Geophysical Research Abstracts
Vol. 20, EGU2018-9231-1, 2018
EGU General Assembly 2018

Preliminary results from IODP Expedition 381: Development of the active Corinth Rift, Greece

Lisa McNeill (1), Donna Shillington (2), Gareth Carter (3), Jeremy Everest (3), Sophie Green (3), and Expedition 381 Scientists (3)

(1) University of Southampton, Ocean and Earth Science, Southampton SO14 3ZH, United Kingdom (lcmn@noc.soton.ac.uk), (2) Lamont-Doherty Earth Observatory, Columbia University, Palisades, NY 10964, USA, (3) ECORD Science Operator, British Geological Survey, Lyell Centre, Edinburgh, EH14 4AP, United Kingdom

International Ocean Discovery Program Expedition 381 was conducted offshore in October-December, 2017 and onshore in Bremen, Germany in February, 2018. The expedition was operated as a Mission Specific Platform onboard the industry drilling vessel Fugro Synergy. The primary objectives of the expedition were to target a very recently forming active continental rift zone (the Corinth Rift, Central Greece) in order to a) obtain high spatial and temporal resolution records of the dynamics of the rifting process and its evolution, b) to study the interaction of climate and tectonics on sedimentary and surface processes in a rift zone, and c) to improve regional hazard assessments in one of the most seismically active regions of Europe. The Corinth Rift has been active < 5 Myr and has very high rates of extension, therefore it is unique in offering a chance to capture the detail of how rift faults and sedimentary basins develop without the complications of later over printing. The rift basin is periodically closed from marine conditions as sea level fluctuates and as the rift moves vertically due to tectonics, therefore a range of paleoenvironmental conditions are encountered, impacting microfossil assemblages and pore-water geochemistry as well as depositional processes. A dense network of interpreted marine seismic data and well studied onshore syn-rift deposits provide the context for drilling and the potential to extend the drilling results around the entire rift system. The expedition drilled, cored and logged at 3 sites along the rift, sampling the syn-rift sedimentary deposits and collectively targeting both the temporal and spatial variation of rift processes. In total 1905 m of section were cored with 85% average recovery (1645 m recovered). At two sites a suite of logging data was collected. Initial results from the offshore phase indicate that the cores hold an exciting and detailed record of how tectonics, climate and paleoenvironment have affected syn-rift basinal deposition. In addition to the core and log data providing the ability to address the primary expedition tectonic and sedimentary objectives, the data hold an unusual record of changing conditions within a partially-closed basin. The new results on how the earliest phase of rifting takes place and impacts the paleoenvironment are expected to make significant advances that can be used to understand other active and ancient rifts around the world. Preliminary results from the expedition will be presented along with an outline of future research plans