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Synergetic Use of Satellite Image and DEM for Identification of Landforms in a Ridge-Valley Topography

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ABSTRACT

Multispectral satellite image and digital elevation model (DEM) have emerged as the primary data sources for the mapping of landforms. They offer an opportunity to gain a fresh insight into the geomorphology of an area through landform identification using spatial, temporal, spectral and radiometric resolution of satellite images, and through the synergetic approach using DEM derivatives such as profile, slope, hill shading, contour pattern and 3-D flythrough visuals. This paper demonstrates an integrated study of Resourcesat-1 LISS III (23.5 m) image with ASTER DEM (30 m) for the identification of landforms in a rugged topography where conventional field based methods are difficult to adopt due to terrain inaccessibility. Satellite image aided by 3-D visualisation helped in accurate identification of landforms such as hogback, cuesta, plateau top and intermontane valley. The results showed that although denudational processes are active in this area, structural imprints of the strata that is mostly of proterozoic era, are still preserved.

KEYWORDS

Geomorphology; Resourcesat-1; ASTER; India

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