Geochemistry of Devonian-Carboniferous volcanogenic rocks in the Mandakh terrain, South Mongolia

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Devonian-Carboniferous volcanic and volcanogenic-sedimentary rocks are widely distributed in the Mandakh terrain, South Mongolia. Devonian rocks are mapped as Unduruud (D_{1-2} un), Uguumur (D_{2-3}ug), Zurkhennuur (D_3-C_1zn) Formations, while Carboniferous rocks are classified as Ikhshankh ($C_1$is), Gunbayan (C_1gb) and Dushiinovoo (C_2do) Formations. They are mostly show basic-intermediate composition (basalt-andesite-dacite-rhyolite and their tuff) and cannot clearly classified based on major element geochemistry. According to the trace element data, can see some differences on LILE. Lithologically Devonian Formations are composed of volcanogenic-sedimentary rocks, indicating forearc and backarc environment. They are formed on the Ordovician magmatic arc [1]. Geochemically Devonian rocks are enriched in LILE (Ba, Th, La) and depleted in HFSE (Sr, P, Ti) indicating subduction.

The Ikhshankh, Gunbayan and Dushiinovoo Formations are belong to the Carboniferous subduction, which is developed on the basis of the Ordovician subduction zone. Carboniferous rocks are sligthly depleted in LIL compared to the Devonian rocks, and similar in HFSE (Sr, P, Ti) indicating also magmatic arc geochemistry [2].

Hovewer, Dushiinovoo Formation is widely distributed in the area and it shows two different geochemical trends on LILE geochemistry. For instance, the Dushiinovoo Formation rocks distributed near to the magmatic arc indicating it's main geochemical features of island arc geochemistry. Whereas some of the Dushiinovoo Formation rocks distributed near to the young backarc/forearc settings are indicating transitional crust geochemical features.

[1] Zhu et al., 2016. *Jour. Asian Earth Sci.* **115**, 507-519. [2] Chimedtseren et al., 2017. *Mongolian Geoscientist*, **46**, 47-67. (in Mongolian)