

# 4. INSPIRE ESPUS školenie „QGIS“

Webové služby

**4. INSPIRE ESPUS  
školenie  
"QGIS"**

**Online formát**  
Termín: 17.08.2022  
Miesto: Online / MS Teams

Operačný program  
Efektívna  
verejná správa

 **Európska únia**  
Európsky sociálny fond

Tento projekt je podporený z Európskeho sociálneho fondu





MINISTERSTVO

ŽIVOTNÉHO PROSTREDIA  
SLOVENSKEJ REPUBLIKY



ESPUS

Efektívna správa priestorových údajov a služieb

## 4. INSPIRE ESPUS školenie „QGIS“ Webové služby

17.08.2022



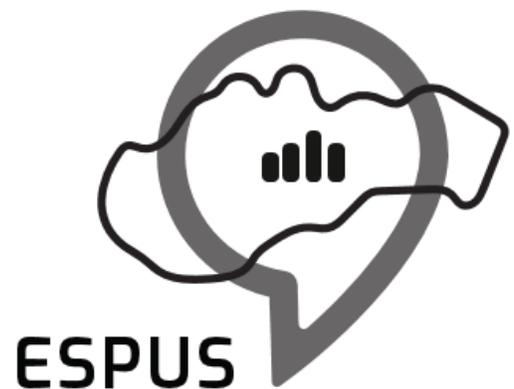
**Európska únia**  
Európsky sociálny fond

# Prehľad

## Webové služby

- WMS
- WMTS
- WFS
- WCS
- Atom feed
- GeoData CZ/SK Plugin
- Publikovanie služieb



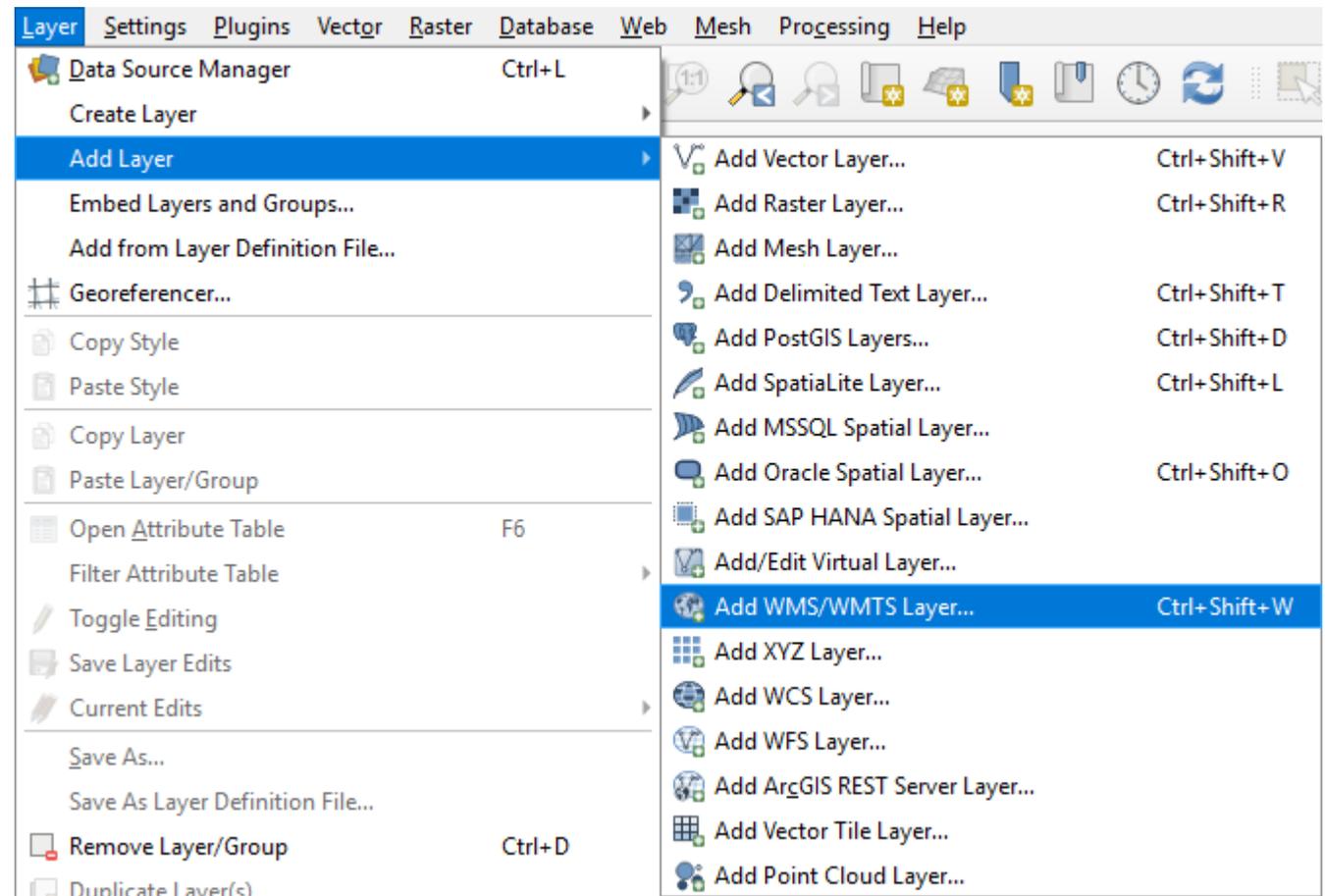


Efektívna správa priestorových údajov a služieb

## Webové služby

# WMS

- Štandard vyvinutý združením Open Geospatial Consortium (OGC)
- Rastrové mapy
  - JPEG, PNG, TIFF
- Pripojenie WMS
  - Layer ? Add Layer ? Add WMS/WMTS Layer
  - Ctrl + Shift + W
  - Open Data Source Manager ? WMS/WMTS

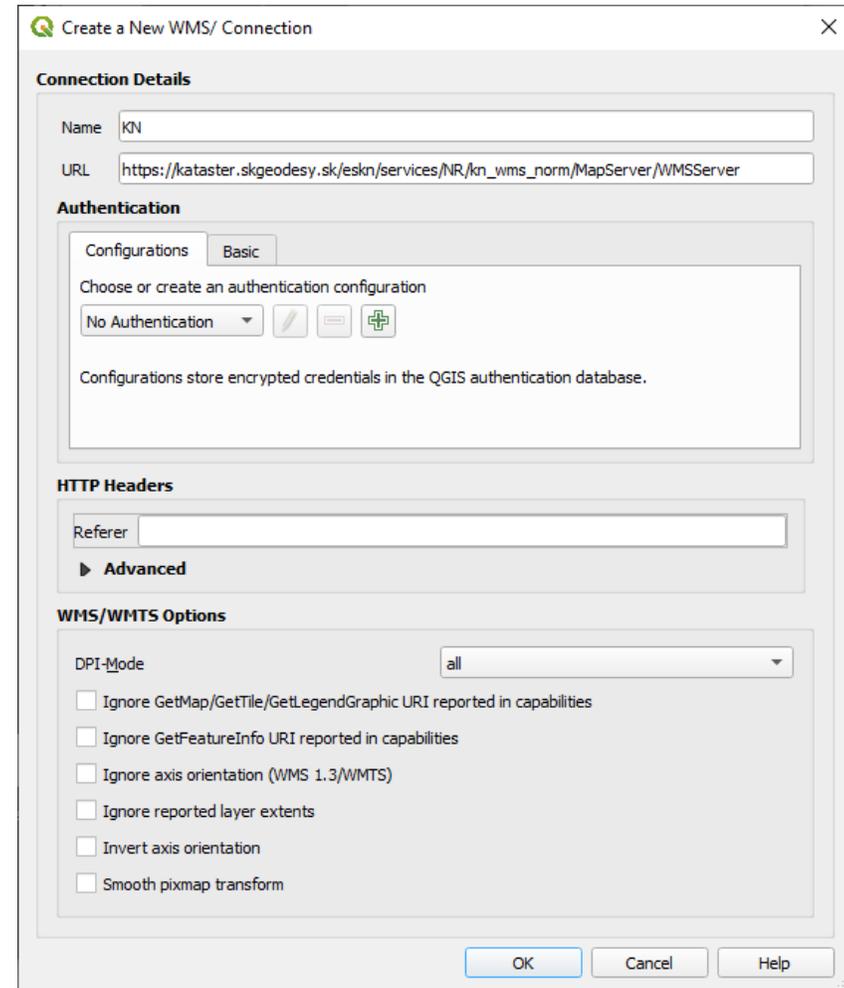
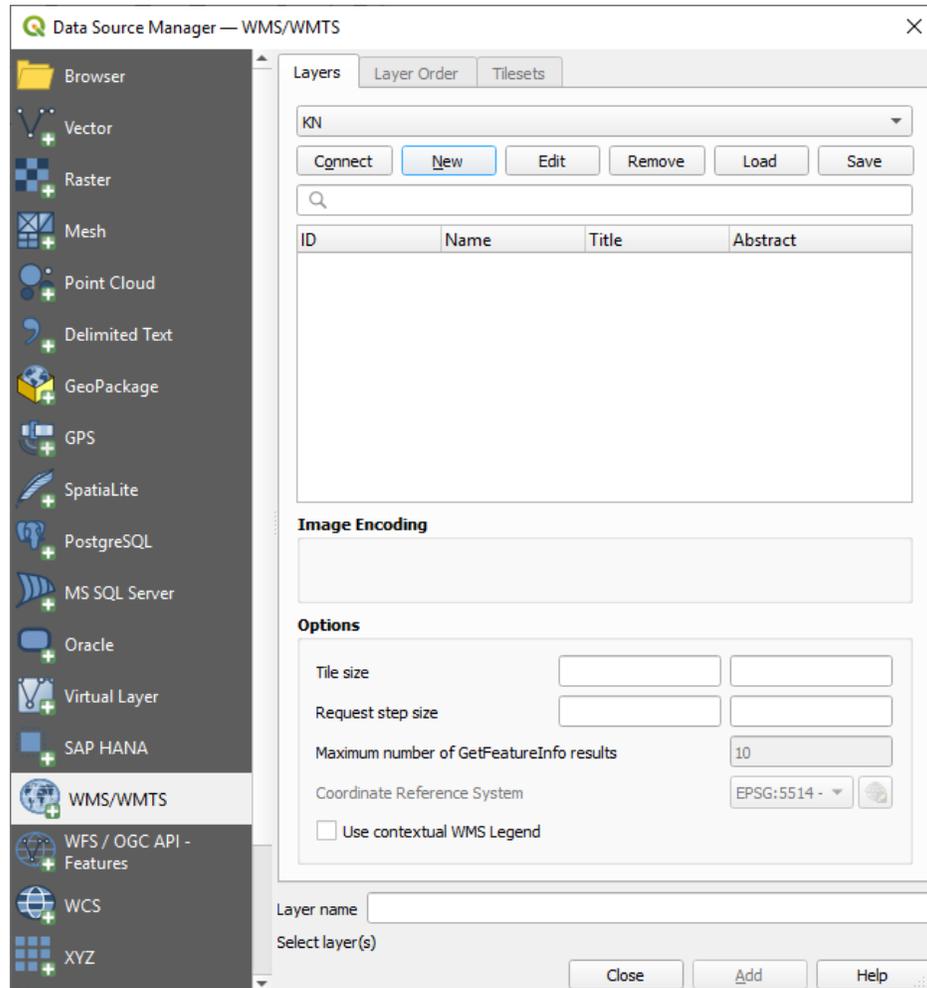


# WMS

- New - vytvorenie nového pripojenie
  - Name - zadať názov služby
  - URL - zadať adresa služby
  - Authentication – v prípade zabezpečených služieb v záložke Basic zadať meno (User name) a heslo (Password)
  - Stlačiť tlačidlo OK
- Následne stlačiť tlačidlo Connect

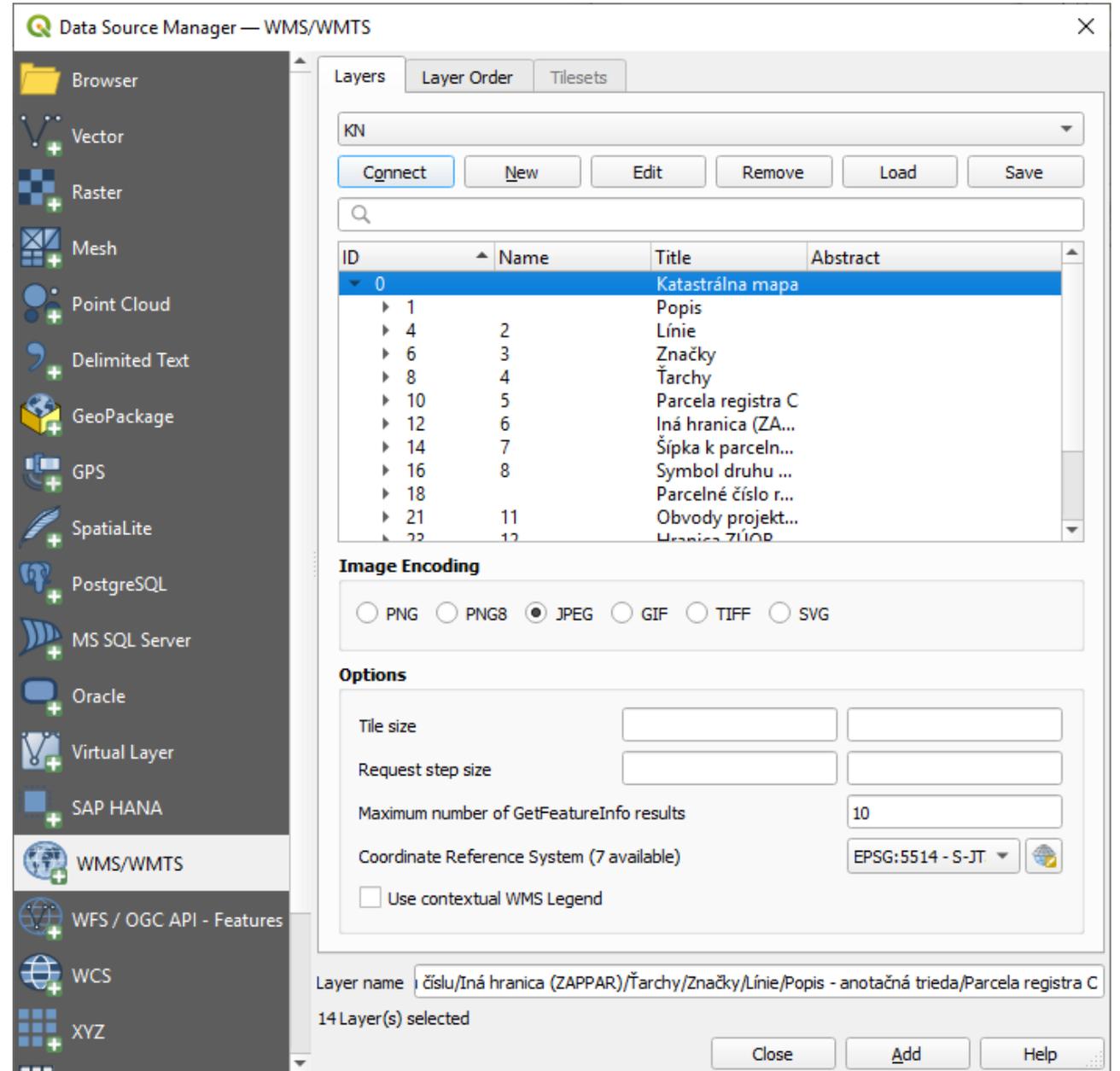
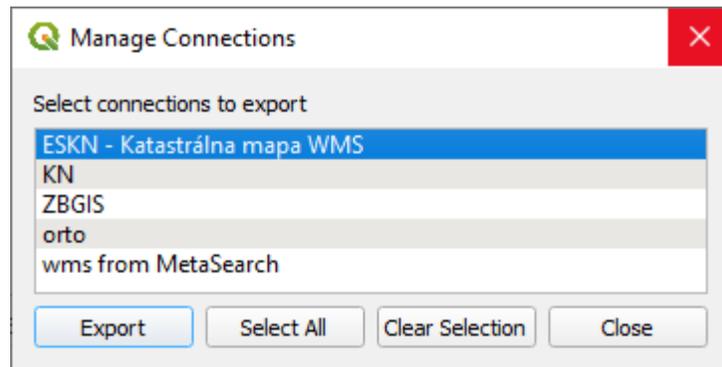
# WMS

- [https://kataster.skgeodesy.sk/eskn/services/NR/kn\\_wms\\_norm/MapServer/WMSServer](https://kataster.skgeodesy.sk/eskn/services/NR/kn_wms_norm/MapServer/WMSServer)



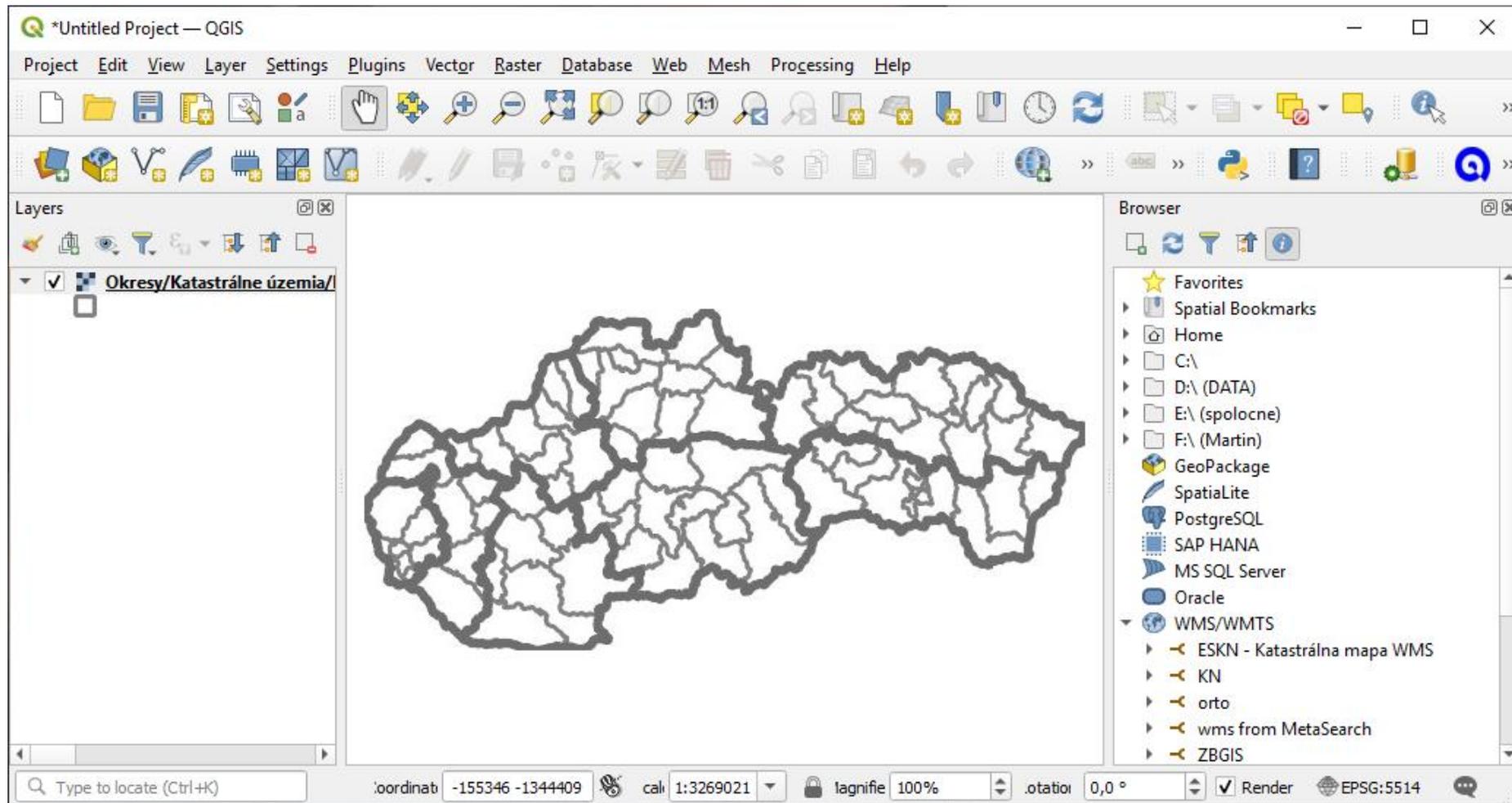
# WMS

- Vrstvy
  - Poradie vrstiev
- Formát
- Súradnicový systém
- Export nastavení



# WMS

- Pripojená služba



# WMS

- Identifikácia

Identify Results

Feature	Value
▸ Hranica ZÚOB	0
▸ Iná hranica (ZAPPAR)	1
▸ Katastrálne územia	2
▸ Kraje	3
▸ Línie	4
▸ Obvody projektov	5
▸ Okresy	6
▾ Parcela registra C	7

Format: Html

5

FeatureInfoCollection - layer name: '5'

ČísloparcelyregistraC	ID	Kódkatastrálnehoúzemia	Geometria	Názovkatastrálnehoúzemia	Výr
540/2	1320913642	833657	Polygon	Lučatín	

(Derived)

- Symbol druhu pozemku 8
- Značky 9
- Šípka k parcelnému číslu 10
- Ťarchy 11

Mode: Top Down

View: Tree

- Informácie o službe

Layer Properties — Kraje/Okresy/Katastrálne územia/Hranica ZÚOB/Obvody projektov/Parcelné číslo registra C - anota...

Information

Information from provider

**Extent** -591311.250000000000000000,-1334762.0400000000372529 : -165436.88000000000046566,-1132697.4199999999254942

**Width** n/a

**Height** n/a

**Data type** Could not determine raster data type.

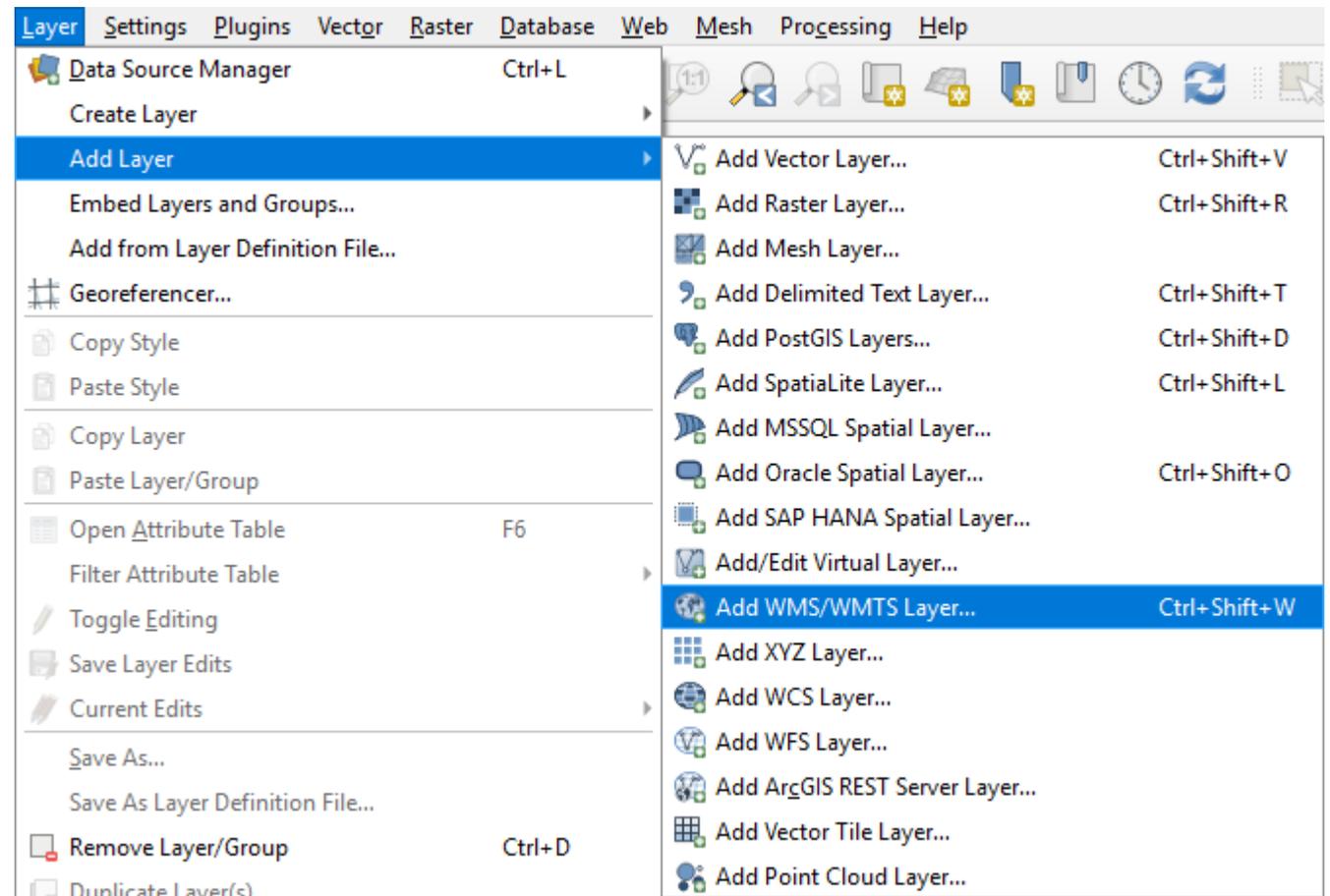
**WMS Info** [Selected Layers](#) [Other Layers](#)

Server Properties	
Property	Value
WMS Version	1.3.0
Title	Zobrazovacia služba WMS - katastrálna mapa
Abstract	Dynamická služba zobrazujúca údaje operátu KN (s.s. S-JTSK a Web Marcator)
Keywords	WMS, KN
Online Resource	-
Contact Person	GKÚ vedúci odboru Geodetický a kartografický ústav Bratislava
Fees	bez poplatkov
Access Constraints	© Úrad geodézie, kartografie a katastra SR
GetCapabilitiesUrl	https://kataster.skgeodesy.sk/eskn/services/NR/KN_WMS_norm/MapServer/WMS/Server?
GetMapUrl	https://kataster.skgeodesy.sk/eskn/services/NR/KN_WMS_norm/MapServer/Wms/Server?

