OpenStreetMap

OpenStreetMap.org

Bird's Eye View GIS

What is it?

OpenStreetMap (OSM)

- **Not software**
- **It's a collaborative project to create a free & editable map of the world.**
- **The Wikipedia of Cartography**
- **Anyone can contribute**

*www.**openstreetmap**.org/*

What is it?

- *Open Geo Data*
- There are many “free” basemaps, Google, Yahoo, Bing...
- These only give limited rights of use
- OSM gives users rights to any kind of reproduction or processing
- *Creative Commons license*

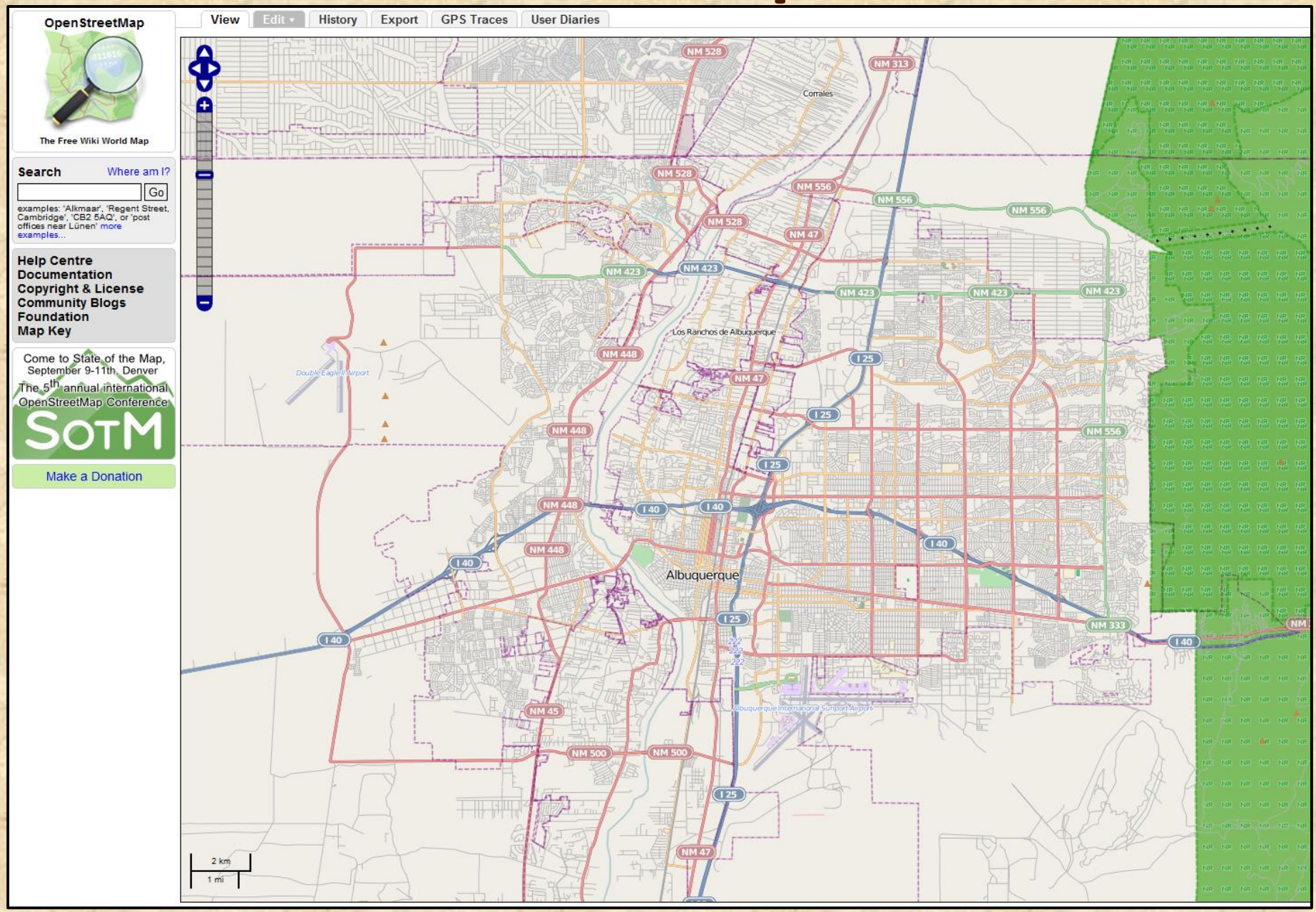
*www.**openstreetmap**.org/*

+

=

OpenStreetMap.org

The Map


OpenStreetMap
The Free Wiki World Map
Search
Where am I?
Go
examples: 'Alkmaar', 'Regent Street, Cambridge', 'CB2 5AQ', or 'post offices near Lünen' more examples...
Help Centre
Documentation
Copyright & License
Community Blogs
Foundation
Map Key
Come to State of the Map, September 9-11th, Denver
The 5th annual international OpenStreetMap Conference
SotM
Make a Donation
View
Edit
History
Export
GPS Traces
User Diaries
Albuquerque
Los Ranchos de Albuquerque
Corrales
Double Eagle II Airport
Albuquerque International Sunport Airport
NM 528
NM 313
NM 556
NM 47
NM 423
NM 448
NM 45
NM 500
NM 333
I 25
I 40
2 km
1 mi

Methodology

People, like you and me, gather location data across the globe from a variety of sources such as:

- Recordings from GPS devices
- Public domain data
- Digitizing against free satellite imagery

This information then gets uploaded to OpenStreetMap's central database from where it can be further modified, corrected and enriched by anyone who notices missing facts or errors about the area.

How accurate/complete is it?

- **Wiki-style process**…no guarantee of accuracy of any kind. Then again, few proprietary maps carry a guarantee of accuracy, either.

- Proprietary map include intentional errors called **easter eggs**

- These errors allow them to catch you using their data illegally

- **All OSM users have a stake in having accurate data.** If one person puts in inaccurate data, maliciously or accidentally, the other 99.9% of people can check it, fix it, or get rid of it.

