



UNIVERSITÀ DEGLI STUDI DI PADOVA

GIS

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1	Downloading geospatial data from web providers	2
1.1	GLOBAL DATASETS	2
1.1.1	GEOSS portal: Group on Earth Observations	2
1.1.2	USGS: EarthExplorer.....	3
1.1.3	FAO: GIS Dataset – GeoNetwork	6
1.1.4	United Nations: Geospatial Data - UNEP	7
1.1.5	USGS: GIS Dataset – GLOBAL LANDCOVER collection	8
1.1.6	ESA: GlobCover.....	9
1.1.7	Got temperature/precipitation? UC Berkeley’s WORLDCLIM rasters	13
1.1.8	Google Earth Engine – the final data provider but coding is required	14
1.2	Regional datasets (Europe).....	14
1.2.1	CORINE Land Cover	14
1.3	Regional datasets (Italy).....	15
1.3.1	Lombardy Region cartographic portal	15
1.3.2	Veneto Region cartographic portal	15
2	Online web mapping services WMS / WCS / WFS	19
2.1.1	National Geo Portal – WFS services	21
2.1.2	Other OGC OWS services	23
2.2	TMS services – Google – Bing – OpenStreetmap etc.....	24
2.3	Open Streetmap.....	26

The following handout gives instructions on how to access and download geospatial data from the web with different means:

1. Downloading data in your computer
2. Web Services WMS¹ / WFS / TMS
3. OpenStreetmap Data²

The objective is to be able to hunt for geospatial data for your future projects, including the project required for passing the exam.

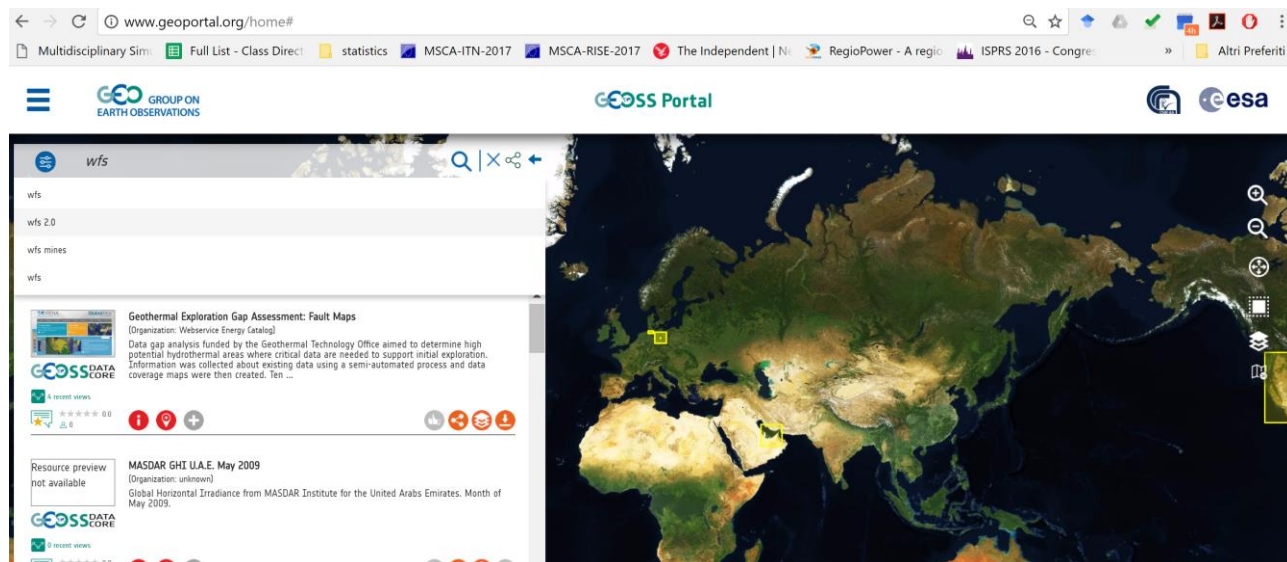
1 Downloading geospatial data from web providers

An internet portal that provides several geospatial datasets for downloading is usually called a “Catalogue”. Finding catalogues can be as easy as search using a search engine (e.g. Google), but sometimes require further investigation. In the next session some examples of web portals providing geospatial data with global, national and regional scales.

1.1 GLOBAL DATASETS

1.1.1 GEOSS portal: Group on Earth Observations

<http://www.geoportal.org/> Geoportal allows to search for both downloads and W(FCM)S services (see “Online web mapping services WMS / WCS / WFS”)



There are many options for filtering data.

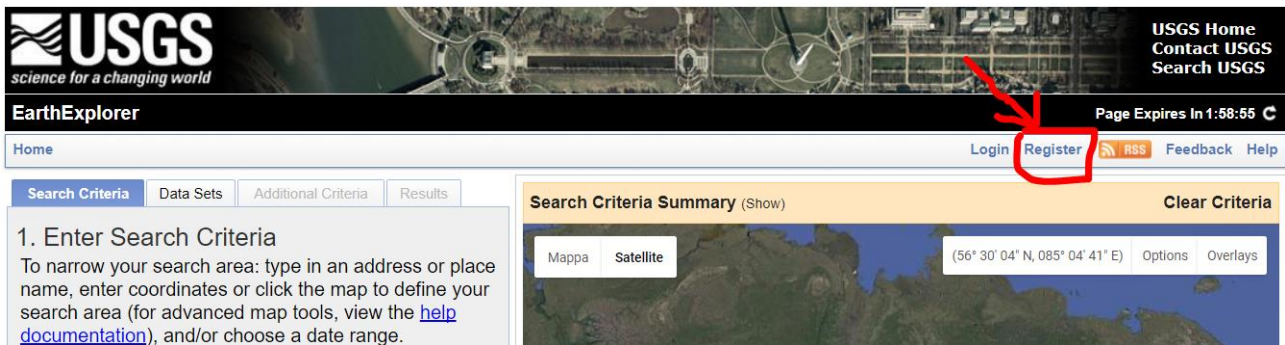
¹ Check tutorial [Working with WMS Data](#)

² Check tutorial [Searching and Downloading OpenStreetMap Data](#)

1.1.2 USGS: EarthExplorer

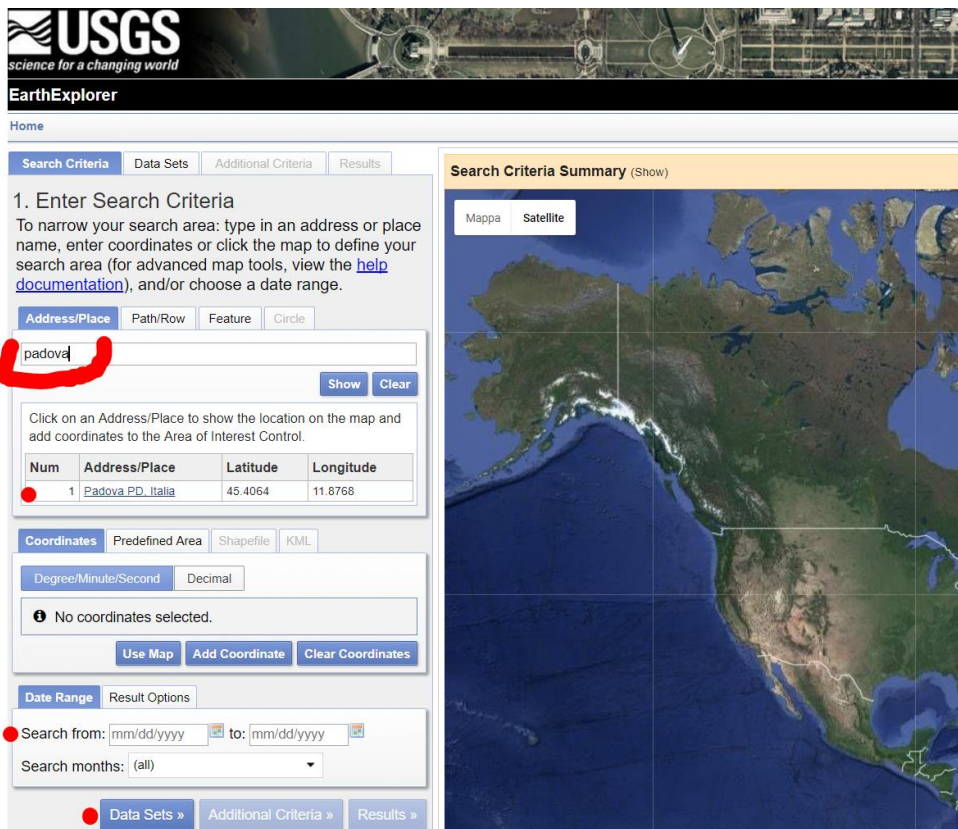
USGS' EarthExplorer <https://earthexplorer.usgs.gov/> provides raster data from satellite sensors. Special satellites (RADAR) allow to provide a raster of height values (DEM digital elevation model). In the following tutorial we will download a digital surface model (DSM) which differs from a digital terrain model (DTM) as the heights include buildings and trees, whereas the DTM only has heights of the bare terrain.

