R003-06
Zoom meeting A ：11/3 AM1 (9:00-10:30)
10:15-10:30

UNDERSTANDING UNZEN VOLCANO MAGMATIC SYSTEM USING BROADBAND MAGNETOTELLURIC OBSERVATION

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Unzen Volcano is an active lava domes complex located in Shimabara Peninsula, Nagasaki, Japan. Since the great eruption in 1990-1995, this volcano has been receiving intensive observations. From previous studies, magma plumbing system models have been suggested. The models favor main magma chamber located about 15 km under Chijiwa bay in west offshore Shimabara Peninsula. Subordinate magma chambers located shallower and closer to the summit, Fugendake. Geodetic measurement by Kohno et al (2008) proposed four deformation sources (from beneath Unzen's summit to its west, namely A,B,C,D) from the latest eruption. The four sources are situated below the intensive hypocenters zone occured before eruption reported by Umakoshi et al (2001). The most intensive sources are D-source which explains inflation occured after the eruption stopped. Meanwhile the C-source experienced intensive deflation during eruption. Magnetotelluric (MT) method is highly sensitive to conductive zone caused by fluid rich zone or melt rich magma. Hence, we present our result from 23 broadband MT stations in southern half of Shimabara Peninsula which were installed on December 2019. Our purposes of the study are to determine magmatic system of Unzen based on resistivity structure, comparing to seismic velocity data (Saiga, personal comm), seismicity (Umakoshi et al 2001) and geodetic data (Kohno et al 2008) and to explain its structural control. Our preliminary resistivity structure outlines shallow low resistivity layer until about 2 km bsl, particularly in the southern part of Shimabara Peninsula. This low resistivity zone roughly coincides with position of several faults in southern Shimabara that was reported by Sugimoto et al (2005). We highlight broad high resistivity zone underlies Shimabara Peninsula at around 5 km bsl to greater depth. It may represent plutonic rock. On the southwestern Chijiwa Bay, low resistivity zone is imaged and this zone possibly extends to around D-source. Expanding observation sites are planned to be conducted this year to fully answer our study objectives.