Revisiting of metamorphic zonal mapping in the Etambetsu Pass area, the Kamuikotan belt, Hokkaido.

*Takao Hirajima[1], Shusuke Kinoshita[1], Kouta Minagawa[1]

1. Department of Geology and Mineralogy, Graduate School of Science, Kyoto University

We propose a new metamorphic zonation based on low-variant mineral assemblage in metabasites from the Etanbetsu Pass area of the Kamuikotan belt.
The prograde decomposition of lawsonite (Lws) to epidote (Ep) was reported by Shibakusa (1989) in this area. However, Imaizumi (1984) proposed that the Ep-blueschist (BS) occur as tectonic blocks and it is in tectonic contact with Lws-BS. Furthermore, Sakakibara & Ohta (1994) supported the tectonic contact model based on phengite K-Ar ages of Lws/Ep BSs. As mentioned above, there is no general consensus on the Kamuikotan metamorphism in the relevant area.
This study confirms that the Etanbetsu Pass area can be divided into Ep-free zone (majority of the area) and Ep-bearing area (the northern part of the area), which almost coincident with Zone I (Lws zone) and Zone II (Ep-Lws zone) of Shibakusa, and Biei- Harushinai and Horokanai units of Sakakibara & Ohta, respectively.
In the Ep-free zone, Lws + Na-pyroxene (Napx) ±pumpellyite (Pmp) assemblage is predominant, but Lws + Na-amphibole (Namp) + Pmp or Lws + Namp + Napx assemblages, the diagnostic of the Lws-BS facies, are limited in the northern part, i.e., the proximal area to Ep zone. Spatial distribution of abovementioned mineral assemblages suggest that the Ep-free zone can be divided into Lws+Napx+Pmp sub-area and Lws+Namp one, and this subdivision can be explained by the progress of a following reaction; Pmp + Napx + Chlorite = Lws + Namp + H2O (1) in the Ca-Al-Fe3-(Fe+Mg) system with excess of quartz, albite and phengite, possibly with the progress of the subduction.
In Ep zone, following mineral assemblages are identified; Ep + Namp + Pmp + Lws (7/16), Ep + Lws + Namp and Ep + Namp + Pmp. Those assemblages are stable around the reaction; Ep +Pmp+Chl = Lws +Namp + H2O (2).
Sato et al (2017) proposed that there is a a significant P-T gap between stability fields of two reactions. This suggest the the tectonic contact model of Ep-free and Ep zones in the study area.

Keywords: metamorphic zonal mapping, Lawsonite blueschist, Kamuikotan belt

