Mapping Landslide Induced by Drought Preceding Rainfall Using Remote Sensing Data

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ABSTRACT: Remote Sensing plays a vital role of mapping landslides because of most of landslides take place in places where field observation is inaccessible or temporarily unavailable due to the failure of the transportation. Besides captured pre and post satellite images show significant change of the reflectance which enable to carry out primary delineation of the landslide area. Though many researches have confirmed the capability of usage of high resolution satellite images in this context, Moderate Resolution Imaging Spectrometer (MODIS) has its own competence to map the landslide mostly when there is urgent need of the area just after occurrence of major event to support disaster recovery activities and also when someone is interested in regional mapping of landslides area. In this case MODIS Normalized Difference Vegetation Index (NDVI) can be used to identify the landslide due to the sudden drop of the value if the landslides take place in area other than sparse vegetation or bare soil region. And the extracted landslide points can be further supported from the elevation and the slope map of the area. Recent research studies revealed that not only incessant rains but also droughts trigger some landslides followed by moderate rain. This take place because of external and internal erosion due to repeated wet-dry cycle causes soil deterioration. So this research is conducted in three phases. First is, established a framework to map landslide areas using remote sensing data, demarcate landslide triggered by the extensive rainfall and the final one is identify landslide triggered by drought preceded rainfall. Shuttle Radar Topographic Mission (SRTM) Digital Elevation Model (DEM) is used to generate the slope gradient and elevation map, Global Satellite Mapping of Precipitation (GsMAP) and the Keetch and Byram Drought Index (KBDI) used to identify the triggering factor of the delimited landslides points. Finally landslide database and the landslide susceptibility zone updated with the generated results.