

NASA ARSET Training

Advanced Webinar on using NASA Remote Sensing for Flood Monitoring and Management
March 30, 2016

Introduction to SEDAC

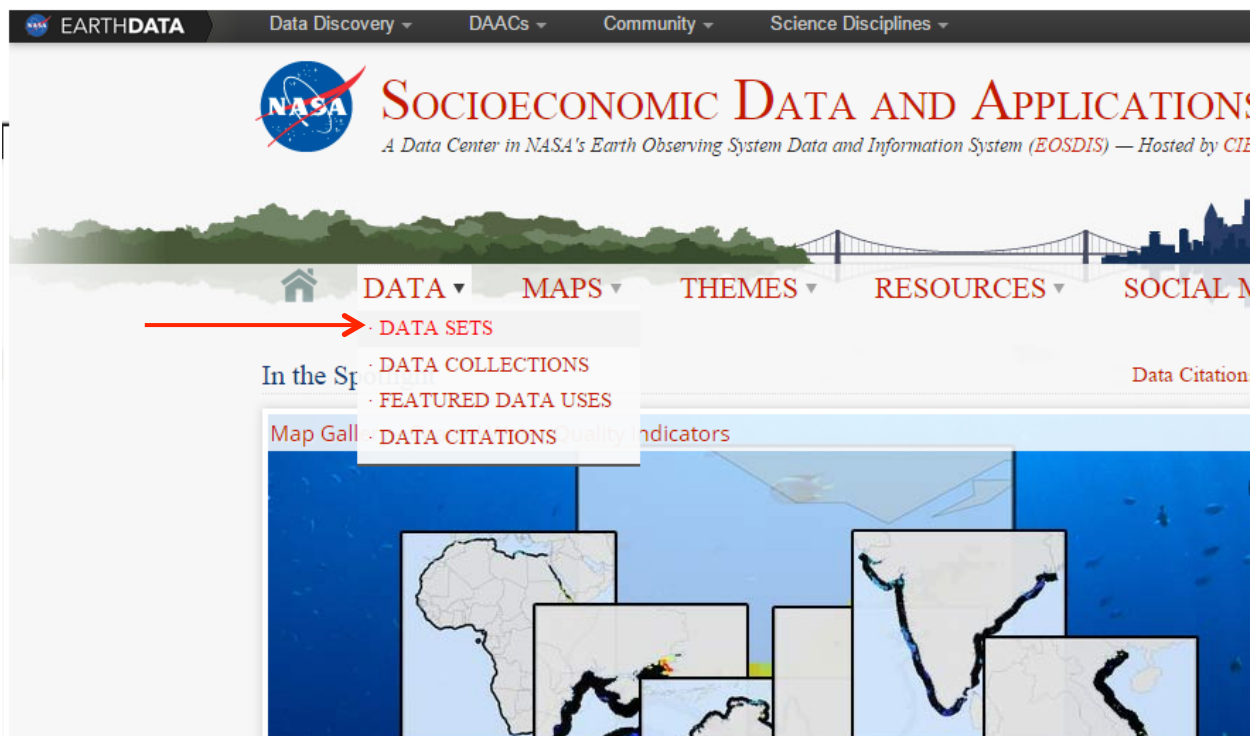
Objective: Locate, download, import and display SEDAC socioeconomic data in QGIS

There are two parts to this exercise:

1. Access SEDAC socioeconomic data products
2. Import and visualize SEDAC data products in QGIS

Part 1: Access SEDAC socioeconomic data products

- Go to the Socioeconomic Data and Applications Center (SEDAC) online repository:
<http://sedac.ciesin.columbia.edu/>
- **Login** using your SEDAC username and password previously created
- Click on the **Data** tab and select **Data Sets**



You can then browse the data sets available by using the search feature, selecting a specific theme, the year published, year of data, or format.

Search

All Fields:

Title:

Author:

Abstract:

Theme

- Agriculture (38)
- Climate (46)
- Conservation (63)
- Governance (14)
- Hazards (40)
- Health (25)
- Infrastructure (26)
- Land Use (35)
- Marine and Coastal (17)
- Population (56)
- Poverty (12)
- Remote Sensing (31)
- Sustainability (99)
- Urban (26)
- Water (28)

Year Published

Select a Year...

Year of Data

Select a Year...

Format

1 of 10 Prev | Next Sort By: Latest Published

Population Exposure Estimates in Proximity to Nuclear Power Plants, Country-Level Aggregates, v1 (1990, 2000, 2010)
Energy Infrastructure

Overview To provide estimates of total, urban and rural populations and land areas in proximity to nuclear power plants.

Download Documents

Population Exposure Estimates in Proximity to Nuclear Power Plants, Locations, v1 (1956–2012)
Energy Infrastructure

Overview To provide a global data set of point locations and attributes describing nuclear power plants and reactors.

Download Documents (1) WMS

Global Estimated Net Migration Grids By Decade, v1 (1970–2000)
Population Dynamics

Overview To provide estimates of net-migration (in-migration minus out-migration) per one-kilometer grid cell on a decadal basis for the 1970s, 1980s, and 1990s.

