**Japan Geoscience Union Meeting 2010**
(May 23-28 2010 at Makuhari, Chiba, Japan)


SVC063-02 Room: 201B Time: May 24 09:15-09:30

# Tilt observation close to active crater of Suwanosejima volcano

Takeshi Nishimura[1*], Masato Iguchi[2], Yusaku Ohta[1], you kitamura[1], Hiroshi Aoyama[7], Atsuo Suzuki[7], Jun Oikawa[4], Haruhisa Nakamichi[5], Hiroshi Yakiwara[6], Takeshi Tameguri[2]

[1]Science, Tohoku Univ., [2]DPRI, Kyoto Univ., [3]Science, Hokkaido Univ., [4]ERI, Univ. of Tokyo, [5]Env., Naogya Univ., [6]Science, Kagoshima Univ., [7]Science, Hokkaido Univ.

To clarify the magma ascent process just before explosions, we installed three tilt meters close to the active crater of Suwanosejima, Japan, in September 2009. The three tilt stations T1, T2, and T4 are located at distances of 1.0, 0.75, 0.35 km, respectively, from the active crater. We embedded the tilt meters (Pinnacle, hybrid type with analog output) at depths of about 4 m to avoid the noises caused by atmospheric temperature variations. The signals are sampled at a sampling frequency of 100 Hz with an A/D resolution of 24 bit and are continuously saved on compact flash memories on the data logger (Keisoku-giken, HKS-9550).
The observed tilt signals show tiny inflation before small explosions. The inflations are detected at the closed station T4. The inflations start about 60 s before each explosion. This is the almost same time when the amplitudes of seismic tremor probably caused by continuous gas emission decrease. This correlation suggests pressurization in the conduit, which inflates the volcano, is caused by a formation of cap on the top of magma head that disturbs the gas flow to the surface. The tilt amplitudes increase with time and are almost a few tens of nano radian at T4 station. The signals at T2 likely show some inflation motions, but the noises prevent us from measuring the amplitudes. Even when the eruptions are not explosive without detectable infrasonic waves, the tilt meters at T4 detect inflation motion similar to that when the explosions occur.

Keywords: Suwanosejima, tilt, magma ascent, eruption