ForBio
Forskerskole i Biosystematikk
Research School in Biosystematics

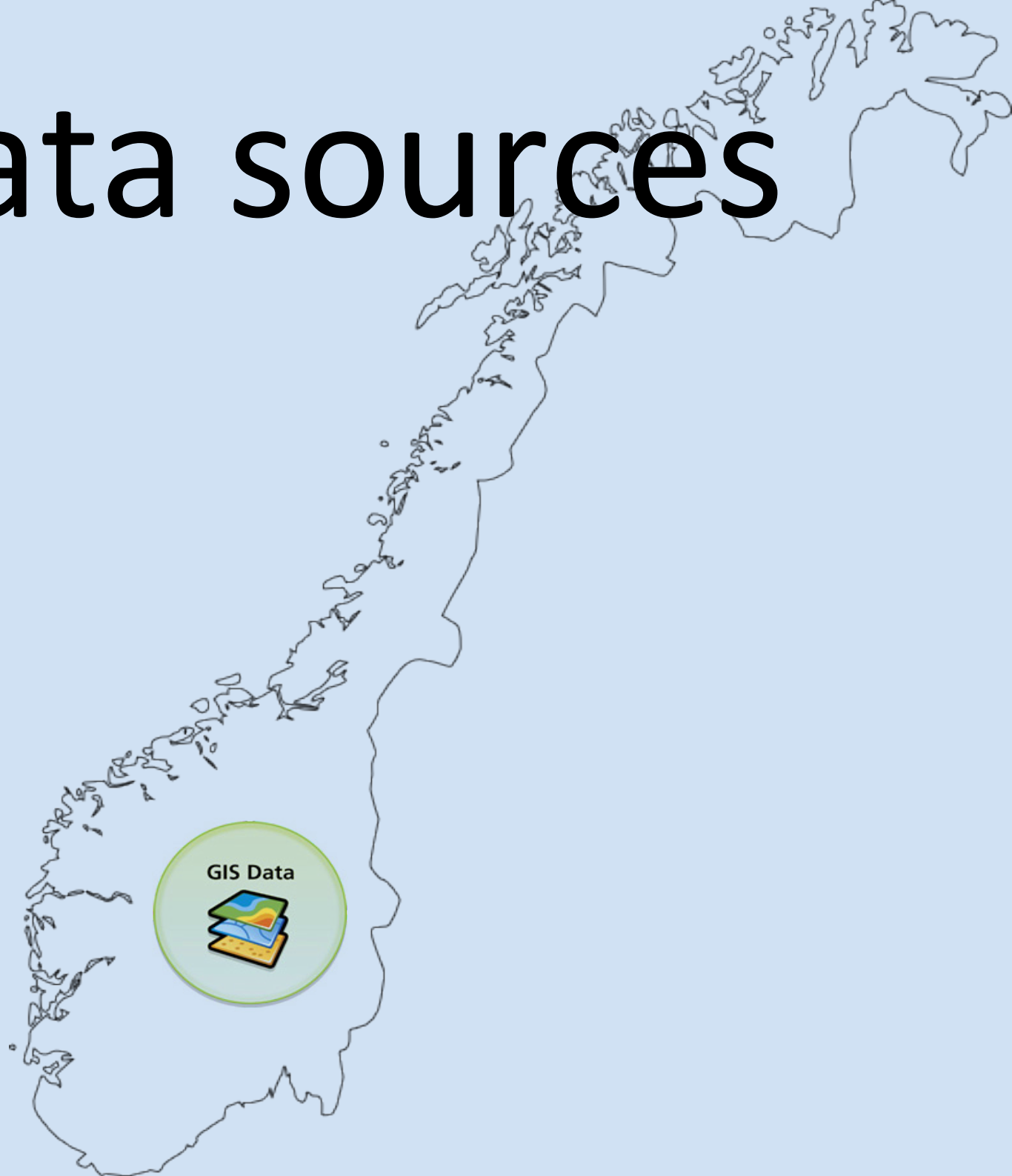
Spatial data sources

Downloadable spatial data

Topics

- Vector and raster data (shape, geotif)
- Web services (WMS/WFS/WCS)

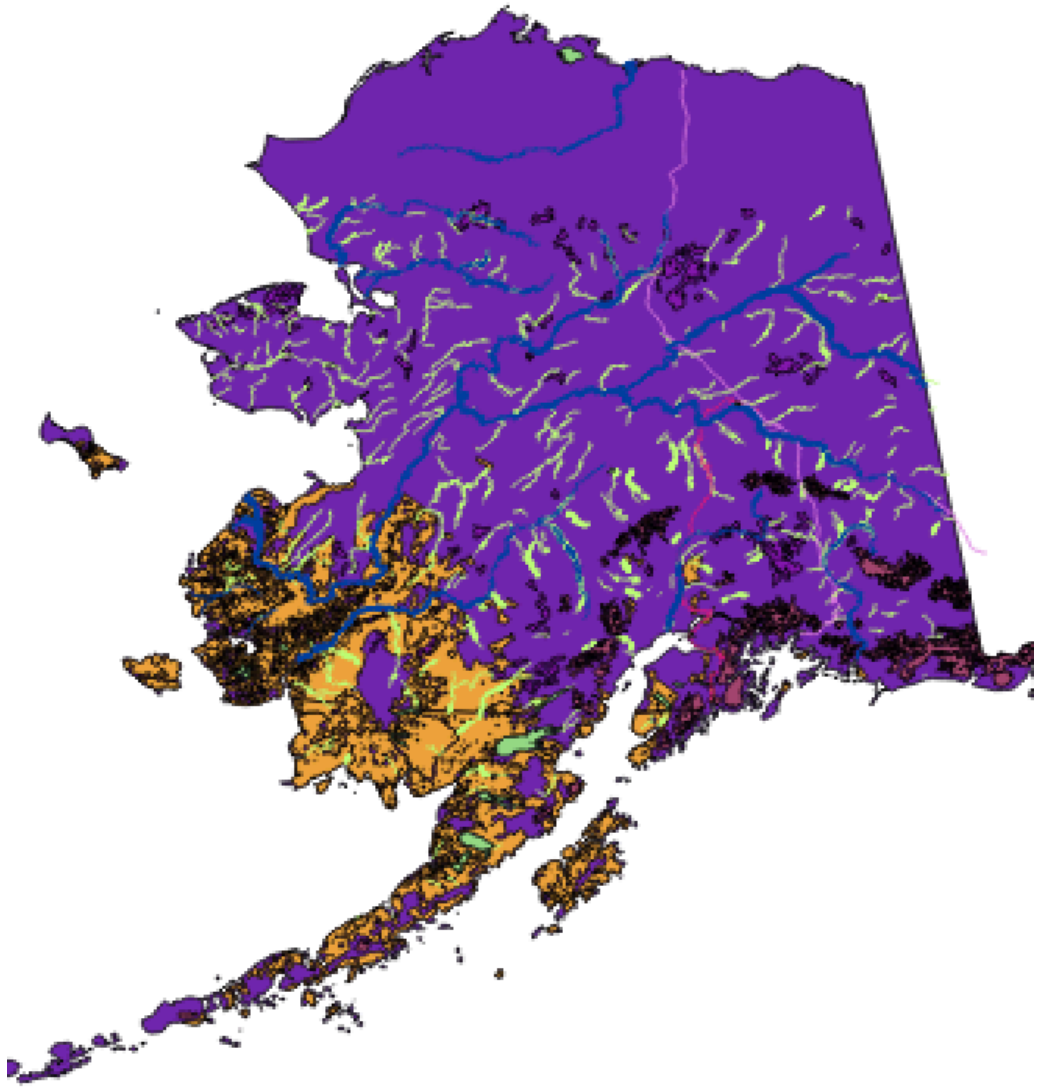
GIS data sources



QGIS Sample Data

- The user guide contains examples based on the QGIS sample dataset.
- Spatial data for Alaska.
- The Windows installer has an option to download the QGIS sample dataset.
- “MyDocuments > GIS Database”
- The projection is Alaska Albers Equal Area with units feet (EPSG 2964).

