

GEO Grid use case: Landslide susceptibility index using the artificial neural network

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<http://www.geogrid.org/>

The GEO Grid is an E-Science infrastructure for worldwide Earth Sciences community to integrate all the relevant data virtually. In the community, there are wide varieties of existing data sets including satellite imagery, geological data, and ground sensed data that each data owner insists own licensing policy. In the framework of the GEO Grid, virtual organization (VO) in which the services including data, software, and also computing resources are shared can be constructed. It enables the control access of the service providers to their services by authenticating and authorizing [1]. Currently, several VOs are set up by the National Institute of Advanced Industrial Science and Technology (AIST). In these VOs, the registered members can utilize all the Advanced Spaceborne Thermal Emission and Reflection Radiometer (ASTER) data [2] freely.

The landslide susceptibility mapping application is one of the available services at the Geological Hazards and Disaster Mitigation (GHZ) VO aiming at providing information for the disaster mitigation. This application uses the artificial neural network to calculate a landslide susceptibility index from the geological information and the topographic information [3]. In the GHZ VO, the application downloads the available geological maps and the ASTER DEM using the OGC standard services through Web Feature Service and Web Coverage Service, respectively, when the target area and input data are selected. Subsequently, a fully automated grid-based processing starts to run to the final results. The landslide application on the GEO Grid, therefore, would ease the researchers' work and speed up the processing. Numerous manual processes including data acquisition and pre-processing are required in using a conventional approach.

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