How accurate/complete is it?

- **Your mileage may vary**. The Wikipedia project has shown that a large amount of good quality data can be collected but it can be difficult to weed out the inevitable errors.

- A full **editing history** is stored for each user & there's a History tab on the main page that shows recent edits to the selected area.

- At the moment the best way to answer this question is to judge for yourself.

Data Format

OSM XML data format

- *.osm files
- Nodes
- Ways
- Attributes → Tags (key and value)
- “key=value”
- Relations

Data Format

Nodes

- Coordinate pair (GCM – 7 decimal places)
- Timestamp of last edit, user ID, changeset ID
- Zero or more tags
- Used to map Points of Interest (POI's)

Data Format

Ways

- Two or more nodes connected
- Timestamp of last edit, user ID, changeset ID
- Zero or more tags
- Used for linear features
- If the first and last nodes are identical an area (polygon) is formed

Lots of creative tools and products out there

Data Format

Tags

- Key Value pair
- Objects can have multiple tags
- Case insensitive

Identify:

- Attributes
- Different POI's
- Differentiate between circular ways and actual areas.

Data Creation

OSM data can be created via many interfaces and tools

- OSM Potlatch online editor
- JOSM – Offline Java Editor
- QGIS Plugin
- ArcGIS toolbox
- Mobile apps → iPhone
- Merkaartor
- Mapzen
- OSM2Go
- …

