

P6 Leg 2 Week 5 Report

2300 local time 24 September 2017

32 30'S 76 38'W, winds 15-20 kn, Outside temperature 13 C

Stn 232

Weather picked up a little at the beginning of this week, but work continued and the wind and waves eventually decreased, producing the calmest days we have had thus far. The NASA team had good conditions for their optical oceanography and all enjoyed the sunshine.

Off-again on-again problems with the LADCP cable re-appeared and it was swapped out and back; the old one was diagnosed and repaired by our ET specialist. CFC operations were disturbed temporarily and the system went down briefly, but very few planned samples were lost, due to the rapid recovery work by the CFC team.

We tend to think of P06 as a renewal of the commitment made during the World Ocean Circulation Experiment to sample the state of the ocean on a global scale, but with the new focus on climate change and the carbon system. WOCE was not the first occupation of a transpacific line at southern subtropical latitudes, though, and we are back 50 years after the 1967 SCORPIO expedition on the USNS Eltanin (28° S and 43° S) to measure once again ocean conditions. Most aspects of the circulation and property distributions described then are relevant now. It will be interesting to make more detailed comparisons with these data too as we map the evolution of the ocean system.

All thoughts are on the final push across the eastern boundary of the P06 line, and the crossing of the Peru-Chile Trench. This should provide our deepest cast, up to the 6000m limit of the CTD package. Already the nature of the water has changed, as we approach the higher productivity upwelling region closer to the Chilean slope and shelf. Oxygen concentrations in the upper oxygen minimum have been dropping dramatically and surface temperatures have decreased. Another factor with this occupation of P06, as in 2003, is that it is late winter here, and as a consequence we have seen relatively deeper surface mixed layers.

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