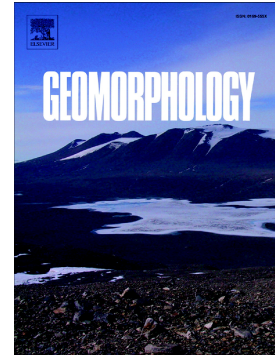


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# Which DEM is best for analysing fluvial landscape development in mountainous terrains?

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## Abstract

Regional studies of fluvial landforms and long-term (Quaternary) landscape development in remote mountain landscapes routinely use satellite-derived DEM data sets. The SRTM and ASTER DEMs are the most commonly utilised because of their longer availability, free cost, and ease of access. However, rapid technological developments mean that newer and higher resolution DEM data sets such as ALOS World 3D (AW3D) and TanDEM-X are being released to the scientific community. Geomorphologists are thus faced with an increasingly problematic challenge of selecting an appropriate DEM for their landscape analyses. Here, we test the application of four medium resolution DEM products (30 m = SRTM, ASTER, AW3D; 12 m = TanDEM-X) for qualitative and quantitative analysis of a fluvial mountain landscape using the Dades River catchment (High Atlas Mountains, Morocco). This landscape comprises significant DEM remote sensing challenges, notably a high mountain relief, steep slopes, and a deeply incised high sinuosity drainage network with narrow canyon / gorge reaches. Our goal was to see which DEM produced the most representative best fit drainage network and meaningful quantification. To achieve this, we used ArcGIS and Stream Profiler platforms to

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