

Tectonic reconstructions and origin of Cretaceous greenrocks, Tokoro Belt, NE-most of Japan

*Shunta Sakai¹, Naoto Hirano², Shiki Machida³

1. Division of Earth and Planetary Materials Science, Tohoku University, 2. Center for Northeast Asian Studies, Tohoku University, 3. Ocean Resources Research Center for Next Generation, Chiba Institute of Technology

The Tokoro Belt, Late Cretaceous accretionary complex at Eastern Hokkaido of Japan, is mainly composed of greenstones with tectonic blocks of bedded chert and limestone (Nikoro Group) with some forearc sediments. The greenstones (mainly basaltic or metabasaltic rocks) within an accretionary complex possibly provide information about igneous activities on subducted paleo-oceanfloor. In previous studies (Bamba, 1984; Yamasaki and Nanayama, 2017), the Nikoro Group greenstones were simply divided into the MORB-dominated eastern part and OIB-dominated western part on the basis of the chemical compositions of greenstones and their mode of occurrences with simultaneously accreted cherts and limestones. However, they reported a limited number of analytical elements of only a few greenstones; thus we report new geochemical major and trace elements of greenstones of Nikoro Group to reconsider their origins.

As mentioned above, geochemical compositions of the western Nikoro Group designate the typical composition of tholeiitic OIB. The greenstones in eastern Nikoro Group are further divided each into their localities on the basis of geochemical variation of them; moreover, the new data in this study show more detailed divisions. The eastern Nikoro Group particularly resulted from the underplating process both of MORB and OIA (oceanic island alkaline basalt) at the deeper part of subduction zone. This study proposes a new model about the origin of Tokoro Belt on the basis of the geochemistry of greenstones with geological data as follows; 1) tectonic structures of the greenstones and chert, 2) microfossil ages of chert and limestone associated with greenstones, 3) variation of metamorphic grades, 4) the exposing volume of MORB, and 5) mode of occurrences of chert and limestone.

Keywords: Tokoro Belt, Accretionary complex, Mid-ocean ridge basalt, Oceanic island basalt