

## Construction of a Volcano Integrated Database Confirming to WOVOdat Database.

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### 1. Introduction

NIED has been developing a prototype system of WOVOdat database as a part of the research project on volcanic eruption prediction and volcanic disaster mitigation. WOVOdat database has been developed by WOVOdat project of WOVO (World Organization of Volcano Observatories) for utilizing various volcano observation data in a common data format and sharing useful knowledge for volcanic eruption prediction. The Volcano Integrated Database is an extended WOVOdat database system including remote sensing data and numerical simulation results of volcanic disasters, and other related research results.

### 2. Purpose

In the case of volcanic unrest, we need to assess rapidly the volcanic activity for volcanic eruption prediction and disaster mitigation by quick collection of various volcanic information including observation data, eruption history and case studied of similar volcanoes. However, it is difficult to collect various volcanic information within a short time, because such information is saved in many different systems in different formats. The obstacle is one of the motivations of developing WOVOdat database in a common format. The purpose of construction of the Volcano Integrated Database is also making a convenient environment for various use by integration of information on volcanoes. The Volcano Integrated Database integrated not only observation data of volcano observation network of NIED, but the result of the eruption prediction system (Automated system for anomalous volcanic crustal deformation detection and source estimation by using real time data), observation data of ARTS (the Airborne Radiative Transfer spectral Scanner), InSAR, and numerical simulation results of volcanic disasters. The integrated database will make easy to handle data and make it possible to rapid exchange and share volcano information.

### 3. Configuration

We are developing the Volcano Integrated Database based on WOVOdat ver.1 (Venezky and Newhall, 2007) by using MySQL database management system. The WOVOdat database does not have categories for numerical simulation data, so we need to add original categories for the data. The access to the Volcano Integrated Database is limited to only users in NIED because of internet security and data ownership. We can open to public a part of allowed data by converting to image files and KML files in our Web site.

### 4. Expected uses of the database.

The construction of the Volcano Integrated Database makes easy to use various volcano data. (1)It make possible to search data by queries and statistical analysis, and make image files. Preparing commands for ordinary processing makes easy for every user to handle data. (2) Common data archive. (3) It makes easy to data exchange with other observatory or research institute which have WOVOdat database. (4)It makes easy to open to public information on volcanoes by

cooperation with WEB system. (5)It make possible to integrated various volcano information in GIS software. The integration of real time observation data and simulation results of volcanic disasters will help to predict volcanic disaster depending on the situation. The cooperation with GIS will connect different volcanic information and increase usefulness of the volcano information.

Keywords: WOVOdat, Volcano observation, simulation, database, volcano data analysis system