Japan Geoscience Union Meeting 2011
(May 22-27 2011 at Makuhari, Chiba, Japan)

HDS027-P09 Room:Convention Hall Time:May 24 16:15-18:45

Landslide inventory mapping in the Lower Nepal Himalayas and its implication for landslide susceptibility mapping

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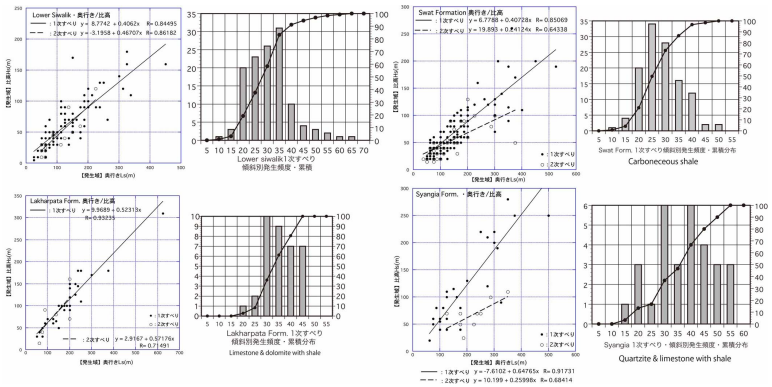
Inventory mapping of landslides in the central western parts of Lower Himalayas in Nepal was implemented, using aerial photographs in scale of 1/50000. A study area covers from longitude 83 east to 84.025 degere east and form latitude 27.5 degree north to 28.375 degree north. This area also covers Siwalik Hills, Mahabharat Ranges and Lower Himalayas where active faults are distributed and of which altitude is ranging 100 to 2800m asl. The active faults such as MCT and MBT continue along the base of the foothill of Nepal and Indian Himalayas. The inventory map is superimposed with topographic map generated from GDEM, geological map in scale of 1/200,000 issued from Geological Survey of Nepal and active fault map located on topological maps in scale of 1/50,000. Author measures geomorphological characteristics of landslides of which total number is 512 in and Tansen area, such as width, relative heights and gradients of source area of landslides for each geological type, to clarify the gomorphological and geological conditions that are prone to cause landslides.

Mean slope gradient of landslide source area is different by each geological type. And the critical gradient at which the number of landslide abruptly increases varies by each geological type (Fig.1). It means that lithological property of each rock affects the degree of vulnerability for landslide. Gradients of the secondary landslides decrease compared with those of the primary ones, due to advanced fracture of rock masses. The most hazardous rocks in this region are Lower Siwalik Formation of unconsolidated mudstone or Swat Formation of carbonaceous shale that easily slide at lowest angle. Those slope angles of source areas are less than 20 degree. However, limestone or dolomite of which critical slope angle is as high as ca 30 degree, indicate high rigidity and resistance for landslide.

Earthquakes that occur along those active faults will affect stability of Himalayan mountain slopes. Authors try to prepare the susceptibility map on earthquake-induced landslides, nsidering those causative factors of landslides.



Keywords: landslide inventory map, Lowe Nepal Himalaya, geomorphologic feature of landslide, critical slope gradient, landslide susceptibility map, active fault