Decadal Changes Evident from CLIVAR Repeat Hydrography Section I9N: More Women Oceanographers at Sea!

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On 22 March 2007 at 1600 local time the R/V Roger Revelle departed Fremantle, Western Australia to begin sampling along 95°E in the Indian Ocean on CLIVAR/CO_2 cruise I9N. This cruise was part of the NSF/NOAA supported U.S. Global Ocean Carbon and Repeat Hydrography Program which focuses on the need to monitor inventories of CO_2, heat, freshwater and their transports in the ocean using baseline observational fields measured during WOCE. Our surface-to-bottom station sampling included a host of carbon-related parameters, as well as temperature, salinity, dissolved oxygen, nutrients, velocity, chlorofluorocarbons, helium, tritium, trace metals, and several types of biological samples. The measurements reveal the changing patterns in these parameters since the last occupation of the I9N transect in 1995 during WOCE. Hopefully this will provide us with a better understanding of the ocean's role in climate variability and the uptake of anthropogenic CO_2.

Apart from the changes in ocean properties, our 2007 cruise also provided evidence of another significant change that seemed to have taken place since WOCE I9N: more female participants at sea! We do not have the information on hand to determine whether this "decadal change" is an across-the-board difference between the WOCE occupations and the CLIVAR/CO_2 repeat lines. But at least for the I9N transect, only five women made up the 26 member science party in 1995, while in 2007, half (16) of the 32 member science party in addition to the Revelle's Second Mate, were all female. On the 2007 CLIVAR/CO_2 I9N cruise, the women participants were quite a diverse group. We came from many different institutions all over the United States, were at different stages of our career paths, and covered many different jobs. Our at-sea functions included chief and co-chief scientists (the authors of this article), hydrographic data management, technical and sampling support as well as analyses of the samples taken. Our present at-home careers include physical and chemical oceanography, marine technical support, post-doctoral fellows, graduate or undergraduate student and even entomology.

For a few of the women it was their first experience on a scientific research cruise. Among those of us who had prior sea-going experience, none of us remember ever having sailed with such a strong female contingent before. Some of us remember not too long ago at the beginning of our oceanographic careers, being one of only two women on board ship. In those days, when women were "allowed" on board it was always in pairs, supposedly so as not to waste the shared two-bunk cabin space. In fact, in the very early years of observational oceanography, one often cited impediment to having any women on board was the lack of "facilities". The implication was that a bathroom would have to be dedicated solely to female use, as unlike at home, it was proposed that women could not possibly share "heads" with men. In those days, it was also not uncommon to be lectured about the need for "appropriate" behavior and dress-code at sea. Thankfully, times change. While it is true that the standard protocol for single-sex sharing of the two-bunk cabin arrangement was followed aboard the R/V Revelle, both male and female participants shared the same heads at least in the common areas of the vessel without problem. Indeed this was almost a

necessity so as not to disturb a possibly sleeping cabin-mate who may have been standing an opposite watch. As to changing on-board behavioral conduct, we feel that this was pretty much a non-issue during our cruise, just as it has been on many other cruises in the past. Furthermore the high percentage of women that made up the science party probably helped facilitate the ease of conduct on board. The presence of a woman during the six-week cruise just was not unusual, whether it was in tee-shirt and shorts during those hot halcyon days crossing the equator, or in full rain gear and orange life-vest when deploying the rosette on a cold, wet and windy 2 a.m. station in the subtropics!

In fact, the gender balance during our cruise was probably fairly similar to what it is in our workplaces at home whether it be at a university, laboratory or other facility. Just as happens back at our normal workplaces, men and women cruise participants interacted on both a social and a professional level to help get the job done. Whether the job be recovering the CTD package; the seemingly endless sampling of the Niskin bottles around the rosette; analyzing the water samples; helping King Neptune welcome the uninitiated pollywogs into his realm during the equator crossing ceremony; or just hanging out shooting the breeze on the aft deck watching the fabulous sunsets and sunrises, both men and women science members participated equally and equally well! Not only was our I9N cruise a scientific achievement in completing our sampling plan of 111 surface-to-bottom stations, but also Captain Dave Murline and the science and crew members alike, commented on how enjoyable the cruise was and specifically related this to the more balanced number of men and women scientists. A successful cruise from all angles!

The number of women science party members on our cruise hopefully reflects a growing interest by women in the observational aspect of oceanography. One learns a lot of oceanography by going to sea that sometimes just cannot be gained from books or lectures. More than just learning the need for designing specific experimental plans to capture specific oceanographic phenomena, or acquiring the feel for the limitations of instrumental measurements, or coping with the improvisations needed for weather or other interruptions to the cruise schedule, one gains an almost visual perspective of the data collected that helps with the interpretation and analysis of that same data when back in the office. At sea, it is almost a magical occurrence watching the ocean properties take shape and change in their vertical and horizontal extent as they are measured directly under your feet, so to speak. Furthermore, the intensity and the sense of community that develops at sea resulting from the shared experience is not as easily or so quickly replicated in the home office environment. By necessity, scientific conversations frequently develop among students, technicians and senior personnel about the interpretation of the measurements being collected. Ship-board life lends itself as a natural environment for the mentoring of young oceanographers, forging relationships that often continue long after the cruise has finished. Obviously these unique advantages of the sea-going experience are not gender specific – they are beneficial to both men and women oceanographers alike.

Photo:
Back row (left to right): Elisa Wallner (UCSB); Mary Johnson (ODF/SIO); Kristin Sanborn (ODF/SIO); Janet Sprintall (SIO); Kyla Drushka (SIO); Mareva Chansen (RSMAS); Nancy Williams (Umiami); Kati Gosnell (FSU); Suzanne Rab Green (LDEO); Chantal Swan (UCSB)
Front Row (left to right): Melissa (R/V Revelle); Sabine Mecking (UW); Debra Tillinger (LDEO); Mindy Kelley (ODF/SIO); Mariko Hatta (UH); Sue Reynolds (ODF/SIO); Erica Key (RSMAS)