

Tilt changes observed at at Onikobe geyser, Miyagi prefecture

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Geysers activity is investigated by temporal tilt observation at Onikobe, Miyagi prefecture. Onikobe geyser intermittently effuses hot water for about 1 minutes every about 10 minutes. Such activity of the geyser, which is often considered to be a miniature of a kind of volcanic activity, has been investigated by the observation of temperature and water levels in the conduit and seismic and acoustic measurements (Kieffer, 1984; Kedar et al., 1996). To investigate the pressurization process of geyser, which is one of the most important processes that control the effusion process, we observed tilt changes associated with the geyser activity at Onikobe.

We installed three tilt meters 5 – 8 m far from the vent of geyser. The records of these three tilt meters show following characteristics of the ground motions. The tilt meters indicate subsidence motions toward the vent when the geyser starts to effuse hot waters. The subsidence continues for about 1 min and the effusion stops. Then, the tilt motion changes the polarity and the uplift motion continues until the next effusion occurs. The amplitude of these tilt is ranging from about 0.5 to 1.0 micro radian. It is noteworthy that the tilt meter at a distance of 5 m from the vent indicates a small uplift just before the subsidence. Although it is not clear whether the time of the small uplift precedes the effusion or not, this may be related to sound generation in the vent and vaporization above the vent that precedes about 10 s before the water effusion.