

# **IRISH GEOSCIENCE NETWORK ORGANISATION REPORTS 2023**

**Hybrid Meeting held  
29<sup>th</sup> March 2023 at 5pm  
at IGI, 63 Merrion Square, Dublin 2  
and on Zoom**

***Report compiled by IGI***

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**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 (GeolSocNI)
  - 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)
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### **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 over 350 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](http://www.igi.ie).

## **IGI Activities since the last IGN meeting, March 2022**

### **QGIS Course**

Introduction to QGIS 3.16 LTR delivered by Shane Carey, Information Systems Consultant. The course was run on two occasions in March 2022 such was the high demand from members.

### **AIPG Talk & Meeting**

In May 2022 a number of IGI members met with the President of the American Institute of Professional Geologists (AIPG), Mrs Dawn Garcia while she was on a visit to Ireland. During the meeting IGI and AIPG discussed the Mutual Recognition Agreement between the organisations and potential opportunities to further develop connections between the organisations.

Following the meeting Dawn gave a hybrid talk to membership entitled *“Greetings from Across the Pond: An Introduction to the American Institute of Professional Geologists (AIPG) and an Introduction to Work in Mexico”*.

### **Annual General Meeting 2022 & Medal of Honor Ceremony**

IGI were delighted to hold our 2022 AGM on 27th June as a hybrid meeting, in-person at 63 Merrion Square and virtually via Zoom. It was well attended and had c. 25 attendees in-person (who enjoyed a social reception afterwards) and a further 15 or so members via Zoom.

The AGM was also an opportunity to present Dr. Eibhlín Doyle with her 2020 Medal of Honour which was awarded in recognition of her outstanding achievements in the field of professional geology. The event was postponed from 2020 due to covid restrictions and IGI were delighted to be able to finally hold the event in person. The event was attended by many IGI members including Eibhlín’s friends and colleagues.

### **Ireland Brownfield Network 10<sup>th</sup> Anniversary Event**

The IGI sponsored the IBN’s 10<sup>th</sup> anniversary event held in Merrion Square in September. The event was very well attended and covered a range of interesting topics including emerging contaminants, ground gas, risk assessments for brownfield development.

### **Geotechnical Soil & Rock Logging Course**

IGI facilitated the very popular David Norbury course Geotechnical Soil & Rock Logging to Eurocode 7 BS5930. This was the first time in a number of years David could travel to Ireland to provide this essential training which was held over two days in late November / early December 2022. IGI will look to arrange a repeat of the course this year should the requirement arise.

### **Environmental Case Law Webinar**

A webinar on Recent Environmental Case Law, presented by Brendan Slattery, Head of Environment and Planning at McCann Fitzgerald LLP in February 2023. It was a very interesting review of current planning and environmental cases and was attended by over 50 IGI members.

## **Extraordinary General Meeting**

In February 2023 IGI held a hybrid EGM to vote on a number of proposed amendments to its Articles of Association and Code of Ethics. The amendments related to a number of areas including: providing clarity on penalties for late submission of fees and CPD records, ability to hold meetings online or hybrid and the expansion of the code of ethics to include members conduct when it comes to equity, diversity and inclusion matters and conduct at events. All proposed amendments were approved and the revised documents are available on our website.

## **IGI Mentoring Scheme Relaunch**

The IGI's Mentoring Scheme was relaunched in 2023 through the publication of Mentoring Guidelines and providing two training sessions (one for Mentees and one for Mentors). The guidelines and training were made possible through the generosity of John and Trudy Arthurs who authored the guidance and gave of their time to impart their expertise in the area. John recently published a book on the topic which we highly recommend "[Mentoring Scientists and Engineers](#)".

## **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.
- EU Commissions, EU Critical Minerals Act, Call for Evidence
- EPA, Stakeholder Consultation Paper for Article 28 relating to the Draft National End of Waste Criteria for Recycled Aggregates.

## **Updated to IGI Summary Guide to Public Reporting for Mineral Companies in Europe**

The IGI produced an update (3<sup>rd</sup> Edition) to the summary guide to the PERC Reporting Standard. 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 2022 with a continued growth in membership applications. The committee interviewed 16 candidates for professional membership, and approved all 16 new professional members (PGeo) and 14 Members-in-Training (MIT).

