

IRISH GEOSCIENCE NETWORK ORGANISATION REPORTS for 2023

**Hybrid Meeting held
12th March 2024 at 5:30pm
at IGI, 63 Merrion Square, Dublin 2
and on Zoom**

Report compiled by IGI



Members of the Irish Geoscience Network (IGN)

- Trinity College Dublin, Department of Geology (TCD)
 - University College Dublin, School of Earth Sciences (UCD)
 - University College Cork (UCC)
 - University of Galway: Earth and Ocean Sciences (EOS, UG)
 - Geological Survey Ireland (GSI)
 - Geological Society – Northern Ireland Branch (GeoSocNI)
 - Geological Survey of Northern Ireland (GSNI)
 - Irish Association of Economic Geologists (IAEG)
 - Geotechnical Society of Ireland
 - Irish Geological Association (IGA)
 - Institute of Geologists of Ireland (IGI)
 - International Association of Hydrogeologists Irish Group (IAH)
 - National Museum of Ireland (NMI)
 - Royal Irish Academy (RIA), Geosciences and Geographical Sciences Committee
 - Irish UNESCO Global Geoparks
 - Geoscience Ireland (GI)
 - Irish Mining and Quarrying Society (IMQS)
 - Irish Quaternary Association (IQUA)
 - Petroleum Infrastructure Programme (PIP)
 - Open University Geological Society Irish Branch (OUGS)
 - Ulster Museum
 - Dublin Institute of Advanced Studies (DIAS)
 - Department of Environment, Climate and Communications: Geoscience Regulation Office
 - Department of Environment, Climate and Communications: Geoscience Policy Division
 - Irish Brownfield Network (IBN)
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- Irish Centre for Research in Applied Geosciences (iCRAG)
- Geomorphological Association of Ireland (GAI, formerly IGGy)
- European Association of Geoscientists and Engineers (EAGE)
- Irish Association of Women in Geoscience
- Speleological Union of Ireland
- Soil Science Society of Ireland
- Geothermal Association of Ireland (GAI)
- Get into Geoscience Ireland

Contributors to this report

- Institute of Geologists of Ireland (IGI)
 - Irish Association of Economic Geologists (IAEG)
 - University College Dublin, School of Earth Sciences (UCD)
 - University of Galway: Earth and Ocean Sciences (EOS, UG)
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 - Dublin Institute of Advanced Studies (DIAS)
 - Department of Environment, Climate and Communications: Geoscience Regulation Office (GSRO)
 - Department of Environment, Climate and Communications: Geoscience Policy Division (GSPD)
 - Geological Survey Ireland (GSI)
 - Geoscience Ireland (GI)
 - New Book Publication – “Classic Mountain Days” by Gareth LI Jones
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2024 - An overview of activities by the Institute of Geologists of Ireland (IGI)

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. The IGI is a registered charity and is run by its members on a voluntary basis. There is a rotating board who is supported by an executive secretary and the organisation relies on the energy and generosity of our membership who give of their time to maintain and develop the IGI and our strategic goals.

The IGI was established and is maintained with the support of our sponsoring bodies, the Irish Association for Economic Geology (IAEG), the Irish Mining & Quarrying Society (IMQS), Geophysical Association of Ireland (GAI), Geotechnical Society of Ireland (GSI), and the International Association of Hydrogeologists (Irish Group, IAH). The IGI has Mutual Recognition Agreements (MRA) with many of the largest geoscience organisations across the world and is part of the European Federation of Geologists through which it can award the EurGeol title.

IGI Members are required to uphold, develop and maintain the highest professional standards in the practise of their profession. To this end all members must undertake CPD recording for approval on an annual basis. IGI maintain a number of specialist registers for geoscientists who specialise in specific assessments including Contaminated Land/Unregulated Waste and Pyrite/Deleterious Substances.

IGI is represented on a number of advisory groups by members including; National Standards Authority of Ireland, Royal Irish Academy, Geothermal Policy Advisory Group, Minerals Policy Advisory Group, GSNI Science Advisory Committee, Pan European Reserves and Resources Reporting Committee amongst others.

The IGI currently has approximately 395 members across a number of membership categories. 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.

IGI Activities since the last IGN meeting, March 2023

Annual General Meeting 2023

IGI were delighted to hold our 2023 AGM on 28th June as a hybrid meeting, in-person at 63 Merrion Square and virtually via Zoom. It was well attended and had c. 16 attendees in-person (who enjoyed a social reception afterwards) and a further 16 or so members who attended via Zoom.

Contaminated Land Webinars

The Contaminated Land Training Series initiative was launched to provide training to Early Career Geoscientists practicing in the areas of environmental risk assessment and contaminated land. The training series was initially advertised in early September 2023 and the series of webinars began later that month. There have been 6 webinars to date which were attended by between 35 and 60 people. There are another 3 webinars scheduled for March and April. A field-based site module will be undertaken in April or May where demonstrations of sampling techniques for both groundwater and site investigations will be given to the attendees.

IGI Conference 2024

IGI is coming up to its 25th Anniversary. We will be hosting a conference on the 23rd and 24th May 2024 in the Ashling Hotel, Dublin around the theme of “Climate and Sustainability – the Responsibility of the Geoscientist”. More details on the topics, speakers and how to register will be available very soon – please keep an eye on our website www.igi.ie for more details.

Consultation Responses

During the last year the IGI maintained its public profile on a number of fronts, in line with the 2019-2024 strategy. We responded to a number of issues concerning geoscience in Ireland through the year via public consultations or direct representations:

- EPA, Stakeholder Consultation Paper for Article 27 relating to the Draft National By-Product Criteria for greenfield soil and stone used in development.
- Contributed to EFG’s EU Soil Monitoring Law Task group who drafted EFG’s Official Response to COM(2023)416 – European Soil Heath Act

IGI Summary Guide to Public Reporting for Mineral Companies in Europe

The IGI produced an update (3rd Edition) to the summary guide to the PERC Reporting Standard which was launched in Brussels on 20th April 2022. The guide is available on the IGI website.

The IGI Committees & Working Groups:

IGI Validation Committee: The Validation Committee continued to be very busy throughout 2023 with a continued growth in membership applications. The committee interviewed 25 candidates for professional membership, and approved 23 new professional members (PGeo) and 20 Members-in-Training (MIT). There were also 6 new Student members admitted to IGI in 2023.

Contaminated Land Committee: This working group was set up to deal with matters arising in relation to Contaminated Land which would have an impact on our members in line with the overall IGI Strategy. They are also responsible for the maintenance and review of the IGI's Register of Professionally Qualified Geoscientists / Competent Persons (in respect of environmental risk assessment for regulated and unregulated waste disposal and contaminated land). This group typically meets every quarter. The Contaminated Land Committee initiated the development of the Contaminated Land Training Series of webinars which have been very successful as reported above.

Environmental Impact Assessment Reporting Working Group: A working group was set up in 2019, following on from a call to the IGI membership for volunteers. It includes members from public service and industry, with a range of experience across the areas of the guidance. The existing IGI guidance needs updating, to reflect changes in the environmental impact assessment procedures and reporting, arising from an amendment to the EU EIA Directive (EU Directive 2011/92/EU and its subsequent amending Directive 2014/52/EU) in so far as they apply to the soils, geology and water elements of the environment.

Minerals Information Working Group: The IGI convened a Minerals Information Working Group in early 2020. The group has the following objectives:

- a) To address the growing trend of misinformation about mining and exploration on the island of Ireland;
- b) To provide factual information on mining and exploration on the island of Ireland to all stakeholders, including the media, various interest groups and the general public.

In 2023, MIWG put out a call to renew and update members. There are now 11 members, including IGI Board member Emer Blackwell as chair. The group is predominantly composed of geologists working in or retired from the minerals industry.

MIWG met regularly during 2023 to discuss matters relating to the minerals industry, particularly the upcoming EU Critical Raw Materials Act.

They also submitted a representation to the GSRO on the subject of the EU Critical Raw Materials Act.

MIWG have drafted a new factsheet on the EU Critical Raw Materials Act and engaged Gibney Communications to assist in a stakeholder engagement program to be timed with the publication of the Act.

Energy Geoscientists Working Group: In 2021 the IGI established an Energy Geoscientists Working Group, to raise awareness of the geoscientist's roles in the energy sector; and to support geoscientists and petroleum geologists so that their skills and experience can be applied to achieving a Just Energy Transition for Ireland.

The EGWG will help the IGI develop initiatives that will support energy geoscientists to harness opportunities and cope with career challenges associated with the energy transition, e.g. tailored training, networking opportunities, highlighting the importance of geoscientist with regard to the mix of energy types (fossil, transition and renewable), the transfer of skillsets to other sectors, promotion of energy geoscience, collaboration and information sharing.

The group is made up of both IGI members and non-members who work in the fields of petroleum, exploration, consultancy, renewables, research and academia. Members are based in Ireland, UK and the USA. The board range of expert skills and global perspectives provides a rich wealth of knowledge in energy geoscience. The group aims to progress a number of initiatives in the coming year.

Equality, Diversity and Inclusion Committee: IGI has recently formed An Equality, Diversity and Inclusion (EDI) Committee with the objective of promoting and increasing equality, diversity and inclusion among IGI's members and in the broader geoscience profession.

These objectives are strategic objectives of the IGI for the period 2019-2024 and beyond. The current initiatives include developing and publishing an EDI Charter for the IGI, provision of supports (e.g. mentoring, financial, information, advocacy) for geoscientists or those looking to study geoscience from marginalised, disadvantaged or underrepresented groups and raising awareness of EDI issues.

Heads of Geoscience Group (HOGGs) The IGI continues to facilitate collaboration in the geoscience community, through convening the Heads of Geoscience Groups forum, which met twice throughout the year. The IGI wishes to thank all participants who have given up their time during the year to make sure that the geoscience community in Ireland is connected and working together.

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).

EurGeol Eoin Wyse PGeo
IGI President



IRISH ASSOCIATION FOR ECONOMIC GEOLOGY

The IAEG annually organises a lecture series, conference and short courses aimed at industry professionals, academia and students. Its membership is made up from geoscientists working in Ireland and internationally. The 2023 Annual Conference was a major undertaking with delegates from around the world and included a 675-page published volume of papers presented.

2023 Programme

Event	Date	Location	Title
<i>Annual Conference</i>	08-10th September	Galway Bay Hotel, Salthill	IAEG50 - Irish Type Zn-Pb Deposits around the World
<i>Student Logging Course</i>	10 th October	Lisheen Core Store, County Tipperary	Student Logging Course – led by Miller O’Prey
<i>Lecture Series</i>	21 st November	Virtual via GoogleMeet	The Critical Raw Materials Act – Mairead Fitzsimons (Geoscience Policy Division)
<i>AGM and talk</i>	12th December	Pillo Hotel, Ashbourne	AGM - Russell Rogers "Using Geological Survey Ireland hyperspectral data as a tool for lithological interpretation"

The IAEG Lecture Series will continue this year, with a lecture planned on Metallurgy in March. The proposed topic for the Annual Conference is based on Critical Raw Materials (CRM) with a planned mid September date.

The IAEG council are also working on preparing a bid for the SGA international meeting for 2027 with input from Bord Failte and others.

With the sad passing of David Hall last year, his family have approached the IAEG to set up a fund to support students entering the exploration industry. The council have agreed to this with “The David Hall Mineral Exploration Fund” in the process of being established.