http://download.osgeo.org/qgis/data/qgis_sample_data.zip

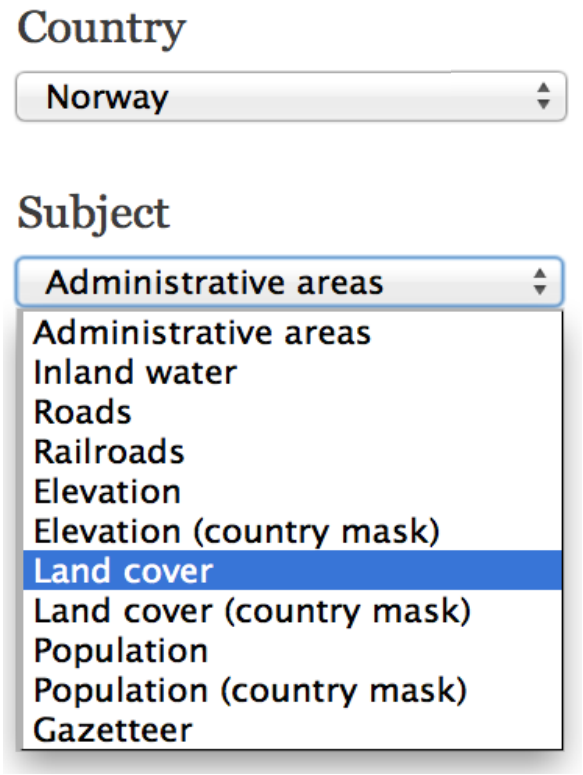


DIVA-GIS data

DIVA-GIS
free, simple & effective

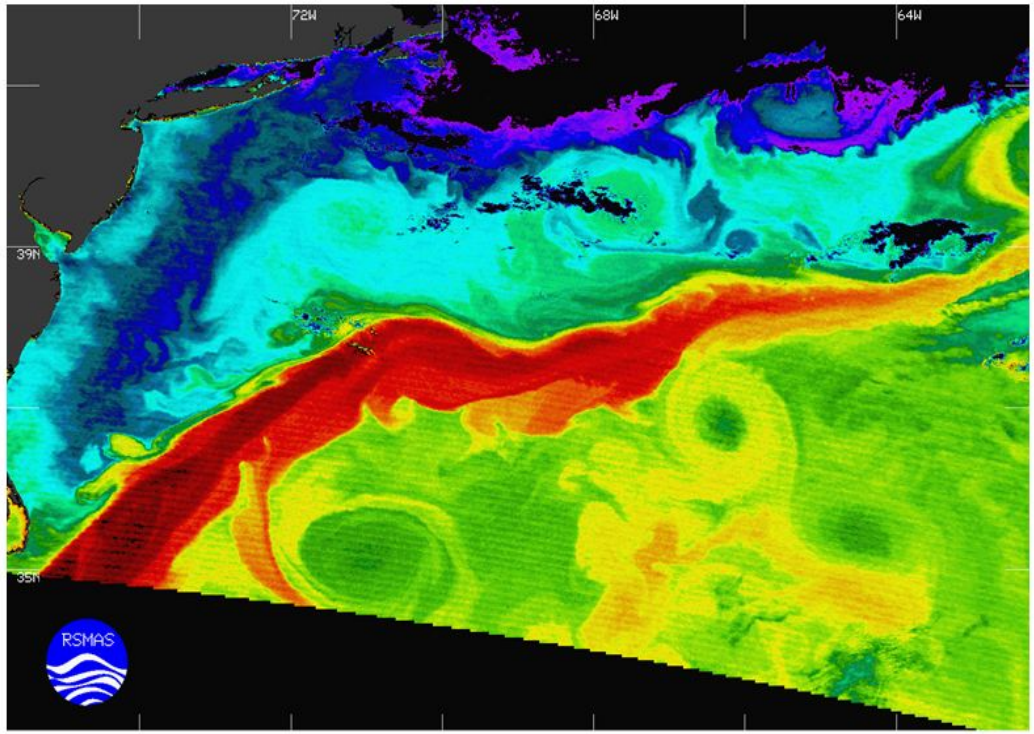
- DIVA-GIS is a user-friendly open and free Desktop GIS software.
- The homepage provides a useful section with **free spatial data**.
- Global coverage and split into sets by country.

- These datasets are useful as a start for the QGIS exercises in this course.



Remote Sensing (Satellite)

- Geographers use pictures taken from satellites and sensors to help solve everyday problems.
- Examples include aerial imagery, infrared (IR) and microwave sensors, and sonar, but there are many more!
- This is known as remote sensing

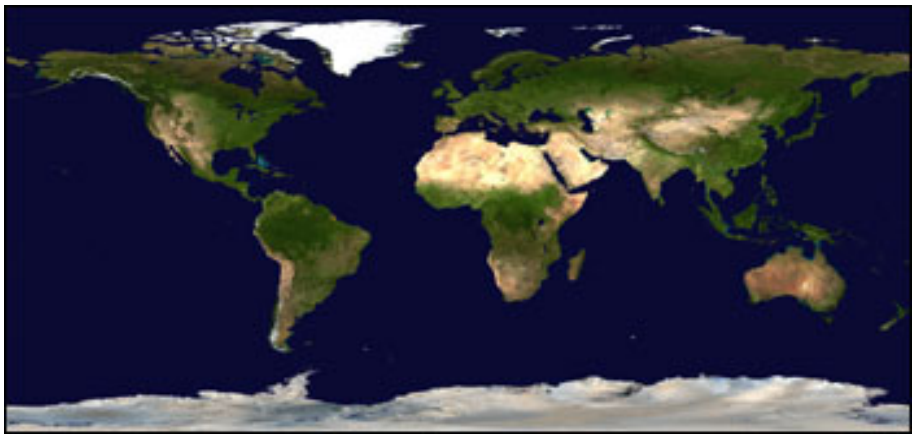


Temperature of the Gulf Stream using Terra Modis satellite, June 28, 2000

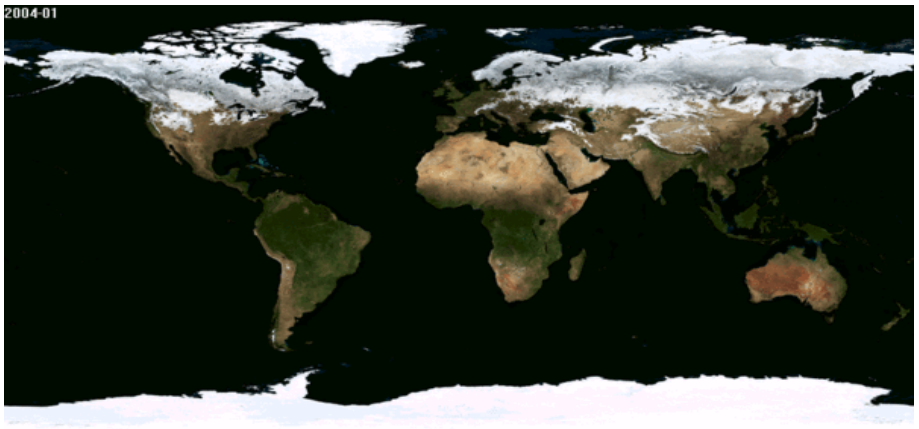
NASA Visible Earth Team ; http://visibleearth.nasa.gov/

The Blue Marble (NASA)

- **NASA Earth Observatory** released in 2002 high resolution (1 km/pixel) photographic satellite data for the entire earth.
- Clean with cloud-cover removed.
- For **FREE** with reuse permitted (Public Domain).
- These satellite images are known as the "***Blue Marble***".
- A new series of satellite images was released in 2005 and known as the "*Blue Marble Next Generation*".
- Monthly cloud-free images at even higher resolution (500 m/pixel).



Blue Marble (2002).

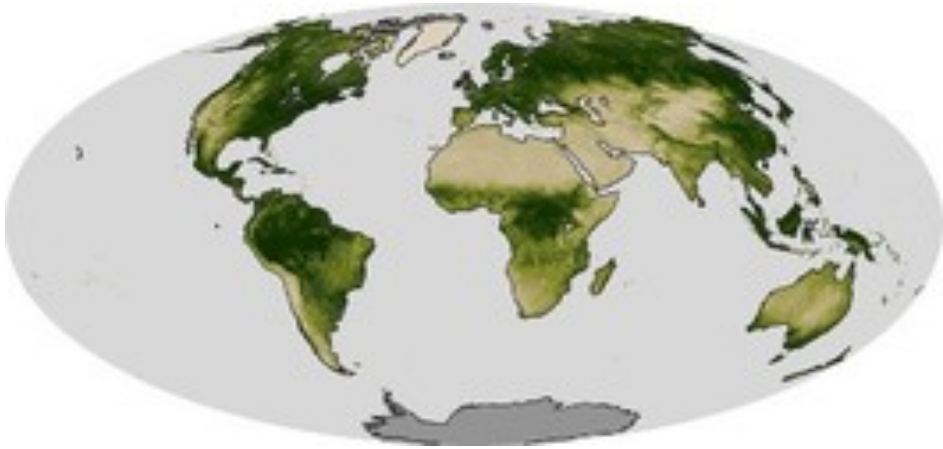


Blue Marble Next Generation - monthly (January to December 2004).

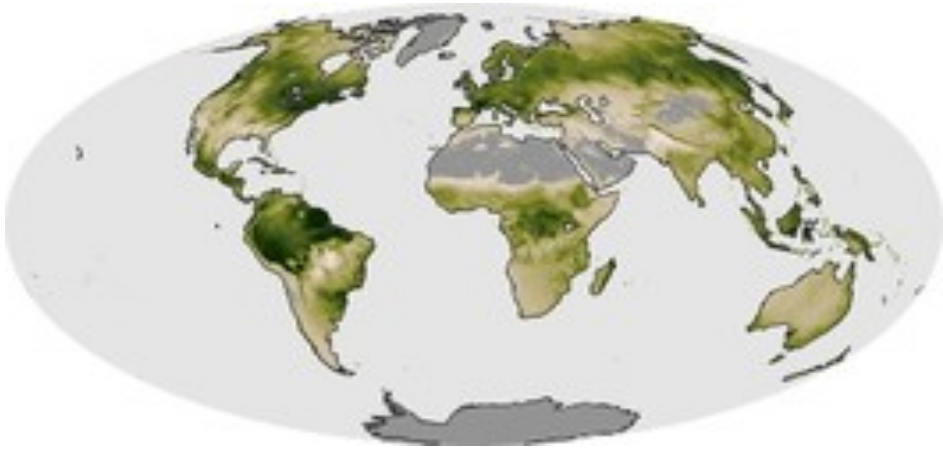
Download: http://visibleearth.nasa.gov/view_cat.php?categoryID=1484

NASA Earth Observatory

- NASA provides other streams of regularly updated and processed satellite data.
- ***Global Maps*** explore key parts of the Earth´s climate system.
- Available for free (please credit NASA Earth Observatory as source).



