

IRISH GEOSCIENCE NETWORK

Organisation Reports 2016

IGN Meeting at IGI



February 15th 2017

Compiled by



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Geological Survey
Suirbhéireacht Gheolaíochta
Ireland | Éireann



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2016 News Items and 2017 Plans

The Geological Survey is Ireland's Geoscience Agency and is part of the newly reconfigured Department of Communications, Climate Action and Environment. Geological Survey's role is providing reliable and independent geological data, information and advice to a wide variety of customers/stakeholders, and providing policy advice, planning tools and project partnership, particularly in relation to Irish geoscience input into other Government Departments, Agencies, Local Authorities and EU Programmes, as well as developing Irish geoscience research capacity and increasing jobs in the geoscience sector.

Highlights from 2016 include:

- GS parent department was reconfigured, now Communications, Climate Action & Environment, with Minister Denis Naughten and Minister of State with responsibility for Natural Resources, Sean Kyne
- **Tellus:** The national geoscience and environmental baseline mapping programme had another very productive year, as it works towards completing national coverage by 2026. A full programme of Airborne Geophysics & Ground Geochemistry took place with acquisition over Waterford (6,500km in collaboration with Unicorn Mineral Resources) and Galway (43,141km) and geochem over Galway/Mayo. Several data releases took place, including fire assay geochemistry for archive stream sediment samples from SE Leinster and airborne geophysics for Waterford. In October a new book "Unearthed" was published with GSI and RIA, outlining Tellus results and research to date.
- **INFOMAR:** The national marine mapping programme, completed the first year of its second ten year Phase. Geological Survey vessels (RV Keary, Tonn and Geo) worked on inshore areas of the Irish East Coast, from Greystones to Arklow. Mapping by the Marine Institute took place in the Celtic Sea and off the south west coast. In addition a transatlantic research expedition TRASNA, was led by GSI and carried out work on the mid Atlantic ridge under the Atlantic Ocean Research Alliance (AORA) onboard the MI Celtic

- In 2015 INFOMAR completed trials of UAV (Drone) mapping of the intertidal zone and this led in 2016 to purchase, licensing and commissioning of a Trimble UX5 fixed wing UAV, which was deployed for intertidal, turlough and landslide mapping (DTM generation and photogrammetry) in 2016.
- **Groundwater:** 3D mapping programme concentrated on sand and gravel aquifers and complex karst areas. Targeted airborne LIDAR surveys, in collaboration with Coillte, were carried out to map karst features principally in Roscommon, Cork and Kerry.
- **Groundwater/Turlough Flooding:** New programme commenced as outlined in new Programme for Government (2016), and new Groundwater flood team put in place in collaboration with TCD. By year end 40 temporary monitoring stations had been put in place in turloughs across the country.
- **Geoscience Ireland:** Further growth of this business cluster which is supported by GSI with Enterprise Ireland and Department of Foreign Affairs and Trade. In 2016 the 28 member companies created net 179 jobs (see separate report)
- **Research:** New Research Roadmap launched, new SFI, IRC, EPA and Fulbright collaborations initiated and 41 short projects funded. Geological Survey continue to support iCrag (see separate report) through data, advice and committee memberships, and helped fund the latest spoke focussed on Geohazards and Engineering Geology to commence in 2017.
- **Land Mapping (Quaternary & Bedrock Geological Mapping):** North Eastern Bedrock Geology at 50k and a new revised seamless digital 100k Bedrock Geology dataset released. Fieldwork concentrated on map revisions including incorporation of interpretations of new Tellus airborne data.
- **Drilling:** Focussed largely on NW Midlands, resolving undifferentiated Visian stratigraphy, and following up on Tellus data, included the deepest borehole to date by new GS rig, 985m in Roscommon.
- **Geological Heritage:** In 2016 GS collaborated with the Heritage Council and local authorities in compilation of Geological Heritage Reports on Laois, Offaly and Longford. In addition we supported geologists operating in the UNESCO Geoparks of Copper Coast (Waterford) and Burren/Cliffs of Moher (Clare) as well as aspiring/developing Geopark proposal in Joyce's Country (Galway)
- **Outreach/Communications:** A new communications strategy was developed in 2016 and included new branding and logo, and a new website will be available in 2017. Among events supported/attended were BT Young Scientists, National Ploughing Championship and the Geoscience 2016 meeting in Dublin Castle. Participation at PDAC in Toronto with a new "Ireland Day" event introduced with EI and GSNI.
- **National Committees:** GS participate or support a wide range of national fora including several related to Water Framework Directive, Office of Emergency Planning (tsunami, ash and flooding) National Landscape Strategy, RIA Geographic and Geosciences Committee, Open Data Gov, Marine Coordination Group, Dublin Institute of Advanced Studies board.

In addition staff members participate in committees of very many of the Geoscience organisations, many of which also receive support of funding or corporate membership from GS and/or free access to theatre facilities for lectures. MoUs for collaboration were signed with Teagasc and DIAS.

- **International:** Geological Survey are active participants in a number of international, mainly EU Programmes and Networks. Principal among these is EuroGeoSurveys (EGS), the representative body of Geological Surveys, who have an office and secretariat in Brussels, with Koen Verbruggen President of EGS (2015 & 16) and several staff members engaged in Expert Groups, including Gerry Stanley as Deputy Chair of the Minerals Expert Group. Project participation includes EPOS (European Plate Observing System), EMODNET (European Marine Data and Observation Network), ERAMin (Minerals Research), and several EU raw materials/minerals projects including Mins4EU (Mineral Database Project), and ProMINE. GS also participate in the Integrated Ocean Drilling Programme (IODP) supporting both the European Management (ECORD) and technical (ESSAC) committees, and North Atlantic Geoscience group (NAG).
- **Staffing:** Geological Survey recruited two new permanent geologists in early 2016, Sophie O'Connor working in Groundwater and Russell Rogers with Land Mapping. Currently there are 83 staff, 37 of whom are permanent including 29 technical/professional.

