

ASSESSMENT OF ASTER GDEM AGAINST VARIOUS SOURCES, INCLUDING SPOT 5.

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ABSTRACT

Presentation of the authors

Spot Image (SPOT) is a leader in Earth Observation products and services. The company offers stereo data and DEM products since the launch of SPOT 1, in 1986. SPOT 5, launched in 2002, includes the HRS sensor, dedicated to collecting stereo imagery all over the landmasses of the Earth. As of end 2008, more than 110 Millions km² of cloud-free stereo imagery from HRS has been acquired and archived.

IGN is the French National Administration for Survey and Mapping. The IGN branch established in Toulouse in 1989, now a 80-people staffed unit, is devoted to space mapping and space photogrammetry from HRS and other sensors, including Cartosat, Alos, Aster and radar.

IGN and SPOT proposed to assess ASTER GDEM using Reference3D as a reference dataset, in conjunction with other reference data such as ICESAT, GPS measurements, and the National Elevation Data Base of France.

Reference data used for the assessment

In 2002, SPOT and IGN jointly launched the mass production of a sophisticated Data Base named Reference3D, extracted from HRS data. Reference3D includes 3 main layers, one of them being a DTED level 2 DEM. As of end 2008, ca. 35 M km² of Reference3D are available on the shelf. The performances of Reference3D were assessed by labs and end users many times and published in many congresses, including the last ISPRS Congress in Beijing in July 2008. The most significant of these results will be exposed, specifically the ones issued from comparison of HRS data against ICESAT (eg over polar icecaps). Scientific references will be listed into the final paper.

The paper will then present the other reference data sets used for the assessment, including the National Elevation Data Base of France.

Choice of the test geocells

To get a global understanding of ASTER GDEM, the authors chose five geocells, in order to represent a good diversity of landscapes and production conditions. These geocells are located in various regions of the world. The rationale for the choice will be exposed in the paper, as well as the producer's feedback concerning the corresponding Reference3D geocells.

Results of the assessment

The results will be presented and discussed. This section will of course be the main part of the paper, and take most of the time of the oral presentation. Since the comparison is due to start only after the delivery of ASTER GDEM geocells in February or early March 2009, no details can be provided within this abstract.