Present weak precursor of the next eruption at Izu Oshima volcano based on the precursory phenomena observed in the 1986 eruption.

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1. Introduction
It has passed 30 years since the latest eruption occurred in 1986-87 at Izu-Oshima volcano. Ground inflation, that is generated by magma storage at reservoir at the depth of approximately 5km, started in the middle of 1990’s and it continues from the long-term point of view with short-term fluctuation: inflations and deflations every 1 -3 years. From this observation, we can present indefinitely that the volcano will erupt in future. Long-term prediction of eruption as mentioned above is not so difficult in general. And we may be able to forecast easily the eruption just before a few hours in the case of appearing large amplitude volcanic tremors and ground deformations like the Nov.21, 1986 flank eruption. However, middle term prediction, that is much effect to mitigate volcanic disaster, is not so easy. It is normally conducted based on the previous observation facts prior to the eruption. If the process prior to the eruption progress in the same manner, it may be not so difficult. But it may be very difficult in the case that the process and type of eruption are not same as the previous one. We should look back the observation facts at the previous eruption, and realize the condition inside of the volcano, try to imagine the condition inside of the volcano, look for new insight of observations.
2. Visiting old: geophysical observation facts in the previous eruption
Many observations are reported for the latest eruption at Izu-Oshima. Among them, I would like to focus on the followings: Magnetic field at the south of the crater decreased 4 years before the eruption and it was accelerated approximately one year before, simultaneously electro-conductivities changed suddenly. Area of anomalous high temperature inside of crater was enlarged before a few months of the eruption. Volcanic tremor appeared 4 months before the eruption and its amplitudes increased gradually until the beginning of the eruption. All of them shows the geothermal anomaly occurred in the shallow part (near ground water level) prior to uprising magma. The heat might be carried by high temperature volatile component: volcanic gasses emitted from magma reservoir. It is common that the volatile component migrates upward from magma reservoir and steam from crater becomes strong prior to the eruption. If we can detect the upward migration of volatile in the other method, we can predict the eruption more precisely and earlier. Behavior of the volatile component is important to know the condition inside of the volcano and eruption type of the future eruption.
3. Learn new: new insight based on the previous observations
Direct observation of volcanic gas flux is one of most effective method to know the behavior of volatile component. However, the measures strongly depend on the place and gloss features cannot be revealed without systematic and wide-area measurements. On the other hand, new method to know the volatile condition deeper than ground water level was proposed using volcano-tectonic seismicity. I have studies volcano-tectonic seismicity whose hypocenters are located beneath caldera and just above magma reservoir, and found out that seismicity is well correlate with stress changes at hypocenter zone (Refer my presentation in the session of S-VC47 in detail). From this analysis, effective normal stress acting on fault surface decreased after 2011-2013, and kept low level at the present. The effective stress is affected by pore pressure acting on the fault plane, and low effective normal stress is equivalent to high pore pressure. One of the most feasible processes of the facts is increasing volatile component emitted from the magma reservoir. This observation is probably the earliest evidence of upward migration of volatile component prior to the next eruption. We should concentrate to watch the seismicity and find out the

relation of the other phenomena until next eruption to develop the method on prediction of volcanic eruption.

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