

## Woodpecker seismicity before the flank effusive eruption at Stromboli

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Stromboli volcano in Italy is known as persistent eruptive activity (Strombolian eruptions). Its activity shifted from summit eruption to flank lava effusion in the Sciara del Fuoco on 7 August 2014. We obtain continuous seismic data during the transition from Strombolian activity to the lava effusion. In this presentation we report unusual seismic waves, that is particularly observed from 22 July until the onset of flank eruptions. The unusual waveforms were looked like repeating volcanic tremor. The tremor (single wave packet) is composed of numerous repeating pulses of 4-12Hz, that having almost same amplitude. It continues for several to ten minutes, and then disappears with some large pulses (or one large pulse). Since the characteristic waves appeared repeatedly with a short pause time of a few minutes, we call this seismic activity as “woodpecker seismicity”. Individual pulses that make up the woodpecker seismicity are very similar. They are likely to be repetitions of the same event. To investigate the waveform similarity, we extract waveform containing an arbitrary pulse as a template event and calculate coefficient of correlation with continuous data every one sample. We set lengths of template events two seconds. As a result, it was found that the emergence of a pulse can be identified based on correlation coefficient for any period of the woodpecker seismicity. Similar results were obtained by changing the template. Since the woodpecker seismicity was seen in the period preceding the flank effusive eruption, the woodpecker seismicity may have the relationship with the dyke intrusion. To check the temporal change in the hypocenter location of the woodpecker seismicity, we investigate the temporal fluctuation of time difference of correlation peaks at the two different stations (RFR, PZZ). As a result, it was found that the time difference at which the correlation coefficient reached the maximum was quite stable at both stations. From this fact, it seems that the mechanism and location have not changed. Considering the activity period, we expect that the woodpecker seismicity reflects some changes in volcanic process below the crater towards the flank eruption. We are planning to investigate the relationship between the woodpecker seismicity and the very long period (VLP) events that is constantly occurring.

Keywords: Stromboli volcano, woodpecker seismicity, transition process of volcanic eruption