1. Create a user profile by registering from <https://earthexplorer.usgs.gov/>

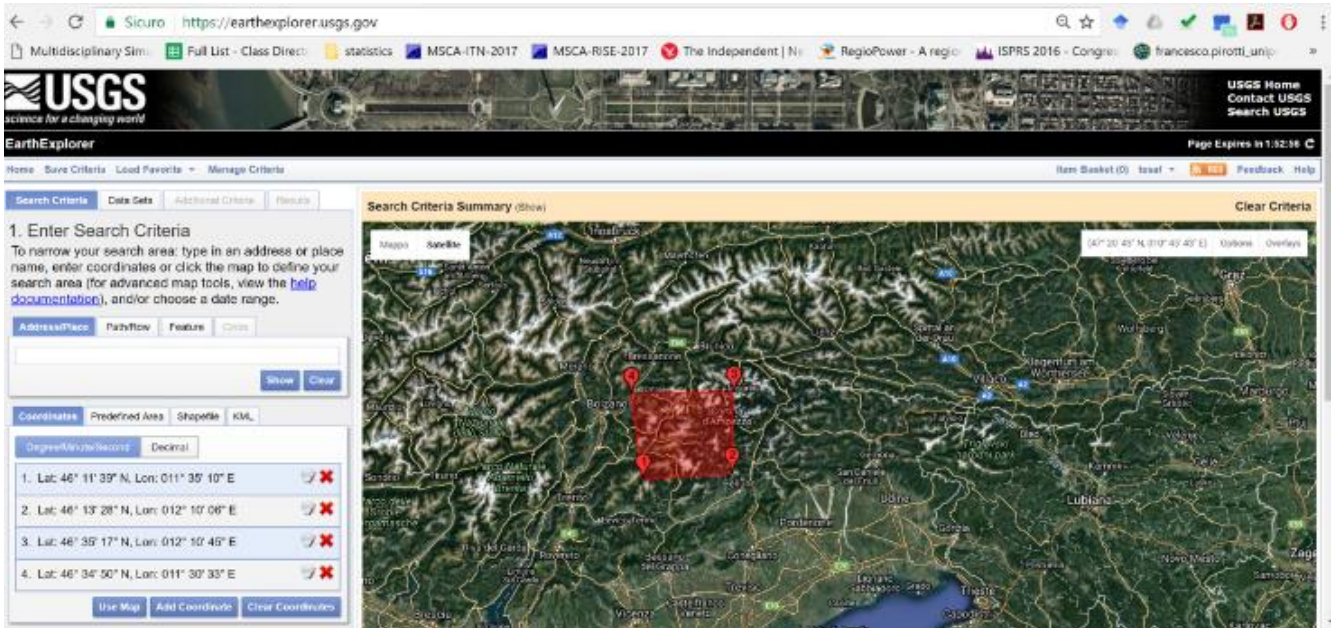


Or directly from <https://ers.cr.usgs.gov/register/>

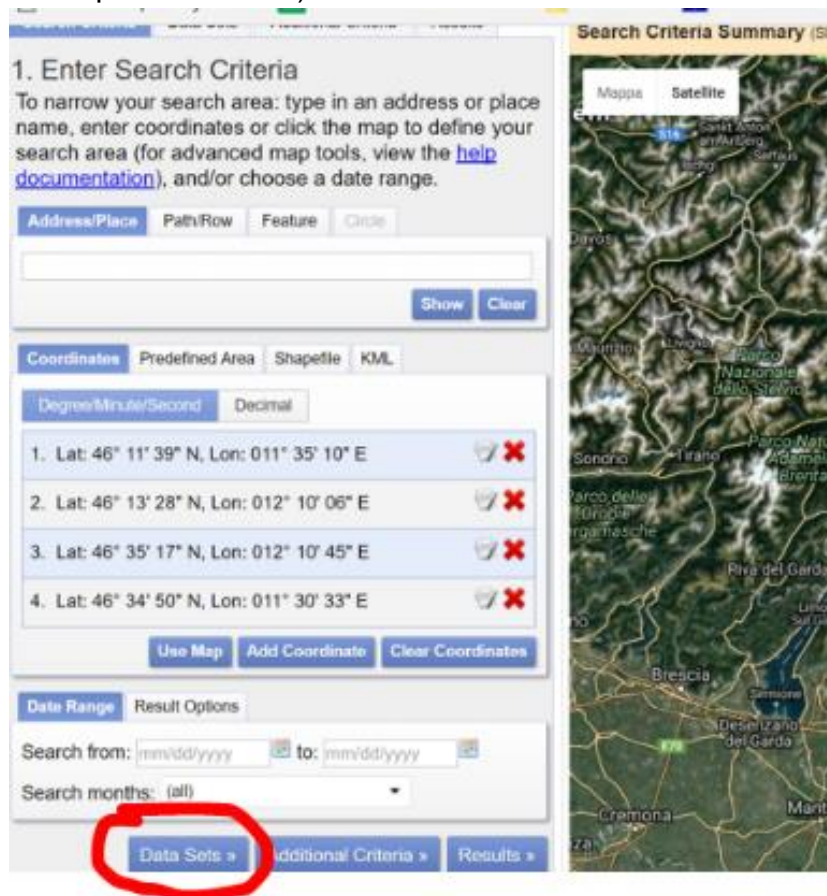
2. **Login** <https://earthexplorer.usgs.gov/> with your registration credentials (username and password) by clicking "login" (see image above)
3. Identify your area in the map. There are several means:
 - a. Search by address / place (e.g. Padova like the following image)



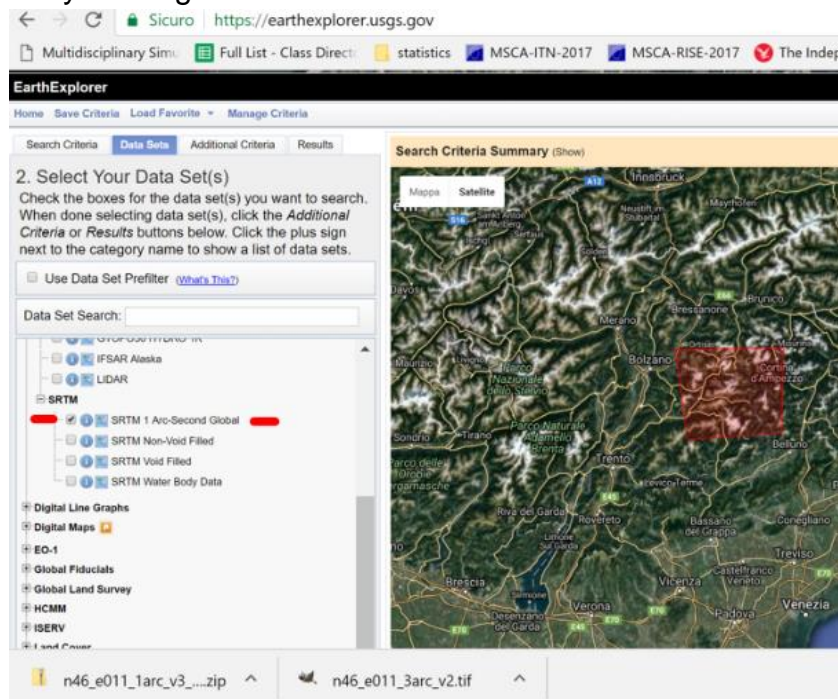
- b. Click the map directly to create a polygon or a point defining your area of interest



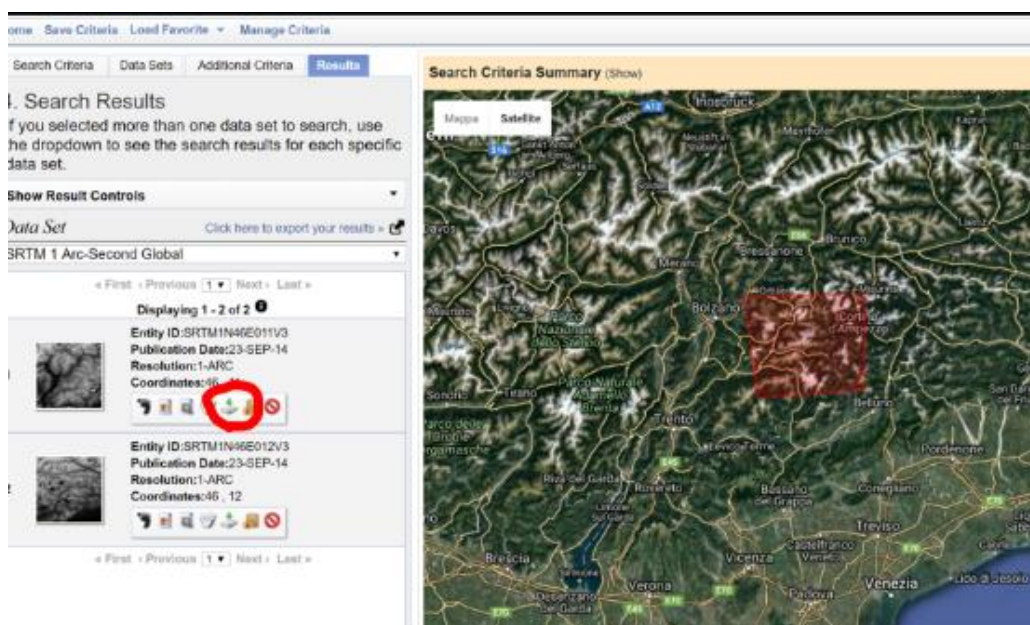
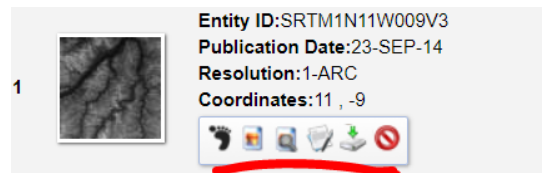
4. In the bottom, click on “datasets” (in some cases you can select a certain date – that’s in case of multitemporal datasets)



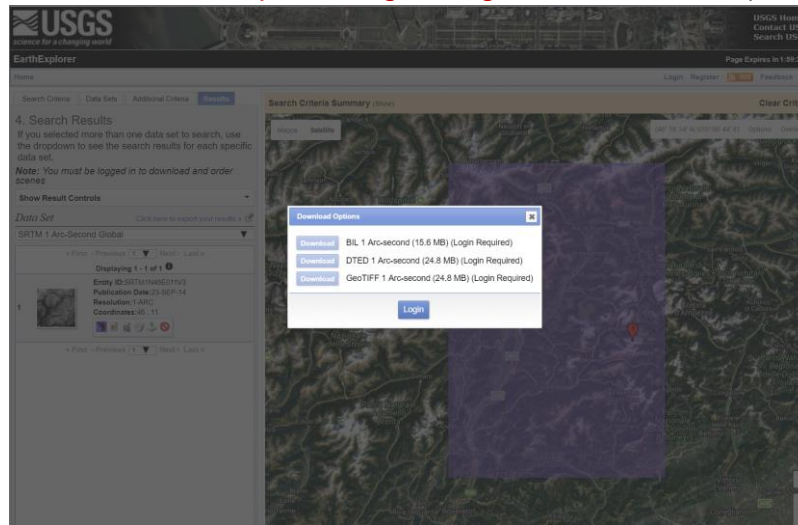
- In the input space of “Data Sets Search” type “SRTM” – you will see the product that you can select by clicking the checkbox



- All SRTM products intersecting your area will appear – for each product you can select from the toolbar the following (from left to right – see image below)
 - Show footprint
 - Show preview on map
 - Browse data
 - Show metadata
 - Download.



7. You can choose from three different raster formats, QGIS is able to read all of them (more on Raster Formats @ http://www.gdal.org/formats_list.html)



8. Load the file in your QGIS project –CRS of this file is 4326 (geographic latitude and longitude) – check handout on coordinate reference systems for more info in CRS.

Exercise: with the procedures above download “SRTM 1-arcsecond Global” and “ASTER Global DEM” datasets: **compare differences** in the two DEMs using the raster calculator and style the map. What are the minimum and maximum values?

1.1.3 FAO: GIS Dataset – GeoNetwork

<http://www.fao.org/geonetwork/srv/en/main.home>

Excellent source of global and agricultural and environmental data

Exercise: search for “rainfall African Water Resource Database” keywords and download rainfall data for Africa, e.g. “APRIL 1ST-DECADAL SHORT MEAN RAINFALL”. This is [Arc/Info Binary Grid \(.adf\)](#) format (click link for more info). Style the map. NB: the CRS (coordinate reference system) of this map is not known.

