Week 3 Drilling and Scientific Report for IODP Expedition 381
Corinth Active Rift Development 2017

6th Nov 00:00 – 12th Nov 24:00 EET Eastern European Time (UTC+2)

1. Operations

Rotary coring continued throughout the 6th – 9th November, with short delays for equipment maintenance and weather (thunderstorms). On the 9th, a slow in penetration rate was noted due to coring tool and formation difficulties.

Coring continued through the morning of the 10th, and at 13:35 the final core for this hole was on deck, giving a total penetration of 610.43 mbsf. Pipe was then tripped to 300 mbsf in preparation for the first phase of downhole logging. The first tool deployed was the EM51 and logging of the lower half of the hole began around midnight.

Logging operations were attempted throughout the 11th. A blockage in the hole limited the logs that were run. Following logging activities, the vessel tripped pipe to seabed, bumped over 20 m to start coring operations at M0078B, to gain overlapping intervals in the shallow stratigraphy.

At midnight the vessel was settling on site at M0078B. The first core was recovered at 02:00 and coring continued throughout the day with good recovery, until 16:40 when coring operations ended before tripping pipe and departing site for the port call on the 13th November.

2. Hole summary

Hole	M0078A	M0078B
Latitude	38° 8' 41.802" N	38° 8' 41.144" N
Longitude	22° 45' 30.251" E	22° 45' 30.242" E
First core	143R	1P
Last core	176R	15P
Cores recovered	33	15
Drilled length (Coring)	238.35 m	55.85 m
Drilled Length (Open Hole)	0	0
Recovered length	213.57 m	52.17 m
Depth in hole	610.43 mbsf	55.85 m
Hole recovery	88.6%	93.4%

3. Science

With coring at Hole M0078A completed to a depth of 610 mbsf, the shipboard science party have been focusing on analysis of the deepest section at the site. This section sampled ~250 m of Seismic Unit 1, the older syn-rift unit targeted by this site. Due to slower operations and considering future sites, the final depth of this Hole/Site was reduced slightly.

Based on through-liner descriptions and core-catcher materials, the core in the lower unit appears to be predominantly fine grained with a high proportion of carbonate. This unit includes both greenish-gray mud that includes finely laminated intervals and lighter coloured beige mud without laminations. Micropaleontological characterization indicates that the unit includes some intervals with diatoms that appear to indicate a freshwater lacustrine environment.

Cores from this section of M0078A exhibit systematically higher MSCL density values, reflecting the increasing induration with depth. Likewise, handheld penetrometer measurements taken every 20 m also yield high values within this part of the section. The magnetic susceptibility, gamma ray and density values appear to correlate with the two different recognised lithologies (marked by colour differences).

Pore-water geochemistry of the cores recovered from the deepest section of M0078A reveals several interesting deviations from patterns expected for typical marine sediments.

A 2-day logging plan was prepared to focus on lithological and physical variations of the sediments downhole, including boundaries between marine and non-marine intervals and between the two primary stratigraphic units, and velocity data to enable correlation between cores and seismic data. Unfortunately due to difficulties with logging, data status is uncertain.

A second hole, Hole M0078B, was cored to 56 mbsf in order to complete and increase recovery of the youngest part of the sedimentary section, a section of interest to many in the scientific party.

The onboard scientist party held their second informal science meeting on 10 November to compare and synthesize results from the different disciplines, and sent an update to the rest of the Expedition 381 science party based onshore. The Co-Chief Scientists also gave a talk to the ship's crew reviewing coring results from Site M0078.

4. HSE Activity

N/A

5. Outreach Activity

Three blogs were posted on the Expedition blog-site between the 6th November and 12th November. During this period, it received 2633 views, 521 visitors, and is being followed in 30 countries.

Daily reports detailing coring progress and a brief scientific summary are also released onto the ECORD Expedition 381 webpage.

