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# **BIOACOUSTICS/OPTICS INTEGRATION WITH TWO PLATFORMS: BIOMAPER-II USED IN SURVEYING A COASTAL REGION AND A FIXED NEAR-SHORE SETUP**

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This is associated with the parent grant ONR N00014-95-1-0287 entitled "Acoustic scattering models of zooplankton and microstructure" that has a long term goal of understanding the acoustic reverberation properties of zooplankton and microstructure so that there will be an improved capability in 1) predicting sonar performance and 2) use of sonars in the mapping of the zooplankton and microstructure. See report of that grant for more details.

## **APPROACH**

The key aspect to the approach in this AASERT research is the integration of acoustics backscatter data and video plankton recorder data in order to identify and quantify the sources of scattering in the water column in the ocean. This is being done in two ways: 1) Development and use of a simple set of hardware that contains several acoustic transducers and a video plankton recorder. This system can be deployed on the seafloor (cabled to shore) or cast from a ship (cabled to the ship). Acoustic scattering data and video data from the \*same\* volume of water is collected simultaneously so that there can be one-for-one correlation between what is seen acoustically in the water and what is being seen optically in the water. 2) To combine acoustics and video plankton recorder data sets from the newly developed BIOMAPER-II survey system so that correlations can be made between the acoustics and optics from broad-scale surveys of shallow water regions.

## **ACCOMPLISHMENTS**

1. All components of the cast/seafloor-mount system have been completed. Integration and deployment in local waters near WHOI is scheduled to take place in the late fall of 1997.
2. The first science cruise using BIOMAPER-II was successfully completed. This cruise involved a broad-scale survey of the Gulf of Maine where there was great biological and physical (internal wave) activity.
3. Concurrent with the preparation for the field activities, existing data involving

co-registered video and acoustic scattering data from zooplankton tethered in the laboratory were analyzed. This activity helped to develop methods that will be used for analysis of the field data.

## **RESULTS**

Analysis of the video and acoustic data from the laboratory has indicated significant correlation between the measured size of the animal and the acoustically inferred size. This result indicates significant promise for applying the methods in the ocean environment (beginning in the late fall, 1997).