

Overview of Hole CM2 in the Oman Drilling Project Phase 2: the Moho transition zone to the uppermost mantle

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Hole CM2B was drilled by the Oman Drilling Project (OmDP) into Wadi Nassif of the Samail ophiolite, Oman. OmDP is an international collaboration supported by the International Continental Scientific Drilling Program, the Deep Carbon Observatory, NSF, IODP, JAMSTEC, and the European, Japanese, German and Swiss Science Foundations, with in-kind support in Oman from the Ministry of Regional Municipalities and Water Resources, Public Authority of Mining, and Sultan Qaboos University. Hole CM2B was diamond cored in December 2017 to January 2018 to a total depth of 300 m. The outer surfaces of the cores were imaged and described on site before being curated, boxed and shipped to the IODP drill ship Chikyu, where they will undergo comprehensive visual and instrumental analysis.

Hole CM2B recovered predominantly dunites, gabbros and harzburgites and has been sub-divided into two sections: the Moho transition zone (MTZ: mostly dunites with some gabbroic layers and minor harzburgite layers) and the mantle. The MTZ occurs from 0 to ca. 140 m and the mantle (mostly harzburgites) is from ca. 140 to 300 m.

The dunites were logged as moderately to intensely serpentinized cores, although coarse granular textures were still observed. A few chromite layers occur at around 115 m. Gabbroic layers commonly have hydrous minerals. The first harzburgite layer was logged at ca. 120m. Harzburgites in the mantle section were logged as moderately to intensely serpentinized cores with locally less serpentinized conditions. They show dominantly coarse granular textures and foliations defined by mineral shapes can be observed.

Keywords: Oman , Mantle, Moho Transition Zone, dunite, gabbro, peridotite