**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.

**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.

The group consists of 21 expert mineral exploration, mining and environmental geologists across the island of Ireland. The Minerals Information Working Group produced a series of informational materials / fact sheets which are now available on our website.

**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 3 times through 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 Cian O’Hora 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.

### 2022 Programme

Event	Date	Location	Title
Lecture Series	24 <sup>th</sup> March	Pillo Hotel, Ashbourne	<b>Copper in Europe – Production, Demand, Potential and Challenges</b> <i>John Clifford</i>
Lecture Series	22 <sup>nd</sup> September	Virtual via GoogleMeet	<b>Exploring for Irish-type Deposits with Data Driven Domain</b> <i>Halleluya Ekandjo (iCRAG) as part of TeamGetAI (Robert Watson, Prithwijit Chakraborti, Xiaolong Wei (University of Houston), Joseph Chappell (Colorado School of Mines))</i>
Annual Conference	21-22 <sup>nd</sup> May	Radisson Blu, Athlone	<b>Getting Back to Business</b>
AGM	30 <sup>th</sup> November	Carlton Hotel, Blanchardstown	<b>AGM</b>

2023 is an important year for the Association, marking the 50<sup>th</sup> anniversary of its founding in 1973. To mark this occasion, the IAEG are hosting a major international conference celebrating '50 Years of Irish-type Zn-Pb Deposits' - a term first believed to be coined at an IAEG meeting in 1977.

The conference will take place over two and a half days (8th – 10th September 2023) at the Galway Bay Hotel, in Galway and will yield a major seminal publication on Irish-type Zn-Pb deposits from around the world.

The organising committee have invited over 30 speakers from around the world describing deposits which have either been called Irish-type deposits or have features in common with Irish-type deposits. There will also be talks from leading authorities on the geochemistry and isotope geology of Irish-type deposits, as well as up to date talks on several of the deposits in Ireland including Aherlow, Ballinalack, Galmoy, Gortdrum, Keel, Kilbricken, Kildare, Lisheen, Tara Deep, Pallas Green and Stonepark. In addition to talks, there will be a core shack with core/samples from most of the Irish deposits, perhaps the first time ever such diversity will be seen together in a single venue.

The Conference is supported by the Society of Economic Geologists (“SEG”) and the Society for Geology Applied to Mineral Deposits (“SGA”) and student bursaries are also available.

Early bird registration is available until April 1st 2023. Details surrounding the conference itinerary, field trip and registration are all available via our website [www.iaeg.ie](http://www.iaeg.ie).

The IAEG Lecture Series will continue this year, with details of the first instalment to follow shortly, 2023 will also see the return of the popular Student Logging Course later in the year. Updates on upcoming events will be published on the IAEG website and social media channels in due course.

Irish type Zn Pb deposits around the world:

# 50 YEARS OF IRISH-TYPE Zn-Pb DEPOSITS

8-10 SEPTEMBER 2023

GALWAY BAY HOTEL, COUNTY GALWAY, IRELAND

**REGISTER NOW AT [IAEG.IE](http://IAEG.IE)**  
**CALL FOR PAPERS - SEE WEBSITE**

The SEG has established a bursary to support Student Members to attend the Irish Association for Economic Geology 50th Anniversary Conference, please visit [www.iaeg.ie/IAEG-50](http://www.iaeg.ie/IAEG-50) for more information.

# IAEG 50

IRISH ASSOCIATION FOR ECONOMIC GEOLOGY

Celebrating the 50th Anniversary of the IAEG

SPONSORED BY



Visit [www.iaeg.ie/IAEG-50](http://www.iaeg.ie/IAEG-50) for more information



## UCD School of Earth Sciences

## Scoil na Domaneolaíochtaí UCD

UCD Science Education and  
Research Centre (West),  
University College Dublin,  
Belfield, Dublin 4, Ireland

Ionad Léann agus Thaighde  
Eolaíochta UCD (Iarthar),  
An Coláiste Ollscoile, Baile Átha Cliath,  
Belfield, Baile Átha Cliath 4, Éire

Email: [geology@ucd.ie](mailto:geology@ucd.ie)

Web: [www.ucd.ie/earthsciences/](http://www.ucd.ie/earthsciences/)

Twitter: @UCD\_Geosciences

2022 saw the successful return to pre-Covid levels of on-campus interaction, teaching and laboratory activity. Following a dip in graduate student number driven by the end of the first phase of iCrag, the launch of the 2022 iCrag PhD call drove the recruitment of a new cohort of PhD students bringing the number of graduate research students on the books back up to 30 again. There were 5 PhD completions during the reporting period.

