



## **Geotechnical and geomorphometric insight to the landslides in Eastern Ghat, India**

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The Koraput and Rayagada railway track of Odisha, India is susceptible to the occurrence of landslides. The occurrence of landslides along the track is more frequent during Monsoon. On 5th October 2017, landslides occurred at Sikarpai and Ketugada village along the track after a heavy precipitation. The materials involved in the mass movement were lateritic soil embedded with big boulders. The impact was very destructive which affected the railway traffic for a couple of days. This study aims at identification of the root cause that triggers landslide along the track. The analysis will systematically quantify the role of geotechnical parameters of the soil or debris, rainfall, drainage and tectonic settings inducing slope instability in the region. Geomorphometric analysis has been performed for identification of the probable landslide hazard zones of this region. The Advanced Spaceborne Thermal Emission and Reflection Radiometer (ASTER) Global Digital Elevation Model had been used for determining various linear, areal and relief parameters which examine tectonically active basins. Three Landslide hazard zones were identified along the Koraput – Rayagada railway track on the basis of field investigation, frequency of occurrences and geomorphic analysis. The laboratory tests on the representative samples were carried out to obtain Geomechanical parameters. The strength properties of the soil were determined at different moisture content which can be related to different levels of precipitation. The Tropical Rainfall Measuring Mission (TRMM) data has been used to correlate the amount of precipitation that triggers the landslide. The stability analysis of slopes has been carried out in PLAXIS 2D, a finite element method based simulator. The study finds that rainfall, soil properties and natural condition of catchment/watershed have a profound role in activation of Landslides along the track and its adjoining area.