



The POL Coastal Observatory: into the fourth year

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A pilot Coastal Observatory has been established in Liverpool Bay (eastern Irish Sea) that integrates near real-time measurements with coupled models in a pre-operational coastal prediction system. The system began in 2002 and will run beyond 2007. The aim is to understand a coastal sea's response to natural forcing and the consequences of human activity. The foci are the impacts of storms, seasonality, and variations in river discharge (freshwater and nutrients) on the functioning of Liverpool Bay.

Measurements include: in situ surface waves, vertical profiles of current, temperature, salinity, turbidity, nutrients and chlorophyll (second site added, April 2005); shore-based HF radar - waves, surface currents with a 50-km range; shore-based X-band radar - waves, surface currents, water depths with a 5-km range; trial glider deployment; instrumented ferries measuring surface properties; coastal tide gauges; satellite data - infra-red (sea surface temperature), visible (chlorophyll, suspended sediment).

In cooperation with the UK Met Office, a suite of nested 3-D models (Proudman Oceanographic Laboratory Coastal Ocean Modelling System, POLCOMS) is run daily, focusing on the Observatory area by covering the ocean and shelf of north-west Europe (at 12 km and 7 km resolution), the Irish Sea (at 1.8 km) and Liverpool Bay (at a resolution of 200-300 m). Baseline implementation is a 3-D wave-current model with interaction between wave (WAM) and current modules. Nutrient and plankton dynamics are simulated with the ERSEM (European Regional Seas Ecosystem Model) component of POLCOMS.

All measurements and model outputs are displayed on the Coastal Observatory web site (<http://coastobs.pol.ac.uk/>). A review of the first four years of operation will be given, with emphasis on integrating the different data streams and on combining these with the model estimates to study spring/neap and seasonal variation.