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COUPLED OCEAN-ATMOSPHERE INTERACTION AND THE DEVELOPMENT OF THE MARINE ATMOSPHERIC BOUNDARY LAYER - AASERT

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LONG TERM GOALS

The goal of this research is to provide an understanding of the processes that control the structure of the marine atmosphere and its interaction with the ocean.

SCIENTIFIC OBJECTIVES

The specific objectives of this work are to understand the processes that control the exchange of heat and moisture between the ocean and the atmosphere; to understand the physical processes that control the formation, development and decay of stratocumulus clouds in the marine boundary layer; and to understand the structure of the coastal marine layer.

APPROACH

Two students are supported under this award to use data collected in several field programs to develop doctoral dissertations. One student is focusing on a numerical model of clouds, the other is using data collected during Coastal Waves ’96 to investigate the structure of the coastal marine boundary layer.

WORK COMPLETED

Both students have passed their dissertation qualifying exams. Various presentations have been made.

RESULTS

The focus of one student’s effort has been the analysis of data collected during the Coastal Waves Experiment in 1996 (CW96). The coastal atmosphere is frequently stably stratified. Approximately 50% of the CW96 aircraft observations indicate stable conditions. Preliminary results indicated that the marine layer can be treated as a two-

layer fluid and that the boundary layer is frequently supercritical. Patterns of Froude Number indicate a complex spatial structure.

IMPACTS

None thus far.

TRANSITIONS

None thus far.

RELATED PROJECTS

This project is related to ongoing coastal related work by Clive Dorman and Clinton Winant, an NSF project that supported the coastal California field work, ONR award N00014-7-1-0054 that supports studies of the littoral atmosphere, and ONR award N00014-97-1-0762 for studies of cloud processes.