Proceedings of the Seventeenth (2007) International Offshore and Polar Engineering Conference
Lisbon, Portugal, July 1-6, 2007

ISBN 978-1-880653-68-5; ISBN 1-880653-68-0(Set); ISSN 1098-6189 (Set)

New tools for Oceanographic Data treatment via Web

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ABSTRACT: Spanish institutions have working services to observe marine environment. Despite of this, there was not a common criteria and method for oceanographic data exchange and analysis. This fact becomes a handicap when facing emergency situations at sea. The ESEOO project pretends to solve this lack defining a tool to homogenize time series data analysis. Codes to analyze observed data were developed and improved. Through a user-friendly application, users obtain time plots, descriptive statistics or spectral analysis of data. Web menus and forms allow users to process data, such as currents, salinity, waves or wind. Using a common method to process measured data a significant description of the Spanish sea environment will be achieved.

KEY WORDS: ESEOO; data analysis; currents; salinity; waves; statistics; spectral analysis.

INTRODUCTION

One of the main objectives of the ESEOO Project (Development of a Spanish Operational Oceanographic System) was to create services based on data analysis in order to improve oceanographic data exchange and exploitation. These services would lead to gain knowledge of the Spanish coastal waters as well as they would provide immediate access to processed information, which would be very helpful in decision making during emergency situations at sea.

An initial task was to inventory oceanographic and atmospheric data available among the ESEOO partners. It showed that homogeneous methods for data analysis were needed to obtain a significant description of the marine environment. To this aim, routines were developed to create a service for data treatment accessible via web. This service allows ESEOO partners to obtain automatically and immediately data plots, calculate and plot inertial and sub-inertial series, as well as descriptive statistics (histograms, roses, tables…), T/S diagrams or spectral analysis of measured time series.

The service is able to process a single point measured data of the following oceanographic and atmospheric parameters:

- Water Currents
- Water Temperature
- Water Salinity
- Wind
- Wind Temperature
- Atmospheric Pressure
- Waves (scalar and directional)

Data treatment has been classified in four areas:

- Current Analysis
- Hydrography Analysis
- Waves Analysis
- Atmospheric Analysis

The user performance can be outlined in three steps:

- Definition and description of the point where measured data were obtained (longitude, latitude, name…)
- Load of the data file on the Server.
- Data analysis and download of results.

This service is a specific tool for time series analysis that was meant to help ESEOO partners to process their data using the same common codes through the Internet.

All the ESEOO partners known to have measured time series of oceanographic and atmospheric data were asked to use this service and those results are part of the ESEOO data services, which compiles relevant information about the Spanish waters.

ARQUITECTURE AND TOOLS

The service is based on some codes to analyze time series. In order to make it a user-friendly, a web interface was designed. User handles the application through menus and forms, which are generated automatically (Fig. 1).