

Hydration in incoming plates prior to subduction: contents, perspective and road to Mantle drilling

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Crustal hydration at the mid-ocean ridge by hydrothermal circulation has been considered to be the first-order control on the degree of the oceanic plate hydration. Previous ocean drilling projects have revealed hydration processes and their extent of oceanic crust at spreading centers. Recently, hydration due to plate bending-induced normal faults (bend-fault hereafter) in incoming plate just prior to subduction has drawn considerable attention (e.g., Ranero et al., 2003 *Nature*). Geophysical data indicate that the hydration has reached to the mantle depth and causes serpentinization of peridotites (e.g., Fujie et al., 2013 *Geophys. Res. Lett.*). However, we really do not know what is the bending-induced fault zone. Two new IODP proposals on hydration in incoming plate of middle America site (Morgan et al., 2014, *Pre-876: Bend-Fault Serpentinization (BFS): Oceanic Crust and Mantle Evolution from Ridge through Trench*) and northwest pacific site (Morishita et al., 2015 *Pre-886: Bend-Fault Hydrology in the Old Incoming Plate*) have been submitted. In the presentation, I introduce the contents and perspective of the proposals. In order to comprehends understand life cycle of oceanic plate, I will also suggest future plan including mantle drilling project.

Keywords: Bending-induced normal fault in incoming plate, Subduction Zone