We continue to build on a shift in school research priorities to the geoscience underpinning the energy transition, access to raw materials, geohazards and environmental change. We recruited Dr Mark Coughlan under UCD's Ad Astra fellowship scheme during 2022 and Mark brings expertise in ground characterisation for the deployment of offshore wind turbines, blue carbon and the interface between geoscience and civil engineering. A number of projects have kicked off on geothermal energy potential onshore and offshore Ireland and on the supply of raw materials, with a continuing research focus on Irish Pb-Zn and Li exploration, and on Cu and Co exploration in the African Copper belt, with fieldwork and mine visits in Africa now possible again. Numerical modelling of stratigraphy, faults, fluid flow and volcanic processes continues and is driving new applied and geohazard insights. The school's growing capability in the application of Interferometry of Synthetic Aperture Radar (InSAR) has attracted funding from the European Space Agency and this is supporting monitoring of Irish bogs during their rehabilitation, an important focus for both the school and iCrag going forward. Research on rapid past climate changes in the Jurassic and during the PETM and the associated Earth system response continues, and on Quaternary ice sheet dynamics employing the school's new cosmogenic isotope dating facility. Work is also progressing on the efficacy of negative carbon emissions technologies including enhanced weathering using construction waste as a soil amendment that is now at field trial stage.

The school's research infrastructure continues to be upgraded. The National Centre for Isotope Geochemistry (NCIG) at UCD took delivery of a new Thermo Scientific Neoma MC-ICP-MS instrument in late December 2022. The new instrument is a high-resolution double-focusing mass-spectrometer equipped with gas-collision technology to circumvent isobaric interferences on several isotopes of interest and it will facilitate in-situ Rb/Sr dating of high Rb minerals by laser ablation, in addition to a host of other measurements in the Si, S, Ca, K and Fe systems. The plan is that the new instrument will be installed alongside the existing NCIG instruments in a new custom-built clean laboratory suite in mid-2023 as part of UCD's ongoing Phase 3 Science district redevelopment. In a joint initiative between UCD Earth Sciences, UCD Geography and GSI, the UCD Itrax XRF core scanner has now been moved to Science and upgraded to allow state-of-the-art rock and soft-sediment core characterisation. A new petrophysical laboratory has also been established and is being used to better characterise rock properties in the Irish subsurface to improve how the geology is remotely imaged for diverse applications including mineral exploration and targeting geothermal resources.

In terms of teaching initiatives, there are two developments to highlight for 2022. Firstly, intake streams for incoming first year undergraduates in UCD Science will change for 2023 entry, with a new stream for Earth and Environmental Sciences. In response to this, the school is rebadging its primary degree as Earth Sciences in place of Geology, a change which will also permit a broadening of the curriculum. Secondly, a new Masters programme in 'Subsurface Characterisation and Geomodelling' commenced Q3 2022 with Assoc. Prof Tom Manzocchi as Course Director. This is a techniques-based, applied geoscience course designed to provide graduates with modern interpretation, spatial and software skills to equip them for flexible careers in a rapidly evolving workplace.



OLLSCOIL NA  
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[www.universityofgalway.ie/eos/](http://www.universityofgalway.ie/eos/)

2022 was a year of change in Galway. The university renamed and rebranded itself as University of Galway, and - within the College of Science and Engineering - Earth and Ocean Sciences became part of a reconstituted School of Natural Sciences.

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, including four new iCrag-funded PhD positions late in the year. The research projects EOS lead and contribute to continue to grow and develop, and we successfully recruited a new lecturer in Economic Geology. Dr Jake Ciborowski graduated with a BSc and MSc from Imperial College London, and completed his PhD at Cardiff. He had worked in EOS several years ago on contract before going to take up a position in Brighton. He returned to Galway and started his new role in December 2022.

Undergraduate teaching, labs and practicals were all run in person, and we were able to run our fieldwork modules and residential field trips for the first time since the pandemic began.

