

ABSTRACTS
MARINE FORECASTING
WEDNESDAY 17 JANUARY 2007

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Operational storm-surge modelling in the UK – Dr Kevin Horsburgh,

Proudman Oceanographic Laboratory kevinh- at -pol.ac.uk

The Proudman Oceanographic Laboratory (POL) develops and maintains tide-surge models used to forecast storm surges around the coastline of the UK. These models are run in real-time as part of an operational forecast suite of models at the UK Met Office. This talk will describe the evolution of the system, known as the Storm Tide Forecasting Service (STFS). The system is constantly upgraded in light of scientific developments, and most recently we have extended the domain of the model to facilitate tsunami warning for the UK as well as to capture far-field meteorological effects. A roadmap of system development is presented, including the use of data assimilation and short period ensemble forecasts.

Operational wave forecasting and extreme events – Dr Peter Janssen, European Centre for Medium-Range Forecasts - peter.janssen- at -ecmwf.int

After a brief presentation of the progress in wave forecasting in the past 15 years, I discuss to what extent present day operational wave forecasting systems may contribute to the prediction of extreme events.

Wave forecasting is about the mean sea state, as reflected by the ocean wave spectrum, and for quite some time it was thought that it was not possible to make statements about extreme events. Recently, it has been shown, however, how to relate fluctuations around the mean sea state to the wave spectrum. Therefore, when the wave spectrum is known the probability distribution function (pdf) of the sea surface elevation can be determined. The tails of the pdf give vital information on the occurrence of extreme events such as freak waves.

Based on the above approach, a first version of a freak wave warning system has been introduced at ECMWF at the end of 2003 and some first results will be presented...

**Oil spills prediction – Mr Simon Rickaby, DV Howells
simonrickaby- at -dvhowells.com**

The following will be covered in the paper entitled “Oil spill forecasting”: the fate and behaviour of spilt oil in the marine environment and how the type of oil and weather have a direct impact on what happens to the oil and the strategic responses appropriate to the evolution of an oil slick; the structure of an oil slick, its profile and how the environment in which it is spilt and weather conditions acting upon the slick will effect its eventual out turn and ultimate impact on the human food chain; monitoring and predicting the movement of an oil slick when taking the weather and environmental conditions into consideration. The paper will be illustrated by examples of major marine oil spills and the lessons learnt from them and their implication for the marine community.

**Waves, tides and coastal defences – Dr Alan Brampton, HR Wallingford
a.brampton- at -hrwallingford.co.uk**

The provision of defences designed to protect the many assets around the coastline of the UK has traditionally been an "obvious necessity". However, this perceived wisdom is now increasingly questioned. Ironically, this is in part due to the success of previous generations of coastal engineers who have not only reclaimed large areas of land for agriculture and industrial development but have also provided security for those living in hazardous coastal areas that engenders a complacent attitude to the dangers posed by the sea. In addition, an increasing desire to preserve natural coastal habitats and allow them to adapt to rising sea levels, a drive for "financial prudence" when spending public money and concerns about "sustainability" in a changing climate have forced a radical review of coastal defence policy.

Against this background, there are clear advantages to reducing the "defence standards" along many parts of our coastline, i.e. not designing defences to withstand all but the most extreme conditions, but instead to accept more frequent flooding or erosion events and to cope with their consequences. This approach leads on immediately to the consideration of reducing the risks to people and their property by giving accurate and timely warning of such events. This presentation outlines the development of methods to warn of coastal flooding as a vital element of this policy. Such techniques require a site-specific approach to predicting not only waves and tides but also the interaction between these and the beaches and coastal defences.

**Offshore structures and extreme weather – Dr Colin Grant, Metocean Advisor, BP
Exploration and Production colin.grant- at -uk.bp.com**

Offshore structures are very sensitive to extreme weather, over a range of timescales and applications. The talk will address three main areas of application:- short term forecast for real time operations, seasonal or statistically based forecasts for operational planning, and finally extreme value assessments for the design and recertification of offshore structures. A range of practical examples will be given, together with a discussion of issues currently being addressed by the offshore industry, including extreme water levels and the potential impact of climate change.

<http://info.ogp.org.uk/metocean/>

<http://ioc.unesco.org/gpsbulletin/GPS1&2/Vol1article.htm>