Relationship between the crustal movement, and subsurface geology and temperature distribution around Mt. Iwate.

Shiro Tamanyu [1], Yasumoto Suzuki [2], Tatsuya Sato [3]

[1] Geotherm., GSJ, [2] Gerd, [3] Geothermal Energy Research & Development Co., Ltd.

NASDA detected a surface upheaval around the Mt. Iwate by SAR interferometory data. The authors made the correlation of the detected upheaval zone with the Quaternary volcanic distribution map, contour map of gravity basement depth and subsurface temperature distribution map. This results in good correlation among them. The upheaval zone corresponds with the distribution area of Quaternary volcanics of Akita-Komagatake, Minami-Hachimantai and Kita-Hachimantai Volcanoes in addition to the Iwate volcanoes. The upheaval zone also corresponds with shallow parts of gravity basement, and subsurface high temperature zone. This indicates that the detected upheaval zone is due to the tectonic upheaval which has been uprised by assumed subsurface geologic unit with heat supply.

NASDA analysed the SAR interferometory data obtained by JERS-1, and detected a surface upheaval at the Mt. Iwate and its vicinity area. This deformation is composed of two parts. One is smaller block (10 km length x 7 km width) associated with the Iwateken Nairiku Chubu Earthquake occurred on September 3, 1998, and the other is wide block(triangular block with about 10km side) extending to Mt. Akita-Komagatake southwestward and Mt. Hachimantai northward. The former rose up to maximum of 48 cm height just behind the surface rupture, and the latter rose up 10 cm in average which seems to be associated with volcanic seismic swarm.

The latter upheaval arises the author's interests in the relationship between the tectonic deformation, and subsurface geology and thermal anomaly. The authors made the correlation of the detected upheaval zone with the Quaternary volcanic distribution map, contour map of gravity basement depth and subsurface temperature distribution map. This results in good correlation among them. The upheaval zone corresponds with the distribution area of Quaternary volcanics of Akita-Komagatake, Minami-Hachimantai and Kita-Hachimantai Volcanoes in addition to the Iwate volcanoes. The upheaval zone also corresponds with shallow parts of gravity basement, and subsurface high temperature zone. This indicates that the detected upheaval zone is due to the tectonic upheaval which has been uprised by assumed subsurface geologic unit with heat supply.