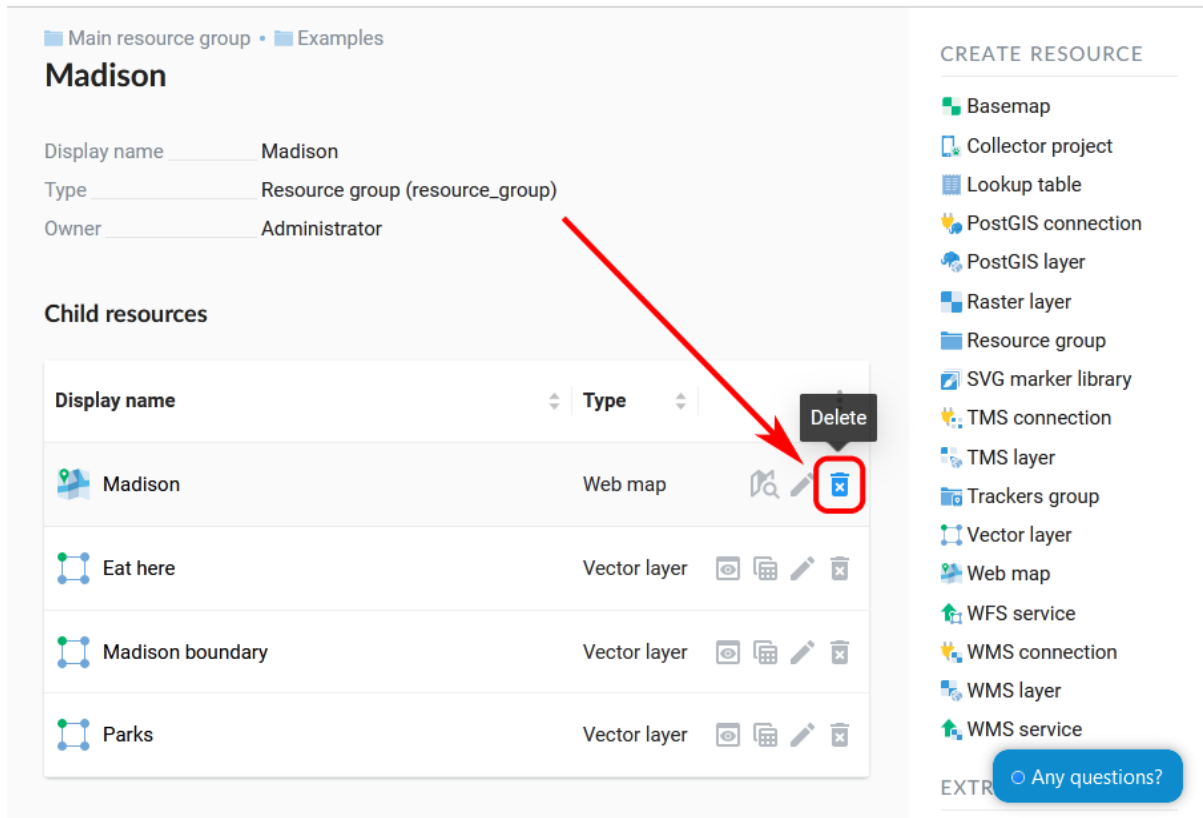


Fig. 6.10: Deleting resource from the group

A pop-up window for confirmation will appear. Click **Delete** to confirm.

Alternatively, open the resource page and then select “Delete” in the actions pane (see Fig. ??).

In the opened “Delete resource” window you need to tick “Confirm deletion of the resource” and press **Delete** button.

If the resource was deleted successfully, the information about it disappear from the corresponding resource group.

When a resource is deleted, all its subresources also get deleted. Before confirming deletion you’ll see a warning about the number of resources of each type that are about to be deleted:

If you selected “Delete” action from the resource page and not from the resource list, the name of the selected resource will be in the path above.

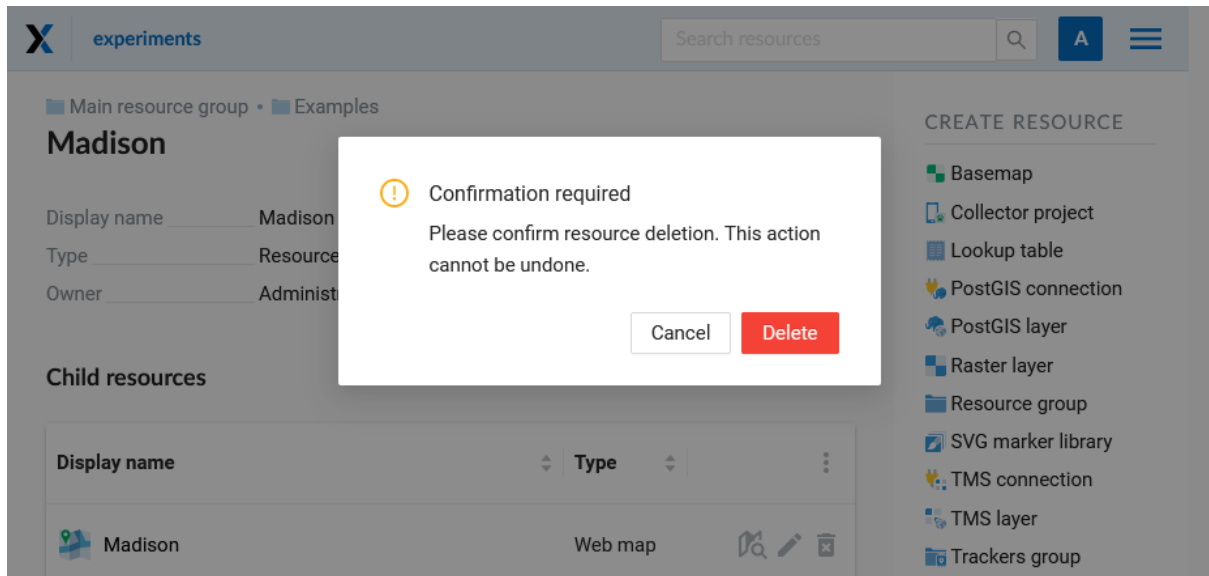


Fig. 6.11: Confirmation to delete a resource

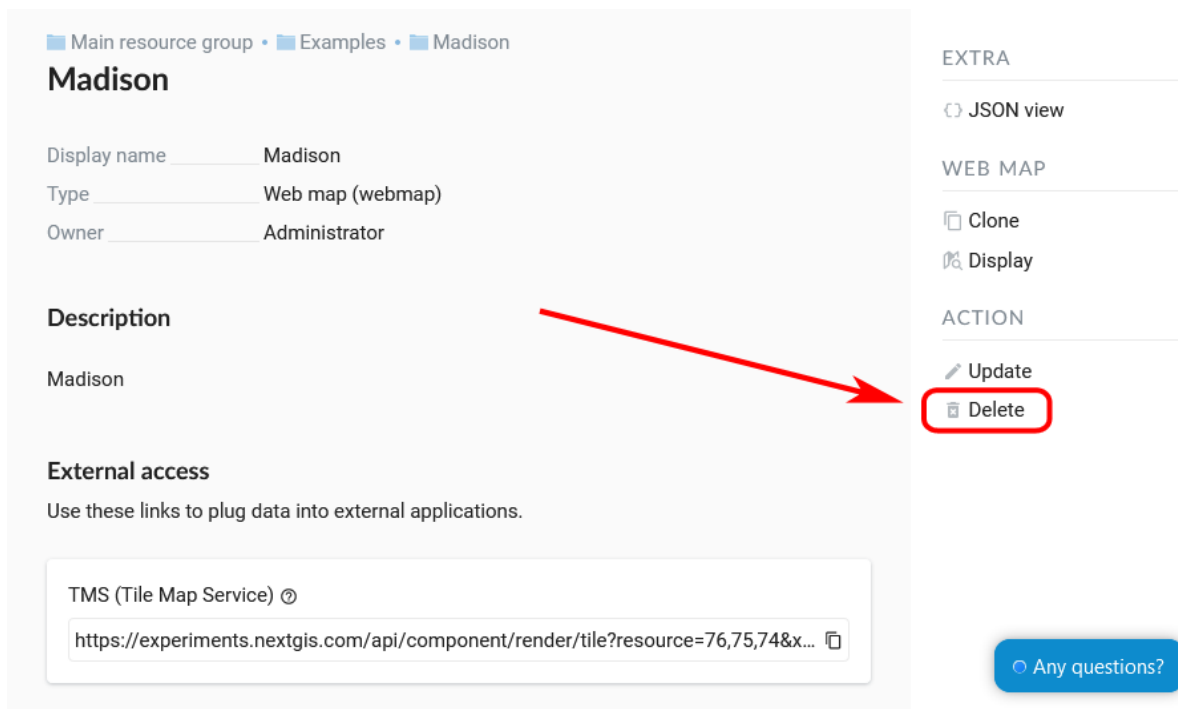


Fig. 6.12: Selection of “Delete” action in the action pane

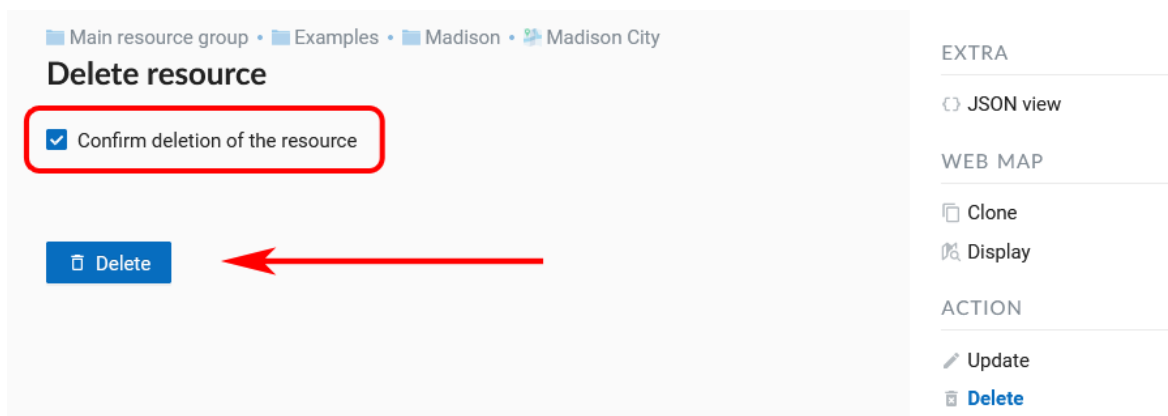


Fig. 6.13: “Delete resource” window

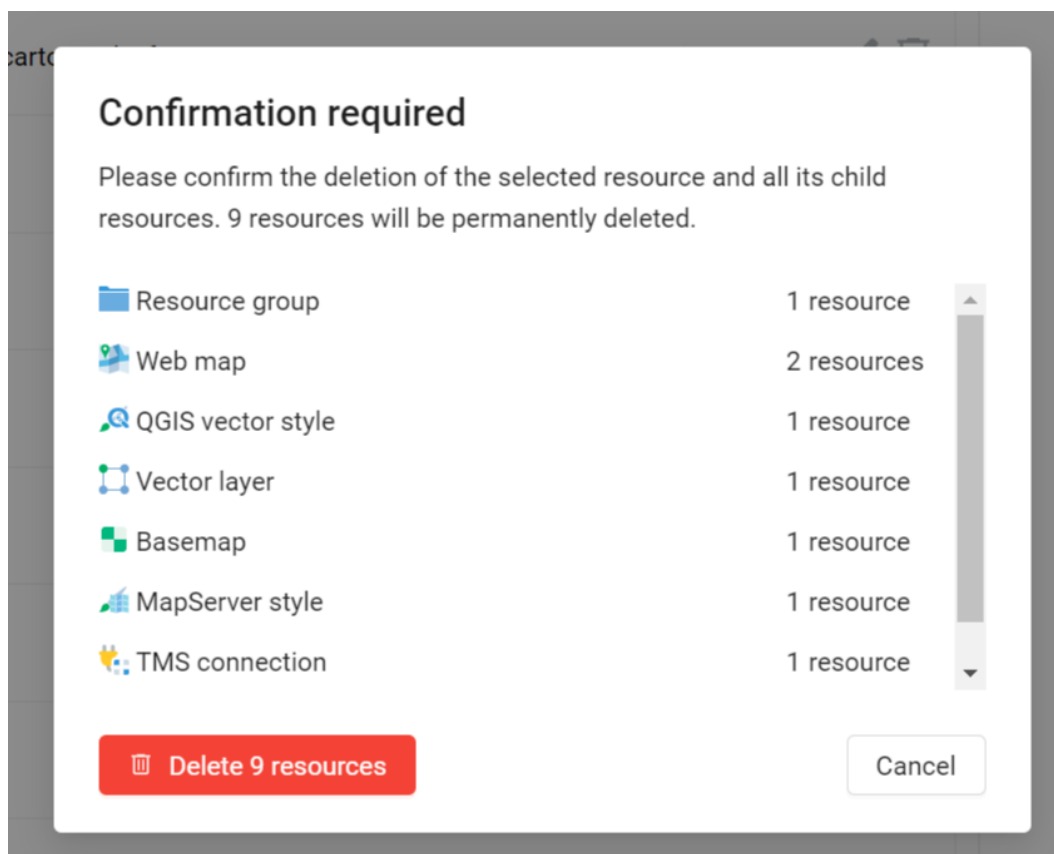


Fig. 6.14: Warning when deleting a resource group

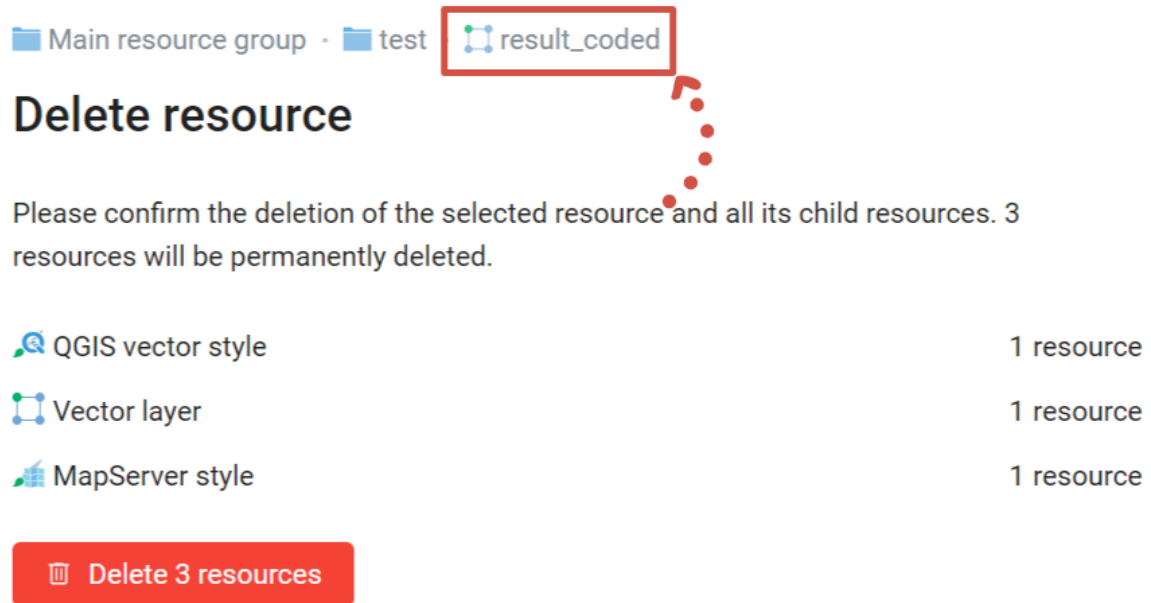


Fig. 6.15: Warning when deleting a layer

### 6.3.1 Deleting several resources at once

In the parent resource open the child resources list menu and enable multiple selection.

Tick the resources and select “Delete” from the same menu. Confirm the operation in the pop-up window.

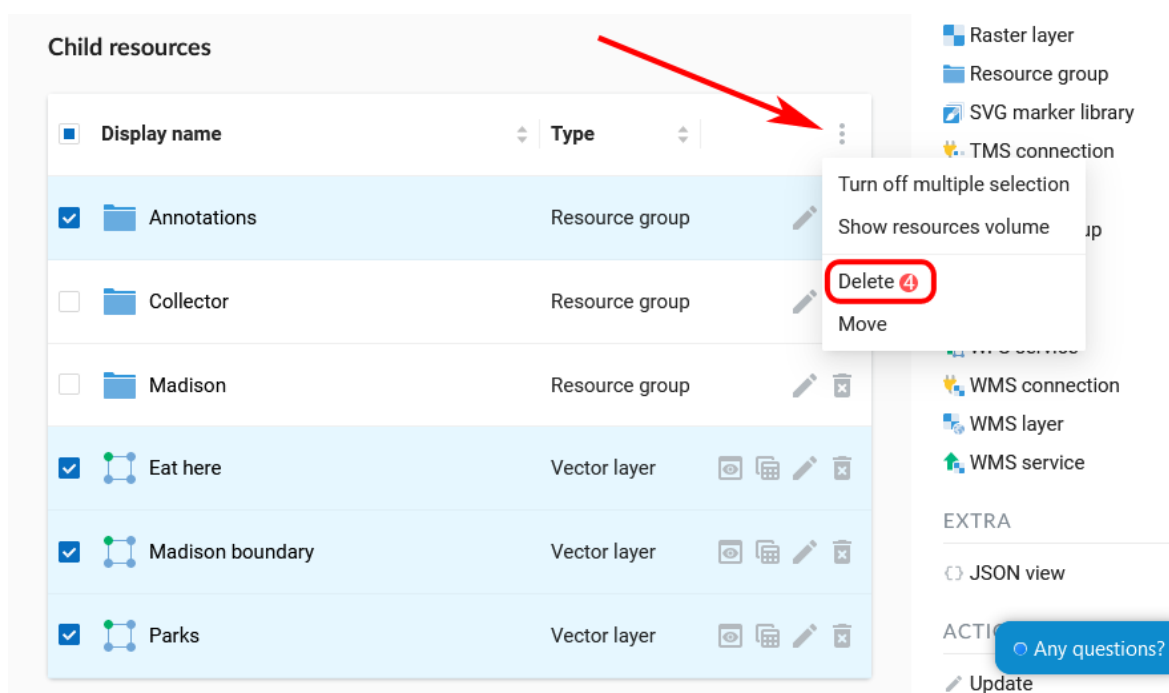


Fig. 6.16: Deleting multiple resources

## **MANAGING FEATURE TABLE**

Feature table can be displayed in a separate browser tab or on the Web Map.

To edit feature table, log in first.

### **7.1 Feature table on a separate tab**

Press the “Table” icon opposite the resource name or select an action for a vector layer called “Table” in the features pane.

Feature table allows to perform the following operations with a selected feature (see Fig. ??):

1. Open
2. Edit (in a new tab or in the same tab)
3. Delete
4. Save as (advanced or quick export available)
5. Use Search Box
6. Refresh the table
7. Open table settings

### **7.2 Feature table on a Web Map**

There is another way to open Feature table. In the administrative interface navigate to a child resource group where resource types are marked and find a resource with a type Web Map. Open it by clicking on the “Display” icon (see Fig. ??):

Alternatively, you can go to the resource page and click “Display” in the Web Map actions pane on the right.

A Web Map will be opened with a layer tree (left) and a map (right). To view a feature table select the required layer in layer tree and then select “Feature table” command in the Layer drop down menu at the top of layer tree Fig. ??:

Table allows to perform the following operations with the selected feature Fig. ??:

1. Open in a new tab

Main resource group · Examples · Madison · Eat here

## Feature table

<div> <div>Open</div> <div>Edit</div> <div></div> <div>Delete</div> <div>Save as</div> <div>Search...</div> <div></div> <div></div> </div>						
#	Name	Type	OSM_TYPE	OSM_ID	orig_ogc_f	
1	Franks Diner	restaurant	node	983946166	0	
2	Subway	restaurant	node	851169236	1	
3	Ponderosa Steakhouse	restaurant	node	851165824	2	
4	Dock of DuBay Bar and Grill	restaurant	node	3886269582	3	
5	Pizza Corral	restaurant	node	864278706	4	
6	Starbucks	cafe	node	3892054366	5	

Fig. 7.1: Actions for the selected feature in the feature table

Main resource group · Examples

## Madison

Display name

Type

Owner

### Child resources

Display name	Type	Display
Madison	Web map	
Eat here	Vector layer	

CREATE RESOURCE

- Basemap
- Collector project
- Lookup table
- PostGIS connection
- PostGIS layer
- Raster layer
- Resource group
- SVG marker library
- TMS connection
- TMS layer
- Trackers group
- Vector layer
- Web map
- WFS service

Fig. 7.2: Opening a Web Map from the list

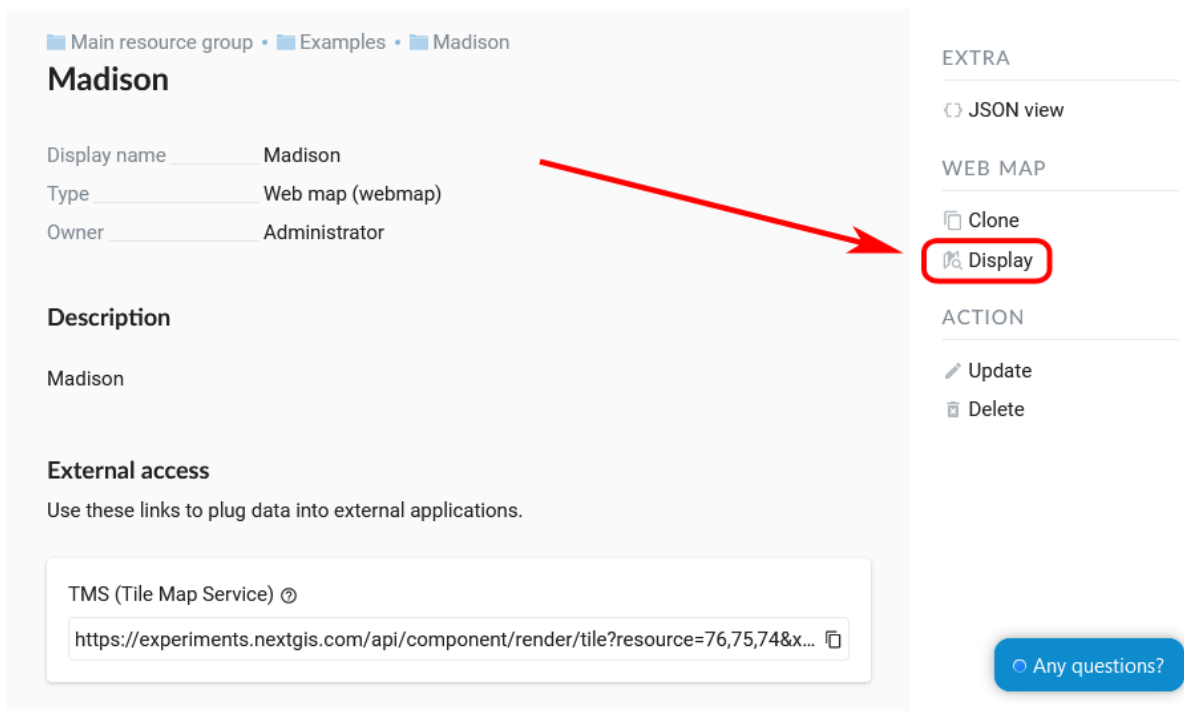


Fig. 7.3: Opening a Web Map from the resource page

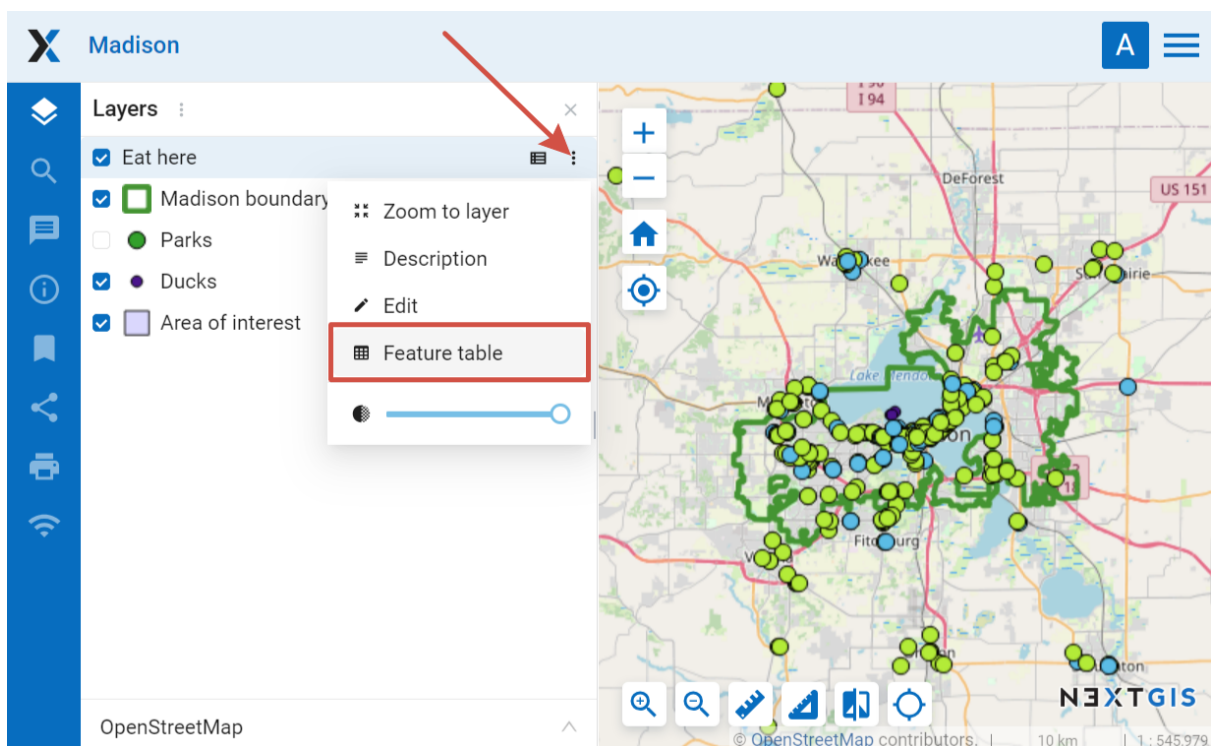


Fig. 7.4: Opening feature table from the map

2. Edit
3. Delete
4. Go to (after a click the selected feature will be displayed on the map)
5. Save as (advanced or quick export available)
6. Zoom to filtered features
7. Filter features by area
8. Use Search Box
9. Refresh the table
10. Open table settings

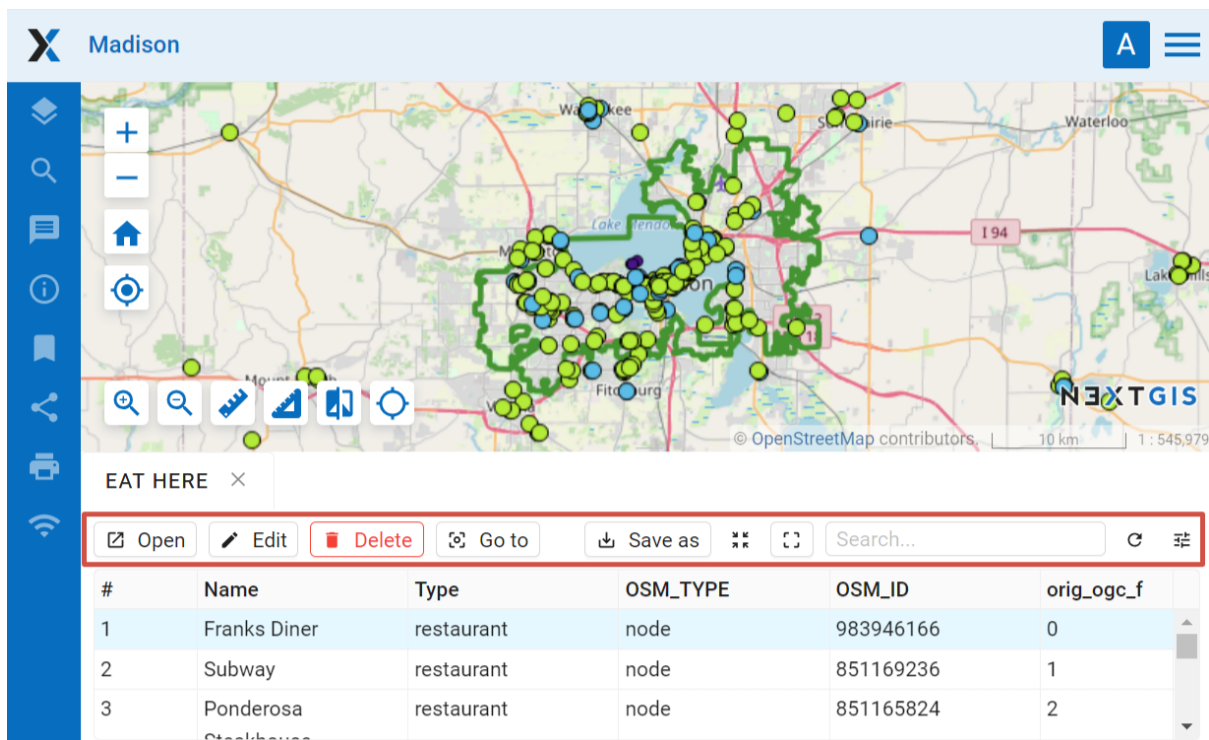


Fig. 7.5: Actions for the selected record in feature table

You can also [edit the attributes](#)<sup>81</sup> themselves.

## 7.3 Filter layer features on the Web Map by area

NextGIS Web has a tool in the Feature table that filters all layer features within a selected area. To choose area limits just draw them on the Web Map.

Open the feature table and click on the button with a dotted frame. In the drop-down menu select the geometry of the area:

- circle (click twice on the map, to choose the center of the circle and its size, the radius length is shown in meters)

<sup>81</sup> [https://docs.nextgis.com/docs\\_ngweb/source/layers\\_settings.html#edit-vector-layer-attributes-table](https://docs.nextgis.com/docs_ngweb/source/layers_settings.html#edit-vector-layer-attributes-table)

- line (features intersected by the line will be filtered)
- rectangle (click on diagonally opposite apexes)
- free-hand drawn polygon (each click creates an apex, the area covered by the polygon is highlighted; to finish the shape, double-click on an apex, the polygon will be completed automatically)

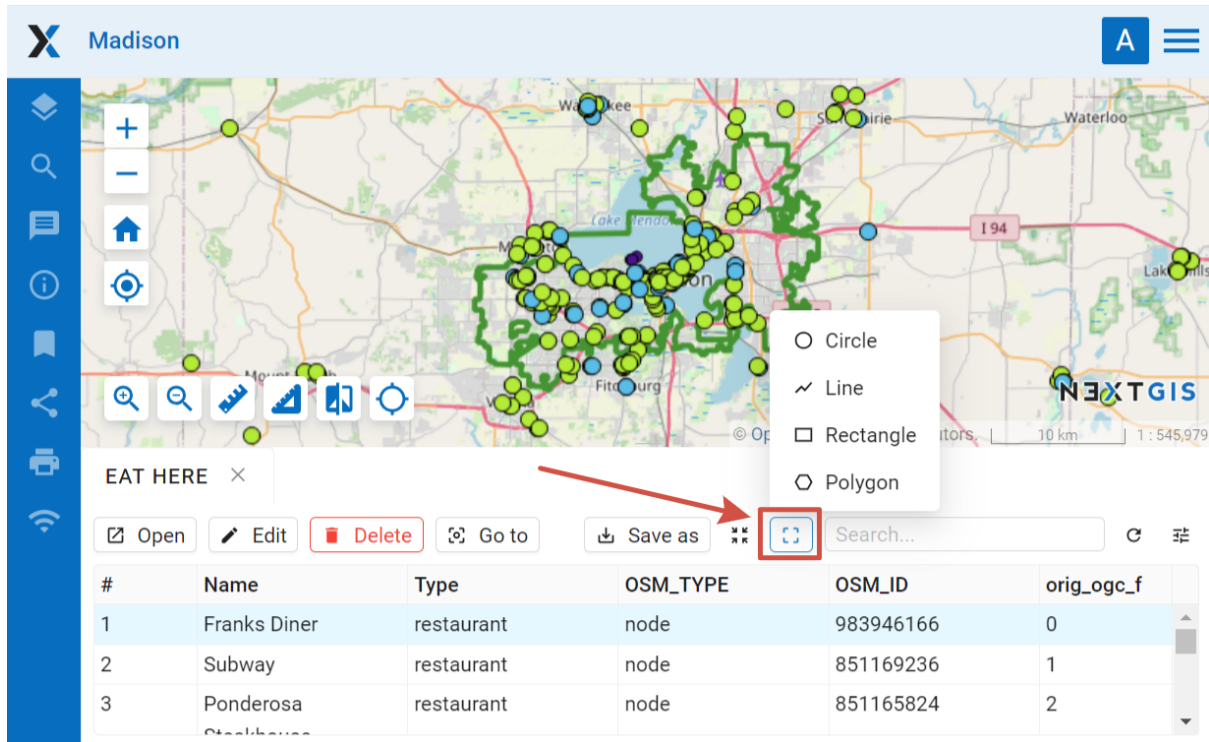


Fig. 7.6: Selecting filter geometry

Now the feature table only contains the features within the selected area. The tool button will have the current area shape on it. In the dropdown menu you can use one of the following options:

- Show/Hide the outline and fill of the selected area
- Zoom to the filtering area
- Clear filtering geometry

You can use quick export to save the filtered features in a variety of common geo-data formats. Click **Save as** and select in the dropdown menu Quick export with default settings or Advanced export to modify parameters (see detailed description below).

See feature filtering in action:

Watch on [youtube](https://youtu.be/q946UruXUb0?si=gXo0OMG3x-2dIsac)<sup>82</sup>.

<sup>82</sup> <https://youtu.be/q946UruXUb0?si=gXo0OMG3x-2dIsac>

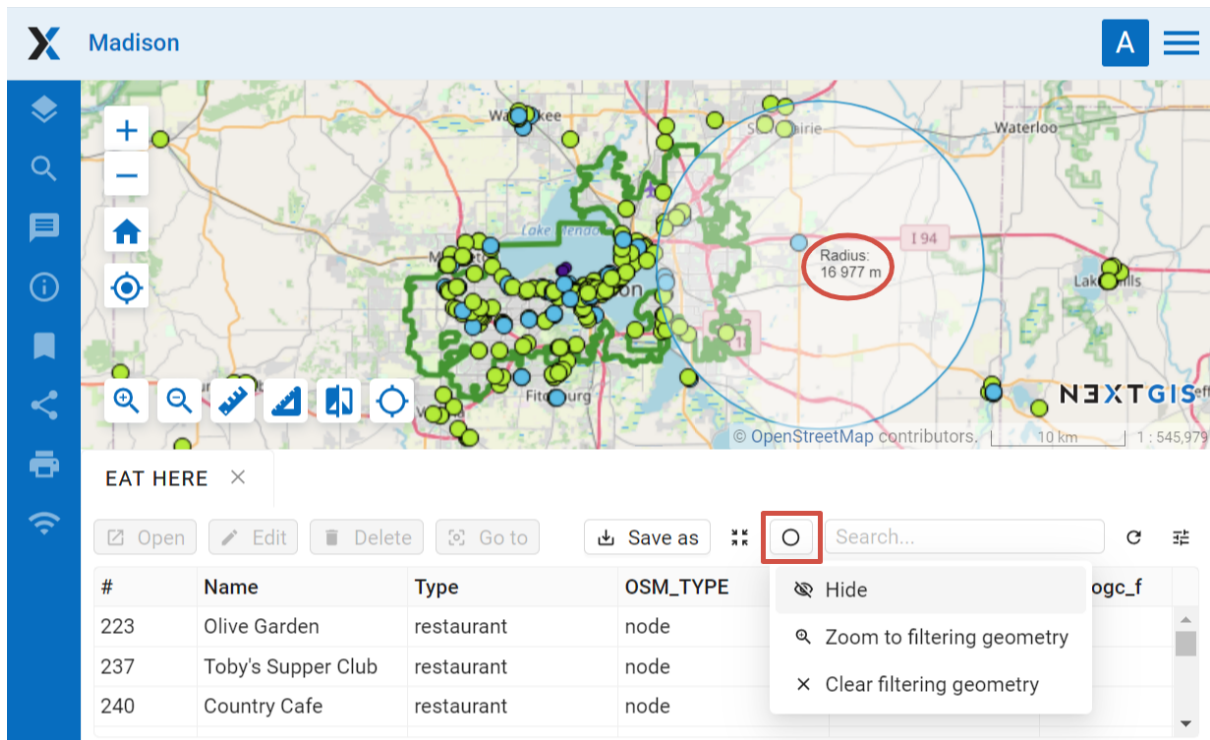


Fig. 7.7: Filter actions

## 7.4 Displaying selected fields and feature edit information

You can select which fields of the feature table to display. Press “Open table settings” button in the right corner and untick the fields you want to hide.

If [feature versioning](#)<sup>83</sup> is enabled, at the bottom of the list you’ll find an additional unticked field. It is a virtual “Last changed” field. It contains date and time of the most recent edit made to the feature as well as the username.

The first change logged is the time the versioning is enabled.

<sup>83</sup> [https://docs.nextgis.com/docs\\_ngweb/source/layers.html#create-vector-layer-vers-pic](https://docs.nextgis.com/docs_ngweb/source/layers.html#create-vector-layer-vers-pic)

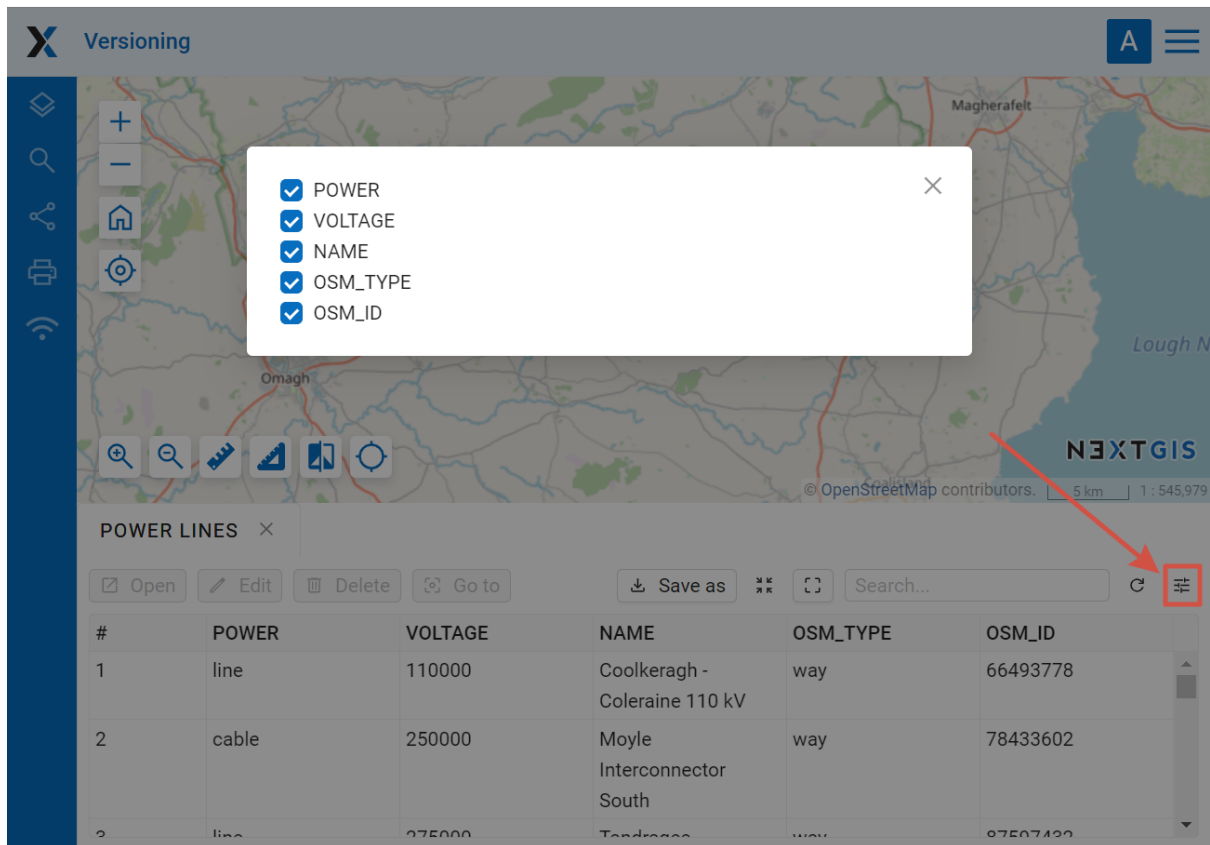


Fig. 7.8: Selecting fields for display

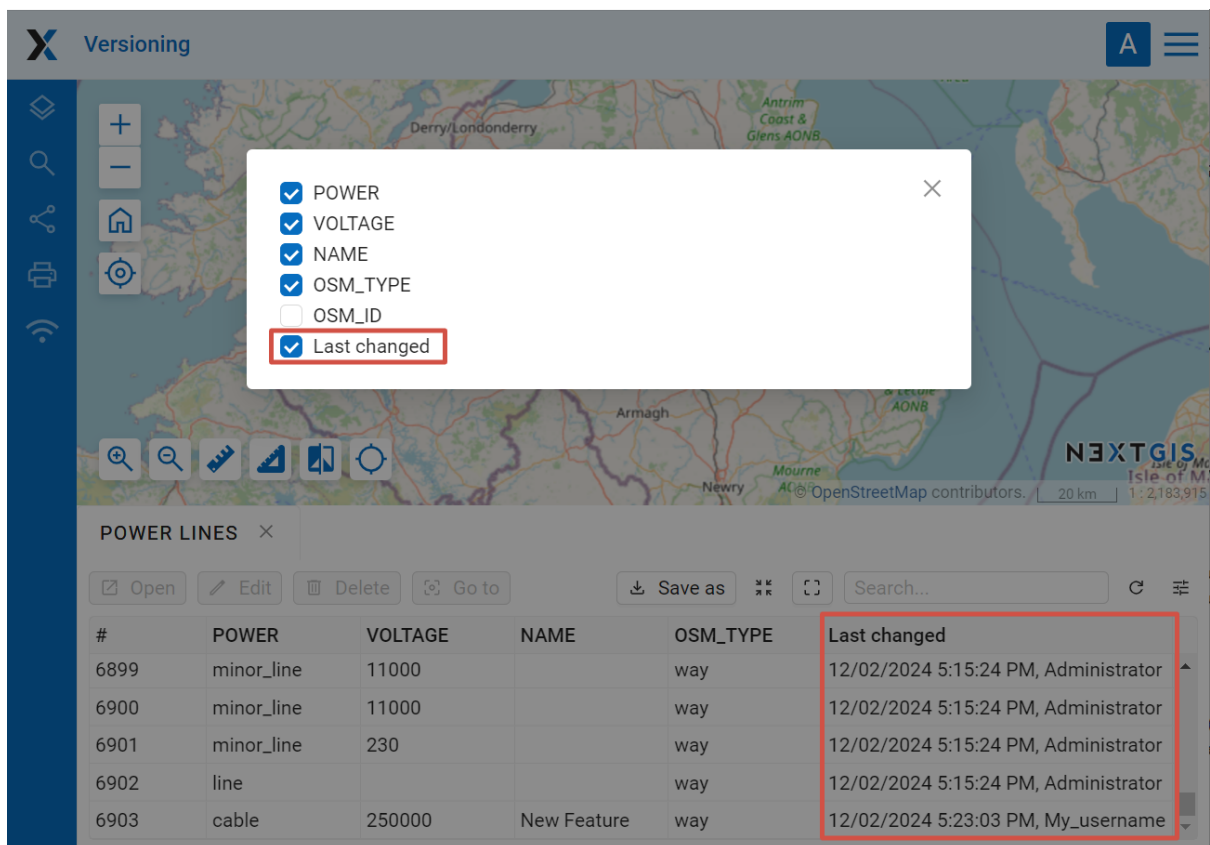


Fig. 7.9: Displaying changes in the feature table

## VECTOR LAYER STYLES

Style is a type of NextGIS resource that describes a way to render the geodata. Styles are necessary to display geodata on a Web Map.

Style is related to a single layer so there is no item “Style” in the main resources list. To create a style you need to open layer properties of the layer you want create style for.

You can get some inspiration, as well as ready-to-go style files and projects in our [Style Gallery](#)<sup>84</sup>.

Watch on [youtube](#)<sup>85</sup>.

### 8.1 Formats

By now NextGIS Web supports two rendering libraries: QGIS and MapServer.

- QGIS style can be uploaded from a QML file or created in Web GIS, it has much more settings.
- You can write MapServer style yourself as a text.

### 8.2 QGIS Style

Open the properties page of the layer you want create style for. To create a default QGIS style, just press the blue button on the resource page of the layer.

If you want to add a customized style, press **Create resource** button and select “QGIS vector style” (see Fig. ??).

After the selection of “QGIS vector style” create resource dialog will open.

You can upload a file or create a simple vector style in the dialog.

---

<sup>84</sup> <https://nextgis.com/map-styles/>

<sup>85</sup> <https://youtu.be/f9SGpeopJ4A?si=O3jxtvEhMWxBf6vD>

Main resource group
Examples

## Vector layer

+ Create resource

Type ..... Vector layer (vector\_layer)  
Spatial reference system ..... WGS 84 / Pseudo-Mercator (EPSG:3857)  
Geometry type ..... Point  
Feature count ..... 0  
Owner ..... Administrator

Layer is created. A style is required to add the layer to a Web Map. You can generate a default QGIS style resource using the button.

Create default QGIS style

EXTRA

User permissions  
JSON view  
Preview

FEATURES

Save as  
Table  
Manage attachments

ACTION

Update

Fig. 8.1: Creating default QGIS style

Main resource group
Examples

## vector layer test

+ Create resource

Everything

Layers and styles

Field data collection

QGIS vector style

Form

MapServer style

Fig. 8.2: Selecting QGIS style resource

### 8.2.1 QGIS style from file

To upload a pre-made style click **Select a style** on the “QGIS style” tab or drag a file to this field (see in Fig. ??).

Main resource group - Examples - Vector layer

#### Create resource

RESOURCE

QGIS STYLE

TILE CACHE

DESCRIPTION

METADATA

Style from file

Select a style or drag and drop here

QML or SLD formats are supported.

SVG marker library:

Create

Create and edit

Fig. 8.3: Uploading QML file

You can type a custom display name for the new style in the *Resource* tab. You can also add resource description and metadata on the corresponding tabs. Tile cache settings are described in details [in this section](#)<sup>86</sup>.

After the QML file is uploaded click **Create**. After the style is created, its resource page opens (see Fig. ??).

You can [replace](#)<sup>87</sup> the QML file of a style.

<sup>86</sup> [https://docs.nextgis.com/docs\\_ngweb/source/mapstyles.html#tile-cache](https://docs.nextgis.com/docs_ngweb/source/mapstyles.html#tile-cache)

<sup>87</sup> [https://docs.nextgis.com/docs\\_ngweb/source/mapstyles.html#ngw-qgis-style-custom-edit](https://docs.nextgis.com/docs_ngweb/source/mapstyles.html#ngw-qgis-style-custom-edit)

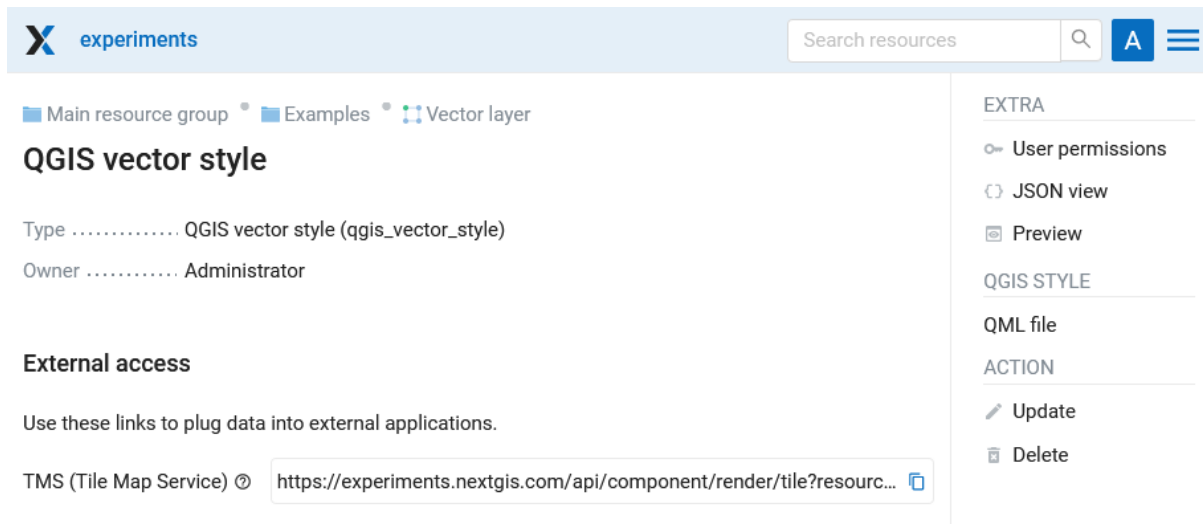


Fig. 8.4: QGIS style resource page

### 8.2.2 SVG markers

There are several ways to add custom markers to a style for NextGIS Web:

1. Embed marker file into QGIS style.

Watch on [youtube](#)<sup>88</sup>.

2. Publish the image file online and use its URL as the path to SVG marker.

Watch on [youtube](#)<sup>89</sup>.

3. Add [SVG marker library](#)<sup>90</sup> to your Web GIS.

To create a style using SVG markers from a library resource, you need to specify the **SVG marker** type in the layer properties in QGIS and enter the **full path to the file** on the local machine (Fig. ??). The file name must match the one loaded in the *SVG Marker Library* resource that the user selects when loading the QML file.

### 8.2.3 SVG Marker Library

In Web GIS you can create SVG marker libraries to be displayed using QGIS styles of vector layers. Press **Create resource** button and select **SVG marker library** (see Fig. ??).

In the opened window, enter the name of the resource (see Fig. ??).

Add description and metadata on the corresponding tabs if you need them. Metadata is used in external apps working with [API](#)<sup>91</sup>.

In the SVG marker library tab you need to upload SVG markers from your device. You can upload markers as individual files or as a zip-archive. The archive must

<sup>88</sup> [https://youtu.be/bJLuYp73u\\_E?si=6vMNCQUz45DjFE79](https://youtu.be/bJLuYp73u_E?si=6vMNCQUz45DjFE79)

<sup>89</sup> <https://youtu.be/llKx2FTuE4?si=wYoDJ9QUtl-4eUXm>

<sup>90</sup> [https://docs.nextgis.com/docs\\_ngweb/source/mapstyles.html#ngw-create-svg-marker-lib](https://docs.nextgis.com/docs_ngweb/source/mapstyles.html#ngw-create-svg-marker-lib)

<sup>91</sup> [https://docs.nextgis.com/docs\\_ngweb\\_dev/doc/developer/toc.html](https://docs.nextgis.com/docs_ngweb_dev/doc/developer/toc.html)

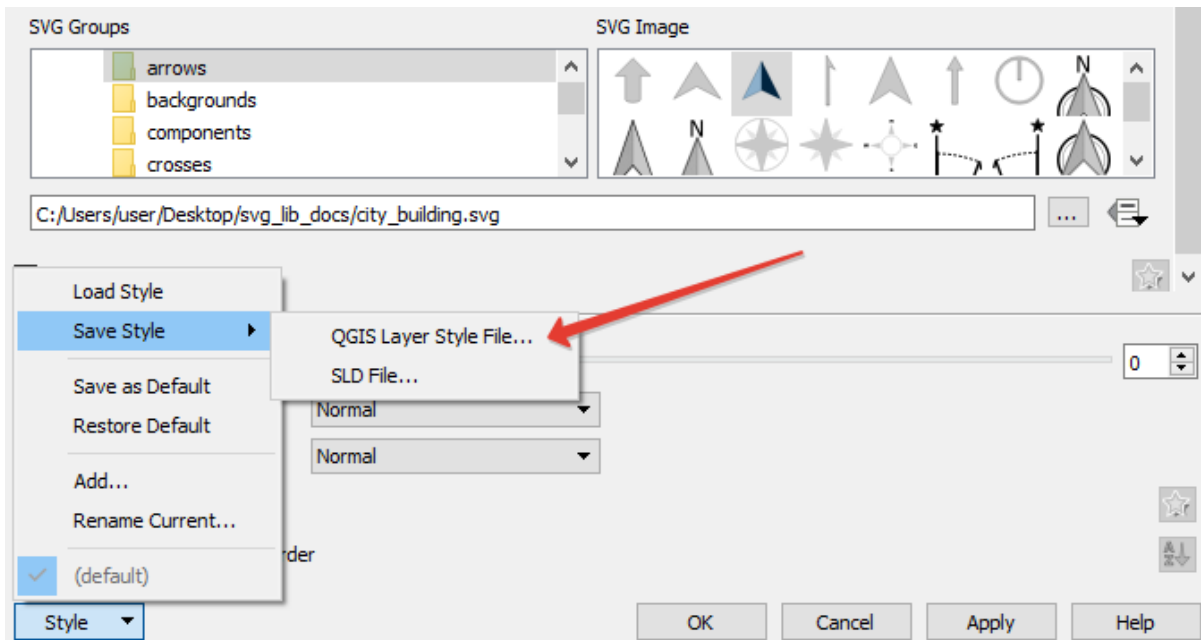


Fig. 8.5: Save QML file in NextGIS QGIS

contain only markers.

After all icons have been uploaded to the library, you will see the list of the file names. Click **Create** to complete the process.

Then create a style with the QML file and select the SVG library resource.

SVG markers can also be embedded in a QGIS style. That way you wouldn't need to create a separate library resource.

### 8.2.4 Custom QGIS style

If you want to create a simple custom style, select "User-defined style" in the drop-down menu. You can set up:

- Marker shape: square, circle, triangle, star, cross;
- Marker size and stroke width. Enter a number or use the arrows in the field;
- Fill color and stroke color and their opacity (by using sliders and eyedropper or entering values in HEX, HSB or RGB format);
- The style of the line / polygon outline: solid, dotted, dashed, dash-dotted.

You can type a custom display name for the new style in the *Resource* tab. You can also add resource description and metadata on the corresponding tabs.

When all the parameters are set, click **Create**. Then the window of QGIS style will open.

Styles created this way can be edited directly in NextGIS Web.

See how it works in our video:

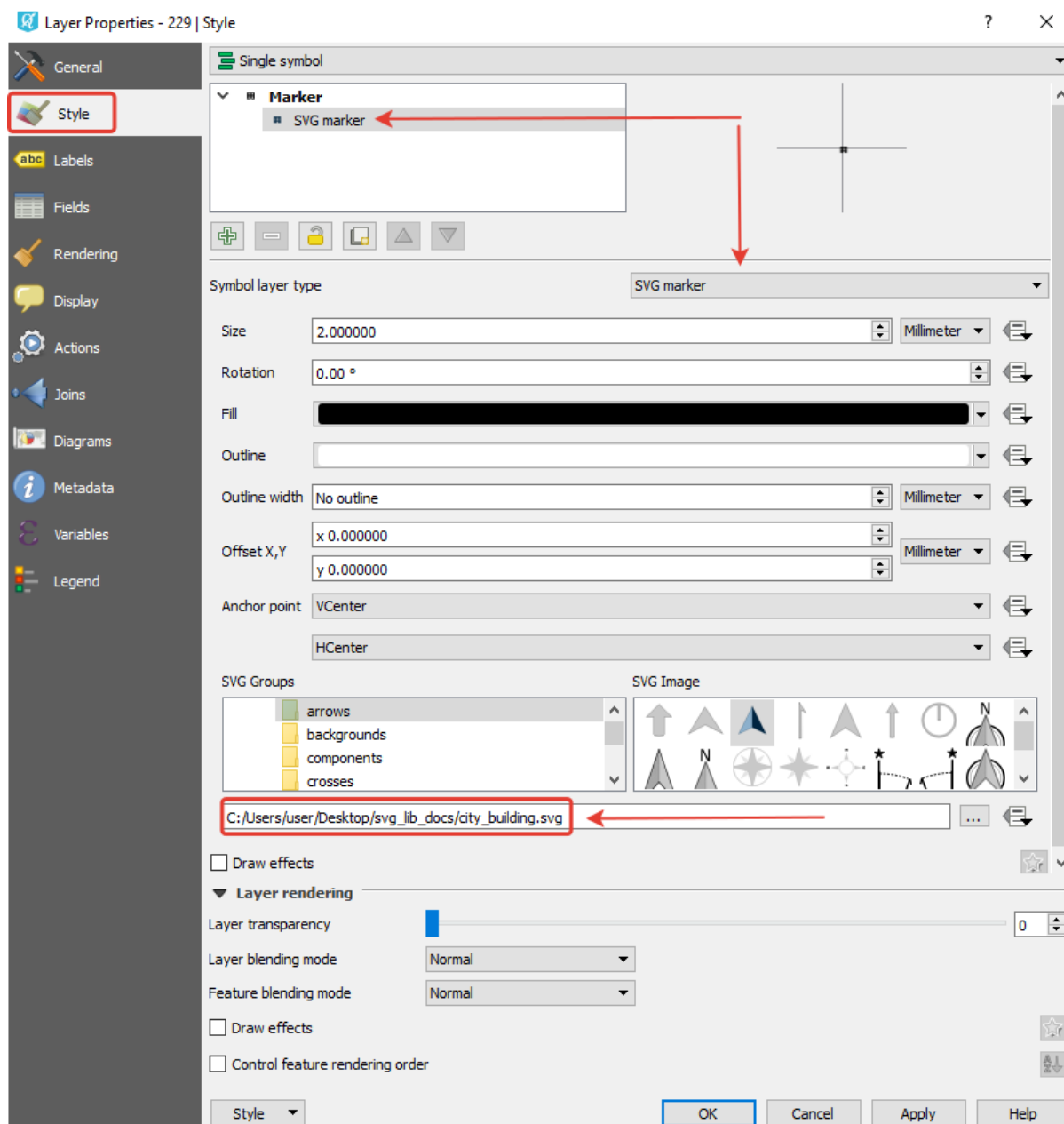


Fig. 8.6: Layer properties settings in NextGIS QGIS

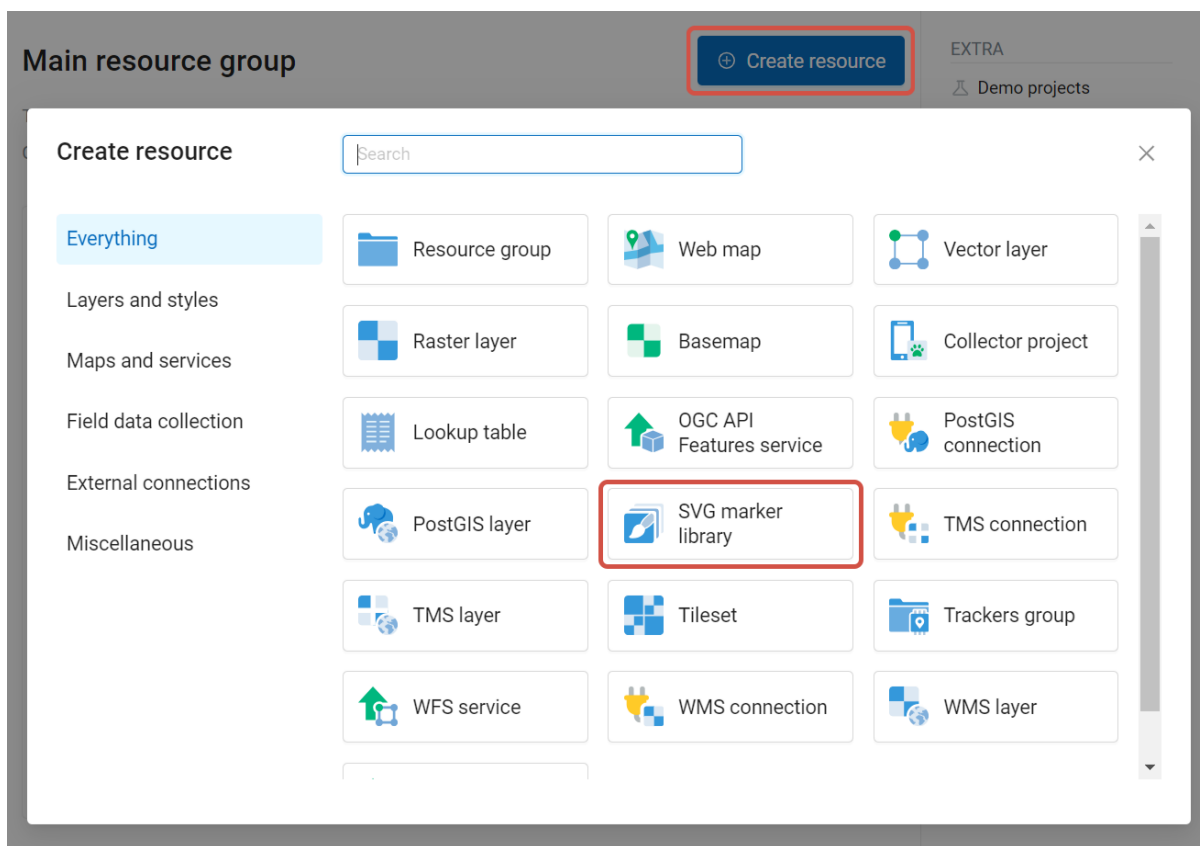


Fig. 8.7: Selecting SVG marker library resource type

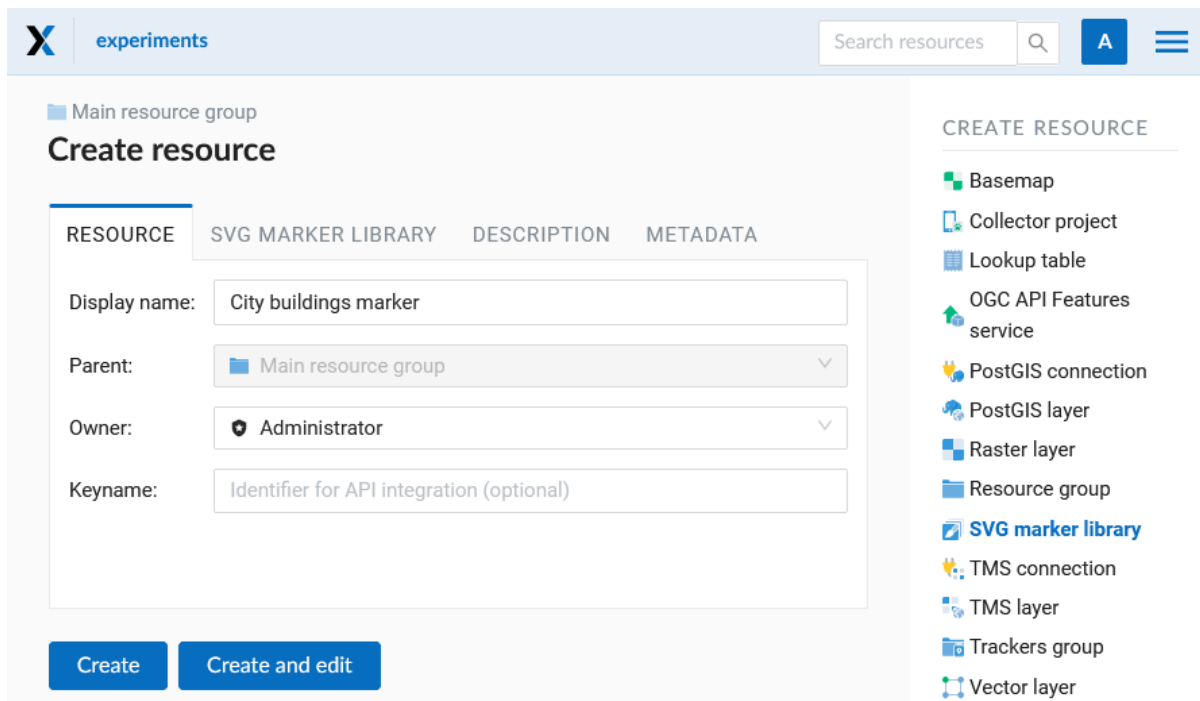


Fig. 8.8: SVG marker library name

Main resource group - Examples

## Create resource

RESOURCE

SVG MARKER LIBRARY

DESCRIPTION

METADATA

Add SVG files

Import from ZIP archive

city\_buildings

Create

Create and edit

Fig. 8.9: Uploading SVG markers

NextGIS Demo Day

Search

A

Main resource group - Examples - City buildings marker

City buildings marker

Display name

City buildings marker

Type

SVG marker library (svg\_marker\_library)

Owner

Administrator

SVG marker library

#	Name
1	<a href="#">city_buildings</a>

EXTRA

JSON view

SVG MARKER LIBRARY

Export

ACTION

Update

Delete

Fig. 8.10: List of SVG markers uploaded to the library

Main resource group • Examples • Vector layer

## Create resource

RESOURCE

QGIS STYLE

TILE CACHE

DESCRIPTION

METADATA

Style from file

[Select a style](#) or drag and drop here  
QML or SLD formats are supported.

SVG marker library:

 Tree

Create

Create and edit

Fig. 8.11: QGIS style using SVG marker library

■ Main resource group   ■ Examples   ■ Vector layer

## Create resource

RESOURCE

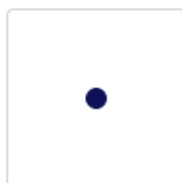
QGIS STYLE

TILE CACHE

DESCRIPTION

METADATA

User-defined style



Shape

Circle

Size

12

Fill color

#0E1058 100%

Stroke color

None

Stroke width

Create

Create and edit

Fig. 8.12: Custom QGIS style for points

## Create resource

Resource


QGIS style •

Tile cache

Description

Metadata

User-defined style



Fill color

#0E1058 100%

Width

3

Style

Dash - dotted

9

3

×

3

3

×

Dash

Gap

×

Create

...

Fig. 8.13: Custom QGIS style for lines

## Create resource

Resource

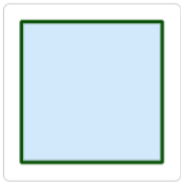
QGIS style •

Tile cache


Description

Metadata


User-defined style



Fill color

 #057EE7 18%


Stroke color

 #085004 100%

Stroke width

2

Stroke style

 Solid

Dash

Gap

×

Create

...

Fig. 8.14: Custom QGIS style for polygons

Watch on [youtube](#)<sup>92</sup>.

## 8.3 Editing QGIS style

To edit a style click on the pencil icon by the style's name in the layer tree.

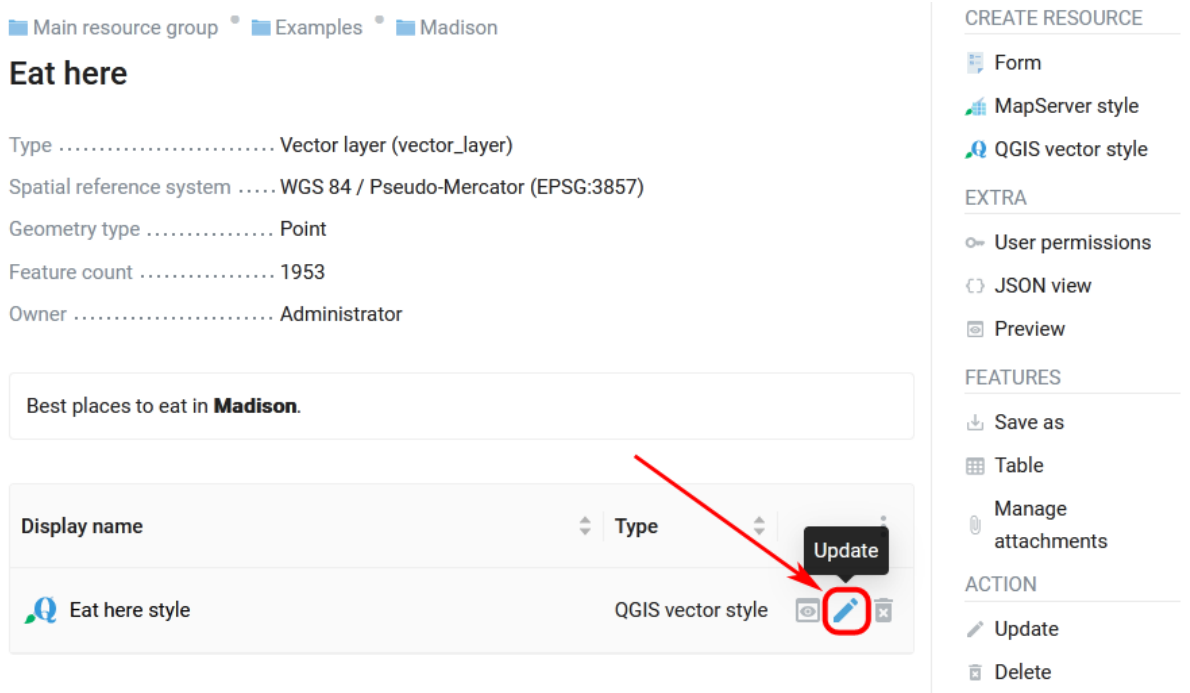


Fig. 8.15: Opening the Update resource dialog

In the opened window you can **replace** the style by uploading a new file from your device. To do so, in the “QGIS style” tab select “Style from file” in the dropdown menu, then add a new QML or SLD file and click **Save**.

A simple QGIS vector style, the default style, for example, can be **edited** directly in NextGIS Web.

To do so, in the “QGIS style” tab select “User-defined style” in the dropdown menu. You can modify:

- Marker shape
- Marker size and stroke width (type it or use arrows in the field)
- Fill color and stroke color and their opacity (by using sliders and eyedropper or entering values in HEX, HSB or RGB format)

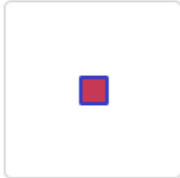
<sup>92</sup> [https://youtu.be/bujOcAhJskI?si=wCRz\\_Wgk7ymIXSvC](https://youtu.be/bujOcAhJskI?si=wCRz_Wgk7ymIXSvC)



Main resource group • Examples • Madison • Eat here • Eat here style

## Update resource

◀ RESOURCE QGIS STYLE TILE CACHE PERMISSIONS DESCRIPTION ▶ ▼

User-defined style ←



Shape	Square ▼
Size	21
Fill color	 #C73855 100%
Stroke color	 #333DC8 100%
Stroke width	2

Save

Fig. 8.16: Editing vector style marker

## 8.4 MapServer style

To create **MapServer** style open layer properties of the layer you want create style for. Press **Create resource** button and select “MapServer style” (see in Fig. ??).

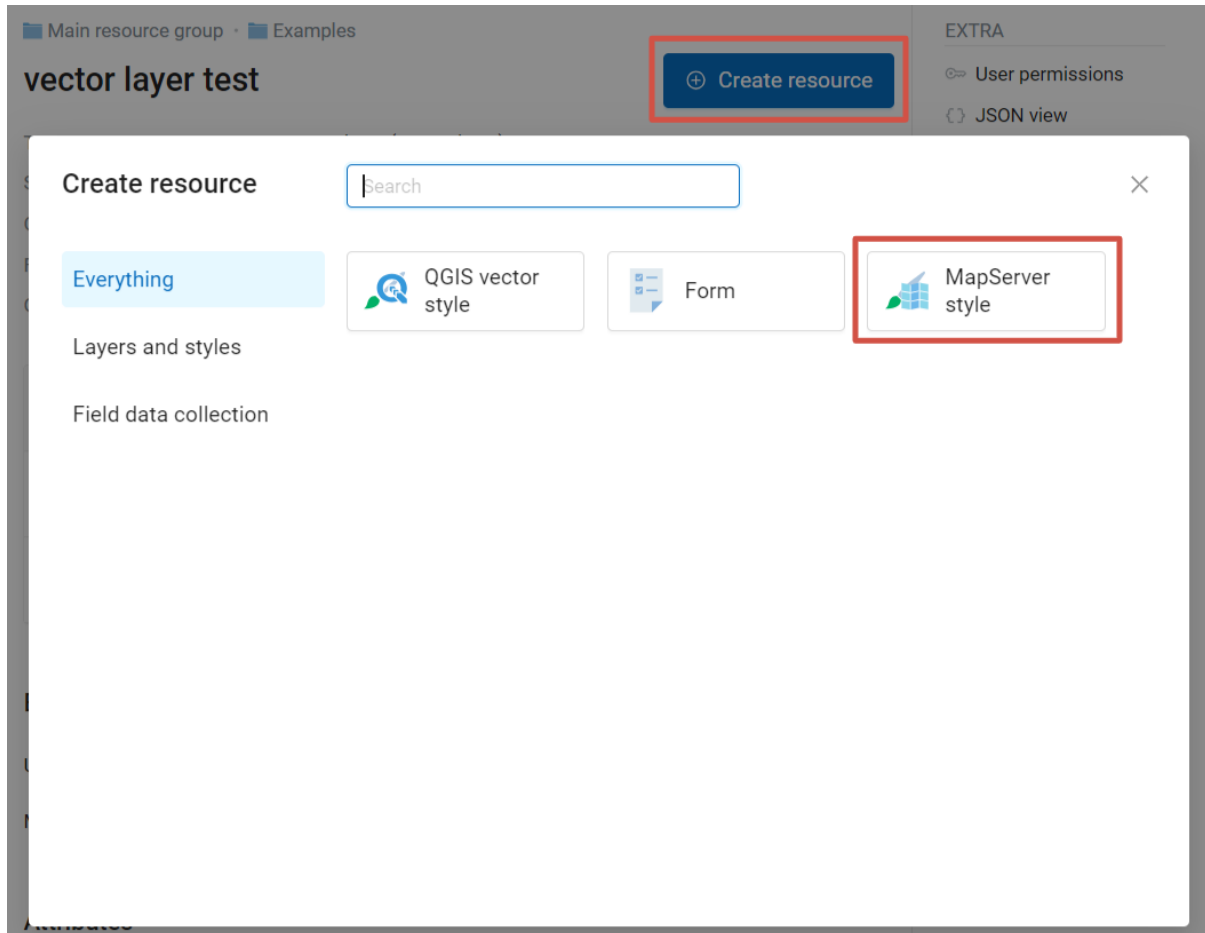


Fig. 8.17: Selecting MapServer style

You can type a custom display name for the new style in the *Resource* tab. You can also add resource description and metadata on the corresponding tabs.

Tile cache settings are described in details [in this section](#)<sup>93</sup>.

In the “MapServer style” tab you can write a style manually (see in Fig. ??). See MapServer [templates](#)<sup>94</sup> and [tags](#)<sup>95</sup>.

Otherwise default values are used.

Click **Create** to finish the process. The window of the created MapServer style will open (see in Fig. ??).

<sup>93</sup> [https://docs.nextgis.com/docs\\_ngweb/source/mapstyles.html#tile-cache](https://docs.nextgis.com/docs_ngweb/source/mapstyles.html#tile-cache)

<sup>94</sup> [https://docs.nextgis.com/docs\\_ngweb/source/mapservertemplates.html](https://docs.nextgis.com/docs_ngweb/source/mapservertemplates.html)

<sup>95</sup> [https://docs.nextgis.com/docs\\_ngweb/source/mapservertemplates.html#ngw-mapserver-tags](https://docs.nextgis.com/docs_ngweb/source/mapservertemplates.html#ngw-mapserver-tags)

Main resource group • Examples • Vector layer

## Create resource

RESOURCE MAPSERVER STYLE TILE CACHE DESCRIPTION METADATA

Display name:

Eat here

Parent:

Vector layer

Owner:

Administrator

Keyname:

Identifier for API integration (optional)

Create Create and edit

Fig. 8.18: Custom name for MapServer style

Main resource group • Docs • Styles • Parks • Create resource

## Create resource

RESOURCE DESCRIPTION TILE CACHE METADATA **MAPSERVER STYLE**

```


1 <map>
2   <symbol>
3     <type>ellipse</type>
4     <name>circle</name>
5     <points>1 1</points>
6     <filled>true</filled>
7   </symbol>
8   <layer>
9     <class>
10      <style>
11        <color blue="179" green="255" red="255"/>
12        <outlinecolor blue="64" green="64" red="64"/>
13        <symbol>circle</symbol>
14        <size>6</size>
15      </style>
16    </class>
17  </layer>
18  <legend>
19    <keysize y="15" x="15"/>
20    <label>
21      <size>12</size>
22      <type>truetype</type>
23      <font>regular</font>
24    </label>
25  </legend>
26 </map>
27

```

Create

Create and edit

Fig. 8.19: “MapServer style” tab



A
≡

Main resource group • Examples • Vector layer

### MapServer style

Type ..... MapServer style (mapserver\_style)

Owner ..... Administrator

#### External access

Use these links to plug data into external applications.

TMS (Tile Map Service) © <https://experiments.nextgis.com/api/component/render/tile?resourc...>

**EXTRA**

- User permissions
- JSON view
- Preview

**ACTION**

- Update
- Delete

Fig. 8.20: MapServer style window

### 8.4.1 Map styles examples

If you wish to edit the templates, see the use of the `tags`<sup>96</sup> below.

