*Topic : Remote Sensing Applications; Disasters*

*Proposed Presenter : Emba Tampang Allo*

*Type of Presentation : Oral Presentation*

**A Slope Stability Assessment in the Tropics**

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Landsliding is one of the most damaging natural disasters in the mountainous and hilly terrain in the tropics, causing loss of human lives and damages to properties. Landslides occur frequently in the rainy season on yearly basis, which shows that it is the main triggering factor. But how much rain for how long period causes landsliding in the humid tropics is not yet clear. The study tries to understand the relationship between rainfall intensity and duration for triggering landslides. Slope stability assessment performed using SINMAP analysis to indicate landslide susceptibility in the whole study area.

The study uses historical landslide inventory and long term climatic data to define rainfall thresholds. Rainfall distribution was analyzed in GIS based on rainfall station positions and landslide locations which were used to perform rainfall threshold analysis. The total 24-hour rainfall (mm) or continued precipitation of many days at a station was considered the event rainfall for the corresponding landslide event.

Slope stability modelled using SINMAP, showing a slope-stability index based on surface topography to route flow downslope. The stability index is reclassified into degree of susceptibility from safe to very high susceptible area.

The result suggests that the initiation of landslide events in the study area is governed by an exponential function. For triggering a landslide antecedent rainfall of up to five days and minimum rain of 37 mm is required on the day of slope failure, or an average precipitation of less than 20 mm day-1 seems necessary to cause landsliding if rainfall continued for more than 20 days. Slope susceptibility to failure depends very much on terrain hydrological condition which is influenced by soil type and land use practices. Study shows that sloping areas having soils with high clay content are more susceptible to slope failure.

Keywords: landslide, rainfall, rainfall thresholds, slope stability.