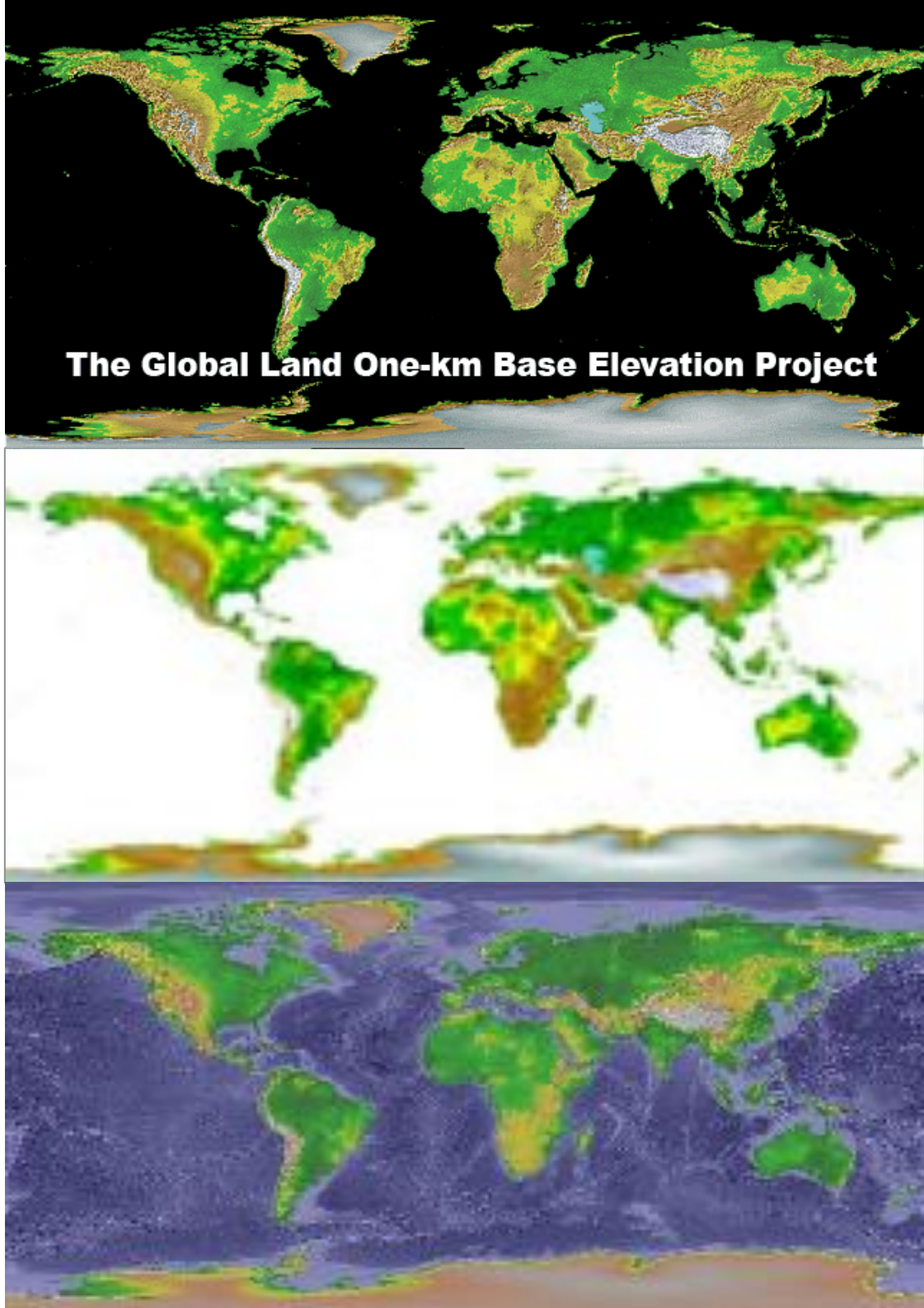
Vegetation (green plants)



Net Primary Production (photosynthesis)

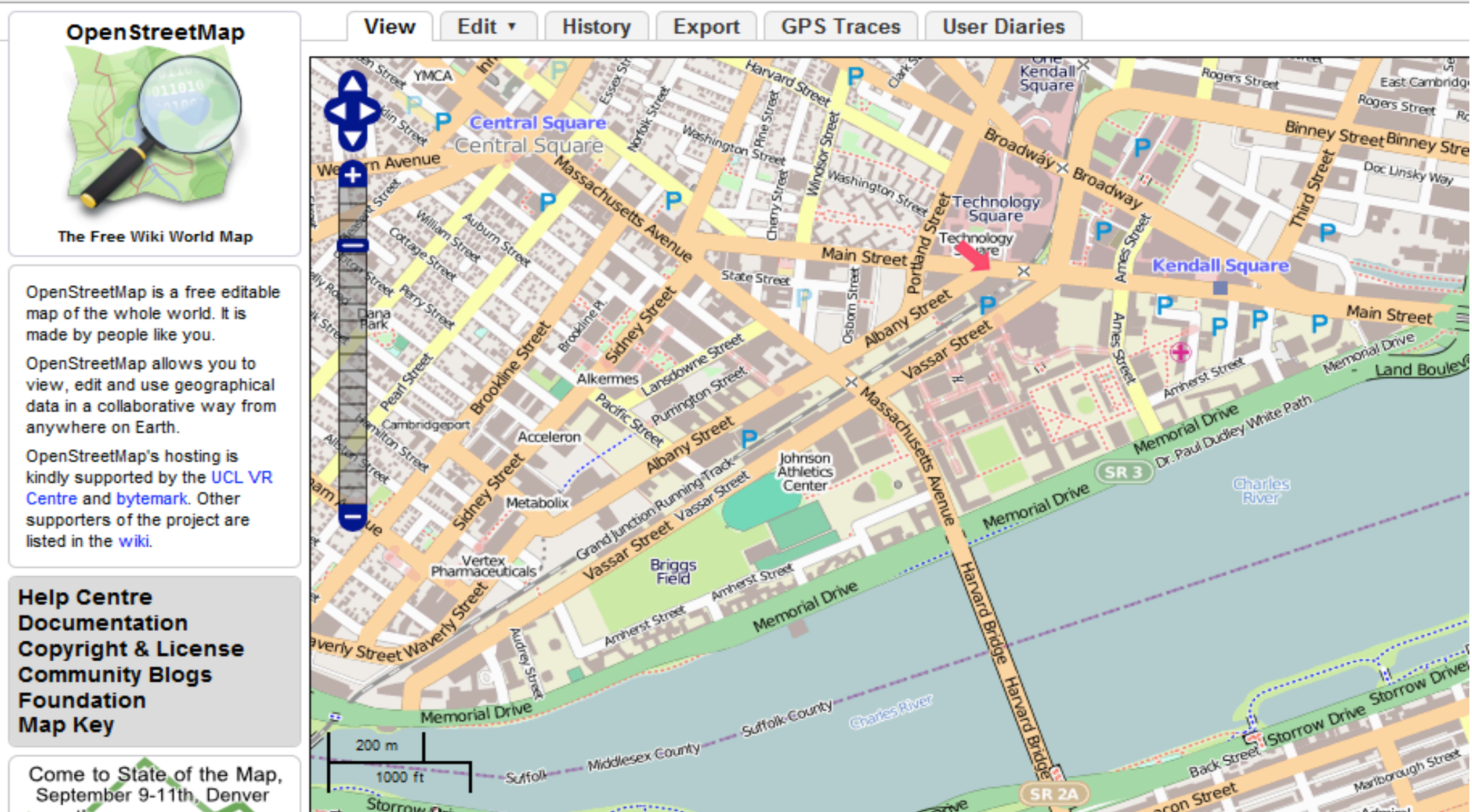
NOAA Raster Data

- The National Oceanographic Atmospheric Administration (NOAA) provides useful high resolution raster data.
- Such as the global land elevation at 1 km resolution.
- And raster data with bathymetry data.
- http://www.ngdc.noaa.gov/ngdc.html