2017

- **Tellus:** in 2017 will fly airborne in NW Mayo and W Donegal, with geochem sampling in N Midlands. Galway geophysical data will be released in early March.
- **INFOMAR:** In 2017 operations will focus on SE Ireland, into Celtic Sea coastline as well as further work in Celtic Sea. A new 19m vessel will be commissioned to support inshore surveying and UAV programme will be expanded. GS are partners in a new €5m InterReg Ireland-Wales project, CHERISH, commenced in January, focussed on Climate Change monitoring of onshore and offshore heritage.
- **Groundwater:** 3D mapping programme will work on sand and gravel aquifers in the west and southwest of the country and complex karst areas, including Galway, Laois, Mayo and Roscommon. The project will also support the GWflood project. Targeted airborne LIDAR surveys, in collaboration with Coillte, will be carried out to map karst features principally in Roscommon, Galway and Mayo.
- **Land Mapping (Quaternary & Bedrock Geological Mapping):** Focus on Monaghan, Leitrim & Roscommon
- **Heritage:** Wexford, Mayo and Galway reports will be produced.
- **Staffing:** Geological Survey expects to appoint up to half a dozen additional permanent technical staff in 2017 which will be advertised externally.



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Geoscience Ireland (GI); 2016 News Items and 2017 Plans

GI is a business development and job creation programme supported by the GSI and Enterprise Ireland to assist Irish companies in winning business in international markets.

In 2016, GI Member Companies created 179 net jobs (H1: 132 + 47: tbc); this brings the total jobs created since 2012 to 470. The Members turnover exceeded €310m for 2014 (€215m from overseas projects); an increase of 12% from 2013.

GI has appointed two further staff as Market Advisors to assist in the further development of GI (Elizabeth Murphy and Stephen Walsh).

Key Events in 2016

New Members | Murphy Surveys, Designer Group, Lisheen Technical & Mining Services (LTMS), PW Nigeria, Rubicon Heritage and Intersocial Consulting.

PDAC - Prospectors and Developers Association Canada | GI and GSI facilitated the successful 'Ireland Presentation' to 100 delegates at the 2016 PDAC Convention; launched by Ambassador Ray Bassett.

2017: GI and GSI to host 'Ireland – Open for Business' presentation; speakers to include GSI (Gerry Stanley to Chair), EMD, GSNI, R&D (iCRAG) and private sector (incl. Gold, Base and Critical Metals sectors); see more:

<http://www.geoscience.ie/ireland-open-for-business-at-pdac-2017/>

Mining INDABA | GI attended the 2016 Convention in Cape Town with 4 GI Members, Ambassador Liam McGabhann and EI support.

2017: GI and EI presence planned.

Africa Ireland Economic Forum | GI Members: SLR Consulting and Nicholas O'Dwyer were panellists at annual Dept. Foreign Affairs & Trade (DFAT) forum.

Enterprise Ireland (EI) | GI participated on a number of events relating to infrastructure development in the UK; also, EI facilitated Inward Buyers visit of 'High Speed Rail 2' (UK Megaproject) to Dublin.

Irish Business Network Scotland (IBNS) | GI has become corporate member of the network and the network is chaired by GI Member, Colm Moloney (Rubicon Heritage). IBNS was formally launched by Minister Paschal Donohue in Edinburgh with further events supported by an Taoiseach, Minister Joe McHugh, DFAT, Enterprise Ireland and GI.

French Geoscience Cluster | GI conduct Market Visit to Pole AVENIA meeting cluster management, private sector and R&D components.

2017: Targeting reciprocal visit to Dublin (Q2/Q3).

EU Raw Materials | GI and Members (SLR Consulting, Lisheen Mining Services) speak at 'Round Table' event hosted in Dublin.

Engineers Ireland Excellence Award | GDG's project with Irish Rail wins Geoscience award (shortlisted GI Members included: TOBIN and LTMS; TOBIN and J.B.Barry were shortlisted for Project of the Year).

PwC Africa Business Forum | GI facilitated speaker presentations and a panel discussion.

GI participated in **Ireland Canada Business Association, Arab Irish Chamber, Consulting Ireland, Business Ireland Africa networks.**

EPA | Minister Naughten appoints Sean Finlay to the 7th Advisory Committee.

Construction Industry Federation (CIF) | GI joins CIF; anticipating GI presentations to CIF Members to collaborate in winning business overseas.

Sean Finlay,
Business Director

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The Irish Mining and Quarrying Society has been promoting and representing the best interests of the natural resources and extractive industries in Ireland since 1958. The society had a busy year in 2016 with many events and interactions and 2017 looks like it will continue in this vein.

Listed below are some of the highlights from 2016 and future events for 2017. Further details can be found at www.imqs.ie

Representations in 2016

Council members represented the IMQS at the following events/committees during 2016

- Quarry Safety Partnership
- Real time Mining forum (realtime-mining.eu)
- Strategic Implementation Plan of the European Innovation Partnership on Raw Materials
- Extractive Industries All-Island Seminar
- Irish GeoScience Network and Quarry Skills Certification Scheme meetings
- Council of the European Federation of Explosives Engineers
- Prospectors and Developers Conference in Toronto

In addition to the above, the IMQS make representations on a number of levels when requested by various mining and quarrying related bodies.

Annual Review 2016

The 2016 Annual Review can be viewed online (www.imqs.ie) and includes many articles of general interest within mining and quarrying and also related to the history of the industry.

Annual Dinner Dance 2016

The 2016 annual dinner dance was held in the Ballsbridge Hotel, Dublin 4 on November 26th, 2016. It was a very enjoyable night with more than 240 people attending. The IMQS Dinner Dance is always a great opportunity to re-connect with people from the industry and to make new acquaintances.

Institute of Quarrying – Northern Ireland, Stone Crushers Ball

The annual Institute of Quarrying (Northern Ireland) Stone Crushers Ball took place in the Europa Hotel, Belfast on October 23rd 2016. The event was attended by Alan Dolan & Brendan Morris on behalf of the IMQS.

Annual Field Trip & Golf Competition

The annual field trip to the Irish Cement Works, Platin, took place on August 2016. The perpetual golfing competition was won by Sean Finlay.

