The ever-increasing capability of remote sensing techniques is leading to the generation of higher and higher resolution Global Digital Elevation Models (GDEMs). The new ASTER GDEM is the highest resolution, freely available global model; however the stated accuracy of ±20m is lower than a number of existing DEMs. For a number of applications such as gravitational modelling accurate depiction of height is a key factor in obtaining correct results.

In order to validate the results of the ASTER GDEM an detailed evaluation has been made over Africa and Australia; ASTER has been compared to Satellite multi-mission Radar Altimetry from the ERS1-Geodetic Mission, ERS-2 and EnviSat Ku-band, in addition to SRTM and ACE2 GDEMs. The ability of Ku-band altimeters to penetrate both cloud and vegetation means that the effects of vegetation on the ASTER GDEM can be quantified and potentially corrected.

This paper presents the results of the comparison both on the continental scale and case studies over individual areas where spatially coherent patterns of height difference have been identified. These results indicate that the ASTER DEM contains significant height artefacts and it is recommended that several DEM models are intercompared (e.g. ACE2, SRTM) with ASTER before deciding on the optimal solution.