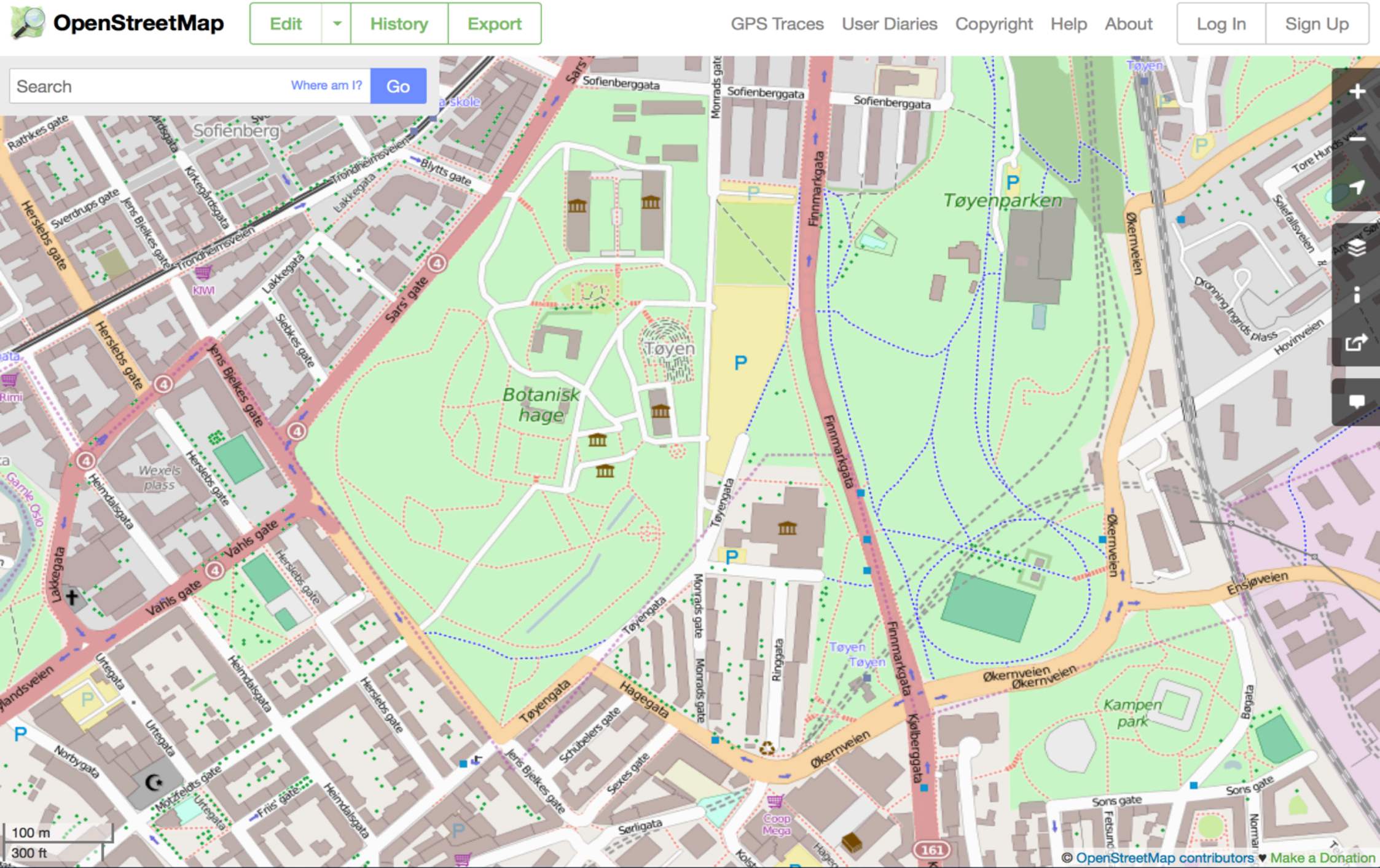


Open Street Map (OSM)

