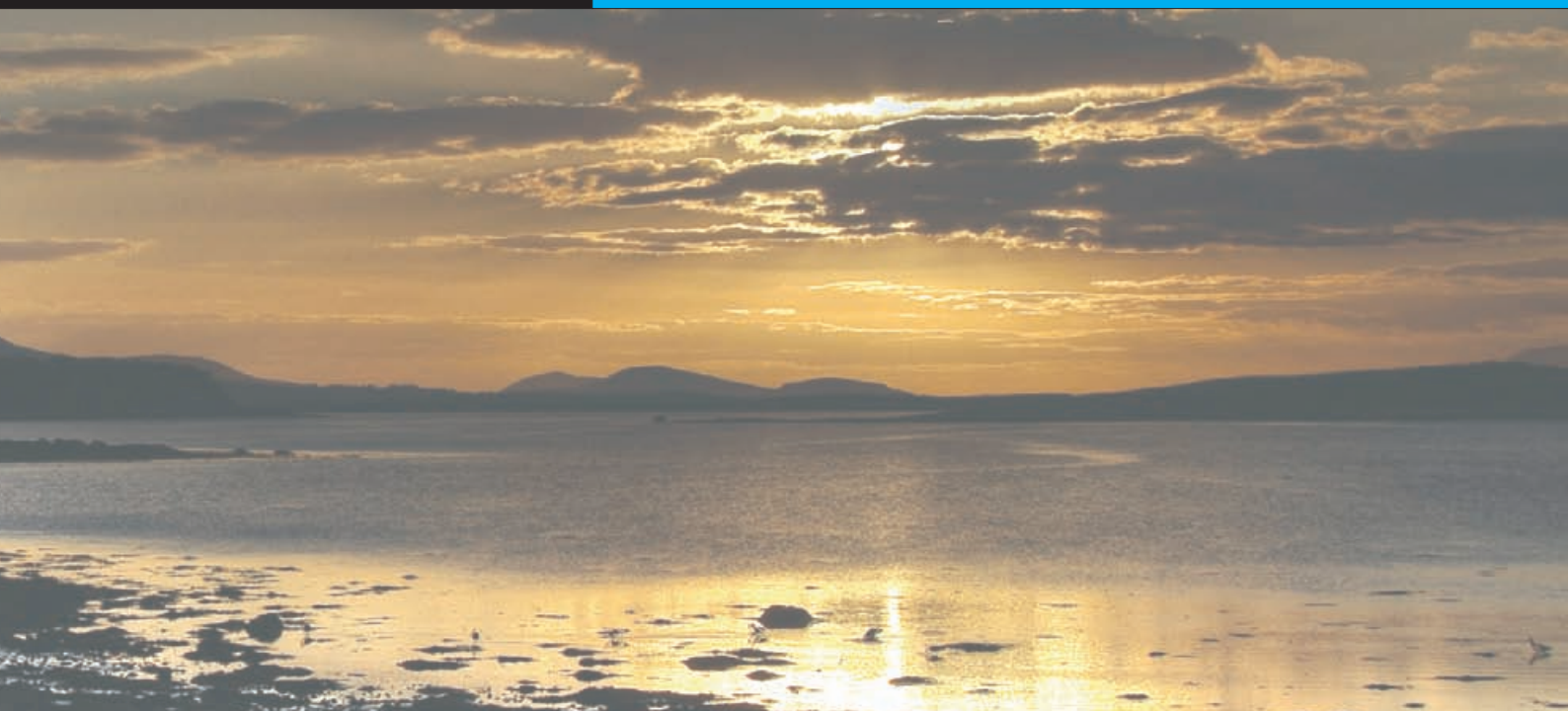




ANNUAL REPORT 2008

Appendices

Geological Survey of Ireland



Department of Communications, Energy and Natural Resources
Roinn Cumarsáide, Fuinnimh agus Acmhainní Nádúrtha



GEOLOGICAL SURVEY OF IRELAND (GSI)

ANNUAL REPORT 2008 - APPENDICES

This information supplements that in the GSI Annual Report for 2008, available through www.gsi.ie. Hard copies of the highlights of this report can be obtained from the GSI Customer Centre. Additional information on the work of GSI is available through “Geology Matters”, the regular GSI Newsletter, copies of which can be accessed through www.gsi.ie

or by contacting the
GSI Customer Centre,
Geological Survey of Ireland,
Beggars Bush,
Haddington Road,
Dublin 4.
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Cover photo taken from Du Noyer entrant Aedan Coffey

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1. GSI COMMITTEES

GSI Consultative Committee consists of representatives of our customer and stakeholder groups, as well as experts in fields of GSI operations. During 2008 the Committee held a joint meeting in April with the Consultative Committee of the Geological Survey of Northern Ireland and the agenda focused on scientific cooperation between the two surveys. The Committee also met in October when various aspects of GSI operations were reviewed. The membership at the end of 2008 was as follows:

