地殻ーマントル境界のダイナミクスと物性を明らかにするオマーン掘削プロジェクト

Oman Drilling project to reveal dynamics and petrophysical properties in the crust-mantle boundary

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The Samail Ophiolite, in Oman and the United Arab Emirates, is the largest, best-exposed section of oceanic lithosphere in the World. As for other ophiolites, the presence of continuous layers of pelagic and metalliferous sediments, submarine lavas, sheeted dikes, and cumulate gabbros overlying residual mantle peridotite is similar to crust formed at intermediate- to fast-spreading, mid-ocean ridges. The ophiolite has long been a testing ground for hypotheses about processes at spreading centers. The ICDP Oman Drilling Project is a comprehensive drilling program that will sample the whole ophiolite sequence, from crust through to upper mantle, in a series of diamond- and rotary-drilled boreholes. Data collection will include analysis of rock core, geophysical logging, fluid sampling, hydrological measurements and microbiological sampling. The Oman Drilling Project in Phase I has already been achieved in early December 2016, through April 2017. Three 400 m long cores have been obtained at the three sites from Wadi Gideah in the Wadi Tayin massif. These sites represent an intact crustal section, including Site GT1 (lower crust), GT2 (mid-crust) and GT3 (dike/gabbro transition). Fourth drill site in Phase I (Site BT1) is located just above the basal thrust of the ophiolite on the north end of Sumail massif at Wadi Mansah. In mid-July to mid-September 2017, drilling cores in Phase I will be sent to the IODP research drilling vessel *Chikyu* in Japan for core description by its dedicated core logging facilities. Following Phase I, Phase II drilling program is scheduled for autumn/winter 2017/2018. Drilling of crust-mantle boundary (namely "Moho") by two 400 m long cores is planned in the Maqsad diapir region of Samail massif. Rotary drilling is also scheduled in some sites for fluid sampling, monitoring and hydrological experiment. Moreover we plan to conduct wire-line logging of rotary-drilled borehole at crust-mantle boundary using the most advanced equipment. We will attempt core-log integration by directly comparing physical properties with the core lithology across crust-mantle boundary. These studies must advance our knowledge about dynamics and physical properties at oceanic Moho. In this presentation, we report the current status of the Oman drilling project and discuss how we can study drilling cores in order to understand the physico-chemical processes in the vicinity of the crust-mantle boundary.

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