

IODP Expedition 353: Indian Monsoon Rainfall

Week 3 Report (14–20 December 2014)

Operations

After the last core of Hole U1443C was recovered (30F), we started recovering the drill string and the bit cleared the seafloor at 1325 h on 14 December. The vessel was then offset 20 m to the south and Hole U1443D was spudded at 1455 h using the HLAPC in an attempt to recover a complete mudline section. Cores U1443D-1F and 2F were taken to 8.4 mbsf. After retrieving Core U1443D-2F, the drill string was pulled above seafloor and the beacon was recovered at 1850 h on 14 December. The crew continued to trip the drill string and the bit cleared the rig floor at 0030 h on 15 December, ending Site U1443.

The *JOIDES Resolution* began the transit to Visakhapatnam, India, to receive clearance to operate within the exclusive economic zone (EEZ) of India. On 17 December, the vessel paused during the transit to test the new tensiometer on the subsea camera system winch. Following the test, the vessel resumed transit and arrived ~24 nmi away from Visakhapatnam at 1048 h on 18 December. The ship is currently on standby waiting for the necessary clearance permits to occupy our remaining primary Expedition 353 drill sites that are all in Indian waters.

Science Results

The science lab teams spent most of Week 3 writing and revising the Site U1443 reports.

The sedimentology team identified four distinct Lithological Units (I–IV) based on visual observations, smear slides, and physical properties data (magnetic susceptibility, reflectance, etc.). These units have been correlated across each of the four holes. Core description files containing the primary data for each hole were inspected to ensure consistent terminology and characterizations (color, abundance, etc.) between shifts and holes. The lithological framework was disseminated to and discussed with the other groups for consistency in age-depth relationships across all the holes at Site U1443.

Biostratigraphic data obtained from Holes U1443A and U1443B were interpreted and plotted. The resulting age model highlighted variations in sedimentation rates over time, ranging from 0.36–1.17 cm/ky. A hiatus is present from the latest Oligocene to the latest Paleocene. Biostratigraphic datums were compared and plotted together with paleomagnetic reversal datums from Hole U1443A. Age estimates for magnetostratigraphic boundaries are available from 0–69 m CSF-A (Pleistocene to late Miocene) and from 137–199 m CSF-A (early Miocene to Oligocene) and show very good agreement with the biostratigraphic results.

Although the age model obtained for Site U1443 agrees with that calculated for Ocean Drilling Program (ODP) Site 758, there are some differences between the two: the nannofossil biostratigraphy has been significantly refined (43 bioevents identified for Site U1443 vs. 20 bioevents for Site 758); Cretaceous planktonic foraminifers recovered at Site U1443 are less well preserved and the assemblages less diverse than those described in Site 758 sediments; finally, at Site U1443 diatoms are scarce in upper Pliocene to Cretaceous sediments, whereas in Site 758 better preserved diatom assemblages were found that allowed age-assignment for most of the sediments.

Additional carbonate measurements were conducted on Hole U1443C samples and confirm the presence of a strong decrease in carbonate from >80 wt% to around 60 wt% for a short interval of the Miocene. The organic carbon content is so low that the usual method of determination by subtracting the carbonate carbon from the total carbon values produced unreliable results. Therefore, selected samples were measured after carbonate removal by addition of HCl. These data reveal organic carbon content decreases from 0.3 wt% to below 0.1 wt% in the uppermost 50 m CSF-A in Hole U1443A and remains below 0.1 wt% for the sampled sediment section.

All cores from Site U1443 were measured using the cryogenic magnetometer, which enabled the construction of a paleomagnetic stratigraphy. A set of rock magnetic measurements was completed on the discrete samples gathered from Hole U1443A. The discrete-sample program on the pass-through magnetometer was tested in preparation for the upcoming sites.

The physical properties scientists completed moisture and density (MAD) sampling and analysis for Hole U1443C.

The stratigraphic correlators used the magnetic susceptibility (MS), natural gamma radiation (NGR), and reflectance spectroscopy b* data from Site U1443 to construct a complete stratigraphic splice to ~178 m CCSF-A.

Education and Outreach Activities

The education and outreach team held seven videoconferences that reached 340 students across the United States and Germany. One of these video broadcasts was held during a poster session at the AGU Fall Meeting in San Francisco. Expedition updates are being posted on Facebook (<https://www.facebook.com/joidesresolution>), Twitter (<https://twitter.com/TheJR>), Instagram (http://instagram.com/joides_resolution), and on the <http://joidesresolution.org/> blogs.

Technical Support and HSE Activities

The technical staff spent the past week helping to process the final Site U1443 cores, taking inventory of laboratory supplies, and troubleshooting software issues.

Laboratories:

- The processing and sampling of cores from Site U1443 was completed.
- The staff is engaged in counting laboratory supplies to update the inventory list.
- The technical staff is working through the procedure for sending the DESClogik data export and core images to shore for processing if the Publications Specialist departs the ship.

Application Developers:

- New LIMS database triggers were deployed that corrected issues with core lengths not automatically being calculated.
- New magnetic susceptibility logger (MSL) software on the Special Task Multisensor Logger (STMSL) was deployed that implements the use of a correction factor for the 678 Hz loop. Numerous tests were made by running play cores and standards through the track to test the behavior of the software and verify that the correction factor was applied correctly.
- Worked with the stratigraphic correlators and Co-chief Scientists to resolve issues related to the splice-interval table for Site U1443.

Marine Computer Specialist:

- A script for transferring subsea camera system data was deployed on the DVR in the Dynamic Positioning (DP) office.

Miscellaneous:

- The installation of the A/C units on Bridge Deck was completed.

HSE activities:

- A Fire and Boat Drill was held on 19 December.
- The eyewash stations and safety showers were tested.