Oral | Symbol S (Solid Earth Sciences) | S-VC Volcanology

[S-VC54_1AM1]Volcanic and igneous activities, and these long-term forecasting

Convener:*Teruki Oikawa(Institute of Geology and Geoinformation, Geological Survey of Japan, National Institute of Advanced Industrial Science and Technology), Daisuke MIURA(Geosphere Sciences, Civil Engineering Research Laboratory, Central Research Institute of Electric Power Industry), Takeshi Hasegawa(Department of Earth Sciences, College of Science, Ibaraki University), Nobuo Geshi(Geological Survey of Japan, The National Institute of Advanced Industrial Science and Technology), Yoshihiro Ishizuka(Geological Survey of Japan, National Institute of Advanced Industrial Science and Technology), Chair:Maya Yasui(College of Humanities and Sciences, Nihon University), Mitsuhiro Yoshimoto(Faculty of Science, Hokkaido University)

Thu. May 1, 2014 9:00 AM - 10:45 AM 411 (4F)

This session focuses on generation and accumulation processes of magmas, magma-crust interaction and degassing, and modes of eruption, long-term forecast of eruption, dispersal and emplacement of the volcanic products. The discussion spans petrological, geochemical, geophysical, and geological processes related with volcanic activity and products in the past, the present and the future.

10:15 AM - 10:30 AM

[SVC54-P09_PG]The volcanic history and geological structure of Sanzugawa Caldera, Yuzawa, Akita prefecture

3-min talk in an oral session

*Fumiya OKI[1], Tsukasa OHBA[1] (1.Akita Univ.)

Keywords:Sanzugawa caldera, Torageyama Formation, Pyroclastic density current deposit, Resurgent dome

Sanzugawa caldera, located in the southern part of Akita prefecture, was formed by collapses after eruptions of voluminous ash flows about > ca. 1 Ma. Torageyama Formation, deposited during the caldera formation, thickly infills the caldera depression. The Formation is divided into two members: Torageyama tuff member and Minasegawa tuff member. Torageyama tuff member consists of welded tuff, lapilli tuff, and alternation of tuffaceous sandstone, mudstone, and conglomerate. Thickness of Torageyama tuff member is approximatly 900m. Minasegawa tuff member consists of lapilli tuff, tuff and conglomerate. Thickness of Minasegawa tuff member is about 450m. In this study, on the basis of lithology, Torageyama Formation is divided into 10 layers, including pyroclastic density current deposits (PDC-1 to PDC-8), a debris flow deposit (DF-1) and a lacustrine deposit (LD-1). Stratigraphic order from the bottom is PDC-1, DF-1, LD-1 and PDC-2 to PDC-8. Approximate thicknesses of the layers are 20m, 80m, 140m, 50m, 250m, 200m, 340m, 160m, 90m and 30m, respectively. Pyroclastic density current deposits consist of massive lapilli tuff. The lapilli tuff contains pumice clasts and lithics, and minor amount of wood pieces. Bases of PDC-4 and PDC-6 consist of ground surge deposits. Low-angle cross-laminar and dunes are developed in the ground surge deposits. The ground surge deposit of PDC-6 is further underlied by a ground breccia layer. The ground breccia layer consists of matrix-supported conglomerate, containing lithics with a maximum grain-size of 2.5 m. Lapilli tuff of PDC-1, 3, 4, 8 include welded parts, developing degassing pipes and columnar joints. Welded parts often contain spherulites and exhibit eutaxitic texture. Debris flow deposit (DF-1) consists of clast-supported conglomerate with rounded clasts. The clasts are directed parallel to the bedding plane, showing coarse-tail reverse grading. Lacustrine deposit (LD-1) consists of alternation of tuffaceous sandstone, mudstone, and conglomerate.

In mudstone, laminar is well developed. Laminar and bedding are well developed in tuffaceous sandstone. Conglomerate is massive. PDC-2 overlying the lacustrine deposit (LD-1) shows sedimentary structures that imply subaqueous setting. Pyroclastic density current occurred more than eight times, suggested by the number of pyroclastic density current layers. The source of PDC-4 is Takinohara vent, determined from paleocurrent estimated with dunes of a ground surge deposit. Presence of a lacustrine deposit (LD-1) in the middle of the Formation implies that caldera collapsed two times. Half-concentric distribution of strike surrounds Mt. Ishigami and their dips incline outward of the caldera. This structure implies a resurgent dome. This resurgent dome resulted in uplift of Oyasudake area where the center of the caldera. Presence of resurgent dome, thick pyroclastic density current deposits and ring fractures suggests that Sanzugawa caldera is classified as a Valles type caldera.