

NASA ARSET Training

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

Introduction to SRTM

Objective: Locate, download, import and display SRTM elevation data in QGIS

There are three parts to this exercise:

1. Access SRTM elevation data products
2. Import and visualize SRTM elevation data products in QGIS
3. Create a derived slope product

Part 1: Access SRTM elevation data products

- Go to the CGIAR-CSI data portal:
<http://srtm.csi.cgiar.org/>
- Click on the SRTM Data Search and Download button

The CGIAR Consortium for Spatial Information (CGIAR-CSI)

Applying GeoSpatial Science for a Sustainable Future...

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CGIAR-CSI Content

- What is CGIAR-CSI ?
- CGIAR-CSI Members
- What's New ?
- CRU Climate Data

SRTM Content

- **SRTM Data Search and Download**
- SRTM Data Processing Methodology
- SRTM FAQ
- SRTM Quality Assessment (PDF File - 2.55 Mb)
- About SRTM Imagery
- CIAT Landuse Project
- How to Search for Data?
- Disclaimer
- Contact Us

GeoNetwork Project

- CGIAR-CSI Geonetwork Nodes
- GeoNetwork Support

SRTM 90m Digital Elevation Data

new Resampled SRTM data to 250m resolutions for the entire globe are available <https://hc.box.net/shar>

UPDATE - VERSION 4: THE SRTM DATA NOW AVAILABLE FROM THIS SITE HAS BEEN UPGRADED TO PREVIOUS VERSIONS, USING NEW INTERPOLATION ALGORITHMS AND BETTER AUXILIARY DEMs. WE ARE CONI

The CGIAR-CSI GeoPortal is able to provide SRTM 90m Digital Elevation Data for the entire world. The SRTM digital eleva provides a major advance in the accessibility of high quality elevation data for large portions of the tropics and other areas of data voids, and to facilitate it's ease of use by a wide group of potential users. This data is provided in an effort to promote the the developing world. Digital elevation models (DEM) for the entire globe, covering all of the countries of the world, are availat

- You then are prompted to make a selection. We will select the **CGIAR-CSI (USA)** server. If you are an international user it may be best to use other servers. The second option allows you to select data by multiple selection, mouse drag, or input coordinates. For simplicity, we will use **Multiple Selection**. This allows you to select individual tiles as needed.

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SRTM Data Selection Options Chinese users : [中国用户可通过中国科学院镜像站点下](#)

1. Select Server: CGIAR-CSI (USA) HarvestChoice (USA) JRC (IT) King's College (UK) TelaScience (USA)

2. Data selection method: Multiple Selection Enable Mouse Drag Input Coordinates

Many tiles can be selected at random locations. These selected tiles are listed in the results page for download.

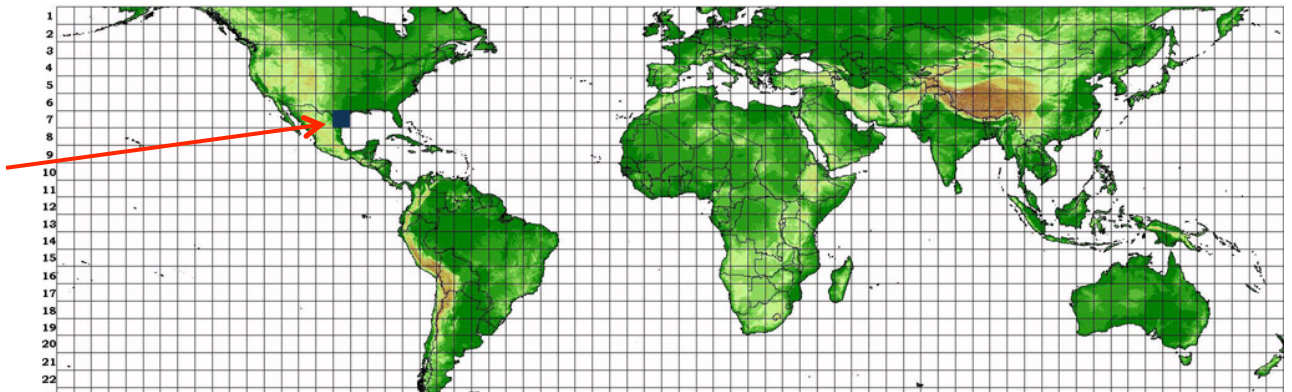
Decimal Degrees (ie 34.5, -100.5) Degrees: Minutes: Seconds (ie 34 30 00 N, 100 30 00 W)

