Origin of alkali basalts in Late Jurassic to Early Cretaceous accretionary complex in Amami–Oshima Island, Ryukyu Arc

*Ginta Motohashi[1], Kohtaro Ujiie[1], Takashi Sano[2]

1. University of Tsukuba, 2. Department of Geology and Paleontology, National Museum of Nature and Science

Basaltic rocks in exhumed accretionary complexes are important for understanding past volcanism on oceanic plate. The basalts intruding into pelagic chert were found from Late Jurassic to Early Cretaceous accretionary complex in Amami–Oshima Island, Ryukyu Arc. However, origin of the basaltic intrusive rocks remains unkown. Here, we conducted geological and geochemical studies on the basalts by using X-ray fluorescene and Inductively Coupled Plasma-Mass Spectrometry. At Naon and Oganeku, the basaltic intrusive rocks are distributed as 100–500m sized blocks in the mélange. In Naon, a massive basalt underlies pelagic radiolarian chert, and two basaltic dikes cut both the massive basalt and chert. In Oganeku, 3–m–thick basaltic sill intrudes pelagic radiolarian chert, which overlie above dolerite. The age of radiolarian chert indicates that intrusion of basalts occurred after Permian. These features suggest that basaltic inrusive rocks were originated from intraplate volcanism and then were incorporated as blocks in overlying plate. In chondrite–normalized rare earth element (REE) patterns, the massive basalt and basaltic dikes in Naon and basaltic sill in Oganeku exhibit light REEs–enriched pattern similar to alkali basalts, while dolerite in Oganeku shows no enrichment in REEs that is similar to N–MORB. In primitive mantle–normalized muti–trace element patterns, the massive basalt in Naon shows negative Zr, Hf, and Ti anomalies, which is similar to petit spot basalts in northwest pacific plate. On the other hand, basaltic dikes in Naon and basaltic sill in Oganeku do not show negative Zr anomaly. Geological and geochemical features of basalts in Naon and Oganeku sugegst that alkali basalts intruded after deposition of pelagic radiolarian chert, but the intrusive event was before subduction, suggesting that part of which could represent petit spot volcanism in incoming oceanic plate.

Keywords: Alkali basalt, Late Jurassic to Early Cretaceous accretionary complex