All updates to the planned programmes will be notified to members and on the IAEG website – www.iaeg.ie



UCD School of Earth Sciences

Scoil na Domaneolaíochtaí UCD

UCD Science Education and
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Ionad Léann agus Thaighde
Eolaíochta UCD (Iarthar),
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2023 was a year of significant disruption for the school in that we finally moved out of the Science West building (our home for over 50 years and showing its age) to temporary and dispersed locations elsewhere in the O'Brien Centre for Science. We are due to return to purpose-built accommodation mid-2026 on completion of the Phase III Science centre redevelopment. In the interim, we are adjusting to working in shared workspaces and temporary teaching rooms and have been busy recommissioning our rock preparation facilities and laboratories. On a positive note, the National Centre for Isotope Geochemistry (NCIG) laboratories have now been relocated to their final home in a refurbished and state of the art analytical suite in the Science South building. The cluster of mass spectrometers includes the new Neoma MC-ICP-MS instrument. Itrax core scanning and laser particle sizing are now available in the Core Handling Laboratory, also in the Science South building.

There have been several new appointments to faculty during the review period. Drs Claire Harnett and Aline Melo were appointed permanent Assistant Professors having successfully navigated UCD's tenure track Ad Astra pathway for faculty positions. Claire was also successful in winning a prestigious ERC Synergy grant that brings together diverse expertise around the topic of alteration, volcano instability and risk mitigation ('ROTTnROCK'); Claire is leading on the numerical modelling aspects of the programme and also brings expertise in the geotechnical properties of Earth materials. Aline uses multiphysics data to improve our understanding of the subsurface, informed by petrophysical measurements acquired from boreholes and core samples. Aline has established and equipped a new petrophysical laboratory to characterise the physical properties of Irish rocks. The School also welcomed Dr Thomas Belgrano to faculty as an Assistant Professor of Petrology and Geochemistry. Tom is interested in situ geochemical and geochronological techniques applied to unconventional minerals using laser ablation ICP-MS and works on the origin, development, and mineralisation of oceanic crust. Tom brings useful prior experience with the Neoma MC-ICP-MS to UCD.

School research priorities include the geoscience underpinning the energy transition, the search for critical raw materials, geohazards, and environmental change, past, present and future. 2023 saw the start of a new cohort of iCrag PhD students, working on topics as diverse as reconstructing the last glacial Irish icesheet, the record of the Paleocene-Eocene Thermal Maximum offshore Norway, and the scope for geothermal and gas storage in Triassic sandstone reservoirs. The school continues to host iCrag, the Science Foundation Ireland Research Centre in Applied Geosciences that is now midway through its

second phase. The Centre underwent a very positive site visit and external review during 2023. We continue to build international engagement, particularly in Africa.

In terms of teaching, we are currently building a broader Earth Sciences curriculum at undergraduate level and increasingly contribute to other UCD interdisciplinary programmes including core elements of UCD's Sustainability degree as well as Study Abroad courses for international students. We have maintained a strong element of field training across our courses as well as digital and spatial skills. Our Masters programme in 'Subsurface characterisation and Geomodelling' is now in its second year and provides students with practical workstation and geospatial skills for a host of application areas. We also contribute a module on Geohazards and Risk to the MSc in Risk, Resilience and Sustainability co-ordinated by UCD School of Geography.



OLLSCOIL NA
GAILLIMHE

UNIVERSITY
OF GALWAY

Earth and Ocean Sciences
School of Natural Sciences
College of Science & Engineering
University of Galway

Quadrangle Building
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www.universityofgalway.ie/eos/

Earth and Ocean Science is now embedded in a newly convened School of Natural Sciences (SNS) at the University of Galway. SNS comprises Physics, and Earth and Life Sciences (EOS, Botany and Plant Science, Zoology, Environmental Science and Marine Science).

Within the discipline, academics and researchers continued to publish their research, PhD students successfully completed their projects and a number of new postgraduate and postdoctoral researchers were recruited.

Undergraduate teaching, labs and practicals are fully on campus, and we restarted our final year fieldwork module based in Anglesey (run by Dr Jake Ciborowski).

There are more than 100 full time students in the denominated EOS degree programme, and the first year intake in September 2023 was up again on previous years. This reflects the outreach work we've undertaken coupled with the higher profile of geosciences in the news and media.

Major research collaborations involving EOS staff include:

- EOS is part of the EU Horizon 2020 Geofit Smart Geothermal and in 2022 site work was completed in drilling 16 c.150 deep production boreholes that will be used to abstract heat for the Alice Perry Engineering Building and the university swimming pool. GSI provided their drill rig to core an additional borehole. The system went online and is successfully heating the swimming pool (and will provide heat for the new outdoor centre).
- Data and outputs from the SFI, UK Government, and National Science Foundation (US) funded SAPHIRE project based in Letterunshin in Co Sligo are generating really interesting outputs, including procedures on designing and deploying two-way communication to

and from instruments, loggers and samplers. The project is focused on water resource resilience associated with undisturbed blanket bog.

- The REWET project (funded by Department of Agriculture, Food and the Marine) led by Civil Engineering and EOS, working with Teagasc, is continuing to develop and continuing to make important contributions to the national scheme.
- The EPA funded Nuts & Bolts project (Prof Peter Croot was PI) wrapped up in late 2023.

iCRAG activities in 2023

iCRAG, the SFI Research Centre in Applied Geosciences, collaborates with partners in industry and government to create solutions for a sustainable society by addressing three main challenges: Earth System Change, Earth Resources, and Earth Science in Society. iCRAG includes approximately 150 researchers from ten Irish institutions with an Operations Team based at University College Dublin (UCD). The Centre's work is underpinned by cross-cutting expertise and technology in geochemistry, geodata, geomodelling, geophysics, and geosensing, alongside an award-winning Education and Public Engagement programme. This brief description highlights some of the Centre's 2023 activities but more can be seen at our website: <https://www.icrag-centre.org>.

In January 2023, as part of the Centre's Education and Public Engagement programme, iCRAG launched "Get into Geoscience", the vision for which is to engage any person between 15 and 19 years of age with iCRAG research and geoscience careers. Two second-level schools took part in the six-session programme, learning about geothermal energy in Ireland, creating a research project and visiting UCD to meet our researchers. "Writing The Earth" was an exciting collaborative programme between iCRAG and the Irish Writers Centre that brought writers and scientists together to explore climate change, climate justice, sustainable development and geosciences. The collaboration produced six unique pieces of creative writing, including two plays, that were launched during Heritage Week 2023 in Pearse St Library. In November and December, several iCRAG members were featured on "10 Things to Know About", an award-winning television series that showcases and celebrates the Irish science behind aspects of modern life. Dr Jean O'Dwyer, Dr Ger McCarthy, and PhD researchers Erica Krueger and Rebecca Rivera were interviewed on research topics including groundwater, the Gulf Stream, cold water corals and peatland fungi.

Dr Aoife Brady was appointed COO of iCRAG in July. Dr Brady, who served as iCRAG's Industry and Programme Manager from 2018, brings extensive experience in research, mineral exploration, and research administration to her leadership role. Dr Brady's appointment follows Dr Jennifer Craig's departure to become Executive Director of the Society of Economic Geologists (SEG) based in Denver, Colorado, USA. We are very grateful to Dr Craig for her service as iCRAG Centre Manager, then COO, leading the Centre through Phase 1 of its research programme, through the COVID-19 pandemic, and into Phase 2 of its expanded research programme.

A major focus of 2023 was an intensive 8-Year Progress Review of iCRAG by an international panel of experts which culminated in a 2-day site review in May 2023. The panel's report to SFI was very positive, noting in particular the breadth and quality of the research, the strong sense of collaboration between researchers within and across institutions in Ireland, the importance of strengthening the Centre's interdisciplinary research, and the high degree of impact of the Centre's research.

Research is the core of iCrag. Many iCrag projects are contributing to understanding the subsurface and earth resources of Ireland. Data from foundational studies in Dr Aline Melo's petrophysical laboratory at UCD, for example, are helping to better understand geophysical responses and produce more accurate regional geological interpretations. Meanwhile, applied research on topics including geothermal and offshore wind energy, the potential for onshore and offshore carbon sequestration, peatlands, and studies of the marine environment supports national environmental and energy priorities.

Research at the intersection of the social sciences and geosciences is increasing. Two twinned studies, the Quest project looking at the potential of sediments in Dundalk Bay to store carbon and the Taking Stock project examining the perspectives of those living in the area about this possible use of Dundalk Bay, are examples of research that feeds into policy making and public engagement as well as advancing scientific understanding.

The results of iCrag research were shared in many venues in Ireland including at the Peatlands Forum hosted by iCrag in Abbeyleix in February with participants from government, industry, NGOs, and the local community, as well as academia. A selection of posters from the event can be viewed on our website. iCrag was a supporting partner of the Mary Robinson Climate Conference in Ballina in July -- a very successful event organised by Drs Audrey Morley and Gordon Bromley from University of Galway. iCrag Director Murray Hitzman gave a keynote talk at the conference and iCrag researchers led a well-attended, interactive workshop on Making the Green Transition a Reality – With What Shall We Build It? The Irish Association of Economic Geologists (IAEG) 50th anniversary meeting in Galway in September provided a truly global stage for many iCrag presentations and highlighted the importance of industry-academia connections.

iCrag researchers participated in many international meetings to showcase their research and promote Ireland as a major centre for geoscience research and expertise. Reflecting Centre research on the energy transition, iCrag played a major role in the European Association of Geoscientists and Engineers (EAGE) meeting on "Securing a Sustainable Future Together" in Vienna in June and in the EAGE Global Energy Transition meeting in Paris in November, while on the raw materials side, iCrag had a strong presence at the Society of Economic Geologists meeting in London on "Resourcing the Green Transition" where PhD researcher Malena Cazorla Martínez won the best poster award in the Battery Metals category.

Compiled by Maeve Boland, Fergus McAuliffe, and Hannah Binner.

2023 CHAPTER REPORT



Each national chapter is required by IAH Rule 6.5 to provide an annual report on its activities. This helps us to report the Association's activities and is published on the IAH web site. It is also expected that, under the terms of the chapter's constitution or rules, the national committee will make an annual report to members in their country.

1. ABOUT YOU

Your name	Sam Marchant
Email address	secretary@iah-ireland.org
Role/responsibility held in chapter	Secretary

2. YOUR CHAPTER'S INFORMATION

Is your chapter's information correct on IAH's website: https://iah.org/groups/national-chapters Please tell us of any changes now and each time a new committee is chosen.	Yes. Sam Marchant took over from Lindsay Connolly as secretary at last AGM.
Does your chapter have its own website? If so, please confirm the URL. If you do have a website, who is responsible for its management? Please provide contact details.	www.iah-ireland.org Charlotte Bennett publicity@iah-ireland.org
Would you be interested in IAH hosting your chapter's website/providing support? As an example, see https://germany.iah.org/ .	No.
Does your chapter have an elected committee? If yes, how often are elections held and how are they managed e.g. postal/email vote/at meetings?	Yes. Elections are held once a year at an annual general meeting. Elected positions are typically held for four years.

3. LOCAL MEMBERSHIP

How is local membership status and trends? e.g. stable, declining, increasing.	Stable. As of 9 th of October 2023, we had 127 members in the IAH (Irish Group) which is only slightly lower than the previous year (129 members in 2022)
What are your challenges to recruitment? e.g. volunteer time/limitation, IAH fee rates, competition from other societies, language, etc.	Unknown. Lost numbers during Covid and trying to rebuild (numbers on 2019 were 186).