Longitude - min: max: Longitude - min: East ▼ max: East ▼

Latitude - min: max: Latitude - min: North ▼ max: North ▼

Longitude: -40.90 Latitude: -23.13 Tile X: 28 Tile Y: 17

3. Select File Format: GeoTiff ArcInfo ASCII



- Next we select the file format GeoTiff, which will provide a raster format easy to view in QGIS.
- Click **Begin Search>>>**
- This will take you to the download page and provides on-screen metadata for the product.

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1 Items have been Found.

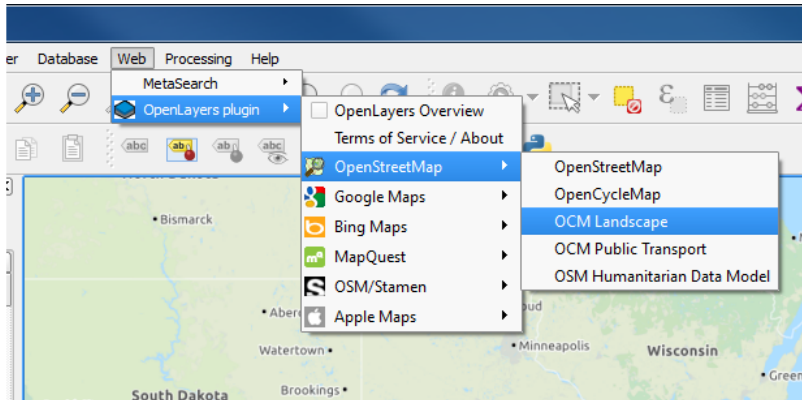
Description	Location	Image
Product : SRTM 90m DEM version 4 Data File Name : srtm_17_07.zip Mask File Name : srtm_mk_17_07.zip Latitude min: 25 N max: 30 N Longitude min: 100 W max: 95 W Center point : Latitude 27.50 N Longitude 97.50 W		

CSI Server :

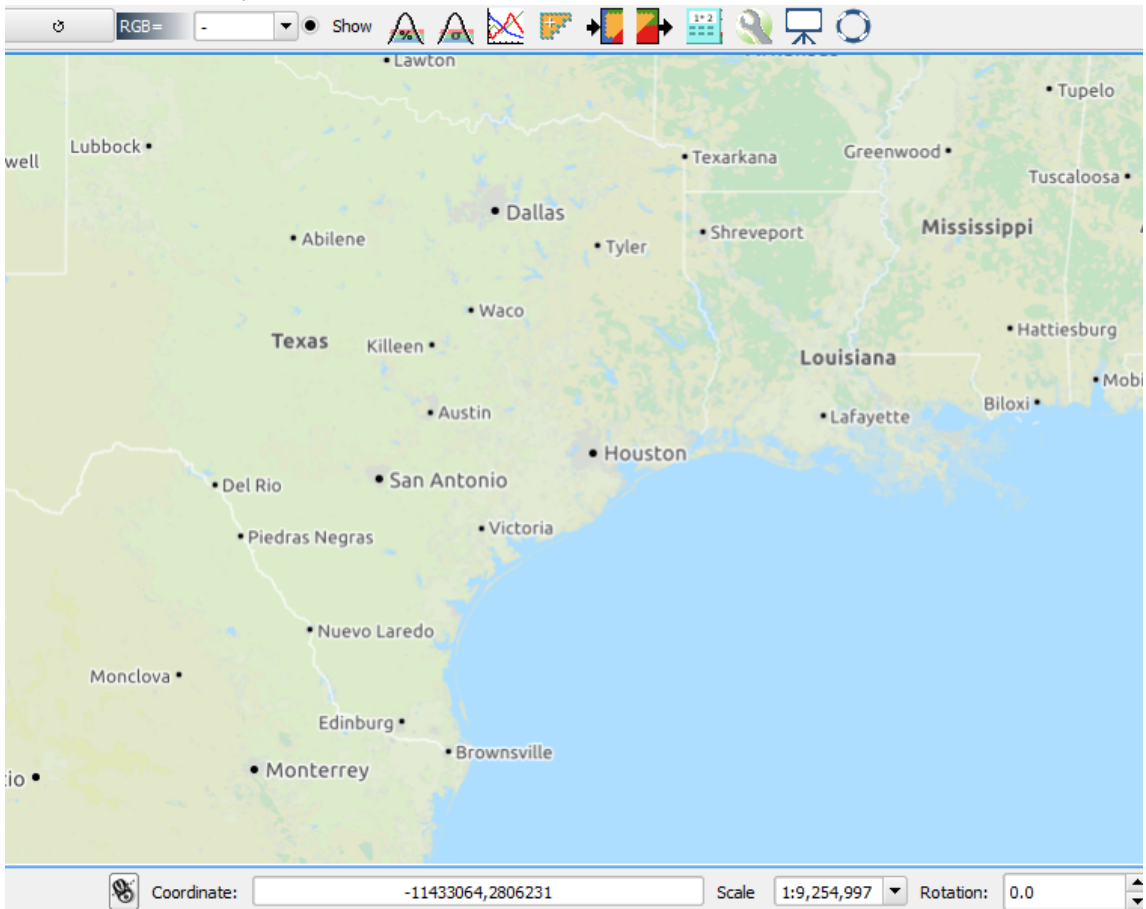
- Click the **Data Download (HTTP)** icon to download the GeoTiff Digital Elevation Model (DEM) file.
- This will download a zipped folder containing the SRTM elevation data.

