



The POL Coastal Observatory - seasonal cycles in Liverpool Bay

R. Proctor(1), J. Howarth(1), P. Knight(1), A. Lane(1), J. Humphery(1), M. Smithson(1), S. O'Donnell(1), J. Holt(1), M.Holt(2), D. Mills(3)

(1)Proudman Oceanographic Laboratory, 6 Brownlow St, Liverpool L3 5DA, UK, (2)The Met Office, FitzRoy Road, Exeter. Devon, EX1 3PB, UK, (3)CEFAS Lowestoft Laboratory, Pakefield Road, Lowestoft, Suffolk NR33 0HT, UK

The pilot Coastal Observatory (2002-2006) in Liverpool Bay (Eastern Irish Sea) integrates (near) real-time measurements with coupled models in a pre-operational coastal prediction system. The aim is to understand a coastal sea's response to natural forcing and the consequences of human activity, focussing on the impacts of storms, seasonality, and variations in river discharge (freshwater and nutrients) on the functioning of Liverpool Bay. After two years of operation, measurements now include: In-situ surface waves, and vertical profiles of current, temperature, salinity, turbidity, nutrients and chlorophyll; Shore-based HF radar measuring waves and surface currents out to a range of 50 km; the Birkenhead-Belfast ferry measuring surface properties; Coastal tide gauges; Satellite data including infra-red (for sea surface temperature) and visible (for chlorophyll and suspended sediment). In cooperation with the UK Met Office, a suite of nested 3-dimensional models (the Proudman Oceanographic Laboratory Coastal Ocean Modelling System - POLCOMS) is run daily, focusing on the Observatory area by covering the ocean/shelf of northwest Europe (at 12 km resolution), the Irish Sea (at 1.8 km) and Liverpool Bay (at 200-300m resolution). Recently near-real time river discharges have become available for input to the models. 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>). Developments in the past 12 months are described and the response of Liverpool Bay to local and far-field forcing discussed.