



Multi-temporal high-resolution geoinformatic data for progressive landslide monitoring

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Due to the high seismicity and high annual rainfall, numerous landslides occurred and caused severe impact in Taiwan. Typhoon Morakot in 2009 brought extreme and long-time rainfall, and caused severe disasters. After 2009, numerous large scale deep-seated landslides on slopes may still creeping, however not necessary easily to inspect the activity. Amount many techniques, detail geomorphological records may plays one of the most economic methodology that able to decipher the environment changes. In recent years, the remote sensing technology improves rapidly, providing an easily accessed, wide range, and precise geoinformatic data set. This kind of analysis is based on multi-temporal high-resolution geomorphic data, and is capable to evaluate from the difference of DEM (DoD). The aerial photographs before and after Typhoon Morakot, and the subsequent multi-periods UAV images are thus been conducted in this study to generated digital surface models (DSMs) in different periods. In order quantify the hazards, we try to integrate several technologies, including 1) Remote-sensing images gathered by Unmanned Aircraft System (UAS) and by aerial photos taken in different periods; 2) field geomatic survey, 3) Terrestrial Laser Scanner (ground LiDAR); 4) and as well as the UAS LiDAR data acquisition. Based on the methods we are able to construct multi-temporal and high resolution DTMs, so as to access the activity and to monitoring the creeping landslides.