Part 2: Import and Visualize the SRTM elevation data

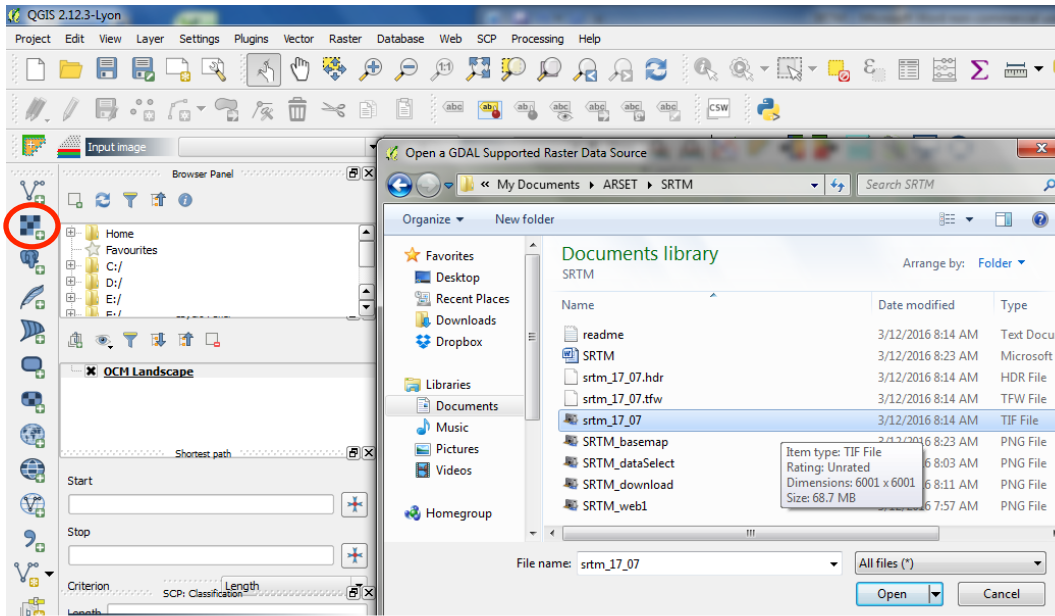
- Once the file is downloaded, you will need to unzip the file and open **QGIS Desktop**.
- First we will add in a basemap using the **OpenLayers plugin**



- Choose the Basemap of your choice (OCM Landscape or Google Physical work well).
- Zoom in on the study area.