Mr. Damien Allen, Dept. of the Environment, Heritage and Local Government
Dr. John Ashton, Boliden Tara Mines Ltd., County Meath
Dr. Sadhbh Baxter, NUI Galway
Mr. Brian Byrne, Arup and Partners
Ms. Petra Coffey, Wicklow
Ms. Fionnuala Collins, Institute of Geologists of Ireland
Dr. Catherine Coxon, Trinity College Dublin
Mr. Pat Duggan, Department of the Environment, Heritage and Local Government
Mr. Garth Earls, Geological Survey of Northern Ireland
Mr. John Evans, The Marine Institute, Oranmore, County Galway
Mr. Fergus Gallagher, Kilsaran Concrete Products Ltd., County Meath
Ms. Roisín Goodman, SLR Group Ltd
Mr. Stephen Harney, Athlone Institute of Technology, County Westmeath
Prof. Alan Jones, Dublin Institute for Advanced Studies
Mr. Peter Lydon, Association of Geography Teachers in Ireland
Mr. Micheál MacCarthaigh, Environmental Protection Agency
Ms. Mairead McCabe, Department of Communications, Energy and Natural Resources
Ms. Fionnuala Meagher, Sligo County Council
Mr. Ciarán ÓhÓbáin, Department of Communications, Energy and Natural Resources
Mr. Jim Ryan, Department of the Environment, Heritage and Local Government
Dr. Mike Sweeney, Copper Coast Geopark, County Waterford

The following GSI staff serve on the Committee:

Dr. Peadar McArdle Chairperson
Mr. Seamus Nevin Secretary
Dr. Pat O'Connor
Dr. Eibhlín Doyle
Dr. John Morris
Mr. Clive Murray
Mr. John O'Donoghue
Mr. Koen Verbruggen

The Landslides Susceptibility Mapping Project Team

Following on from the work of the Landslides Working Group and its publication of the report “Landslides in Ireland” in 2006, a major new project began in 2008. Comprehensive landslides susceptibility mapping was a major recommendation of that report. In June 2008 the consultants Mouchel Ireland Ltd. were commissioned to undertake this work in two specific regions of Ireland over a five and a half year period. The two areas are East Leinster and the Greater Cork City area. The study would include the coastal zone in both regions. This work is funded from the National Development Plan.

A GSI Project Team was established to lead this project. The following GSI staff serve on the Project Team:

Dr. Ronnie Creighton Project Manager
Mr. Koen Verbruggen
Mr. Michael Sheehy
Mr. Xavier Pellicer
Ms. Charise McKeon
Dr. Ray Scanlon

In early 2009 a Technical Advisory Group, made up of people from external agencies, will be established to advise the consultants and GSI Project Team. A range of expertise will be represented on this group.

In 2009 a Landslides Workshop will be held to which a wide range of stakeholders will be invited.

International Year of Planet Earth – Irish National Committee was established in 2006 to coordinate a programme of events to mark the International Year of Planet Earth (IYPE) 2008. Managed by GSI with the support of the Royal Irish Academy, this is an All-Island forum whose membership at the end of 2008 was:

Mr. David Ball, International Association of Hydrogeologists (Irish Branch)
Dr. Tony Bazley, ES2K
Prof Anne Buttimer, International Geographical Union, Royal Irish Academy (RIA), Senior Adviser to IYPE Corporation
Ms. Marie Cowan, ES2k, Geological Survey of Northern Ireland
Dr. Catherine Dalton, Irish Quaternary Association, National Committee for Geography
Mr. Garth Earls, Geological Survey of Northern Ireland
Mr. John Evans, Marine Institute
Dr. Vincent Gallagher, Irish Association for Economic Geology
Dr. Bettie Higgs, Department of Geology, NUI Cork
Prof. Alan Jones, Dublin Institute for Advanced Studies
Dr. Deirdre Lewis, Institute of Geologists of Ireland, Geosciences Committee (RIA)
Ms. Sonja Masterson, International Association of Hydrogeologists (Irish Branch)
Mr. Gerry Murphy, Irish Meteorological Society, Met Eireann
Dr. Aodhagán Ó'Rodaighe, National Committee for Climate Change
Mr. John O'Sullivan, Irish Offshore Operators Association, Geophysical Association of Ireland
Dr. Matthew Parkes, Institute of Geologists of Ireland, National Museum of Ireland, Geosciences Committee (RIA)
Ms. Susan Pyne, Irish Geological Association
Dr. Ian Sanders, Department of Geology, Trinity College Dublin

The following GSI staff serve on the committee:

Dr. Peadar McArdle	Chairperson; Senior Adviser to IYPE Corporation
Ms. Mary Carter	Secretary; International Union of Geological Sciences
Dr. Sarah Gatley	
Mr. Enda Gallagher	
Ms. Sophie Preteseille	Copper Coast Geopark

Irish National Committee for IUGS and IGCP is managed by GSI with the support of the Royal Irish Academy. Its members at the end of 2008 were:

Dr. Peadar McArdle	Chairperson
Ms. Mary Carter	Secretary
Dr. Julian Menuge	Geosciences Committee, (RIA)

INFOMAR Project Board is the supervisory board for the INFOMAR Project, Ireland's national marine mapping programme, jointly managed by GSI and the Marine Institute. Its members at the end of 2008 were:

Mr. Martin Brennan	Chairperson, Department of Communications, Energy and Natural Resources (DCENR)
Mr. Peter Croker	Petroleum Affairs Division, DCENR

Mr. John Evans	The Marine Institute
Dr. Peter Heffernan	The Marine Institute
Dr. Peadar McArdle	Geological Survey of Ireland
Mr. Stephen O'Connor	DCENR
Mr. Koen Verbruggen	Geological Survey of Ireland
Mr. Thomas Furey	The Marine Institute