The IMQS hosted a series of guest speakers during 2016, as follows:

- ***“The Application of Enhanced Ground Penetrating Radar (GPR) in Mining, Engineering and Environmental Projects”*** The IMQS and IAEG jointly hosted this presentation by Charlie Williams, CEO of Terravision Exploration Limited on Thursday June 9th at the GSI Offices in Dublin
- ***“Solar Energy Development in Ireland”*** This presentation was held at Finning Ireland Ltd, Rathcoole, Co Dublin on May 5th 2016, and was presented by Michael Moore of Elgin Energy Services Ltd.
- ***“Sort Crushing Myths - Expect Results”*** At the AGM on February 23rd 2016, this was presented by Jouni Mahonen, Global Head of Sales Support in Aggregates Business with METSO.

“Tynagh Mine: A Celebration”

To celebrate the 50th anniversary of the opening of the Tynagh mine, the IAEG, IMQS, IGI, DCENR & GSI organised a special conference on the 29th & 30th of January 2016.

Mine Rescue 2016

IMQS council member Mike Lowther is Chairman of the Irish Mine Rescue Committee (IMRC). In August 2016, over 40 teams from all over the world competed at the International Mines Rescue Competition in Sudbury, Canada. The Boliden Tara Mines team was awarded a silver medal in the category of Best Overall Team. (<http://imrc2016.ca/>).

Forthcoming Events in 2017

1. The first major event for the IMQS in 2017 will be the AGM, which will be held at the Spa Hotel in Lucan, on Tuesday 21st February. Prior to the AGM, there will be a seminar and demonstration by Geovia – Dassault Systemes on Mine and Quarry Planning Software Solutions. (3pm to 6:50pm). This should be of great interest to companies associated with mining, quarrying and related industries. Further information will be available online. The AGM will begin at 7pm with a presentation from Kilroot Salt Mine on their recent mine developments.
2. The Annual Field Trip will take place at Kilroot Salt Mine, Carrickfergus, followed by the annual Golf Competition. A date has yet to be agreed for this event.

3. The annual Prospectors and Developers Association of Canada (PDAC) Convention will be held in Toronto, March 5th-8th, 2017. The IMQS will be represented by Brendan Morris.

The IMQS website and LinkedIn page are available for members and non-members and all activities of the society are kept up to date. We welcome new individual and corporate members, with membership details available online.

Brendan Morris,

President IMQS

Serving the Mining and Quarrying Industries in Ireland since 1958



IRISH ASSOCIATION FOR ECONOMIC GEOLOGY



The IAEG annually run a lecture series, conference and short courses aimed at both students and industry professionals.

2016

Lecture Series

Date	Venue	Speaker	Title
25th February	Pillo Hotel, Ashbourne, Co.Meath	Peter Tyler	<i>From Gortdrum to Pallas Green and beyond; A geological journey</i>
21st April	Clarion Hotel, Liffey Valley, Dublin	George Reynolds	<i>Lisheen - Invisible to geophysics?</i>
31st May	Clarion Hotel, Liffey Valley, Dublin	Karl Roa	<i>Discovery, geology and origin of the Fruta Del Norte deposit, Ecuador</i>
9th June	GSI, Dublin	Charlie Williams ¹	<i>The application of enhanced ground penetrating radar in mining, engineering and environmental projects</i>
22nd September	Pillo Hotel, Ashbourne, Co.Meath	Robert Morrison	<i>Fluid controls in petrogenesis of the IOCG Olympic Dam Deposit, South Australia</i>
8th December	Pillo Hotel, Ashbourne, Co.Meath	Paul Gordon	<i>A summary of key issues around social acceptance of geoscience activities & earth resources in Ireland</i>

¹ Jointly hosted with IMQS

Short Courses

Date	Venue	Short Course
15th February	Lisheen core store, Co.Tipperary	<i>Student core logging course</i>
24th March	Radison Blu Hotel, Athlone	<i>Practical sampling & analytical quality assurance/quality control</i>
20th May	Glenview Hotel, Co Wicklow	<i>Prospectivity mapping in GIS²</i>

² Held as part of the IAEG Annual Conference weekend

Annual Conference was held in Glenview Hotel Co.Wicklow on 21st- 22nd May. The topic for this years conference was ***Critical Raw Materials – Securing Resources for the Green Energy Revolution.***

IAEG also actively participated in the organisation of the Tynagh Celebration event in January and the Lifetime Achievement Award presented to Mike Philcox in October

2017

Short Course 24th-26th February Student Geophysics Training Weekend, Co.Galway

Talk series 1st March TCD, Mike de Wit – SEG Visiting lecturer. Further talks to be confirmed.

2017 Annual Conference - ***Exploration Under Deep Cover*** held in May

IAEG will also be developing two planned publications. ***The Mineral Exploration Handbook*** (last updated 1979) and an update of ***Lower Carboniferous Lithostratigraphy of the Irish Midlands*** in partnership with Dr Mike Philcox and iCrag – more widely known as the Blue Book.

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iCRAG is a national research centre established in 2015, which brings together over 150 researchers from the Irish university geoscience community, in collaboration with industry partners and government organisations. Supported by Science Foundation Ireland and industry, iCRAG focusses on finding solutions for problems such as safe and secure groundwater supplies, the discovery of mineral and aggregate deposits and the de-risking of oil and gas exploration. Allied aims include research on the public perception and understanding of geosciences, and related social licence, and associated public engagement and education. iCRAG is a collaboration between UCD, TCD, DIAS, NUIG, UCC, NUIM and Teagasc, in partnership with government agencies involved in the geosciences sector (e.g. GSI, PAD, EPA & EMD). Together with over 40 industry partners, ranging from Irish SME's to large multinational corporations, iCRAG's main aim is to address Ireland's resource security problems by performing high quality science, which is both fundamental and applied.

Following an effective start-up date for our research of September 2015, our recruitment and research activity has ramped up very significantly. By the end of 2016, we have recruited 70 PhDs and, mainly Post-Doctoral, research staff, together with an operational team of 5 people. iCRAG aims to transform applied geosciences research in Ireland by focussing resources into thematic areas and by requiring that research outputs are systematically embedded into industry to maximise impact. The Centre's research programme consists of four cohesive topics or 'spokes' in the areas of raw materials, marine geoscience, groundwater and hydrocarbons which are built around four enabling technology and equipment based 'platforms' which focus on geophysical sensing and imaging, geochemistry, 3D geological modelling and public perception and understanding.

iCRAG researchers have made excellent progress in all of our main areas of research activity, with presentations and posters presented at the IGRM, IAEG, IAH and Atlantic Ireland conferences, and posters presented in Geoscience2016 for nearly 40 projects started before summer 2016. Our work has also been presented at various international conferences, with researchers winning prizes and funding for their participation.

