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THE SURFACE WAVE DYNAMICS EXPERIMENT (SWADE)

by

S.R. Long, J.D. Oberholtzer, C.W. Wright, and H.G. Shirk (672)

SWADE was developed to study the dynamics of the wave field development in the open ocean with the following specific objectives:

- (1) to understand the development of the wave directional spectrum under various conditions,
- (2) to determine the effect of waves on the air/sea transfers of momentum, heat, and mass,
- (3) to determine breaking distributions as a function of sea state, wind, and boundary stability, and
- (4) to provide data and analyses for ERS-1 validation.

The experiment is designed for the Winter of 1990-1991. Four buoys will be deployed for 6 months starting October 1990 and ending March 1991. During that time period, three intensive periods of 2 weeks duration each will be selected for frequent aircraft flights for wave data collection to satisfy scientific studies, as well as ERS-1 validation needs.

Experiment Location

The buoys will be located at the corners of a square of approximately 100 km on each side, and centered at 37° N and 74° W. This location is about 200 km due east off the Wallops Flight Facility, just off the continental shelf in the deep ocean. Based on available statistics, the buoys will be outside the Gulf Stream proper, with a slight possibility of encountering

occasional meanders and some warm core rings near the conclusion of the deployment.

Management and Wallops Personnel

The Goddard portion of the SWADE project will be under the overall direction of Norden E. Huang. He is one of the initiators of the SWADE project. His other duties include analytic modeling of the probability structures and dissipation source function, investigating the possible impact of Kelvin-Helmholtz instability on the wind wave generation, and assisting the validation of the scatterometry.

Steven R. Long will be the Chief for the ground operations at Wallops. Additionally, he will be the primary investigator for the probability structure of the ocean surface wave field and the co-investigator with N. E. Huang and A. K. Liu in assessing the new possibility of wind-wave generation mechanisms. Erik Mollo-Christensen, supported by ONR, will develop the telemetry system for all the ground data collection. He will also assist and supervise the data archiving and other theoretical investigations.

David Oberholtzer will be responsible for data archiving. He will be assisted by a full-time data technician, Helen Shirk, at Wallops, and also by Erik Mollo-Christensen for this duty. Wayne Wright will assist Erik Mollo-Christensen in the development of the central on-board computers and telemetry systems.

For further information on Project SWADE, contact N.E. Huang at the GSFC or S.R. Long at the GSFC/WFF.