P27

グントール火山における火山構造性地震の震源分布
Hypocenter distribution of Volcano-tectonic earthquakes at Guntur volcano

○Nurlia Sadikin and Masato Iguchi

1. Introduction

Guntur Volcano is an andesitic stratovolcano with 2249 m high above sea level and located in West Java, Indonesia (longitude : 107^0 50.5' E and latitude : 7^0 8.87' S) about 35 km southeast from Bandung city. Guntur volcano as the youngest of Guntur – Gandapura complex lies on the edge SE of a NW-SE lineation of Gandapura – Masigit – Paruhpuyan – Kabuyutan – Guntur volcanic centers. Guntur volcano's crater covered by forest and minor fumarolic activity has remained where large fumaroles area is located in the Kamojang caldera, west of the summit of Guntur. The fumaroles area continues to southwest, Darajat caldera. The first recorded eruption in historic time was in 1690 and until the middle of 19^{th} century, eruptions frequently occurred. For almost 158 years since 1847 until now, Guntur volcano has been in a quiet state. With such along time of quite state, it is obvious about the threatened by the incoming eruption in the future.

In order to monitor the activity of Guntur volcano, Volcanological Survey of Indonesia and Sakurajima Volcanological Observatory reinforced seismic network at the volcano in 1994 by adding 3 seismic stations equipped with 3-component short-period seismometers at Pasir Cileungsing (PSC), Gunung Putri (PTR) and Legokpulus (LGP) at SE-SW flank of the volcano, to the previous monitoring station Citiis (CTS) 0.8 km apart from the Guntur crater. Because of increasing in seismic activity in 1997, a station was installed at the summit crater, Kabuyutan (KBY).

The seismicity at the volcano is dominated by volcano-tectonic earthquakes with clear P and S waves and no LF event has been observed since 1994. Based on 11-years data, we grasp the hypocenter of volcano-tectonic earthquakes and its change.

2. Hypocenter

Location of hypocenters was calculated assuming a homogeneous half space 2.7 km/s by using more than 4 seismic stations. At first, we show outline of the hypocentral distribution. The hypocenters are located mainly in two regions; one is the summit area and the other is caldera area west of the volcano. The hypocenters in the summit area are distributed at depths of 0-5 km, and the epicenters are aligned along the volcanic cone-belt from NW to SE; Gandapura caldera, Masigit, Paruhpuyan, Kabuyutan and the newest crater Guntur. The hypocenters in caldera area is a little bit deep; 5-10km. In temporary observation by using 11 seismic stations in 1995-1996, it was shown that the epicenters are distributed along the fault striking NE to SW (Suantika *et al.,* 1997). Next, we show the temporal change in hypocentral distribution in the summit area. The hypocenters were distributed in the area from Maigit to Gutur during the period from 1994-1996. The seismicity suddenly increased in May 1997 and attained its peak in October. The hypocentral region extended to NW; Gandapura caldera. In 1998, the seismicity was restricted in the Masigit-Guntur area again. On May 6, relatively large earthquakes (M=2.9 and 2.7) occurred at the volcano. The earthquakes were felt near the volcano. The main-shock was located at a depth of 2km beneath the Gandapura caldera. About 60 after-shocks follow the main-shock. The hypocenters of the after-shocks were distributed around the main shock and the seismicity at Masigit-Guntur area was relatively low. The seismicity was restricted in Masigit-Guntur area again in 2000-2004. Hypocenters were moved to Gandapura caldera in 2005 again. A felt earthquake (M=3.1) occurred 12:55 on Feb. 2. The focal depth was 2km.

3. Conclusion

Seismicity of Guntur volcano is restricted in Masigit-Guntur area in normal state. The seismicity extends to Gandapura caldera when it increased. This suggests the specific structure (for example, magma intrusion?) beneath Gandapura caldera.