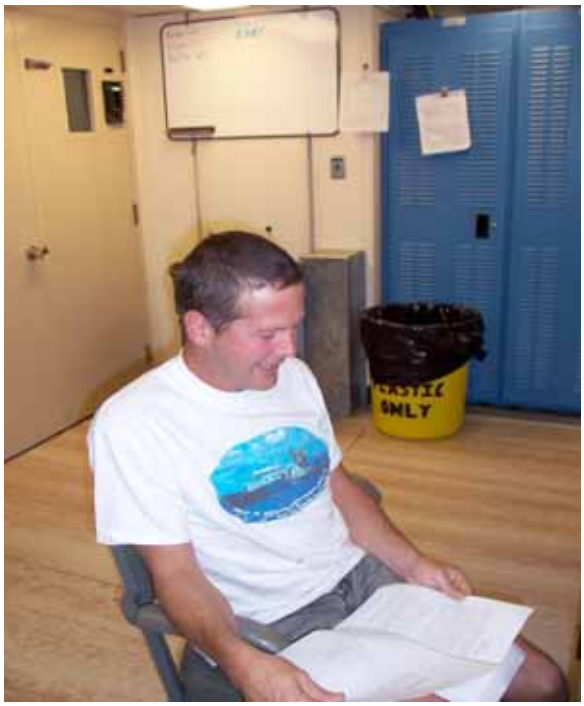
Log 7 Thursday
1. 082100Z September 2005
2. Position: Lat: 3-59.9N LONG 139-59.9W
3. Course: On station
4. Speed: 0 kts
5. Distance: 240.5 NM
6. Steaming Time: 22H 18M
7. Station Time: 1H 42M
8. Fuel: 4983 gals
9. Sky: Ptly Cldy; Cu, Sc
10. Wind: 120-T, 20 kts
11. Sea: 100-T, 2-3 ft
12. Swell: 120-T, 5-7 ft
13. Barometer: 1008.8 mb
14. Temperature: Air: 27.5 C, Sea: 27.0 C
15. Equipment Status: No change.
16. Comments: On station, sample collection in progress.

MASTER, R/V ROGER REVELLE

Message to all science party from Chief Scientist:
We'll start our station work at 4°N x 140 °W (9/8) at about 09:30. Casts will be pretty limited because of the time we're arriving on station - we need to collect a lot of our water either before dawn or shortly afterward for biological experiments. We'll still be at the 4°N x 140°W station on Friday (9/9) and we plan to start our pre-dawn cast sequence at 01:00 that day. I'll send you the full schedule for Friday's casts this afternoon.

Time	Station #	Cast #	Lat °N	Long °W	Cast type	In charge	On console	On deck (includes samplers)	
0930	**1**	**1.01**	**4.0**	**140.0**	**CTD rosette**	**Greeley**	**Greeley (+ trainees)**	**Greeley+1**	**Pondaven Corvaisier**
1030	**1**	**1.02**	**4.0**	**140.0**	**TM rosette**	**Measures**	**Measures**	**Leonard Yang**	**Brice**
1200	**1**	**1.03**	**4.0**	**140.0**	**CTD rosette**	**Greeley**	**Greeley**	**Greeley+2**	**Nelson Krause**