#### Polygon layer with scale range and labels

```
<map>
  <layer>
    <labelitem>a_hsnmbr</labelitem>
    <class>
      <style>
        <color red="255" green="170" blue="127"/>
        <outlinecolor red="106" green="106" blue="106"/>
        <width>0.425196850394</width>
        <maxscaledenom>10000</maxscaledenom> <!-- Scale limit -->
      </style>
      <label>
        <type>truetype</type>
        <font>regular</font>
        <size>8.25</size>
        <color blue="0" green="0" red="0"/>
        <linewidth>3</linewidth>
        <outlinecolor blue="255" green="255" red="255"/>
        <position>ur</position>
        <maxscaledenom>10000</maxscaledenom>
      </label>
    </class>
  </layer>
</map>
```

#### White circle marker

```
<style>
  <color red="255" green="255" blue="255"/>
  <outlinecolor red="0" green="0" blue="0"/>
  <size>8.50393700787</size>
  <symbol>std:circle</symbol>
</style>
```

<sup>96</sup> [https://docs.nextgis.com/docs\\_ngweb/source/mapservertemplates.html#ngw-mapserver-tags](https://docs.nextgis.com/docs_ngweb/source/mapservertemplates.html#ngw-mapserver-tags)

**A line displayed with small black circles**

```

<style>
  <angle>auto</angle>
  <gap>-10</gap>
  <color red="255" green="255" blue="255"/>
  <outlinecolor red="0" green="0" blue="0"/>
  <size>2</size>
  <symbol>std:circle</symbol>
</style>

```

**Filtering**

```

<map>
  <layer>
    <labelitem>NAME</labelitem>
    <classitem>PLACE</classitem>
    <class>
      <expression>"city"</expression>
      <style>
        <color red="255" green="170" blue="0"/>
        <outlinecolor red="0" green="0" blue="0"/>
        <size>11.3385826772</size>
        <symbol>std:circle</symbol>

      </style>
      <style>
        <color red="255" green="170" blue="0"/>
        <outlinecolor red="0" green="0" blue="0"/>
        <size>5.66929133858</size>
        <symbol>std:circle</symbol>

      </style>
      <label>
        <type>truetype</type>
        <font>regular</font>
        <size>18</size>
        <color blue="0" green="0" red="0"/>
        <linewidth>3</linewidth>
        <outlinecolor blue="255" green="255" red="255"/>
        <position>ur</position>
      </label>
    </class>
    <class>
      <expression>"town"</expression>
      <style>
        <color red="255" green="255" blue="255"/>
        <outlinecolor red="0" green="0" blue="0"/>
        <size>11.3385826772</size>

```

(continues on next page)

(continued from previous page)

```

    <symbol>std:circle</symbol>

</style>
<style>
  <color red="0" green="0" blue="0"/>
  <outlinecolor red="0" green="0" blue="0"/>
  <size>5.66929133858</size>
  <symbol>std:circle</symbol>

</style>
<label>
  <type>truetype</type>
  <font>regular</font>
  <size>14</size>
  <color blue="0" green="0" red="0"/>
  <linewidth>3</linewidth>
  <outlinecolor blue="255" green="255" red="255"/>
  <position>ur</position>
</label>
</class>
<class>
  <expression>"village"</expression>
  <style>
    <color red="255" green="255" blue="255"/>
    <outlinecolor red="0" green="0" blue="0"/>
    <size>6.8031496063</size>
    <symbol>std:circle</symbol>

  </style>
  <label>
    <type>truetype</type>
    <font>regular</font>
    <size>8.25</size>
    <color blue="0" green="0" red="0"/>
    <linewidth>3</linewidth>
    <outlinecolor blue="255" green="255" red="255"/>
    <position>ur</position>
  </label>
</class>
<class>
  <expression>"hamlet"</expression>
  <style>
    <color red="255" green="255" blue="255"/>
    <outlinecolor red="0" green="0" blue="0"/>
    <size>4.25196850394</size>
    <symbol>std:circle</symbol>

  </style>
  <label>

```

(continues on next page)

(continued from previous page)

```

    <type>truetype</type>
    <font>regular</font>
    <size>8.25</size>
    <color blue="0" green="0" red="0"/>
    <linewidth>3</linewidth>
    <outlinecolor blue="255" green="255" red="255"/>
    <position>ur</position>
  </label>
</class>
<class>
  <expression>"locality"</expression>
  <style>
    <color red="255" green="255" blue="255"/>
    <outlinecolor red="0" green="0" blue="0"/>
    <size>2.83464566929</size>
    <symbol>std:circle</symbol>

  </style>
  <label>
    <type>truetype</type>
    <font>regular</font>
    <size>6.5</size>
    <color blue="0" green="0" red="0"/>
    <linewidth>3</linewidth>
    <outlinecolor blue="255" green="255" red="255"/>
    <position>ur</position>
  </label>
</class>
<class>
  <expression>' '</expression>
  <style>
    <color red="255" green="255" blue="255"/>
    <outlinecolor red="0" green="0" blue="0"/>
    <size>2.83464566929</size>
    <symbol>std:circle</symbol>

  </style>
  <label>
    <type>truetype</type>
    <font>regular</font>
    <size>8.25</size>
    <color blue="0" green="0" red="0"/>
    <linewidth>3</linewidth>
    <outlinecolor blue="255" green="255" red="255"/>
    <position>ur</position>
  </label>
</class>
</layer>
</map>

```

## Polygon layer with a classification by field values and labels

```

<map>
<layer>
  <labelitem>NAME</labelitem>
  <class>
    <expression>([num] gt 18) and ([num] le 26.1)</expression>
    <style>
      <color red="255" green="255" blue="212"/>
      <outlinecolor blue="64" green="64" red="64"/>

    </style>
    <label>
      <type>truetype</type>
      <font>regular</font>
      <size>8.25</size>
      <color blue="0" green="0" red="0"/>
      <linewidth>3</linewidth>
      <outlinecolor blue="255" green="255" red="255"/>
      <position>ur</position>
      <maxscaledenom>7000000</maxscaledenom>
    </label>
  </class>

  <class>
    <expression>([num] gt 26.1) and ([num] le 28.1)</expression>
    <style>
      <color red="254" green="217" blue="142"/>
      <outlinecolor blue="64" green="64" red="64"/>

    </style>
    <label>
      <type>truetype</type>
      <font>regular</font>
      <size>8.25</size>
      <color blue="0" green="0" red="0"/>
      <linewidth>3</linewidth>
      <outlinecolor blue="255" green="255" red="255"/>
      <position>ur</position>
      <maxscaledenom>7000000</maxscaledenom>
    </label>
  </class>

  <class>
    <expression>([num] gt 28.1) and ([num] le 30)</expression>
    <style>
      <color red="254" green="153" blue="41"/>
      <outlinecolor blue="64" green="64" red="64"/>

```

(continues on next page)

(continued from previous page)

```

</style>
<label>
  <type>truetype</type>
  <font>regular</font>
  <size>8.25</size>
  <color blue="0" green="0" red="0"/>
  <linewidth>3</linewidth>
  <outlinecolor blue="255" green="255" red="255"/>
  <position>ur</position>
  <maxscaledenom>7000000</maxscaledenom>
</label>
</class>

</layer>
</map>

```

### OSM settlement-point

```

<!-- Style with different settings for different scales-->
<!-- Version 2015-07-24 -->
<map>
  <layer>
    <labelitem>NAME</labelitem>
    <classitem>PLACE</classitem>
    <class>
      <expression>"city"</expression> <!-- City -->
      <style>
        <color red="255" green="170" blue="0"/>
        <outlinecolor red="0" green="0" blue="0"/>
        <size>11.3385826772</size>
        <symbol>std:circle</symbol>

      </style>
      <style>
        <color red="255" green="170" blue="0"/>
        <outlinecolor red="0" green="0" blue="0"/>
        <size>5.66929133858</size>
        <symbol>std:circle</symbol>

      </style>
      <label>
        <type>truetype</type>
        <font>regular</font>
        <size>18</size>
        <color blue="0" green="0" red="0"/>
        <linewidth>3</linewidth>
        <outlinecolor blue="255" green="255" red="255"/>
        <position>ur</position>

```

(continues on next page)

(continued from previous page)

```

</label>
</class>
<class>
  <expression>"town"</expression> <!-- Small city or town -->
  <style>
    <color red="255" green="255" blue="255"/>
    <outlinecolor red="0" green="0" blue="0"/>
    <size>11.3385826772</size>
    <symbol>std:circle</symbol>
    <maxscaledenom>6000000</maxscaledenom>

  </style>
  <style>
    <color red="0" green="0" blue="0"/>
    <outlinecolor red="0" green="0" blue="0"/>
    <size>5.66929133858</size>
    <symbol>std:circle</symbol>
    <maxscaledenom>6000000</maxscaledenom>

  </style>
  <label>
    <type>truetype</type>
    <font>regular</font>
    <size>14</size>
    <color blue="0" green="0" red="0"/>
    <linewidth>3</linewidth>
    <outlinecolor blue="255" green="255" red="255"/>
    <position>ur</position>
    <maxscaledenom>6000000</maxscaledenom>
  </label>
</class>
<class>
  <expression>"village"</expression> <!-- Village -->
  <style>
    <color red="255" green="255" blue="255"/>
    <outlinecolor red="0" green="0" blue="0"/>
    <size>6.8031496063</size>
    <symbol>std:circle</symbol>
    <maxscaledenom>1000000</maxscaledenom>

  </style>
  <label>
    <type>truetype</type>
    <font>regular</font>
    <size>8.25</size>
    <color blue="0" green="0" red="0"/>
    <linewidth>3</linewidth>
    <outlinecolor blue="255" green="255" red="255"/>
    <position>ur</position>

```

(continues on next page)

(continued from previous page)

```

    <maxscaledenom>1000000</maxscaledenom>
  </label>
</class>
<class>
  <expression>"hamlet"</expression> <!-- Hamlet -->
  <style>
    <color red="255" green="255" blue="255"/>
    <outlinecolor red="0" green="0" blue="0"/>
    <size>4.25196850394</size>
    <symbol>std:circle</symbol>
    <maxscaledenom>500000</maxscaledenom>

  </style>
  <label>
    <type>truetype</type>
    <font>regular</font>
    <size>8.25</size>
    <color blue="0" green="0" red="0"/>
    <linewidth>3</linewidth>
    <outlinecolor blue="255" green="255" red="255"/>
    <position>ur</position>
    <maxscaledenom>500000</maxscaledenom>
  </label>
</class>
<class>
  <expression>"locality"</expression> <!-- Non inhabited place -
→ ->
  <style>
    <color red="255" green="255" blue="255"/>
    <outlinecolor red="0" green="0" blue="0"/>
    <size>2.83464566929</size>
    <symbol>std:circle</symbol>
    <maxscaledenom>500000</maxscaledenom>

  </style>
  <label>
    <type>truetype</type>
    <font>regular</font>
    <size>6.5</size>
    <color blue="0" green="0" red="0"/>
    <linewidth>3</linewidth>
    <outlinecolor blue="255" green="255" red="255"/>
    <position>ur</position>
    <maxscaledenom>500000</maxscaledenom>
  </label>
</class>
<class>
  <expression>' '</expression>
  <style>

```

(continues on next page)

(continued from previous page)

```

    <color red="255" green="255" blue="255"/>
    <outlinecolor red="0" green="0" blue="0"/>
    <size>2.83464566929</size>
    <symbol>std:circle</symbol>

</style>
<label>
  <type>truetype</type>
  <font>regular</font>
  <size>8.25</size>
  <color blue="0" green="0" red="0"/>
  <linewidth>3</linewidth>
  <outlinecolor blue="255" green="255" red="255"/>
  <position>ur</position>
</label>
</class>
</layer>
</map>

```

## OSM highway-lowzoom

Public roads (small roads are in a separate style). Colorscheme from openstreetmap.de

```

<map>
<!-- Highways for low-zoom from openstreetmap (from motorway to
→residential)
version 2015-11-06 -->
  <layer>
    <classitem>Highway</classitem>
    <labelitem>Name</labelitem>
    <class>
      <expression>"motorway"</expression>
      <style>
        <color red="185" green="49" blue="49" />
        <linejoin>round</linejoin>
        <width>8</width>
        <linecap>round</linecap>
      </style>
      <style>
        <color red="226" green="114" blue="114" />
        <linejoin>round</linejoin>
        <width>4</width>
        <linecap>round</linecap>
      </style>
      <style>
        <color red="255" green="255" blue="255" />
        <linejoin>round</linejoin>

```

(continues on next page)

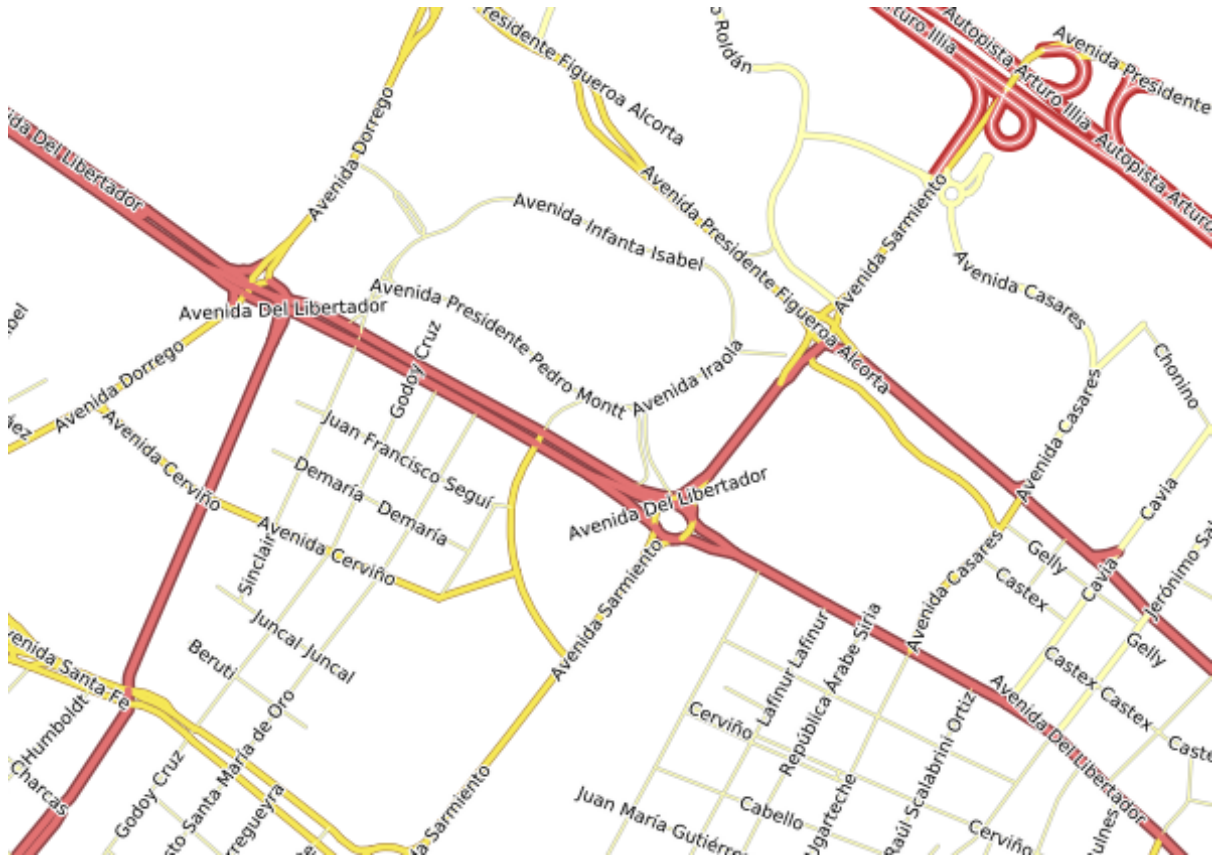


Fig. 8.21: Fragment of colorscheme for public roads.

(continued from previous page)

```

<width>1</width>
<linecap>round</linecap>
</style>
<label>
  <type>truetype</type>
  <font>regular</font>
  <size>7</size>
  <color blue="0" green="0" red="0" />
  <linewidth>1</linewidth>
  <outlinecolor blue="255" green="255" red="255" />
  <angle>follow</angle>
  <antialias>true</antialias>
  <repeatdistance>300</repeatdistance>
  <maxoverlapangle>20.0</maxoverlapangle>
</label>
</class>
<class>
  <expression>"motorway_link"</expression>
  <style>
    <color red="185" green="49" blue="49" />
    <linejoin>round</linejoin>
    <width>8</width>

```

(continues on next page)

(continued from previous page)

```

        <linecap>round</linecap>
    </style>
    <style>
        <color red="226" green="114" blue="114" />
        <linejoin>round</linejoin>
        <width>4</width>
        <linecap>round</linecap>
    </style>
    <style>
        <color red="255" green="255" blue="255" />
        <linejoin>round</linejoin>
        <width>1</width>
        <linecap>round</linecap>
    </style>
</class>
<class>
    <expression>"trunk"</expression>
    <style>
        <color red="185" green="49" blue="49" />
        <linejoin>round</linejoin>
        <width>8</width>
        <linecap>round</linecap>
    </style>
    <style>
        <color red="226" green="114" blue="114" />
        <linejoin>round</linejoin>
        <width>4</width>
        <linecap>round</linecap>
    </style>
    <style>
        <color red="255" green="255" blue="255" />
        <linejoin>round</linejoin>
        <width>1</width>
        <linecap>round</linecap>
    </style>
    <label>
        <type>truetype</type>
        <font>regular</font>
        <size>7</size>
        <color blue="0" green="0" red="0" />
        <linewidth>1</linewidth>
        <outlinecolor blue="255" green="255" red="255" />
        <angle>follow</angle>
        <antialias>true</antialias>
        <repeatdistance>300</repeatdistance>
        <maxoverlapangle>20.0</maxoverlapangle>
    </label>
</class>
</class>

```

(continues on next page)

(continued from previous page)

```

<expression>"trunk_link"</expression>
<style>
  <color red="185" green="49" blue="49" />
  <linejoin>round</linejoin>
  <width>8</width>
  <linecap>round</linecap>
</style>
<style>
  <color red="226" green="114" blue="114" />
  <linejoin>round</linejoin>
  <width>4</width>
  <linecap>round</linecap>
</style>
<style>
  <color red="255" green="255" blue="255" />
  <linejoin>round</linejoin>
  <width>1</width>
  <linecap>round</linecap>
</style>
</class>
<class>
  <expression>"primary"</expression>
  <style>
    <color red="141" green="67" blue="70" />
    <linejoin>round</linejoin>
    <width>6.4062992126</width>
    <linecap>round</linecap>
  </style>
  <style>
    <color red="226" green="114" blue="114" />
    <linejoin>round</linejoin>
    <width>3.57165354331</width>
    <linecap>round</linecap>
  </style>
  <label>
    <type>truetype</type>
    <font>regular</font>
    <size>7</size>
    <color blue="0" green="0" red="0" />
    <linewidth>1</linewidth>
    <outlinecolor blue="255" green="255" red="255" />
    <angle>follow</angle>
    <antialias>true</antialias>
    <repeatdistance>300</repeatdistance>
    <maxoverlapangle>20.0</maxoverlapangle>
  </label>
</class>
<class>
  <expression>"primary_link"</expression>

```

(continues on next page)

(continued from previous page)

```

<style>
  <color red="141" green="67" blue="70" />
  <linejoin>round</linejoin>
  <width>6.4062992126</width>
  <linecap>round</linecap>
</style>
<style>
  <color red="226" green="114" blue="114" />
  <linejoin>round</linejoin>
  <width>3.57165354331</width>
  <linecap>round</linecap>
</style>
</class>
<class>
  <expression>"secondary"</expression>
  <style>
    <color red="163" green="123" blue="72" />
    <linejoin>round</linejoin>
    <width>4</width>
    <linecap>round</linecap>
  </style>
  <style>
    <color red="246" green="232" blue="86" />
    <linejoin>round</linejoin>
    <width>3</width>
    <linecap>round</linecap>
  </style>
  <label>
    <type>truetype</type>
    <font>regular</font>
    <size>7</size>
    <color blue="0" green="0" red="0" />
    <linewidth>1</linewidth>
    <outlinecolor blue="255" green="255" red="255" />
    <angle>follow</angle>
    <antialias>true</antialias>
    <repeatdistance>300</repeatdistance>
    <maxoverlapangle>20.0</maxoverlapangle>
  </label>
</class>
<class>
  <expression>"secondary_link"</expression>
  <style>
    <color red="163" green="123" blue="72" />
    <linejoin>round</linejoin>
    <width>4</width>
    <linecap>round</linecap>
  </style>
  <style>

```

(continues on next page)

(continued from previous page)

```

        <color red="246" green="232" blue="86" />
        <linejoin>round</linejoin>
        <width>3</width>
        <linecap>round</linecap>
    </style>
</class>
<class>
    <expression>"tertiary"</expression>
    <style>
        <color red="187" green="187" blue="187" />
        <linejoin>round</linejoin>
        <width>4</width>
        <linecap>round</linecap>
    </style>
    <style>
        <color red="255" green="255" blue="179" />
        <linejoin>round</linejoin>
        <width>3</width>
        <linecap>round</linecap>
    </style>
    <label>
        <type>truetype</type>
        <font>regular</font>
        <size>7</size>
        <color blue="0" green="0" red="0" />
        <linewidth>1</linewidth>
        <outlinecolor blue="255" green="255" red="255" />
        <angle>follow</angle>
        <antialias>true</antialias>
        <repeatdistance>300</repeatdistance>
        <maxoverlapangle>20.0</maxoverlapangle>
    </label>
</class>
<class>
    <expression>"tertiary_link"</expression>
    <style>
        <color red="187" green="187" blue="187" />
        <linejoin>round</linejoin>
        <width>4</width>
        <linecap>round</linecap>
    </style>
    <style>
        <color red="255" green="255" blue="179" />
        <linejoin>round</linejoin>
        <width>3</width>
        <linecap>round</linecap>
    </style>
</class>
</class>

```

(continues on next page)

(continued from previous page)

```

<expression>"unclassified"</expression>
<style>
  <color red="187" green="187" blue="187" />
  <linejoin>round</linejoin>
  <width>4</width>
  <linecap>round</linecap>
</style>
<style>
  <color red="255" green="255" blue="179" />
  <linejoin>round</linejoin>
  <width>3</width>
  <linecap>round</linecap>
</style>
<label>
  <type>truetype</type>
  <font>regular</font>
  <size>7</size>
  <color blue="0" green="0" red="0" />
  <linewidth>1</linewidth>
  <outlinecolor blue="255" green="255" red="255" />
  <angle>follow</angle>
  <antialias>true</antialias>
  <repeatdistance>300</repeatdistance>
  <maxoverlapangle>20.0</maxoverlapangle>
  <minscaledenom>1</minscaledenom>
  <maxscaledenom>40000</maxscaledenom>
</label>
</class>
<class>
  <expression>"residential"</expression>
  <style>
    <color red="187" green="187" blue="187" />
    <linejoin>round</linejoin>
    <width>2</width>
    <linecap>round</linecap>
  </style>
  <style>
    <color red="255" green="255" blue="179" />
    <linejoin>round</linejoin>
    <width>1</width>
    <linecap>round</linecap>
  </style>
  <label>
    <type>truetype</type>
    <font>regular</font>
    <size>7</size>
    <color blue="0" green="0" red="0" />
    <linewidth>1</linewidth>
    <outlinecolor blue="255" green="255" red="255" />

```

(continues on next page)

(continued from previous page)

```

        <angle>follow</angle>
        <antialias>true</antialias>
        <repeatdistance>300</repeatdistance>
        <maxoverlapangle>20.0</maxoverlapangle>
        <minscaledenom>1</minscaledenom>
        <maxscaledenom>40000</maxscaledenom>
    </label>
</class>
<class>
    <expression>"living_street"</expression>
    <style>
        <color red="187" green="187" blue="187" />
        <linejoin>round</linejoin>
        <width>2</width>
        <linecap>round</linecap>
    </style>
    <style>
        <color red="255" green="255" blue="179" />
        <linejoin>round</linejoin>
        <width>1</width>
        <linecap>round</linecap>
    </style>
    <label>
        <type>truetype</type>
        <font>regular</font>
        <size>7</size>
        <color blue="0" green="0" red="0" />
        <linewidth>1</linewidth>
        <outlinecolor blue="255" green="255" red="255" />
        <angle>follow</angle>
        <antialias>true</antialias>
        <repeatdistance>300</repeatdistance>
        <maxoverlapangle>20.0</maxoverlapangle>
        <minscaledenom>1</minscaledenom>
        <maxscaledenom>40000</maxscaledenom>
    </label>
</class>
</layer>
</map>

```

## OSM highway-maxzoom

Access roads, service roads, dirt roads, pedestrian ways

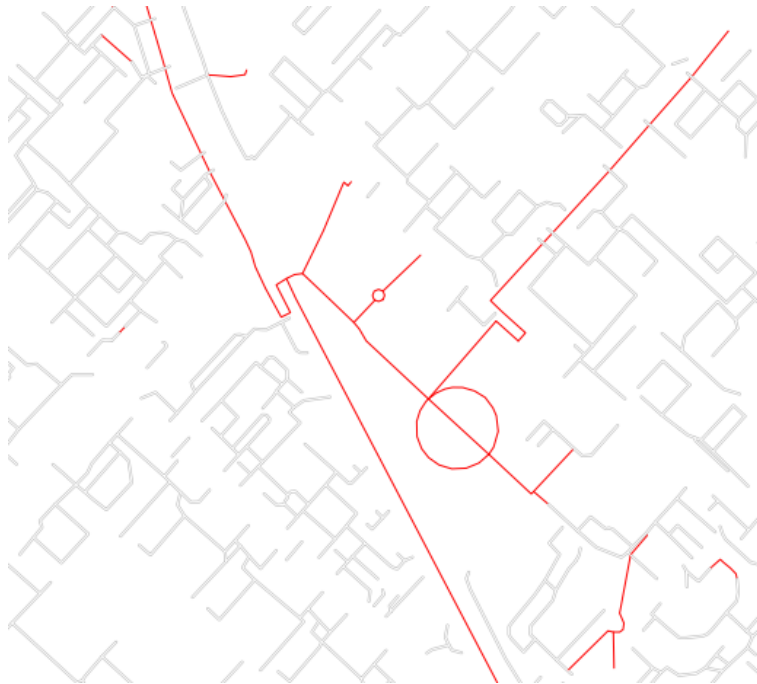


Fig. 8.22: Fragment of road map.

```

<map>
  <!-- Highways for high-zoom from openstreetmap (from service to
  → track)
  version 2015-11-06 -->
  <layer>
    <classitem>Highway</classitem>
    <labelitem>Name</labelitem>
    <class>
      <expression>"service"</expression>
      <style>
        <color red="187" green="187" blue="187" />
        <linejoin>round</linejoin>
        <width>2</width>
        <linecap>round</linecap>
      </style>
      <style>
        <color red="255" green="255" blue="255" />
        <linejoin>round</linejoin>
        <width>1</width>
        <linecap>round</linecap>
      </style>
    </class>
    <class>
      <expression>"footway"</expression>
      <style>

```

(continues on next page)

(continued from previous page)

```

        <color red="255" green="0" blue="0" />
        <linejoin>round</linejoin>
        <width>1</width>
        <linecap>round</linecap>
    </style>
    <label>
        <type>truetype</type>
        <font>regular</font>
        <size>7</size>
        <color blue="0" green="0" red="0" />
        <linewidth>1</linewidth>
        <outlinecolor blue="255" green="255" red="255" />
        <angle>follow</angle>
        <antialias>true</antialias>
        <repeatdistance>300</repeatdistance>
        <maxoverlapangle>20.0</maxoverlapangle>
    </label>
</class>
<class>
    <expression>"pedestrian"</expression>
    <style>
        <color red="255" green="0" blue="0" />
        <linejoin>round</linejoin>
        <width>2</width>
        <linecap>round</linecap>
    </style>
</class>
<class>
    <expression>"path"</expression>
    <style>
        <color red="255" green="0" blue="0" />
        <linejoin>round</linejoin>
        <width>1</width>
        <linecap>round</linecap>
        <pattern>5 5</pattern>
    </style>
</class>
<class>
    <expression>"track"</expression>
    <style>
        <color red="153" green="116" blue="43" />
        <linejoin>round</linejoin>
        <width>2</width>
        <pattern>16 8</pattern>
        <linecap>round</linecap>
    </style>
</class>
</layer>
</map>

```

## OSM railway-line

```
<!-- railway-line style with different display for different scales  
version 2015-07-24 -->
```

```
<map>
  <layer>
    <classitem>RAILWAY</classitem>
    <class>
      <expression>"abandoned"</expression>
      <style>
        <color red="255" green="255" blue="255"/>
        <linejoin>round</linejoin>
        <width>2.83464566929</width>
        <linecap>round</linecap>
      </style>
      <style>
        <pattern>2.35275590551 4.70551181102</pattern>
        <color red="165" green="165" blue="165"/>
        <linejoin>round</linejoin>
        <width>2.35275590551</width>
        <linecap>round</linecap>
      </style>
    </class>
    <class>
      <expression>"razed"</expression>
      <style>
        <color red="255" green="255" blue="255"/>
        <linejoin>round</linejoin>
        <width>2.83464566929</width>
        <linecap>round</linecap>
      </style>
      <style>
        <pattern>2.35275590551 4.70551181102</pattern>
        <color red="255" green="165" blue="210"/>
        <linejoin>round</linejoin>
        <width>2.35275590551</width>
        <linecap>round</linecap>
      </style>
    </class>
    <class>
      <expression>"construction"</expression>
      <style>
        <color red="255" green="255" blue="255"/>
        <linejoin>round</linejoin>
        <width>2.83464566929</width>
        <linecap>round</linecap>
      </style>
      <style>
        <pattern>2.35275590551 4.70551181102</pattern>
        <color red="255" green="0" blue="127"/>
```

(continues on next page)

(continued from previous page)

```

    <linejoin>round</linejoin>
    <width>2.35275590551</width>
    <linecap>round</linecap>
  </style>
</class>
<class>
  <expression>"crossing"</expression>
  <style>
    <color red="37" green="37" blue="255"/>
    <linejoin>bevel</linejoin>
    <width>0.737007874016</width>
    <linecap>square</linecap>
  </style>
</class>
<class>
  <expression>"light_rail"</expression>
  <style>
    <color red="0" green="0" blue="0"/>
    <linejoin>bevel</linejoin>
    <width>1.41732283465</width>
    <linecap>square</linecap>
  </style>
</class>
<class>
  <expression>"narrow_gauge"</expression>
  <style>
    <color red="150" green="150" blue="150"/>
    <linejoin>bevel</linejoin>
    <width>1.41732283465</width>
    <linecap>square</linecap>
  </style>
</class>
<class>
  <expression>"platform"</expression>
  <style>
    <color red="0" green="0" blue="0"/>
    <linejoin>bevel</linejoin>
    <width>4.25196850394</width>
    <linecap>square</linecap>
  </style>
</class>
<class>
  <expression>"rail"</expression>
  <style>
    <color red="0" green="0" blue="0"/>
    <linejoin>bevel</linejoin>
    <width>2.83464566929</width>
    <linecap>square</linecap>
    <maxscaledenom>25000</maxscaledenom> <!-- Black and white

```

(continues on next page)

(continued from previous page)

```

↪line at large
  scale -->
</style>
<style>
  <pattern>9.41102362205 14.1165354331</pattern>
  <color red="255" green="255" blue="255"/>
  <linejoin>bevel</linejoin>
  <width>2.35275590551</width>
  <linecap>square</linecap>
  <maxscaledenom>25000</maxscaledenom> <!-- Black and white
↪line at large
  scale -->
</style>
<style>

  <color red="0" green="0" blue="0"/>
  <linejoin>bevel</linejoin>
  <width>2</width>
  <linecap>square</linecap>
  <minscaledenom>25000</minscaledenom> <!-- Black line at
↪medium scale -->
  </style>
</class>
<class>
  <expression>"siding"</expression>
  <style>
    <color red="145" green="145" blue="145"/>
    <linejoin>bevel</linejoin>
    <width>1.41732283465</width>
    <linecap>square</linecap>
  </style>
</class>
<class>
  <expression>"subway"</expression>
  <style>
    <pattern>1.41732283465 2.83464566929</pattern>
    <color red="155" green="155" blue="155"/>
    <linejoin>round</linejoin>
    <width>1.41732283465</width>
    <linecap>round</linecap>
  </style>
</class>
<class>
  <expression>"tram"</expression>
  <style>
    <color red="0" green="0" blue="0"/>
    <linejoin>bevel</linejoin>
    <width>1.41732283465</width>
    <linecap>square</linecap>

```

(continues on next page)

(continued from previous page)

```

    </style>
  </class>
</layer>
</map>

```

## OSM water-line

```

<!-- water-line style with different display for different scales-->
<!-- Version 2015-07-24 -->
<map>
  <layer>
    <classitem>Waterway</classitem>
    <labelitem>name</labelitem>
    <class>
      <expression>"river"</expression>
      <style>
        <color red="102" green="153" blue="204"/>
        <linejoin>round</linejoin>
        <width>3</width>
        <linecap>round</linecap>
        <!-- Unprocessed attributes: width_unit, offset_unit,
↳ customdash_unit -->
      </style>
      <label>
        <type>truetype</type> <!-- Label -->
        <font>bold</font>
        <size>7</size>
        <color blue="255" green="255" red="255"/>
        <linewidth>1</linewidth>
        <outlinecolor red="102" green="153" blue="204"/>
        <angle>auto</angle>
        <repeatdistance>300</repeatdistance>
        <maxoverlapangle>90.0</maxoverlapangle>
        <maxscaledenom>500000</maxscaledenom>
      </label>
    </class>

    <class>
      <expression>"canal"</expression>
      <style><!-- vertical lines -->
        <angle>auto</angle>
        <gap>-8.50393700787</gap>
        <!-- unparsed attributes: interval_unit, placement,
offset_unit, offset -->
        <color red="102" green="153" blue="204"/>
        <outlinecolor red="0" green="0" blue="0"/>
        <size>15.66929133858</size>
        <symbol>std:line</symbol>

```

(continues on next page)

(continued from previous page)

```

    <!-- Unprocessed attributes: outline_width, offset_unit,
    outline_width_unit, size_unit -->
</style>
<style>
  <color red="102" green="153" blue="204"/>
  <linejoin>round</linejoin>
  <width>3</width>
  <linecap>round</linecap>
  <!-- Unprocessed attributes: width_unit, offset_unit,
  customdash_unit -->
</style>
<label>
  <type>truetype</type> <!-- Label -->
  <font>bold</font>
  <size>7</size>
  <color blue="255" green="255" red="255"/>
  <linewidth>1</linewidth>
  <outlinecolor red="102" green="153" blue="204"/>
  <angle>auto</angle>
  <repeatdistance>300</repeatdistance>
  <maxoverlapangle>90.0</maxoverlapangle>
  <maxscaledenom>500000</maxscaledenom>
</label>
</class>

<class>
<expression>"stream"</expression>
<style>
  <color red="102" green="153" blue="204"/>
  <linejoin>round</linejoin>
  <width>1.5</width>
  <linecap>round</linecap>
  <maxscaledenom>250000</maxscaledenom>
  <!-- Unprocessed attributes: width_unit, offset_unit,
  customdash_unit -->
</style>
</class>

<class>
<expression>"drain"</expression>
<style>
  <color red="102" green="153" blue="204"/>
  <linejoin>round</linejoin>
  <width>1</width>
  <linecap>round</linecap>
  <maxscaledenom>250000</maxscaledenom>
  <!-- Unprocessed attributes: width_unit, offset_unit,
  customdash_unit -->
</style>

```

(continues on next page)

(continued from previous page)

```

    </class>
  </layer>
</map>

```

## OSM water-polygon

```

<!-- water-polygon style
version 2015-07-24
To add
-reservoirs
-swamp hatch
-->
<map>
  <layer>
    <labelitem>NAME</labelitem>
    <classitem>NATURAL</classitem>
    <class>
      <expression>"water"</expression> <!-- Water -->
      <style>
        <color red="102" green="153" blue="204"/>
        <outlinecolor red="102" green="153" blue="204"/>
      </style>
      <label>
        <type>truetype</type>
        <font>regular</font>
        <size>7</size>
        <color red="102" green="153" blue="204"/>
        <linewidth>2</linewidth>
        <outlinecolor red="255" green="255" blue="222"/>
        <!-- Label scale range-->
        <minscaledenom>1</minscaledenom>
        <maxscaledenom>100000</maxscaledenom>
      </label>
    </class>
    <class>
      <expression>"wetland"</expression> <!-- Wetland -->
      <style>
        <color red="102" green="153" blue="204"/>
        <outlinecolor red="102" green="153" blue="204"/>
      </style>
      <label>
        <type>truetype</type>
        <font>regular</font>
        <size>7</size>
        <color red="102" green="153" blue="204"/>
        <linewidth>2</linewidth>
        <outlinecolor red="255" green="255" blue="222"/>
        <!-- Label scale range -->

```

(continues on next page)

(continued from previous page)

```

    <minscaledenom>1</minscaledenom>
    <maxscaledenom>100000</maxscaledenom>
  </label>
</class>
</layer>
</map>

```

## OSM landuse-polygon

NextGIS Web styles support for different hatched (see Fig. ??).

```

<map> <!-- A demo of different hatched. Use with dark background.-->
  <layer>
    <labelitem>OSM_ID</labelitem>
    <classitem>LANDUSE</classitem>
    <class>
      <expression>"residential"</expression>
      <!-- Residential -->
      <style>
        <!-- hatch with right slope -->
        <color red="255" green="185" blue="33"/>
        <width>1.4</width>
        <symbol>std:line</symbol>
        <gap>3</gap>
        <size>1</size>
        <angle>90</angle>
      </style>
      <style>
        <!-- Outline -->
        <outlinecolor red="255" green="185" blue="33"/>
        <width>0.5</width>
      </style>
    </class>
    <class>
      <expression>"grass"</expression>
      <!-- Grass zones -->
      <style>
        <!-- Lines -->
        <color red="20" green="255" blue="33"/>
        <width>1</width>
        <symbol>std:line</symbol>
        <gap>6</gap>
        <size>4</size>
        <angle>0</angle>
        <pattern>2.5 4.5</pattern>
      </style>
      <style>
        <!-- Outline -->

```

(continues on next page)

(continued from previous page)

```

        <outlinecolor red="20" green="255" blue="33"/>
        <width>0.5</width>
    </style>
</class>
<class>
    <expression>"commercial"</expression>
    <!-- Residential -->
    <style>
        <!-- hatch with right slope -->
        <color red="133" green="33" blue="25"/>
        <width>1.4</width>
        <symbol>std:line</symbol>
        <gap>10</gap>
        <size>5</size>
        <angle>45</angle>
    </style>
    <style>
        <!-- Outline -->
        <outlinecolor red="133" green="33" blue="25"/>
        <width>0.5</width>
    </style>
</class>
<class>
    <expression>"industrial"</expression>
    <!-- Industrial zones -->
    <style>
        <!-- hatch with right slope -->
        <color red="255" green="50" blue="50"/>
        <width>0.4</width>
        <symbol>std:hatch</symbol>
        <gap>10</gap>
        <size>5</size>
        <angle>45</angle>
    </style>
    <style>
        <!-- hatch with left slope -->
        <color red="255" green="50" blue="50"/>
        <width>0.4</width>
        <symbol>std:hatch</symbol>
        <gap>10</gap>
        <size>5</size>
        <angle>-45</angle>
    </style>
    <style>
        <!-- Outline -->
        <outlinecolor red="255" green="50" blue="50"/>
        <width>0.5</width>
    </style>
</class>

```

(continues on next page)

(continued from previous page)

```

<class>
  <expression>"cemetery"</expression>
  <!-- Cemeteries -->
  <style>
    <!-- fences -->
    <color red="14" green="166" blue="0"/>
    <width>1.4</width>
    <symbol>std:rectangle</symbol>
    <gap>20</gap>
    <size>11</size>
    <angle>0</angle>
  </style>
  <style>
    <!-- fences -->
    <color red="0" green="0" blue="0"/>
    <width>1.2</width>
    <symbol>std:rectangle</symbol>
    <gap>20</gap>
    <size>10</size>
    <angle>0</angle>
  </style>
  <style>
    <!-- crosses -->
    <color red="14" green="166" blue="0"/>
    <width>1.4</width>
    <symbol>std:cross</symbol>
    <gap>20</gap>
    <size>9</size>
    <angle>0</angle>
  </style>
  <style>
    <!-- Outline -->
    <outlinecolor red="14" green="166" blue="0"/>
    <width>0.5</width>
  </style>
</class>
</layer>
</map>

```

### Individual feature styles from field

It is possible to set up individual style for every vector feature. First create a field that contains style description in ORG Style format. For example,

```
ogr2ogr -f GeoJSON -sql "select *, OGR_STYLE from Australia"
↳ australia.geojson Australia.TAB
```

Learn more on ORG Style on the [Feature Style Specification](https://gdal.org/user/ogr_feature_style.html)<sup>97</sup> page.

<sup>97</sup> [https://gdal.org/user/ogr\\_feature\\_style.html](https://gdal.org/user/ogr_feature_style.html)

Now that you have a vector layer with *OGR\_STYLE* field containing the style for the feature, add the following NextGIS Web Mapserver:

```
<map>
  <layer>
    <styleitem>OGR_STYLE</styleitem>
    <class>
      <name>default</name>
    </class>
  </layer>
</map>
```

## Map style tags

To change a style or to create a new one it is recommended you take a code of some existing style and then modify it, so there is no need to start creating a style from scratch.

## Common tags

- `<color red="255" green="170" blue="127"/>` - the color of a fill or a line
- `<outlinecolor red="106" green="106" blue="106"/>` - outline color
- `<width>0.5</width>` - a width of a line or an outline of the polygon.
- `<linewidth>3</linewidth>` - outline width
- `<minscaledenom>1</minscaledenom>` - do not display a feature if the map scale is larger than value
- `<maxscaledenom>100000</maxscaledenom>` - do not display a feature if the map scale is less than value

## Markers

- `<symbol>std:circle</symbol>` - marker type
- `std:rectangle` - rectangle
- `std:circle` - circle
- `std:diamond` - diamond
- `std:triangle` - triangle with peak at the top
- `std:triangle-equilateral` - triangle with peak at the bottom
- `std:star` - five-pointed star
- `std:pentagon` - pentagon
- `std:arrow` - arrow (by default is top oriented. Rotation could be set using a tag `<angle>45</angle>`)
- `std:cross` - +



Fig. 8.23: A demo for different hatches.

- std:xcross - x
- std:line - short line
- std:hatch - long line texture

These markers could be used to draw a line, to fill a polygon or to display points. Also they may be combined to a complex symbol:

```
<class>
  <expression>"industrial"</expression>
  <!-- Industrial areas -->
  <style> <!-- hatch with a right slope -->
    <color red="255" green="50" blue="50"/>
    <width>1.4</width>
    <symbol>std:hatch</symbol>
    <gap>10</gap>
    <size>5</size>
    <angle>45</angle>
  </style>
  <style> <!-- hatch with a left slope -->
    <color red="255" green="50" blue="50"/>
    <width>1.4</width>
    <symbol>std:hatch</symbol>
    <gap>10</gap>
    <size>5</size>
    <angle>-45</angle>
  </style>
  <style> <!-- Outline -->
    <outlinecolor red="255" green="50" blue="50"/>
    <width>0.5</width>
  </style>
</class>
```

- <size>2</size> - marker size in pixels

## Line features

- <gap>10</gap> - a step size for dashed line (used with <symbol>std:circle</symbol>)
- <width>8</width> - width of line in pixels
- <classitem>PLACE</classitem> - filter by attribute PLACE. Also see example in #Filtering. The following operators are supported:
  - attribute name
  - !=
  - >=
  - <=
  - <

- >
- \*= - case insensitive string comparison.
- =
- lt - less than
- gt - greater than
- ge - greater or equal
- le - less or equal
- eq - equal
- ne - not equal
- and - AND
- && - AND
- or - OR
- || - OR
- <linejoin>round</linejoin> - line draw at corners
- <linecap>round</linecap> - line draw at the beginning and at the end



Fig. 8.24: <linecap>butt</linecap> / <linecap>round</linecap> / <linecap>square</linecap>

- <pattern>2.5 4.5</pattern> - dash template

---

**Todo:** check for numbers

---

- <angle> - marker rotation angle. Hatch could also be rotated.

## Labels

- `<labelitem>a_hsnmbr</labelitem>` - attribute name for labelling.
- `<minscaledenom>100</minscaledenom>` - do not show a label if a scale is larger than 1:1000
- `<maxscaledenom>100000</maxscaledenom>` - do not show a label if a scale is smaller than 1:100000
- LABELCACHE [on|off] - specifies whether labels should be drawn as the features for this layer are drawn, or whether they should be cached and drawn after all layers have been drawn. Default is on. Label overlap removal, auto placement etc... are only available when the label cache is active.
- `<position>ur</position>` - label offset direction.
  - ur - ↗ up and right (recommended).
  - ul - ↖
  - uc - ↑
  - cl - ←
  - cc - centered
  - cr - →
  - ll - ↙
  - lc - ↓
  - lr - ↘
  - auto

## Some other useful tags

- MAXGEOWIDTH - Maximum width, in the map's geographic units, at which this LAYER is drawn. If MAXSCALEDENOM is also specified then MAXSCALEDENOM will be used instead.
- MINGEOWIDTH - Minimum width, in the map's geographic units, at which this LAYER is drawn. If MINSCALEDENOM is also specified then MINSCALEDENOM will be used instead.
- OFFSITE - Sets the color index to treat as transparent for raster layers.
- OPACITY [integer|alpha] - opacity of the layer
- SIZEUNITS [feet|inches|kilometers|meters|miles|nauticalmiles|pixels] - Sets the unit of CLASS object SIZE values (default is pixels). Useful for simulating buffering.
- SYMBOLSCALEDENOM [double] - The scale at which symbols and/or text appear full size. This allows for dynamic scaling of objects based on the scale of the map. If not set then this layer will always appear at the same size.

Scaling only takes place within the limits of MINSIZE and MAXSIZE as described above. Scale is given as the denominator of the actual scale fraction, for example for a map at a scale of 1:24,000 use 24000.

- TYPE [chart|circle|line|point|polygon|raster|query] - Specifies how the data should be drawn. Need not be the same as the feature geometry type. For example polygons or polylines may be drawn as a point layer.

See MapServer templates [here](#)<sup>98</sup>.

## 8.5 Tile cache

Caching provides faster rendering of Web Map layers. It can be enabled for **vector**<sup>99</sup> and **raster layer styles**<sup>100</sup> as well as for **WMS**<sup>101</sup> and **TMS**<sup>102</sup> layers.

To enable caching go to the Tile cache tab of the resource and check “Enabled”.

In the **tile cache** settings you can also configure the following parameters (see Fig. ??):

- *Enabled* checkbox;
- *Allow using tiles in non-tile requests* checkbox - the requested image (not a tile) will be prepared from previously cached tiles (if available);
- Input field *Maximum zoom level* - a threshold value, above which the cache is not accessed and the image is formed “on the fly”;
- Input field *TTL, sec* (Time to live) - a time of storage of tiles on the server in seconds, after which the image will be formed again on the next request. TTL = 0 means that the storage time is unlimited;
- *Flush* checkbox - write only - clears the tile cache when saving the style.

## 8.6 Adding a style on the map

To edit a Web Map click pencil icon near it or click the Web Map and in actions pane “Action” select “Update”. In “Update resource” layer select **Layers** tab (see in Fig. ??).

Here you can do the following actions:

1. Add layer
2. Add group
3. Remove layer or group
4. Modify the order of the layers on the map

<sup>98</sup> [https://docs.nextgis.com/docs\\_ngweb/source/mapservertemplates.html](https://docs.nextgis.com/docs_ngweb/source/mapservertemplates.html)

<sup>99</sup> [https://docs.nextgis.com/docs\\_ngweb/source/mapstyles.html](https://docs.nextgis.com/docs_ngweb/source/mapstyles.html)

<sup>100</sup> [https://docs.nextgis.com/docs\\_ngweb/source/layers.html#ngw-process-create-raster-style](https://docs.nextgis.com/docs_ngweb/source/layers.html#ngw-process-create-raster-style)

<sup>101</sup> [https://docs.nextgis.com/docs\\_ngweb/source/layers.html#wms-layer](https://docs.nextgis.com/docs_ngweb/source/layers.html#wms-layer)

<sup>102</sup> [https://docs.nextgis.com/docs\\_ngweb/source/layers.html#tms](https://docs.nextgis.com/docs_ngweb/source/layers.html#tms)

## Create resource

RESOURCE DESCRIPTION **TILE CACHE** QGIS STYLE METADATA

Enabled

☒

Allow using  
tiles in non-tile  
requests

☒

Max zoom level

TTL, sec.

Flush

☐

Fig. 8.25: Tile cache settings

Click “Add layer” and in opened window select the QGIS style of the layer, then click “OK”. After that click “Save”

In the “Web Map” actions pane of the Web Map properties window select “Display”. The map will open, layers tree will be on the left. To hide/display a layer place a tick near the layer .

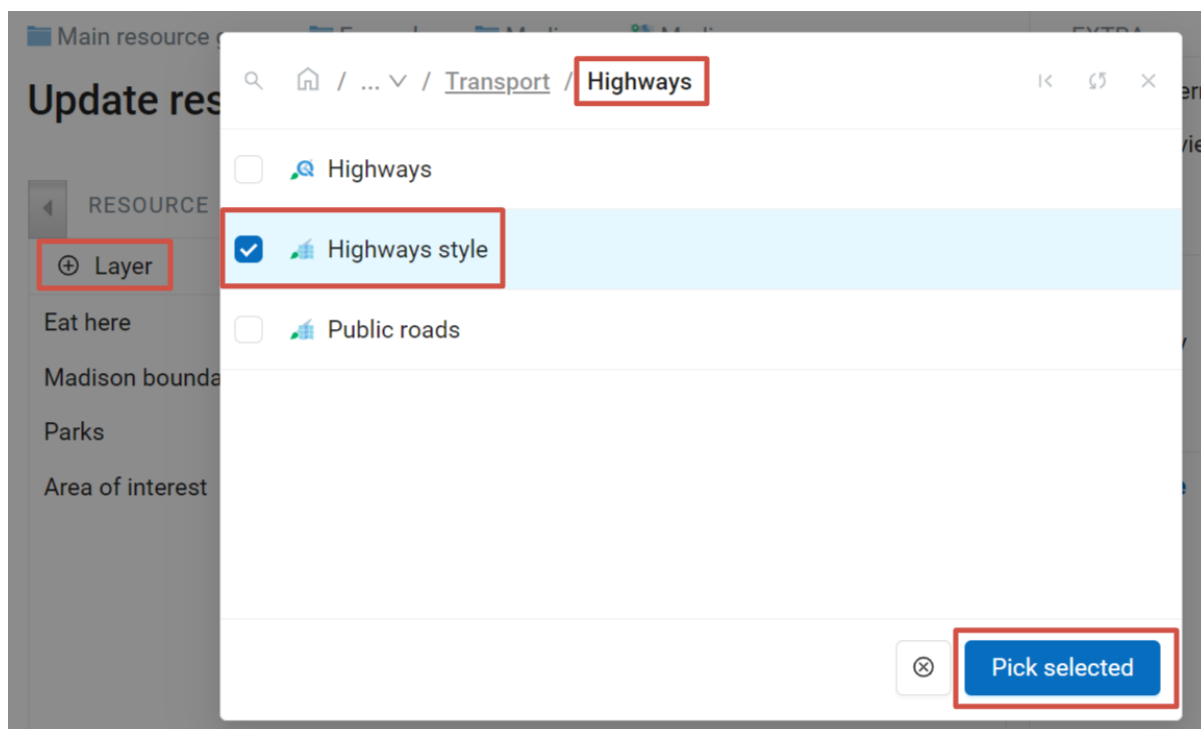


Fig. 8.26: Adding style on the map

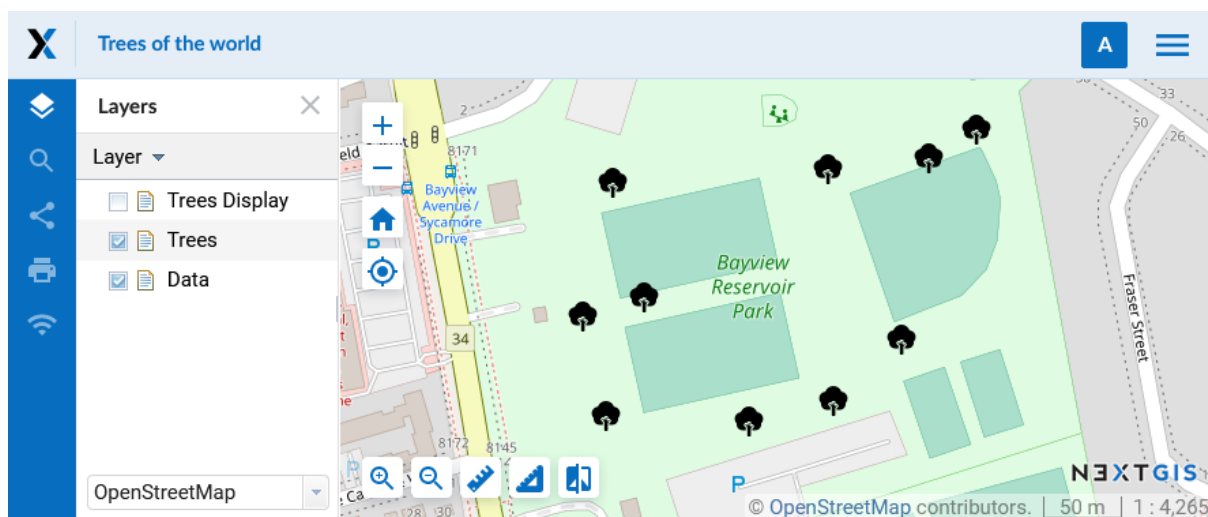


Fig. 8.27: Layer with special SVG markers in the QGIS style on a Web Map

## CREATING OTHER TYPES OF RESOURCES

### 9.1 Lookup table

To create a lookup table navigate to the group, where you want to create it (root group or another). Press **Create resource** button and select **Lookup table** (see Fig. ??).

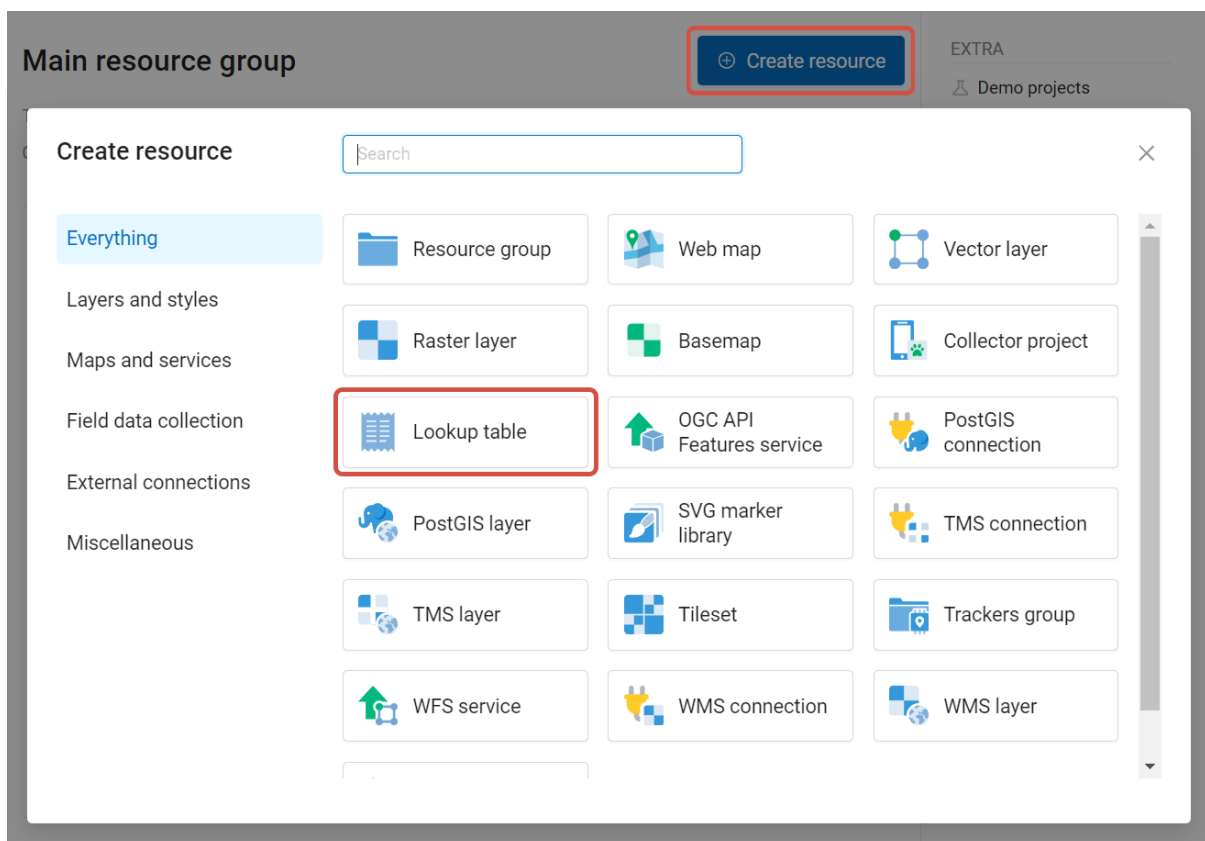


Fig. 9.1: Selecting “Lookup table” resource type

In the opened dialog enter a display name. It will be displayed in the resource list and the Web Map layer tree. “Keyname” field is optional.

Switch from “Resource” tab to the “Lookup table” tab, which is presented on Fig. ?. Add data in the “key-value” format. You can also import a pre-made lookup table from a CSV file.

The entries can be sorted in a variety of ways:

experiments

Search resources

Main resource group

### Create resource

RESOURCE LOOKUP TABLE DESCRIPTION METADATA

Display name: Agriculture

Parent: Main resource group

Owner: Administrator

Keyname: Identifier for API integration (optional)

Create Create and edit

CREATE RESOURCE

- Basemap
- Collector project
- Lookup table
- OGC API Features service
- PostGIS connection
- PostGIS layer
- Raster layer
- Resource group
- SVG marker library
- TMS connection
- TMS layer
- Trackers group
- Vector layer

Fig. 9.2: Lookup table name

## Create resource

Resource • Lookup table 5 Description Metadata

Import Export Custom Clear

Key	Value
72	Aquitaine
83	Auvergne
53	Bretagne
26	Bourgogne

Type here to add a new item...

Create ...

Fig. 9.3: Lookup table contents

- By key, ascending (lower to higher);
- By key, descending (higher to lower);
- By value, ascending;
- By value, descending;
- Custom - drag the six dot icon on the left (Fig. ??) to move the entry.

Numbers with separators are treated like decimals, i.e. “1.12” is before “1.7”. If you need to fix it, sort by key first, then switch to “Custom” and move the entries to the correct position.

You can also add resource description and metadata on the corresponding tabs. Metadata is used in external apps working with [API](#)<sup>103</sup>.

Then click **Save**. The window will then look as on Fig. ??

**Code INSEE**

Type ..... Lookup table (lookup\_table)

Owner ..... My\_username

**Items**

Key	Value
42	Alsace
72	Aquitaine
83	Auvergne
26	Bourgogne
53	Bretagne

**EXTRA**

- User permissions
- JSON view

**ACTION**

- Update
- Delete

Fig. 9.4: Newly created lookup table

To change anything in a lookup table click **Update** in the “Action” pane. The resource update dialog will open. Switch to “Lookup table” tab where you can change the table’s contents:

- add a new key-value pair
- change a current key-value pair
- delete a key-value pair

A lookup table can be exported to a CSV file.

<sup>103</sup> [https://docs.nextgis.com/docs\\_ngweb\\_dev/doc/developer/toc.html](https://docs.nextgis.com/docs_ngweb_dev/doc/developer/toc.html)

You can also connect a lookup table to a field of a vector layer. This way while editing the layer you can choose attribute values from the list. To add a lookup table to the layer, open the Edit dialog and to the Attributes tab. In the row of the attribute click on the downward arrow in the Lookup table column.

See how to work with lookup tables in our video:

Watch on [youtube](#)<sup>104</sup>.

## 9.2 File bucket

**Important:** It is a special type of resource available in [Extended edition of NextGIS on-premise](#)<sup>105</sup>. It allows users to create a storage space for any types of files.

On the **Resource** tab enter a name for the file bucket. It will be displayed in the administrator interface. “Keyname” field is optional.

■ Main resource group

### Create resource

RESOURCE	FILE BUCKET	DESCRIPTION	METADATA
Display name	<input type="text" value="File bucket"/>		
Parent	<div> <div>■</div> <div>Main resource group</div> <div>▼</div> </div>		
Owner	<div> <div>🛡️</div> <div>Administrator</div> <div>▼</div> </div>		
Keyname	<input type="text" value="Identifier for API integration (optional)"/>		

Fig. 9.5: File bucket name

In the **File bucket** tab select files or a ZIP archive to extract files from.

The “Description” and “Metadata” of the resource can be configured on the corresponding tabs.

After a file bucket is created, its contents can be modified. You can add and delete individual files. If you select a new ZIP archive, the files extracted from it will replace all files added before.

Files stored in the bucket can be viewed in browser (if the file type allows it), saved one-by-one from the context menu or exported all at once as a ZIP archive.

<sup>104</sup> <https://youtu.be/TVuKHJjP5E?si=JiGYc2ApkmUbT0LV>

<sup>105</sup> <https://nextgis.com/pricing/>

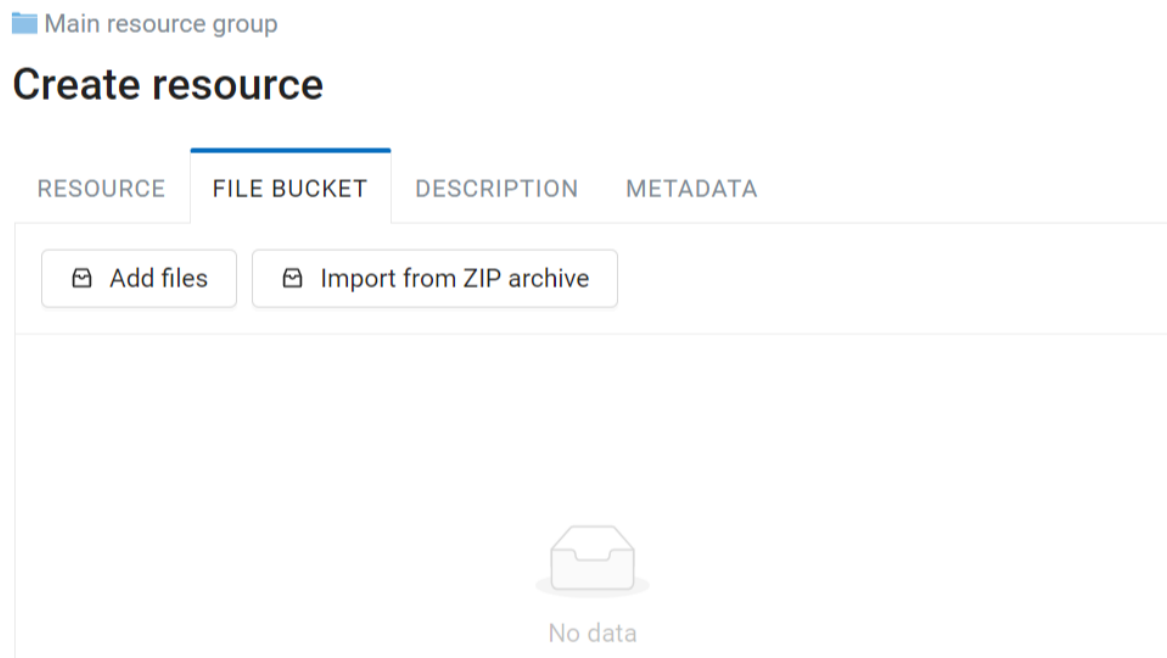


Fig. 9.6: Uploading files to bucket

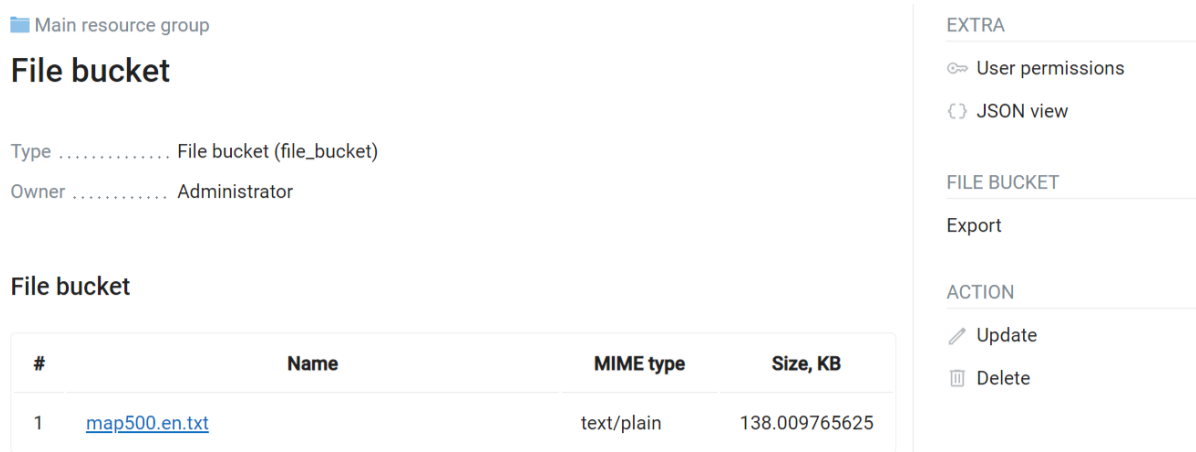


Fig. 9.7: Resource page of a File bucket with the list of included files

## **VERSIONING**

Geodata storage NextGIS Web supports **versioning**, a mechanism that logs changes made to features of vector layers.

When a feature is created, deleted or edited, this change is registered (who made it and when), and the state of the database before the change is saved in a special way.

It allows NextGIS Web administrator to:

- Learn who and when made any change to the vector layer;
- Learn who, when and how changed the attributes or the geometry of the feature;
- Access any recorded state of the vector layer and reset incorrect changes;
- Get a list of all the edits made by one user;
- Get a list of all the edits for a given period, for example, a particular date or since a connected database was last updated;

etc. Changes in both **attributes** and **geometry** are logged.

Versioning is **disabled by default**. You can [turn it on](#)<sup>106</sup> for a specific vector layer if needed. Logging activates when the versioning is turned on, the changes made before that are not registered anywhere.

When the versioning is turned off, all the logged information about the changes in the layer is **deleted**.

### **10.1 Versioning in the NextGIS Web interface**

At the moment in the user interface of NextGIS Web you can access the following functions:

- Enable and disable versioning in the vector layer settings;
- View versioning status (yes/no) on the Vector layer resource page;
- Additional virtual field “Last changed” in the attribute table of the versioned layer. It allows to see the time and author of the latest change for each feature of the layer.

---

<sup>106</sup> [https://docs.nextgis.com/docs\\_ngweb/source/layers.html#create-vector-layer-vers-pic](https://docs.nextgis.com/docs_ngweb/source/layers.html#create-vector-layer-vers-pic)

It is planned to gradually expand the tools for working with versioned layers through the GUI.

## 10.2 Versioning in NextGIS Web API

The main options for obtaining information about versioned layers are now available only in the NextGIS Web API. Through API queries, you can get the states of layers and features for different time periods, the difference between different states, and so on. Here are some examples of API methods for versioned layers:

- `/api/resource/{id}` you can get the information on the versioning status and the current version of the data in the general layer query ('versioning' property).
- `/api/resource/{id}/feature/` add layer version to get its state at a particular moment
- `/api/resource/{id}/feature/changes/check` to get information about the difference between two given versions of the layer
- `/api/resource/{id}/feature/version/{vid}` get metadata for a given version

## 10.3 Versioning in QGIS

Versioning is actively used in QGIS plugin [NextGIS Connect](https://docs.nextgis.com/docs_ngconnect/source/ngconnect.html)<sup>107</sup> that allows integration with NextGIS Web. When versioning is enabled, QGIS can get information about all the changes made to the layer stored in NextGIS Web since the last time it had been accessed. It allows to [simultaneously edit](https://docs.nextgis.com/docs_ngconnect/source/edit.html)<sup>108</sup> a layer stored on the server from several QGIS sessions on separate computers.

---

<sup>107</sup> [https://docs.nextgis.com/docs\\_ngconnect/source/ngconnect.html](https://docs.nextgis.com/docs_ngconnect/source/ngconnect.html)

<sup>108</sup> [https://docs.nextgis.com/docs\\_ngconnect/source/edit.html](https://docs.nextgis.com/docs_ngconnect/source/edit.html)

## EDIT VECTOR LAYER ON A WEB MAP

### 11.1 Introduction

To edit a layer [log in to the Web GIS](#)<sup>109</sup>.

To modify layer settings, open the group containing the layer (see Fig. ??, item 5), find the layer in the list and click on the pencil icon next to it. It opens the [Update resource](#)<sup>110</sup> page. On this page you can edit the settings standard for all types of resources (parent, description, metadata, access permission) and specific for vector layers: [delete or replace all the features](#)<sup>111</sup>, [edit fields and their aliases](#)<sup>112</sup> and [enable editing](#)<sup>113</sup> for vector features and annotations on the map.

Web GIS interface allows to [edit](#)<sup>114</sup> geometries on the map and feature attribute values, add description and [attachments](#)<sup>115</sup> (photos etc) to features of Vector layers and [PostGIS layers](#)<sup>116</sup>.

### 11.2 Allow editing

By default editing of a Web Map is disabled. To allow users to modify the layers of the map, enable editing in the Web Map settings. To find out how to open the “Update resource” dialog, see *this chapter* (page ??).

You can enable or disable editing of all Web Map layers on the “Settings” tab by selecting the corresponding option in the dropdown menu (see Fig. ??).

---

**Note:** By default layer editing is turned off.

---

Editing is available for users who have permissions to [read and modify data](#)<sup>117</sup>. The “Modify data” permission can be set for the entire resource group where the data is stored or for individual layers.

---

<sup>109</sup> [https://docs.nextgis.com/docs\\_ngweb/source/admin\\_interface.html#ngw-admin-login](https://docs.nextgis.com/docs_ngweb/source/admin_interface.html#ngw-admin-login)

<sup>110</sup> [https://docs.nextgis.com/docs\\_ngweb/source/edit\\_resource.html](https://docs.nextgis.com/docs_ngweb/source/edit_resource.html)

<sup>111</sup> [https://docs.nextgis.com/docs\\_ngweb/source/layers\\_settings.html#ngw-vector-file-replace](https://docs.nextgis.com/docs_ngweb/source/layers_settings.html#ngw-vector-file-replace)

<sup>112</sup> [https://docs.nextgis.com/docs\\_ngweb/source/layers\\_settings.html#ngw-attributes-edit](https://docs.nextgis.com/docs_ngweb/source/layers_settings.html#ngw-attributes-edit)

<sup>113</sup> [https://docs.nextgis.com/docs\\_ngweb/source/layers\\_settings.html#ngw-allow-edit](https://docs.nextgis.com/docs_ngweb/source/layers_settings.html#ngw-allow-edit)

<sup>114</sup> [https://docs.nextgis.com/docs\\_ngweb/source/layers\\_settings.html](https://docs.nextgis.com/docs_ngweb/source/layers_settings.html)

<sup>115</sup> [https://docs.nextgis.com/docs\\_ngweb/source/layers\\_settings.html#ngw-attachments](https://docs.nextgis.com/docs_ngweb/source/layers_settings.html#ngw-attachments)

<sup>116</sup> [https://docs.nextgis.com/docs\\_ngweb/source/layers.html#postgis](https://docs.nextgis.com/docs_ngweb/source/layers.html#postgis)

<sup>117</sup> [https://docs.nextgis.com/docs\\_ngcom/source/permissions.html](https://docs.nextgis.com/docs_ngcom/source/permissions.html)

Main resource group - Main Web Map

## Update resource

Resource

Layers

Basemaps 3

Settings

Permissions

Des ...

Initial extent ?

From layer ×

West ° South ° East ° North °

Constraining extent ?

From layer ×

West ° South ° East ° North °

Title

Legend

Default ▾

Annotations

Show with messages ▾

Bookmarks

Select resource ▾

Measurement SRS

Default ▾

Layers editing

Enable ▾

Additional options

Configure

Disable

Enable ←

Save

Fig. 11.1: “Enable layers editing” is turned on

Users who do not have “Modify data” permission won’t be able to activate the edit mode. [How to check user permissions](#)<sup>118</sup>.

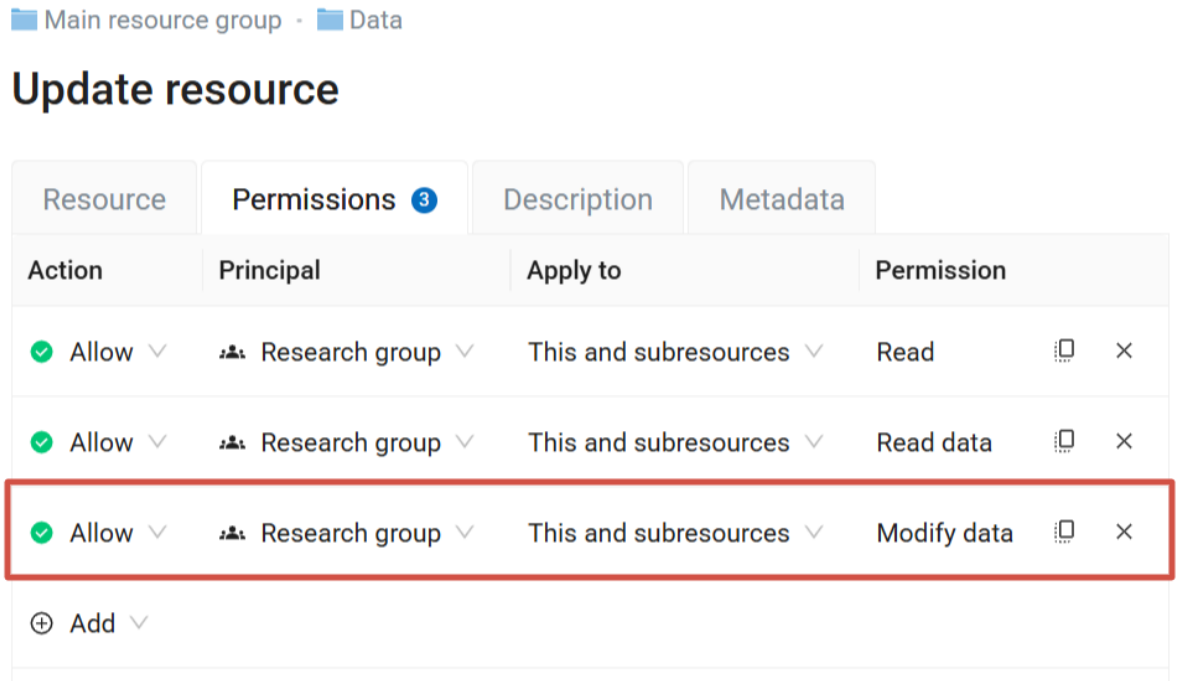


Fig. 11.2: Permissions set for the Data resource group to allow editing

## 11.3 Edit vector feature on a Web Map

1. Open Web Map and select the layer with the feature you need to edit.
2. Open dropdown menu by pressing the three dots to the right of the layer name (see Fig. ??), then select “Edit”.
3. Editing toolbar will appear on the Web Map (see Fig. ??):

### 11.3.1 Create a new feature (point, line, polygon)

1. On the editing toolbar activate “Create features” button (see Fig. ??):
2. A blue circle will appear nearby a mouse pointer, with it you can add new features. Click on the map to create a new feature. You can add several new features one after another. While creating a line you need to indicate its start and end points by clicking on the map. While creating a polygon each new click on the map will indicate its new vertice, to finish a polygon you need to click on its start point. You can use adhesion while creating vertices.
3. In the opened pop-up window you can enter attribute values, then and press **Ok** to complete feature creation. To clear the form, press **Reset**.