Mapping Parties

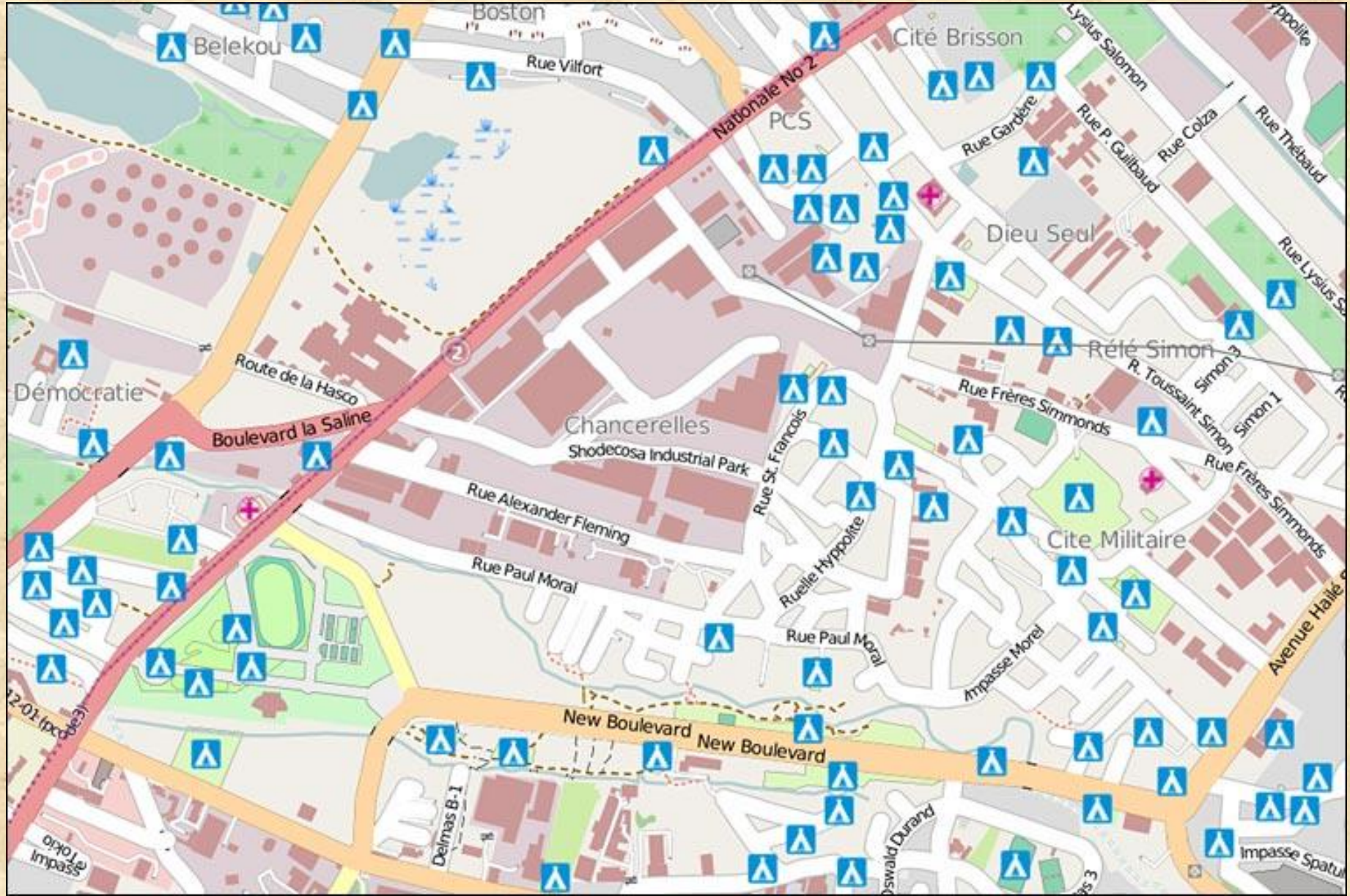
Citizen's mapping with GPS

Relief Efforts - Mapping in Haiti

Humanitarian mapping

Mapping in Haiti

Mapping in Haiti



Data Download

Data can be downloaded for limited areas

- QGIS Plugin