4. YOUR CHAPTER'S ACTIVITIES IN 2023

<p>Did your chapter hold an annual meeting (AGM-style)? If so, please advise:</p> <ul style="list-style-type: none"> • Date and place of meeting • Approximate number attending 	<p>Our AGM was held on the 21st of November 2023 via Zoom.</p>
<p>Did your chapter hold other events e.g. technical and scientific meetings, seminars, conferences, field visits, training events?</p> <ul style="list-style-type: none"> • If you have already reported these to the IAH Secretariat, only summary information is required. • If not, these please provide a summary of dates, location, number of participants, topics, etc. and how successful you felt each event was. • Do you have photos we can use? • Are your events open to IAH non-members? • Did you hold events in partnership with others e.g. a national society, company, institution? 	<p>Annual conference – <i>Groundwater & Planning</i> 18-19th April 2023. In person event with over 140 attendees.</p> <p>Six technical discussion meetings (TDM) were held both online, via Zoom, and in-person with over 100 people attending.</p> <p>Our Annual Field Trip was held on 14-15th October. 30 people attended with the trip focusing on the Arney and Blackwater catchments in counties Armagh, Fermanagh and Monaghan.</p> <p>The IGI/IBN/IAH contaminated land training series commenced in September 2023 with three webinar sessions taken place, these will continue into 2024.</p> <p>All our events are open to non-IAH members.</p> <p>We are seeking to re-establish joint-talks with the Geotechnical Society of Ireland and the Geothermal Association of Ireland. Discussions have also been held with UCC and UoG with regards to hosting TDMs on there campuses in the future.</p>

5. YOUR CHAPTER'S PLANS

<p>Do you have any activities or tasks planned for 2023?</p> <p>If yes, please provide brief details, including if your plans are limited because of e.g. lack of funds or local interest/volunteer support to help</p>	<p>Our Annual Conference in Ireland will take place on the 16th and 17th of April 2024 in the Tullamore Court Hotel , Co. Offaly. The topic will be '<i>Groundwater & Nature Based Solutions</i>'.</p> <p>The potential for a training course in 2024 is being explored. Title and dates to be confirmed.</p> <p>Our Annual Field Trip in Ireland will be held in Autumn. It is an in-person, 2-day event. Details to be confirmed.</p> <p>TDMs are held monthly with a mixture of online and in-person.</p>
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6. ADDITIONAL COMMENTS

Please use this section to make any additional comments/suggestions e.g. what support from IAH centrally might assist your chapter, future plans you would like to see for IAH



Coláiste na Tríonóide, Baile Átha Cliath
Trinity College Dublin
Ollscoil Átha Cliath | The University of Dublin

Department of Geology, IGN report

27th February, 2024

The Geology Department at Trinity College Dublin (TCD) continues its transformation, which has been both exciting and daunting. Major changes in student numbers and staff have occurred since our previous annual report, but with building activities that lag behind.

TCD made a strategic move before covid with the initiation of the Engineering, Environment and Emerging Technology (E3) Mission. This included the development of the undergraduate TR062 Geoscience Programme, and a greater than anticipated escalation in undergraduate student enrolment. This year, we have 42 graduating students in Geoscience, which will likely exceed 50 by 2025. Our MSc Environmental programme is now fully subscribed at 25 students.

Additional staff and new facilities were also planned. We have hired a new Assistant Professor (AP) in "paleoenvironments", Matthias Sinnasael. He arrives from Paris Observatory and is an expert in stratigraphy. We hope to hire another new AP in 2026, although this may align with academic retirements. Our Chief Technician Frances Hendron and our Museum Building Attendant Rita Biernent retired this year, and our Executive Officer Sarah Guerin shifted to a new position at TCD.

None have been replaced yet. Meanwhile, the E3 Building, with new classrooms and laboratories, remains unfinished, although it is further along than last year.

To account for the extraordinary undergraduate student growth, we are hoping to split the TR062 Programme into "Geology" and "Earth Science" streams with different modules. Some of our modules, especially field trips have become more difficult to teach effectively. At least for this year, our traditional spring field trips to Wexford (2nd year), Greece (3rd year) and Spain (4th year) are slated again.

As always, we welcome ideas and collaborations with friends and colleagues across Ireland. In the last two months, we have hosted the IGA evening seminars in the Museum Building.

Yours sincerely,

A handwritten signature in blue ink, appearing to read 'GJ Dickens'.

Prof. Gerald (Jerry) Dickens, HEAD OF GEOLOGY

An Update from the National Museum of Ireland – Natural History Division (Geology) 2023 Report for Irish Geological Network Meeting – March 2024

By Dr Patrick Roycroft

The large temporary exhibition Down To Earth – Exploring Ireland’s Geology, co-curated with Geological Survey Ireland (GSI) at the Riding School in Collins’ Barracks, closed 6th November 2023. This exhibition celebrated Ireland’s geology within the context of the 175th anniversary of the founding of the (then called) Geological Survey of Ireland. It was popular with school groups, the public, and geologists and featured the largest geological map of Ireland ever produced. I thank the GSI, the OPW, fellow museum staff, the staff from the many institutions and organizations who contributed and who helped in making its de-installation go smoothly.

The large amount of geological material that had been acquired from University College Dublin since 2013 continues to be databased. The National Museum of Ireland (NMI) hired a team of 4 documentation assistants for 1.5 years, ending in May 2024, specifically to process the UCD geology material. The NMI continues to work with UCD in taking in items otherwise considered non-essential to their work but that are worth preserving: this includes books, offprints, maps, old scientific instruments, usable microscopes, and other items of historic value to the history of geology in Ireland (notably, old photographs and lantern slides). ***I encourage any and all other institutions to contact me at the museum if you have similar material that should to be preserved.***

We have also benefited from the donations of type specimens and geological material relevant to publications. This has included Irish Ordovician corals, a new species of *Bothryolepis* from the Valentia Slate, and corkite mineral from the type locality at Glandore Mine in Co. Cork.

The museum is working in partnership with Geological Survey Ireland on an estimated 2-year project to produce a database of hyperspectral mineral data. This will be done by putting through the GSI’s hyperspectral scanner almost the entire NMI mineral collection. This ‘hyperspectral mineral project’ should act as a foundation resource by which hyperspectral data obtained on unknown minerals can be then keyed to a candidate species.

There is also exciting ongoing palaeobotanical research with Trinity College Dublin’s Botany Department (and their international co-partners) on the Kiltorcan plant fossils from Co. Kilkenny. The NMI has the largest such collection in the world. Separately, there are researchers examining the plant matter stuck in the teeth of giant Irish deer.

I myself have started a project to produce a mineralogy of Ireland, working with Dr Andrew Tindle (Open University, UK, emeritus). This aims to be the first such Ireland-only mineralogy since 1832.

The collections, and NMI staff, continue to be a source of media interest. For example, I was filmed in 2023 for a documentary called *Hidden Treasures*, investigating the Brasky Mass meteorite that hit Limerick in 1813. This is to be broadcast on RTE in 2024 (date tbc).

Finally, a request. If you, either as an individual, an organization, an institution, or a geological business, are considering, for whatever reason, getting rid of rocks, minerals, fossils, thin sections, isotope powders, heavy mineral separates, etc, or books, journals, offprints, photographs, equipment (modern or historical), please ask the museum first *if* we might take it. Too much irreplaceable material has been lost over the years.



Irish Quaternary Association Update 2023/24

IQUA held its two meetings – the Spring Meeting and the Autumn Symposium – in person in 2023. Due to time constraints, the Field Meeting to County Louth was postponed in the Autumn.

Spring Meeting & AGM

The IQUA Spring Meeting and AGM 2023 were held at the Cork Enterprise Centre, School of Biological, Earth and Environmental Sciences, University College Cork, on Saturday the 25 March 2023. A keynote talk was delivered by Eileen McCarthy (QMEC Environmental), on her experience as a geo-consultant. Following a series of talks in the morning, an afternoon session entailed a panel discussion was led by Dr. Aaron Lim (University College Cork), Eileen McCarthy and Dr. Margaret Browne (Geological Survey of Ireland) on the topic of academia and industry. The Best Postgraduate Student Presentation was awarded to Sarah Ferrandin (QUB).

The AGM was conducted in hybrid form, attended by eight committee members and 18 IQUA members. The Treasurer reported an increase in membership to 111 in 2022 following a concerted effort to publicise IQUA through mailshots. The main business included a discussion of membership fees, which the membership agreed to raise by €5 towards the additional cost of paying its parent association (INQUA) membership. With Ben Thebaudeau stepping down from the Committee after many terms of service (including the roles of Secretary and Webmaster), Michelle McKeown was voted in as an Ordinary Member, and Adrienne Foreman took up the position as Webmaster.

International Quaternary Association (INQUA) Congress, Rome

IQUA's parent organisation INQUA held its four-yearly Congress in Rome in July 2023, which was attended by IQUA's President and Secretary, and many IQUA members. The IQUA President attended INQUA meetings as Ireland representative, and despite a lapse in membership subscription, was permitted to vote on INQUA business matters. The outgoing President of INQUA, Thijs van Kolfschoten, made a case for allowing smaller countries who were unable to raise INQUA annual dues a right to vote in all relevant matters, but no consensus was reached on such a change.

Autumn Symposium

The IQUA Autumn Symposium 2023 was held in the Helen Roe Theatre of The Royal Society of Antiquaries of Ireland in Dublin on 1 December 2023, on the theme of 'Marginal environments: processes, use, and resilience'. In addition to presentations by 12 researchers, a keynote was delivered by Eugene Costello (University College Cork) on "Learning from the past? Adapting land use and shaping habitats in uplands since medieval times".

The meeting concluded with the announcement of a series of IQUA Awards. The Bill Watts ¹⁴Chrono Award was awarded granted Alex Clark (Royal Holloway). IQUA Research Awards went to Sarah Ferrandin

(Queen's University Belfast) and Graeme Warren (University College Dublin). The Valerie Hall Award for Best ECR Publication was awarded to Helen Essell (Queen's University Belfast).

Outlook for 2024

Following the upcoming Field Meeting, IQUA's Spring Meeting and AGM will be held in University of Ulster on 27 April, organised by PhD student Jack Mason. We are pleased to note an offer from the Geological Survey of Ireland to hold our Autumn Symposium at their premises in Booterstown.

Plans are also presently being put in place to hold our second Early Career Researcher Workshop. Our postgraduate reps have identified the use of XFR core scanners as a broad area of interest, and our Treasurer Mark Coughlan is negotiating arrangements to hold a workshop at UCD in the late summer/early autumn.

Dates for 2024

IQUA Field Meeting to Co. Louth 5th – 7th April

IQUA's Spring Meeting and AGM in University of Ulster on 27th April

The following is a summary of the activities of The Irish Mining and Quarrying Society (IMQS) in 2023.

The highlight of the year was the hosting of European Federation of Explosives Engineers' 12th World Conference on Explosives and Blasting between 8th and 13th September in The RDS in Dublin. The IMQS were supporting partners.

The Dublin conference was one of EFEE's most successful, with record attendance and exhibitor numbers. 550 attendees from 54 countries representing more than 300+ organisations.

To coincide with the conference, we published our Annual Review earlier than usual in September 2023. We also held two field trips. The first was a walking tour of Dublin with a Geological and Explosives theme. The second was a tour of the Breedon cement works in Kinnegad.

We held our Annual Dinner in the Knightsbrook Hotel in November 2023. As always, the event proved very successful. The golf tournament, entertainment and sponsored draws with exceptional prizes always draw a great crowd.

In October, we attended the Institute of Quarrying Northern Ireland Stone Crushers Ball in the Europa Hotel, Belfast.

The IMQS hosted two Seminars in 2023. Our first was titled - "How can Mining related companies support UN SDGs with O-Pitblast Solutions". Presented by Francisco Leite from O-Pit Blast.

Our second seminar titled "Introduction to Mining" was presented by Brendan Morris.

The IMQS was represented at the following by council members - European Federation of Explosives Engineers (EFEE), Prospectors and Developers Conference (PDAC), Geo-Drilling Apprenticeship, Quarry Skills Certification Scheme meetings (QSCS), Quarry Safety Partnership (QSP), Minerals Information Working Group

(MIWG), Department of Environment, Climate and Communications (DECC), Geoscience Network & Mines Rescue Group.