You can add multiple features in one go. To create a straight line click on the map to indicate its beginning and end. To create a polygon, click on the map to mark

<sup>118</sup> [https://docs.nextgis.ru/docs\\_ngcom/source/permissions.html#ngcom-permissions-view](https://docs.nextgis.ru/docs_ngcom/source/permissions.html#ngcom-permissions-view)

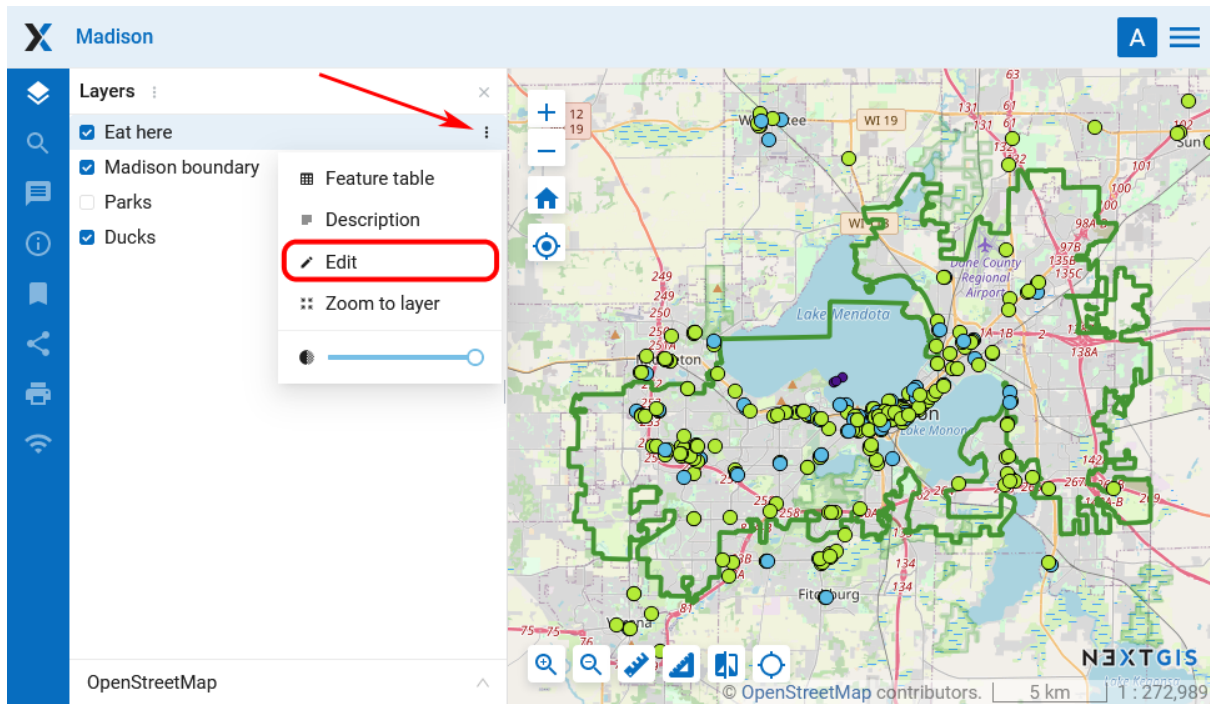


Fig. 11.3: Entering the editing mode

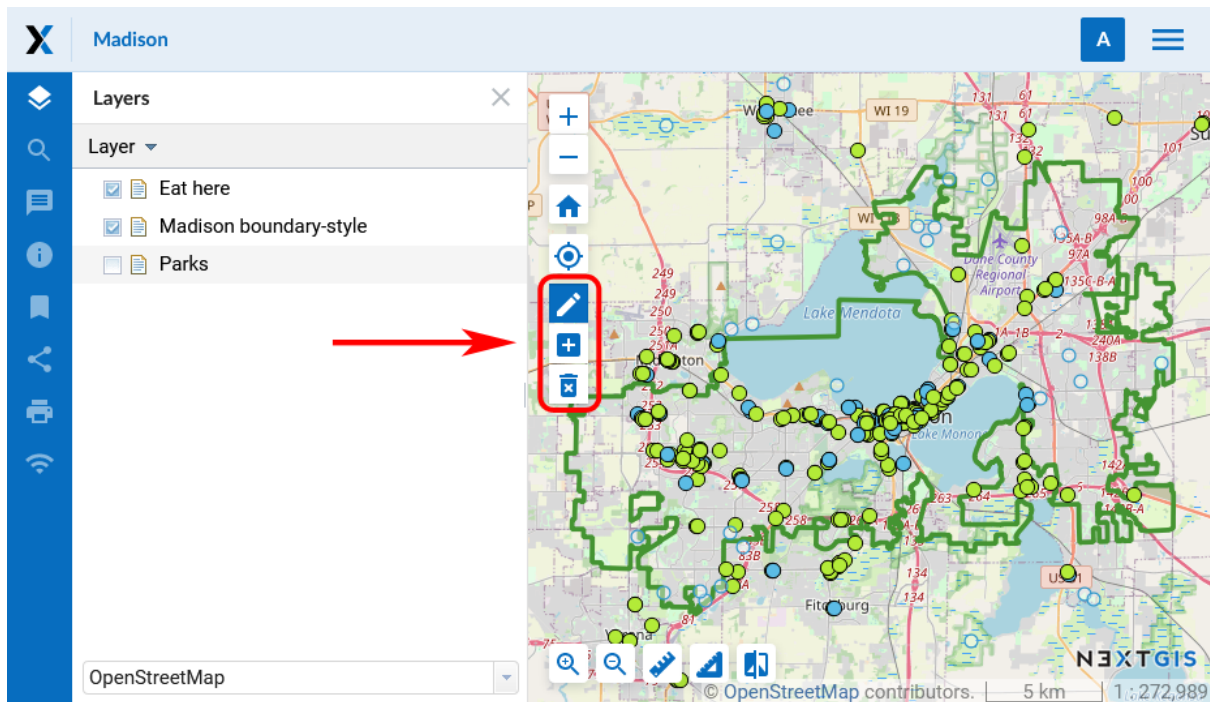


Fig. 11.4: Editing toolbar

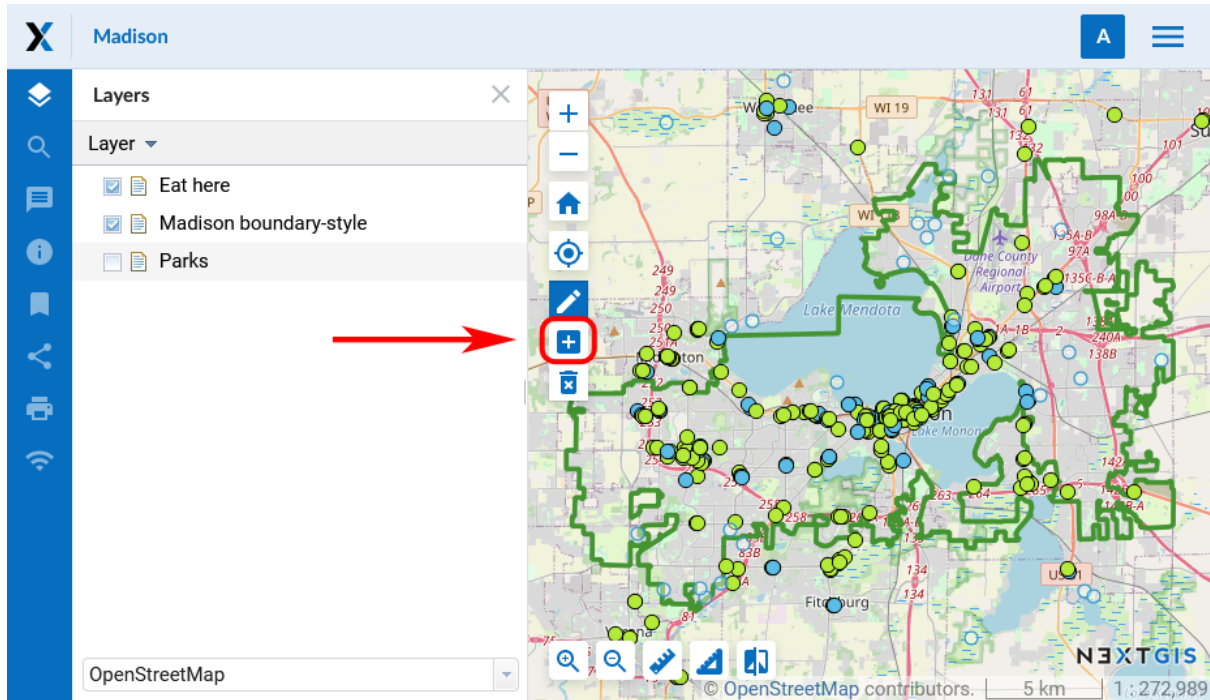


Fig. 11.5: “Create features” button on the editing toolbar

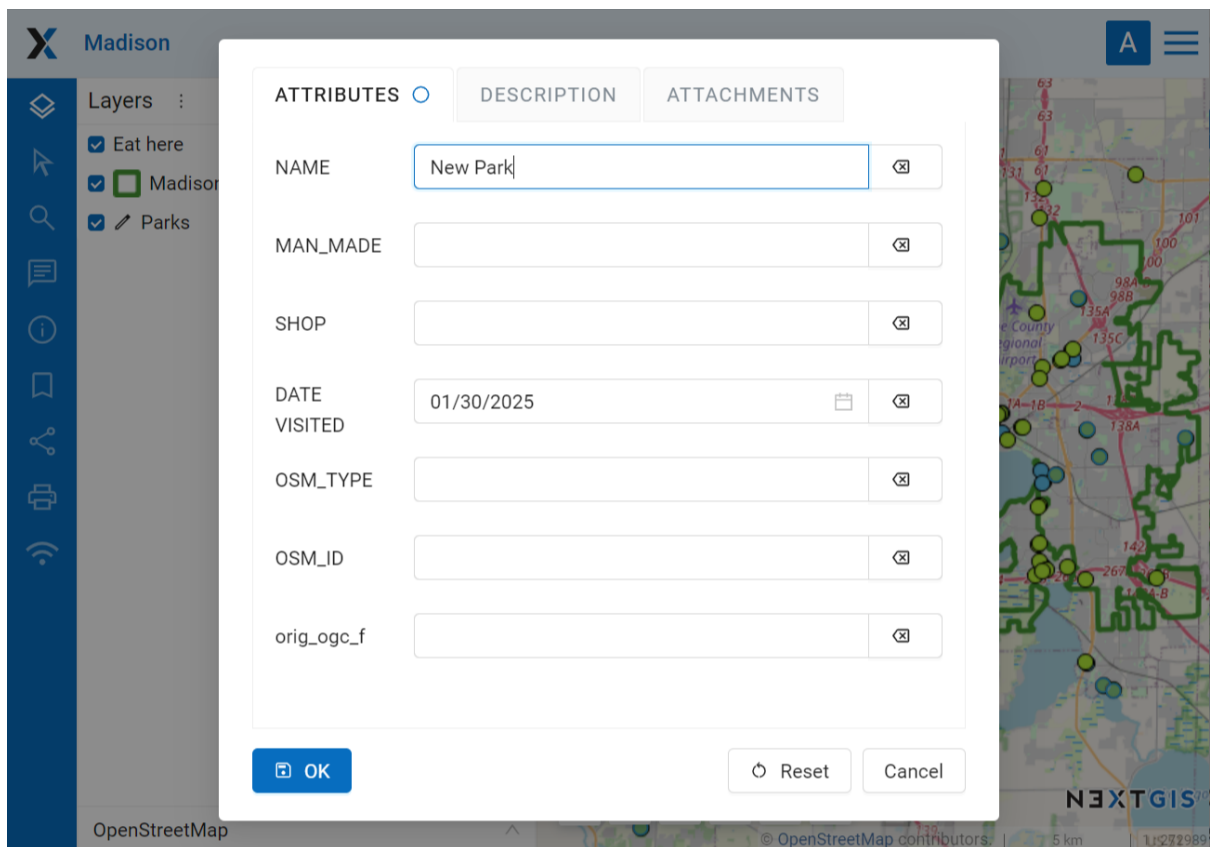


Fig. 11.6: Entering attribute values for a new feature

its vertices, then click on the first point to complete the polygon. Snapping is used while adding vertices.

4. To finish creation of the new feature press “Stop editing” in the layer menu.
5. In the opened dialog select **“Save”** to save changes, “Don’t save” to discard them, or “Cancel” to stay in the edit mode:

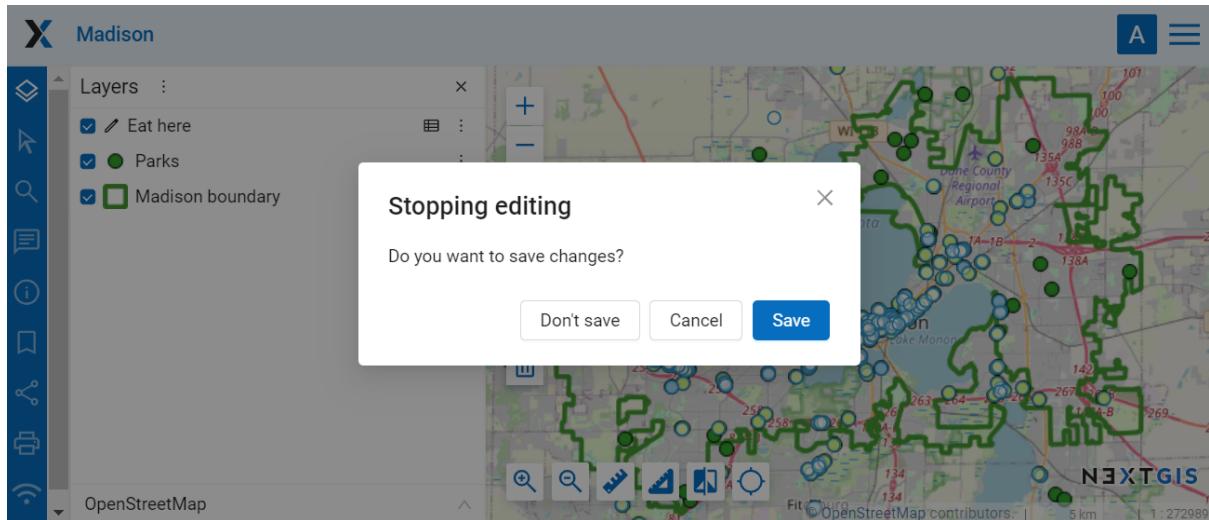


Fig. 11.7: Dialog window of finishing edits

### 11.3.2 Delete a feature

1. On the editing toolbar activate “Delete features” button (see Fig. ??):

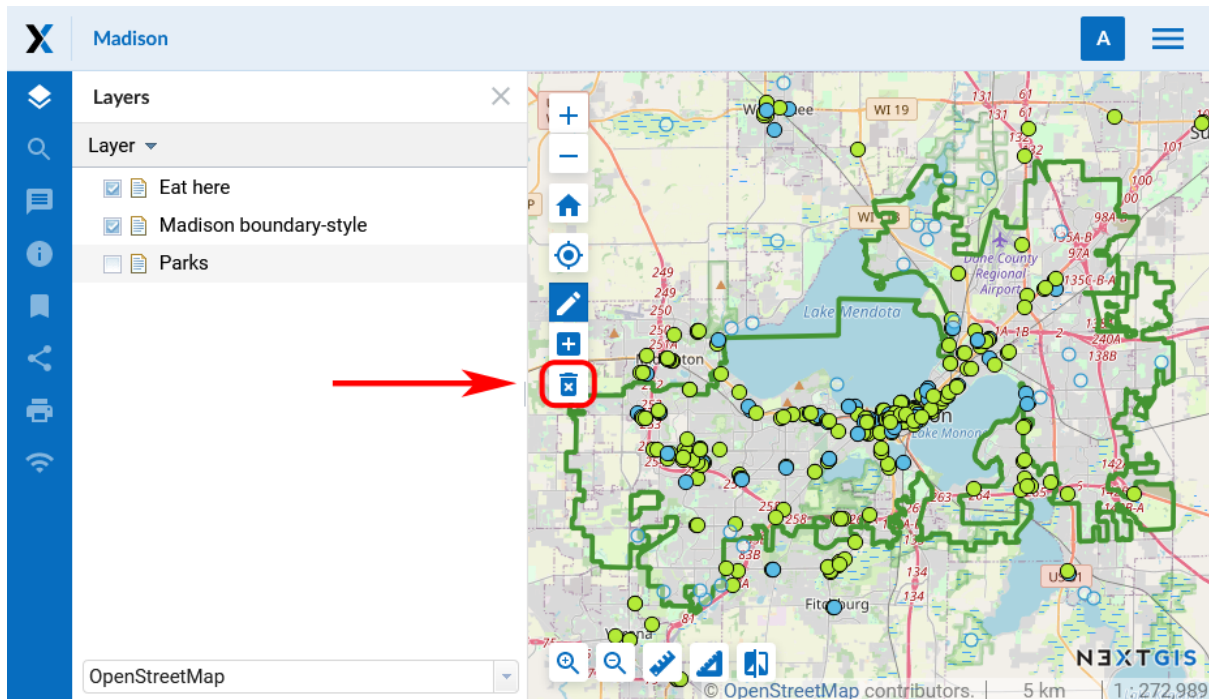


Fig. 11.8: “Delete features” button on the editing toolbar

2. Features you can modify will reduce their color intensity and have a blue outline. The pointer will become a black cross.
3. Left-click to select the features you would like to delete. Selected features will become dark again.

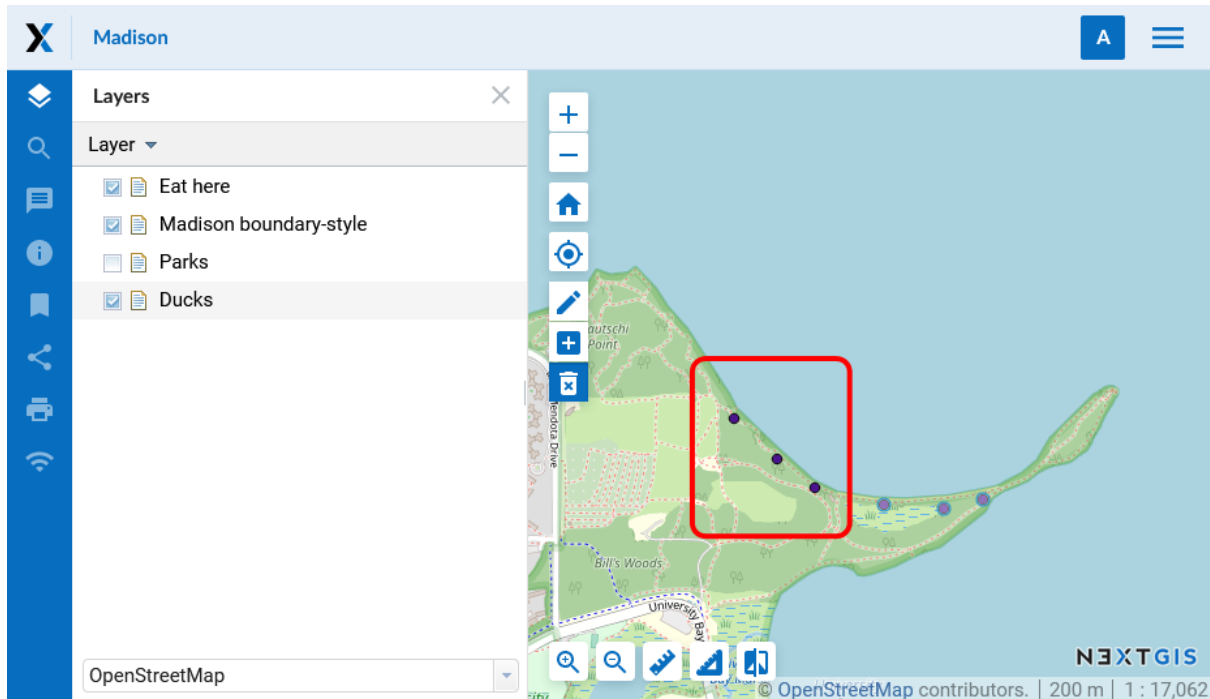


Fig. 11.9: The layer with the purple points is active. The marked points have been selected to be deleted

4. Select “Stop editing” in the layer dropdown menu.
5. In the opened dialog select “Save” (see Fig. ??).

### 11.3.3 Move a feature or its vertices

1. On the editing toolbar activate “Modify features” button (pencil icon, see Fig. ??):
2. Features you can modify will reduce their color intensity and have a blue outline.
3. Select a feature (point) or one of its vertices (line, polygon) with the pointer and drag it, then release on a new place. For vertices modifying an adhesion will work.
4. Select “Stop editing” in the layer dropdown menu.
5. In the opened dialog select “Save” (see Fig. ??).

**Note:** You can edit several layers simultaneously. To do it enter the edit mode in every layer you want to edit. Adhesion will work for features of all these layers.

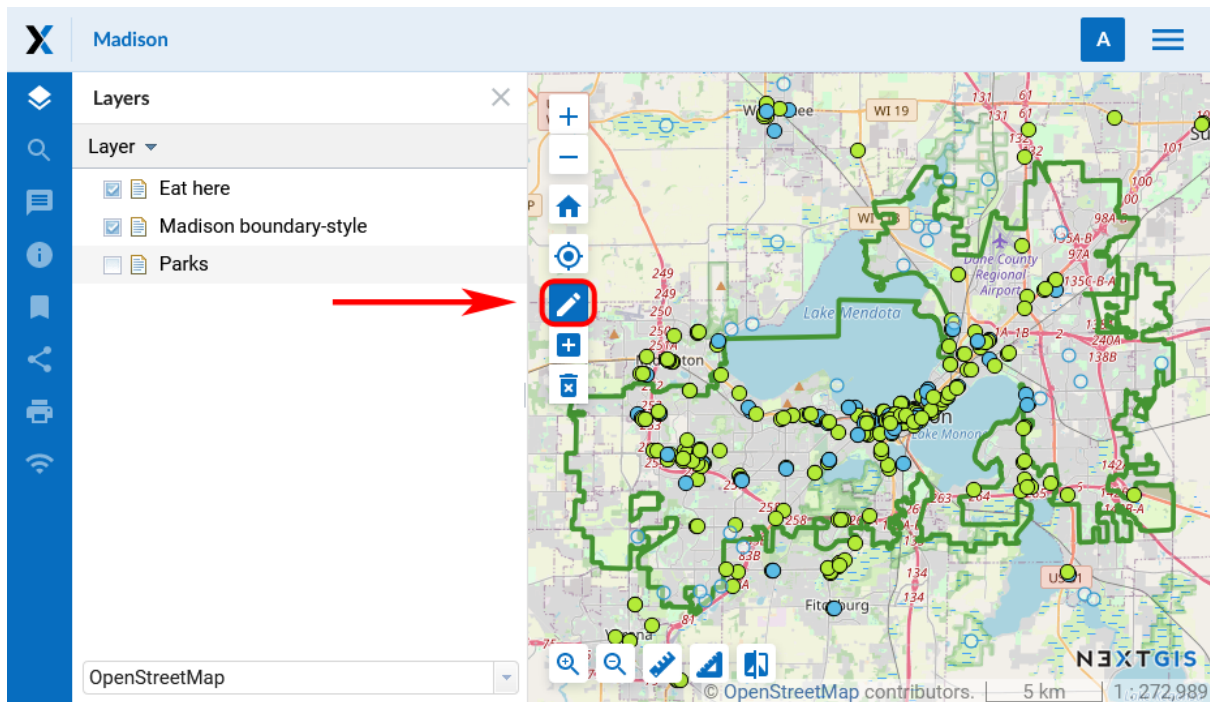


Fig. 11.10: “Modify features” button on the editing toolbar

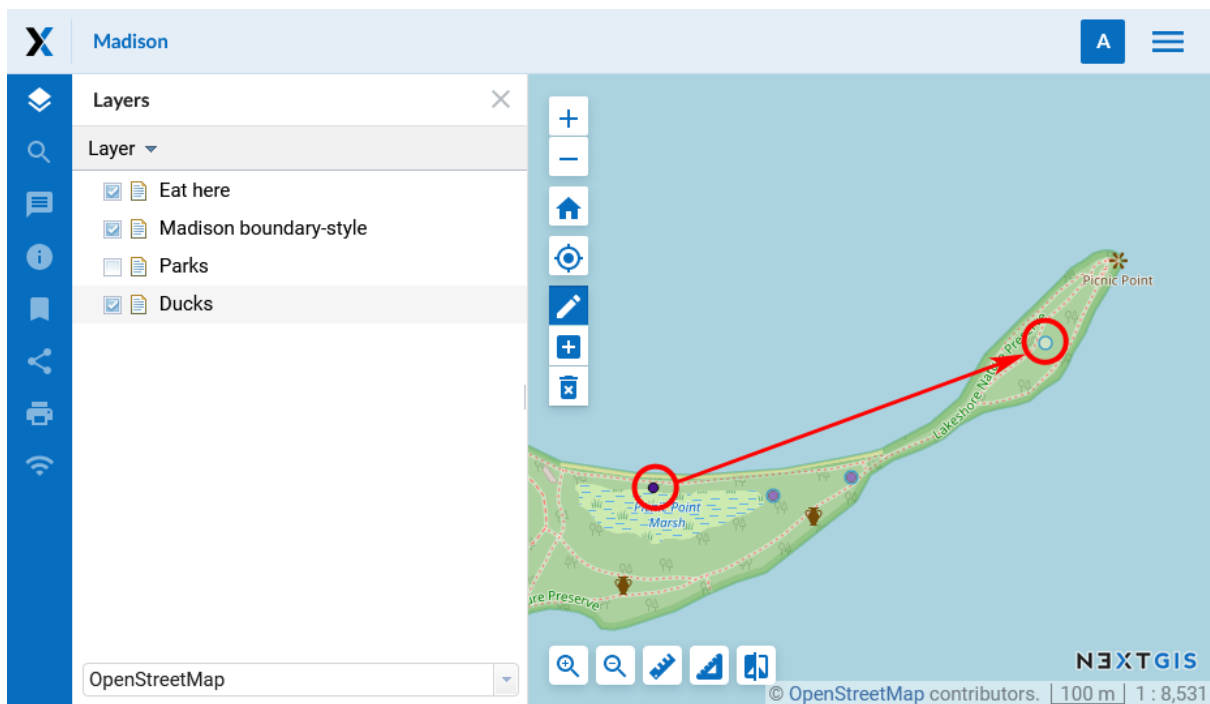


Fig. 11.11: Moving a point. Before you confirm the edit, both its initial and its final location will be visible on the map

### 11.3.4 Add and delete vertices

To delete a vertice enter the editing mode, hold **Shift** and click on the vertice.

To add a vertice, click on the line between two existing vertices and drag it to the desired location.

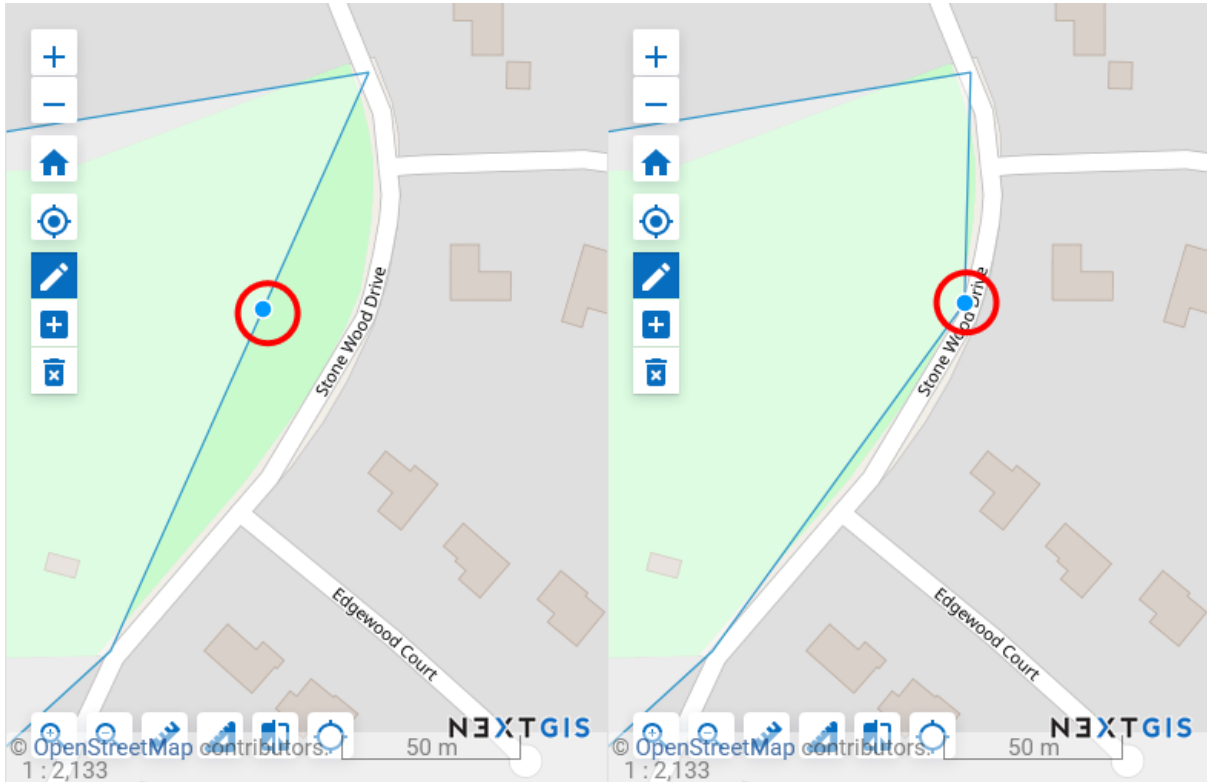


Fig. 11.12: Creating a new vertice

## 11.4 Edit attribute values

NextGIS Web software allows to edit attributes for geographical features. Editing could be launched from the administrator interface or from the map display.

- Editing attributes from administrator interface:
  - Click the table icon opposite the resource or select an action for a vector layer called “Feature table” in the actions pane (see Fig. ??).
  - A feature table for the layer will open. Select the row you want to edit. It will be highlighted in yellow.
  - Click **Edit** button (see Fig. ??).
- Editing attributes from the map display:
  - Open a Web Map.
  - Click on the map with Identify tool active.
  - Click edit button in the Identify window (the last tab, see Fig. ??).

[Main resource group](#) • 
 [Examples](#) • 
 [Madison](#) • 
 [Parks](#)

## Feature table

[Open](#)
[Edit](#)
[Delete](#)
[Save as](#)

#	NAME	SHOP	DATE VISITED	OSM_TYPE	OSM_ID	orig_ogc_f
	Dog Park					
7	La Pointe City Park			node	777099985	138
8	Windmill Oaks Park			node	767120494	149
9	Scheidegger Forest County Park			node	1116119727	150
10	Waltz Park			node	1143480497	153
11	BadFish Creek State Wildlife Area			node	1143295811	155
12	Ward-Swartz Decatur Woods State Natural Area			node	1117940572	159
13	Evansville			node	1141916935	162

Fig. 11.13: Editing attributes from administrator interface

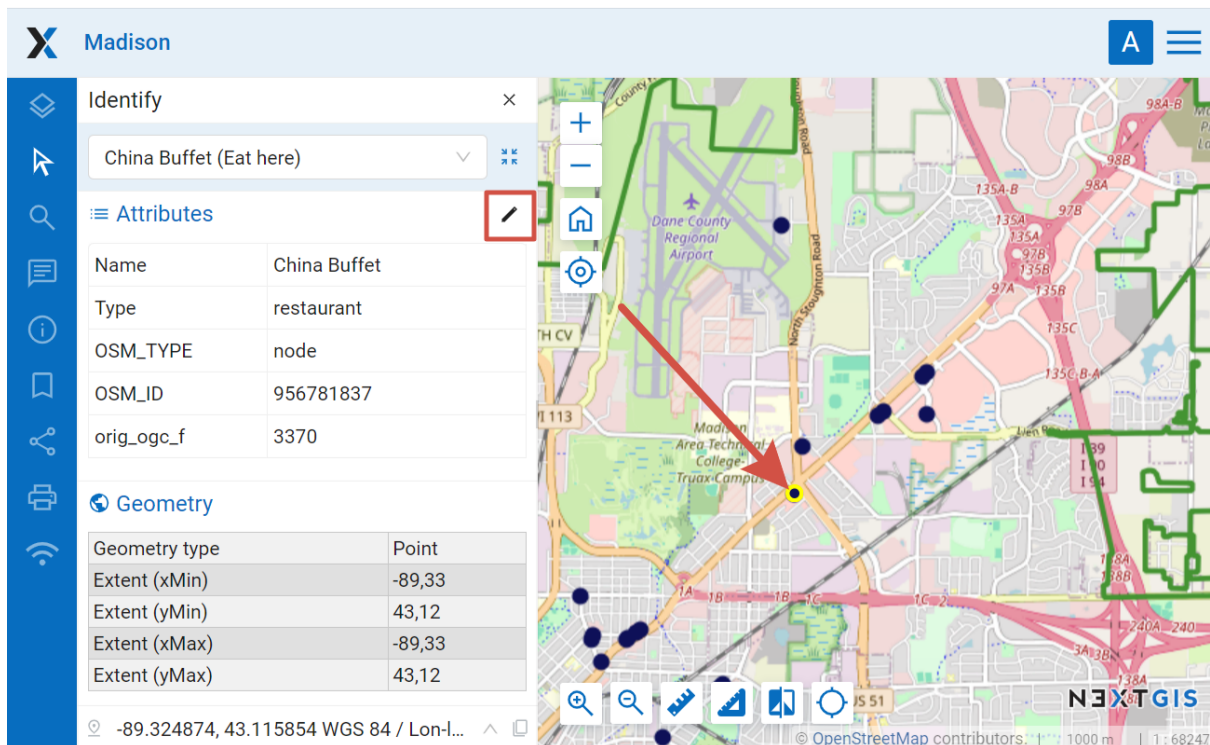


Fig. 11.14: Editing attributes from the map

You can change attribute values in the opened window. Description made on “Description” tab will be visible on the map display in the indentify window.

Editing page has following tabs:

- “Attributes” tab (see Fig. ??).

To edit an attribute click on the field.

Numbers can be typed in or modified with arrows that appear on the right end of the field.

Dates also can be typed in or selected in the calender. To open the calender click the icon on the right end of the field.

- “Description” tab (see Fig. ??).
- “Attachments” tab (see Fig. ??).

---

**Note:** When editing a PostGIS layer attribute changes are saved to PostGIS database and descriptions are saved to a local database. When editing a layer based on a Shapefile attribute all changes are saved to a local database.

---



---

**Note:** Geodata with changed attributes could be downloaded by link *Download as GeoJSON* or published as WFS service. Download of descriptions is currently unavailable.

---










Main resource group • Examples • Madison • Parks

## Feature #8

ATTRIBUTES

DESCRIPTION

ATTACHMENTS

NAME	Windmill Oaks Park	
MAN_MADE	NULL	
SHOP	2	<div></div> <div></div>
DATE VISITED	2023-07-12	<div></div> <div></div>
OSM_TYPE	node	
OSM_ID	767120494	
orig_ogc_f	149	

Save

Fig. 11.15: “Attributes” tab

Main resource group • Examples • Madison • Parks

## Feature #10

ATTRIBUTES

DESCRIPTION

ATTACHMENTS

↶ ↷

Paragraph ▾

**B**
*I*
U
~~S~~

▾
 ▾

“ ”

:≡
½≡
≡≡
≡≡

Source

Save



Fig. 11.16: “Description” tab

Main resource group • Examples • Madison • Parks

## Feature #8

ATTRIBUTES DESCRIPTION ATTACHMENTS

Upload

Preview	File name	Size	MIME type	Description	
	waltz_1	318.8 KB	image/png	sign	

Save

Fig. 11.17: “Attachments” tab

## 11.5 Attachments

NextGIS Web software supports adding photos, panoramas and other files to the features. If a feature has attachments, they will be shown along with description and attributes in the identify window (see Fig. ??).

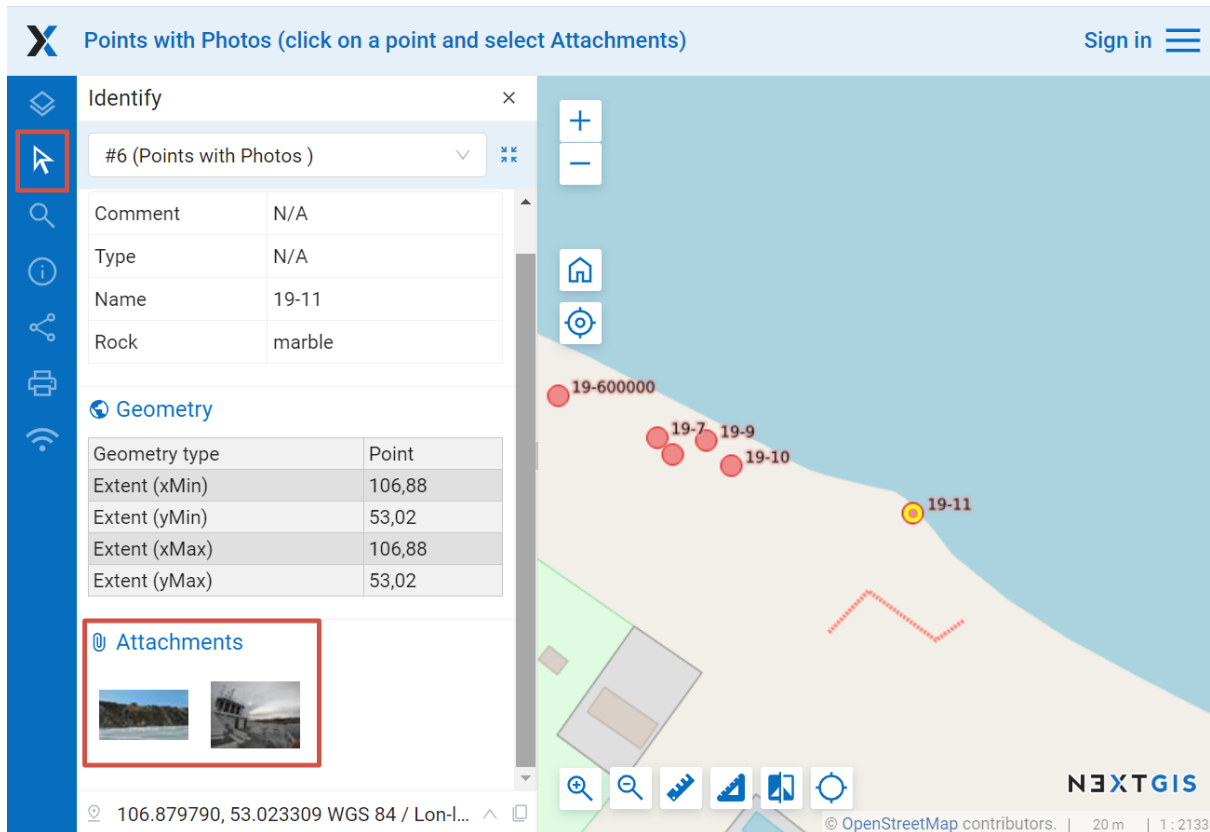


Fig. 11.18: Identify window for a feature with attached photos

Files in the following formats can be viewed directly in the web client:

- JPEG, PNG images. GIF format not supported.
- Panoramas complying with the [specification](https://developers.google.com/streetview/spherical-metadata?hl=en)<sup>119</sup>.

Other types of files can be added as attachments, but won't be viewed in the interface.

After a click on a photo preview a lightbox window is open (a javascript powered window in browser). Photo size is adjusted to fit the window. Photos have descriptions and user can navigate through them using left and right arrow keys on the keyboard (see Fig. ??).

To navigate within the panorama, use the mouse. Hold down the left mouse button to rotate the camera. Use the wheel to zoom in and out. Panorama mode can be disabled by clicking on the blue round button in the upper right corner.

<sup>119</sup> <https://developers.google.com/streetview/spherical-metadata?hl=en>



Fig. 11.19: A lightbox with uploaded photo for the identified feature

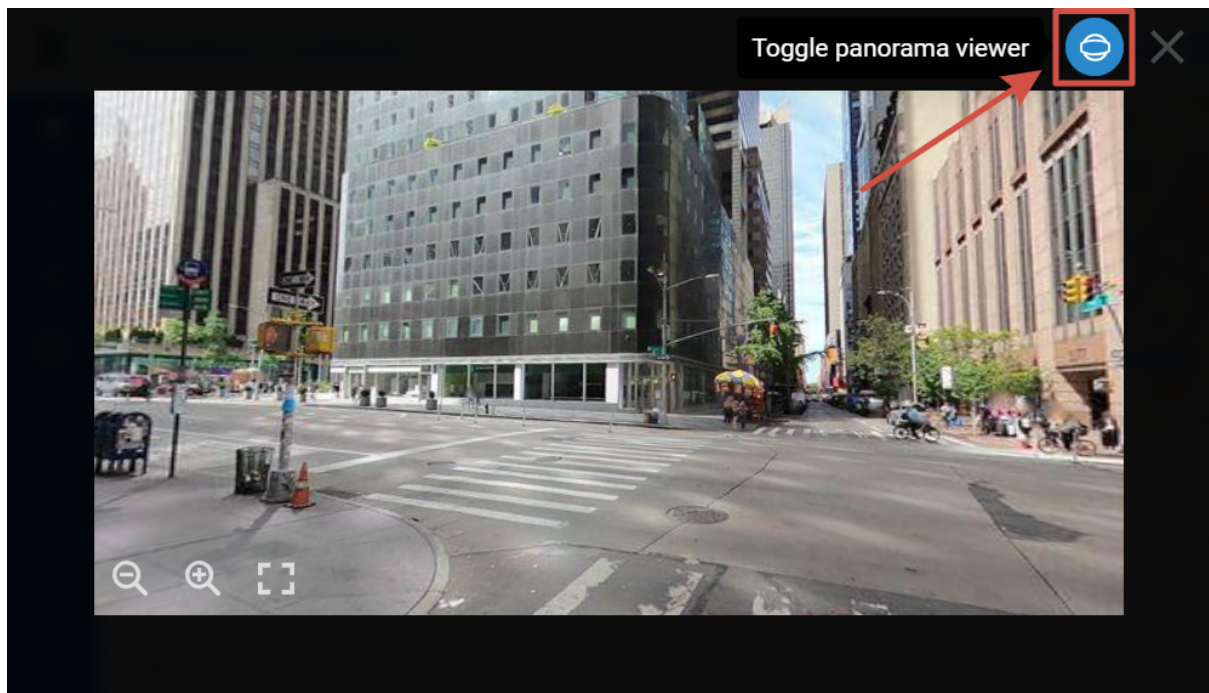


Fig. 11.20: Panorama opened from Web Map

### 11.5.1 Add attachments to a feature

To add an attachment to a feature, go to the edit window. There are several ways to open it:

- Click on the feature on the Web Map, then in the pop-up window press the **Edit** button.
- Open the feature table on the Web Map, select the feature and click **Edit** in the toolbar.
- Open the feature table from the resource page, select the feature and click **Edit** in the toolbar.

On the Edit page open the Attachments tab and upload the files.

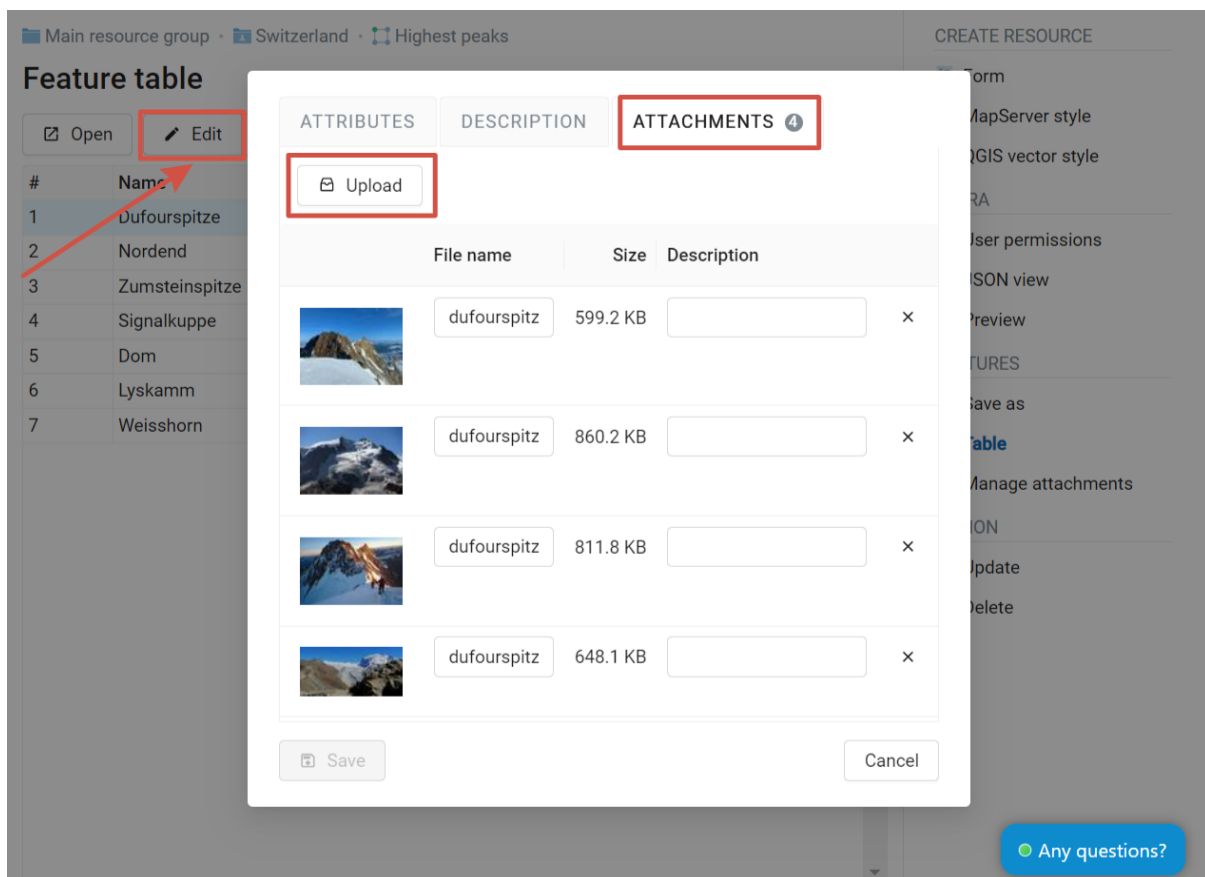


Fig. 11.21: Adding file as attachment

Enter titles for the attachments and press **Save**.

After uploading you can see previews of photos and panoramas on the “Attachments” tab of the identify window (see [attach\\_tab\\_pic](#)).

**Note:** By default attachments could be added by any user but there is an option to limit number of users who can upload photos (see [Managing access rights](#)<sup>120</sup>).

<sup>120</sup> [https://docs.nextgis.com/docs\\_ngcom/source/permissions.html](https://docs.nextgis.com/docs_ngcom/source/permissions.html)

You can edit file names and descriptions of the added attachments. To delete an attachment, press the cross icon to its right. If you've made an error during editing, press **Reset**, all modifications will be cancelled.

To delete an attachment select it on the "Attachments" tab of the edit window, click **Delete**, and then click **Save** button.

See the process of adding attachments in our video:

Watch on [youtube](#)<sup>121</sup>.

### 11.5.2 How to use panoramas

Not only photos, but also panoramas can be added as attachments. They allow to immerse explore new locations or find new details in familiar places.

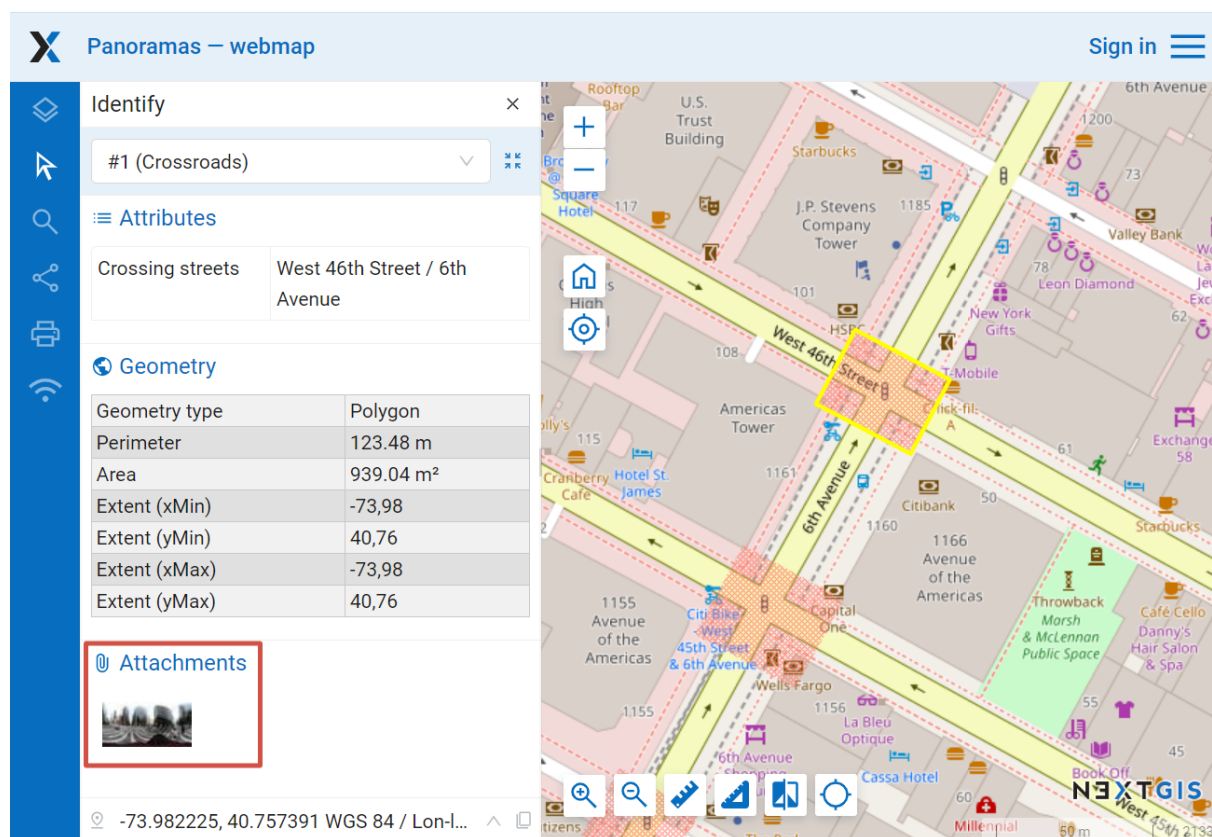


Fig. 11.22: Panorama preview in the identify panel

Uploaded panoramic images must comply with the Google XMP Photo Sphere [specification](#)<sup>122</sup>.

See how to work with panoramas in our video:

Watch on [youtube](#)<sup>123</sup>.

<sup>121</sup> [https://youtu.be/t1c1GT2myD4?si=2SZsLHOYH\\_lfnNAx](https://youtu.be/t1c1GT2myD4?si=2SZsLHOYH_lfnNAx)

<sup>122</sup> <https://developers.google.com/streetview/spherical-metadata?hl=en>

<sup>123</sup> [https://youtu.be/MeZ0jAbZ5I?si=F6s\\_wScaTeEjfpPl](https://youtu.be/MeZ0jAbZ5I?si=F6s_wScaTeEjfpPl)

### 11.5.3 Export and import attachments

To copy feature attachments between different layers or to create a backup you can save them to your device as an archive (Standard layer saving does not include attachments).

Navigate to the layer resource page and select **Manage attachments**.

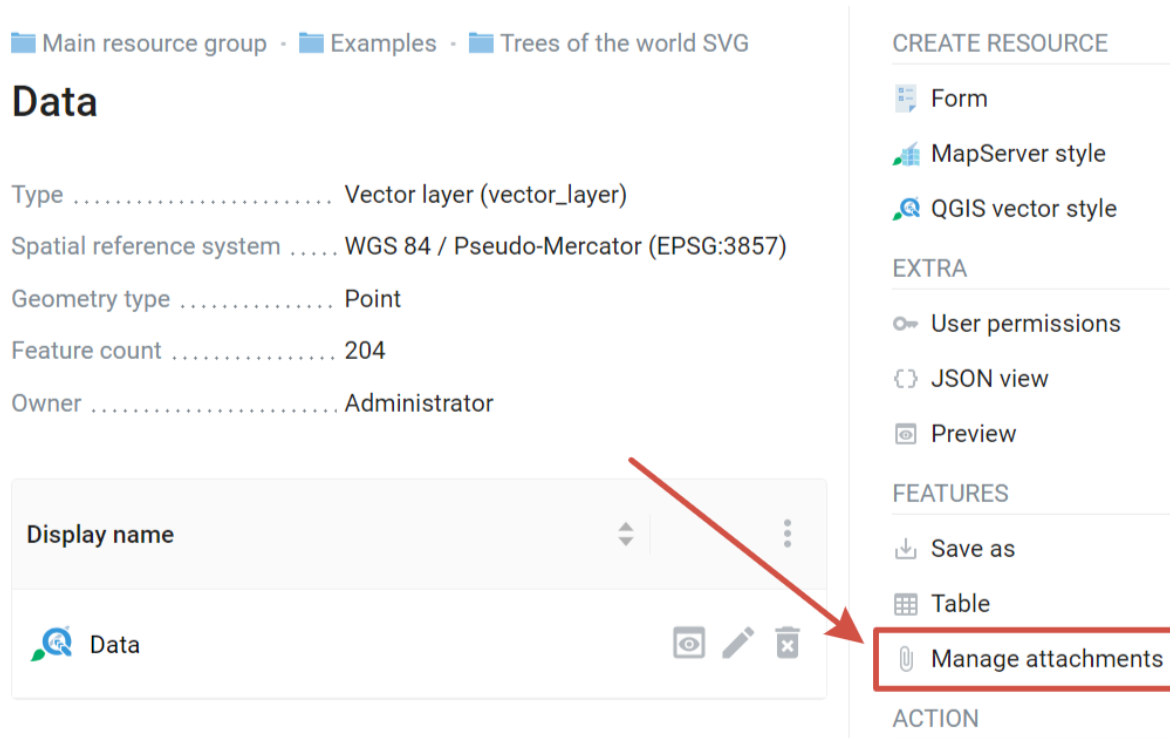


Fig. 11.23: Managing attachments

To save the attachments, go to the **Export** tab and press **Export attachments to ZIP archive**. The resulting ZIP archive will contain all of the attachments put in directories named after feature IDs. Attachment metadata are put into a separate JSON file.

The resulting archive can be imported to add the attachments to the layer features. Open the **Import** tab, click **Import attachments from ZIP archive** and select the archive on your device. An archive must contain directories named after feature IDs. Each folder can contain one or many attachments. Duplicates will be ignored. If you need to replace the current attachments, tick "Delete existing attachments".

## 11.6 Edit vector layer attributes table

"Fields" tab contains a table with vector layer attributes (see Fig. ??). Click on a table row to open the attribute edit form.

The table contains the following columns:

- Name of the attribute - display name to use in the identification window instead of the keyname

Main resource group
Examples
Trees of the world SVG
Data

## Manage attachments

Export
Import

Use export to copy feature attachments between different layers or to create a backup. The resulting ZIP archive will contain all of the attachments put in directories named after feature IDs. Attachment metadata are put into a separate JSON file.

Export attachments to ZIP archive

CREATE RESOURCE

Form
MapServer style
QGIS vector style

EXTRA

User permissions
JSON view
Preview

FEATURES

Save as
Table
Manage attachments

ACTION

Fig. 11.24: Exporting attachments as ZIP archive

Main resource group
Examples
Trees of the world SVG
Data

## Manage attachments

Export
Import

Upload a ZIP archive to batch append attachments to existing features. An archive must contain directories named after feature IDs. Each folder can contain one or many attachments. Duplicates will be ignored.

☐ Delete existing attachments

Import attachments from ZIP archive

CREATE RESOURCE

Form
MapServer style
QGIS vector style

EXTRA

User permissions
JSON view
Preview

FEATURES

Save as
Table
Manage attachments

ACTION

Fig. 11.25: Importing attachments from ZIP archive

Main resource group - Switzerland - Largest lakes

## Update resource

⊕ Add						
Name	Name	STRING				
Area, km²	Area_km2	REAL				
Area, mi²	Area_mi2	REAL				

Fig. 11.26: “Fields” tab

- Key - technical name of the attribute, can be comprised only of plain latin symbols
- Type

For the next three parameters a dark symbol means “on” and a light symbol means “off”.

- Feature table - the attribute is displayed in the identification window.
- Text search - you can disable text search in the values of the attribute.
- Label attribute - the attribute is used for bookmarks.

At the end of each row there is a button:

- Delete

In the attribute editing mode you can also add a [Lookup table](https://docs.nextgis.com/docs_ngweb/source/create_other.html#ngw-create-lookup-table)<sup>124</sup>. It allows to select values of the attribute when you add or edit features. To add a lookup table, click on the field in the form, then in the pop-up window select the resource.

To go back to table view, press the arrow in the top row of the form.

After all edits are made, click **Save**.

<sup>124</sup> [https://docs.nextgis.com/docs\\_ngweb/source/create\\_other.html#ngw-create-lookup-table](https://docs.nextgis.com/docs_ngweb/source/create_other.html#ngw-create-lookup-table)

Main resource group - Switzerland - Largest lakes

## Update resource

RESOURCE

FIELDS

VECTOR LAYER

SETTINGS

PERMISSIONS

DESCRIPTION

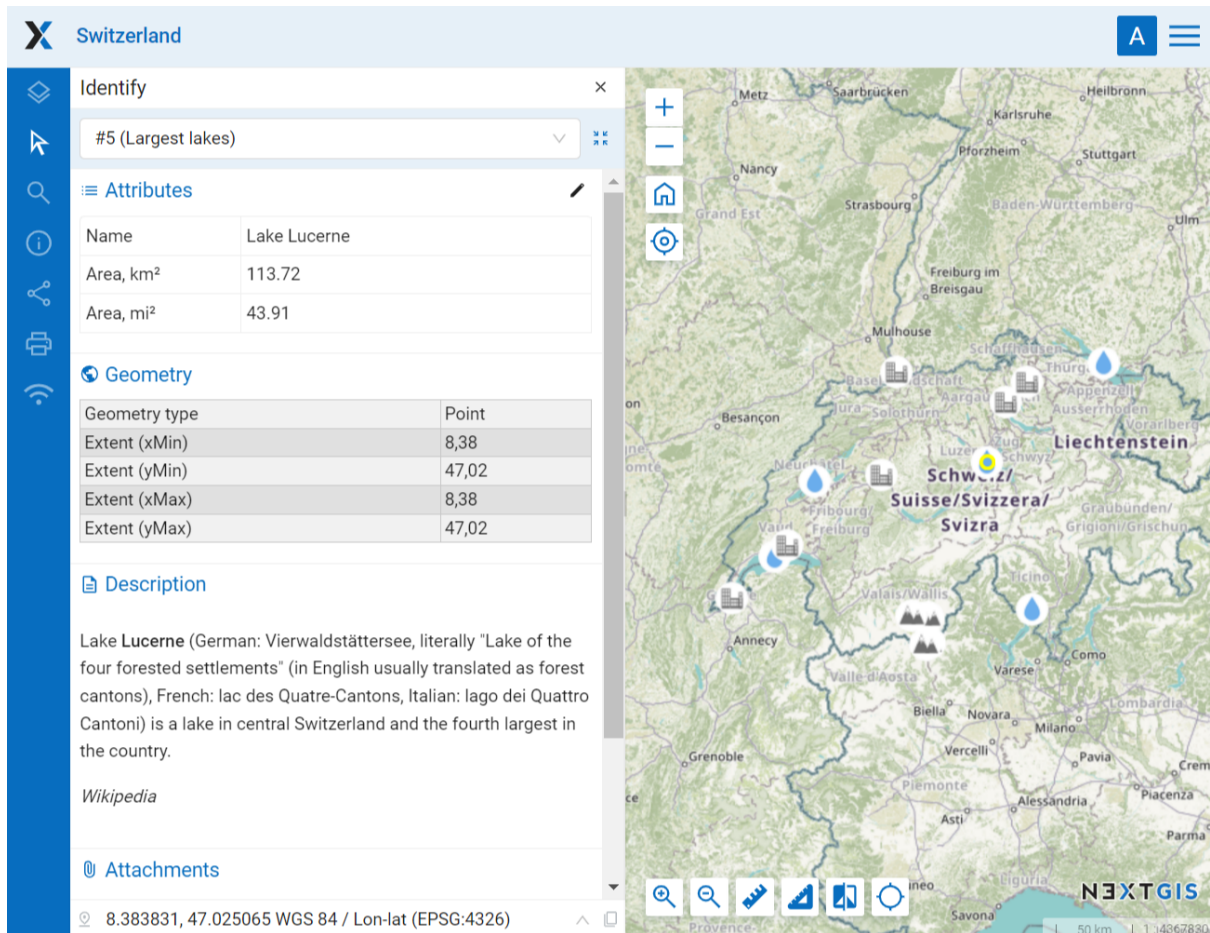
⊕ Add

✕ Delete

Name	
Area, km <sup>2</sup>	<div>Display nameArea, km<sup>2</sup></div> <div>KeynameArea_km2</div> <div>TypeREAL</div> <div><input checked="" type="checkbox"/> Feature table</div> <div><input checked="" type="checkbox"/> Text search</div> <div><input type="checkbox"/> Label attribute</div>
Area, mi <sup>2</sup>	

Save

Fig. 11.27: Display name with superscript symbol and keyname of the field



**Switzerland**

**Identify**

#5 (Largest lakes)

**Attributes**

Name	Lake Lucerne
Area, km <sup>2</sup>	113.72
Area, mi <sup>2</sup>	43.91

**Geometry**

Geometry type	Point
Extent (xMin)	8,38
Extent (yMin)	47,02
Extent (xMax)	8,38
Extent (yMax)	47,02

**Description**

Lake **Lucerne** (German: Vierwaldstättersee, literally "Lake of the four forested settlements" (in English usually translated as forest cantons), French: lac des Quatre-Cantons, Italian: lago dei Quattro Cantoni) is a lake in central Switzerland and the fourth largest in the country.

*Wikipedia*

**Attachments**

8.383831, 47.025065 WGS 84 / Lon-lat (EPSG:4326)

**Map**

Metz, Saarbrücken, Karlsruhe, Heilbronn, Nancy, Pforzheim, Stuttgart, Grand Est, Strasbourg, Baden-Württemberg, Ulm, Freiburg im Breisgau, Mulhouse, Schaffhausen, Thurgau, Appenzell Aargau, Appenzell Ausserrhoden, Vorarlberg, Graubünden/Grigioni/Grischun, Liechtenstein, Schweiz/Svizzera/Svizra, Ticino, Valais/Wallis, Valle d'Aosta, Varese, Como, Biella, Novara, Milano, Lombardia, Pavia, Cremona, Piacenza, Parma, Asti, Vercelli, Piemonte, Alessandria, Genova, Liguria, Savona, Piemonte, Provence, NEXTGIS

Fig. 11.28: The identification window. Names of the fields are displayed with superscript symbols

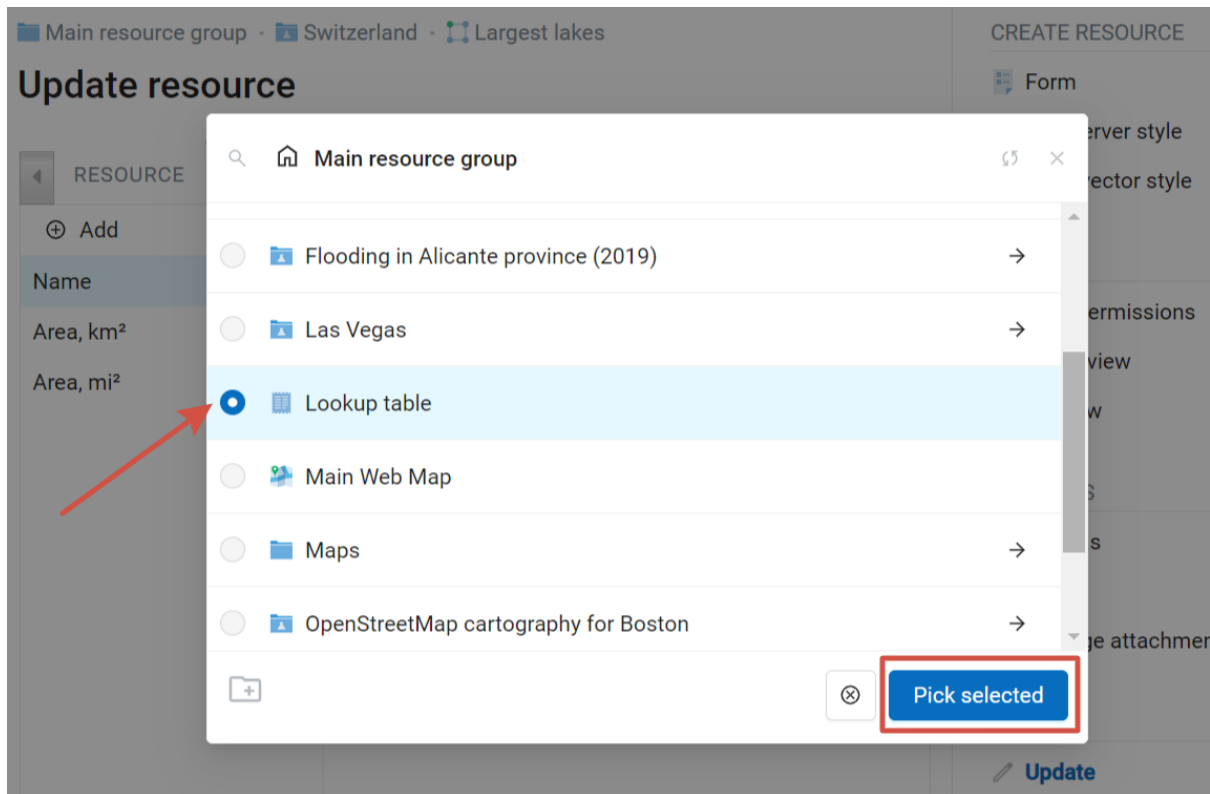


Fig. 11.29: Adding lookup table to a field

## 11.7 Delete or replace all features

NextGIS Web software allows to delete all features of a layer or replace them by uploading a new file.

Click on the pencil icon next to the layer.

In the “Vector layer” tab select the action from the dropdown menu.

You can delete all the features. This will result in an empty layer of the same structure that you can add new features to. To do so, select “Delete all features from layer”, tick to confirm and press **Save**.

You can replace all the features by uploading a previously prepared file. Select “Replace layer features from file”. Open the file or drag and drop it into the frame.

If the file has multiple layers, select the one you need in the “Source layer” field. You can also set up other properties, as while creating a new vector layer.

If you replace the file, not only the features, but the structure of the attributes and other properties will be changed to match the new file.

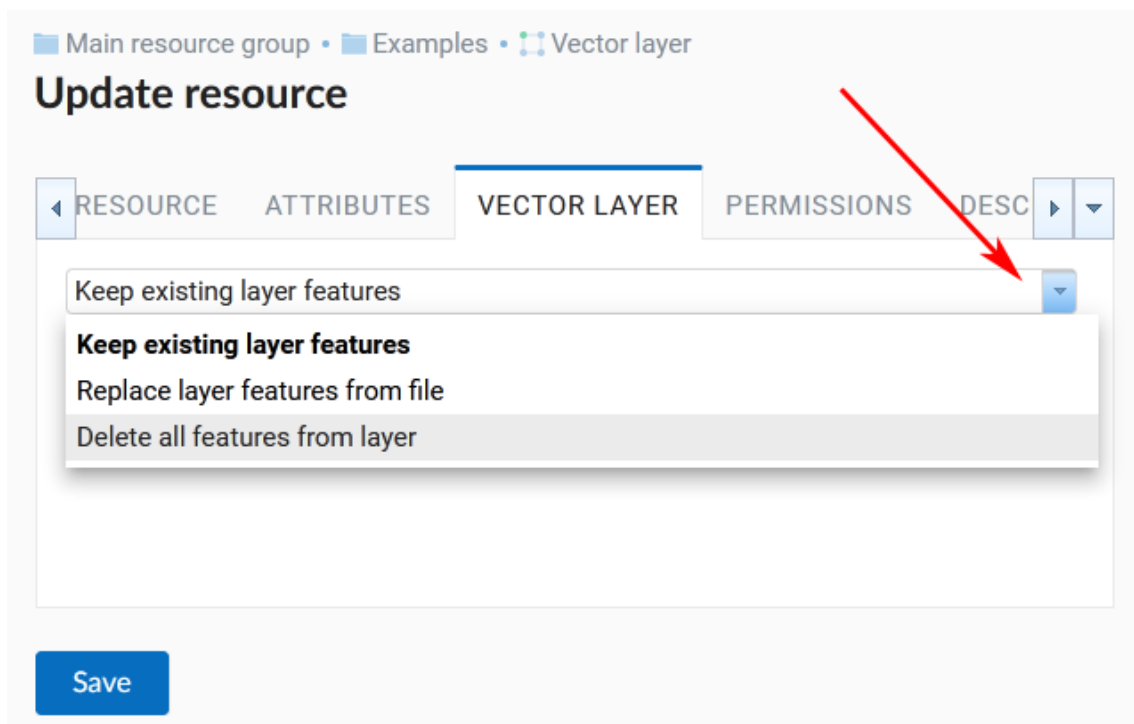


Fig. 11.30: Options to edit the layer file

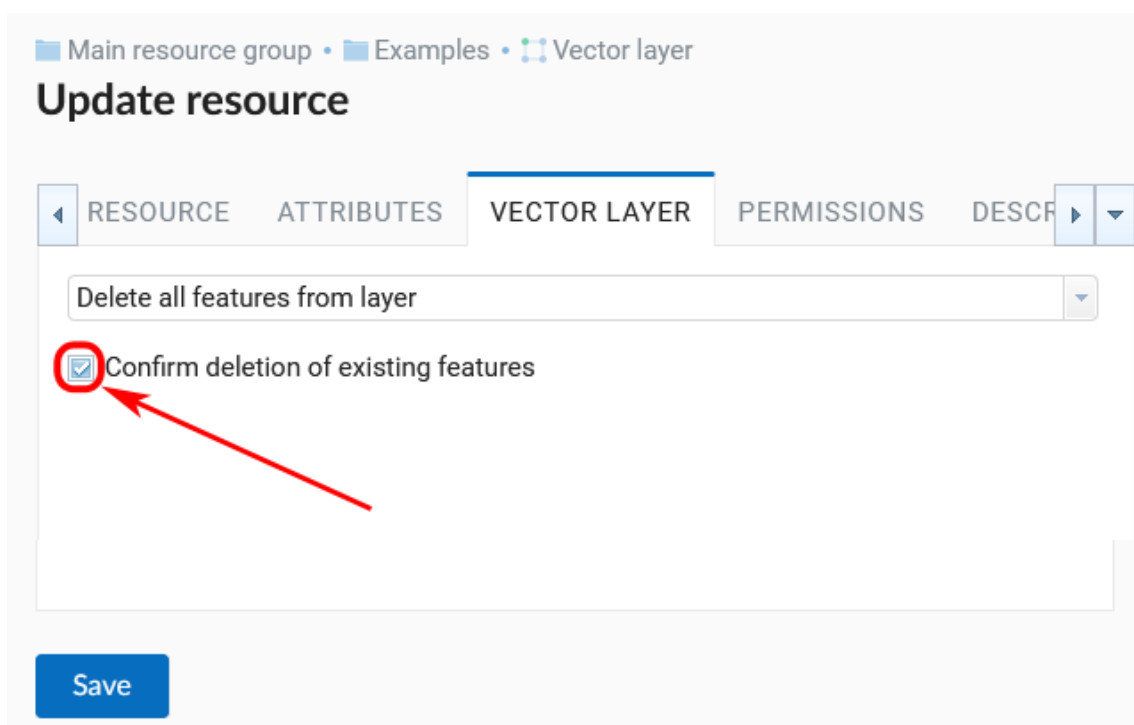


Fig. 11.31: Deleting all features from the layer

Main resource group • Examples • Vector layer

## Update resource

RESOURCE ATTRIBUTES VECTOR LAYER PERMISSIONS DESCRIPTION

Replace layer features from file

Select a dataset or drag and drop here.

ESRI Shapefile (zip), GeoPackage, GeoJSON, GML, KML, CSV or XLSX formats are supported. For CSV and XLSX only points are supported, coordinates must be put in lat and lot columns.

2.0 GB max

Source layer

Advanced options

Fix errors Whatever possible

☒ Skip features with unfixable errors

Geometry type Auto

☐ Only load features of the selected geometry type

Multi-geometry Auto Z-coordinate Auto

FID source Auto FID field(s) ngw\_id,id

☒ Confirm deletion of existing features

Save

Fig. 11.32: Replacing layer file

## ADVANCED OPTIONS FOR UPLOADING VECTOR LAYER FROM A FILE

Advanced settings are available when uploading a vector layer from a file (Fig. ??).

### 12.1 Processing possible errors

#### Fix errors

Possible values:

- **Whatever possible** - errors will be corrected to the maximum with possible data loss;
- **Without losing data** - errors will be corrected without data loss;
- **None** - no error will be corrected.

The following fixes are made:

- Extract geometries from Geometry Collection and Multigeometries if they have only one part;
- Close the rings of polygons;
- When extracting geometries from a Geometry Collection and Multigeometries the first matching geometry is taken, the others are discarded. This correction is not performed in “Without losing data” mode.

**Skip features with unfixable errors** - defines what happens if the errors cannot be corrected using the *Fix errors* mode. If ticked, features with errors will be skipped and the layer will be created. If unticked, then the layer will not be created and the first 10 errors that led to this will be listed.

### 12.2 Detecting geometry type

In NextGIS Web vector layers must have a single type of geometry. If the source file contains different types of geometry, you must either set up filtering or convert the geometries to a specific type.

#### Geometry type

Possible values:

## Create resource

Resource

Vector layer

Settings

Description

Metadata

Load features from file

[Select a dataset](#) or drag and drop here  
ESRI Shapefile (zip), GeoPackage, GeoJSON, GML, KML, CSV or XLSX formats are supported. For CSV and XLSX only points are supported, coordinates must be put in lat and lot columns.  
2.0 GiB max

Advanced options

Fix errors:

Whenever possible

Without losing data

None

☒ Skip features with unfixable errors

Geometry type:

Auto

Point

Line

Polygon

☐ Skip features with other geometry types

Multi-geometry:

Auto

Yes

No

Z-coordinate:

Auto

Yes

No

FID source:

Auto

Sequence

Field

ngw\_id, id

Create

...

Fig. 12.1: Advanced vector layer uploading options

- Auto
- Point
- Linesrting
- Polygon

This setting specifies the geometry class. For example, the POINT class includes geometries such as POINT, MULTIPOINT, POINTZ, MULTIPOINTZ.

If a geometry class is selected and the original layer contains geometries from other classes, this will be considered an error. If you check **Only load features of the selected geometry type**, then geometries of other classes will be skipped.

Geometry type can be further specified by parameters **Multi-geometry** and **Z-Coordinate**.

Possible values for those two parameters are:

- Auto
- Yes
- No

## 12.3 Object ID detection settings (FID)

Every feature in a NextGIS Web vector layer must have a unique identifier. If the file has no field that can serve as FID, a new field is created. You can select how to define FID for the layer.

### FID source

Possible values:

- **Auto** - FID is taken from the *integer* field with unique values if it exists. The field is not included into the layer's attributes. Otherwise, a new hidden field is created, numbers start with 1;
- **Sequence** - a new field is created, FID starts with 1;
- **Field** - FID is taken from the field defined by user. For example, if a layer was exported from NextGIS Web, it has a field *ngw\_id*.

## POSTGIS SPECIFICS AND DIAGNOSTIC

### 13.1 Multiple geometries in a single table

NextGIS Web software supports tables with point, line and polygon geometries stored in a single geometry column. This is required for some specific datasets: e.g. if one table stores coordinates for parks as polygons and trash cans as points. In this case, in NextGIS Web you need to add three different layers, one for each type of geometry, and select the appropriate “Geometry type” parameter for each layer.

After a layer is created, you need to set a label attribute to display labels. Navigate to layer edit dialog and set a checkbox for the required field in the “Label attribute” column.

If the structure of the database changes (column names, column types, number of columns, table names etc.), you need to update the attribute definitions in the layer properties. Select “Update” in the actions pane and then on the “PostGIS layer” tab change “Attribute definitions” to “Reload” and click **Save**.

### 13.2 PostGIS diagnostics

You can check the correctness of the entered data when adding the [PostGIS Connection](#)<sup>125</sup> resource using the **Diagnostics** tool. To do this, you need to click on the **Diagnostics** button on the panel on the right.



If all fields are filled in correctly when creating a connection to PostGIS - diagnostics will be successful.

If any of the entered data is not correct, an error message will appear.

---

<sup>125</sup> [https://docs.nextgis.com/docs\\_ngweb/source/layers.html#creating-postgis-connection](https://docs.nextgis.com/docs_ngweb/source/layers.html#creating-postgis-connection)

The screenshot shows the 'PostGIS diagnostics' section in the NextGIS Web interface. The 'PostgreSQL connection' status is 'SUCCESS', indicating a successful connection to the database. The 'PostGIS extension' status is also 'SUCCESS', showing details like 'PostGIS extension version 2.5.5' and 'Number of geometry columns: 7'. The right sidebar contains links for 'User permissions', 'JSON view', and 'Diagnostics', along with 'Update' and 'Delete' actions.

The screenshot shows the 'PostGIS diagnostics' section in the NextGIS Web interface. The 'PostgreSQL connection' status is 'ERROR', with the message 'Failed to connect to the database.' The 'PostGIS extension' status is 'UNKNOWN'. The right sidebar contains links for 'User permissions', 'JSON view', and 'Diagnostics', along with 'Update' and 'Delete' actions.

## 13.3 PostGIS layer troubleshooting

You created a connection, but when you try to create a PostGIS layer based on it, you get errors.

If you get:

1. Cannot connect to the database!

Check the database: is it available, do you have the right credentials? You can do it using **pgAdmin** or **NextGIS QGIS**.

Note that databases may be down temporarily and credentials might change.

## 13.4 Create layers with conditions

In **NextGIS Web** you can not define queries using WHERE SQL clause. This provides additional security (prevention of SQL Injection attack). To provide query capability you need to create views with appropriate queries in the database.

To do this connect to PostgreSQL/PostGIS database using **pgAdmin**, then navigate to data schema where you want to create a view, right click tree item “Views” and select “New view” (see item 1 in Fig. ??). Also you can right click on schema name and select “New object” and then “New view”. In the opened dialog, enter the following information:

The screenshot shows the 'PostGIS diagnostics' section in the NextGIS Web interface. The 'PostgreSQL connection' status is 'ERROR', with the message 'Host name resolution failed: name or service not known.' The 'PostGIS extension' status is 'UNKNOWN'. The right sidebar contains links for 'User permissions', 'JSON view', and 'Diagnostics', along with 'Update' and 'Delete' actions.

1. View name («Properties» tab).
2. Data schema where to create a view («Properties» tab).
3. SQL query («Definition» tab).

