

The stratigraphy of Pliocene to middle Pleistocene pyroclastic deposits, Miyagi Prefecture, Japan

Takahiro Kuzumaki¹, Akihiko Fujinawa², Tsukasa Ohba³

¹Graduate School of Science and Engineering, Ibaraki University, Japan, ²Department of Earth and Environmental Sciences, Ibaraki University, Japan, ³Faculty of Engineering and Resource Science, Akita University, Japan

E-mail: 12nd401g@mcs.ibaraki.ac.jp

In the Kurikoma geothermal area on the frontal zone of the Northeast Japan arc, a caldera cluster has been formed during recent 9Ma, through the repeated explosive volcanisms which numerous tephra layers in the east of the cluster. Among the tephra, the latest 4 pyroclastic flow layer; Ikeduki, Shimoyamazato, Nizaka, Yanagisawa tuff layers have been well determined their localities of vents along with their eruption ages ranging from 0.3 to 0.04Ma. However, the tephra layers preceding to the above 4 layers have not been well defined in terms of their lithostratigraphy, eruption ages, or localities of eruption vents. These have been regarded as the members of the Pliocene to middle Pleistocene Onoda Formation. We reported the stratigraphy of the eruptive product in the Onoda Formation: Takatama (3.3 ± 0.3 Ma), Shimatai, Yubama, Chijimisawa (1.00 ± 0.06 Ma), Mozume (1.08 ± 0.13 Ma and 0.62 ± 0.10 Ma), Toshojisawa (0.87 ± 0.21 Ma), and Uguisuzawa pyroclastic flow deposits in stratigraphic order with Aonosawa tephra layers at the top (Kuzumaki and Ohba, 2010, 2011).

In this study, the stratigraphy of pyroclastic deposits in Onoda Formation are reexamined on basis of newly identified deposits, and the frequency of pyroclastic eruption are examined.

At the 4 newly discovered localities (St, Ot, Tt, and Kt) 7, 5, 3, 2, distinct tephra layers are identified. The layers Kt-1 and -2 and Tt-1, -2, and, -3, in are to be stratigraphically lower than the Yubama pyroclastic flow deposit, because Kt-1 and -2 are overlain by Yubama pyroclastic flow deposit, and the topography of deposition for Tt-1, -2, and, -3 is lower than Kt-2. Since St-7 is correlated petrologically with Mozume pyroclastic flow deposit, six pyroclastic deposits, St-1~6, are stratigraphically higher than Mozume pyroclastic flow deposit.

At least seventeen distinct pyroclastic deposits above the Chijimisawa pyroclastic flow deposit of ca. 1.0Ma are identifiable in this area. Therefore, the frequency of pyroclastic eruption is higher than 1 in every 0.06Ma.