Robin Robertson

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Modelers and observationalists often operate in different circles. I enjoy operating at the intersection of those circles. As a modeler, I simulate realistic scenarios, incorporating real data and verifying the results against observations. In turn, my simulations suggest where certain processes may be observed. I also collect data in field experiments, which is used for model verification. Field work reminds me how complex the real ocean is and what the models are still missing.

Although much of my career has been involved with waves of many types, vertical mixing mechanisms in the polar regions became my broad interest in the early 1990s. More recently my primary focus became tides. Tides are believed to be a major vertical mixing mechanism throughout the world ocean. Much of the mixing is believed to occur through interactions of the barotropic tide with the continental slope or rough topography generating internal tides. To determine the role of tides in vertical mixing, I model the tidal fields in various regions in three dimensions. Presently, I am simulating internal tides not only in the Antarctic Seas (Ross and Weddell), but also in the Indonesian Seas.

My career path has not been the standard, direct, one-discipline approach, but rather has combined oceanography and ocean engineering; academia and industry; and field work, data analysis, and modeling. My first modeling projects were done as an ocean engineering student, simulating oil dispersion due to wave motion and the dispersion of pollutants. At the time, I and four other women were the first to be admitted to the Ocean Engineering Department at the University of Rhode Island.

So how did a modeler start doing field work, especially in those days when many people felt that women should not go to sea? At the time I finished my master's degree, things looked grim for an inexperienced ocean engineer due to a glut of unemployed, experienced ocean engineers when oil prices dropped. After I was hired by SAIC, I was soon actively involved in their environmental monitoring field program. This was fortunate, because suddenly I became a modeler with field experience. This would later open doors for me, for instance, at Ocean Research and Engineering, where I ran a field program to measure surface waves using stereo photography.

Dr. Robin Robertson collected XBT (expendable bathythermograph) and CTD (conductivity-temperature-depth) profiles on the AnSlope III field program in the Ross Sea. Here, she is aboard the RVIB *Nathaniel B. Palmer* launching an XBT with the mascot of the 6th grade class at George Grant Mason Elementary School, Tuxedo, NY. She is now is at Lamont-Doherty Earth Observatory of Columbia University where she further investigates vertical mixing mechanisms, particularly internal tides and waves, in the Ross, Weddell, and Indonesian Seas.

I earned my Ph.D. at Oregon State University modeling tides while working with an observationalist and going to sea. My modeling work provided tidal estimates for subsequent field operations. In 1999, I joined Lamont-Doherty Earth Observatory (LDEO) of Columbia University. LDEO has strong observational and climate programs, which allows me to concentrate on the modeling aspect of my work, as well as to participate in field work and discuss the relevance of the results to the climate community.

Biggest Rewards: interesting work; interactions with interesting people; getting grants funded; and outreach to school kids and getting them to like science.

Biggest Challenges: Past – overcoming prejudices against women scientists (things have improved); Now – getting funding, along with everyone else.