Tsunami Warning System - Inter-Departmental Committee:

The purpose of this Committee is to develop a proposal to meet Ireland's needs for a tsunami warning system. Its members in 2008 were:

Mr. Martin Brennan	Chairperson, Department of Communications, Energy and Natural Resources
Mr. John O'Donoghue	Secretary, Geological Survey of Ireland
Mr. Tony Boland	Department of the Environment, Heritage and Local Government
Mr. Jerome Kelly	Department of Education and Science
Dr. Peadar McArdle	Geological Survey of Ireland
Dr. Brian McConnell	Geological Survey of Ireland
Mr. Declan Murphy	Met Eireann
Mr. Michael Perkins	Department of Finance
Mr. Brian Spain	Department of Defence

Tsunami Warning System - Technical Group:

The purpose of this Group is to assist the Inter-Departmental Committee in the development of a proposal to meet Ireland's needs for a tsunami warning system. Its members in 2008 were:

Dr. Peadar McArdle	Chairperson, Geological Survey of Ireland
Mr. John O'Donoghue	Secretary, Geological Survey of Ireland
Ms. Celina Barrett	Department of the Environment, Heritage and Local Government
Mr. Kieran Cummins	Met Eireann
Prof. Alan Jones	Dublin Institute for Advanced Studies
Dr. Brian McConnell	Geological Survey of Ireland
Mr. Glenn Nolan	Marine Institute
Mr. Guy Westbrook	Marine Institute

Integrated Ocean Drilling Program (IODP) - National Committee:

The purpose of this Committee is to maximize participation by scientists at Irish institutes in IODP and to ensure that Ireland's scientific priorities are considered in developing the IODP science plan. Its members in 2008 were:

Mr. Peter Croker	Petroleum Affairs Division, DCENR
Dr. Robin Edwards	Trinity College Dublin

Prof. Pat Shannon University College Dublin
Dr. Andy Wheeler University College Cork

The following GSI staff serve on the Committee:

Dr. Brian McConnell
Mr. Koen Verbruggen
Mr. Xavier Monteys.

2. NATIONAL AND INTERNATIONAL REPRESENTATION

Commission for the Geological Map of the World

Mr. K. Verbruggen: North Atlantic Map

EU Directive on the management of waste from the extractive industries

Mr. G. Stanley: Co-chair of Technical Ad-hoc Group (Workshop held in Nenagh in April).

Eurogeosurveys

Dr. P. McArdle: Meeting of Directors: Italy, October
Dr. P.O'Connor: Meeting of Contact Points: Brussels, February
Dr. P. McArdle: Eurogeosurveys General Assembly: Brussels, March
Dr. W. Warren: Soils Working Group
Ms. M. Lee: Groundwater Working Group
Mr. G. Stanley: Mineral Resources Working Group
Dr. P. O'Connor: Geochemistry Working Group: Berlin, March
Dr. R. Creighton: Geohazards Working Group
Dr. E. Doyle: Research Managers Working Group
Ms. M. Carter: INSPIRE Working Group
Mr. K. Verbruggen: Marine Geology Working Group, Brussels, December

European Geoparks Network

Dr. P.O'Connor (Osnabruck, Germany, June), J. Morris, S. Gatley, S. Preteseille.

Geoscience Information Consortium

Ms. M. Carter: Helsinki, May

GEO High Level Group

Dr. P. O'Connor

33rd International Geological Congress

Delegates: Ms. M. Carter, Dr. P. McArdle, Mr. K. Verbruggen

International Year of Planet Earth

Dr. P. McArdle: Senior Adviser

Integrated Ocean Drilling Program – ECORD Council

Management: Mr. X. Monteys and Mr. K. Verbruggen

Science: Dr. B. McConnell and Mr. D. Hardy

Kopernikus, formerly, Global Monitoring for Environment and Security (GMES)

Dr. P. O'Connor: Advisory Council member. Brussels, February and November.

Mr. K. Verbruggen: National Contact Point, Terrafirma Project.

North East Atlantic and Mediterranean Tsunami Warning System (NEAMTWS) Coordination Group (UNESCO)

Dr. B. McConnell: Irish delegate.

ProGEO: The European Association for the Conservation of the Geological Heritage

Dr. J. Morris and Dr. S. Gatley: Irish Representative.

Royal Irish Academy – National Committees:

Dr. P. McArdle: Geosciences.

Dr. W. Warren: Geography

3. PARTICIPATION IN WORKING GROUPS AND SOCIETIES

Applied Agricultural Meteorology Working Group (AGMET):

Ms. M. Lee: Member

Bréifne Mountains Co. Ltd.

Dr. P. O'Connor: Director.

Burren Connect Steering Group

Dr. P. O'Connor: Member

Coillte Advisory Panel, Woodland habitat on limestone pavement.

Dr. S. Gatley: Member.

Copper Coast European Geopark

Dr. J. Morris: Geological Representative to Co-ordination Committee.

Earth Science 2000

Dr. S. Gatley and Ms. S. Preteseille: Committee.

Mr. E. Gallagher: Editorial Board.

EPA STRIVE Steering Committee

Dr. N. Hunter Williams: Member

Europamines - Project Development Meetings and Site Visits:

Dr. J. Morris

European Federation of Geologists

Dr. J. Morris: Member of Geological Heritage Working Group

Dr. E. Doyle: Member of Resources and Reserves Working Group

EU Water Framework Directive (WFD)

Dr. N. Hunter Williams: Monitoring Working Group.