Our public engagement activities have included publication of the Science Apprentice Magazine on 'Earth and Resources' in the Irish Independent in November, our support and partnership with Earth Science Ireland Magazine, attendance at many public events (National Ploughing Championships, BT Young Scientist, UCD Festival etc.) and various media contributions (TV, radio, newspaper). We have also made presentations and had discussions

with several ministers and the Taoiseach. The principal purpose of all of this engagement is to improve the public's understanding and perception of geoscience, and to better inform decision makers on the broad range of geoscience-related issues.

iCRAG have also been very successful in leveraging additional funding for our research, something which is critical for our long-term future and sustainability. In addition to our Research Centre-related funding, we have raised more than €8M support for our research, some of which has led to major improvements in associated research infrastructure, such as an array of ocean bottom acoustic sensors (DIAS) and the establishment of the iCRAG@TCDlab providing state-of-the-art electron and laser beam equipment for the characterisation of geoscience materials.

John Walsh, Director



The
Geological
Society

serving science & profession



Northern Ireland Regional Group

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This has been a year of successful 'firsts' with the group running its first short course in April, presented by Dr Eric Grunsky on 'the interpretation of geochemical survey data'; and co-convening a conference in June on 'ground water in fractured bedrock environments'. We have had the pleasure of welcoming several distinguished speakers to deliver lectures on: 'Earth's Climate Evolution' (Dr Colin Summerhayes), 'Contaminated Land Management' (Prof. Paul Nathanail), 'Global Geoparks' (Dr Kirstin Lemon) and 'Gold in Ireland' (Prof. Garth Earls). We were sorry to say goodbye to our Chair, Mike Young, as he retired and relocated to Wales in October. Mike put a lot of work into establishing and leading this group over the last two years and we are grateful for his continued support as an active member.

Our annual fieldtrip always attracts a lot of interest and 2016 was no different. A visit to the Irish Salt Mining and Exploration (ISME) operation in Carrickfergus was planned over two days in November. Participants were led underground for informative tours by Alwyn McCreanor and Jason Hopps.

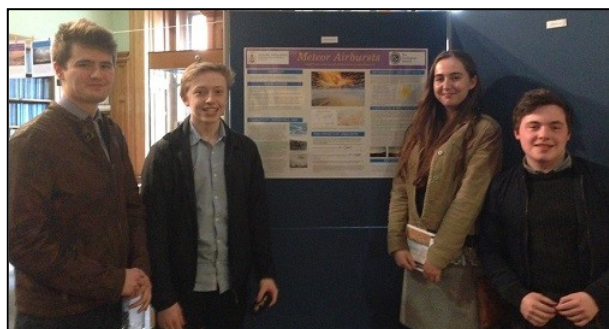


Photo (above): taken by Mark Kelly at the ISME site, Carrickfergus.

Photo (left): Courtesy of Methodist College Belfast – Schools Geology Challenge finalists.

Northern Ireland entered the GSL Schools Geology Challenge for the first time this year. Students from Methodist College Belfast were successful in winning the quiz round and best overall poster (on meteor airbursts) during the competition finals at Burlington House in May. The regional group also took part in the GSL photographic competition, the results will be announced in 2017.

Our first lecture of 2017 will be in collaboration with the Belfast Geologists' and the Irish Astronomical Association (22nd February 6.30pm in the Lamour Theatre, Queens University). Professor Sanjeev Gupta will present results from the most recent NASA Mars Science Laboratory mission – Curiosity Rover. This is an NI Science Festival lecture and registration for the event is advised (<http://www.nisciencefestival.com>). On 27th March we will joint host a lecture by Glossop medal winner Dr Tony Waltham, an expert on karst geology, alongside the NI Geotechnical Group. This talk is scheduled for 6.30pm in the David Keir lecture theatre, Queen's University Belfast.

Thank you to all those who supported our events and meetings during 2016, we hope to see you at our upcoming lectures.

Dr Sarah Coulter
Chair

Dr Dermot Smyth
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The GAI has been working on a new proposed strategy for development of a greater public profile for geothermal energy in Ireland.

In the earlier part of the year GAI developed a strategy for the organisations that sets out some changes to the main organisation structure a comprehensive communication strategy as well as objectives for education, outreach and training

GAI organised a successful one day annual conference during April 2016 that was held as part of the Energy Show 2016. The conference showcased speakers from both the shallow and deep geothermal sectors presenting key project developments in the UK and Ireland. An update on the conclusions of the IRE THERM research programme and the results of research undertaken by the UK BritGeothermal group were presented. An international research poster competition held as part of the conference.

Three the main events of the conference included the launch by the Geological Survey of the Shallow geothermal collector suitability maps and homeowner handbook. The launch was followed by the presentation of the GAI Installation of the Year Award that rewards best practice in installation for commercial and residential ground source heat pump systems. A lifetime Membership Award for all the work carried in the geothermal energy sector in Ireland was presented to former chairperson Bob Aldwell.

During the second quarter of 2016, GAI made a comprehensive response to the DCCAE Renewable Heat Incentive consultation. Through the input of members detailed technology costs for commercial ground source heat pump systems as well as large scale deep geothermal schemes was provided.

The potential for implementing a new communication strategy was the focus for the final two quarters of the year. A detailed questionnaire was circulated to all members and GAI social media contacts to obtain feedback on the existing communication tools and views on content of information distributed by the organisation.

A series of talks and presentation was launched in the final part of the year with a talk in by Prof Jon Gluyas and Dr, Charlotte Adams of Durham University on deep geothermal research and developments in the UK.

