Oral | Symbol S (Solid Earth Sciences) | S-GL Geology

[S-GL42_29AM2]Geochronology and Isotope Geology

Convener:*Takahiro Tagami(Graduate School of Science, Kyoto University), Yuji Sano(Division of Ocean and Earth Systems, Atmosphere and Ocean Research Institute, University of Tokyo), Chair:Yuji Sano(Division of Ocean and Earth Systems, Atmosphere and Ocean Research Institute, University of Tokyo), Takahiro Tagami(Graduate School of Science, Kyoto University)

Tue. Apr 29, 2014 11:00 AM - 12:45 PM 419 (4F)

Reliable reconstruction of geohistory is of primary importance to better envision the present and future of the Earth. Geochronology and isotope geology play major roles in the reconstruction. This session offers an opportunity to present the results of fundamental studies, including the developments / improvements of analytical methods and age calibration, as well as applications to the Earth and planetary materials. We particularly focus on: (1) radiometric dating, bio-stratigraphy, magneto-stratigraphy and stable isotopic time series that provide the age information, (2) radioisotopes and stable isotopes widely employed for analyzing the Earth and planetary systems and (3) hypothesis and numerical modeling that utilize / assimilate the age and isotopic data. We also welcome contributions that integrate a variety of relevant disciplines.

12:25 PM - 12:40 PM

[SGL42-P04_PG]Luminescence dating and analysis of environmental change of fine grained sediments from Lake Yogo, Japan

3-min talk in an oral session

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Keywords:OSL dating, pIRIR dating, lake sediments

We applied optically stimulated luminescence (OSL), infrared stimulated luminescence (IRSL), post-IR IRSL (pIRIR) and ^{14}C dating to the sediment core YG11-3 (294cm) from Lake Yogo, Japan. The fine grained quartz and polymineral sample are used for equivalent dose (D_e) estimation. As a result of several basically test, the preheat temperature of 200 ^{o}C for 10 s and a cut heat of 160 ^{o}C were suitable to all OSL measurements. The accepted aliquots are about 90 % per measurement discs and the range of D_es are 0.3 ~ 3.5 (Gy). The bulk ^{14}C ages are ca. 300 years older than these of plant residue. After subtracting this age difference from bulk ^{14}C ages, the corrected ages agree with the OSL ages except the ages of sediments from some depths. Two excepted OSL ages are older than the corrected bulk ^{14}C ages (YG11-3-245, YG11-3-343) and these layers include a lot of plant residue enough to analyze the plant residue ^{14}C ages. It seems that these sediments from two layers have been transported quickly in muddy stream based on a temporary environmental event. Additionally, the result of the $IRSL_{50/225}$ and $pIRIR_{225}$ age confirms the existence of this temporary event. By comparing the OSL ages with ^{14}C, IRSL and pIRIR ages, the quartz from the small catchment area can be applied to reconstruct the age model of sediment core in Japan.