As well as our annual events, in 2024 we are planning even more involvement with our members and the extractive sectors.

In 2022, we hosted a Seminar titled “Energy Management in Quarries” presented by Kevin Donovan. Due to its popularity, are planning a follow up seminar later in the year.

In conjunction with the Midland Institute of Mining Engineers (UK) we are planning a seminar regarding the Anglo American Woodsmith Project.

We are planning to hold a series of technical presentations to coincide with our council meetings.

With our upgraded website and communications platform, we will be redistributing our newsletter.

We have established a Bursary committee to manage the division of funds held on behalf of Athlone IT. This money will benefit people starting their careers in the extractive industry.

We are in the process of finalising our annual field trip.

Our annual dinner dance will be held in November.

More information can be found on our web site or in our Annual Reviews available to download from our website.

I would like to take this opportunity to thank our members. The IMQS cannot exist without their continued support.

Alan Dolan – President IMQS.



Geothermal Association of Ireland. 2023-2024

Report to Irish Geoscience Network February 2024

Membership & AGM

- Membership has remained steady at the association throughout 2023 with no additional new memberships
- The latest committee meeting was held on the 15th of December 2023. The main activities of the association including a planned AGM for Q1 of 2024 were discussed along with the outlook for the work programme for 2024.

Website & Social Media

- The GAI website provides updates on the association's news and members. This is currently being redeveloped and a new website structure to be launched by end of March 2024.
- LinkedIn and Twitter are the main social media platforms for the association -

Publications

- Bimonthly newsletters provide updates on the association's activities, interviews with industry players and project updates

News & Activities

- In 2022/3 in partnership with Queens University Belfast, Aberdeen University, and the Geological Survey of Northern Ireland and Geological Survey Ireland, GAI has continued its involvement in the delivery of an online webinar series of geothermal energy topics. The talks have provided global perspective on updates from projects, reviews of different technological solutions and policy initiatives.
- GAI is actively involved in Women in Geothermal ([WING](#)) with a GAI committee member also sitting on the WING UK committee.
- GAI has signed membership to the Global Geothermal Alliance (GGA). GGA is a coalition for action to increase the use of geothermal energy, both in power generation and direct use of heat. It calls on governments, business and other stakeholders to support the deployment of realizable geothermal potential. The organisation membership includes development partners, international and bilateral development organisations, international financial institutions, institutional investors, international organisations, and other development partners involved with geothermal energy. The GGA is managed by IRENA and includes membership of >25 countries in 6 regions of the globe.
- GAI continues to participate in the Geothermal Advisory Group set up by the Geological Survey of Northern Ireland and Department for Economy. The work is focussed on developing a roadmap for the development of geothermal energy resources in Northern Ireland through consultation with government, public, academia and industry stakeholders. The next planned meeting is April 2024.

- GAI is participating in the Department of the Environment, Climate and Communications Geothermal Advisory Committee and providing support in the shaping of a new licensing and regulatory framework for the geothermal sector in Ireland.
- GAI participated in the 2023 Geothermal Summit organised by Geological Survey Ireland, presenting an outlook for the geothermal sector in the context of the upcoming policy changes and facilitating a panel discussion session on geothermal in Ireland.
- GAI is also a member of EGEC (European Geothermal Energy Council). GAI is actively participating in the EGEC policy information sessions with other European geothermal associations designed to shape and inform EU policy of shallow and deep geothermal energy deployment.

Secretariat: c/o c/o Terra GeoServ Ltd., Unit 26 The Village Mill Enterprise Park, Rathnew, Co. Wicklow

Irish Geological Association's Report for Irish Geoscience Network Meeting March 2024



Cumann Geolaíochta na hÉireann (Established, 1959)

Our Contact Details:

Email: info@geology.ie or president@geology.ie

Website: <http://geology.ie/>

Facebook: <https://m.facebook.com/IrishGeoAssoc>

Instagram: <https://www.instagram.com/irishgeological/>

Linktree: linktr.ee/irishgeologicalassociation

Introduction:

For 65 years, the Irish Geological Association has been the all-island outreach organisation, established with the primary goal of sharing geological knowledge and building the geological-interest community through excursions, lectures and workshops but also through social events together. We work together with regional geological groups, academic centres and others to provide events for festivals, libraries, Heritage Week and Science Week.

Membership of IGA in 2024 continues to grow, with an almost equal balance between academics and students and non-professional geologists. We maintain membership fees at a low cost to keep IGA as accessible as possible to all.

Current Membership Fees: Student €5; Individual Membership €20; Family Membership €30

We also have a number of organisations supporting as Sustaining Members and we are grateful to all for their support.

Awards:

Each year, IGA awards student prizes at the Irish Geological Research Meeting for best talks (in memory of the late Barry Long (GSI) and best poster presentations.

IGA also co-judge and award the Annual George V. Du Noyer Photographic Awards in collaboration with the Geological Survey of Ireland.

2023 Review:

In 2023 IGA had a very full programme of events, starting with a lecture by Prof. Phil Gibbard (University of Cambridge). Lectures through the year were given by Dr. Chris Stimpson (University of Oxford), Dr. Úna Farrell (TCD), Dr. William (Bill) Sheppard (Trails Creative), Dr. Paul Rondelez, Dr. Vincent Dupret (Uppsala University), Dr. Aileen Doran (UCD) and Dr. Ezster Badenzski (UCD). Though many of our lectures in 2023 were by Zoom, IGA is fortunate to be working with the Geology Department at Trinity College Dublin to use facilities there again for some hybrid lectures.

Our excursions were led by Dr. Gerry Baker and Dr. Alison Orr (both of ARUP), on a joint day excursion to Glen of the Downs, Co. Wicklow, with IAH; Dr. Charlotte DuPlessis led a weekend to North Donegal – Glenveagh, Ards Peninsula; Frank Clissmann led the Peter Lewis Memorial Gold Panning Day in Co. Wicklow and thanks to the Clissmann Family who hosted us and to GSI for use of panning equipment.

Our overseas excursion was in July to the Isles of Mull and Iona with Dr. Stephen Daly (UCD) and Dr. Michael Flowerdew (CASP). Many thanks to Stephen Carrington, Excursions Secretary, who worked so hard to make this a wonderful event.

Other events included our AGM and Rock Roadshow, A Festival of Irish Geology with events dotted around Ireland during Heritage Week and our Members Night/Christmas celebration.

IGA is most grateful to our auditor Michael Shorten, our lecturers, excursion leaders, event partners, host venues and landowners who contributed so much throughout the year, as well as to our own Council members and the wider IGA membership who have given so generously of their time and resources.

IGA Council 2023/2024

• President: Maria Cullen	• Membership Secretary: Gosia Horajska-Shaikh
• Vice President: Laura Smith	• Minutes Secretary: Howard Fox
• Excursions Secretary: Dr. Stephen Carrington	• Cork Geological Assoc Rep.: Dr. Richard Unitt
• Lecture Secretary: Dr. Patrick Roycroft	• Galway Geological Assoc Rep.: Jacinta Hennelly and Kevin Rogers
• Webmaster/Communications: Gordon Poole	• Council Members: Laura Reilly, Frank Clissmann, Michele Castiaux, Dr. Meabh Banrion, Ed McKenna
• Treasurer: Dan O'Shea	
• Newsletter Editor: Dr. Bill Sheppard	



Pics from IGA Excursions, Summer 2023 (L) Dunlewey, Co. Donegal with Dr. Charlotte DuPlessis and (R) Mull, Scotland with Prof. Stephen Daly and Dr. Michael Flowerdew

Irish Geological Network Update about Irish Geological Association PROGRAMME OF EVENTS FOR 2024

DATE	EVENT	LEADER
24th January 2024	IGA LECTURE - From Seafloor Methane to Continental Flooding: Understanding the Palaeocene–Eocene Thermal Maximum and Global Climate Change (TCD/Hybrid)	Prof. Gerald Dickens (TCD)
21st February 2024	IGA LECTURE - Seeing Beyond the Visible with 'Virtual Palaeontology' (TCD/Hybrid)	Dr Chris Mays (UCC)
1st - 3rd March 2024	Irish Geological Research Meeting (IGRM) , Galway with IGA Prizegiving for Student Talks and Posters	
6th March 2024	IGA EVENING EXCURSION & LECTURE: Visit to Earth Surface Research Lab (ESRL), Trinity Tech & Enterprise Centre, Pearse St., Dublin	Dr. Mike Stock (TCD) and Victoria Lowe (Tellus/GSI)
4 th April 2024	IGA LECTURE - Dr. Patrick Meere (UCC)	
10th April 2024 (TBC)	IGA AGM and Presidential Address 'The singing River and the wise Rock /An abhainn ag canadh agus an charraig eagna"... A sense of place and the IGA'	
22nd April 2024	Earth Day	
26th - 28th April 2024	Wild Mind Festival, Fenit, Co. Kerry	
27th April 2024	IGA DAY EXCURSION: Rockabill Island, Co. Dublin ***FULLY BOOKED***	Dr. Stephen Newton (Birdwatch Ireland) & Dr. Brian McConnell (Retired, GSI)
22nd May 2024	IGA Members' Night following a Geology/Biodiversity Workshop for Biodiversity Week	Howard Fox
31st May - 2nd June	IGA WEEKEND EXCURSION: 3 Granites, 2 Beaches and 1 Island. Roundstone Area, Connemara, Co. Galway	Maria Cullen
30th June 2024	IGA DAY EXCURSION: Balcadden Bay & Howth, Co. Dublin	Prof. John Walsh (UCD)
13th July 2024	IGA DAY EXCURSION: The Visual Arts and Geology at the Royal Hibernian Academy and beyond!	Dr. William (Bill) Sheppard (Retired, GSI)
26th - 28th July 2024	IGA WEEKEND EXCURSION: Rathlin Island, Tieve Bulliagh and The Gobbins, Co. Antrim, Northern Ireland	Dr. Mark Cooper (GSNI)
August 17th - 24th 2024	HERITAGE WEEK 2024: Theme "Connections, Routes and Networks" IGA Events	
September/October 2024 TBC	IGA OVERSEAS EXCURSION: Aberdeenshire, Scotland	
28th September 2024	IGA DAY EXCURSION: Peter Lewis Memorial Goldpanning, Avoca, Co. Wicklow	Frank Clissmann
Sep-24	LECTURE	Nigel Monaghan (Retired, National Museum of Ireland)
Oct-24	LECTURE	Dr. Richard Unitt (UCC)
Nov-24	LECTURE	Dr. Martin Mollhoff (DIAS)
Dec-24	LECTURE	Dr. Aoife Brady (iCIRAG)
18th December 2024	IGA Members' Night	



**Geotechnical Society
of Ireland**

The Geotechnical Society of Ireland has hosted three events so far in the 2023-24 season with one further event planned for late April / early May and one further event to be confirmed.

- On the evening of Wednesday 19th April 2023, the Geotech Society had a lecture by Doreen King of Bord na Móna on *“Peatland Rehabilitation - Implementation of the Peatlands Climate Action Scheme on Bord na Mona Peatlands”*. This event was a hybrid event held in Clyde Road followed by the society’s annual AGM.
- On 10th October 2023, the Society ran a half-day seminar which was organised in conjunction with GSI devoted to the European Ground Motion Service (a Copernicus Service devoted to the monitoring of land deformation phenomena). The event was delivered by Dr. Michele Crosetto (Centre Tecnològic de Telecomunicacions de Catalunya) and was chaired by Dr. Sophie O’Connor and was well attended with ~20+ in person and 11 online.
- On 28th of November 2023, the society held an in-person evening lecture by Dermot Kelly of Powerbetter Soil Solutions on the *“Recent use of Rapid Impact Compaction and Polygon Compaction Roller ground improvement techniques for infrastructure and construction projects in Ireland and the UK”* which was attended by ~20 people in person.
- The society plans to run a jointly organised lunchtime lecture with the NI Geotech Group on - Embankment stabilisation in peat bogs by Colin Hedderly of Irish Rail. This was originally scheduled for January 2024 but was postponed. The rescheduled date is yet to be confirmed.
- The society also plans to run a half day Research Symposium on *“Current Geotechnical Research and Practice in Ireland”* in late April / early May 2024. The speakers will be invited authors of papers for the ECSMGE 2024 (Lisbon) and TRA 2024 (Dublin) conferences.

