Sea Grant Florida

FLORIDA SEA GRANT COLLEGE PROGRAM

ABSTRACT

TITLE: Hurricane Data Collection Hardware and Software: Improvements, Maintenance and Development.

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Every year, billions of dollars are lost in property and economic disruptions due to windstorms. Improved methods to safeguard life and property against these storms can be developed through a realistic assessment of extreme wind behavior, structural response to these winds, and practical solutions to reducing wind damage. Several universities and organizations have started taking field measurements of wind velocity within the ten-meter envelope that most structures reside, and the resulting wind pressure on full-scale residential structures.

The University of Florida, Clemson University, and Florida Institute of Technology comprise the Florida Coastal Monitoring Program (FCMP). The program is sponsored by the Florida Department of Community Affairs and was initiated in 1998. The FCMP goal is to characterize wind-structure interaction in extreme wind conditions through full-scale data collection. Phase one of the project includes the development of portable towers to collect wind velocity data. Phase two includes measuring wind pressures on the exterior and interior of low-rise homes.

This thesis presents several contributions to improving, maintaining, and developing the FCMP: 1) The maintenance of the portable towers to ensure they are ready for each hurricane season, the design of base plate stabilizers to steady the five-meter aluminum towers during deployment, and the wiring of fifteen coastal homes. 2) The organization and processing of the collected data for all storms from 1999 to 2002. 3) Improving a software program, written at the University of Florida, to view and analyze wind velocity data collected during hurricane landfall. 4) The development of a software program to view and analyze the pressure data collected from instrumented homes. These contributions will help further ongoing efforts to provide the baseline wind behavior information needed to develop cost-effective wind damage mitigation strategies.