1.1.4 United Nations: Geospatial Data - UNEP

<http://geodata.grid.unep.ch/>

United Nations Environment Programme
environment for development

Environmental Data Explorer

English | Français | Contact | Help | System

select a dataset

Number of entries found: 37

Data Set Type: All types of data sets

back continue

	Data Set Type	Extent	Covered Time	Download protected?	Data Provider	Last updated	Preview
Annual Temperature	Geospatial	World	1970-2002		CRU	08/2008	
Average Monthly Maximum Temperature - April	Geospatial	World	1950-00		WorldClim	04/2009	
Average Monthly Maximum Temperature - August	Geospatial	World	1950-00		WorldClim	04/2009	
Average Monthly Maximum Temperature - December	Geospatial	World	1950-00		WorldClim	04/2009	
Average Monthly Maximum Temperature - February	Geospatial	World	1950-00		WorldClim	04/2009	
Average Monthly Maximum Temperature - January	Geospatial	World	1950-00		WorldClim	04/2009	
Average Monthly Maximum Temperature - July	Geospatial	World	1950-00		WorldClim	04/2009	
Average Monthly Maximum Temperature - June	Geospatial	World	1950-00		WorldClim	04/2009	
Average Monthly Maximum Temperature - March	Geospatial	World	1950-00		WorldClim	04/2009	
Average Monthly Maximum Temperature - May	Geospatial	World	1950-00		WorldClim	04/2009	
Average Monthly Maximum Temperature - November	Geospatial	World	1950-00		WorldClim	04/2009	
Average Monthly Maximum Temperature - October	Geospatial	World	1950-00		WorldClim	04/2009	
Average Monthly Maximum Temperature - September	Geospatial	World	1950-00		WorldClim	04/2009	
Average Monthly Minimum Temperature - April	Geospatial	World	1950-00		WorldClim	04/2009	
Average Monthly Minimum Temperature - August	Geospatial	World	1950-00		WorldClim	04/2009	
Average Monthly Minimum Temperature - December	Geospatial	World	1950-00		WorldClim	04/2009	
Average Monthly Minimum Temperature - February	Geospatial	World	1950-00		WorldClim	04/2009	
Average Monthly Minimum Temperature - January	Geospatial	World	1950-00		WorldClim	04/2009	
Average Monthly Minimum Temperature - July	Geospatial	World	1950-00		WorldClim	04/2009	
Average Monthly Minimum Temperature - June	Geospatial	World	1950-00		WorldClim	04/2009	
Average Monthly Minimum Temperature - March	Geospatial	World	1950-00		WorldClim	04/2009	
Average Monthly Minimum Temperature - May	Geospatial	World	1950-00		WorldClim	04/2009	
Average Monthly Minimum Temperature - November	Geospatial	World	1950-00		WorldClim	04/2009	
Average Monthly Minimum Temperature - October	Geospatial	World	1950-00		WorldClim	04/2009	
Average Monthly Minimum Temperature - September	Geospatial	World	1950-00		WorldClim	04/2009	
Change in Glacier Mass	Glaciers	World	1980-2004		WGMS	01/2004	
Change in Glacier Mass - Mean Cumulative Net Balance	Global	World	1980-2014		WGMS	05/2015	
Global Average Temperature	Global	World	1881-2010		NOAA/ESRL	02/2011	
Global Land-Ocean Temperature Anomaly	Global	World	1880-2013		NOAA/ESRL	09/2014	
Global Mean Land Surface Temperature	Global	World	1858-2015		Met Office Hadley Centre observations datasets	07/2015	
Global Mean Sea Surface Temperature	Global	World	1850-2015		Met Office Hadley Centre observations datasets	09/2015	
Sea Ice Area (North)	Global	World	1979-2015		NSIDC	09/2015	
Sea Ice Area (South)	Global	World	1979-2015		NSIDC	09/2015	

Map Metadata Download

Download Data

Adobe PDF
ArcInfo e00
ASCII GRID
BIL (raster)
TIF Image
ESRI (e00)
ESRI Shapefile

Source: UNEP (2017): The UNEP Environmental Data Explorer, as compiled from Berkeley Museum of Vertebrate Zoology - United Nations Environment Programme. <http://ede.grid.unep.ch>.

define years

1950-00

Select all

submit

define dataset

submit

CLIMATE CHANGE

submit

Exercise: search for “climate africa” keywords and download rainfall data for Africa. You find both raster (BIL) and vector (ESRI Shapefile). Open the BIL file and style the map.

1.1.5 USGS: GIS Dataset – GLOBAL LANDCOVER collection

<https://landcover.usgs.gov/> at link “Global Land Cover” (see image below) you will find a link to European Space Agency (ESA) datasets, see next section, **1.1.6 ESA: GlobCover**.

At link “30 meter Global Land Cover” also an interesting set of data for further GIS analyses (<https://landcover.usgs.gov/glc/>).



1.1.6 ESA: GlobCover

http://due.esrin.esa.int/page_globcover.php

due
data user element

ESA DUE HOME USERS PROJECTS COMPANIES

INFORMATION

- User Partnership
- User Workshops
- SENTINEL 2
- MWBS 2015
- MUAS 2015
- News
- FAQ

DUE DATA

- ATSR World Fire Atlas
- GlobCover
- Sentinel-2 Time Series Emulation

ESA Data User Element > GlobCover

GlobCover

Welcome to the European Space Agency GlobCover Portal

The GlobCover Portal provides access to the results of the GlobCover project. GlobCover is an ESA initiative which began in 2005 in partnership with JRC, EEA, FAO, UNEP, GOCF-GOLD and IGBP. The aim of the project was to develop a service capable of delivering global composites and land cover maps using as input observations from the 300m MERIS sensor on board the ENVISAT satellite mission. ESA makes available the land cover maps, which cover 2 periods: December 2004 - June 2006 and January - December 2009.

Please see below the links to download the products.

References

GlobCover Land Cover Maps
Use the links below to download the map.

GlobCover 2009 (Global Land Cover Map) **RELEASED ON 21st December 2010**
Here you can find:

- 1) The zip file: [Globcover2009_V2.3_Global.zip](#) (information can be found in the [Globcover2009_ReadMe.pdf](#) which is included),
- 2) Updated Product Description and Validation Report ([files/GLOBCOVER2009_Validation_Report_2.2.pdf](#))
- 3) A coloured version of the map in GeoTIFF format ([CLICK HERE](#))

Data policy

CCI LAND COVER - S2 prototype Land Cover 20m map of Africa 2016

10m Sentinel-2A cloud-free composite - Southern Africa 2016

S2 Monthly Composites North Morocco

WorldCover 2017

Exercise: Styling exercise with ESA GlobCover

When you open with QGIS the GeoTIFF file, you only see numeric values of the single cells. Each cell value corresponds to a legend label. The label is found in the MS Excel file that is distributed with the dataset. In this exercise you will learn how to create a legend file to style the layer automatically.

Appunti		Carattere			
324		X	✓	<i>fx</i>	No data (burnt are
A	B	C	D	E	
Value	Label	Red	Green	Blue	
11	Post-flooding or irrigated croplands (or aquatic)	170	240	240	
14	Rainfed croplands	255	255	100	
20	Mosaic cropland (50-70%) / vegetation (grassland/shrubland/forest) (20-50%)	220	240	100	
30	Mosaic vegetation (grassland/shrubland/forest) (50-70%) / cropland (20-50%)	205	205	102	
40	Closed to open (>15%) broadleaved evergreen or semi-deciduous forest (>5m)	0	100	0	
50	Closed (>40%) broadleaved deciduous forest (>5m)	0	160	0	
60	Open (15-40%) broadleaved deciduous forest/woodland (>5m)	170	200	0	
70	Closed (>40%) needleleaved evergreen forest (>5m)	0	60	0	
90	Open (15-40%) needleleaved deciduous or evergreen forest (>5m)	40	100	0	
100	Closed to open (>15%) mixed broadleaved and needleleaved forest (>5m)	120	130	0	
110	Mosaic forest or shrubland (50-70%) / grassland (20-50%)	140	160	0	
120	Mosaic grassland (50-70%) / forest or shrubland (20-50%)	190	150	0	
130	Closed to open (>15%) (broadleaved or needleleaved, evergreen or deciduous) shrubland (<5m)	150	100	0	
140	Closed to open (>15%) herbaceous vegetation (grassland, savannas or lichenstmosses)	255	180	50	
150	Sparse (<15%) vegetation	255	235	175	
160	Closed to open (>15%) broadleaved forest regularly flooded (semi-permanently or temporarily) - Fresh or brackish water	0	120	90	
170	Closed (>40%) broadleaved forest or shrubland permanently flooded - Saline or brackish water	0	150	120	
180	Closed to open (>15%) grassland or woody vegetation on regularly flooded or waterlogged soil - Fresh, brackish or saline water	0	220	130	
190	Artificial surfaces and associated areas (Urban areas >50%)	195	20	0	
200	Bare areas	255	245	215	
210	Water bodies	0	70	200	
220	Permanent snow and ice	255	255	255	
230	No data (burnt areas, clouds...)	0	0	0	

We can style the layer by right-click “Properties” and go the the “style” dialogue, but it would take a long time to enter all values by hand. Let’s do a trick: save a dummy legend,

Layer Properties - GLOBCOVER_L4_200901_200912_V2.3 | Style

Band rendering

Render type: Singleband pseudocolor

Band: Band 1 (Gray)

Min: 19 Max: 210

Load min/max values

Interpolation: Exact

Color: Random colors [Edit] [Invert]

Label unit suffix:

Min / max origin: Estimated cumulative cut of full extent.