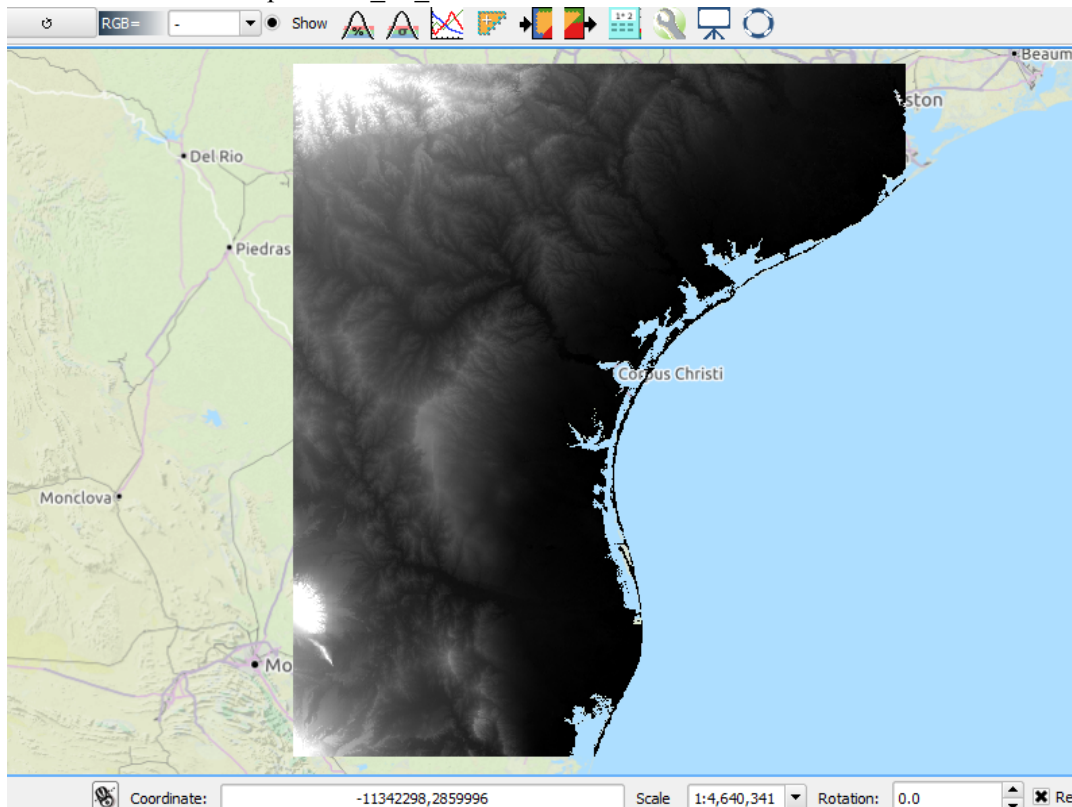


- Using the **Add Raster Layer** icon, click **Add Raster**.