In 2022, there were more than 100 full time students in the denominated EOS degree programme, and the first year intake in September 2022 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:

- SEAI-funded project on Carbon Capture, Use and Storage, in collaboration with Mechanical Engineering at NUIG and the University of Liverpool, to address CCUS issues in an Irish context;

- 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 will go online in early 2023.
- The SFI, UK Government, and National Science Foundation funded SAPHIRE project is up and running. 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, got underway.

## **iCrag Activities in 2022**

Submission to IGN; March 2023

2022 was a busy year for iCrag, the SFI Research Centre in Applied Geosciences, as research projects ramped up in the second year of the Centre's Phase 2 which runs from 2021 to 2026. This report mentions some highlights from 2022 with a focus on interdisciplinary work but there is a great deal more going on in iCrag so please do get in touch or visit our website, <https://www.icrag-centre.org>.

iCrag includes approximately 150 researchers from eight Irish institutions with an Operations Team based at UCD. iCrag researchers collaborate 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. This work is underpinned by cross-cutting expertise and technology in geochemistry, geodata, geomodelling, geophysics, and geosensing and augmented by extensive Education and Public Engagement activities.

In a major boost to geoscience research capacity in Ireland, iCrag advertised 33 PhD positions across all of the Centre's activities in a single call in July. Recruitment for these positions was still in progress at the end of 2022. This cohort of new researchers from around the world is joining other iCrag members to generate exciting new discoveries and increase Ireland's global research impact.

iCrag researchers are studying diverse aspects of climate and the marine environment. In March, iCrag held a workshop on De-risking Ireland's Offshore Wind Potential that showcased how iCrag research in geoscience, geo-engineering, and social science is supporting climate action and the developing offshore wind industry. Talks from the workshop are available on the [iCrag YouTube channel](#). Dr. Mark Coughlan and Dr. Brian Kelleher secured €1 million in funding from the Marine Institute for the Quest project to examine the capacity of seafloor sediments to store carbon. The Quest project is paired with a social science study on public perceptions of the offshore and seafloor sediments. Results from these and other related projects will be shared with policy makers and communities, in addition to scientific publications.

The Horizon Europe VECTOR project is a major interdisciplinary project that began in 2022. iCrag members are prominent in the €7.5-million project which seeks to develop human-centred solutions for a socially acceptable, responsible, and sustainable supply of critical raw materials in Europe. Dr. Geertje Schuitema (UCD) is leading the social science component of VECTOR. Other iCrag researchers are contributing to the geological component working with industry partners including Group 11, Teck and Boliden at two field locations in Ireland.

The [ReStoRE](#) (Researching Social Theories, Resources and Environment) Summer School boosted Ireland's international profile for interdisciplinary study. Held under the patronage of UNESCO, ReStoRE brought 50 early career researchers and professionals from 10 developed and 19 developing countries plus 10 lecturers from four continents to Dublin in July. Participants drew on their highly varied backgrounds and experiences in geoscience, environmental science and social science to tackle issues as varied as artisanal mining, just transition, and the circular economy.

The iCrag short film "[Inception Horizon](#)" was selected as a finalist film in the Geoscience Professional category in the Earth Futures Film festival, finishing 3<sup>rd</sup> out of 972 films in the People's Choice Award. "Inception Horizon" follows the path of atmospheric water above the lowlands of County Clare, through the soil and into the layers of rock that lie beneath. It seeps, drips and then gains traction, creating and passing through various pathways with its laminar and then increasingly turbulent flow. The festival connects geoscience and the arts raising international awareness of the role Earth Science plays in building our sustainable future. In September the Mellow Tonics choir performed Inception Horizon in the Zupanova jama cave in Slovenia.

iCrag and our partners Geological Survey Ireland announced the launch of six new [educational resources](#) created through the Geoscience for Leaving Certificate Geography Teachers Continuing Professional Development programme. The resources cover a broad range of curriculum-facing geoscience topics, from seismicity to groundwater to geothermal energy and more.

iCrag announced the appointment of Prof. David Chew as Deputy Director. Prof. Chew is an iCrag Principal Investigator and Professor in Trinity College Dublin's School of Natural Sciences. His research areas involve applying geochronology and thermochronology to a variety of problems in the geosciences including mineral exploration, sedimentary provenance, and regional tectonics. Prof. Chew took over the position of Deputy Director from Dr Shane Tyrrell of iCrag at University of Galway.

