

R004-10

Zoom meeting A : 11/4 AM2 (10:45-12:30)

12:00~12:15

Paleointensity dating for submarine volcanic rocks: a case study at Izu Oshima

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Dating volcanic rocks provide a foundation for understanding the evolution of volcanoes. Volcanic activity on the order of 1000 years is also important for disaster prediction. However, dating in this range is often difficult for submarine volcanoes, where radiocarbon dating is unavailable. In this talk, we present paleointensity age constraints for recent submarine basalts around Izu Oshima. The samples were collected in 2009 from submarine ridges in the southeast of Izu Oshima Island. Geochemical data are reported in Ishizuka et al. (2014) and are interpreted to reflect activity over the past 20 kyr. Furthermore, correlating with subaerial volcanics with age information, chemical signatures corresponding to the addition of backarc components at ca. 10-5 ka were observed in some samples. However, more detailed ages are currently unknown. Because sample orientations were not recorded, we focused on geomagnetic intensity (paleointensity) using the Tsunakawa-Shaw protocol. Rock magnetic data indicate that the samples generally contain Ti-rich titanomagnetite with the blocking temperature around 350 °C. The magnetic properties of the sample do not change much when heated in Ar or vacuum. So far, we have estimated the paleomagnetic intensities of three ridges (SE1, SE2, and SE3). SE1 shows a moderate value of about 45 μ T, while the ridges SE2 and SE3 record relatively strong magnetic fields of about 60 μ T. Comparing with the global and local paleointensity data, such a high paleointensity could be correlated to ca. 8-10 ka. Together with the geochemical data, We interpret SE2 and SE3 to be 8-10 ka and SE1 <2 ka. These results indicate that paleomagnetism may improve the dating of submarine volcanic rocks.

Ishizuka et al. (2014) JVGR, 285, 1-17. <https://doi.org/10.1016/j.jvolgeores.2014.08.006>