- ArcGIS toolbox

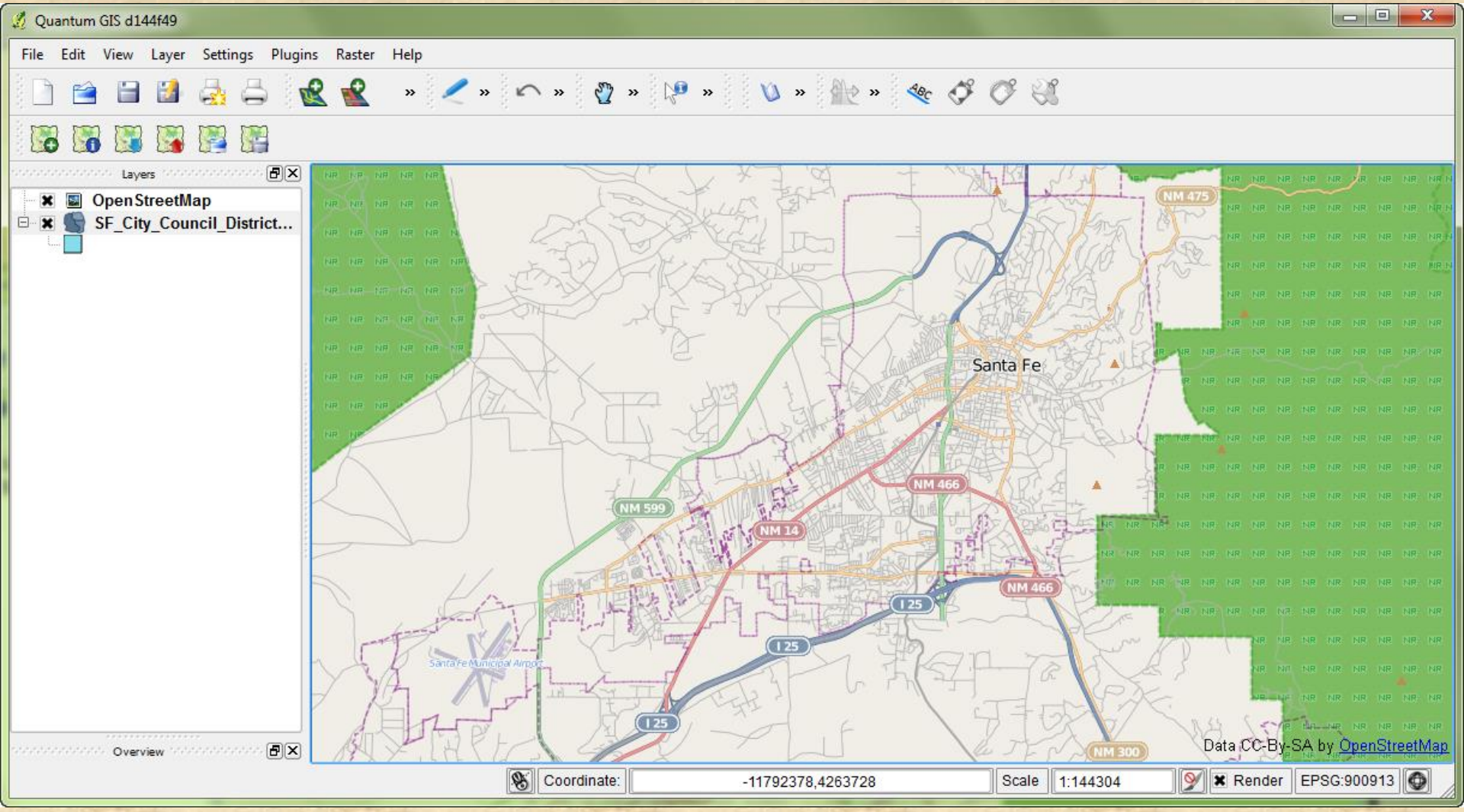
- Cloudmade – extracts by country
- PlanetOSM

http://wiki.openstreetmap.org/wiki/Planet.osm

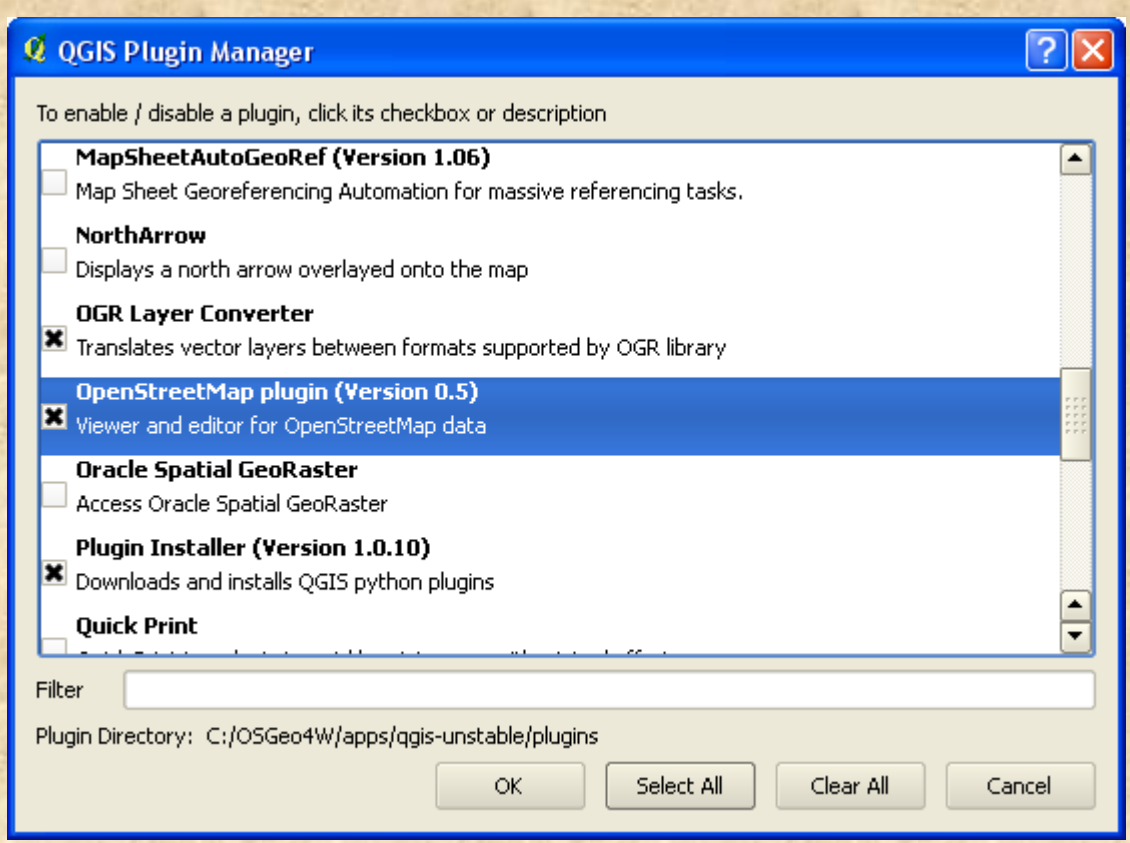
Allows you to download snapshots of the OSM database