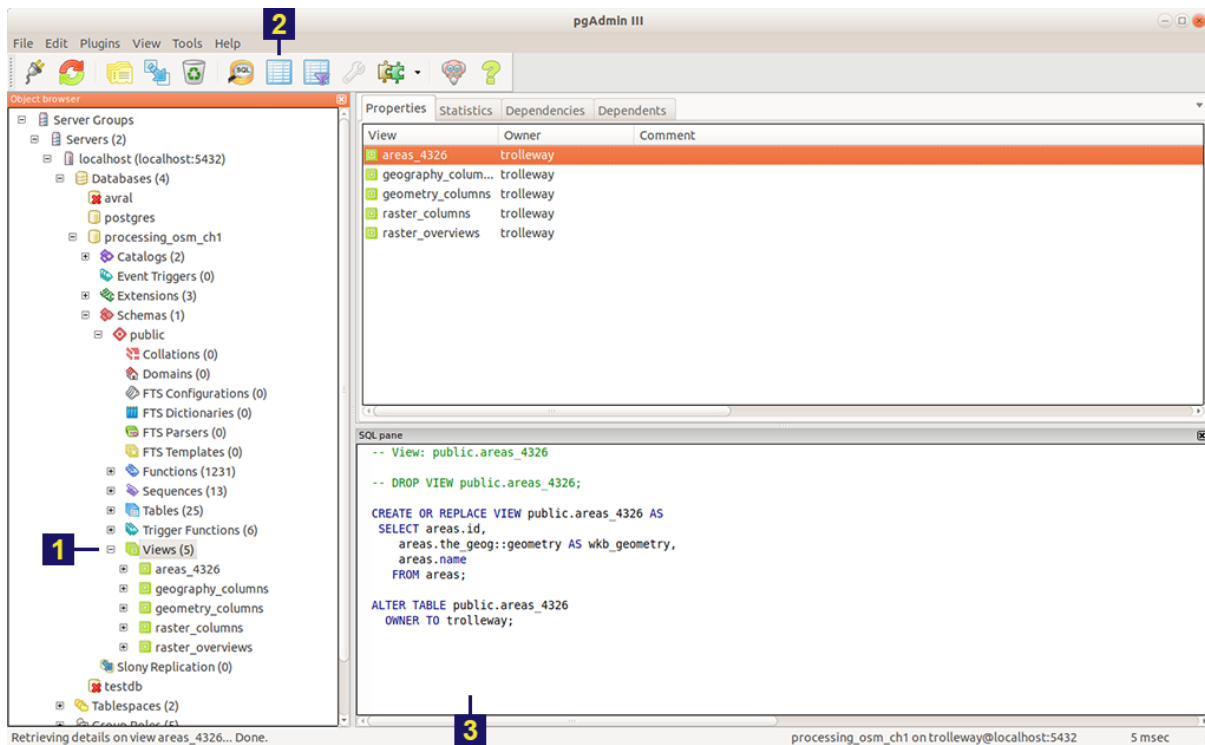


Fig. 13.1: Main dialog of **pgAdmin** software

The numbers indicate: 1. – Database items tree; 2 – a button for table open (is active if a table is selected in tree); 3 – SQL query for view.

After that you can display a view to check if the query is correct without closing **pgAdmin** (see item 2 in Fig. ??).

## ADDING WEB MAPS

There could be several Web Maps in NextGIS Web. For example one map is for work, another is for public access and third is for testing of layer styles.

Each Web Map has its own URL address. Different access permissions for Web Map viewing can be set for users and groups.

Web Map displays layers. They can be turned on or off by the user. You can set the [order](#)<sup>126</sup> of the layers, default layer [visibility](#)<sup>127</sup> and create layer [groups](#)<sup>128</sup>. Groups on a map do not relate to resource groups in the Control Panel. Groups may be nested.

To view Web Map in browser, press  next to its name in the resource list or open the resource page and select **Display** in the Actions panel on the right. It will open in a [web viewer](#)<sup>129</sup>.

### 14.1 Creating a Web Map

First upload the data to your Web GIS as [layers](#)<sup>130</sup>.

To create a Web Map, open the resource group where you want to add it, press **Create resource** button and in the pop-up window select “Web Map”. (see Fig. ??).

Create resource dialog for a Web Map will open, see Fig. ??.

Enter Web Map display name that will be visible in the administrator interface and in the Web Map viewer. (You can set up a title to be displayed in Web Map viewer in the [Settings tab](#)<sup>131</sup>.)

“Keyname” field is optional.

You can also add resource description and metadata on the corresponding tabs.

If you want to create a copy of an existing Web Map, you can [clone](#)<sup>132</sup> it.

---

<sup>126</sup> [https://docs.nextgis.com/docs\\_ngweb/source/webmaps\\_admin.html#layer-draw-order](https://docs.nextgis.com/docs_ngweb/source/webmaps_admin.html#layer-draw-order)

<sup>127</sup> [https://docs.nextgis.com/docs\\_ngweb/source/webmaps\\_admin.html#admin-webmap-create-layers](https://docs.nextgis.com/docs_ngweb/source/webmaps_admin.html#admin-webmap-create-layers)

<sup>128</sup> [https://docs.nextgis.com/docs\\_ngweb/source/webmaps\\_admin.html#layer-groups](https://docs.nextgis.com/docs_ngweb/source/webmaps_admin.html#layer-groups)

<sup>129</sup> [https://docs.nextgis.com/docs\\_ngweb/source/webmaps\\_client.html](https://docs.nextgis.com/docs_ngweb/source/webmaps_client.html)

<sup>130</sup> [https://docs.nextgis.com/docs\\_ngweb/source/layers.html](https://docs.nextgis.com/docs_ngweb/source/layers.html)

<sup>131</sup> [https://docs.nextgis.com/docs\\_ngweb/source/webmaps\\_admin.html#ngw-map-settings](https://docs.nextgis.com/docs_ngweb/source/webmaps_admin.html#ngw-map-settings)

<sup>132</sup> [https://docs.nextgis.com/docs\\_ngweb/source/webmap\\_clone.html](https://docs.nextgis.com/docs_ngweb/source/webmap_clone.html)

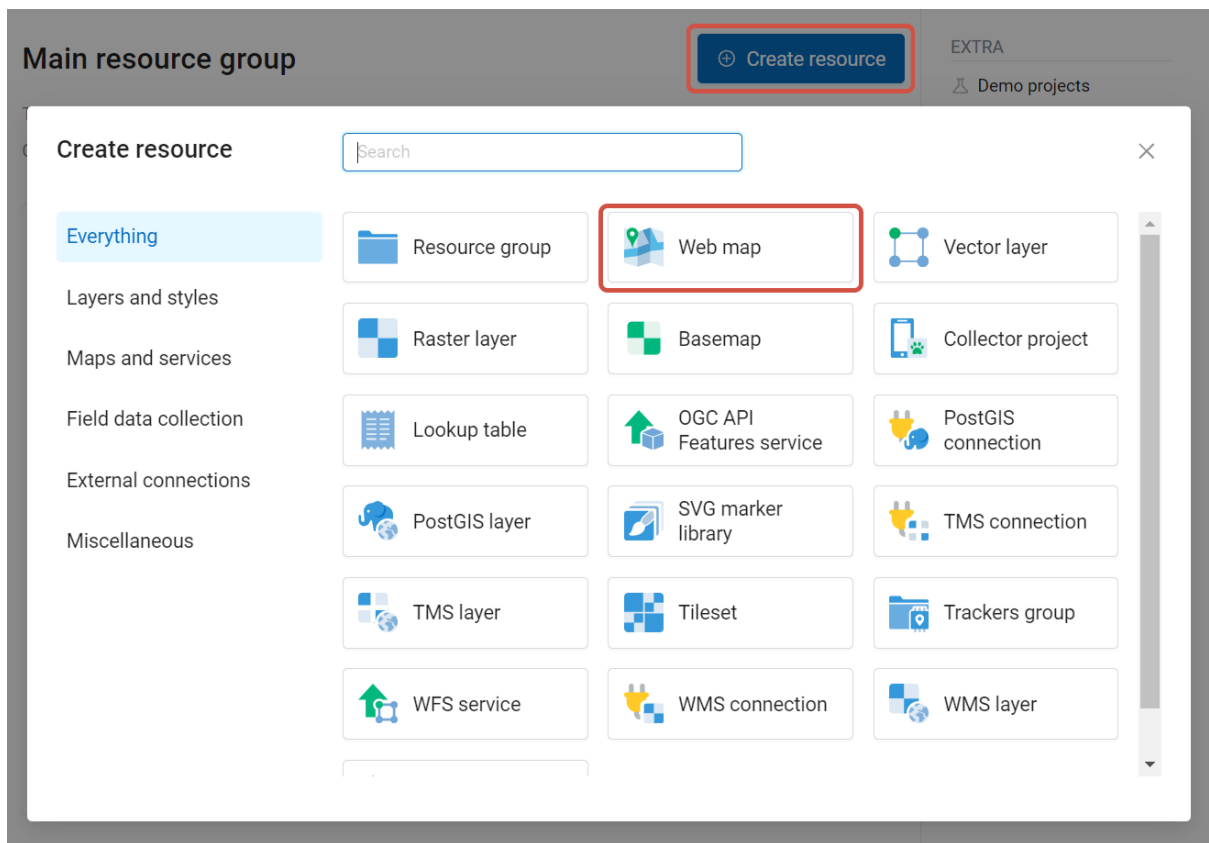


Fig. 14.1: Selection of “Web Map” resource type

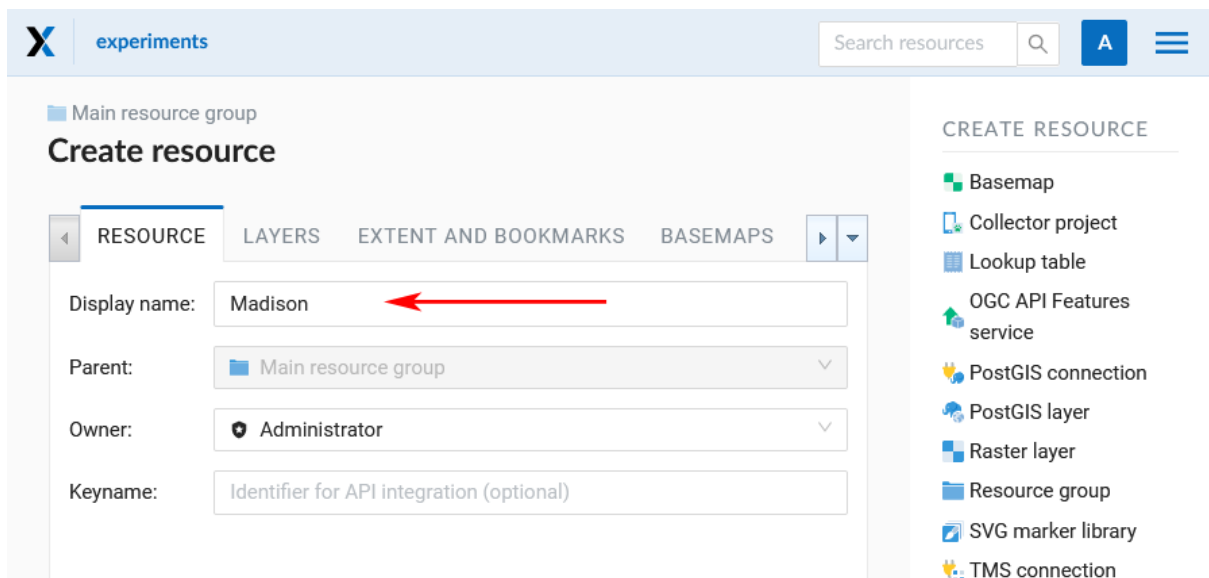


Fig. 14.2: “Create resource” dialog for Web Map

## 14.2 Web Map Layers

In the “Layers” tab you can add, group or remove layers and change their order using the buttons “Add layer”, “Add group”, “Customize draw order” and “Delete layer” (X at the end of each row).

Main resource group · Examples · Madison · Madison

### Update resource

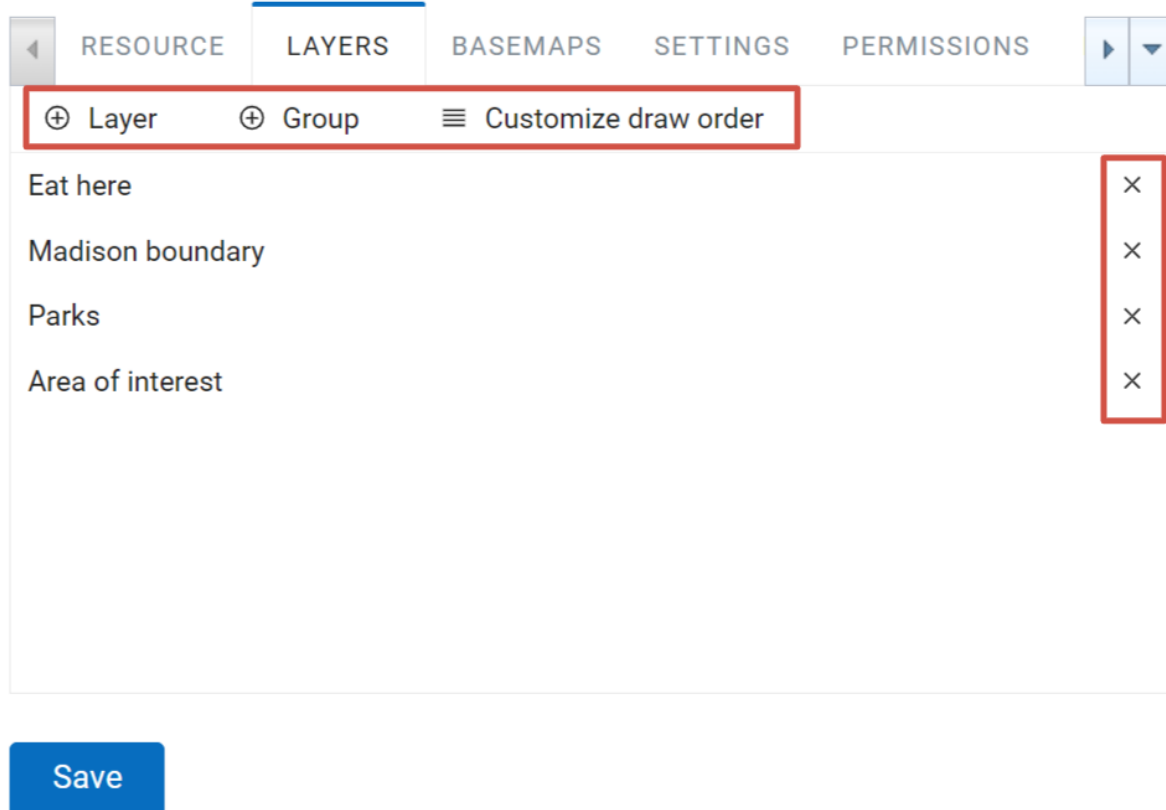




Fig. 14.3: “Layers” tab

To view the data of the layer on a map, you need to create at least one layer style. More on creating styles for different layer types [here](#).

You can add multiple styles at once. The layers containing selected styles are marked with blue dots. Navigate between resource groups and tick the styles of various layers you want to add. The **Pick selected** button displays the total

number of selected styles. To clear the selection press the  button next to it.

You don’t need to go the style list of the layer to select the style. Press the  button to the right of the layer name to auto-select the first style.

Layers of a particular map have several settings, see Fig. ??.

“Enabled” checkbox sets default visibility of a layer.

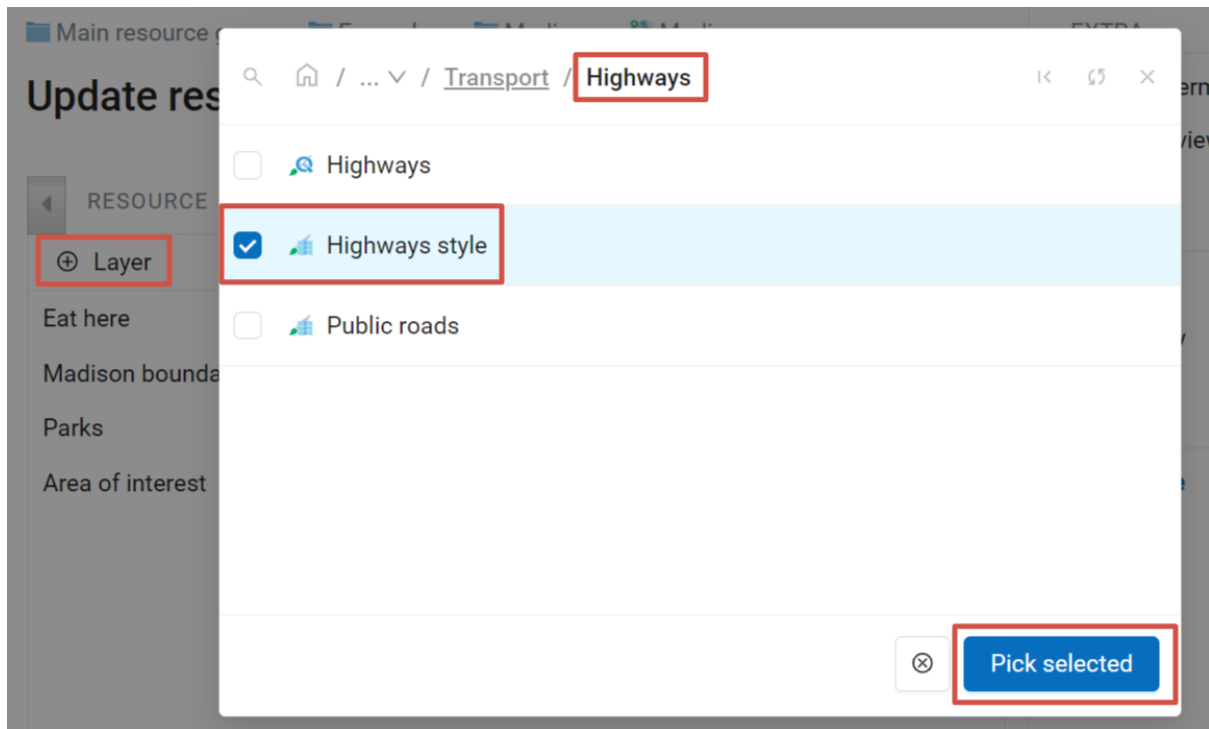


Fig. 14.4: Using style to add a layer to the Web Map

The “Transparency” field sets the layer transparency on a map between 0% (opaque) and 100% (completely transparent).

We recommend setting the “Adapter” field to “Image” (a single image for the entire map), unless there are some special requirements. Alternatively, you can choose “Tiles” (images of 256 x 256 pixels).

---

**Tip:** Use “Tiles” adapter to display correctly features crossing the 180th meridian.

---

You can also set up a scale range. Min scale corresponds to the smaller image, max scale - to the larger, more detailed image. For example, if you want a layer to be displayed in scales between 1 : 250,000 and 1 : 5,000, the higher number (250,000) is the minimal scale.

---

**Note:** Max and min scale can be set not only using the Web Map’s Layers tab, but also in the layer style itself (See an [example](#)<sup>133</sup>). If the layer should not be displayed in a certain range of scales, we recommend to mark it in the Web Map’s layer settings. If the scale limit is only set within the style, empty tiles will be generated in other scales, which is less efficient.

---

To go back to the layer list, press **Hide details**.

<sup>133</sup> [https://docs.nextgis.com/docs\\_ngweb/source/mapstyles.html#osm-water-line](https://docs.nextgis.com/docs_ngweb/source/mapstyles.html#osm-water-line)

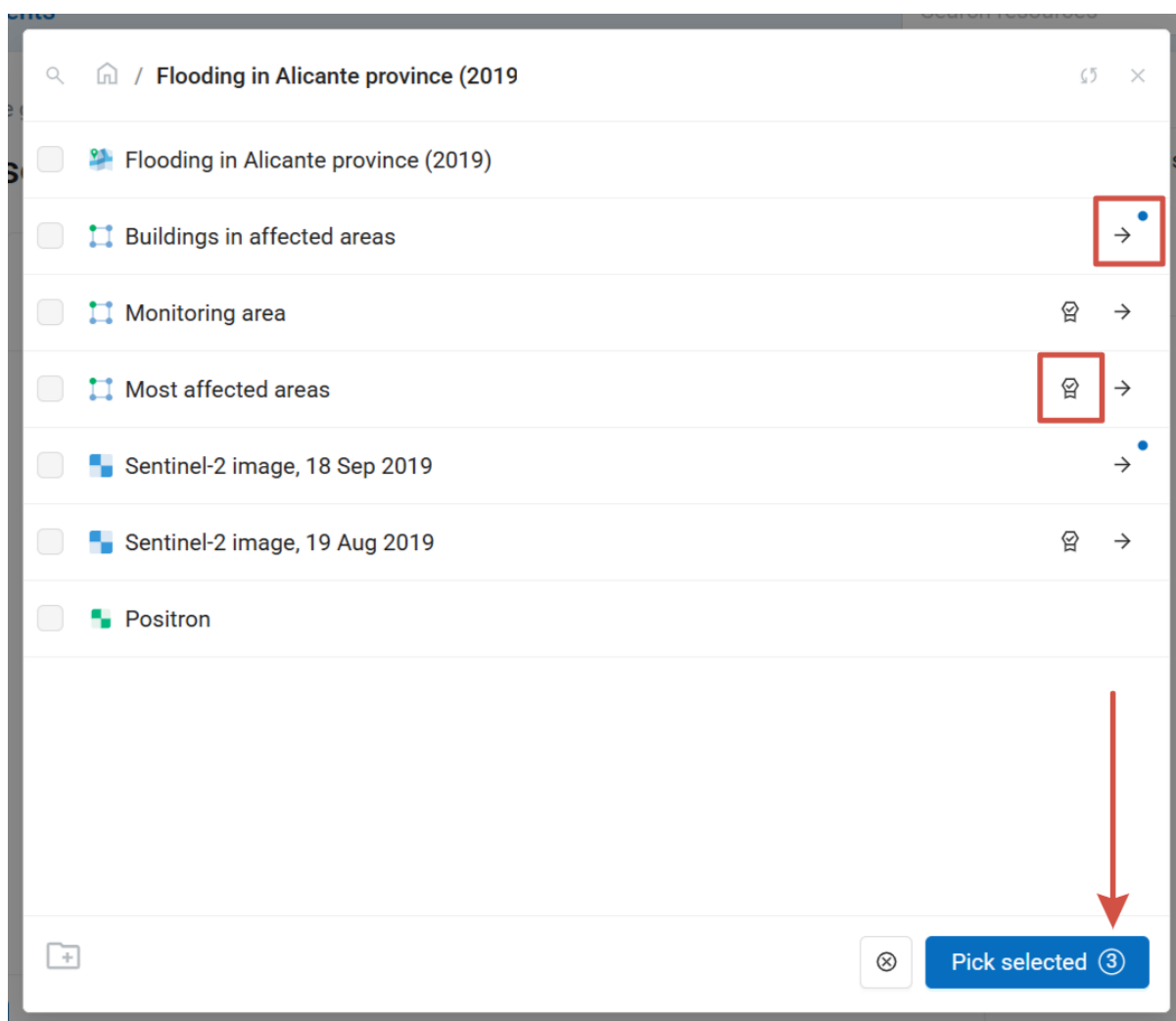


Fig. 14.5: Adding multiple layer styles to a WebMap. Three styles are selected (two styles of one layer + one style of another layer)

## Update resource

◀

RESOURCE

LAYERS

BASEMAPS

SETTINGS

PERMISSIONS

DESCRIPTION

▶

▼

⊕ Layer

⊕ Group

🔒 Hide details

✕ Delete

Eat here

Madison boundary

Parks

Area of interest

Highways



Display name

Highways

☒ Enabled

☒ Identifiable

Resource

 Highways style 

Min scale

Not set

Max scale

Not set

Legend

Default

▼

Adapter

Image

▼

Transparency

0 %

Save

Fig. 14.6: Layer settings

### 14.2.1 Layer groups

Layers added to Web Map can be gathered into groups. It will only affect the layer tree displayed on the map itself, making the legend more legible. It does not affect the actual resource group contents.

To add a new group press **+ Group**. To put a layer into a group, drag and drop.

## Update resource

The screenshot shows the 'Update resource' dialog for a layer group. The 'LAYERS' tab is active. On the left, a list of layers is shown, with 'Satellite' selected and expanded to show 'Sentinel-2 image, 19 Aug ...' and 'Sentinel-2 image, 18 Sep ...'. On the right, the 'Display name' is set to 'Satellite'. There are two checkboxes: 'Expanded' (unchecked) and 'Exclusive' (unchecked). A 'Delete' button is visible in the top right corner. A 'Save' button is located below the dialog.

Fig. 14.7: Layer group settings

**Expanded** option defines the way the layer group is presented in the layer tree when the Web Map is opened.

If **Exclusive** is ticked, layers in the group will only be displayed one at a time. If you activate a layer, all other layers of the group are automatically hidden. It can be handy if you have, for example, a group of satellite data that completely overlaps.

To go back to the layer list, press **Hide details**.

### 14.2.2 Layer draw order

The order of the layers on a map can be different from the order in which they appear in the tree. Click “Customize draw order” in the “Layers” tab of the map settings. It allows to choose the order of the displayed layers without affecting the groups.

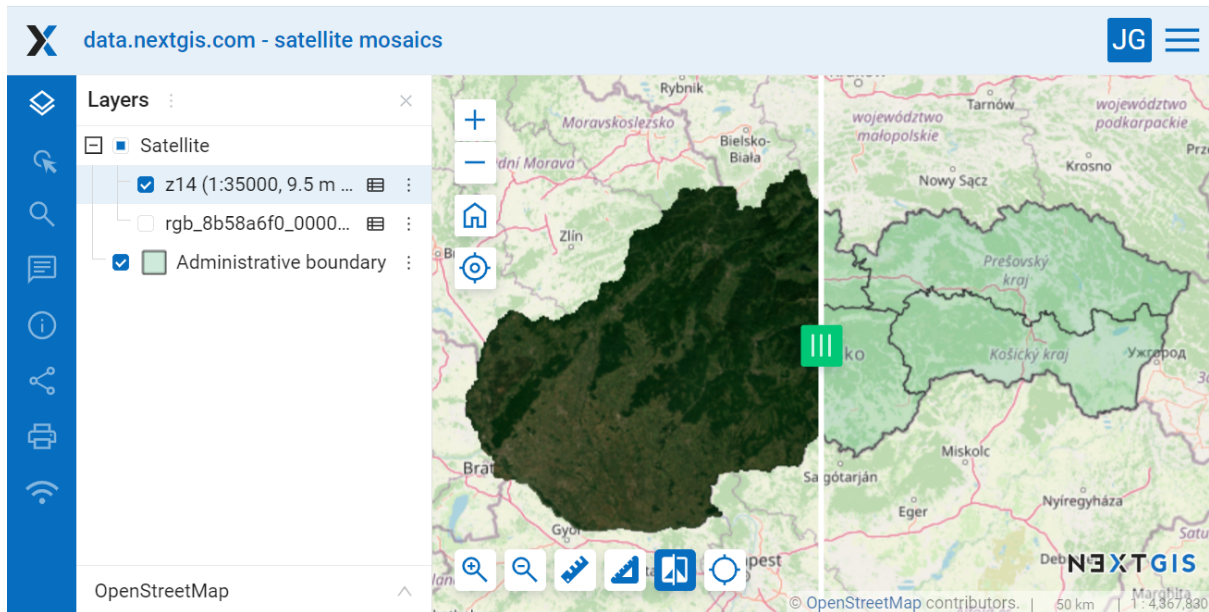


Fig. 14.8: Layer order as is: satellite images obscure the layer where the boundaries are marked

To go back to the list of layers, press **Back to layers and groups**. To restore the initial layer order, press **Use default draw order**.

Press **Save** to save the changes.

## 14.3 Basemaps

“Basemaps” tab allows to add and remove basemaps using corresponding buttons “Add” and “Remove” (see Fig. ??).

If “Default basemap” is checked, this basemap will be visible when the Web Map is opened.

“Opacity” field sets basemap transparency on a map in a range between 0 and 100%.

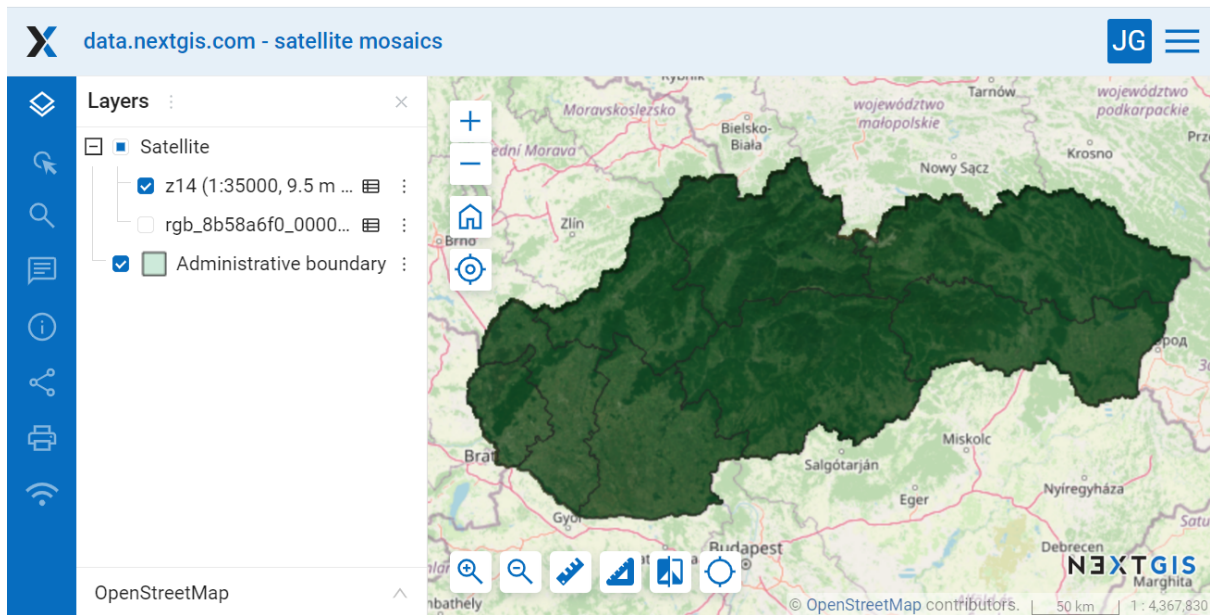


Fig. 14.9: Different draw order: the layer marking the boundaries is above the satellite images, while the layer groups on the left remain unchanged

Main resource group - Examples - Presentation

## Create resource


RESOURCE	LAYERS	BASEMAPS	SETTINGS	DESCRIPTION
<div> <span>⊕ Add</span> <span>✖ Delete</span> </div>				
Positron		<div> <div>Display name</div> <input type="text" value="Positron"/> </div>		
Dark Matter		<div> <input checked="" type="checkbox"/> Default basemap         </div>		
		<div> <div>Opacity</div> <input type="text" value="100 %"/> </div>		
		<div> <div>Resource</div> <div>  Positron         </div> </div>		

Fig. 14.10: “Basemaps” tab

### 14.3.1 Creating Basemap

Press **Create resource** button and select **Basemap** (Fig. ??). In the opened window enter the name of the resource that will be displayed in the administrator interface (Fig. ??).

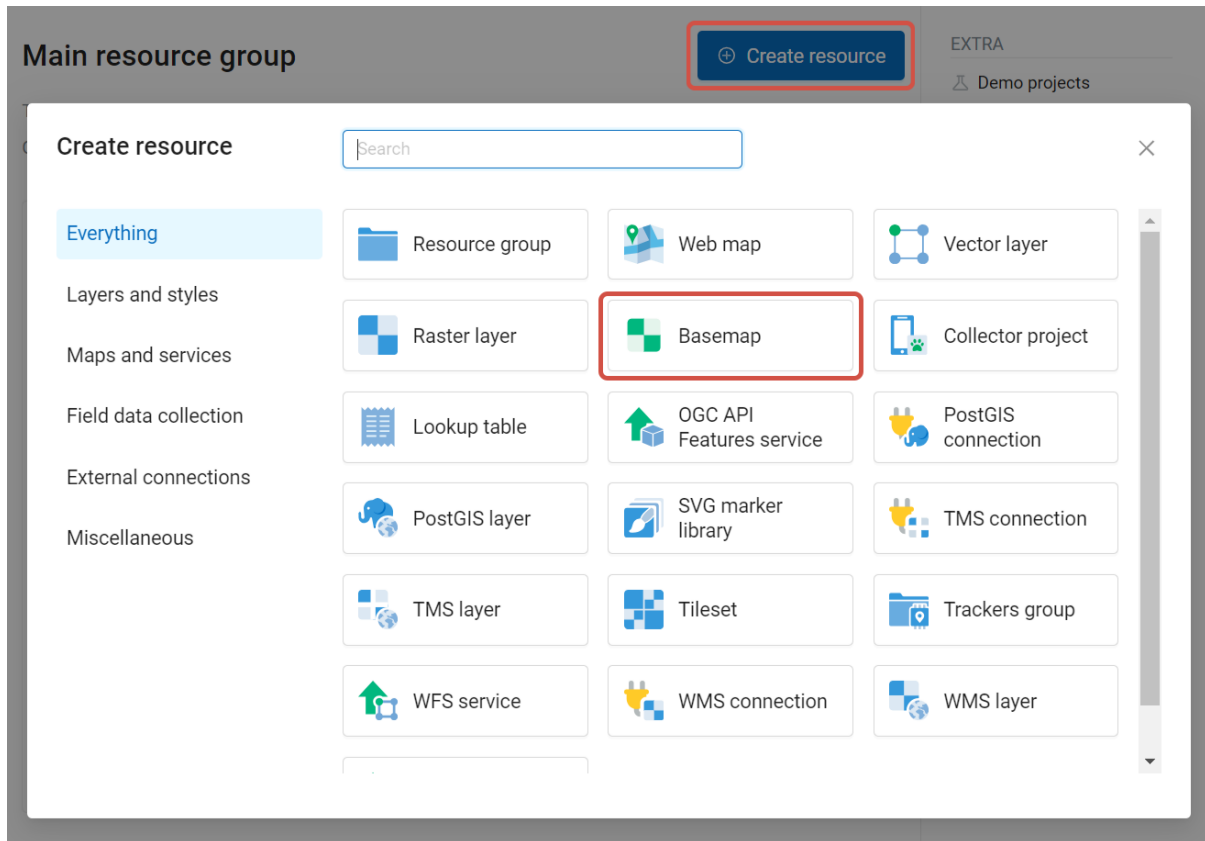


Fig. 14.11: Selection of “Basemap” resource type

The “Description” and “Metadata” of the resource are configured on the corresponding tabs (Fig. ??). On the “Description” tab you can add any text describing the content.

In the “Basemap” tab you must enter the URL-address of the TMS service (Fig. ??). There are two ways to do so:

- Use the search bar to find a map in the [QuickMapServices catalog](https://qms.nextgis.com/)<sup>134</sup>. After a map is selected, other fields will be filled in automatically.
- Enter the address manually.

The basemap will be previewed below. Press  **Toggle basemap** and move the opacity slider to compare it to the standard OSM basemap.

<sup>134</sup> <https://qms.nextgis.com/>

**experiments** Search resources  **A**

Main resource group

## Create resource

RESOURCE BASEMAP DESCRIPTION METADATA

Display name:

Parent:

Owner:

Keyname:

**CREATE RESOURCE**

- Basemap**
- Collector project
- Lookup table
- OGC API Features service
- PostGIS connection
- PostGIS layer
- Raster layer
- Resource group
- SVG marker library
- TMS connection
- TMS layer
- Trackers group
- Vector layer

Fig. 14.12: Basemap name

Main resource group

## Create resource

RESOURCE BASEMAP DESCRIPTION METADATA

← → Paragraph **B** *I* U Source

**OpenStreetMap** basemap

Fig. 14.13: Basemap description

Main resource group - Basemaps

## Create resource

RESOURCE BASEMAPS DESCRIPTION METADATA

Pick from QMS ⓘ

Positron [no labels] ↗

URL ⓘ

[https://a.basemaps.cartocdn.com/light\\_nolabels/{z}/{x}/{y}.png](https://a.basemaps.cartocdn.com/light_nolabels/{z}/{x}/{y}.png)

Copyright text ⓘ

Map tiles by CartoDB, under CC BY 3.0. Data by OpenStreetMap, under ODbL

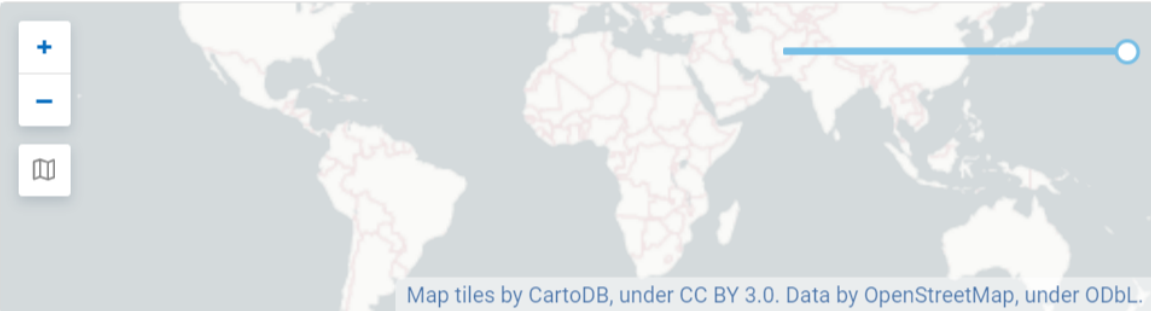
Copyright URL ⓘ

<https://cartodb.com/basemaps/>

+

-

📖



Map tiles by CartoDB, under CC BY 3.0. Data by OpenStreetMap, under ODbL.

Create

Create and edit

Fig. 14.14: Basemap settings

### 14.3.2 Web Map with no basemap

By default a Web Map is created with OpenStreetMap basemap. If you need a map without a basemap: create a new basemap and add it to your Web Map. Then turn this newly created basemap off.

See how it works in our video:

Watch on [youtube](#)<sup>135</sup>.

### 14.3.3 How to use any layer in your Web GIS as a basemap

Any layer (style) created in Web GIS can be used as a source of a tile service and connected as a **basemap**. To do this, you should:

1. Create the required [layer](#)<sup>136</sup> (vector or raster) and a [style](#)<sup>137</sup> for it. Inside the style you'll find a link marked **TMS service** - you will need it for step 3;
2. Enable [caching](#)<sup>138</sup> (to speed up Web Map processing, for [Premium plan](#)<sup>139</sup> only);
3. Create "Basemap" resource with unchecked "Use options from QMS" and the URL of the above-created TMS layer.

## 14.4 Settings

In the "Settings" tab you can modify several parameters:

- title that will be displayed on the Web Map instead of resource name;
- legend visibility (more [here](#)<sup>140</sup>);
- enable annotations ([more on annotations](#)<sup>141</sup>);
- select measurement spacial reference system;
- allow layer editing;
- set up initial and constraining [extent](#)<sup>142</sup>;
- select [bookmark](#)<sup>143</sup> resource;
- set visibility of panels and feature identification elements.

---

<sup>135</sup> <https://youtu.be/KUAzaL15Tvl?si=8dy3RS3YgCUBiBEC>

<sup>136</sup> [https://docs.nextgis.com/docs\\_ngweb/source/layers.html](https://docs.nextgis.com/docs_ngweb/source/layers.html)

<sup>137</sup> [https://docs.nextgis.com/docs\\_ngweb/source/mapstyles.html](https://docs.nextgis.com/docs_ngweb/source/mapstyles.html)

<sup>138</sup> [https://docs.nextgis.com/docs\\_ngweb/source/mapstyles.html#tile-cache](https://docs.nextgis.com/docs_ngweb/source/mapstyles.html#tile-cache)

<sup>139</sup> <https://nextgis.com/pricing-base/>

<sup>140</sup> [https://docs.nextgis.com/docs\\_ngcom/source/legend.html](https://docs.nextgis.com/docs_ngcom/source/legend.html)

<sup>141</sup> [https://docs.nextgis.com/docs\\_ngweb/source/annotation.html](https://docs.nextgis.com/docs_ngweb/source/annotation.html)

<sup>142</sup> [https://docs.nextgis.com/docs\\_ngweb/source/webmaps\\_admin.html#extent](https://docs.nextgis.com/docs_ngweb/source/webmaps_admin.html#extent)

<sup>143</sup> [https://docs.nextgis.com/docs\\_ngweb/source/webmaps\\_admin.html#bookmarks](https://docs.nextgis.com/docs_ngweb/source/webmaps_admin.html#bookmarks)

## Create resource

The screenshot shows the 'Settings' tab of the 'Create resource' interface. It features a horizontal tab bar at the top with 'RESOURCE', 'LAYERS', 'BASEMAPS', 'SETTINGS' (highlighted), 'DESCRIPTION', and 'SOCIAL'. Below the tabs, the 'SETTINGS' section includes:

- Initial extent**: A field with a help icon, a 'From layer' button with a close icon, and a directional grid (West, South, East, North) with degree symbols.
- Constraining extent**: A similar field with a help icon, 'From layer' button, and directional grid.
- Title**: A text input field containing 'Great breakfast places'.
- Legend**: A dropdown menu set to 'Default', an 'Annotations' label, and a 'Select mode' dropdown.
- Bookmarks**: A dropdown menu set to 'Select resource'.
- Measurement SRS**: A dropdown menu set to 'Default'.
- Layers editing**: A checkbox that is currently unchecked.

Fig. 14.15: “Settings” tab

## 14.5 Legend

Map symbols may need additional explanation. Paper maps and atlases use a separate page or an insert explaining what each symbol means.

In NextGIS Web you have two options to display the information on symbols used in a layer:

Display the map symbols in the layer tree. The markers of the layer styles will be used. In addition, you can add detailed description of the map symbols in the [Description panel](#)<sup>144</sup> (“i” in a circle).

In NextGIS Web settings the term “legend” refers specifically to the map symbols displayed in the layer tree of the Web Map under the layer name.

Visibility settings of the legend can be modified at various levels, allowing customization for specific goals, from “display all legends” to “display the legend differently for specific layers of one Web Map”. Legend visibility can be set:

- for a layer of a Web Map
- for a Web Map (all layers)
- for the entire Web GIS

Legend visibility for a particular layer is set in the Layer tab of the Web Map settings.

Legend visibility for a Web Map is set in its Settings tab.

<sup>144</sup> [https://docs.nextgis.com/docs\\_ngcom/source/webmap\\_create.html#add-a-description-and-map-legend](https://docs.nextgis.com/docs_ngcom/source/webmap_create.html#add-a-description-and-map-legend)

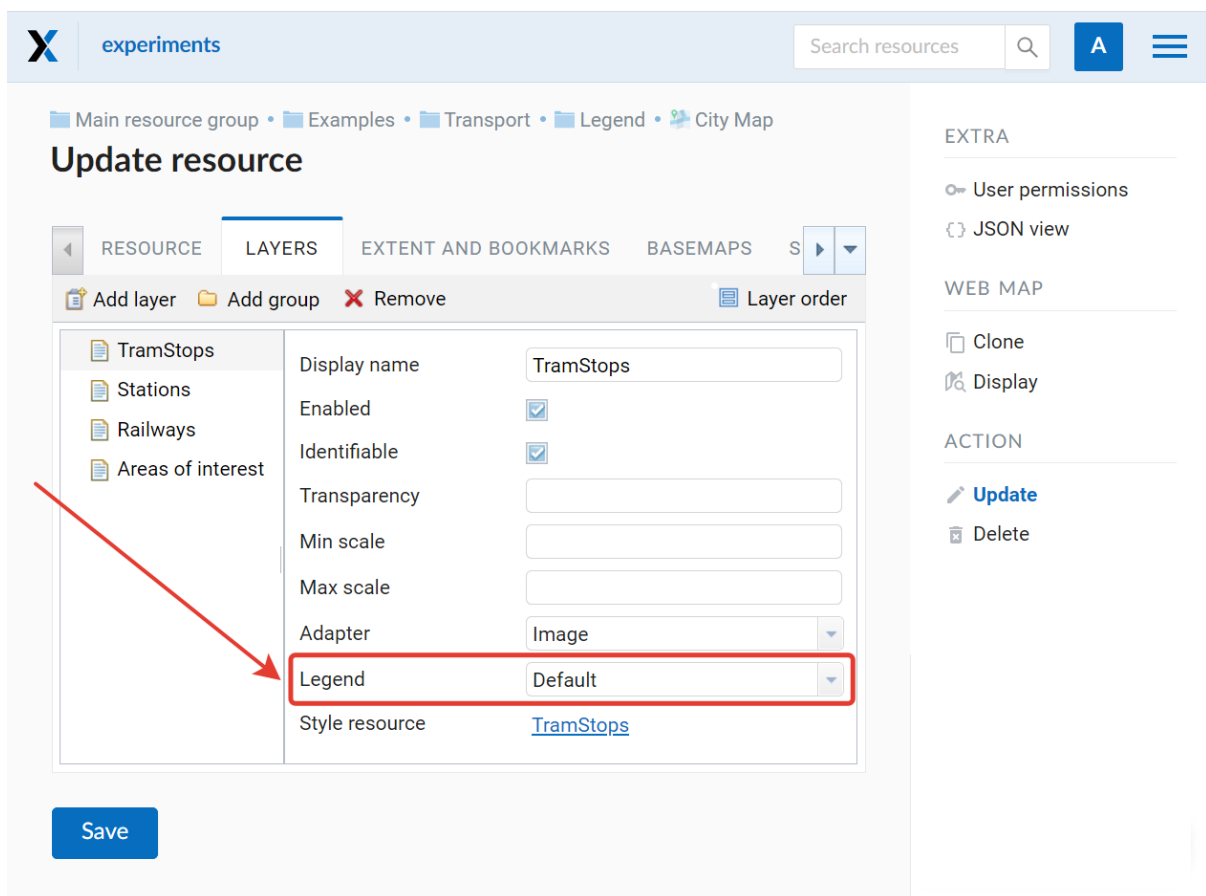


Fig. 14.16: Setting legend visibility for particular layers

Main resource group - Examples - data.nextgis.com - elevation - Elevation data from data.nextgis.com - Elevation data from data.nextgis.com — webmap

## Update resource

◀

SOURCE

LAYERS

BASEMAPS

SETTINGS

PERMISSIONS

DESCRIPTION

▶

▼

Initial extent

?

From layer

West

7

South

:

East

7

North

:

Constraining extent

?

From layer

West

°

South

°

East

°

North

°

Legend

Default

▼

Annotations

Select mode

▼

Bookmarks

Expand

▼

Measurement SRS

Collapse

▼

Layers editing

Disable

▼

Layers editing

☐

Save

Fig. 14.17: Setting legend visibility for the Web Map

You can also set default legend visibility for the Web GIS: Control panel – Web Map – Legend. This setting will be used if both Web Map and the layer have “Default” selected for legend visibility.

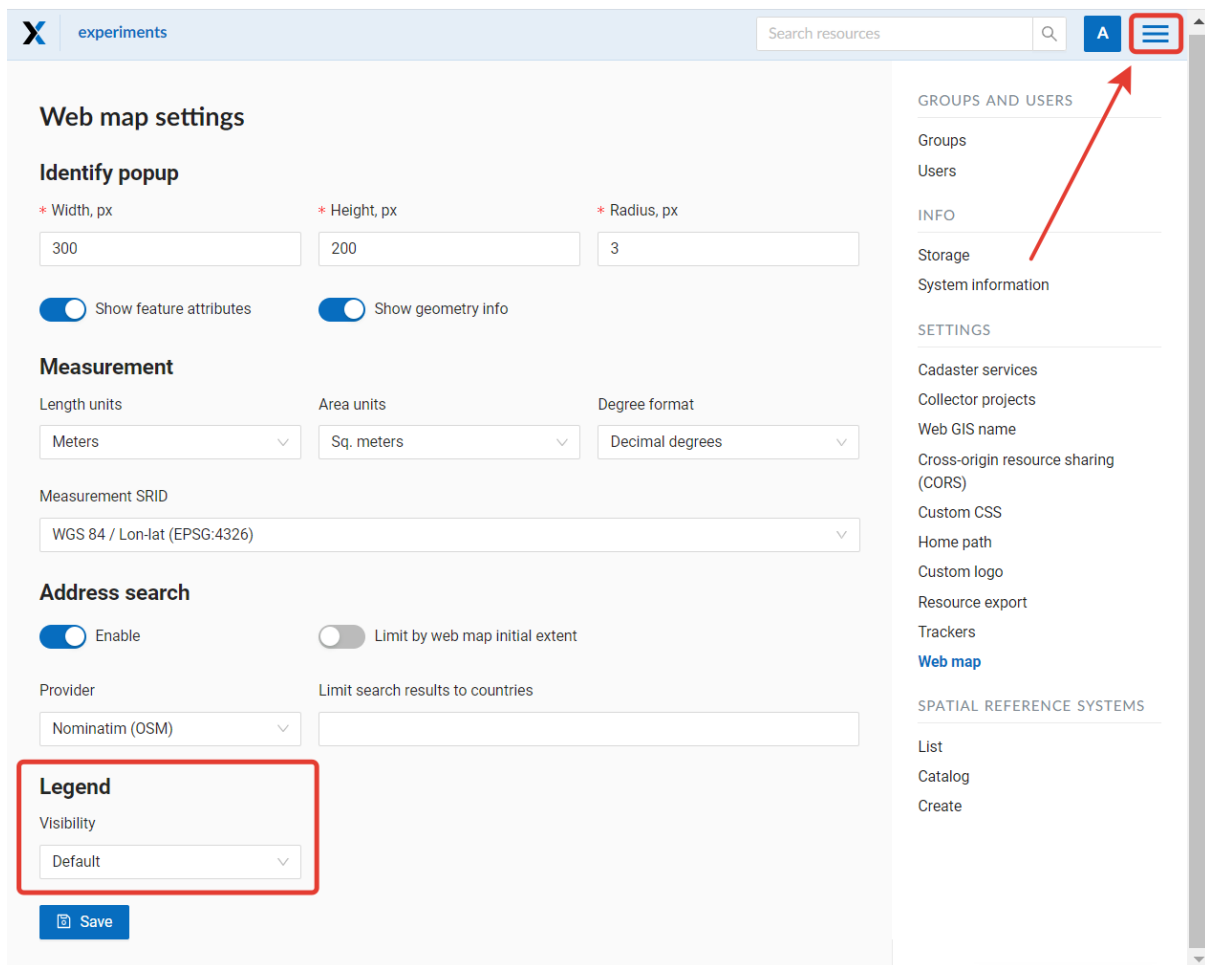


Fig. 14.18: Setting legend visibility for the entire Web GIS

Options for legend visibility are:

- **Expand** – the legend is displayed in the layer tree. If the style has multiple marker types or colors, a full list will be shown. To collapse the list click on the ^ symbol next to the layer menu.
- **Collapse** – the legend is displayed, but the list of the map symbols for a specific layer is collapsed when the map is opened. To expand it, click on a table symbol next to the layer menu.
- **Disable** – the legend is not displayed in the layer tree.
- **Default** – the higher level setting is used. For the layers that have “default” selected for legend visibility, the setting of the Web Map will be used. If the Web Map also has “default” selected, the visibility setting selected for the Web GIS is applied.

NextGIS Web GIS supports legends for both vector and raster layers. Raster data in geographic information systems can represent vegetation cover and its density, changes in elevation, and other similar indicators. In this case the legend will show the gradient steps and corresponding values of the parameter.

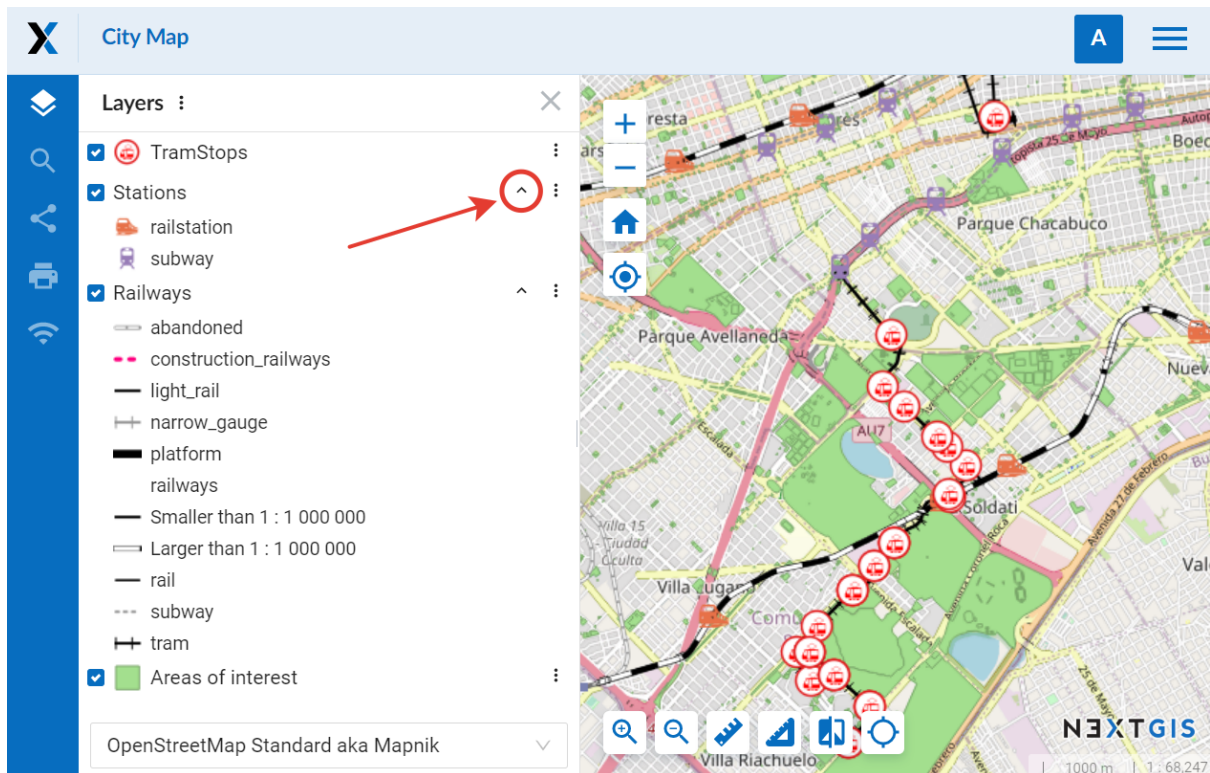


Fig. 14.19: Expanded legend on a Web Map

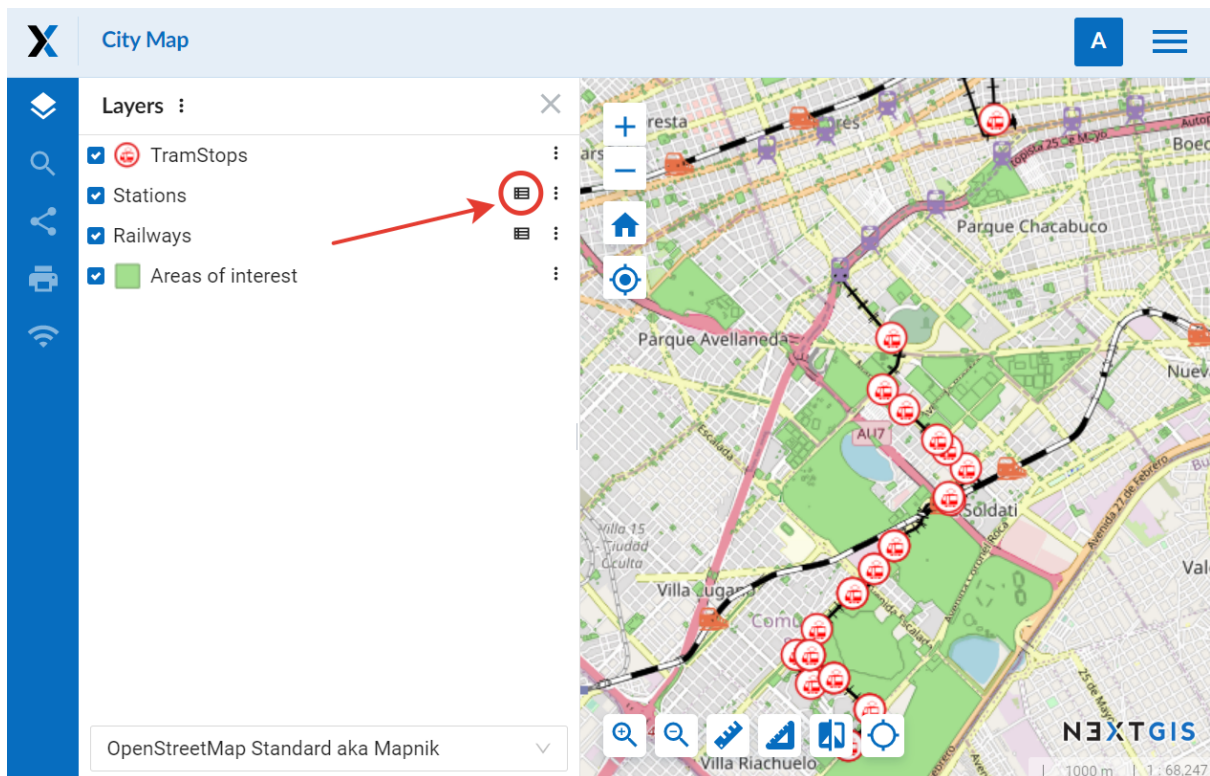


Fig. 14.20: Collapsed legend on a Web Map

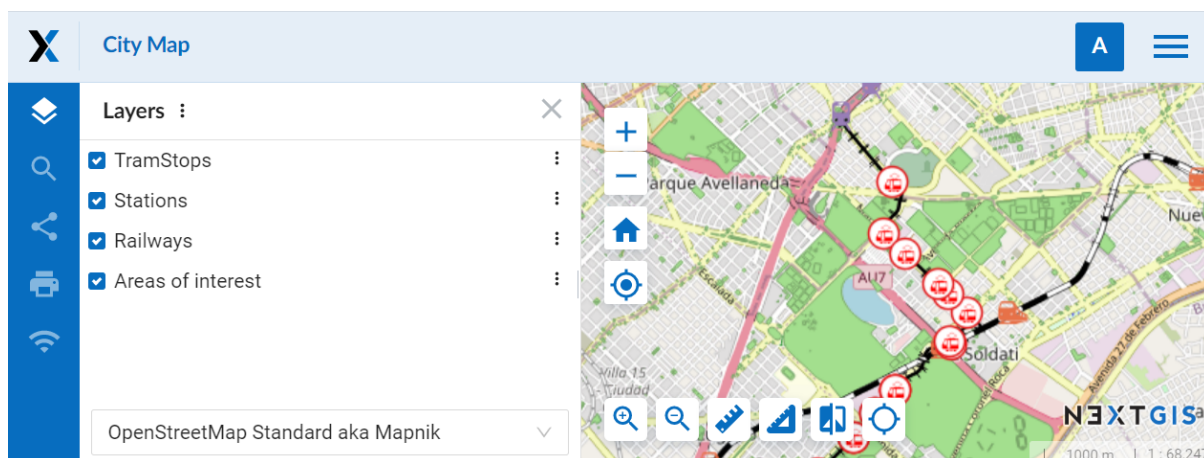


Fig. 14.21: Legend disabled. Only the names of the layers are displayed

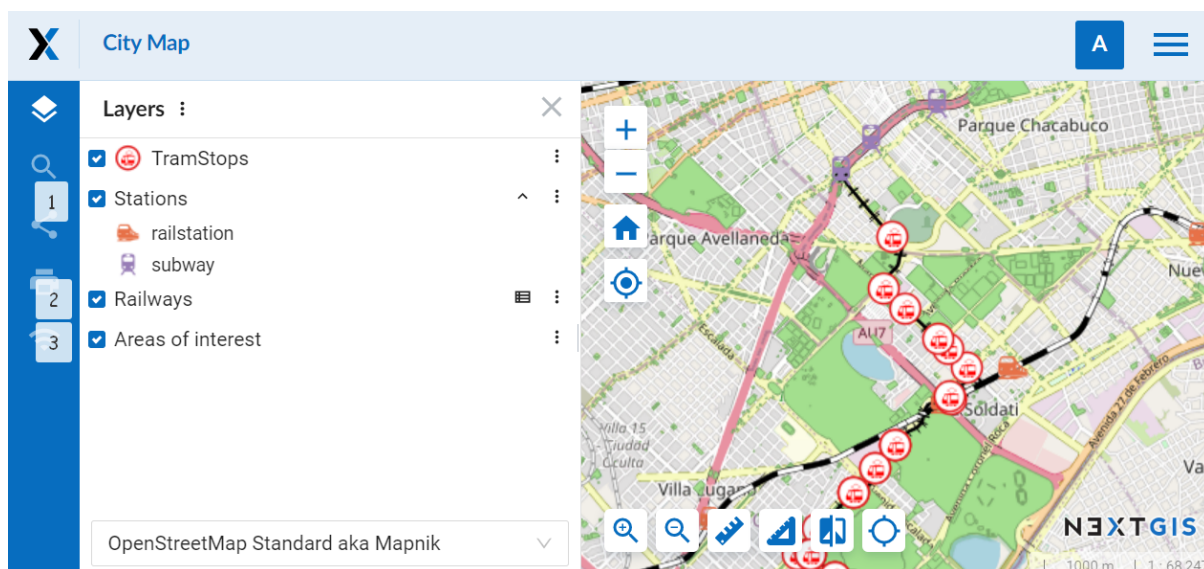


Fig. 14.22: Different legend visibility settings for layers of the same Web Map: 1 – disabled, 2 – collapsed, 3 – expanded

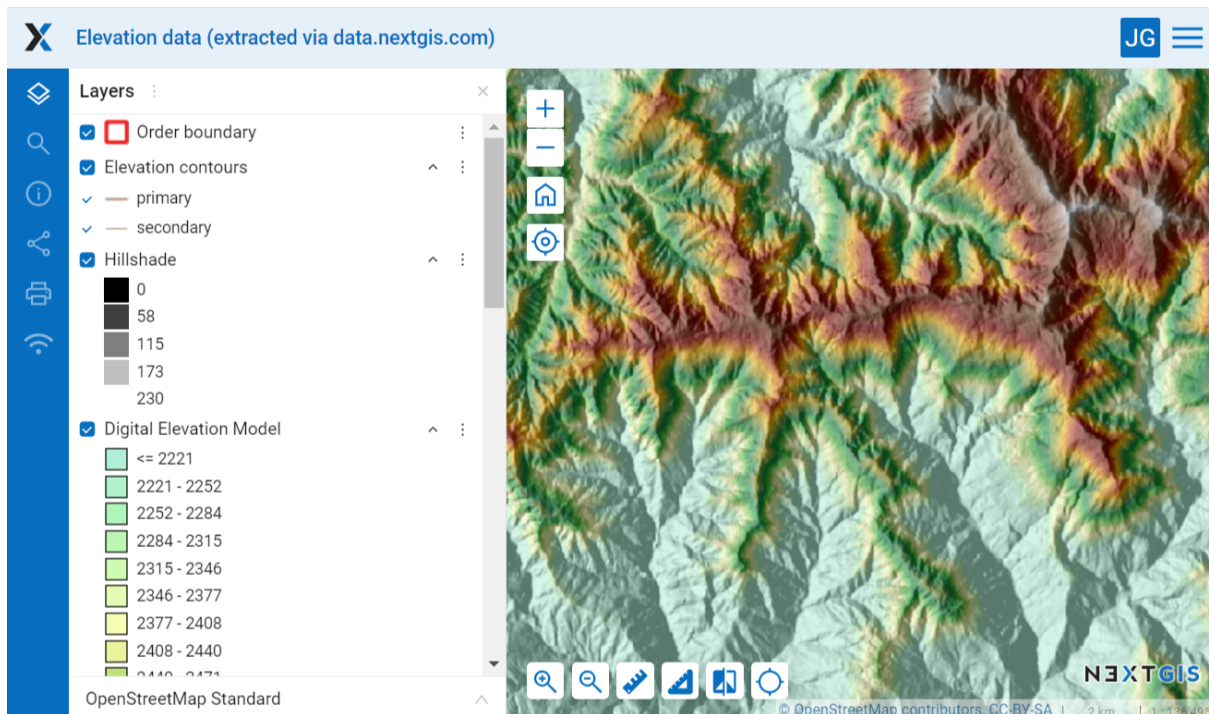


Fig. 14.23: Legend for raster layers: hillshade and digital elevation model

The way the legend is formed depends on the raster type:

- Multiband color - as it is RGB raster, the legend consists of red, green and blue squares;
- Paletted/unique values - each value is represented with the color it corresponds to;
- Singleband gray - it is a gradient, but the legend shows a set number of symbols (5 by default) marked by value range;
- Singledband pseudocolor - like singleband gray shows symbols marked by value range.

## 14.6 Extent

In the Settings tab you can set up:

- Initial extent - part of the Web Map that is shown upon its opening
- Constraining extent - users will not be able to zoom out or scroll past this extent

Use the four fields to set the extent measured in degrees.

**Extent from layer** button allows to set Web Map extent from the layer's extent. Click it to open the "Select layer" window, where you can select a layer to use for setting the Web Map extent (see Fig. ??). The four fields for the extent coordinates will be filled in.

Main resource group · Examples · Presentation

### Create resource

RESOURCELAYERSBASEMAPSSETTINGSDESCRIPTIONSOCIALMETADATA

Initial extent ⓘ

From layer

West

-89.5668°

South

43.1719°

East

-89.2468

North

42.9981°

Constraining extent ⓘ

From layer

West

°

South

°

East

°

North

°

Legend

Default

Annotations

Select mode

Bookmarks

Select resource

Measurement SRS

Default

Layers editing

☐

Fig. 14.24: Extent settings

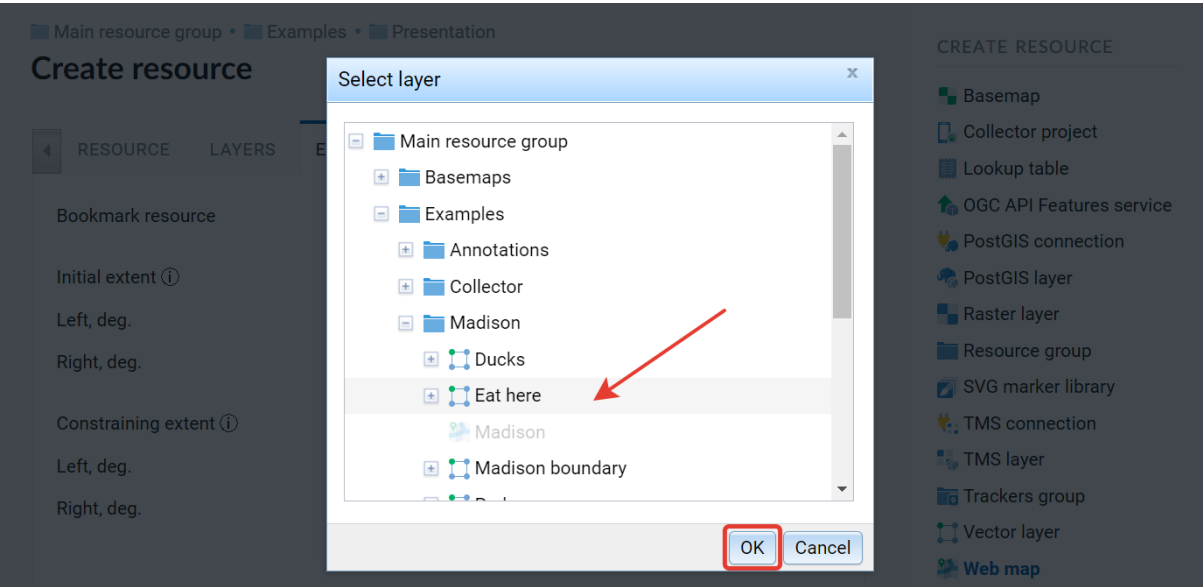


Fig. 14.25: “Select layer” window

**Tip:** Extent coordinates could be generated using third-party services, for example <http://boundingbox.klokantech.com/> (select csv in a list).

## 14.7 Bookmarks

In the “Bookmark resource” field of the Settings tab you can select a vector layer with any type of geometry to use for bookmarks. The Web Map will show bookmarks panel (see Fig. ??) with names defined by “Label attribute” if it is set (see Fig. ??).

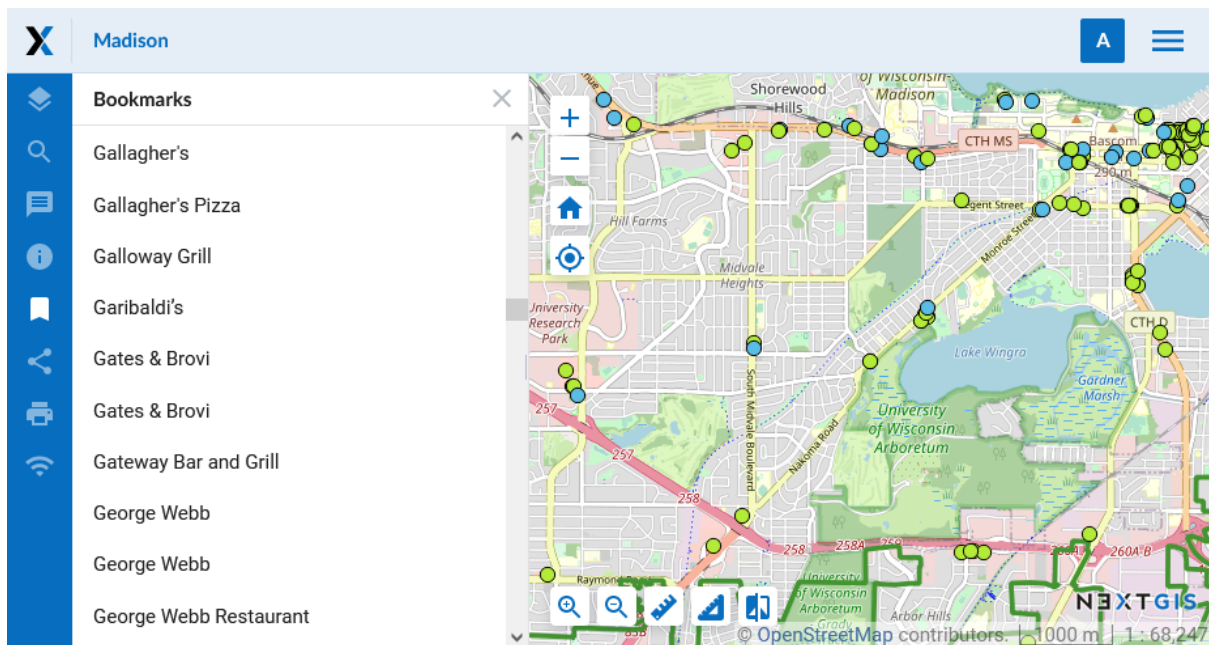


Fig. 14.26: “Bookmarks” tab and the bookmarks viewed on the map

## 14.8 Hide or show panels and identification sections

In the “Additional options” of the Web Map settings you can set up visibility for the following elements:

- [Trackers](#)<sup>145</sup> panel;
- feature attributes in the identification panel;
- feature geometry info in the identification panel.

For each of them you can choose one of three options: “Yes” - show, “No” - do not show, “Auto” - applies the default [option](#)<sup>146</sup> set up for the Web GIS a whole. To set the “Auto” option, click on the cross on the right side of the option field.

<sup>145</sup> [https://docs.nextgis.com/docs\\_ngweb/source/trackers.html#tracking-web-map](https://docs.nextgis.com/docs_ngweb/source/trackers.html#tracking-web-map)

<sup>146</sup> [https://docs.nextgis.com/docs\\_ngweb/source/webmap\\_set.html#ngw-contr-panel-webmap-settings](https://docs.nextgis.com/docs_ngweb/source/webmap_set.html#ngw-contr-panel-webmap-settings)

Main resource group - Examples - Madison - Parks

## Update resource

RESOURCE

FIELDS

VECTOR LAYER

SETTINGS

PERMISSIONS

⊕ Add

NAME

MAN\_MADE

SHOP

DATE VISITED

OSM\_TYPE

OSM\_ID

orig\_ogc\_f

✕ Delete

Display name

NAME

Keyname

NAME

Type

STRING

Lookup table

Not used

☒ Feature table

☒ Text search

☒ Label attribute

Save

Fig. 14.27: Setting attributes for the vector layer containing boundaries

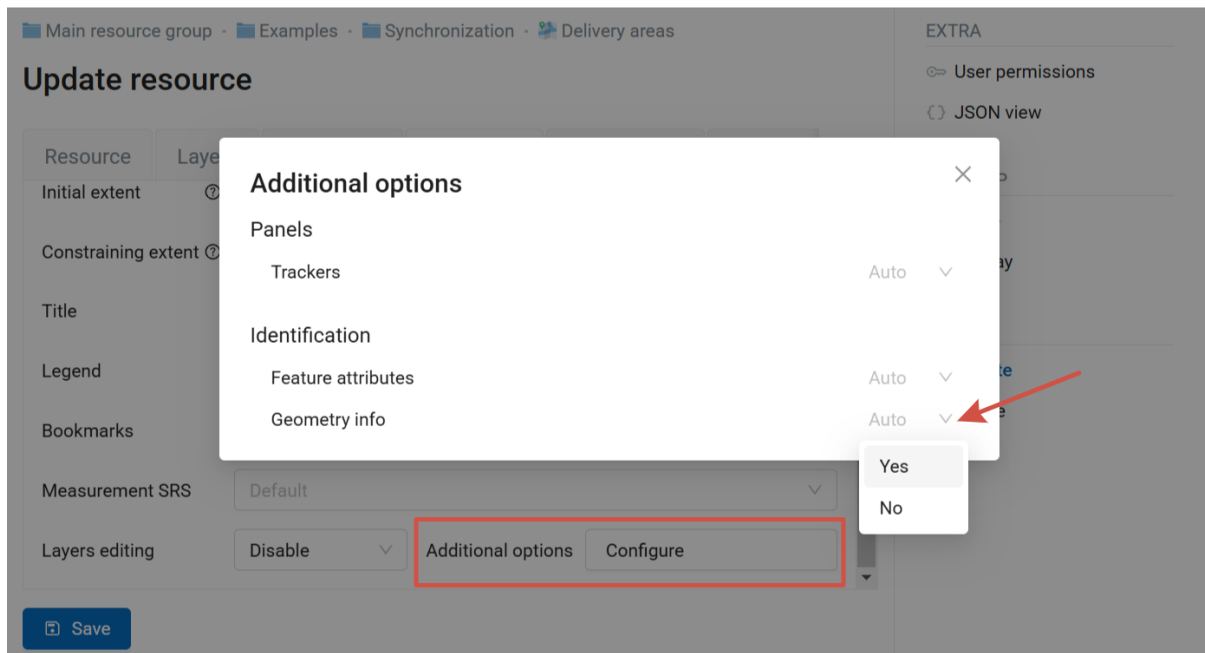


Fig. 14.28: Additional Web Map options

## 14.9 Social

The “Social” tab is used to upload an image to be used as preview in social media.

### 14.10 Final steps

After creating the map content and adjusting settings for all the layers, click “Save” button. A saved map will be shown in the list of maps. Click an icon with a map in the list of Web Maps or select “Display” action in the tab on the Web Map properties page to open it in the viewer. While the Web Map resource page is open, you can also open the map by clicking the “View” button on the right. Web Maps viewer is described *here* (page ??). A Web Map URL displayed in the viewer may be shared with other users because it is static.

**Warning:** After a map is deleted, its URL will no longer be available.

### 14.11 How to optimize Web Map performance

Web Maps show data rendered by the server. The more of this data you have, the more server resources are needed to render and the more time it takes. There are several techniques you can use to improve your map experience.

#### Don’t show everything at once

This is a universal recommendation. Does your user need to see everything after opening the Web Map for the first time? Typically, it is not informative. On broad

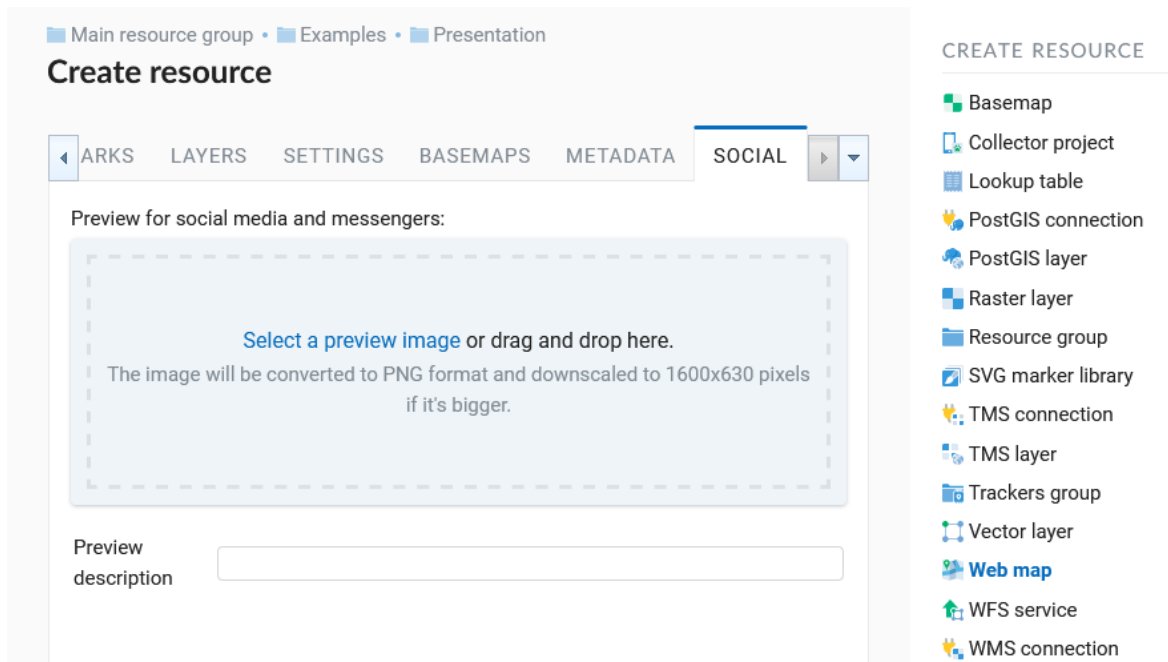


Fig. 14.29: “Social” tab

scales (smaller zooms) it is advisable to show limited amount of data as a start.

### Scale range

Set a range of [scale levels](#)<sup>147</sup> for displaying data on a Web Map. This will allow you to avoid requesting data outside this range and showing excess data where it is not essential.

### caching

Set up [caching](#)<sup>148</sup> for your layer styles. In this case, already rendered data will not be re-requested. Note that, while technically it's possible to turn on caching for rasters, this is not recommended.

### Services

Today's interactive map is often a complex system that might include connections to external services, such as basemaps, WMS, TMS services and more. If you use them on your map, overall speed on it will depend on their performance. Remove them if you don't need them or at least turn them off not to show by default. **Select Image as an adapter**

In the Web Map settings, go to the Layers tab and [select](#)<sup>149</sup> **Image** as an adapter to allow for faster data processing. We do not recommend using Tiles if it isn't necessary. It slows down the entire Web GIS if large amounts of data are used.

