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
Air-ocean Modeling and Prediction System Development	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) **Naval Research Laboratory,Monterey,CA,93943-5502**	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**	

AIR-OCEAN MODELING AND PREDICTION SYSTEM DEVELOPMENT

James D. Doyle
Naval Research Laboratory
Monterey CA 93943-5502
Ph (408) 656-4716/Fax (408) 656-4769
doyle@nrlmry.navy.mil

LONG TERM GOALS:

Increase our scientific understanding of the processes that are responsible for energy transport between the atmosphere and ocean and apply this knowledge to improve our ability to predict the atmosphere and ocean, particularly in their respective boundary layers.

OBJECTIVES:

Study the effects and feedbacks that occur on the mesoscale between the atmosphere and ocean. For example, tropical and extratropical cyclones have been observed to change the circulation and temperature of the ocean. These oceanic changes can then in turn have an impact on the subsequent structure and behavior of the atmospheric boundary layer.

APPROACH:

Utilize existing atmospheric, ocean, wave, and ice models, such as NOGAPS, NORAPS, TOPS, COAMPS, WAM, PIPS, and the Yellow Sea model. Models such as NORAPS or NOGAPS need to be coupled to TOPS, PIPS, or WAM while COAMPS represents a fully coupled system of atmospheric and ocean models. Tests of these interactive systems will give insight into the problems of interactive air/ocean models, e.g., SST biases, and will guide ultimate development of interactive atmosphere/ocean models and atmospheric/ice models. Use Labrador Sea field experiment data to validate and improve COAMPS boundary layer. Perform high-resolution benchmark tests of COAMPS over Labrador Sea for 2-3 week period using data assimilation to incorporate all conventional observations. Use field experiment data to validate the performance of these simulations and to test impact in additional data assimilation experiments.

WORK COMPLETED:

Used COAMPS to provide real-time forecasts in support of Labrador Sea experiment. Continued integration of the Princeton Ocean Model (POM) and the Modular Ocean Model (MOM) into COAMPS. Built interfaces in COAMPS for initialization of ocean depth, temperature, salinity, and currents for real and idealized simulations.

RESULTS:

Atmospheric component of COAMPS was used for real-time forecast support for the Labrador Sea experiment during Feb-Mar 1997. During this time, COAMPS provided accurate wind, temperature, moisture, and flux data which is currently being analyzed.

IMPACT:

The utility of COAMPS for real-time, high-resolution forecasts was validated. In an e-mail message concerning these COAMPS forecasts, Bob Pickart from Woods Hole Institute stated "You should be pleased to know that the Captain regularly exclaimed how much more accurate your forecasts were than the standard product they were receiving on the bridge. I was impressed again and again in the same regard."

TRANSITIONS:

Developments from this program will transition to an existing 6.4 program (PE 0603207N) for applications within COAMPS and for possible transition to Fleet Numerical Meteorology and Oceanography Center (FNMOC) for operational use.

RELATED PROJECTS:

Related 6.2 projects within PE 0602435N include BE-35-2-18 which focuses on the development of the atmospheric component of COAMPS, and 3523 which focuses on the development of an ocean model for COAMPS. A related 6.4 project within PE 0603207N is X0513-02 which focuses on the transition of COAMPS to FNMOC. Another 6.4 project, within PE 0603785N is 0120-ADV which focuses on the development of a coupled data assimilation system for COAMPS.

REFERENCES:

None.