OpenStreetMap (OSM) Mapping

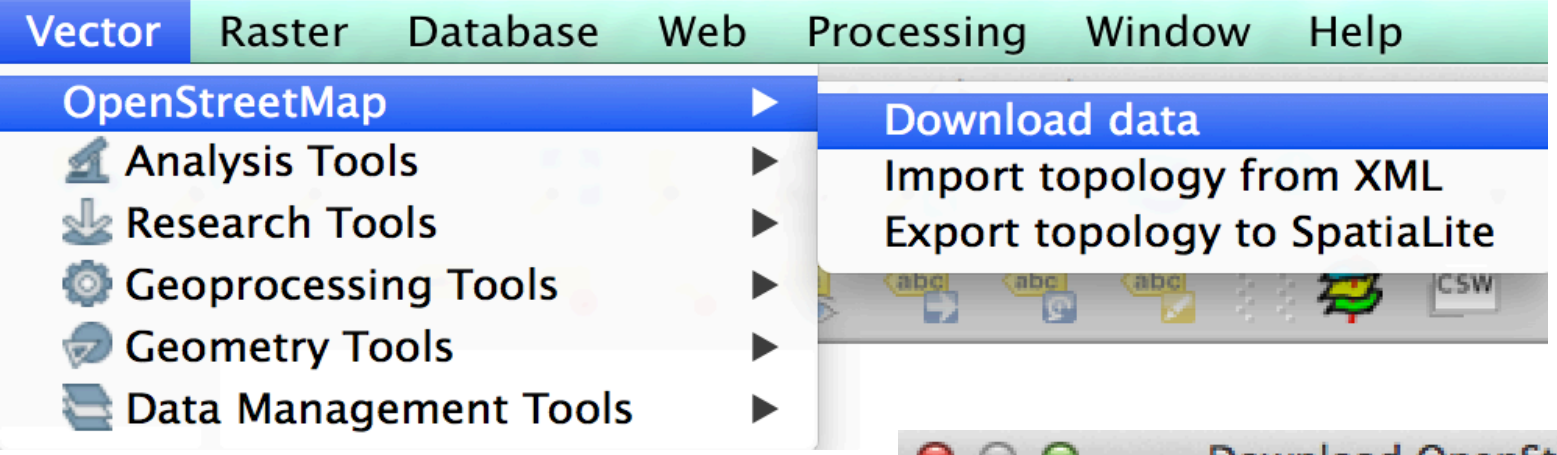


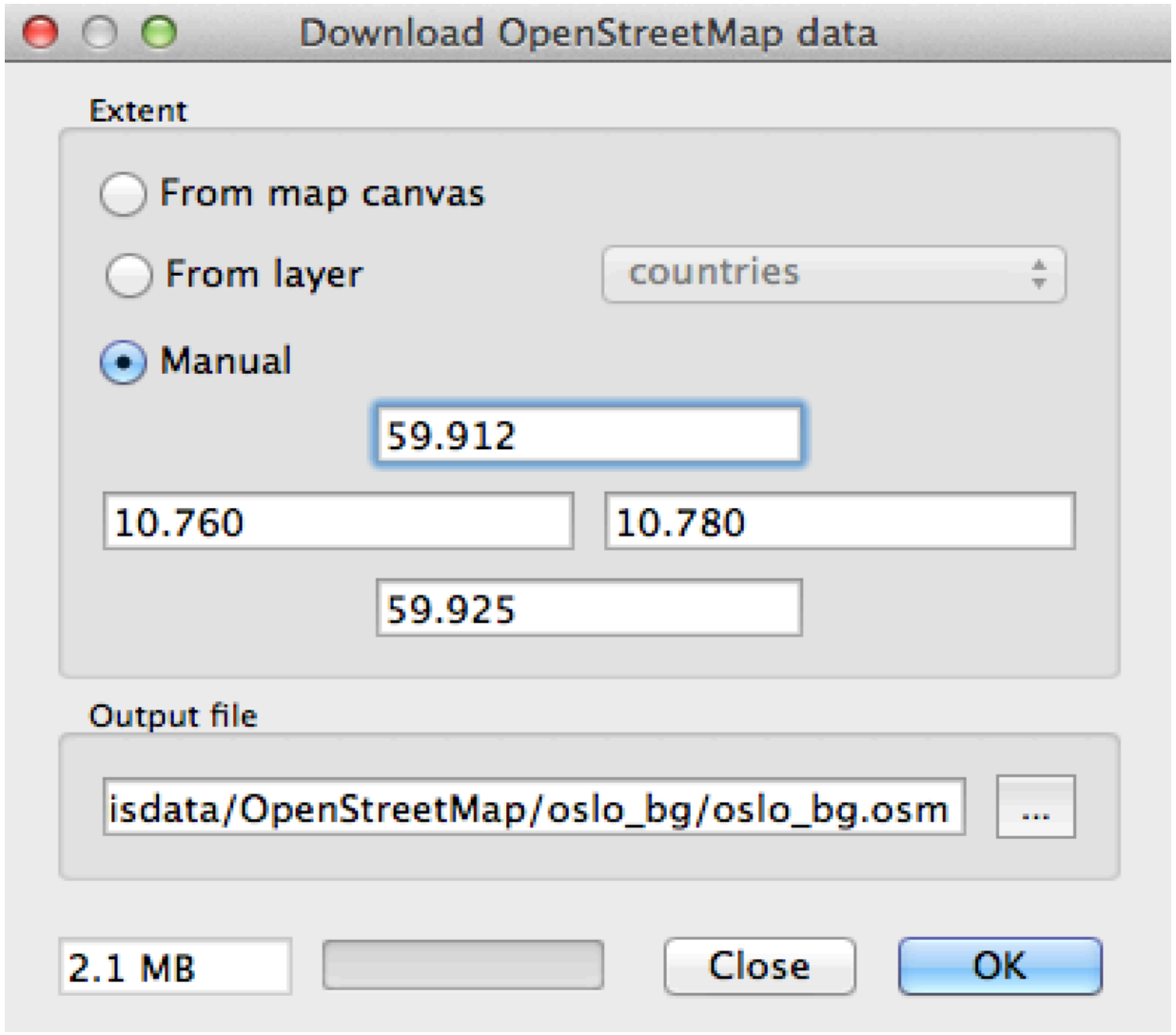
OpenStreetMap (OSM) Mapping

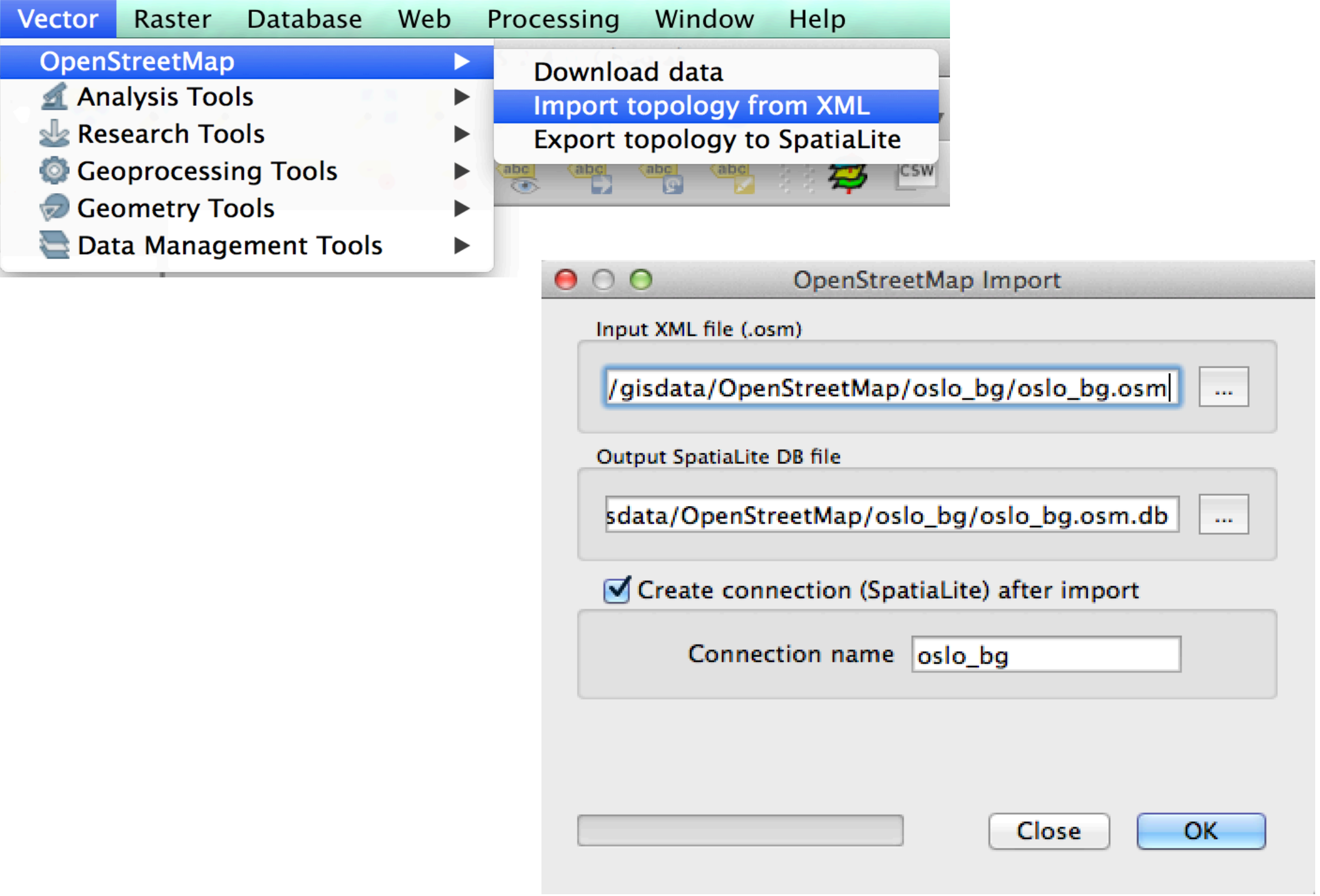


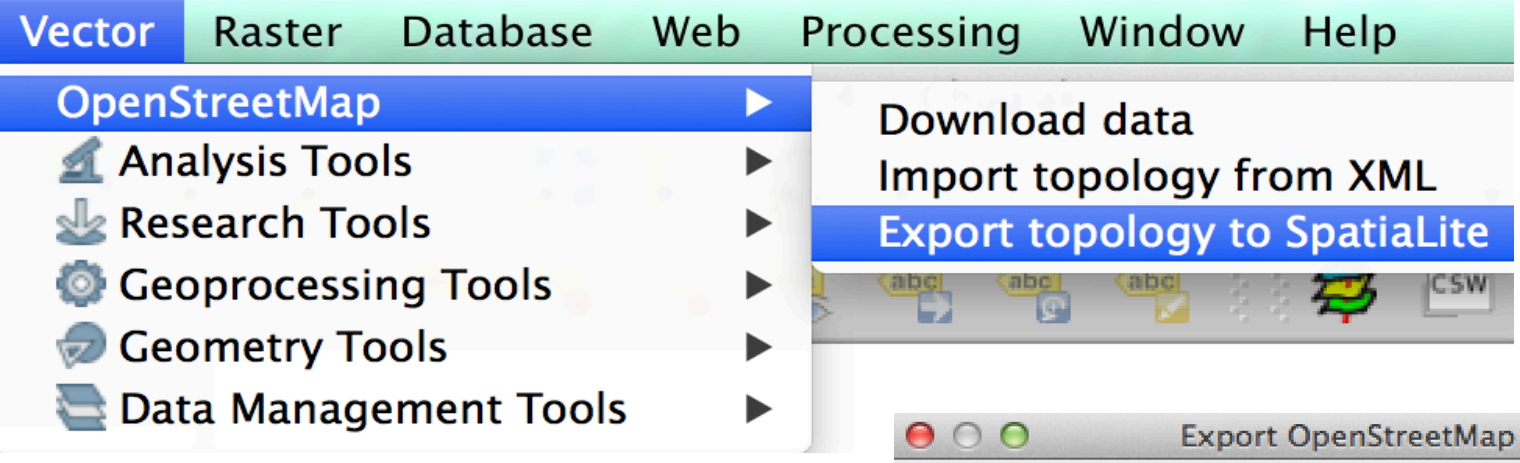
Open Street Map (OSM)

- The OSM project provides a free editable map of the world from GPS data, aerial photography or local knowledge.
- QGIS (now) integrates OSM import as a core functionality.
- Menu: *Vector*
  - *Vector ‣ Openstreetmap ‣ Load data*
  - *Vector ‣ Openstreetmap ‣ Import topology from an XML file*
  - *Vector ‣ Openstreetmap ‣ Export topology to SpatiaLite*
  - *Layer ‣ Add SpatiaLite Layer...*


Vector
Raster
Database
Web
Processing
Window
Help
OpenStreetMap
Analysis Tools
Research Tools
Geoprocessing Tools
Geometry Tools
Data Management Tools
Download data
Import topology from XML
Export topology to SpatiaLite
CSW