Style OK Cancel Apply Help

# WMTS

- Štandard vyvinutý združením Open Geospatial Consortium (OGC)
- Rozdiely oproti WMS
  - Názov, cache, rýchlosť, vrstvy
- Pripojenie
  - Layer ? Add Layer ? Add WMS/WMTS Layer
  - Ctrl + Shift + W
  - Open Data Source Manager
    - ? WMS/WMTS

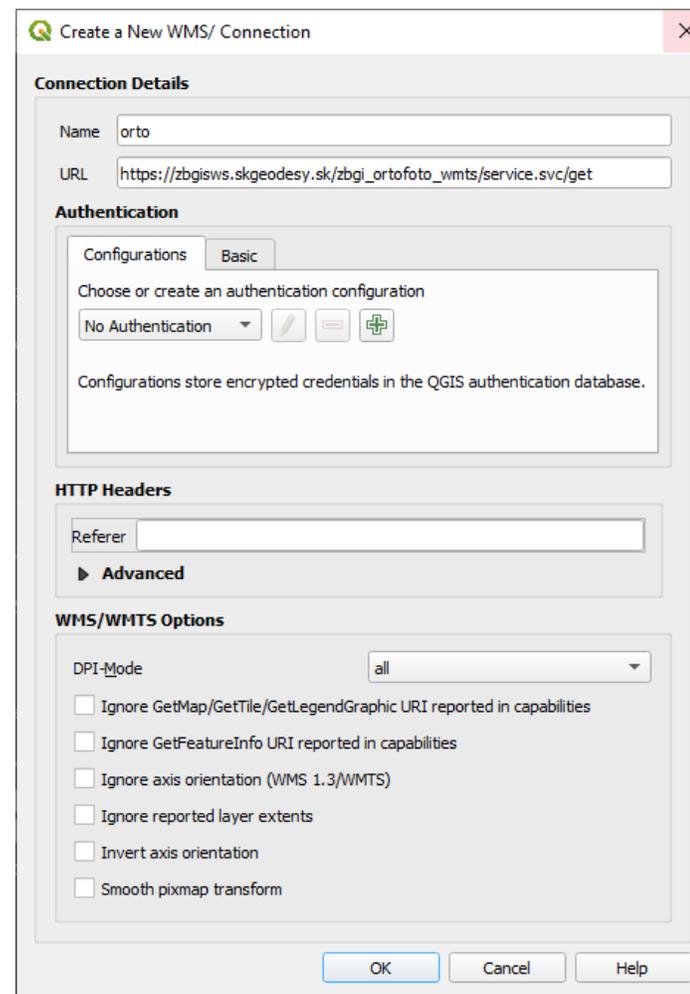
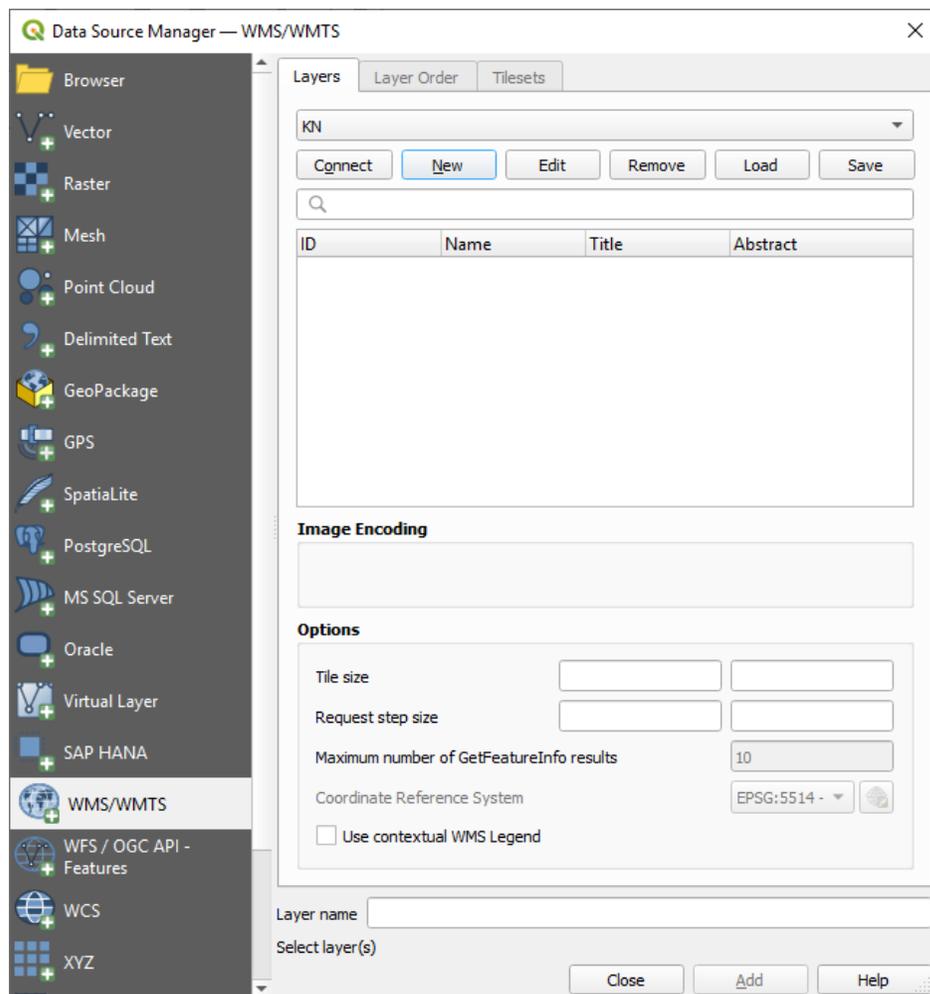


# WMTS

- New - vytvorenie nového pripojenie
  - Name - zadať názov služby
  - URL - zadať adresa služby
  - Authentication - v prípade zabezpečených služieb v záložke Basic zadať meno (User name) a heslo (Password)
  - Smooth pixmap transform - nastavenie vyhladzovania pixelov
  - Stlačiť tlačidlo OK
- Následne stlačiť tlačidlo Connect

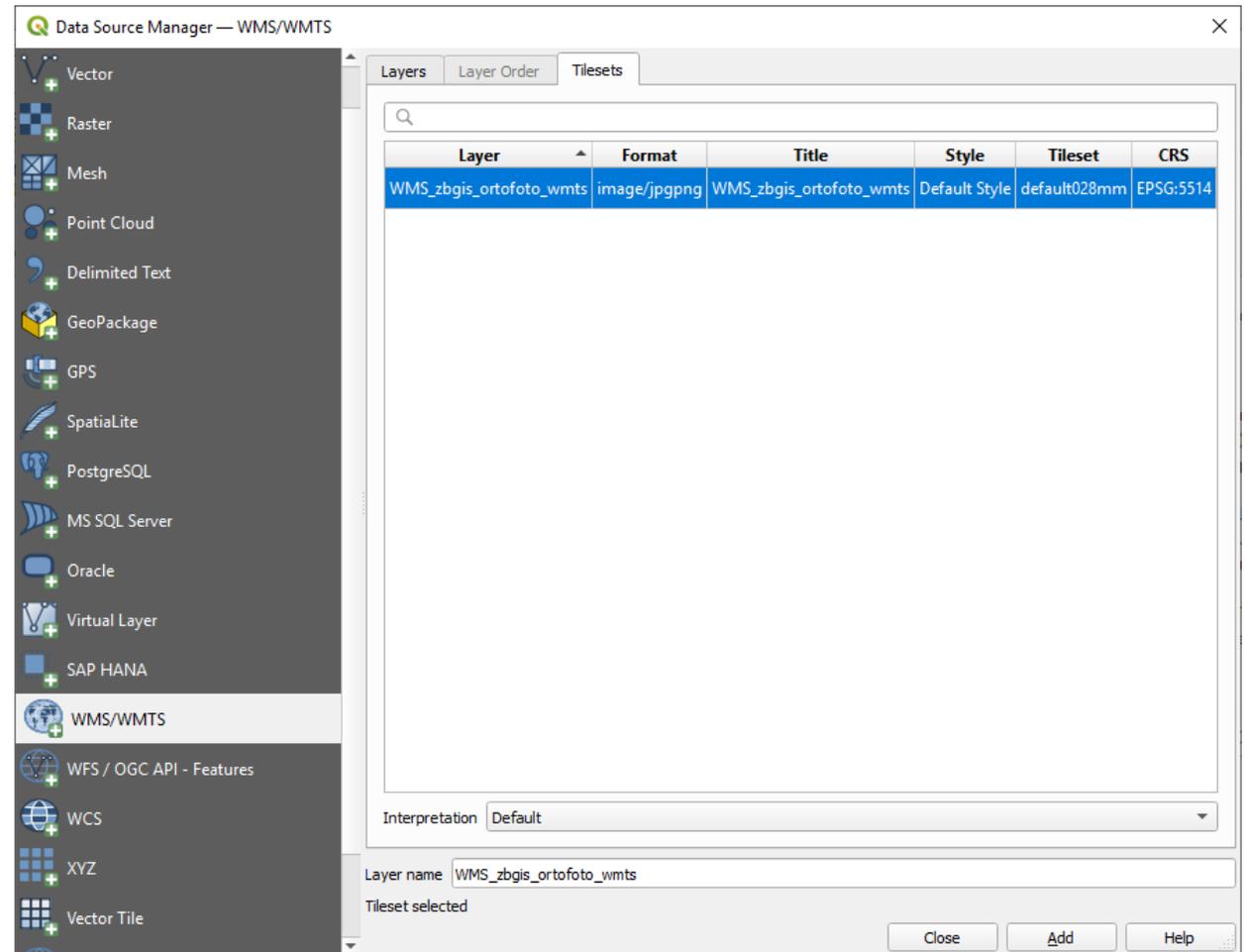
# WMTS

- [https://zbgisws.skgeodesy.sk/zbgis\\_ortofoto\\_wmts/service.svc/get](https://zbgisws.skgeodesy.sk/zbgis_ortofoto_wmts/service.svc/get)



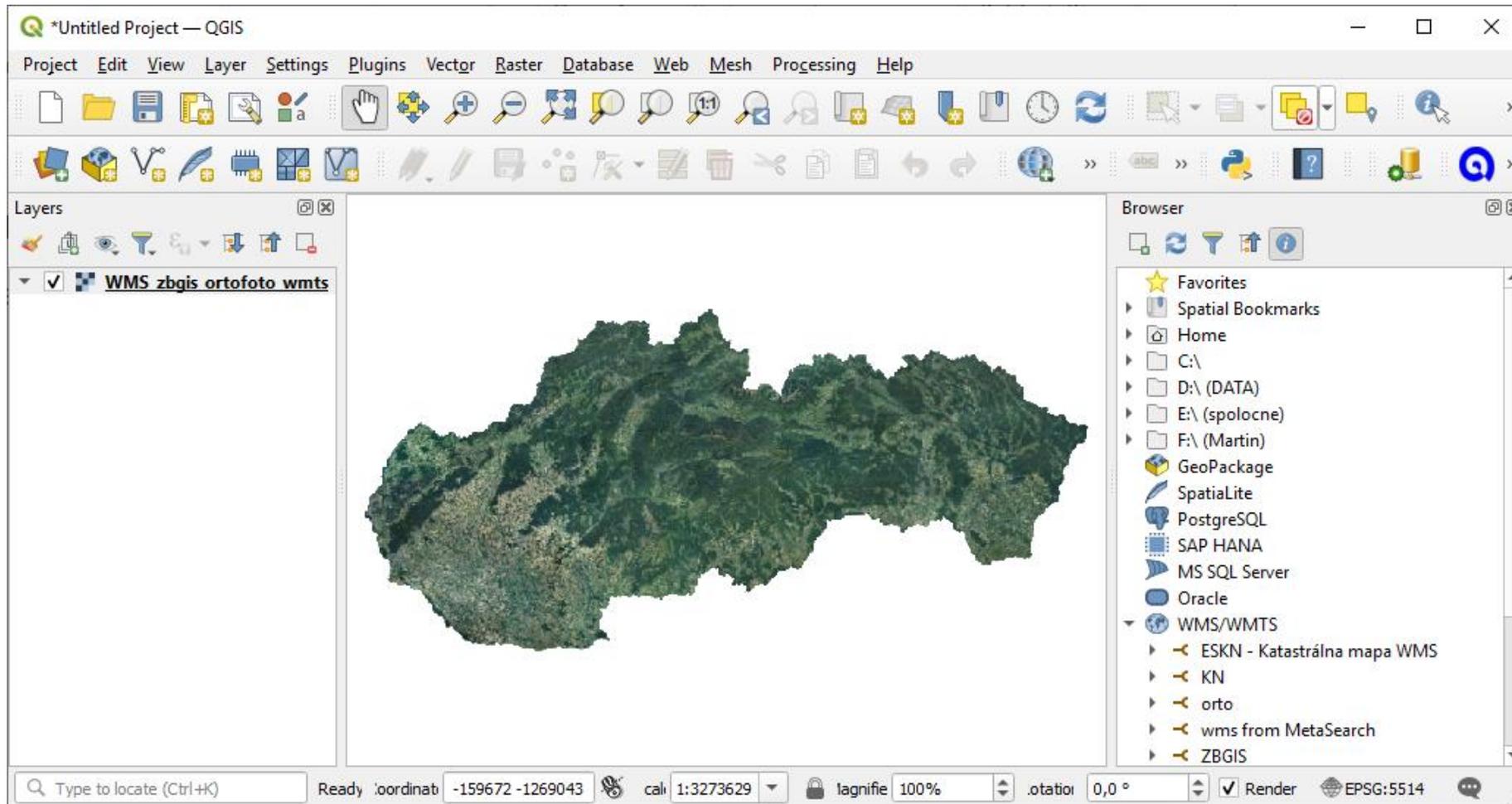
# WMTS

- Výber vrstvy
  - V záložke Tilesets vyberieme vrstvu
  - Pomocou Add pridáme do mapy



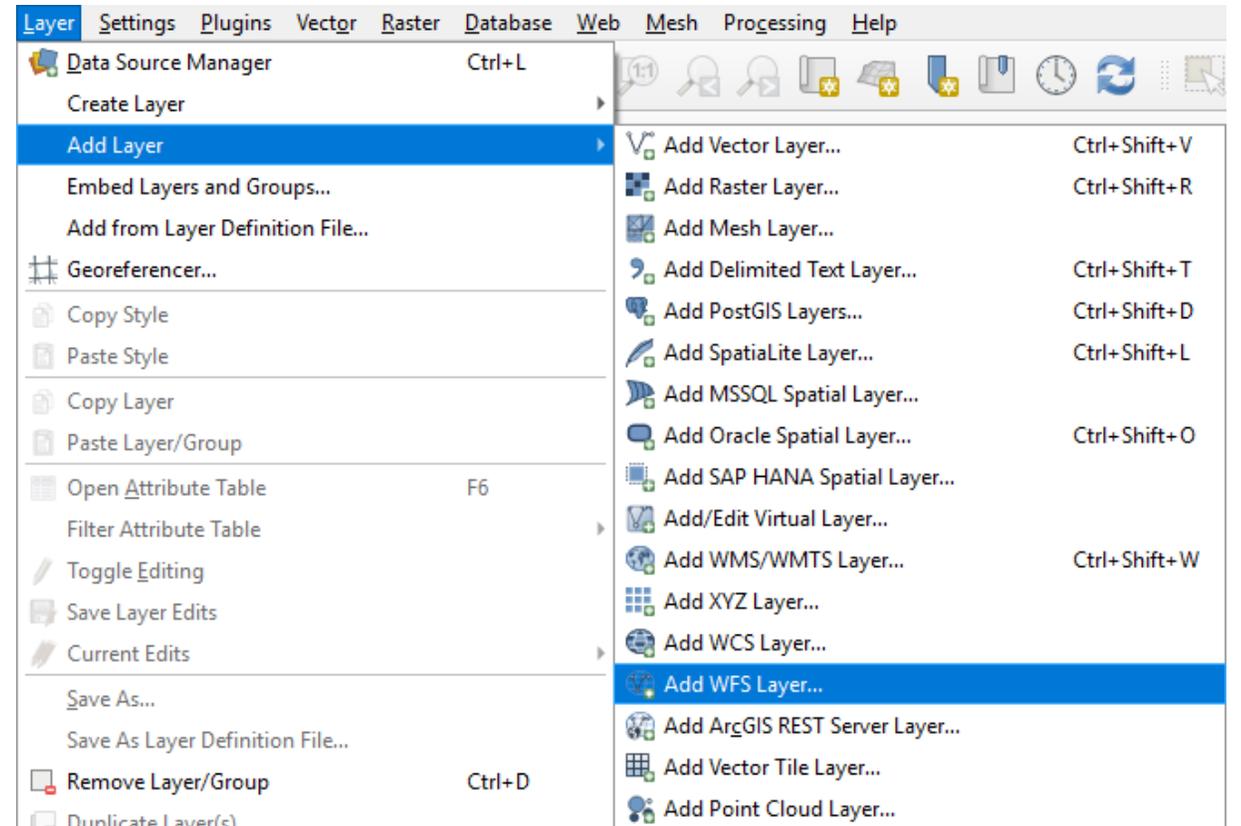
# WMTS

- Pripojená služba



# WFS

- Štandard vyvinutý združením Open Geospatial Consortium (OGC)
- Klient-server
- Vektory vo formáte GML
- Pripojenie WFS
  - Layer ? Add Layer ? Add WFS Layer
  - Open Data Source Manager ? WFS / OGC API - Features

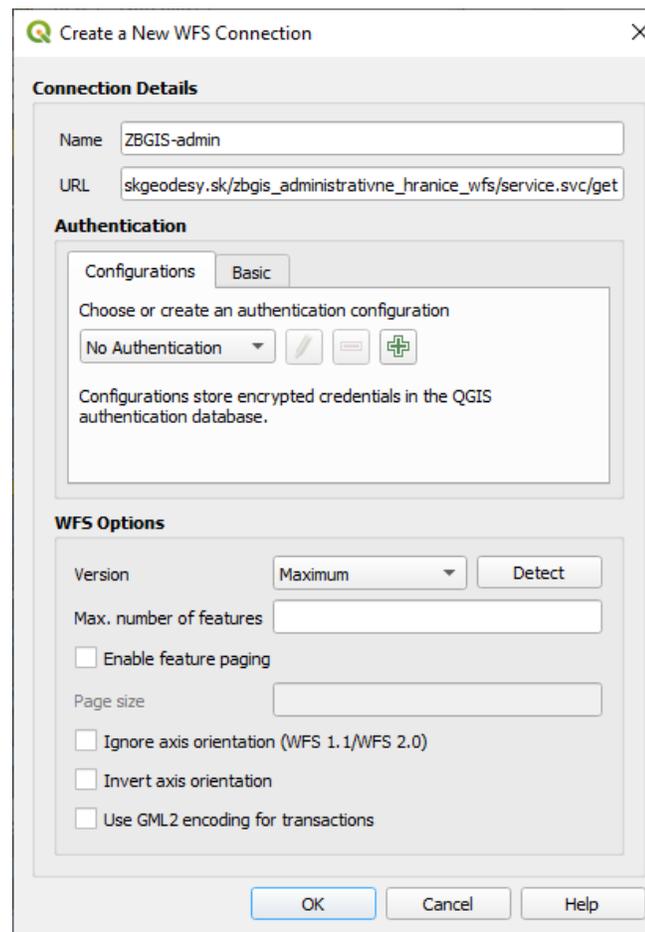
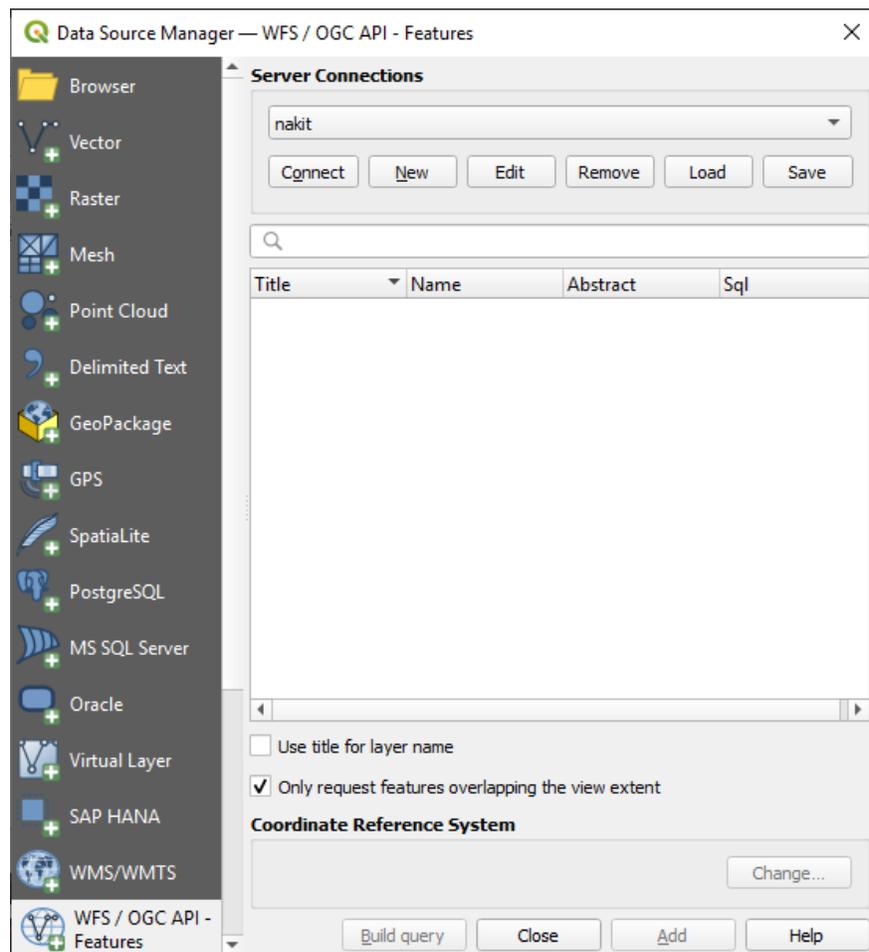


# WFS

- New - vytvorenie nového pripojenie
  - Name - zadať názov služby
  - URL - zadať adresa služby
  - Authentication - v prípade zabezpečených služieb v záložke Basic zadať meno (User name) a heslo (Password)
  - Version - výber verzie služby (Maximum)
  - Max. number of features - limit na počet objektov
  - Stlačiť tlačidlo OK
- Následne stlačiť tlačidlo Connect

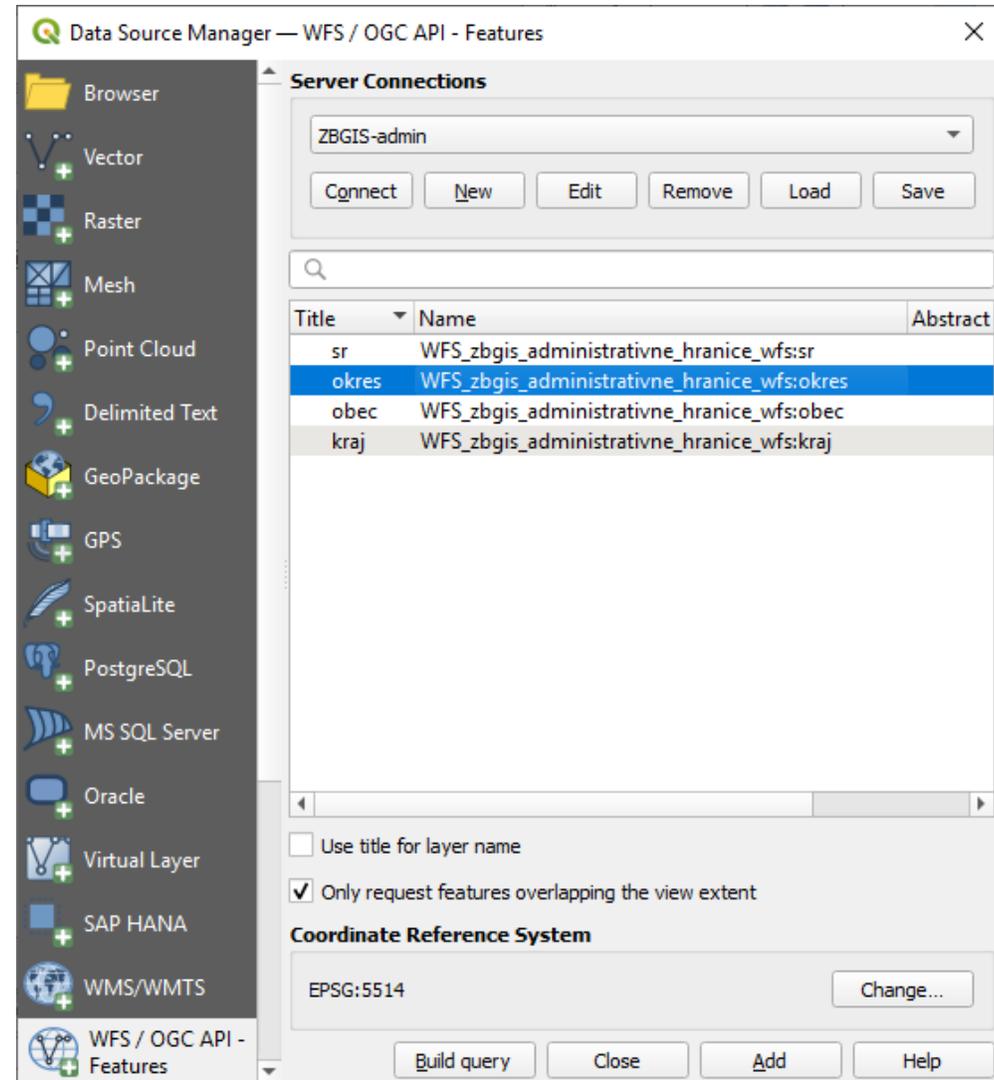
# WFS

- [https://zbgisws.skgeodesy.sk/zbgis\\_administrativne\\_hranice\\_wfs/service.svc/get](https://zbgisws.skgeodesy.sk/zbgis_administrativne_hranice_wfs/service.svc/get)