OSM in QGIS

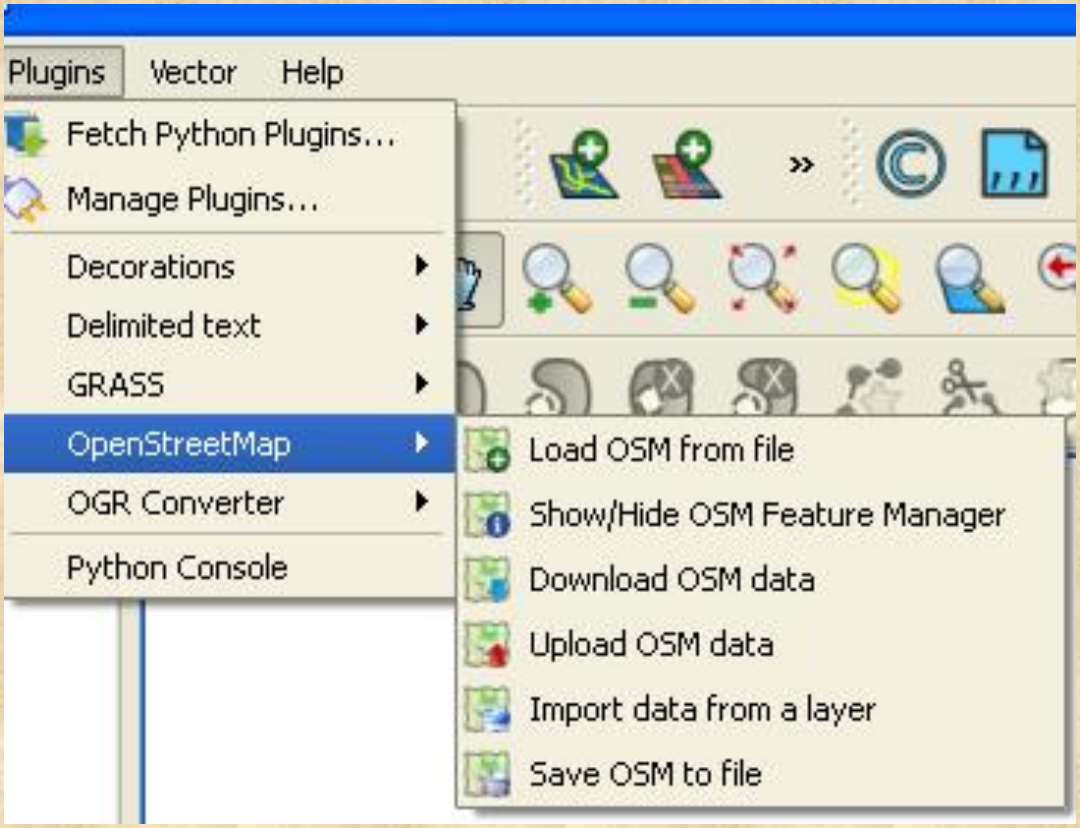
OpenLayers Plugin



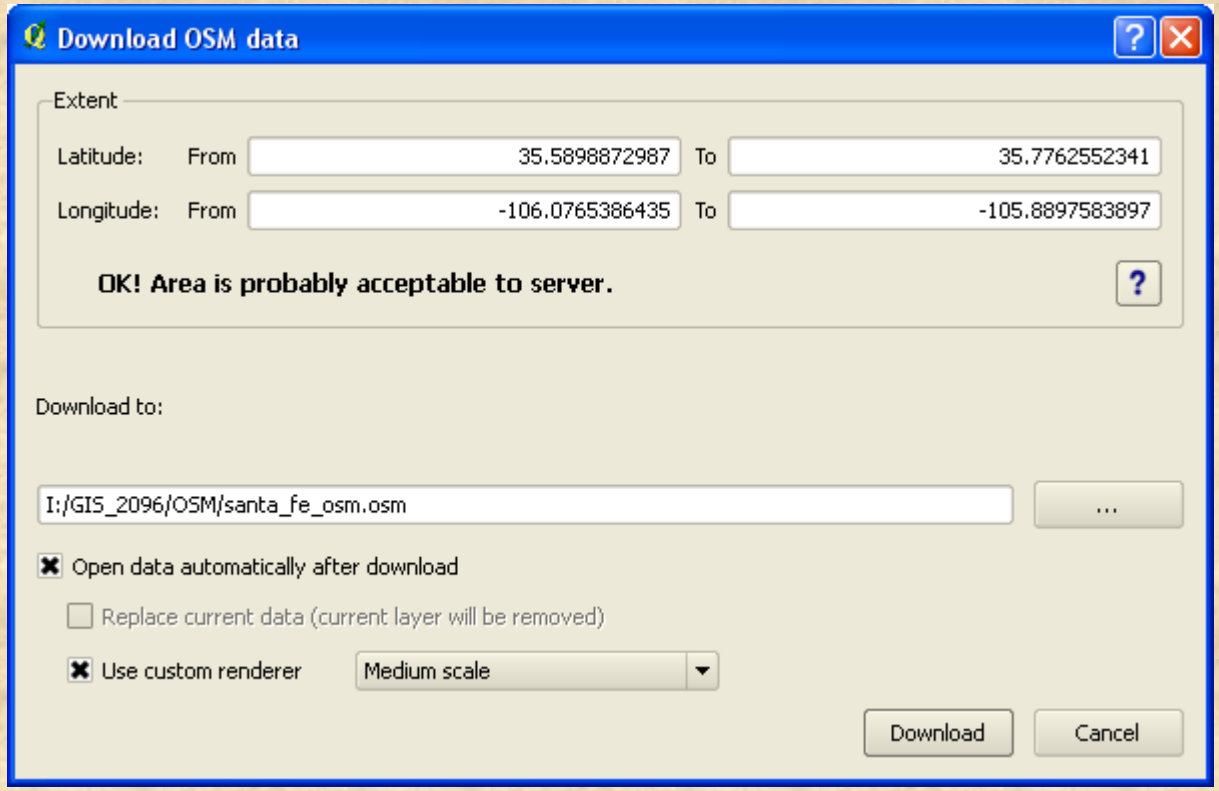
QGIS OSM Plug In



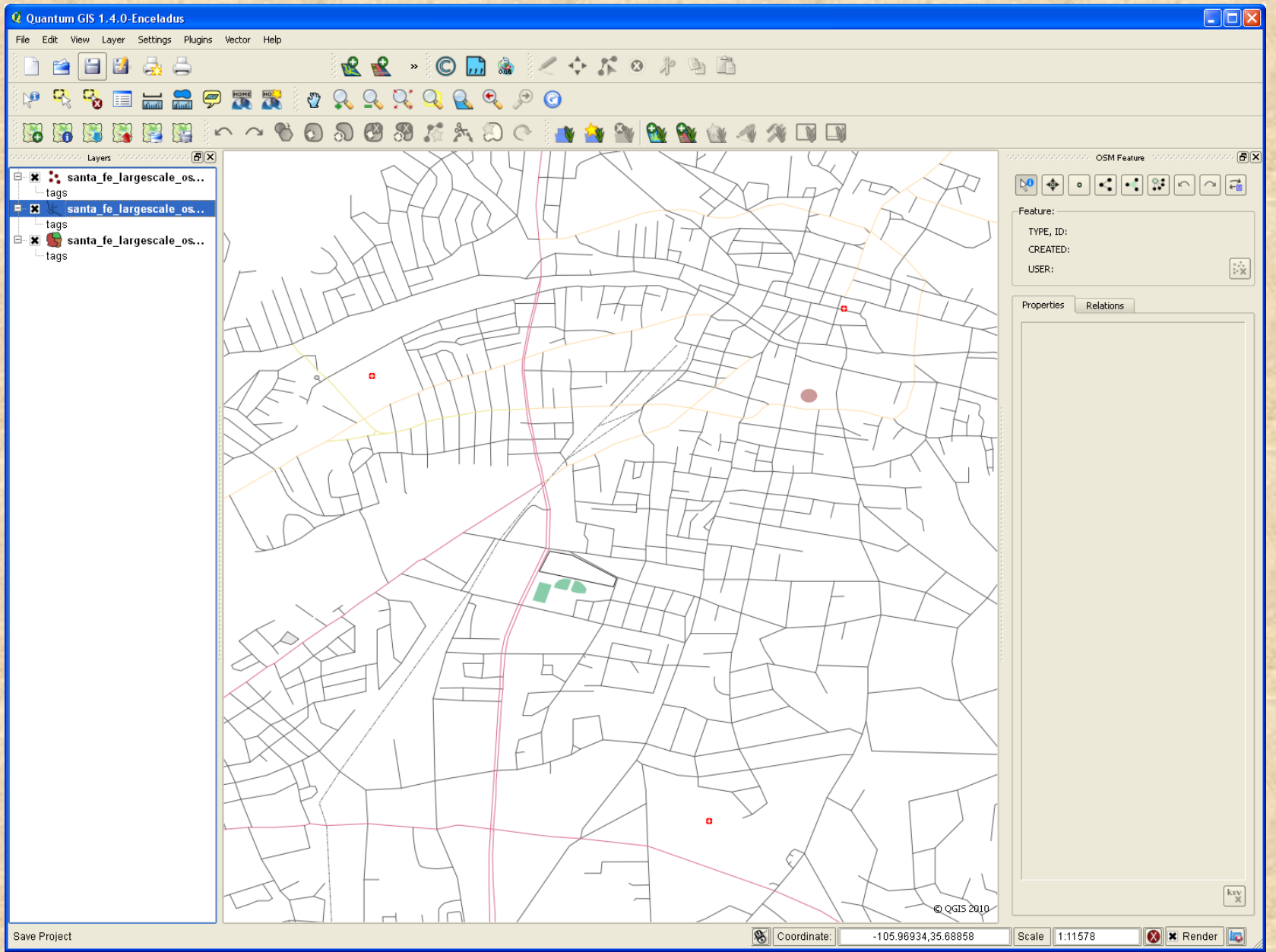
QGIS PlugIn


Plugins
Vector
Help
Fetch Python Plugins...
Manage Plugins...
Decorations
Delimited text
GRASS
OpenStreetMap
OGR Converter
Python Console
Load OSM from file
Show/Hide OSM Feature Manager
Download OSM data
Upload OSM data
Import data from a layer
Save OSM to file

