



Field Research Facility Data Integration Framework - FDIF

Improved Access & Preservation to a National Coastal Treasure

ERDC-CHL operates the Field Research Facility (FRF) at Duck, North Carolina, where we maintain a number of oceanographic datasets, including winds, waves, water levels, currents and beach morphology. Together, these datasets provide a 35-year record of coastal conditions (as of 2016) and have become an important national resource for our coastal engineering and scientific communities. To preserve this important national archive, CHL's Coastal Observation & Analysis Branch developed the FRF Data Integration Framework (FDIF) with the help of industry partner RPS ASA and the U.S. Army Corps of Engineers Mobile District Spatial Data Branch. The FDIF represents a combination of processes, standards, people, and tools used to transform disconnected enterprise data into useful, easily accessible information for analysis and reporting.

Problem

The FRF's observations represent a \$40M national investment into Coastal Knowledge. Throughout the observation lifecycle spanning more than 3 decades, the following challenges have been met:

- 35-Years of instrument, data collection, and format changes
- New advances in data QA/QC methods
- Dwindling institutional knowledge (retirements)
- Expanding sensor count (80+) and user base (1 million files/year)

Technology

A public facing data portal connects the user to the framework that integrates both oceanographic observation and geomorphology measurements using a combination of ESRI and open-source technology while providing a seamless data discovery, access, and analysis experience to the user. The user interface was built with ESRI's JavaScript API and all project metadata is managed using Geoportal. The geomorphology data is made available through ArcGIS Server, while the oceanographic data sets have been formatted to netCDF4 and made available through a THREDDS server. Additional web tools run alongside the THREDDS server to provide rapid statistical calculations and plotting, allowing for user defined data access and visualization. Alternatively, users can access the database from the command line making use of netCDF libraries.

Benefit

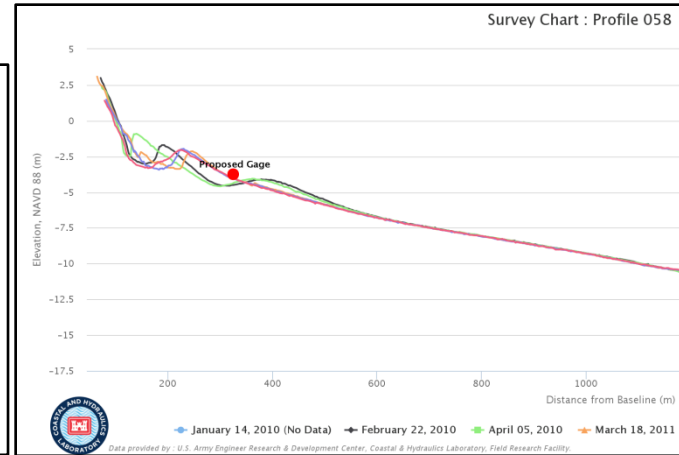
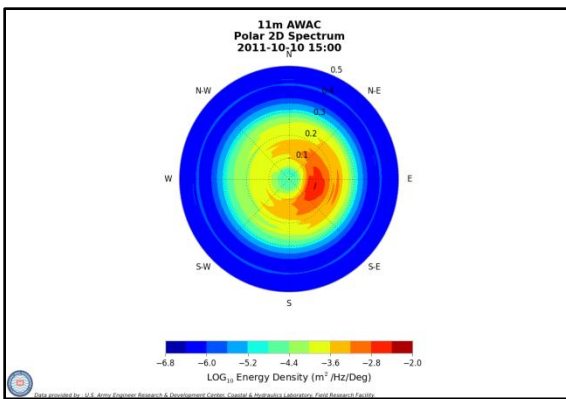
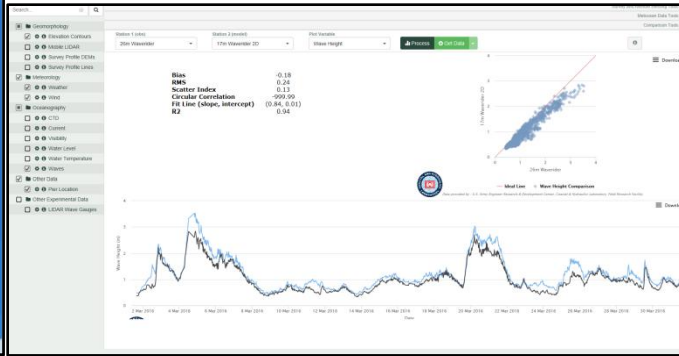
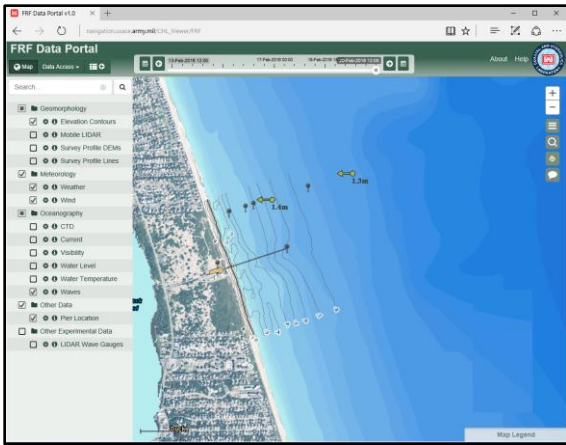
Allows Scientists, Engineers, and the public rapid access to observations and tools:

- Near real time data from a variety of coastal observations
- Provides near real-time data access for implementation of Coastal Model Test Bed
- General plotting and statistics for user defined time periods covering (1980 – current)
- Tools for statistically comparing two datasets (i.e. observed vs. modeled)

Status

Version 1 was released on 21 December 2015 and is accessible at the web address below:

http://navigation.usace.army.mil/CHL_Viewers/FRF/



FDIF – Data Portal Version 1.0 (top left) , comparison tools - displaying observations from 17 & 26m waveriders along with error statistics (top right), plotting tools - displaying polar 2D wave spectrum from 11m AWAC wave and current sensor (lower left), and profile tool – displaying selected surveys along a transect north of the pier (lower right).

ERDC Points of Contact

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