

Development of a Web-GIS tool for visualization of volcano monitoring data

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There are 111 active volcanoes in Japan and related potential disasters. The volcanic activity is basically controlled by underground magma chamber. It is necessary to analyze multiple kinds of data to understand the underground magma activity indirectly. However, each data is usually handled by researchers in each specific study field. There is a possibility that the interpretation based on one kind of data would be one-sided. One interpretation could be inconsistent with other interpretation based on other kind of data. So, a tool to integrate and visualize those multiple kinds of data at a glance would be very useful.

Sato et al. [2018] [1] developed a GIS tool named "Hiiragi". The tool visualizes earthquake data and volcano monitoring data on 3D map. The original Hiiragi works in local and all the data necessary are stored in local file. User cannot obtain the latest observation data.

The goal of this study is to build Hiiragi on a server as a new Web GIS which handles databases. We assume the situation where monitoring data increases and introduce appropriate data management. We use Django, a web application framework which simplifies construction of website to handle multiple databases. We divide functions of Hiiragi into 4 apps: (i) showing map, (ii) earthquake data management and (iii) crustal deformation data management based on (a) GNSS and (b) InSAR. Each app has database where the specific data are to be extracted. The system can obtain and display the latest data from Japan Meteorological Agency every time user loads the page. The users can always get the latest information. We hope the new "Hiiragi" would be used by many researchers and contributes to the volcanic disaster prevention in future.

[1] Sato. K. et al., 2018, JpGU "Development of a GIS tool for viewing volcanic and tectonic data in Japan".

Keywords: Web-GIS, Database, Volcano, Crustal deformation