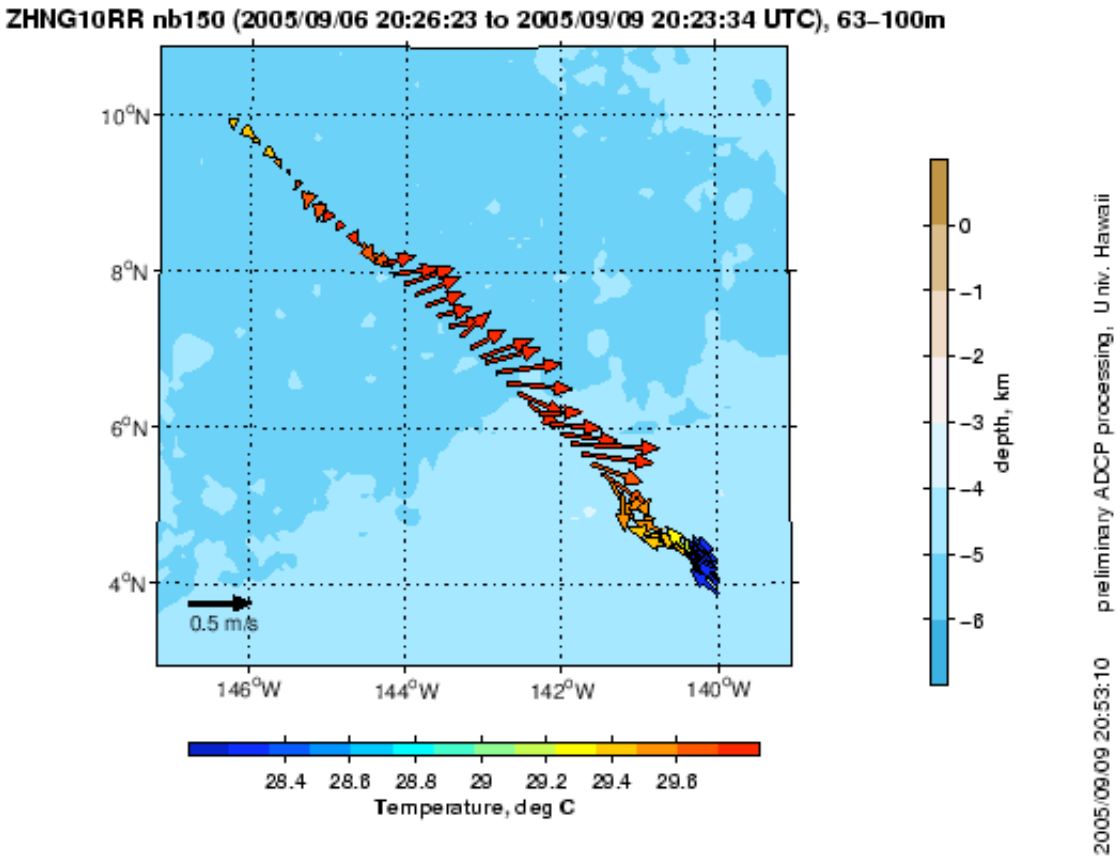
I am running the winch and doing the data logging for the 3rd cast of trace metals for Dr. Measures at 10:30. The casts went well and the collections portion of the cruise has really begun. Here are some pictures of the first casts.



Dana Greeley of PMEL/NOAA monitoring the CTD console

Checking the flow on the plankton incubators on the fantail

Lift off! Launching the CTD package from the staging bay. 1st cast of the day.