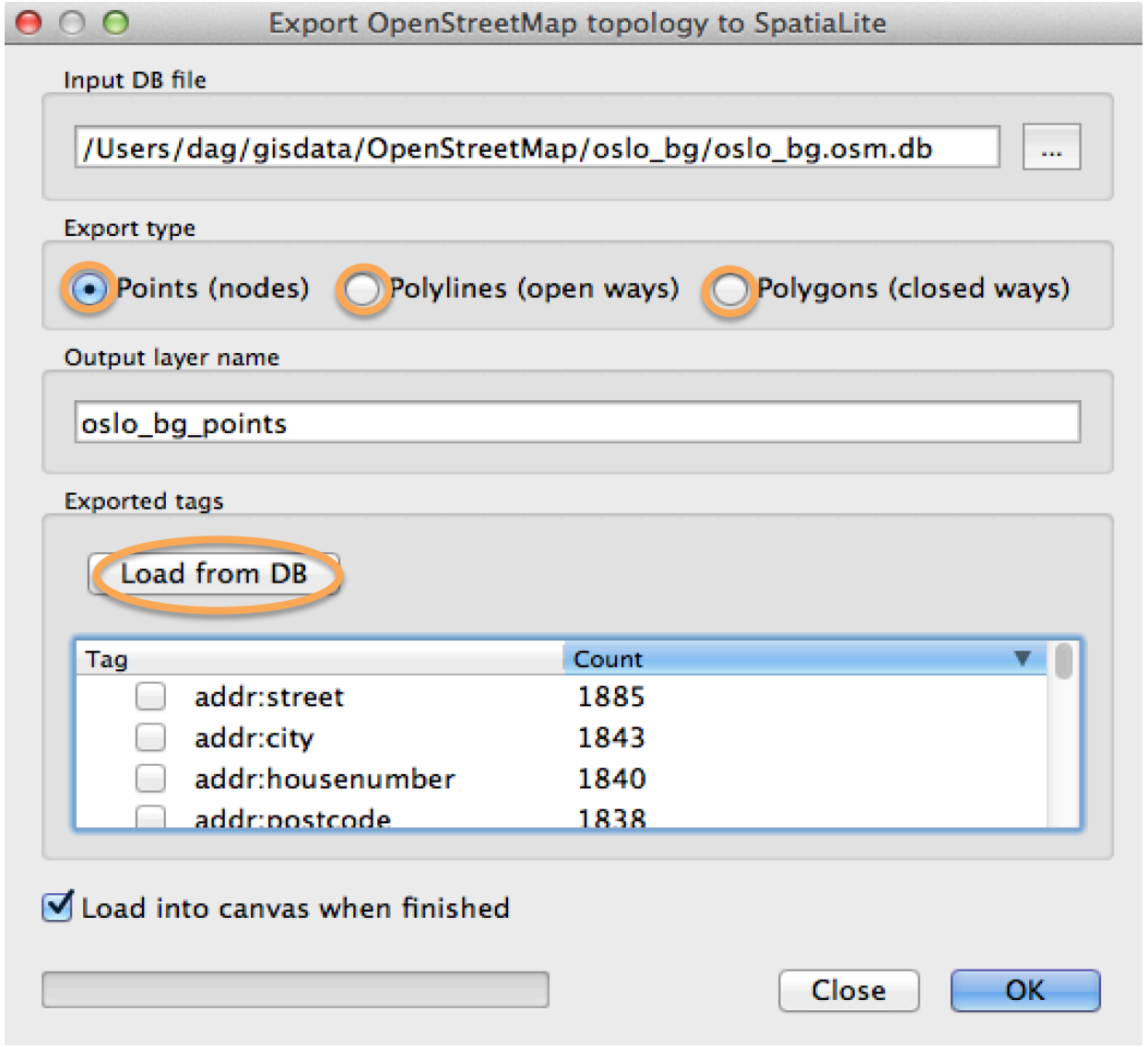

Download OpenStreetMap data
Extent
From map canvas
From layer
countries
Manual
59.912
10.760
10.780
59.925
Output file
isdata/OpenStreetMap/oslo_bg/oslo_bg.osm
...
2.1 MB
Close
OK

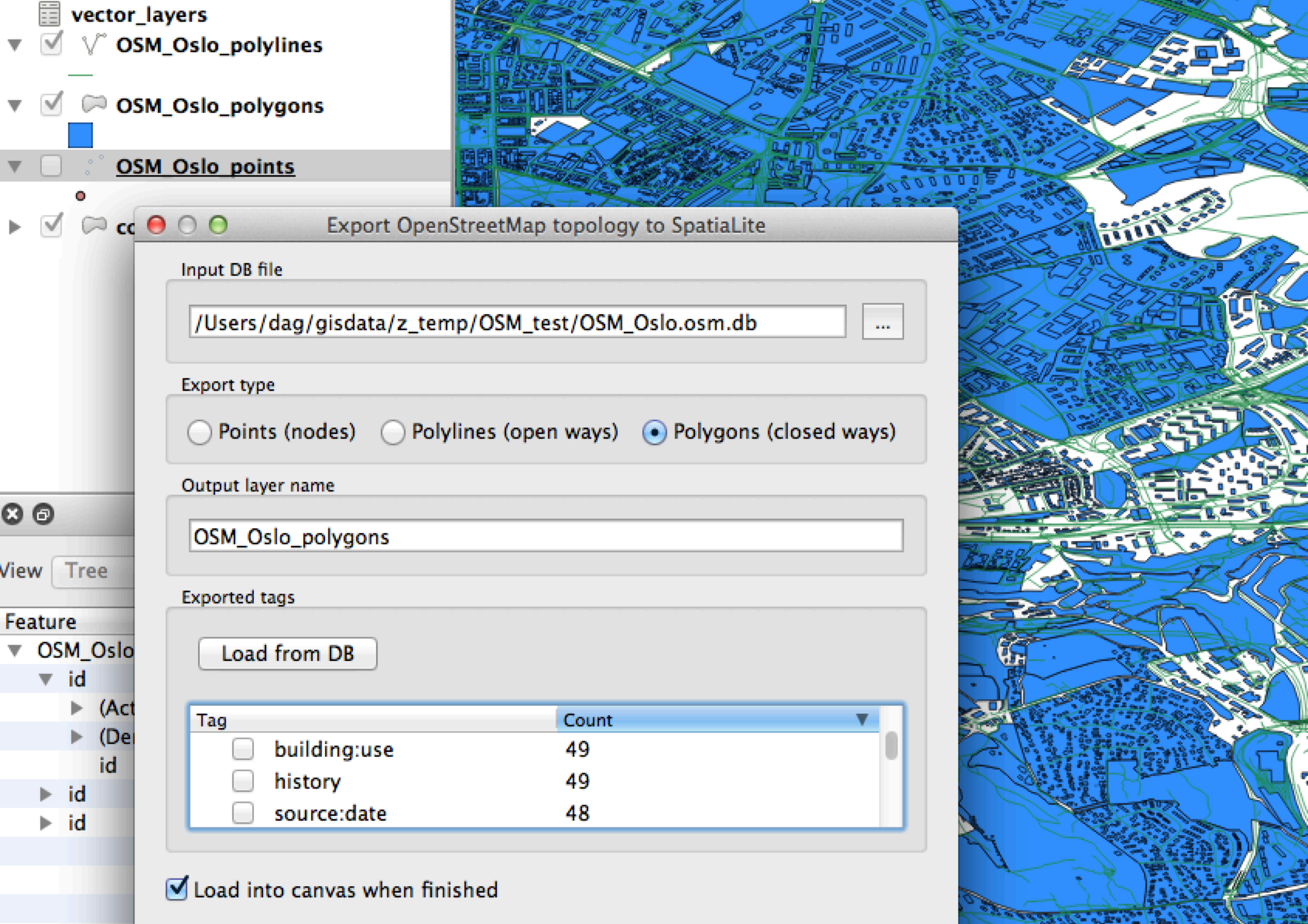

Vector
Raster
Database
Web
Processing
Window
Help
OpenStreetMap
Analysis Tools
Research Tools
Geoprocessing Tools
Geometry Tools
Data Management Tools
Download data
Import topology from XML
Export topology to SpatiaLite
CSW
OpenStreetMap Import
Input XML file (.osm)
/gisdata/OpenStreetMap/oslo_bg/oslo_bg.osm
...
Output SpatiaLite DB file
sdata/OpenStreetMap/oslo_bg/oslo_bg.osm.db
...
Create connection (SpatiaLite) after import
Connection name
oslo_bg
Close
OK

