MERGING GDEM, SRTM AND OTHER DATA SETS TO OPTIMIZE GLOBAL COVERAGE

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In 2000 the Shuttle Radar Topography Mission (SRTM) used radar interferometry to map the Earth's topography between ±60° latitude - representing 80% of the land surface. The resulting digital elevation models bettered existing topographic data sets (including restricted military data) in accuracy, areal coverage and uniformity by several orders of magnitude, and have found broad application in most of the geosciences, civil and military operations, even Google Earth.

Despite their popularity the SRTM data have number of limitations, including lack of coverage in polar regions and occasional small voids, or areas of no data in regions of high slope of low radar backscatter. Fortunately additional data sets are becoming available that, although lacking SRTM's coverage and at times quality, are sufficient to mitigate many of these limitations. This includes SPOT stereo, ICESat laser profiles, airborne radar interferometry data, and most notably the soon to be released global DEM produced from ASTER stereo pairs, called GDEM.

NASA, through it's MEaSUREs program (Making Earth System data records for Use in Research Environments) is sponsoring an effort to merge these sets to produce and distribute an improved collection of data records that will optimize the topographic data, as well as make available additional data from the SRTM mission. There are four main areas of effort:

• A systematic program to combine SRTM elevation data with those from other sensors, principally GDEM, to fill voids in the DEMs according to a prioritized plan, as well as extend the coverage beyond the current 60° latitude limit.

• Work with the ICESat project team to combine laser altimeter topographic profiles with SRTM DEMs to produce and distribute data with enhanced ground control.

• Document the existing SRTM radar image and ancillary data cells, as well as generate image mosaics at multiple scales and distribute them via the world wide web.

• Generate, document and distribute a standard and representative set of SRTM raw radar echo data, along with the appropriate ancillary tracking and pointing data necessary to process the echoes into DEMS using improved algorithms or techniques.

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