Geothermal Association of Ireland - 2017 planned activities

- Launch of new form newsletter
- One day conference at the Energy Show 2017 – 6th April 2017
- Calendar event of speakers with 4 talks starting on the 7th of February 2017 – Gareth Far will talk on *'Low enthalpy ground source heating in Wales: baseline mapping and operational systems utilizing abandoned coal workings and shallow urban aquifers'*



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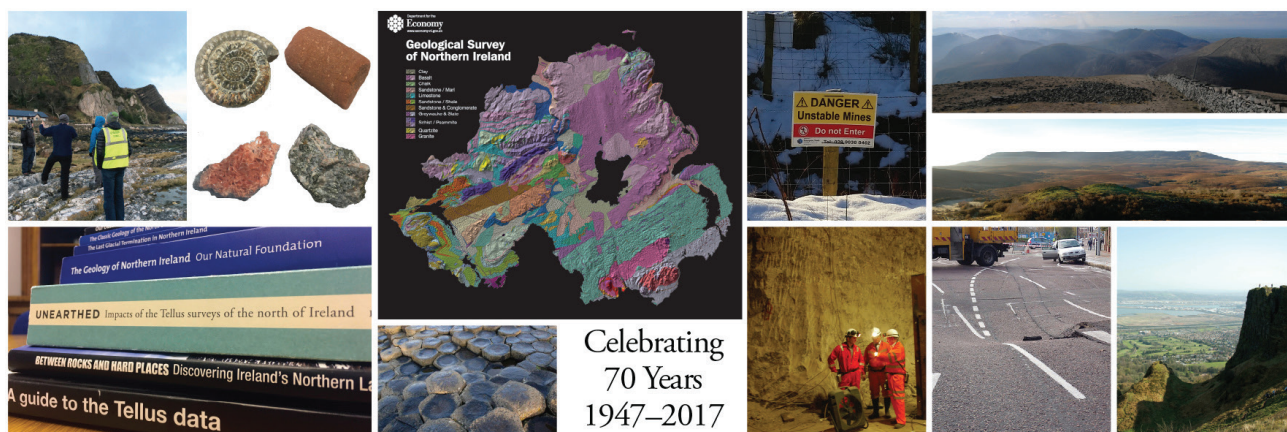
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This year GSNI will be celebrating 70 years of public service

GSNI was established as an office of the Department for the Economy in Northern Ireland in 1947 and during the course of this year it is planning a series of events including;

1. NI Science Festival event at the Ulster Museum (Feb)
2. National Science and Engineering Week events at Stormont with 6 NGO geotourism sector partners (March)
3. North Atlantic Group of (10) Geological Surveys meeting in Iceland (April)
4. NICS Live proposed GSNI-led session with government, research and industry partners with interactive displays (May)
5. Launch of new NI walks guide in Mourne (June)
6. New exhibit at W5 with QUB and BGS (Summer)
7. CPD workshop for secondary school teachers on InSar and applications to geohazards for secondary school teachers with QUB (Sept)
8. World record attempt to create a mini earthquake with 10,000 pupils on Stormont Estate with DfP and NIA (Oct)
9. Symposium showcasing the highlights from our 70 year history (Nov/Dec)



Celebrating
70 Years
1947–2017

**Irish Group of the International Association of Hydrogeologists**

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Update on Activities in 2016 (in no particular order):

1. Held annual field trip in North Mayo (October 2016) – “Exploring the complexity of ground-water/surface water interactions in a combined karstic and sand/gravel system”. Approximately 40 people attended.
2. Held annual conference in Tullamore (April 2016) - “Sustaining Ireland’s Water Future: the Role of Groundwater”. Approximately 150 people attended in addition to suppliers/vendors.
3. Held Technical Discussion Meetings at the GSI throughout the year.
4. Hosted the annual David Burden Memorial Lecture (February 2016) – Professor Stephen Foster spoke on “Resilient Cities and Groundwater”.
5. Hosted the 2016 Darcy Lecturer - Ty Ferré (University of Arizona) spoke on “Rethinking the Relationship between Data and Models”.
6. IAH International celebrated its 60th anniversary in 2016. The IAH Irish Group celebrated its 40th anniversary (founded 1976).
7. In connection with the IAH Irish Group’s 40th anniversary, Bob Aldwell was awarded a National Honorary Membership (NHM) in recognition of his role as a founding member and his lasting contribution to hydrogeology in Ireland. Bob was presented with the NHM at the group’s AGM on 1st of November 2016, where he also gave a presentation on “A history of Groundwater Use and Development in Ireland from 1950-1976”.
8. Bruce Misstear (Trinity College) was voted Secretary General of IAH International.
9. “Hydrology for hydrogeologists” course was held in January 2016.
10. Continued the (slow) application process for charitable status.
11. IAH Irish Group was approached by Fáilte Ireland about potential interest in hosting the IAH International Congress in the near future. The next opportunity is in 2019 or 2020.
12. Significant turnover in committee members in 2016 – secretary, conference secretary, field trip secretary.

13. Issued student bursaries.
14. Supported the Early Career Hydrogeologists Network (ECHN).
15. Agreed to increase the support of international membership.
16. Submitted letters to Simon Harris (TD) and the OPW to express concern with the condition of Dunmore Cave.
17. Jointly with the IGI, submitted letter of concern to Irish Water re: specifications used for evaluation of drillers for framework contract purposes.
18. Updated website and established Twitter account (>160 followers).
19. Total IAH Irish Group membership was 130 on 1st of November 2016.
20. Availled of and updated the Irish Geoscience Network's Public Liability Insurance policy.

IAH Irish Group – Plans for Activities in 2017 (in no particular order):

- “Statistics for Hydrogeologists” course will be held on 25 January 2017
- The TDM programme will continue throughout the year;
- The annual Burdon Lecture will be held in March 2017 (date and speaker to be confirmed)
- The annual conference will be held in Tullamore on 25/26 April 2017. Theme and speakers are being researched and decided upon at the present time. Conference programme will attempt to attract a wider (general) audience and groups of stakeholders (including local authorities).
- Annual field trip will be arranged in October 2017.
- Potentially, the 2017 Darcy Lecturer will be invited to speak.
- A decision will be made on the twinning initiative with IAH Uganda Group
- Outreach programmes will continue – e.g. support of “Discover your tap water” programme.
- Initiatives will be explored and implemented to increase the awareness and visibility of Hydrogeology as a science – this will involve information dissemination, outreach and stakeholder identification/engagement.
- Outreach and education opportunities will be explored with Irish Water.
- The ECHN will be supported and promoted.

