

# Seismological characteristics on the Hakusan volcano

# Yoshihiro Hiramatsu[1]; Kazuei Sakai[1]; Naoki Takahashi[1]; Hiroaki Negishi[2]

[1] Natural Sci., Kanazawa Univ.; [2] NIED

The Hakusan volcano, whose volcanic activity started in 0.3-0.4 Ma, is located in the Ryohaku mountains area. Moriya (2000) reported that eruptions repeat every 500 years in the last 10,000 years. We report here seismological characteristics on the Hakusan volcano based on seismicity and the three-dimensional velocity structure around the Hakusan volcano.

We performed temporal seismic observations around the Hakusan volcano in the summer season of 2001-2003. The hypocenter distribution reveals that the volcanoes in the Ryohaku mountains area except the Hakusan volcano show no ordinal seismic activity. Applying the Double-Difference method, we confirm that hypocenters concentrate beneath the summit of the Hakusan volcano at the depth of 0-1 km below sea level, no hypocenter below 2 km depth and the depths of hypocenters increase as horizontal distances from the summit to hypocenters increase. This suggests a possible existence of a magma chamber beneath the summit at the depth of a few kilometers. The source mechanism indicates that the local stress field around the Hakusan volcano is consistent with the regional one in this region.

We determine the three-dimensional P- and S-waves velocity structures in the Ryohaku mountains area using the travel-time tomography method. We find a velocity anomaly zone with low- $V_p$ , low- $V_s$  and high- $V_p/V_s$  beneath the Hakusan volcano at the depth of 10 to 14km, while there is no such a region beneath other volcanoes in the Ryohaku mountains area. We consider that the velocity anomaly is a partially melting rock matrix with high temperature. The Hakusan volcano is one and only active volcano in the recent 0.2 Ma in the Ryohaku mountain area. This geological feature is consistent with our seismological results. Based on these results, we propose that there can be two magma chambers beneath the Hakusan volcano, one at the depth of a few kilometers and the other at the depth of 10-14 km. Furthermore, we may point the existence of magma near the Moho discontinuity where low-frequency earthquakes occurred although the reliability of the tomography is low.