

## Petrology of the Late Cenozoic tholeiitic rock series from Yoneyama area, northern Fossa Magna, Japan

\*Masataka Aizawa<sup>1</sup>, Satoshi Okamura<sup>1</sup>, Toshiro Takahashi<sup>2</sup>, (Group) Yoneyama Research Group

1. Hokkaido Education University, Sapporo Campus, 2. Faculty of Science, Niigata University

Late Pliocene-Early Pleistocene volcanic rocks from Yoneyama Formation in northern Fossa Magna consist of basaltic - andesitic pyroclastic rocks and small intrusive rocks, frequently accompanied by Hbl gabbroic xenoliths and Hbl xenocrysts. On the basis of phenocryst assemblage, the volcanic rocks are divided into Ol basalt, Cpx - Opx andesite and Hbl andesite. Nakanodake intrusion in the Yoneyama Formation is composed of inner Cpx - Opx gabbro and outer Hbl andesite, which sometimes contain syenite vein. The volcanic rocks are characterized by high - K and tholeiitic rock series (TH). Two pyroxene geothermometer (Wells, 1977) shows 1100°C at basalts and 1050°C at andesites. Ca-amphibole geobarometer (Ernst and Liu, 1998) shows 0.1 - 1.5 GPa at hornblende phenocrysts, 1.1 - 1.5 GPa at hornblende xenocrysts and 0.5 - 0.8 GPa at gabbroic xenoliths, which suggests that hornblende fractionation occurred at depths of lower crust. Hornblende fractionation plays an important role in magma differentiation from basalts to andesites, because of rare earth elements behaviors. H<sub>2</sub>O contents calculated by plagioclase hygrometer (Hamada and Fuji, 2007) indicate up to 4.1 wt% at basalts and gabbros, and 3.9 wt% at andesites. We propose that the TH magma from the Yoneyama Formation may have been produced under high water condition.

Keywords: Northern Fossa Magna, Tholeiite rock series, Water content, Ca-amphibole