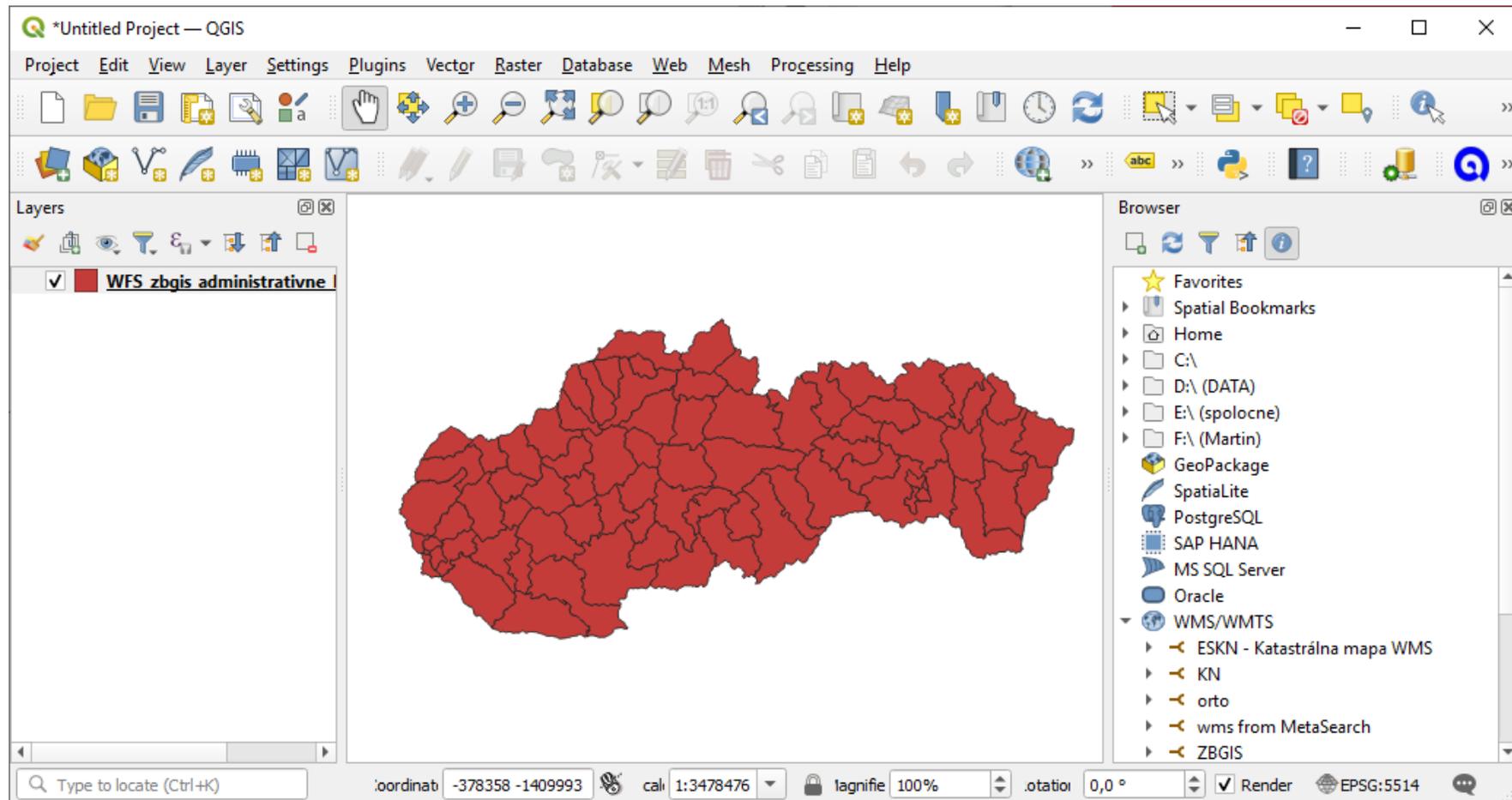
# WFS

- Vrstvy
- Extent
- Súradnicový systém



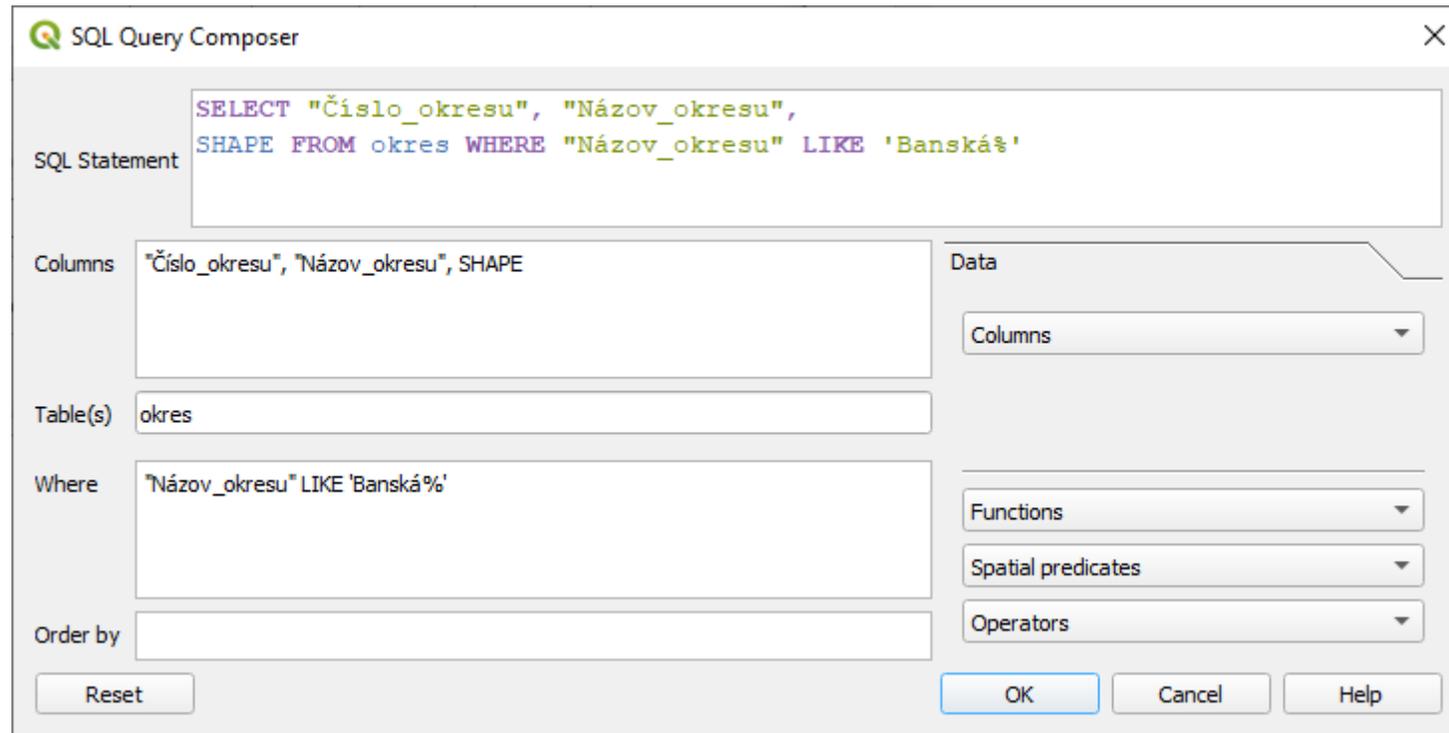
# WFS

- Pripojená služba



# WFS

- Výber objektov



SQL Query Composer

SQL Statement

```
SELECT "Číslo_okresu", "Názov_okresu",  
SHAPE FROM okres WHERE "Názov_okresu" LIKE 'Banská%'
```

Columns "Číslo\_okresu", "Názov\_okresu", SHAPE

Table(s) okres

Where "Názov\_okresu" LIKE 'Banská%'

Order by

Reset OK Cancel Help

Data

Columns

Functions

Spatial predicates

Operators

# WFS

- Výber objektov

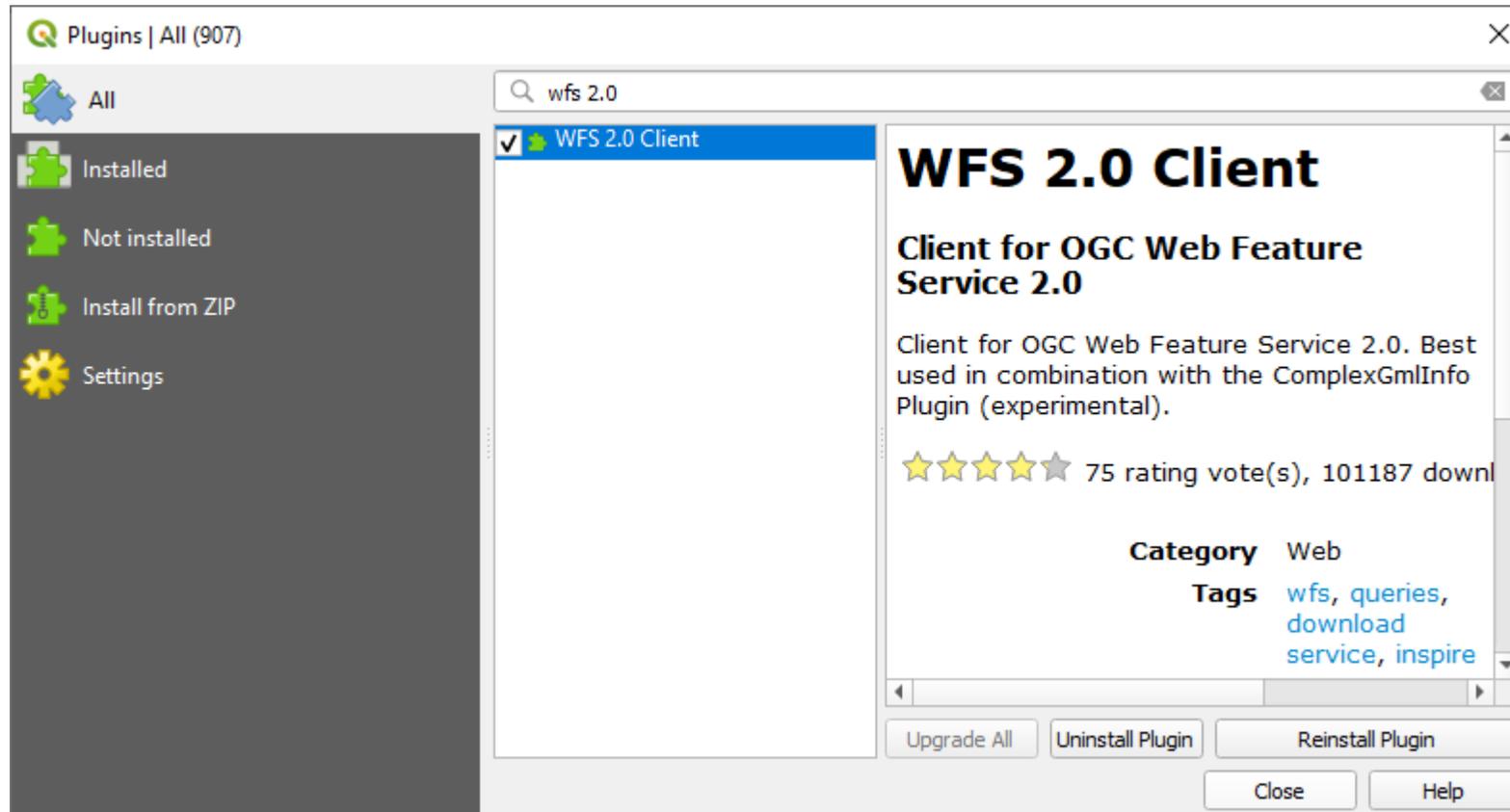
The screenshot displays the QGIS desktop environment. The main map window shows a yellow polygon representing a region. The 'Layers' panel on the left lists 'WFS\_zbgis\_administrativ'. A dialog box titled 'WFS\_zbgis\_administrativne\_hran...' is open, showing a table of features. The table has two columns: 'Číslo\_okresu' and 'Názov\_okresu'. The first row is highlighted with a green border, indicating it is selected.

Číslo_okresu	Názov_okresu
1	602 Banská Štiavnica
2	601 Banská Bystrica

The status bar at the bottom shows the current layer is '1 lege', the coordinate is '-198891 -1119163', the scale is '1:3478476', the projection is 'EPSG:5514', and the rendering is checked.

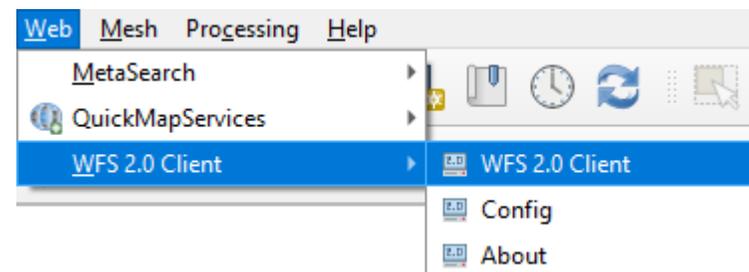
# WFS

- Pripojenie WFS pomocou WFS 2.0 Client



# WFS

- Web  WFS 2.0 Client  WFS 2.0 Client



WFS 2.0 Client - Version 0.9.11

**WFS 2.0 OnlineResource**

Authentication required

**FeatureTypes**

Use current Extent as Bounding Box Filter

**FeatureLimit**

**SRS**

SRS is set to EPSG: 5514

WFS 2.0 Client - Version 0.9.11

**WFS 2.0 OnlineResource**

Authentication required

**FeatureTypes**

WFS\_zbgis\_administrativne\_hranice\_wfs:obec

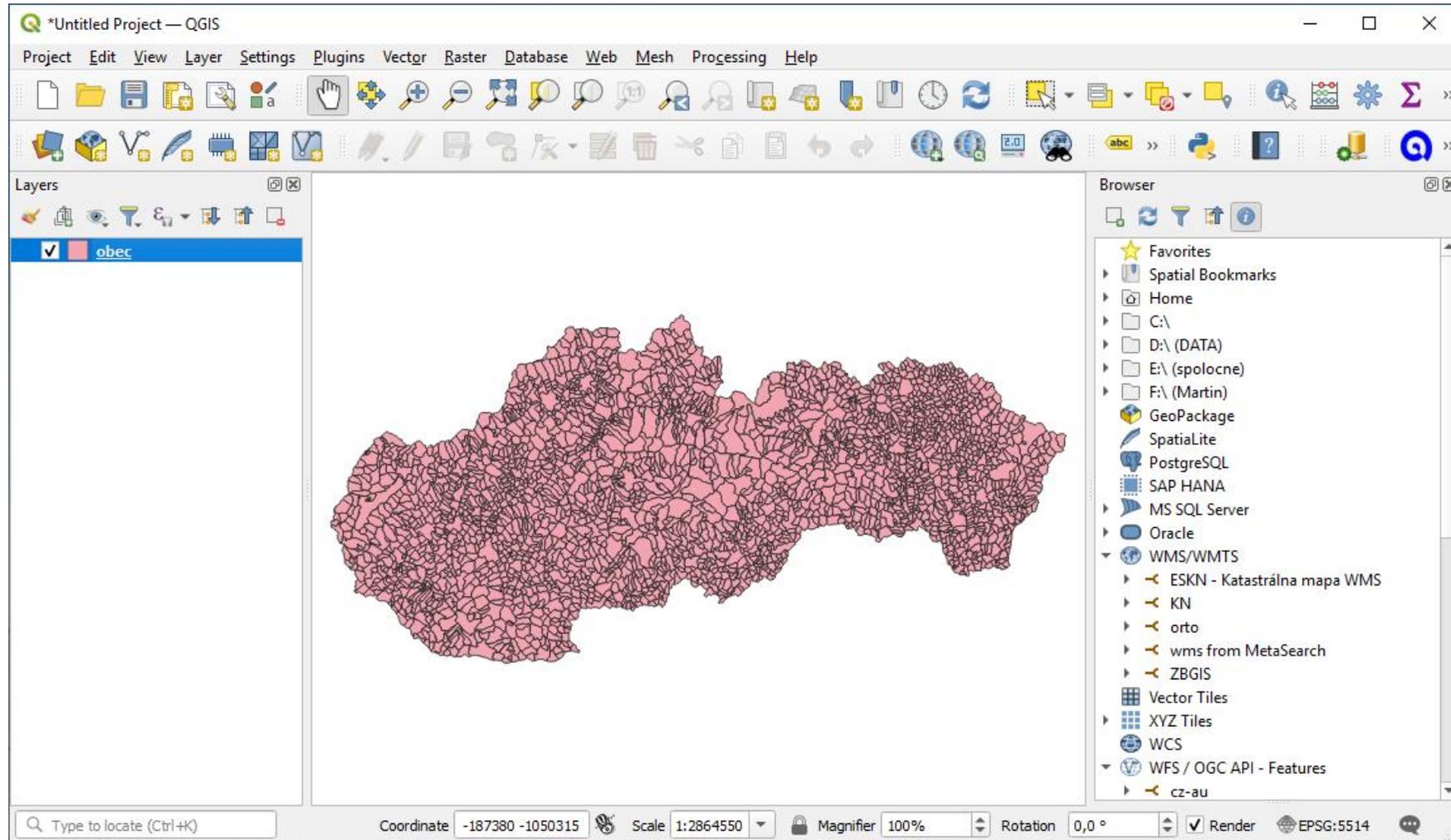
obec

Use current Extent as Bounding Box Filter

**FeatureLimit**

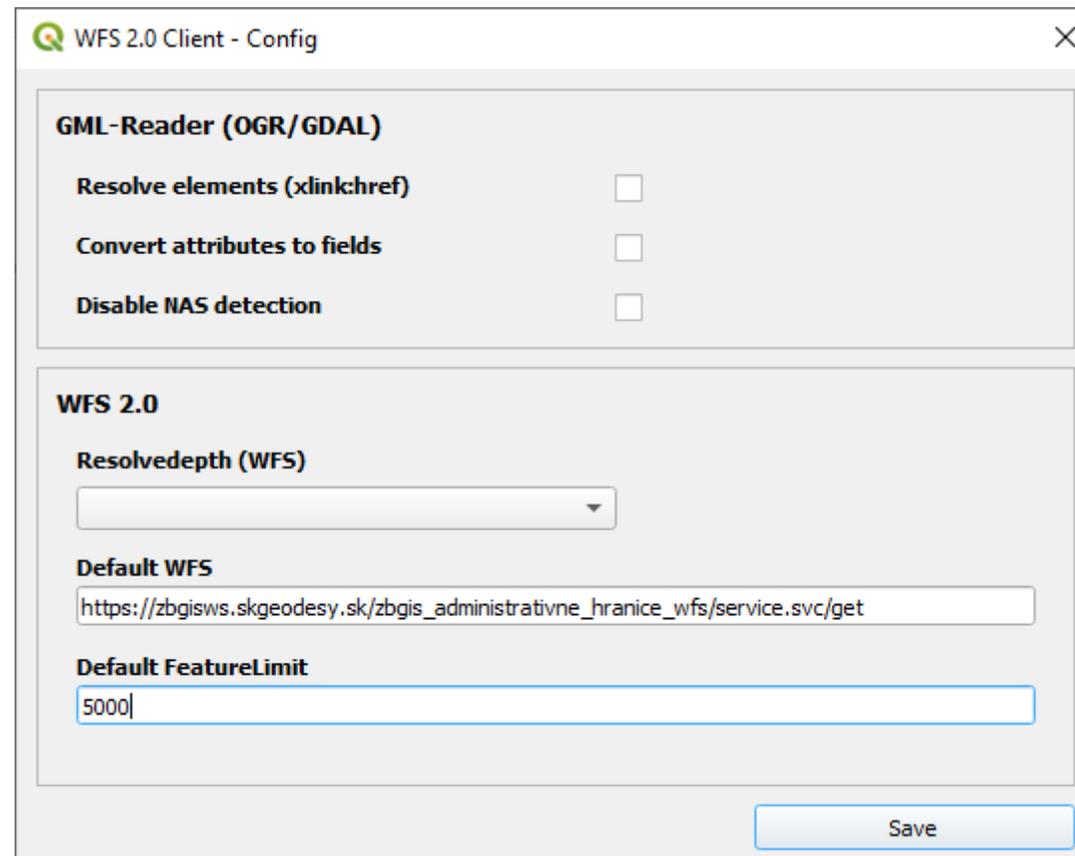
**SRS**

# WFS



# WFS

- Web  WFS 2.0 Client  Config



**WFS 2.0 Client - Config**

**GML-Reader (OGR/GDAL)**

Resolve elements (xlink:href)

Convert attributes to fields

Disable MAS detection

**WFS 2.0**

Resolvedepth (WFS)

Default WFS

https://zbgisws.skgeodesy.sk/zbgis\_administrativne\_hranice\_wfs/service.svc/get

Default FeatureLimit

5000

Save

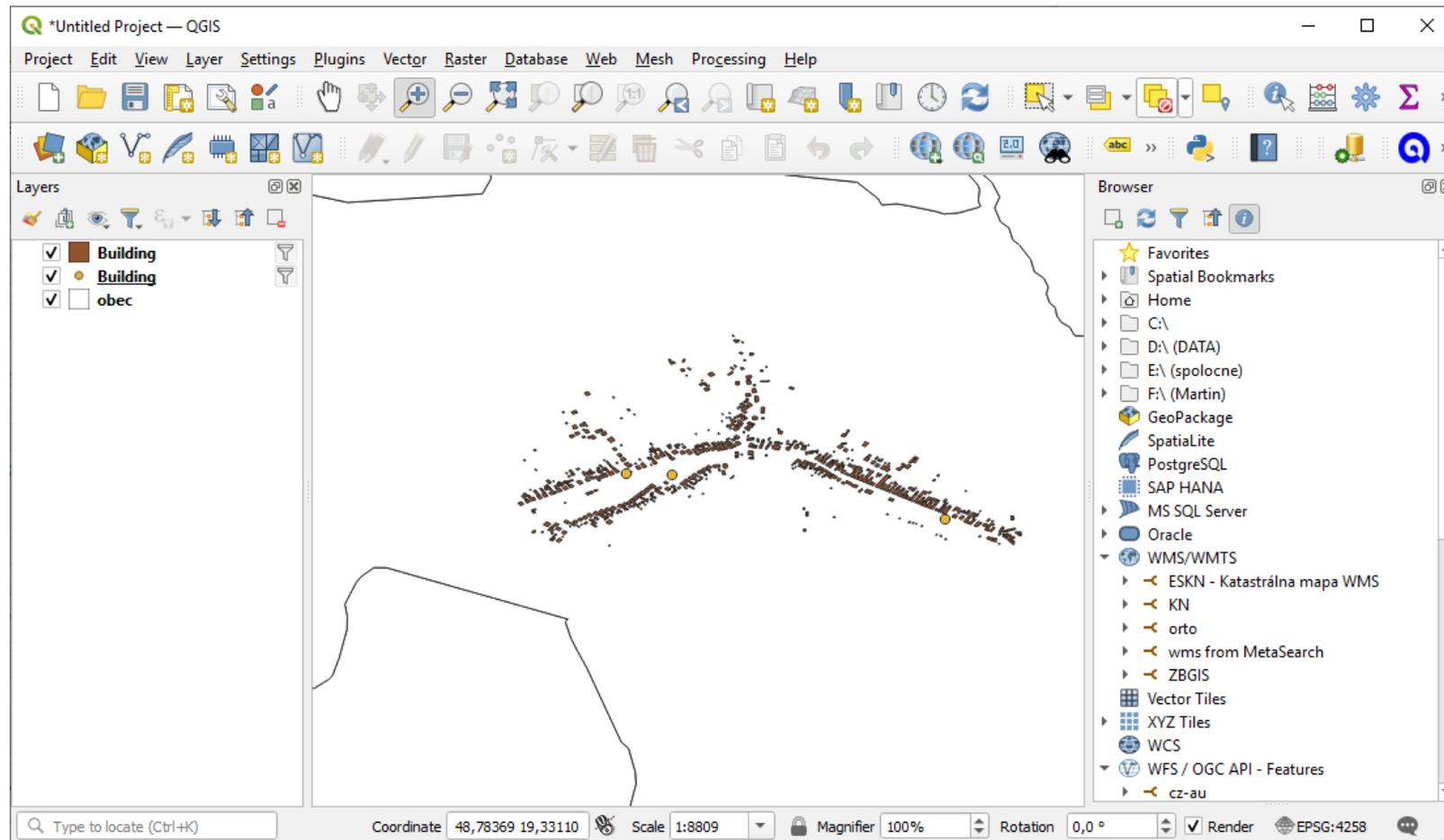
# WFS

- WFS 2.0 Client
  - Načítanie dát podľa extentu
  - [https://zbgisws.skgeodesy.sk/inspire\\_buildings\\_wfs/service.svc/get](https://zbgisws.skgeodesy.sk/inspire_buildings_wfs/service.svc/get)

The screenshot shows the 'WFS 2.0 Client - Version 0.9.11' window. The 'WFS 2.0 OnlineResource' section contains the URL 'https://zbgisws.skgeodesy.sk/inspire\_buildings\_wfs/service.svc/get' and an unchecked 'Authentication required' checkbox. Below this are 'List FeatureTypes' and 'List StoredQueries' buttons. The 'FeatureTypes' section has a dropdown menu set to 'bu-core2d:Building', a 'Metadata' button, and a 'Show Extent' button. A checked checkbox 'Use current Extent as Bounding Box Filter' is followed by four coordinate input fields: '48.7907369944929', '19.311560324382086', '19.3385614097877', and '48.76858695154999'. The 'FeatureLimit' is set to '1000' and the 'SRS' is 'urn:ogc:def:crs:EPSG::4258'. A 'GetFeature(s)' button is at the bottom.

