IODP Expedition 346: Asian Monsoon

Week 1 Report (29 July–3 August 2013)

Operations

Asian Monsoon Expedition 346 officially began with the first line ashore the Valdez Container Terminal in Valdez, Alaska, at 1120 h on 29 July. The first week of Expedition 346 consisted almost entirely of port call activities. This was the first port of call in Valdez and operations proceeded very smoothly. In spite of the remote location and logistical challenges the vessel was resupplied and departed one day earlier than scheduled.

The IODP-USIO crew and the expedition chief scientists arrived at the ship in Valdez on 29 July after an eight hour bus ride from Anchorage. The ship's (Siem Offshore) crew arrived the following day. On day three of the port call, the Expedition 346 science party moved aboard, completing the sailing compliment for the expedition.

Port call activities included the routine resupply of consumables, and the offloading of the previous expedition's (Southern Alaska Margin) freight. All Expedition 341 core samples were offloaded to refrigerated containers and dispatched to the IODP Core Repository at Texas A&M University, in College Station, Texas. All microbiological samples were offloaded and dispatched to the Expedition 341 scientist's home institutions via courier. Three empty core liner boxes were also offloaded for disposal. In addition, 2441 sacks/122.1 short tons of barite, 3920 sacks/196.0 short tons of sea gel, and 1872 sacks/88.0 short tons of cement were loaded. Bunkering totals included the loading of 115,015 gallons marine gas oil via trucks from a local Valdez refinery.

The ship's crew's activities included the receipt and installation of a replacement standpipe valve including the required X-ray certification of the high pressure welds by a technician out of Anchorage. In addition, a Schlumberger mechanic came to assist the logging engineer with repairs to the securing system holding the logging winch/transmission in place.

With all port call activities completed, the *JOIDES Resolution* departed for Site U1422 (JB-3) with the last line away at 0718 h on 2 August. Departure was 28 hours ahead of the scheduled departure time. The transit during the first two days was uneventful with the vessel making an average speed of ~9.1 knots. The estimated day of arrival at Site U1422 (JB-3) is 17 August.

Science Results

The overall goal of IODP Expedition 346 is to core and log seven sites on a latitudinal transect in the Sea of Japan/East Sea and one site in the northern East China Sea to test the hypothesis that Pliocene–Pleistocene uplift of the Himalaya and Tibetan Plateau and the consequent emergence of the two discrete modes of Westerly Jet circulation caused the amplification of millennial-scale variability of the East Asian monsoon and provided teleconnection mechanism(s) for Dansgaard–Oeschger cycles. The research is oriented toward exploring the relationships between atmospheric processes (e.g., positioning of Westerly Jet circulation), rainfall (e.g., Yangtze River

discharge), and oceanic processes (e.g., surface water circulation into and out of the Sea of Japan/East Sea and deepwater convection within the sea).

Specific scientific objectives of Expedition 346 include:

1. Addressing the timing of onset of orbital- and millennial-scale variability of the East Asian Summer Monsoon (EASM) and the East Asian Winter Monsoon (EAWM) and their relation with variability of Westerly Jet circulation;

2. Reconstructing orbital- and millennial-scale changes in surface and deepwater circulation and surface productivity in the Sea of Japan/East Sea during at least the last 5 m.y.;

3. Reconstructing the history of the Yangtze River discharge using cores from the northern end of the East China Sea as it reflects variation and evolution in EASM and exert an impact on the paleoceanography of the Sea of Japan/East Sea; and

4. Examining the interrelationship among EASM, EAWM, the nature and intensity of the influx through the Tsushima Strait, the intensity of winter cooling, surface productivity, ventilation, and the bottom water oxygenation in the Sea of Japan/East Sea and their changes during the last 5 m.y.

During the first week of the expedition, Expedition 346 scientists started to become familiarized with the ship's laboratories, core flow, sampling, core curation, and publication obligations and procedures used on the ship. Scientists and new USIO personnel received safety training and safety regulations by the captain and key crew members of the *JOIDES Resolution.* The sedimentology and micropaleontology teams received training on the core description application. The scientific party started to converge on their laboratory procedures and the sampling plan for shipboard analyses. They also started to work on the methods sections of the expedition reports.

Technical Support and HSE Activities

The following technical support activities took place:

Logistics:

- Technical staff cross-over completed.
- All science logistic activities were completed.

Laboratory:

- All Tracks systems were tested and found operational except for the SRM issue with the over torque error.
- Section-half image logger (SHIL): Installed new camera support plates. Investigated issues with VCD printing reported last expedition and confirmed upgrades made remotely from shore worked. No additional changes made.

- Section-half multi-sensor logger (SHMSL): Software maintenance completed and testing in progress.
- Whole-round multi-sensor logger (WRMSL): Installation of new “top-of-core” switches in progress.
- Superconducting Rock Magnetometer (SRM): Replaces Galil control board in PC and over torqueing issues resolved.
- Towed magnetometer deployed after crossing the Aleutian trench.
- Collecting bathymetric data.
- Training new staff.

Other:

- All equipment and supplies secured for possible heavy seas during transit.
- Held meeting with ship’s crew regarding upcoming maintenance projects for tie-up and dry dock periods in the Philippines.
- Science party personal computers setup to work in shipboard computing environment.

The following HSE activities took place:

- All hands completed the required IODP and ship’s crew introduction and safety meetings.
- Pre-expedition safety survey in progress.