

Coastal Observation Technology System Project Summary – 2004

Project Name/Title: Research and Development of a Coastal Ocean Observation Sensor Platform: Ocean-Atmosphere Sensor Integration System (OASIS)

Date Project Initiated: September 1, 2003

Recipient Institution: Virginia's Center for Innovative Technology

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Brief Project Summary: The primary focus of the project is to establish an ocean observing system along the coastal ocean regions of Virginia, Maryland, and Delaware. A second focus is to establish this system so that it can be used by NASA scientists to develop and test new sensors, platforms, and applications to support NASA and NOAA coastal ocean remote sensing activities and products. The project is focusing on several developments, including developing, testing, and deploying a solar-powered surface autonomous vehicle (Ocean-Atmosphere Sensor Integration System, or OASIS) that is being commercialized with support from NASA's SBIR program. The project is presently developing software for command and control of multiple OASIS platforms to support real-time dynamic mapping capabilities. In conjunction with this, the project is developing a multispectral in situ fluorometer that will be incorporated with the OASIS platform to support HAB (harmful algal bloom) detection research and development efforts. Finally, the project is working to deploy a suite of three long-range coastal surface current radars (CODARs) that will provide real-time surface currents offshore out to 250 kilometers and along the coasts of Virginia, Maryland, and Delaware.

Accomplishments to Date:

- Completion of OASIS platform design that exceeds design specifications and with a reasonable (less than \$20,000 to \$30,000) manufacturing cost estimate.
- Completion of guidance, navigation, and control testing software
- Collaborated with NASA Goddard Space Flight Center's Autonomous Sensor Fleet software group to create an application for multiple platform command and control for dynamic mapping applications.
- Completion of design for the multispectral in situ fluorometer with EG&G and Luna Innovations.
- Identified locations for CODAR radar units.

Current Year Objectives:

1. Complete development, fabrication, and testing of OASIS prototype platform, including testing of guidance, navigation, and control firmware for autonomous surface mapping.
2. Complete development and testing of the spectrometer-based, fluorescence sensing system under development by Luna Innovations and EG&G.
3. Complete field testing of the OASIS platform to determine its capabilities under actual open-ocean situations.
4. Deploy the suite of three CODAR units along the three-state coastal region.
5. Develop an OpenDAP data archive system for the CODAR and OASIS data sets to allow for open community access to all data sets, as recommended by Ocean.US.

Partners: NASA, Old Dominion University, Donald L. Blount & Associates, DLBA Robotics, Luna Innovations, Oceana Sensor Technologies, Emergent Technologies, EG&G Services, Pacific Gyre, and Noesis Inc.