

# Geology Matters



The Newsletter of the Geological Survey of Ireland  
Nuachtlitr Suirbhéireacht Gheolaíochta Éireann

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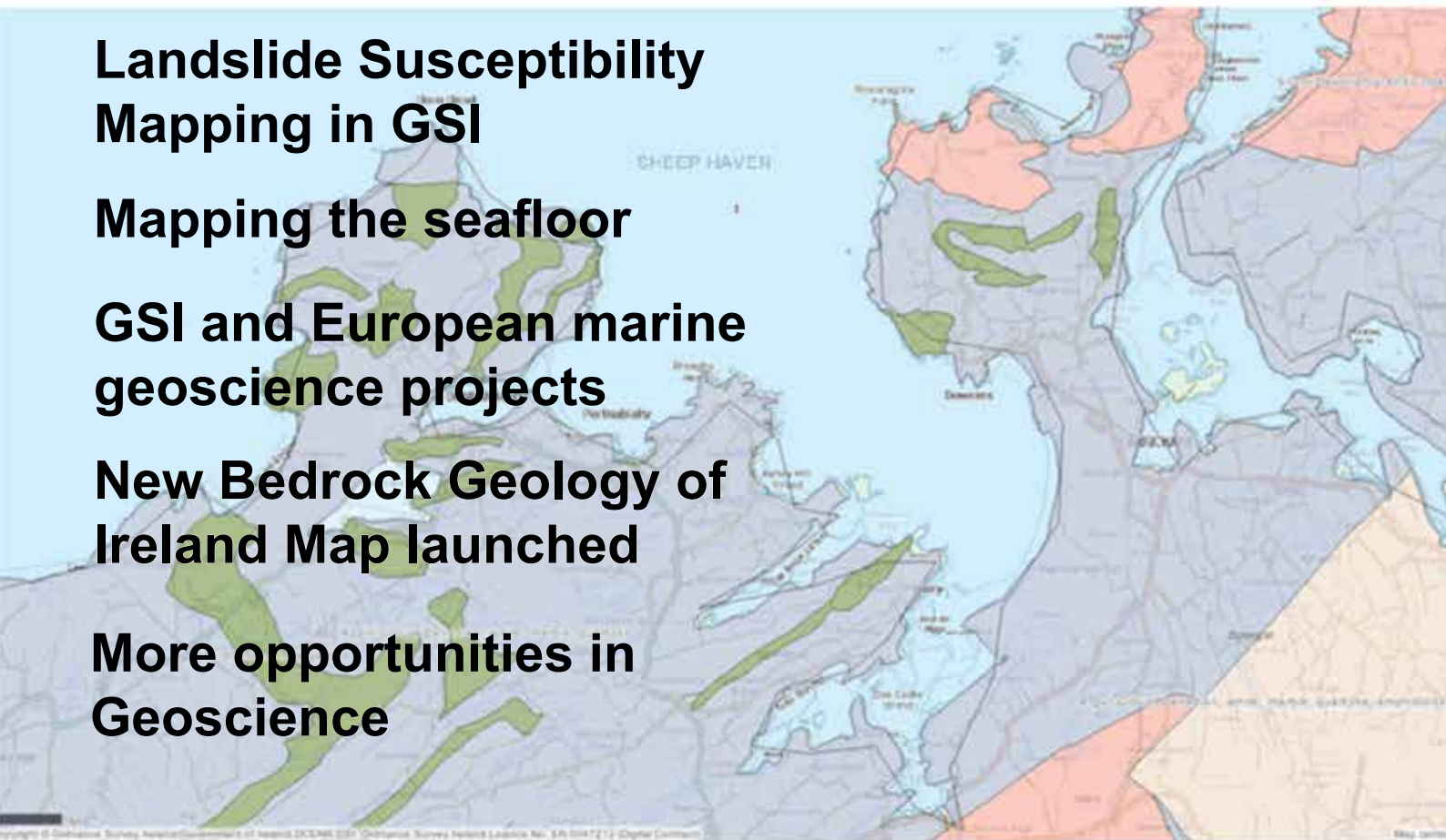
## Landslide Susceptibility Mapping in GSI

## Mapping the seafloor

## GSI and European marine geoscience projects

## New Bedrock Geology of Ireland Map launched

## More opportunities in Geoscience



# Introduction

Welcome to Issue No. 16 of Geology Matters, The Newsletter of the Geological Survey of Ireland.

In this issue we are very excited to announce the publication of a new 1:1 million Geology Map of Ireland covering the whole Island and a report on mapping the seafloor. We also have a feature on "Harnessing our Ocean Wealth" and a special report on landslide susceptibility.

We hope you enjoy reading this edition of Geology Matters and as always we welcome your comments and feedback. We would like to take this opportunity to remind you that you can stay up to date with all matters geological by accessing our website [www.gsi.ie](http://www.gsi.ie)

You might also like to visit our Customer Centre and Library. Contact details and opening times are provided below.

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If you would like to provide feedback on any aspect of Geology Matters, either for publication or simply to comment on any aspect of the newsletter please send your comments to [gsisales@gsi.ie](mailto:gsisales@gsi.ie)

**Front cover:** Images taken onboard the Cosantóir Bradán during CB14\_01 survey by Niall Finn (GSI). The 4 images are of the Dalradian Appin Group rocks, of quartzite, dolomitic marble and schist accompanied by the 1:500,000 Bedrock Geology as taken from the GSI's online webmapping viewer service.



# Planes, boats and drill rigs!

Koen Verbruggen

As we go to press we welcome our new Minister for the Department of Communications, Energy & Natural Resources Alex White, T.D. and Minister of State with special responsibility for Natural Resources, Joe McHugh T.D. We look forward to working with them.

2014 is proving to be a busy year for GSI, as the previously flagged pilot projects and ongoing initiatives ratchet up for the field season. As I write we are currently involved in activity on multiple fronts, and reassuringly, more fieldwork than we have seen for some time.

INFOMAR, our marine mapping programme with the MI, (Marine Institute) is working towards a key target of completing Phase 1 of its acquisition schedule by 2016. This means having all 3 large offshore Priority Areas and 26 inshore Priority Bays fully mapped. So far the project is on track and this year has seen mapping completed in Lough Swilly, Donegal Bay and Broadhaven by GSI, with mapping of Killary Harbour approaches, Galway Bay approaches, offshore Clare and Tralee Bay by the MI. However acquisition of multibeam and associated data is only the beginning of the work, and I am delighted to see an article in this newsletter, on recent work undertaken producing new geological maps of our deeper offshore from data acquired during the INSS in 2000 and 2001! It is great to see new products still emerging from this world class dataset, and in this case we are only now in a position of having the computing power, software and experience to really generate these products. The ultimate downstream outputs of INFOMAR are featured in this edition, with articles on both our participation in the Government Ocean Wealth Conference, where INFOMAR data underpins policy and public outreach activities, at the Drogheda Maritime Festival.