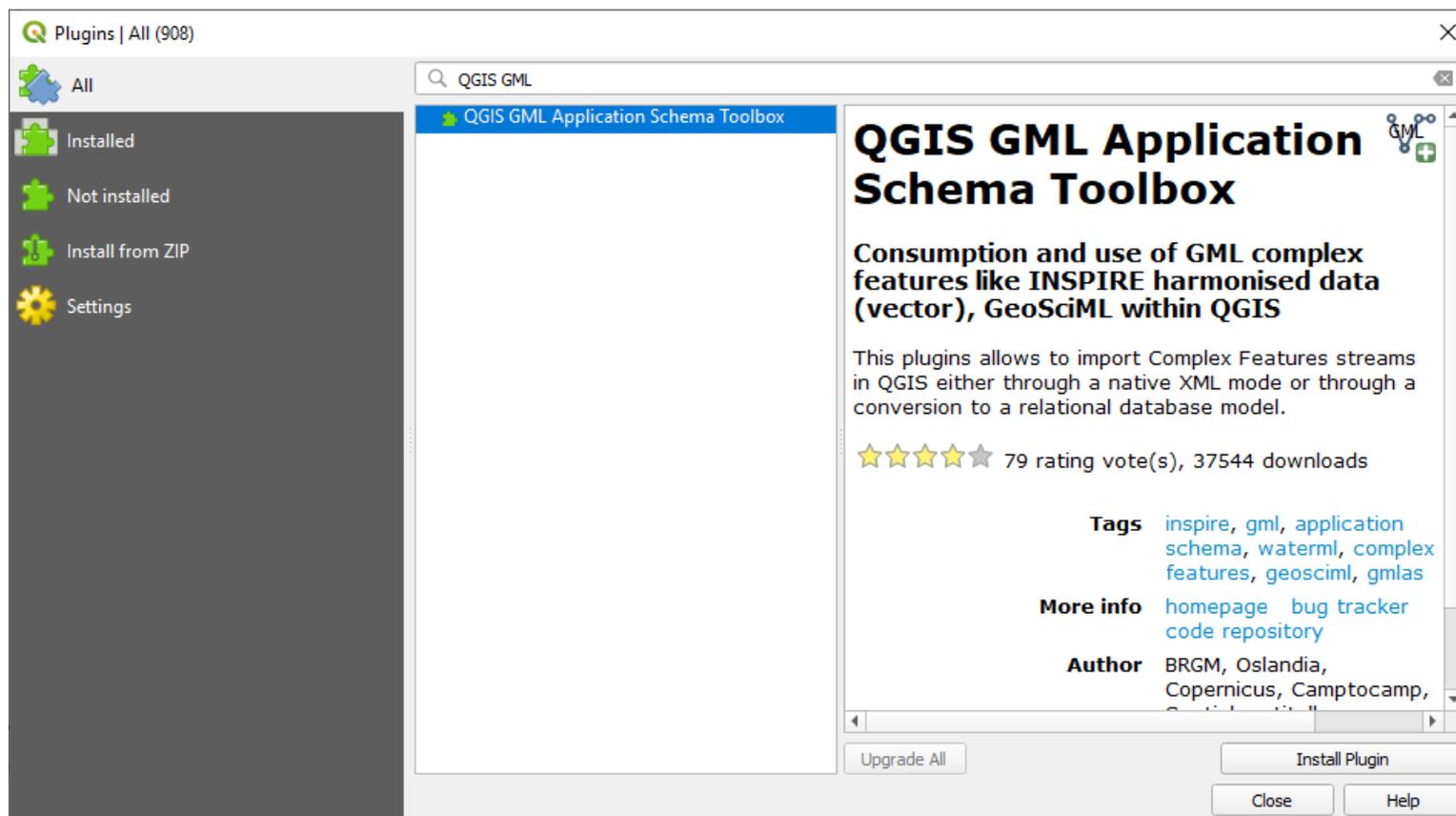
# WFS

- WFS 2.0 Client Načítanie dát podľa extentu výsledok



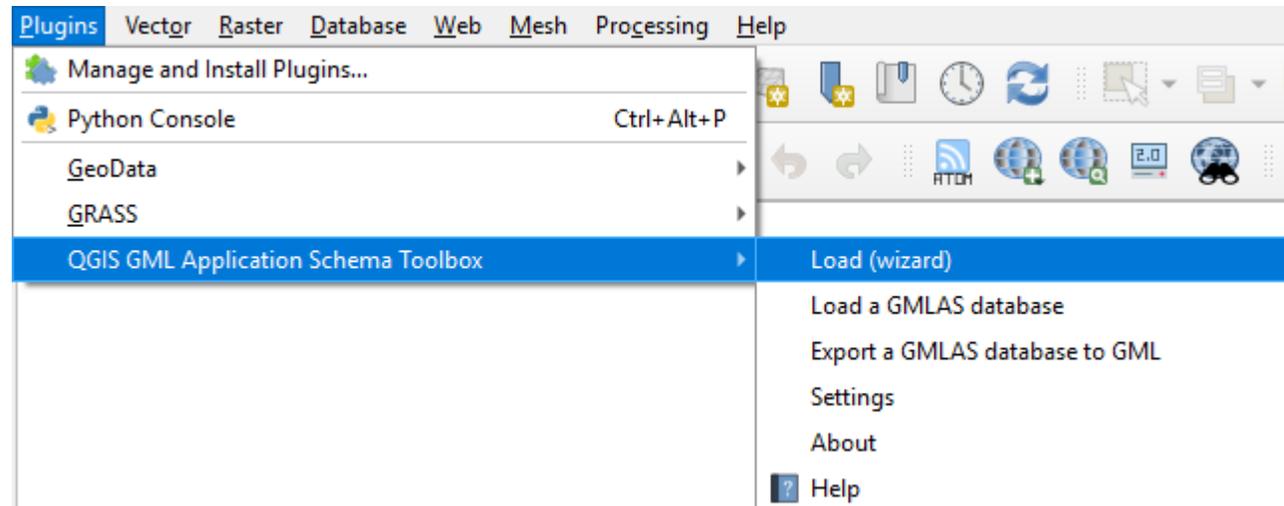
# WFS

- QGIS GML Application Schema Toolbox
- Podpora pre INSPIRE WFS ukladacie služby



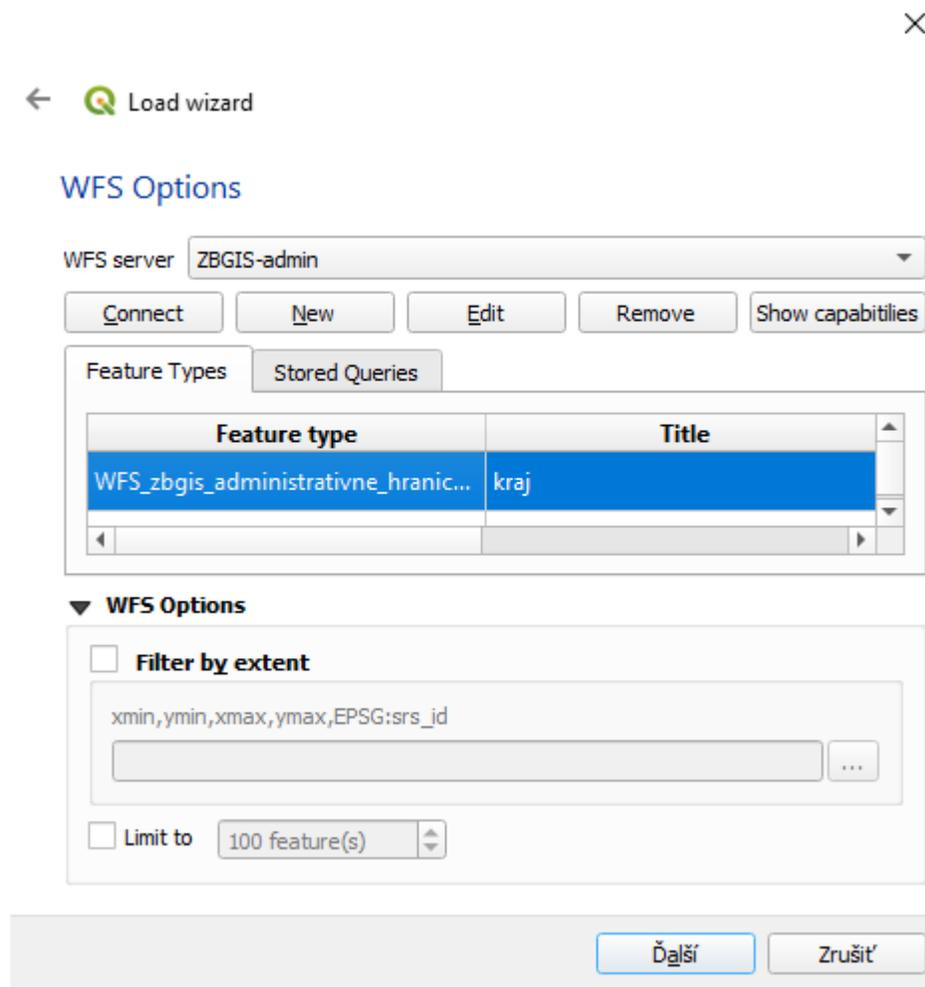
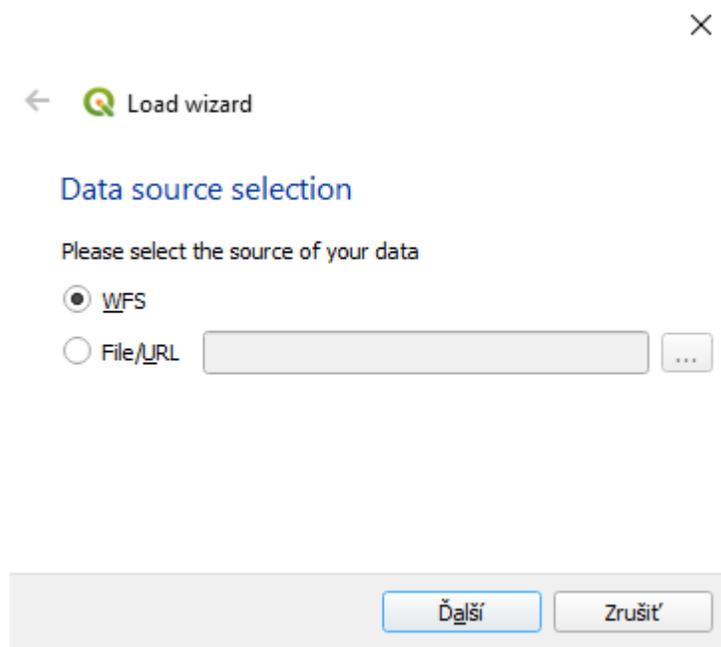
# WFS

- Plugins ? QGIS GML Application Schema Toolbox ?  
Load (wizard)



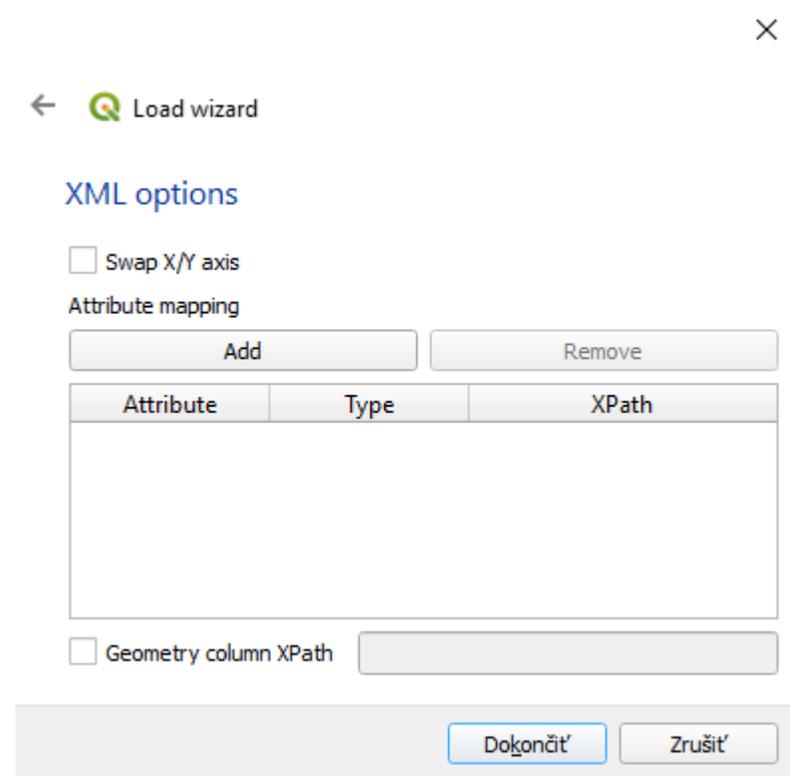
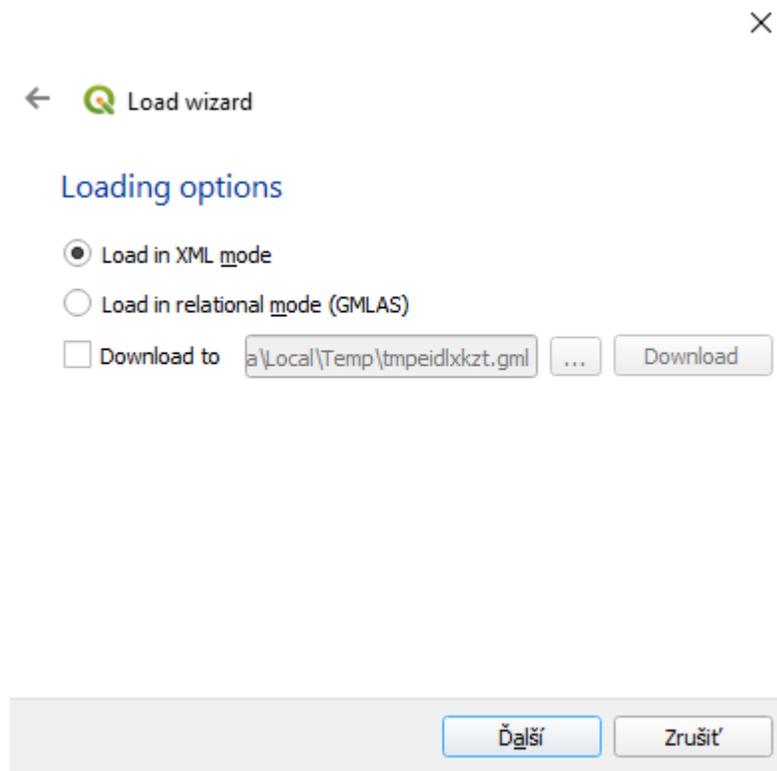
# WFS

- QGIS GML Application Schema Toolbox
  - Výber dát - WFS
  - Pripojenie nakonfigurovanej WFS služby



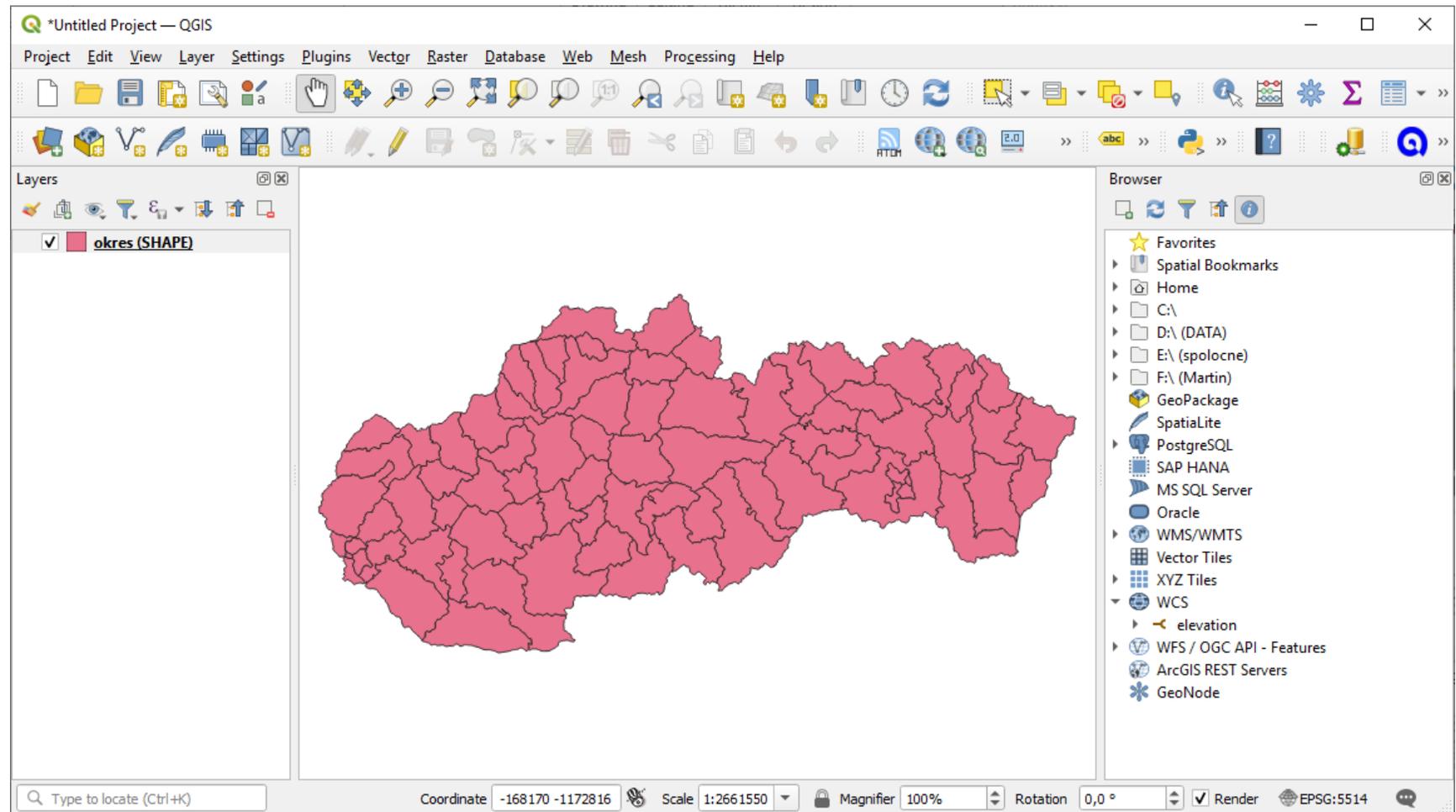
# WFS

- QGIS GML Application Schema Toolbox
  - Možnosti načítania služby



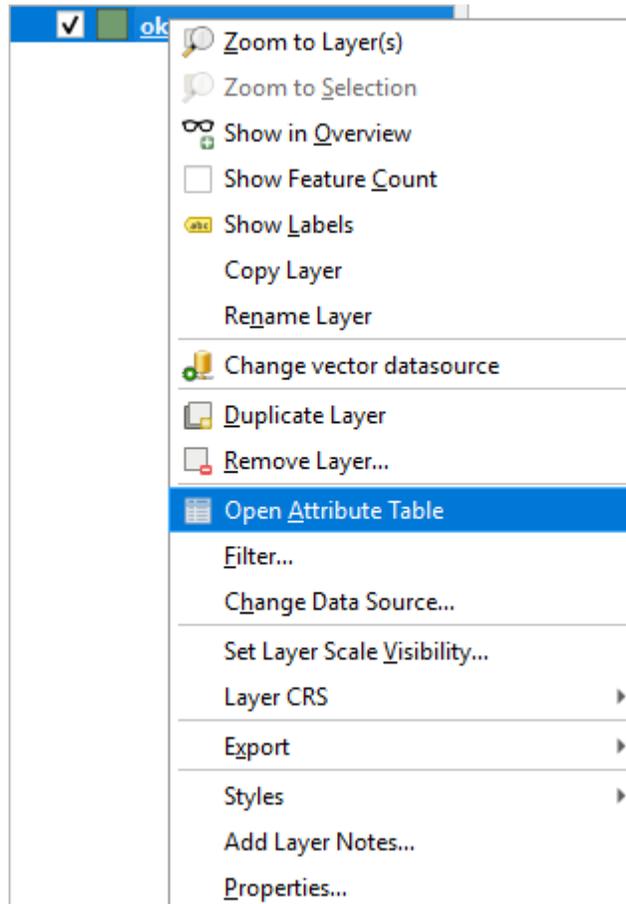
# WFS

- QGIS GML Application Schema Toolbox
  - Výsledok



# WFS

- Atribútová tabuľka



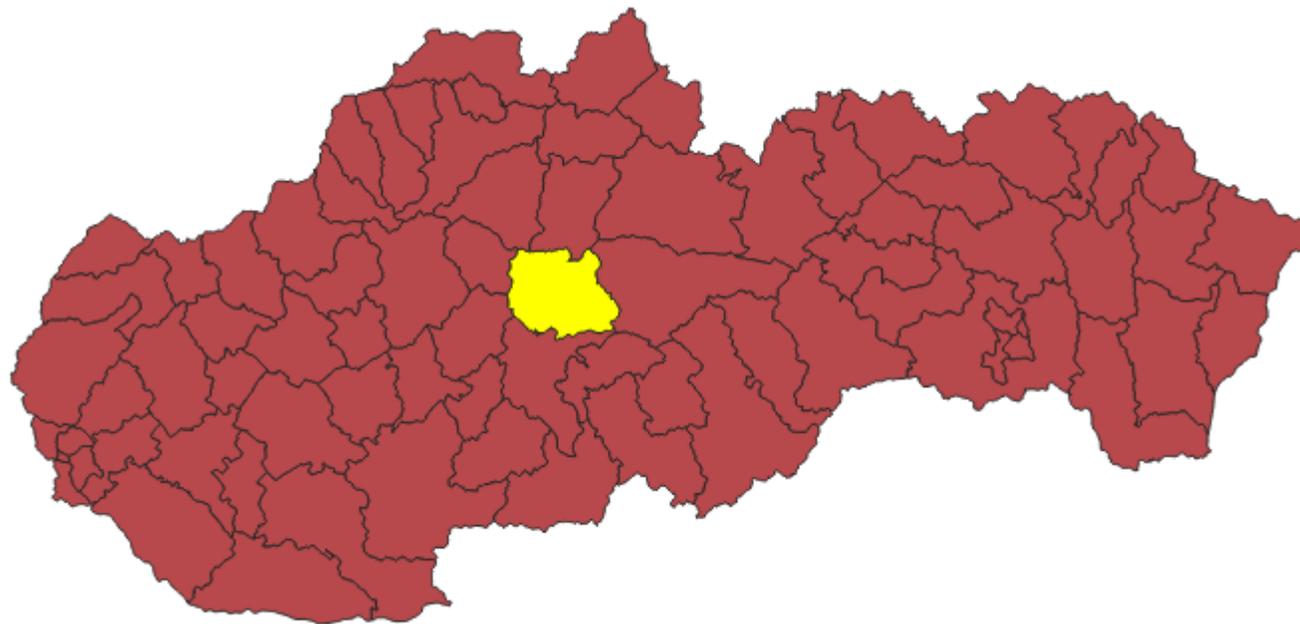
A screenshot of the 'Okresy' attribute table window in a GIS application. The window title is 'Okresy — Features Total: 79, Filtered: 79, Sel...'. The table has three columns: OBJECTID, Číslo\_okresu, and Názov\_okresu. The second row is highlighted in blue.

	OBJECTID	Číslo_okresu	Názov_okresu
1	967	301	Bánovce nad B...
2	1038	601	Banská Bystrica
3	1005	602	Banská Štiavnica
4	1028	701	Bardejov
5	1022	101	Bratislava I
6	1012	102	Bratislava II

At the bottom of the window, there is a 'Show All Features' button.

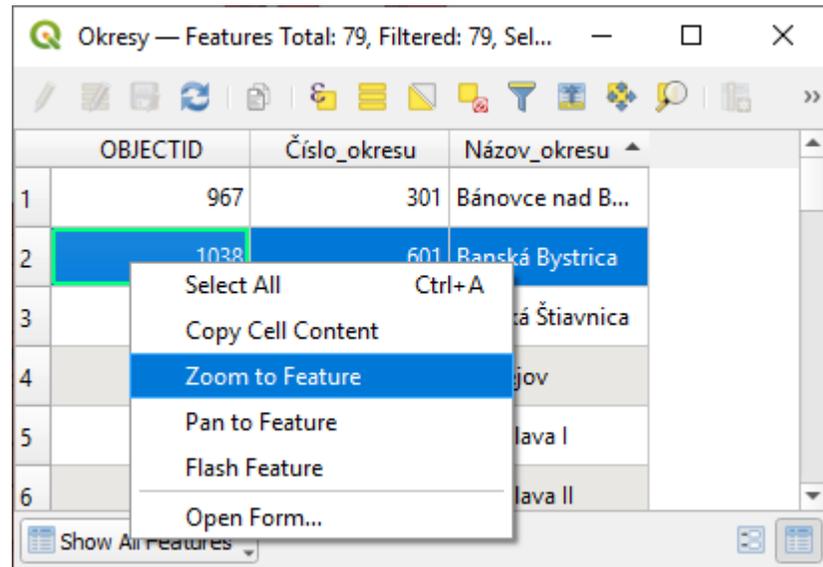
# WFS

- Atribútová tabuľka zvýraznenie objektu v mape



# WFS

- Atribútová tabuľka priblíženie na objekt



Okresy — Features Total: 79, Filtered: 79, Sel...

