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TanDEM-X: Application of the Digital Elevation Model

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In this paper the potential application of using TanDEM-X derived digital elevation models will be presented. The goal of the TanDEM-X mission is to provide a higher level product (the digital elevation model) and to serve the science community with basic interferometric Synthetic Aperture Radar products (a pair of CoSSC's). The focus in this paper will be given to the potential applications of the derived highly accurate digital elevation model.

Digital elevations models (DEMs) are of fundamental importance for a wide range of scientific and commercial applications. For example, many geoscience areas like hydrology, glaciology, forestry, geology, oceanography and land environment require precise and up-to-date information about the Earth's surface and its topography. Digital topographic maps are also a prerequisite for reliable navigation, and the improvements in their precision needs to keep step with advances in the performance of global positioning systems, like GNSS and Galileo. In principle, DEMs can be derived from a variety of airborne and spaceborne sensors. However, the resulting mosaic of data from different sources with a multitude of horizontal and vertical data, accuracies, formats, map projections, time differences and resolutions is hardly a uniform and reliable data set. Hence, the Shuttle Radar Topography Mission (SRTM) was the first system fulfilling the requirements for a homogeneous and reliable DEM with the DTED-2 specification (30m posting and 12m height accuracy) at least for latitudes up to ca. 60º. However, many scientific and commercial applications require today even better accuracy, corresponding to the emerging HRTI-3 standard (12m posting and 2m height accuracy) which is comparable to DEMs generated by high-resolution airborne SAR systems. The science proposal submission for data requests is available over the TanDEM-X Science Service System following the basic structure of the TerraSAR-X Science Service System. The TanDEM-X DEM products will be available soon and the intermediate DEM product can be already ordered through a science proposal.