Our newly reorganised Land Mapping Unit has been busy in the border region, following up on both Tellus Border data and our National Quaternary Map released last year. Work is ongoing in the Lough Allen Basin, compiling and revising both the bedrock geology and quaternary mapping, and our drilling team have been busy proving and disproving theories without favour! Further east we have been working with colleagues in GSI on the Longford-Down sequence, and trying to elucidate poorly exposed sequences with the new benefit of airborne magnetic and EM data that can see through the ubiquitous cover.

In addition to this the Groundwater team have been working all over the country with the Federation of Group Water Schemes and also, again with our drill crew, in Lough Gur, Co Limerick along with Limerick county Council.

We are now entering another phase of Landslides Susceptibility Mapping, with a team working in Donegal, Slieve Blooms and Tipperary, and an article on this project is also included in this edition.

## Director's discourse

This year we will also see the next phase of the TELLUS project, as we carry out further airborne geophysics and ground geochemistry, focussed on Longford, Westmeath and Roscommon. An article on this will appear in the next edition, but the importance of working towards national coverage of these datasets cannot be understated. The currency of a geological survey is data, and new data from new initiatives is vital for everything geoscience can contribute to.

Another new initiative worth mentioning is our recruitment of Graduate Geologists on one year contracts. GSI has had a successful Temporary Field Assistant (TFA), later Temporary Geological Assistant (TGS) programme for many years. These schemes allowed young graduates to get a taste for working as a geologist, valuable experience and helped many of them on the way to successful geo-careers. We hope to work our way back to the success of the previous schemes, commencing with 5 posts this year, as the other vital ingredient for a survey, to go with new data, is new ideas!



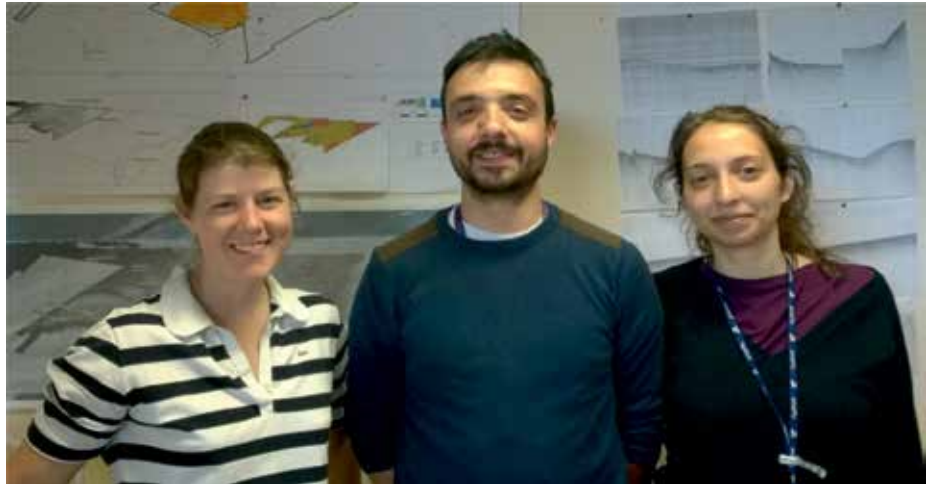
*Xavier Pellicer (left) sampling till in Glenfarne, Co. Leitrim, using the GSI Drill Rig in auger mode with drillers Ger Cott (centre) and Oisín O'Brien*

# Mapping the seafloor

Dr Benjamin Thébaudeau

Recently, a team consisting of Dr Benjamin Thébaudeau (contract Post Doc), Natalie Duncan (Geoscience Intern) and Clara Murcia-Castillo (Leonardo da Vinci Scholar), started working with Xavier Monteys on a project for INFOMAR, aiming to be the first detailed investigation of the Hatton-Rockall Basin area, the most westerly area surveyed as part of the Irish National Seabed Survey (INSS). The multibeam survey carried out in 2000 and 2001 produced bathymetric and backscatter datasets for an area of about 95,000 km<sup>2</sup> (the whole of Ireland is 84,421 km<sup>2</sup>) and allowed the creation of a Digital Terrain Model (DTM) of about 60m in resolution. This DTM and backscatter data, combined with seismic datasets (representing shallow subbottom stratigraphy), magnetic susceptibility images and shallow sediment samples, are being used to identify geomorphological features and to classify the nature of the seabed substrate. Detailed maps of these findings are due for completion in the coming months. The initial part of the study has identified key geomorphological features, which we describe here.

The study area is located at the north-west reaches of the designated Irish Exclusive Economic Zone (EEZ) from 16 - 25° W and 54 - 58 ° N, with a depth range of between 459 - 3507m. It comprises the south-west of the Rockall Bank, the south of the Hatton-Rockall Basin, the south of the Hatton Bank, the Edoras Bank, the Fangorn Bank surrounded by Helm's Deep, and parts of the Maury Channel. The Irish Petroleum Affairs Division (PAD) offshore geological database recognises the Edoras Bank as an igneous extrusive complex, and several mounds that appear in the bathymetry as igneous intrusive bodies. Similarly, the Hatton Bank corresponds closely to an expression of continental lava flows. The Banks and western half of the zone have been classified as lying over basement bedrock whereas the Hatton-Rockall Basin is composed of



*INSS Marine mapping team at GSI, Natalie Duncan, Ben Thebaudeau and Clara Murcia-Castillo*

undistinguished Mesozoic formations (Makris et al., 1991; Hitchen, 2004).

Example of geomorphological features identified:

**1. Volcanic mounds:** These mounds have a very distinct peaked morphology with dimensions on average 2km wide and 300m height above the seabed. These make them comparable in size to the Great Sugar Loaf Mountain in Co. Wicklow. They have been designated as intrusive bodies (due in part to magnetic surveys) and more than 600 have been identified in the study area, mainly concentrated on the two seamounts and beside the Maury Channel.

**2. Carbonate mounds:** These smaller features are encountered on the slopes of the Rockall Bank. Some 290 individual mounds are found as a field on the south-west slope of the Rockall Bank at a depth of about 600 to 700m. They are roughly circular with a diameter of about 400m and height above seabed about 20m, making their dimensions roughly comparable to that of the Custom House in Dublin.

**3. Seamounts:** Two seamounts are present in the designated area; the Fangorn Bank and the Edoras Bank. They are both roughly round plateaus about 60km in diameter and with a height above the seabed of about 500m at their centre point. They are comparable in area with county Antrim and have a comparable diameter

to the long axis of the Wicklow mountains. They are surrounded by sharp escarpments and long canyons on their northern and south eastern side.