	OBJECTID	Číslo_okresu	Názov_okresu
1	967	301	Bánovce nad B...
2	1038	601	Banská Bystrica
3			Štiavica
4			ov
5			lava I
6			lava II

Context menu options:

- Select All (Ctrl+A)
- Copy Cell Content
- Zoom to Feature**
- Pan to Feature
- Flash Feature
- Open Form...

Show All features



# WFS

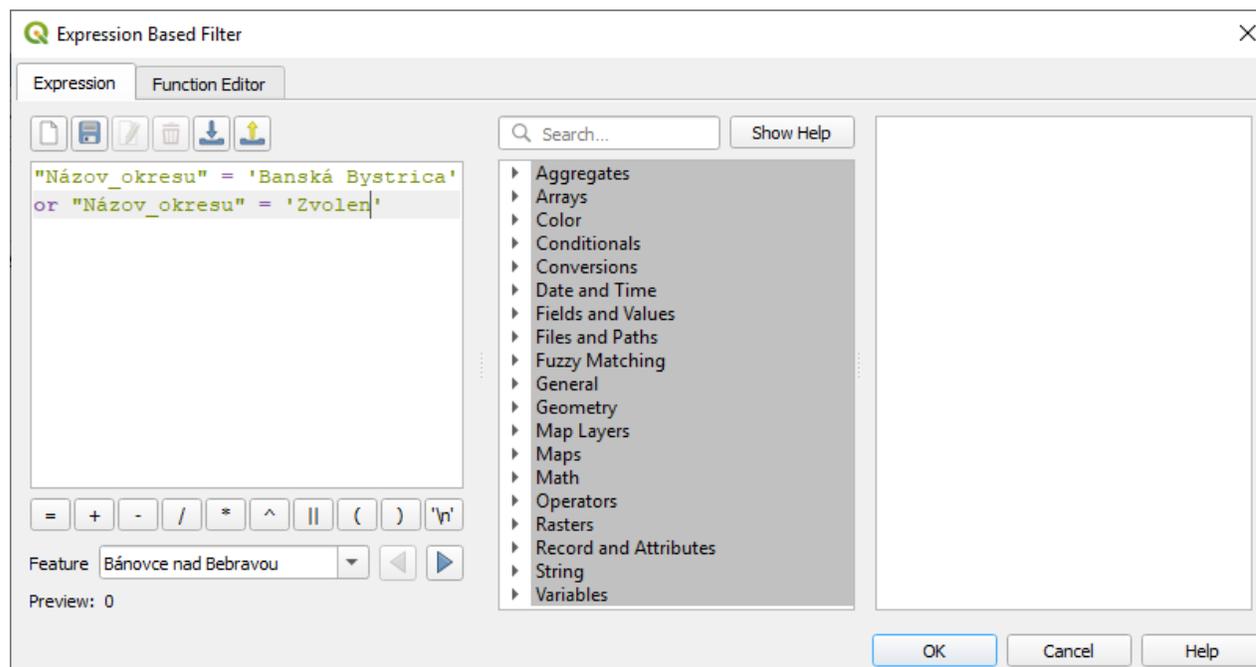
- Atribútová tabuľka filtrovanie

Okresy — Features Total: 79, Filtered: 79, Sel...

OBJECTID	Číslo_okresu	Názov_okresu
1	967	301 Bánovce nad B...
2	1038	601 Banská Bystrica
3	1005	602 Banská Štiavnica
4	1028	701 Bardejov
5	1022	101 Bratislava I
6	1012	102 Bratislava II

Show All Features

- Show All Features
- Show Selected Features
- Show Features Visible On Map
- Show Edited and New Features
- Field Filter
- Advanced Filter (Expression)**
- Stored Filter Expressions



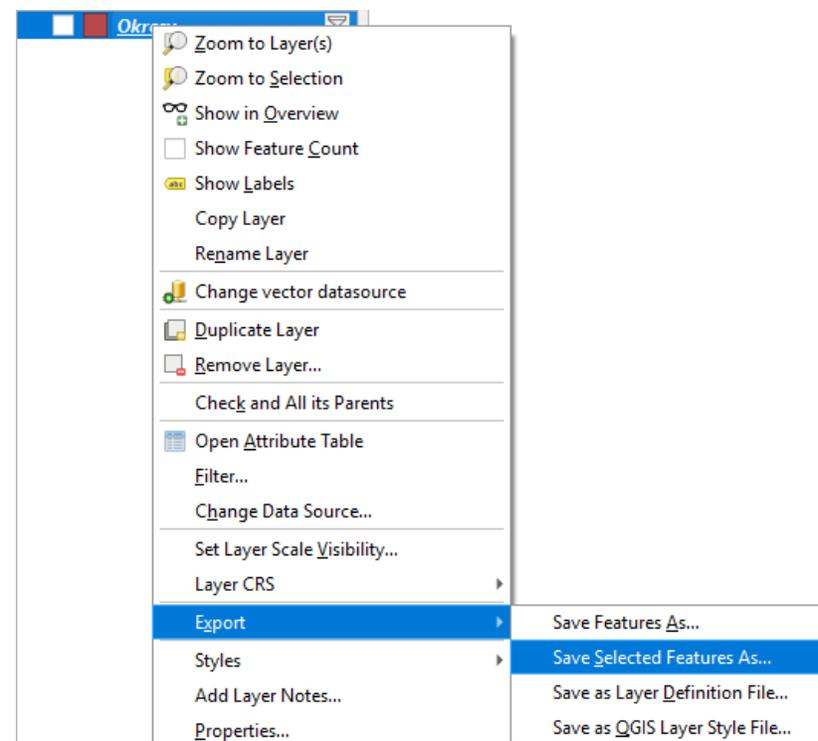
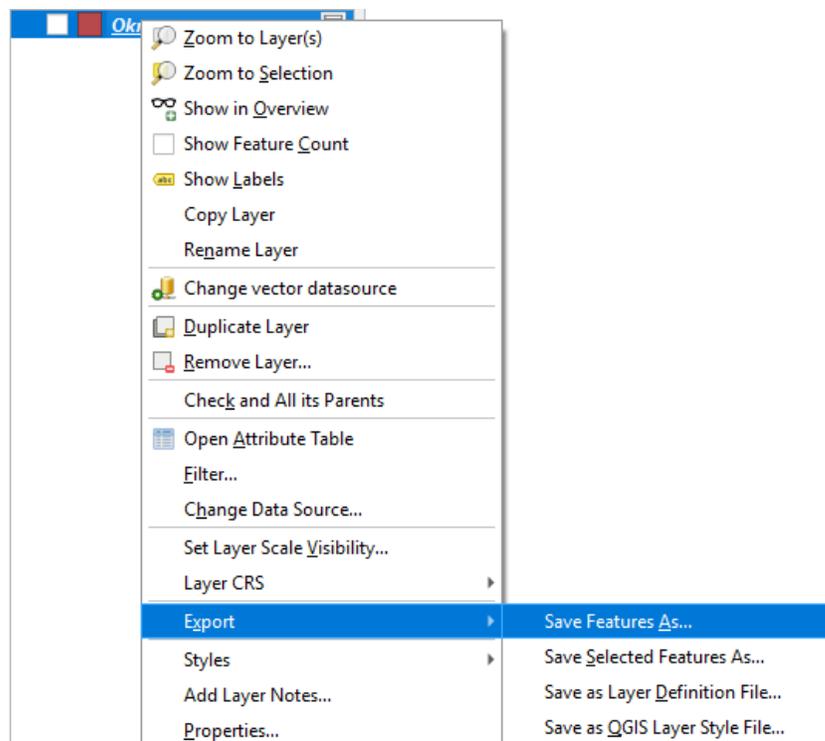
Okresy — Features Total: 79, Filtered: 2, Sele...

OBJECTID	Číslo_okresu	Názov_okresu
1	1038	601 Banská Bystrica
2	961	611 Zvolen

Advanced Filter (Expression) = 'Zvolen' Apply

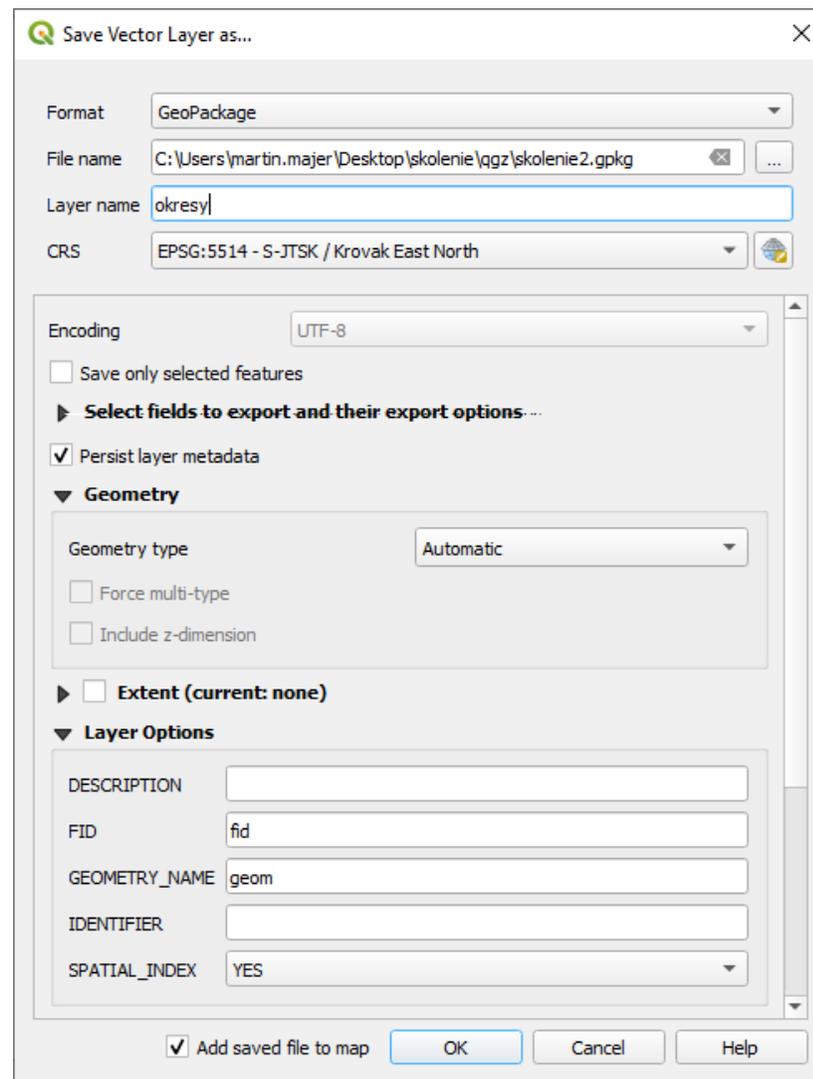
# WFS

- Exportovanie údajov
  - Právý klik na feature ? Export ? Save Features As...
  - Právý klik na feature ? Export ? Save Selected Features As...



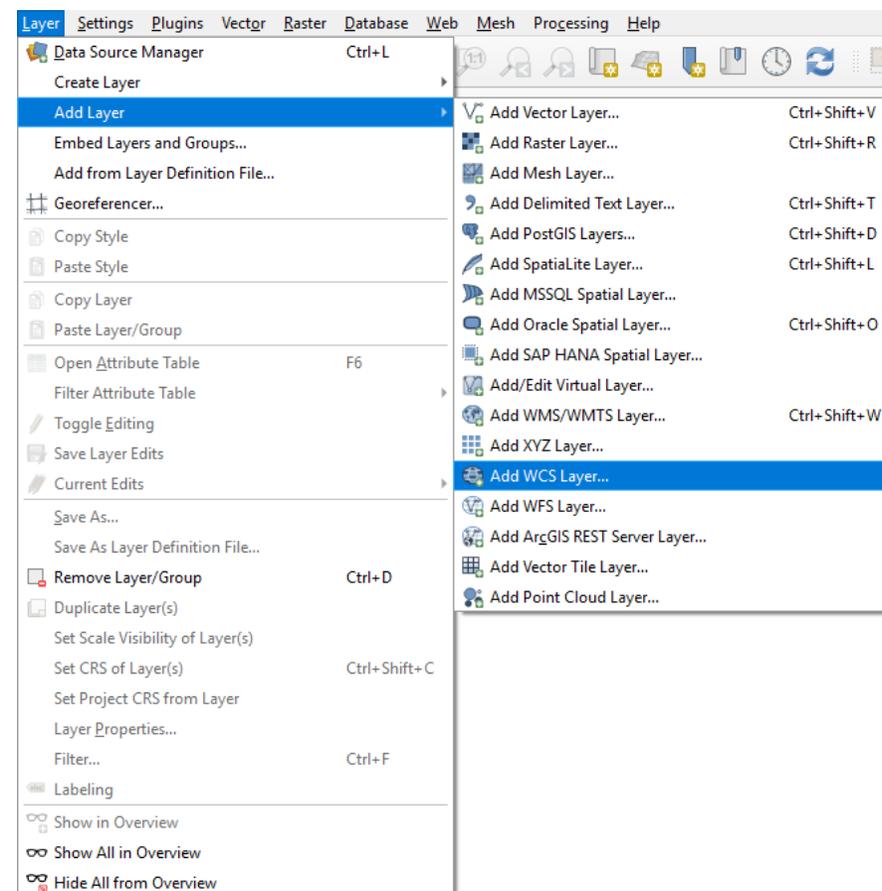
# WFS

- Exportovanie údajov
  - Formát
  - Názov súboru
  - Názov vrstvy
  - Súradnicový systém
  - Uloženie len označených
  - Extent
  - Možnosti vrstiev



# WCS

- Štandard vyvinutý združením Open Geospatial Consortium (OGC)
- Klient-server
- Coverage údaje vo formáte GeoTIFF, HDF
- Pripojenie
  - Layer ? Add Layer ? Add WCS Layer
  - Open Data Source Manager ? WCS

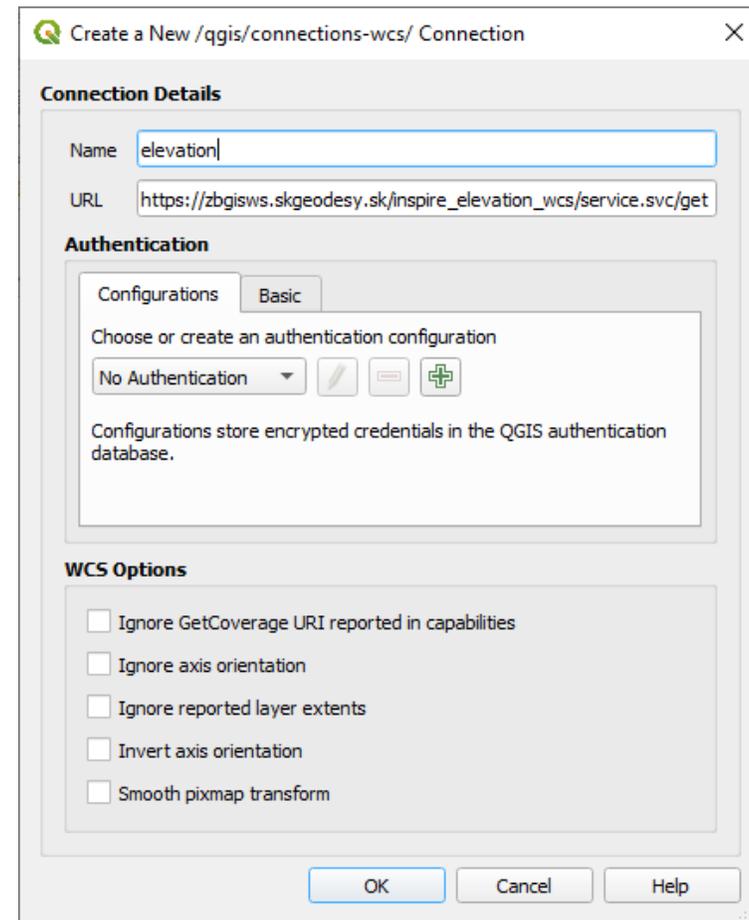
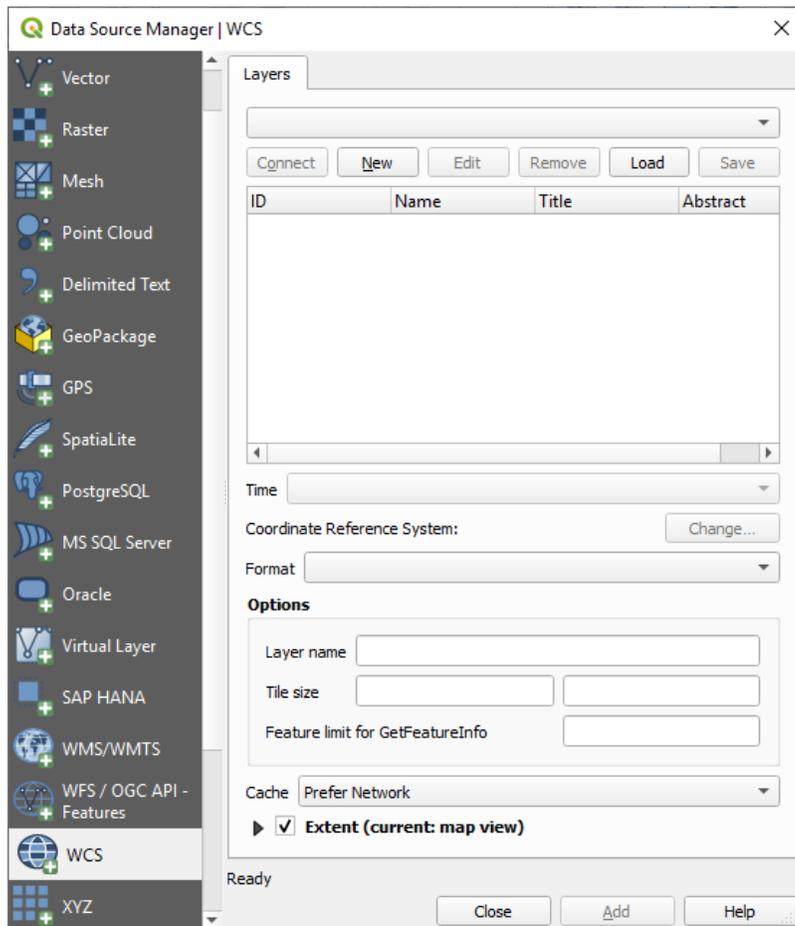


# WCS

- New - vytvorenie nového pripojenie
  - Name - zadať názov služby
  - URL - zadať adresa služby
  - Authentication - v prípade zabezpečených služieb v záložke Basic zadať meno (User name) a heslo (Password)
  - Stlačiť tlačidlo OK
- Následne stlačiť tlačidlo Connect

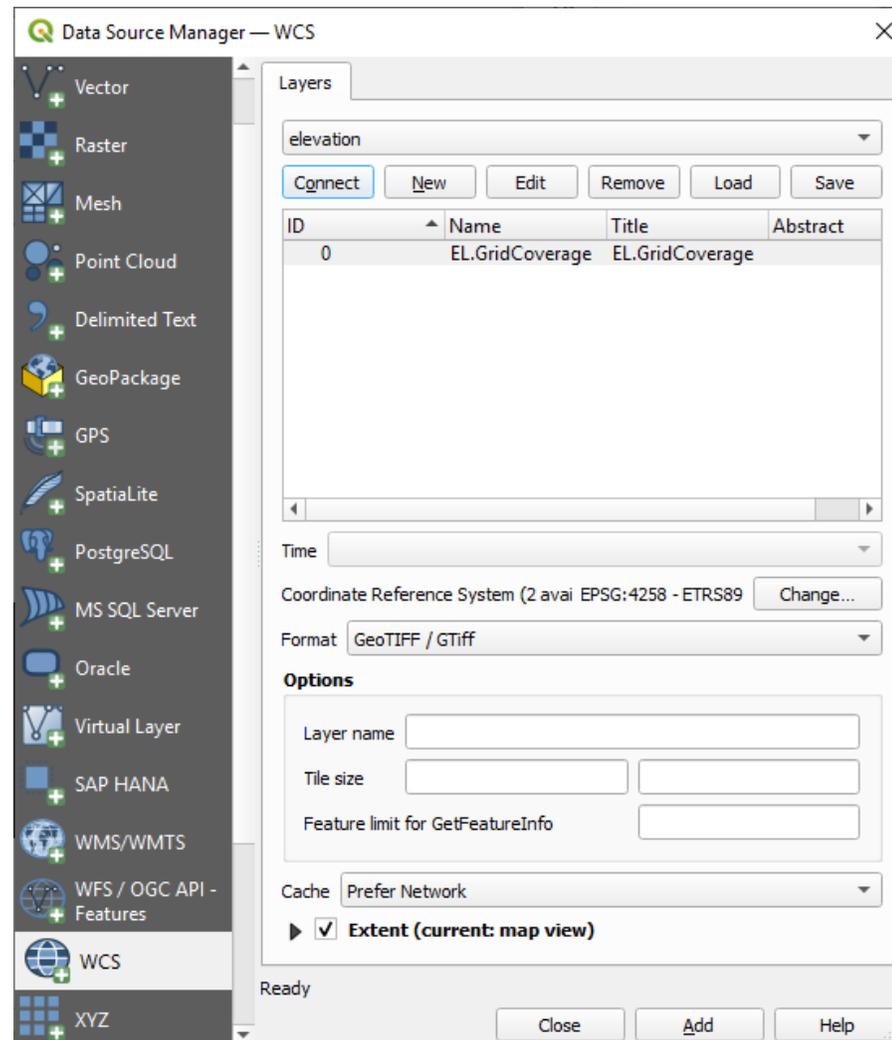
# WCS

- [https://zbgisws.skgeodesy.sk/inspire\\_elevation\\_wcs/service.svc/get](https://zbgisws.skgeodesy.sk/inspire_elevation_wcs/service.svc/get)



