Expedition 363: Western Pacific Warm Pool:

October to December 2016

(Katie Halder – Education officer, Canning College, Western Australia)

Katie Halder aboard *JOIDES Resolution*

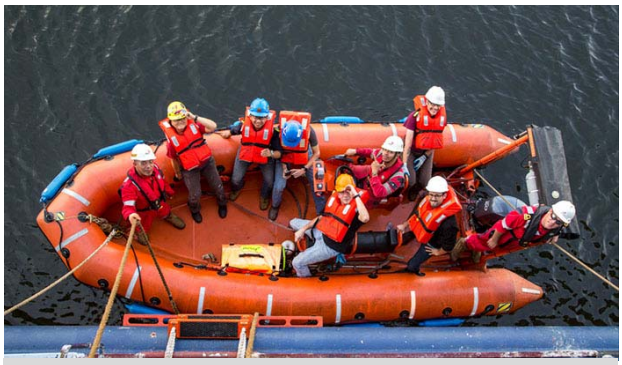
After flying to Singapore I stayed overnight ready to join the *JOIDES Resolution.* I could hear the buzz of excited conversation as I descended to the hotel lobby to meet the scientists with whom I would be spending the next two months at sea. It was immediately clear from the greetings being exchanged and smiling faces that many of those gathered were old friends catching up, whilst others like me knew nobody. After a brief bus journey we rounded the corner to the dock. Necks craned to catch a first glimpse of our new home; it was easy to spot with its distinctive 66 m derrick, so I knew it instantly.

The *JOIDES Resolution* at a mighty 150 m long is one of the most capable drilling ships in the world, able to drill in both deep ocean water and to great depths below the ocean floor. It has been solely used for scientific research since its conversion from an oil exploration vessel in 1984. It can drill down through rocks and sediment on the ocean floor to remove long cores which are studied by scientists both during and after the voyage. Initial measurements and analysis of the cores is performed on board using the ship's laboratory equipment. The scientists work around the clock to maximise the equipment and time on the ship.

For our expedition we took sea floor cores around the Western Pacific Warm Pool. This is the largest patch of warm sea water in the world, and due to the high heat capacity of water it contains a great deal of stored energy. This influences important climate systems. These include the Asian monsoons, the Australian Monsoon and the El Nino cycle. The interaction between this large body of water and these weather systems is not well understood. Understanding the interplay between the extent of the Western Pacific Warm Pool and the climate in the past will help us to better predict future climate changes as the planet becomes warmer. Scientists are particularly keen to understand the last 10 million years of climate history, as during this time the Earth's land masses were similarly placed to where they are today so currents and climate systems are thought to be similar.

JOIDES Resolution in Singapore Harbour prior to Expedition 363

For the three days before leaving port the ship was a hive of activity. Goods were continually craned on and off the ship in preparation for the voyage. With a total of 124 people on board the preparations for the galley alone was staggering. The food included 10800 eggs, an astonishing 7000 kg of vegetables and 4000 kg of meat. The shelves and the corridors in the huge walk-in fridges were heaving under the weight of the food stacked to the ceilings.

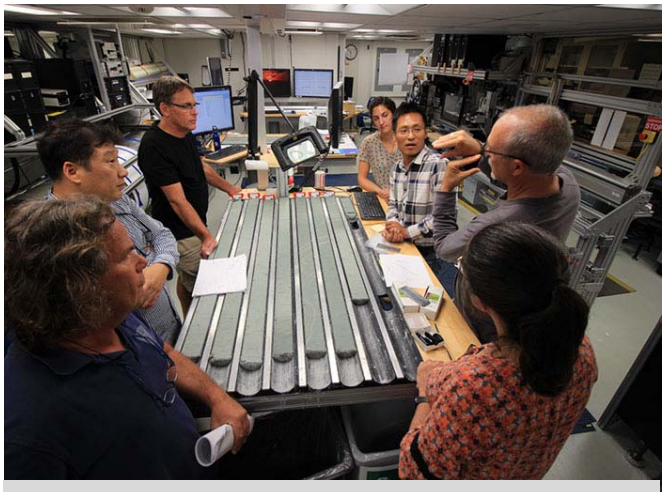


Members of the IODP JRSO technical staff participate in the man overboard drill aboard the rescue craft. (Credit: Bill Crawford, IODP JRSO)

Katie gets an introduction to the microscope lab. (Credit: Bill Crawford, IODP JRSO)

The laboratories had to be restocked and prepared. The previous expedition's core samples needed to be removed from the ship's hold. Computer equipment was set up and made ready for the new personnel and the ship was refuelled, which was a 24 hour procedure in itself. The teams of personnel comprised engineers, the drill floor crew, the captain and his mates, the cooks and stewards working in the 'hotel stack', the laboratory technicians, the marine computer specialists and of course the scientists. All were briefed in preparation for the expedition.

My position on board was the 'education officer'. Like all on board I worked 12 hour shifts 7 days a week. My role was to engage the public with the research on board so that they gain a better understanding of the expedition's science and learn how scientific research is conducted more generally. This was done through the use of social media (by writing blogs and posting on facebook and twitter), and by engaging directly with schools, universities and other institutions through webinars and by making resources for teachers. The webinars were tailored to the needs and interests of the institution. With primary schools this mainly focused on what life was like on board with students' interested in our work routines and sleeping arrangements. For the secondary schools webinars included more about the scientific process and the concepts underpinning the work on board. Earth science has an increasingly large place in the science curriculum in Australian schools and it is a great opportunity for students to see the scientists researching this area in action. All the webinars included a short tour of the ship and a chance to engage with the scientists on board.



Katie joins the science party to discuss what the core is revealing (Credit: Takuya Sagawa & IODP)

Life on board soon settled down into a routine. My mid-day to midnight shift allowed me to enjoy many sunset meals. We were lucky enough to glimpse the occasional pod of dolphins and had visits from different sea birds. After the end of the shift we would sometimes watch the stars when in transit between sites. In the nights on drill sites the deck is brightly light by the derrick's lights and stars looked somewhat dimmer under the electric glare. Tim Proctor, the camp boss, helped keep morale up by providing delicious birthday cakes to celebrate birthdays. He and his team also provided special meals to celebrate events. We had a sushi night where staff decorated the canteen and provided a feast of fishy treats.

Scientists and IODP JRSO technical staff enjoy a BBQ on deck to celebrate crossing the Equator. (Credit: Bill Crawford, IODP JRSO)

Sushi buffet aboard the *JOIDES Resolution*

As the voyage reached its conclusion, with the hold filled with almost 7000 m of core, excitement rose with the prospect of seeing land once more. I was up at 5.00 am to see Guam appear in the early morning light. First a pilot came on board then tug boats moved us into place at the dock. Customs officers and passport control came to process our arrival in the United States. Finally we were cleared to leave the boat and to wait for the arrival of our bus to take us to our hotel.

Although my time as the education officer has finished there is always an education officer on the *JOIDES Resolution*. Schools can book free webinars with the *JOIDES Resolution* from the joidesresolution.org website. The education officer on board will try to meet the time requested by the school. I would certainly recommend that schools take advantage of this opportunity. It is an interesting and unusual experience for students to get a glimpse into research, work as a scientist and life on board a boat. Each expedition has different objectives so there are differences in the material presented but the overall opportunity to see science research in action remains common.

Credit: Takuya Sagawa & IODP JRSO