Dr. N. Hunter Williams, Dr. C. Hickey, Ms. M. Lee: Working Group on Groundwater (and sub-committees).

Dr. N. Hunter Williams: Urban Pressures Programme of Measures Study - Steering Committee.

Dr. N. Hunter Williams: Groundwater - Surface Water Interaction POMs Study - Steering Committee.

Dr. N. Hunter Williams (Cardiff, January), Dr. C. Hickey (Birmingham, November): WFD Visualisation (SNIFFER).

Steering Groups for River Basin District Management Projects: Dr. N. Hunter Williams (Shannon, South-Eastern, South-Western, Eastern, Western,); Dr. P. O'Connor (Shannon); Dr. E. Doyle (Neagh-Bann).

Exploration and Mining Division (EMD) – GSI Liaison Committee

Dr. P. McArdle and Dr. E. Doyle.

Fingal Heritage Forum

Dr. S. Gatley: Member

FUNMIG Project (Fundamental migration behaviour of radionuclides in the environment).

Dr. P. O'Connor: Associate Partner

Geological Journal Editorial Board

Dr. B. McConnell: Member

Geotechnical Society of Ireland (Institute of Engineers of Ireland)

Dr. J. Creighton: Committee Member

Geothermal Working Group (DCENR)

Dr. J. Morris, Dr. E. Doyle, Dr. N. Hunter Williams

GIS in Government, Interdepartmental Group

Dr. R. Scanlon: Member

Hydrographic Society – Irish Branch

Mr. S. Cullen: Chairperson

Institute of Geologists of Ireland

Dr. S. Gatley, F. Collins: Board Members

Dr. E. Doyle: Disciplinary Committee

Dr. E. Doyle: Awards Committee (Chair)

Interdepartmental Irish Spatial Data Infrastructure/INSPIRE Working Group

Mr. K. Verbruggen, Dr. R. Scanlon: Members

International Association of Hydrogeologists – Irish Group

Dr. N. Hunter Williams: Member, Technical Discussion Meetings Committee

Dr. C. Hickey, Dr. N. Hunter Williams: Seminar Sub-Committee

International Hydrological Programme (IHP)

Dr. N. Hunter Williams: Member, Irish National Committee.

Dr. E. Doyle: Member, International Commission on Irrigation and Drainage.

Irish Coastal Forum

Mr. A. Donovan and Mr. S. Cullen: Members.

Irish Journal of Earth Sciences

Dr. J. Morris: Editorial Board Member.

Irish Offshore Strategic Environmental Assessment 2 (IOSEA), Porcupine Basin, Petroleum Affairs Division, DCENR.

Mr. K. Verbruggen: Steering Group Member

Kerry Heritage Forum

Dr. S. Gatley: Member

Kerry Geopark Working Group

Dr. S. Gatley: Member

Marine Institute: Industry-led Research Awards

Mr. K. Verbruggen: Evaluator-information management

Maritime Institute of Ireland

Mr. S. Cullen: Treasurer

Mining Heritage Trust of Ireland Ltd.

Dr. J. Morris: Conservation and Inventory Co-ordinator

NEED Project

Dr. P. O'Connor: Partner (Iceland, October)

North Atlantic Minerals Symposium – Organising Committee

Mr. G. Stanley: Co-Chair

Sea Change, Marine Institute NDP Research

Mr. K. Verbruggen and Dr. R. Scanlon: Working Group Members

Silvermines Inter-Agency Advisory Committee

Dr. P. O'Connor: Member

StratAG (Strategic Research Cluster in Advanced Technologies)

Mr. K. Verbruggen: Scientific Board Member

Mr. X. Monteys: Member, Working Group on spatial visualisation and algorithms/Marine data.

Technical Advisory Group on Corrib Project (for the Minister for Communications, Energy and Natural Resources)

Mr. K. Verbruggen: Member

UK Groundwater Forum

Dr. E. Doyle, Ms. M. Lee: Members

Waterford City Council Natural Heritage Forum

Dr. S. Gatley: Member.

4. RESEARCH USING GSI DATABASES

The following is a list of research topics based on GSI databases and the third level institutes where each was or is being undertaken. Some topics comprise more than one project.