Several iCrag members received notable recognition during 2022, these are just some of their achievements: Two PhD researchers, Halleluya Naantu Ekandjo and Prithwjit Chakraborti were members of TeamAI, which won the international Frank Arnott Next Generation Explorers Award Innovation Prize. Working under the guidance of iCrag members Dr. Aline Melo and Dr. Koen Torremans, former iCrag Ops Team member Dr. Sean Johnson, and Dr. Jiajia Sun (University of Houston), they used Tellus data to generate mineral exploration targets in NW Ireland. Dr. Anna Bidgood was selected as a Fulbright Scholar and will spend a year at the Carnegie Institution for Science in Washington, DC. Dr. Srikumar Roy was awarded an SFI Industry Fellowship to work with Gavin and Doherty. Dr. Nick Vafeas is currently a Research Fellow at SFI. Nine iCrag members were appointed to Royal Irish Academy Science Committees: Dr. Jean O'Dwyer, Prof. Lawrence Gill and Prof. Peter Croot serve on the Climate Change and Environmental Sciences Committee while Dr. Eve Daly, Prof. Quentin Crowley, Prof. David Chew, Dr. Tiernan Henry, Dr. John Murray and Prof. Frank McDermott serve on the Geosciences and Geographical Sciences Committee.



# 2022 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	Lindsay Connolly
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: <a href="https://iah.org/groups/national-chapters">https://iah.org/groups/national-chapters</a> Please tell us of any changes now and each time a new committee is chosen.	Yes.
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.	<a href="http://www.iah-ireland.org">www.iah-ireland.org</a> Damien Doherty <a href="mailto:publicity@iah-ireland.org">publicity@iah-ireland.org</a>
Would you be interested in IAH hosting your chapter's website/providing support? As an example, see <a href="https://germany.iah.org/">https://germany.iah.org/</a> .	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.	Declining. As of the 5 <sup>th</sup> October 2022, we had 129 members in the IAH (Irish Group) which is slightly lower than the previous year. (139 members in 2021).
What are your challenges to recruitment? e.g. volunteer time/limitation, IAH fee rates, competition from other societies, language, etc.	Unknown.

#### 4. YOUR CHAPTER'S ACTIVITIES IN 2022

<p>Did your chapter hold an annual meeting (AGM-style)? If so, please advise:</p> <ul style="list-style-type: none"> <li>• Date and place of meeting</li> <li>• Approximate number attending</li> </ul>	<p>Our AGM was held on the 8<sup>th</sup> November 2022 at Dublin City University, Collins Ave Ext, Whitehall, Dublin 9. Approx. 21 people attended.</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"> <li>• If you have already reported these to the IAH Secretariat, only summary information is required.</li> <li>• If not, these please provide a summary of dates, location, number of participants, topics, etc. and how successful you felt each event was.</li> <li>• Do you have photos we can use?</li> <li>• Are your events open to IAH non-members?</li> <li>• Did you hold events in partnership with others e.g. a national society, company, institution?</li> </ul>	<p>Annual Conference - <i>Groundwater: Making the Invisible Visible</i>. 26-27<sup>th</sup> April 2022. Online. Approx. 103 people attended.</p> <p>Training Course – <i>Open-Source Groundwater Modelling training for hydrogeologists</i>. 1<sup>st</sup> June 2022. Approx. 18 people attended.</p> <p>Five technical discussion meetings (TDM) were held online in 2022 with over 120 people attending TDMs.</p> <p>Our Annual Field Trip was held on 22-23<sup>rd</sup> October 2022. 38 people attended with the trip going to counties Dublin, Meath and Monaghan.</p> <p>All our events are open to non-IAH members.</p> <p>We typically have two joint-TDMs a year with the Geotechnical Society of Ireland, and the Geothermal Association of Ireland. However, these events weren't run in 2022.</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 on the 18-19<sup>th</sup> April 2023 will be held in person in Tullamore, Co. Offaly. The topic will be <i>Groundwater &amp; Planning</i>.</p> <p>Two training courses are being planned for this year. 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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Department of Geology, IGN report

12<sup>th</sup> March, 2023

The Geology Department at Trinity College Dublin continues its exciting post-covid eruption. Since our last annual report, new projects have initiated, staff and student numbers have increased, and building transformations progress.