Value	Co	Label
19		random label
66.8	66.8	
114	114	
162	162	
210	210	

Mode: Equal interval | Classes: 5

Classify [Add] [Remove] [Refresh] [Save] [Apply]

and then use a text editor to check format

```

dummy.txt
1 # QGIS Generated Color Map Export File
2 INTERPOLATION:EXACT
3 19,221,169,57,255,random label
4 66.8,187,94,65,255,66.8
5 114,66,248,96,255,114
6 162,169,59,92,255,162
7 210,42,116,200,255,210
8

```

Steps:

1. In MS Excel in the legend file information change columns to mirror the above table

	A	B	C	D	E	F
	Value	Red	Green	Blue	alpha	Label
11	170	240	240		255	Post-flooding or irrigated croplands (or aquatic)
14	255	255	100		255	Rainfed croplands
20	220	240	100		255	Mosaic cropland (50-70%) / vegetation (grassland/shrubland/forest) (20-50%)
30	205	205	102		255	Mosaic vegetation (grassland/shrubland/forest) (50-70%) / cropland (20-50%)
40	0	100	0		255	Closed to open (>15%) broadleaved evergreen or semi-deciduous forest (>5m)
50	0	160	0		255	Closed (>40%) broadleaved deciduous forest (>5m)
60	170	200	0		255	Open (15-40%) broadleaved deciduous forest/woodland (>5m)
70	0	60	0		255	Closed (>40%) needleleaved evergreen forest (>5m)
90	40	100	0		255	Open (15-40%) needleleaved deciduous or evergreen forest (>5m)
100	120	130	0		255	Closed to open (>15%) mixed broadleaved and needleleaved forest (>5m)
110	140	160	0		255	Mosaic forest or shrubland (50-70%) / grassland (20-50%)
120	190	150	0		255	Mosaic grassland (50-70%) / forest or shrubland (20-50%)
130	150	100	0		255	Closed to open (>15%) (broadleaved or needleleaved, evergreen or deciduous) shrubland (<5m)
140	255	180	50		255	Closed to open (>15%) herbaceous vegetation (grassland, savannas or lichens/mosses)
150	255	235	175		255	Sparse (<15%) vegetation
160	0	120	90		255	Closed to open (>15%) broadleaved forest regularly flooded (semi-permanently or temporarily) - Fresh or brackish water
170	0	150	120		255	Closed (>40%) broadleaved forest or shrubland permanently flooded - Saline or brackish water
180	0	220	130		255	Closed to open (>15%) grassland or woody vegetation on regularly flooded or waterlogged soil - Fresh, brackish or saline water
190	195	20	0		255	Artificial surfaces and associated areas (Urban areas >50%)
200	255	245	215		255	Bare areas
210	0	70	200		255	Water bodies
220	255	255	255		255	Permanent snow and ice
230	0	0	0		255	No data (burnt areas, clouds...)

2. Select (as image above) and copy/paste to the text file

```

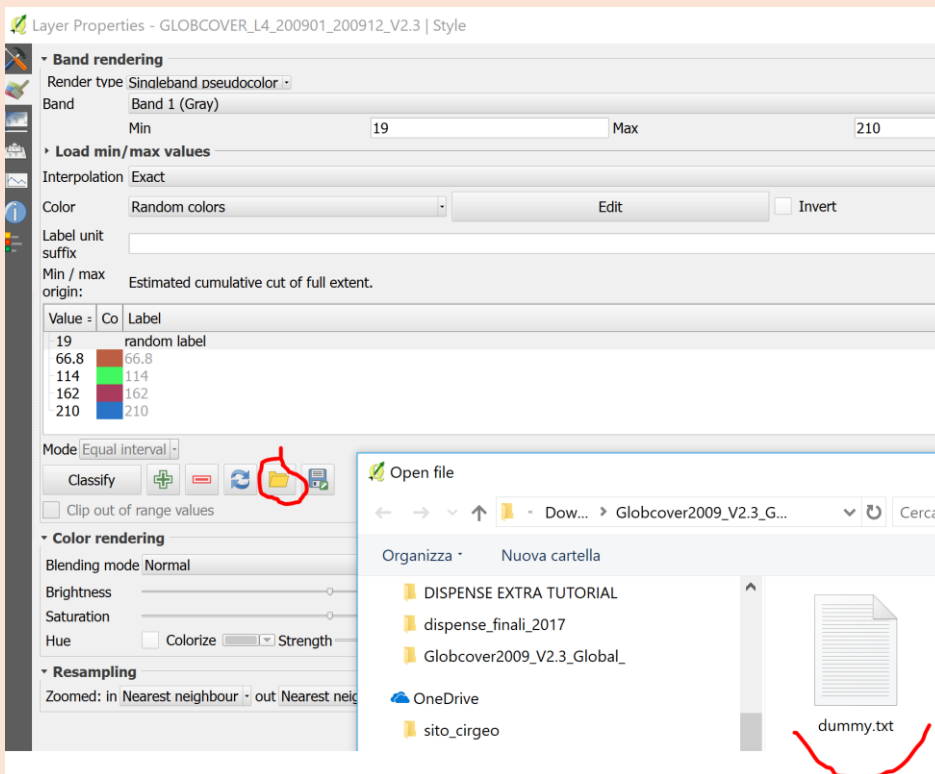
dummy.txt
1 # QGIS Generated Color Map Export File
2 INTERPOLATION:EXACT
3 19,221,169,57,255,random label
4 66.8,187,94,65,255,66.8
5 114,66,248,96,255,114
6 162,169,59,92,255,162
7 210,42,116,200,255,210
8
9
10 11 170 240 240 255 Post-flooding or irrigated cropl
11 14 255 255 100 255 Rainfed croplands
12 20 220 240 100 255 Mosaic cropland (50-70%) / veget
13 30 205 205 102 255 Mosaic vegetation (grassland/shr
14 40 0 100 0 255 Closed to open (>15%) broadleav
15 50 0 160 0 255 Closed (>40%) broadleaved decidu
16 60 170 200 0 255 Open (15-40%) broadleaved decidu
17 70 0 60 0 255 Closed (>40%) needleleaved everg
18 90 40 100 0 255 Open (15-40%) needleleaved decid
19 100 120 130 0 255 Closed to open (>15%) mixed broa
20 110 140 160 0 255 Mosaic forest or shrubland (50-7
21 120 190 150 0 255 Mosaic grassland (50-70%) / fore
22 130 150 100 0 255 Closed to open (>15%) (broadleav
23 140 255 180 50 255 Closed to open (>15%) herbaceous
24 150 255 235 175 255 Sparse (<15%) vegetation
25 160 0 120 90 255 Closed to open (>15%) broadleav
26 170 0 150 120 255 Closed (>40%) broadleaved forest
27 180 0 220 130 255 Closed to open (>15%) grassland
28 190 195 20 0 255 Artificial surfaces and associat
29 200 255 245 215 255 Bare areas
30 210 0 70 200 255 Water bodies
31 220 255 255 255 255 Permanent snow and ice
32 230 0 0 0 255 No data (burnt areas, clouds,...)

```

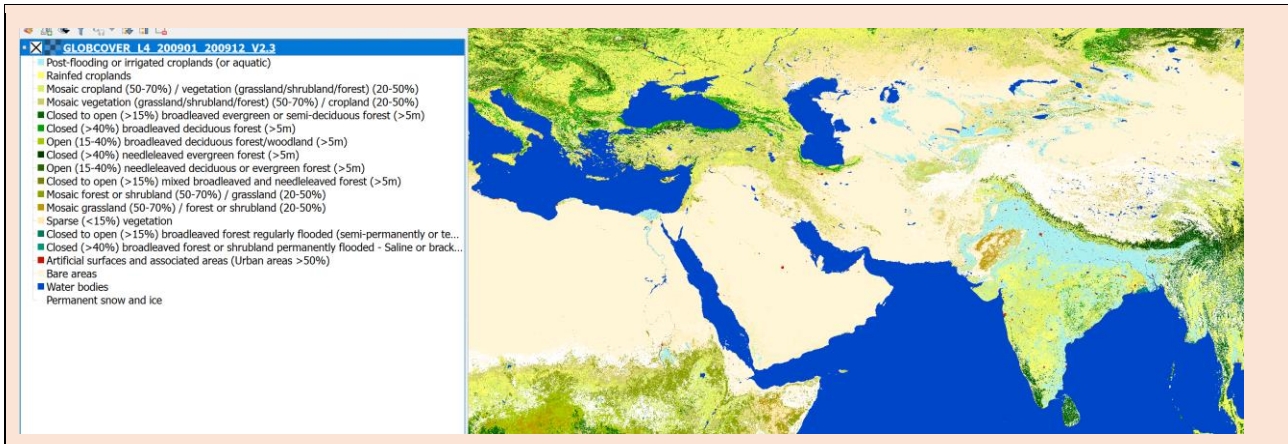
3. Make sure to change column separators to correct ones (commas) – a “find and replace” should work on any text editor. The final result should be like the image below.


```
dummy.txt x
1 # QGIS Generated Color Map Export File
2 INTERPOLATION:EXACT
3 11,170,240,240,255,Post-flooding or irrigated croplands
4 14,255,255,100,255,Rainfed croplands
5 20,220,240,100,255,Mosaic cropland (50-70%) / vegetati
6 30,205,205,102,255,Mosaic vegetation (grassland/shrubla
7 40,0,100,0,255,Closed to open (>15%) broadleaved evergr
8 50,0,160,0,255,Closed (>40%) broadleaved deciduous fore
9 60,170,200,0,255,Open (15-40%) broadleaved deciduous fo
10 70,0,60,0,255,Closed (>40%) needleleaved evergreen fore
11 90,40,100,0,255,Open (15-40%) needleleaved deciduous or
12 100,120,130,0,255,Closed to open (>15%) mixed broadleav
13 110,140,160,0,255,Mosaic forest or shrubland (50-70%) /
14 120,190,150,0,255,Mosaic grassland (50-70%) / forest or
15 130,150,100,0,255,Closed to open (>15%) (broadleaved or
16 140,255,180,50,255,Closed to open (>15%) herbaceous vec
17 150,255,235,175,255,Sparse (<15%) vegetation
18 160,0,120,90,255,Closed to open (>15%) broadleaved fore
19 170,0,150,120,255,Closed (>40%) broadleaved forest or s
20 180,0,220,130,255,Closed to open (>15%) grassland or wo
21 190,195,20,0,255,Artificial surfaces and associated are
22 200,255,245,215,255,Bare areas
23 210,0,70,200,255,Water bodies
24 220,255,255,255,255,Permanent snow and ice
25 230,0,0,0,255,No data (burnt areas, clouds,...)
26
```

4. Open the style dummy.txt that you modified



5. You will get a correct legend



1.1.7 Got temperature/precipitation? UC Berkeley's WORLDCLIM rasters

WorldClim is a set of global climate layers (gridded climate data) with a spatial resolution of about 1 km². These data can be used for mapping and spatial modelling, and multi-criteria analysis (see the dedicated tutorial). <http://worldclim.org>

From the Google Earth Engine Catalogue description:

WorldClim V1 Bioclim provides bioclimatic variables that are derived from the monthly temperature and rainfall in order to generate more biologically meaningful values.

The bioclimatic variables represent annual trends (e.g., mean annual temperature, annual precipitation), seasonality (e.g., annual range in temperature and precipitation), and extreme or limiting environmental factors (e.g., temperature of the coldest and warmest month, and precipitation of the wet and dry quarters).

The bands scheme follows that of ANUCLIM, except that for temperature seasonality the standard deviation was used because a coefficient of variation does not make sense with temperatures between -1 and 1.

WorldClim version 1 was developed by Robert J. Hijmans, Susan Cameron, and Juan Parra, at the Museum of Vertebrate Zoology, University of California, Berkeley, in collaboration with Peter Jones and Andrew Jarvis (CIAT), and with Karen Richardson (Rainforest CRC).