WFD Groundwater-Surface Water Interaction POMs Study. Southwest RBD/RPS
Lowland karst of Roscommon (Trinity College Dublin)
Highly and moderately permeable subsoils (Trinity College Dublin)
Holocene sediment transport, southeast Ireland (University College Dublin)
Seabed substrate characterisation (NUI Galway)
Neural networks and seabed backscatter (NUI Galway)
Northeast Atlantic marine system modelling (NUI Galway)
Slope processes in the Rockall Trough (University College Dublin)
Accuracy of tidal prediction (Dublin Institute of Technology)
Cenozoic basin margins, Porcupine and Rockall (University College Dublin)
Quaternary of Clew Bay (Queen's University of Belfast)
Use of digital laser scanning in Dublin Port area (University College Dublin)
Site stability assessment using Terrafirma data (University College Dublin)
Research into health risks associated with private well supplies in Ireland (Trinity College Dublin)
Early Tertiary sediment transport systems across Ireland feeding the Porcupine and Rockall Basins (Trinity College Dublin)
Processing and interpretation of seismic data from the Hatton Margin, west of Ireland (Trinity College Dublin)
Character and impact of faults propagating through soft sediment to displace the deep seafloor (University College Dublin)
Landscapes in stone: digital perspectives of the Connemara landscape (NUI Galway)
Inorganic and organic characterisation of coastal and marine sediments: investigations into the fate of terrestrial organic carbon and implications for climate change (Dublin City University)
Coral Atlas, an inventory of carbonate mounds in Irish waters (University College Cork)
Marine biological investigation of the Irish Biologically Sensitive Area (Galway Mayo Institute of Technology)
Geohazard identification and early reconnaissance for hydrocarbon potential using marine electromagnetic and high frequency acoustic methods (Dublin Institute for Advanced Studies / GSI)
High resolution seafloor evidence for glacial and post-glacial environments in the Irish Sea (University College Cork)
A high resolution record of contourite deposition and palaeoclimatic forcing on the eastern Porcupine Seabight (University College Cork)
Griffith Geoscience Research Programme (see main part of Annual Report)
Urban pressures POMs study for Water Framework Directive. Eastern RBD/CDM.
On-site wastewater treatment systems study for Water Framework Directive. Western RBD/ESBI.
Ungauged catchments flow prediction study for Water Framework Directive. ESBI.
Evaluating Irish Marine Palaeoclimate Records (EIMeR) NUI Maynooth

Holocene climate change on the western Irish seaboard employing foraminiferal analysis of sediment cores from Galway Bay	NUI Galway
Palaeoceanographic records of abrupt climate change: a preliminary investigation	Trinity College Dublin
Development of standard operating procedures for video analysis and classification. GIS integration, video visualisation and image data archiving	NUI Galway
Environmental, biological and geochemical studies in Dunmanus Bay and associated inner shelf areas.	AQUAFACT, Dublin City University
Prototype toolset for evaluating automated image processing of sub-sea video data	NUI Maynooth
Application of improved single beam echosounder classification and characterization methods to multifrequency INFOMAR data	GSI, University of Victoria, Canada
Multibeam seabed mapping: correlating acoustic backscatter returns to ground-truthing using statistical tools. Developing a bio-geological classification scheme derived from existing INFOMAR-INSS databases.	University College Cork
GIS integration of Irish onshore and offshore LIDAR datasets to create new value -added	NUI Maynooth
Carbonate mounds	University College Cork
LIDAR Backscatter	QTC
Marine Geochemistry	Dublin City University
Paleoenvironmental and glacial significance of iceberg keel marks on the Porcupine and Rockall Banks	GSI
Updating the glacial map of Ireland	University of Ulster
Investigation of gas pockmarks on the Malin Shelf	GSI
Geoprocessing large acoustic datasets	NUI Maynooth
Using acoustic soundings to map oceanographic conditions	Trinity College Dublin
Analysis of seabed and water-column particle transport patterns	NUI Galway
Archaeological applications of the Joint Irish Bathymetric Survey (JIBS) data	University of Ulster
Benthic mapping of the Biologically Sensitive Area (BSA) as a tool in ocean management	Galway-Mayo Institute of Technology

5. GSI PUBLICATIONS

Anon. 2008 Groundwater Protection Scheme for County Cavan.

Gallagher, E. (Editor) 2008. Planet Earth Newsletter, Issue No. 2.

Gatley, S. and Parkes, M. 2008. Geological Heritage Guidelines for the Extractive Industry. Irish Concrete Federation and Geological Survey of Ireland. 16 pages.

McConnell, B. and Gatley, S. (Compilers) 2008. Bedrock Geological Map of Ireland, 1:500,000 scale (GIS CD version). Geological Survey of Ireland.

Sleeman, A.G., Scanlon, R.P., Pracht, M. and Caloca, S. 2008. Landscape and Rocks of the Burren. 1:50,000 scale Bedrock Map. Geological Survey of Ireland.

