Cork to Become Hub of Maritime Research

The establishment of Maritime Campus Ireland, as announced by Eamonn Ryan, the Minister for Communications, Energy and Natural Resources, will significantly enhance maritime research in Ireland. As a result of the initiative, UCC’s Hydraulics and Maritime Research Centre (HMRC) and the CMRC will collaborate with Cork Institute of Technology (CIT), the Naval Service and the National Maritime College of Ireland (NMCI).

This clustering of complementary, multidisciplinary research groups will help to stimulate growth in the maritime economy of Ireland. One of the first steps in turning this initiative into a reality will be the development, with government investment, of a state-of-the-art wave tank and ocean energy research facility at a new site in the Cork Harbour area, therefore boosting Ireland’s ability to carry out world class research and development in the ocean energy sector.

Commenting on the initiative Valerie Cummins, the CMRC Director, said “this collaboration will allow us take advantage of the combined research skills and infrastructure in the various institutions and will help position Cork at the hub of national and international R&D activities in the maritime area”.

A view over the lower Cork Harbour area from the Naval Base, Haulbowline.
Focus Coastal Processes and Seabed Mapping

The recommendations from the Irish Sea Marine Aggregates Initiative come at an opportune time given the recent publication of the EU’s vision of an Integrated European Maritime Policy. This policy is attempting to rationalise the sectoral approach to European maritime affairs and reduce potential conflict. The impacts of climate change on our coastal areas is also one of the issues under scrutiny at the CMRC as illustrated by its work at Inch Strand, Co. Kerry and in Courtmacsherry Bay, Co. Cork. The Centre hopes to build on its current activities in this area by participation in new projects under the Interreg Northern Periphery Programme, which links Ireland to its Scottish, Scandinavian and Arctic neighbours!

Building from the Seabed

The use of sediment from the seabed for construction purposes has long been the practice in other European coastal countries. The potential for the sustainable use of Ireland’s seabed to supply aggregates has been the focus of the Interreg IIIa funded Irish Sea Marine Aggregate Initiative (IMAGIN) currently concluding. To date, issues such as data and information gaps, and the absence of a policy framework have meant that little commercial exploitation of aggregate resources has been undertaken in Irish waters.

The outputs of IMAGIN, both in terms of an estimate of the potential extent and value of the sediments contained in the Irish Sea, and guidance on policy development, mean we now have a clearer understanding of how a marine aggregates sector for Ireland might take shape.

Recommendations in the final project reports show that:

• A national policy should be developed to promote and facilitate the sustainable use of Irish marine aggregates;
• The policy should incorporate best practice, e.g. in terms of mechanisms for monitoring interactions and environmental assessment;
• There is a need for a single database of identified aggregate resources;
• A national statutory framework for the marine aggregate sector should be created that is fully consistent with the principles of marine spatial planning.

The latter point is relevant in the context of the recently agreed Integrated Maritime Policy for Europe, whereby the European Commission intend developing a roadmap to facilitate the development of maritime spatial planning by Member States. For further information and for copies of the final report contact Gerry Sutton (gerry.sutton@ucc.ie).

Specialist technical services provided for new container port in Cork

The CMRC team has been working closely with RPS Consulting Engineers and Port of Cork officials in the provision of specialist technical consultative and operational services in support of site investigation work associated with the new container and RO-RO port development in Cork’s Lower Harbour. Much of the CMRC team’s input relates to the work involved in sourcing the large volume of suitable fill material that is required to complete reclamation work at the site. The team is providing expert technical advice on marine aggregates, as well as coordination, quality supervision, data interpretation, data analysis, and state of the art GIS data integration for ongoing geophysical and geotechnical investigations.

For more information on marine aggregate consulting activities at the CMRC contact Gerry Sutton (gerry.sutton@ucc.ie).

Sandwaves are evident in this shaded relief map of the seabed (above). Grab samples and video dive tracks are also shown.

Sandy seabed areas are indicated by lighter greys in this multibeam sonar backscatter image. Seismic profiles indicate deep (red dots) and shallow (black triangle) surface layers.
High energy swell waves travel east across the North Atlantic ocean unimpeded until they smash into the west and southwest Irish coast. With warnings of sea level rise, an increase in storm magnitudes due to climate change and coastal erosion, assessments of future wave climates and their potential impacts at the coast are essential.