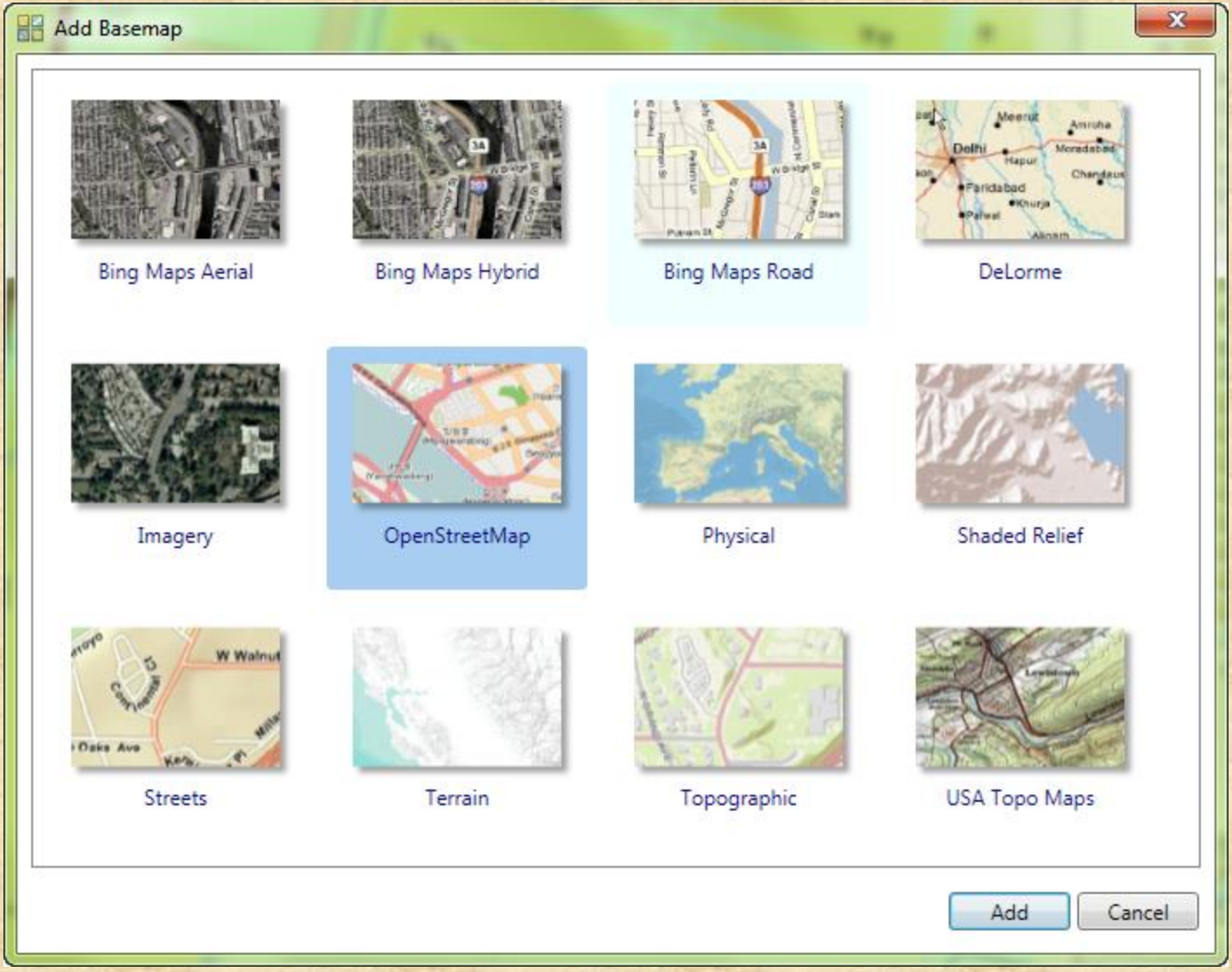
QGIS PlugIn


Download OSM data
Extent
Latitude: From 35.5898872987 To 35.7762552341
Longitude: From -106.0765386435 To -105.8897583897
OK! Area is probably acceptable to server.
Download to:
I:/GIS_2096/OSM/santa_fe_osm.osm
...
Open data automatically after download
Replace current data (current layer will be removed)
Use custom renderer
Medium scale
Download
Cancel

