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Coastal Mixing and Optics Coordination and Data Management

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LONG-TERM GOAL

I wish to understand mixing processes, particularly in boundary layers. I approach this goal by developing instrumentation that can be used in experiments to measure bottom boundary layer turbulence. Within Coastal Mixing and Optics, I have sought to facilitate the efforts of all PIs by coordinating ship use, tripod and mooring use, and by holding periodic meetings to develop our research plan and share ideas, data, and understanding.

OBJECTIVES

The CMO experiment was to have 12 months of field observation in the period July 1996 to June 1997. 14 cruises to the CMO site 50 miles south of Martha's Vineyard at 40.5N, 70.5W obtained underway observations of optical properties of the water column, suspended sediment, nano and pico plankton, microstructure, stratification, frontal structure, internal waves, and atmospheric forcing. Mooring cruises deployed surface moorings for air-sea interaction and wave measurements; subsurface moorings for sediment traps, particle samplers, current, temperature, and salinity measurements; and bottom tripods for boundary flow and optical measurements. Tracer injections to study mixing near the bottom and in the mid water were performed at four periods. In fact, the experimental period extended until August 1997 to accommodate ship demands. The objectives of the approximately 24 PIs were to understand physical process that control optical properties and mixing in a coastal environment.

APPROACH

Meetings have been scheduled with assistance of Judy White at WHOI. Our contact list includes program managers Steve Ackleson, Lou Goodman, Tom Kinder, and Joe Kravitz at ONR and Eric Itsweire at NSF; marine operators Tim Askew (Harbor Branch), Bill Hahn (URI), and Don Moller (WHOI); and scientists Yogi Agrawal (Sequoia), Steve Anderson, Bob Beardsley, Tim Duda, Jim Edson, Jim Ledwell, Steve Lentz, Jim Lynch, Rob Olson, Al Plueddemann, Bill Shaw, Heidi Sosik, Miles Sondermeyer, John Trowbridge, George Voulgaris, Judy White, and Sandy Williams (me) at WHOI; John Apel, Dave Porter, and Don Thompson at APL JHU; Jack Barth, Tim Boyd, Mike Kosro, Murray Levine, Scott Pegau, Ian Walsh, and Ron Zaneveld at OSU; Paula Coble at USF; Tommy Dickey at UCSB; Percy Donaghay at URI; Jeff Dusenberry and Allan Robinson at Harvard; Terry Ewart, Mike Gregg, Frank Henyey, Steve Reynolds, and Kevin Williams at APL UW; Wilf Gardner and M.J. Richardson at TAMU; Pat Gallacher, Ron Holyer, Chuck Luther, George Marmorino, Peter Smith, and Steve Stanic at NRL; Paul Hill at Dalhousie U.; Bob Houghton at LDEO; Ed Levine at

NUWC; Son Nghiem and Simon Yueh at JPL; Neil Oakey at BIO; and Collin Roesler at UCONN. This exhaustive list came and expended energy on steering the program at a series of meetings about a year apart between 1994 and 1998.

WORK COMPLETED IN FY98

During FY 98, the CMO fieldwork had been completed but the analysis phase was gathering momentum. Under support of the Coordination and Data Management portion of the program, a report was prepared and distributed to the mailing list of 60 CMO participants, managers, and interested parties, of the meeting held in Santa Fe in February 1997. This was the CMO Report III. The meeting had been held halfway through the field year and served to inform all of us about the observations while there was still some time for mid-course correction.

In August 1998 we held the fourth CMO working meeting in Keystone Colorado to present early analyses and to plan interactions and publications. Two special issues were identified for reports of first order results and other collaborations were reaffirmed. We discussed data serving and web sites. These tasks are still awaiting completion.

RESULTS ETC.

In the interest of brevity, the results, impact, transitions, references, publications, and patents will be found in the individual reports of CMO. However, there has been a conscious effort to connect the core CMO program with the two Primers: Synthetic Aperture Sonar, and Shelf Break.