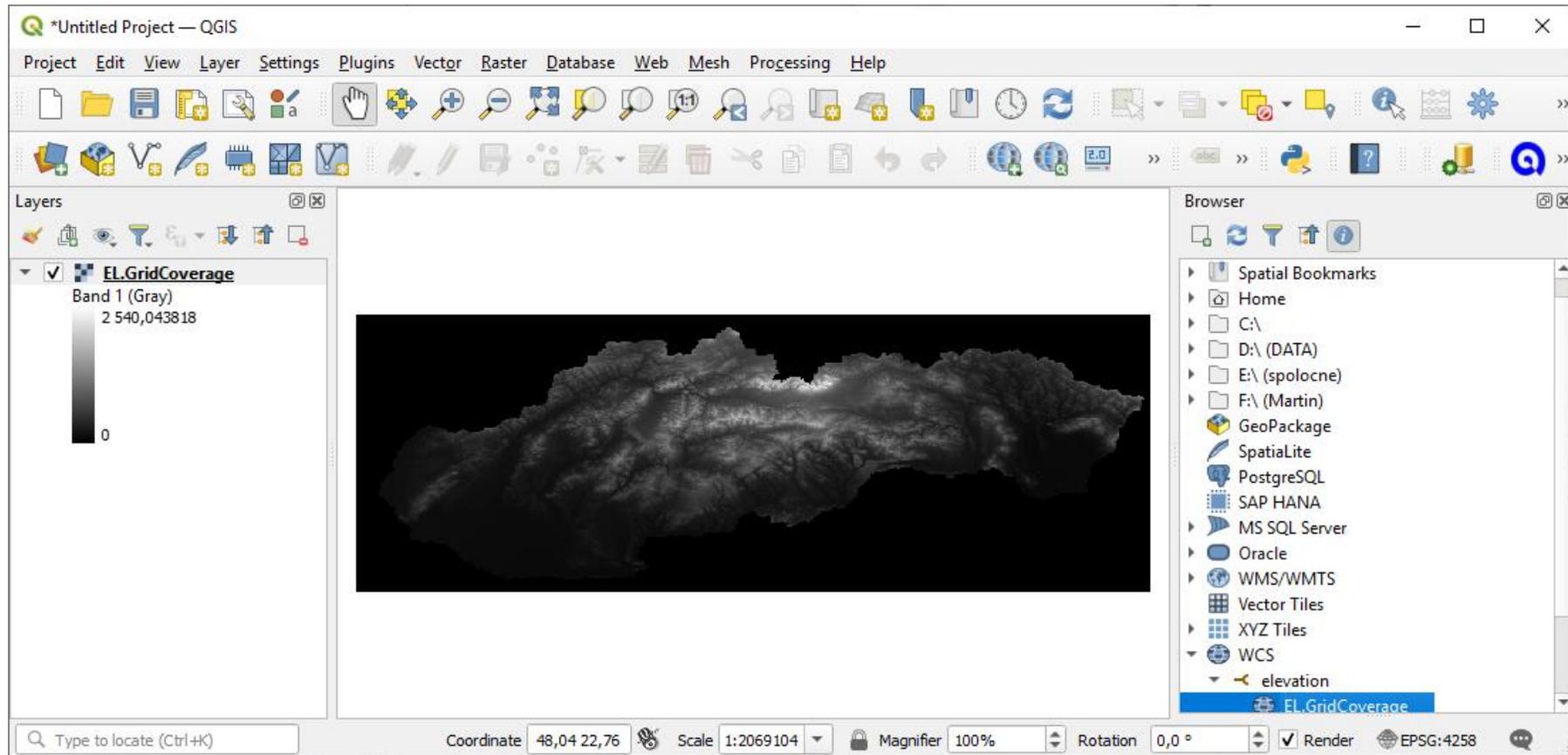
# WCS

- Výber vrstvy
- Súradnicový systém
- Formát



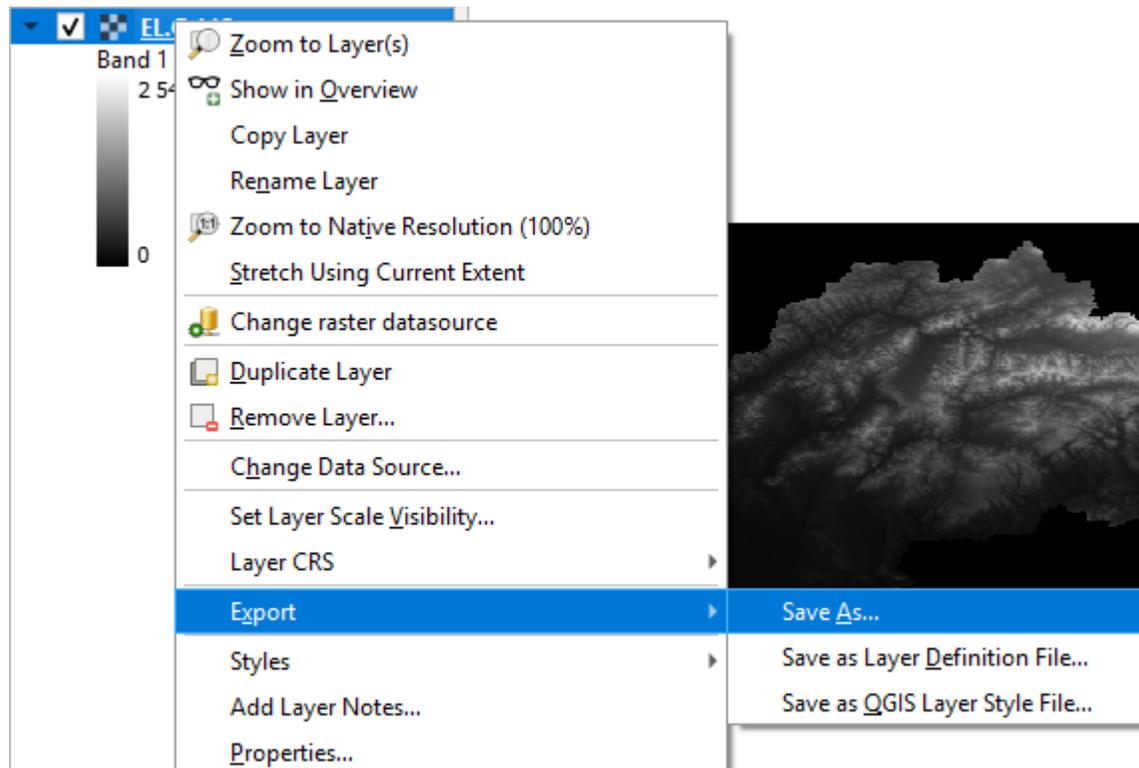
# WCS

- Výsledok



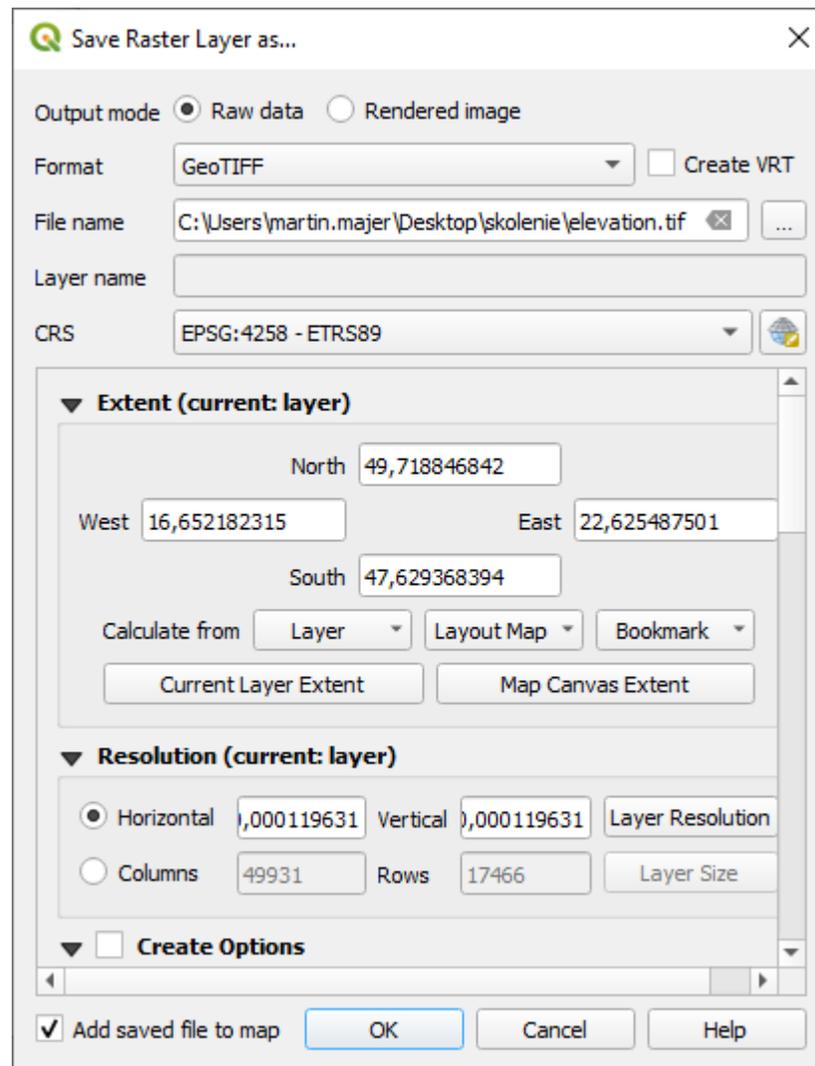
# WCS

- Export
- Pravý klik na feature  Export  SaveAs



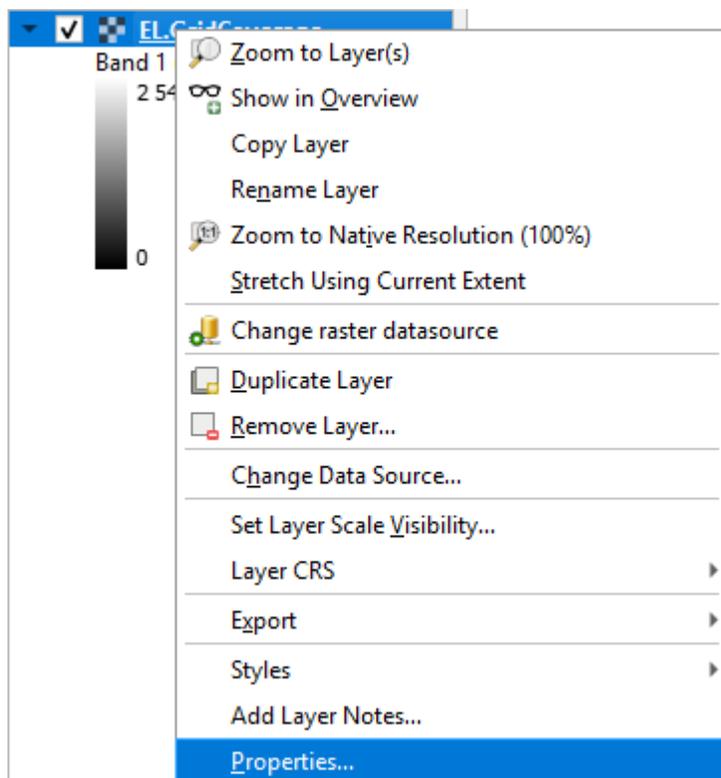
# WCS

- Export
  - Mód výstupu
  - Formát
  - Názov súboru
  - Súradnicový systém



# WCS

- Informácie o službe



The 'Layer Properties - EL.GridCoverage - Information' dialog box displays the following information:

**General**

- Name:** EL.GridCoverage
- URL:** [https://zbgisws.skgeodesy.sk/inspire\\_elevation\\_wcs/service.svc/get](https://zbgisws.skgeodesy.sk/inspire_elevation_wcs/service.svc/get)
- Source:** dpiMode=7&identifier=EL.GridCoverage&url=https://zbgisws.skgeodesy.sk/inspire\_elevation\_wcs/service.svc/get
- Provider:** wcs

**Information from provider**

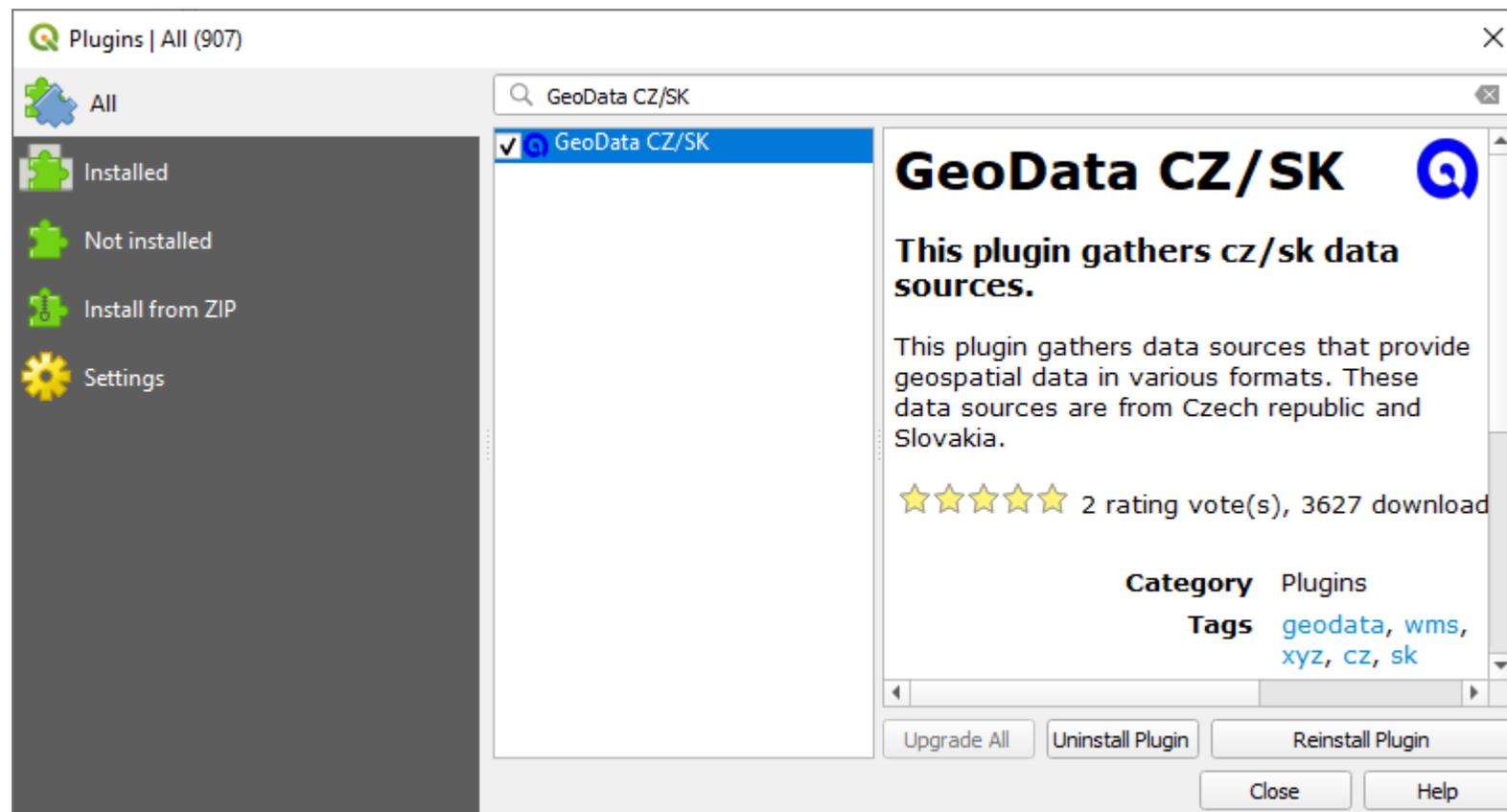
- Extent:** 16.6521823146346115,47.6293683937703634 : 22.6254875012255994,49.7188468418086202
- Width:** 49931
- Height:** 17466
- Data type:** Float64 - Sixty four bit floating point
- WCS Info:** [Coverages](#)

Server Properties	
Property	Value
WCS Version	1.0.0
Title	INSPIRE Download Service - Elevation

Buttons: Style, OK, Cancel, Apply, Help

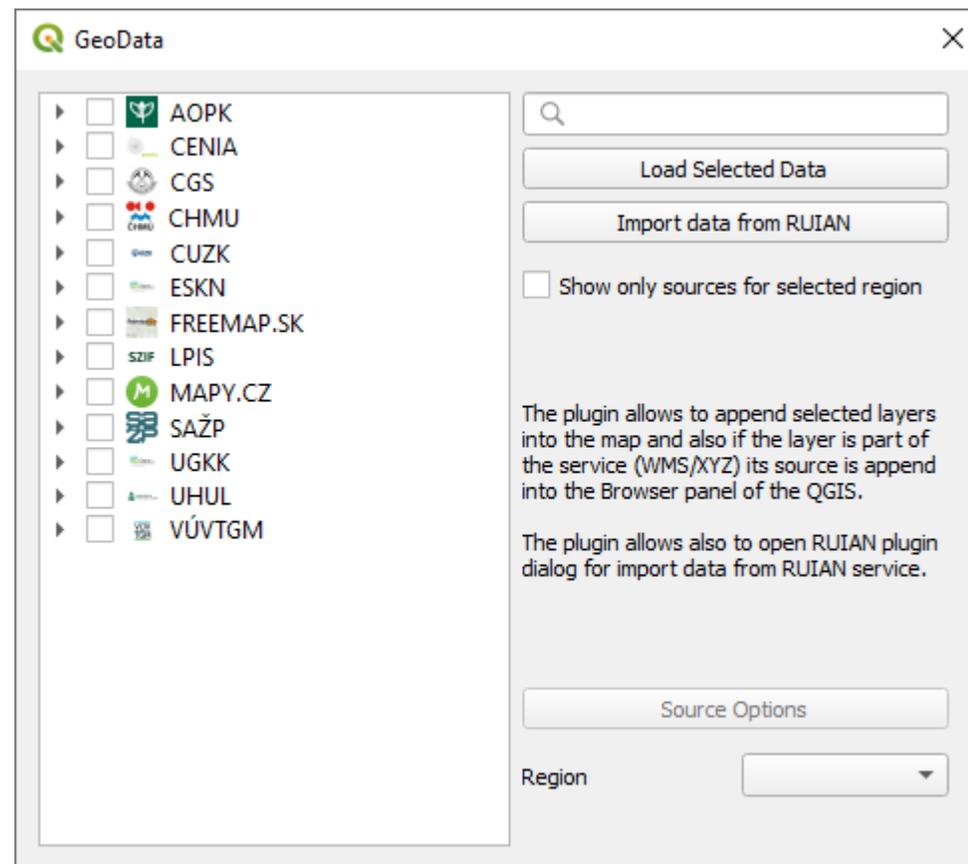
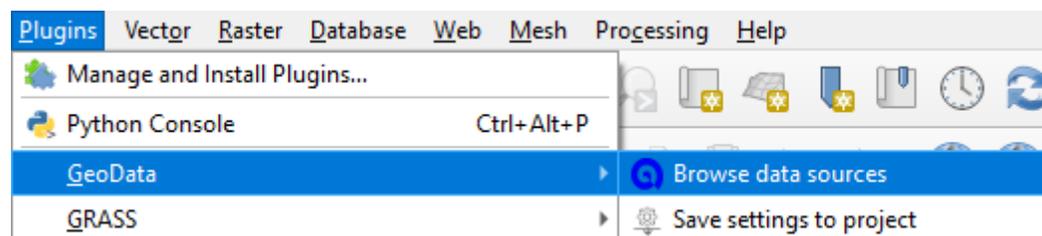
# GeoData CZ/SK Plugin

- Zhromažďuje zdroje geopriestorových údajov
- Rôzne formáty
- Česko a Slovensko



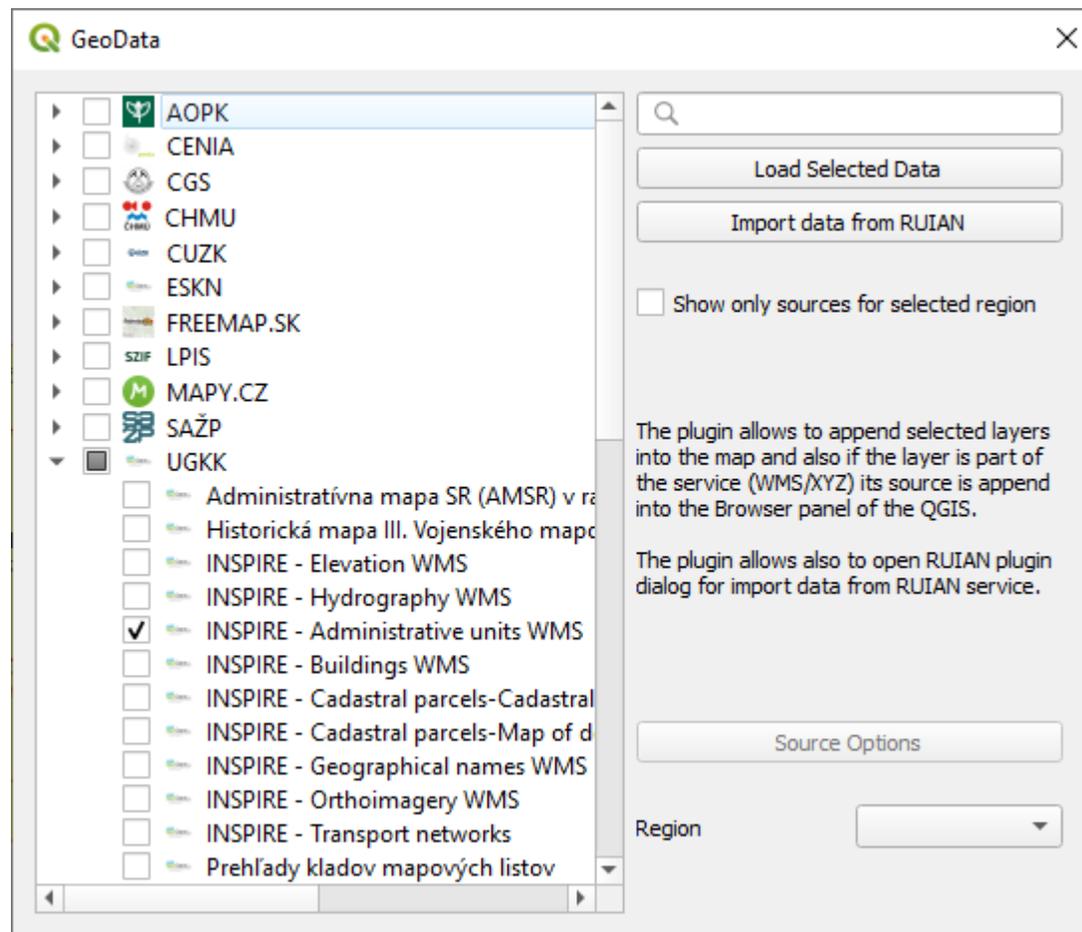
# GeoData CZ/SK Plugin

- Plugins ? GeoData ? Browse data sources
- Browse data sources



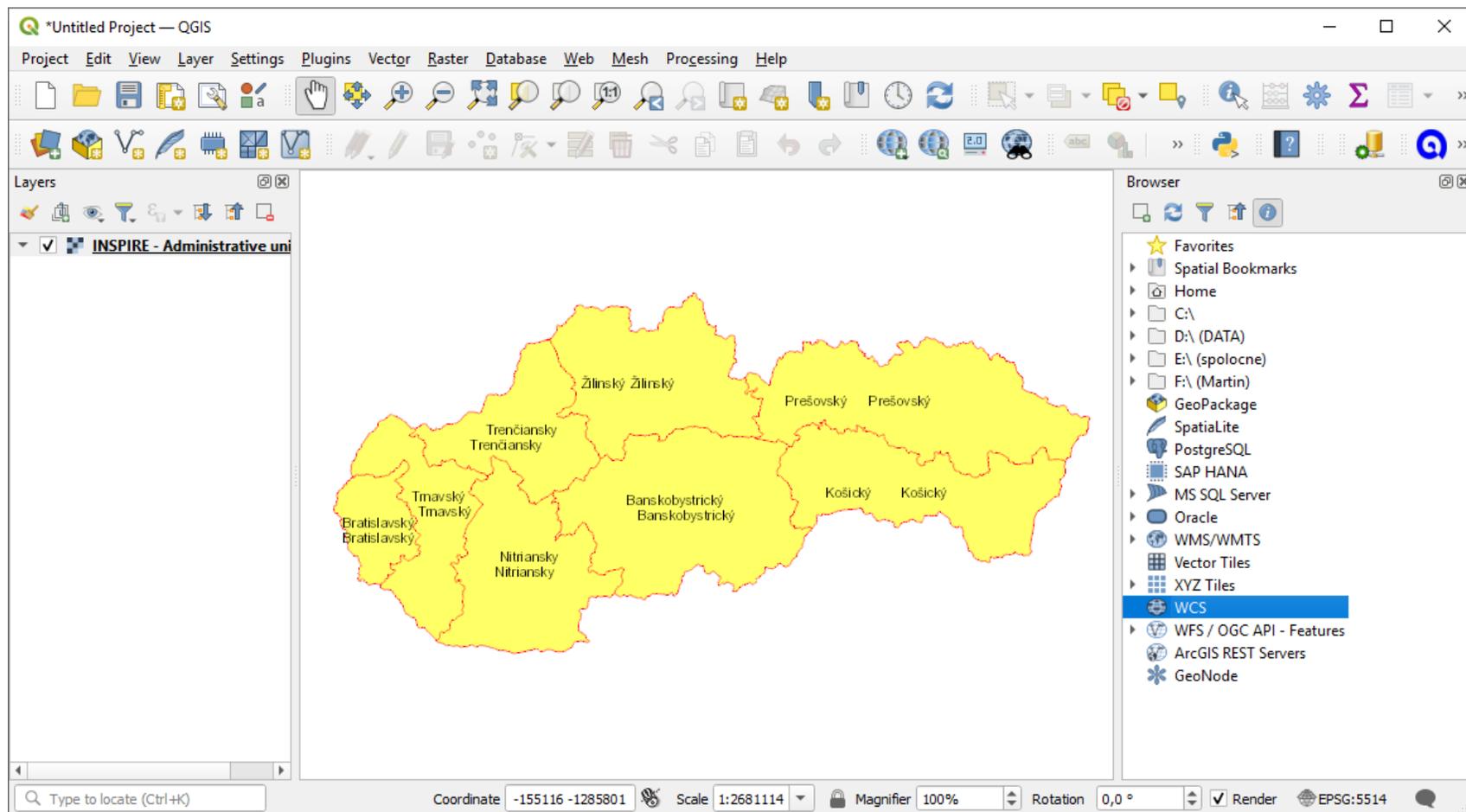
# GeoData CZ/SK Plugin

- Výber dát
  - Len dáta z vybraného regiónu
  - Výber regiónu
  - Načítanie vybraných dát



# GeoData CZ/SK Plugin

- Zobrazené dáta

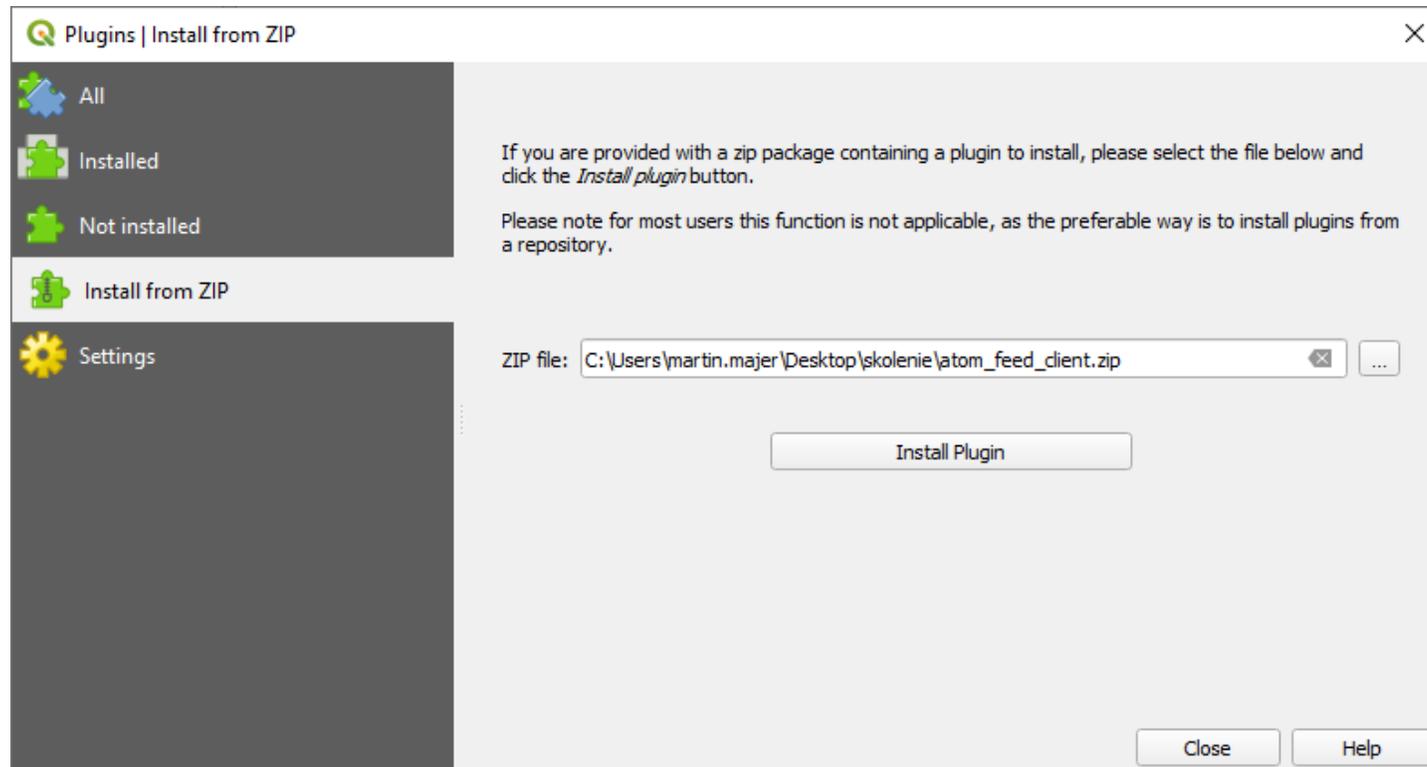


# ATOM feed

- Podobný RSS feedu
- XML formát umožňujúci syndikáciu webového obsahu
- Syndikované feedy
  - Malé textové súbory
  - Poskytujú informácie o obsahu webovej stránky
  - Keď sa obsah stránky update-ne, update-ne sa aj obsah feedu manuálne alebo programom
- Podpora pre INSPIRE ATOM ukladacie služby