Also, watch out for news of the 4th Hanrahan lecture, which will be delivered by Professor Barry Lehane of University of Western Australia (UWA) on *“Geotechnical failures: a personal perspective”* in October 2024.



Report from the Irish UNESCO Global Geoparks Committee – 2023

The Irish UNESCO Global Geoparks Committee (IUGGC) operates on an all-island basis to allow for networking and exchange of knowledge from all those involved and interested in UNESCO Global Geoparks across the island.

Members:

Clare Glanville (Chair) – Geological Survey Ireland
Kirstin Lemon (Vice-Chair) – Geological Survey of Northern Ireland
Grainne O’Connor – Cuilcagh Lakelands UNESCO Global Geopark
Martina O’Neill – Cuilcagh Lakelands UNESCO Global Geopark
Carol Gleeson – Burren & Cliffs of Moher UNESCO Global Geopark
Eamon Doyle – Burren & Cliffs of Moher UNESCO Global Geopark
Robbie Galvin – Copper Coast UNESCO Global Geopark
John Galloway – Copper Coast UNESCO Global Geopark
Sarah Gatley – Copper Coast UNESCO Global Geopark
Darren Rice – Mourne Gullion Strangford UNESCO Global Geopark
Michelle Boyle – Mourne Gullion Strangford UNESCO Global Geopark

Active UGGp applications:

- The application was submitted to UNESCO from the Joyce Country and Western Lakes Aspiring UNESCO Global Geopark (UGGp) in November 2022 and the geopark was evaluated in June 2023 by two members of the UNESCO Global Geoparks evaluation team. The IUGGC offered support to Joyce Country Western Lakes in relation to their evaluation via several online meetings and sharing of information. The UNESCO Global Geoparks Council at their meeting in September discussed the report from the evaluators and the decision was made to defer the Geopark application pending the successful completion of a number of recommendations. The Geopark has until August 2025 to submit a progress report outlining how the recommendations have been met.

UGGp revalidations:

- Due to their proposed change in size relative to the original geopark boundary Cuilcagh Lakelands UGGp (formerly Marble Arch Caves UGGp) submitted a full reapplication to UNESCO in November 2022. The geopark was evaluated in June 2023 by two members of the UNESCO Global Geoparks evaluation team. IUGGC supported the Geopark in their evaluation and they received a successful result in November 2023, retaining their UGGp status.
- Copper Coast UGGp was revalidated by UNESCO during July 2023. IUGGC supported the Geopark in their revalidation and they received a successful result in November 2023, retaining their UGGp status.
- Burren Cliffs of Moher UGGp was revalidated by UNESCO during July 2023. IUGGC supported the Geopark in their revalidation and they received a successful result in November 2023, retaining their UGGp status.

Committee Activities

- The IUGGC held one committee meeting in 2023 which took place in May. Items discussed were updates of progress from each of UGGps and relevant information from both Geological Survey

Ireland and GSNI, in addition to upcoming revalidations. Other items on the agenda were the European Geopark Network (EGN) Values document, compiled as part of a series of activities to strengthen the functioning of the EGN. Further discussions took place on the UNESCO Global Geoparks Youth Forum and participation in the EGN Geohazards publication. There was also discussion on the use of the UNESCO Global Geoparks logo, the terms of use of which have been revised.

- The UGGps on the island of Ireland attended the 10th International Conference on UNESCO Global Geoparks in Marrakech, Morocco, hosted by M'Goun UNESCO Global Geoparks. The conference took place from 7-10 September and was attended by over 1500 delegates and was the first UGGP conference to be held in Africa. There were a number of presentations from Irish UGGps and aspiring UGGps including on climate change, sustainable tourism and the implementation of the SDGs within Irish UGGps. The conference was marred by the 6.8 Mw earthquake that shook Marrakech on 8 September. Whilst all of the Irish UGGp attendees were safe, this devastating event destroyed parts of the city, and caused huge amounts of fatalities close to the earthquake epicentre.
- The IUGGC organises an annual Irish Geoparks Forum to allow for networking and engagement amongst all those interested in UGGps on the island of Ireland. Due to several reasons both personal and professional amongst the committee this forum was cancelled in 2023 but plans are already afoot to hold an in-person forum in November 2024.

The Open University Geological Society Ireland Branch

Branch Organiser Report – February 2024

The OUGS Ireland Branch has presently 20 paid up members for this current year.

We held our AGM on the 20th January in Newry. Tom McGoldrick was elected the new Branch Officer and Michael Andrews was re-elected as Treasurer. Dr Bettie Higgs and Susan Pyne were re-elected as News Editors.

There were no OU Ireland field trips in 2023 due to the unusually bad weather. There was also a transition period regarding the new Branch Officer, as outlined above. We have no formal lectures or field trips organised to date in 2024. However, we are exploring a day trip to Portmarnock sedimentary succession and a weekend trip to Galway in the near future.

Tom McGoldrick will be going on a Field trip to Northern France with the OU Wessex group from SW England. The trip takes place 19 to 22nd May of this year. He will be preparing a report for the newsletter about that trip.

OU members attended some of the IGA lectures in person or on Zoom as they members of both OU and IGA.

Tom McGoldrick
Branch Organiser.

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DIAS

Institiúid Ard-Léinn | Dublin Institute for
Bhaile Átha Cliath | Advanced Studies

In 2023 DIAS experienced a dynamic year marked by significant events. Our team of researchers actively participated in both remote and in-person conferences, delivering presentations, posters, talks, and seminars across various platforms such as IGRM2023, EGU2023, EAGE2023, iCRAG 2023, AGU2023, IAVCEI23, Workshop on de-risking Ireland's offshore wind potential, Volcano Day at Trinity College, Irish Mantle Group workshop, iCRAG Summit2023, IUGG 2023, 4th International Symposium of Machine Learning & Big Data in Geoscience, GSI geoscience 2023, National Open Research Festival RIA Dublin and National Geothermal Energy Summit, TUD Grangegorman.

DIAS welcomed a new Masters student, Leon Berry-Walsh, working on a project focused on real-time remote sensing of ocean noise in Galway Bay. This research uses DAS cable data previously acquired and under the supervision of Dr Jean-Baptiste Tary, recently appointed to the Seismology Assistant Professorship. Additionally, postdoctoral researchers commenced work on a range of projects. Furthermore, the year saw the successful completion of viva for two PhD scholars.

Throughout the year, DIAS was actively engaged in terrestrial and marine fieldwork. The DIAS team played a significant role in deploying temporary research networks globally, including locations such as Iceland, Etna, Galapagos, and Mount St. Helens. This involved the utilization of DIAS marine, magnetotelluric (MT), and seismic infrastructure and equipment pools.

The DIAS team participated in various short offshore surveys within Ireland, including the MANGO project in collaboration with the Marine Institute at the SmartBay facility in Galway Bay for underwater acoustic monitoring. Additionally, the team undertook two small-scale projects under the Geological Survey Ireland (GSI) short call initiative. One of these projects, HI-RES (Hibernian Regional Geoelectrical Structure), focused on strengthening collaboration with the DIAS Astronomy & Astrophysics Section to complete a dataset of magnetotelluric soundings across Ireland.

The Irish National Seismic Network (INSN), a collaboration between DIAS and the GSI, had a busy year in 2023. A MoU signed in November 2023 extended the collaboration for another five years. Building upon the 2022 MoU for the Community Seismology Programme (CSP), DIAS welcomed Outreach Officer Laura Reilly to enhance the original Seismology in Schools initiative. Quake Shake, was launched in December 2023.

Laura Reilly organised several outreach events, activities and presentations including 'Wild Child Rock 'N' Shake Adventure' held in collaboration with Irish Geological Association at Rathmines Library on August 19th. Quake Shake displayed a Raspberry Shake at the GSI stand at the National Ploughing Championship in Ratheniska Co. Laois between September 19th to 21st. Additionally, on October 13th, Quake Shake facilitated a seismological workshop at Technological University Dublin, Grangegorman, with the participation of the 6th class from Stanhope N.S. DEIS school.

Several schools and geoparks are actively involved in operating CSP Raspberry Shakes, including The Burren and Cliffs of Moher UNESCO Global Geopark in Co. Clare, Copper Coast UNESCO Geopark in Co. Waterford, Joyce Country and Western Lakes UNESCO Geopark in Co. Mayo, St. Columba's Stranolar in Co. Donegal, Oatlands College in Co. Dublin, Gaelscoil Coláiste Chroí Mhuire Spiddal in Co. Galway, and Douglas Community School in Co. Cork.

Ongoing international collaborations with researchers in University of Kiel, University of Iceland, Icelandic Meteorological Organisation, Ludwig Maximilian University of Munich, University of Bergen, Cambridge University, University of Edinburgh, GFZ Potsdam, Ifremer, European Space Agency, University of Birmingham, Instituto Geofísico, Charles University, TU Delft, Universidad Complutense de Madrid and many others. Current large scale collaborative projects include iCrag2, EU IMPROVE, DIG, DEEP, EU SPIN, IGUANA (DIAS, University of Edinburgh, Instituto Geofísico in Quito), ESA 3D Earth, POROCLIM, MOD3LTHERM and HEKLA, as well as ongoing individual level interdisciplinary work with our research partners around the world.

Following Dr. Emma L. Chambers' initial three-year fellowship to work on geothermal starting in April 2023 (GRANNUS – Geothermal Resource Assessment beneath Ireland using subsurface imaging) funded by SEAI research development and demonstration funding programme 2022, Dr. Chambers was awarded the SFI-IRC Pathway Programme funding to work on MODelling the 3D thermal and Lithospheric Structure of geothermal regions (MOD3LTHERM) at the end of 2023, which is also co-funded by the SEAI.

Furthermore, Dr Eoghan Totten was awarded a 2 years IRC Postdoctoral Fellowship for his project proposal, 'Rapid Retrieval of Seismic Velocity Models Using Fourier Neural Operator based Deep Learning'.

It was also a busy year with publications, with a total of 15 articles, including two chapters in books. These works appeared in a diverse range of prestigious journals, such as Geophysical Journal International, Tectonophysics, Research Article, Journal of Geodynamics, Earth and Planetary Science Letters, International Association of Geodesy Symposia, Marine and Petroleum Geology, Scientific Reports, Journal of Applied Geophysics, and Earth Surface Dynamics.

In May 2023, DIAS hosted the IMPROVE Summer School in Carlingford Ireland attended by 23 young PhD researchers. The school focused on geophysical data inversion and numerical modeling, by exploring both theoretical and practical aspects of these techniques. On the 17th of May an IMPROVE Open Day was held in the Foy Centre in Carlingford, engaging primary and secondary school students, as well as the local community and hosted by the attending IMPROVE researchers. The day attracted a total of 200+ students, teachers and members of the public.

2023 was also eventful with outreach events and public engagement. In January 2023, DIAS attended the BT Young Scientist and Technology Exhibition in the RDS, Ballsbridge, as a part of the GSI stand. A 'make your own earthquake' display with a raspberry shake seismometer, a real-time monitor showing the most recent global and local seismic events detected by INSN stations and a hydrophone display were operated by a variety of researchers, technical staff and outreach officers.