Resolution
30 arc seconds (≈1 km)

Bands

Name	Units	Min	Max	Scale	Description
bio01	°C	-290*	320*	0.1	Annual mean temperature
bio02	°C	9*	214*	0.1	Mean diurnal range (mean of monthly (max temp - min temp))
bio03	%	7*	96*		Isothermality (bio02/bio07)
bio04	°C	62*	22721*	0.01	Temperature seasonality (Standard deviation * 100)
bio05	°C	-96*	490*	0.1	Max temperature of warmest month
bio06	°C	-573*	258*	0.1	Min temperature of coldest month

bio07	°C	53*	725*	0.1	Temperature annual range (bio05-bio06)
bio08	°C	-285*	378*	0.1	Mean temperature of wettest quarter
bio09	°C	-521*	366*	0.1	Mean temperature of driest quarter
bio10	°C	-143*	383*	0.1	Mean temperature of warmest quarter
bio11	°C	-521*	289*	0.1	Mean temperature of coldest quarter
bio12	mm	0*	11401*		Annual precipitation
bio13	mm	0*	2949*		Precipitation of wettest month
bio14	mm	0*	752*		Precipitation of driest month
bio15	Coefficient of Variation	0*	265*		Precipitation seasonality
bio16	mm	0*	8019*		Precipitation of wettest quarter
bio17	mm	0*	2495*		Precipitation of driest quarter
bio18	mm	0*	6090*		Precipitation of warmest quarter
bio19	mm	0*	5162*		Precipitation of coldest quarter
* estimated min or max value					

1.1.8 Google Earth Engine – great data provider but coding is required

Google Earth Engine is an advanced portal for processing satellite imagery and other geospatial big-data online through their map-reduce paradigm. You can put your hands on many datasets, process them and even download results or any intermediate data you produce – with limitations on the size of the data you can download. **Coding** is required (Javascript through their online <https://code.earthengine.google.com/> or Python through Jupyter notebooks). Welcome to coding/programming if you want to dive deeper in more advanced GIS.

1.2 Regional datasets (Europe)

1.2.1 CORINE Land Cover

<https://www.eea.europa.eu/publications/COR0-landcover>

“An inventory of land cover in 44 classes, and presented as a cartographic product, at a scale of 1:100 000. This database is operationally available for most areas of Europe.”

You have 4 options for download

1. Raster (GeoTIFF) 100 m cell size
2. Raster (GeoTIFF) 250 m cell size
3. Vector model (ESRI Shapefile)
4. Vector model (SQLite Database).

<http://land.copernicus.eu/pan-european/corine-land-cover>

Global Pan-European Local Reference data FAQ

You are here: Home / Pan-European / CORINE Land Cover / CLC 2012

CLC 2012

Map View Metadata **Download**

The current CLC 2012 version is v.18.5.1, which covers all EEA39 countries. For details click [here](#).

Corine Land Cover products are available in both raster (100 and 250 meter resolution), and vector (ESRI and SQLite geodatabase). The Minimum Mapping Unit (MMU) for the CLC is 25 hectares for areal phenomena and 100 meter for linear phenomena. The time series (1990, 2000, 2006 and 2012) are complemented by change layers, which highlight changes in land cover with an MMU of 5 ha. If you are interested in changes between two surveys always use the CLC-Change layer, as this has a higher resolution than the status layer. Results can be filtered by using the search box.

Please, remove **popup block** on your browser for <http://land.copernicus.eu/> to download the products.

Search:

<input type="checkbox"/>	Name	Year	Type	Format	Version	Size	Download
<input type="checkbox"/>	Corine Land Cover	2012	Raster	100m GeoTIFF	18.5.1	71.4 MB	
<input type="checkbox"/>	Corine Land Cover	2012	Raster	250m GeoTIFF	18.5.1	31.8 MB	
<input type="checkbox"/>	Corine Land Cover	2012	Vector	ESRI Geodatabase	18.5.1	1.8 GB	
<input type="checkbox"/>	Corine Land Cover	2012	Vector	SQLite Database		2.5 GB	

Download selected items (0) Download all

1.3 Regional datasets (Italy)

1.3.1 Lombardy Region cartographic portal

<http://www.geoportale.regione.lombardia.it/download-dati>

1.3.2 Veneto Region cartographic portal

The Veneto Region portal - <https://idt2.regione.veneto.it> - provides downloading capabilities and also services (see chapter **Online web mapping services WMS / WCS / WFS**).

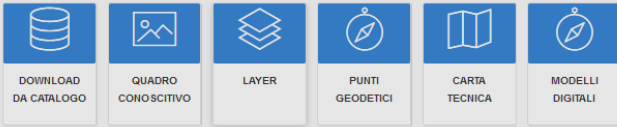
For downloading raster and vector datasets:

<https://idt2.regione.veneto.it/idt/downloader/download>

You can choose the CRS (see the handout on coordinate reference systems), and filter using the province and municipality of interest (e.g. Padova) – below and example for downloading the Urban Agricultural Areas.

DOWNLOAD DATI

All'interno di questa Sezione è possibile effettuare il download delle banche dati della Regione del Veneto (dati vettoriali, raster o alfanumerici). L'utente ha la possibilità di ricercare i dati di interesse attraverso il Catalogo (Catalogo Metadati), effettuare il download dell'intero Quadro Conoscitivo Regionale (link a pagina di spiegazione) suddiviso per limiti amministrativi, o per singolo layer ritagliato per comune di interesse. Nella stessa sezione è possibile effettuare il download dei Prodotti Cartografici (link a pagina di spiegazione) suddivisi in Punti Geodetici (Capisaldi e Vertici), Carta Tecnica Regionale (CTRN) e GeoDB Topografici e DTM (Modello Digitale del Terreno a 5 e 25 metri).



LAYER

This section allows the download of an information layer for a specific municipality and the layer of interest and press the Download Layer button.

Sistema Riferimento
CRS nativo

Layer
Progetto Area Agricola Metropolitan

Elenco Province
Padova

Elenco Comuni
Padova

Download Layer

Confirm

▲ Procedere con il download?

Confirm

Annulla

If you want to mine for data using key-words, you can use the Catalog

REGIONE DEL VENETO

Home | Aerofototeca | Gestione Metadati | Ricerca Da Catalogo | Condizioni d'utilizzo

IDT-RV 2.0 – INFRASTRUTTURA DATI TERRITORIALI DELLA REGIONE DEL VENETO

VISUALIZZATORI GEOGRAFICI
Accesso Libero

RICERCA DA CATALOGO
Accesso Libero

DOWNLOAD DATI GEOGRAFICI
Accesso Libero

TRASFORMAZIONE COORDINATE
Accesso Riservato

Cerca nel sito...

NOTIZIE

ACCESSO LIBERO AL GEOPORTALE

19 febbraio 2019
Viste le numerose richieste di registrazione da parte di utenti "privati" si ricorda che l'accesso ...
[Continua]

SONDAGGI

Quale nuova funzionalità ritieni più utile nel Geoportale?

La disponibilità del WebGIS per visualizzare in mappa i dati in maniera semplice e veloce.

La ricerca dei dati attraverso il nuovo catalogo.

La possibilità di compilare i metadati online e validarli secondo standard RNDT.

Vota

Visualizza risultato sondaggi

GEOPORTALE
VENETO

Il GeoPortale regionale consente di visualizzare, consultare e scaricare dati territoriali ed ambientali messi a disposizione dalla Regione del Veneto.
L'accesso è libero e non necessita di alcuna registrazione.

Il portale è suddiviso in 4 specifiche sezioni:

1. Sezione "Visualizzatori Geografici", dove sono presenti i vari WebGIS realizzati e classificati in base alle funzioni svolte (Aerofototeca, Cartografia di base, Progetto Venezia etc...)
2. Sezione "Catalogo Metadati", permette di ricercare le informazioni territoriali e ambientali della Regione Veneto e degli altri Enti che pubblicano il proprio catalogo in formato OGC - CSW (Catalogue Web Service); il Catalogo è sviluppato completamente con tecnologia open source e si basa su ESRI Geoportal Server;
3. Sezione "Download Dati", permette di effettuare il download dei dati vettoriali, raster, alfanumerici, suddivisi in base alla tipologia di prodotti ricercati. Per il download del Quadro Conoscitivo per la redazione degli strumenti urbanistici e territoriali (legge regionale 11/2004) riservato agli Enti Locali, cliccare qui;
4. Sezione "Trasformazione coordinate" disponibile, consente di convertire in tempo reale coordinate planimetriche tra i Sistemi di Riferimento più usati in Italia. Attualmente il servizio è disponibile solo per gli Enti Locali, previa registrazione.

Servizi OGC messi a disposizione:

With key-words you can find both geospatial data and documents. If you want only geospatial data you can filter using only “Layers”

REGIONE DEL VENETO Il Geoportale dei dati Territoriali

Area Riservata | Login Enti Locali | English | Contatti | FAQ

Home | Aerofototeca | Gestione Metadati | Ricerca da catalogo | Condizioni d'utilizzo

RICERCA DA CATALOGO

Il Catalogo permette di ricercare le informazioni territoriali e ambientali della Regione Veneto e degli altri Enti che pubblicano il proprio catalogo in formato OGC - CSW (Catalogue Web Service) e aderiscono al GeoPortale. Una volta individuato il dato d'interesse, è possibile consultarne il metadato, visualizzare il dato in un visualizzatore (insieme agli altri temi di interesse) e scaricarlo ove previsto dalle politiche di diffusione assunte dai proprietari. È possibile, inoltre, consultare i metadati da client esterni attraverso il servizio di CSW (CSW 2.0.2 ISO Profile):

Il CSW - Catalog Service for the Web è uno standard dell'OGC adottato anche in ambito INSPIRE per definire un'interfaccia per servizi di ricerca, navigazione e interrogazione di metadati su dati e servizi, in modo che i metadati siano consultabili anche da client esterni al catalogo proprietario, in maniera automatica. Se si dispone quindi di un'applicazione in grado di utilizzare il servizio CSW è possibile invocare il servizio digitando nell'applicazione la URL del CSW, impostando i parametri eventualmente richiesti secondo necessità.

Istruzioni per la ricerca

Ricerca Semplice
Digitare la parola esatta da ricercare o parte di essa seguita dal carattere jolly (*).
ATTENZIONE: non in prima posizione.