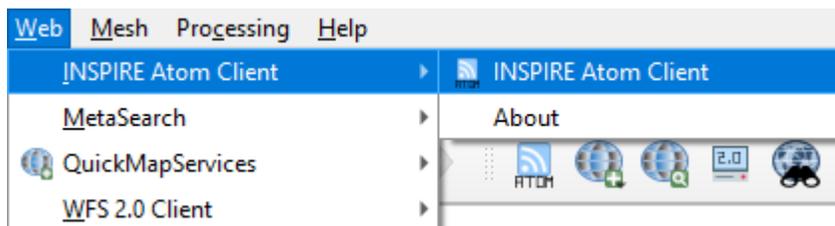
# ATOM feed

- Install INSPIRE Atom Client Plugin
  - Download [https://www.geoportal-mv.de/portal/downloads/plugins/qgis\\_plugins.zip](https://www.geoportal-mv.de/portal/downloads/plugins/qgis_plugins.zip)
  - Install from Zip



# ATOM feed

- Spustenie INSPIRE Atom Client
  - Web ? INSPIRE Atom Client ? INSPIRE Atom Client
  - INSPIRE Atom Client



INSPIRE Atom Client 0.7.0

### INSPIRE ATOM Feed URL

Authentication required

Username

Password

Select Dataset

Selected Dataset

Title

Resource Identifier

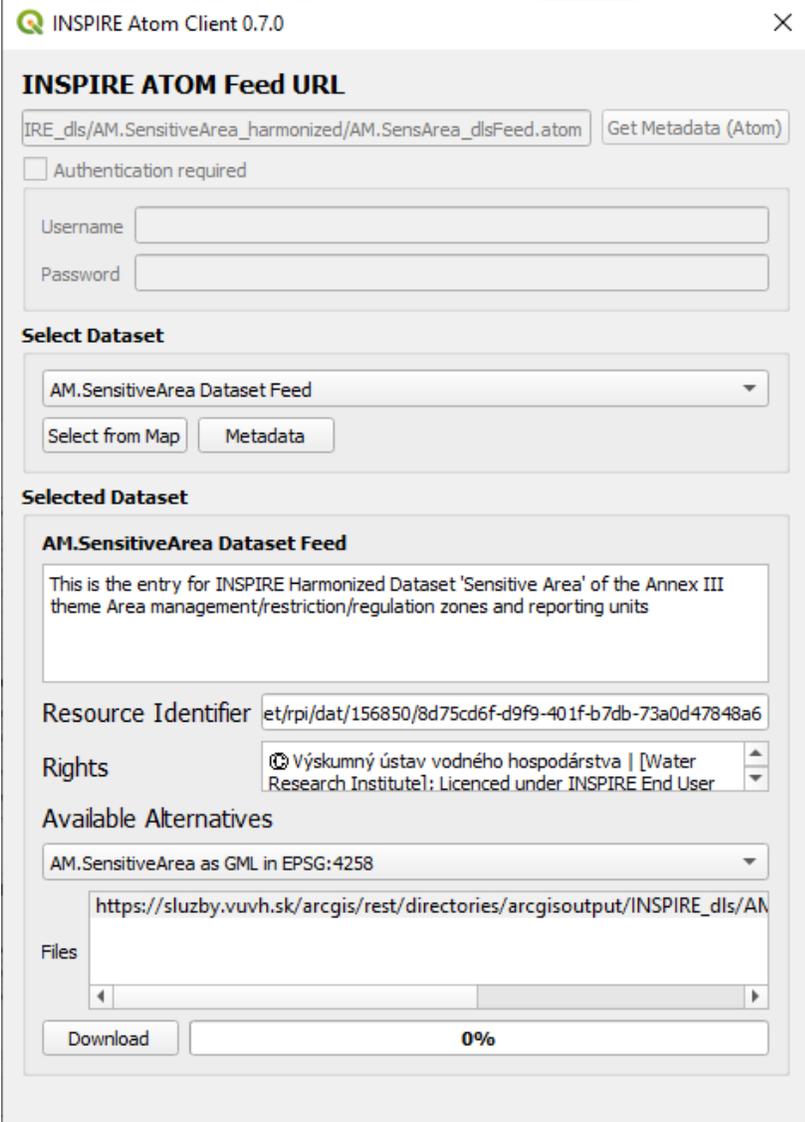
Rights

Available Alternatives

Files

# ATOM feed

- Načítanie dát
  - Vložiť [URL](#)  Get Metadata (Atom)
  - Vybrať dataset
  - Stiahnuť Dataset



INSPIRE Atom Client 0.7.0

### INSPIRE ATOM Feed URL

IRE\_dls/AM.SensitiveArea\_harmonized/AM.SensArea\_dlsFeed.atom

Authentication required

Username

Password

#### Select Dataset

AM.SensitiveArea Dataset Feed

#### Selected Dataset

##### AM.SensitiveArea Dataset Feed

This is the entry for INSPIRE Harmonized Dataset 'Sensitive Area' of the Annex III theme Area management/restriction/regulation zones and reporting units

Resource Identifier

Rights

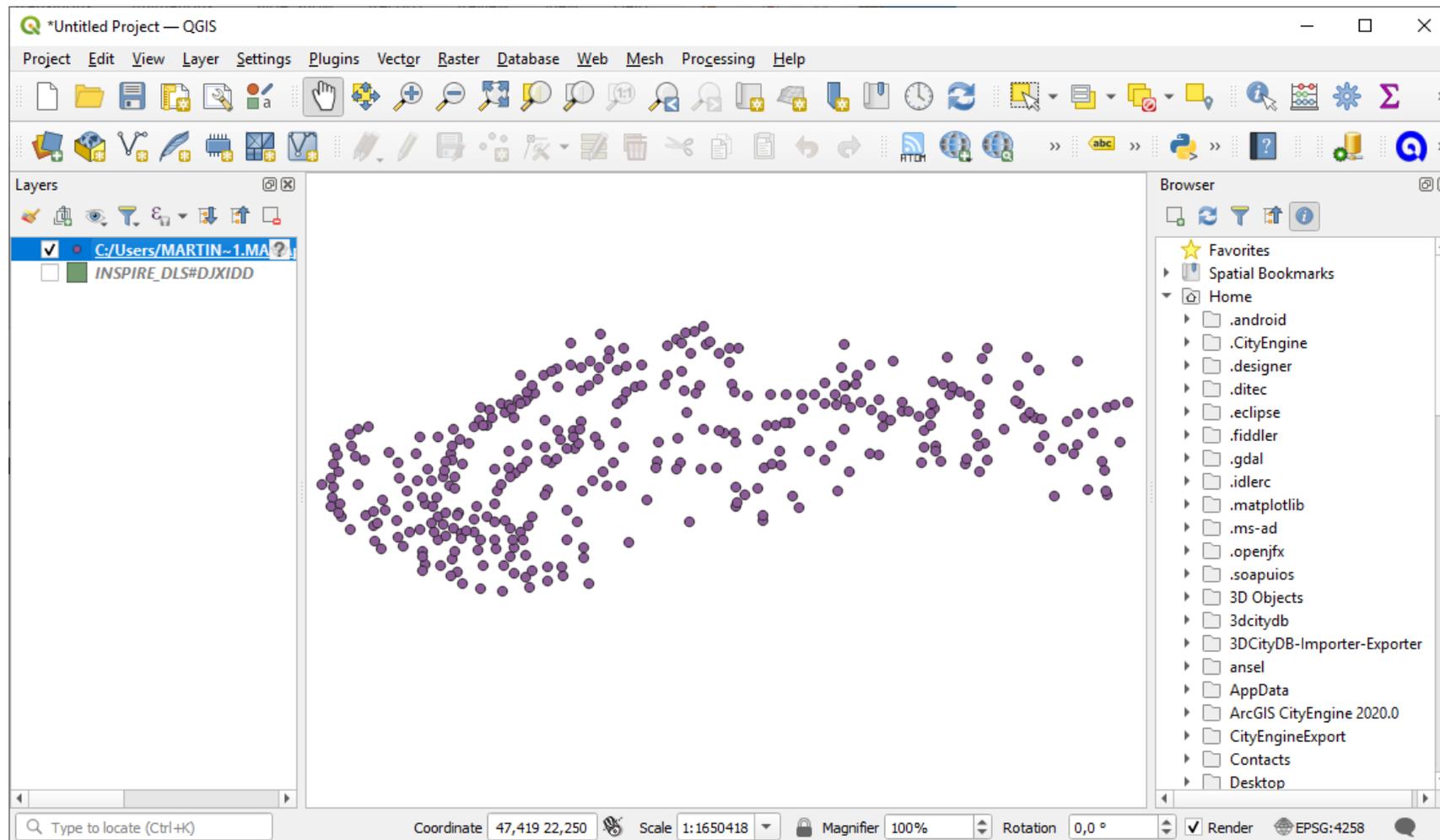
#### Available Alternatives

AM.SensitiveArea as GML in EPSG:4258

Files

# ATOM feed

- Výsledok



# ATOM feed

- Informácie

The screenshot shows the 'Layer Properties' dialog box for the file 'AM.SensArea\_ETRS89.gml'. The 'General' tab is active, displaying the following information:

- Name:** C:/Users/MARTIN-1.MAJ/AppData/Local/Temp/inspireatomclient/AM.SensArea\_ETRS89.gml
- Path:** C:\Users\MARTIN-1.MAJ\AppData\Local\Temp\inspireatomclient\AM.SensArea\_ETRS89.gml
- Sidecar file:** AM.SensArea\_ETRS89.gfs
- Total size:** 1.96 MB
- Last modified:** utorok 16. augusta 2022 7:50:43 (AM.SensArea\_ETRS89.gml)
- Provider:** ogr

The 'Information from provider' section shows:

- Storage:** GML
- Encoding:** UTF-8
- Geometry:** Point (Point)
- Extent:** 16.8349799998657339,47.7313170010482537 : 22.5668399998807310,49.6137670010230423
- Feature count:** 357

The 'Coordinate Reference System (CRS)' section is currently 'Unknown'.

The 'Identification' section shows:

- Identifier:** (empty)
- Parent Identifier:** (empty)
- Title:** (empty)
- Type:** dataset
- Language:** (empty)
- Abstract:** (empty)
- Categories:** (empty)
- Keywords:** (empty)

Buttons at the bottom include 'Style', 'OK', 'Cancel', 'Apply', and 'Help'.

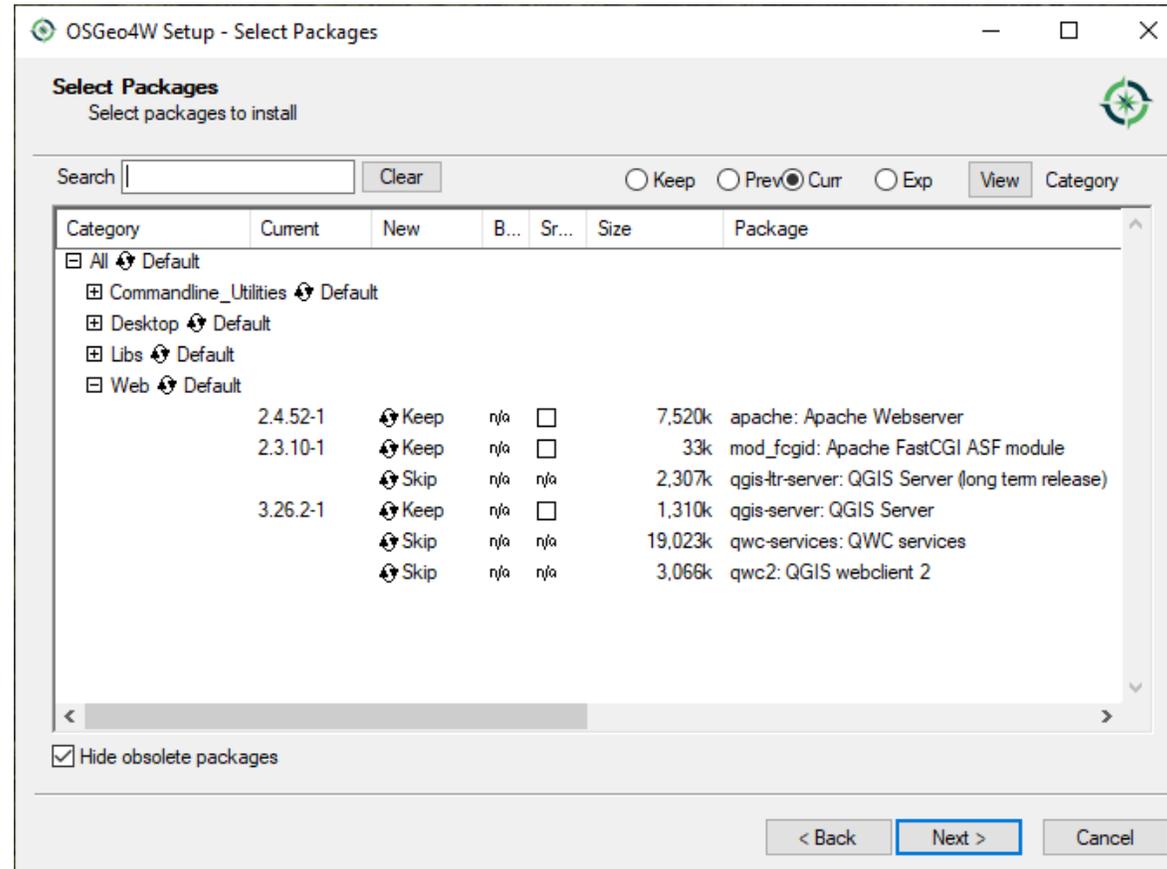
The screenshot shows a Windows File Explorer window titled 'inspireatomclient'. The address bar indicates the path: 'Local > Temp > inspireatomclient'. The search bar contains 'Search inspireatomclient'. The left sidebar shows the folder structure, including 'Desktop', 'Downloads', 'Documents', 'Pictures', 'obrazky', 'obrazky2', 'qqz', 'skolenie', 'This PC', '3D Objects', 'Desktop', 'Documents', 'Downloads', 'Music', 'Pictures', and 'Videos'. The main pane displays a table of files:

Name	Type	Date modified
AM.SensArea_ETRS89.gfs	GFS File	16. 8. 2022 7:57
AM.SensArea_ETRS89.gml	GML File	16. 8. 2022 7:57
INSPIRE_DLS#B1SQA8.xml	XML File	16. 8. 2022 7:57

The status bar at the bottom indicates '3 items'.

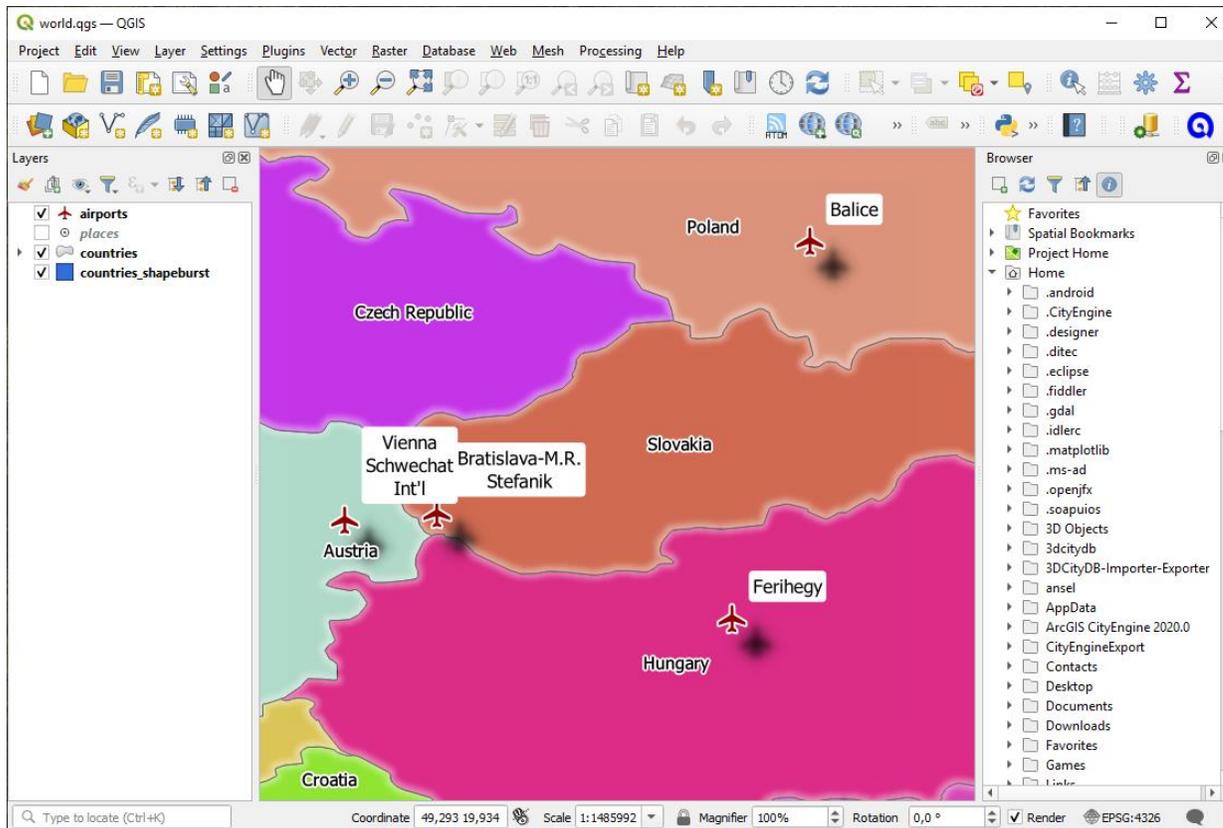
# Publikovanie služieb

- Inštalácia QGIS Server

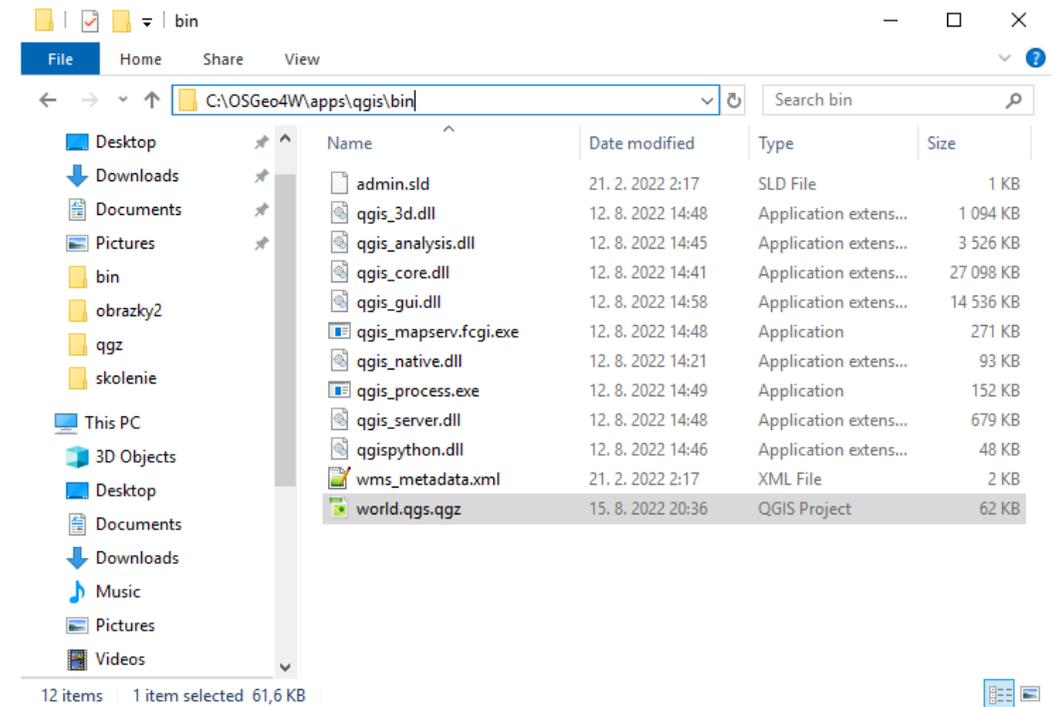


# Publikovanie služieb

- Príprava projektu

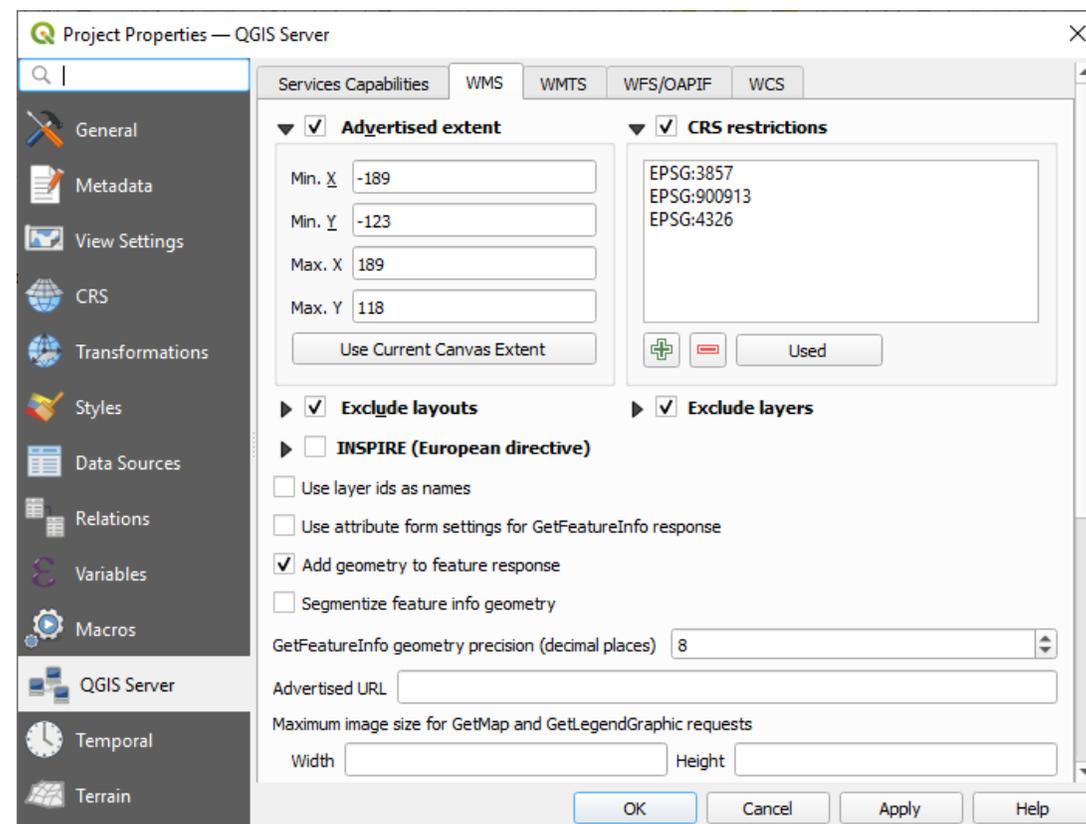
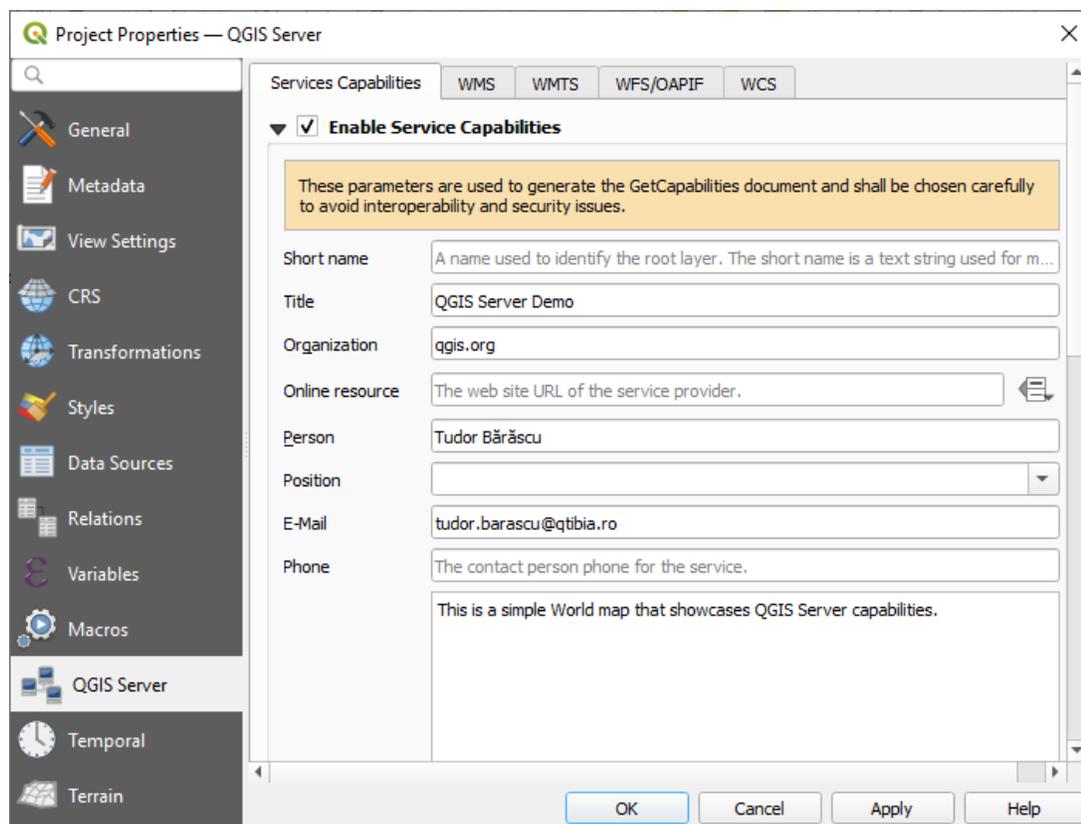