Download Documents (18) Maps (3) WMS

Global Annual PM2.5 Grids from MODIS, MISR and SeaWiFS Aerosol Optical Depth (AOD), v1 (1998–2012)
Satellite-Derived Environmental Indicators

Overview To provide a continuous surface of concentrations (micrograms per cubic meter) of fine particulate matter of 2.5 micrometers or smaller (PM2.5) for health and environmental research.

Download Documents (7) Maps (2) WMS

Global Grid of Probabilities of Urban Expansion to 2030, v1 (2000–2030)
Land Use and Land Cover

Overview To assess likely future areas of urban expansion up to the year 2030.

Download Documents (1) Maps

Environmental Performance Index, 2014 Release (2002–2014)
Environmental Performance Index (EPI)

Overview To provide quantitative metrics for evaluating a country's environmental performance in different policy categories relative to clearly defined targets.

Download Documents (13) Maps (13) WMS

We will be downloading two datasets (1) Population Density and (2) Roads.

1. Population Density:

- Type in 'population density' in the All Fields search box

Data Sets (108) Follow Us: | Share:

Search Data Sets » All Fields: population density*

All Fields:
 2 of 6 Prev | Next Sort By: Latest Published

Title:

Author:

Abstract:

National Administrative Boundaries, v1 (1990)
Global Rural-Urban Mapping Project (GRUMP), v1

Overview To permit cartographic display of countries and territories that exactly match the GRUMPv1 population surfaces

Download Documents

Population Density Grid, v1 (1990, 1995, 2000)
Global Rural-Urban Mapping Project (GRUMP), v1

Overview To provide a time series of raster population density data for data integration.

Download Documents (238) Maps (4) WMS

Settlement Points, v1 (1990, 1995, 2000)
Global Rural-Urban Mapping Project (GRUMP), v1

Overview To provide populated place

Urban Extents Grid, v1 (1995)
Global Rural-Urban Mapping Project (GRUMP), v1

Overview To provide a raster

Theme

- Agriculture (12)
- Climate (18)
- Conservation (31)

- Then click **Next** to go to the **3rd** page of results
- Select the **‘Population Density Grid, v3’** dataset

Search » Data Sets (108) Follow Us: | Share:

Search Data Sets » All Fields: population density ✖

All Fields: 3 of 6 Sort By: Latest Published ▼

Prev | Next

Population Count Grid Future Estimates, v3
(2005, 2010, 2015)
Gridded Population of the World (GPW), v3

Overview To provide a time series of raster data on population projected to the year 2015 to facilitate data integration.

Download (3) WMS

Population Density Grid, v3 (1990, 1995, 2000)
Gridded Population of the World (GPW), v3

Overview
Download (238) Maps
(3) WMS



To provide a time series of raster data on population density to facilitate data integration.

- This will bring us to the dataset’s page containing information about the data
- Click the **Data Download** tab

Gridded Population of the World (GPW), v3 Follow Us: | Share:

Collection Overview **Population Density Grid, v3 (1990, 1995, 2000)**

Methods Set Overview **Data Download** Maps Map Services Metadata

Data Sets (10)
Population Density Grid, v3 (1990, 1995, 2000)

Map Gallery (479)
Map Services (15)
Citations
FAQs
GPW and GRUMP
Acknowledgments
Population Estimation

Downloads

Data:
View Recommended Citation(s)
Select and download data:

Geography: Data Set:

Data Attributes:

United States of America Summary

- This page allows users to select subsets of the global data
- Under **Geography** select **Country > United States of America** from the dropdown
- Set **Data Set** to **Population Density Grid**
- Next select **.ascii, 2.5’, 1990, 1995, 2000** for the **Data Attributes**
- Click **Download**

2. Roads:

- Type in **‘roads’** in the **All Fields** search box

- Select the **Global Roads Open Access Data Set (gROADS) v1**

Data Sets (29) Follow Us: | Share:

Search Data Sets » All Fields: roads *

All Fields: 1 of 2 [Prev](#) | [Next](#) Sort By: [Latest Published](#) ▼

Title:


Author:

Abstract:

Theme
 [Agriculture \(7\)](#)

Global Roads Open Access Data Set (gROADS), v1 (1980–2010)
Global Roads

[Overview](#)
[Download](#)
[Documents \(7\)](#)
[Maps](#)



To provide an open access, well documented global data set of roads between settlements using a consistent data model (UNSDI-T v.2) which is, to the extent possible, topologically integrated.