**4. Bedrock ridge:** A high rugosity ridge has been recorded lying from the Hatton Bank and running south. The nature of this ridge is unknown but its morphology suggests a bedrock ridge resulting from tectonic forces perhaps linked with the opening of the Atlantic Ocean or the volcanic intrusion in the neighbouring seamounts. The ridge has its peak lying about 200m above the surrounding seabed, has a width of about 10km and runs along a distance of about 80km. This makes this ridge quite comparable to the Wicklow mountain range.

**5. Maury Channel:** The Maury channel is a recognised sea channel running in a north east to south west orientation at depth of about 3000m. It is at least 300 km long with 200km inside the Irish EEZ and has a rough U-shaped profile with a flat valley floor 4km in width and lying 100m deeper than the surrounding seabed. The channel has a meandering aspect comparable to some land flowing rivers.

**6. Polygonal faulting:** The seafloor of the Hatton-Rockall Basin is covered by a network of cracks identified as polygonal faults. These features have been recognised recently in literature as resulting from compaction of

sediment and fluid expulsion (Berndt et al., 2012). They are analogous in shape to ones found on land on desiccated surfaces and, in other seabed areas, have been used as analogues for modelling polygonal features on Mars. They occur in our survey area at about 1400m depth with polygons about 2 to 3km in diameter. The cracks are about 500m wide and 5 to 7m deep.

**7. Iceberg scours:** More than 60 iceberg scours have been identified in the shallowest part of the study area on top of the Rockall Bank, limited to a water depth of less than 600m. They are eroded streaks on the seabed, created by passing icebergs. The longest found are about 15km long with an indentation of a few meters; no particular orientation is recognised.

**8. Contourite drifts:** Two well-known contourite drifts are recognised in the study area; the Hatton Drift to the

north and west of the Edoras Bank continuing to the Endymion spur, and the Gardar Drift to the extreme western part of the Irish EEZ. These appear as long sediment ridges of up to 20km in length, 500m in width and height of up to 20m. The Hatton Drift presents ridges aligned to the bathymetric contours as representing a current flow from the south-west and contouring the Edoras Bank to the north. The Gardar Drift displays ridges with much less relief that are aligned roughly in an east-west direction.

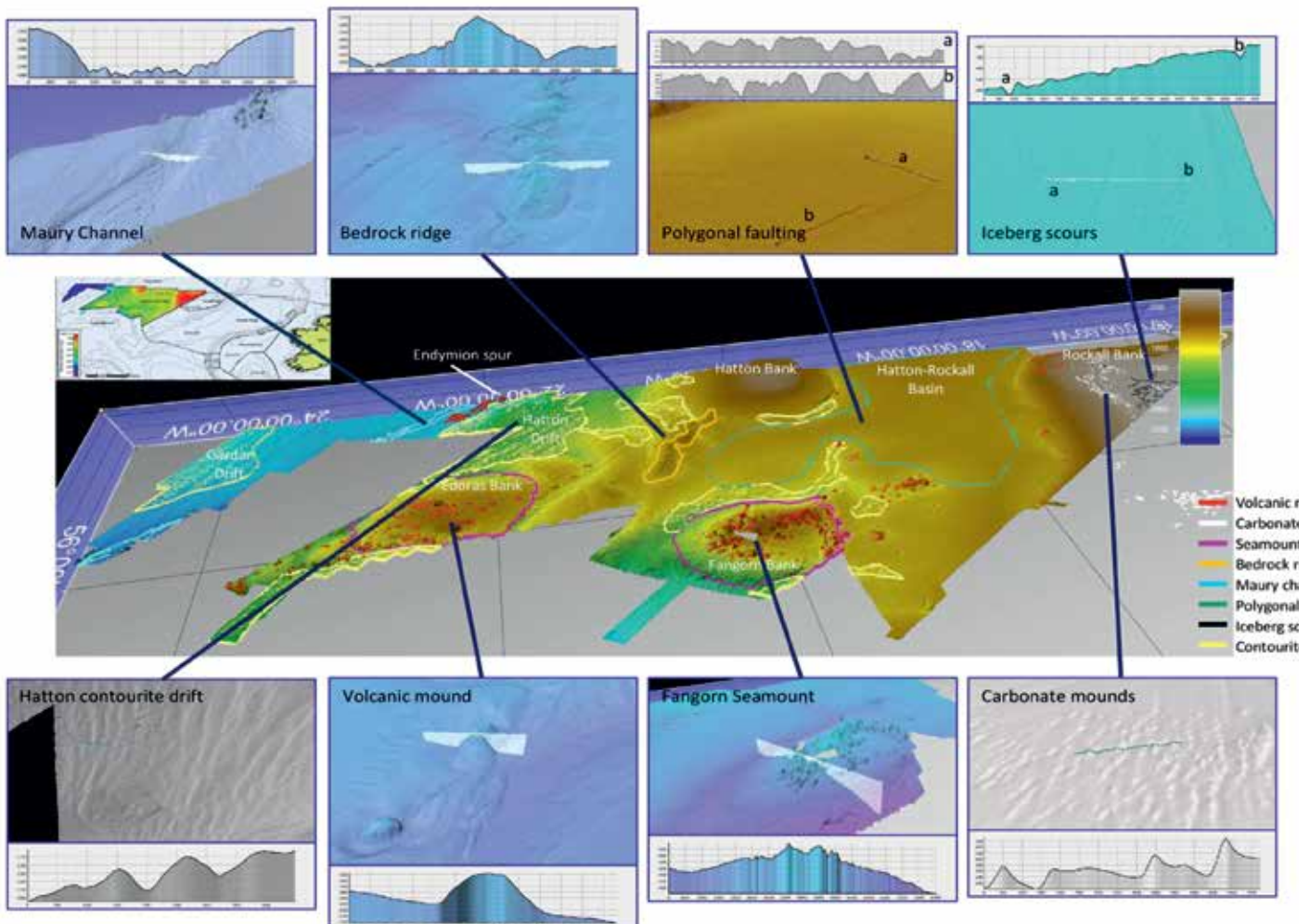
This article details for the first time a number of geomorphological features of the Hatton-Rockall Basin area. These initial results are based on the interpretation of sub bottom, bathymetric and backscatter data acquired as part of the INSS. This seabed mapping project aims to further define these and other geomorphological features as well as

to classify the seabed substrate in the Irish offshore with the creation of maps and the publication of corresponding articles in the Journal of Maps.

