



**US Army Corps
of Engineers®**

Engineer Research and
Development Center

Coastal Field Data Collection

Field Research Facility Measurements

Problem Corps coastal projects require accurate knowledge of the environmental conditions that affect them. While this can be gained from physical or computer modeling, field measurements are required to evaluate and calibrate models and to improve the theoretical understanding necessary to improve models. This is particularly true for navigation and beach projects where sediment transport is important, since the theories on which existing sediment transport models are based are highly simplistic.

Research Approach Continuously operate and maintain a comprehensive suite of sensors that monitor the coastal environment at the Corps' Field Research Facility (FRF) located on the Atlantic Ocean in Duck, NC. Among the unique datasets collected since 1980 are long-term measurements of sea-level rise, nearshore profile evolution, hurricane surge/erosion and wave transformation. Evaluate and implement new measurements techniques as they become available including: video observations (1986), high resolution directional wave measurements (1986), bottom boundary layer and offshore change measurements (1994), shallow swath surveys (2007). Support short-term multi-investigator experiments that provide enhanced datasets on hydrodynamics and sediment transport over complex and evolving bathymetry. The data from these experiments have been used extensively for numerical model development and testing, including the new MORPHOS 3D numerical model.

Labs/others involved Wilmington District; NOAA National Ocean Service (NOS) & National Data Buoy Center (NDBC); University of North Carolina (UNC, ECSU, ECU, CSI); Navy (NRL, ONR, NFEC); Oregon State University, Ohio State University, US Geological Survey, Alliance for Coastal Technologies, and others.

Final Products FRF real-time and archived data along with analyzed data products and model nowcasts are automatically posted to the web (3000+ daily hits). Studies and instrument evaluations are reported in technical reports and conference papers. Recent accomplishments include an analysis of depth of closure; use of Acoustic Doppler Current Profilers for measuring wave data, and use of interferometric survey system for shallow-water surveying.

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