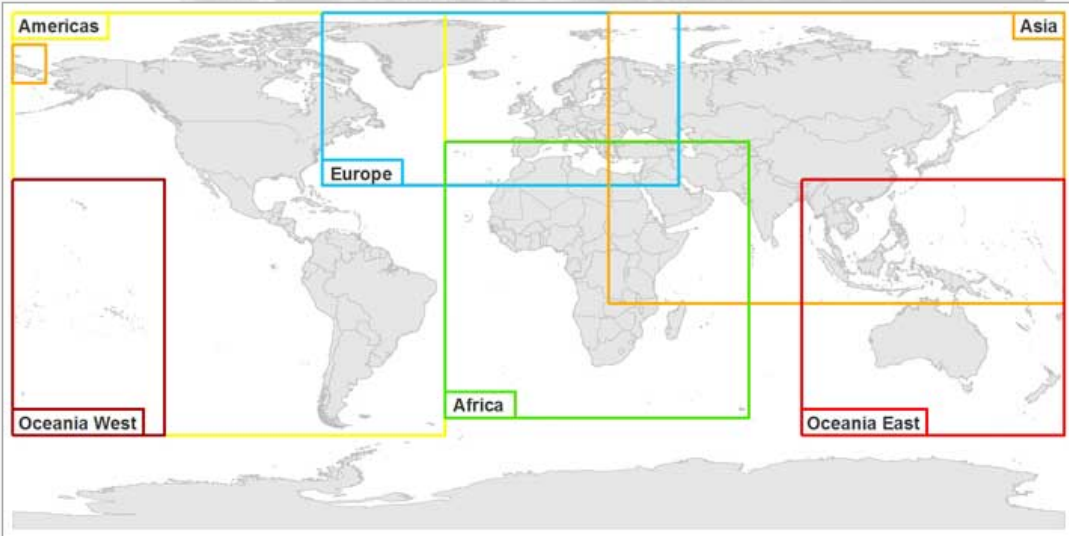
CODATA Catalog of Roads, v1 (1976–2008)
Global Roads

[Overview](#)
[Download](#)

To provide documentation on roads data sets that are potential candidates for inclusion in the Global Roads Open Access Data Set (gROADS), and which may be useful to others searching for data on road infrastructure.

- Click on the **Data Download** tab and scroll down to the map

Extents of Regional Data Downloads:



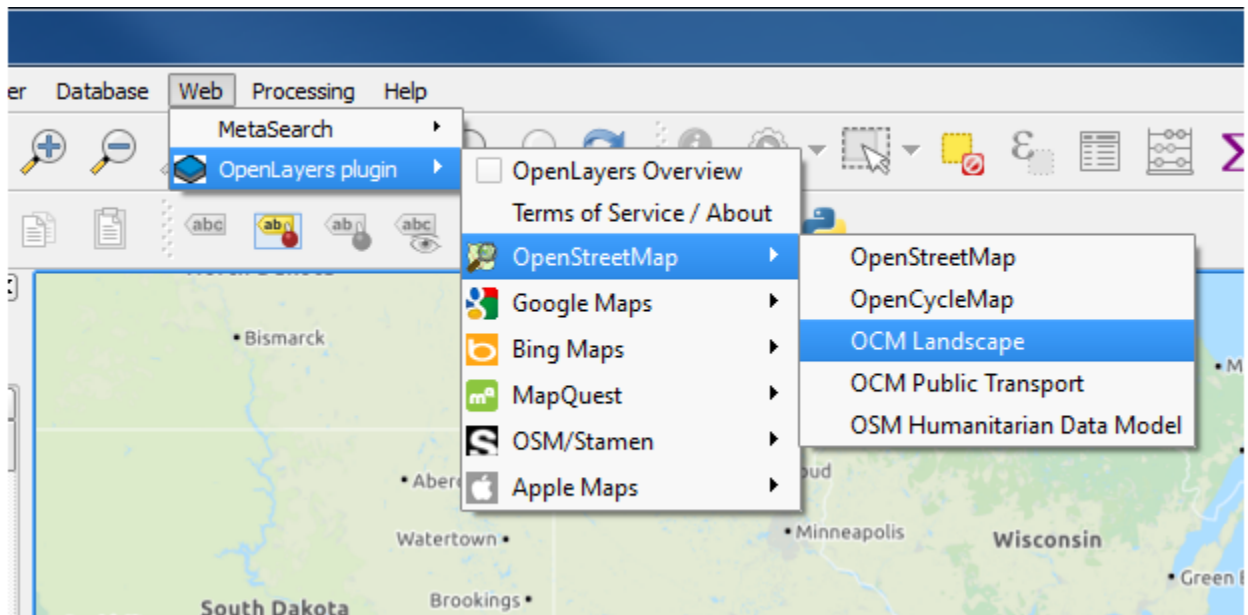
Global	Geodatabase (196 MB)	
Africa	Geodatabase (91.9 MB)	Shapefile (206 MB)
Asia	Geodatabase (86.7 MB)	Shapefile (194 MB)
Europe	Geodatabase (53.9 MB)	Shapefile (81.9 MB)
Americas	Geodatabase (48.1 MB)	Shapefile (62 MB) ←
Oceania East	Geodatabase (9.5 MB)	Shapefile (13.6 MB)

- This will show the extent of each dataset and allow the user to download data by continent