*Berndt, C., Jacobs, C. L., Evans, A., Gay, A., Elliott, G. M., Long, D., & Hitchen, K. (2012). Kilometre-scale polygonal seabed depressions in the Hatton Basin, NE Atlantic Ocean: Constraints on the origin of polygonal faulting. Marine Geology, 332-334, 126-133.*

*Hitchen, K. (2004). The geology of the UK Hatton-Rockall margin. Marine and Petroleum Geology, 21(8), 993-1012.*

*Makris, J., Ginzburg, A., Shannon, P. M., Jacob, A. W. B., Bean, C. J., & Vogt, U. (1991). A new look at the Rockall region, offshore Ireland. Marine and Petroleum Geology, 8(4), 410-41*



# Harnessing our Ocean Wealth

Archie Donovan  
INFOMAR Project Manager

The first annual 'Our Ocean Wealth Conference' took place in Dublin Castle the 18th of June with the aim to review the progress of Ireland's first Integrated Marine Plan for Ireland, Harnessing Our Ocean Wealth.

The conference, attended by five Government Ministers and An Taoiseach demonstrates the Government approach to drive the three goals of Harnessing Our Ocean Wealth – a thriving maritime economy, healthy ecosystems and engaging with the sea.

Various topics were addressed during the conference including marine and fisheries sectors plans, new tax regime for offshore petroleum taxation, the development of Wild Atlantic Way (Ireland's first long-distance touring route, stretching along the Atlantic coast from Donegal to West Cork) and the development of a new Marine Spatial Planning system.

Dr Peter Heffernan, CEO Marine Institute highlighted the key role of research and innovation in delivering the goals of Harnessing Our Ocean Wealth. Dr Heffernan also highlighted Ireland's successful performance in international marine research including EU earnings.

The Conference was attended by over 400 delegates from the public



*Archie Donovan, Project Manager for INFOMAR, at the Ocean Wealth conference with Karl Brady, Underwater Archaeology Unit of National Monuments Service.*

and private sector. The Marine Institute, the GSI and the INFOMAR programme were well represented at the event with various interactive

stands. This was a great opportunity to meet important stakeholder across various marine sectors.



*Simon Coveney, T.D., Minister for Agriculture, Food and the Marine speaking at Our Ocean Wealth Conference*

# The Irish Maritime Festival 2014

Sean Cullen  
Marine and Geophysics  
programme



As part of their outreach activities, GSI marine staff provided both an information stand and a display featuring the survey vessel RV GEO for the Irish Maritime Festival on the weekend of the 13th, 14th and 15th June 2014 at Drogheda Port, County Louth. The Festival was a spectacular celebration of all things seafaring. The location, programme of events and wonderful weather attracted in excess of 30,000 people to the port during the 3 day event.

A feast of maritime fun including full-scale pirate ships battling on the River Boyne, a coastal rowing race, show-stopping watersports, a Boyne swim, a Maritime Pavilion plus a host of cultural and family entertainment was accompanied by the arrival of five beautifully restored schooners to Drogheda port.

Festival goers were spoiled for choice with fun fairs, boat and canoe trips on the river, stunning watersports displays, the real food village, boat-

building workshops, a stand-up paddle boarding race, art and photography zones and a maritime history pavilion. An urban beach offered the chance to create the ultimate sandcastle while expert sand sculptors were at work on their creations. The kids loved it all. Louth County Council in partnership with Drogheda Port and Drogheda Chamber of Commerce are looking forward to welcoming everybody back to Drogheda Port next year for The Irish Maritime Festival 2015.



# Landslide Susceptibility Mapping in the GSI

Charise McKeon, Landslide Mapping Project Manager

Over the last ten years the Geological Survey of Ireland (GSI) has developed a greater understanding of the spatial and temporal distribution of landslides in Ireland. The foundation for this work was developed through the Landslides in Ireland publication (2006) and its recommendations. These recommendations included the aspiration to develop a risk assessment methodology for Ireland based on international best practice. As part of the Geoscience Initiative 2007-2013 the GSI successfully completed the development of a landslide susceptibility mapping model in parallel with a comprehensive inventory for east Leinster (Louth, Meath, Dublin, Wicklow) and the greater Cork area. The project developed a robust repeatable methodology for the production of landslide susceptibility maps in Irish conditions, based on available national datasets and produced maps over the two selected study areas. These areas of susceptibility are ranked, in accordance to slope

stability and associated topographic factors, into categories that range from low to high. It should be noted that the term "susceptibility" refers to the identification of areas which are predisposed to landslides and this is measured by the number of incidences per square km. This work was completed in early 2013 which allowed for additional testing of the model to be carried out as part of a small project for counties Mayo and Kerry. A total of 2265 landslide events have now been mapped over the past 6 years and added to the National Landslide Database as a result of this work. It is hoped that a draft national landslide susceptibility map will be produced in 2014/15. This national landslide susceptibility map would then provide a baseline dataset for the production of a national landslide hazard and subsequent landslide risk map.

Since 2004 the GSI and the Landslide Working Group has had close liaison with planning authorities with regard to proposed landslide susceptibility map

outputs. Currently there is potential for susceptibility maps to be used initially as part of EIS assessment or similar development plans at the current level of land mapped. A National Map would be required by the Planning Authorities in order to produce National Guidance as per Flood Risk Management Guidelines which was driven by an EU directive. A series of reports and further information on the GSI's landslide susceptibility mapping can be viewed at <https://www.gsi.ie/Programmes/Quaternary+Geotechnical/Landslides/> and this data is available for use by the public, researchers and stakeholders.

