

**First deployment of a multi-barrel sea floor drill rig on the Antarctic continental shelf:  
experiences from the MARUM-MeBo70 on Polarstern-Expedition PS104**

Freudenthal, T.<sup>1</sup>, Gohl, K.<sup>2</sup>, Klages, J.<sup>2</sup>, Hillenbrand, C.-D.<sup>3</sup>, Bickert, T.<sup>1</sup>, Bohaty, S.<sup>4</sup>, Ehrmann, W.<sup>5</sup>, Esper, O.<sup>2</sup>, Frederichs, T.<sup>1</sup>, Gebhardt, C.<sup>2</sup>, Kuhn, G.<sup>2</sup>, Larter, R.<sup>3</sup>, Pälike, H.<sup>1</sup>, Ronge, T.<sup>2</sup>, Pereira, P.S.<sup>6</sup>, Smith, J.<sup>3</sup>, Uenzelmann-Neben, G.<sup>2</sup>, van de Flierdt, T.<sup>6</sup>

<sup>1</sup>MARUM, University of Bremen, Bremen, Germany, <sup>2</sup>AWI, Bremerhaven, Germany, <sup>3</sup>BAS, Cambridge, United Kingdom, <sup>4</sup>University of Southampton, Southampton, United Kingdom, <sup>5</sup>University of Leipzig, Leipzig, Germany, <sup>6</sup>Imperial College London, London, United Kingdom

Content

The MARUM-MeBo (abbreviation for Meeresboden-Bohrgerät, the German expression for seafloor drill rig) is a robotic drilling system that is developed since 2004 at the MARUM Center for Marine Environmental Sciences at the University of Bremen in close cooperation with Bauer Maschinen GmbH and other industry partners. The MARUM-MeBo drill rigs can be deployed from multipurpose research vessel like, RV MARIA S. MERIAN, RV METEOR, RV SONNE and RV POLARSTERN and are used for getting long cores both in soft sediments as well as hard rocks in the deep sea.

The first generation drill rig, the MARUM-MeBo70 is dedicated for drilling depths of more than 70 m (Freudenthal and Wefer, 2013). Between 2005 and 2017 it was deployed on 18 research expeditions and drilled more than 3 km into different types of lithologies including carbonate and crystalline rocks, gas hydrates, sands and gravel, glacial till and hemipelagic mud with an average recovery rate of 67 %. In February and March 2017 the MeBo70 was used on the West Antarctic continental shelf in the Amundsen Sea Embayment for the first time. The goal of the deployment on RV Polarstern expedition PS104 was to recover a series of sediment cores from different ages that will provide material for investigating the glaciation history of this area known as the most dynamic drainage area of the West Antarctic Ice Sheet. In this presentation we will focus on the operational experiences of this first deployment of a multi-barrel sea floor drill rig on the Antarctic continental shelf.

References: Freudenthal, T and Wefer, G (2013) Drilling cores on the sea floor with the remote-controlled sea floor drilling rig MeBo. *Geoscientific Instrumentation, Methods and Data Systems*, 2(2). 329-337.  
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