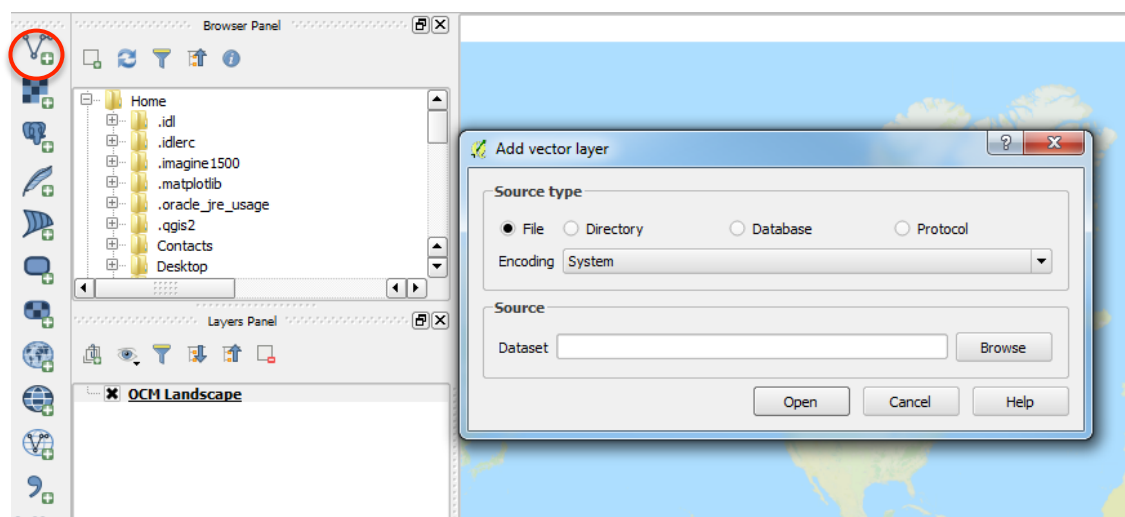
- We will then select the **Americas Shapefile**, this will begin the download

Part 2: Importing and Visualizing SEDAC Data Products in QGIS

- Once the data has finished downloading **Extract** each folder containing our data from SEDAC
- Open **QGIS Desktop**
- Load a basemap using the **OpenLayers** plugin and choose a basemap of your choice

