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Effective Mitigation System by Local Government Using Event Trees and Risk Assessments

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Since the announcement of the Eruption Alert Level System by the Japan Meteorological Agency in 2007, local governments near active volcanoes are required to install Disaster Prevention Plans and hazard maps. Although earlier hazard maps published were mostly intended for specialists, recent maps have more resident-friendly (Nakamura et al., 2008). However these hazard maps and mitigation systems were basically designed by deterministic algorithms and intended to countermeasure specified volcanic activities in correspondence to the previous Volcanic Alert System, JMA.

By using the GIS database and probabilistic logic methods, effective mitigation systems and hazard maps capable of responding to Eruption Alert Levels changes are investigated by Disaster Mitigation Committees at Nasu volcanic area. (1) To build up the GIS database of social and natural environments and disaster prevention infrastructures. (2) To quantitatively assess factors of hazard, vulnerability and value of losses by using risk analyses. (3) To construct hazard event-trees and eruption scenarios by referring to disaster records and volcanic history. (4) To resolve appropriate disaster mitigation plans for the target volcanic area.

Disaster Mitigation Committees discuss and decide on the present Disaster Prevention Plans and hazard maps and local governments published them to residents.

Keywords: volcanic hazards, risk assessment, volcanic eruption