Emma Tomlinson was awarded an European Research Council (ERC) Consolidator Grant for the project **LITH03: Quantifying the formation and evolution of the Archaean lithospheric mantle**. The overarching aim centres on a deep-rooted, longstanding question: how does cratonic lithosphere form? Quentin Crowley received a Human Capital Initiative (HCI) Project through the Higher Education Authority. This project will develop Ireland's knowledge and skills to enable innovative and systemic adaptation of enterprise and society to a decarbonized economy and sustainable living. Chris Nichols has started a major project with the Ugandan government to map the rift system of this country. The endeavour will couple traditional field methods with 21st century technology such as drone photography.

The TR062 Geoscience Program, which initiated in 2020, has led to a considerable escalation in undergraduate student enrolment. This year's graduating class approaches 35 students, with the number likely to exceed 40 by 2025. In response to this and the growing research output, we have welcomed three new academic staff, Eyad Abushandi (hydrology), Swetha Venugopal (volcanism) and Subhash Chandra (energy), and two new technical staff, Sarah Carty and Hilde Koch. With their recent move from Arizona to Ireland, Nancy Riggs and Michael Ort also have joined us as Adjunct Professors. Furthermore, the department currently has an open tenure track position for a new Assistant Professor in "paleoenvironments".

Construction continues to surround our Museum Building. Although the roof repairs are now completed, a tent is rising next door for the movement and refurbishment of the Old Library (Book of Kells). More crucially, the E3 building, which will house new laboratories and classrooms for science departments, now moves upward with tangible concrete and steel.

After covid hiatuses, in-person seminars returned, including two special lectures. Clive Oppenheimer (Oxford) gave the John Joly Memorial Lecture, and Daniel Rothman (MIT) gave the Visiting Professor Seminar. Our traditional spring field trips to Wexford (2nd year), Greece (3rd year) and Spain (4th year) recurred successfully and are slated again for 2023. As in previous years, we welcome ideas and collaborations with friends and colleagues across Ireland.

Yours sincerely,

Prof. Gerald (Jerry) Dickens,

HEAD OF GEOLOGY

## **An Update from the National Museum of Ireland – Natural History Division (Geology)**

**By Dr Patrick Roycroft**

The major exhibition Down To Earth – Exploring Ireland’s Geology [see IGN 2021-2022 Update], which highlights Ireland’s geology and celebrates 175 years of Geological Survey Ireland, continues to successfully run at Collin’s Barracks. The exhibition, which is co-curated with Geological Survey Ireland, is free and has proved popular with the public and with school groups. It will see much educational use over the coming year. For more, see <https://www.museum.ie/en-IE/Museums/Decorative-Arts-History/Exhibitions/Down-to-Earth>. The exhibition is due to close on 5<sup>th</sup> November 2023. .

The National Museum of Ireland secured funding for major renovation (refurbishment and conservation) of the Natural History Museum building itself – the first in its history. This follows an initial round of funding that allowed an access deck to be built to facilitate the next phase of works. This required the removal of two large whale skeletons that were hanging from the roof; the removal of the whales was the subject of a TV documentary (*The Dead Zoo*) that was aired on RTÉ.

A significant geology documentation project started and will run through most of 2023. Many thousands of mineral, but also rock (and some fossil), specimens will be catalogued and databased, most notably a collection that came from UCD. A team of four documentation assistants have been hired for this purpose, and the project is being overseen by the Registration Division and myself.

The geology collections continue to be used and added to. The Natural History Division has hosted a variety of academic researchers and artists (film makers, designers, etc) all of whose work adds value to the collections. Among the academic studies are a major project with the Botany Department of Trinity College Dublin to thoroughly examine the museum’s Kiltorcan plant collection, and also a project with continental academics looking at the teeth, and the plant material within the teeth, of the giant Irish deer. Material donated to the museum includes that which forms the basis for many papers within the 2023 *Irish Journal of Earth Sciences*, which is a tribute to the late Dr Matthew Parkes.

The museum is updating the storage of its (small) collection of radioactive and asbestiform minerals to ensure it meets the most up-to-date standards, finding ways to mitigate the perennial problem of pyrite disease, and find ways to preserve and conserve the many old and delicate specimen labels that are with many of the minerals, fossils, and rocks.

Dr Patrick Roycroft was made a permanent member of staff as of 31 January 2023.

For donations to the museum, including large institutional collections, and any other queries, please contact me at: [proycroft@museum.ie](mailto:proycroft@museum.ie).