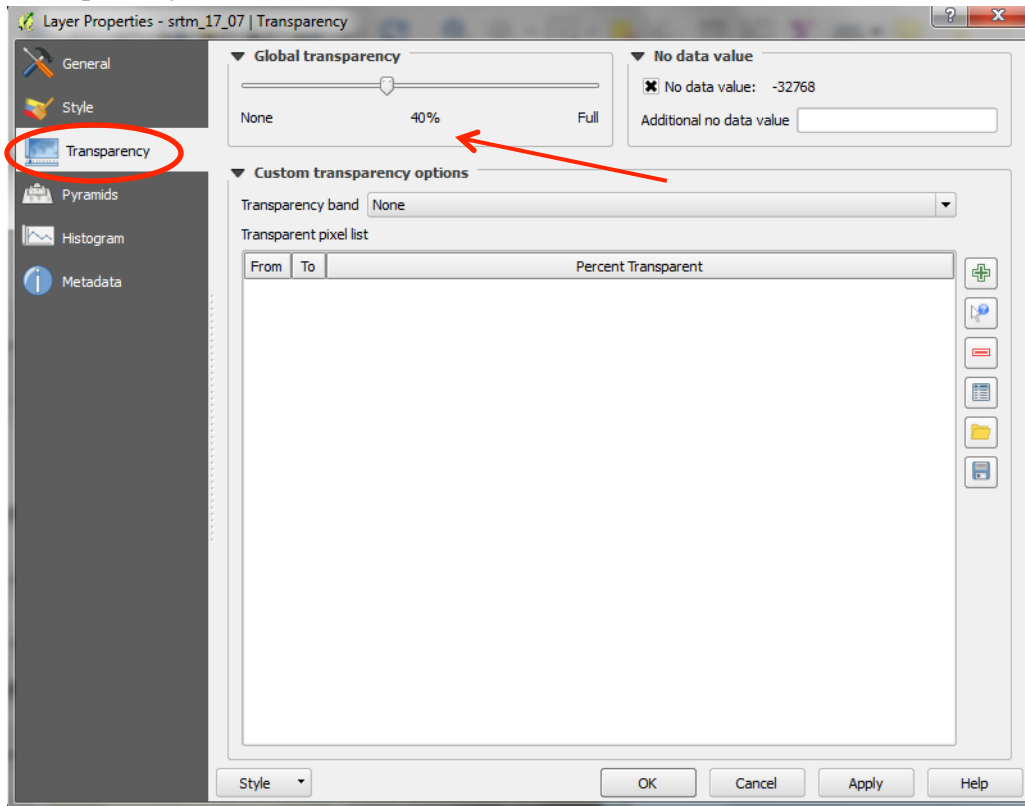
A window will open for you to navigate to the location of the downloaded SRTM product.

- Select the GeoTiff raster ending in **'.tif'** and click **open**
 - Example: srtm_17_07.tif

