[JJ] Evening Poster | B (Biogeosciences) | B-CG Complex & General

# [B-CG10]Phanerozoic biodiversity change: Extinction and diversification

convener:Yukio Isozaki(Department of Earth Science and Astronomy, Multi-disciplinary Sciences - General Systems Studies, Graduate School of Arts and Sciences, The University of Tokyo), Yusuke Sawaki(The University of Tokyo)
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Biotic evolution was the consequence of repeated extinction and following diversification in the past, which was caused by large-scale environmental changes, in particular, by extremely rapid and drastic forcing that changed the environments of the biosphere. Irreversible and episodic changes in material cycling on the planet and in galactic cosmic radiation are nominated as major driving mechanism for the alleged rapid, large-scale environmental perturbations. The biodiversity change in the fossiliferous Phanerozoic record is characterized by 5 major mass extinctions within the long-term trend of diversity increase. Nonetheless, each extinction event has been explained rather in ad hoc manner, without any universal explanation. This session discusses the Phanerozoic biodiversity change under a new light of the recent progress in geology.

# [BCG10-P06]Re-interpretation of Anglesey-Lleyn geotectonic framework in terms of the Pacific-type orogenic evolution

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The Mona Complex in Anglesey-Lleyn, Wales formed via Neoproterozoic-Ordovician subduction-accretion processes on the Avalonian margin. It consists of an ophiolite, high-pressure metamorphic rocks, volcaniclastic sediments, but comprehension of their tectonic evolution has been hindered by the paucity of age constraints. A major geochronological study is necessary to elucidate the subduction, accretion and exhumation history of the Avalonian orogen. Therefore, we have provided U-Pb zircon data for volcano-sedimentary rocks in the Monian Supergroup, and then K-Ar data of micas for pelitic and mafic schists in the Blueschist unit, the Central Shear Zone, and the New Harbour Group. By integrating with published data, our new chronological data enable re-interpretation of Anglesey-Lleyn geotectonic framework in terms of a younger analogue of comparable blueschist belts and accretionary orogens in Japan and California.

The early records of arc activities are widely distributed in Avalonia, and they date back to 760 Ma. The presence of 711–677 Ma calc-alkaline granites in Wales and Central England suggests that subduction of the Iapetus Oceanic plate already drove arc-related magmatism along the Avalonian margin. In the period of main arc magmatism (616–555 Ma), an accretionary complex with the Gwna Group sediments formed (by 578 Ma) on an active margin of Avalonia. Its formation likely continued to 530 Ma. Moreover, metamorphic rocks of the Blueschist unit and the Central Shear Zone were exhumed from different crustal depths in the interval 578–530 Ma. Afterwards, sediments of the New Harbour and South Stack Groups were deposited at <515 ± 13 Ma and <501 ±

10 Ma. The New Harbour and South Stack Groups were finally accreted underneath the Gwna Group at the base of the accretionary wedge. The greenschist facies metamorphism of the New Harbour Group at 474 Ma constrains its minimum depositional age. In a larger perspective, our new ages are broadly contemporaneous with the calc-alkaline continental arc magmatism in NW Wales and Central England that formed by successive eastward subduction from 711 to 474 Ma.