Geology and petrology of Taisetsu volcano group, Hokkaido, Japan ; The outline of eruptive history and temporal variation of magma during 1 My

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Taisetsu-Tokachi volcanic field, extending in the direction of NE-SW over 80km, locates at the southern end of Kuril arc, in which arc type volcanism has continued at least since late Miocene. In order to reveal the temporal change of magma generation processes and related tectonics at the arc-arc junction, we focus on the northen part of the field, Taisetsu volcano group. In the group, after large silicic pyroclastic eruptions during 2-1 Ma, andesitic stratovolcanoes and lava domes have been build up until now. Although previous studies (eg., NEDO, 1990; Saito, 1996) revealed the outline of structure and eruptive history of the group, detail chronological and petrological studies have not been carried out. In this paper, we report preliminary results of volcano geology and K-Ar age dating of the volcano group.Based on the temporal shift of eruption centers, mode of activity and petrological features of the rocks, the activity can be divided into five stages. Stage 1; Andesite lava flows were effused from several fissure vents to flat-shaped volcanic edifices which extends N-S direction. Stage 2: Relatively large stratovolcanoes were formed at the northwestern part of the group. After the formation, eruption centers had moved to the central part. Stage 3: Many eruptive centers were active to form lava domes and cones. Stage 4: The most explosive and voluminous pyroclastic eruption had occurred ca. 30 ka to form a small caldera 2km in diameter. Effused pyroclastic flows filled the deep valleys and were exposed as welded tuffs. Stage 5: After the formation of the caldera, the activity has continued at the southwestern part of the caldera to form sevarl stratovolcanoes, including Asahidake edifice (2291 m).The latest magmatic eruption occurred 5000 years ago. Phreatic explosions has repeated since then to form many craters. All of the rocks usually contain plagioclase, clinopyroxene, orthopyroxene and Ti-magnetite phenocrysts. In some of the rocks also include minor amounts of hornblende, olivine, and quartz phenocrysts. These volcanic rocks often contain mafic inclusions.The SiO_2 contents range from 56.4 to 68.5 wt.% for host rocks and from 52.2 to 56.2 for the inclusions. Almost all the rocks are defined as medium – K in SiO_2 – K_2O and CA type in SiO_2–FeO/MgO – SiO_2 diagram. Although some of major and trace elements of these rocks could be distinguished among stages and/or eruption centers, there exists no distinct features among these rocks especially in incompatible elements. Thus, it seems that similar primary magmas have been formed and differentiated by similar crustal processes during the last 1 My.