**IRISGH GEOLOGICAL ASSOCIATION**

<http://geology.ie/>

twitter @IrishGeoAssoc

The Irish Geological Association (IGA) is the oldest geological society in Ireland that is specifically geared towards the amateur and undergraduate geologist. The IGA is mandated by its constitution to providing a minimum of 6 meetings per year, which could include lectures or field trips: that number has always been exceeded, however. Membership is open to anyone: child to adult, beginner to professor. In addition to lectures and field trips, the IGA also includes two 'Member's Nights' where fun and chat are mixed with geological items of interest.

The IGA Committee, normally elected during January, will, in 2017, be elected at the AGM on 8 February 2017 due to extra time needed to finalise the accounts. Subject to full ratification, **the committee for 2017** will likely be as follows:

Marian Cullen – President (Officer)
Patrick Roycroft – Vice President (Officer)
Frank Clissmann – Vice President (Officer)
Michele Castiaux – Minutes Secretary (Officer)
Daniel O'Shea - Treasurer (Officer)
Maria Cullen - Excursions Secretary (Officer) Niall
Reenan - Social Media Secretary (Officer) Sara
Dickson – Ordinary Member
Ed McKenna - Communications
Chris Clayton - Membership coordinator
Bettie Higgs - Cork Representative
Karen O'Reilly - Galway Representative

Joan Hepworth has kindly agreed to continue as the IGA's auditing accountant. Roles and duties may change if needs be in order to make the IGA function.

During 2016, the IGA – in addition to providing lectures, field trips and members' nights – obtained a grant from the Heritage Council to start the process of properly archiving its documents. This was coordinated by Michele Castiaux in conjunction with the National Museum of Ireland – Natural History (NMI-NH). The IGA archive is now with the NMI-NH and in a state where it can be added to and be accessed. Members of the IGA helped with this process over the summer of 2016.

Plans are still afoot to make the website a better resource for members, acquire more members, and to get members themselves more engaged with geology [active personal engagement, in addition to passive attendance at lectures etc.]. We hope to develop this in 2017.

The IGA thanks the Geological Survey of Ireland for allowing use of its lecture theater and facilities for IGA meetings.

Patrick Roycroft – President.

Exploration Offshore Ireland

Exploration Offshore Ireland

Compiled by Petroleum Affairs Division



**Roinn Cumarsáide, Gníomhaithe
ar son na hAeráide & Comhshaoil**

Department of Communications,
Climate Action & Environment

2016 has been an important year for the Geoscientists in the Petroleum Affairs Division.

PROMOTION: The Petroleum Affairs Division of the Irish Government has an ongoing Promotional Campaign to inform companies, contractors, governments and researchers about Exploration & Production opportunities offshore Ireland and to encourage investment in our petroleum sector. The campaign has been effective in proactively outlining the prospectivity of Ireland's offshore basins, and particularly successful in recent years where the focus was on promoting the frontier Atlantic Margin. A suite of 10 new technical posters, using new Departmental branding, were created in 2016. A PAD Dataroom facility is provided as a key element to the promotional effort and it was in strong demand throughout 2016. The annual Atlantic Ireland conference and exhibition was extended for the first time to a second day in 2016 and proved very successful.

LICENCE ACTIVITY: Applications for the 2015 Atlantic Margin Licensing Round closed on 16th September 2015. It was the most successful licensing round to date with 43 applications from 17 companies, across five basins in water depths from 100m to 3000m. The response from industry was extremely positive, particularly against the backdrop of a sustained low oil price. Applicants include international majors, mid capital companies and smaller players with some new exploration companies to the Irish Atlantic Margin. There was a substantial overlap for acreage applied for in this round, with more than 75% of the applications overlapping in the Porcupine Basin and a feature of the 2015 licensing round included applications over blocks never previously licensed. A wide variety of exploration targets are recognised including stratigraphic and structural traps. As a result of the large number of applications and the associated strong work programmes (including planned seismic acquisition in summer 2016) it was decided to have two tranches of awards, in February 2016 and June 2016. In total, 28 new Licence Options were awarded as a result of the 2015 licensing round to 14 companies. For reference, Ireland's 2011 Licensing Round resulted in 13 new authorisations being awarded compared with 1 following the 2009 Round and 4 following the 2007 Round. The number of exploration authorisations in 2016 were at the highest level since exploration began in the 1970s.

The Celtic Sea area continued to have substantial interest in 2016 and a number of new Licensing Options, with associated significant work programmes, were awarded in the basin focussing on both established and underexplored plays in the area.

EXPLORATION ACTIVITY: All exploration and production activities were conducted with due regard to safety, environmental impact and to other land and sea users.

Seismic: 2016 saw a continued momentum in the level of new seismic acquisition offshore Ireland. Four separate large 3D seismic surveys were acquired in 2016, all located in the Porcupine Basin. The surveys were for the most part located across selected new licences offered to industry early in 2016, as part of the 2015 Atlantic Margin awards. More than 8,500 sqkm of new long offset 3D subsurface data were acquired that should aid in assessing the prospectivity in the Porcupine Basin. Many companies are looking for analogues to the discoveries made offshore in the basins off the east coast of Canada in recent years.

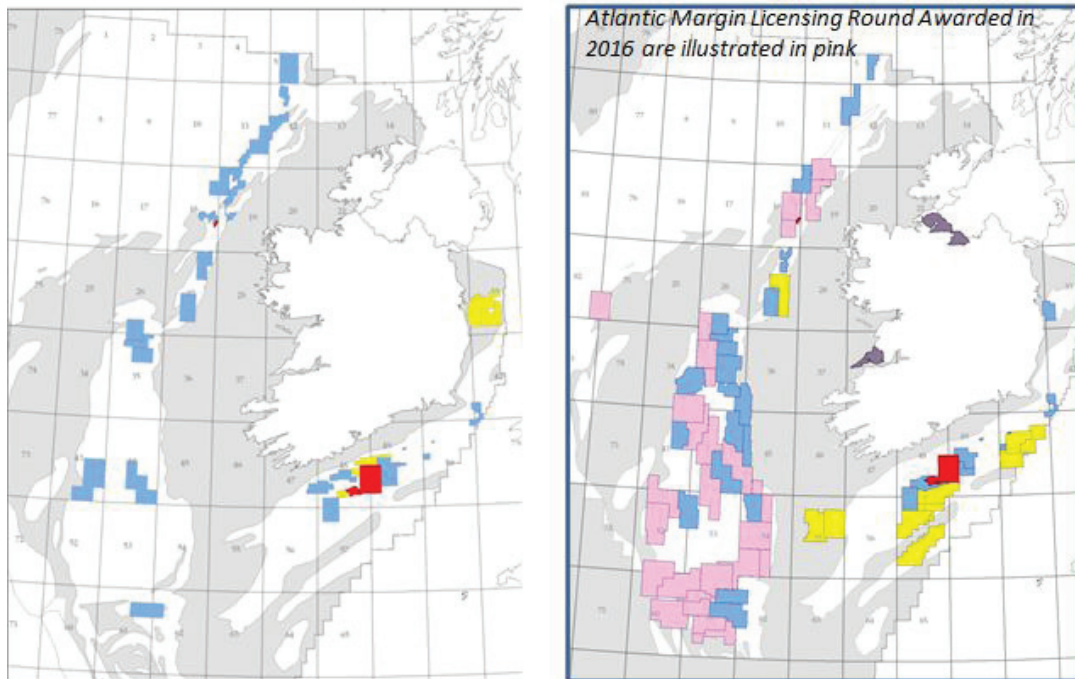
Drilling: No wells were drilled offshore Ireland in 2016. However, the Corrib gas field in the Slyne Basin came on stream in late December 2015 and all wells are now on production.