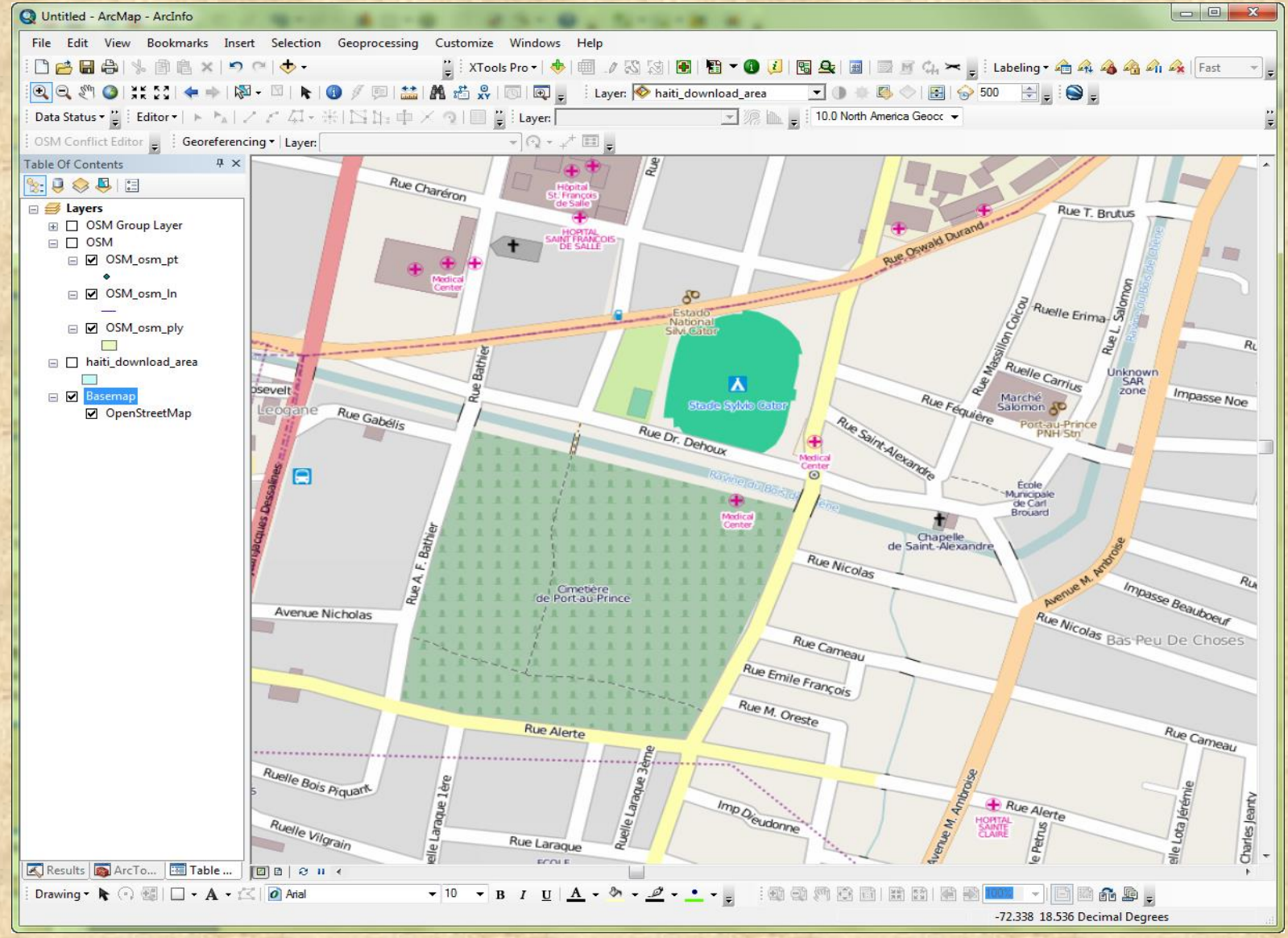
QGIS PlugIn


Quantum GIS 1.4.0-Enceladus
File Edit View Layer Settings Plugins Vector Help
Layers
santa_fe_largescale_os...
tags
santa_fe_largescale_os...
tags
santa_fe_largescale_os...
tags
OSM Feature
Feature:
TYPE, ID:
CREATED:
USER:
Properties
Relations
© QGIS 2010
Save Project
Coordinate:
-105.96934,35.68858
Scale
1:11578
Render

