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Development of G-EVER volcanic hazard assessment support system, and earthquake and volcanic hazard information system

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The G-EVER volcanic assessment support system is developed based on eruption history, volcanic eruption database and numerical simulations (Takarada et al., 2014). The volcanic eruption database is developed based on past eruption results, which only represent a subset of possible future scenarios. Therefore, numerical simulations with controlled parameters are needed for more precise volcanic eruption predictions. The ”best-fit” parameters of the past worldwide major eruptions have to be estimated and the simulation results database should be made. Using the volcano hazard assessment system, the time and area that would be affected by volcanic eruptions at any locations near the volcano can be predicted using numerical simulations. The system could estimate volcanic hazard risks by overlaying the distributions of volcanic deposits on major roads, houses and evacuation areas using GIS enabled systems. The G-EVER hazard assessment support system is implemented with user-friendly interface, making the risk assessment system easy to use and accessible online. The volcanic hazard assessment support system using Energy Cone and Titan2D simulations is available online (http://volcano.g-ever1.org). The system can assess any volcano in the world using ASTER Global DEM (10m resolution DEM is used in Japan). Links to major volcanic databases, such as Smithsonian, VOGRIPA, ASTER Satellite images, and Volcanoes of Japan are available on each volcano information popup on the map. A new fast-processing version of energy cone simulation system using elevation tiles is available (g-ever1.org/quick). The updated Titan2D simulation system could be run using DEM data uploaded by the user and download more detailed simulation results. It also provides informative and user friendly interface.

The Asia-Pacific region earthquake and volcanic hazard mapping project aims to make an advanced online hazard information system (ccop-geoinfo.org/G-EVER) that provides past and recent earthquake and volcanic hazards information and links to global earthquake and volcanic eruption databases. It could also be used as earthquake and volcanic hazard risk assessment tool. The information system also shows tsunami inundation areas, active faults distributions and hazard maps. The online hazard information system provides useful information about earthquake and volcanic hazards in an interactive and user-friendly interface. This project will be implemented with the cooperation of major research institutes and organizations in the Asia-Pacific region such as the Center for Volcanology and Geological Hazard Mitigation (CVGHM) of Indonesia and Philippine Institute of Volcanology and Seismology (PHIVOLCS).

The Coordinating Committee for Geoscience Programmes in East and Southeast Asia (CCOP) and Geological Survey of Japan (GSJ) started the CCOP-GSJ Geoinformation Sharing Infrastructure for East and Southeast Asia (GSi) project. The project aims to compile various geoscientific information in CCOP countries and develop a Web-based database and Geographic Information System (Web-GIS) using Free and Open Source Software (FOSS) and Open Geospatial Consortium (OGC) based standards. The preliminary portal site of the project (ccop-geoinfo.org/GeoPortal) provides spatial data about geohazards, geology, geoenvironment, groundwater, mineral resources, remote sensing, geophysical and topography covering the countries in East and Southeast Asia. Development of spatial data model standard, data integration and sharing and capacity building are the major targets of this project.

Keywords: G-EVER, volcanic hazard mitigation, hazard assessment, simulation, Asia Pacific, International Standadization