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## Dating the serpentinite mud production of Fantangisña seamount using calcareous nannofossils and planktonic foraminifera biostratigraphy (IODP Expedition 366).

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The Izu-Bonin Mariana (IBM) convergent margin is located in the NW Pacific Ocean (12° N to 35° N) and represents, to the best of our knowledge, the only setting where recent episodes of serpentinite mud volcanism took place. The IBM arc-system started to form around 50-52 Ma when the Pacific Plate began to subside below the Philippine Plate and the eastern Eurasian Margin. On the Mariana forearc system, which constitutes the southward region of the IBM, a high number of large serpentinite mud volcanoes formed between the trench and the Mariana volcanic arc. Their origin is linked to episodic extrusion of serpentinite mud and fluids along with materials from the upper mantle, the Philippine plate, and the subducting Pacific plate to the sea floor, through a system of forearc faults. Among them, Fantangisña seamount was drilled during IODP Expedition 366. Cored material comprises serpentinite mud and ultramafic clasts that are underlain by nannofossil-rich forearc deposits and topped by pelagic sediments.

Integrated calcareous nannofossil and planktonic foraminifera biostratigraphy was performed on Sites U1497 and U1498, which are at the top of the serpentinite seamount and on its most stable southern flank, respectively. A total of nine bioevents were recorded in this study, permitting the establishment of a valid age-depth model for Site U1498A which allows for the definition of the latest phase of activity of Fantangisña serpentinite mud volcano. In particular, the emplacement of the mud production was detected between 6.10 (Late Miocene, Messinian) to 4.20 (Early Pliocene, Zanclean). This time interval is defined by nannofossil bioevents LO *Reticulofenestra rotaria* and FO of *Discoaster asymmetricus*. Furthermore, our analyses reveal that the latest stage of the serpentinite mud activity occurred 4 Ma later than the age proposed by a previous study (10.77 Ma) and is coeval with the initiation of the rifting in the Mariana Trough recorded at 7-6 Ma.

The age depth model also shows a rapid shift in sedimentation rates (11.80 to 94.71 m/Myr) during the Middle Pleistocene, which corresponds to a change in deposition of distinct serpentinite mud units, likely associated with the regional tectonic activity (different stages of seamount accretion and subduction and/or changes in the forearc extension related to the slab rollback).