Japan Geoscience Union Meeting 2013
(May 19-24 2013 at Makuhari, Chiba, Japan)

SVC49-03 Room:201A Time:May 19 09:30-09:45

The G-EVER next-generation real-time volcanic hazard assessment system

Shinji Takarada[1*]

[1]Geological Survey of Japan, AIST

The Asia-Pacific Region Global Earthquake and Volcanic Eruption Risk Management (G-EVER) Consortium among the Asia-Pacific geohazard research institutes was established in 2012. There are currently 4 working groups that were proposed in the G-EVER Consortium. The next-generation volcano hazard assessment WG is planning to provide a useful system for volcanic eruption prediction, risk assessment, and evacuation schemes at various eruption stages. The assessment system is planned to be developed based on volcanic eruption scenario datasets, volcanic eruption database and numerical simulations. Defining volcanic eruption scenarios based on precursor phenomena leading up to major eruptions of active volcanoes is quite important for the prediction of future eruptions. A high quality volcanic eruption database, which contains compilations of eruption dates, volumes and styles is important for the next-generation volcano hazard assessment system. Formulating international standards on how to estimate the volume of volcanic products (eg. tephra and pyroclastic flow deposits) is needed in making high quality volcanic eruption database. Spatial distribution database of volcanic products (eg. tephra and debris avalanche distributions) that are encoded on Geographic Information System (GIS) is necessarily for more precise area and volume estimation and risk assessments. For example, tephra fall distribution database of major eruptions in the world with estimated total volume, column height and flux are important for the future tephra fall risk assessment during volcanic eruptions. The volcanic eruption database is developed based on past eruption results, which only represent a subset of future scenarios. Therefore, numerical simulations with controlled parameters are needed for more precise volcanic eruption predictions. The ”best-fit” parameters of the past major large-scale eruptions in the world have to be estimated and the simulation results database should be made. Using these best-fit parameters is quite useful for emergency situation especially when similar-style eruptions happened before.

The use of the next-generation system should enable the visualization of past volcanic eruptions datasets such as distributions, eruption volumes and eruption rates, on maps and diagrams using timeline and GIS technology. Similar volcanic eruptions scenarios should be easily searchable from the eruption database. Using the volcano hazard assessment system, prediction of the time and area that would be affected by volcanic eruptions at any locations near the volcano would be possible, using numerical simulations. The system should estimate volcanic hazard risks by overlaying the distributions of volcanic deposits on major roads, houses and evacuation areas using a GIS enabled system. The next-generation real-time hazard assessment system would be implemented with user-friendly interface, making the risk assessment system easily usable and accessible online.

Keywords: next-generation, real-time, vocanic hazards, G-EVER, simulation, database