

Journal 29

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My last live broadcast with San Marcos Middle School. We are interviewing Dr. Chris Measures of the University of Hawaii and Dr. Chris Sabine of PMEL/NOAA.

#### Interview with Justine Afghan

Justine Afghan is a lab technician at Scripps Institution of Oceanography. She has a BS from UCSD in Chemistry and has been working at SIO for 10 years. She said she decided to get her degree in chemistry because she enjoyed it and was interested in going into Physical Oceanography. Oceanography is a broader field and tends to be more a graduate area of study. As an undergraduate she got a job working in one of the chemistry labs cleaning glassware and little by little they began to train her to do some of the processing and analysis and she enjoyed it. By the time she graduated from UCSD one of the technicians in the lab was retiring and she applied for the position. She enjoys doing the chemistry and the challenge of analysis. She also gets the opportunity to travel as part of her job either as a hired technician for other science groups, like this time for NOAA, or as part of an SIO group. She says she is at sea about 5 months a year and enjoys the challenge of working on different projects as well as traveling to different places. When working on a cruise the hours are long and the work is intense. But the people are usually interesting and equally focused and professional. For example on this cruise we were all working 12 hour a day shifts. Justine was collecting and doing the analysis for her entire shift most days for the entire 40-day cruise period.

For this cruise she is working for Pacific Marine Environmental Labs, (PMEL) a division of NOAA. She and Dr. Chris Sabine are doing CO<sub>2</sub> collection and analysis. CO<sub>2</sub> is one of the major greenhouse gases in the atmosphere and the ocean is the largest CO<sub>2</sub> sink. The ocean's ability to take CO<sub>2</sub> out of the atmosphere and how much CO<sub>2</sub> can be dissolved in seawater is a major factor in trying to understand global warming and climate change. Looking at how much CO<sub>2</sub> can be dissolved in seawater, is there a limit? If so, what is it? The amount of CO<sub>2</sub> dissolved in seawater varies with temperature, salinity and other factors. Most of my students will understand the concept of dissolved gases by thinking of their favorite soda. The gas in their soda is kept inside the bottle or can by pressure and begins to come out of solution as soon as they open the can/bottle. The warmer the soda, the faster the gas comes out of solution. This is also true of seawater: the colder it is, the more gas it can hold. At depth the pressure holds the gas in solution. This is also why the samplers are in a certain order around the CTD. With the CFCs going first, followed by Helium and Oxygen as these gases begin to come out of the solution as soon as the bottles are opened.



Justine Afghan sampling CO<sub>2</sub>