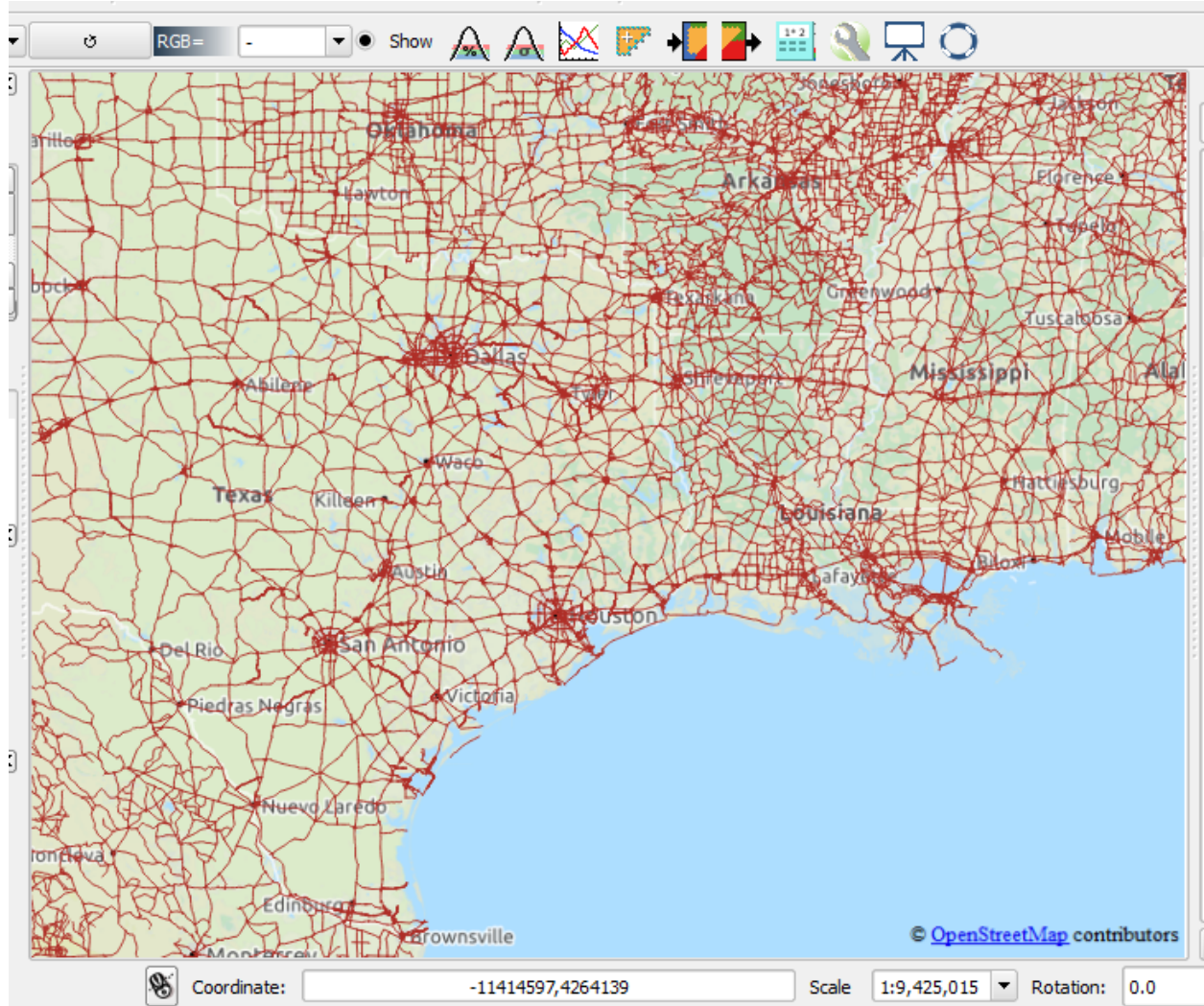


- Next we will add in the roads shapefile we downloaded
- Using the **Add Vector Layer** icon, click **Add Vector**



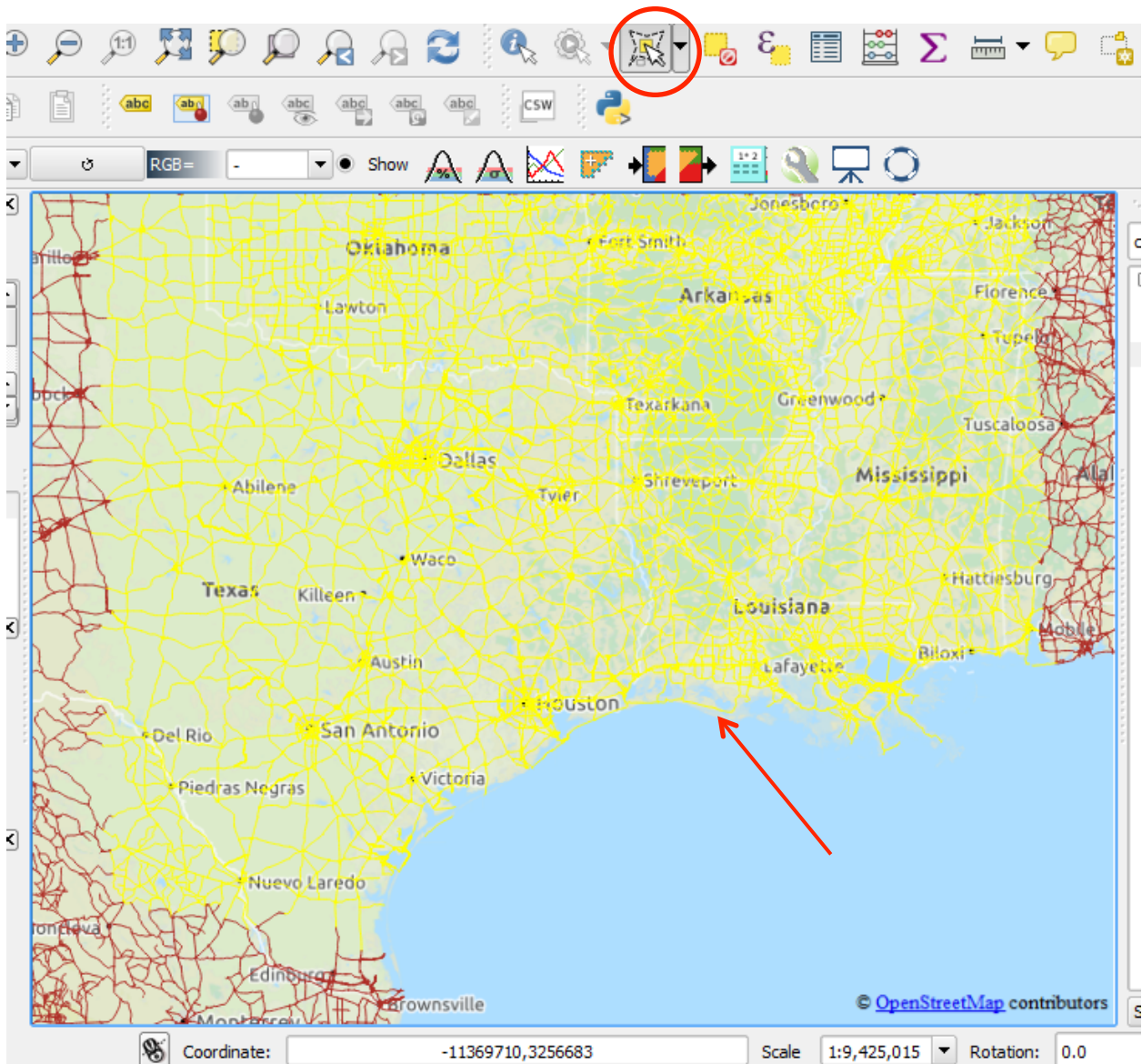
A window will open for you to navigate to the location of the downloaded SEDAC roads data product.