### Raster styles instead of QGIS raster style

If your map shows big rasters you can add few percents of performance by switch-

<sup>147</sup> [https://docs.nextgis.com/docs\\_ngweb/source/webmaps\\_admin.html?highlight=scale#admin-webmap-create-layers](https://docs.nextgis.com/docs_ngweb/source/webmaps_admin.html?highlight=scale#admin-webmap-create-layers)

<sup>148</sup> [https://docs.nextgis.com/docs\\_ngweb/source/layers.html#tms-layer](https://docs.nextgis.com/docs_ngweb/source/layers.html#tms-layer)

<sup>149</sup> [https://docs.nextgis.com/docs\\_ngweb/source/webmaps\\_admin.html?highlight=adapter#admin-webmap-create-layers](https://docs.nextgis.com/docs_ngweb/source/webmaps_admin.html?highlight=adapter#admin-webmap-create-layers)

ing from QGIS raster styles to regular raster styles. Go to your raster, add a raster style (if possible), add them back to your Web map replacing QGIS ones.

## WEB MAP CLONING

With NextGIS Web you can create a copy of an existing Web Map by cloning it. To copy a Web Map, select “Clone” in the actions pane of its resource page.

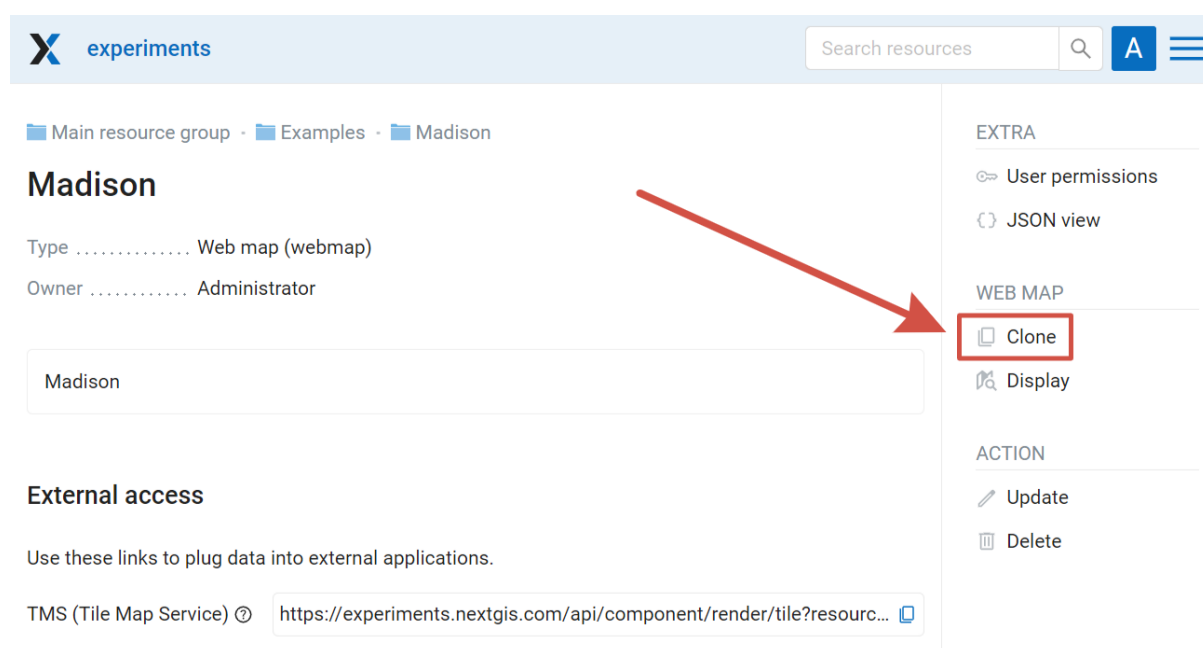


Fig. 15.1: Selecting “Clone” action

You will be redirected to “Clone Web Map” page to set up the location of the copy in the resource tree and the name for it.

By default it’s the name of the original Web Map with an added number, “(1)”, “(2)” etc. By default a copy is created in the group containing the original Web Map.

If all the parameters are correct, press “Clone”. A copy of the map will be created. After the cloning process is completed successfully you will be redirected to “Update resource” page where you can change the settings of the newly created copy.

See the process of cloning a Web Map in our video:

Watch on [youtube](https://youtu.be/Ra3rzjz3-LA?si=tpO0k-Zn9NCSop9K)<sup>150</sup>.

If you wish to create a copy in a **different folder**, press the magnifying glass icon at the end of the “Resource group” field. See detailed description below.

---

<sup>150</sup> <https://youtu.be/Ra3rzjz3-LA?si=tpO0k-Zn9NCSop9K>



Fig. 15.2: “Clone Web Map” page

## 15.1 Clone to another group

A magnifying glass icon in the right end of the “Resource group” field opens the group selection pop-up window.

This window contains the following elements:

1. Search bar and path to the resource the copy will be created in
2. Return to the initial folder (the one containing the original Web Map) |<, refresh the resource tree state and close the window
3. Option button to select a group (folder)
4. Open the selected group (folder)
5. Create new resource group (folder)
6. Clear selection
7. Button that completes group selection.

If a group (folder) is selected, the button reads “Clone to selected group”. If no group is selected, it reads “Clone to this folder”, in this case the copy will be created in the group currently open (the path to it is indicated in the top panel of the pop-up window).

Use the second way to copy a Web Map to the main resource group (marked by a house icon in the path panel).

## 15.2 Clone to a new group

If you need to create a new group, click on the folder icon with a plus in the bottom left corner of the pop-up window.

A field will appear where you need to enter the name for the new group. To confirm group creation click the blue button with a tick.

The group will appear in the list. New group is created inside the group that is open in the window.

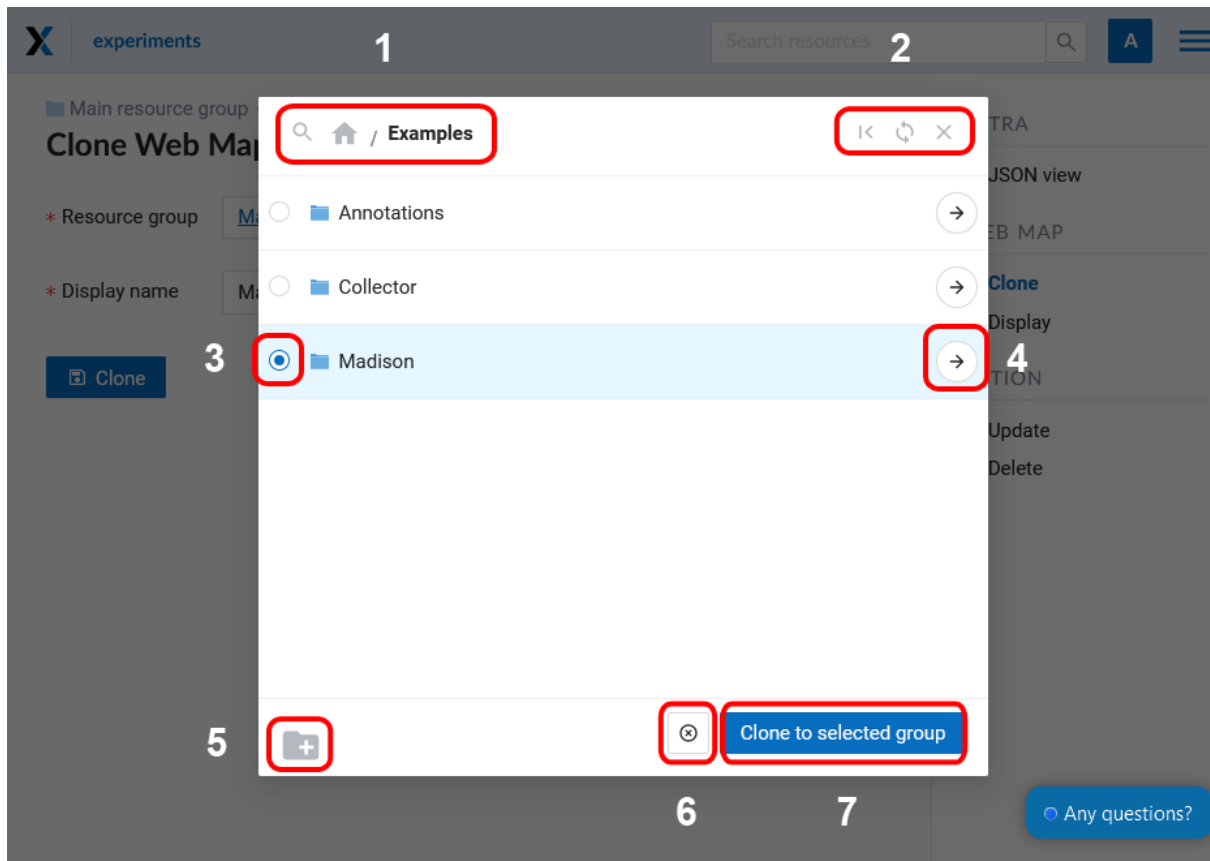


Fig. 15.3: Group selection window

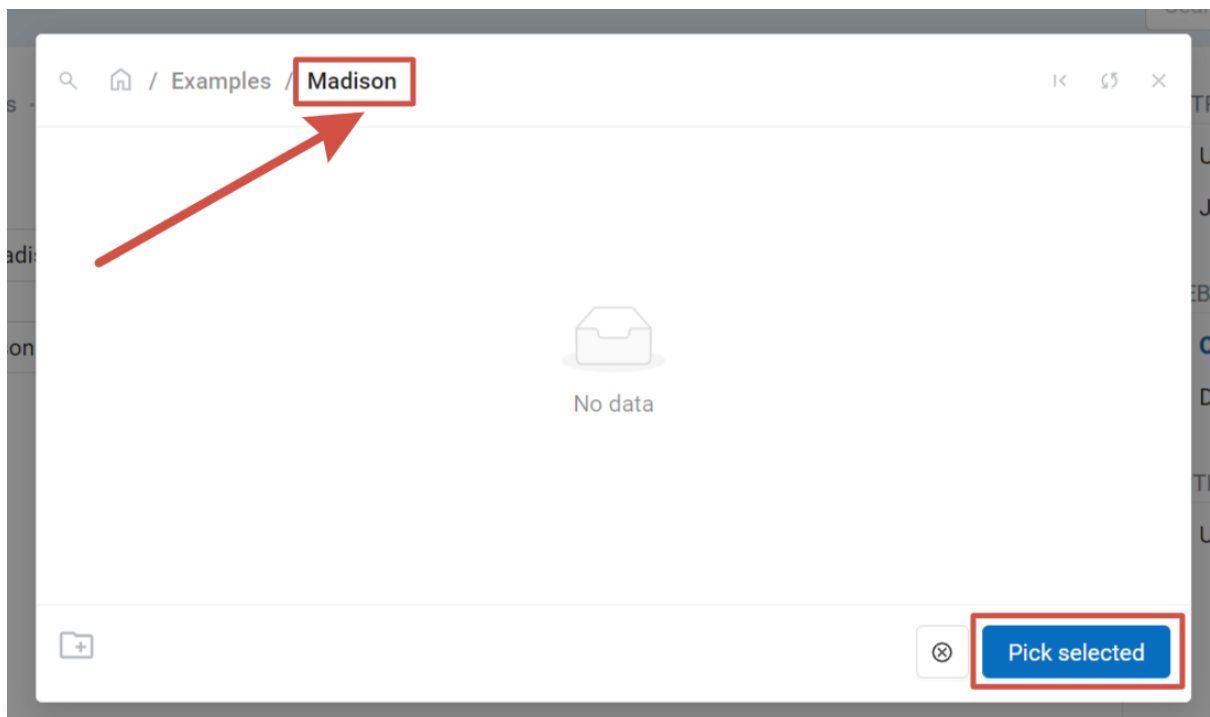


Fig. 15.4: A opened group in the group selection window

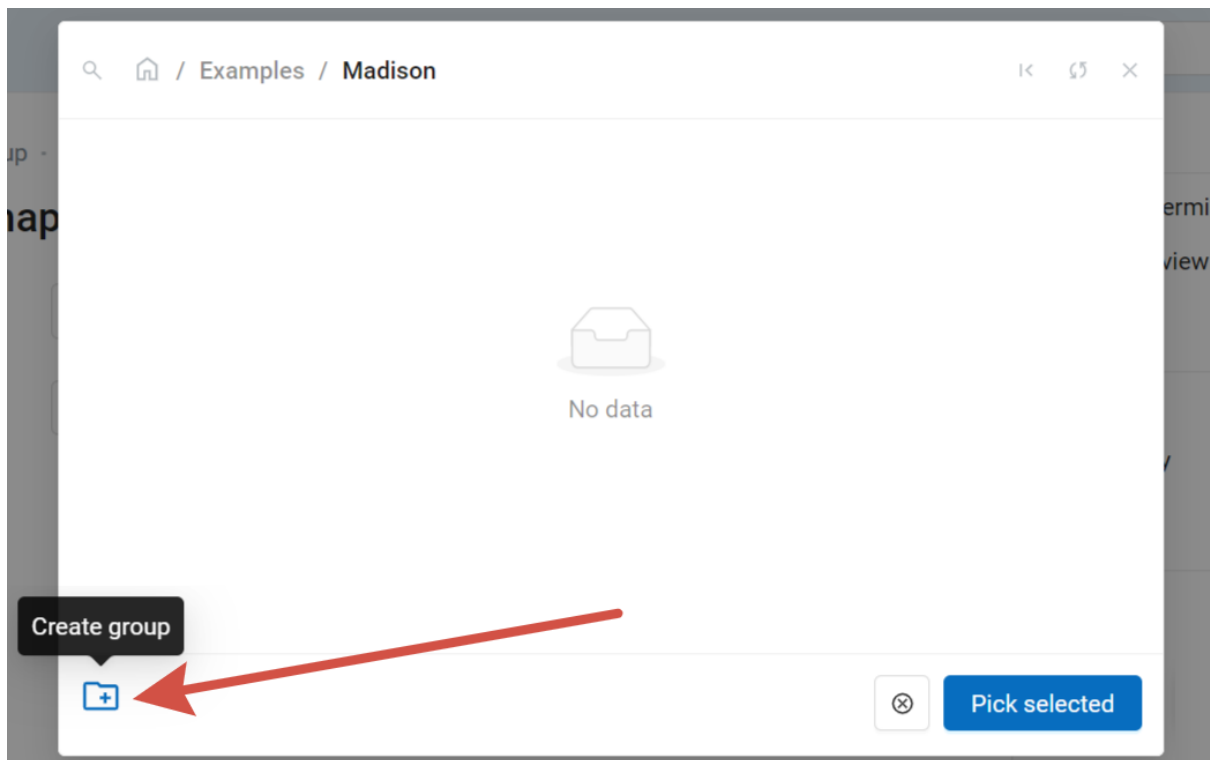


Fig. 15.5: Selecting "Create group" action

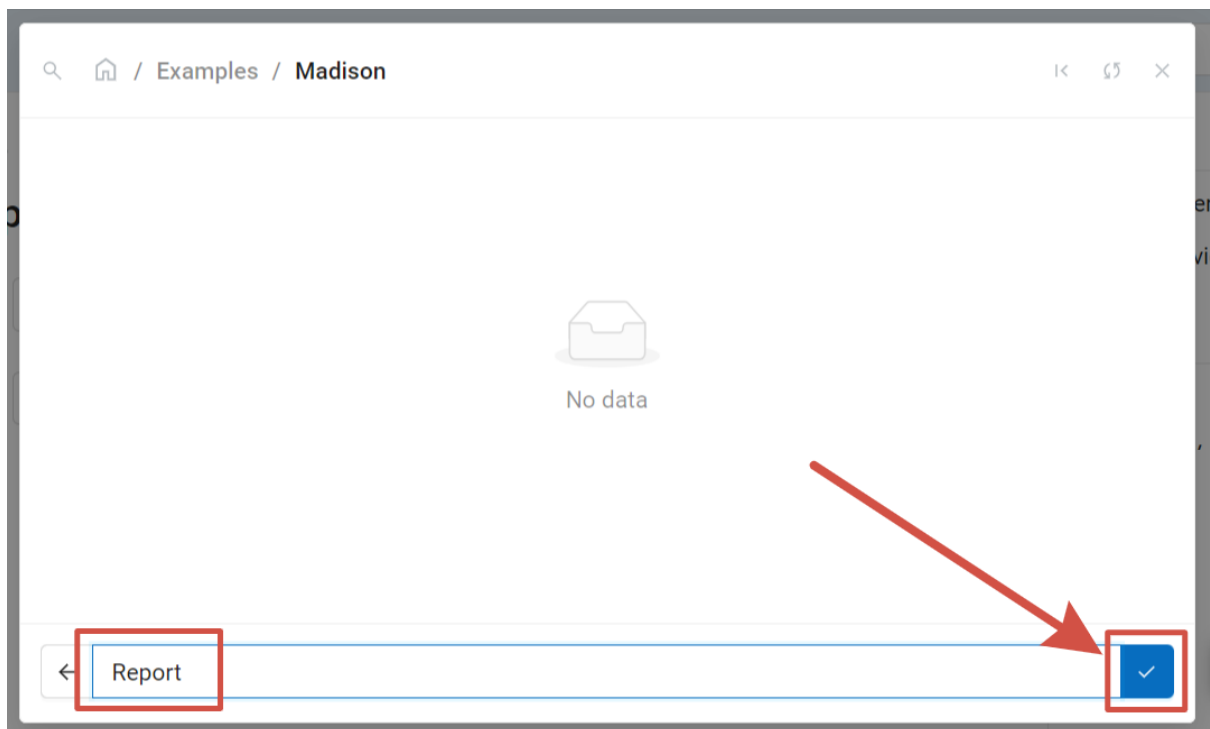



Fig. 15.6: Creating new group

## A VIEWER FOR WEB MAPS

A special web application for viewing Web Maps is included in NextGIS Web (see Fig. ??).

To view the Web Map press  next to its name in the resource list or open the resource page and select **Display** in the Actions panel on the right. The following page will open:

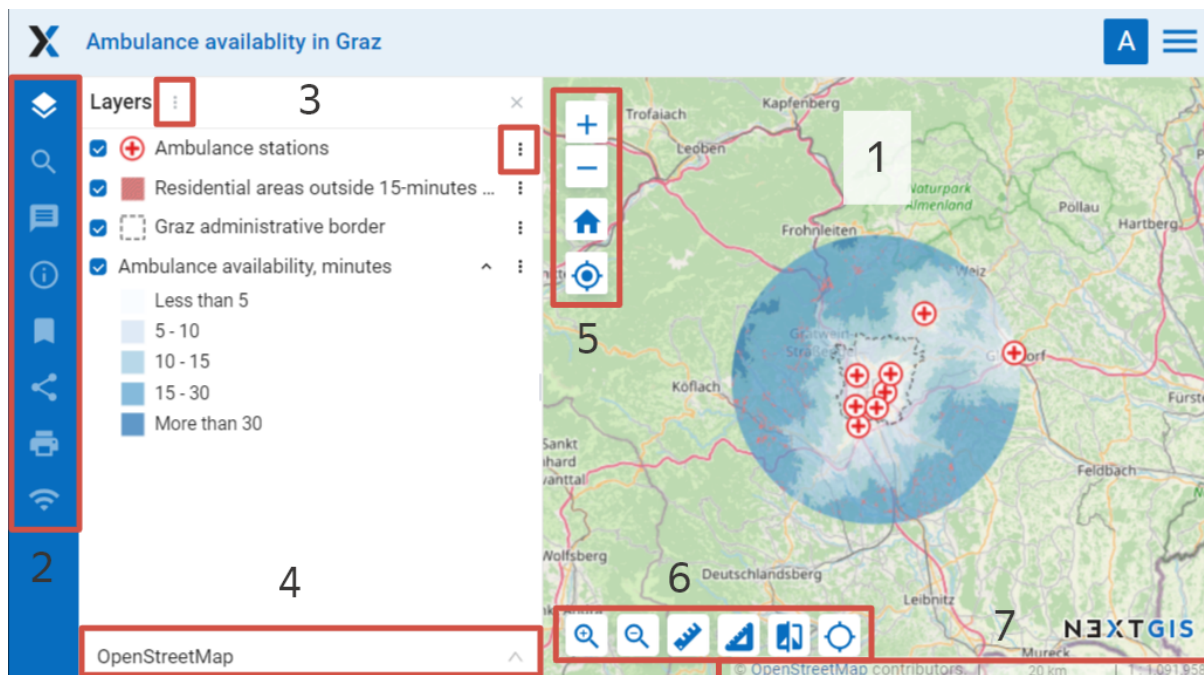


Fig. 16.1: The interface of viewer client application

Numbers indicate: 1 – map; 2 – map panels; 3 – layer tree with layer menu buttons; 4 – dropdown list of basemaps; 5 – zoom tools; 6 – map tools; 7 – status bar and copyright.

Web client includes three main components: a map, [panels<sup>151</sup>](https://docs.nextgis.com/docs_ngweb/source/webmaps_client.html#ngw-webmaps-client-panels), [map tools<sup>152</sup>](https://docs.nextgis.com/docs_ngweb/source/webmaps_client.html#ngw-webmaps-client-tools).

<sup>151</sup> [https://docs.nextgis.com/docs\\_ngweb/source/webmaps\\_client.html#ngw-webmaps-client-panels](https://docs.nextgis.com/docs_ngweb/source/webmaps_client.html#ngw-webmaps-client-panels)

<sup>152</sup> [https://docs.nextgis.com/docs\\_ngweb/source/webmaps\\_client.html#ngw-webmaps-client-tools](https://docs.nextgis.com/docs_ngweb/source/webmaps_client.html#ngw-webmaps-client-tools)


## 16.1 Zoom and rotation

The status bar (see Fig. ??) displays the current scale of the map. If you use the identify tool to click on the map, a pop-up window will show the coordinates of the point you clicked on and list map features if present in this point of the map.

You can change the scale of the map using zoom tools (see item 5 in Fig. ??). To reset the map to its initial extent, press the house icon.







There are some options to work with map:

- if you click on `alt + shift` simultaneously and execute round cursor movements around a monitor, a map will turn for a certain degrees to the right or to the left,
- if you simultaneously click on `shift` and select of the necessary part of a map on a monitor by a cursor, you will highlight this part and zoom in it on the map.

To view your current location on the map, press . See how it works in our video: Watch on [youtube](#)<sup>153</sup>.

## 16.2 Panels

On the left side of the workspace are the functional panels:

-  Layers<sup>154</sup>
-  Feature identification<sup>155</sup>
-  Search<sup>156</sup>
-  Annotations<sup>157</sup>
-  Description<sup>158</sup>
-  Bookmarks<sup>159</sup>

<sup>153</sup> <https://youtu.be/HVvuDMX1pEo?si=YzQcqFMw-ge50qPA>

<sup>154</sup> [https://docs.nextgis.com/docs\\_ngweb/source/webmaps\\_client.html#ngw-webmaps-client-layers](https://docs.nextgis.com/docs_ngweb/source/webmaps_client.html#ngw-webmaps-client-layers)




<sup>155</sup> [https://docs.nextgis.com/docs\\_ngweb/source/webmaps\\_client.html#ngw-webmaps-client-ident](https://docs.nextgis.com/docs_ngweb/source/webmaps_client.html#ngw-webmaps-client-ident)

<sup>156</sup> [https://docs.nextgis.com/docs\\_ngweb/source/webmaps\\_client.html#ngw-webmaps-client-search](https://docs.nextgis.com/docs_ngweb/source/webmaps_client.html#ngw-webmaps-client-search)


<sup>157</sup> [https://docs.nextgis.com/docs\\_ngweb/source/annotation.html](https://docs.nextgis.com/docs_ngweb/source/annotation.html)

<sup>158</sup> [https://docs.nextgis.com/docs\\_ngcom/source/webmap\\_create.html#add-a-description-and-map-legend](https://docs.nextgis.com/docs_ngcom/source/webmap_create.html#add-a-description-and-map-legend)

<sup>159</sup> [https://docs.nextgis.com/docs\\_ngweb/source/webmaps\\_admin.html#bookmarks](https://docs.nextgis.com/docs_ngweb/source/webmaps_admin.html#bookmarks)

-  [Share<sup>160</sup>](#) here you can generate a link to the Web Map or an [embed code<sup>161</sup>](#)
-  [Print<sup>162</sup>](#)
-  [Trackers<sup>163</sup>](#)

## 16.3 Legend in the layers tree

The **Layer tree** panel  contains a list of all layer styles added to the Web Map.

The panel allows to:


- Disable/Enable layer visibility. You can also hide parts of a layer by selecting items in the Web Map legend. It's helpful for big projects where one layer may contain a variety of features grouped by value of an attribute.
- Open layer attribute table
- Zoom map to layer
- Open layer description
- Change the order of the layers by dragging them within the layer tree. Refresh the page to restore the original order.

How to [configure the legend<sup>164</sup>](#).

Functionality of the layer panel is presented in our video:

Watch on [youtube<sup>165</sup>](#).

## 16.4 Feature identification

To get information about features on the Web Map activate the  identify panel. Click anywhere on the map to get info on vector features and raster pixels.

If there are multiple features (for example a point and a line going through it), the identify panel will show the feature of the topmost layer. To view information on the other features click on the downward arrow to the right of the feature name and select the feature from the dropdown list.

<sup>160</sup> [https://docs.nextgis.com/docs\\_ngweb/source/webmaps\\_client.html#ngw-webmaps-client-share](https://docs.nextgis.com/docs_ngweb/source/webmaps_client.html#ngw-webmaps-client-share)

<sup>161</sup> [https://docs.nextgis.com/docs\\_ngweb/source/embed\\_webmap.html](https://docs.nextgis.com/docs_ngweb/source/embed_webmap.html)

<sup>162</sup> [https://docs.nextgis.com/docs\\_ngweb/source/print.html](https://docs.nextgis.com/docs_ngweb/source/print.html)

<sup>163</sup> [https://docs.nextgis.com/docs\\_ngcom/source/tracking.html](https://docs.nextgis.com/docs_ngcom/source/tracking.html)

<sup>164</sup> [https://docs.nextgis.com/docs\\_ngweb/source/webmaps\\_admin.html#ngw-legend](https://docs.nextgis.com/docs_ngweb/source/webmaps_admin.html#ngw-legend)

<sup>165</sup> <https://youtu.be/4Pd5AKtoR2g?si=0lMooDE3ZzpO0xxz>

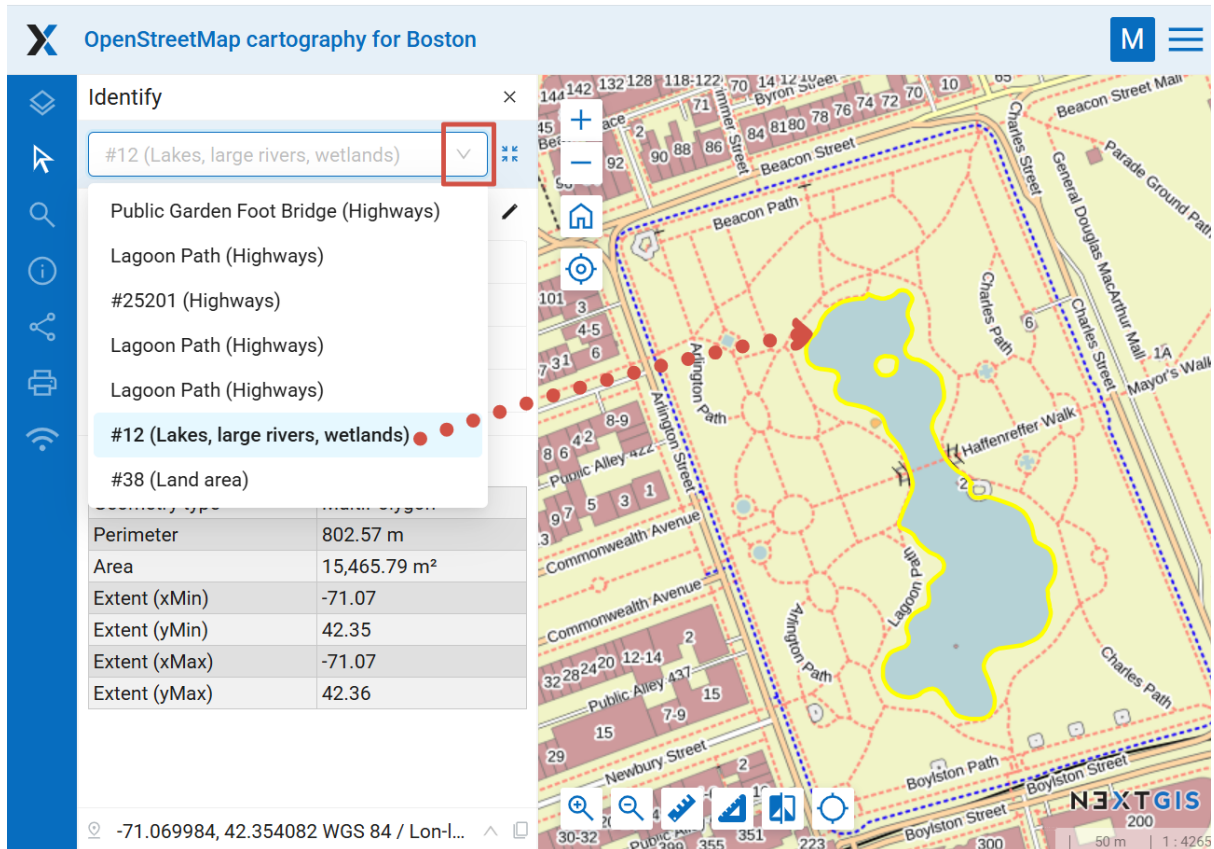


Fig. 16.2: Selecting feature in the identification panel

To configure how far from the clicks the features can be to be identified and what parameters are displayed in the panel go to the [Control panel](#)<sup>166</sup>.

You can disable identification for individual layers and modify their order in the [Web Map settings](#)<sup>167</sup>.

## 16.5 Search

**Search** is performed using three sources:

1. Coordinates.
2. Attributes of layers added to a map.
3. Address database (OpenStreetMap or Yandex.Maps, depending on [address search settings](#)<sup>168</sup>).

Results are shown as user inputs text and are sorted in this order: points on the map matching the coordinates, then feature numbers for attribute search and finally full addresses. After a click on a search result map changes extent to show selected feature.

<sup>166</sup> [https://docs.nextgis.com/docs\\_ngweb/source/webmap\\_set.html#ngw-contr-panel-webmap-ident](https://docs.nextgis.com/docs_ngweb/source/webmap_set.html#ngw-contr-panel-webmap-ident)

<sup>167</sup> [https://docs.nextgis.com/docs\\_ngweb/source/webmaps\\_admin.html#ngw-map-layers](https://docs.nextgis.com/docs_ngweb/source/webmaps_admin.html#ngw-map-layers)

<sup>168</sup> [https://docs.nextgis.com/docs\\_ngweb/source/webmap\\_set.html#address-search](https://docs.nextgis.com/docs_ngweb/source/webmap_set.html#address-search)

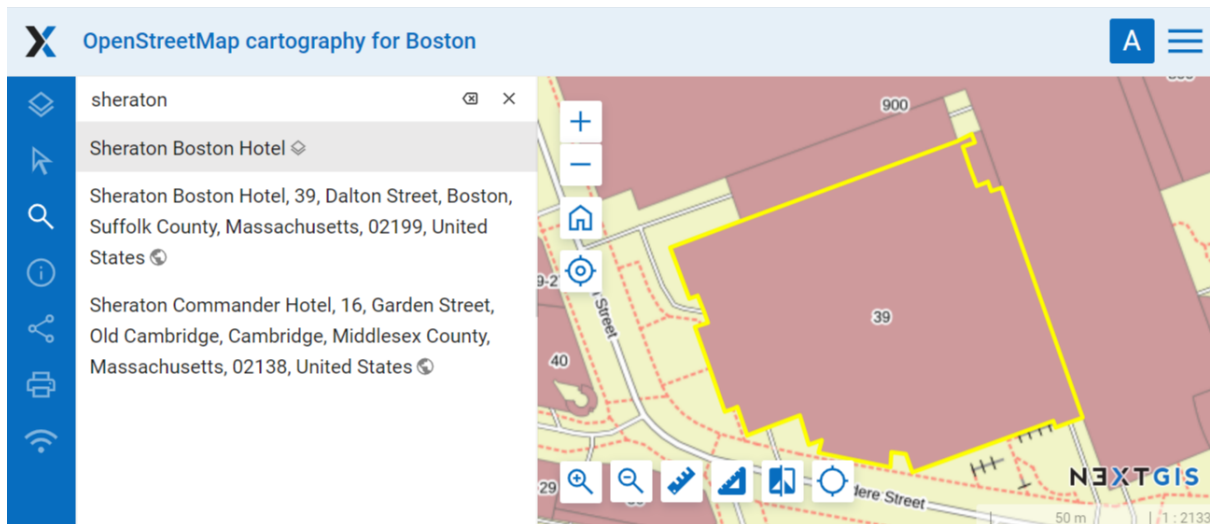


Fig. 16.3: Feature selected in search results is displayed on the map

### 16.5.1 Search by coordinates

To find a point using the coordinates, enter the latitude and longitude in degrees, minutes and second, degrees and decimal minutes or decimal degrees (make sure to use straight single and double quotes), for example:

```
79 W 43 N
W 79 N 43
-79 43 (the results will contain two points: 79 W, 43 N and 43 E,
↪ 79 S)
79- 43
-79 W 43 N
79°4'14.08" W 43°4'59.37" N
-79°4'14.08" 43°4'59.37"
-79 4.25 W 43 4.95 N
-79 4.25 43 4.95
79.068493 43.079920
79.068 W 43.08 N
```

See how it works in our video:

Watch on [youtube](https://youtu.be/tjPHvUWtpKs?si=Od-yUzIhM0yr4JwM)<sup>169</sup>.

When the feature table is opened on the Web Map, you can filter features by area ([read more](https://docs.nextgis.com/docs_ngweb/source/admin_interface.html#ngw-feature-table-filter-area)<sup>170</sup>).

<sup>169</sup> <https://youtu.be/tjPHvUWtpKs?si=Od-yUzIhM0yr4JwM>

<sup>170</sup> [https://docs.nextgis.com/docs\\_ngweb/source/admin\\_interface.html#ngw-feature-table-filter-area](https://docs.nextgis.com/docs_ngweb/source/admin_interface.html#ngw-feature-table-filter-area)

## 16.6 Layer menu

To change the transparency of the layer use the slider in the dropdown menu of the layer.

Choose **Edit** to modify the selected layer. To complete the process, open the dropdown menu again and select **Stop editing** ([read more here](#)<sup>171</sup>).

Using **“Description”** option you can view the description of the selected layer, added during creation or editing of the layer.

**“Zoom to layer”** option allows you to zoom a map so that the selected layer takes up all the visible map area.

See how it works in our video:

Watch on [youtube](#)<sup>172</sup>.

After a click on **“Feature table”** option you will see feature table of the selected layer under the map.

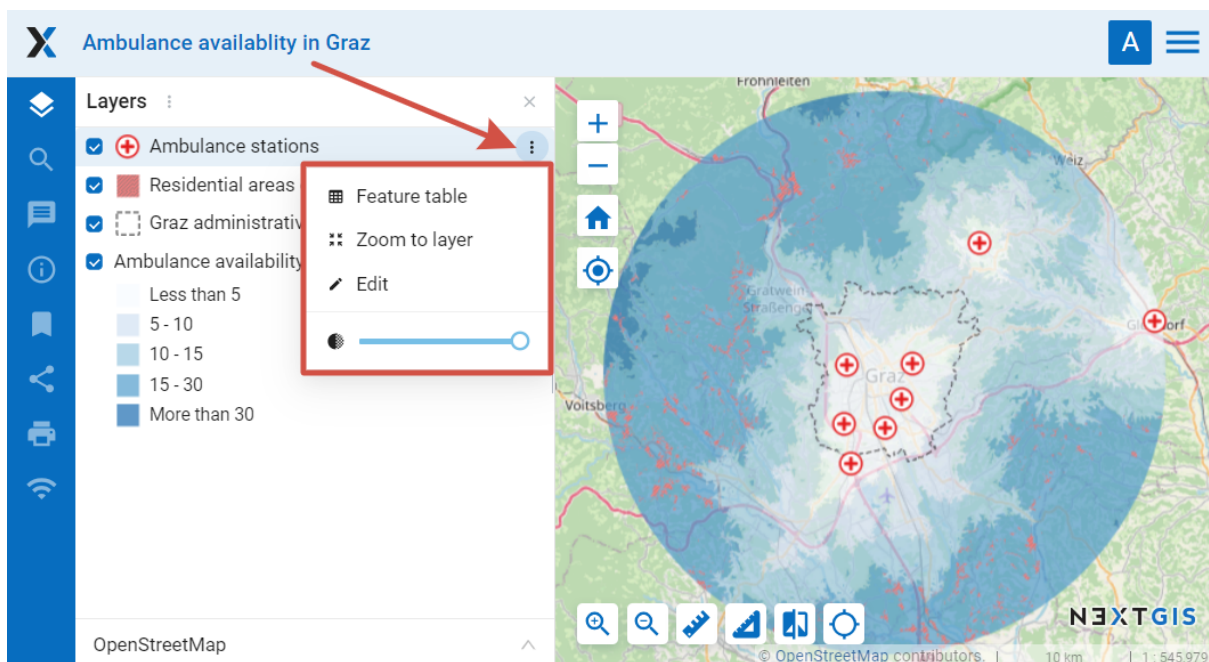


Fig. 16.4: Layer menu on the Web Map

Select a row in feature table to navigate to the feature on a map, it will be highlighted (see Fig. ??). For the selected feature you can open a window with its properties, edit it or delete it. **“Go to”** button allows you to zoom a map to display the selected feature on the whole visible map area (see Fig. ??). In feature table tab you have an option to dynamically filter records. When user types a text the contents of the window are filtered leaving only the records that match the search text. Filter by area option is also available ([more on how to use it](#)<sup>173</sup>).

<sup>171</sup> [https://docs.nextgis.com/docs\\_ngweb/source/layers\\_settings.html#ngw-edit-objects](https://docs.nextgis.com/docs_ngweb/source/layers_settings.html#ngw-edit-objects)

<sup>172</sup> <https://youtu.be/M4cThWxdaZg?si=8sohojUzoB8oovvY>

<sup>173</sup> [https://docs.nextgis.com/docs\\_ngweb/source/feature\\_table.html#filter-layer-features-on-the-web-map-by-area](https://docs.nextgis.com/docs_ngweb/source/feature_table.html#filter-layer-features-on-the-web-map-by-area)

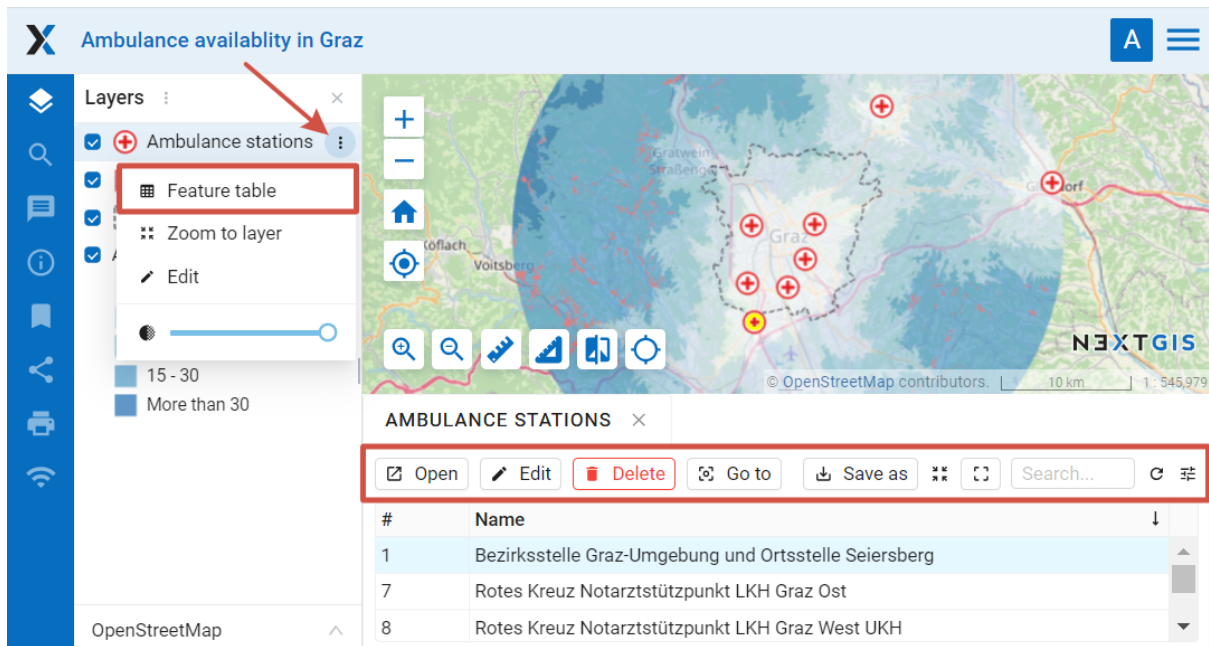


Fig. 16.5: Feature table of the selected layer on a Web Map

## 16.7 Basemap

To change a basemap use the dropdown list (see Fig. ??). By default there are the following basemaps:

- None
- OpenStreetMap

Basemap is a map image that is shared by third-party services in the Internet. Users can not influence their content. You can disable the basemap so that a white background is shown instead. If the Internet access is expected to be poor or if the Web GIS is deployed in local network without access to the Internet, it is possible to work without a basemap adding base data as WebGIS layers.

You can add other basemaps, see the instructions in [Adding resources](#)<sup>174</sup>.

**Note:** If the Web Map is supposed to work without Internet access, edit the file with [basemap settings](#)<sup>175</sup> and delete records about Google basemaps.

<sup>174</sup> [https://docs.nextgis.com/docs\\_ngweb/source/layers.html#ngw-create-basemap](https://docs.nextgis.com/docs_ngweb/source/layers.html#ngw-create-basemap)

<sup>175</sup> <https://github.com/nextgis/nextgisweb/blob/3/nextgisweb/webmap/basemaps.json>

## 16.8 Map tools

Tools to work with the Web Map (see Fig. ?? item 6) named from left to the right:

- Zoom in
- Zoom out
- Measure distance
- Measure area
- Vertical swipe
- Show cursor coordinates/extent



Fig. 16.6: Map tools

### 16.8.1 Measuring tools

Map tools allow to measure distance (straight or segmented line) and area. Activate the tool and draw a line by clicking on the map. Double-click to finish line creation. You can draw multiple measuring lines on a map and compare results. To delete one of the measurement lines, press X on the measurement results label. To clear selection, press the tool button again.

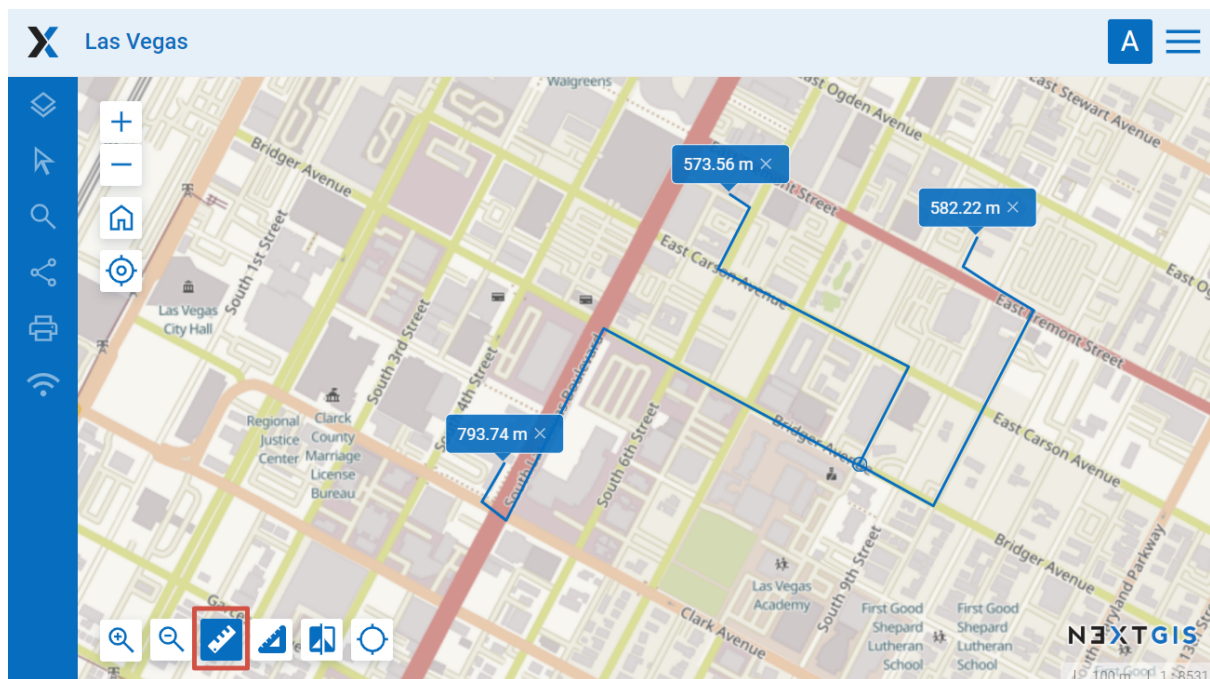


Fig. 16.7: Measuring distance on the Web Map

To measure area draw a custom polygon on the map. Double-click to finish the polygon.

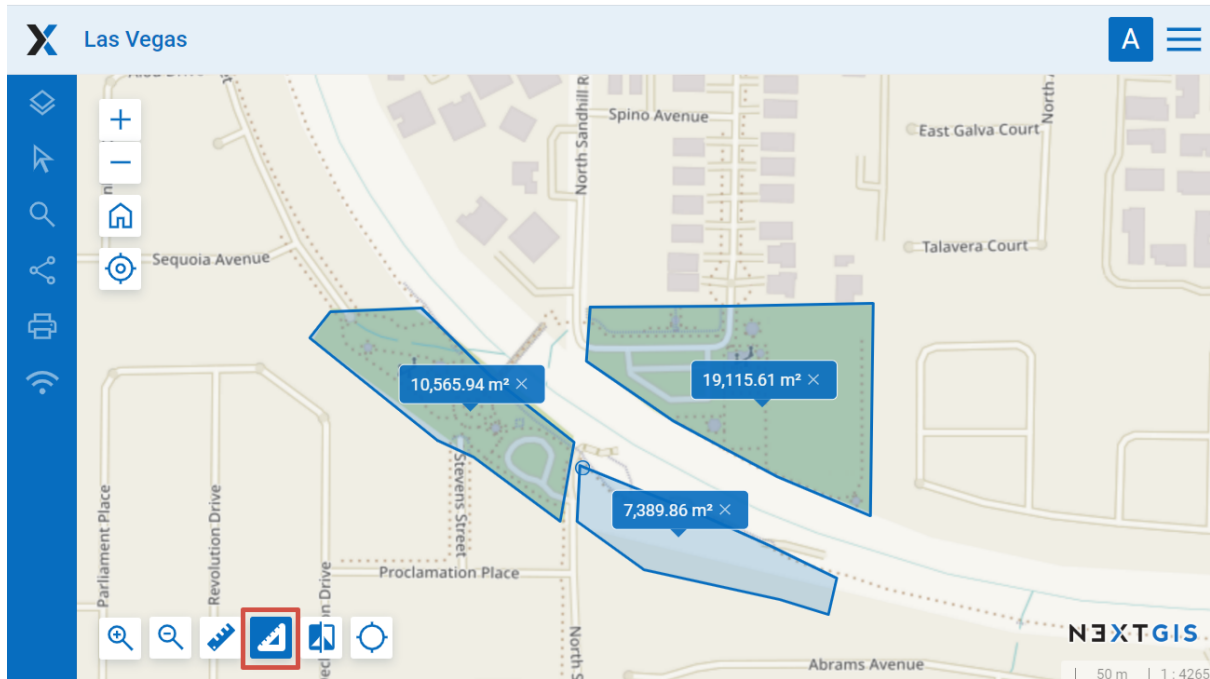


Fig. 16.8: Measuring areas on the Web Map

Measurement units are selected in the [Control panel](#)<sup>176</sup>

### 16.8.2 Swipe

Swipe makes the selected layer transparent to one side of the line.

To select a layer click on it in the layer tree (it will be highlighted in blue), then

press the swipe button  (see Fig. ??).

Use the square in the center to move the swipe and the circle on the line to rotate it 90 degrees.

Swipe makes it possible to “peek” under the selected layer and compare it with the substrate or another layer on the map. The tool will be useful if we want to compare changes in the terrain by satellite images for different dates (for example, to identify forest felling or floods).

<sup>176</sup> [https://docs.nextgis.com/docs\\_ngweb/source/webmap\\_set.html#ngw-contr-panel-webmap-measure](https://docs.nextgis.com/docs_ngweb/source/webmap_set.html#ngw-contr-panel-webmap-measure)

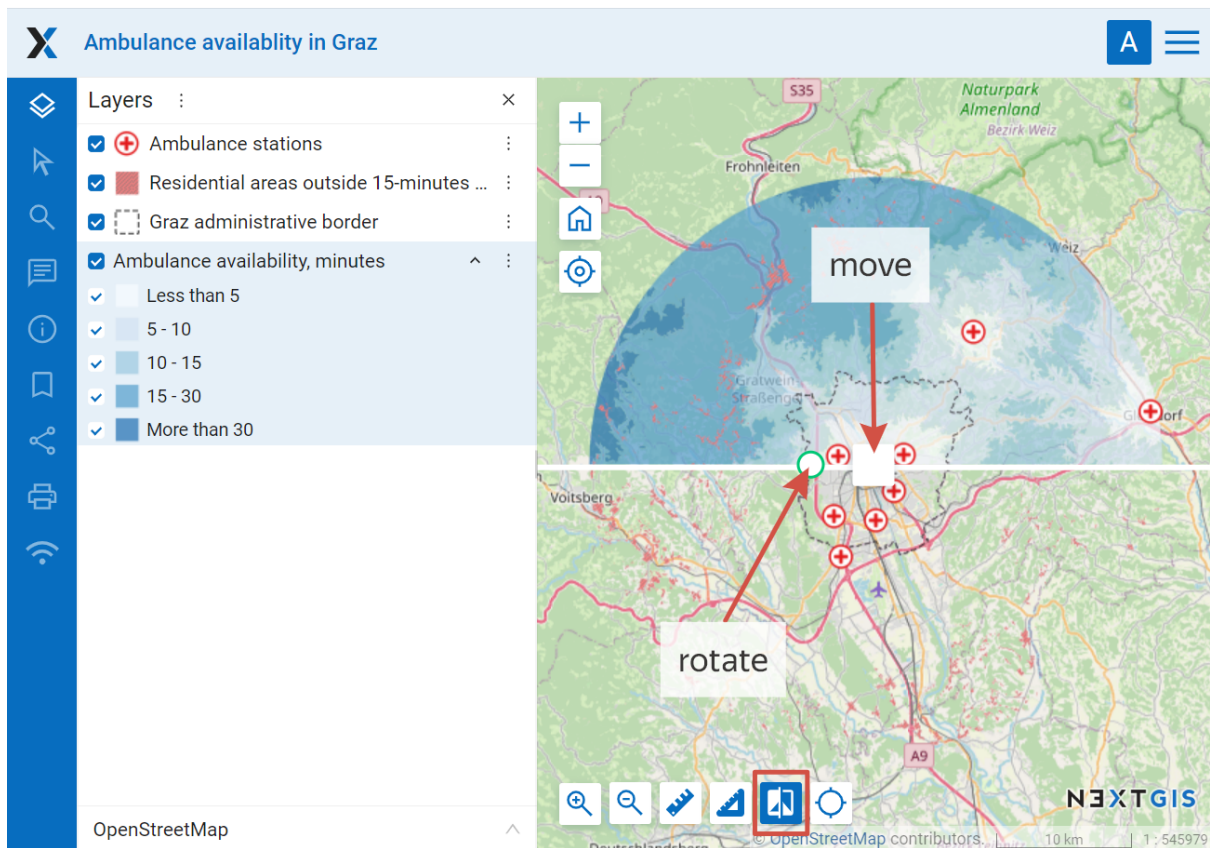


Fig. 16.9: Horizontal swipe. Selected layer is marked in blue

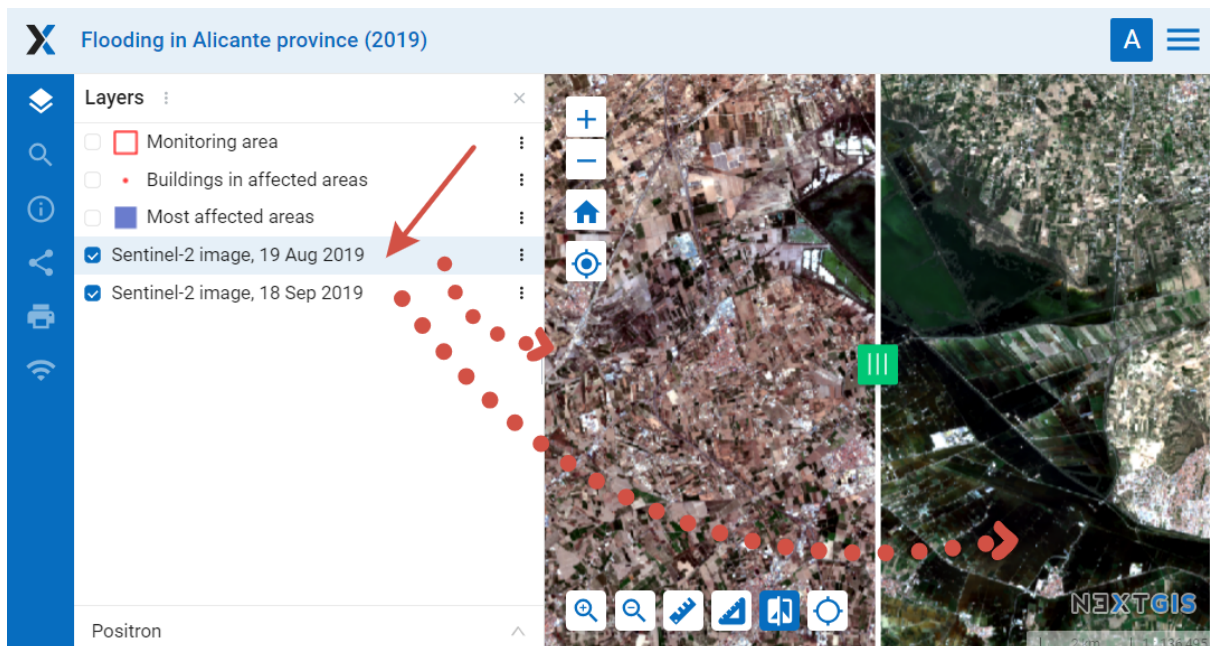


Fig. 16.10: Satellite image after applying the vertical swipe

### 16.8.3 Show extent or cursor coordinates

A field can be added to the Web Map interface to show the coordinates of the current cursor position or the extent of the visible map area. To activate it, press



the button in the map tools panel.

The icon on the right indicates what is displayed. Click on it to switch between modes.

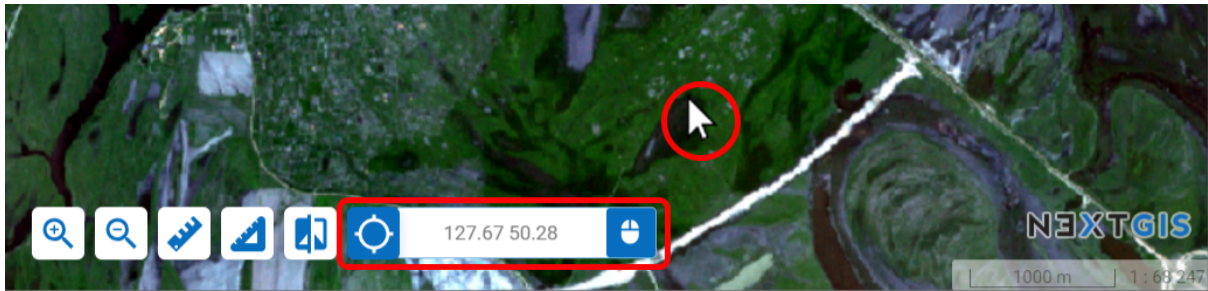


Fig. 16.11: Cursor coordinates mode

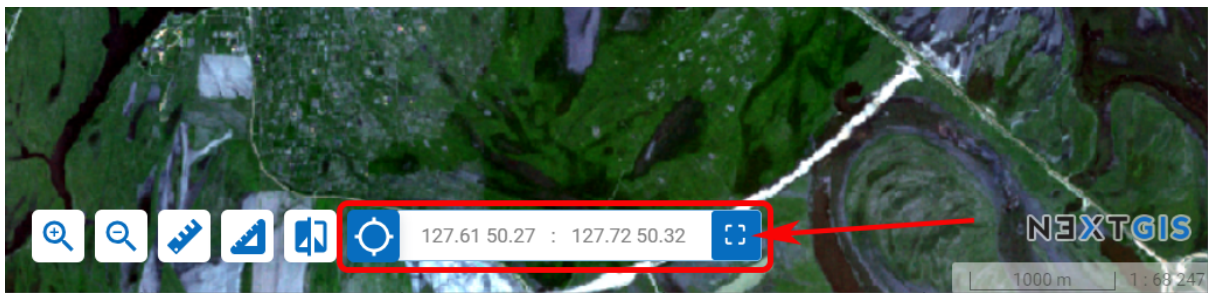



Fig. 16.12: Extent mode

## 16.9 Share

In the  “Share” panel you can:

- copy a link to the Web Map (the link includes zoom level and layer visibility);
- add the visible fragment of the Web Map to [favorites](https://docs.nextgis.com/docs_ngweb/source/favorites.html#ngw-favorites-wm-fragment)<sup>177</sup>;
- configure and copy the code for embedding the Web Map to a Web site.

<sup>177</sup> [https://docs.nextgis.com/docs\\_ngweb/source/favorites.html#ngw-favorites-wm-fragment](https://docs.nextgis.com/docs_ngweb/source/favorites.html#ngw-favorites-wm-fragment)

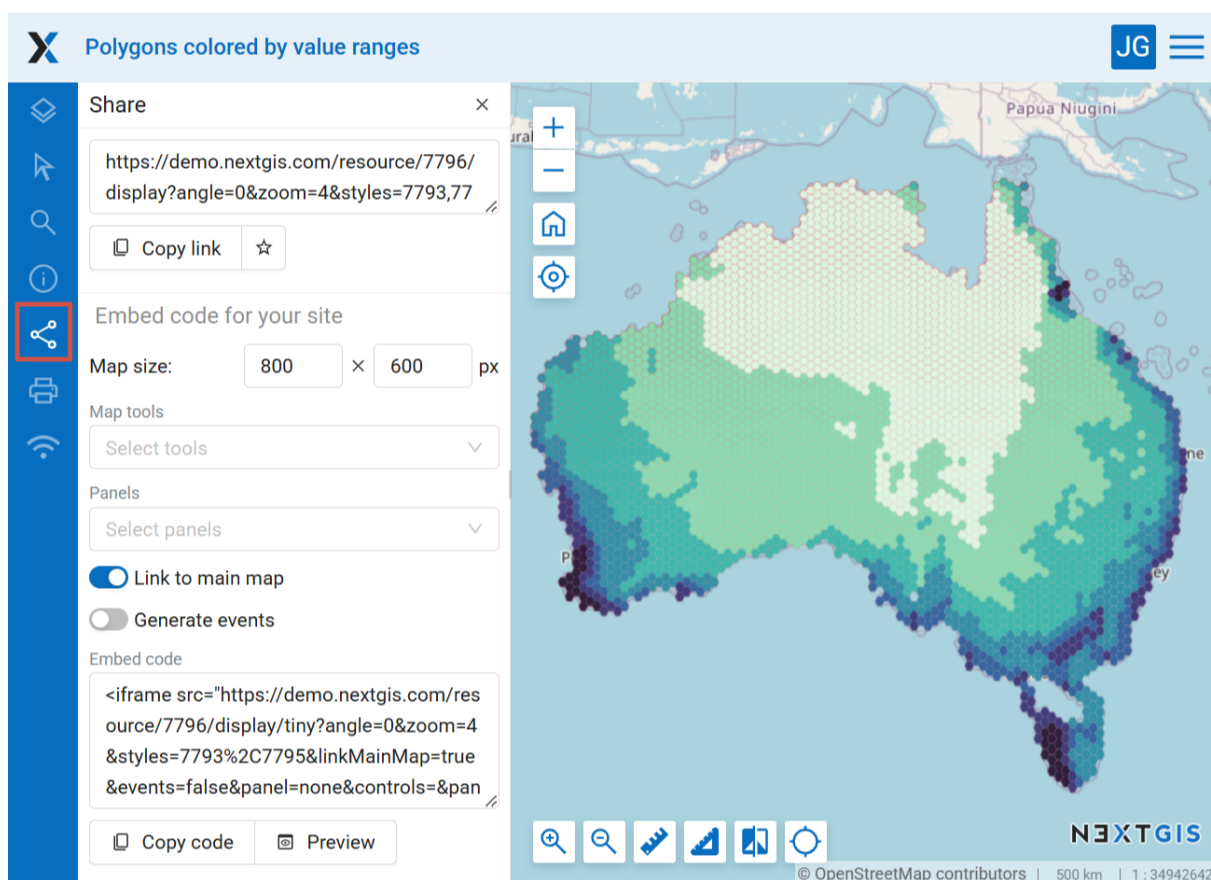


Fig. 16.13: "Share" panel

## 16.10 Link to a Web Map feature

The easiest way is to zoom in on the area and copy the link via the **Share** panel (Fig. ??)

Using specially generated GET queries you can share a link to a particular feature of a layer. The link will open with the geographical context that you can select in the Web Map settings.

All you need to do is create links in the information systems. By clicking on them users will be directed to the map with the selected feature and context.

Such links can be automatically generated by your system integrated with NextGIS Web.

Example:

[https://demo.nextgis.com/resource/6118/display?panel=layers&hl\\_lid=6108&hl\\_attr=OSM\\_ID&hl\\_val=230629285&zoom=17](https://demo.nextgis.com/resource/6118/display?panel=layers&hl_lid=6108&hl_attr=OSM_ID&hl_val=230629285&zoom=17)

You can make such a link **manually**. Here's what you need:

- Link to the Web Map: <https://demo.nextgis.com/resource/6118/display?panel=layers>

For the feature:

- hl\_lid - layer ID (open the layer resource page and see the number in the URL, for example <https://demo.nextgis.com/resource/6114>, here hl\_lid=6114
- hl\_attr - the name of the ID attribute field, for example OSM\_ID;
- hl\_val - the value of the ID field.

You can also add:

- zoom - value in numbers with 1 being the minimum.

Here's the resulting link:

[https://demo.nextgis.com/resource/6118/display?panel=layers&hl\\_lid=6114&hl\\_attr=OSM\\_ID&hl\\_val=1058246738&zoom=17](https://demo.nextgis.com/resource/6118/display?panel=layers&hl_lid=6114&hl_attr=OSM_ID&hl_val=1058246738&zoom=17)

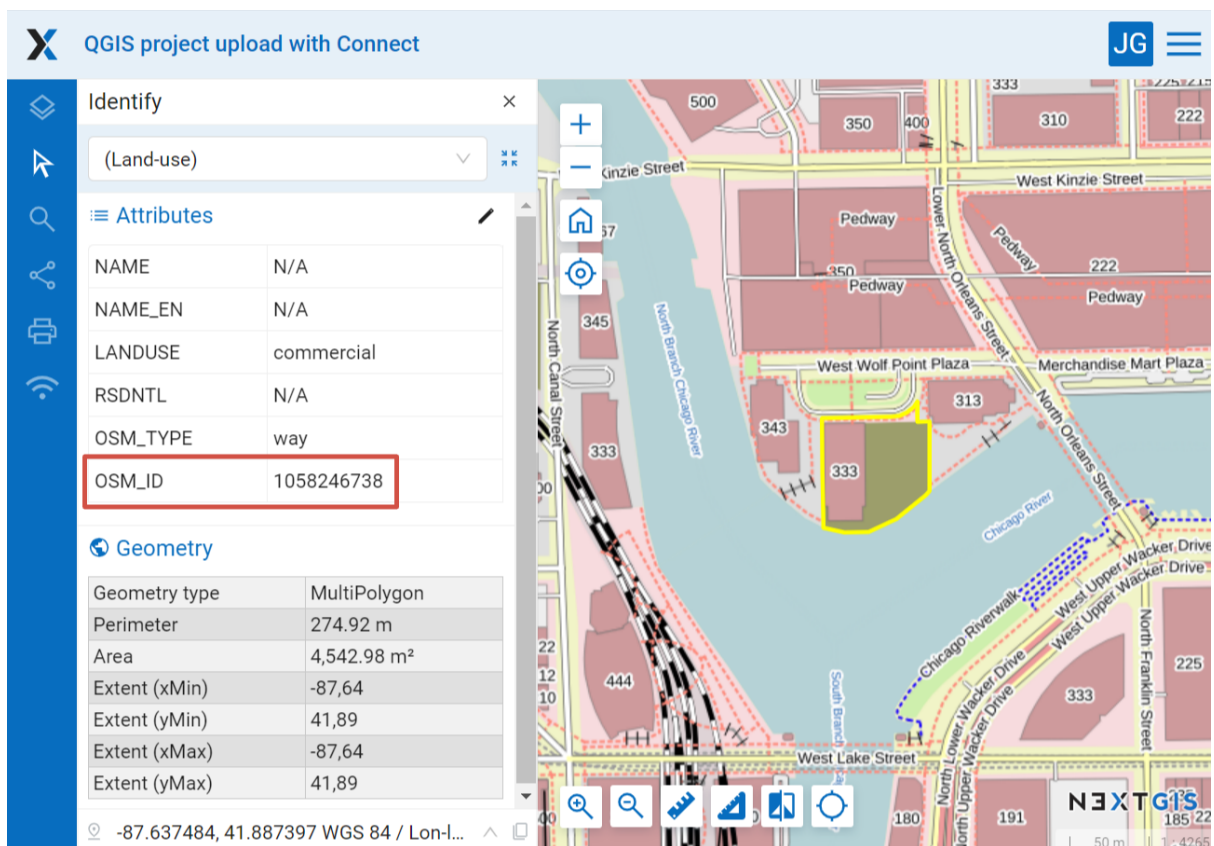


Fig. 16.14: Web Map opened via the link. The link contains the ID of the layer and the ID field name and value for the selected feature

## PRINT A WEB MAP OR SAVE AS IMAGE

Web GIS allows to print a Web Map or save it as a picture. To do it:

1. Go to the Properties window of Web Map from the relevant Resource group;
2. Select Web Map → Display on the right side of Web GIS admin console;
3. In the opened web client, which allows to view and edit geodata, press the “Print map” button (see Fig. ??).

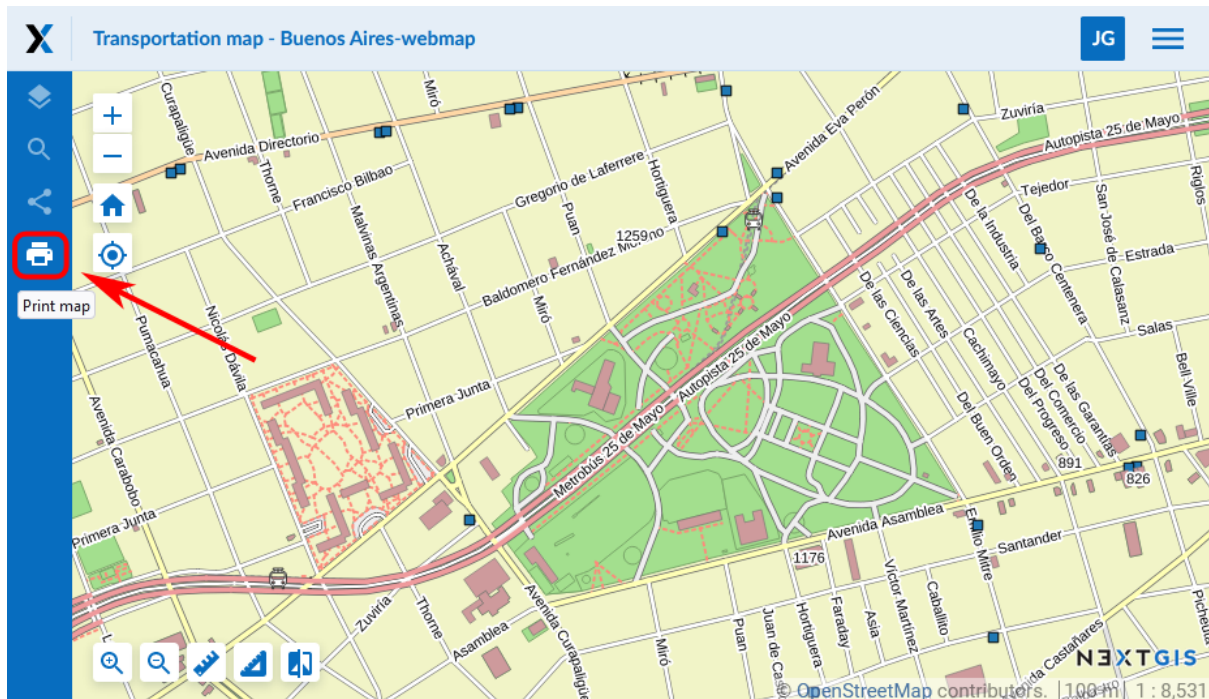


Fig. 17.1: “Print map” button

In the opened window you can select the area you would like to print and set up printing parameters:

- Paper format (A3, A4 or custom);
- Margins;
- Scale.

You can also add:

- Legend (includes visible layers of expanded groups if their legend is expanded, it is set up in the Layers tab);

- Title (can be edited, the default is the Web Map resource name);
- North arrow;
- Scale value;
- Scale bar.

The size and placement of the title, the legend and the map itself can be changed.

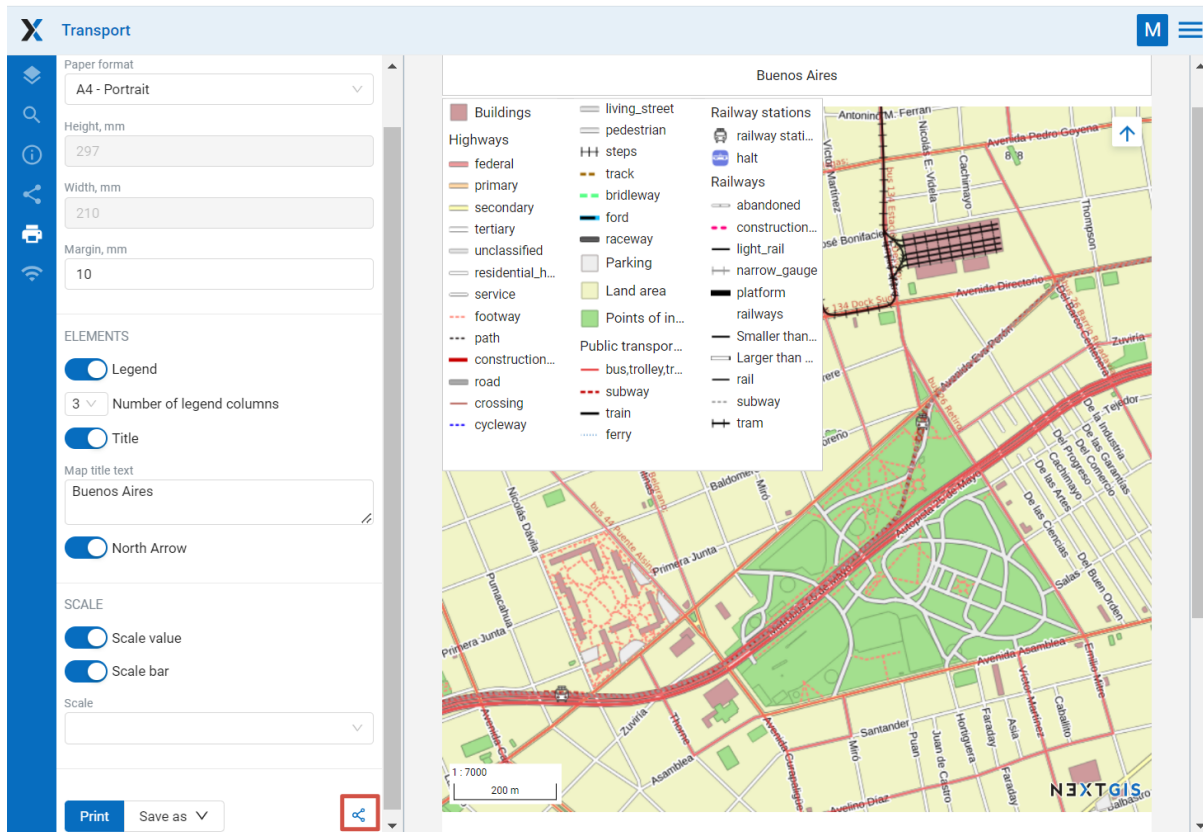



Fig. 17.2: Printing parameters

After you set all parameters press **Print**.

You can also share the map prepared for printing with all the parameters. Click

on the  symbol (marked in red on the Fig. ??) to copy the link. Upon opening this link you'll get the same setup and print the map as needed.

To save a map as a picture press **Save as** and choose a format from the list: JPEG, PNG, TIFF or PDF. Then uploading will begin automatically.

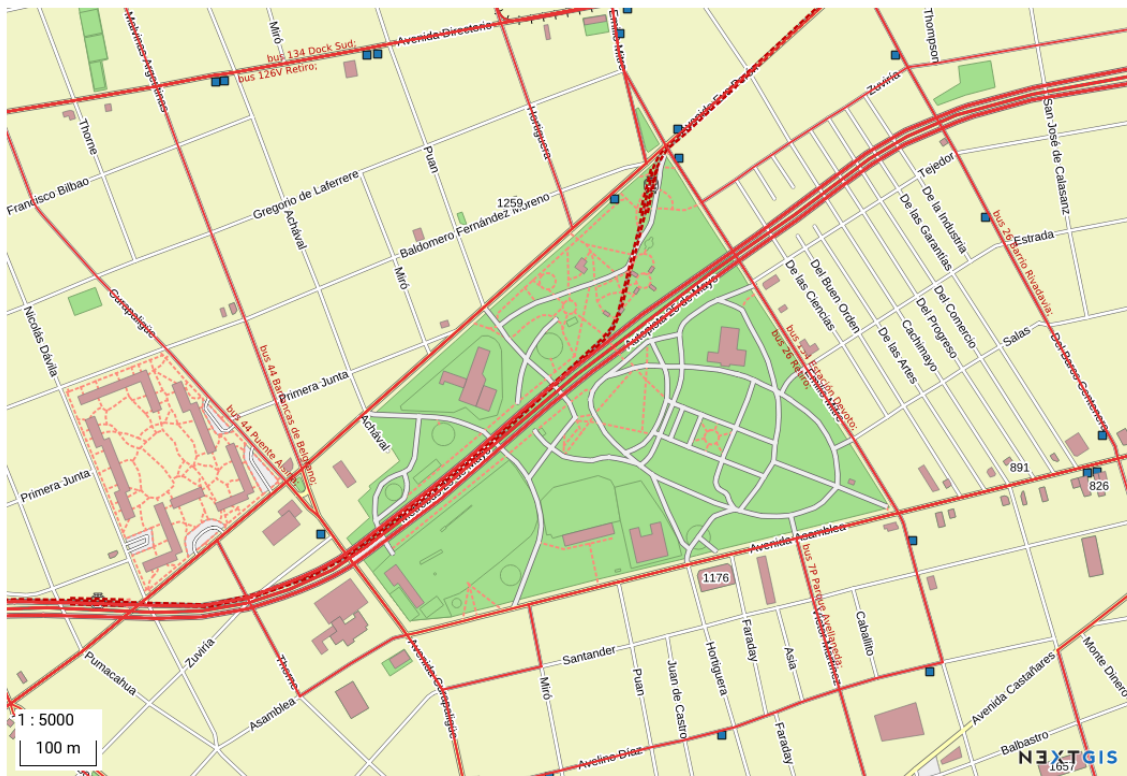


Fig. 17.3: Example of a Web Map saved as a PNG image

## **EMBED WEB MAP ON A WEB PAGE**


All Web Maps created on nextgis.com can be easily embedded into your website.

---

**Note:** This functionality is available only to nextgis.com [Mini and Premium](#)<sup>178</sup> users.

---

To embed a Web Map:

- Open Web Map
- Click on the  “Share” panel on the left sidebar
- If you wish to, customize map width and height and [other parameters](#)<sup>179</sup>.
- Copy the code
- Paste this code to your site

You can preview the embedded map before publishing it by pressing **Preview** button.

### **18.1 Embedded map settings**

**Map size** - width and height in pixels.

**Link to the main map** - to go from the site to the map page in the Web GIS.

**Generate events** - for integration and programmatic interaction with the iframe.

You can also embed a Web Map with additional tools and panels. This will allow users, for instance, to enable and disable particular layers.

