

## Behavior of volcanic gas at Miyakejima and estimation of its danger

# Kisei Kinoshita[1]

[1] Fac. Education, Kagoshima Univ.

<http://www-sci.edu.kagoshima-u.ac.jp/volc/gas/>

Volcanic gas of high-temperature type from active crater flows and diffuses almost together with the volcanic cloud in the atmosphere.

Dense volcanic gas from the summit crater of Miyakejima is most dangerous when it is blown along the slope down to the foot of the volcanic island.

On the other hand, as far as the volcanic cloud is rising from the crater because of the thermal buoyancy under weak wind, the gas concentration on the surface in the island is rather low generally. It may be quite possible to put forward the recovering operations by avoiding to situate at the downwind direction from the summit when wind is strong enough.

Volcanic gas of high-temperature type, ejected from active crater, flows and diffuses almost together with the volcanic cloud in the atmosphere. This inspection, based on the combined analysis of the ground monitoring of the volcanic clouds at Sakurajima, their satellite images, meteorological data of upper air and continuous monitoring data of air quality, is now supported from the detections of SO<sub>2</sub> at Miyakejima by the ASTER sensor on board of TERRA satellite and by COSPEC observation from helicopters.

Dense volcanic gas from the summit crater of Miyakejima is most dangerous when it is blown along the slope down to the foot of the volcanic island. Such a situation can be easily seen by observing the flow of volcanic cloud forming the mountain lee wave.

On the other hand, as far as the volcanic cloud is rising from the crater because of the thermal buoyancy under weak wind, the gas concentration on the surface in the island is rather low generally. It may be quite possible to put forward the recovering operations by avoiding to situate at the downwind direction from the summit when wind is strong enough. As for the danger of for the pyroclastic flow, different consideration should be necessary because of the gravity effect.

Long range transport of volcanic gas results in high concentration events of SO<sub>2</sub> at the surface in the main island of Japan by the following mechanisms: (1) When the wind is not so strong, the convection mixing in the daytime brings down the gas in the plume to the ground. (2) When the wind is strong enough, the volcanic plume flows without rising and affects strongly along its path.

Such situations may be essentially predicted by weather charts, and confirmed by satellite imagery.