- Select the **shapefile** **‘.shp’** and click **open**
 - Example: **‘gROADS-v1-americas.shp’**

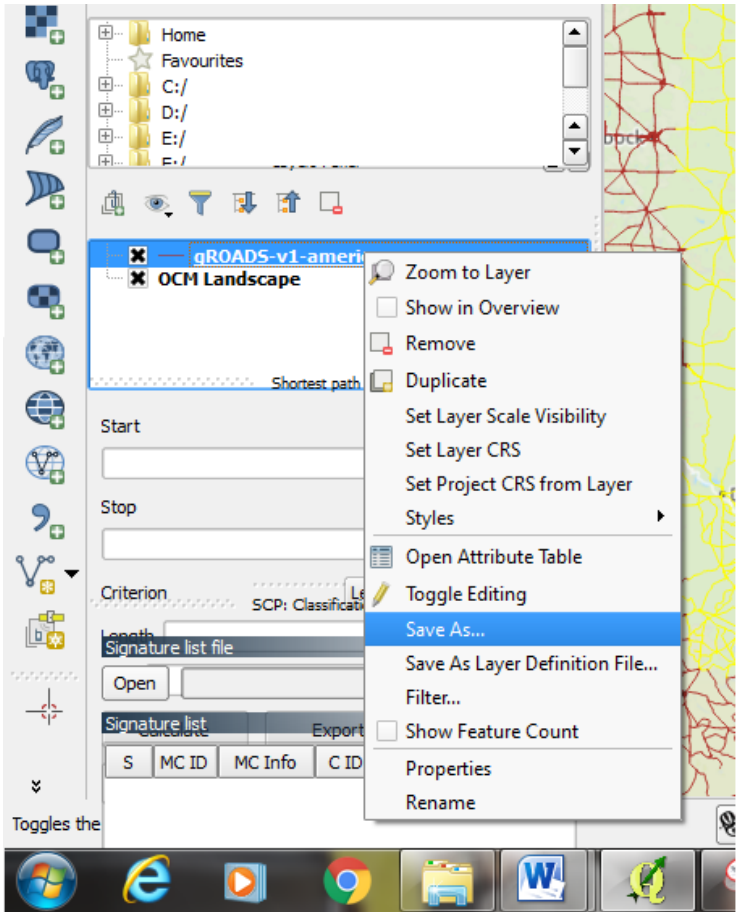


This file contains road data for all of the Americas.

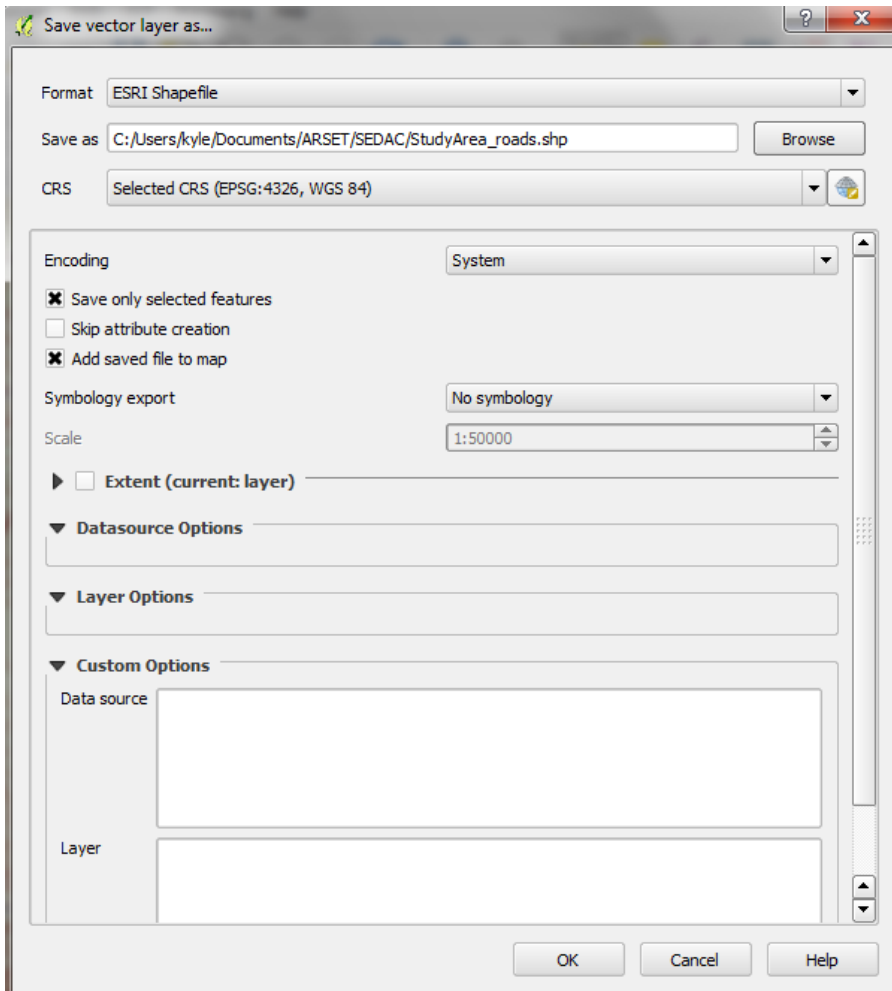
- **Zoom** in to the study area around Eastern Texas
- Since the file is so large we will want to create a subset of the data so that it only contains information within and around the study area. This will allow the data to load and display faster.
- Using the **Select Features by Polygon** tool draw a box around targeted study area