RESEARCH: PAD Technical actively supports petroleum research initiatives by funding relevant projects, providing data and actively participating on research steering committees and management boards (e.g. iCrag and PIP) aimed at deepening knowledge of the petroleum potential of Ireland's offshore. In 2016 two major research projects commenced – An Atlas of Source Rocks, Oil Characteristics and Oil-Source Rock Correlation in Mesozoic Basins of the North Atlantic Conjugate Margin, Offshore Ireland and Offshore Newfoundland-Labrador in collaboration with Nalcor Energy (on behalf of the Offshore Geoscience Data Program with the Government of Newfoundland and Labrador) by Beicip-Franlab and An Integrated Lithostratigraphic and Biostratigraphic Framework of all basins offshore Ireland (by a Consortium led by Merlin). The innovative ObSERVE project that is an aerial and an acoustic environmental baseline data gathering undertaking, continued to acquire data in the Atlantic Basins in 2016.

Overall, the exploration interest offshore Ireland in 2016 continued to gain momentum. The upswing in exploration effort offshore Ireland, both in terms of the number and quality of exploration companies active in the Irish offshore and in the level of new seismic acquisition is positive. It is expected that the current exploration interest will in due course lead to increased drilling activity. The continued collaboration between government, industry and researchers in the petroleum sector offshore Ireland is undoubtedly beneficial.

RESOURCES:

PAD Technical consists of a small number (5) of highly qualified petroleum specialists, 2 of which were recruited in 2016. Following procurement, a Consultant Petroleum Engineer was contracted in 2016. New Kingdom licences were obtained in 2016 to assist with data interpretation and a large scale high resolution plotter and scanner were purchased in-house to generate promotional montages.



Ireland Concession Map
January 2011

Ireland Concession Map
September 2011

Increased exploration interest offshore Ireland is demonstrated by the dramatic increase in Authorisations issued in the past 5 years

2017 Planned Activity:

PAD Technical expect to have a very active programme in 2017 that will include a comprehensive promotional programme, the completion of the milestone Trans-Atlantic Geochemistry source rock study, access to new data from offshore seismic surveys and the routine active regulation of work programmes associated with Authorisations. There will be a strong emphasis on the digital capture of data in 2017 to augment our national petroleum archive.

Clare Morgan

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Department of Communications, Climate Action and Environment, Petroleum Affairs Division,
Head of Technical Section

**OUGS - The Open University Geological Society**

www.ougs.org

Twitter: @OpenUniGeolSoc

Facebook: OU Geological Society

Overall 2016 was a good year for the Ireland Branch. The Branch is thriving and membership numbers are slowly increasing.

We ran of seven events during the year, two weekend field trips, three one-day field trips and two indoor events. All events were well attended considering we are small branch covering a large area. Starting the year we had our AGM in the Canal Court Hotel in Newry, Co. Down. After the AGM we again had an excellent *"show and tell"* and in the afternoon a successful *"Minerals under the microscope"* workshop, led by Siobhán Power, using both real and virtual microscopes.

A bright February day saw us in the field to experience a thermal spring which was all the more impressive because of the cold weather. Led by the ever enthusiastic Robbie Meehan, who uncovered some secrets of hydrogeology in Co. Meath

In April we went underground in the salt mine at Kilroot, Co. Antrim. In June we once more we went underground at the Marble Arch Caves in Co. Fermanagh, and were taken around the superb local Carboniferous geology by member, and very knowledgeable leader, Vicky Gilfillan. Driving through impressive scenery we happily wandered back and forth across the international border between N. Ireland and the Republic without hindrance. In the cold light of Brexit, a re-run of this trip could be exceedingly difficult.

On a warm and sunny July weekend we went to Whitehead and Islandmagee in Co. Down, led by Phyllis Turkington and Rosalie Grainger. The geology here is similar to the geology seen on our trip to the North Antrim Coast last year and it was interesting to compare the two and, in particular, the Cretaceous Ulster White Limestone Formation. I write this with a tinge of sadness because Rosalie passed away suddenly and unexpectedly shortly afterwards. We will miss her greatly and her thorough geological knowledge of the area.

At the end of September we moved from Islandmagee to Portmagee in Co. Kerry, for the geology of Valentia Island and the tetrapod footprints. The trip was led by the amazing Bettie (and Ken) Higgs. On a weekend with a terrible weather forecast we had beautiful sunshine that lit up the stunning scenery of that part of Co. Kerry.

In December 2016 we went out on a high, with a day of talks in Dublin. There were four speakers who covered the topic of climate change during the Ordovician, the late Triassic and two different aspects of the Quaternary. There was an excellent turnout of about 60 including many non-members because we opened the event to members of local geological societies. We are a small branch and we did this to generate a larger audience for the four speakers, to promote communication between the different geological groups and to raise the profile of the OUGS in Ireland.

Susan Pyne, Branch Organiser, OUGS

Society of Petroleum Engineers, Ireland Section

2017 Upcoming Events

20th February 2017: **Borehole Seismic Solutions for Integrated Reservoir Characterization and Monitoring**, Steve Morice, Shell Todd oil Services Ltd.

