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## Serpentinite mud volcanism and exhumation of fore arc- and lower plate material in the Mariana convergent margin system (IODP Expedition 366)

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Serpentine seamounts located in the forearc region of a subduction zone setting represent an excellent natural laboratory for studying the geochemical processes acting along convergent plate margins and the associated natural hazards as well as the forearc structure and fault patterns. Active serpentinite mud volcanoes are currently restricted only to the Izu-Bonin-Mariana system, where old (presumably Cretaceous) oceanic lithosphere is subducting in the absence of an accretionary prism.

IODP Expedition 366 recovered cores from three serpentinite mud volcanoes at increasing distances from the Mariana trench (Yinazao, Fantangisña and Asùt Tesoru). Most of the material consists of serpentinite mud containing lithic clasts from the underlying forearc crust and mantle as well as from the subducting Pacific plate. A thin cover of pelagic sediments and volcanic ash deposits underlying the mud volcanoes were also recovered. Recycled materials from the subducted slab are found at all three mud volcanoes and consist of metavolcanic rocks, metamorphosed pelagic sediments including cherty limestone as well as fault rocks.

Preliminary investigation of recovered sedimentary clasts from the summit of Fantangisña Seamount revealed that they contain primary calcite veins, whereas the latest veins are composed of aragonite ( $\text{CaCO}_3$ ) and barite ( $\text{BaSO}_4$ ).

Recovered clasts from the flank consist mainly of ultramafic rocks with various degrees of serpentinization. The serpentinite veins consist of lizardite and chrysotile, which suggests rather low temperatures of serpentinization (below 200 °C). Petrological analysis of metabasalt clasts from the same drilling hole shows changes in the mineral composition within the different intervals of the core. The composition of clinopyroxene varies between aegirine-augite and omphacite, but augite is also present. The presence of phengite with Si content of 3.5-3.8 a.p.f.u. indicates minimum pressure of 0.7 GPa at ~250 °C.

Furthermore, providing a detailed characterization of the fluids composition and transport would allow the better constraining of the tectonic and metamorphic history as well as the physical properties of the subducting Pacific Plate. Obtaining data on that point is in progress and will be presented additionally.

