

An interpretation of post-doming subsidence in the area of the 2000 activity of Mt. Usu

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Since the end of June 2000, continuous GPS measurements have been carried out on the center of the uplifted region in the 2000 activity of Mt. Usu. According to those observations, since the middle of August 2000, subsidence has been continuously observed, and it becomes weaker gradually. Before the beginning of subsidence, stable stage was detected in about two weeks.

The subsidence speed is quite large compared with that observed on the summit of Mt. Usu after the 1977-1982 activity. In the first one year, the amount of subsidence at the center of the uplifted region of the last activity reached about 41cm. After the 1977-1982 activity, the maximum subsidence in the first year observed on the summit of Mt. Usu amounted about 10cm.

The decrease of subsiding rate after the last activity is also larger than that after the 1972-1982 activity. The rate of subsidence at the center of the uplifted region shows c.a. 15 cm/year in Spring 2003. On the contrary, post-activity subsiding rate after the 1977-1982 activity was still kept about 8cm/year in 1999.

Using Mogi's model and assuming the intruded magma to be centered at the 1km depth, decreasing volume was 4,000,000m³ in the first year and it was 1,800,000m³ in the second year. These values indicate that annual mean energy release are 12MW and 6MW for each year.

On Dec. 7, 2002, estimated energy release by the method of 'Plume rise' is 2-60MW.

Both estimation of energy release show good agreement each other.