IODP Expedition 359: Maldives Monsoon and Sea Level

Week 3 Report (12–18 October 2015)

Operations

The ship continued to make good time in transit to Malé, Republic of Maldives. The ship crossed over the Equator, entering into the Northern Hemisphere at 1813 h on 15 October 2015. Clocks were changed twice, with the last change taking place at 0200 h on 16 October, placing the ship on Maldives time (UTC + 5 h, or 10 h ahead of College Station) for the remainder of the expedition. The *JOIDES Resolution* arrived at the Malé pilot station at 0630 h Sunday, 18 October, completing the 3594 nmi transit from Darwin, Australia, at an average speed of 11.6 kt. The harbor pilot boarded the ship at 1030 h, and the ship proceeded to anchorage. By 1142 h the ship was securely anchored. Maldivian Customs and Immigration personnel cleared the ship by 1300 h and there was a brief visit by the Maldivian Coast Guard. During the Malé stopover the ship was cleared into Maldivian waters to conduct scientific coring operations over the next six-week period. In addition, the Minister of Fisheries and Agriculture from the Republic of Maldives, accompanied by an entourage of local news media personnel, took a brief tour of the laboratory facilities and held a press conference with the expedition Co-Chief Scientists. A limited amount of fresh food and supplies was brought aboard, including some spare parts. Finally, two coastal observers from the Republic of Maldives Ministry of Defense joined the ship and will sail with us until the end of coring operations. At 2048 h on the same day, the harbor pilot arrived onboard and we proceeded out of the Malé harbor. After discharging the pilot at 2142 h, we began our sea passage to the first site of the expedition, Site U1465 (MAL-01A). The ship will return to Malé on 28 November to clear out of Republic of Maldives waters and disembark the two observers. As of midnight Sunday, the vessel had transited 24 nmi at an average speed of 10.43 kt. There were 41 nmi remaining to Site U1465.

Science Results

Our science activities for this week consisted of refining laboratory procedures and hands-on training exercises with the laboratory instrumentation and applications, as well as preparations for coring activities. The Co-Chief Scientists presented the scientific objectives for Sites U1465, U1466, and U1467 (*Scientific Prospectus* sites MAL-01A, 02A, and 03A, respectively) to the science party, and presented the overall scientific objectives of Expedition 359 to the ship's crew and IODP technicians. In addition, the Co-Chief Scientists, Logging Engineer, Logging Scientists, and key IODP staff and ship's crew met to review the coring and logging plan for Sites U1465 and U1466.

In further detail, the sedimentology team developed DRAWVCD forms for core description, and smear slide, thin section and grain size description forms. Terminology for carbonate sedimentology in DESClogik was adapted to meet the sediment types that we expect to recover during the upcoming drilling campaign. Smear slide and thin section training sessions completed the preparation program. The paleontology team refined their procedures and became further acquainted with shipboard applications and database and curatorial systems. Activities included reviewing relevant literature and training with core samples that are available in the ship core repository. They practiced imaging with the light and scanning electron microscopes. The calcareous nannofossil specialists also made use of the transit across the Indian Ocean to collect a series of surface water samples to characterize the modern assemblages of coccolithophores in the region. This opportunistic study has started to reveal interesting preliminary results on the biogeography of coccolithophores in the eastern Indian Ocean.

The geochemists continued to refine analytical protocols and procedures. They prepared an oyster shell as an internal shipboard standard for ICP analysis, and a short ICP sequence was run to test the calibrations, reproducibility, and data reduction protocols.

Paleomagnetists tested the measurement procedure with the SMR 2G Cryogenic Magnetometer using different demagnetizing sequences to optimize the core flow. Physical properties specialists and logging scientists performed test runs to train on the ship instrumentation and software.

During our stop in Malé, the Co-Chief Scientists gave a tour of the ship laboratories for the Minister of Fisheries and Agriculture of the Maldives and local media, which was followed by a press conference.

Education and Outreach

We posted daily updates and photos on our social media outlets (Facebook [https://www.facebook.com/joidesresolution], Twitter [https://twitter.com/TheJR], and Instagram [http://instagram.com/joides_resolution]) and in blogs on the *JOIDES Resolution* website (http://joidesresolution.org/) and in personal blogs from members of the science party. We held a number of live ship-to-shore videoconferences with schools in Belgium, France, Morocco, and the United States.

Technical Support and HSE Activities

Technical staff continued to provide guidance and assistance to the scientific party as they become familiar with laboratory equipment, software, and procedures, and prepare the laboratories for coring activities.

Laboratories

- Surface water samples collected daily for analysis of plankton.
- Repairs to floors in the Splitting Room and Core Laboratory are complete.
- Underway Laboratory
    - Bathy 2010: Began collecting bathymetry data starting from the edge of the Australian continental shelf until arrival in Malé on 18 October.
    - Magnetometer: Deployed on 11 October after passing Christmas Island, retrieved prior to arrival in Malé on 16 October.
- Source Rock Analyzer (SRA)
    - The SRA was experiencing problems on Expedition 356 and a new IR Chassis was ordered to fix the issue. The new IR Chassis was installed. The instrument was run successfully.
- Natural Gamma Ray (NGR)
    - The model 758 octal logic unit for the active shielding on the NGR failed towards the end of Expedition 356. It was repaired by the Electronics Technicians with components available on the ship and functioned acceptably until the end of the cruise. A model 757 unit was borrowed for Expedition 359 and put in place of the model 758 unit to allow the unit to be repaired with new components. Tests and calibrations indicate the instrument is functioning normally.

HSE Activities

- Protected Species Observer (PSO) training provided for JRSO staff in anticipation of vertical seismic profile (VSP) operations.
- The eyewash stations and safety showers were tested.