

Weekly Report 2

June 2 – June 8, 2015

From Alison Macdonald (chief sci.) and Sabine Mecking (co-chief sci.)

P16N – Leg 2 Honolulu to Seattle via 152°W

Current Position: 41.5°N, 152°W

Calmer now than earlier in the week, winds 5-10 knots – the sun is out!

<http://clivarp16n2015.blogspot.com/>

Fourteen days out. This past week we have met and overcome a number of technical and mechanical challenges and are setting some challenges of another nature for ourselves.

We have been using a well-used staggering scheme for our bottles sampling, however this week we realized that the 24 bottle schema fell short off ideal when in nearly 6000 m of water over multiple stations. The CTD watch worked diligently to ensure that a reasonable spread in bottle spacing and a few new lines were included in the staggering schema code expressly for deeper water.

The ship has been quite concerned about the lifetime of the aft winch wire we are using. It is only 2 months old and is already showing signs of rust, first below 4000 m and then below 5000 m. Although the wire was lubed on leg 1, this lubing was done on one cast and the wire was immediately rinsed on the next cast. The manufacturer suggests a particular applicator (purchased while in port in Hawaii) and a minimum waiting period of 2 days before the wire is used again. As (co)chief scientists, we were adamantly opposed to losing science time to wire maintenance, especially as things were going so well on the aft winch. On the other hand knowing that we want GO-SHIP cruises to be possible on this ship well into the future, we recognize that wire maintenance is necessary. In an effort to impact the science as little as possible we prepared the forward wire ahead of time, decided to give up bongos for two nights and did the lubing on station 141 (5956 dbar), the deepest cast so far. The last 500 m of wire were not lubed.

Unfortunately, although, it appeared all bottles fired properly, the first cast on the forward winch saw multiple modulo and modem errors. The sheer number of errors early in the next cast caused us to abort. Keeping our focus on the complete occupation the 152°W line, rather than moving on, we decided to stay on station and reterminate. Modem errors continued on ensuing casts until the junction box connections and slip rings were changed, but throughout, the data appeared reasonable and all bottles fired as expected. Upon return to the aft winch similar problems were encountered, and were dealt with in a similar manner (although no reterminations were necessary). In the end we lost about 3 hours to the extra retermination, some further time to slower deployments and recoveries on the unfamiliar winch and another 45 minutes to an unrelated mishap with LADCP that caused us to have change out the battery. The good news is we have data from every planned station thus far.

The technical challenges we have had over the past week have not been enough for all parties. Two more challenges are under way: one – to collectively burn 150,000 calories before arriving in Seattle; and two – a 2 km rowing race taking place today. Other points of interest include jellies, jellies, jellies, seal and shark sightings, and a 21st birthday.

– *Alison and Sabine*

ps. We continue, undaunted, to measure the changes in the ocean in spite of our senate's decision that these changes are not unprecedented and are not caused by human activity.

Our *Catches of the Week*:

Figure 1 (on right): Dissolved oxygen values along leg 2 of the 2015 P16N occupation. Lowest values are less than 10 $\mu\text{mol/kg}$. Comparing to the WOCE observations in this region, the minimum value of bottle DO in 1991 was 8.6 $\mu\text{mol/kg}$ at 1073 dbar (35.6N). In 2015, it is 7.6 $\mu\text{mol/kg}$ at 1234 dbar (34.5N). Slightly further north, we have seen a value of 6.9 $\mu\text{mol/kg}$.

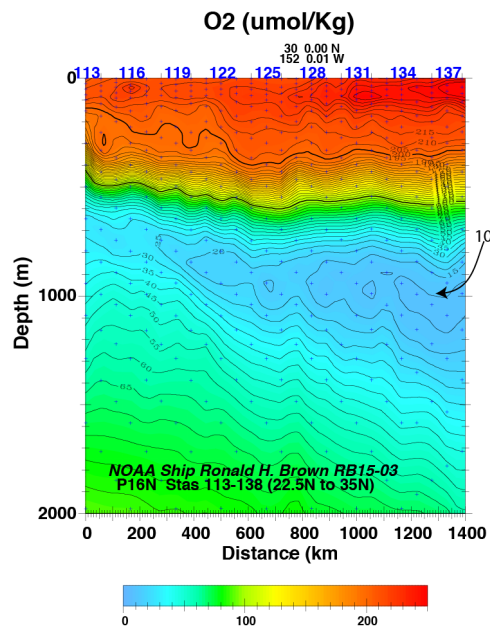


Figure 2 (below): Blue shark visiting the ship (courtesy of Kelsey Bisson).

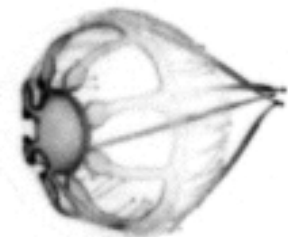


Figure 2: Jelly swimming past the rosette, caught on the UVP (courtesy of Jessie Turner).



Figure 4 (above): Bongo coming in (courtesy of Amanda Fay).