Ricerca Avanzata
Classificazione RV
Digitare la parola esatta da ricercare o parte di essa seguita dal carattere jolly (*). ATTENZIONE: non in prima posizione.
Dettagliata
Testo esatto
Digitare la parola esatta. Verranno restituiti risultati solo nel caso in cui il testo conterrà esattamente la parola digitata.
Almeno una parola (OR)
Digitare una o più parole (separate da spazi). Verranno restituiti risultati nel caso in cui il testo contenga almeno una delle parole digitate. È possibile utilizzare il carattere jolly (*) accanto a ciascuna parola digitata per estendere i risultati.
Tutte le parole (AND)
Digitare una o più parole (separate da spazi). Verranno restituiti risultati nel caso in cui il testo contenga tutte le parole digitate non necessariamente in sequenza. ATTENZIONE: Se anche una delle parole digitate non dovesse essere presente non verranno restituiti risultati.

RICERCA:
agricol* Ovunque 🔍

Ricerca avanzata
Classificazioni RV Dettagliata

TIPO DI DATO DA RICERCARE
Tutti **Layer** Documento Serie

RICERCA SU BASE

From results you can:

- 1- Read metadata. Metadata keep all information that are not directly in the data – for example who is the owner, the date that data were acquired, copyright etc...

Esporta risultato in CSV | Esporta risultato in JSON | Vista da 1 a 3 di 3 elementi | Ordina per: Titolo

IDT Regione Veneto
Guid: arpa_ve:c0507061_RischioPerAzot
Titolo: Carta del rischio di percolazione dell'azoto
Descrizione: Suddivisione del territorio regionale di pianura in 5 classi di rischio di percolazione dell'azoto di origine agricola nelle acque profonde

Apri | Download | **Dettagli**

Scheda Metadati
Metadati-XML

IDT Regione Veneto
Guid: arpa_ve:c1016281_CarichiAzotoAgr
Titolo: Carichi di azoto agricolo, da allevamento e da fertilizzanti
Descrizione: Carichi sul suolo di azoto agricolo a livello comunale, suddivisi in apporti da effluenti da allevamento e da concimazione

- 2- You can download the layer for all the Region or for only a municipality or province.

Esporta risultato in CSV | Esporta risultato in JSON | Vista da 1 a 3 di 3 elementi | Ordina per: Titolo

IDT Regione Veneto
Guid: arpa_ve:c0507061_RischioPerAzot
Titolo: Carta del rischio di percolazione dell'azoto
Descrizione: Suddivisione del territorio regionale di pianura in 5 classi di rischio di percolazione dell'azoto di origine agricola nelle acque profonde

Apri | **Download** | Dettagli

Download Layer
Download per Comune o Prov.

IDT Regione Veneto
Guid: arpa_ve:c1016281_CarichiAzotoAgr

- 3- Almost all data are available also via web services, check Online web mapping services WMS / WCS / WFS section below.

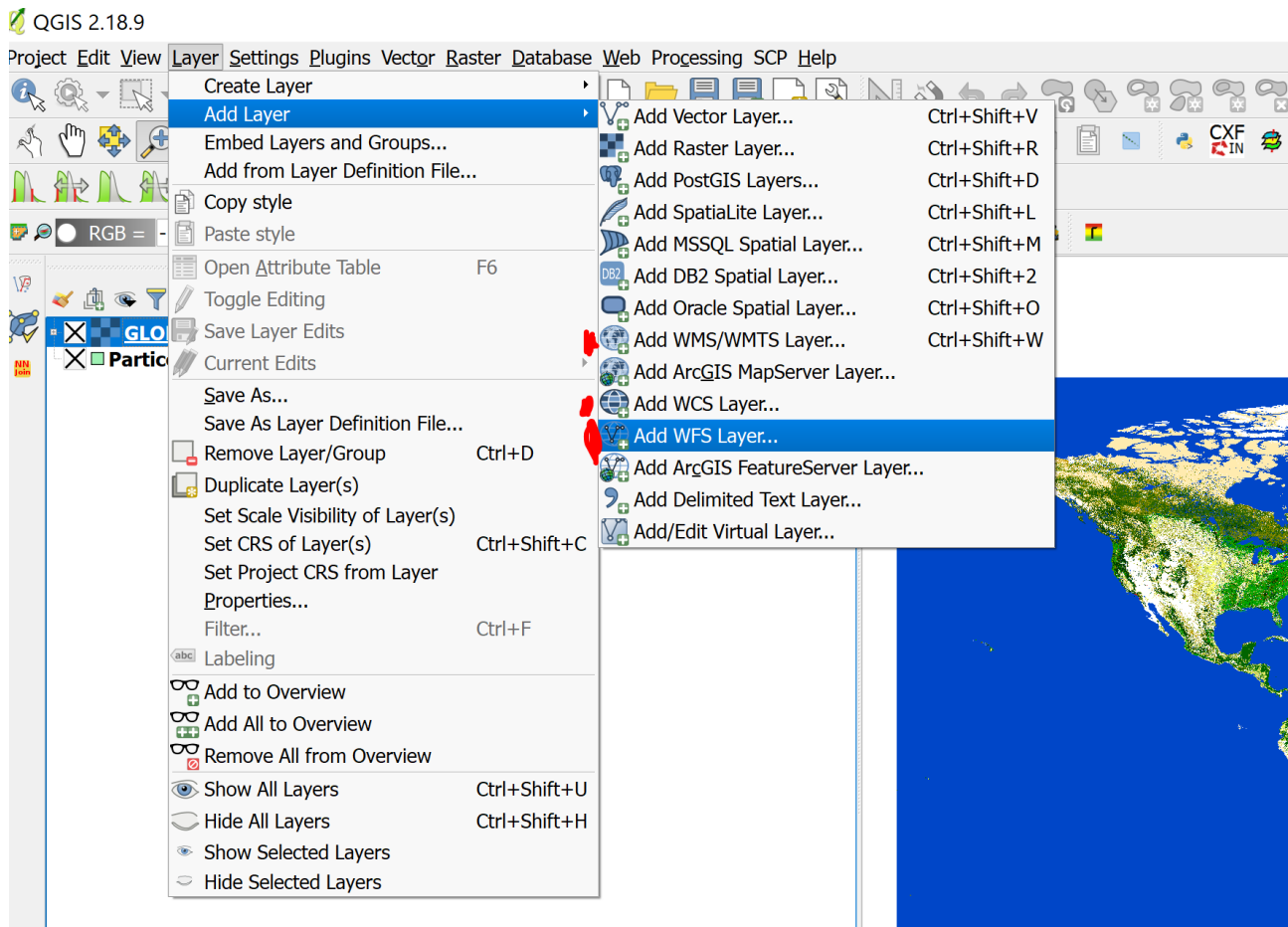
2 Online web mapping services WMS / WCS / WFS

These are online services providing access to the data for download or visualization. WMS is only for visualization, WCS and WFS are respectively for downloading data as well, for raster (grid) data and vector data respectively.

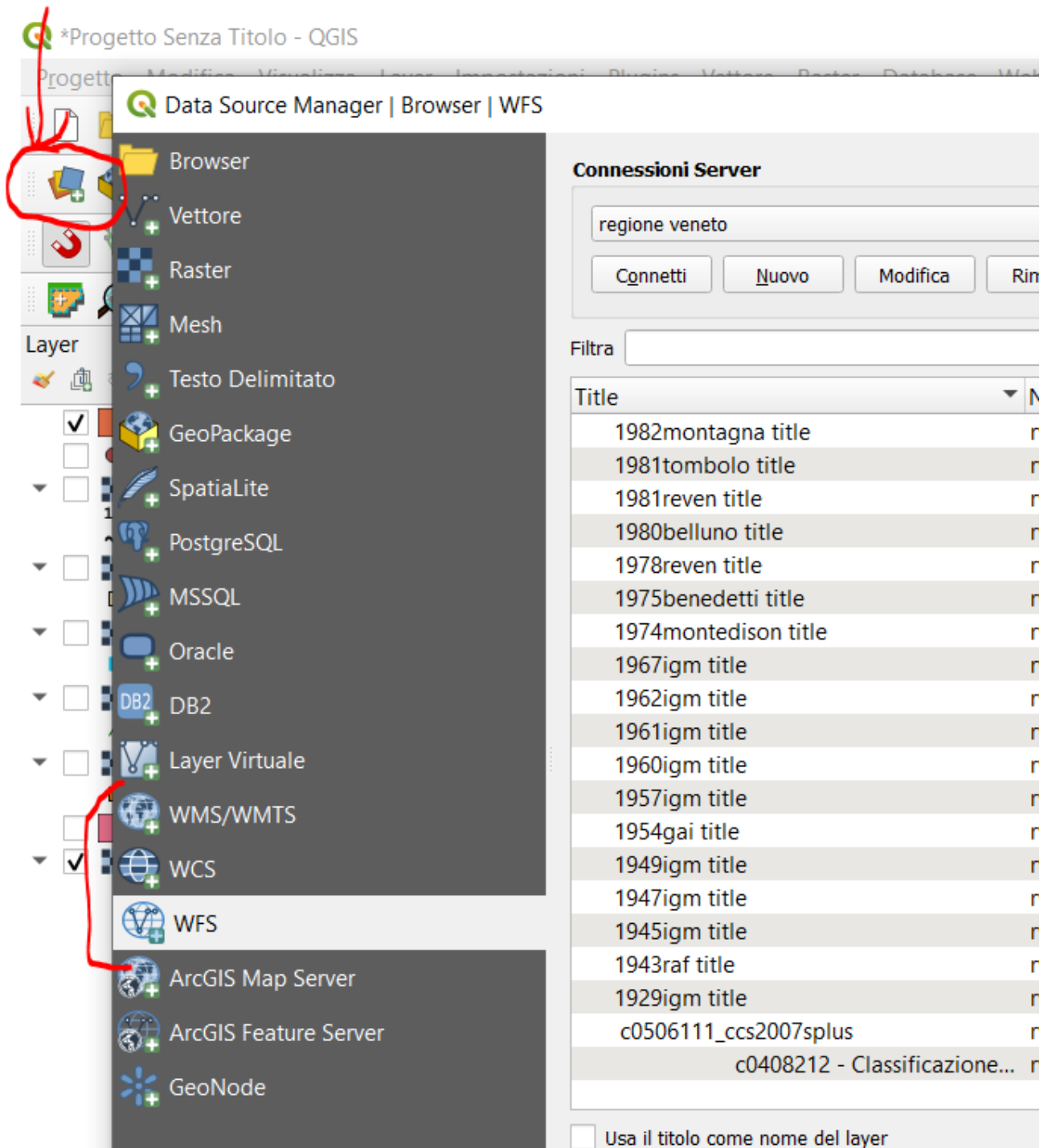
1. WMS – Web Mapping Services – see also tutorial
2. WCS – Web Coverage Services
3. WFS – Web Feature Services

There are many more services, which are standards defined by user community of the Open Geospatial Consortium (https://en.wikipedia.org/wiki/Open_Geospatial_Consortium) - OGC. As a matter of fact these services have been recently referred to the term: **OWS** – Open Geospatial Consortium (OGC) **Web Services**.