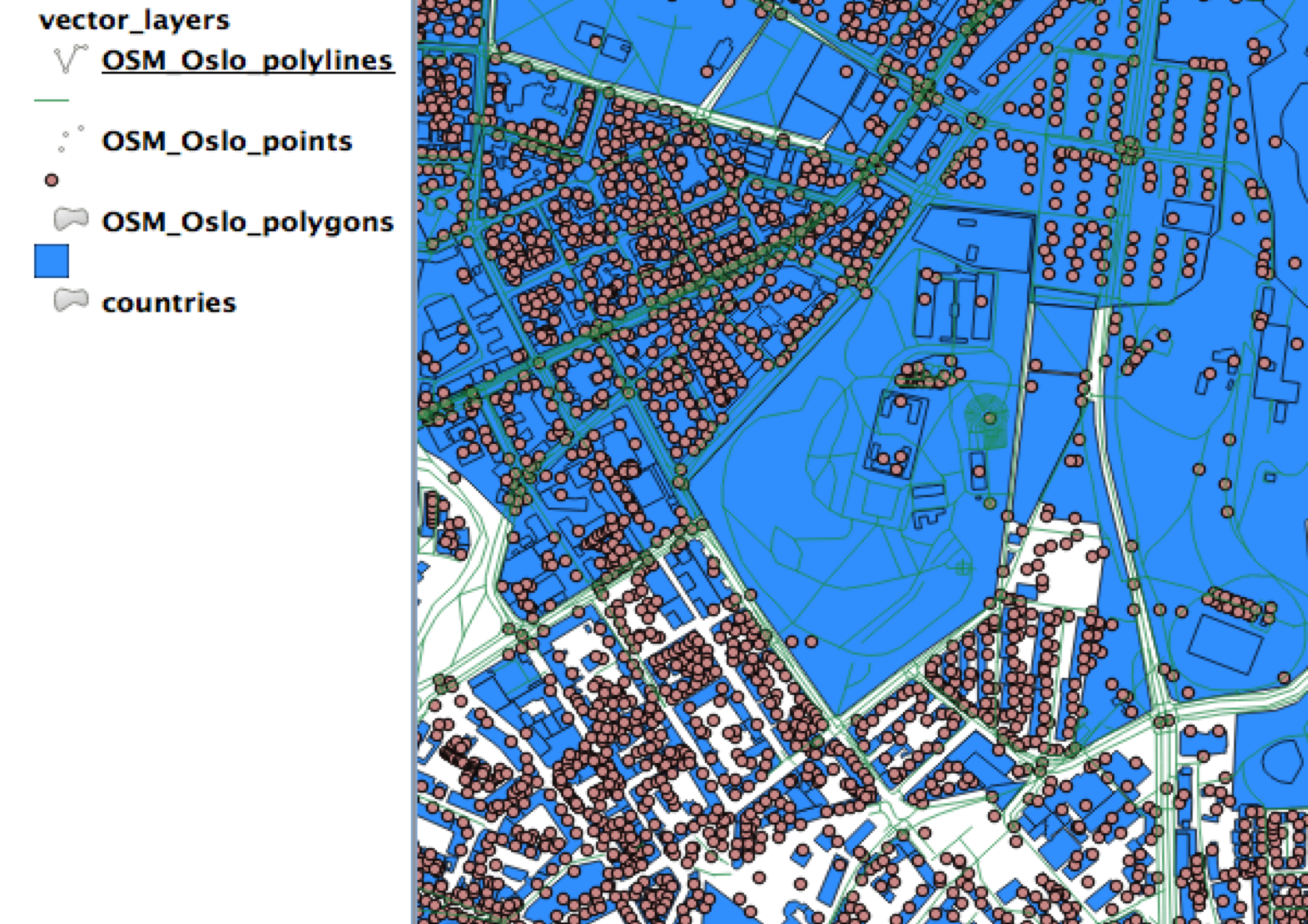


Repeat for each type (Points, Polylines, Polygons) and remember to press the "Load from DB" button for each type.

(You may select tags to load only some type of objects).




vector_layers
OSM_Oslo_polylines
OSM_Oslo_polygons
OSM_Oslo_points
Export OpenStreetMap topology to SpatiaLite
Input DB file
/Users/dag/gisdata/z_temp/OSM_test/OSM_Oslo.osm.db
...
Export type
Points (nodes)
Polylines (open ways)
Polygons (closed ways)
Output layer name
OSM_Oslo_polygons
Exported tags
Load from DB
Tag
Count
building:use
49
history
49
source:date
48
Load into canvas when finished
View
Tree
Feature
OSM_Oslo
id
id
id


vector_layers
OSM_Oslo_polylines
OSM_Oslo_points
OSM_Oslo_polygons
countries

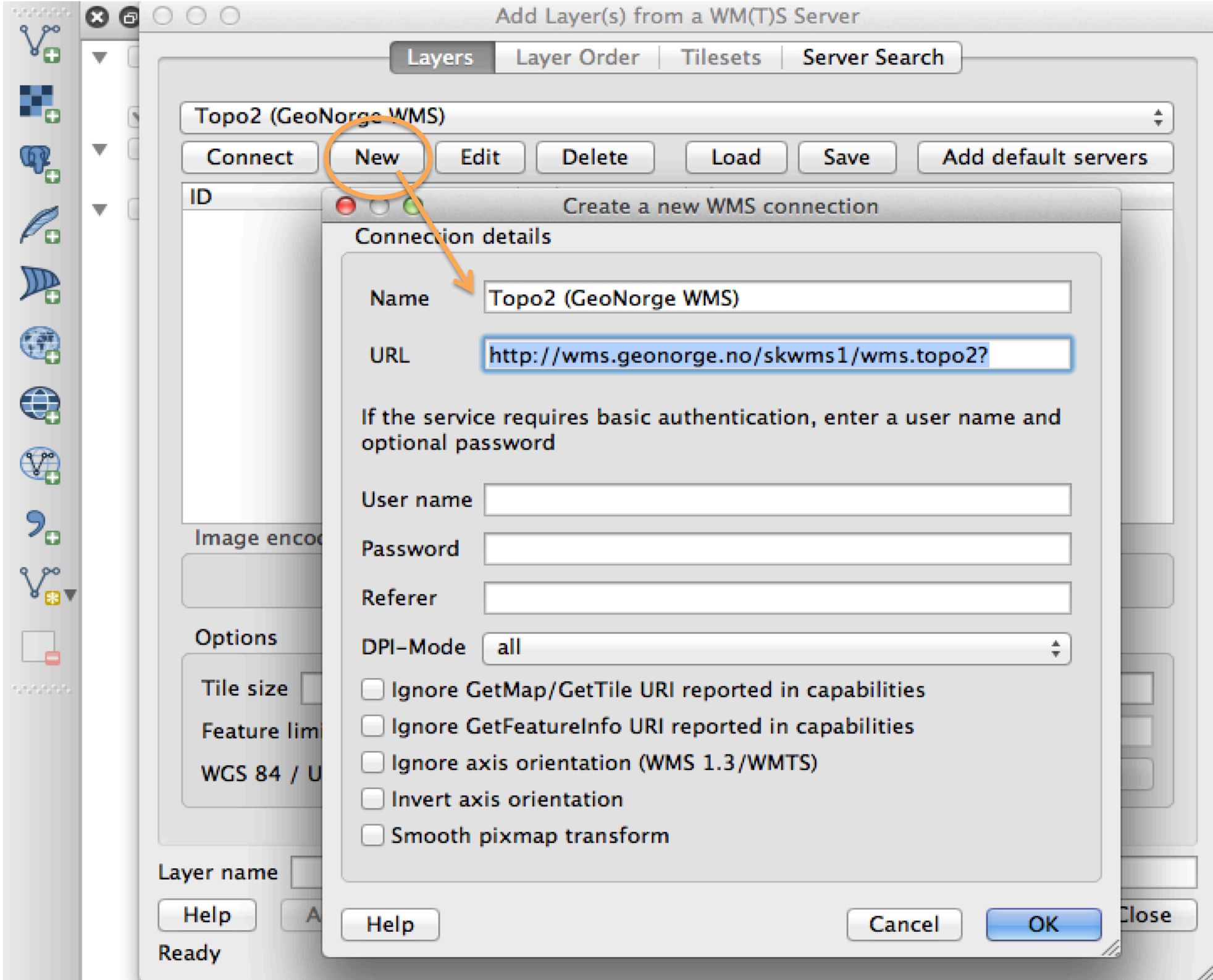
OGC web services

Kartverket

OGC web services

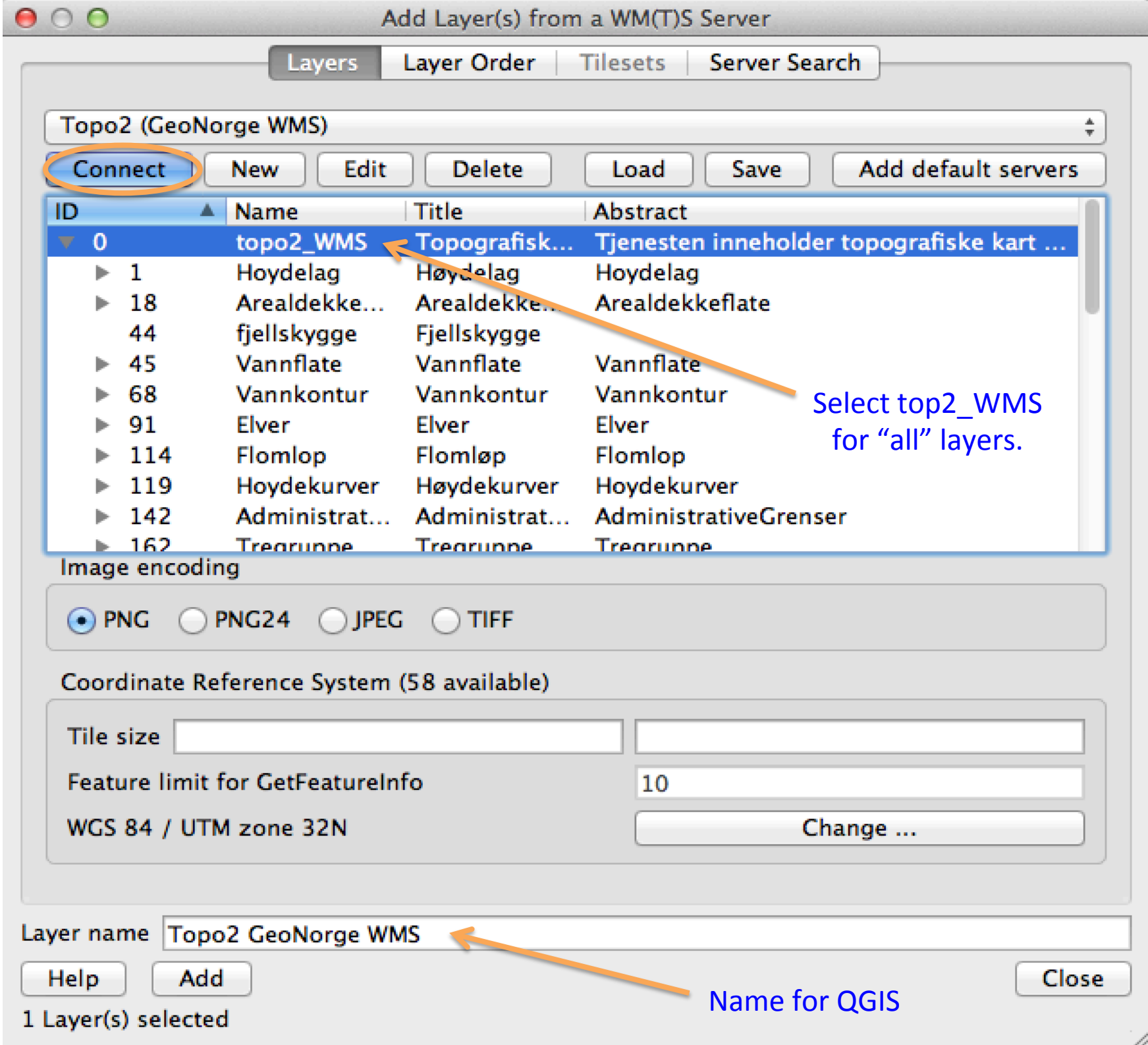
- The Open Geospatial Consortium (OGC) is an international organization maintaining standards for geospatial content and services, GIS data processing and exchange.
- Some of the relevant exchange standards:
  - **WMS** — Web Map Service
  - **WFS** — Web Feature Service
  - **WCS** — Web Coverage Service
  - **GML** — Geography Markup Language