6. Figures

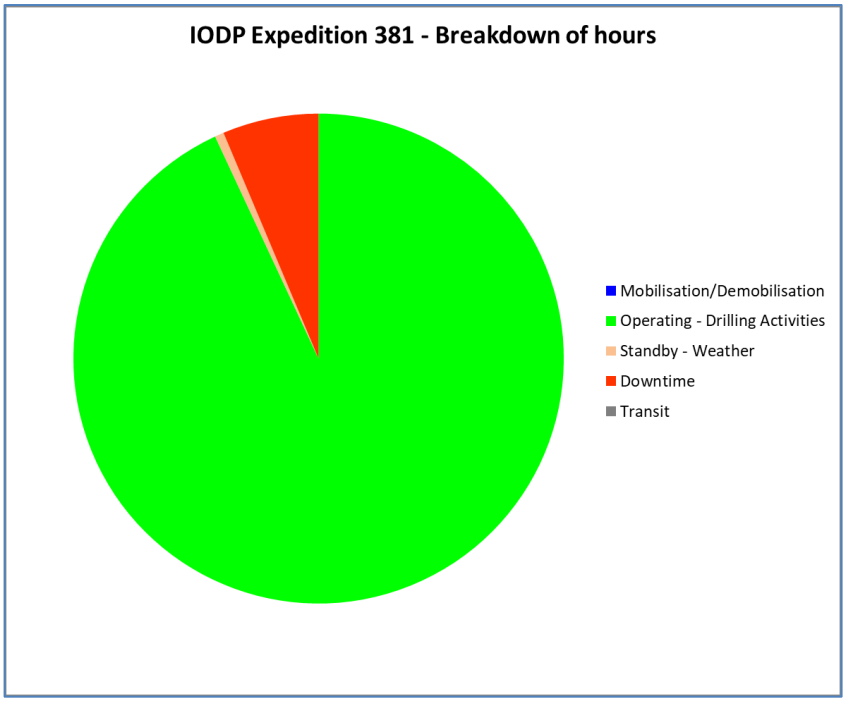

Figure 1: Breakdown of hours from 00:00 November 6th to 24:00 November 12th 2017.

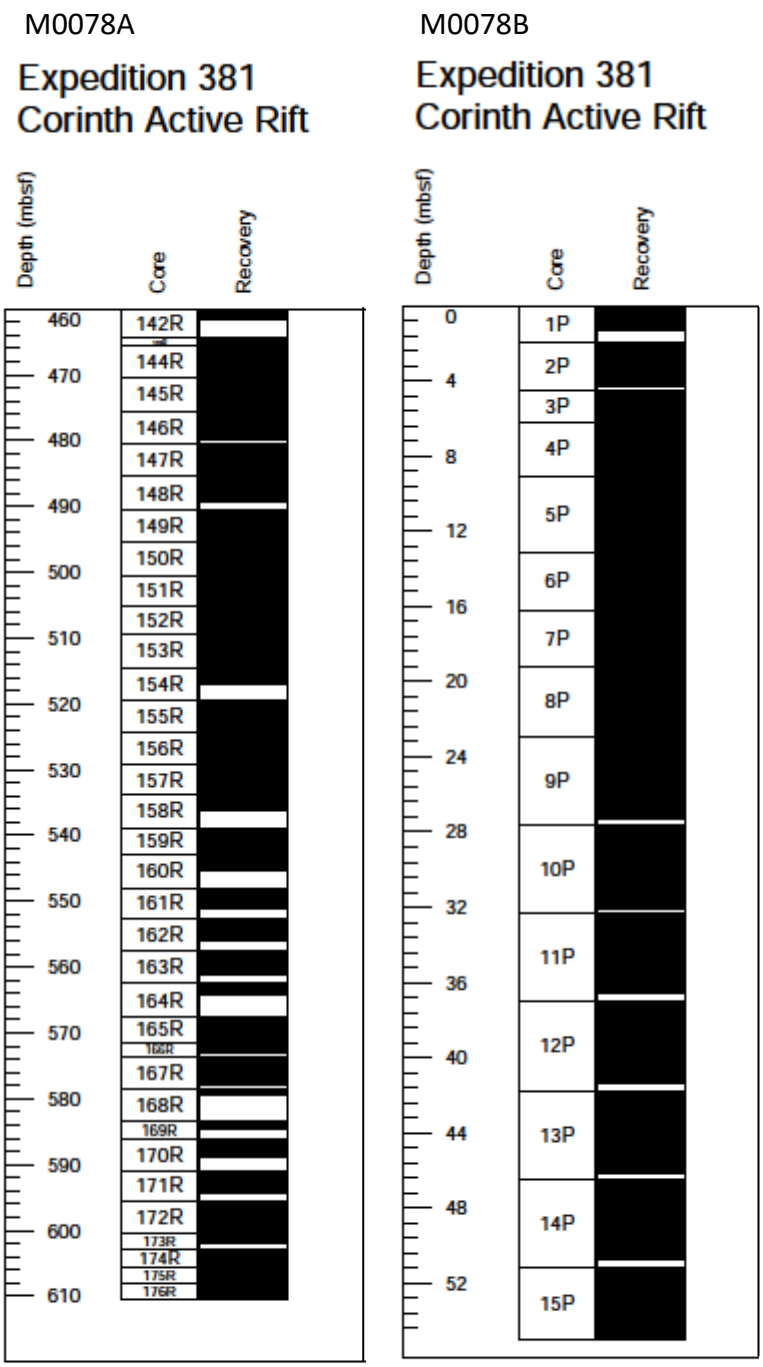

Figure 2: Core recovery for Week 3 (6th Nov to 12th Nov 2017).