You access these data either from the menu bar, “Layer” → “Add layer”



...or you can use the Data source manager by clicking the icon in the toolbar (see figure below).



In all cases you will need to add a web address (URL) to the dialogue window. See next example and bottom of next section for some URL sources.

2.1.1 National Geo Portal – WFS services

<http://www.pcn.minambiente.it/mattm/en/>

Click “Services→ “Network Services - OGC”.



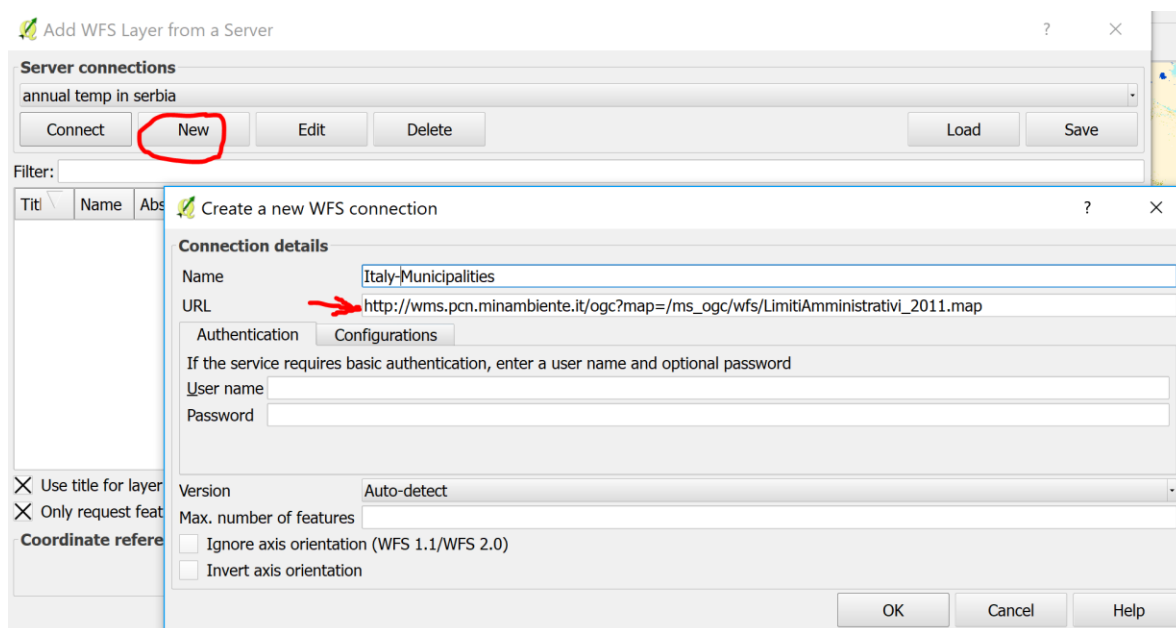
Select in the next page WFS Services



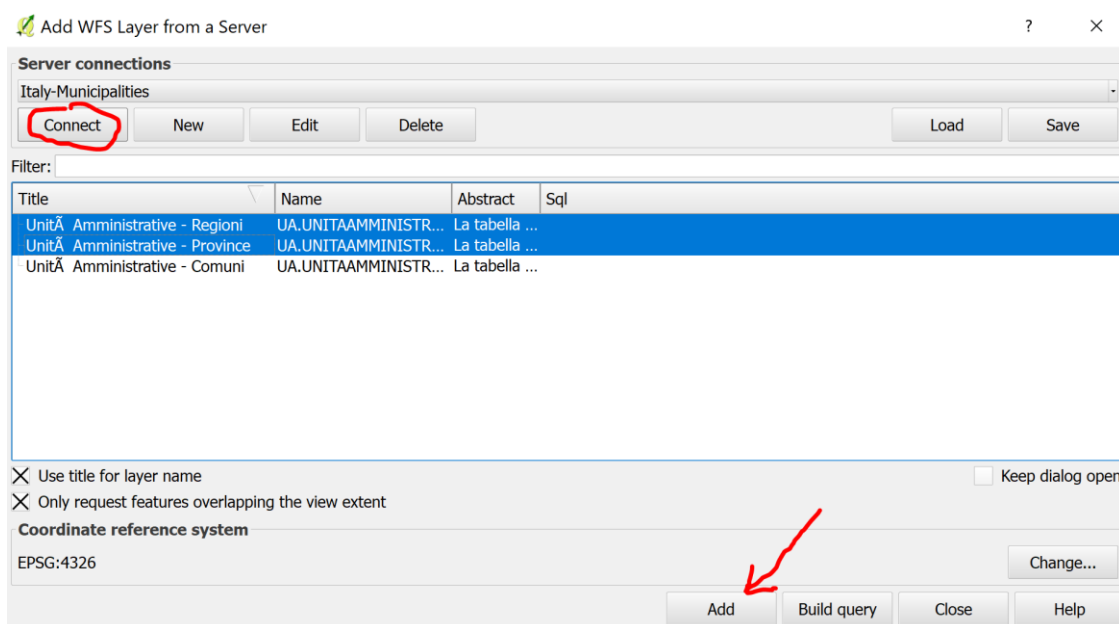
You will see a list of datasets, all have a URL address – we will “Copy URL” of the data we want. For example “Unità amministrative” is the border of municipalities in Italy (layer names are only in Italian).

Toponimi d'Italia IGM	http://wms.pcn.minam...	Capabilities
Unità amministrative regionali, provinciali e comunali	http://wms.pcn.minam...	Capabilities

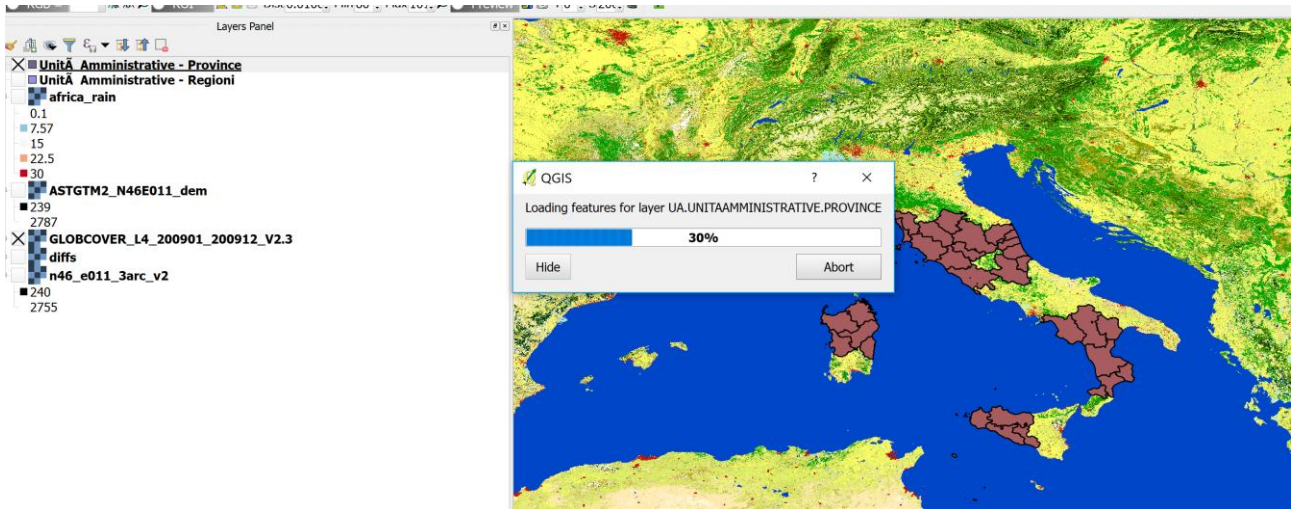
In the QGIS menu “Layer” → “Add Layer” → “Add WFS layer” you will get a dialogue window, click “New” and copy the URL in the input area, and give a Name to the layer



After click “ok” and “connect” from the main window. You will get three sub-layers: regions, provinces and towns – you can choose one ore more layers and then “Add” to add to project:



The layers will load: it might take some time depending on the size of the data, on internet connection speed and on the speed of the server providing the WFS service



NB: the same identical procedure can be used to add WMS or WCS service layers, which add raster data: QGIS menu “Layer” → “Add Layer” → “Add WCS layer” or “Add WMS layer”

2.1.2 Other OGC OWS services

https://www.qgistutorials.com/en/docs/working_with_wms.html

WMS

<https://mrdata.usgs.gov/wms.html> - USGS OGC Web Mapping Services

<https://idt2-geoserver.regione.veneto.it/geoserver/ows> - Veneto Region Styled raster

<https://idt2.regione.veneto.it/gwc/service/wmts> - Veneto Region orthophotos

WFS

<https://mrdata.usgs.gov/wfs.html> - USGS OGC Web Feature Services

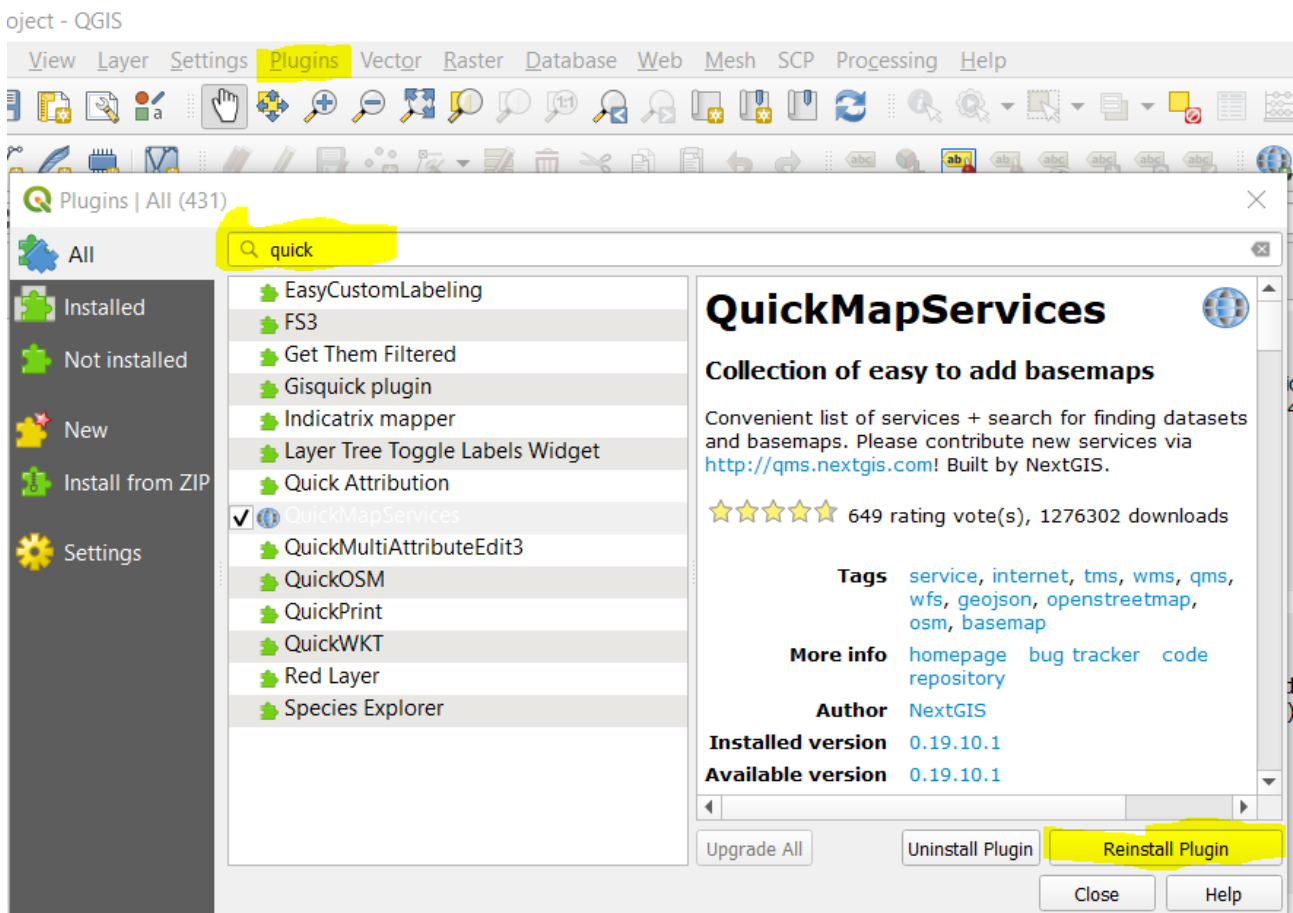
<https://idt2-geoserver.regione.veneto.it/geoserver/ows> - Veneto Region

