# DEVELOPMENT OF NEAR REAL-TIME, HIGH-RESOLUTION, GLOBAL EARTH OBSERVATION 3D PLATFORM FOR DISASTER MONITORING AND ASSESSMENT

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To derive the high-resolution spatial images and terrain data immediately after a disaster happened in disaster area is very crucial for decision support to response and rescue. To reach this goal, the National Applied Research Laboratory in Taiwan has conducted a multidisciplinary project entitled "Development of near real-time, high-resolution, global earth observation 3D platform for applications to disaster monitoring and assessment." In short, it is a "3D GIS Taiwan" platform. The platform has encompassed Formosat-2 space borne images and terrain data following OGC standard for data transmission and integration, using high-performance 3D visualization and Grid technologies as core cyberinfrastructure, and trying to implement an in-time, semi-automation image processing procedures and 3D display and analyses capability through the use of NASA World Wind 3D sub-platform for leveraging high resolution Land Sat imagery. Further, the 3D GIS Taiwan platform can link with end-user disaster prevention database, analyzed model and assessment methods, real-time observation data and images, and human collaborative and communication system, for comprehensive integration of relevant information and knowledge to decision support. In the study, the authors wish to illustrate the features of the 3D GIS Taiwan platform through the applications to, and demonstration on, typhoon, inundation, and earthquake disaster events, especially the 2009 typhoon Morakot induced 88-flood event and associated landslides. Moreover, this study has covered multi-scale earth observation methodologies, including large scale remote sensing observation viewing from space and in-situ small scale but higher resolution 3D photography observation viewing from ground surface. The combined use of space remote sensing image and ground 3D photography provides multi-viewpoint scenario information in the disaster area that enhances the quality level of disaster decision support.