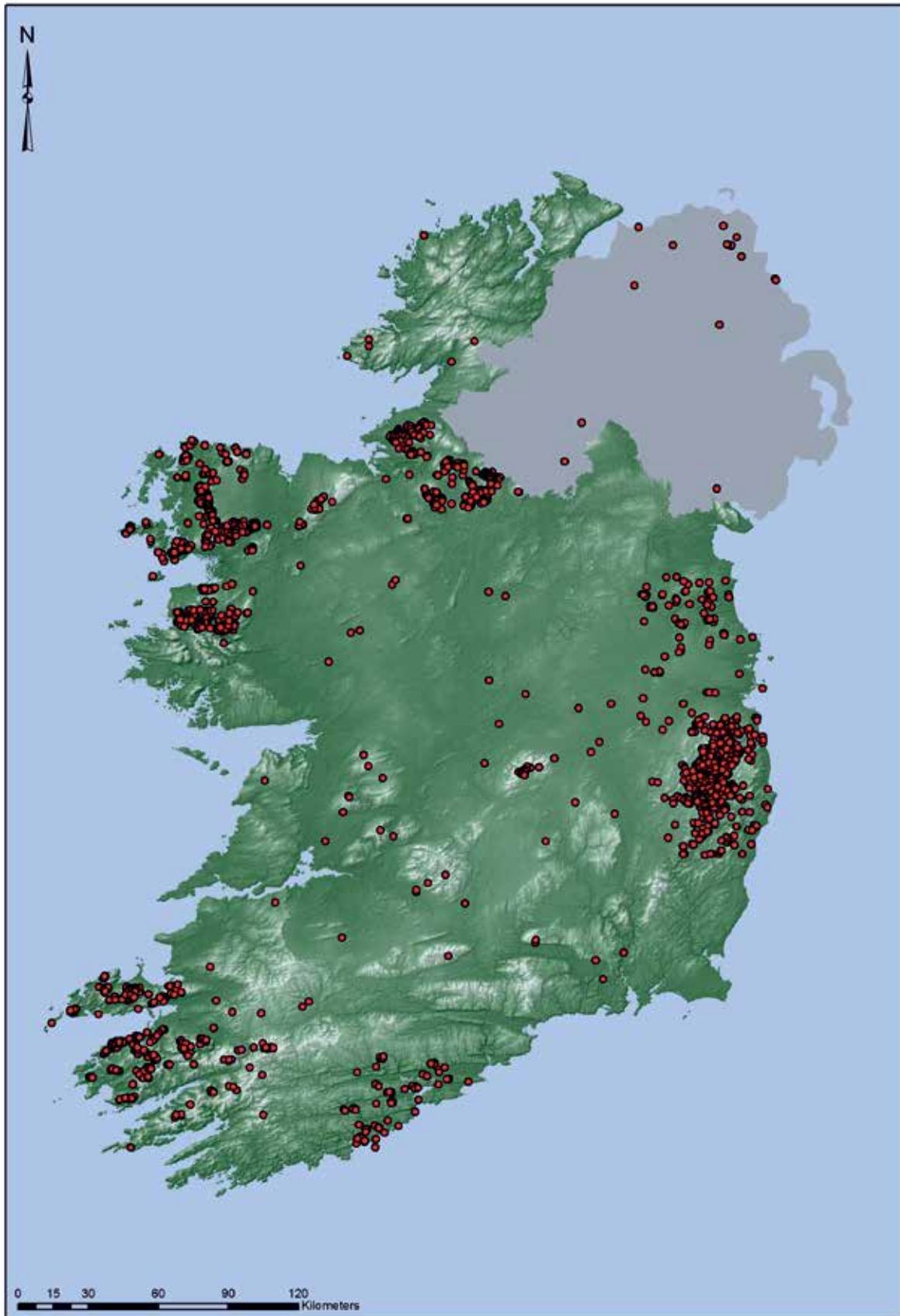
A dedicated landslides viewer is also available where all associated landslide data can be viewed and downloaded at <http://spatial.dcenr.gov.ie/GeologicalSurvey/LandslidesViewer/index.html>

To report a landslide to GSI see <http://www.gsi.ie/Forms//Landslides.htm>



Landslide in Mayo in 2013





*landslide events currently in the Irish Landslide Database as of June 2014*

# New 1:1 million Bedrock Geology of Ireland map

Brian McConnell, Land Mapping Unit, GSI

The GSI 'Geology of Ireland' map ("Schools Map"), which is aimed at secondary school level and accompanies our book on Irish geology, is nearly out of print, so we have taken the opportunity to replace it with a proper 1:1M scale digital data set, as a contribution to international and derived products.

The starting point was the island of Ireland 1:500,000 map, published in 2006 as a collaborative product with the Geological Survey of Northern Ireland.

To derive the 1M map, 83 units were grouped into 35 units of related rocks and the outlines smoothed to the new scale.

The 1M map was initially served up online for the international

OneGeology map project ([www.onegeology-europe.org](http://www.onegeology-europe.org)), coded by IUGS chronostratigraphical age or international lithological classification. A proper island of Ireland map, however, should present the specific geological history and combine age and lithology in a lithostratigraphical scheme. For example, preserving the Dalradian distinct from other Neoproterozoic metasedimentary rocks, or distinguishing the Silurian sandstones of lapetus-margin Longford-Down from those of post-Grampian basins in Mayo.

For the printed product, we have used the Emodnet project map ([www.emodnet-geology.eu](http://www.emodnet-geology.eu)) compiled by the Marine section in GSI, plus some British Geological Survey mapping, to

continue the geology offshore and fill the white space traditionally seen in the areas covered by sea.

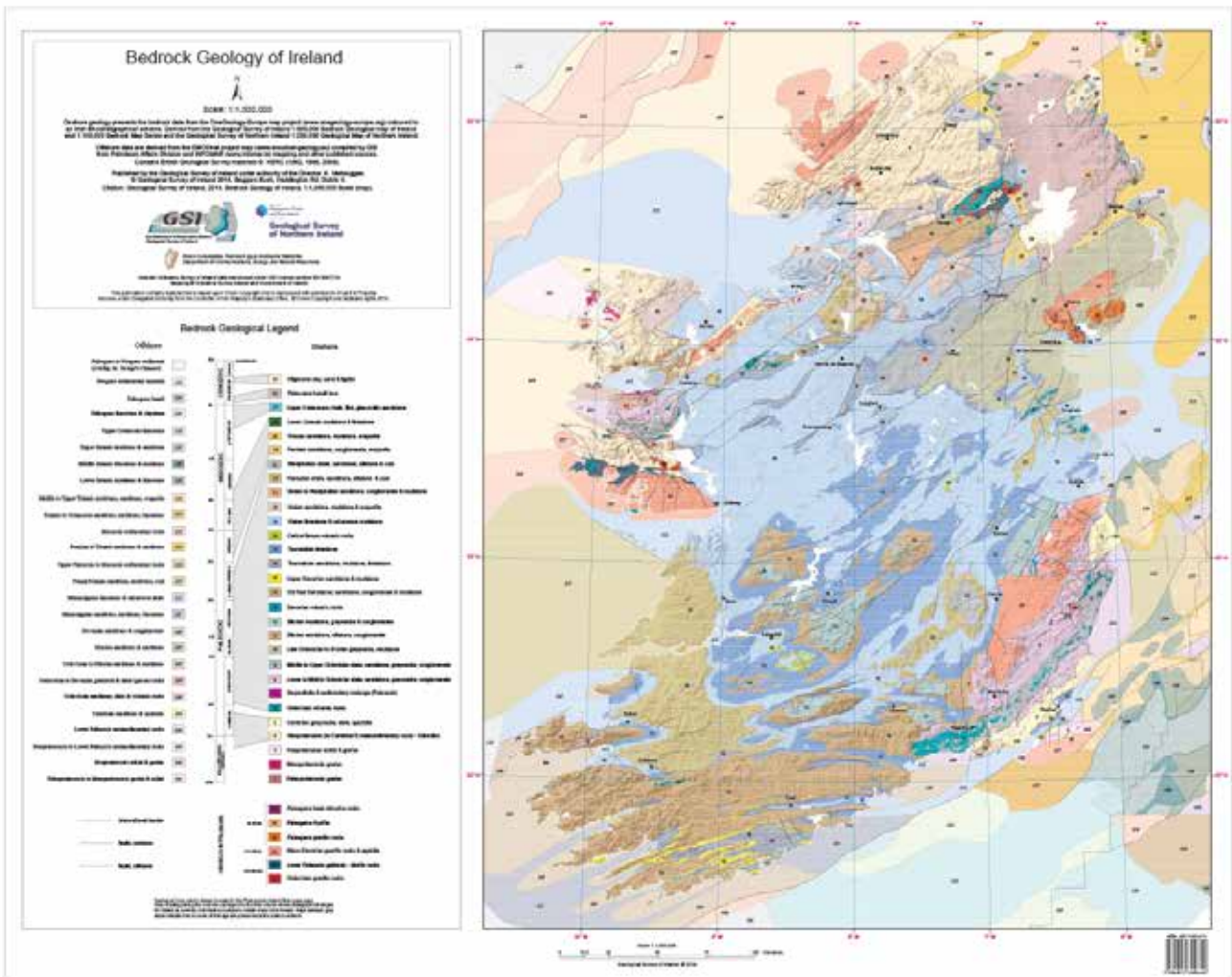
The map has separate onshore and offshore legends but a fairly seamless visual appearance.