- Nakopírovaní na QGIS Server



# Publikovanie služieb

- Konfigurácia služby



# Publikovanie služieb

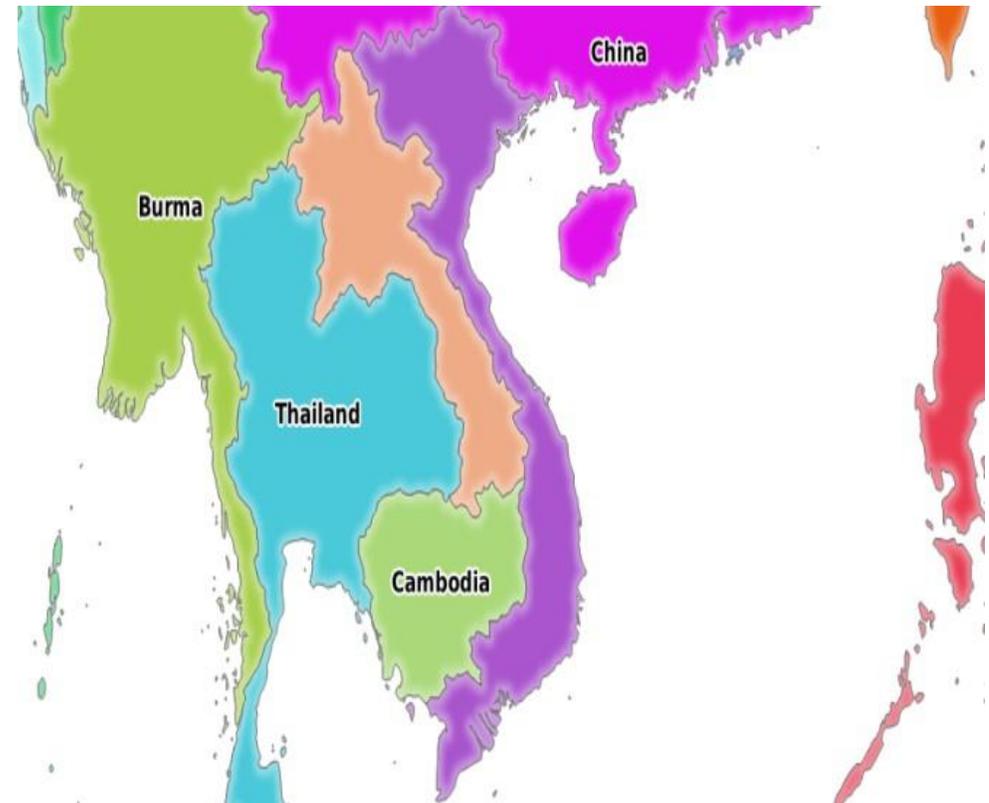
- Dopytovanie služby
  - [GetCapabilities](#)

```

▼ <WMS_Capabilities xmlns:sld="http://www.opengis.net/sld"
  xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance" xmlns="http://www.opengis.net/wms"
  xmlns:qgs="http://www.qgis.org/wms" version="1.3.0" xsi:schemaLocation="http://www.opengis.net/wms
  http://schemas.opengis.net/wms/1.3.0/capabilities_1_3_0.xsd http://www.opengis.net/sld
  http://schemas.opengis.net/sld/1.1.0/sld_capabilities.xsd http://www.qgis.org/wms
  http://localhost:8080/cgi-bin/qgis_mapserv.fcgi.exe?
  MAP=world.qgs.qgz&SERVICE=WMS&REQUEST=GetSchemaExtension">
  ▼ <Service>
    <Name>WMS</Name>
    <Title>QGIS Server Demo</Title>
    ▼ <Abstract>
      <![CDATA[ This is a simple World map that showcases QGIS Server capabilities. ]]>
    </Abstract>
    ▼ <KeywordList>
      <Keyword vocabulary="ISO">infoMapAccessService</Keyword>
      <Keyword>QGIS Server World</Keyword>
    </KeywordList>
    <OnlineResource xmlns:xlink="http://www.w3.org/1999/xlink" xlink:type="simple"
      xlink:href="http://localhost:8080/cgi-bin/qgis_mapserv.fcgi.exe?MAP=world.qgs.qgz"/>
    ▼ <ContactInformation>
      ▼ <ContactPersonPrimary>
        <ContactPerson>Tudor Bărăscu</ContactPerson>
        <ContactOrganization>qgis.org</ContactOrganization>
      </ContactPersonPrimary>
      <ContactElectronicMailAddress>tudor.barascu@qtibia.ro</ContactElectronicMailAddress>
    </ContactInformation>
    <Fees>conditions unknown</Fees>
    <AccessConstraints>None</AccessConstraints>
  </Service>
  ▼ <Capability>
    ▼ <Request>
      ▼ <GetCapabilities>
        <Format>text/xml</Format>
        ▼ <DCPType>
          ▼ <HTTP>
            ▼ <Get>
              <OnlineResource xmlns:xlink="http://www.w3.org/1999/xlink" xlink:type="simple"
                xlink:href="http://localhost:8080/cgi-bin/qgis_mapserv.fcgi.exe?MAP=world.qgs.qgz"/>
            </Get>
          </HTTP>
        </DCPType>
      </GetCapabilities>
      ▼ <GetMap>
        <Format>image/jpeg</Format>
        <Format>image/png</Format>

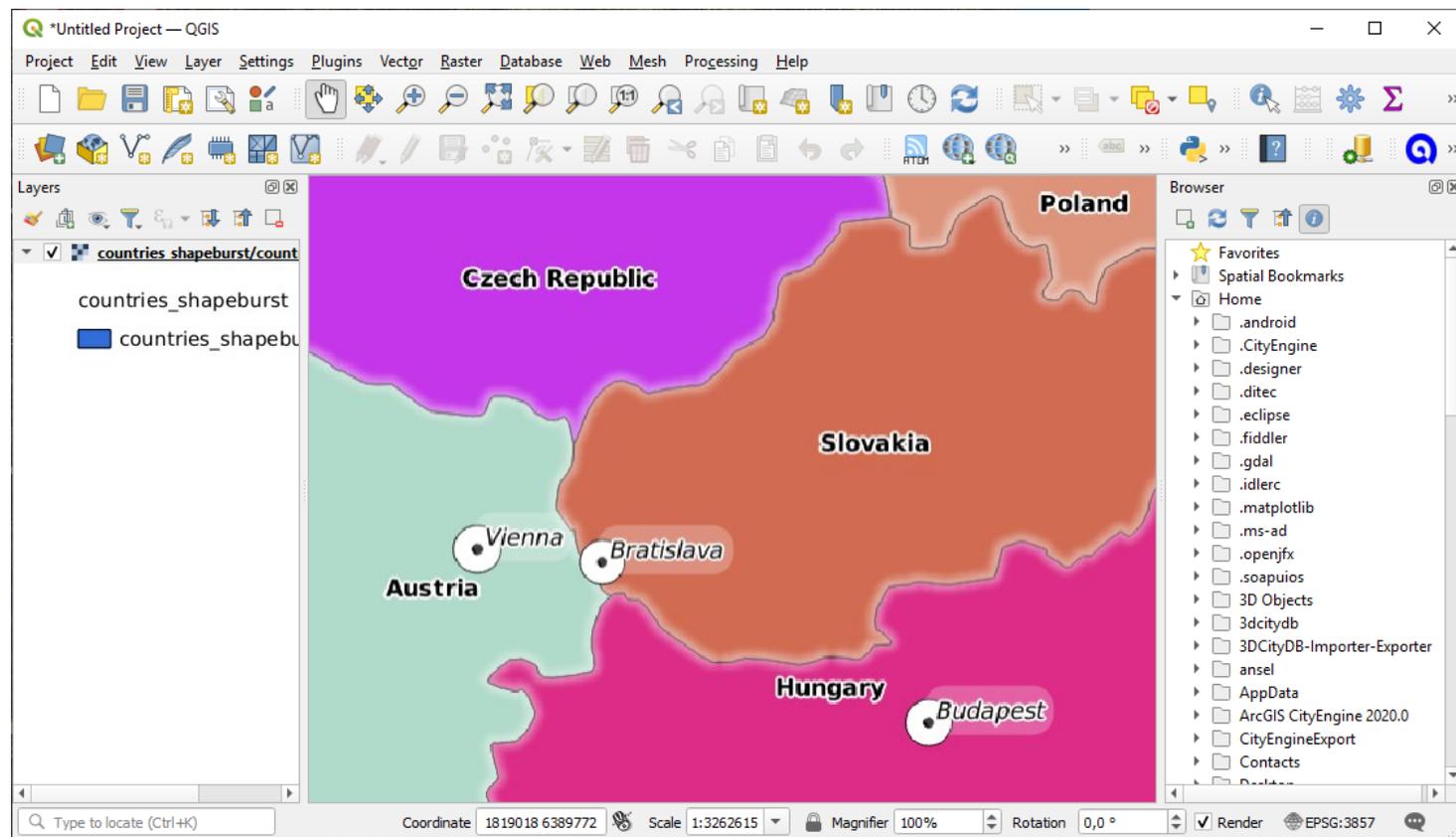
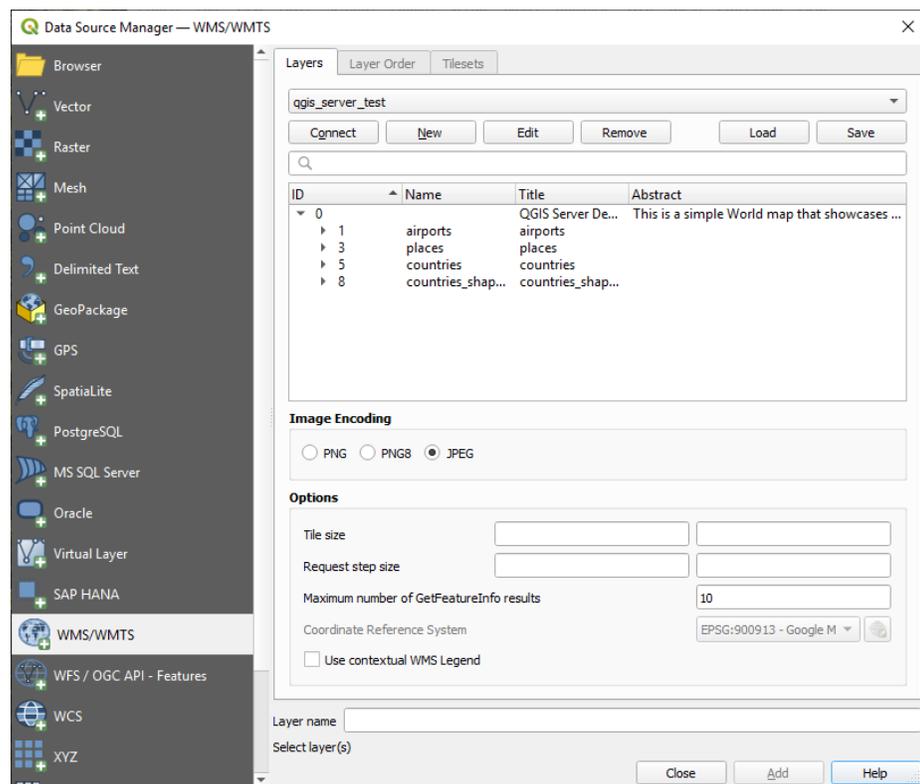
```

- Dopytovanie služby
  - [GetMap](#)



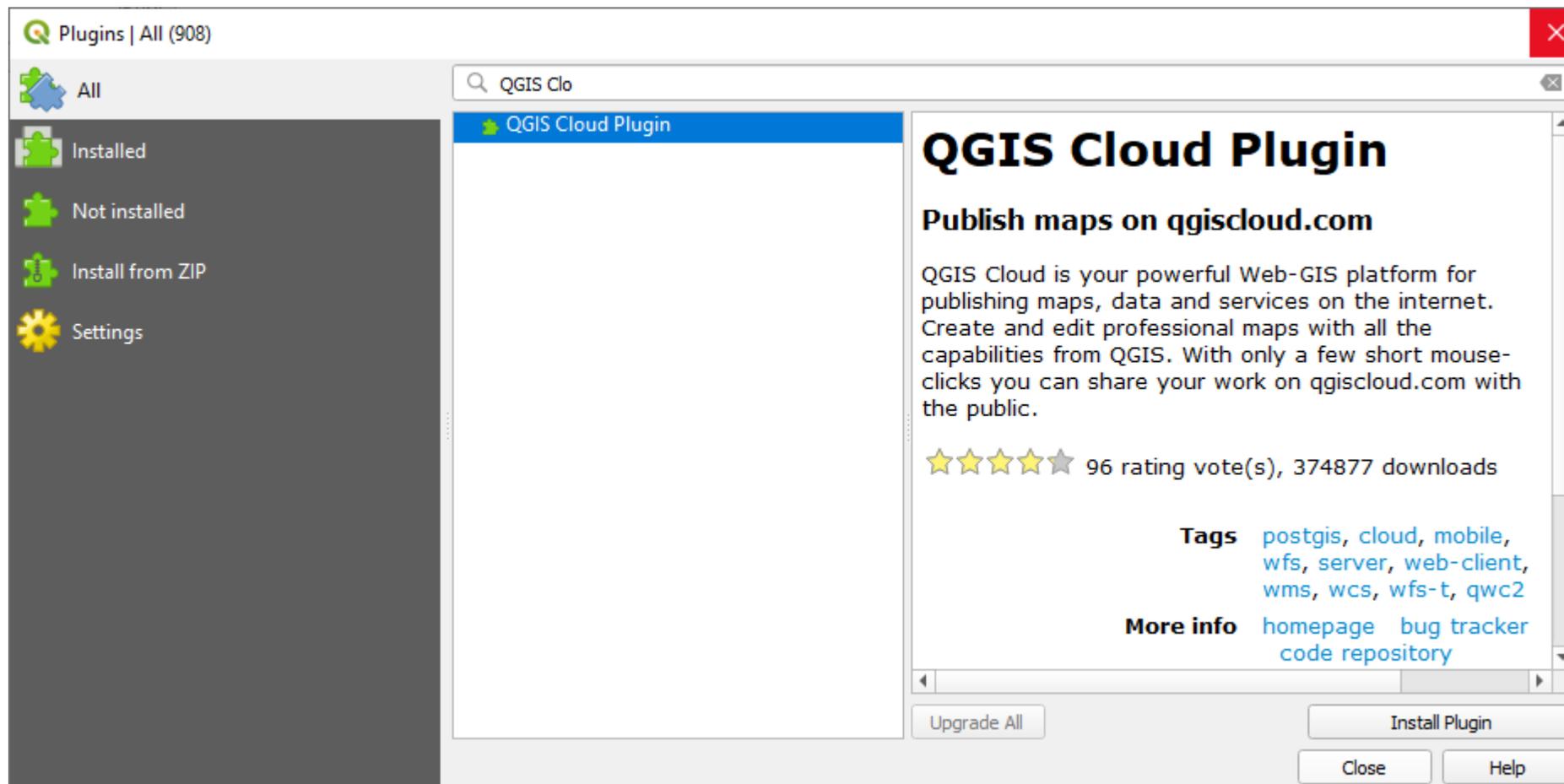
# Publikovanie služieb

- Pridanie služby do QGIS
  - URL



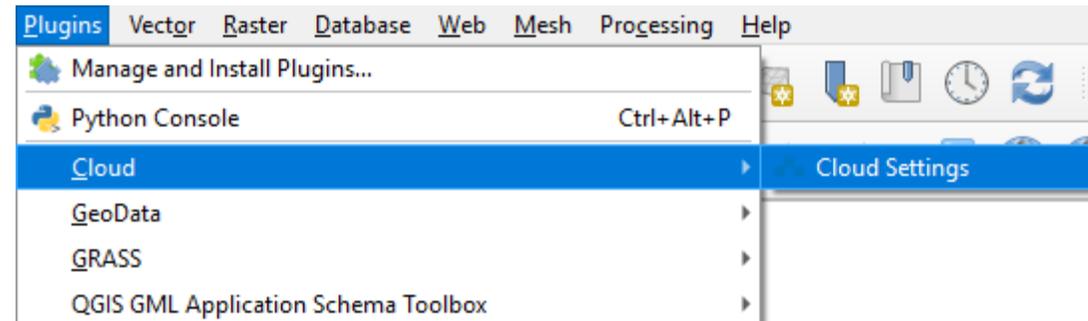
# Publikovanie služieb

- QGIS Cloud



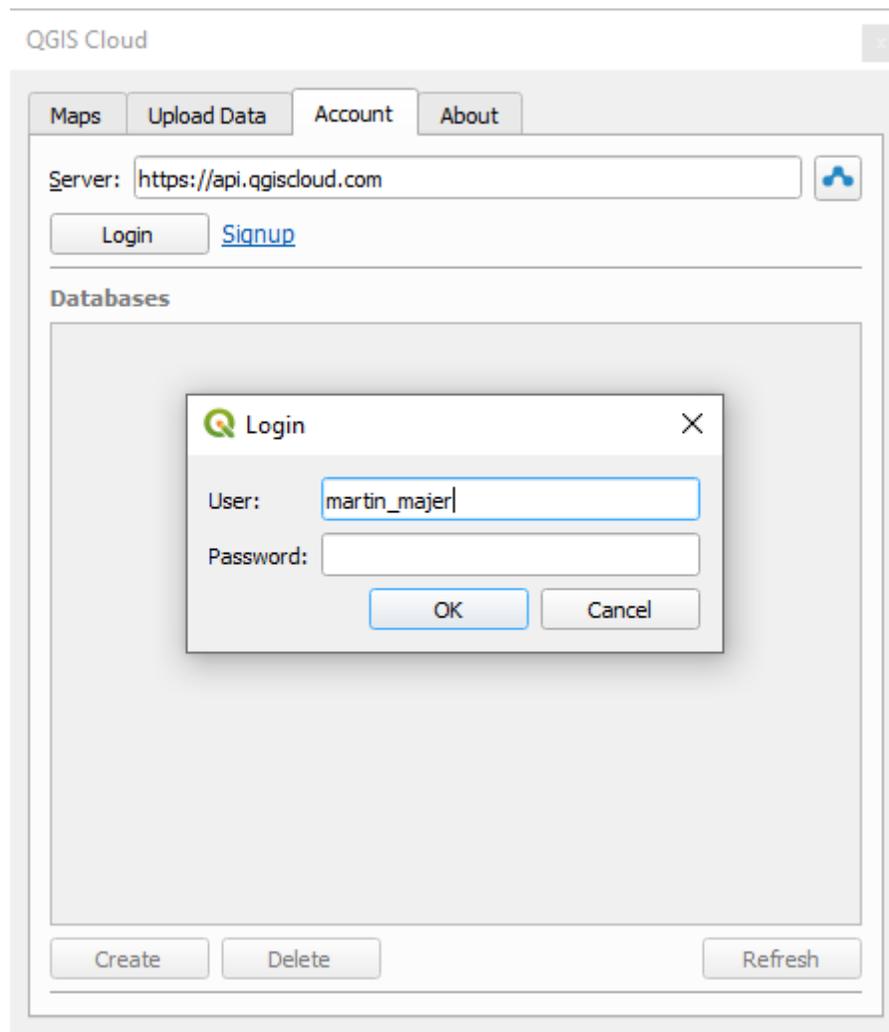
# Publikovanie služieb

- Plugins ? Cloud ? Cloud Settings



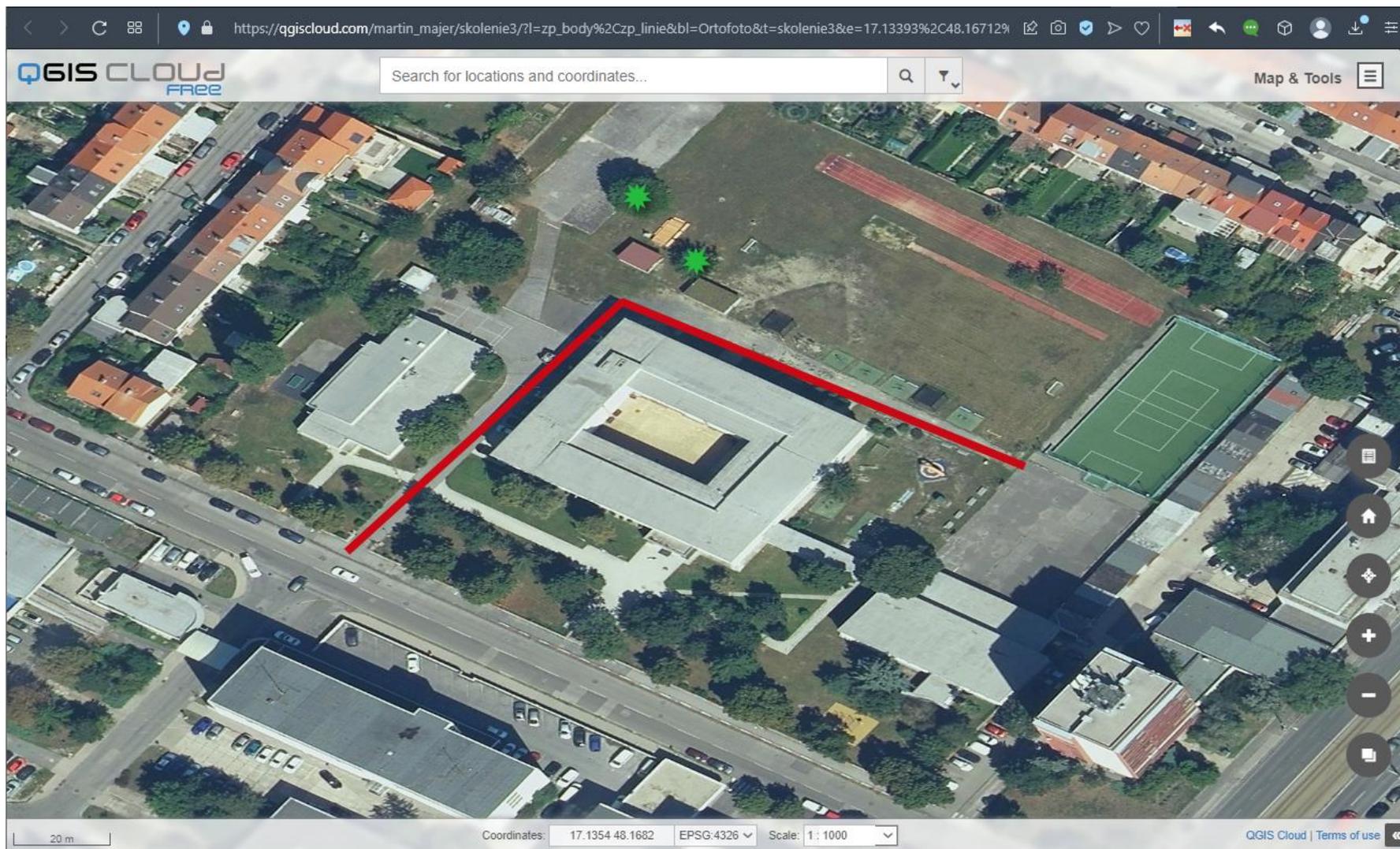
# Publikovanie služieb

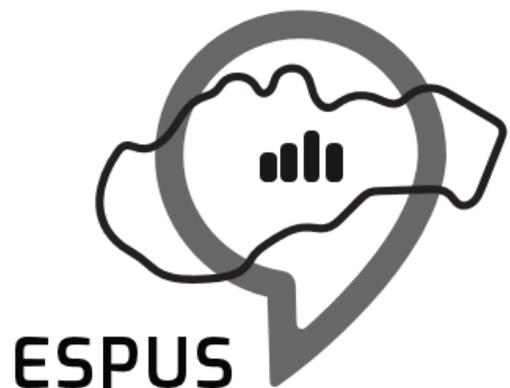
- Login
- Publish map



# Publikovanie služieb

- Výsledok





Efektívna správa priestorových údajov a služieb

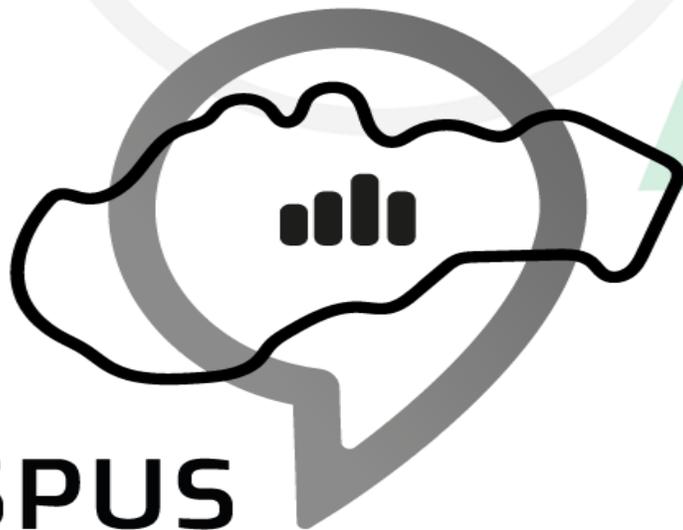
Ďakujem za pozornosť!

**Martin Majer**

[martin.majer@zymestic.sk](mailto:martin.majer@zymestic.sk)

<https://zymestic.sk>

# ESPUS



## ESPUS

Efektívna správa priestorových údajov a služieb

<https://inspire.gov.sk/projekty/espus>