6. CONFERENCE PAPERS

- Carter, M. 2008. Delivering data and information over the internet in a usable fashion (Abstract). Symposium IEI-16. 33rd International Geological Congress, Oslo.
- Carter, M. 2008. Delivering Ireland's geological map data - a map for One Geology (Abstract). Symposium WMA-02. 33rd International Geological Congress, Oslo.
- Dorschel, B., Wheeler, A.J., de Haas, H. and Monteys, X. 2008. Cold-water coral carbonate mound provinces in Irish waters: distribution and characteristics (Abstract). 51st Irish Geological Research Meeting, UCD School of Geological Sciences, Programme and Abstracts, page 26.
- Lee, M., Hunter-Williams, N., Meehan, R., Kelly, C., Kabza, M., Murphy, O. and Spillane, M. 2008. Groundwater Vulnerability Mapping. *In* Proceedings of the Irish National Hydrology Conference 2008, Tullamore, pages 34-43.
- McArdle, P. and Lewis, D. 2008. The value of geoscience in Ireland (Abstract). Symposium IEE-04, 33rd International Geological Congress, Oslo.
- McConnell, B., Riggs, N. and Crowley, Q. 2008. "Old" Caradoc fauna at Grangegeeth: island hopping in *Iapetus* (Abstract). 51st Irish Geological Research Meeting, UCD School of Geological Sciences, Programme and Abstracts, page 39.
- Monteys, X., Garcia, X., Szpak, M., Garcia-Gil, S., Kelleher, B. and O'Keeffe, E. 2008. Multidisciplinary approach to the study and environmental implications of two large pockmarks on the Malin Shelf, Ireland. 9th International Conference on Gas in Marine Sediments. Bremen University, Germany.
- Monteys, X., Hardy, D., Doyle, E. and Garcia-Gil, S. 2008. Distribution, morphology and acoustic characterisation of a gas pockmark field on the Malin Shelf, NW Ireland. Symposium OSP-01, 33rd International Geological Congress, Oslo.
- Monteys, X., Praeg, D., Caloca, S. and Garcia-Gil, S. 2008. Iceberg keel marks on the Porcupine and Rockall Banks, NE Atlantic. American Geophysical Union, Spring Meeting 2008, abstract #OS24A-06
- Monteys, X., Praeg, D., Caloca, S. and Garcia-Gil, S. 2008. Iceberg keel marks on the Porcupine and Rockall Banks, NE Atlantic. IQUA Spring Meeting, 5 April 2008. *In*: IQUA Newsletter, No. 41, July 2008, page 3.
- O'Connor, P.J. 2008. The role of geotourism in supporting regeneration in disadvantaged rural communities in Ireland. Proceedings of Conference on Sustainable Tourism III, Malta.

- Pellicer, X. 2008. Quaternary Geology Map of County Dublin at 1:50,000 scale. IQUA Newsletter, No. 41, July 2008, page 9.
- Power, S. 2008. Mapping Ireland's seabed. Abstract No. TL213L. Plenary presentation, 33rd International Geological Congress, Oslo.
- Scanlon, R. and Donovan, A. 2008. Delivering terabytes of Irish geophysical and geological data freely over the internet. 11th AGILE Conference, Girona, Spain.
- Sleeman, A.G. 2007. Geology of Ireland. In: Geology of the land and sea areas of Northern Europe. A collection of short descriptions of the region covered by the 1:4 million bedrock geological map. Norges Geologiske Undersøkelse Special Publication 10, pages 47-48.
- Verbruggen, K., Cullen, S., Monteys, X., Donovan, A. and Furey, T. 2008. New discoveries, semi-automated mapping and seabed exploration: The Irish National Seabed Survey and INFOMAR projects (Abstract). Symposium OSP-01, 33rd International Geological Congress, Oslo.
- Verbruggen, K., Creighton, R., Pellicer, X. and McKeon, C. 2008. Landslides in Ireland and the Irish Landslide Working Group (Abstract). Symposium GHZ-12, 33rd International Geological Congress, Oslo.
- Verbruggen, K. and Donovan, A. You can't plan if you've no map: The INFOMAR experience (Abstract). In: Planning Challenges and Opportunities for Ireland's Coast. 2nd Irish Coastal Network Meeting, Derry.
- Warren, W.P. 2008. Preparing the ground (Abstract). In: Afterwise use - the future of peatlands. Proceedings of the 13th International Peat Congress. Abstracts of Presentations, Farrell, C. and Feehan, J. (Editors), Tullamore, Ireland, vol. 1, pages 95-100.

7. GENERAL ARTICLES

- Anon, 2008. The Geological Survey of Ireland. In: Planet Earth International Year. Boston Hannah International, page 145.
- Coffey, P. 2008. Unique maps uncovered at the Geological Survey of Ireland. Irish Society for Archives Newsletter, March/September 2008, pages 2-3.
- Demetriades, A. and others (including P.J. O'Connor). 2008. Monitoring water quality: The Eurogeosurveys' Geochemical Atlas of Europe approach. European Geologist, No. 25, June 2008, page 5.
- Gallagher, E. 2008. International Year of Planet Earth: A year in progress. Institute of Geologists of Ireland Newsletter, No. 17, pages 3-4.
- Gallagher, V. 2007. International Year of Planet Earth (2008): Ireland's contribution. Irish Association for Economic Geology, Annual Review 2007, pages 38-39.
- McArdle, P. 2008. Rock around Ireland: A guide to Irish geology. Albertine Kennedy Publishing, 112 pages.
- Missteart, B.D.R., Brown, L. and Hunter Williams, N. 2008. Groundwater recharge to a fractured limestone aquifer overlain by glacial till in County Monaghan, Ireland. Quarterly Journal of Engineering Geology and Hydrogeology, Vol. 41, pages 465-476.
- Morris, J. 2008. The mineral statistics for Ireland, 1806-1920. MHTI Newsletter, No. 41, August 2008, pages 4-6.
- Morris, J. 2008. Conservation works 2008. MHTI Newsletter, No. 41, August 2008, pages 6-11.
- Morris, J. 2008. Developing a community-based Geopark: The Copper Coast Geopark, Ireland. European Geologist, No. 25, June 2008, pages 31-32.
- Stanley, G. and Frimmel, H. 2007. The 9th Biennial SGA Meeting: Digger Deeper. Irish Association for Economic Geology, Annual Review 2007, pages 14-18.
- Stanley, G. and Frimmel, H. 2007. The 9th Biennial SGA Meeting field trips. Irish Association for Economic Geology, Annual Review 2007, pages 19-21.
- Stanley, G.A., Lally, P. and Loesch, C. 2008. Update on Aggregate Potential Mapping. Extractive Industry Ireland, page
- Verbruggen, K. 2008. Seminar delivers results and ambitious plans in marine mapping. Inshore Ireland.