The aim is that it is sufficiently attractive and easy to read to be useful in education, while at the same time being sufficiently detailed for use as a technical overview of the bedrock geology of Ireland and a contribution to international projects and derived map products.

A pdf download is available on [www.gsi.ie](http://www.gsi.ie). The printed version of the map, with Irish language on one side and English language on opposite side, will be available before schools reopen in September



Former Minister Fergus O'Dowd at launch of new Schools Geology Map, with local students, Molly Brown (to left) and Clara Cowan (to right) both are Year 9 students at Sacred Heart Grammar School Newry. The map was launched at the GEOExpo in Newry, organised by Mourne Cooley Gullion Geotourism Expo in Newry.



**Save the Date October 22<sup>nd</sup> and 23<sup>rd</sup>**

The Geological Survey of Ireland and the Marine Institute are delighted to announce the 2014 Annual INFOMAR Seminar.

The two day event will take place in the Tower Hotel Waterford on October 22<sup>nd</sup> and 23<sup>rd</sup>.

The seminar will include an update on Ireland’s national seabed mapping programme including survey operations and coverage, future plans, associated research along with poster sessions.

Details of logistics and the programme agenda will be available soon.

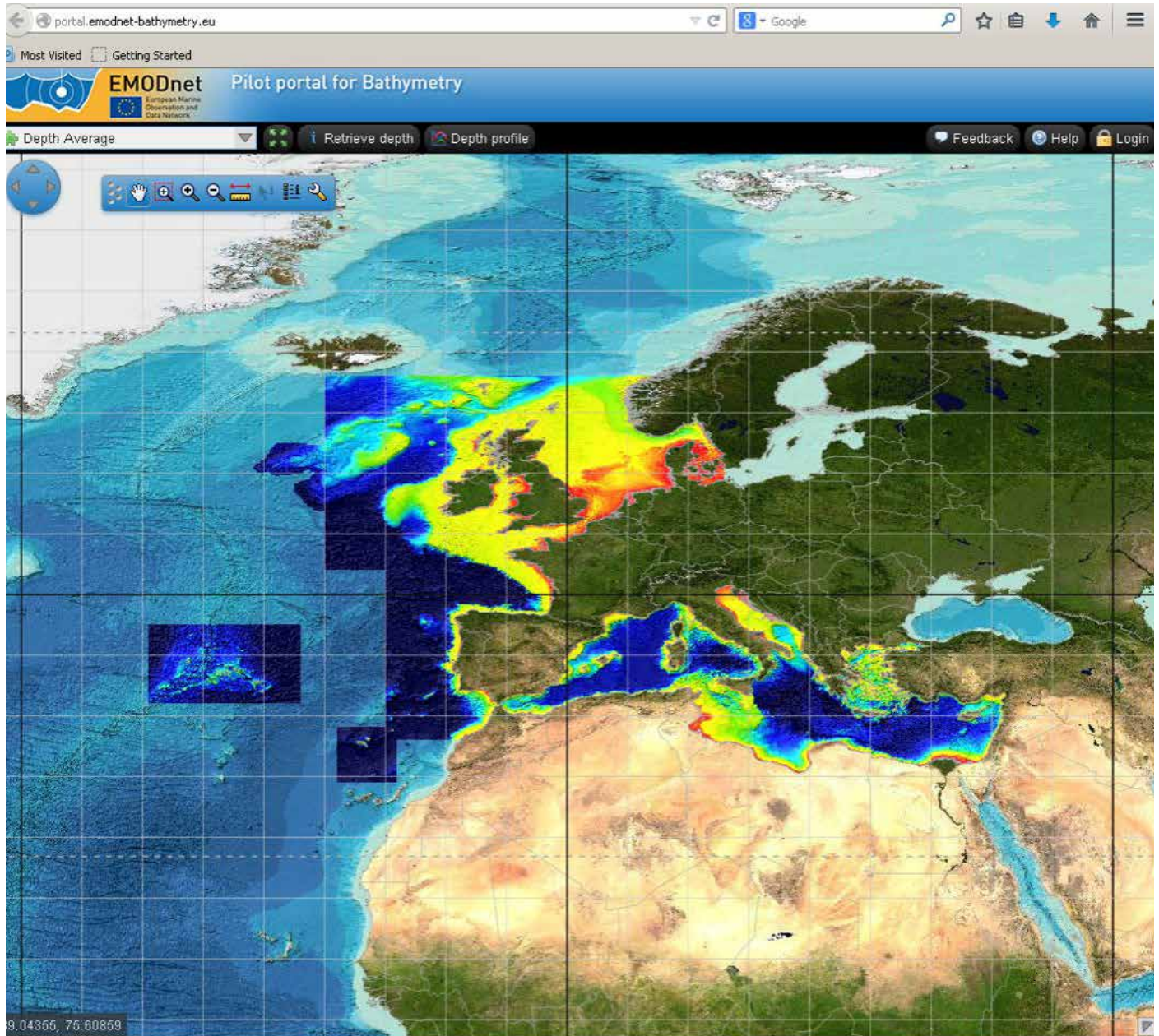


# EMODNET Hydrography 2

Producing high resolution digital bathymetry for European sea basins.

