FIELD_AC

Fluxes, Interactions and Environment at the Land-Ocean Boundary. Downscaling, Assimilation and Coupling

TOWARDS MORE TARGETED COASTAL MARINE FORECASTS

Coastal zones are on the edge of land and ocean. Here rivers mix with salty waters. Here wind-waves approach the shore and become a dominant agent. These effects create special conditions that generate a need for more targeted regional marine forecasts. The project FIELD_AC takes on this forecasting challenge.

As fresh flood water mixes with the sea, large scale oceanographic models such as the GMES Marine Service prove insufficient when predicting marine conditions in coastal zones. These effects, which hamper informed environmental decision making, generate a need for more targeted regional marine forecasts.

The FIELD_AC project aims at providing an improved operational service for coastal areas. Through the introduction of more comprehensive land boundary conditions, driving factors and their interactions, the project will advance the state of art (e.g. 3D salt-wedge dynamics or wave-current 3D couplings) and provide higher accuracy and robustness at beach/harbour scale. The project aims at developing such computations within four "geometrically" restricted domains which cover a representative set of oceanographic conditions in terms of tide, wave, and energy.

By means of enhanced use of in-situ data collected in the coastal areas and remote observation data from satellites, FIELD_AC seeks to bridge the gap from shelf predictions to small scale local simulations of river mouth and beach-scale conditions. In doing so, the project not only provides enhanced information on environmental conditions in these areas, it also adds value to large scale oceanographic models developed by the GMES Marine Service, casting light on the complex interplay between the waters of lands and seas.

Augistín **SÁNCHEZ-ARCILLA**
is project coordinator

Kevin Bourdeaux © Fotolia.com

FIELD_AC assesses the quality of coastal scale oceanographic predictions. It specifically includes free-surface waves and continental discharges, with emphasis on coupling and high resolution.

Questions & Answers

What do you want to achieve with this project?

We want to include land discharges, both from rivers and distributed run-off to coastal oceanographic predictions. We also want to add wind-waves (sea and swell) to such predictions, focusing on the coupling terms which are so important in coastal areas. This is because high-resolution means more than just decreasing the numerical mesh size.

Why is this project important for Europe?

Most coastal problems occur near the coast and in these "restricted" domains present forecasting still shows large errors. We want to reduce those errors for a representative number of coastal cases and, from here, extend the approach to other coastal areas in the EU.

How does your work benefit European citizens?

Our work will show citizens of the EU and stakeholders from European Coastal zones how to use oceanographic predictions for leisure (e.g. surfing) or economic (e.g. aquaculture) activities. We also want to show them the limits of predictions in the present state of our technology.

FIELD_AC

Fluxes, Interactions and Environment at the Land-Ocean Boundary. Downscaling, Assimilation and Coupling

LIST OF PARTNERS

- Universitat Politecnica de Catalunya, Spain
- Katholieke Universiteit Leuven, Belgium
- Service Hydrographique et Oceanographique de la Marine, France
- GKSS - Forschungszentrum Geesthacht Gmbh, Germany
- Instytut Budownictwa Wodnego Polskiej Akademii Nauk, Poland
- Natural Environment Research Council, United Kingdom
- Consiglio Nazionale delle Ricerche, Italy
- DHI, Denmark
- Barcelona Supercomputing Center - Centro Nacional de Supercomputacion, Spain

COORDINATOR

Universitat Politecnica de Catalunya, Spain

CONTACT

Prof. Agustín SÁNCHEZ-ARCILLA
Tel: +34 934016468
E-mail: agustin.arcilla@upc.edu

PROJECT INFORMATION

Fluxes, Interactions and Environment at the Land-Ocean Boundary. Downscaling, Assimilation and Coupling (FIELD_AC)
Contract no: 242284
Starting date: 01/01/2010
Duration: 36 months
EU Contribution: € 3.309.416
Estimated total cost: € 4.229.558

GMES Downstream Services