DIAS also hosted Culture Night on Friday 22nd in 5 Merrion Square where upwards of 150+ visitors attended and heard talks from Asst. Prof. Jean-Baptiste Tary, Dr. Duygu Kiyan & Dr. Nicolas Celli, from Director of Seismic Networks Dr. Martin Möllhoff and Seismic Data Analyst James Grannell, as well as partook in interactive displays such as a raspberry shake seismometer and a hydrophone. Dr. Emma L. Chambers & PhD researcher Maurice Weber represented DIAS in Trinity College at the Fiery Forces event for Culture Night, where 300+ visitors were in attendance.

On October 25th, researchers and technical officers hosted an event titled 'Sounds from the Deep' as a part of DIAS' Samhain agus Science festival, in Galway City Museum in collaboration with the Sea Science exhibition.

On November 21st the Geophysics Section hosted the statutory lecture in the Museum of Irish Literature (MoLI). This lecture, titled 'Exploring the Deep Earth: Supercomputing and Digital Twins', was given by Prof. Heiner Igel of Ludwig Maximilian University of Munich. Upwards of 40 visitors attended this lecture and was well received by the public and generated interest across social media platforms.

The year was marked by extensive coverage in national media outlets and newspapers, with many from DIAS appearing in interviews on radio and television programs. Below are some notable examples of this media exposure:

- 7th Feb 2023 (Chris Bean) - Why is Turkey so prone to earthquakes? Interview on RTE Radio 1 with Chris Bean, <https://tinyurl.com/2p8kab2c>
- 7th Feb 2023 (Chris Bean) - Newstalk The Pat Kenny Show. Devastation in Turkey: <https://www.insn.ie/wp-content/uploads/2023/02/The-Paty-Kenny-Show-7th-Feb-2023-Chris-Bean.mp3>
- 8th Feb 2023 (Chris Bean) - Interview with RTE news2day <https://www.rte.ie/video/id/4443/>
- 7th May 2023 (Martin Möllhoff) - Largest earthquake for 10 years shakes Donegal <https://www.bbc.com/news/articles/ce7g37w270no>
- 8th May 2023 (Martin Möllhoff) - BBC NI, Martin speaking about Donegal M2.5 earthquake (broken link) <https://www.bbc.co.uk/sounds/play/m001lqxg>

- 8th May 2023 (Martin Möllhoff) - More people heard rather than felt Donegal earthquake – DIAS <https://highlandradio.com/2023/05/08/more-people-heard-rather-than-felt-donegal-earthquake-dias/>
- 11th May 2023 (Laura Reilly) - DIAS to host public Volcano outreach day in Carlingford next week <https://www.dundalkdemocrat.ie/news/home/1167566/dias-to-host-public-volcano-outreach-day-in-carlingford-next-week.html>
- 12th June 2023 (James Grannell) - Why we are more inclined to witness earthquakes in the North or Ireland compared to elsewhere <https://highlandradio.com/2023/06/12/podcast-mondays-nine-til-noon-show-44/>
- 18th June 2023 (Chris Bean & James Grannell)- Why Ireland has fewer Earthquakes than Britain? Future Proof with Jonathan McCrea Podcast <https://www.goloudplayer.com/episodes/why-ireland-has-fewer-earthquake-ZTM3MTQ5Njg0Y2ZlYjEzMDljZjFhNTRmYmExNDViMDE=>
- 29th August 2023 (Chris Bean) - ‘They certainly did shake the ground’: Fans cause seismic activity at Taylor Swift concern <https://www.goloudplayer.com/episodes/they-certainly-did-shake-the-gro-ODdiMjE3ZDI2OGU1YmQwZjU3MzlmMjFkNjIwNTQ4ZmE=>
- 11th September 2023 (James Grannell) - ‘There's a report on the earthquakes in Morocco and an explainer on how they happen too. <https://www.rte.ie/kids/news2day/2023/0911/1404697-news2day-11-september-2023/>
- 15th November 2023 (Chris Bean) - ‘Science Week Special: What are the Biggest Threats to Humanity?’ <https://www.goloudplayer.com/episodes/science-week-special-what-are-th-ZTNIYzMwNWZDkyMzBmNjA4ZWY2ZjU0ZDg5YTg4N2Y=>



Geoscience Regulation Office Department of the Environment, Climate and Communications

The Geoscience Regulation Office (GSRO) is a division of the Department of the Environment, Climate and Communications (DECC). It was established on 1 January 2021 and resulted from a restructuring of the geoscience functions within DECC. Two new divisions, the **Geoscience Policy Division** (GSPD) and the **Geoscience Regulation Office** replaced the Exploration and Mining Division (EMD) and Petroleum Affairs Division (PAD).

The GRSO is responsible for managing:

- the regulation,
- licensing, and
- compliance and enforcement

roles for **mineral** and **petroleum** exploration, production, and decommissioning. In addition, it will be responsible for **geothermal** regulation and enforcement when legislation is in place.

The GSRO has a statutory obligation to lay before the Houses of the Oireachtas 6 monthly reports on mineral and petroleum activities.

The [Six Monthly Reports to the Oireachtas on Mineral Exploration and Mining in Ireland](#) sets out details of current:

- State Mining Leases,
- State Mining Licences,
- Prospecting Licences (PL) and
- the total amount of all moneys collected by the Minister under or by virtue of any such Lease or Licence or otherwise in connection with the Minerals Development Acts.

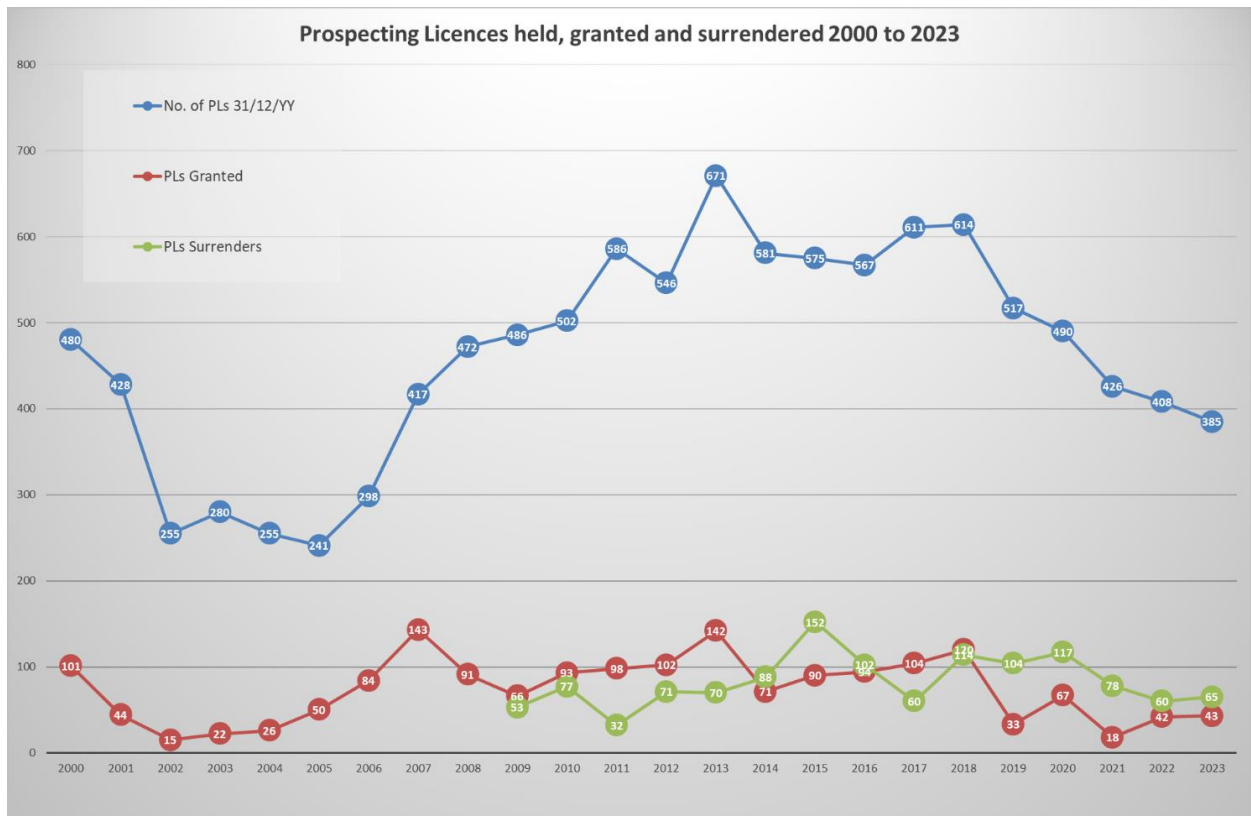


Figure 1 Prospecting Licences held as of the 31 December from 2000 to 2023, and the number of licences granted during each calendar year.

The [Six Monthly Reports to the Oireachtas on Petroleum Exploration and Development in Ireland](#) sets out:

- the particulars of all current Authorisations granted by the Minister during the reporting period,
- the amount of money relating to petroleum exploration and development collected by the Minister during the reporting period, and
- other information relating to petroleum exploration and development in Ireland.

Additional information is available to our stakeholders in our [GSRO Stakeholder Guidance Document](#)

[Mineral and Petroleum – Exploration and Production 2023](#). This document, first published in 2023 gives an overview of how to interact with us in regard to key regulatory processes. Please note that this document is provided for guidance only and to assist our stakeholders in engaging with the GSRO.

Highlights during 2023 were:

- GSRO Stakeholder Guidance Document Mineral and Petroleum – Exploration and Production 2023 published,
- New online submission form for the public to participate in the application and renewal of PLs,
- Exploration Activity Screening templates and guidance issued,
- Kinsale offshore decommissioning completed.

Paul Mc Dermott *PGeo & EurGeol*
Principal Geologist,
Geoscience Regulation Office
29 February 2024



**An Roinn Comhshaoil,
Aeráide agus Cumarsáide**
Department of the Environment,
Climate and Communications

Geoscience Policy Division

Department of the Environment, Climate and Communications

Update on Activities in 2023

Critical Raw Materials Act

The Geoscience Policy Division (GSPD) in DECC acted as Ireland's policy coordination lead on the EU Critical Raw Materials Act (CRMA) which is anticipated to come into effect across the EU from April 2024. The CRMA is a Regulation which will take direct effect, on ensuring the EU's secure and sustainable supply of critical raw materials (CRMS). The European Commission proposal for the CRMA was released in March 2023, with final negotiations concluding on 29th November 2023. GSPD engaged with inter-departmental and external key stakeholders throughout the negotiation of the CRMA. It recognises the need to strengthen value chains to improve capacity in monitoring and mitigating risks of disruption to CRM supply, diversifying imports to reduce strategic dependencies, and improving circularity.

GSPD is currently planning for CRMA implementation. There are a range of obligations for Ireland to fulfil in the areas of business supports, permitting, planning, trade, financing, market surveillance, national mapping, reporting, risk monitoring and penalties enforcement; for which competent authorities must be assigned. A CRM value chain study will further inform our understanding of Ireland's actual value chain for CRMs, to identify key market operators and to advise on implementation.

Overall, the CRMA presents opportunities and some challenges too for Irish geoscience, such as sourcing the correct technical skills to support increased mineral exploration, mapping and mining as well as valorisation activity; and ensuring adequate educational and outreach activities to support public engagement and foster public acceptance for CRM project development. We can anticipate increased provision of high-quality State-sponsored data and as well as a range of other measures to create more favourable investment conditions for exploration (both primary and extractive waste) and mining projects with high environmental and social governance standards.

Geoscience Bill

Work on the scoping of a new Geoscience Bill has been initiated that will expand Ireland's regulatory powers, provide greater transparency, and deliver future-proofed minerals and petroleum frameworks across the geoscience regulatory area. A comprehensive review of the current legislative framework is currently being carried out to define and develop robust and effective functions for geoscience regulation in Ireland.

