Report Documentation Page

Form Approved
OMB No. 0704-0188

1. REPORT DATE	2. REPORT TYPE	3. DATES COVERED
30 SEP 1997		**00-00-1997 to 00-00-1997**

4. TITLE AND SUBTITLE	5a. CONTRACT NUMBER
Coastal Mixing and Optics Management	5b. GRANT NUMBER
	5c. PROGRAM ELEMENT NUMBER
6. AUTHOR(S)	5d. PROJECT NUMBER
	5e. TASK NUMBER
	5f. WORK UNIT NUMBER
7. PERFORMING ORGANIZATION NAME(S) AND ADDRESS(ES) **Woods Hole Oceanographic Institution,Department of Applied Ocean Physics and Engineering,Woods Hole,MA,02543**	8. PERFORMING ORGANIZATION REPORT NUMBER
9. SPONSORING/MONITORING AGENCY NAME(S) AND ADDRESS(ES)	10. SPONSOR/MONITOR'S ACRONYM(S)
	11. SPONSOR/MONITOR'S REPORT NUMBER(S)

12. DISTRIBUTION/AVAILABILITY STATEMENT
Approved for public release; distribution unlimited

13. SUPPLEMENTARY NOTES

14. ABSTRACT

15. SUBJECT TERMS

16. SECURITY CLASSIFICATION OF:			17. LIMITATION OF ABSTRACT	18. NUMBER OF PAGES	19a. NAME OF RESPONSIBLE PERSON
a REPORT **unclassified**	b ABSTRACT **unclassified**	c THIS PAGE **unclassified**	**Same as Report (SAR)**	**2**	

COASTAL MIXING AND OPTICS MANAGEMENT

Albert J. Williams 3rd
Department of Applied Ocean Physics and Engineering
Woods Hole Oceanographic Institution, MS#12
Woods Hole, MA 02543
phone: 508-289-2725 fax: 508-457-2194 email: awilliams@whoi.edu

Award #N00014-96-1-0575

LONG-TERM GOALS

My long-term goals are to develop instruments to observe physical phenomena responsible for mixing the ocean, suspending and transporting sediment at the bottom, and entraining air and momentum at the surface under wind and waves.

OBJECTIVES

Study of a coastal environment over several seasons with instrumentation capable of determining processes responsible for mixing sediment and nutrients into the photic zone, and observation of optical properties over the entire water column, both inherent and particulate, will enable us to understand the physical processes responsible for coastal ocean visibility variations. My objective under this grant is to facilitate joint studies by the PIs in the CMO experiment through data exchange, joint planning of experiments, and mutual consideration of results.

APPROACH

Annual meetings are scheduled at which all CMO PIs are expected to attend and at which cruises are coordinated, data sets shared, and preliminary results reported upon. A report is prepared summarizing the meeting which is distributed to PIs, Program Managers, and participants in affiliated programs. As data sets become available, the CMO Website will point to or archive material for collaborative analyses and eventually for distribution to interested viewers.

WORK COMPLETED

In 1997, CMO Meeting III was held February, 14-16 in Santa Fe, NM. This was appended to the Ocean Sciences meeting held there at which several CMO participants were present. The CMO Report II of the previous meeting was assembled and distributed. There were six CMO cruises in FY 97 and several Primer cruises in the same period on which there were logistics arrangements made. Data sets became available but so far have been handled on websites of the PI acquiring the data.

RESULTS

Results include observations of hurricanes Edouard and Hortense in September, 1996 and a northeast storm in October, 1996. Mixing at the slope front and at the CMO site revealed by tracers has been reported upon in talks by Bob Houghton and Jim Ledwell. Seminars including preliminary optical and hydrographic results have been given. Tommy Dickey has taken the lead in preparing a paper for Nature on the hurricane passage with Yogi Agrawal, Paul Hill, John Trowbridge, and me. Other papers are being organized. The Ocean Sciences meeting in February, 1998 will include a CMO session and we will follow this with CMO Meeting IV.

One result of the CMO Management part of the program is that relations with fisherman remained cordial. An advertisement was run in National Fisherman for the duration of the field program describing the moored arrays. Phone calls from fisherman asking how far away they should remain were encouraging. We lost no equipment to fishing and were able to tow through lobster trawl fields with minimum hangs and no lost gear. Nor did we damage their gear.

IMPACT/APPLICATIONS

One impact is the observation during hurricane Edouard that particles coalesced into marine snow during the precursor waves but were broken apart during the higher level of turbulence with the passage of the hurricane itself. Mixing during the hurricane was observed from sections run just before and just after passage. A mixed layer from the surface to 25 meters depth and from the bottom at 70 meters to 30 meters depth showed bottom and surface mixing that relaxed over the next three days.

TRANSITIONS

Transition from understanding of processes affecting water clarity to prediction of optical properties in coastal regions is an important product of this program. At each meeting, participants of related programs have been present to facilitate rapid exchange of information. However, it is too soon to point to any particular transition to a more operational department.

RELATED PROJECTS

Related projects, those covering the same region during the FY 97 field year, include ONR's Synthetic Aperture Sonar Primer, APL Johns Hopkins' Remote Sensing of the Shelf, NRL's Remote Sensing and Acoustic Propagation program, and Harvard's Predictive and Assimilative Model program.

REFERENCES

CMO Report II, Coastal Mixing and Optics Meeting - February 16 & 17, 1996, Town and Country Hotel, San Diego, CA, prepared by A.J. Williams 3rd, February 10, 1997.