1. DATASET FULL NAME

2013 Baluchistan, Pakistan Pre-Earthquake Stereogrammetric DEMs

2. OVERVIEW DESCRIPTION

This dataset is composed of a suite of pre-seismic 2m resolution DEMs spanning the 2013 M_w7.7 Baluchistan earthquake. The DEMs were constructed using the open-source software package SETSM (https://mjremotesensing.wordpress.com/setsm/) from DigitalGlobe base imagery (©DigitalGlobe 2018). DEMs were mosaicked and vertically registered using the Ames StereoPipeline (https://ti.arc.nasa.gov/tech/asr/groups/intelligent-robotics/ngt/stereo/). The base imagery included 0.5m and 0.3m resolution panchromatic imagery from QuickBird, GEOEYE, WorldView1, WorldView2, and WorldView3 (©DigitalGlobe 2018). The dataset includes DEMs generated from in-track stereo imagery, as well as DEMs constructed from mixed pairs of non-in-track stereo images. The pre-event DEMs are all vertically registered to the 30 m Shuttle Radar Topography Mission (SRTM) DEM. The generation of this dataset was funded by NASA in cooperation with the U.S. Geological Survey. A complete description of the generation of this dataset and the images that were used to construct the DEMs can be found in the associated manuscript. The naming description of individual DEMs is as follows:

*sensor1*n*sensor2*_*date1*n*date2*_HOSHAB_*id1*_*id2*_2m_dem_ll_srtm.tif

where *sensor1* and *sensor2* are the sensors from which imagery was acquired (QB02- QuickBird, GE0- GEOEYE, WV01- WorldView1, WV02-WorldView2, WV03-WorldView3), *date1* and *date2* are the acquisition dates in format YYMMMDD (i.e., 13AUG11), and *id1* and *id2* are the image identifier numbers provided by DigitalGlobe. Files lacking "srtm" in the filename were not registered to the SRTM DEM.

Note: The actual data products for this project are the set of individual 2 meter DEMs that were constructed with the SETSM open-source software (described above). Users who want access to the source datasets are encouraged to download these files by using the "Bulk Download" option on the OpenTopography website.

To facilitate use of these datasets with the OpenTopography webmap interface, these DEMs were mosaiced using a simple average for overlapping pixels to create a single seamless mosaic of pre-earthquake topography. Details on how this single mosaic was created are in the section below.

3. HORIZONTAL COORDINATE SYSTEM

UTM Zone 41N, WGS 84 Meters

4. VERTICAL COORDINATE SYSTEM

WGS84

5. DATASET KEYWORDS

2013 Baluchistan Earthquake, Pakistan, Hoshab Fault, Makran Accretionary Prism

6. PROJECT ROLES

FUNDER(s): NASA Earth Surface and Interior Program

PARTNER(s): US Geological Survey

COLLECTOR(s): DigitalGlobe (data accessed under NextView license)

7. MOSAIC METHODOLOGY

In order for the datasets to be viewed in the OpenTopography webmap viewer, the source DEMs had to be mosaicked to a single seamless pre-earthquake DEM. This task was performed using Global Mapper V18. All individual pre-earthquake DEMs were loaded into Global Mapper, and were combined to create a new single 2 meter mosaic. In areas where pixels overlapped, a mean of all overlapping pixels was created. As a result, the single mosaic should be used with caution as it may produce unexpected results.

For certain applications, users may wish to utilize the source datasets by downloading the original DEMs via the "Source" directory under the "Bulk Download" section of the OpenTopography website.