GIS-based earthquake potential analysis in Northwest Himalayan, Pakistan

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The present study focuses on the use of integrated remote sensing and the Geographical Information System (GIS) approach for the identification of earthquake potential areas. In the adopted approach Sentinel-2 and Shuttle Radar Topography Mission (SRTM) satellite data, earthquake data, and geological data are used. Important factors related to earthquakes were recognized and relative input data layers (digital elevation model, slope, earthquake magnitude, epicentre location, lineaments, faults, distance to active faults and epicenter) were developed. For data integration in GIS, a numerical ranking scheme has been adopted to establish rank values for each factor for the appraisal of earthquake potential index (EPI) map. The final earthquake potential index map divides the study region into different corresponding potential classes: high, moderate, low, and very low. The earthquake potential map produced for the region was compared with the previous seismic hazard maps derived from traditional techniques. The use of various parameters and implementation of the suggested method in the study region elucidates its good and detailed estimation of earthquake potential areas compared to traditional techniques.

Keywords: Remote sensing: GIS; Lineaments; Earthquake potential index; Northern Pakistan