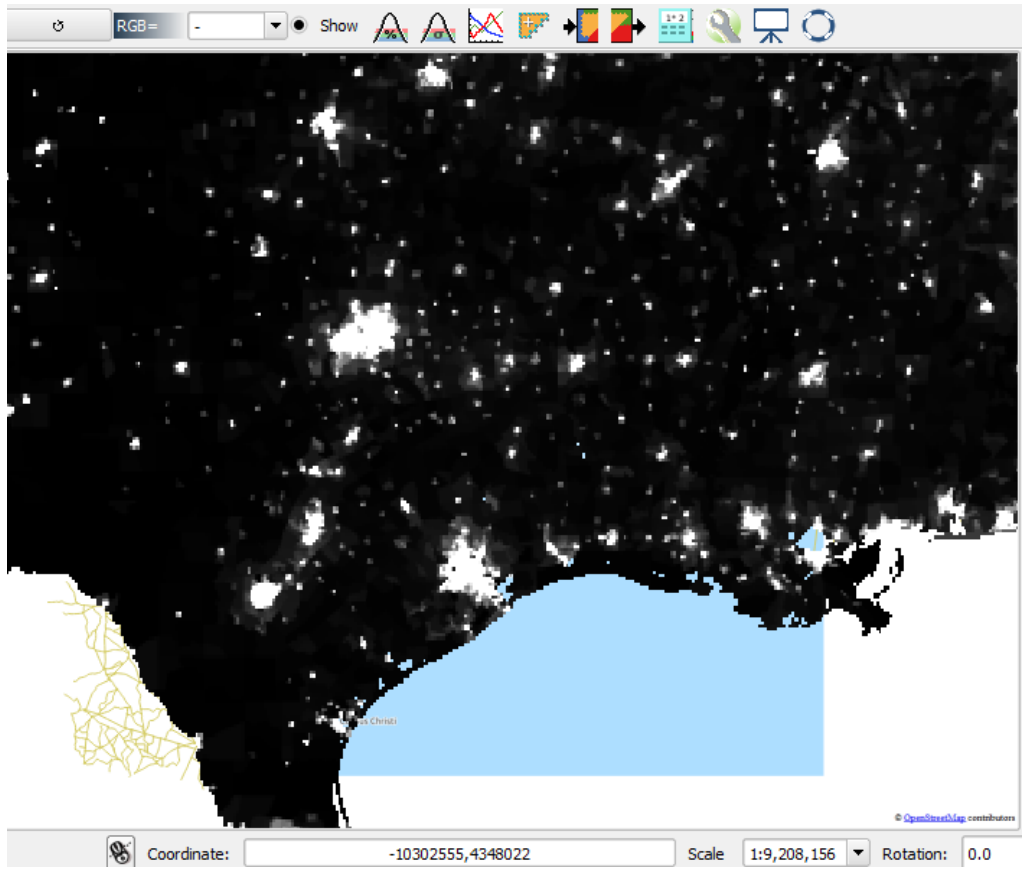
- Once you have created the desired box around the study area **right click** to make the selection. This will highlight the selected area.
- Next, we will create a subset of the Americas road data. **Right click** on the 'gROADS-v1-americas' layer and select **Save As**.



- You will then create a name for the file and under **Encoding** check the ‘**Save only selected features**’ box