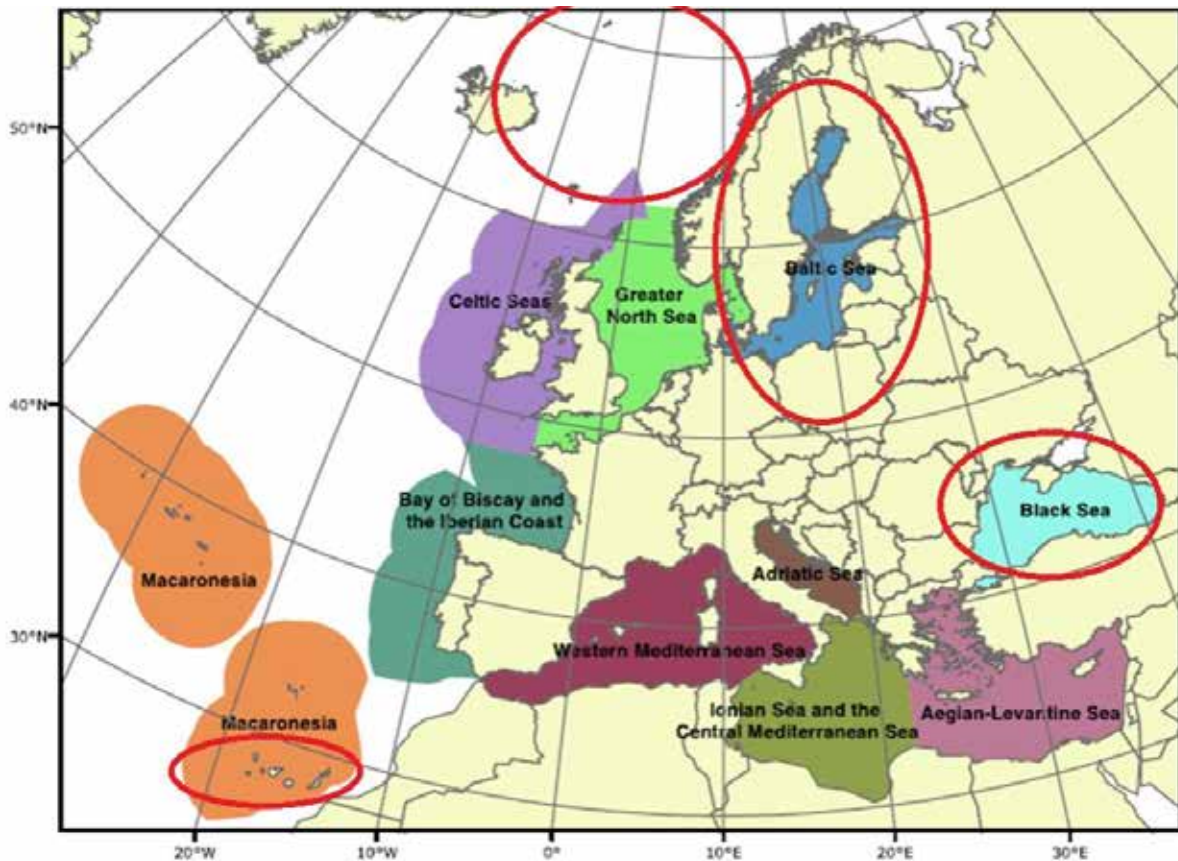
Grainne O'Shea, GSI Marine Section

EMODNET Hydrography 1 (2010 – 2012) aimed to make inaccessible marine data publicly available, interoperable, and continuous across Europe. A pilot portal was developed which provides a Discovery and Data Access service. A 463m gridded digital terrain model (DTM) was created and both the data and metadata can be downloaded from the portal.



The EMODNET Hydrography portal, including GSI's seabed mapping data at <http://portal.emodnet-hydrography.eu/>

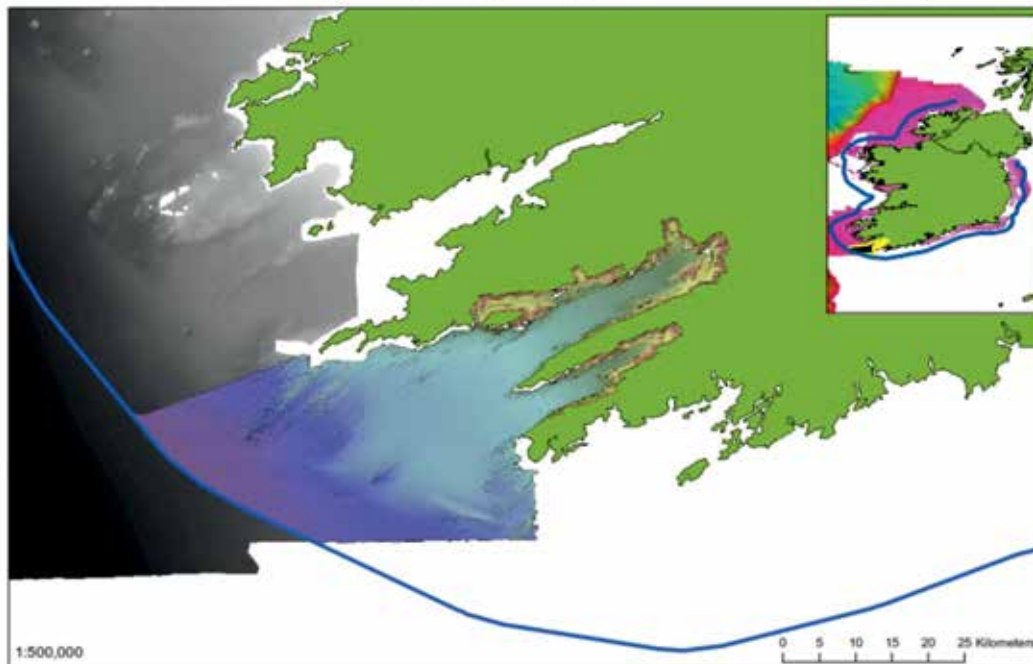
EMODNET Hydrography 2 (2013-2015) objectives are to extend the geographical coverage to include the Baltic Sea, the Black Sea, the Norwegian - Icelandic Seas and the Canary Islands (as part of Macaronesia). In addition all partners from EMODNET 1 will incorporate any new surveys collected since 2012. EMODNET 1 had nine countries participating and this has extended to eighteen countries including 32 Partners and 6 Associate Partners.



Areas into which coverage will be expanded in next phase of EMODNET Hydrography project, in red circles.