8. PRESENTATIONS

- Carter, M., Donovan, A. and Scanlon, R. Map Services - Data delivery and web services in Ireland. Geological Information Consortium, Helsinki, May.
- Collins, F. Guidance on the collection, presentation and interpretation of geological and hydrogeological information for quarry development in Ireland. Conference on geology and water management, Athens, May.
- Cullen, S. Tooling up for inshore survey work. INFOMAR Annual Seminar, Marine Institute, Galway, February.
- Donovan, A. INFOMAR Project update and web data delivery system demonstration. Oceanology 08 Exhibition & Trade Show, London, February.
- Donovan, A. Web data delivery system demonstration. Seminar on Joint Irish Bathymetric Survey (JIBS) Project, Portrush, September.
- Gatley, S. Geological Heritage working with the Extractive Industry. Environmental Seminar, Irish Concrete Federation, Enfield, April.
- McArdle, P. 2008 – International Year of Planet Earth. EcoZone Workshop, BT Young Scientist and Technology Exhibition, Dublin, January.
- McConnell, B. The new 1:500,000 Bedrock Geological Map of Ireland. Irish Geological Research Meeting, UCD School of Geological Sciences. February.
- Meehan, R. Druids and Drumlins - the landscape of mid-Cavan. Cavan, Irish Geology Week, May.
- Monteys, X. Seabed classification and iceberg keelmarks on the Porcupine Bank. Fisheries and Oceans Canada, Sydney, Canada.
- Monteys, X. INFOMAR and seabed classification. CMIMA-CSIC, Barcelona, Spain.
- Monteys, X. Seabed classification: The Folk dilemma. INFOMAR Annual Seminar, Marine Institute, Galway, February.
- Monteys, X. and Collins, B. Classification of LIDAR reflectivity. INFOMAR Annual Seminar, Marine Institute, Galway, February.
- Mozo, B. The National Geotechnical Borehole Database. Dublin Soils Seminar, University College Dublin, December.
- Pellicer, X. Geophysical data modelling prior to interpretation. Colloquium, NUI Maynooth.

- Scanlon, R. Digital geological surveys. UCD Colloquium, September.
- Sheehy, M. Earth Observation on land and sea at GSI and the Terrafirma Project. Irish Earth Observation Symposium, Cork.
- Stanley, G. Characterisation of historic mine sites in Ireland and their environmental risks. Green Mines Conference, Nenagh, April.
- Stanley, G. The Historic Mines Project. Presentation to the EPA Board, Wexford, December.
- Stanley, G. and Doyle, E. Risk ranking and categorisation of historic mine sites in Ireland. Seminar for SAFEMANMIN Interrreg project, Vienna, January.
- Verbruggen, K. Integration of JIBS data. Seminar on Joint Irish Bathymetric Survey (JIBS) Project, Portrush, September.
- Verbruggen, K. Case study – costs and benefits of Irish seabed mapping. Marine Observation and Data Expert Group, European Commission – Maritime Affairs, Brussels, December.
- Verbruggen, K. INFOMAR Project overview and update. INFOMAR Annual Seminar, Marine Institute, Galway, February.
- Verbruggen, K. and Evans, J. INFOMAR, Ireland's marine mapping programme. Engineers Ireland, Northwest. Lecture and webcast, Sligo, February.
- Warren, W. Quaternary geology and physical geology of Ireland; a historical and cultural perspective. Cork Geological Association, Cork, September.

9. FIELD TRIPS LED BY STAFF

- Collins, F. Source protection plan for Annagh Lough. IAH Annual Field Trip, September.
- McArdle, P. Carlow's Volcano. National Heritage Week, August.
- Warren, W.P. Coumshingaun, County Waterford. Copper Coast Geopark excursion, June.

10. EXHIBITIONS

BT Young Scientist and Technology Exhibition, Dublin, January. Joint IYPE stand with Dublin Institute for Advanced Studies.

Groundwater Exhibition. National Water Conference, Galway, June; also National Heritage Week, Cork, August.

IYPE Geological Exhibition. Geological Survey of Ireland. Opened during August.

Oceanology International, London, June. INFOMAR stand.

Prospectors and Developers Association of Canada (PDAC) Convention, Toronto, March. Joint stand with Exploration and Mining Division (DCENR) and Geological Survey of Northern Ireland.

11. OVERSEAS MEETINGS ATTENDED

Association of Geographic Information Laboratories in Europe, Girona, Spain, May.
R. Scanlon.

British Geological Survey Open Day (and related meetings), Edinburgh, September. J.
O'Donoghue.

Conference on arsenic in the environment, Valencia, Spain, May. P. O'Connor.

Engineering geology and urban infrastructure development. EuroEng 2008, Madrid,
September. B. Mozo.

Geothermal workshop (GT-Heat), Bayern, Germany, February. N. Hunter Williams and
E. Doyle.

GSI 3D Workshop, British Geological Survey, Keyworth, September, R. Scanlon.

Highlands Workshop, Scotland, May. B. McConnell.

Hydrogeology and Hydroecology Conference, London, May. C. Hickey.

IAVCEI General Assembly, Reykjavik, August. B. McConnell.

