Challenge and Opportunity in Predicting Landslide Spatiotemporal Distribution: Integrating the Heritage of Landslide Zoning Techniques and recent Advance of Real-time Monitoring System for Landslide Triggers (Rainfall and Ground Quake)

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Predicting global landslide occurrences is very difficult and expensive in terms of time and money. Drawing the recent advances of satellite remote sensing technology, a framework is proposed to forecast the timing for landslides induced by heavy rainfall or earthquakes, the two major triggers. This proposed framework includes three major modules: (1) zoning the global landslide hotspots from a routinely updated geospatial database; (2) a real-time space-borne precipitation estimation system at fine spatiotemporal scales; and (3) a near-real-time ground seismic wave monitoring system. Early results demonstrated the effectiveness of this system in identifying landslides triggered by heavy rainfall or large earthquakes. Such a system can be continuously enhanced by improved satellite remote sensing technology as more relevant information becomes available. This proposed system can be of essential value in improving our capacity of landslide prediction and in possibly lessening their devastating impact on the local economies and lives, if it can be successful to operate in cost-effective ways. However, retrospective validation and regionalization of such system using local *in situ* data must be emphasized. More importantly, wide-interdisciplinary and multi-national collaboration is vital important for successful implementing such development.