Geothermal Energy

The Government published its 'Policy Statement on Geothermal Energy for a Circular Economy' in July 2023. The Policy Statement sets out the general approach to regulating the exploration for and the utilisation, of geothermal energy as a natural resource. It also sets out the scope of strategy for the successful implementation of a geothermal policy to facilitate deployment in Ireland. The Department intends to publish a General Scheme of a Bill to provide the necessary legislative basis for the regulatory framework by Q4, 2024.

The approach to the regulatory framework will aim to give certainty regarding ownership and use of geothermal energy, create licensing processes and reporting systems for geothermal projects, and integrate with existing environmental, health and safety and planning regulatory frameworks.

GSPD will build on data gathering, research, knowledge, skills and capacity while planning and engaging with local authorities and the public.

Given the climate imperative to decarbonise our economy and the need for a secure source of energy, the Policy Statement addresses barriers to the development of the geothermal energy sector and integrates with developing policies on heat and district heating. The SEAI found that up to 54% of domestic, commercial, and public sector demand for heating in Ireland could be met by District Heating and that geothermal energy will be an important source of heat.

Prospectors and Developers Association of Canada (PDAC) Trade Show

The 2023 PDAC exhibition was held 5th-8th March 2023. GSPD, representing the Government of Ireland, exhibited at the event showing the mineral potential, data availability and the legislative/regulatory regime to other attendees and exhibitors.

ObSERVE Phase 2

The ObSERVE Programme is a major marine scientific programme that began in 2014, which will help build a greater understanding of Ireland's marine species and the habitats they need to survive and to thrive. The ObSERVE programme will provide key information on sensitive marine ecosystems and enable us to better plan marine activities and development.

A review of data from aerial surveys undertaken during the second phase of ObSERVE is currently underway, which will build on the knowledge and data gathered in the successful first phase.

ObSERVE will assist in the development of suitable conservation strategies that will sustain our marine environment into the future.

The Programme is jointly funded by the Department of the Environment, Climate and Communications, the Department of Housing, Local Government and Heritage and Sustainable Energy Authority Ireland (SEAI).

Irish Offshore Strategic Environmental Assessment 6 (IOSEA6)

To facilitate existing authorisation holders in being able to seek to progress their authorisations, the Department of the Environment, Climate and Communications has published its sixth Irish Offshore Strategic Environmental Assessment (IOSEA6) in September 2023. This involved a Strategic Environmental

Assessment and Appropriate assessment of the Departments “Plan for issue of Petroleum Exploration and Production Authorisations in Irish Offshore Waters for the period to 2030”.

This plan considered policy changes that have occurred in Ireland in recent years, including the placing of the commitment to end the issuing of new licences for new exploration and extraction on a statutory basis, and sets the proposed approach to the issuing of petroleum authorisations, and the consideration of the possible offshore exploration activities that could take place under petroleum authorisations.

Legacy Mines

The State is involved in the rehabilitation of legacy mine sites and this year have advanced essential maintenance and inspection agreements with relevant local authorities at Silvermines, Co. Tipperary; Avoca, Co. Wicklow and Bunmahon, Co. Waterford. Other funded mine repairs and safety works have been undertaken at Allihies.

Petroleum Exploration and Production Policy

The Programme for Government commitment to end the issuing of new licences for the exploration and extraction of gas, on the same basis as the decision taken in 2019 by the previous Government in relation to oil exploration and extraction, was placed on a statutory footing with the commencement of the Climate Action and Low Carbon Development (Amendment) Act 2021.

Holders of existing authorisations are not affected by the changes and may apply to progress through the standard lifecycle stages towards production, subject to regulatory consents being given.



An Roinn Comhshaoil,
Aeráide agus Cumarsáide
Department of the Environment,
Climate and Communications



Irish Geoscience Network: Geological Survey Ireland, 2023 update and 2024 Plans

The Geological Survey is Ireland's Geoscience agency and is part of the Department of the Environment, Climate and Communications (DECC). Geological Survey Ireland's role is to provide reliable and independent geological data, information, and advice to a wide variety of customers/stakeholders, and provide 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.

2023 was another productive year for Geological Survey Ireland, now settled into operations across four locations: Head Office in Booterstown, Operational Centre including storage, archives and labs in City West, Core Store and scanning centre in Sandyford and additional core storage and drill-operation centre in Birr, County Offaly. Details are listed below but highlights include resumption of Tellus National Soil Sampling Programme, another deep exploration hole for Geothermal Energy in Tallaght, INFOMAR's launch of "Blue Map" series, commencement of Coastal Change Assessment Project and return to our in-person conference in Dublin Castle, Geoscience23 – Geoscience for a better future.

Programme updates.

Tellus Project.

2023 saw the successful return of soil sampling with Aurum Exploration Ltd, working on behalf of the Tellus programme collecting 7000 soil samples from the mid-west region. These samples, following quality checks, have joined the 1000s of previous samples currently being prepared and analysed, with new data releases expected in 2024. Further planning also took place with Aurum field samplers aiming to complete soil sample collection for the whole country, including urban sampling of our main cities, by the end of summer 2024. The Terra Soil project (a joint soil research collaboration between Geological Survey Ireland and Teagasc) moved towards completion with datasets finalised and new scientific papers published. Results and final maps and data will be released in April 2024 at the project's final conference.

Tellus would also like to acknowledge Vincent Gallagher, who was awarded the Cameron-Hall Copper Medal by the Association of Applied Geochemists (AAG). This award recognizes Vincent's work in the article "Tellus regional stream water geochemistry: environmental and mineral exploration applications," published in the *Geochemistry: Exploration, Environment, Analysis (GEEA)* journal.

Marine and Coastal Unit.

INFOMAR, the national marine mapping programme, completed the seventh year of its Phase II programme, which will see all Irish waters mapped by 2026. In 2023 total marine mapping achieved was 8925 sq.km (gross coverage from both Geological Survey Ireland and the Marine Institute combined). Nearshore and inner shelf mapping was undertaken by Geological Survey Ireland utilising four survey vessels and focused on the inner shelf and coastlines of Counties Clare, Galway and Mayo. Offshore mapping was undertaken by the Marine Institute in the Atlantic and in the Celtic Sea, using R.V. Tom Crean. Shipwrecks continue to be investigated and recorded as part of INFOMAR mapping, working in conjunction with the National Monuments Underwater Archaeology Unit (DHLGH). In 2023 INFOMAR also launched its “Blue Series” maps of sections of the Irish offshore, shaded maps combining onshore satellite imagery with shaded relief offshore maps to highlight the diversity of our bathymetry or “offshore topography” as now revealed by the programme’s mapping. It is planned in 2024 to extend inshore survey coverage along the coasts of Galway and Mayo, along with offshore areas on the inner Atlantic and outer Celtic Sea shelves.

The Marine & Coastal Unit, in partnership with the Marine Institute, coordinated and delivered two MSc modules in Marine Remote Sensing in the University of Maynooth and University College Dublin, which are complimented by the SMART Sea programme of offshore training for students onboard the RV Tom Crean.

The Coastal programme is continuing to work on the development of Coastal Vulnerability Index and Coastal Change reports for Ireland. It is hoped that the full suite of reports, starting with Dublin in Spring 2024, will be released by late 2025.

Groundwater and Geothermal Unit.

Catchment-based Groundwater Resource Assessments (GW3D) (2023-2026): *GW3D Shannon/Western Region* commenced in May 2023, with a focus on the Shannon basin and adjacent catchments. So far, the six southern sub-catchments have been characterised, and in 2024 will to northern sub-catchments and supporting fieldwork. The studies and reports will more comprehensively support the supply of clean drinking water (guidance for better resource identification) and WFD management (understanding the catchments).

GWClimate (2023-2026) commenced in May 2023 and will extend the existing work and outputs to include climate change modelling and forecasting. The project continues to monitor and model groundwater flooding at turloughs, and further long-term groundwater monitoring boreholes were installed across Dublin in Winter 2023/24.

Lough Carra LIFE (3 year study within 5 year project) began in late 2021. Geological Survey Ireland’s role in this project is to improve the conceptual understanding of the lake hydrogeology and its catchment to aid nutrient management, water quality and maintenance of ecological status. So far, karst field mapping and three tracer tests have been completed, which has allowed the catchment area to be re-evaluated.

CatchmentCARE InterReg North-South concluded at the end of April 2023. GGU has incorporated the groundwater monitoring boreholes into its network.

Geological Survey Ireland has a specific role in groundwater source protection delineation, review, risk assessment and data management under the **European Union (Drinking Water) Regulations (SI 99/2023)**.

Geothermal Energy: The National Geothermal Database Project entered a new phase in 2023, and is focussing on delivery of new national maps of geothermal resources, and on improving resource awareness. A highly successful second National Geothermal Energy Summit and 'Geothermal Week' was held in November 2023. A second deep borehole, just over 1km, was drilled on TUD's Tallaght campus, returning a bottom hole temperature of 34 deg.C, and GGU continue to work closely with TU Dublin and other stakeholders to assess the feasibility of deep geothermal heat in Dublin city centre. Two further deep holes are planned in 2024 in Offaly and in Munster.

Geological Mapping (Quaternary & Bedrock Geological Mapping).

Bedrock geology activities in 2023 and 2024 include support for geothermal energy in the format of feasibility assessments, reports, geological logging, and hyperspectral scanning of core from deep boreholes at Grangegorman and Tallaght. Hyperspectral data acquisition, being carried out at the Geological Survey core store at Sandyford, and analysis, form the basis of several collaborative research and interdepartmental projects. Geological Survey Ireland has also published and presented findings on the use of hyperspectral data as a tool to support bedrock mapping. In addition, it is hosting the EGS Geological Mapping and Modelling Expert Group meeting in June 2024 and contributing to EU Geological Service for Europe (GSEU) work packages. A national update was given at the 6th European Meeting on 3D geological modelling in Copenhagen in May 2023. In 2024, Quaternary geology skillsets and resources remain focused on supporting national coastal change assessment, in collaboration with Marine and Coastal Unit. In addition, scoping of physical hazard assessment at Historic Mine Sites will be carried out in 2024. Staff actively participate in the recently convened, internal Peat group too. Three new national datasets have been produced from the National Geotechnical Database. These are due for release in 2024. In autumn 2023, and in conjunction with Engineers' Ireland Geotechnical Society, Geological Survey Ireland co-hosted a half-day introductory course on the European Ground Motion Service, a Copernicus-based service developed using Synthetic Aperture radar (SAR) which is now updated every 3 days. Earth Observation interests extend to the similarly named EGS expert group and participation in the National Space Enterprise Steering of DETE. Through the corresponding EGS expert group, Urban Geology activity runs parallel with that of other European survey organisations and linked outputs include factsheets, journal articles, urban geo-climate test cases and documentaries, and presentation at an EGU session in 2024.

Geological Mapping programme continue to contribute to the Geohazard (Landslides), Outreach & Education (BTYSE, modules for Geoscience for Leaving Certificate Geography CPD course), Research, Planning and Geoheritage programmes.

Geological Heritage.

Cork County Geological Heritage audit was completed and will be published in 2024. We continue to support the geologists in the 3 UNESCO Global Geoparks. Joyce Country and Western Lakes Aspiring UNESCO Global Geopark (UGGp) was evaluated in June 2023 by two members of the UNESCO Global Geoparks evaluation team. UNESCO Global Geoparks Council at their meeting in September discussed the report from the evaluators and the decision was made to defer the Geopark application pending

the successful completion of a number of recommendations. The Geopark has until August 2025 to submit a progress report outlining how the recommendations have been met.

Minerals.