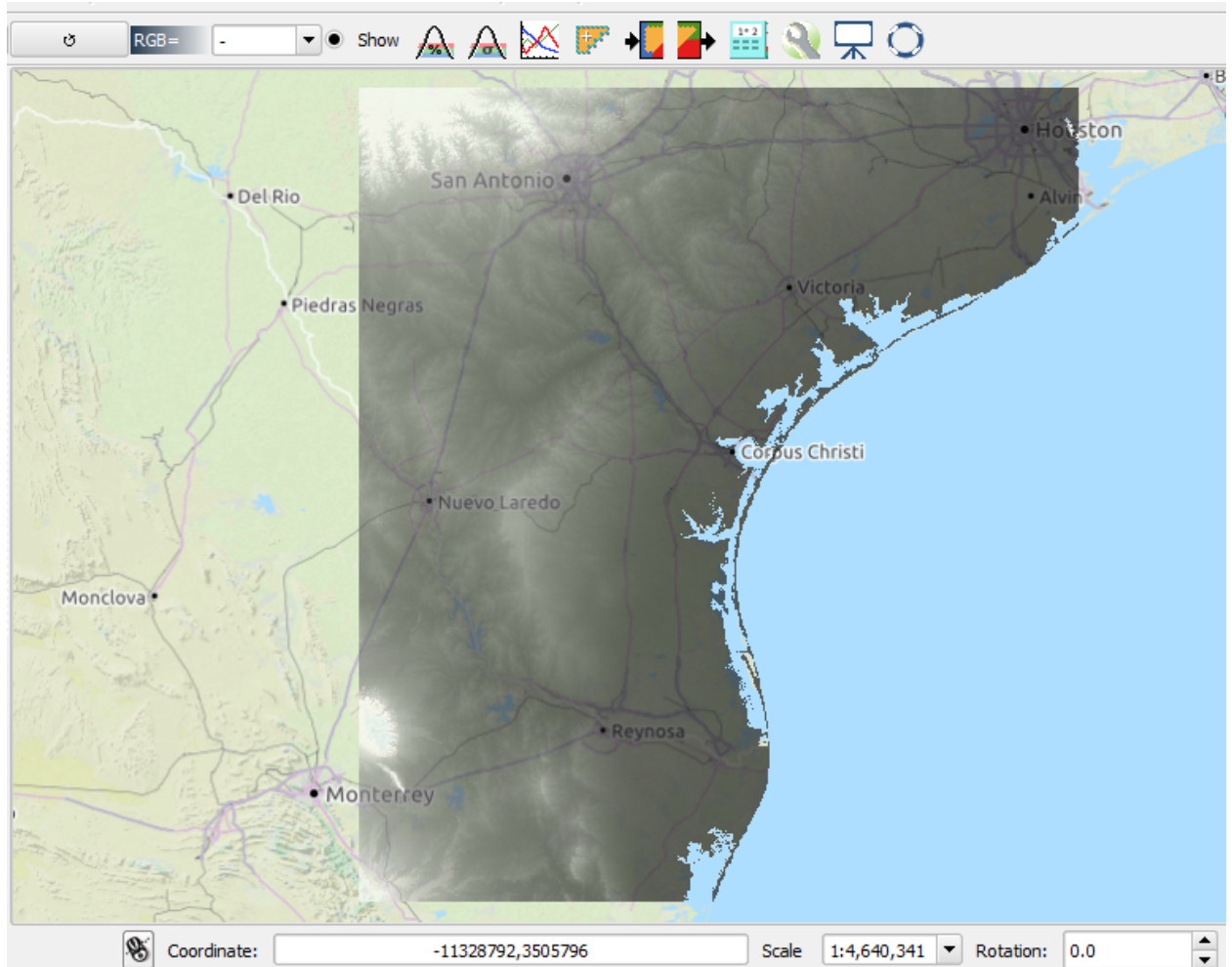


The raster has been imported. You may wish to change the transparency of the DEM file in order to view the basemap with elevation properties.

- Right click the **layer**, navigate to **layer properties** and the **Transparency** tab, set the **Global Transparency to 40%**. Click ok.

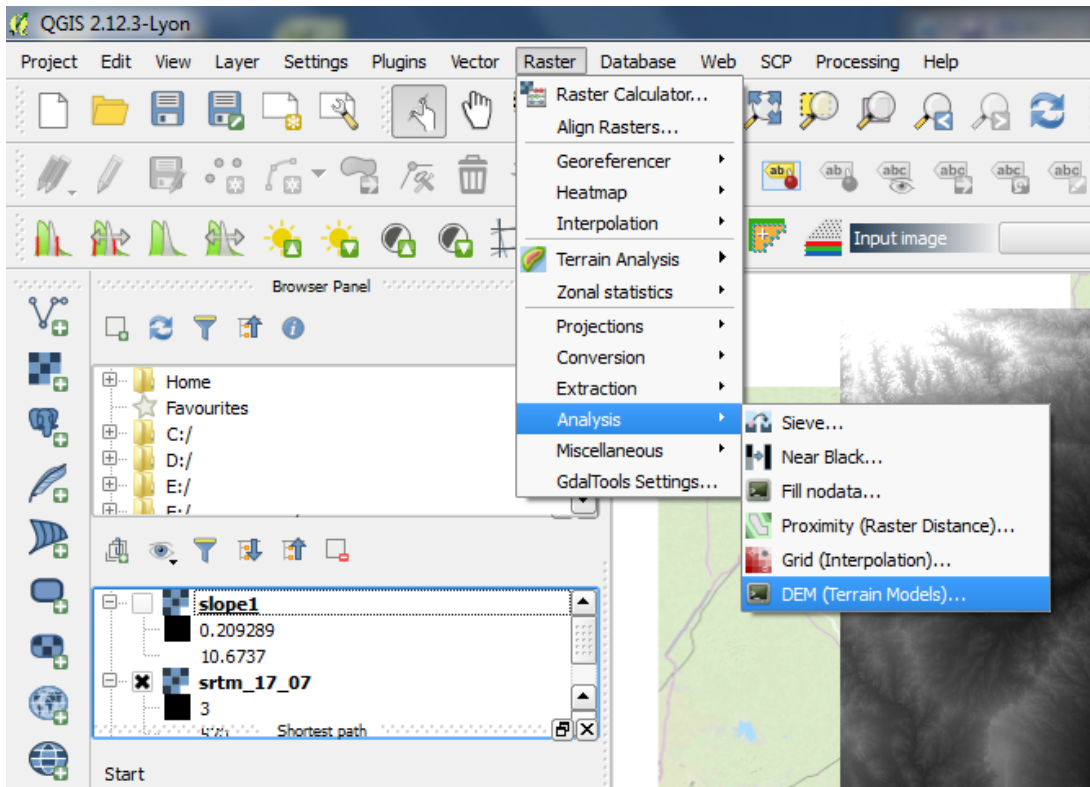


The resulting image:

