(White Paper, Proposal for a)
Coastal Data Assembly Facility
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Coastal oceanographic and meteorological data collection is rapidly expanding along the nations coasts. Enabling technologies such as fiber optic undersea cables and associated transmission systems make possible the acquisition and transmission to shore of high quality, high bandwidth data. The recent advent of many focused natural laboratories along the coasts brings together groups with common needs. The tact being taken by the all of the natural laboratories is to provide a densely instrumented ocean site that serves as a backdrop suitable for a wide variety of ocean experiments.

One such natural laboratory is the South Florida Ocean Measurement Center (SFOMC). The SFOMC stakeholder partnership includes the Naval Surface Warfare Center Carderock Division (NSWCCD), Florida Atlantic University (FAU), University of South Florida (USF), University of Miami Rosensteil School of Marine and Atmospheric Science (UM-RSMAS), Nova Southeastern University Oceanographic Center (NSUOC), the National Oceanic and Atmospheric Administration-Atlantic Oceanographic and Meteorological Laboratory (NOAA-AOML) and The Harbor Branch Oceanographic Institution (HOBI). This Center was established for collaborative research efforts in ocean engineering and oceanography in South Florida. One objective of the Center is to provide the scientific community with a natural ocean laboratory within the existing SFTF range operated by NSWCCD.

The combination (high bandwidth data, densely instrumented sites, and many users and experiments) creates an opportunity to bring a complete picture of the coastal environment together for use by both the broad area research and local area applications community. Therefore, a need and an opportunity exist to create a Coastal Data Assembly Facility (CDAF) within the South Florida Ocean Measurement Center (SFOMC) infrastructure. The proposed CDAF would serve a support mission at SFOMC. The CDAF would provide integration and real time display, via the Internet, of nearly all-available locally colleted data, in a format suitable for use by both the applications and research community.

The applications community interested in obtaining real time integrated display of data of local interest includes but is not limited to: The Port Everglades pilots, who are requesting information to support safe navigation in strong currents as they approach the coastline. They have funded installation of a port ADCP and would benefit significantly from a real time display of all available, locally colleted, data. The Coast Guard Station Fort Lauderdale commanding officer is interested in using the proposed CDAF to support local search and rescue. The commander officer has noted the need for rapid response and real time knowledge of the strong coastal currents and rapidly developing local sea states. Broward county is requesting information in support of beach refurbishment and spoil disposal and local wastewater utilities are seeing information in support of ocean outfall assessments.

Guided by the U.S. Navy's reappraisal of its ocean science research needs to place greater emphasis on the oceanography and meteorology of the coastal zone the research community is now placing a greater emphasis on the same. The CDAF would make available in real time over the Internet links to, and display of, data being gathered as part of local area coastal research. Current scientific research is related to upwelling fronts, vertical turbulent mixing processes, surface wave propagation, boundary layer dynamics, responses to cold air outbreaks, and estuary shelf coupled circulation. Engineering research is being conducted in the areas of underwater acoustics, water and wave mechanics, autonomous vehicles, cable and buoy dynamics.

Clearly the data being collected by scientific and engineering users of the SFOMC and data being collected serves a dual use to both national security and ecosystem security. The implementation of CDAF will support this dual use activity and expand the user groups to include public outreach. Some limited SFOMC data is now being provided over the Internet this data has served well both the general public and scientific and engineering SFOMC user groups. Two immediate examples come to mind. Local dive clubs and fishing clubs are using the limited amount of ADCP (water velocity data) to plan fishing and diving trips. The amount of public use becomes most apparent through phone calls when the system goes down and data is not available. A recent United Kingdom based engineering user group was able to use ADCP data (feely available on the Internet) to aid in the conduct of an autonomous vehicle experiment.

The proposed CDAF would serve a support mission at SFOMC. The CDAF if supported would provide a valuable resource that is currently not available or at least available only in a limited extent. The CDAF once established would serve as an infrastructure asset to the general public, city, state, and federal governments The CDAF would provide integration and real time display, via the Internet, of nearly all-available locally colleted data, in a format suitable for use by both the applications and research community.

We seek funding for a one-year period to add one full time computer scientist/electronic engineer and two half time graduate students in computer science or electronic engineering field. The first-year effort would establish the working systems the protocols to be used and the database structure to be followed in subsequent years. The system would be implemented on two new NT servers and four existing workstations. To ensure fast accurate and reliable implantations of the CDAF full time computer scientist/electronic engineer shall be fully knowledgeable of NT Server Administration, Visual Basic, Microsoft Access, Visual Interdev, Microsoft Front Page, Visual C, and shall have a demonstrated capability to do the type of work we propose.

The proposed budget first-year effort and deliverables is given on the following page. (*Omitted*)