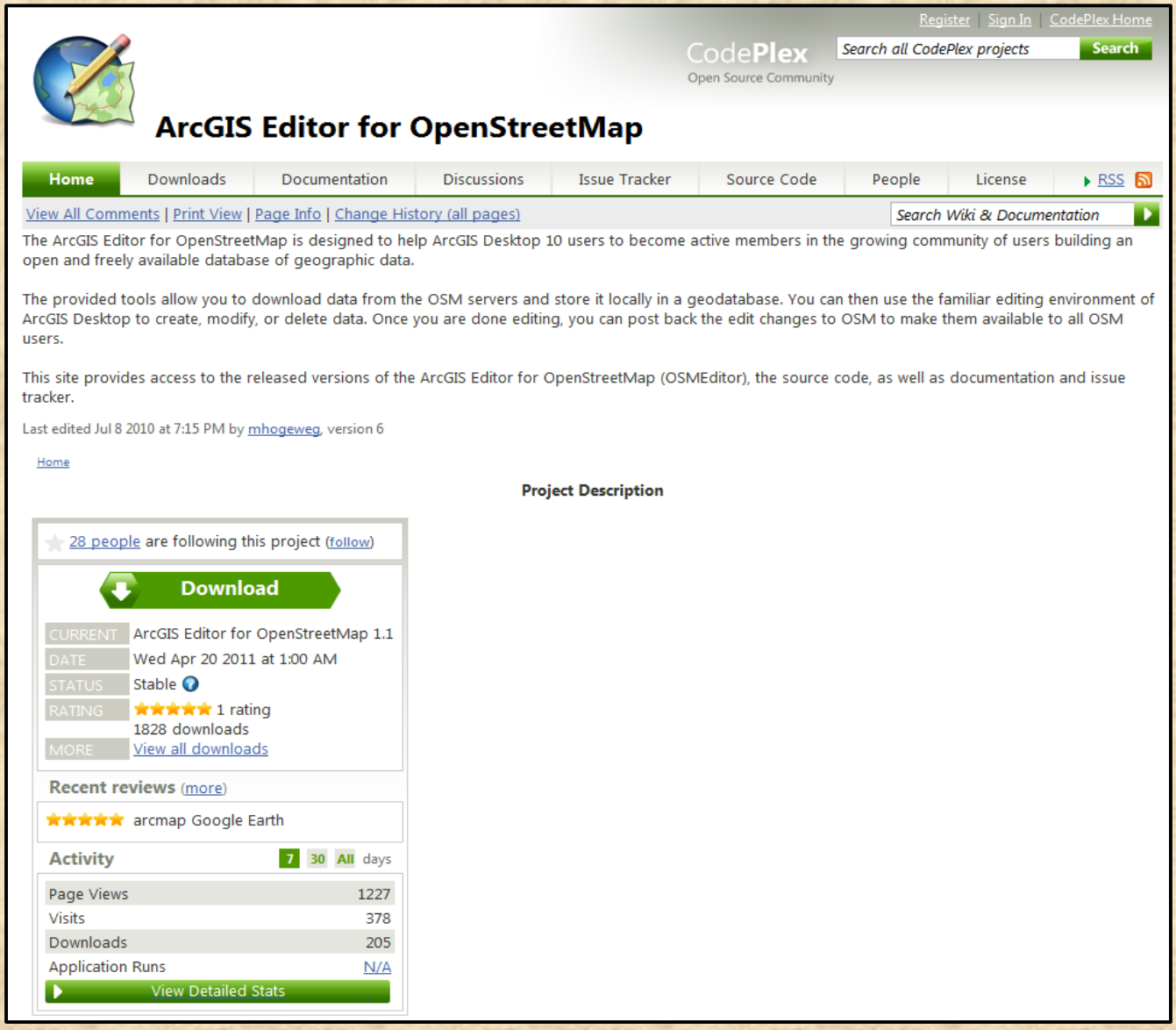
OSM in ArcGIS



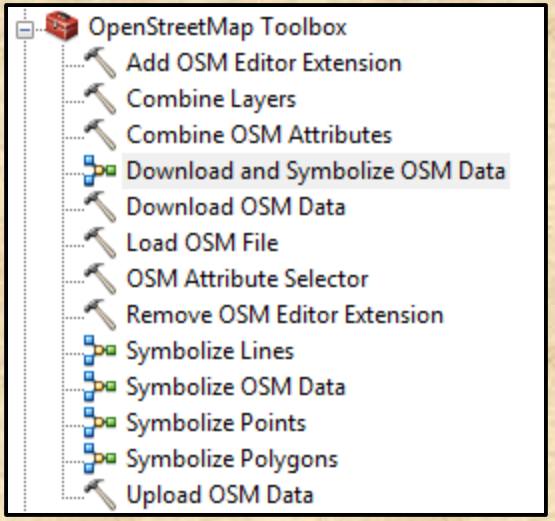
OSM in ArcGIS

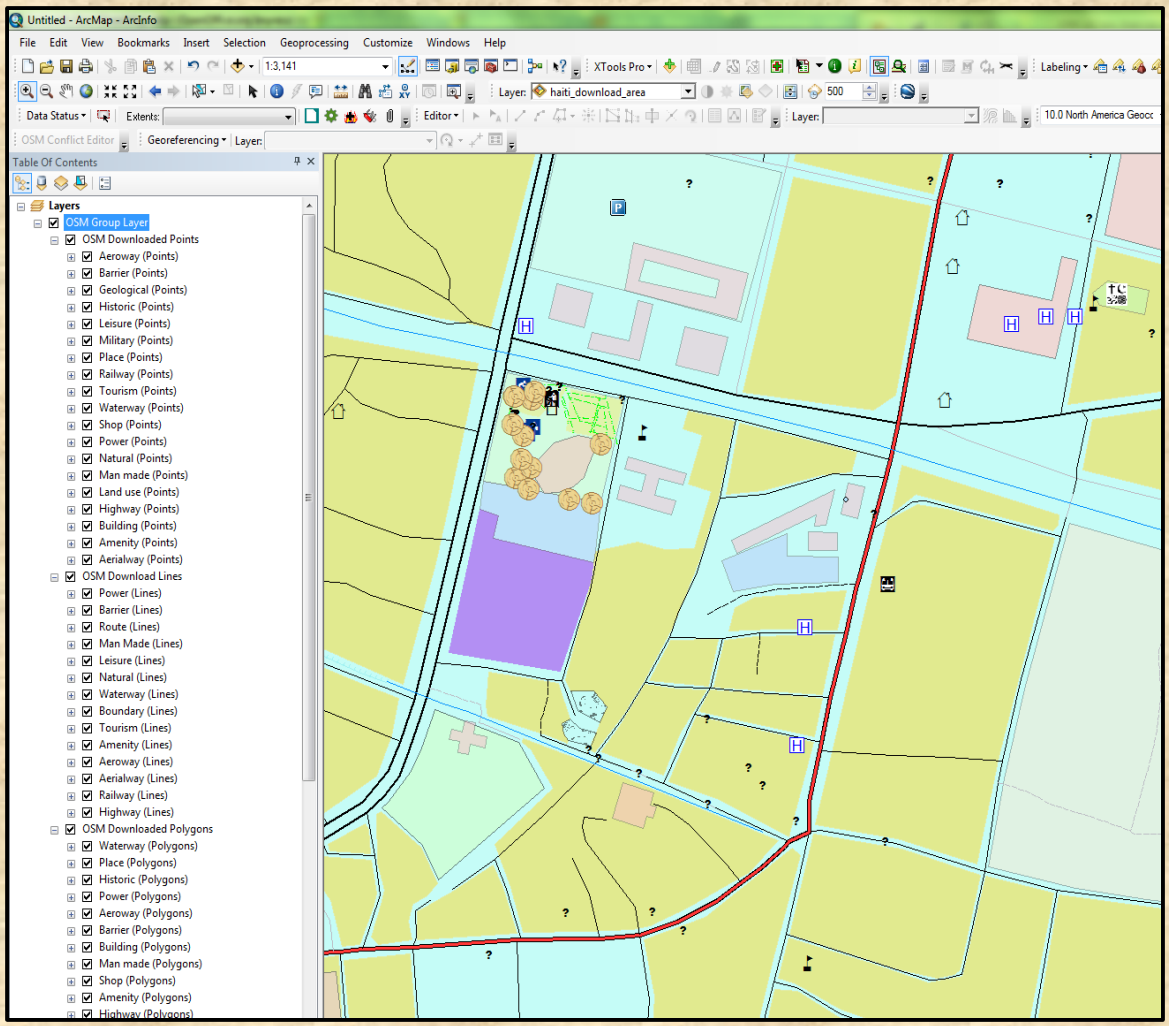


Editing OSM in ArcGIS



Download OSM in ArcGIS





Other Open Geo Data Projects

- OpenGeoData

http://opengeodata.org/

- OSM Streetview
- Open Aerial Map
- Free Earth Foundation

NASA World Wind

http://www.freeearthfoundation.com/

(NASA World Wind)

- Open knowledge Foundation

http://www.okfn.org/

Resources

The Map
http://www.openstreetmap.org/

Wiki
http://wiki.openstreetmap.org/wiki/Main_Page

Planet OSM
http://wiki.openstreetmap.org/wiki/Planet.osm

Twitter
@openstreetmap

Resources

QGIS

http://www.qgis.org/wiki/Using_OpenStreetMap_data

OSM → PostGIS