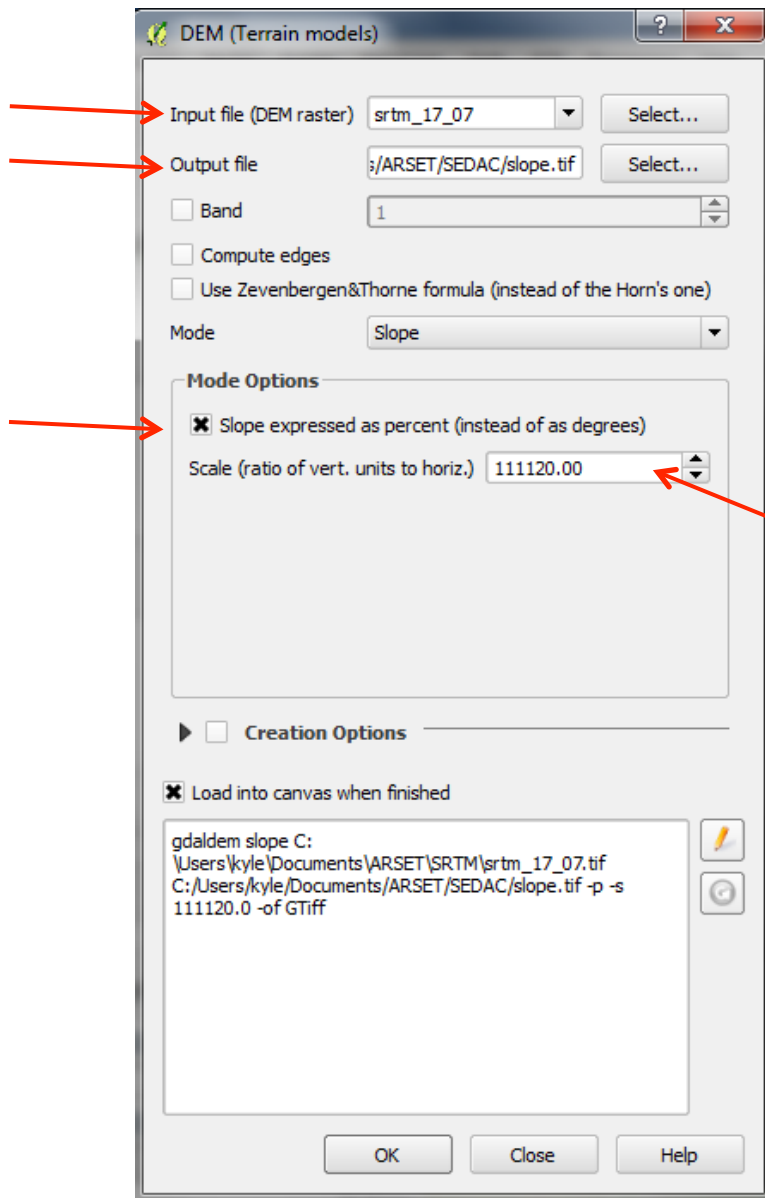


Part 3: Creating a derived slope product

- Using the SRTM DEM now imported into QGIS we can create a slope product using the **DEM (Terrain models)** tool
- Click on the menu item **Raster > Analysis > DEM (Terrain models)**.



- In the dialog that appears, ensure the **Input file** is the DEM we just visualized.



- Set the **Output file** to a folder and name ending in **‘.tif’**
- Select the **Mode** option **Slope**
- **Check** the **Slope expressed as percent** box
- In the **Scale** box enter **111120.00** to convert the units to meters
- Click **OK**
- The resulting image displays slope as percentage. White being higher slope and black lower.

