

09 July 2013

R&D Update for Coastal Chairs – for information

With our last briefing we provided an update on R&D recently completed by the joint R&D programme. With this briefing we'd like to take a closer look at some of our on-going work which aims to improve our understanding of coastal change over long time and large space scales.

We introduce two of our current *'flagship'* coastal R&D projects, but start with introducing our ambition to update and improve accessibility to FutureCoast. We hope with your support, we will be able to promote this for R&D funding in 14/15.

What do you know about Futurecoast?



Many people 'believe' that they know what Futurecoast is and what it contains, but rarely are they actually fully aware of the range and depth of information therein.

One belief is that Futurecoast primarily provides mapping of the future shoreline position over the next 100 years. This is partially true but is little more than scratching the surface; the rates of change are indeed one output but almost a by-product of a much deeper study.

A more complete description of Futurecoast is ***"a collation and assessment of all available knowledge on past coastal change at different scales (millennia to decades) to describe the way in which the coastline might be expected to evolve in the coming decades."*** The Futurecoast dataset also provides a thorough understanding of how and why those changes would take place.

Within Futurecoast there are over 3,000 pages of text - a rich source of information for anyone wishing to understand a stretch of shoreline. This is complemented by maps which include over 70,000 features. Despite this wealth of information the only way to access the Futurecoast information is directly from the CD. Data is not downloadable nor can the CD be copied. There is a rapidly increasing risk that all of this data will disappear. At a cost of £1.2million (at 2000-2002 prices) this should not be allowed to happen.

Our proposal is to find a means to increase accessibility of Futurecoast, both to those who have a use for it for statutory undertakings (e.g. EA, LAs, Natural England) and the wider public (academia, schools, individuals) for general information, research, and improving awareness of coastal issues; a more informed public can be a more receptive public!

There are a variety of options for doing this, but making the data web-available seems logical. We are keen to hear feedback from the Coastal Chairs on this proposal.

Cliff and shore erosion under accelerating sea level rise



Research Contractor: Royal Haskoning DHV

Evidence lead: Owen Tarrant – Principal Research Scientist

Project Executive: Jim Hutchison - Regional Flood & Coastal Risk Manager

Lead Business User: Garry Watson – Senior Advisor Partnership and Strategic Overview

Programme 2012 - 2014

Predicting future coastal recession rates

Our knowledge of current and historic recession at a broad scale has developed recently through the Shoreline Management Plans and with projects such as Futurecoast and our National Coastal Erosion Risk Mapping. However, two key areas of uncertainty remain:

1. the effects of climate driven sea-level rise on coastal recession; and
2. coastal erosion 'catch-up' following removal of coastal protection structures.

The objective of this project is to derive ***a consistent set of coefficients of erosion acceleration for the coasts of England and Wales for the prediction of recession due to accelerated sea level rise over the next century.***

What's in scope

The following aspects are notably within the scope of this project:

- The whole coast of England and Wales
- Shores comprising a shallow or absent beach.
- Cliff and shore response to sea level rise and removal of coastal protection (coastal 'catch up') A 100+ year planning horizon
- Consideration of erosion rates across a wide range of sea level rise scenarios
- A review of the relative strength of influence of sea level rise and rainfall on cliff erosion rates over the long timescales of interest to this project

Our key outputs will be:

- A set of spatially varying coefficient of acceleration of coastal erosion for England and Wales which can be easily applied to historic recession.
- User guidance on the application of the coefficients and support technical reports

Our programme

The project has been split over two stages of development and pilot testing and then national application. During stage one; we will be undertaking four pilot studies, including one site looking specifically at issues of coastal catch-up following defence removal.

Provisionally, the following sites have been short listed

- Berling Gap;
- Happisburgh (catch-up);
- South Wales/Severn; and
- Whitby.

If you are interested in this project or one of the potential pilot sites are in your patch- please get in touch.



Integrating COASTal Sediment Systems (iCoasst)



Consortium lead: University of Southampton (Prof Robert Nicholls)

Lead funder - NERC

Evidence lead: Owen Tarrant – Principal Research Scientist

Project Executive: Wendy Brooks – FCRM Manager

Lead Business User: Uwe Dornbusch – Supra-area coastal engineer

Programme 2012 - 2016

Related to our ambitions for improving Futurecoast data accessibility and the above project on accelerated erosion due to sea level rise is the iCoasst Project.

Who and what are iCoasst

iCoasst is a research consortium of universities, research laboratories (including Channel Coastal Observatory) and engineering consultants led by Southampton University. Their aim is to provide the *next generation* of modelling tools to help quantify how our coastline will evolve over the long term in response to our management activities and due to climate change. These new tools will be open source and available to the practitioner community.

The consortium is funded by the Natural Environment Research Council (NERC) under its Natural Hazards Theme, and the Environment Agency is a active partner; providing the consortium with both advice and access to significant amounts of data. The EA also has ownership of the final objective of this project – to further pilot the tools and techniques developed by iCoasst and ensure that they can be used to improve operational decision-making.

Engaging with the practitioner community

A significant condition of UK Research Council funding is contingent on the researcher's ability to demonstrate a clear *pathway to impact*. To these ends the consortium are piloting the new mapping and modelling tools on two pilot sites in the UK – Liverpool Bay (SMP22) and the Suffolk Coast (SMP7). This pilot testing is being designed to ensure the models produce qualitatively correct and quantitatively useful morphodynamic behaviours.

The consortium are now engaging with those responsible for managing the coast in these areas and has held two workshops in each pilot sites. With aim of ensuring that the research builds on the sound understanding of long-term coastal changes developed during the SMP process and to identify real-life coastal management problems as challenging 'tests' for the new modelling tools developed.

Our role

Given our role as project partner, we are working to ensure that the research outputs have practical applicability. Over the long-term we envisage that all the projects presented in the paper will converge so we have one single place to go for the information and tools to help us predict long-term and large-scale morphological change in the UK.

