

## Petrological characteristics of rocks from Chokai A.D.1800-1804 activities, NE Japan

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Chokai volcano is a Quaternary stratovolcano located at rear arc of the Northeast Japan. The activity is divided into three stages (ca. 0.6 Ma ; Stage I , ca. 0.16Ma to 20ka; Stage II , 20ka to present; Stage III). In historical age, magmatic and phreatic eruptions occurred at least three and four times, respectively. One of the historical magmatic eruption occurred two years after the big earthquake of AD 869. Thus, this volcano has a potential to erupt after the 2011 off the Pacific coast of Tohoku Earthquake, but no precursory phenomena have been detected yet. To reveal the magma feeding system, we examined geologic and petrologic features of youngest (AD1800-1804) magmatic eruption products.

The AD1800-1804 eruption products are composed of Shinzan lava (SL), Shinzan pyroclastic fall deposits (SPFD) and Shinzan dome lava (SLD) in ascending order. SL is consisted of mainly two lava flows, one flowed to the southward and the other to northward from SLD. Maximum thicknesses of southern and northern lobe are 50m and 25m, respectively. Total volume is ca.  $7.3 \times 10^{-3} \text{km}^3$ . These are massive lavas and the surfaces are composed of the blocky lava. Mafic inclusions can be observed in these lavas. SPFD drapes the SL within ca. 50m from SLD. The thickness varies and reaches ca. 30cm near the base of SLD. The estimated volume is  $9.0 \times 10^{-7} \text{km}^3$ . The deposit is lapilli tuff to volcanic breccia, composed of mainly angular lithic fragments in coarse ash matrix. Most of the fragments have shiny surfaces. Subangular to subrounded pumice is rarely observed, whose diameter reaches ca. 5cm. Volcanic bombs are observed in the area of ca. 500 m radius from SLD. These usually cover the SPFD, thus we include them into the SPFD. These are mainly breadcrust bomb and subsequently breccia bomb, which looks like a fragment of the explosion breccia. Mafic inclusions are generally seen in breadcrust bombs, but rarely breadcrust bombs are made of only mafic inclusion. Breccia bombs are consisted of angular rubbles of several centimeters to one meter in weak welded matrix. SLD forms a peak dome of Chokai volcano. Relative elevation of SLD is 50m, volume is  $9.0 \times 10^{-4} \text{km}^3$ . Columnar and platy joints can be observed inner of dome. Mafic inclusions are seen.

AD1800-1804 eruption products belong to medium-K to high-K, calc-alkaline series. Phenocryst assemblage is plagioclase, orthopyroxene, clinopyroxene, opaque  $\pm$  olivine and hornblende. Plagioclases with resorbed texture such as dusty zone and honey comb texture dominate than the clear type. Orthopyroxene and olivine sometimes have a reaction rim, but hornblende doesn't have it. Volumes of total phenocrysts in the hosts are high in SL (48-50vol.%) than the others (26-36vol.%). Those of mafic inclusions are 20-30 vol.%. Groundmass texture of host lava is hyaloophitic, while that of inclusion is dikty-taxitic. Size of microlites in the inclusions varies by samples. SiO<sub>2</sub> contents of host lavas are ca. 60-62wt.% (SL, 60.7-60.8 wt.%; SPFD pumice 60.7-61.2 wt.%; SPFD lithic fragments, 60.8-61.1 wt.%; SPFD volcanic bomb, 60.5-61.5 wt.%; SPFD breccia bomb, 60.7-61.0 wt.%; SLD, 61.2-62.2 wt.%) and those of mafic inclusions are ca. 52-57wt.% (SL 53.3 wt.%; SPFD lithic fragments, 54.2 wt.%; SPFD volcanic bomb, 56.5 wt.%; SPFD breccia bomb, 52.6-54.8 wt.%; SLD 54.0-55.8wt.%). All eruption products are depicted on the same linear trends in silica variation diagrams.

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