2.2 TMS services – Google – Bing – OpenStreetmap etc...

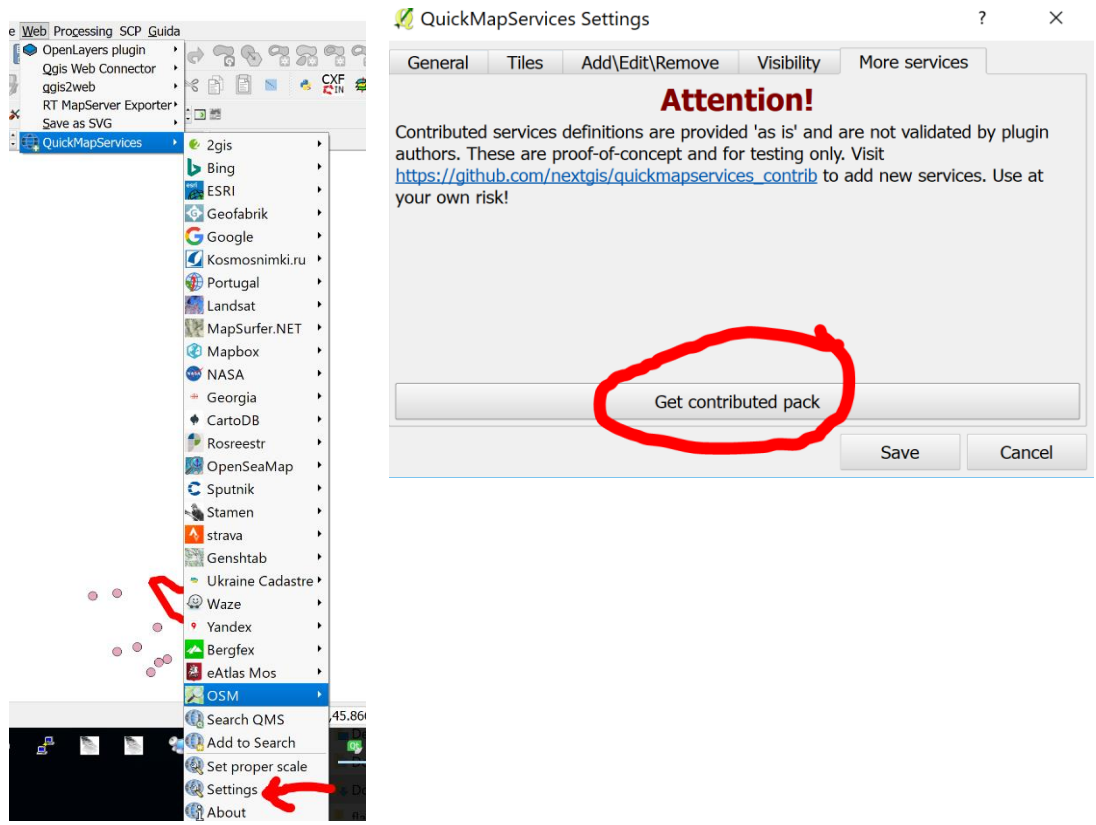
TMS Services are a particular type of online services that provide visual maps, usually styled maps and aerial imagery (e.g. Google Maps). They are very fast to load and are used as base maps to view study area extents and provide visual information of your area.

QGIS provides two plugins to access TMS data, OpenLayers and QuickMapServices. We will use “QuickMapServices” as it is more robust. The procedure to install the plugin is the following:

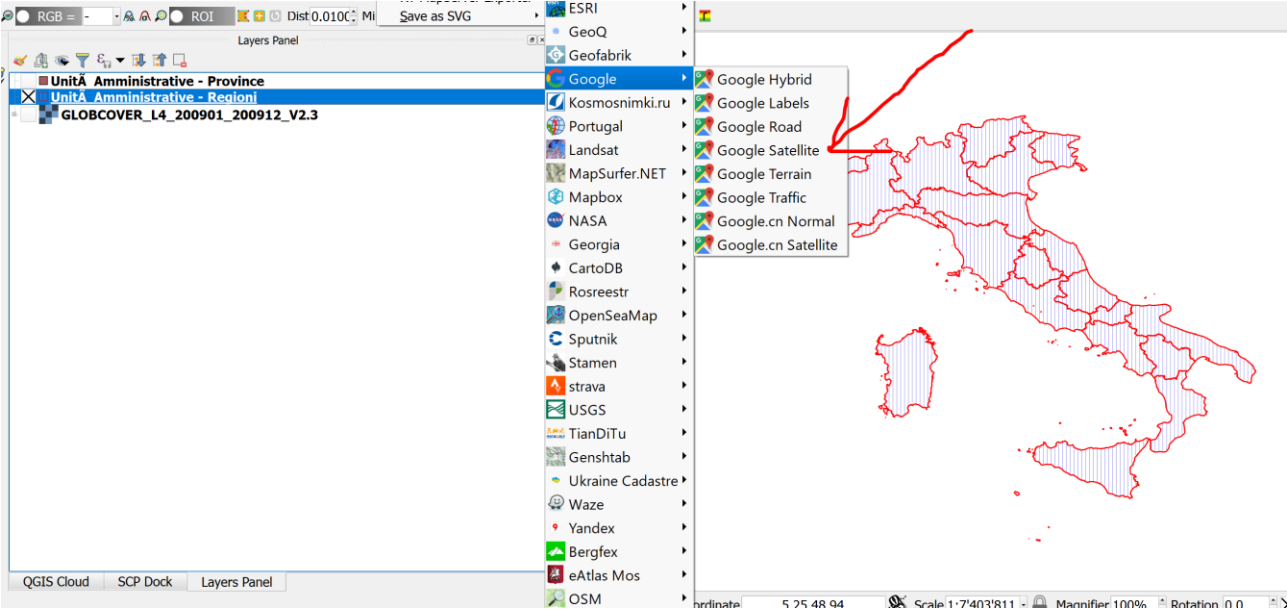
1. Download the plugin “QuickMapServices” (menu “Plugins”→”Manage and install plugins”). NB is you do NOT see a large list of plugins, you might not be connected to the internet or maybe QGIS has trouble connecting – to solve (i) check that internet is working (ii) close and reopen the Plugin panel window (iii) if still no plugins, restart QGIS.

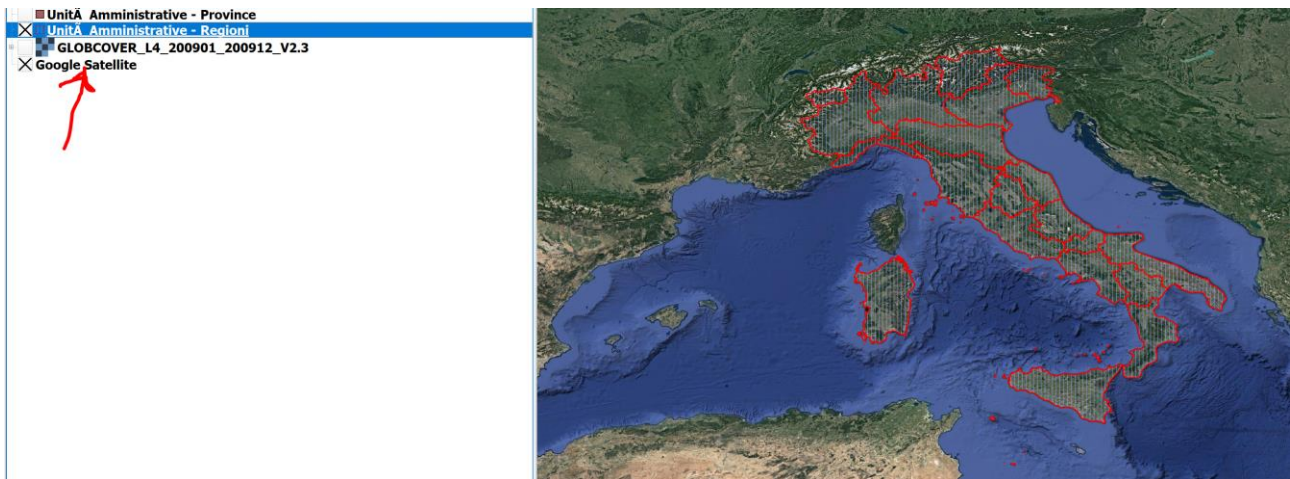


2. Once installed, you will see the plugin in the menu at “Web”→ “QuickMapServices” – you will see many available map services that can be loaded, **but not all**
3. to load all services go to menu “Web”→”QuickMapServices”→”Settings”: from dialogue window click “More Services” →”Get Contributed Pack”



4. Now from menu “Web”→ “QuickMapServices” you will see all available services: select “Google”→”Google Satellite” you will have access to Google image database up to a resolution below 1 m in almost all of the Earth surface!!





2.3 Open Streetmap

Open StreetMap is a special type of service providing access to their data also for download. Check online tutorial [Searching and Downloading OpenStreetMap Data](#)