Using Multi-Scale Spatial Data in Landslide Mornitoring and Landuse Classification Interpretation

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Abstract
Owing to the rapid developments in the field of Geographic Information Systems and Remote Sensing techniques, various images sources have been widely available to identify ground changes information. Those commonly used multi-scale images provide the sources from macro to micro information and can be served as basic analysis platform in landslide monitoring and land use classification. Taiwan has a unique and vulnerable geological condition with potential disasters easily triggered by landslide occurrence due to typhoon and heavy precipitation each summer season. In order to identify and analyze those landslide information temporary and spatially, this research integrate satellite images, aerial survey data from aviation photography and LIDAR, and remotely controlled helicopter techniques to set up a diverse information network. Satellite images can fulfill the need for large area environmental inventory and land use classification. Digital Terrain Model generated by LIDAR and aerial photos can be used to mark the landslide area and estimate the size and volume. Remotely controlled helicopter can overcome the barriers of site accessibility and data transmitting simultaneously. This network then provides a less time and cost consuming platform by the idea of Grid methodology. The output from this research demonstrates the integration of heterogeneous data into a uniform communication interface to construct a thorough analysis mechanism. It is applicable and feasible to monitor the vegetation, terrain, and landscape changes through land use and land cover identification by multi-scale spatial data.
Keywords
RS, grid, multi-scale image, LIDAR, aerial photogrammetry