Contribution of intraoceanic subduction systems to development of Eurasian continental margin in the Cretaceous: Insights from NE Japan arc.

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Three localities (Gunkanyama, Sutappu-zawa, and Oku-Niikappu) of ophiolites with boninite so far found in Hokkaido suggest existence of intraoceanic subduction system(s) offshore Eurasian continental margin in the Jurassic to Cretaceous periods. Middle Jurassic ages from felsic rocks associated with boninites constrain the younger limit of their initiation, and the oldest terrigenous clastic rocks in middle Early Cretaceous suggest its first interaction with the continental margin there. Stratigraphic relations with cover sediments, as well as geochemistry of igneous rocks, imply that the source arc was not singular. Gabbro and serpentinites of the Sutappu-zawa ophiolite (STO) were unconformably overlain by late Early Cretaceous pelagic mudstone. Earliest Cretaceous chert overlying volcanics of the Oku-Niikappu complex (ONC) intercalates volcaniclastic conglomerate with gabbro and pyroxenite clasts. These occurrences suggest multiple unroofing events of lower crustal to upper mantle rocks of arcs in pelagic realms, as commonly seen in the present-day western Pacific backarc basins. These Jurassic to potentially Early Cretaceous ophiolites presumably of arc-backarc origins seem to have belonged to distinct oceanic plate(s) with Triassic or older oceanic plate responsible for Jurassic to Early Cretaceous accretionary complexes. A TTT triple junction is thus assumed, and one of the two oceanic plates were adhered to the Eurasian continental margin. The adhered oceanic basin presumably of arc-backarc origins subsequently acted as a ~100 km wide and >1000 km long forearc basin of the Eurasian active continental margin.

Keywords: intraoceanic arc, backarc basin, Eurasian continental margin

