Disaster prevention using data of climber’s movement and tendency in active volcanoes

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Integrated Program for Next Generation Volcano Research conducted by Ministry of Education, Culture, Sports, Science and Technology, Japan started in 2016. This project takes notice to not only observation and prediction researches but also research for countermeasure technology of volcano disasters. National Research Institute for Earth Science and Disaster Resilience has been in charge of one of the main theme which is named “Development of countermeasure technology for volcano disasters”. In this theme, we develop an information tool for volcano disasters, in which we consider disaster management personnel in local governments as users, and we try to provide appropriate information for them in both the event of disaster and normal times.
In the tragic disaster of Ontake Volcano in 2014, it was difficult for local governments to grasp whereabouts of climbers and to conduct rescue and search for victims. Even recently, climbers can approach to an active vent in many volcanoes in Japan, for example Mt. Fuji, it is quite important to grasp whereabouts of climbers in the event of disaster for proper decision of rescue and search.
Experiments to acquire data of climbers have conducted in Mt. Fuji since 2015 and Mt. Ontake in 2019, named “Mt. Fuji Challenge” and “Mt. Ontake Challenge”. In experiments, we distribute beacons to climbers and receivers which are set in mountain trails detect signals from the beacons, then we can grasp the number and location of climbers who have the beacons. In the experiment in 2018, it took about two hours to grasp locations of 3,000 climbers.
In this research, we are going to use the data for disaster prevention. In the event of disaster, it is possible to reduce the time for grasping climber’s information. In the normal time, local governments can refer the output data to make evacuation plans, including establishment of shelters or evacuation routes.
The information tool developed in our research use the climber’s data as input data, and visualize on GIS like software. As a result, it is possible to grasp whereabouts of climbers on map information, including trails, shelters and hazard information from hazard map. Now we try to promote actions for disaster prevention by local governments around Mt. Fuji and Mt. Ontake, in which there are climber’s data from the experiments, by using our information tool and the climber’s data. In next summer, other experiment will be conducted in Nasudake Volcano.

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