**Tools** available for embedded map:

- feature identification;
- measuring area and distance;
- cursor location and extent coordinates;
- scale line;

---

<sup>178</sup> <http://nextgis.com/nextgis-com/plans>

<sup>179</sup> [https://docs.nextgis.com/docs\\_ngcom/source/embed\\_webmap.html#ngcom-embed-webmap-settings](https://docs.nextgis.com/docs_ngcom/source/embed_webmap.html#ngcom-embed-webmap-settings)

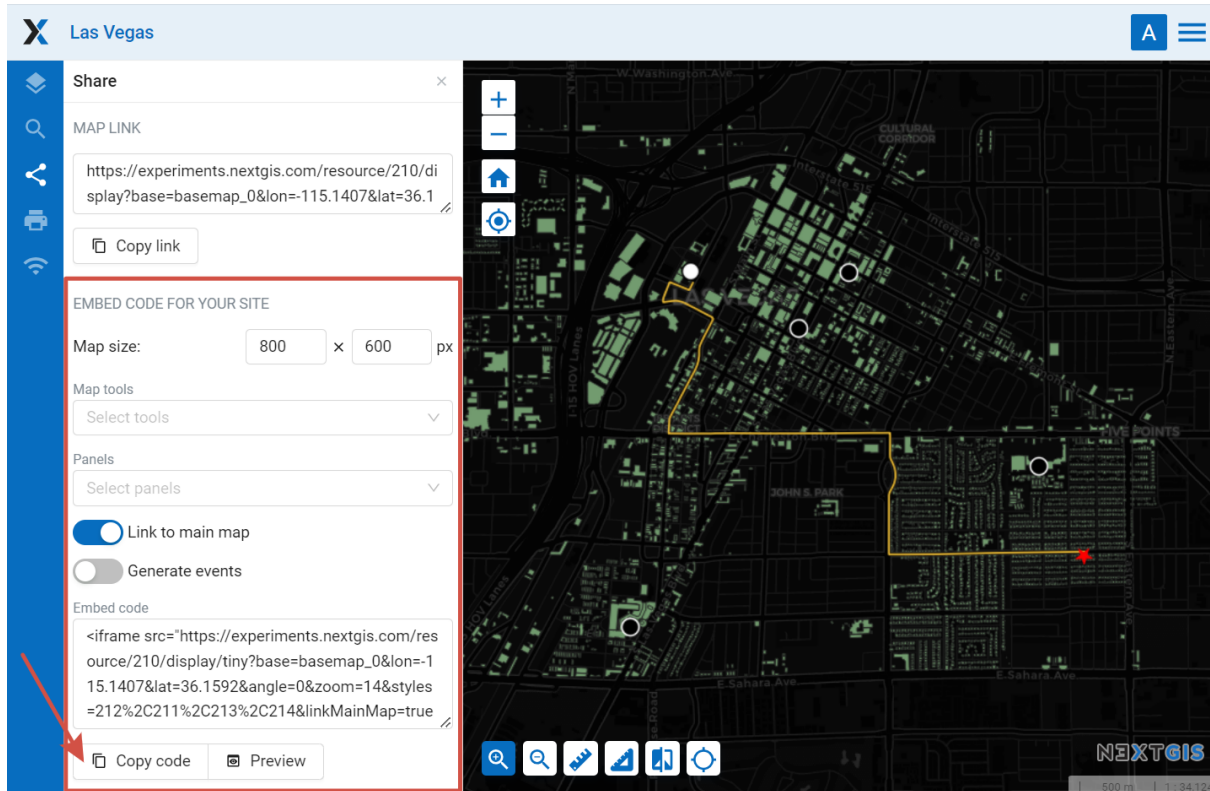


Fig. 18.1: Sharing panel

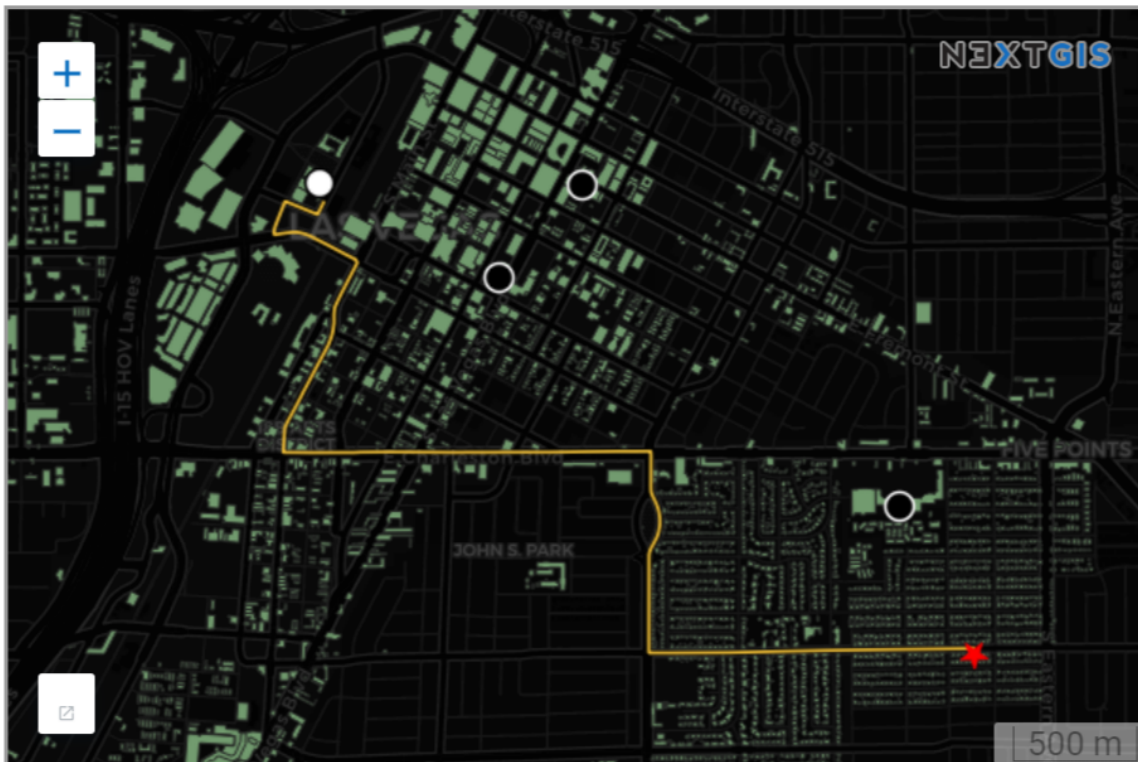


Fig. 18.2: Embedded Web Map example

- initial extent;
- marking user location;
- zoom;
- scale info.

You can also choose which **panels** will be available on the map:

- description;
- layers;
- search.

If several panels are added, you can use the **Active panel** menu to select one of them to be displayed by default or have the map open with the panels minimized.

All settings are included in the code.

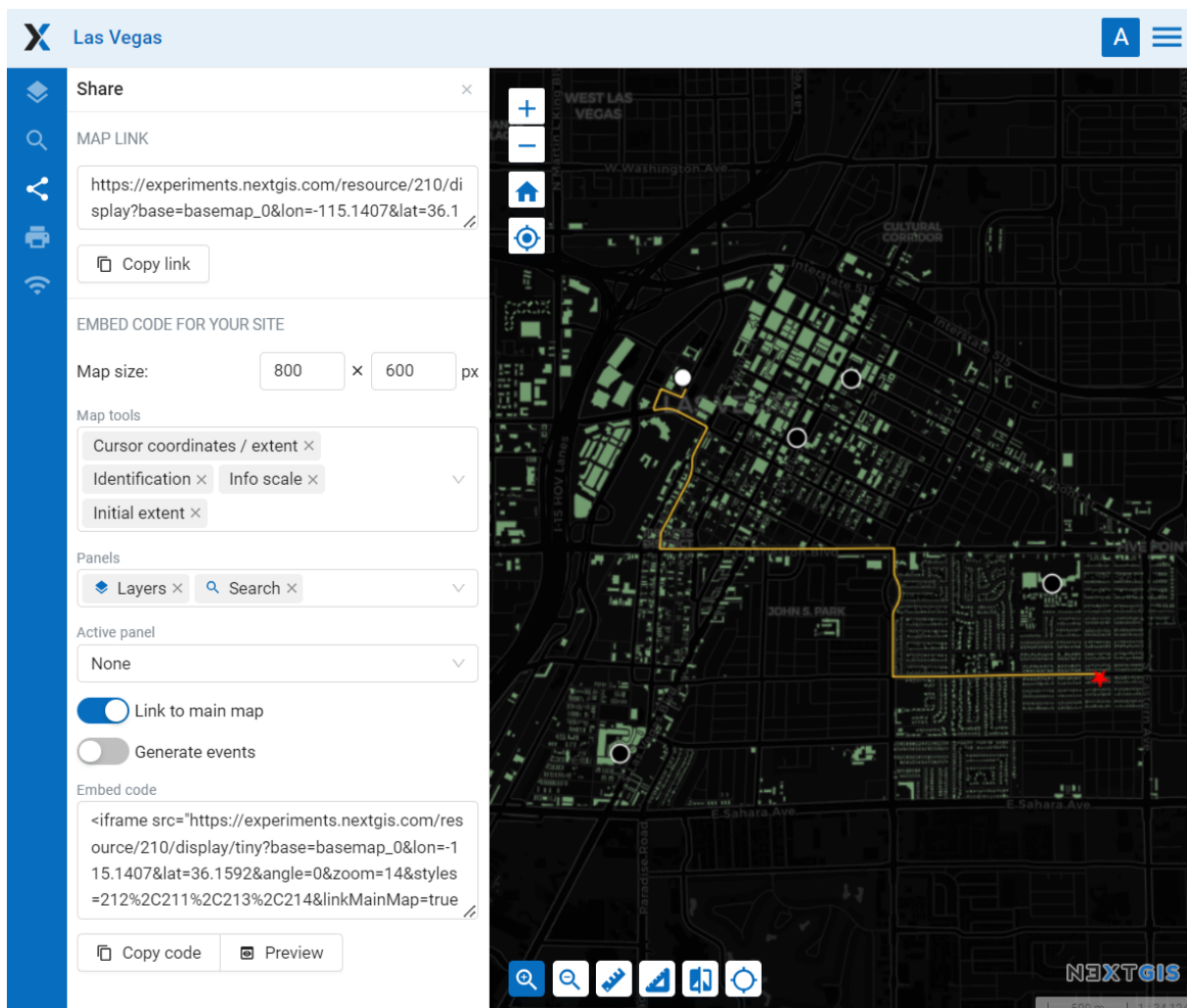


Fig. 18.3: Web Map embedding settings

If you are a developer check out the [code.nextgis.com](https://code.nextgis.com)<sup>180</sup> library suite and the [NGW API](https://docs.nextgis.com/docs_ngweb_dev/doc/toc.html)<sup>181</sup>.

<sup>180</sup> <https://code.nextgis.com/>

<sup>181</sup> [https://docs.nextgis.com/docs\\_ngweb\\_dev/doc/toc.html](https://docs.nextgis.com/docs_ngweb_dev/doc/toc.html)

## **WEB MAP SETTINGS**

Using the control panel administrator can set a number of general settings for all Web Maps in NextGIS Web:

- Visibility of the navigation menu for guests;
- Identification popup parameters;
- Measurement units;
- Address search parameters;
- Legend visibility.

### **19.1 Navigation menu vizibility**

You can hide the navigation menu for guests. While veiwing your Web Maps, guests will not have access to the main dropdown menu in the top right corner that has link to the main resource group.

In the Control panel of your Web GIS go to the Web Map settings (Fig. ??) and enable the option *Hide navigation menu for guest*.

### **19.2 Identify panel**

The section regulates the following parameters:

- The radius of the area around the object within which the identification works;
- Enabling or disabling geometry info;

### **19.3 Measurements**

The section sets the parameters responsible for various measurements on the Web Map:

- Units of length measurement (according to the selected SRS)
- Units of measurement of areas (in accordance with the selected SRS)
- Degree format

## Web map settings

### General

☒ Hide navigation menu  
for guest

### Identification

☒ Show feature attributes ☒ Show geometry info

\* Radius, px

10

### Measurement

Length units

Meters

Area units

Sq. meters

Degree format

Decimal degrees

Measurement SRS

WGS 84 / Lon-lat (EPSG:4326)

### Address search

☒ Enable ☒ Limit by web map initial extent

Provider

Nominatim (OSM)

Limit search results to countries

### Legend

Visibility

Default

 Save

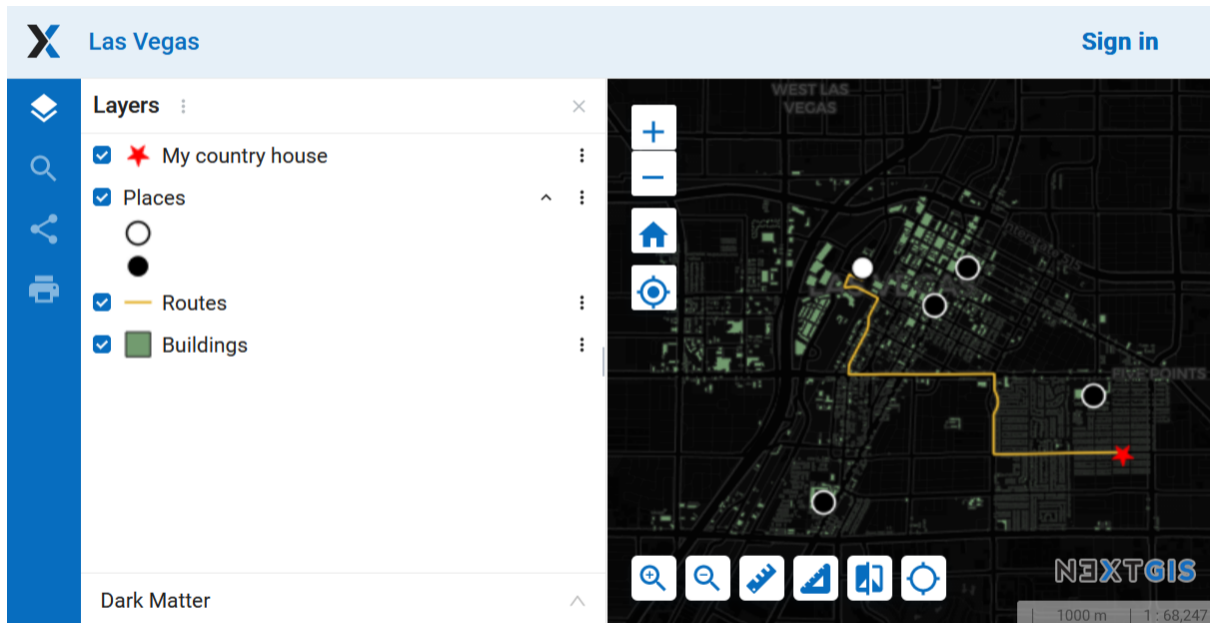


Fig. 19.2: Web Map without the navigation menu icon

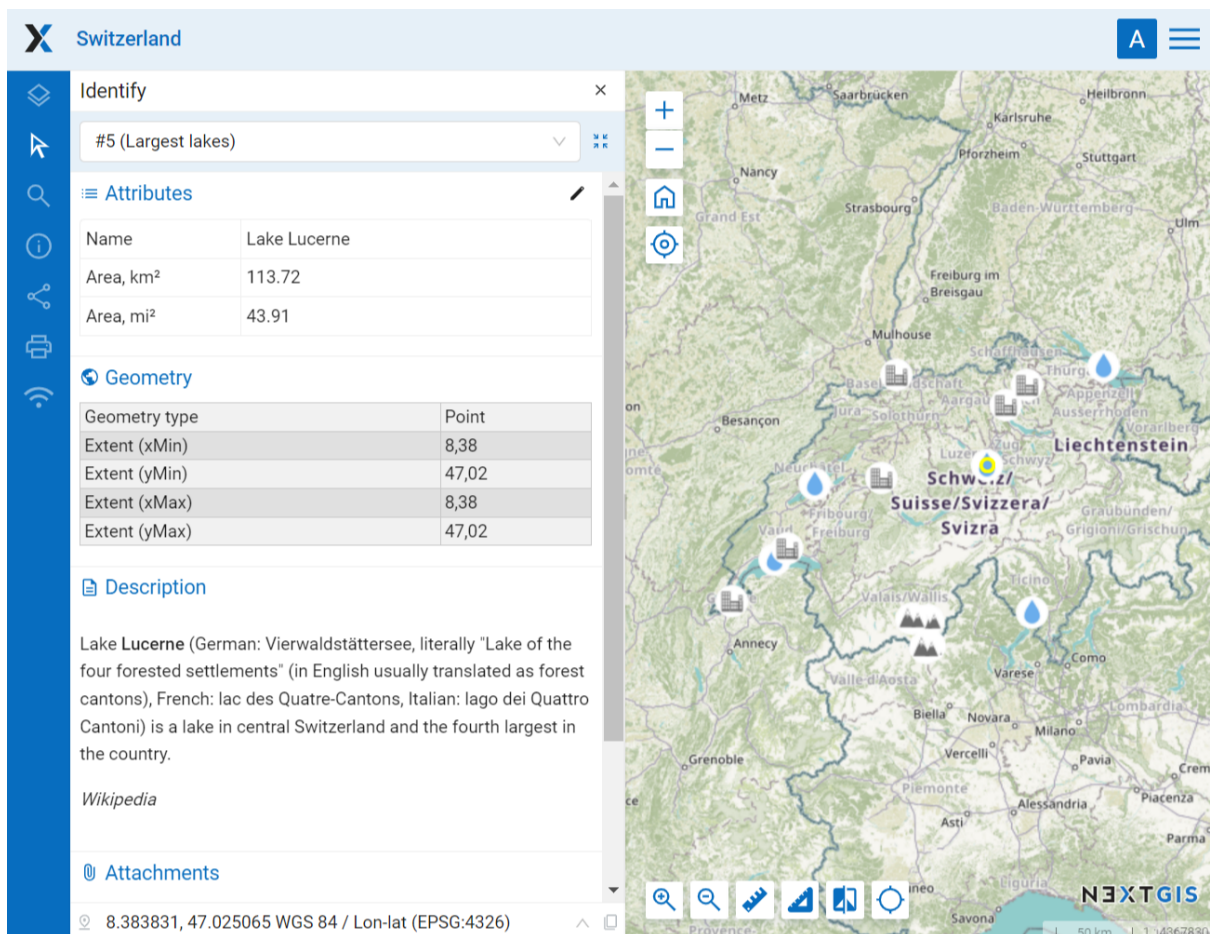


Fig. 19.3: Feature identification on the Web Map

- Coordinate system for calculating measurements

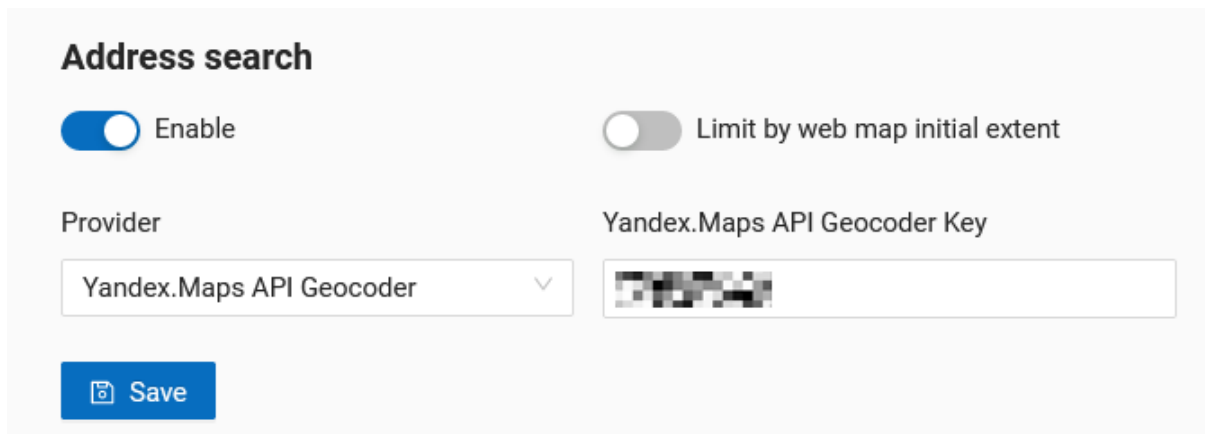
## 19.4 Address search

NextGIS Web address search is performed through one of the two data bases (providers):

- Nominatim (OpenStreetMap) - used by default
- Yandex.Maps - an external geocoder with API key

The following parameters can be set up:

- “Enable” - the search results on the Web Map will include not only the attribute data but also the address base if there are matches
- “Limit by Web Map initial extent” - the search will be performed within the extent set in the Web Map settings
- “Provider” - defines the geocoder used for address search. OpenStreetMap by default, can be changed to Yandex.Maps
- “Limit search results to countries” - while using OSM, if a country code is specified (de, fr, gb etc), the search results will only include matches from the selected country’s territory
- “Yandex.Maps API Geocoder Key” - when Yandex.Maps is selected as provider, this is the field to enter the API key. Users obtain the keys independently by signing up on <https://developer.tech.yandex.ru>.



**Address search**

☒ Enable ☐ Limit by web map initial extent

Provider Yandex.Maps API Geocoder Key

Yandex.Maps API Geocoder [masked key]


 Save

Fig. 19.4: Address search settings for Web Map



Fig. 19.5: Web Map search

### 19.4.1 Disabling address search

Address search can be turned off. In that case the search will only be performed in the feature attributes of the layers added to the Web Map (except the basemap). From the control panel go to [Web Map settings](#)<sup>182</sup>. Set the toggle of the “Address search” section to the off position.

### 19.4.2 Selecting search provider

NextGIS Web can use one of the two data bases for searching: Nominatim of OpenStreetMap or Yandex.Maps API Geocoder. By default the OSM search is used. To select a provider, go to control panel and open [Web Map settings](#)<sup>183</sup>. In the “Address search” section use the dropdown menu of the “Provider” field to select the desired geocoder.

To use Yandex.Maps enter your API key in the field on the right. API keys can be obtained by users signed up on <https://developer.tech.yandex.ru>.

### 19.4.3 Limit search area

You can limit the search area to the Web Map’s initial extent. From the control panel go to [Web Map settings](#)<sup>184</sup>. Set the toggle of the “Limit by Web Map initial extent” to the on position.

While using OSM, you can also limit the search to a particular country. In the field “Limit search results to countries” enter the code of the country using the ISO of the OSM data base: de, gb, fi etc. To find out the code, use the search on <https://www.openstreetmap.org>.

<sup>182</sup> [https://docs.nextgis.com/docs\\_ngweb/source/admin\\_tasks.html#web-map-settings](https://docs.nextgis.com/docs_ngweb/source/admin_tasks.html#web-map-settings)

<sup>183</sup> [https://docs.nextgis.com/docs\\_ngweb/source/admin\\_tasks.html#web-map-settings](https://docs.nextgis.com/docs_ngweb/source/admin_tasks.html#web-map-settings)

<sup>184</sup> [https://docs.nextgis.com/docs\\_ngweb/source/admin\\_tasks.html#web-map-settings](https://docs.nextgis.com/docs_ngweb/source/admin_tasks.html#web-map-settings)

## Web map settings

### Identify popup

\* Width, px  \* Height, px  \* Radius, px

☒ Show feature attributes

### Measurement

Length units  Area units  Degree format

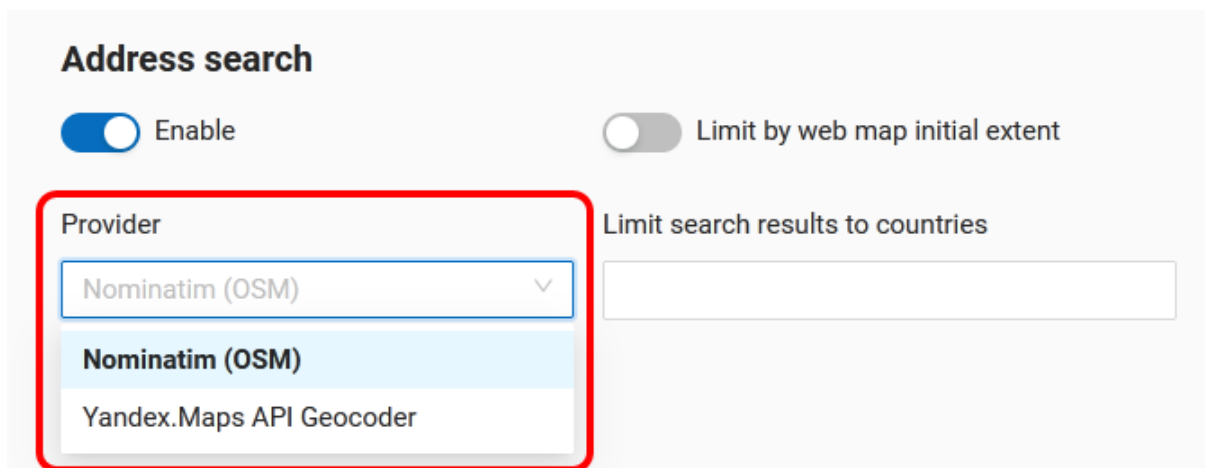
Measurement SRID

### Address search

☐ Enable ☐ Limit by web map initial extent

Provider  Limit search results to countries

Fig. 19.6: Address search disabled



**Address search**

☒ Enable ☐ Limit by web map initial extent

Provider

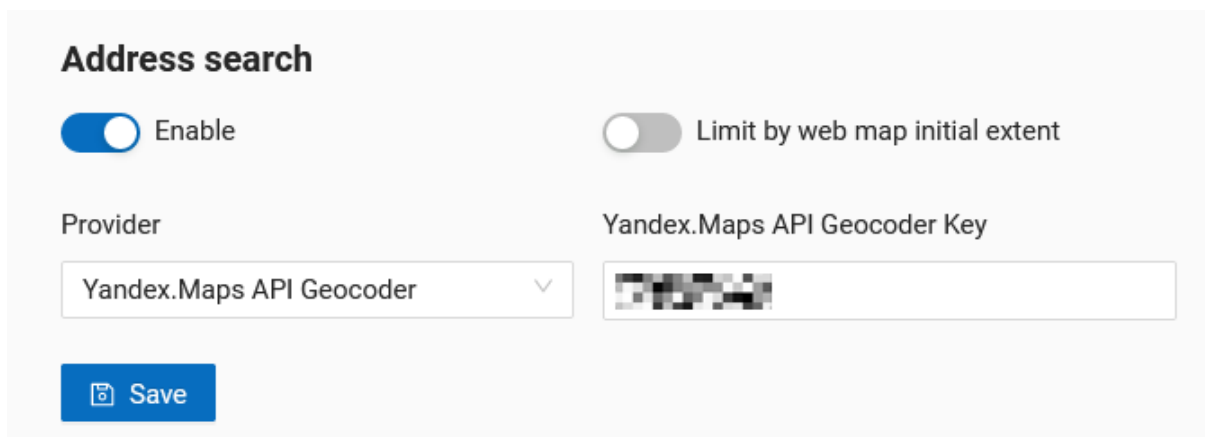
Nominatim (OSM) ▼

Nominatim (OSM)

Yandex.Maps API Geocoder

Limit search results to countries

Fig. 19.7: Selecting address search provider



**Address search**

☒ Enable ☐ Limit by web map initial extent

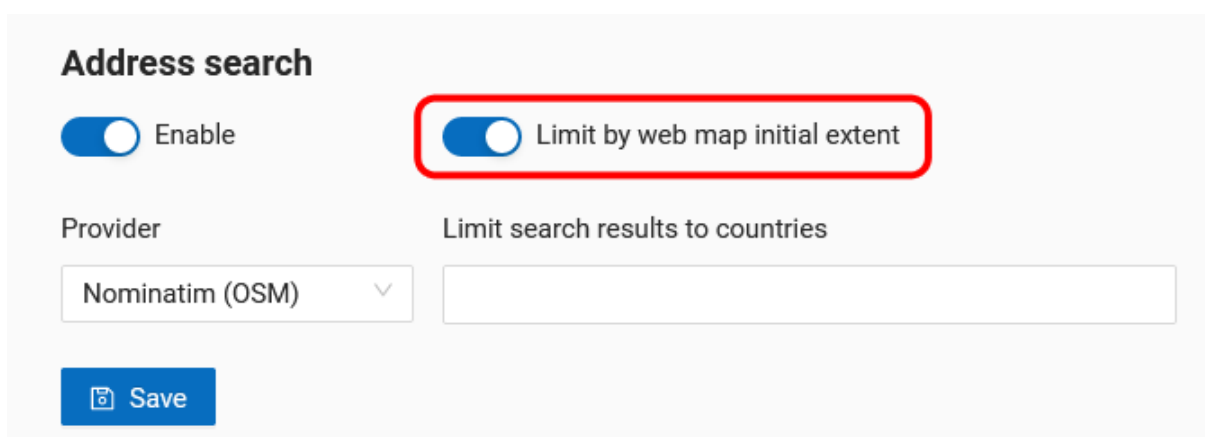
Provider

Yandex.Maps API Geocoder ▼

Yandex.Maps API Geocoder Key

Save

Fig. 19.8: Entering API key to use Yandex.Maps



**Address search**

☒ Enable ☒ Limit by web map initial extent

Provider

Nominatim (OSM) ▼

Limit search results to countries

Save

Fig. 19.9: Search limited to the initial extent of the Web Map

**Address search**

☒ Enable ☐ Limit by web map initial extent

Provider

Nominatim (OSM) ▼

Limit search results to countries

fr


 Save

Fig. 19.10: Search limited to the territory of France

## FAVORITES

In NextGIS Web, you can have quick access to the most frequently used resources (groups, layers, maps and fragments of maps) through the Favorites feature.

To add a resource to Favorites, navigate to its page, click on the user initials in the top panel to open the menu and press the star icon. Click on the Favorites item in the menu to open the Favorites page.

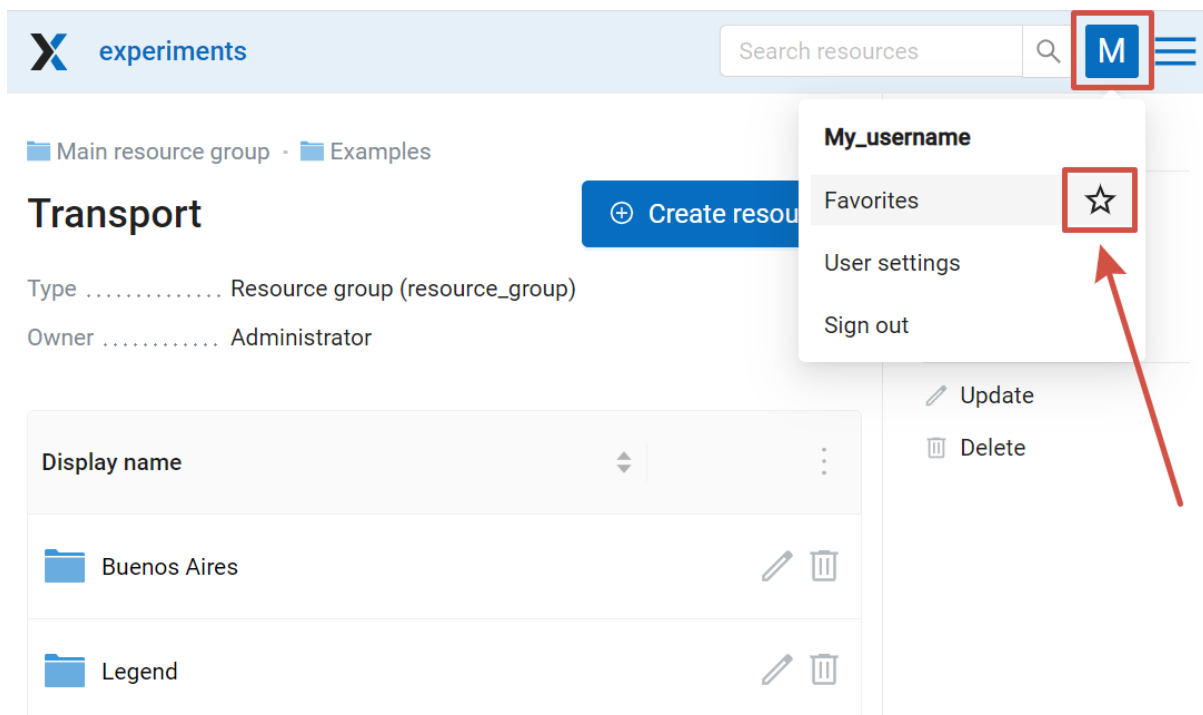


Fig. 20.1: Adding to Favorites

On the Favorites page you can edit the list of added resources and modify names of Web Map fragments (more about managing Favorites [here](https://docs.nextgis.com/docs_ngcom/source/favorites.html)<sup>185</sup>).

<sup>185</sup> [https://docs.nextgis.com/docs\\_ngcom/source/favorites.html](https://docs.nextgis.com/docs_ngcom/source/favorites.html)

## Favorites

Done








 Las Vegas	Demo project	
Basemaps		
 Open Street Map	Basemap	
Examples > Transport		
 Transport	Web map	
<input type="text" value="Central Park"/>	Fragment	
<input type="text" value="Fragment 2"/>	Fragment	

Fig. 20.2: Editing Favorites

## 20.1 How to add Web Map fragment to Favorites

You can add a Web Map to Favorites with the extent different from the initial extent chosen in the Web Map settings. To do so open the map, modify the extent, then open the “Share” tab and press the star next to the “Copy link” button.

You can set up a custom name for the fragment or keep the default (“Fragment”).

The fragment name can later be edited from the Favorites page (see below).

## 20.2 Favorites list editing

The Favorites page contains a list of the added resources. Above each one there is the name of the parent resource, if it’s not the Main resource group.

To open the page of a resource, press **Go to** button on the right end of the row.

Press **Edit** button to modify the list.

To remove a resource from Favorites, click the bin icon on the right. No additional confirmation needed. Deleting from Favorites will not affect the resource itself. You can add it to Favorites and remove it multiple times.

Also from this page you can modify the name of the added Web Map fragments.

To exit the editing mode, press **Done**.

See how to use Favorites in our video:

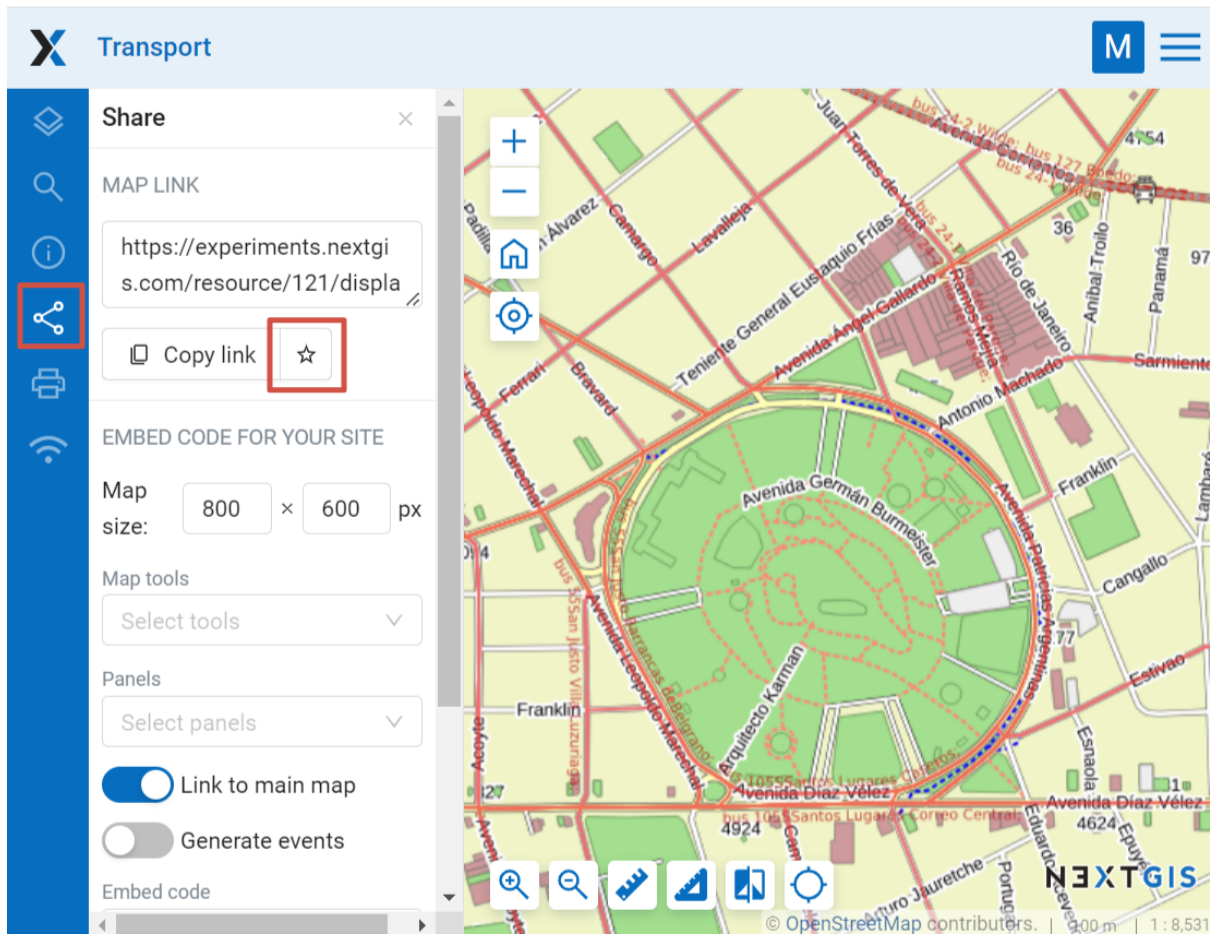


Fig. 20.3: Adding Web Map fragment to Favorites

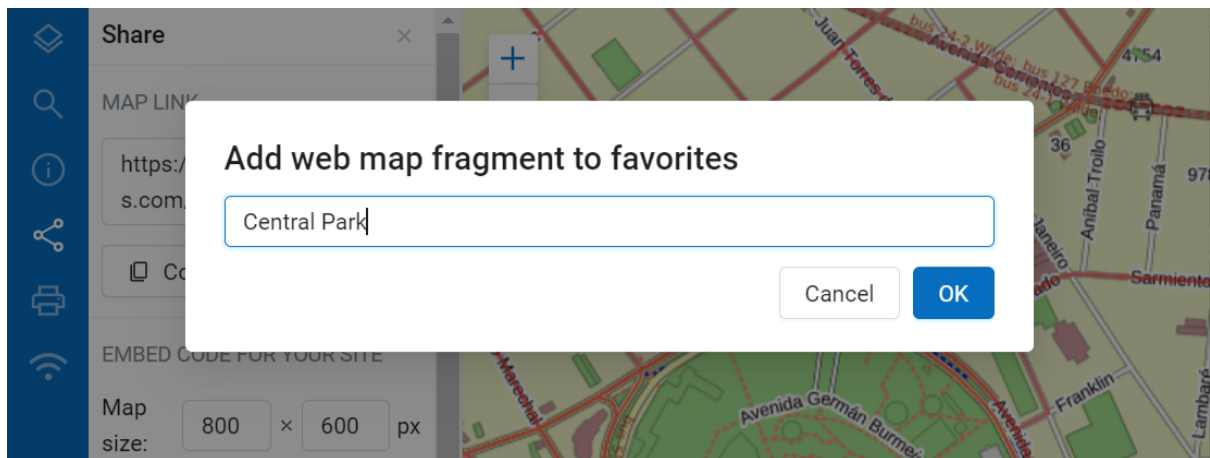


Fig. 20.4: Name for the fragment

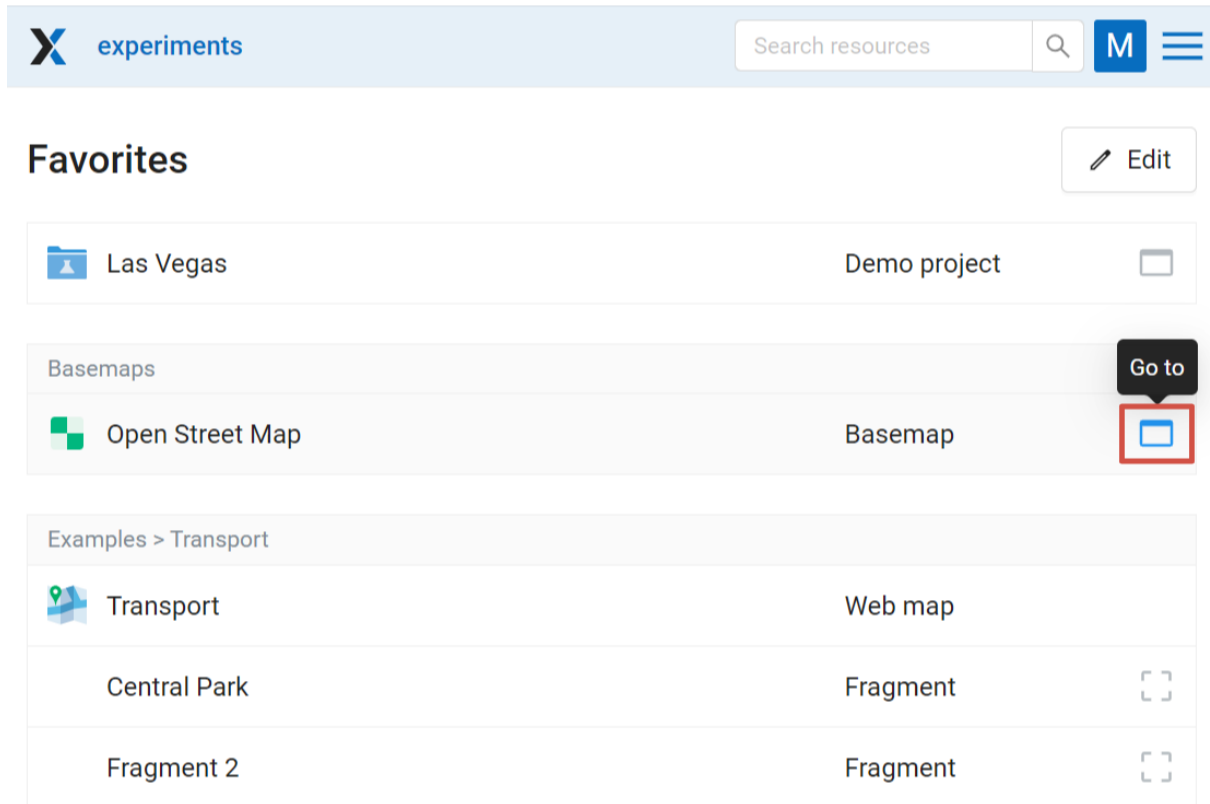


Fig. 20.5: Favorites

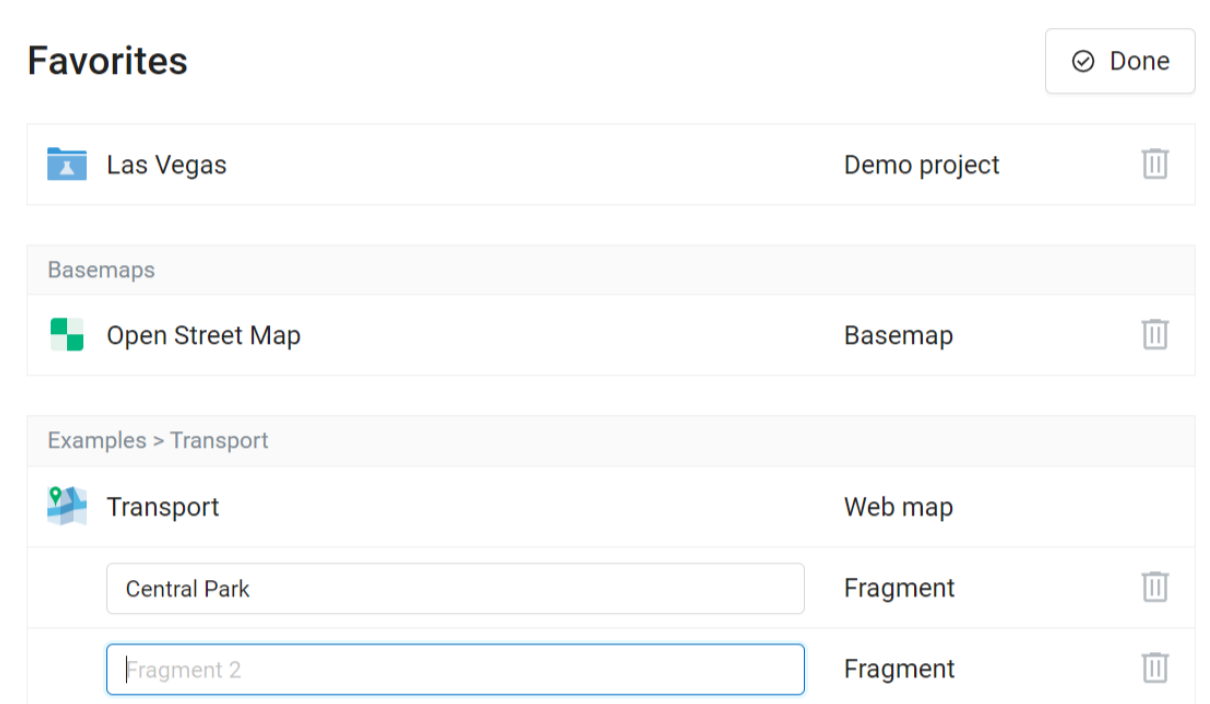


Fig. 20.6: Editing Favorites

Watch on [youtube](#)<sup>186</sup>.

---

<sup>186</sup> <https://youtu.be/Nk42wbopjBk?si=mK0uk6t6c4lE0i-z>

## WEB MAP ANNOTATIONS

### 21.1 Annotation. What is it?

Annotations are text messages attached to the points, which you can create and display on any [Web Map](#)<sup>187</sup>. You can create your own set of annotations for each Web Map.

Annotation consists of a point and a message attached to this point.

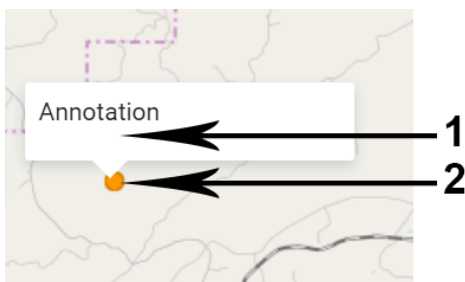


Fig. 21.1: Annotation structure (1 - a text message of annotation, 2 - a point of annotation)

The main aim of annotations is to specify user's data by placing temporary messages on a Web Map.

At the same time, you can use annotations as a simple tool to create point data with text attributes attached to the Web Map.

---

**Note:** In contrast to a full vector layer, annotation tool does not allow to export data, search for it etc. Therefore, we recommend using [vector layers](#)<sup>188</sup> to create the bulk of the data.

---

<sup>187</sup> [https://docs.nextgis.com/docs\\_ngweb/source/webmaps\\_admin.html](https://docs.nextgis.com/docs_ngweb/source/webmaps_admin.html)

<sup>188</sup> [https://docs.nextgis.com/docs\\_ngweb/source/layers.html#empty-vector-layer](https://docs.nextgis.com/docs_ngweb/source/layers.html#empty-vector-layer)

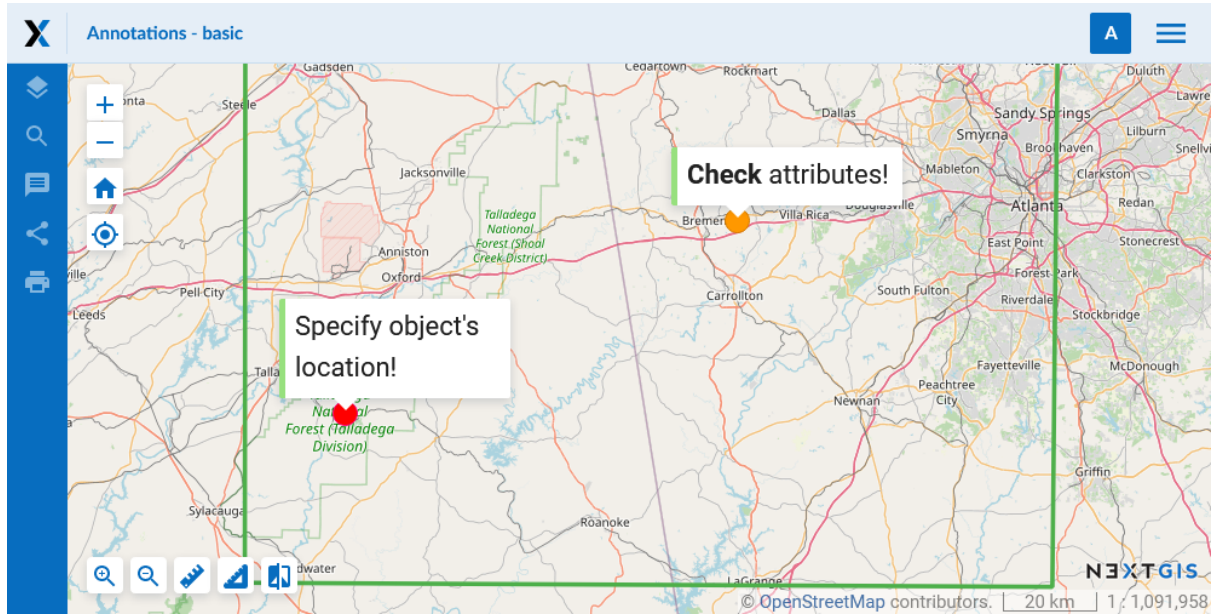


Fig. 21.2: An example of annotation display

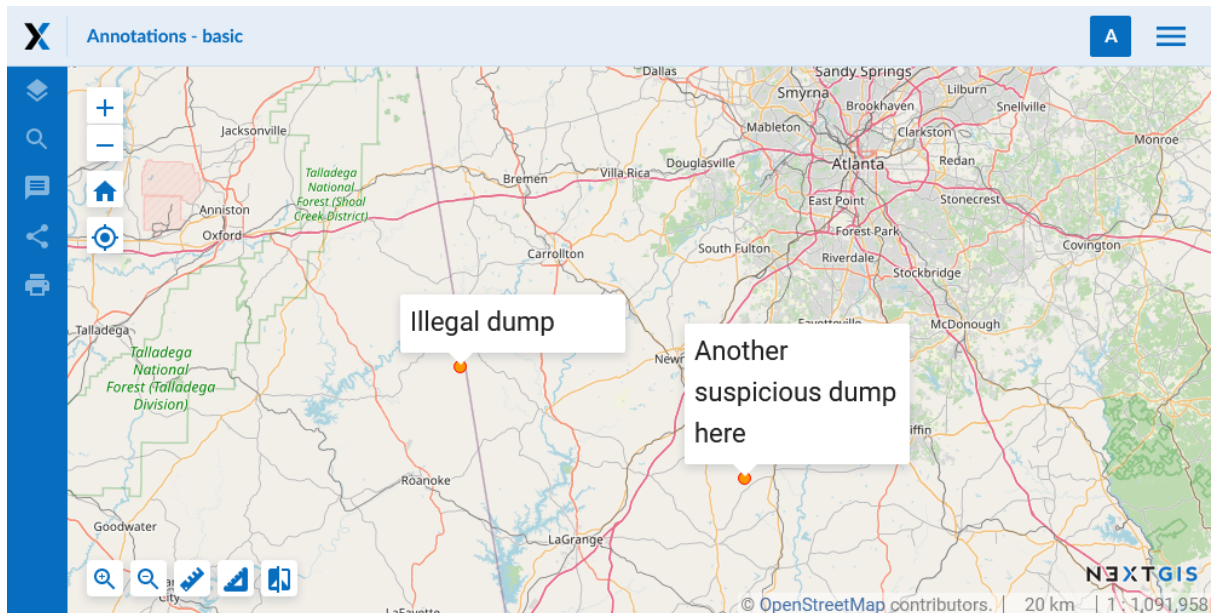


Fig. 21.3: An example of annotation display (as point data)

## 21.2 How to enable Web Map annotations?

You can enable creation of annotations and set the display options in the Settings tab of the “Create resource” or “Update resource” windows for the Web Map (see *Update resource* (page ??)). By default the annotation tool is inactive.

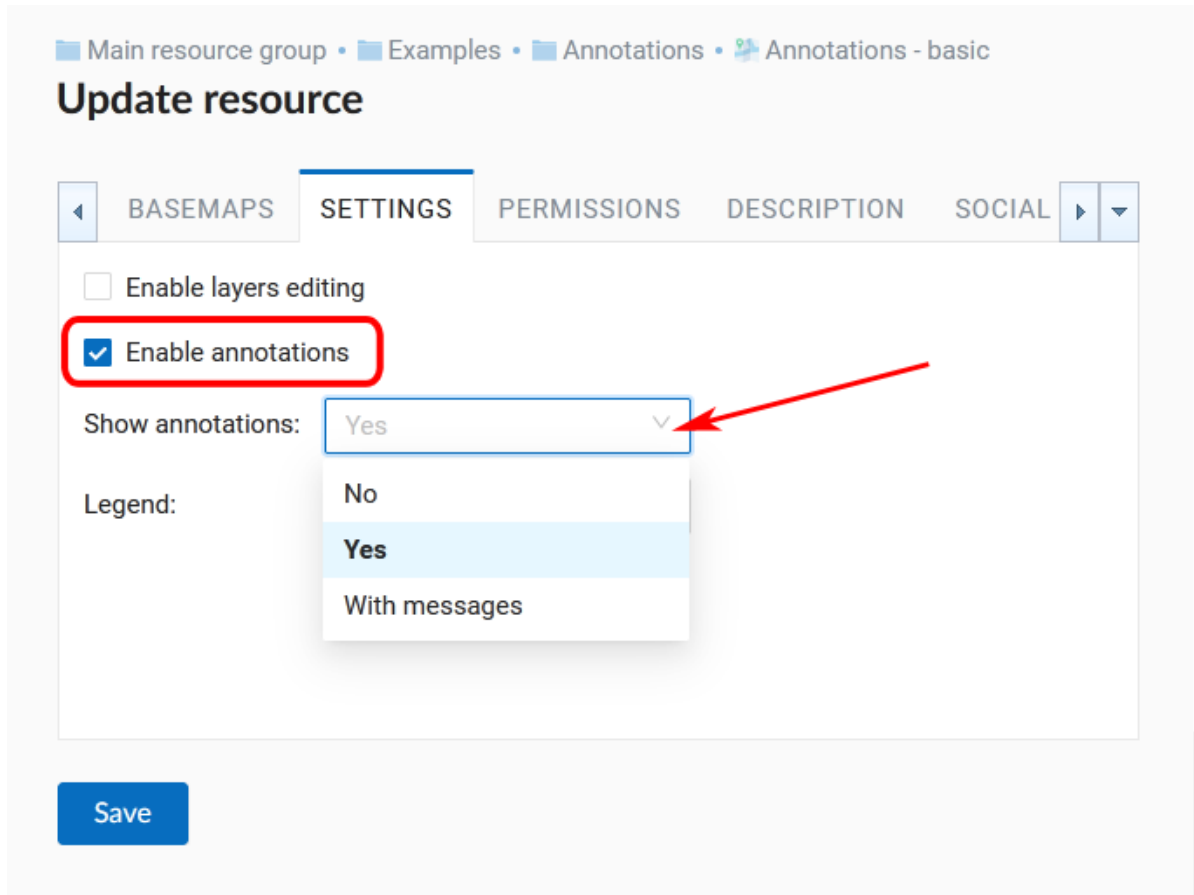


Fig. 21.4: Settings tab of a Web Map for managing annotations (annotations are enabled and are shown on a Web Map when it opens)

There are two parameters in the Settings tab of a Web Map:

**Enable annotations** - enable or forbid working with annotations while working with the Web Map.

**Show annotations:**

- *No* - annotations are hidden
- *Yes* - the annotation symbols are visible on the Web Map when it opens
- *With messages* - both symbols and text are shown on the Web Map

## 21.3 Web Map: Annotations panel

If the “*Enable annotations*” option is active, the “Annotations” panel appears on the Web Map:

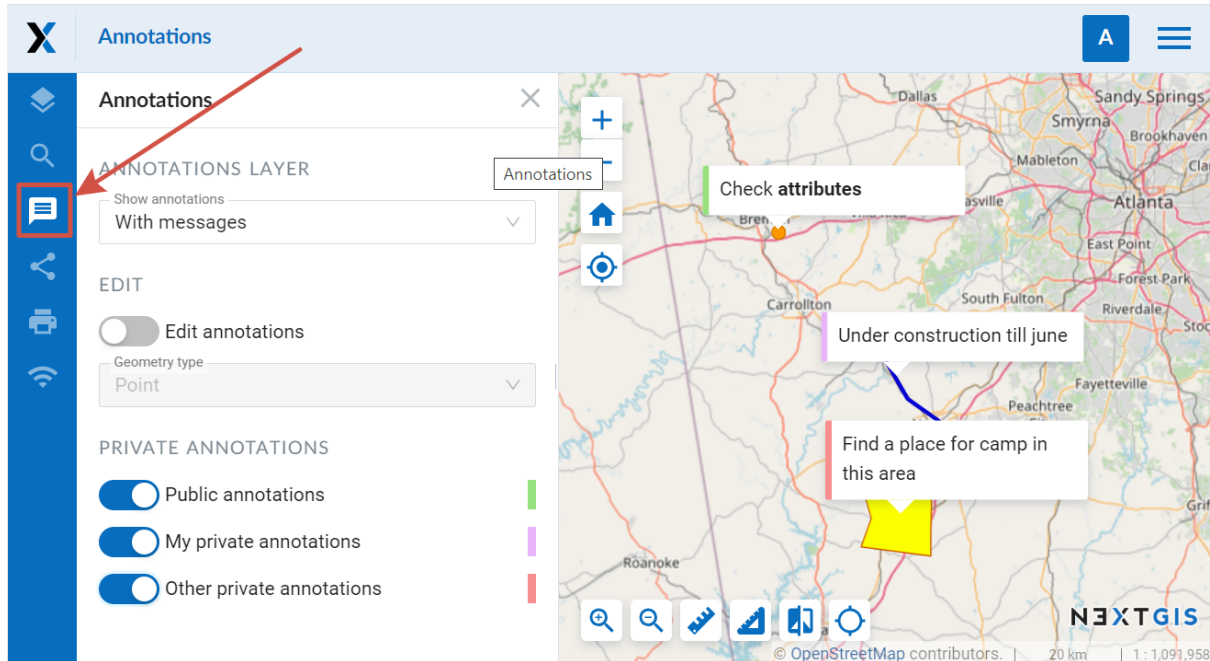


Fig. 21.5: “Annotations” panel on a Web Map

“Annotations” panel consists of several options:

**Show annotations** - allows to show or hide symbols and messages of annotations.

**Edit annotations** - activate or inactivate annotation edit mode.

**Private annotations** - select what types of annotations are displayed. The types are color-coded:

- **Public annotations** - marked green. Visible for everyone, even unlogged users.
- **My private annotations** - marked purple. Visible for the creator and authorized users, including the administrator
- **Other private annotations** - marked red. Private annotations added by other users of the WebGIS

## 21.4 Web Map: annotation editing

You can create and edit annotations, if the option *Edit annotations* on the “Annotations” panel is active. When it is active, the mouse pointer has a blue point next to it and a pencil pictogram appears above existing annotations:

To **create** an annotation you need to click the left mouse button on the Web Map. For a point symbol, only click once. To finish creating a line or a polygon, double click on the last point (polygon will be automatically completed).

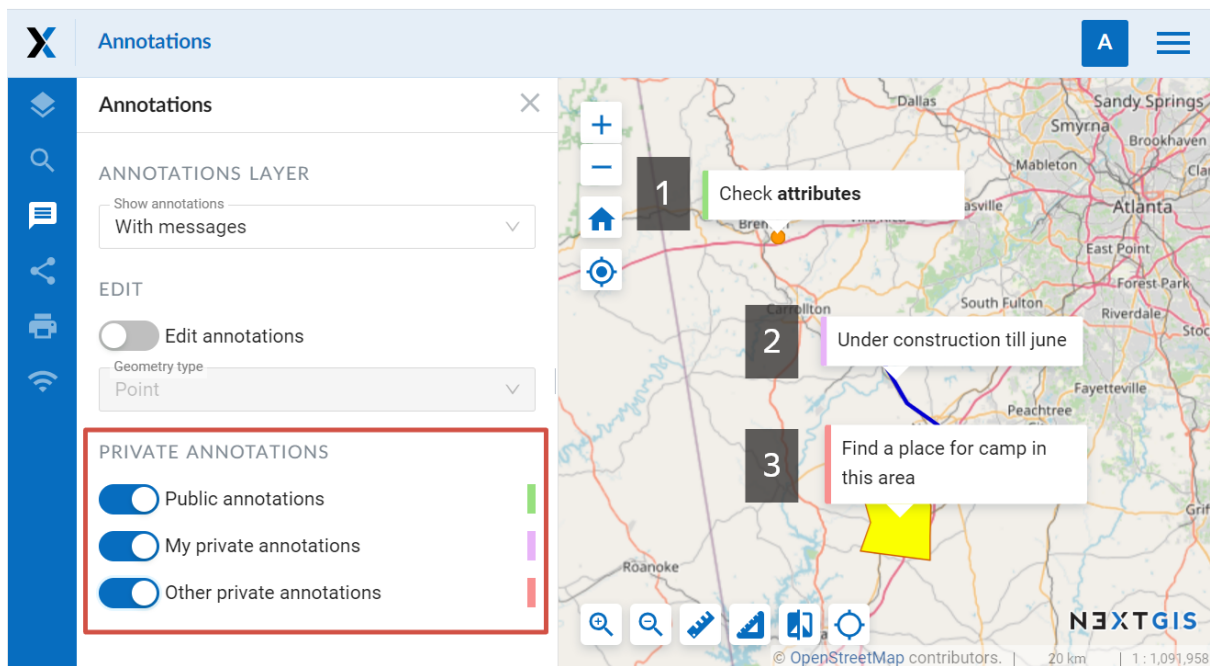


Fig. 21.6: Three color-coded types of annotations: 1 - public, 2 - my private, 3 - other private

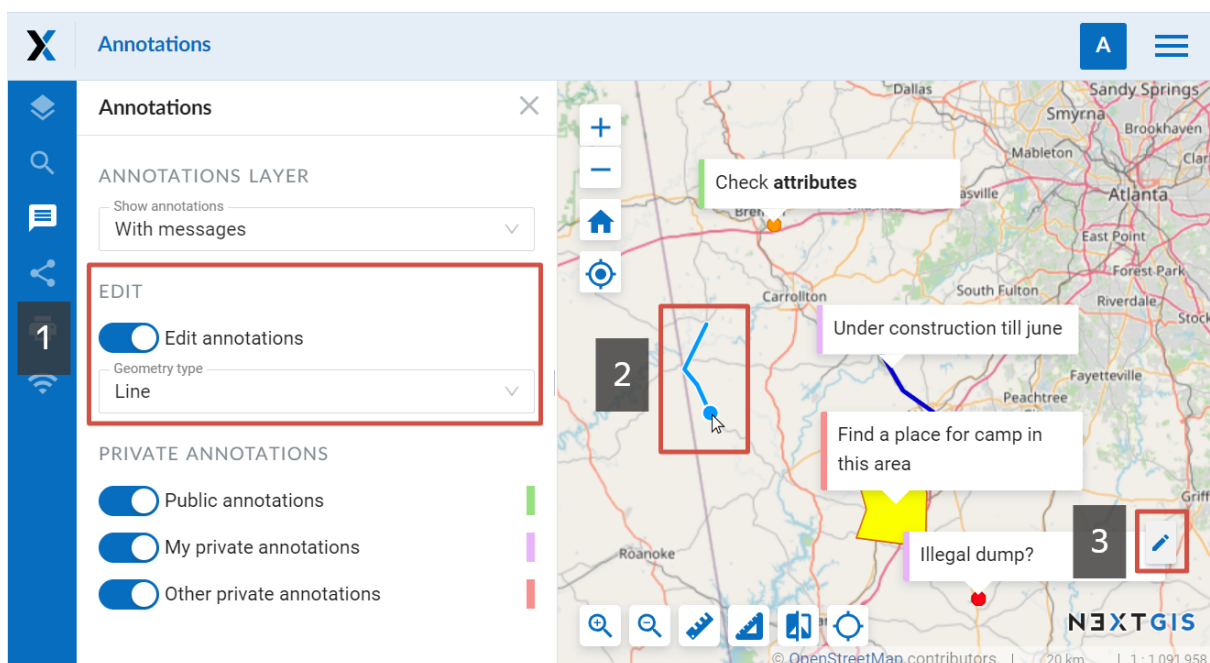


Fig. 21.7: Annotation edit mode (1 - annotation editing enabled, 2 - mouse pointer while creating a line, 3 - edit pictogram appearing when the pointer hovers over the annotation text)

Then a dialog window of annotation creation will be opened:

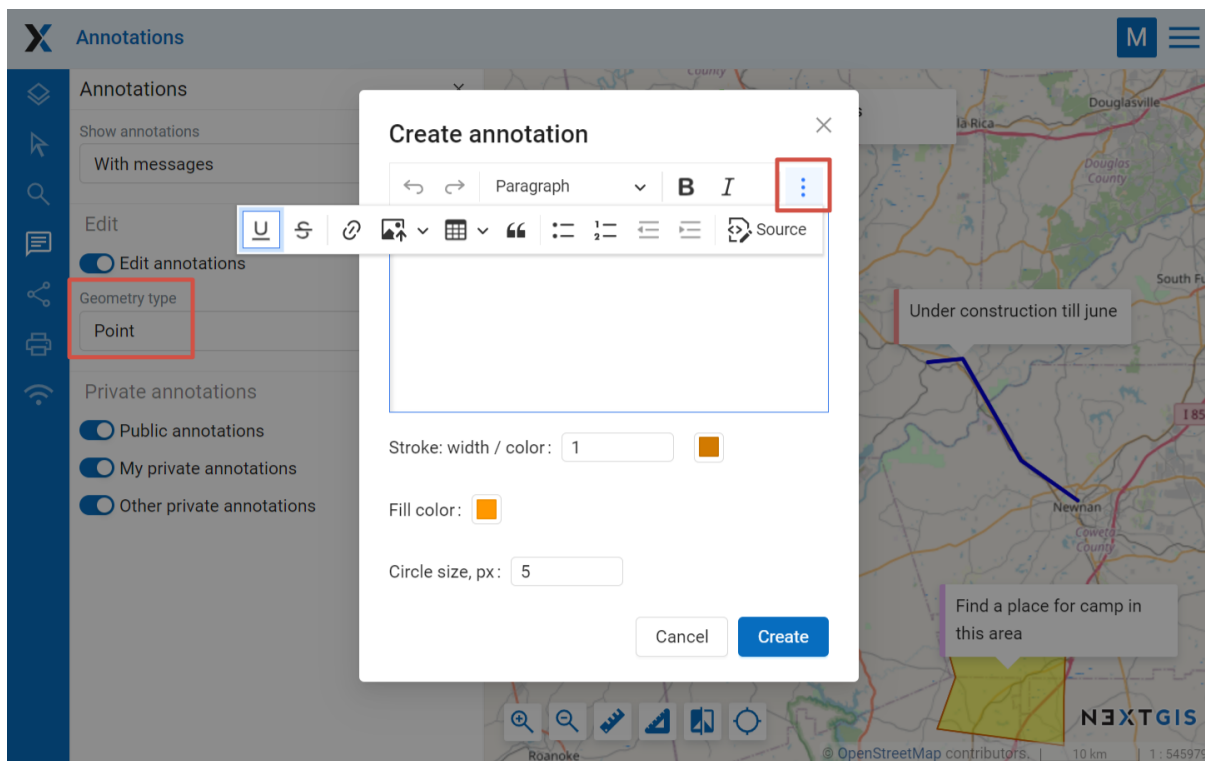


Fig. 21.8: Dialog window of annotation creation. Point geometry type is selected

Dialog of annotation creation consists of:

- **Editor of annotation message** - [WYSIWYG](https://en.wikipedia.org/wiki/WYSIWYG)<sup>189</sup> editor of the annotation text message.
- **Stroke: width / color** - width and color of the annotation point stroke.
- **Fill color** - color of the annotation point.
- **Circle size, px** - size (diameter) of the annotation point in pixels.

After clicking **Save**, a drop-down menu appears. In it you need to select the type for your annotation - public or private. After you do so, the newly created annotation will appear on the Web Map.

To **edit** annotations you need to activate annotation edit mode, point to an annotation and click the pictogram on it with the left mouse button. The dialog window for annotation editing looks like a dialog window of annotation creation, but has a **"Delete"** button, which allows to delete the chosen annotation. In order to change the font size of the message or its part, you need to select the text first. You can edit both your own private annotations and those created by other users if you have the necessary permissions. The type of the annotation is marked at the top of the edit window. For private annotations of other users you will see the creator's name in brackets.

<sup>189</sup> <https://en.wikipedia.org/wiki/WYSIWYG>

## 21.5 Web Map: user's permissions associated with annotations

To further manage the work with annotations you can use access permissions (you can read more about [setting permissions](https://docs.nextgis.com/docs_ngcom/source/permissions.html#types-of-rules-what-can-be-allowed-or-denied)<sup>190</sup>).

There are three permissions associated with annotations:

- **Web Map: View annotations** - allows or forbids annotations viewing by selected users for particular resources. If it is set to Deny value, "Annotations" panel is inactive.
- **Web Map: Edit annotations** - determines whether the selected user can edit public annotations and their own private annotations in a particular resource. If it is set to Deny value, "Edit annotations" option on the "Annotations" panel is inactive.
- **Web Map: Manage annotations** - determines whether the selected user can edit all types of annotation, included those created by other users. If it is set to Deny value, the "Other private annotations" option is not shown on the "Annotations" panel and the other users' private annotations can not be viewed on the Web Map.

Using above-mentioned permissions you can set annotations as following.

In the Settings tab of the Web Map

Settings	Result
Enable annotations - No	Annotations panel is not shown on the Web Map. Annotations can not be shown on the Web Map.
Enable annotations - Yes Show annotations by default - No	Annotations panel is available on the Web Map. No tick for "Show annotations layer". Annotations are not displayed on the Web Map when it opens but can be viewed.
Enable annotations - Yes Show annotations by default - Yes	Annotations panel is available on the Web Map. "Show annotations layer" is ticked. Annotations are displayed on the Web Map when it opens.

<sup>190</sup> [https://docs.nextgis.com/docs\\_ngcom/source/permissions.html#types-of-rules-what-can-be-allowed-or-denied](https://docs.nextgis.com/docs_ngcom/source/permissions.html#types-of-rules-what-can-be-allowed-or-denied)

In the Permissions tab of the Web Map If annotations are enabled in the Web Map settings, a particular user can have certain permissions:

Settings	Result for <b>administra- tor</b>	Result for other users
Web-map: View annotations - <b>Deny</b> annotation_read - Deny	Annotations panel is not shown on the Web Map. No annotations are displayed on the Web Map, even the public annotations that are shown to unlogged users are hidden.	Annotations panel is not shown on the Web Map. No annotations are displayed on the Web Map, even the public annotations that are shown to unlogged users are hidden.
Web-map: View annotations - <b>Allow</b> annotation_read - Allow	Annotations panel is available on the Web Map. Annotations can be viewed. <i>Editing of annotations is possible.</i>	Annotations panel is available on the Web Map. Public annotations and <i>this user's annotations</i> can be displayed. <i>Annotations created by other users can not be displayed.</i> <i>Annotation editing tools are unavailable.</i>
Web-map: View annotations - <b>Allow</b> Web-map: Edit annotations - <b>Deny</b> annotation_read - Allow annotation_write - Deny	Annotations panel is available on the Web Map. Public annotations and this user's annotations can be displayed. Annotations created by other users can not be displayed. Annotation editing tools are unavailable.	Annotations panel is available on the Web Map. Public annotations and this user's annotations can be displayed. Annotations created by other users can not be displayed. Annotation editing tools are unavailable.
Web-map: View annotations - <b>Allow</b> Web-map: Edit annotations - <b>Allow</b> annotation_read - Allow annotation_write - Allow	Annotations panel is available on the Web Map. Public annotations and annotations created by all users can be displayed. Editing of annotations is possible.	Annotations panel is available on the Web Map. Public annotations and <i>this user's annotations</i> can be displayed. <i>Annotations created by other users can not be displayed.</i> <i>Editing of annotations is possible.</i>
<b>21.5. Web Map: user's permissions associated with annotations</b>		<b>268</b>

## MANAGING USERS

If you want to add a user to your team, see the [Team management](#)<sup>191</sup>.

### 22.1 Create new user group

A dialog for creation of a new user group presented on Fig. ?? To open this window select “Control panel” (see Fig. ??) in the main menu (see item 1 in Fig. ??). From the control panel (see Fig. ??) go to the “Groups” page and click **Create**.

#### Create new group

The dialog box for creating a new group has the following fields and controls:

- Full name:** A text input field containing the value "Data collectors".
- Group name:** A text input field containing the value "collectors".
- Users:** A multi-select dropdown menu showing two selected items: "Administrator" and "Collector Admin", each with a close button (X). A downward arrow is on the right.
- Permissions:** A dropdown menu with a downward arrow on the right.
- New users:** A checkbox that is currently unchecked.
- Description:** A large text area for entering a description, with a small edit icon (pencil) in the bottom right corner.
- Create:** A blue button with a document icon and the text "Create".

Fig. 22.1: “Create new group” dialog

---

<sup>191</sup> [https://docs.nextgis.com/docs\\_ngcom/source/teams.html#team-management](https://docs.nextgis.com/docs_ngcom/source/teams.html#team-management)

In “Create new group” dialog enter full name and group name (short name), if necessary enter a group description, set group members and global permissions (see [below](#)<sup>192</sup>) and click “**Create**”. Set “New users” flag for a group to automatically assign new user to it.

---

**Note:** A name for a group should contain only letters and numbers.

---

## 22.2 Global permissions

While creating or editing a user or user group, you can set global permissions concerning Web GIS a whole:

- creating users and groups of users, managing access permissions;
- manage spacial reference systems of the Web GIS;
- manage CORS settings.

These global permissions are separate from [access permissions](#)<sup>193</sup> applied to particular resources (vector and raster layers, resource groups, services, Web Maps etc). The latter regulate working with resources, while global permissions allow users to manage Web GIS functions.

**Warning:** If you include Guest to a group that has global permissions, anyone will be able to access Control panel even without logging in.

See how it works in our video:

Watch on [youtube](#)<sup>194</sup>.

## 22.3 How to find user identification number

To learn user ID, in the Web GIS go to the [Control panel](#)<sup>195</sup>, open [Users](#)<sup>196</sup> section, find the user you need and enter the Edit mode (or just hover the cursor over the pencil icon to see the link without opening the page, if your browser allows it).

---

<sup>192</sup> [https://docs.nextgis.com/docs\\_ngweb/source/users.html#global-permissions](https://docs.nextgis.com/docs_ngweb/source/users.html#global-permissions)

<sup>193</sup> [https://docs.nextgis.com/docs\\_ngcom/source/permissions.html](https://docs.nextgis.com/docs_ngcom/source/permissions.html)

<sup>194</sup> <https://youtu.be/pp137N12-B4?si=r-Kb92HSVI2tbfHl>

<sup>195</sup> [https://docs.nextgis.com/docs\\_ngweb/source/admin\\_interface.html#ngw-control-panel](https://docs.nextgis.com/docs_ngweb/source/admin_interface.html#ngw-control-panel)

<sup>196</sup> [https://docs.nextgis.com/docs\\_ngweb/source/users.html](https://docs.nextgis.com/docs_ngweb/source/users.html)

## Create new group

Full name

Group name

Users Administrator × Jacques Paganel × Someone Else × ▼

**Permissions** Groups and users: View × Spatial reference systems: View × 🔍

- Groups and users: View ✓
- Groups and users: Manage
- Spatial reference systems: View ✓
- Spatial reference systems: Manage
- Cross-origin resource sharing (CORS): View
- Cross-origin resource sharing (CORS): Manage

New users

Description


 **Create**

Fig. 22.2: Setting up global permissions for a group

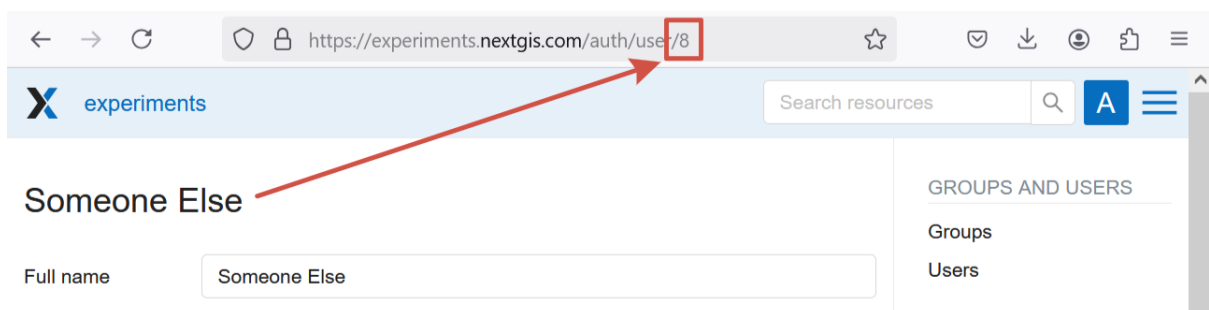


Fig. 22.3: User ID for “Someone Else” is 8

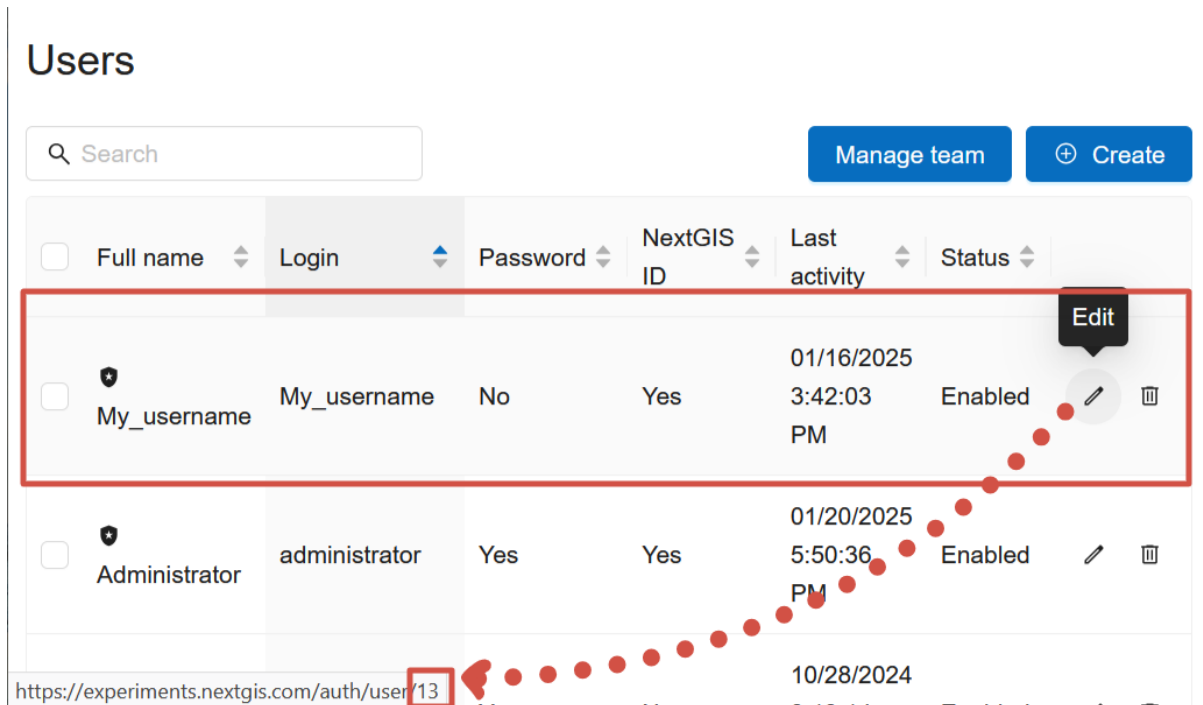


Fig. 22.4: Hovering over the Edit button you can see the link to the profile editing. The ID of the user “My\_username” is 13

## 22.4 Create new user

A dialog for creation of a new user is presented on Fig. ???. To open this window select “Control panel” (see Fig. ??) in the main menu (see item 1 in Fig. ??). From the control panel (see Fig. ??) go to the “Users” page and click **Create**.

