WERA
Ocean Remote Sensing

ICHE Hamburg 2014

11th International Conference on Hydroscience & Engineering
"Hydro-Engineering for Environmental Challenges"

Hamburg | Germany
28 September to 2 October 2014

Session T12: Remote Sensing and Field Monitoring
Thursday – October 2 – 13:20 to 15:00 PM
room M

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New Data Management System for Coastal Radar WERA to support decision making

The HF-Coastal Radar "WERA" is a shore based remote sensing system to monitor ocean surface currents, waves and wind direction. This very reliable long range (up to >200 km) monitoring system provides reliable data maps of the coastal zone with high spatial and temporal resolution. These data can be used for decision makers to optimize coastal zone management and planning and in case of emergencies it can be used to support hazard management.

The new data management system provides easy and fast access to all archived current, wave and wind data. The data are stored in an archive and can be accessed as time series plots for individual grid cells or as animated maps for the entire measured area. For each grid cell all data are marked with quality flags which can be used to exclude suspicious data from the analysis. Various output formats are available to compare the ocean radar data with data acquired from other sensors or numerical models.

In addition to use the measured data for planning and real-time monitoring, a special forecasting mode can be used to improve predictions of ocean currents and waves in case of risk management. Due to the outstanding accuracy of the radar the acquired data can be assimilated into numerical oceanographic models. In case of accidents in a distance of up to 200 km off the coast the real-time ocean surface current data can help Search and Rescue (SAR) operators. Presently, SAR tools are based on hydro-dynamical and atmospheric models to provide hindcast and forecast situations. Even if these oceanic numerical models are efficient to produce instantaneous maps of currents, the accuracy of derived Lagrangian trajectories is not sufficient for search and rescue purposes.

Results of various experiments with drifters to simulate a drifting persons or containers show the significant improvement of the drift simulation, when using real-time current data provided by radar systems instead of using results from numerical models only. This improved quality of the drift prediction can be very useful for various applications.

The same tool can be used for backtracking a monitored oil spill and estimate the origin to identify the polluter. Furthermore the improved numerical models can be used to provide more reliable metocean forecasts (sea states and currents) to be used by ferry operators. Data and experimental results from the French coast demonstrate the efficiency of these instruments.

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http://www.iche2014.baw.de/venue/index.html