A Higher Education Authority (HEA) funded project is now underway that will simulate the wave climate around Ireland for periods up to 2060. In order to validate the wave predictions, Katherine Cronin, a PhD student at UCC is using the simulation outputs to run a high resolution inshore model in Courtmacsherry, Co. Cork and verifying this with measurements of wave height, direction and energy transport among others made in the estuary. This builds on the work carried out by the CMRC in the recently completed HIPOCAS (Hindcast of Dynamic Processes of the Ocean and Coastal Areas of Europe) project which produced a 40 year hindcast of waves in Irish waters.

This project carried out in collaboration with Met Éireann, will provide comprehensive information on wave climates around the coastline and will be of benefit for shipping, risk assessment and management of sensitive coastlines. For more information contact Katherine at k.cronin@ucc.ie.

The impacts of climate change on coastal communities and habitats are receiving attention as part of a project proposal whose development received seed funding from Interreg Northern Periphery. The CMRC is a partner in the project led by the Western Islands Council in Scotland and currently has participants from the Republic of Ireland, Northern Ireland, Scotland and Norway and other partners from the region are being actively sought. Initial project development took place in Inverness in November 2007 (left) and was followed up with a meeting, hosted by the North Periphery Secretariat, in Copenhagen in February 2008 in order to facilitate the delivery of a completed proposal in early March. For further information on the aims and objectives of the project, contact Jeremy Gault (j.gault@ucc.ie).

During some of the recent dramatic storms, with wave heights of over 14m being reported, CMRC scientists were out on Inch Strand Co. Kerry collecting data to help draw up effective guidelines for coastal managers on eroding coastlines. Repeated topographic surveys have been conducted and wave gauges have been deployed offshore. The coastline position at Inch Strand, a popular tourist destination, has historically been influenced by large storm events.

This three year research programme is being conducted in conjunction with the Hydraulics and Maritime Research Centre (HMRC) at UCC with the co-operation of Kerry County Council and forms part of the EU funded Conscience project. Inch Strand has recently been armoured and it is hoped that the outputs from this ongoing research will contribute to the coastal protection strategy of the local authority. For more information contact Jeremy Gault (j.gault@ucc.ie).

Conscience (Concepts and Science for Coastal Erosion Management) is funded under the EU 6th Framework programme and has the strategic objective of developing and testing scientifically justified guidelines, concepts and methods to implement sustainable coastal erosion management for European coasts. The project is led by Delft Hydraulics and runs until March 2010 – for details see http://www.conscience-eu.net/.
During November 2007, a 26 km² bloom of the mauve jellyfish (*Pelagia noctiluca*) caused the death of over 100,000 salmon valued at more than €1.3 million, at a farm in Co. Antrim. An oceanic cruise conducted just prior to the fish kill by CMRC biologist Dr. Tom Doyle revealed that this jellyfish was located throughout much of the Northeast Atlantic. Indeed, several fish farms off the west coast of Ireland witnessed large numbers of jellyfish in their nets, nonetheless few fish deaths were recorded. Considering Ireland’s ambitions to expand finfish aquaculture capacity three-fold by 2020, there is an urgent need to improve prediction, prevention and minimization of future mass jellyfish occurrences. For more information on jellyfish visit [http://www.turtle.ie](http://www.turtle.ie) or contact Tom Doyle at t.doyle@ucc.ie.

The CMRC has just completed an audit and carrying capacity study for marine recreation in West Cork. The study was part of an overall strategy developed by Cork County Council in partnership with the CMRC, Fáilte Ireland, the Department of Agriculture, Fisheries & Food and the Marine Institute.

Staying with the recreation theme, the CMRC has just started working with East Cork Area Development (ECAD) to develop walking and cycling trails in East and South Cork. This work aims to identify community and key tourism trails for all abilities. For more information on either project contact Vicki O’Donnell at vodonell@ucc.ie.

**New Faces**

Dr. Tom Doyle is a marine biologist who has been studying the ecology of jellyfish and that of their large vertebrate predators such as leatherback sea turtles and ocean sunfish for a number of years. He is currently carrying out a 2-yr postdoctoral study funded by IRCSET.

Ali Al-Othman worked as a software developer at the Athens Information Technology Institute in Greece before joining the CMRC. He is currently developing a software system to integrate data, metadata and services as part of the FP6 ECOOP project.