In “Create new user” dialog enter the following information:

- Full user name (e.g. John Smith)
- Login - user login (e.g. smith)
- Password
- Group(-s) user belongs to (select from a dropdown menu. If the required group is absent you need to create a new one (see *Create new user group* (page ??))).
- Permissions - [global permissions](https://docs.nextgis.com/docs_ngweb/source/users.html#global-permissions)<sup>197</sup> concerning Web GIS as a whole
- Interface language for the user

You can add some more information about the user in the “Description” field.

Then click **“Create”**.

**Note:** The password is limited in length in the range of 5-25 characters. Login can have symbols of the Latin alphabet, numbers and an underscore, but must

<sup>197</sup> [https://docs.nextgis.com/docs\\_ngweb/source/users.html#global-permissions](https://docs.nextgis.com/docs_ngweb/source/users.html#global-permissions)

## Create new user

Consider adding NextGIS ID user to your team instead of creating a new user with a password.

[Manage team](#)

Full name

Jacques Paganel

Login

paganel

Password

Enter new password here

Disabled

☐

Groups

Research group ×

Permissions

Groups and users: View ×

Spatial reference systems: View ×

Language

Browser default

[Improve or add new translation](#)

Description

Intern

Create

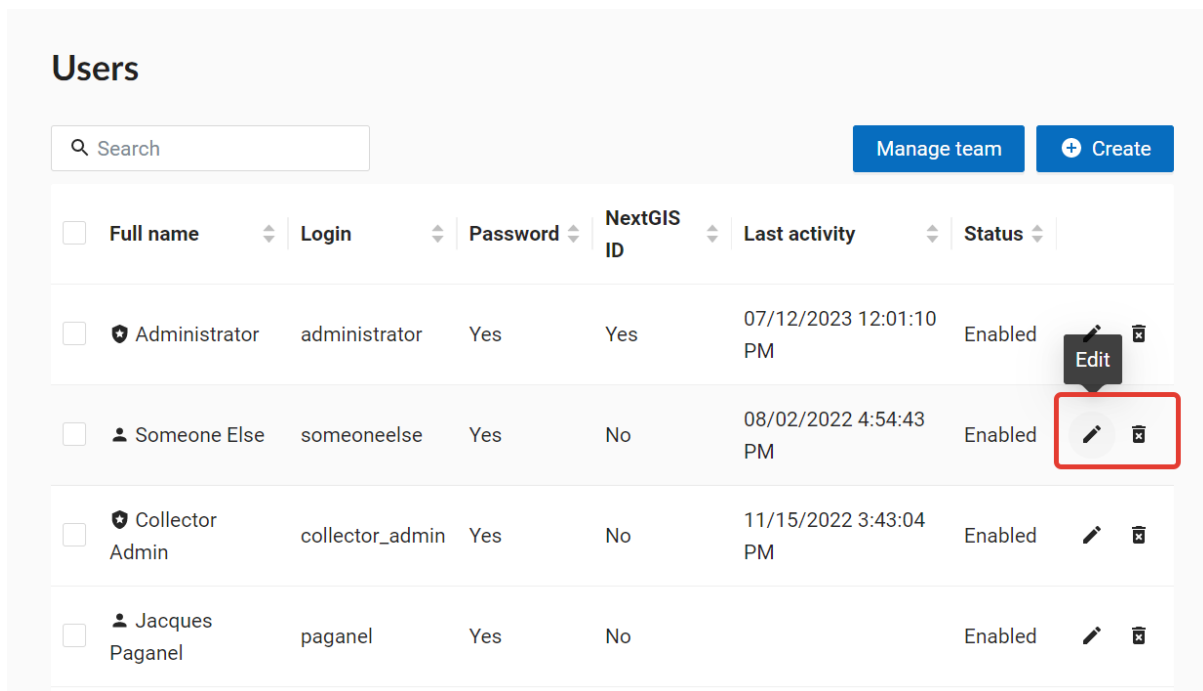
Fig. 22.5: “Create new user” dialog

begin necessarily with a letter.

You can set up [access permissions](#)<sup>198</sup> for particular users and groups of users.

## 22.5 Disable or delete users

In the main menu (see item 1 in Fig. ??) open the Control panel (see Fig. ??) and select “Users”. Each user has “Edit” and “Delete” icons on the right end of the line.



<input type="checkbox"/>	Full name	Login	Password	NextGIS ID	Last activity	Status	
<input type="checkbox"/>	Administrator	administrator	Yes	Yes	07/12/2023 12:01:10 PM	Enabled	Edit
<input type="checkbox"/>	Someone Else	someoneelse	Yes	No	08/02/2022 4:54:43 PM	Enabled	Edit
<input type="checkbox"/>	Collector Admin	collector_admin	Yes	No	11/15/2022 3:43:04 PM	Enabled	Edit
<input type="checkbox"/>	Jacques Paganel	paganel	Yes	No		Enabled	Edit

Fig. 22.6: User list

On the editing page you can modify properties of the user and **disable** the user. Tick “Disabled” and press **Save**.

Users that are turned off in this fashion do not count in the user limit of your plan. It allows you to enable various users as needed, all within the limits of your current plan.

If you need to **delete a user permanently**, you can do so by pressing the “Delete” icon in the user list (see Fig. ??) and confirming the action in the pop-up window.

Alternatively, you can open the editing page and press **Delete**.

If the user is the owner of Web GIS resources, a warning appears: *Validation error. User is referenced with resources*. Click on **Technical information** to see ID of the resources owned by the user. Delete these resources or [change their owner](#)<sup>199</sup> to delete the user.

<sup>198</sup> [https://docs.nextgis.com/docs\\_ngcom/source/permissions.html](https://docs.nextgis.com/docs_ngcom/source/permissions.html)

<sup>199</sup> [https://docs.nextgis.com/docs\\_ngweb/source/edit\\_resource.html](https://docs.nextgis.com/docs_ngweb/source/edit_resource.html)

### Someone Else


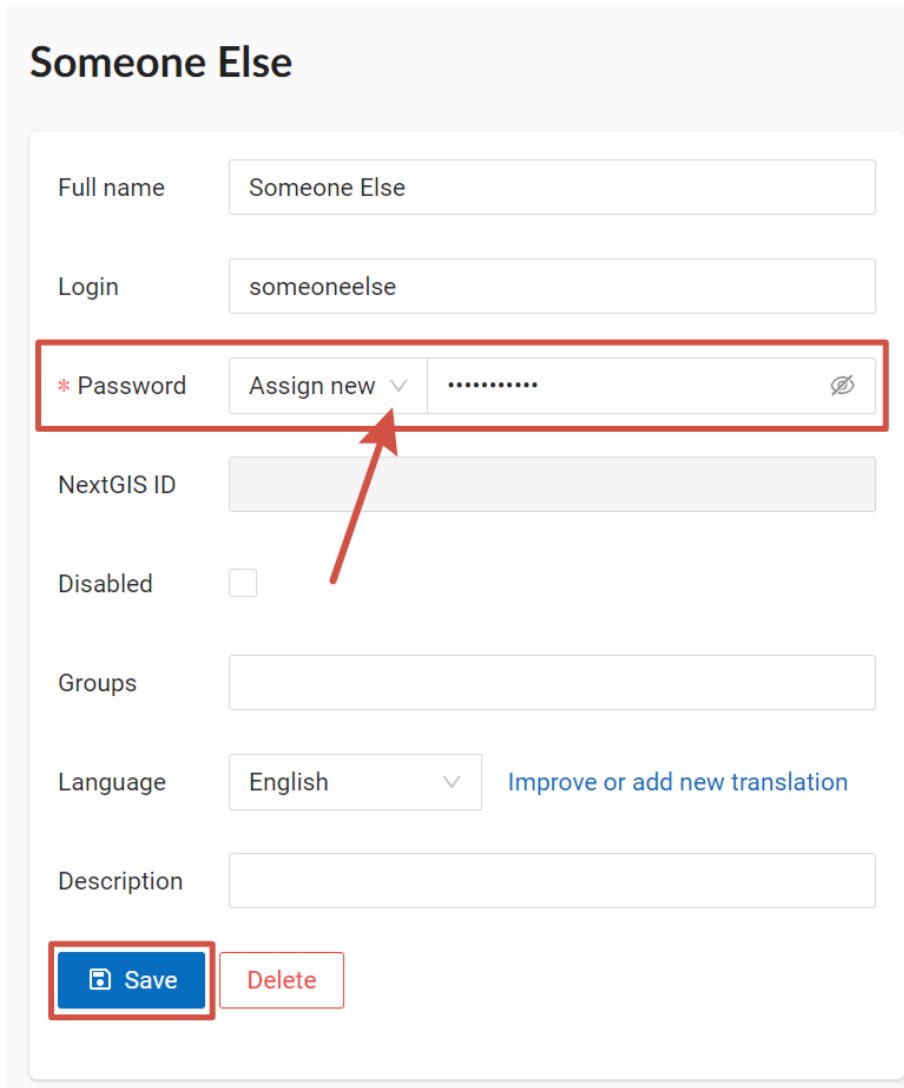
Full name	<input type="text" value="Someone Else"/>
Login	<input type="text" value="someoneelse"/>
* Password	<input type="text" value="Keep existing"/>
NextGIS ID	<input type="text"/>
Disabled	<input checked="" type="checkbox"/> 
Groups	<input type="text"/>
Language	<input type="text" value="English"/> <a href="#">Improve or add new translation</a>
Description	<input type="text"/>

Fig. 22.7: Disabling the user

## 22.6 Update user password


To update user password you can use administrative interface. To do it select “Control panel” (see Fig. ??) in the main menu (see item 1 in Fig. ??). In control panel (see Fig. ??) select “List” option in “Users” block and click pencil icon near the user you want to update password for (see Fig. ??). In opened window in “Password” field select “Assign new” in the dropdown menu, fill in a new password and click **Save** button.



**Someone Else**

Full name: Someone Else

Login: someoneelse

\* Password: Assign new ▼ ..... 

NextGIS ID:

Disabled: ☐

Groups:

Language: English ▼ [Improve or add new translation](#)

Description:


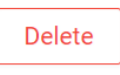
 

Fig. 22.8: User editing window

Also there is an option to change user password using command line:

**Warning:** Setting a password using a command line is not safe.

```
env/bin/nextgisweb --config config.ini change_password user password
env/bin/nextgisweb --config config.ini change_password user password
```

---

**Note:** The password is limited in length in the range of 5-25 characters.

---

If you forgot the password to your NexGIS ID, follow [this instruction](#)<sup>200</sup>.

---

<sup>200</sup> [https://docs.nextgis.com/docs\\_ngcom/source/faq\\_webgis.html#i-forgot-my-account-password-nextgis-id-what-](https://docs.nextgis.com/docs_ngcom/source/faq_webgis.html#i-forgot-my-account-password-nextgis-id-what-)

## **PERMISSION SYSTEM IN NEXTGIS WEB**

Mechanism of permission management is one of the key options of NextGIS Web. Resources are the main entities in NextGIS Web and access permissions are managed at its level.

Mechanism of permission management of resources is similar to the principle of the file system access permissions.

### **23.1 Permissions and its types (scopes)**

**Permission** - the ability to make various actions with resources. For example, 'Read' permission allows you to get man information about resources (e.g. name). 'Update' permission allows you to update this info.

For convenience permissions are grouped by **types (permission scope)**. Listed above Read and Update permission examples are related to the main permission scope - 'Resource'. But there are some other types such as 'Metadata', 'Data structure' or 'Data'.

### **23.2 Access control list and the rules**

Permission management is carried out through **access control list (ACL)** changes which are linked to the resources. In many ways, this is similar to Windows and Unix (POSIX ACL) OS permission management. However NGW has much more features and actions on resources than filesystems. Therefore there are more permissions and they are grouped into categories.

Access control list consists of the **rules** which have the following attributes:

- Action - allow or deny
- Principal - user or group of users to which this rule applies
- Permission - permission or permission scope that is prohibited or allowed by the rule
- Apply to - scope of application: this resource, this and subresourcer or a particular type of resource to which this rule applies

Regardless of rule's placement (at the beginning or end of the list) - first, the rules with the action "Allow" are applied, and then the rules "Deny". In other words

- **‘Deny’ has a higher priority than ‘Allow’**. The position of the rule doesn’t matter.

You can set a group of users as a principal (e.g. ‘editors’ group) - in the result this rule will be applied to such users who are in this group. Also as a principal you can set a specific user. In this case the rule will be applied to this user.

In addition to the groups created by the administrator, the system has special system user groups:

- Administrators - group whose users have administrative rights
- Editors - a group whose users do not have access to the control panel, but can create and edit data

Adding users to these groups is a convenient way to quickly assign the necessary permissions throughout the system. These groups cannot be deleted.

Also, a specific user can be specified as a principal, in which case the rule will apply only to him.

Also NextGIS Web has multiple virtual system users to be used in access control lists:

- Authenticated - the rule will be applied to any authenticated user (logged in NGW)
- Guest - the rule will be applied to not authenticated user
- Everyone - the rule will be applied to any user (authenticated or not)
- Owner - the rule will be applied to user who created a resource

If the **‘Apply to’** attribute is set to ‘This and subresources’, then the rule applies not only to the current resource but to child resources. This attribute also allows you to set rules limitations to specific subresource categories.

## 23.3 Permissions dependencies

Such a situation, if a user may change resource name but has no opportunity to read this name, is so weird and leads to inconsistent system behavior in general. To avoid this problem NextGIS Web has permission dependencies.

For example, ‘Update’ permission depends on ‘Read’ permission. Even if a user has a rule which allows him to ‘Update’ a resource but has not a rule to ‘Read’ it - then ‘Update’ permission will not take effect, ‘Update’ will be masked by ‘Read’. In practice most permissions depend on ‘Read’ at least

Also there are dependencies between permissions of related resources. Let’s consider the example of the file system hierarchy. Suppose there is a hierarchy in the file system: **directory 1 > directory 2 > file**.

Here a user can be given the permission to read the file. But if he does not have the opportunity to go to directory 1, and then to directory 2, he will not be able to read the file.

Similar behavior is implemented using the dependence of the “Read” permission of the child resource on the “Read” permission of the parent resource.

**Warning:** Thus, if you set the resource 'Read' permission then it doesn't matter what permissions you assign to resources inside this folder, they won't take effect.

## 23.4 Computing Effective Permissions

Suppose the user is going to perform some operation on a resource, for example, read its name. When accessed, for example via API, NextGIS Web calculates **effective permissions** - the set of permissions that the user has in relation to a particular resource. The computing is performed in the following sequence:

1. By default user does not have any permissions - the rule is **'everything is deny except what is not explicitly allowed'**
2. Applied current resource and parent resources permissions that apply to 'This and subresources'.
3. First the 'Allow' rules are applied - permissions from them are added to the computed set of permissions.
4. After that, 'Deny' rules are applied - the permissions from them are subtracted from the calculated set of permissions.
5. Dependencies are checked, permissions with unsatisfied dependencies are marked as masked.

In the result you have an effective set of user permissions - permissions which are allowed, not denied and not masked by dependencies. Based on this set NextGIS Web makes a decision about performing an action both in the API and in the web interface.

## 23.5 Assigning permissions to users before their first sign in

In NextGIS Web, users have the ability to sign in both as an internal NextGIS Web user and as a global account on my.nextgis.com. In the second case, the administrator must add the global user account to [the team](#)<sup>201</sup> in its profile on my.nextgis.com or NextGIS ID on-premise server.

After sign in, a global user becomes a NextGIS Web user and is counted in the limit on their number. However, by default, it does not have any permissions in NextGIS Web.

Therefore, we advise you to pre-set the permission type for a global user before its first auth. There are two ways how you can do this:

- Preferred method: Assign permissions to some [user group](#)<sup>202</sup> by checking the "New Users" flag. The user will be included in this group the first time they log in to NextGIS Web.

<sup>201</sup> [https://docs.nextgis.com/docs\\_ngcom/source/create.html#team-management](https://docs.nextgis.com/docs_ngcom/source/create.html#team-management)

<sup>202</sup> [https://docs.nextgis.com/docs\\_ngweb/source/users.html#create-new-user-group](https://docs.nextgis.com/docs_ngweb/source/users.html#create-new-user-group)

- Alternative way: assign resource permissions for the principal “Authenticated”.

For typical scenarios of permission usage see our [Common cases](#)<sup>203</sup>.

---

<sup>203</sup> [https://docs.nextgis.com/docs\\_ngcom/source/permissions.html#ngcom-permissions-cases](https://docs.nextgis.com/docs_ngcom/source/permissions.html#ngcom-permissions-cases)

## **SPACIAL REFERENCE SYSTEMS**

You can manage spacial reference systems using Control panel. It allows browsing the list of added SRS, importing SRS from the catalog and creating your own.

To see which SRS are already added, select “List”. In this list there are two SRS by default: «WGS 84 / Lon-lat (EPSG:4326)» and «WGS 84 / Pseudo-Mercator (EPSG:3857)».

### **24.1 Custom Spatial Reference Systems**

---

**Note:** Custom SRS functionality is available on [Premium](#)<sup>204</sup> and while using the product [On-premise](#)<sup>205</sup>.

---

---

**Note:** Only users with administrative permissions can add and modify SRS.

---

If needed, you can import additional SRS from the catalog or create your own.

#### **24.1.1 Import SRS from catalog**

To add an SRS from the catalog, go to the Control panel and in the Spatial reference system section press **Catalog** (or, if you are viewing the SRS list, press **Import from catalog**). You will be redirected to the catalog page. Start typing the name of the SRS in the search bar. When you find the desired SRS in the search results, press the icon with the arrow next to it.

You will be redirected to the import page. Here you can modify the name of SRS to be displayed in your WebGIS.

On the next page, press **Save** to complete the import.

---

<sup>204</sup> <https://nextgis.com/pricing-base/>

<sup>205</sup> <https://nextgis.com/pricing/>

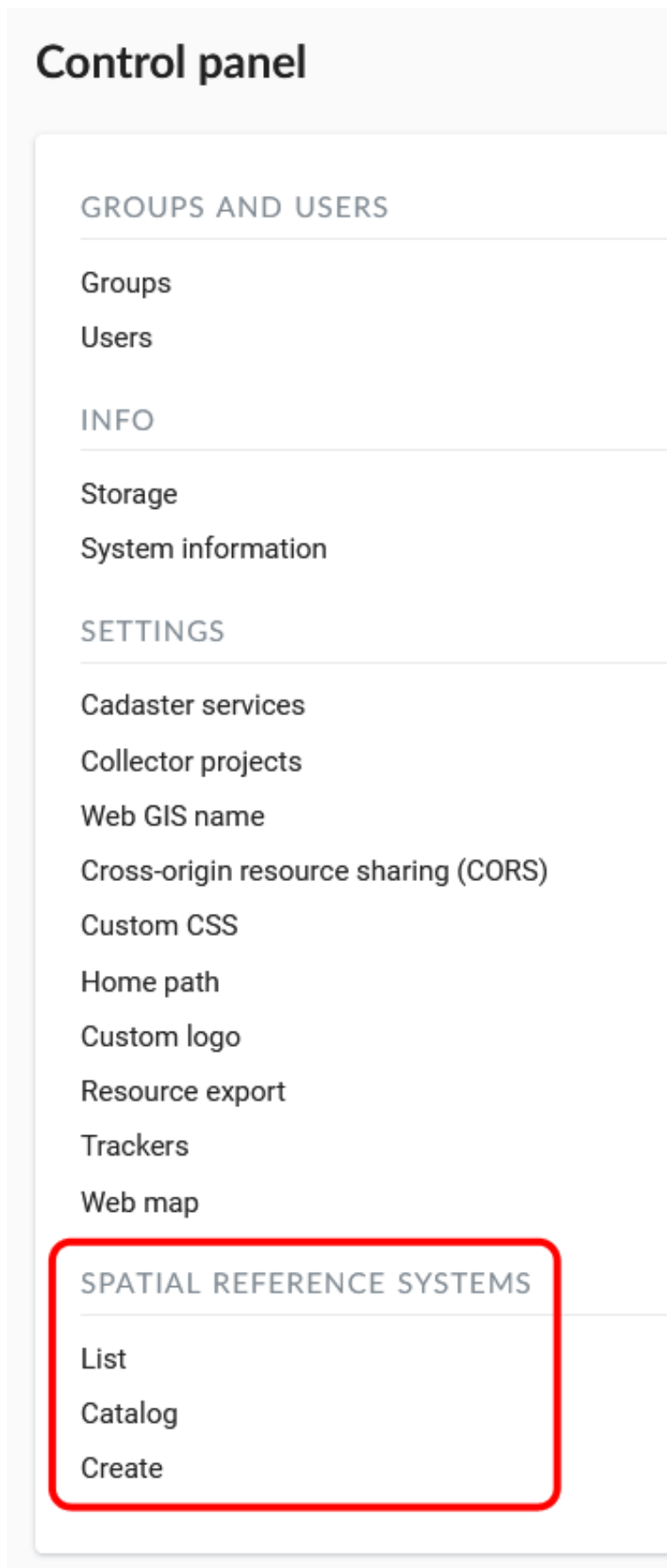


Fig. 24.1: Spatial reference systems in the Control panel

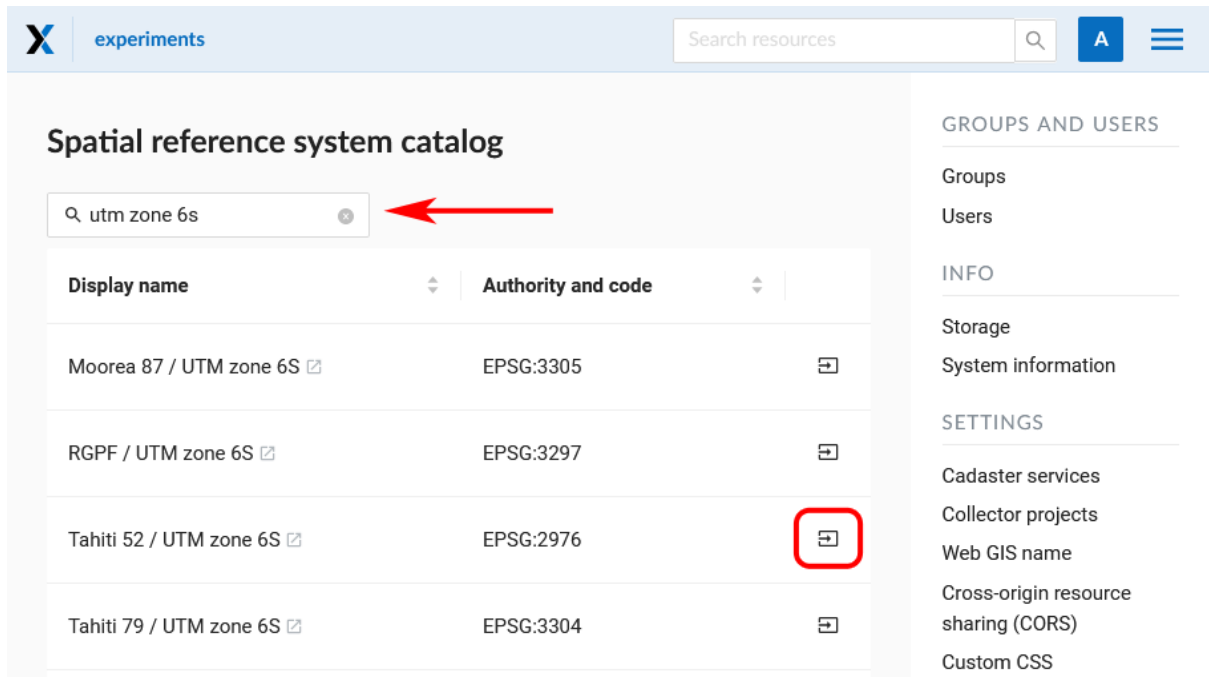


Fig. 24.2: Search results in the catalog

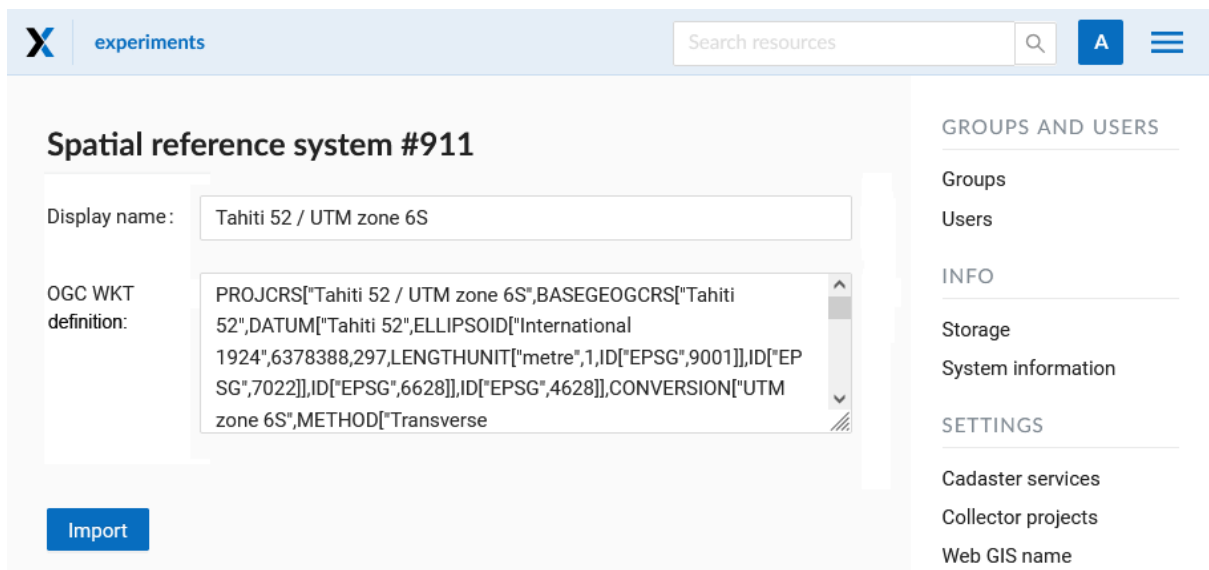


Fig. 24.3: Adding SRS from catalog

**Tahiti 52 / UTM zone 6S**

\* Display name:

Authority and code:

\* OGC WKT definition: 

```
PROJCRS["Tahiti 52 / UTM zone 6S",BASEGEOGCRS["Tahiti 52",DATUM["Tahiti 52",ELLIPSOID["International 1924",6378388,297,LENGTHUNIT["metre",1,ID["EPSG",9001]],ID["EPSG",7022]],ID["EPSG",6628]],ID["EPSG",4628]],CONVERSION["UTM zone 6S",METHOD["Transverse
```

**GROUPS AND USERS**

Groups

Users

**INFO**

Storage

System information

**SETTINGS**

Cadaster services

Collector projects

Web GIS name

Cross-origin resource sharing (CORS)

Custom CSS

Fig. 24.4: Completing import

### 24.1.2 Creating new SRS

To create a new SRS open “Control panel” in the main menu and press **Create** in “Spatial reference systems” (or press **Create** while on the SRS list page).

You can give an SRS display name and enter its definition in OGC WKT format. You can also import definitions from common formats as PROJ, MapInfo and EPSG, after the import they will get converted to OGC WKT format. Then press “**Create**”. The new SRS will appear in the list.

## 24.2 How to edit or delete SRS

You can change the *display name* of any SRS by clicking the pencil icon in the corresponding row of the list. If you created an SRS yourself, you can also modify its *OGC WKT definition*.

To *delete* an SRS, press the trash can icon in the corresponding row of the list. A small dialog window will appear. Confirm that you want to delete the SRS by pressing **OK**.

After the operation is completed, a message will appear announcing “SRS deleted”. The two default SRS, «WGS 84 / Lon-lat (EPSG:4326)» and «WGS 84 / Pseudo-Mercator (EPSG:3857)», can’t be removed.

**Create new Spatial reference system**

\* Display name:

\* OGC WKT definition:

**GROUPS AND USERS**

Groups

Users

**INFO**

Storage

System information

**SETTINGS**

Cadastral services

Collector projects

Web GIS name

Cross-origin resource sharing (CORS)

Custom CSS

Fig. 24.5: Creation of a new SRS

**Spatial reference systems**

<input type="checkbox"/>	<b>Display name</b>	
<input type="checkbox"/>	WGS 84 / Lon-lat (EPSG:4326)	<input type="button" value="edit"/>
<input type="checkbox"/>	WGS 84 / Pseudo-Mercator (EPSG:3857)	<input type="button" value="edit"/>
<input type="checkbox"/>	Tahiti 52 / UTM zone 6S	<input type="button" value="edit"/> <input type="button" value="delete"/>
<input type="checkbox"/>	Cape / UTM zone 34S	<input type="button" value="edit"/> <input type="button" value="delete"/>
<input type="checkbox"/>	Tokyo / UTM zone 53N	<input type="button" value="edit"/> <input type="button" value="delete"/>
<input type="checkbox"/>	WGS 84 / UTM zone 15N	<input type="button" value="edit"/> <input type="button" value="delete"/>

Fig. 24.6: Editing icon in the SRS list

## WGS 84 / Delhi

\* Display name

Main: WGS 84 / Delhi

\* OGC WKT definition

```
PROJCRS["WGS 84 / Delhi",BASEGEOGCRS["WGS 84",ENSEMBLE["World Geodetic System 1984 ensemble",MEMBER["World Geodetic System 1984 (Transit)",ID["EPSG",1166]],MEMBER["World Geodetic System 1984 (G730)",ID["EPSG",1152]],MEMBER["World Geodetic System
```

Import definition

Save

Delete

Fig. 24.7: Editing SRS

☐ Cape / UTM zone 34S
 

✎ 🗑

☐ Tokyo / UTM zone 53N
 

✎ 🗑

☐ WGS 84 / UTM zone 15N
 

✎ 🗑

☐ Main: WGS 84 / Delhi
 

✎ 🗑

Delete SRS?

Cancel OK

Web GIS name

Cross-origin resource sharing (CORS)

Custom CSS

Home path

Custom logo

Resource export

Trackers

Web map

SPATIAL REFERENCE SYSTEMS

Fig. 24.8: Deleting custom SRS

## 24.3 Usage of additional SRS

The added SRS can be used for various purposes:

1. To capture coordinates on Web maps. If you have set up additional SRS (one or several), you can now conveniently capture coordinates in this SRS from anywhere on the map:
2. To export vector layers. All custom SRS are also available for data export. See [this section](#)<sup>206</sup> for details.
3. To extend API requests. Support for custom SRS is gradually added to NextGIS Web API too. For example, this request will return a feature in a required SRS:

```
/api/resource/{id}/feature/{fid}?srs=990002
```

Custom SRS identifier (990002 in this example) can be known by editing a created SRS, for example:

```
/srs/990002/edit
```

## 24.4 Custom SRS support for external PostGIS Databases

A common case for Web GIS users is adding an external PostGIS/PostgreSQL database while [creating a PosGIS layer](#)<sup>207</sup>. These layers often get incorrectly displayed in the Web GIS. It happens when the spacial reference system has incorrect definition in the external database. To make the Web GIS-DB complex work efficiently, here's what you need:

1. External database must have a table of SRS descriptions `spacial_ref_sys`.
2. In the geometry column (usually called "geom") a SRS must be assigned.
3. The ID of the assigned SRS must be included in `spacial_ref_sys`.
4. Data in the external DB must actually be in that coordinate system, a.i. the SRS definition must correspond to the data.

If all the above requirements are met, then whatever SRS you use in your database, layers created in Web GIS will be reprojected "on the fly" and displayed correctly along any other data you have in your Web GIS.

To check if everything works correctly use [PostGIS diagnostics](#)<sup>208</sup>.

---

<sup>206</sup> [https://docs.nextgis.com/docs\\_ngweb/source/admin\\_interface.html#data-export-to-csv-and-geojson-formats](https://docs.nextgis.com/docs_ngweb/source/admin_interface.html#data-export-to-csv-and-geojson-formats)

<sup>207</sup> [https://docs.nextgis.com/docs\\_ngcom/source/data\\_connect.html#external-postgis-databases](https://docs.nextgis.com/docs_ngcom/source/data_connect.html#external-postgis-databases)

<sup>208</sup> [https://docs.nextgis.com/docs\\_ngweb/source/postgis\\_details.html#postgis-diagnostics](https://docs.nextgis.com/docs_ngweb/source/postgis_details.html#postgis-diagnostics)

## COLLECTOR PROJECTS

---

**Note:** You can use described functionality in Web GIS created in [nextgis.com](http://nextgis.com/)<sup>209</sup> service on [Premium plan](https://nextgis.com/pricing-base/)<sup>210</sup>

---

### 25.1 List of participants

In the Collector Projects section of the Control Panel, you can manage the list of [data collectors](#)<sup>211</sup>. Each participant must have a [NextGIS ID account](#)<sup>212</sup>.

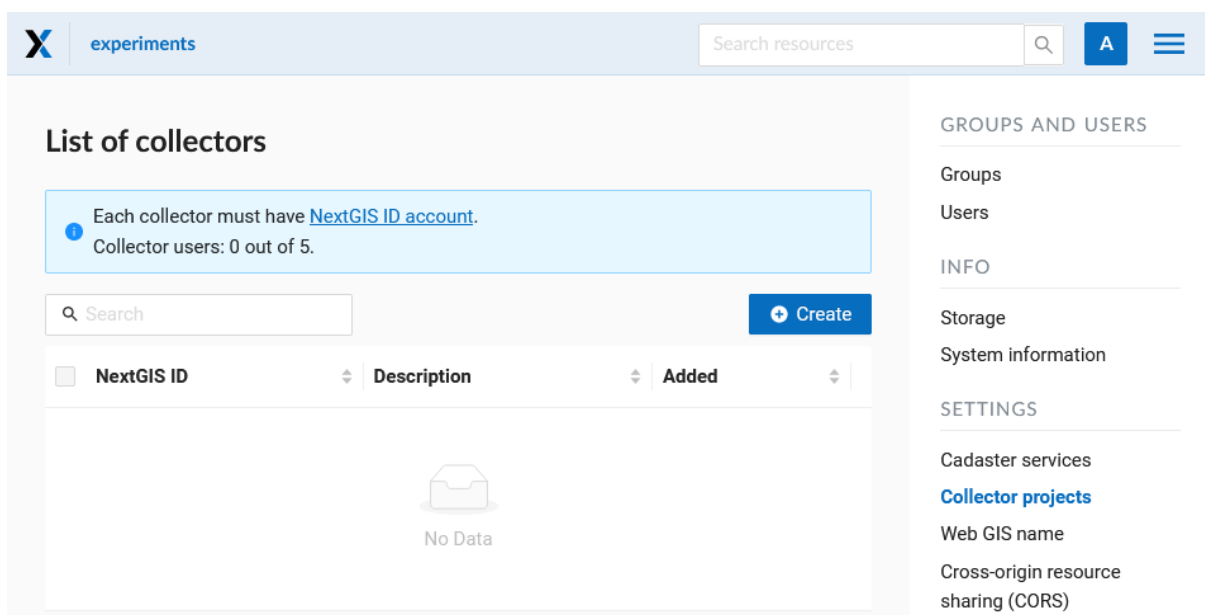


Fig. 25.1: List of collectors

To add a team participant to the Web GIS press “Create” button. It will redirect you to the “Create new collector” page. Make sure to type in full email address that serves as NextGIS ID login.

---

<sup>209</sup> <http://nextgis.com/>

<sup>210</sup> <https://nextgis.com/pricing-base/>

<sup>211</sup> [https://docs.nextgis.com/docs\\_ngcom/source/collector.html](https://docs.nextgis.com/docs_ngcom/source/collector.html)

<sup>212</sup> [https://docs.nextgis.com/docs\\_ngcom/source/create.html#how-to-create-account-nextgis-id](https://docs.nextgis.com/docs_ngcom/source/create.html#how-to-create-account-nextgis-id)

**Note:** We recommend filling up the field “Description” with the name and the surname of the team participant in order to have data about all NextGIS Collector users in one place.

You can always find the participant you need with a search tool in a table of Collector users, which is quite suitable when there are a lot of participants.

Fig. 25.2: Creating a new data collection participant

As a result of this stage all data collection team participants will be registered in your Web GIS.

<input type="checkbox"/> NextGIS ID	Description	Added	
<input type="checkbox"/> aaaaaa@aaa.aa	Anna Addams	07/05/2022 4:17:14 PM	
<input type="checkbox"/> bbbbbb@bbbb.bb	Harry Potter	07/05/2022 4:17:33 PM	

Fig. 25.3: An example of a filled list of collectors

Users with a registration in your Web GIS can access data collection projects from

your Web GIS and begin data collection after they installed the [NextGIS Collector<sup>213</sup>](#) mobile app and successfully sign in there.

However you can control the access of different users to each individual project. It is described in details below.

## 25.2 Creating data collection project

Data collection project is a resource in your Web GIS, it is a set of layers for editing. In a Web GIS “data collection project” is called “Collector Project”. Data collection project allows a data collection team participant to edit its layers. Web GIS owner can restrain access to the project for separate participants.

You can create a Collector project via NextGIS FormBuilder (the simplest way, described [here<sup>214</sup>](#)) or in your Web GIS.

If you want to use your Web GIS to create a Collector project, first you need to create necessary data layers in NextGIS FormBuilder or upload them from a file.

Let’s suppose that layers with data are already uploaded to your Web GIS, and you want to create a project and allow data collection team participants to collect or edit data in your Web GIS.

To do it:

1. Open the Web GIS.
2. Create a basemap if the collector will need to see a map on the mobile app.
3. Press «Create resource» and select «Collector project»:
4. Name your project. This name will be displayed in the [NextGIS Collector<sup>215</sup>](#) mobile app :

In the “Project” tab select “Starting screen” and fill in “NextGIS Collector user credentials”.

The starting screen in the [NextGIS Collector<sup>216</sup>](#) mobile app could be a list of forms or a map.

«NextGIS Collector user credentials» - user name and password of a Web GIS user with necessary permissions to access data used in the project. This user is not related to accounts of actual data collectors.

6. The next stage is adding necessary items to the project on the “Items” tab.

An item of Collector project could be an editable data layer, display-only data layer, basemap or a form for data collection.

---

**Note:** You could add PostGIS layers in Collector project, but the NextGIS Collector mobile app does not support work with them for now

---

<sup>213</sup> <https://play.google.com/store/apps/details?id=com.nextgis.collector>

<sup>214</sup> [https://docs.nextgis.com/docs\\_formbuilder/source/workflow.html#nextgis-web](https://docs.nextgis.com/docs_formbuilder/source/workflow.html#nextgis-web)

<sup>215</sup> <https://play.google.com/store/apps/details?id=com.nextgis.collector>

<sup>216</sup> <https://play.google.com/store/apps/details?id=com.nextgis.collector>

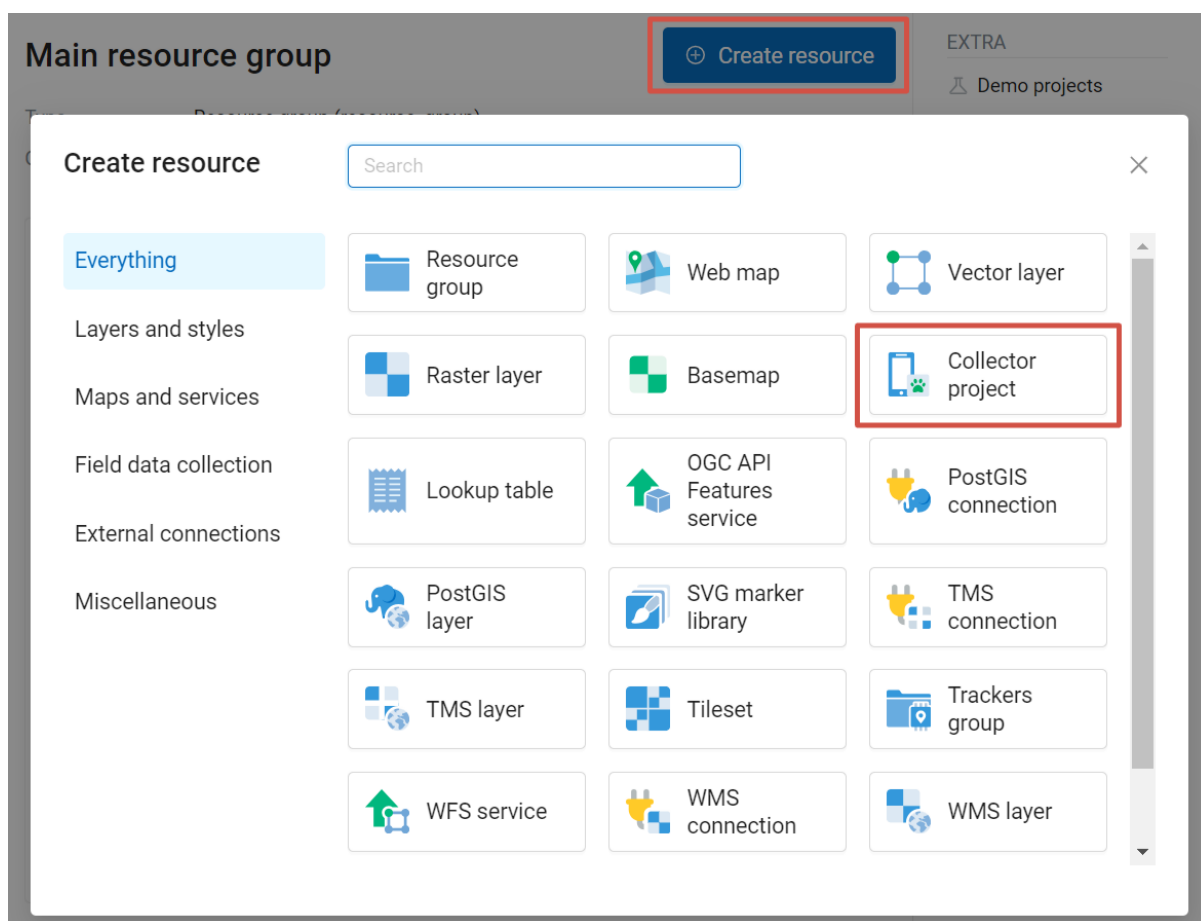


Fig. 25.4: Select «Collector project»

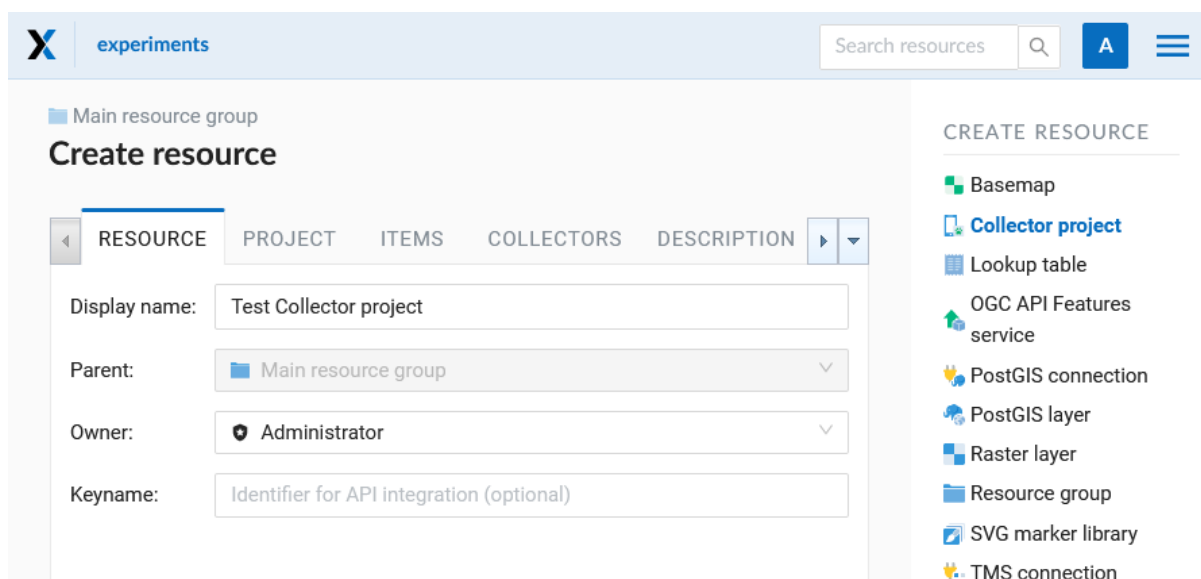


Fig. 25.5: Adding name for Collector project

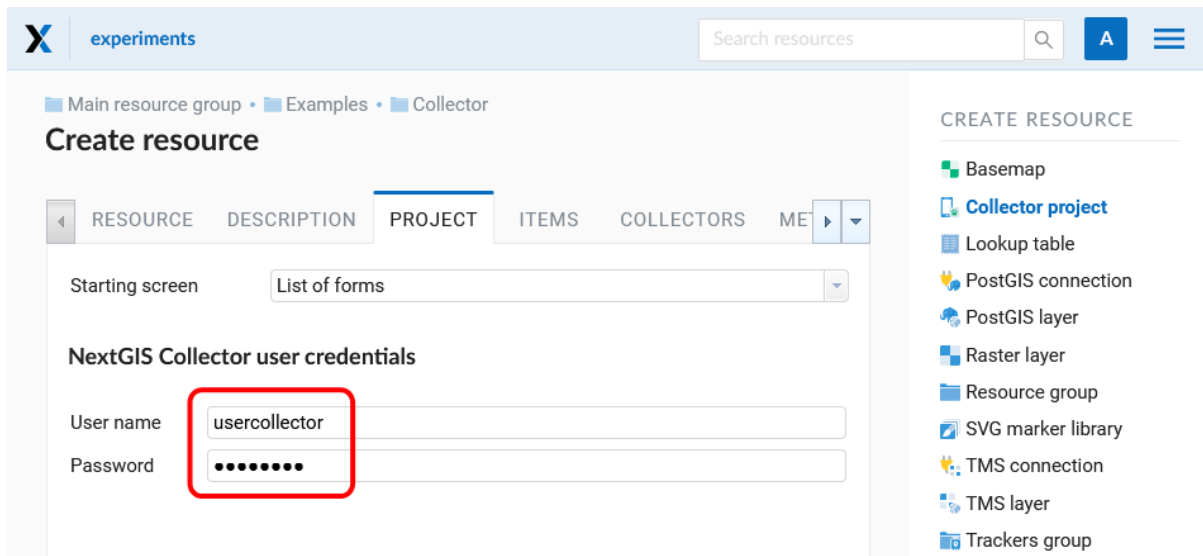


Fig. 25.6: “Project” tab

Adding of items is like adding layers when creating a Web Map. Press the **+ Layer** button to add a layer or a data collection form.

Select the vector layer in the resource list, not the form. Press **+ Group** to create a group of items. Drag-and-drop to rearrange items within the item tree. To delete an item, press **X** at the end of the row.

Click on the item to see its attributes.

Each item of Collector project has the following attributes:

- «Display name» - a layer name which is displayed in the NextGIS Collector mobile app.
- «Editable» - allow or deny editing of the layer in the NextGIS Collector mobile app.
- «Visible» - controls layer's visibility in the NextGIS Collector mobile app.
- «Syncable» - allow or deny synchronization of the layer with your Web GIS.
- «Zoom level visibility» - defines for which zoom levels the layer is visible. It has two parameters: Min zoom and Max zoom.
- «Lifetime for tiles (in min)» - time of tiles caching (for tile layers).

To go back to the list of items, press **Hide details**.

7. Add basemap if necessary.
8. Then on the “Collectors” tab tick the users participating in the project to give them permissions:
9. Press “Create”.

As a result a Collector project (data collection project) will be created.

You can have unlimited number of projects in your Web GIS. In each of them you can restrain or allow access for a particular set of users from the data collection participants list.

◀

RESOURCE

PROJECT

ITEMS

COLLECTORS

PERMISSIONS

DESCRIPTION ▶ ▼

⊕ Layer

⊕ Group

data

Boundary

Notes

Railways Collector

Collector basemap

Hide details

✕ Delete

Display name

data

☒ Editable
 ☒ Visible
 ☒ Syncable

Zoom level

Min zoom

Max zoom

visibility

0

25

Lifetime for tiles (in min)

1440

Resource


 data
 ☐

Fig. 25.7: “Items” tab

◀

RESOURCE


PROJECT

ITEMS

COLLECTORS

PERMISSIONS

DESCRIPTION ▶ ▼

<input checked="" type="checkbox"/> NextGIS ID	Description	Added
<input type="checkbox"/>  @gmail.com	Myusername	07/08/2022 12:50:58 PM
<input checked="" type="checkbox"/> dddddd@ddd.dd	Donald Dove	07/06/2022 11:44:49 AM
<input type="checkbox"/> bbbbbb@bbbb.bb	Basil Backer	07/06/2022 11:44:35 AM
<input checked="" type="checkbox"/> aaaaaa@aaaa.aa	Anna Addams	07/06/2022 11:43:08 AM

Save

Fig. 25.8: «Collectors» tab

## 25.3 Data collection form

Data collection form can be uploaded to Web GIS using [Formbuilder](#)<sup>217</sup> and create a layer with it (plus, optionally, a Web Map and and a Collector project).

Also you can add a form to the layer in the Web interface. Open the resource page of the layer for which you want to add a form.

Press **Create resource** and select “Form”.

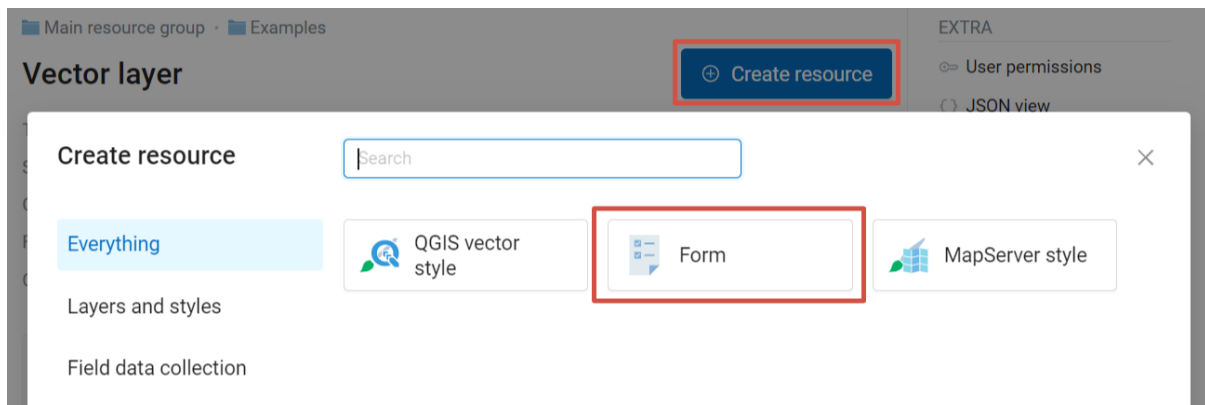


Fig. 25.9: Selecting “Form” resource type

In the opened window on the Form tab you have two options:

- upload a NGFP file made in Formbuilder;
- build a form by selecting

### Create resource

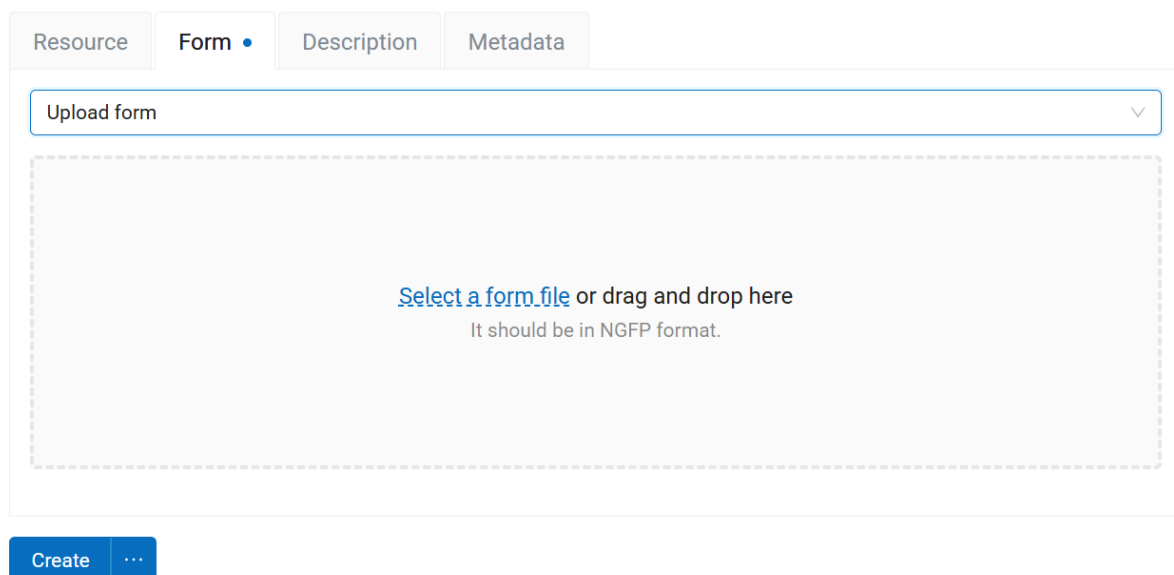


Fig. 25.10: Uploading form file

<sup>217</sup> [https://docs.nextgis.com/docs\\_formbuilder/source/workflow.html](https://docs.nextgis.com/docs_formbuilder/source/workflow.html)

To create a new form in the online builder, drag the elements from the list on the left to the middle field. Click on the element to modify it and select the field in which this data will be stored.

### Create resource

Fig. 25.11: Building a form online. Properties of the “Text box” element are displayed

If you tick **Add absent fields to layer**, fields for the added elements will be added automatically. This allows users to create an empty layer, then set its structure by creating a form.

You can set a display name on the Resource tab and add description and metadata on the corresponding tabs.

In the Web interface you can also replace an existing data collection form of a layer with a new one. Create a new form resource inside the layer. Then delete the old form. Form built via online builder can be later edited in the same tab.

After replacing or modifying the form launch synchronization in the Collector app. The new form will be uploaded, allowing you to continue collecting data to the same layer.

## **DATA COLLECTION ON PREMISE**

### **26.1 Introduction**

---

**Note: Condition:** This functionality is available for users who have purchased [Extended](#)<sup>218</sup> on premise licence for NextGIS Web.

---

#### **Software and components:**

- [NextGIS FormBuilder](#)<sup>219</sup> - desktop app for creating unique forms for field data collection projects.
- [NextGIS Collector](#)<sup>220</sup> - specialized mobile app for field data collection.
- [NextGIS Web](#)<sup>221</sup> (NGW) - Web GIS deployed on your server to synchronize the data gathered in the field, store it, process, visualize and analyze it.
- [NextGIS ID on-premise](#)<sup>222</sup> (NGIDOP) - user authorization server for managing access to data collection process.

**Roles (users):** Administrator and Data Collectors. **Administrator** sets up and organizes data collection (Formbuilder, NGW). **Data Collectors** only use NextGIS Collector app.

**Data components:** Geodata consists of two components - point coordinates and attributes (description, attachments/photos)

### **26.2 Administrator's check-list**

1. NGW and NGIDOP are deployed on the server. You have username and password for Administrator.
2. Check NGIDOP settings (configuration provided on demand): sections [OAuth Applications](#)<sup>223</sup> and [NextGIS ID on-premise](#)<sup>224</sup> - make sure collector\_hub is

---

<sup>218</sup> <https://nextgis.com/pricing/#ngwextended>

<sup>219</sup> <https://nextgis.com/nextgis-formbuilder>

<sup>220</sup> <https://nextgis.com/nextgis-collector/>

<sup>221</sup> <https://nextgis.com/nextgis-web/>

<sup>222</sup> [https://docs.nextgis.com/docs\\_ngid/source/index.html](https://docs.nextgis.com/docs_ngid/source/index.html)

<sup>223</sup> [https://docs.nextgis.com/docs\\_ngid/source/ngidop.html#oauth-applications](https://docs.nextgis.com/docs_ngid/source/ngidop.html#oauth-applications)

<sup>224</sup> [https://docs.nextgis.com/docs\\_ngid/source/ngidop.html#nextgis-id-on-premise-identificator](https://docs.nextgis.com/docs_ngid/source/ngidop.html#nextgis-id-on-premise-identificator)

set to the address of the server where the GIS is deployed, **otherwise data collection will be impossible**.

3. Create users for data collectors in the [Team](#)<sup>225</sup> section of NGIDOP.
4. Open NextGIS Web. In [Control panel](#)<sup>226</sup> create a list of data collectors using names of the Team members added on step 3. Later when the data collection projects are set up, data collectors will be added from that list.
5. In NextGIS Web create a point vector layers that will store collected data. It can be done in the [web interface](#)<sup>227</sup> or with [NextGIS FormBuilder](#)<sup>228</sup> by creating a data collection form. For more detailed description of form creation see [Formbuilder documentation](#)<sup>229</sup>. Remember that at this point you'll need to change the authorization [endpoint](#)<sup>230</sup> from cloud (my.nextgis.com) to the on-premise deployment server.

---

Now you can set up projects for data collection. NGW has a special type of resource for that, **Collector Project**. You need to enter a resource name (it will be visible for data collectors in NextGIS Collector app and for the administrator in the NGW interface). You also have an option to add description and metadata.

6. Set up parameters in the tabs: **Project, Items, Collectors**. In the **Project** tab the administrator enters the credentials of an NGW user that will be utilized for adding the collected data to the database. By default it can be the *administrator* user given when NGW is deployed. But we recommend [creating](#)<sup>231</sup> a special user for the purpose. In the **Items** tab add layers the data will be stored in and basemaps to make the collection process more handy. In the **Collectors** tab from the list (see step 4) select users who will have access to data collection in this project. Save the project parameters.

- 
7. **Data Collector's work** in [NextGIS Collector](#)<sup>232</sup>. First, as for FormBuilder, data collector must change [authorization server](#)<sup>233</sup> to NGIDOP. After that the process is pretty standard for field data collection - log in using credentials given by the administrator (see Team section) and collect data. More on the functionality of the app in the [documentation](#)<sup>234</sup>.

---

Additionally, see how the data collection process works [in the cloud on nextgis.com](#)<sup>235</sup>.

---

<sup>225</sup> [https://docs.nextgis.com/docs\\_ngid/source/ngidop.html#ngidop-teams](https://docs.nextgis.com/docs_ngid/source/ngidop.html#ngidop-teams)

<sup>226</sup> [https://docs.nextgis.com/docs\\_ngcom/source/collector.html#collector-add-members](https://docs.nextgis.com/docs_ngcom/source/collector.html#collector-add-members)

<sup>227</sup> [https://docs.nextgis.com/docs\\_ngweb/source/layers.html#ngw-create-vector-layer](https://docs.nextgis.com/docs_ngweb/source/layers.html#ngw-create-vector-layer)

<sup>228</sup> <https://nextgis.com/nextgis-formbuilder>

<sup>229</sup> [https://docs.nextgis.com/docs\\_formbuilder/source/index.html](https://docs.nextgis.com/docs_formbuilder/source/index.html)

<sup>230</sup> [https://docs.nextgis.com/docs\\_formbuilder/source/gui.html#on-premise-authorization](https://docs.nextgis.com/docs_formbuilder/source/gui.html#on-premise-authorization)

<sup>231</sup> [https://docs.nextgis.com/docs\\_ngweb/source/users.html#create-new-user](https://docs.nextgis.com/docs_ngweb/source/users.html#create-new-user)

<sup>232</sup> [https://docs.nextgis.com/docs\\_collector/source/index.html](https://docs.nextgis.com/docs_collector/source/index.html)

<sup>233</sup> [https://docs.nextgis.com/docs\\_collector/source/auth.html#via-on-premise-ngidop](https://docs.nextgis.com/docs_collector/source/auth.html#via-on-premise-ngidop)

<sup>234</sup> [https://docs.nextgis.com/docs\\_collector/source/index.html](https://docs.nextgis.com/docs_collector/source/index.html)

<sup>235</sup> [https://docs.nextgis.com/docs\\_ngcom/source/collector.html](https://docs.nextgis.com/docs_ngcom/source/collector.html)

## TRACKERS SETTINGS

In the Trackers section of the Control panel you can configure the display of the tracks on Web Maps and their export as GPX files.

Here are the parameters that can be modified:

### Trackers settings

#### Common settings

\* Interval for splitting tracks, min

#### Stops detecting

\* Minimal speed, km/h

\* Minimal time stop, sec

#### Timezone settings

Time zone


 Save

Fig. 27.1: Trackers settings

- Interval for splitting tracks, min (default value is 30)
- Parameters for detecting stops: if the speed is lower than a set amount for a


set time, a stop is recorded in the track. Minimal speed is in km/h (the default value is 5). Minimal time to mark a stop, in seconds (the default value is 300 sec., i.e. 5 min.).

- Timezone settings - select a time zone marked as GMT+-N from a dropdown menu

**Note:** The number of trackers available depends on your [subscription plan](#)<sup>236</sup>. On Free and Mini you can add 1 tracker, on Premium the default limit is 5 trackers, but it can be extended.

## 27.1 Viewing tracks on a Web Map

Data on moving objects collected in NextGIS Tracker, NextGIS Collector or NextGIS Mobile can be displayed on any Web Map of your Web GIS if the tracker is linked to it.

To view the tracks open any Web Map or create a new one. On the left panel bar you'll find the tracker icon .

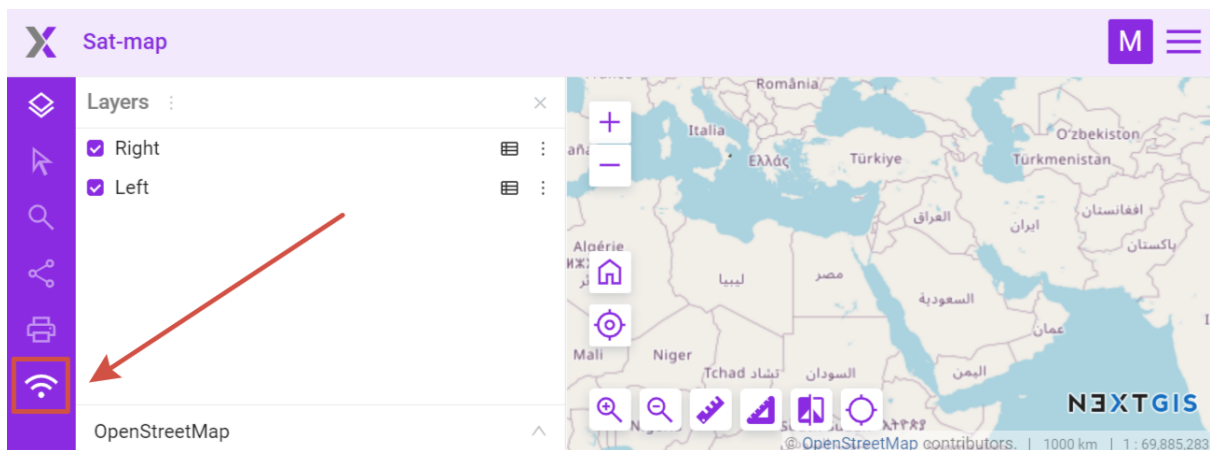


Fig. 27.2: Opening Trackers panel

Tracker panel has two parts: calendar and tracker list.

Use the calendar to filter tracks by date and time.

Below you'll see the list of all available trackers. Trackers can be sorted by name or time of the recording.

By default the tracks are hidden. To view a track on the Web Map, find the tracker(s) in the list and select track elements you'd like to display. Then set a date range in the calendar or in the track's context menu select **Set filter to last day with data**.

Elements you can view:

-  last point of the track

<sup>236</sup> <https://nextgis.com/pricing-base/>

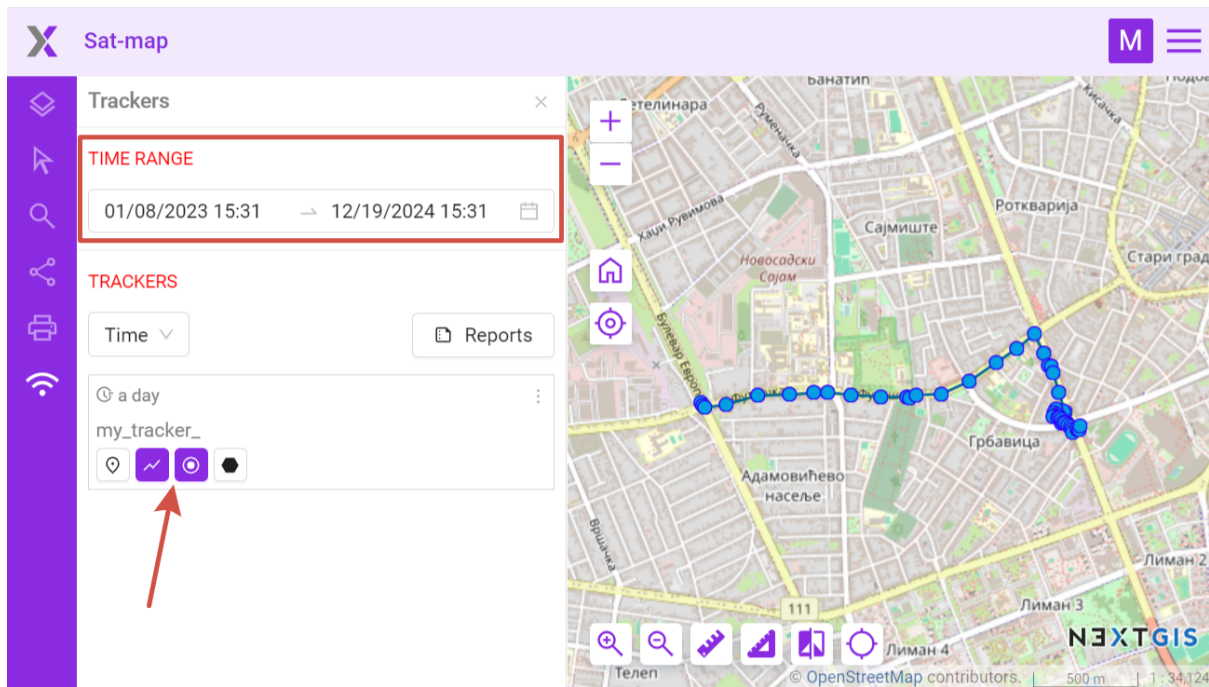





Fig. 27.3: Viewing track on Web Map

-  the route lines of the GPS-tracks
-  points where coordinates were picked
-  stops (not all tracks have them)

Three dots in the top right corner of the track open its context menu that allows to:

- Zoom to layer;
- Set filter to last day with data;
- Show last activity (hourly chart for a selected date).

Click on a point to show a popup with tracking information: date, time, speed (km/h), height (m), course (bearing i.e. the horizontal direction of travel of this device in the range between 0 and 360 counting clockwise from the North), number of satellites and HDOP.

Horizontal dilution of precision or HDOP is a parameter showing how precise the GPS readings are. The smaller the HDOP value, the higher the accuracy of horizontal coordinates. HDOP=1 is ideal, 3-4 is okay, if HDOP is over 6-8 it means that the position of satellites at the moment is unfortunate providing information with low accuracy. HDOP depends on the number of visible satellites, their position in the sky and relative to the receiver.

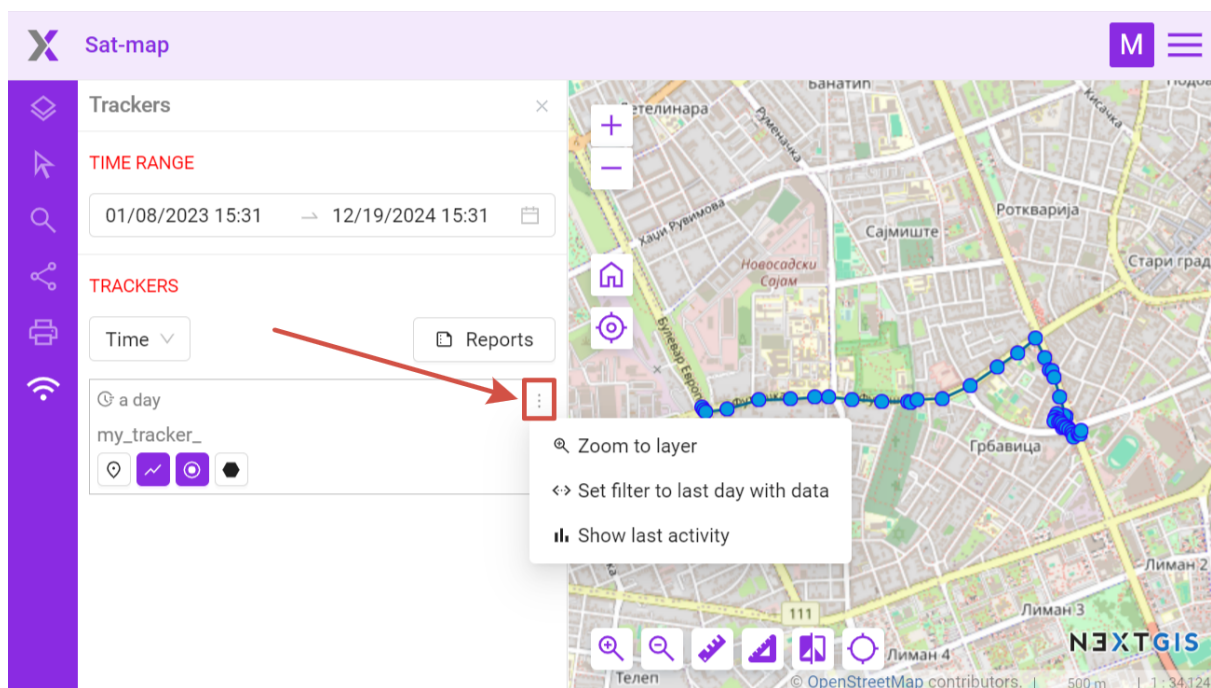


Fig. 27.4: Tracker menu

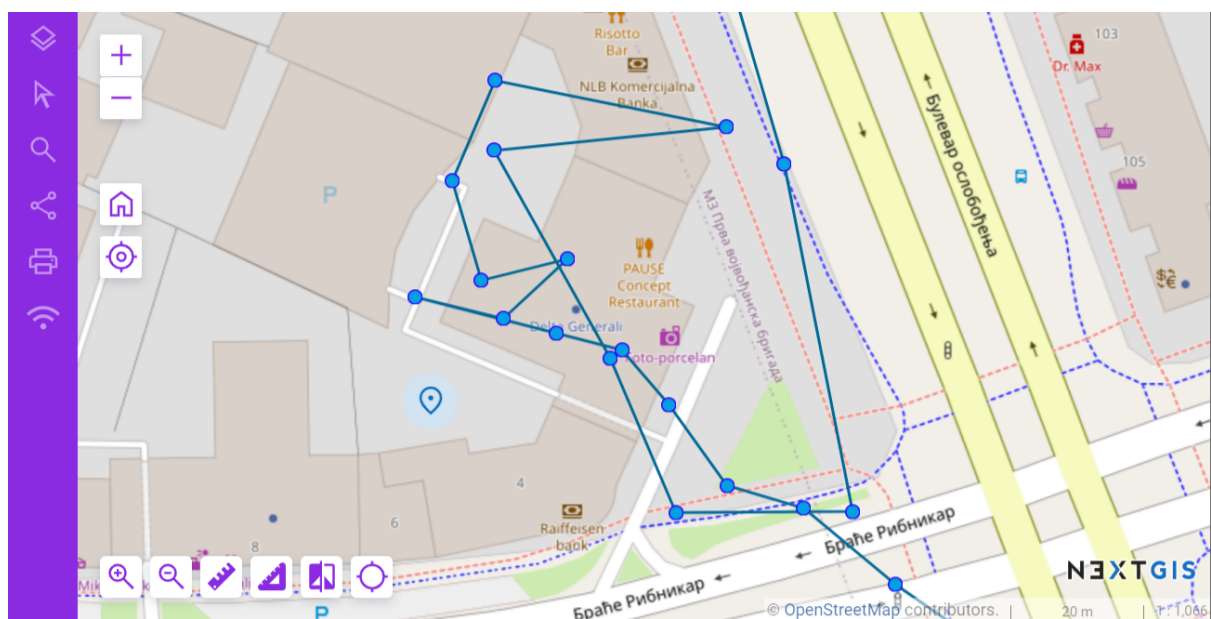


Fig. 27.5: Viewing a GPS track, track points and current location on a Web Map

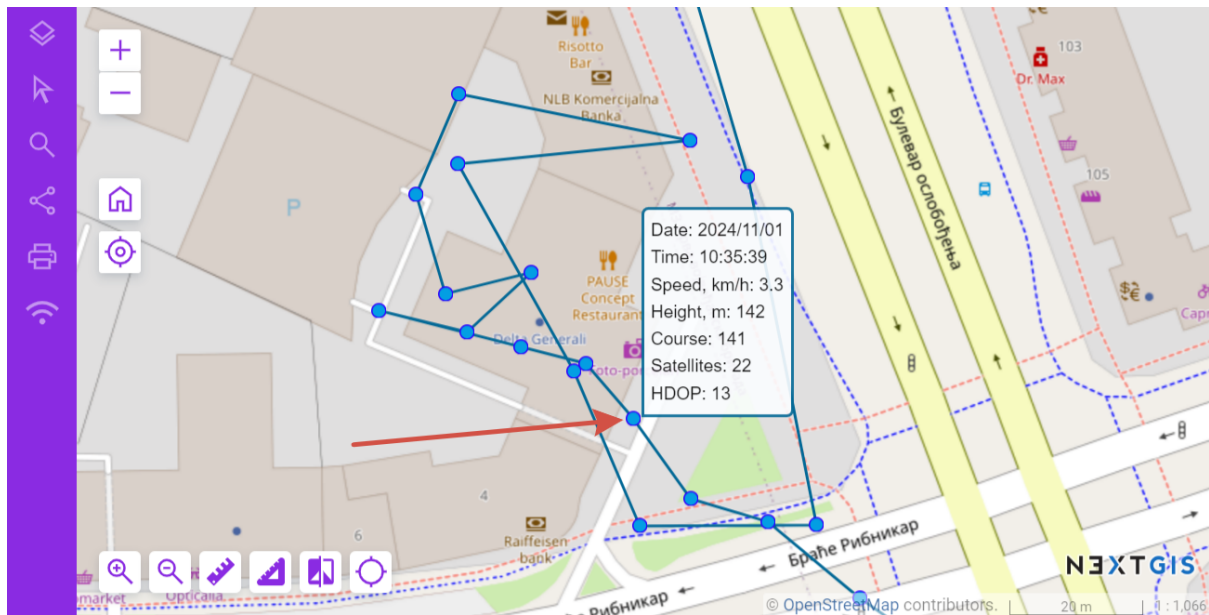


Fig. 27.6: Pop-up window with track point info

## 27.2 Reports

By clicking the 'Reports' button you can create various types of reports depending on selected tracker and parameters.

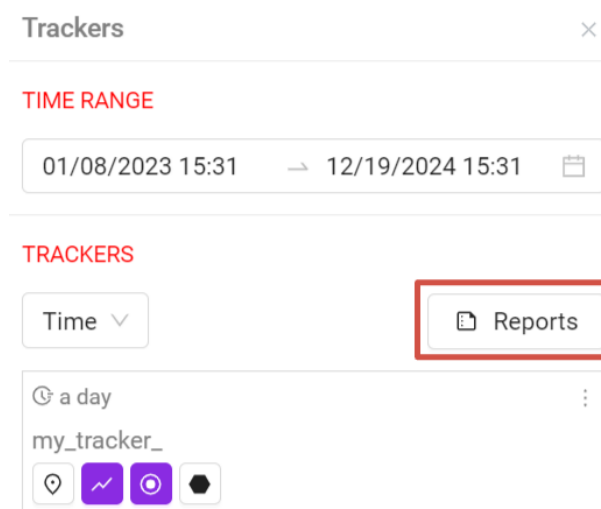


Fig. 27.7: Button opening the reports page

A separate page for creating tracking reports opens.

In the first block, you need to select the trackers for which you want to get an information summary.

- report type (mileage, top speed, average speed, spent fuel, stops, [GPX-file](#)<sup>237</sup>);

<sup>237</sup> [https://docs.nextgis.com/docs\\_ngweb/source/trackers.html#track-export](https://docs.nextgis.com/docs_ngweb/source/trackers.html#track-export)

## Trackers reports

### SETTINGS

Report type: Mileage ▾

Time range: 12/19/2024 04:1 → 12/20/2024 04:1 📅

Group by: Days ▾

TRACKERS

- ☒ 1 day ago my\_tracker\_
- ☐ 5 years ago bishop
- ☐ 3 years ago sim

**Build report**

Fig. 27.8: Report settings

- time range;
- grouping by days/hours.