The Minerals programme is continuing its extensive collaborations with European partners across a wide range of raw materials projects. Development is continuing on a new quarry database, and technical expertise is being provided to the Dept. of Housing and the relevant market surveillance authorities, particularly focused on deleterious materials in construction products. This has included Geological Survey Ireland arranging several research projects into deleterious materials, behaviour of sulphides and related issues, by national and international consortia.

Within the Irish mineral exploration space, the Minerals programme is continuing to collaborate with multiple industry and academic partners to improve the data availability for exploration and arranged an exhibit of the new Blue Book Lithostratigraphy data in collaboration with ICRA, at the IAEG 50th anniversary conference in Galway. The minerals programme is also participating in projects under the Geological service for Europe programme of EuroGeoSurveys (GSEU), including data compilation on CRMs, REES and a review of Caledonide Geology and mineral potential. Geological Survey Ireland is also now engaged with DECC colleagues in relation to Historic Mine Sites, with monitoring programmes underway at Avoca and Silvermines, and plans for remediation being developed with the relevant local authorities. The minerals programme also attended PDAC, the world's largest mining conference in Toronto in 2023 with DECC colleagues and plan to do so again in 2024, supporting both the Irish stand and EU/EGS presence.

Information Management.

Geological Survey Ireland is continuing to develop the Irish Geoscience Data Centre (IGDC). Progress has been delayed due to resourcing issues and systems and support migration, but in 2024 it is hoped to launch an Internal Portal to be followed by the first phase of a new External Data Portal.

Outreach and Education.

Geological Survey Ireland returned to Dublin Castle for the first post-Covid annual conference, Geoscience2024 – Geoscience for a better future. It attended the National Ploughing Championships as part of the Government of Ireland “Climate” tent and gave two public talks as well as having an indoor stand and the drill rig outside. It also took part in the BT Young Scientist with a large activity stand, maps and education resources available for teachers and sponsorship of a special award. 2023 saw the final months of the Down to Earth exhibition at Collins Barracks – it had been open for 25 months and had been a very successful run. The materials have been returned to their owners and materials developed for the exhibition are in Citywest awaiting new plans for their use. Geological Survey Ireland did not finance the production of any TV shows in 2023 but it was asked to contribute to various programmes in English and Irish, including Tellus on 10 Things to Know About.... and Marine mapping on Michael Portillo's Great Railways Journeys. The Geological Survey presented outreach work at EGU in Vienna in April and hopes to do the same in 2024.

In education, it worked with iCRA to develop and deliver a workshop for JCT STEAM on Fast Fashion – an unusual topic for geologists but it exposed a different cohort of teachers to management of Earth

resources and was well received. Geological Survey Ireland also worked with iCRAG and volunteer teachers for the third year of developing Leaving Cert Geography resources. All resources are available on the website. Quake Shake, a collaboration between Geological Survey Ireland and the Dublin Institute of Advanced Studies, started in 2023, launched its website in November, and we successful in securing SFI funded to purchase Raspberry Shake seismometers for schools and other places of education/outreach. The 2024 Oide Creativity (new name for JCT) will be based on seismology to promote the Quake Shake project.

Research.

In 2023 Geological Survey Ireland continued to support high quality geoscience research in Ireland. This included 16 new awards to Geological Survey-funded/co-funded projects, including a new call focussed on supporting Masters by Research projects. Nine new MSc projects were funded across a range of topics including real time remote sensing of noise in Galway Bay, developing new education tools for virtual fieldtrips, assessing the effects of climate change on groundwater resources, soil health, and PGE fertility of Irish lithospheric mantle. A new call for Targeted Projects was also launched in 2023 with projects awarded in early 2024.

Geological Survey Ireland also participated for the first time in the SFI Public Service Fellowship call. This aims at improving the links between academic researchers and policy making. It will host a non-geoscience researcher who will support the new Legislation and Regulation for geothermal energy in Ireland currently being developed by colleagues in the Geoscience Policy Division of DECC.

Additional awards in 2023 included two new pieces of equipment to support geoscience research (vessel winch and a magnetometer) and co-funding of new optical fibre Earth sensing suite of infrastructure.

The Geological Survey Ireland Research Programme contributes to national research and innovation strategies and participate in the Implementation forum to implement Impact 2030. In 2023, it contributed significantly to the development of the Department of the Environment, Climate and Communication's Research and Innovation strategy. This is expected to be formally launched in Q1 2024.

National Committees.

Geological Survey Ireland participates in or supports a wide range of national fora including several related to Water Policy (DHGLH), Office of Emergency Planning (tsunami, ash and flooding) hosted by Dept of Defence, National Landscape Strategy, RIA Geographic and Geosciences Committee, Irish UNESCO Global Geoparks, Open Data Gov, Marine Co-ordination Group, National Standards Authority of Ireland (NSAI), Dublin Institute of Advanced Studies Geophysics and Cosmic Physics board, the National Space Enterprise Steering Committee of DETE and the DHGLH interdepartmental Committee on National Coastal Change strategy, supporting both the Steering Group and Technical sub-Committee. In addition, staff members participate in committees of very many of the Geoscience organisations and research bodies such as Geoscience Ireland and iCRAG, many of which also receive support of funding or corporate membership from Geological Survey.

International.

Geological Survey Ireland is active in a number of international Programmes and Networks. Principal among these is EuroGeoSurveys (EGS), the representative body of Geological Surveys, who have an office and secretariat in Brussels, with several Survey staff members engaged in expert groups and projects. Project participation includes EPOS (European Plate Observing System), EMODNET (European Marine Data and Observation Network), ERAMIN2 (Minerals Research), and numerous EU raw materials/minerals projects. In 2022 a new EU initiative, the Geological Service for Europe (GSEU) commenced under EuroGeoSurveys, a collaboration of all the European geological surveys funded through Horizon Europe. EGS is also building the European Geoscience Data Infrastructure or EGDI which will provide access to Pan-European and national geological datasets and services from the Geological Survey Organisations of Europe. Geological Survey Ireland also participates in the Integrated Ocean Drilling Programme (IODP) supporting both the European Management (ECORD) and technical (ESSAC) committees, and North Atlantic Geoscience Group (NAG) of Geological Surveys. In 2024 it is intended that some staff will attend the IGC2024 Conference of IUGS, a global international geoscience conference held every 4 years.

Staffing.

2023 saw no changes in permanent staffing, however in a positive move, after internal competitions, three staff were appointed as Senior Geologists, Charise McKeon, David Hardy and Siobhán Power, and Eoin McGrath was appointed Principal Geologist and member of the Geological Survey Ireland Senior Management Team. We continue to run a successful Graduate Geologist programme recruiting 6 graduates for 11 months each year.

See website www.gsi.ie and social media channels for further updates, including the 2024 Activity Map.

IGN 2024

Geoscience Ireland (GI) Report for 2023

Geoscience Ireland (GI) is a business network providing design, consultancy and contracting services across several sectors including minerals, infrastructure, renewable energy and water services. GI assists its members to win business in international markets, building on the extensive skill sets developed by members in Ireland.

Most GI members reported increased turnover and job growth in 2023. Sectors performing strongly in Ireland and internationally were renewable energy, housing, construction and water services. Some notable new projects advancing were the Lesotho Highlands Water Supply (JB Barry); NEOM mega-city in Saudi Arabia (Nicholas O Dwyer); the 400Km SUEB powerline in Germany (Rubicon); marine works in the UAE (Ayesa-Byrne Looby); drilling in the UK and Sweden (Irish Drilling and Priority Drilling); mining contracts in Portugal (QME) and Ethiopia (PW Mining) and land remediation and water utilities in the UK (FLI). Priority Drilling and Geo Drilling Solutions are involved in the GeoEnergy NI Demonstration Project in Northern Ireland.

Closer to home, Murphy Geospatial, Fehilly Timoney and Rubicon made key contributions to the recently opened Dunkettle Interchange, while TOBIN continue to advise on the Midlands Water Supply Project and the Codling Offshore Wind Farm. WSP-Golder are engaged on Metro North.

However, a slowdown in mineral exploration in Ireland together with the suspension of operations at Tara Mines at Navan Co Meath have impacted heavily on several GI companies in 2023. These factors resulted in significant job losses with knock-on effects on the GI supported Geo Drilling Apprenticeship at SETU, now paused for 2024. GI engaged with Minster Eamonn Ryan, SIPTU and Tara Mines during the year regarding the Navan mine.

Other problems facing almost all GI members are skills shortages; lack of accommodation and cost inflation. Planning delays still loom large for many Irish projects.

GI's networking continued apace, with attendance at a 3-day UN procurement workshop in Denmark in March. GI members also attended major mineral industry events at AME and PDAC in Canada and INDABA in South Africa and will do so again in 2024. Other events attended were Geo-Fluids in Italy and several Enterprise Ireland seminars on Offshore Wind Energy held in Ireland, Germany, France and the UK and Geothermal events in Ireland, Northern Ireland and in the EU. **GI engaged with Irish MEPs regarding the European Parliament resolutions on Geothermal Energy.** Valuable links to research organisations - Geological Survey Ireland and iCRAG - remain active. GI also joined Construct Innovate during the year.

Sean Finlay C Eng P Geo
Director, Geoscience Ireland
c/o iCRAG
Science Centre
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26 February 2024

New Book Publication



Classic Mountain Days

Treks & Climbs in Ireland, Europe & America

Gareth Llwyd Jones

EurGeol Gareth Ll. Jones BSc MSc PGeo has produced a pictorial mountain memoir that illustrates over 60 years of mountain exploration and discovery. Since he came to Ireland from Wales in 1962, he has seen the hills change from wild landscapes with few trails, to popular, heavily tracked mountains. On these treks, as a geologist he sees the influence of the bedrock on the landscape and on the formation of mountains. In particular he notes the effects of older tropical weathering on the Mourne mountains and their distinctive tors. Also recent glaciation which produced the classical rounded profile of many Wicklow hills and of the sharp aretes and precipitous faces of the McGillicuddy Reeks and the classic corries and lakes seen in the Comeragh Mountains.. Plus, karst development which shaped the Burren hills produced limestone pavements, dolines and the unique Carron polje.

The book was launched on the 20th February in the Dropping Well, Milltown by **Frank Nugent** the experienced mountaineer, explorer and expedition leader. A former Chairman of Mountaineering Council of Ireland; he was the deputy leader of the 1993 first successful Irish Everest Expedition; he followed in Shackleton and Crean's footsteps across the Island of South Georgia on the 1997 South Arís Expedition; and sailed the Northwest Passage in the 2001 Northabout Expedition.

This 300-page pictorial extravaganza appeals to the large number of people, all around the country, now involved with and taking up hill walking. It informs them of geological setting of each trek. It illustrates over fifty walks from Wicklow to Kerry, from Clare to Mayo and from Donegal to Down, as well as treks in the UK, Europe and North America. The latter features the Great Unconformity. Gareth started hill walking in Wales before he came to Ireland in 1962. He has since been climbing mountains in Ireland and around the world.

He was a member of the Irish Mountaineering Club and of the Spillikin Club, and a Founder Member of the Cavern Rock and Fell Club, RCSI. He is a member of Mountaineering Ireland and of MountainViews. This book not only records the changes in the mountains but chronicles *inter alia* various hill walking groups including the Saturday Walkers and the "Old Farts" hiking groups - that he still treks with.

Gareth Jones lives in Dublin with his wife Sheila. He is a Past President of the Institute of Geologists of Ireland, of the Irish Association for Economic Geology and of the European Federation of Geologists. He is a geologist specialising in microfossils, petrography and geothermal energy. He has spent a

lifetime exploring landscapes, climbing mountains and surveying caves. The book sells at €26 + €7 P&P for Ireland and can be ordered from Gareth at 5 Kennington Crescent, Templeogue, Dublin 6W, Ireland. D6W PV22;

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