7. Photographs

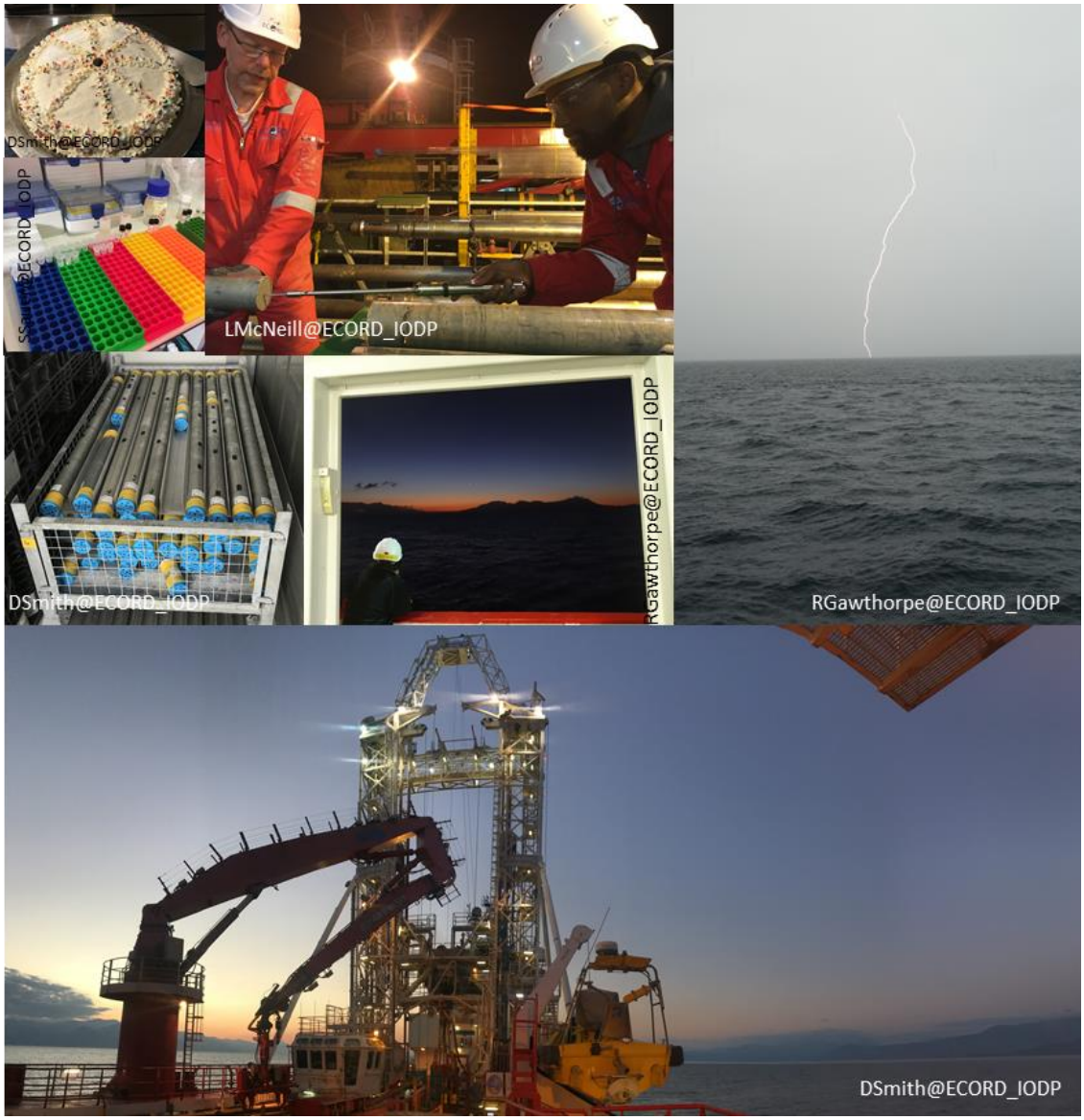

Figure 3: Photos from Week 3 of Expedition 381.