Another objective is to create a higher resolution DTM of 231m. All partners will use Globe software to produce the DTMS. In addition the GSI is one of three countries involved in creating a pilot higher resolution coastal DTM (10-15m). The coastal DTM will extend up to at least the Highest Astronomical Tide (HAT) and out to 12nm(nautical miles) offshore. The GSI has chosen Bantry & Dunmanus for the pilot which will merge five offshore multibeam bathymetry surveys, produced from 3 different ships and two bathymetric LIDAR datasets.

**Multibeam & LIDAR Bathymetry Bantry and Dunmanus Bays (10m)**



# Collaborations between the GSI and Irish Universities (DCU, NUIM & TCD)

Xavier Monteys and Monica Lee

The Geological Survey of Ireland (DCENR) is pleased to announce that three post-doctoral researchers have been awarded funding within the Irish Research Council's (IRC) Enterprise Partnership Scheme. All three positions are joint collaborations between the GSI and Irish Universities (DCU, NUIM & TCD). The fellowships, which are all for duration of two years, will undertake high level research in groundwater and marine environments.

The two marine research projects will focus on two regions from the Irish Exclusive Economic Zone to better understand the geology and the biogeochemical processes in

the deep-water seafloor. Results are expected to add value to the existing public INFOMAR databases and serve as a bridge between the research community and the active marine industry in these areas.

The groundwater project will investigate groundwater flow in karst aquifers, which will greatly increase our understanding of these aquifers, supply groundwater for our drinking water and to our rivers and groundwater dependant ecosystems. The outcome will be to provide more information to the general public as well as aid the work of the Local Authorities and Irish Water in their role of providing wholesome drinking

water. The research will also support the EPA in meeting our Water Framework Directive commitments.

The Minister for Research and Innovation Seán Sherlock T.D. announced the awarding of €5.7 million to support 50 new enterprise-academia research partnerships through the Irish Research Council's (IRC) Enterprise Partnership Scheme. The funding of 50 new awards this year marks the 10th year of the Enterprise Partnership Scheme and the engagement of 250 companies.

## Project titles:

1. Modelling Karst Hydrogeological Networks (ID: EPSPD/2014/25):
  - a. HEI: Trinity College Dublin (TCD)
  - b. Awardee: Ted McCormack
  - c. Academic Mentor: Laurence Gill (TCD)
  - d. GSI Mentor: Monica Lee/Caoimhe Hickey
  
2. Methane Hydrates and Shallow Gas in the Atlantic Irish Waters - Resource Evaluation. (ID: EPSPD/2014/12)
  - a. HEI: Dublin City University [DCU]
  - b. Awardee: Michal Szpak
  - c. Academic Mentor: Brian Kelleher
  - d. GSI Mentor: Xavier Monteys (GSI)
  
3. Mapping the shallow geology of the Porcupine Bank, west of Ireland (ID: EPSPD/2014/15)
  - a. HEI: The National University of Ireland, Maynooth [NUIM]
  - b. Awardee: Benjamin Thébaudeau
  - c. Academic Mentor: Stephen McCarron
  - d. GSI Mentor: Xavier Monteys (GSI)



Monica Lee (GSI) , Ross McKiernan (IRC), Ted McCormack (TCD), Eucharia Meehan (IRC), Benjamin Thébaudeau (NUIM), Michal Szpak (DCU), Xavier Monteys (GSI)

Geoscience 2014

The Geological Survey of Ireland annual showcase will feature updates on key activities in the sector; INFOMAR, Tellus, Groundwater, Minerals and Geological Mapping. a dedicated research session will focus on the conclusion of the Griffiths 1 programme. In addition a number of new GSI products and initiatives

**GSI**  
Geological Survey of Ireland

Geological Survey of Ireland  
Beggars Bush, Haddington Road, Ballsbridge, Dublin 4

## Opportunities for Contract Graduate Geologists

Geological Survey of Ireland has positions for 5 contract graduate geologists.

Positions are in the following areas:

1. Groundwater Programme
2. Landslide Project
3. Geological Heritage Programme
4. Land mapping unit
5. INFOMAR Programme

Contracts are for up to one year duration at a fixed rate of €120 per day

Candidates must hold or are due to be conferred with an honours degree (2.2 or higher) in Geology, Physical Geography, Earth Science or other relevant discipline, hold a full driving licence, or will hold one by commencement of position.

C.V. (3 pages max) and cover letter (2 pages max), outlining suitability for position to be sent via email to [tenders@gsi.ie](mailto:tenders@gsi.ie) by 12 noon on August 25th

further information: [www.gsi.ie](http://www.gsi.ie)

# 61 New Jobs Created in Geoscience

Sean Finlay, Geoscience Ireland

A second annual Review of Geoscience Ireland (GI) for 2014 shows continued strong job creation by GI members. The review was completed by Neary Marketing Surveys on behalf of the Geological Survey of Ireland/ Department of Communications, Energy and Natural Resources.

Speaking about the results of the Review, former Minister with responsibility for Natural Resources, Fergus O'Dowd T.D. said, "These are very encouraging figures and are a testament to the resilience and determination of these Irish Geoscience companies that they have continued to expand as we recover economically. The effective collaboration of state bodies in GSI and EI (Enterprise Ireland), to create and develop this Geoscience Ireland business cluster is a great example of how government can assist industry in an effective way."

The key findings of the Review are:

- Since September 2012, GI companies have created a total of 145 new jobs of which 61 were created since July 2013.
- One third of members reported that GI's contribution to members in winning international business was significant, while 60% reported that GI was assisting them in key areas of geoscience.
- Ratings of GI Support Services were considered useful/important by c. 66% of members.
- Ratings of Enterprise Ireland Support Services were considered important by 80% of members.

A recent GI Workshop resulted in the following key recommendations:

- Development of a Marketing Plan for July 2014-June 2015. The focus of the Plan will reflect the priorities of the member companies as to sectors and

geographical areas to target for the next 12 months.

- Opportunity Updates: the Review proposes a new type of structure, appointing Lead Companies to focus on tendering opportunities in particular sectors.
- Build on continued support by GSI, Enterprise Ireland, the Department of Communications Energy & Natural Resources and the Department of Foreign Affairs & Trade.

Mr O' Dowd went on to say, "If this were a single factory with 60 or a 100+ jobs it would lend itself to a fairly significant announcement. However it is no less important for the fact that it reflects sustained incremental growth across a range of companies."



*Delegates at the recent Geoscience Ireland Africa Forum - John Murnin (QME), Deirdre Lewis (SLR), John Carty (FLI Group), Sean Finlay (GI) and Emma Walsh (Byrne Looby Partners)*