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# The Oman Drilling Project – Overview and Initial Results

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The Oman Drilling Project (OmanDP) is a major, multidisciplinary scientific research project investigating processes preserved and occurring in the rocks of the Samail ophiolite, Oman; the largest and best subaerial exposure of ancient fast spread ocean crust and upper mantle. The major goals of OmanDP are to understand the full spectrum of processes that create and modify oceanic crust and the upper mantle, involving mass and energy transfer between mantle, the crust, the hydrosphere, the atmosphere and the biosphere over a range of temperatures from 1350 to 20°C, depths from the surface to 10 or 20 km below paleo-seafloor, and tectonic settings from spreading ridges to the deep ocean to surficial weathering to subduction zones.

The OmanDP Science Team comprises >160 scientists representing 30 countries. OmanDP closely collaborates with Sultan Qaboos University, the Oman Ministry of Regional Municipalities and Water Resources, the Public Authority for Mining, and the German University of Technology, Oman. Science operations are supported by ICDP, IODP, NASA, NSF, ERC, DCO, JAMSTEC, JSPS, SwissNSF, and DFG.

During winters 2016-17 and 2017-18, OmanDP drilled >5458 m in nine diamond-cored and six rotary-drilled boreholes. We recovered ∼3221 m of drill core at ∼100% recovery. Drilling samples critical sections from the dike-gabbro transition, the foliated and layered gabbros, and drilled the crust-mantle transition including the Samail paleo-Moho. A further diamond cored hole drilled the boundary between the ophiolite and the underlying metamorphic rocks to understand fluid mass transfer and the hydration and carbonation of the upper mantle in an ancient subduction zone. Additional drilling has developed a multi-borehole test site in a region of mantle peridotite undergoing active serpentinisation, to enable subsurface hydrogeologic, seismic, and microbiological experiments, and fluid, gas and microbial sampling. All holes have been characterized by wireline geophysical logging, and borehole testing and fluid sampling using a borehole packer system has been initiated in winter 2018-19. All the diamond drill cores were shipped to the DV Chikyu and during two ChikyuOman campaigns, all cores have been described to better than scientific ocean drilling standard including complete XrayCT and infrared scanning.

This presentation will provide an overview, including initial findings of the OmanDP and will introduce plans for future experiments.