US Army Corps of Engineers®
Engineer Research and Development Center

Coastal Inlets Research Program

TideNet

Description

The TideNet is a web-based Graphical User Interface (GUI) that provides users with GIS mapping tools to query tide data sources in a desired geographic region of USA and its territories (Figure 1). Users can select a tide data source through the Google Map® interface to view data and parameters of interest. TideNet allows users to fetch the data from a source to plot, analyze and extract tidal information in different formats based on a user-specified time window, and output tide data for engineering applications. TideNet has additional post-processing capabilities to produce tables and figures, and prepare input files for numerical models used in USACE projects.

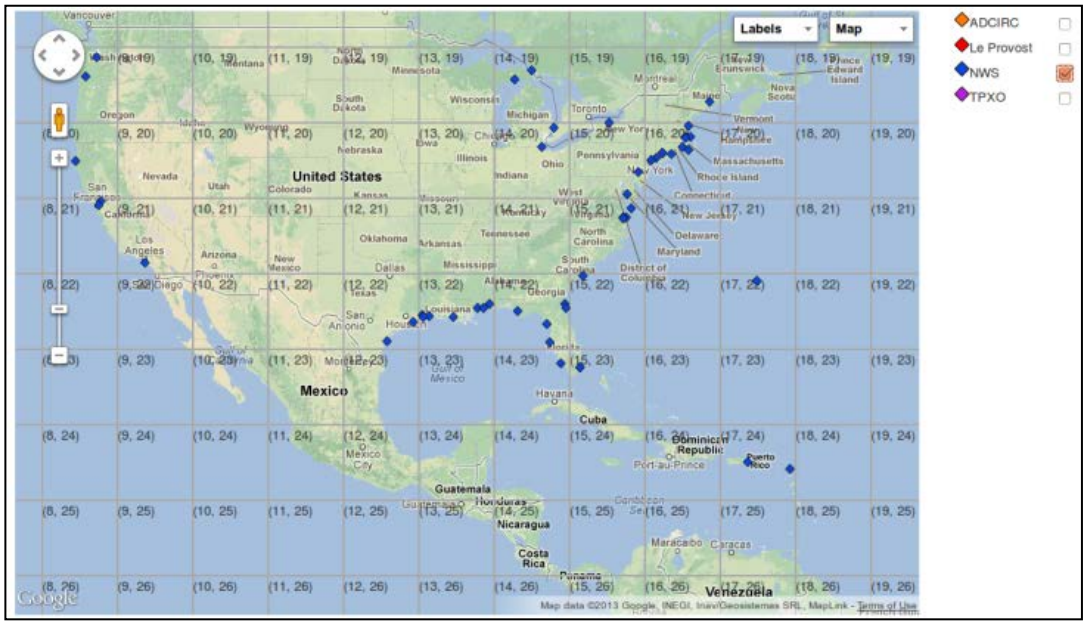

Figure 1. TideNet data sources and locations

The data management is handled using combination of databases, web programming language, Google earth and other GIS maps, and Python scripting. In addition to providing plots and tables from the source, TideNet may be used to post-process tide data downloaded from any source to perform additional tidal analyses. The home page of the TideNet map in Figure 1 displays four data sources, which include ADCIRC, Le Provost, the National Weather Service (NWS), and TOPEX/POSEIDON Global Tidal Model (TPXO) databases. Users can zoom into the region of interest where water level and wind data are desired. The display and plotting options include text (ASCII) files of tide record time series or html files, histograms of data, and images (.jpg or .png) or portable document (.pdf) files of plotted data (Figure 2). The numerical model support in TideNet allows users to select a model (e.g., CMS-Wave, CMS-Flow, etc.) to prepare input water level data.

Issue Addressed

The purpose of this web-based tool is to address a basic shared need of the Corps for coastal modeling and planning to acquire oceanographic data and metrics while minimizing complexity and uncertainty in the process. TideNet provides water levels and current data required for coastal, ocean, and marine engineering applications, facilitates conversion of data used in input files for numerical wave models developed by the Corps of Engineers, and provides tabular and graphical information for project planning and design reports.

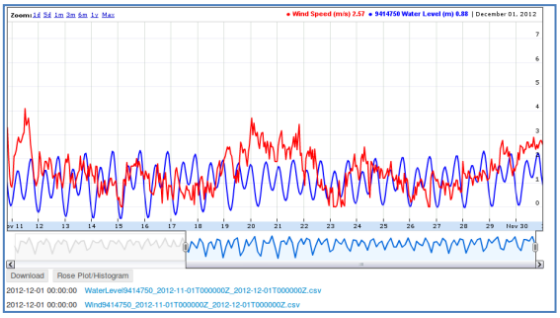

Figure 2. Time series of water level and wind speed data

Products

The TideNet tool is a web-based GUI intended to provide users with a GIS mapping tool to query and select data sources according to the desired geographic region. It uses the Google Map interface to display data from different sources.

Application of Products

Recent project applications for WaveNet include: Ambrose Entrance Channel, NY; Braddock Bay, NY; Tangier Island, VA; Sand Island, WI; Hilo Harbor, HI; Kikiaola harbor, HI; Dana Point Harbor, CA; Tillamook Bay, OR; Grays Harbor, WA; Sand Island, WI; Duluth Harbor, MN; Cape Canaveral, FL.

Projected Benefits

TideNet is a web-based data management tool designed to support USACE coastal navigation and flood modeling and planning missions requiring tide, water level, and wind data. This tool facilitates access, process and analysis of tide (water levels and current) and wind data from different data sources, and provides users a combination of analysis and graphical capabilities to minimize the complexity and uncertainty of data processing in USACE project applications. TideNet provides most reliable and accurate data necessary to improve engineering design, operation and maintenance of navigation projects, rehabilitation data for inlets, jetties, breakwaters, and data for evaluation of the impacts of engineering activities affecting safety of coastal navigation (e.g., channel deepening, and jetty modifications) on port access and utilization and shoreline erosion.

Documentation

A technical note describes general features of TideNet, the elements and operation of GUI, characteristics of different data sources, and analysis capabilities available in TideNet.

Points of Contact

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CIRP Website

- Please see the CIRP website to download documentation: http://www.erdc.usace.army.mil/Missions/WaterResources/CIRP/Publications.aspx
- View archived webinars: http://www.erdc.usace.army.mil/Missions/WaterResources/CIRP/TechTransfer.aspx
- Review guidance documented on the CIRP wiki: http://cirpwiki.info/wiki/Main_Page