SAFEMANMIN Seminars: Brussels, June, G. Stanley; Vienna, January, E. Doyle.

Sustainability of Extractive Industry enterprises, Brussels, June. G. Stanley.

12. STAFF CHANGES

The following staff joined or returned to GSI in 2008:

Fionnuala Collins, Emma Fitzmaurice, Louise Hickey, Jennifer Howell, Louise Marcantonio, Marlene Phelan.

The following staff left the GSI in 2008:

Silvia Caloca-Casado, Fionnuala Collins, John Deasy, Natalia Fernandez, Emma Fitzmaurice, Louise Hickey, Jennifer Howell, Judy Kavanagh, Michael Kennedy, Claudia Loesch, Ciaran Oman, Marlene Phelan.

During 2008, Natalia Hunter Williams was appointed as Senior Geologist.

14. SOME STATISTICS

a) Distribution of queries from the public in 2007 and 2008

	2007	2008	% Change
Customer Centre	491	481	-2
Groundwater	859	895	+4
Minerals	150	90	-40
Heritage	280	326	+16
Seabed (Standard)	79	0	N/A
Seabed (IWDDS)	259	704	+270
Quaternary	170	99	-42
Geotechnical	115	141	+23
Information Management	92	78	-15
Bedrock	78	60	-23
Technical	20	16	-20
Total	2873	2890	+1

b) GSI website activity: Visitors/User Sessions

	2007	2008	% Change
gsi.ie	509,738	587,033	+15
Web_Mapping	46,223	58,510	+27
gsiseabed.ie	32,046	*17,577	-45
Spatial Pages	923	11,987	+1299
Planetearth.ie	Not active	23,630	N/A
Totals	588,930	698,737	+19

*Note that in 2008 there were periods when structural changes were made to the seabed website during which activity was not recorded.

c) **GSI Coverage in Print Media during 2008 (Column-cm)**

Theme	National	Regional	Trade	Subtotal
Seabed/Marine	286	194	776	1256
Hazards	213	0	0	213
New Surveys	0	39	0	39
Energy/Climate	239	30	0	269
Heritage	326	238	466	1030
Groundwater	0	15	0	15
Mining	26	48	74	148
Research	0	0	36	36
Outreach/IYPE	*461	147	759	1367
Strategy	58	24	24	106
Subtotals	1609	735	2135	4479

* An additional minimum of 168 column-in was devoted to IYPE events in which GSI had no role.

d) **Training in GSI**

Individual training requirements are identified for all staff in their Role Profiles and reviewed in the mid-year Interim Review.

A total of 335 person-days were spent on training and at conferences during 2008 and they were spread throughout the year (162 person-days in the first half and 173 in the second half). Using a staff level of 55 for 2008, this represents 6.1 days per member of staff. The enthusiastic support of SDU, which funds course fees and conference registrations, is acknowledged.

15. GSI MERIT AWARDS 2008

A limited scheme of Merit Awards was administered during 2008 and nominations were limited to staff serving as Staff Officers, Clerical Officers, Services Officers and Services Attendants.

The following GSI staff members were presented with Merit Awards in 2008:

- Bernie Mockler, for her exceptional performance in supporting the Irish Geological Heritage Programme;
- Margaret Nolan, for her exceptional performance in managing GSI accounts and financial records.

16. IYPE PARTNERS AND SPONSORS

GSI wishes to thank the following bodies and individuals who participated in the events of International Year of Planet Earth (IYPE) as either partners or sponsors.

An Post

Association of Geography Teachers in Ireland

Athlone Institute of Technology

David Ball, hydrogeologist

Belfast Geologists' Society

Blackrock Education Centre

Boliden Tara Mines Ltd

Breifne Project Board

British Geological Survey

Burren Visitor Centre

Castlecomer Discovery Park

Cavan County Council

Clare County Council

Cliffs of Moher Visitor Centre

Copper Coast Geopark, County Waterford

Cork Geological Association

CSA Group (now part of SLR Ltd.)

Department of Enterprise, Trade and Investment (NI)

Discover Science and Engineering

Donegal County Council

Dublin Institute for Advanced Studies

Engineers Ireland

Environmental Engineering

Exploration and Mining Division (DCENR)

Fermanagh District Council

Fingal County Council

Geological Survey of Northern Ireland

Holocene Ltd.

Institute of Geologists of Ireland

International Association of Hydrogeologists (Irish Branch)

International Peat Society

Irish Association for Economic Geology

Irish Concrete Federation

Irish Examiner

Irish Geological Association

Irish Mining and Quarrying Society

Irish Quaternary Association

Kerry County Council

Kerry Heritage Council

Kilkenny County Council

Laois County Council

Louth County Council

Marble Arch Caves Geopark, County Fermanagh

Marine Institute
Mayo County Council
Met Eireann
Michael Cusack Centre
National Aeronautics and Space Administration (USA)
National Museum of Ireland
National University of Ireland, Galway
Northern Ireland Environmental and Heritage Service
Petroleum Affairs Division (DCENR)
Providence Resources Ltd.
Radiological Protection Institute of Ireland
Roscommon County Council
Royal Irish Academy
RTE
Science Spin
Sligo Institute of Technology
SWC Promotions
Teck Cominco Ltd
Trinity College Dublin
Ulster Museum
University College Cork
University College Dublin
University of Limerick
W5, Belfast