

## **IODP Expedition 379: Amundsen Sea West Antarctic Ice Sheet History**

### **Week 2 Report (21–26 January 2019)**

The second week of the IODP Amundsen Sea West Antarctic Ice Sheet History Expedition (379) consisted of the final 3 d of port and the first 3 d of transit to the Amundsen Sea. Our primary activities included conducting initial ship/laboratory safety orientations as well as scientific preparations by scientists and IODP JRSO staff. All times in this report are in ship local time (UTC – 3 h).

#### **Operations**

This week started with continued port call activities at the Prat Terminal, Punta Arenas, Chile. On January 21, other than securing equipment for departure, we were waiting for the arrival of our additional backup satellite communications systems (required to maintain essential communications), a replacement starter motor for one of the life boats, a backup wireline logging tool (VSI), and heaters for the life raft release system (required for us to sail). In addition, the Captain was evaluating the weather to determine the optimum timing and route for departing Punta Arenas.

The backup wireline logging tool (VSI) and the essential backup satellite communications systems were received on 22 January. Installation of the backup communications systems began immediately, while waiting for the heaters for the life raft release system to arrive the following day.

At 0730 h on 23 January, we departed the dock and moved offshore to anchorage to make way for the RVIB *Nathaniel B. Palmer*. While at anchorage, we received the last remaining supplies necessary to sail, were cleared by immigration, and departed for Amundsen Sea at 1418 h on 23 January. The total transit from Punta Arenas to our first site was estimated at just over 1802 nmi. Due to significant weather and seas to the west, we took the eastern route through the Strait of Magellan. The pilot departed the ship at 2024 h on 23 January, and shortly after we exited the Strait of Magellan into the South Atlantic. Late in the day of 24 January, we departed the Atlantic Ocean via the Le Maire Strait (the passage between the Argentine portion of Tierra del Fuego and Isla de los Estados), entered the Southern Ocean, and started heading southwest toward the Amundsen Sea. As of 2400 h on 26 January, we had completed 736 nmi of our transit to proposed Site ASRE-09A with 1066 nmi remaining.

## **Science Results**

This week the science party participated in (1) the required ship/laboratory safety orientations; (2) discussions of the primary expedition science objectives as well as those of each individual scientist; (3) laboratory team meetings with IODP JRSO staff members as well as with the Co-Chief Scientists, Curator, and Expedition Project Manager; (4) introductions to drilling and coring operations, downhole measurements, core description, microscope and digital imaging, core curation, the new core X-ray imaging system and processing software, and planned expedition outreach; and (5) a series of science seminars covering a variety of topics central to our primary science objectives.

## **Outreach**

The two Expedition 379 Outreach Officers boarded the ship with the science party. Outreach is up and running, trying to accomplish as much as possible before the unexpected loss of internet capabilities that will occur during the transit to our drilling area. We were informed of the loss of our routine satellite communications a few days before boarding the ship in Punta Arenas. The backup communications systems will not allow for the many planned interactive ship-to-shore events that formed part of our outreach plans. We are refocusing our projects so that they will not require this connectivity.

We have talked to staff onshore and have developed a solid plan for how to spend the time without internet access, including creating materials to be distributed during that time and after the cruise. However, this week we did have two live interactive events, one with third grade students from the Acera School (Boston, Massachusetts, USA) and another with fifth graders from the West Orange School (West Orange, New Jersey, USA). We are also making plans with others groups on shore for days we will have internet connectivity on our transit back to Punta Arenas at the end of the cruise. Unfortunately, we had to cancel all the other scheduled events while in the Amundsen Sea. These groups were sent a letter with links to a YouTube site that will include the trailer that is being made on board, as well as links to other relevant materials for use. Many of the groups are rescheduling their live events for the upcoming Iceberg Alley Expedition (382).

The outgoing audio is not working properly on either of the Bluetooth headsets for the interactive events; we are investigating possible solutions. Three new Expedition 379 comics were completed, for a total of eight posted or scheduled for posting. In addition, we are drafting an article about a scientist. Both Outreach Officers have been touring the ship and the laboratories, getting to know places and processes, training on safety procedures, and attending lectures and discussions.

Co-Chief Scientist Julia Wellner was interviewed by the BBC as well as appearing in her local university's research news

(<https://cloudapps.uh.edu/sendit/w/L2763wsy6CLERBeHfoALvemg/YnMQUW1VLUcjNrID5m0zPA/TmQBedUuqXHCemFIYXYE763A>). A brief story about Expedition 379 scientist Margot Courtillat was reported in a French newspaper (<https://www.le-journal-catalan.com/une-doctorante-de-lupvd-en-mission-oceanographique-en-antarctique/64645>).

## **Technical Support and HSE Activities**

Staff continued introducing the science party to their laboratories, preparing for coring operations, and completing outstanding maintenance and upgrades projects.

### *Logistics Activities*

- Cold weather gear was distributed to staff.
- Staff completed physical counts of supplies and updated the AMS inventory accordingly.
- A 3D printer was installed in the logistics shop.

### *Underway Activities*

- We started collecting bathymetric and magnetic data after entering international waters.
- We had issues the level wind tracking related to the fleet arm sensor. Once we are in better seas we will be able to complete troubleshooting this issue.
- The navigation program on the WINFROG-1 computer will not permit data collection due to an unknown file error. We switched to WINFROG-2 without issue and will troubleshoot at a later time.

### *Laboratory Activities*

- X-Ray Imaging
  - System aligned and secured to bench.
  - Area radiation monitors installed and tested.
  - X-ray safety signage installed.
  - Applied thermal compound between X-ray housing and the water jacket to improve heat dissipation.
  - Completed a full radiation survey with the hand Fluke monitors (maximum readings were below 30  $\mu$ rad/h).
  - Developed image collection and calibration code in LabVIEW. Tests have started comparing images acquired with LabVIEW vs. Sherlock to see if there are any issues with post data processing. So far it looks possible to automate image collection before we arrive on site.

- Velocity
  - Testing code changes on the laser displacement transducer to remove glitches seen during port call measurements.
  - Data collection per the testing protocol provided has started.
- Microscopes: Found a workaround regarding problems with the compatibility of the Spot microscope cameras with the Windows 10 operating system.
- SEM: The previously reported startup issue was resolved.
- NGR: Unable to find the reason for issues reported with scanning core section labels. All tests successful so far but will continue to watch for problems.

#### *Application Support Activities*

- L2E and SEM Uploader: started work on the Java 11 update.
- X-Ray Image Post-Processing Software: Archived in Subversion: C:\develop\wapps\Tools\xrayImgProcessing
- Tomcat 9 configuration and Java 11 installation. The process for upgrading to Java 11 will take several weeks and will not be installed during expedition. Work will be done in test environment aboard the JR.
- Legacy Users Manuals: Fixed landing pages on the Wiki/Confluence manuals.
- TCON: Reverted to the report definition developed during Expedition 375 before May 2018.

#### *IT Support Activities*

- VSAT: Bow dome still exhibits issues and intermittently drops its connection.
- Iridium Phones: Systems installed and operational. Some minor problems continue, will contact vendor on Monday to resolve.
- EndRun Time Server: System up and operational after antenna and cable feed replaced.
- Scientist Laptop Registration: Discovered scientists were not able to self-register their laptops without MCS assistance. Appears to be an issue with LDAP, eDir and NAC manager.

#### *HSE Activities*

- Conducted weekly fire and boat drill.
- Installed X-ray warning signs provided by TAMU HSE.