

Project NOPP Drifters

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Results of a Workshop 7 January 1998

I. INTRODUCTION

This workshop was convened by the National Ocean Partnership Program Office located at the Consortium for Oceanographic Research and Education. The purpose of the workshop was to reach consensus on the broad outlines of a NOPP-sponsored project to celebrate the 1998 Year of the Ocean (YOTO) by developing a project that will provide benefits to both the scientific and educational communities. The NOPP has committed \$500,000 to this project in FY98 funds. The proposal to the group was to deploy a number of drifting ocean observation devices (drifters) whose data can be downloaded from the Internet and used by scientists, educators, and students to test hypotheses and learn lessons about the ocean.

The participation of representatives from a number of Federal agencies as well as the education community was greatly appreciated, as were presentations by Peter Niiler, Scripps Institute of Oceanography, Mark Swenson and Mark Bushnell, NOAA Global Drifter Program, and Sharon Walker, University of Southern Mississippi.

II. OBJECTIVES

There are both educational and scientific objectives of this project.

A. Education Objectives

1. To foster an enhanced awareness and understanding of the world's oceans by teachers, students and the general public by formal (schools) and informal (aquaria, museums, science centers) means, through integration of scientific research and education while providing "hands-on" concepts and activities;
2. To compile or modify existing, complementary oceanographic curricular materials for use in the classroom. These materials will assist in broadening existing NOPP partnerships by "bridging the gap" between scientists and educators locally, regionally, nationally, and internationally; and
3. To promote and augment the use of a high-technology infrastructure (computers and the Internet) that can be used to meet additional long-term educational needs.

B. Scientific Objectives

1. To map poorly-known current systems;
2. To provide additional measurements of upper ocean heat flux;

3. To verify or initialize regional physical models and remotely-sensed data;
4. To measure the transport of drifting particles.

III. APPROACH

There are a variety of issues, needs and requirements of this program in order for it to succeed. These are listed below:

1. Cooperate with the existing NOAA Global Drifter Program (GDP). This program is based at AOML in Miami, FL. It currently has 553 drifters deployed and being monitored. These drifters are funded by a variety of agencies in a number of locations throughout the world ocean.
2. Procure and deploy additional drifters of the type used in the World Ocean Circulation Experiment. GDP builds and maintains this type of drifters, approximately 100 of which are currently available for this program to acquire and deploy.
3. Determine what additional operations are necessary. If necessary, desirable, and affordable, install additional sensors on the drifters to measure other parameters; deploy, collect and disseminate information, and make modifications to other drifter operations in order to accommodate the specific needs of both the scientific and educational programs.
4. Provide data and information at a range of timescales. The scales at which data are useful to scientists and educators may vary depending on the processes being studied, the amount of time allocated for a project during the school year, and other variables. To ensure the success of this project, different timescales should be identified prior to deployment of the new drifters. Such timescale identification will facilitate a project design which will accommodate appropriate data acquisition and translation efforts.
5. Provide adequate publicity of the Drifter Program. This effort would be made not only by the NOPP Program Office but by those agencies and individuals involved in the project in order to reach as broad an audience as possible, including not only the students and educators in the current NOPP projects but all schools and the general public as well. Existing NOPP educational efforts will also provide a mechanism for enhancing outreach.
6. Provide continuing data translation. The conversion of the raw data from the drifters into a form which is usable to scientists is currently being done by the GDP. This data translation will be provided as well for the additional drifters. Expanded data translation may be required for easier use by K-12 educators. A commitment from the participating agencies to identify and provide scientific expertise for data analysis and interpretation should be made for the educational portion of the drifter program.
7. Leverage existing resources. In addition to the GDP and current NOPP educational projects, this program should make use of existing materials and curricula, infrastructure, and related efforts in order to tie this program with other projects.

8. Facilitate educational evaluations. The educational portion of this drifter program should be implemented in such a way as to provide educators with the ability to easily evaluate the its success within the framework of required national and state criteria.

9. Evaluate the success of the program. There should be developed some means of evaluating the Drifter Program at the end of the first year to assess its success from both scientific and educational perspectives.

10. Identify and secure additional funding. Although the NOPP has dedicated \$500,000 to this project, it is likely that additional funding will be required to optimize the benefits of the project over time. Additional funds from government and private sector sources should be considered.

IV. ACTIONS

A number of actions and timelines for the Operations, Education, and Science portions of the project have been generated. Specific actions under each category are listed below:

A. Operations

- Identify deployment opportunities (on ships, aircraft)
- Deploy new drifters - this would begin in the spring of 1998, depending on deployment opportunities. Deployment of the drifters would occur on a continuing basis through September 1998. It was recommended that an event be planned around the release of the final group of drifters with student/teacher participation.
- Data retrieval - this would be accomplished in conjunction with GDP, their existing ARGOS contractor , and the existing data retrieval and posting on the Web.

B. Education

- Publicize the project - this needs to be done as soon as possible. Publicity materials need to be prepared and available for use at the April meeting of the National Science Teachers Association and meetings of the National Marine Educators Association. Materials should also be prepared for use during National Science and Technology Week in April. The publicity campaign will be maintained throughout the life of the project.
- Develop tools and materials - in conjunction with existing educational programs.
- Develop the YOTO Drifter Project Website - The development of this website should be accomplished soon by an external contractor.
- Develop an education program in conjunction with existing NOPP educational efforts. Modifications of existing curricula should be accomplished this spring, thereby facilitating the availability of appropriate curricular materials for use by teachers in the summer of 1998 and for precollege students by the fall.

C. Science

- Develop broad objectives - done at workshop, 7 January 1997
- Have a "town hall" meeting with scientists at the Ocean Sciences (AGU/ASLO) meeting 9-13 February 1998). The purpose of this meeting will be to obtain input from the scientific and college educational community on the scientific objectives and the educational aspects of the Drifter program.
- Revise scientific objectives and hypotheses and subsequent deployment plan based on input from scientists.

V. DIRECTION AND COORDINATION

The YOTO Drifter Project will be managed by a committee. Overall coordination of the project will be provided by Ellen Prager of the US Geological Survey. Science direction and coordination of input from that community will be provided by Peter Niiler, Scripps Institute of Oceanography and Mark Swenson, NOAA AOML. Input regarding drifter operation and logistics will be provided by Mark Bushnell, NOAA AOML. Coordination of the educational aspects of the program will be provided by Sharon Walker, University of Southern Mississippi.