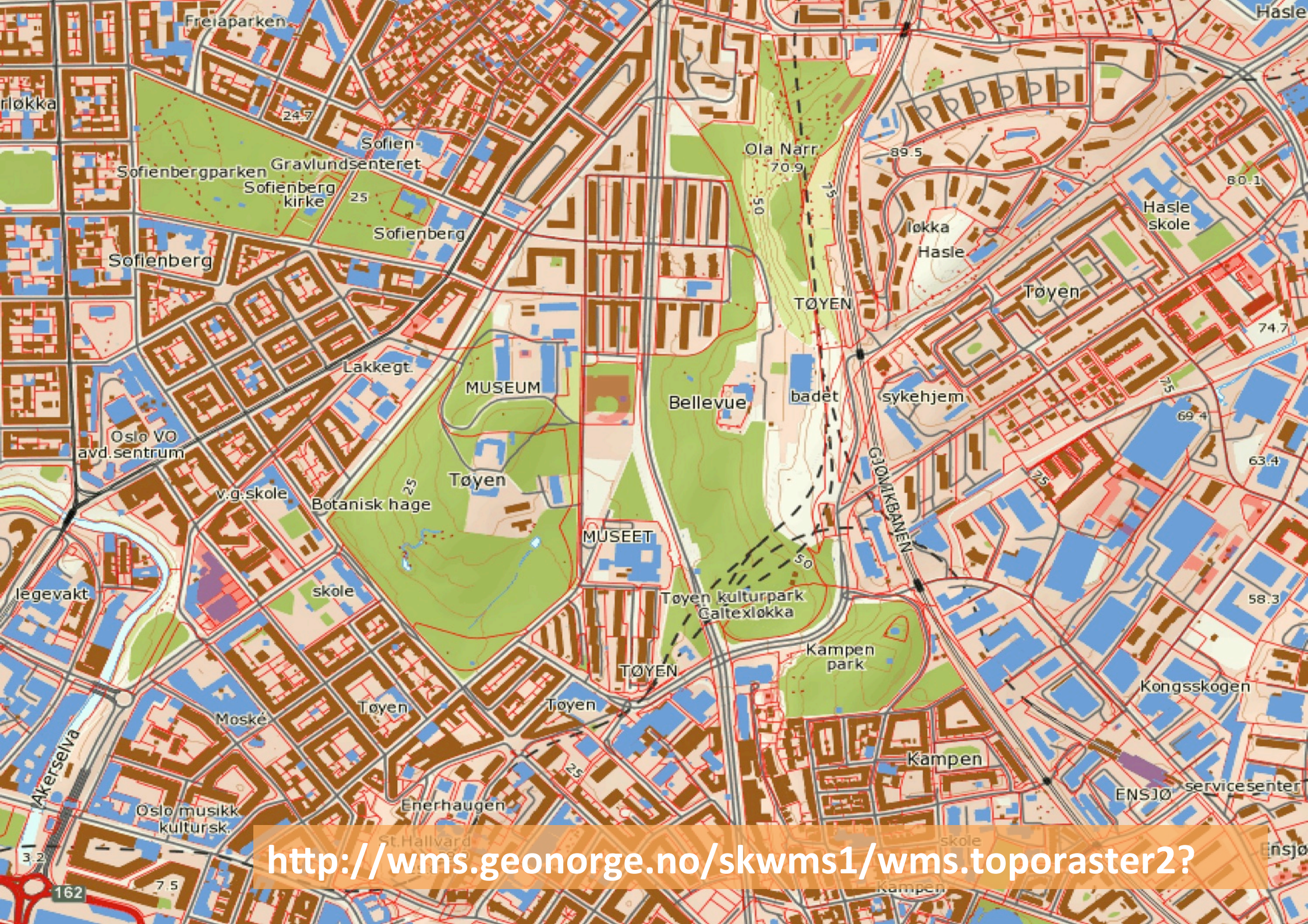
WMS – Web Map Service



Kartverket GeoNorge WMS – Topo2

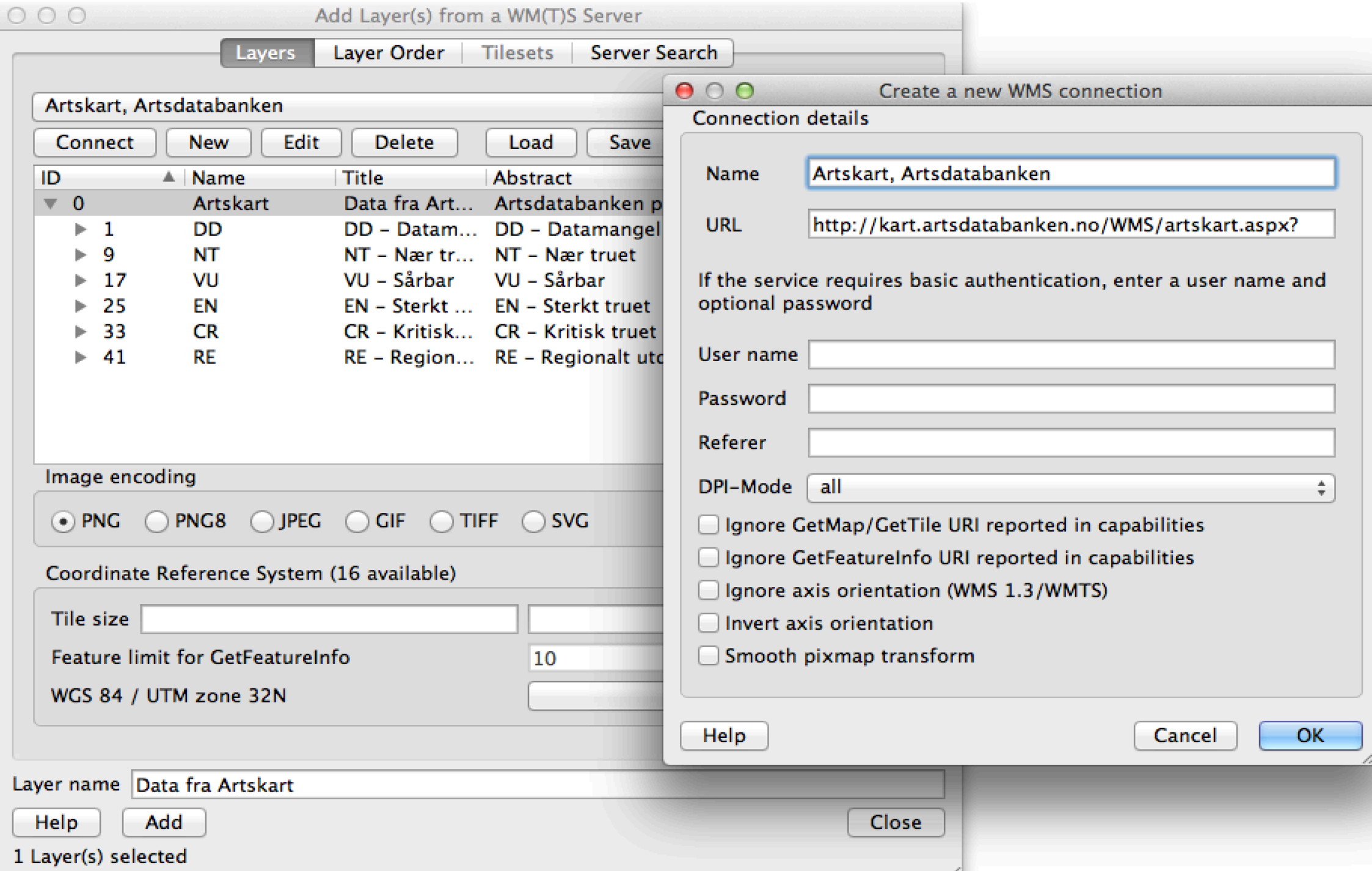
http://wms.geonorge.no/skwms1/wms.topo2?




http://wms.geonorge.no/skwms1/wms.toporaster2?

http://wms.geonorge.no/skwms1/wms.topo2.graatone?

Artskart - WMS




http://wms.geonorge.no/skwms1/wms.topo2.graatone?
http://kart.artsdatabanken.no/WMS/artskart.aspx?