

Development of mobile observatory for volcanic eruption and observational system

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To understand the surface phenomena accompanied by volcanic explosion and to reduce the volcanic disaster, the establishment of scaling rule that govern the relations among explosion energy, explosion depth and the surface phenomena is essential. For this purpose, we are needed to develop new observational instruments that make near-crater observation possible. The production of mobile observatory of volcanic eruption, MOVE, is intended for that purpose.

Considering the time and fund available for the development, we decided that the absolute condition for the development should be the practical use from the beginning. MOVE should be used for various observations and should be controlled from 2 km distant by a wireless apparatus. We chosen a powershovel MPX10 of Hitachi Construction Machinery as a base machine because of its experience of use at the field of volcanic disaster and with a wireless control. The essential function of MOVE is going to and coming back from the explosion site using a wireless on the rough road scattered with volcanic ejectors. To fulfil these functions, we use 2.4 GHz OFDM wireless for sending visible and near-infrared pictures, 400 MHz wireless for controlling the machine and sending observational data. The data is also saved in the data logger. Other functions including the protection from ballistic fragment, ash fall and pyroclastic surge have been also decided after general consideration. The observational duration is planned for few days. The machine itself will be perfected at the end of February 2004, and the total system will be in September 2004.