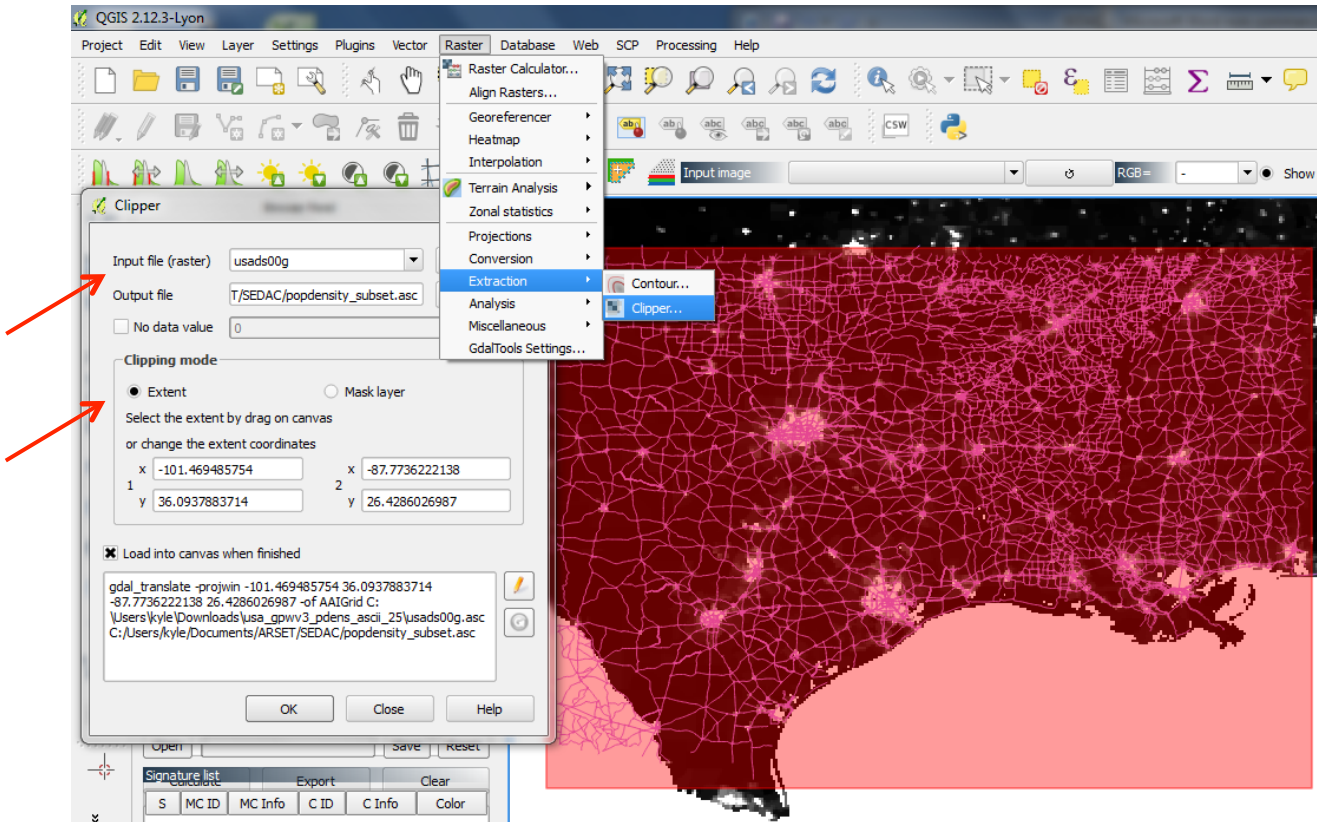


- Click **OK**
- This will create an independent vector file from the selected features. The file will automatically be loaded into the viewer.

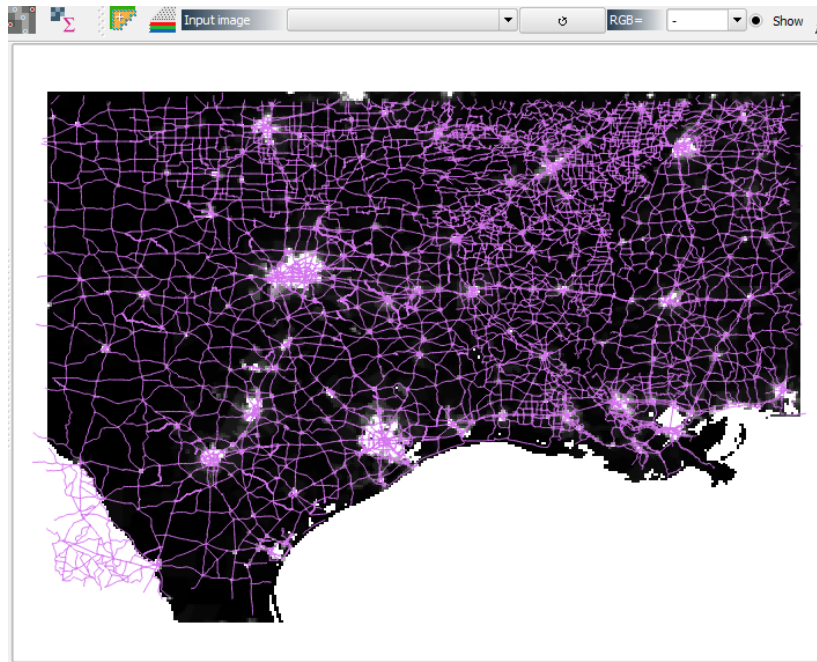


The population density raster will appear as a white to black scale. White values being the greatest density and black the lowest.

- Next we will create a subset of the population density raster to match the roads file for the study area
- Navigate to the **Raster** dropdown, **Extraction, Clipper...**



- Using the **Clipper** tool set the **Input file** to the population density raster, specify the **Output file**, and select the **Extent** clipping mode, then **drag a polygon** to match the extent of the roads subset.
- Click **OK**



We now have both a roads and population density layer that is clipped to the study area that can be used for further analysis.