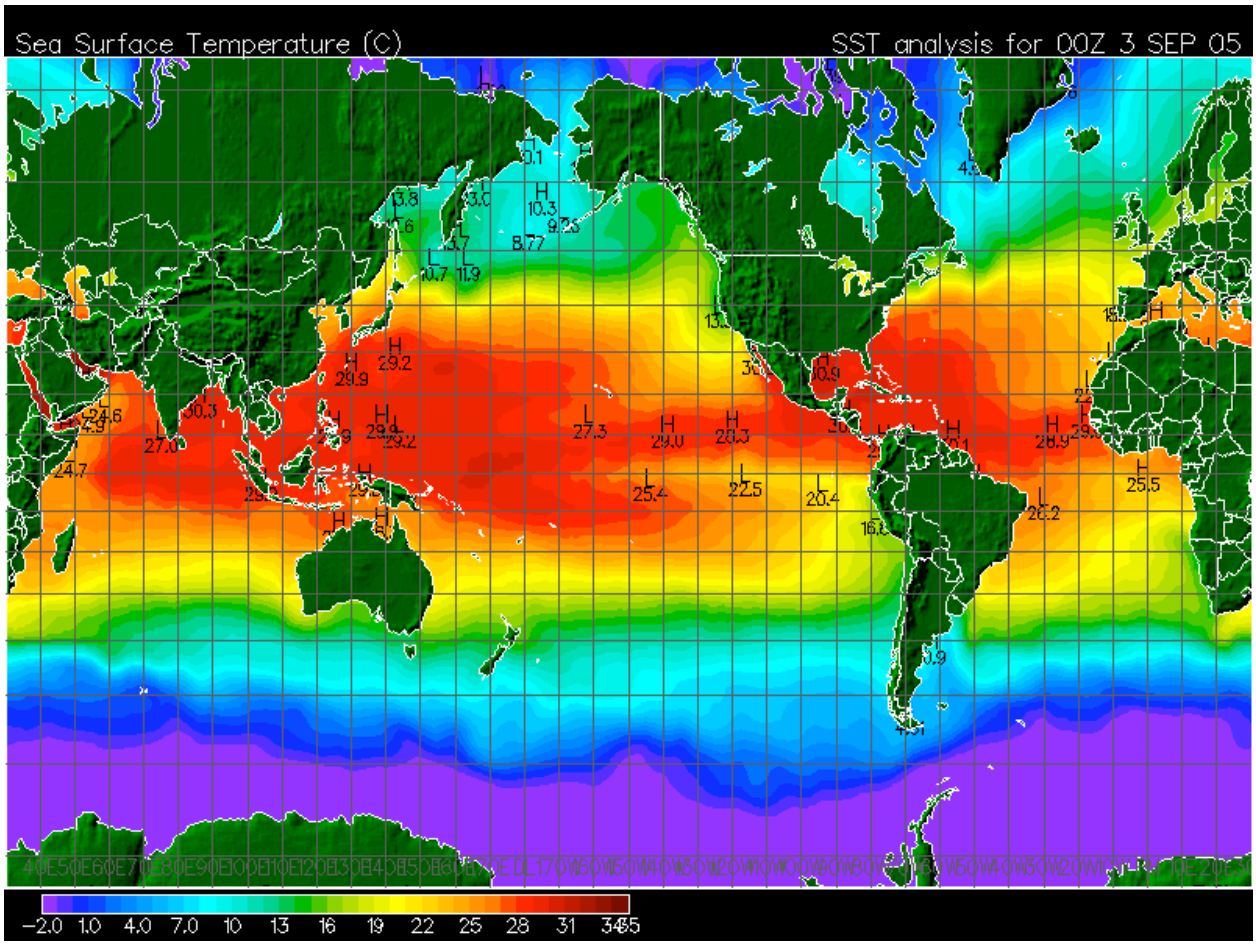


Surface currents and sea surface temperature. Looking at the Acoustic Doppler Current Profiler on the R/V Revelle

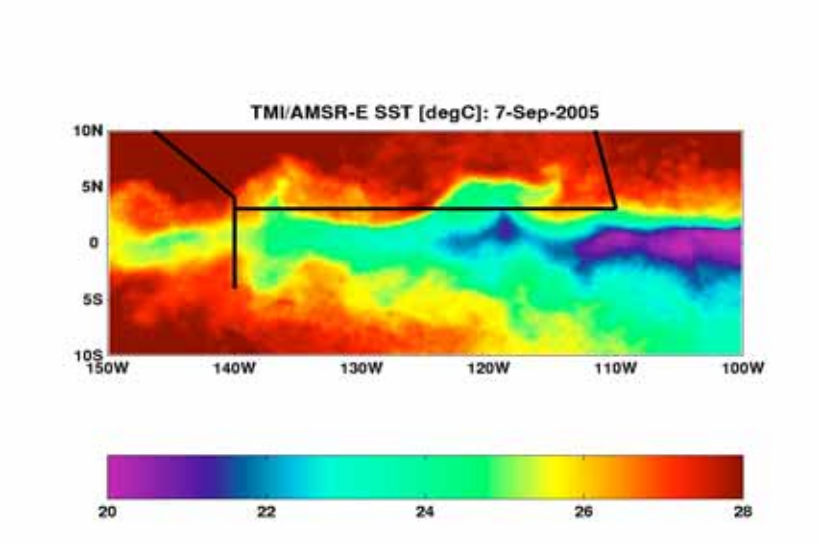
You can see the temperature scale on the bottom of the diagram and the surface current direction by the arrows. As we traveled from 10' N you can see the warm, eastward surface current, as we leave the North Equatorial current and enter the Equatorial Counter Current indicated by the colder temperatures and reversing current direction of the arrows. He sheer created when these two currents meet is part of what creates the TIW (Tropical Instability Wave).
Acoustic Doppler Current Profiler developed by Dr. Rob Pinkel and the Marine Physical Lab, Scripps Institution of Oceangraphy. This instrument an experimental model and is only on the R/V Revelle. The system consists of two 4-beam Doppler sonars and assorted support sensors. The sonars are similar in principle to the commercial instruments found on many research vessels. Each sonar transmits repeatedly, at 2 second intervals. The sound scatters from plankton drifting in the water column. From the Doppler shift of the return echo, the relative speed between the ship and water can be inferred. P-code GPS, along with a variety of other support sensors, is used to infer the absolute ocean velocity.

You have probably heard the weatherman on the news channel talk about his "Doppler Radar" showing where the rain storms are located. Well his Doppler sonar is bouncing the sound off of the water droplets and return echo tells him where they are and how

heavy the rainfall is. The ADCP is bouncing the sound off of the floating plankton who are being pulled along in the current and that is how they map the currents, they have other sensors for water temperature.
So if you look at the SST figure below, you can see that we have just left the North Equatorial Current and are entering the Equatorial Counter Current which is a bit cooler in temperature and the current in going the other way. You can also see the "wave-like" quality of the TIW where the sheer effect of the two currents happens.



In the seasurface profile below that was sent to us by Pete Strutton you can see a closer look at the small eddies and pools of cooler water caused by the sheering. The black line represents our cruise plot.



Lets look at the chlorophyll data for today, also sent by Pete Strutton. This is giving us an indication of concentrations of phytoplankton. These images are being sent to us daily by Pete, back in his lab at U of Oregon. It has been very helpful to be able to see satellite photos of both changing sea surface temps, but also plankton concentrations.