Next select the trackers that you want to get information about and press The report will appear on the same page below.

### RESULT

#### Mileage report

my\_tracker\_

Days	Mileage
2024-11-01	2.60
2024-12-19	0.05

Fig. 27.9: Tracker report

**Note:** For getting the spent fuel report you need to set up [fuel consumption](#)<sup>238</sup> parameter in NextGIS Web settings (l/100 km)

<sup>238</sup> [https://docs.nextgis.com/docs\\_ngcom/source/tracking.html#tracker-settings](https://docs.nextgis.com/docs_ngcom/source/tracking.html#tracker-settings)

## 27.3 Export to GPX

You can use the [report page](#)<sup>239</sup> to export track with the selected parameters as a GPX file.

### Trackers reports

SETTINGS

Report type

Mileage ✓

Time range

02/24/2025 02:24 → 02/25/2025 02:24

Group by

Days

Mileage

Top speed

Average speed

Fuel consumed

Stops

GPX file

Create report

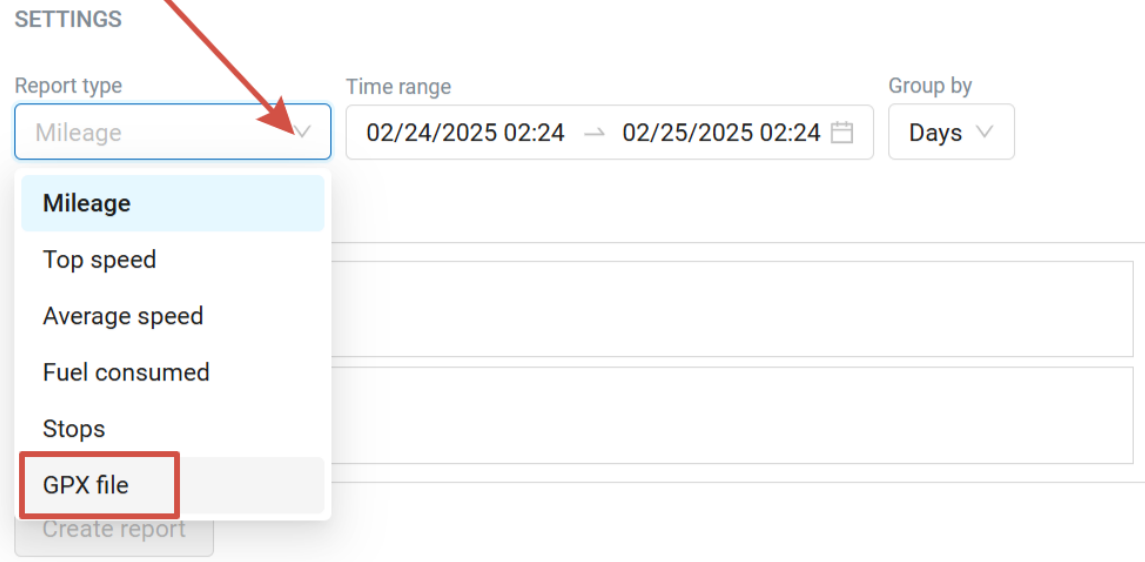


Fig. 27.10: Export as GPX

<sup>239</sup> [https://docs.nextgis.com/docs\\_ngweb/source/trackers.html#tracker-report-icon-pic](https://docs.nextgis.com/docs_ngweb/source/trackers.html#tracker-report-icon-pic)

## CROSS-ORIGIN RESOURCE SHARING (CORS)

---

**Note:** This functionality is available only to nextgis.com [Mini and Premium users](#)<sup>240</sup>.

---

If you're a developer and would like to use your Web GIS as a backend for your own map or an app, you can switch on and set up CORS. This mode allows to use data from Web GIS for a map or system on your organization's domain, while all geodata uploads and management pains will be taken care of by your Web GIS at nextgis.com.

In your Web GIS Control panel go to "Cross-origin resource sharing (CORS)" section and enter allowed origins for cross-domain requests on CORS Settings page, one origin per line. Press **Save**.

Fig. 28.1: CORS settings page

Please note that different protocols (HTTP and HTTPS) and subdomains (example.com and www.example.com) are different origins. Wildcards are allowed for third-level domains and higher.

---

<sup>240</sup> <https://nextgis.com/pricing-base/>

## WEB GIS INFORMATION

### 29.1 System information

Through the control panel, the administrator can view information about the system and the current version of the platform (see Fig. ??). Using the icon in the upper right corner, you can copy all this data to the clipboard.

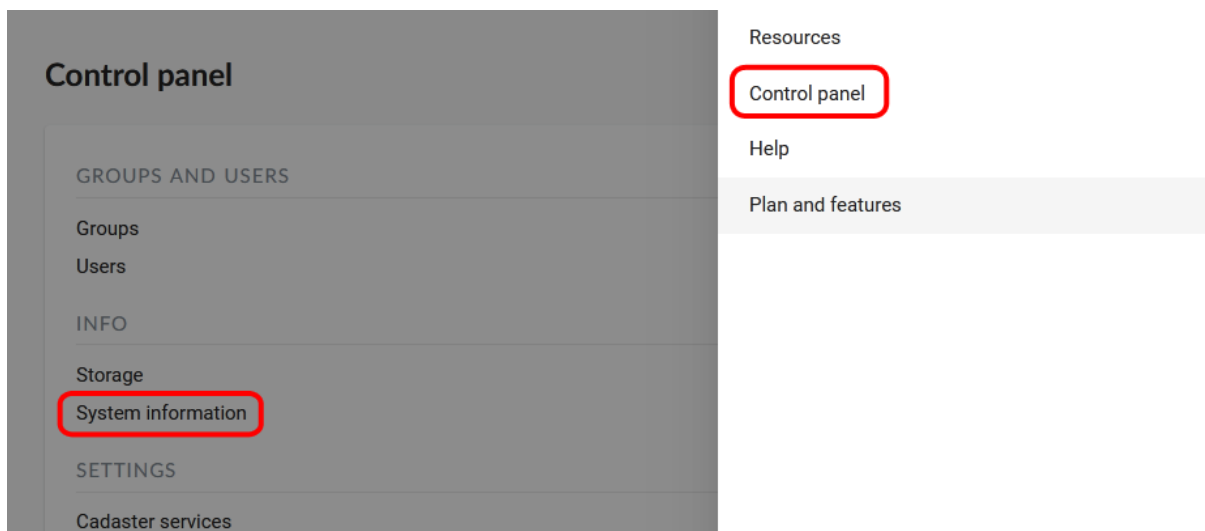


Fig. 29.1: System information section in the control panel

### 29.2 Storage

---

**Note:** This functionality is only available for cloud Web GIS

---

The “Storage” section contains information about the volume of data loaded into Web GIS depending on their type. The space usage estimate is located below the main table. The administrator can forcibly recalculate the amount of storage (for example - immediately after loading big data, if the system has not yet recalculated the occupied space on its own).

## System information



NextGIS Web Cloud 9 (2021-11-04)

Package	Version	
nextgisweb	4.0.0.dev9	3d11ac826
nextgisweb_basemap	1.4.0.dev1	a3a98f5
nextgisweb_cadaster	1.4.0.dev0	4521f78
nextgisweb_collector	1.3.0.dev0	a260138
nextgisweb_formbuilder	1.4.0.dev0	4d6c008
nextgisweb_mapserver	1.6.0.dev1	7995856
nextgisweb_ngwcluster	2.0.0.dev0	e9018c6
nextgisweb_qgis	2.4.0.dev1	ea9a3d7
nextgisweb_tracker	1.2.0.dev0	299560

## Platform

Linux kernel	5.4.0-88-generic
OS distribution	Ubuntu 20.04.3 LTS
CPU	8 × Intel Xeon Gold 6240R CPU @ 2.40GHz
RAM	32116 MB
Python	3.8.10
PostgreSQL	12.8
PostGIS	3.1.4
GDAL	3.0.4
QGIS	3.16.12-Hannover
MapServer	7.6.1

Fig. 29.2: System and platform information

**Storage**

Kind of data	Volume
Rasters and pyramids	3.1 GiB
Feature attachments	1.2 GiB
Vector layer features	895.6 MiB
<b>Total</b>	<b>5.1 GiB</b>

Storage usage was fully estimated at 2021-11-09 06:54:05.  
Some changes may be reflected only after full estimation.

[Estimate storage](#)

**GROUPS**

- List
- Create

**USERS**

- List
- Create

**INFO**

- Storage**
- System information

**SETTINGS**

- Cadaster services
- Collector projects
- Web GIS name
- Cross-origin resource sharing (CORS)
- Custom CSS
- Home path
- Custom logo
- Resource export
- Trackers

**SPATIAL REFERENCE SYSTEMS**

- List
- Create

**WEB MAP**

- Web map settings

Fig. 29.3: Storage section

## 29.3 Backups

In this section you can see a list of available NextGIS Web backups, as well as download any of them. The process of creating backups and restoring for developers is described in [this section](#)<sup>241</sup>.

---

**Note:** This functionality is available only for [on-premise](#)<sup>242</sup> Web GIS.

---

## 29.4 Backup policy

Data backups are performed for every Web GIS (any plan). The frequency depends on total data volume and Web GIS use activity (once or several times per month).

Restoring data from backups is available for [Premium](#)<sup>243</sup> users only. Other plans Web GIS are backup-ed to mitigate possible infrastructure risks not related to user actions.

If you are on Premium and need a restore - send us a request to [support@nextgis.com](mailto:support@nextgis.com). We'll let you know which dates are available. Additionally, you can see the last backup date under System information section of your Web GIS' Control panel (subsection Platform - Last backup).

<sup>241</sup> [https://docs.nextgis.ru/docs\\_ngweb\\_dev/doc/admin/backup\\_restore.html](https://docs.nextgis.ru/docs_ngweb_dev/doc/admin/backup_restore.html)

<sup>242</sup> <https://nextgis.com/pricing/>

<sup>243</sup> <https://nextgis.com/pricing-base/>

## 29.5 User activity log

**Note:** This functionality is available only for [on-premise](#)<sup>244</sup> Web GIS.

User requests to the Web GIS are logged in a journal. It can be found in the **Info** section of the Control panel of the Web GIS (Fig. ??).

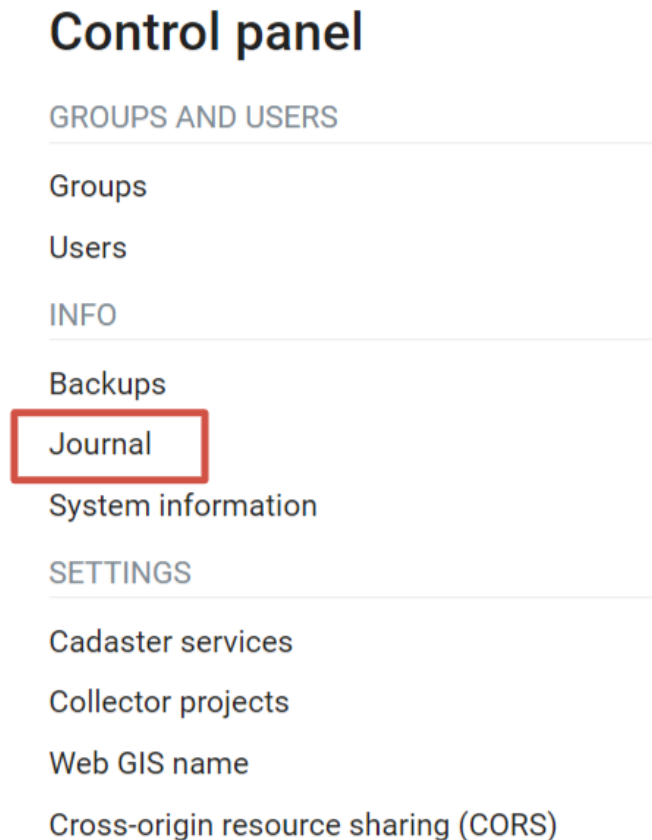


Fig. 29.4: Request journal in the Web GIS Control panel

The log is presented in a form of a table that has a set of filters above it (Fig. ??). Every user action is registered in the journal. The entry contains the following details:

- Timestamp
- Request (includes [response status codes](#)<sup>245</sup> and [request method](#)<sup>246</sup> )
- IP address
- User
- Route name
- Context (type and ID of the resource)

<sup>244</sup> <https://nextgis.com/pricing/>

<sup>245</sup> <https://developer.mozilla.org/en-US/docs/Web/HTTP/Status>

<sup>246</sup> <https://developer.mozilla.org/en-US/docs/Web/HTTP/Methods>

**Journal**  →

Timestamp	Request	IP address	User	Route name	Context
2023-11-30 13:24:45.841537	302 GET /	172.24.38.88		home	
2023-11-30 13:24:46.320794	200 GET /resource/0	172.24.38.88	administrator	resource.show	resource_group:0
2023-11-30 13:24:46.461284	200 GET /api/component/pyramid/custom_css	172.24.38.88		pyramid.custom_css	
2023-11-30 13:24:47.144003	200 GET /api/component/pyramid/route	172.24.38.88		pyramid.route	
2023-11-30 13:24:47.213216	200 GET /api/component/pyramid/settings	172.24.38.88		pyramid.settings	
2023-11-30 13:24:47.311011	200 GET /api/component/pyramid/settings	172.24.38.88		pyramid.settings	
2023-11-30 13:24:54.119832	200 GET /resource/33	172.24.38.88	administrator	resource.show	resource_group:33
2023-11-30 13:24:54.236167	200 GET /api/component/pyramid/custom_css	172.24.38.88		pyramid.custom_css	

Fig. 29.5: Activity journal

You can filter the journal entries by time period and user performing the action (Fig. ??). The table, filtered or otherwise, can be exported as a CSV file.

**Journal**  →

Timestamp	Request	User	Route name	Context
2024-01-22 22:24:04.625572	303 GET /	administrator		
2024-01-23 13:10:22.179227	303 GET /	Alexander		
2024-01-23 13:10:22.519320	200 GET /uacompat	Anastasia	pyramid.uacompat	
2024-01-23 16:28:51.233729	200 GET /api/component/render/tile	Ed	render.tile	
2024-01-23 16:28:51.303934	200 GET /api/component/render/tile	local	render.tile	

Fig. 29.6: Filtering by timestamp and user

To view the complete text of the request click on the corresponding entry (Fig. ??).

**Journal**  →

Timestamp	Request	IP address	User	Route name
2023-11-30 13:24:54.119832	200 GET /resource/33		administrator	resource.show
	user { "id": 4, "keyname": "administrator", "display_name": "administrator" }			
	context { "id": 33, "model": "resource_group" }			
	request { "path": "/resource/33", "method": "GET", "remote_addr": "172.24.38.88" }			
	response { "route_name": "resource.show", "status_code": 200 }			
2023-11-30 13:24:54.236167	200 GET /api/component/pyramid/custom_css			pyramid.custom_css
2023-11-30 13:24:54.654228	200 GET /api/component/pyramid/route			pyramid.route
2023-11-30 13:24:54.767399	200 GET /api/component/pyramid/settings			pyramid.settings

Fig. 29.7: Log entry

## METRICS AND ANALYTICS

---

**Note:** This functionality is only available for [Premium<sup>247</sup>](#) subscription plan.

---

In this section of the Control panel you can add tracking code to your Web GIS. Measurement code will be added to each page to help track user activity.

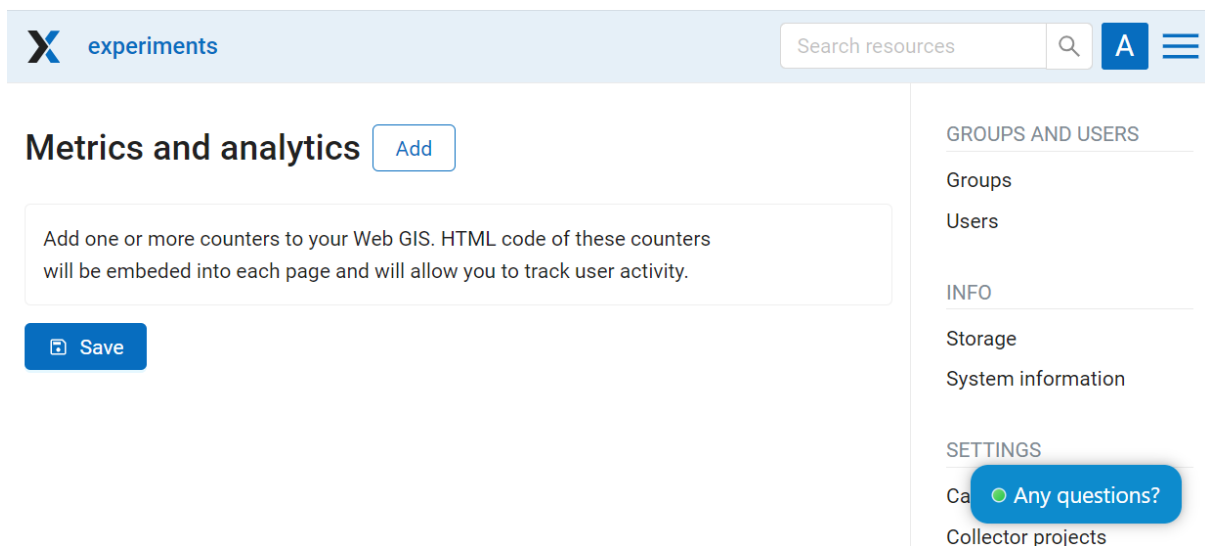


Fig. 30.1: Metrics and analytics

To add new measurement code, press **Add**, select a service you'd like to enable and enter your measurement ID in the opened tab.

---

<sup>247</sup> <https://nextgis.com/pricing-base/>

### Metrics and analytics

Add

GOOGLE ANALYTICS

Measurement ID

G-XXXXXXXXXX

Save

GROUPS AND USERS

Groups

Users

INFO

Storage

System information

SETTINGS

Cadaster services

Collector projects

Web GIS name

Cross-origin resource sharing (CORS)

Cu

Any questions?

For more information

Fig. 30.2: Adding new measurement

## DESIGN CUSTOMIZATION

The look of your Web GIS can be modified. You can customize logos, title, fonts, colors of the header, background, buttons and other elements.

**Note:** These settings can only be changed by an administrator. Apart from changing the Web GIS name and fonts, other design settings are only available on the [Premium<sup>248</sup>](#) subscription plan.

---

### 31.1 Web GIS name

It's the title displayed next to the logo on the top bar of the page. By default it's the same as the Web GIS URL, but it can be changed.

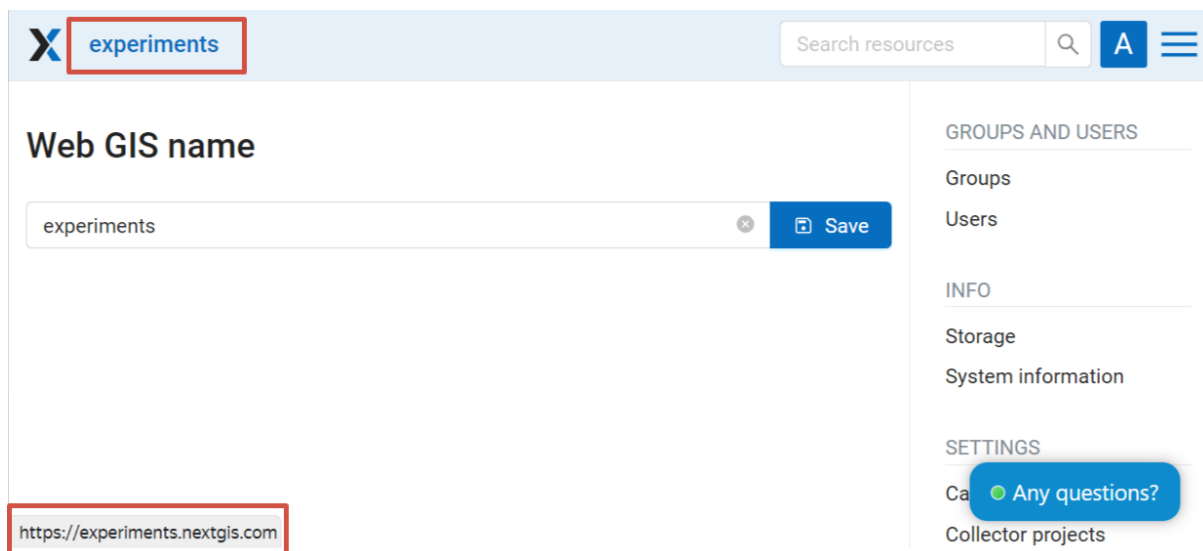


Fig. 31.1: Default name

---

<sup>248</sup> <https://nextgis.com/pricing-base/>

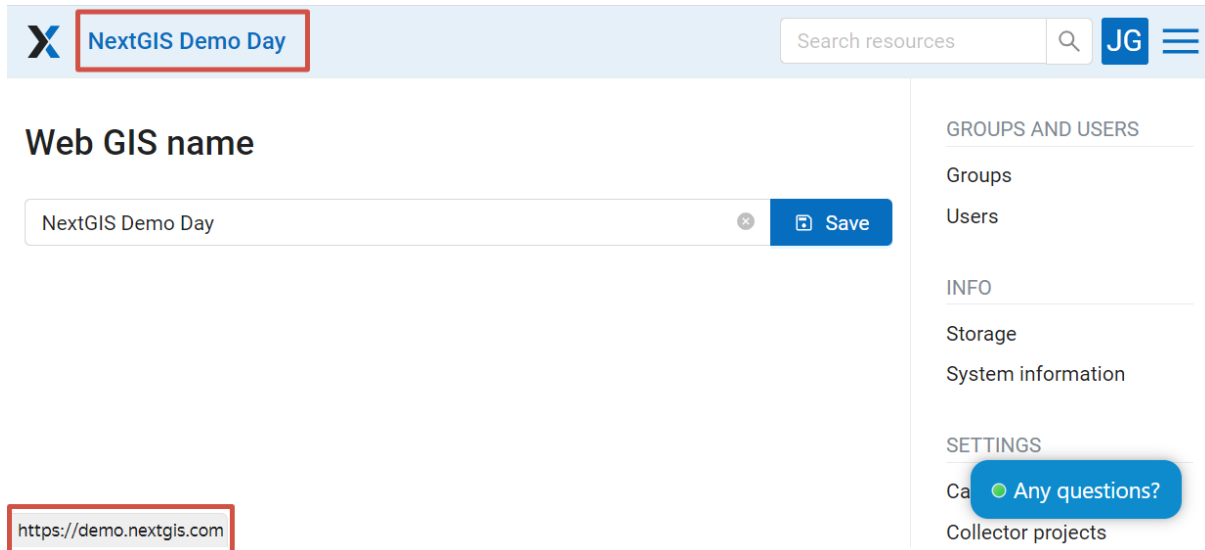


Fig. 31.2: Custom name

## 31.2 Font management

NextGIS Web allows to upload custom fonts in addition to system ones.

To open the font management page, go to the Main menu, open the Control panel and in the Settings section select “Font management”. If no additional fonts have been uploaded, the list is empty.

To view the pre-installed fonts, tick “Show system fonts”.

On this page you can view the list of system and custom fonts, upload or delete custom fonts.

### 31.2.1 How to add a font

Users can add custom fonts.

---

**Important:** The font must be used as labels in the appropriate QGIS style for the layer to which you want to apply this font. More about [labels](#)<sup>249</sup> in QGIS.

---

Technical requirements:

- TTF or OTF format;
- File size up to 10MB;
- Filename only has basic latin characters, numbers, underscore (\_) and dash (-).

To add a custom font, on the Font management page press **Upload** and select the font file from your device.

<sup>249</sup> [https://docs.qgis.org/3.34/en/docs/training\\_manual/vector\\_classification/label\\_tool.html](https://docs.qgis.org/3.34/en/docs/training_manual/vector_classification/label_tool.html)

## Font management

☒ Show system fonts

<input checked="" type="checkbox"/> Font	Format	Type
<input checked="" type="checkbox"/> GigGGK08 Plain Regular	TrueType	Custom
<input type="checkbox"/> C059 Bold	Type 1	System
<input type="checkbox"/> C059 Bold	CFF	System
<input type="checkbox"/> C059 Bold Italic	Type 1	System
<input type="checkbox"/> C059 Bold Italic	CFF	System
<input type="checkbox"/> C059 Italic	Type 1	System

Fig. 31.3: Font management page. System fonts are shown. A custom font is selected.

## Font management

☐ Show system fonts


<input type="checkbox"/> Font	Format	Type
<div>  <p>No data</p> </div>		

Fig. 31.4: Uploading custom font

To install the font the Web GIS needs to restart. Make sure there are no ongoing requests, restarting Web GIS aborts them.

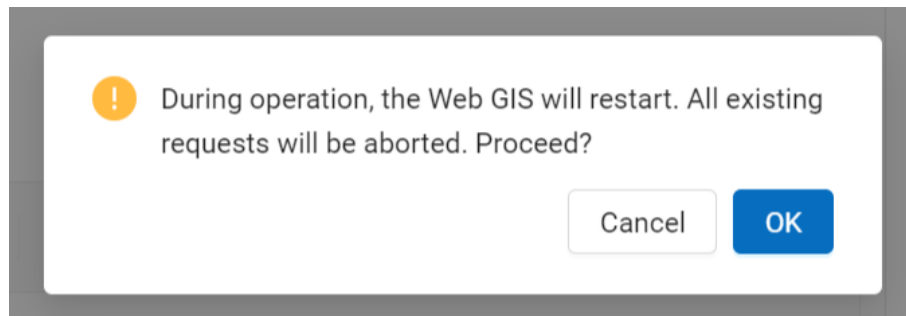


Fig. 31.5: Web GIS restart alert

Press **Ok** to complete font uploading.

After the installation is complete, the new font will appear in the list, marked as "Custom".

## Font management

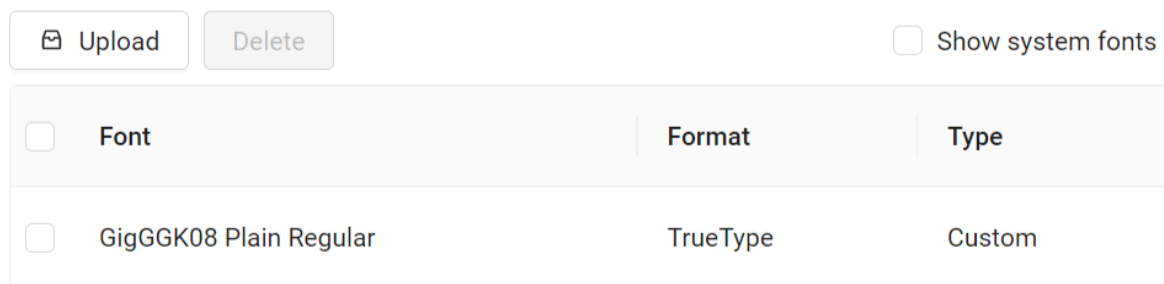


Fig. 31.6: Custom font added successfully

See the process in our video:

Watch on [youtube](https://youtu.be/4TFxD9hz9i8?si=jYtMc9kM1h4B_8hV)<sup>250</sup>.

### 31.2.2 How to delete a custom font

Only custom fonts added by users can be deleted.

To delete a font, go to Font management page of the Control panel. Tick the font you'd like to delete.

Press **Delete**. While deleting a font, as while installing one, Web GIS needs to be restarted.

<sup>250</sup> [https://youtu.be/4TFxD9hz9i8?si=jYtMc9kM1h4B\\_8hV](https://youtu.be/4TFxD9hz9i8?si=jYtMc9kM1h4B_8hV)

## Font management

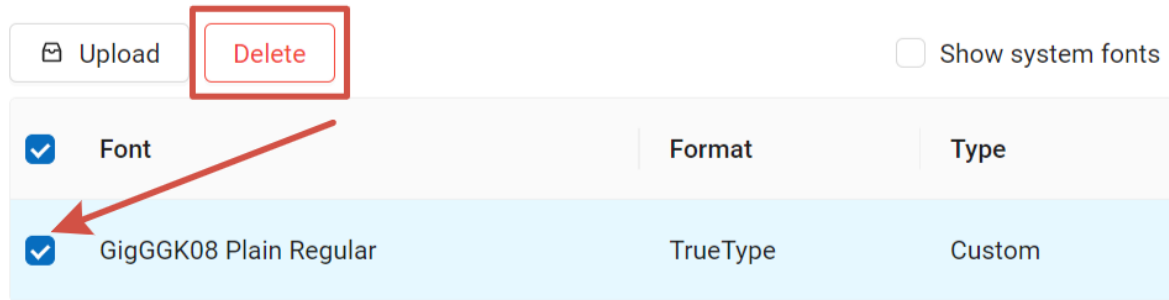


Fig. 31.7: Deleting custom font

### 31.3 Upload a logo

You can change the upper-left logo (present on all pages), you can't change the Web map logo (lower right).

To upload a logo choose *Custom logo* on control panel (see item 1 in Fig. ??) and in opened window upload a file in PNG format with height up to 45 px, width up to 200 px. Then press "Save".

### 31.4 Customize the design with CSS

You can modify the look of NextGIS Web using CSS. From the main menu (see Fig. ??) open the Control Panel (see Fig. ??). In the Control Panel (see Fig. ??) select **Custom CSS** in the Settings section. Here you can enter your own CSS rules. They will be used throughout your Web GIS on all its pages.

### 31.5 Custom CSS examples

#### 31.5.1 Change main Web GIS color

Affects header, symbols in the header, buttons, field contours, links highlighted on hover etc.

```
:root {
  --primary: red
}
```

### 31.5.2 Change main font color

Affects menu, name and parameters of displayed resource group etc.

```
:root {  
  --text-base: #ff6600  
}
```

### 31.5.3 Change additional font color

Affects paths for the displayed resource, parameters etc.

```
:root {  
  --text-secondary: rgb(40 200 40 / .8)  
}
```

## 31.6 Hide resource export

To hide the ability to export data from Web GIS from certain categories of users, you need to:

- Go to Control Panel -> Settings -> Resource export
- Select the type of users that **will be able** to export data (only administrators / users with [Data:Read](#) or [Data:Modify](#) permissions)

Users who do not fit the selected list will not see the “Save as” link in the interface.

The categories of users you can select to have access to “Save as” action:

- administrators

or users with the permission to:

- Read data
- Modify data

All other users will not be able to save data from the Web GIS interface.

More on how to set up permissions to read and modify data [here](#)<sup>251</sup>.

---

**Note:** This setting does not in any way affect the ability to receive data through the [REST API](#)<sup>252</sup> in accordance with the set [permissions](#)<sup>253</sup> to them.

---

<sup>251</sup> [https://docs.nextgis.com/docs\\_ngcom/source/permissions.html](https://docs.nextgis.com/docs_ngcom/source/permissions.html)

<sup>252</sup> [https://docs.nextgis.com/docs\\_ngweb\\_dev/doc/developer/toc.html](https://docs.nextgis.com/docs_ngweb_dev/doc/developer/toc.html)

<sup>253</sup> [https://docs.nextgis.com/docs\\_ngweb/source/permissions.html](https://docs.nextgis.com/docs_ngweb/source/permissions.html)

## Resource export

Select the category of users who can use the "Save as" link to download resource data.

- ☒ Users with "Data: Read" permission
- ☐ Users with "Data: Modify" permission
- ☐ Administrators

 Save

\* This will not affect REST API use which will continue to be governed by permissions.

### GROUPS AND USERS

Groups

Users

### INFO

Storage

System information

### SETTINGS

Cadaster services

Collector projects

Web GIS name

Cross-origin resource sharing (CORS)

Custom CSS

Font management

Home path

Custom logo

Metrics and analytics

**Resource export**


Trackers

Web map

Fig. 31.8: Selecting a category of users entitled to export data

Main resource group - Data

## Line1604

 Create resource

Type ..... Vector layer (vector\_layer)

Spatial reference system ..... WGS 84 / Pseudo-Mercator (EPSG:3857)


Geometry type ..... Line

Feature count ..... 1424

Owner ..... Administrator

Display name


Type


 Default style


QGIS vector style

### EXTRA

 User permissions

 JSON view

 Preview


### FEATURES

 **Save as**

 Table

 Manage attachments

### ACTION

 Update

 Delete

Fig. 31.9: Data export available in the Features panel

## 31.7 How to change the homepage address

By default the starting page of your Web GIS is the main resource group page (/resource/0). The starting page is the page that gets open first whenever some visit your Web GIS or clicks on the logo in top left corner.

You can change which page will be opened first to any other resource of the system. For example, if you'd like your visitors to always start from a map, you can change this setting to this map.

1. Sign in as the user with administrative privileges and open Control panel, then select *Home path*.
2. Enter path to the resource page that should be opened first when you Web GIS is accessed. For example: /resource/644/display

After making this setting visiting <http://yourwebgis.nextgis.com> will open not the main resource contents page, but the page you've set up. To access main resource content page after this setting you will need to go directly to: <http://yourwebgis.nextgis.com/resource/0>.

## HOW TO CHANGE WEB GIS DOMAIN

---

**Note:** This functionality is available only to nextgis.com [Premium users](#)<sup>254</sup>.

---

After you created a Web GIS you get a domain at nextgis.com, for example *mywebgis.nextgis.com*. You can rename it to something else, i.e. *mywebgis2.nextgis.com* by contacting support.

You can also change it to a subdomain under the domain of your organization, for example *gis.example.com* where example.com is the domain of your organization. We will use these two addresses in the examples below.

---

**Note:** You can't use your organization domain itself (mycompany.com) as Web GIS domain. It is impossible to add CNAME record in the DNS zone root with most of the providers.

---

Follow these steps to change the domain name. The described actions are done by the system administrator of your company or another authorized person who has access to DNS records.

### Step 1. Add DNS record to get HTTPS certificates

`_acme-challenge.gis.example.com. CNAME _acme-challenge.nimbo.  
→nextgis.net.`

change *gis.example.com* in this record to the needed domain under the domain of your organization.

#### Check 1

Your system administrator needs to check that changes took effect. Use [Dig](#)<sup>255</sup>.

Enter: `_acme-challenge.gis.example.com`.

Expected answer: CNAME (TTL and TARGET). TARGET must have the following value: `_acme-challenge.nimbo.nextgis.net`.

Give some time for DNS changes to take effect.

### Step 2. Add DNS record 2 to redirect requests to Web GIS

---

<sup>254</sup> <http://nextgis.com/nextgis-com/plans>

<sup>255</sup> <https://toolbox.googleapps.com/apps/dig/#CNAME/>

`gis.example.com. CNAME example.nextgis.com.`

change *gis.example.com* to the needed domain under the domain of your organization, change *example.nextgis.com* to your Web GIS address at \*.nextgis.com

## Check 2

Your system administrator needs to check that changes took effect. Use [Dig](#)<sup>256</sup>.

Enter: `gis.example.com`

Expected answer: CNAME (TTL and TARGET). TARGET must have the following value: `mywebgis.nextgis.com`.

Give some time for DNS changes to take an effect.

## Step 3. Inform us

After both checks are successful, let us know at [support@nextgis.com](mailto:support@nextgis.com). Please use the following template:

1. Your Web GIS URL: *mywebgis.nextgis.com*
2. Domain you want to switch to: *gis.example.com*

We will finalize the setup and contact you when everything is ready.

---

<sup>256</sup> <https://toolbox.googleapps.com/apps/dig/#CNAME/>

## CUSTOMIZE UI ELEMENTS (WHITE LABEL)

---

**Note:** This functionality is only available [on-premise](#)<sup>257</sup>

---

White label is a special module that allows you to remove or replace NextGIS logos and names with your company logos and names. The module is purchased and installed separately. The module adds a new section to the Control Panel (. Fig. ??), which allows you to disable or override various interface elements mentioning NextGIS.

### 33.1 Company logo on Web Map

In Control Panel, you can upload your logo in PNG format (see in Fig. ??) to display in the lower right corner of the map.

If the file is not loaded, there is no logo (see in Fig. ??).

### 33.2 Company URL

You can assigned a new hyperlink for a company website to a just added logo (. Fig. ??)

### 33.3 Help page

By default, help leads to <http://nextgis.com/help/>. You can set a different hyperlink (see in Fig. ??) to 'Help'.

---

<sup>257</sup> <https://nextgis.com/pricing/>

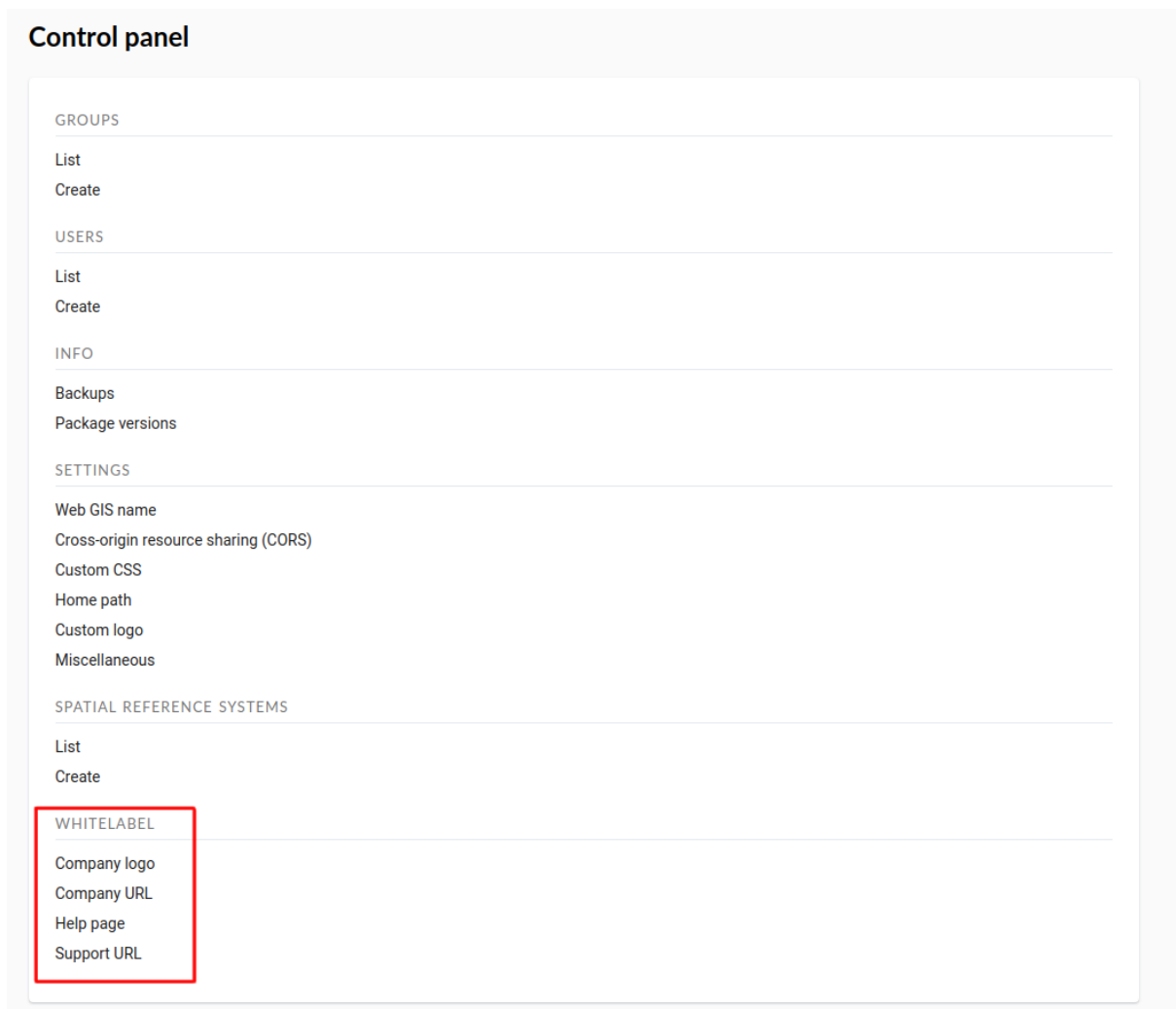


Fig. 33.1: 'White label' module in control panel

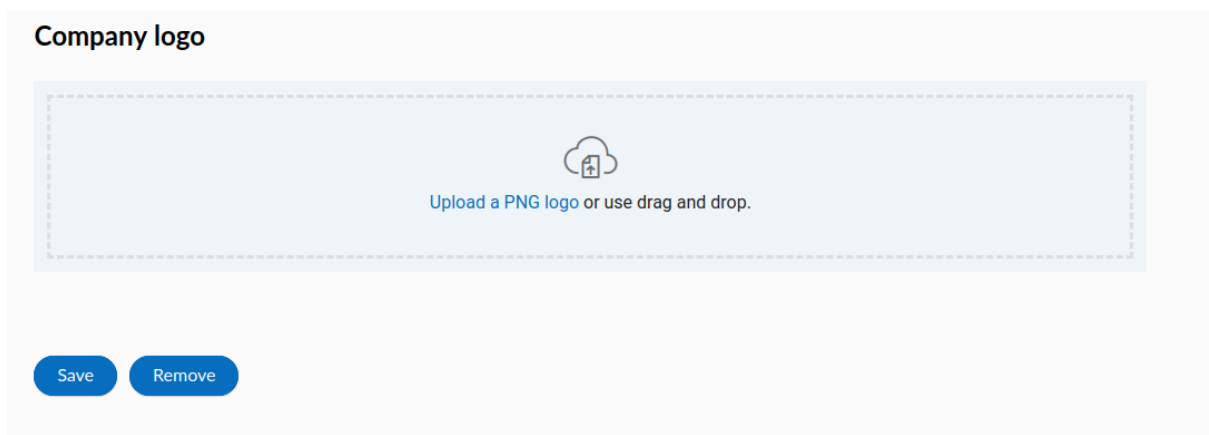


Fig. 33.2: Upload company logo file

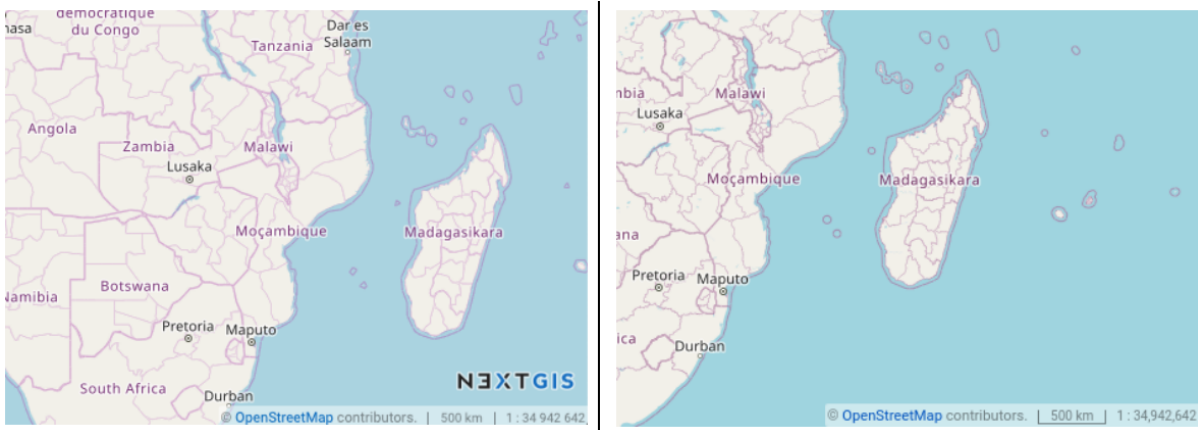


Fig. 33.3: Web Map with NextGIS logo (left) and without logo (right)

**Company URL**

Fig. 33.4: Company URL

**Help page**

Fig. 33.5: Reroute a link to 'help'

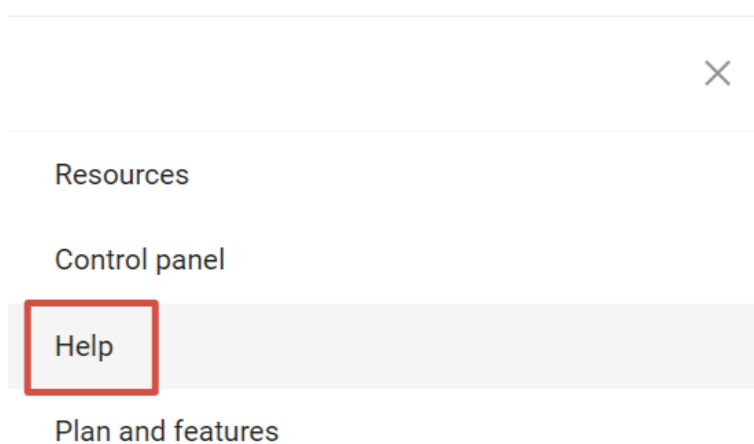


Fig. 33.6: 'Help' in the menu

## 33.4 Support URL

Also you can set URL for the technical support page (see in Fig. ??).

This link will appear on error messages:

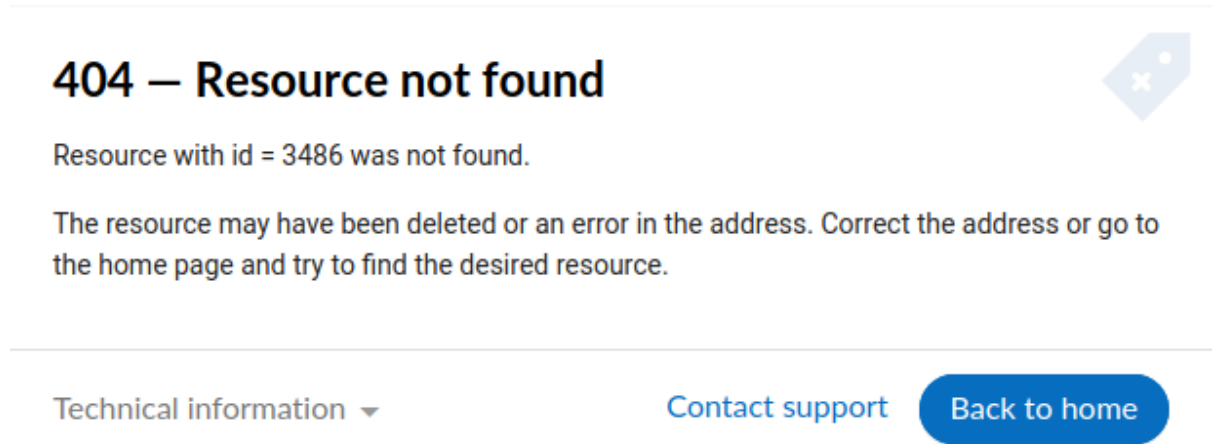


Fig. 33.7: Support URL in the interface

## 33.5 Other items

- The default Web GIS name is specified without mentioning NextGIS.
- In WMS and WFS services resources, **NextGIS QGIS** is replaced with **QGIS** (. Fig. ??).

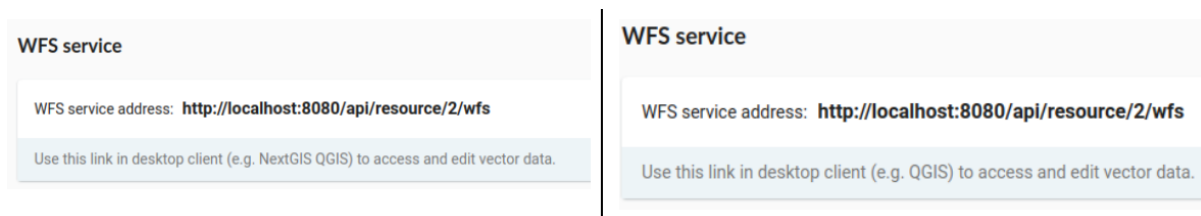


Fig. 33.8: Replacing *NextGIS QGIS* (left) with *QGIS* (right) in WMS and WFS services

- The social networks preview mentioning NextGIS is removed (. Fig. ??).

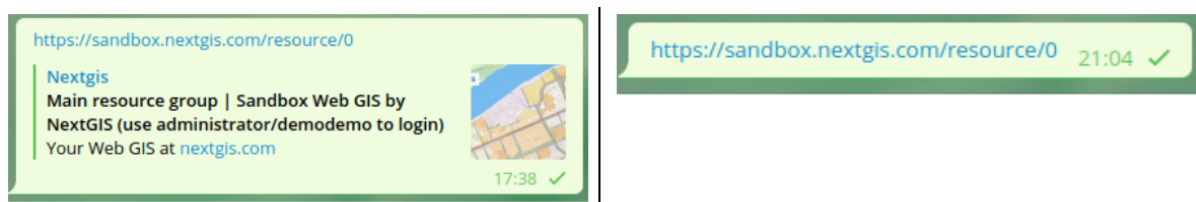


Fig. 33.9: Hiding the mention of *NextGIS QGIS* in web GIS links

## LATEST CHANGES

This section describes the latest changes to the software.

### 34.1 5.1.0 released on 23 Jun 2025

- Identification of raster layers on webmaps.
- Improved webmap links, preserving legend symbols in URLs.
- Ability to configure panels and tools individually for each webmap.
- Refined resource picker behavior for single and multi-selection.
- Configurable lookup table item order, including manual ordering.
- Experimental adaptive layouts for webmaps on mobile and tablet devices.
- Initial experimental support for UI form designer.
- Handle rendering artifacts at tile boundaries for QGIS styles.
- Fix *@map\_scale* variable and area calculations for QGIS styles.
- Support for dash patterns in user-defined styles.
- Support for adding fields to layers with versioning enabled.
- Creation of raster layers from ZIP archives and PAM support.
- Support for GDAL PAM georeferenced (.aux.xml) JPEG and PNG rasters.
- Configurable default basemaps for on-premises installations.
- Improved handling of date and bigint fields in UI and HTTP API.
- Improved handling of *geom* fields in feature layers.
- Clean up unreferenced file objects during maintenance by default.
- Python 3.10+ is now the minimum required version.
- OpenLayers library upgraded to 10.4.

## 34.2 5.0.0 released on 05 Mar 2025

- Webmap migrated to React with many new features.
- The identification panel enabled by default, replacing webmap popups.
- Resource editing interface fully migrated to React.
- New feature display page and modal dialog with vector tile geometries.
- Enhanced resource deletion confirmation with details of resources to delete.
- On-demand webmap legend symbol loading, optimizing webmap opening time.
- Configurable SSL mode for PostGIS connections.
- Handling of invalid geometries for MVT vector tiles.
- Better support for date and time fields in WFS clients.
- Expanded JSON output format capabilities in WMS services.
- Improved handling of *fid* fields in feature layers.
- Extended resource search HTTP API.
- Pre-calculated and cached style scale ranges for faster webmap opening.
- Chrome 118+, Safari 17+, Edge 116+, or Firefox 115+ is required.
- All legacy AMD modules migrated to TypeScript, and Dojo dependency removed.
- Experimental support for Python 3.10.
- Improved track display with a distinguishable style.
- Fixed rounding of speed, direction, and HDOP in webmap popup.

## 34.3 4.9.0 released on 06 Okt 2024

- New resource creation dialog.
- Identification panel replaces popup on the webmap.
- Font management in the control panel.
- Preview layers without leaving the current page.
- Preview of the basemap on the resource editing page.
- Support for empty geometries when importing vector layers.
- Customizable web map title.
- WFS client component turned on by default.
- Data structure permission scope removed.
- TUS uploader is available using CORS.
- All of resource widgets migrated to Antd and React.

- Fix uploading of zero-length files.

## **34.4 4.8.1 released on 20 Sep 2024**

- Fix audit journal display.
- Fix WMS service layer adding.

## **34.5 4.8.0 released on 17 Jul 2024**

- Customizable print layout including legend.
- Exclusive layer groups on webmaps.
- User-defined favorite resource pages.
- Measurement SRS configuration per-webmap.
- Experimental support for feature versioning.
- Better handling of incomplete geometry parts.
- Show feature attachment descriptions in the viewer.
- Extent information in PostGIS layer diagnostics.
- Transparent annotation polygons for better visibility.
- Switch to nearest neighbor resampling for raster pyramids.
- Experimental support for NULL geometries.
- Support for upper-case placeholders in TMS connections.
- Metadata permission scope and webmap display permission removed.
- Sentry client-side JavaScript integrations.
- Cache seeding and invalidation removed, use NextGIS GeoServices instead.
- Most of resource widgets migrated to Antd and React.

## **34.6 4.7.0 released on 04 Apr 2024**

- Turn legend categories on/off for a better experience on webmaps.
- Lots of customization options for embedded webmaps: map tools and panels.
- Ability to exclude feature layer fields from text search.
- Configurable permissions for groups, users, SRS and CORS management.
- Enhanced feature attachment viewer now includes panoramic images support.
- Ctrl+click opens feature attachment in a fixed tab.
- Ability to copy printing parameters as a URL for sharing.

- Support for custom SVG logos in addition to PNG.
- Add export to CSV and import from CSV for lookup tables.
- Support for multiple replicas and long-running requests.
- Update minimum required NodeJS version to 20.0.
- Fix permission dependencies on QGIS style parent resources.
- Copying QGIS styles from one to another.

## **34.7 4.6.2 released on 02 Mar 2023**

- Expanded list of allowed CORS headers.

## **34.8 4.6.1 released on 27 Dec 2023 and 29 Dec 2023**

- Fix styles for WFS layers.

## **34.9 4.6.0 released on 27 Dec 2023 and 29 Dec 2023**

- Support for lookup tables for feature layer attributes.
- Print to TIFF format in addition to PDF, JPEG and PNG.
- Geometry-based filtering of feature tables on webmaps.
- Autodetection of minimum and maximum scales for webmap and WMS layers.
- Refresh feature tables after saving layer changes on webmaps.
- Improved handling of id and fid attributes of vector layers.
- Improved handling of date and time inputs.
- Passing a zoom level to webmaps via zoom attribute.
- Support for OpenID Connect UserInfo endpoint.
- Extraction of scale ranges from QML styles.
- Fix NextGIS ID configuration issue.
- Support for PostgreSQL 12.

## 34.10 Earlier releases

### 4.5.1 released on 17 Nov 2023

- Fix print to TIFF format in addition to PDF, JPEG and PNG.

### 4.5.0 released on 29 Sep 2023

- New tileset resource for storing and serving prerendered tiles.
- New OGC API Features service with read and write support.
- Up to 2x speed-up of loading vector layer data.
- Differentiate webmap initial and constraining extents.
- Support for Google Analytics metrics.
- Support for basic user-defined styles.
- Save to PDF from the webmap printing panel.
- Check effective permissions of other users for a resource.
- Legends for webmaps is enabled by default.
- Lots of improvements in feature editing widgets.
- OutputFormat declaration in WFS for better compatibility.
- Store audit journal in PostgreSQL database instead of ElasticSearch.
- React library upgraded to 18.
- Ant Design library upgraded to 5.

### 4.4.0 released on 30 Jun 2023

- Auto-generated and configurable legends for webmaps.
- Reordering layers via drag-and-drop while viewing webmaps.
- Changing layer opacity while viewing webmaps.
- Creation of an empty vector layer without uploading a file.
- Ability to replace existing vector layer features and fields from a file.
- Brand-new feature table based on React.
- Resource and feature description editors updated to CKEditor 5.
- Improved handling of resource descriptions on webmaps.
- Zoom to a filtered set of features on webmaps.
- Geometry properties in the identification popup.
- Show the cursor location and the current extent on webmaps.
- Zoom to all layers on webmaps.
- Support for linear and polygonal annotations.
- Default display names for resources during creation.
- Deletion of all features and changing geometry type for vector layers.

- Limit by extent while exporting feature layers.
- Ability to export a filtered set of features.
- MapInfo formats support when creating a vector layer.
- TMS client: parallel fetching of tiles and HTTP/2.
- Reasonable resource tabs ordering and auto-activation.
- Improved usability of the layers tree on webmaps.
- Fast PNG compression for rendering.
- Chrome 102+, Safari 15+, Edge 109+ or Firefox 102+ is required.
- User permissions section is moved to a separate page.
- OAuth-based automatic group assignment.

#### **4.3.1 released on 14 Dec 2022**

- Fix resource group selection issue while cloning webmaps

#### **4.3.0 released on 21 Nov 2022**

- Support for webmap cloning via UI.
- Search by coordinates on web maps.
- CSV and XLSX support when creating a vector layer.
- Export and import feature layer attachments.
- Vector layer export to KML and KMZ formats.
- Fields selection while exporting feature layer.
- Assign default groups while creating users via UI.
- Experimental support for authorization links.
- Use resource SRS by default while exporting raster and vector layers.
- Support for booleans and nulls in resource metadata.
- Support for fixed length character columns in PostGIS layers.
- Support for materialized views and 25D geometries in PostGIS layers.
- Ability to turn off user password and keep only OAuth authentication.
- Check for disk free space in the healthcheck.
- Ability to search through resources recursively in REST API.
- OpenLayers library upgraded to 6.15.1.

#### **4.2.0 released on 18 Jul 2022**

- “Locate me” tool on web maps.
- Identifiable setting for web map layers.
- Batch deletion and moving of resources.
- Ability to download raster layers as an internal representation.

- PostGIS connection and layer diagnostic tool.
- Support for quad-key basemaps on web maps.
- OAuth improvements: NextGIS ID integration, simultaneous authorization code and password grant types.
- Improved management of spatial reference systems and catalog integration.
- Better support for 25D geometries on web maps and PostGIS layers.
- Improved handling of URLs in descriptions and feature layer fields.
- Cloud-optimized GeoTIFF (COG) enabled by default.
- In-place conversion between COG and non-COG rasters.
- Hide empty groups and groups with no accessible layers on web maps.
- M dimension stripping while creating vector layers in LOSSY mode.
- Selecting features on web maps via hl\_\* URL parameters.
- Ability to inject some HTML into the base template for metrics and counters.
- Fast JSON serialization and deserialization based on orjson library.
- Completed control panel migration to Antd and React.

#### **4.1.0 released on 16 Feb 2022**

- Cloud-optimized GeoTIFF (COG) support for raster layers.
- Browser compatibility test and Internet Explorer deprecation.
- Experimental support for long-running requests for raster and vector layers creation using lunkwill extension.
- Private annotations on web maps, visible only for authors.
- Wrapping around the dateline for tile-based layers on web maps.
- A lot of improvements for the control panel: filters, batch operations, etc.
- Improved handling of vector layer sources with id and geom fields.
- Reprojection into different coordinate systems in WMS and WFS services.
- Export feature layer using field display names (aliases) instead of keynames.
- Support for CORS domain wildcards (like [https://\\*.csb.app](https://*.csb.app)).
- WFS client and server simple filters support.
- Improved handling of coordinates outside boundaries of coordinate systems.
- Support for 25D geometries in PostGIS layers.
- Ability to filter NULL values in feature REST API.
- Unknown fields in REST API filters return an error.
- Improved handling of external services errors and timeouts.
- Upgraded dependencies: Pyramid 2.0, SQLAlchemy 1.4, and OpenLayers 6.10

**4.0.0 released on 18 Nov 2021**

- Source layer selection while creating vector layers from multi-layer sources, such as ZIP-archives or Mapinfo TABs.
- On-the-fly reprojection for WMS and WFS services.
- Ability to restrict address search by a country if using Nominatim.
- Hide inaccessible layers while displaying web maps.
- Highlight feature when selecting from search results.
- Display emails as active mailto: links in the webmap popup.
- Ability to delete users and groups from the control panel.
- Ability to change resource owner in UI and REST API.
- Automatic generation of keynames for WMS and WFS services.
- Improved support for Unicode field names for WFS services.
- Granular control setting for resource export availability.
- ISO-8601 date and time formatting in feature layer REST API via `dt_format=iso` option.
- Drop Python 2.7 support, NextGIS Web now requires Python 3.8+.
- PostgreSQL 10+, PostGIS 2.5+ and GDAL 3.0+ are required now.
- Synchronization of translations with POEditor.
- Yandex Maps-based address search on the webmap.

**3.9.0 released on 11 Aug 2021**

- Simple tool for previewing resources on the map.
- Resource quick search tool in the page header.
- Disable/enable address search via settings in the control panel.
- Ability to constraint address search area by web map initial extent.
- Zoom to a better extent from address search and bookmark panel.
- Language autodetection, per-user language setting, and support for the external translation files.
- Automatic downsampling of a social preview image to 1600x630 pixels.
- Better support for KML: LIBKML GDAL driver is used when available.
- Filtering features by ID in feature REST API.
- Layers with an “id” field can be loaded if the field has an integer type.
- Information about available distribution versions in the control panel.
- Experimental storage accounting and estimation subsystem.

**3.8.0 released on 12 May 2021**

- Ability to constraint a web map to the default extent.

- More length and area units in web map settings.
- Automatic correction of errors during the creation of a vector layer.
- Support for creation of vector layers from GML and KML files.
- User login is case insensitive when logging in.
- Configuration option for disabling social networks sharing buttons.
- Performance improvements in geometry handling and rendering, especially when converting between WKT and WKB formats.
- Performance improvements in tile cache component.
- Improved word wrapping in web map identification popup.
- Minimum and maximum scale restrictions in WMS server.
- Experimental integration of modern JavaScript and Webpack.
- Quota for the maximum number of enabled users.
- OpenLayers library upgraded to 6.5.0.
- OAuth server logout support via logout redirect endpoint.

### **3.7.0**

- Add database migrations framework and automatic migrations applying.
- External access links for styles, web maps (TMS), and feature layers (MVT).
- Experimental WFS client and raster mosaic, which is disabled by default.
- Add support of 1.1.0 version in WFS server implementation.
- Improved handling of NODATA values in raster layer and raster style.
- Compression level of PNG images is set to 3, which is much faster.
- Performance improvements and better concurrency for tile cache.
- New “CSV for Microsoft Excel” export format for better Excel compatibility.
- Fix infinite wait of database lock, including during vector layer deletion.
- Improved handling of invalid JSON bodies in RESP API, now the correct error message is returned.
- Vector layer export to MapInfo MIF/MID format.
- Vector layer export to Panorama SXF format.

### **3.6.0**

- Major improvements and bug fixes in WFS protocol implementation.
- Permission model changes: now any action on resource requires read permission from scope resource on the resource and its parent.
- PostGIS layer extent calculation and improved extent calculation in vector layer.
- Vector layer export to GeoPackage format.
- Faster processing of empty tiles and images.

- Tile cache and webmap annotations are enabled by default.
- Command to delete orphaned vector layer tables.
- HTTP API with resource permissions explanation.
- Support for like, geom and extensions in feature layer REST API.
- Support for GeoJSON files in ZIP-archive and faster ZIP-archive unpacking.
- Clickable resource links in webmap, WMS and WFS services.
- Ability to disable SSL certificate check for TMS connection.
- Lookup table component is part of nextgisweb core package nextgisweb.
- Fix TMS layer tile composition in case of extent outside the bounds.
- Fix GDAL > 3 compability issues, including axis orientation.
- SVG marker library resource available to renderers.

### **3.5.0**

- Raster layer export to GeoTIFF, ERDAS IMAGINE and Panorama RMF formats.
- Customizable link preview for resources.
- Improved resource picker: inappropriate resources are disabled now.
- New implementation of WFS server which fixes many bugs.
- Quad-key support in TMS connection and layer.
- Support for geom\_format and srs in feature layer REST API (POST / PUT requests).
- Session-based OAuth authentication with token refresh support.
- Delete users and groups via REST API.
- Track timestamps of user's last activity.
- Customization of web map identify popup via control panel.
- Speedup cleanup of file storage maintenance and cleanup.
- Fix bulk feature deletion API when passing an empty list.
- Fix bug in CORS implementation for requests returning errors.
- Fix coordinates display format in web map identification popup.
- Fix tile distortion issue for raster styles

### **3.4.2**

- Fix WMS layer creation.

### **3.4.1**

- Fix layout scroll bug in vector layer fields editing.

### **3.4.0**

- New tus-based file uploader. Check for size limits before starting an upload.

- Server-side TMS-client. New resource types: TMS connection and TMS layer.
- Create, delete and reorder fields for existing vector layer.
- Improved Sentry integration.
- WMS service layer ordering.
- Stay on the same page after login.
- Error messages improvements on trying to: render non-existing layer, access non-existing attachment or write a geometry to a layer with a different geometry type.

**2020-06-30 release**

- General. Add/remove fields of attributes table.
- General. Reorder fields of attributes table.

**2020-06-24 release**

- General. Support raster pyramids for QGIS style for raster layers.

**2020-06-05 release**

- General. New data uploader. Check for size limits before starting an upload.
- General. Stay on the same page on login to the same page.
- General. Human readable error on trying to access non-existing attachment.
- General. Human readable error on trying to render non-existing layer.
- General. Human readable error on trying to write a geometry to a layer with a different geometry type.
- General. Improve handling rasters with huge size.
- Extensions. Whitelabel - new extension to set corporate interface elements (logos, links, company mentions etc.).

**2020-04-16 release**

- For developers. Single feature extent endpoint. Example: <https://demo.nextgis.com/api/resource/1735/feature/1/extent>
- For developers. Ordering for data filtering. Reverse ordering and two and more field ordering are supported. Example: [https://demo.nextgis.com/api/resource/1731/feature/?limit=10&order\\_by=NAME,-LEISURE](https://demo.nextgis.com/api/resource/1731/feature/?limit=10&order_by=NAME,-LEISURE)
- Admin GUI. Prohibit blocking of the last (the only) administrator in the system.

**2020-03-03 release**

- Services. Fix declared CRS for WMS containing raster layers.
- Services. Fix RGBA conversion to JPG on WMS requests.

**2020-02-12 release**

- Storage. Support for storing Z-type geometries, PolygonZ etc.
- For developers. API can accept and provide Z-type geometries.

**2019-11-18 release**

- Storage. Support for numeric-type fields on layers added from external PostgreSQL/PostGIS
- Search. Improve address search (uses Nominatim)
- For developers. In addition to style IDs Web Map API now provides layer IDs.

**2019-11-06 release**

- Printing. Zooming with the box now correctly fit the zoomed area with chosen paper format (A4 etc.)

**2019-10-17 release**

- CRS. Import from ESRI WKT (in addition to OGC WKT)
- CRS. Unicode in CRS names is now supported.
- CRS. Identification doesn't crash anymore if CRS transformation was not possible.

**2019-08-12 release**

- Web Map. Search for integer values in added to the embedded feature table.
- Web Map. Improved zooming on a point from the embedded feature table.
- Web Map. While editing the embedded feature table is correctly updated to show newly added features.

## EXTENSIONS

### 35.1 General Information

The following extensions are available to increase the functionality of the software:

1. **Basemaps** - adding and managing basemaps.
2. **File buckets** - file sets, adds ability to upload any files, including non-geospatial ones.
3. **QGIS** - map rendering with QGIS.
4. **MapServer** - map rendering with MapServer.
5. **Audit** - logging user events such as log in/out, resource addition or removal etc.
6. **NextGIS ID on premise** - enterprise authentication and authorization features, such as LDAP or OAuth.

Specific extensions may require installation of additional software components.

## **GNU GENERAL PUBLIC LICENSE, VERSION 2**

### **GNU GENERAL PUBLIC LICENSE**

Version 2, June 1991

Copyright (C) 1989, 1991 Free Software Foundation, Inc. 51 Franklin Street, Fifth Floor, Boston, MA 02110-1301, USA

Everyone is permitted to copy and distribute verbatim copies of this license document, but changing it is not allowed.

### **A.1 Preamble**

The licenses for most software are designed to take away your freedom to share and change it. By contrast, the GNU General Public License is intended to guarantee your freedom to share and change free software—to make sure the software is free for all its users. This General Public License applies to most of the Free Software Foundation's software and to any other program whose authors commit to using it. (Some other Free Software Foundation software is covered by the GNU Lesser General Public License instead.) You can apply it to your programs, too.

When we speak of free software, we are referring to freedom, not price. Our General Public Licenses are designed to make sure that you have the freedom to distribute copies of free software (and charge for this service if you wish), that you receive source code or can get it if you want it, that you can change the software or use pieces of it in new free programs; and that you know you can do these things.

To protect your rights, we need to make restrictions that forbid anyone to deny you these rights or to ask you to surrender the rights. These restrictions translate to certain responsibilities for you if you distribute copies of the software, or if you modify it.

For example, if you distribute copies of such a program, whether gratis or for a fee, you must give the recipients all the rights that you have. You must make sure that they, too, receive or can get the source code. And you must show them these terms so they know their rights.

We protect your rights with two steps: (1) copyright the software, and (2) offer you this license which gives you legal permission to copy, distribute and/or modify the software.

Also, for each author's protection and ours, we want to make certain that everyone understands that there is no warranty for this free software. If the software is modified by someone else and passed on, we want its recipients to know that what they have is not the original, so that any problems introduced by others will not reflect on the original authors' reputations.

Finally, any free program is threatened constantly by software patents. We wish to avoid the danger that redistributors of a free program will individually obtain patent licenses, in effect making the program proprietary. To prevent this, we have made it clear that any patent must be licensed for everyone's free use or not licensed at all.

The precise terms and conditions for copying, distribution and modification follow.

## **A.2 TERMS AND CONDITIONS FOR COPYING, DISTRIBUTION AND MODIFICATION**

0. This License applies to any program or other work which contains a notice placed by the copyright holder saying it may be distributed under the terms of this General Public License. The "Program", below, refers to any such program or work, and a "work based on the Program" means either the Program or any derivative work under copyright law: that is to say, a work containing the Program or a portion of it, either verbatim or with modifications and/or translated into another language. (Hereinafter, translation is included without limitation in the term "modification".) Each licensee is addressed as "you".

Activities other than copying, distribution and modification are not covered by this License; they are outside its scope. The act of running the Program is not restricted, and the output from the Program is covered only if its contents constitute a work based on the Program (independent of having been made by running the Program). Whether that is true depends on what the Program does.

1. You may copy and distribute verbatim copies of the Program's source code as you receive it, in any medium, provided that you conspicuously and appropriately publish on each copy an appropriate copyright notice and disclaimer of warranty; keep intact all the notices that refer to this License and to the absence of any warranty; and give any other recipients of the Program a copy of this License along with the Program.

You may charge a fee for the physical act of transferring a copy, and you may at your option offer warranty protection in exchange for a fee.

2. You may modify your copy or copies of the Program or any portion of it, thus forming a work based on the Program, and copy and distribute such modifications or work under the terms of Section 1 above, provided that you also meet all of these conditions:
  - a) You must cause the modified files to carry prominent notices stating that you changed the files and the date of any change.
  - b) You must cause any work that you distribute or publish, that in whole or in part contains or is derived from the Program or any part thereof, to be

licensed as a whole at no charge to all third parties under the terms of this License.

- c) If the modified program normally reads commands interactively when run, you must cause it, when started running for such interactive use in the most ordinary way, to print or display an announcement including an appropriate copyright notice and a notice that there is no warranty (or else, saying that you provide a warranty) and that users may redistribute the program under these conditions, and telling the user how to view a copy of this License. (Exception: if the Program itself is interactive but does not normally print such an announcement, your work based on the Program is not required to print an announcement.)

These requirements apply to the modified work as a whole. If identifiable sections of that work are not derived from the Program, and can be reasonably considered independent and separate works in themselves, then this License, and its terms, do not apply to those sections when you distribute them as separate works. But when you distribute the same sections as part of a whole which is a work based on the Program, the distribution of the whole must be on the terms of this License, whose permissions for other licensees extend to the entire whole, and thus to each and every part regardless of who wrote it.

Thus, it is not the intent of this section to claim rights or contest your rights to work written entirely by you; rather, the intent is to exercise the right to control the distribution of derivative or collective works based on the Program.

In addition, mere aggregation of another work not based on the Program with the Program (or with a work based on the Program) on a volume of a storage or distribution medium does not bring the other work under the scope of this License.

- 3. You may copy and distribute the Program (or a work based on it, under Section 2) in object code or executable form under the terms of Sections 1 and 2 above provided that you also do one of the following:
  - a) Accompany it with the complete corresponding machine-readable source code, which must be distributed under the terms of Sections 1 and 2 above on a medium customarily used for software interchange; or,
  - b) Accompany it with a written offer, valid for at least three years, to give any third party, for a charge no more than your cost of physically performing source distribution, a complete machine-readable copy of the corresponding source code, to be distributed under the terms of Sections 1 and 2 above on a medium customarily used for software interchange; or,
  - c) Accompany it with the information you received as to the offer to distribute corresponding source code. (This alternative is allowed only for noncommercial distribution and only if you received the program in object code or executable form with such an offer, in accord with Subsection b above.)

The source code for a work means the preferred form of the work for making modifications to it. For an executable work, complete source code means all the source code for all modules it contains, plus any associated interface definition files, plus the scripts used to control compilation and installation of the executable. However, as a special exception, the source code distributed need not include

anything that is normally distributed (in either source or binary form) with the major components (compiler, kernel, and so on) of the operating system on which the executable runs, unless that component itself accompanies the executable.

If distribution of executable or object code is made by offering access to copy from a designated place, then offering equivalent access to copy the source code from the same place counts as distribution of the source code, even though third parties are not compelled to copy the source along with the object code.

4. You may not copy, modify, sublicense, or distribute the Program except as expressly provided under this License. Any attempt otherwise to copy, modify, sublicense or distribute the Program is void, and will automatically terminate your rights under this License. However, parties who have received copies, or rights, from you under this License will not have their licenses terminated so long as such parties remain in full compliance.
5. You are not required to accept this License, since you have not signed it. However, nothing else grants you permission to modify or distribute the Program or its derivative works. These actions are prohibited by law if you do not accept this License. Therefore, by modifying or distributing the Program (or any work based on the Program), you indicate your acceptance of this License to do so, and all its terms and conditions for copying, distributing or modifying the Program or works based on it.
6. Each time you redistribute the Program (or any work based on the Program), the recipient automatically receives a license from the original licensor to copy, distribute or modify the Program subject to these terms and conditions. You may not impose any further restrictions on the recipients' exercise of the rights granted herein. You are not responsible for enforcing compliance by third parties to this License.
7. If, as a consequence of a court judgment or allegation of patent infringement or for any other reason (not limited to patent issues), conditions are imposed on you (whether by court order, agreement or otherwise) that contradict the conditions of this License, they do not excuse you from the conditions of this License. If you cannot distribute so as to satisfy simultaneously your obligations under this License and any other pertinent obligations, then as a consequence you may not distribute the Program at all. For example, if a patent license would not permit royalty-free redistribution of the Program by all those who receive copies directly or indirectly through you, then the only way you could satisfy both it and this License would be to refrain entirely from distribution of the Program.

If any portion of this section is held invalid or unenforceable under any particular circumstance, the balance of the section is intended to apply and the section as a whole is intended to apply in other circumstances.

It is not the purpose of this section to induce you to infringe any patents or other property right claims or to contest validity of any such claims; this section has the sole purpose of protecting the integrity of the free software distribution system, which is implemented by public license practices. Many people have made generous contributions to the wide range of software distributed through that system in reliance on consistent application of that system; it is up to the author/donor to decide if he or she is willing to distribute software through any other system and a licensee cannot impose that choice.

This section is intended to make thoroughly clear what is believed to be a consequence of the rest of this License.

8. If the distribution and/or use of the Program is restricted in certain countries either by patents or by copyrighted interfaces, the original copyright holder who places the Program under this License may add an explicit geographical distribution limitation excluding those countries, so that distribution is permitted only in or among countries not thus excluded. In such case, this License incorporates the limitation as if written in the body of this License.
9. The Free Software Foundation may publish revised and/or new versions of the General Public License from time to time. Such new versions will be similar in spirit to the present version, but may differ in detail to address new problems or concerns.

Each version is given a distinguishing version number. If the Program specifies a version number of this License which applies to it and “any later version”, you have the option of following the terms and conditions either of that version or of any later version published by the Free Software Foundation. If the Program does not specify a version number of this License, you may choose any version ever published by the Free Software Foundation.

10. If you wish to incorporate parts of the Program into other free programs whose distribution conditions are different, write to the author to ask for permission. For software which is copyrighted by the Free Software Foundation, write to the Free Software Foundation; we sometimes make exceptions for this. Our decision will be guided by the two goals of preserving the free status of all derivatives of our free software and of promoting the sharing and reuse of software generally.

### **A.3 NO WARRANTY**

11. BECAUSE THE PROGRAM IS LICENSED FREE OF CHARGE, THERE IS NO WARRANTY FOR THE PROGRAM, TO THE EXTENT PERMITTED BY APPLICABLE LAW. EXCEPT WHEN OTHERWISE STATED IN WRITING THE COPYRIGHT HOLDERS AND/OR OTHER PARTIES PROVIDE THE PROGRAM “AS IS” WITHOUT WARRANTY OF ANY KIND, EITHER EXPRESSED OR IMPLIED, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE. THE ENTIRE RISK AS TO THE QUALITY AND PERFORMANCE OF THE PROGRAM IS WITH YOU. SHOULD THE PROGRAM PROVE DEFECTIVE, YOU ASSUME THE COST OF ALL NECESSARY SERVICING, REPAIR OR CORRECTION.
12. IN NO EVENT UNLESS REQUIRED BY APPLICABLE LAW OR AGREED TO IN WRITING WILL ANY COPYRIGHT HOLDER, OR ANY OTHER PARTY WHO MAY MODIFY AND/OR REDISTRIBUTE THE PROGRAM AS PERMITTED ABOVE, BE LIABLE TO YOU FOR DAMAGES, INCLUDING ANY GENERAL, SPECIAL, INCIDENTAL OR CONSEQUENTIAL DAMAGES ARISING OUT OF THE USE OR INABILITY TO USE THE PROGRAM (INCLUDING BUT NOT LIMITED TO LOSS OF DATA OR DATA BEING RENDERED INACCURATE OR LOSSES SUSTAINED BY YOU OR THIRD PARTIES OR A FAILURE OF THE

PROGRAM TO OPERATE WITH ANY OTHER PROGRAMS), EVEN IF SUCH HOLDER OR OTHER PARTY HAS BEEN ADVISED OF THE POSSIBILITY OF SUCH DAMAGES.