23rd March 2017: **Dry Hole Analysis: What I have Learnt about the Upstream Petroleum Industry from My Failure**, Steve Mackie, Santos Ltd.

27th April 2017: **2017 SPE & PESGB Oil & Gas Industry Evening**, featuring speakers from Woodside Energy & Providence Resources

31st May 2017: **Creating Value from Uncertainty and Flexibility**, Reidar Bratvold, University of Stavanger

For more information google "SPE Ireland Connect" to find our SPE Ireland website which is at <http://connect.spe.org/ireland/home>

or

Contact SPE Ireland Section via our Chairperson, Donal Meehan, at spe-ireland@spemail.org





Activities 2016

IQUA had its Spring Meeting and AGM in April, hosted in University of Ulster Coleraine, a September field meeting to the Burren coordinated by the Galway Geological Association, and its annual symposium in the GSI on "Early Human Occupation of Ireland" organised by IQUA secretary Benjamin Thebaudeau. These core activities were supplemented with many new initiatives in 2016 including an upgrade of the IQUA logo, generation of website content, video capture of IQUA events, construction of guidance documents for planning fieldmeeting and symposiums for volunteer coordinators and archiving IQUA historical records. IQUA also undertook a review of financial income and expenditure, in view to building additional funds in lead up to INQUA. Accordingly the membership and meeting registration fees were increased slightly. IQUA had the privilege of co-sponsoring the IGN Michael Philcox Lifetime Achievement Award in October. An IQUA article on the 2016 fieldmeeting entitled 'Reconstructing the landscape of the Burren' was picked up by the Clare People in November by journalist Andrew Hamilton. Pete Coxon's (TCD) description of inter-glacial deposits found northwest of Gort, first examined in 1865 by Quaternary geologist G.H. Kinehan was give the eye-catching headline 'Desperately seeking Gort's answer to Indiana Jones'.

Plans for 2017

The 2017 Spring Meeting will be organised by Steve Davis and Graeme Warren in UCD (dates to be confirmed). The 2017 fieldmeeting will potentially be to Donegal and volunteer coordinators are currently being canvassed. The 2017 IQUA Symposium has still to be discussed by the committee but could potentially include a retrospective of key Irish Quaternary Scientists.

Other planned activities for 2017 include making sponsorship applications for upcoming symposia and fieldmeetings, continue website revisions or redesign website in Wordpress to accommodate higher specification material, generation of additional educational, outreach and archive materials.

IQUA are additionally working on a proposal to participate in the Royal Irish Academy Oireachtas Member Pairing Scheme.

XX INQUA 2019 – Life on the Edge – Dublin Ireland

The IQUA committee are de facto members of the INQUA Local Organising Committee and are core participants in working groups for social events, marketing partnerships, fieldtrips, public outreach and scientific committee work. Meetings took place in February and November 2016.

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Proposed Events 2017

- “Mexico City/Lake Texcoco clays”. (Nick O’Riordan, Arup, London) Engineers Ireland 22 Clyde Road, Ballsbridge, Dublin 4. 6:00 pm 2nd February 2017.
- “Deep Basements in Water Bearing Gravels in Cork” (Mike Long, Toby Roberts, Martin Murphy) repeat presentation of the IAH / GSI joint lecture given in Geologic Survey of Ireland, Beggars Bush, Dublin in Jan 2016. Venue TBC Cork on Tues 28 Feb or Tues March 7 2017.
- “Control the Drainage: The Gospel According to Sinkholes” Joint Geotechnical Society / IAH / IGI Evening Lecture Speaker: Dr Tony Waltham (2015 Glossop Lecturer)
- April 2017 Half-day Seminar. 2 – 5 pm Date TBC. “Ground Risks” (Brian Byrne Carlow IT & Tony Bracegirdle + others ?) Engineers Ireland 22 Clyde Road, Ballsbridge, Dublin 4.
- GSI Conference in Oct / Nov 2017. “Surface and Ground Water in Geotechnics” Date TBC. 1 full day, Portlaoise. Key note speaker TBC but anticipated to come from UK/ Europe to acknowledge 30 year anniversary of European Conference on Soil Mechanics and Geotechnical Engineering held in Dublin 1987. Call for papers issued in December 2016.



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The Institute of Geologists of Ireland (IGI) was established in 1999 with the mission of promoting and advancing the science of geology and its professional application in all disciplines, especially the geosciences and to facilitate the exchange of information and ideas in relation thereto. IGI Members are required to uphold, develop and maintain the highest professional standards in the practise of their profession.

Professional membership of the IGI is open to all practising geoscientists who meet the required standards of qualification and experience. For information on how to apply, please visit www.igi.ie.

Upcoming Events

The following courses and seminars are planned for Spring 2017:

9th March 2017

Evening Seminar: Engaging Geoscientists in Global Development – Interdisciplinary work across three continents. Joel C. Gill (BGS & Geology for Global Development) and Nic Bilham (Geological Society of London)

Venue & Co-organiser: Geological Survey Ireland

21/22 March 2017

2 Day Course: Geotechnical Soil and Rock Logging to Eurocode 7 – BS5930

Course Provider: Professor David Norbury

Venue & Co-organiser: Geological Survey Ireland

21st March 2017

Evening lecture delivered by Professor David Norbury (Glossop Lecturer 2016) – title to be confirmed

Venue & Co-organiser: Geological Survey Ireland

28th March 2017

Joint Geotechnical Society / IAH / IGI Evening Lecture:

Control the Drainage: the Gospel Accorded to Sinkholes - Dr Tony Waltham (2015 Glossop Lecturer)

Venue: Engineers Ireland, Clyde Road

April 2017:

Update to EIS Guidelines – Date and Venue to be confirmed

31st May 2017

IGI AGM and Medal of Honour

Venue: No. 63 Merrion Square

The IGI acknowledges the continued support of our sponsoring bodies, the Irish Mining & Quarrying Society (IMQS), Geophysical Association of Ireland (GAI), Geotechnical Society of Ireland (GSI), Irish Association for Economic Geology (IAEG) and the International Association of Hydrogeologists (Irish Group, IAH).

Marie Fleming
IGI President