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Seabed rock drilling: previous scientific results and future applications

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A number of remotely-operated seabed rock drills have been developed that allow short cores to be drilled in hard seafloor substrates, using a conventional research vessel rather than a specialist drill ship. Such tools offer an alternative mode of ocean drilling which complements that conducted using JOIDES Resolution and Chikyu, and offer enormous potential scientific opportunities if employed as mission-specific platform operations under the IODP/post-IODP umbrella. Seabed drills have the potential to penetrate 1-100m below seafloor and have previously been operated in water depths in excess of 5000m. They are ideal for exploring horizontal variability (in the x-y dimension) and perfectly complement deep drilling platforms, which optimally investigate the z dimension. Oriented coring is possible with some tools, opening many additional opportunities for innovative science. In this contribution we review the operations and, in particular, scientific results of previous seabed drilling expeditions with a number of different drills, with the aim of informing the ocean drilling community of the opportunities and future potential of such devices for science up to and post-2013.