## **Irish Quaternary Association Update 2022/23**

IQUA was pleased to see a return to “normal” activities with in-person meetings, and the running of the postponed Field Meeting, as well as the launch of the Early Career Researcher Workshop.

### **Early Career Researcher Workshop**

IQUA ran its first ECR Workshop at Queen’s University Belfast in April 2022, organised by IQUA PGR Reps Adrienne Foreman and Ryan Smazal and IQUA Treasurer Mark Coughlan. The two-day event focused on Bayesian statistics and was facilitated by Dr Maarten Blaauw (Queen’s University Belfast) and Dr Niamh Cahill (Maynooth University). It was attended by 16 participants, including postgraduates and postdoctoral researchers.

### **Spring Meeting & AGM**

The Spring Meeting was held on 30 April at Queen’s University Belfast, organised IQUA President Gill Plunkett and Secretary Graeme Swindles. Six speakers, including five Early Career Researchers, showcased their research on a wide range of themes, and four posters were also presented. The Best Postgraduate Presentation Award was given to David O’Leary (University of Galway). The Eileen Reilly Postgraduate Research Award was shared by David O’Leary and Fermin Alvarez (Trinity College Dublin).

The AGM, conducted following the Spring Meeting, was held in hybrid format attended by nine IQUA members. IQUA President Gill Plunkett proposed some minor amendments to the IQUA Constitution, including the addition of three Officer positions (Webmaster, Publications Officer and PGR Representative(s)) and a change to gender-neutral language. The Treasurer, Mark Coughlan, reported that IQUA finances were in a healthy position, and an increase in membership to 87. Chris Randolph stepped down as an Ordinary Member, having served on the Committee for many years. Dr Sam Kelley (University College Dublin) was nominated by Gill Plunkett as Ordinary Member, seconded by Graeme Swindles, and was unanimously elected as such.

### **Field Meeting**

Postponed since September 2020, the long-awaited Field Meeting to Sligo took place on 22–24 April. The meeting was organised by IQUA Newsletter Editor Dr Susann Stolze (University of Colorado) on the theme “Archaeology and Landscape History of Neolithic County Sligo”. Participants enjoyed visits to the Carrowkeel and Carrowmore passage tomb complexes, the site of Magheraboy causewayed enclosure, and to palaeoenvironmental sites in the Treanscrabbagh Valley, Loughbrick Bay and Lough Dargan.

## **Autumn Symposium**

The Autumn Symposium was held in the Maynooth University on 2 December, organised by Dr Helen Shaw and Dr Nick Scropton, with the theme “Research from the Past– Impact for the Future”. There were nine presentations, and a keynote talk was delivered by Jason Kirby (Liverpool John Moores University) on “Holocene relative sea-level changes in northwest Ireland: implications for glacio-isostatic adjustment models and contemporary sea-level change”. Presentations were followed by a short workshop in which IQUA Secretary Prof. Graeme Swindles (Queen’s University Belfast) presented an example of some of his research that had been submitted as an Impact Case Study submitted to the UK Research Excellence Framework exercise.

The meeting concluded with the announcement of a series of IQUA Awards. The Bill Watts <sup>14</sup>Chrono Award was awarded jointly to Christopher Stewart (University of Galway), Lewis Howell (Aberystwyth University) and Helen Essell (Queen’s University Belfast). The Research Award went to Dr Anthony Beese.

## **Outlook for 2023**

The Spring Meeting is being held in University College Cork on 25 March, organised by Dr Michelle McKeown. The Field Meeting will return to its usual spot in the annual cycle (September – date to be confirmed) which will encompass sites within Co. Louth. Following the move out of Beggar’s Bush by the Geological Survey of Ireland, IQUA presently remains without a permanent home for its Autumn Symposium. We hope that it will be held in University College Dublin, but final arrangements will be announced in due course.

The following are the main activities of the Irish Mining and Quarrying Society (IMQS) in 2021/2022. Due to Covid restrictions, activities were curtailed but the society remained active.

#### REPRESENTATIONS IN 2021/2022

- European Federation of Explosives Engineers (EFEE)
- Prospectors and Developers Conference (PDAC)
- Draft Policy Statement for Mineral Exploration and Mining In Ireland - Response
- Geoscience Ireland
- Geo-Driller Apprenticeship
- Quarry Skills Certification Scheme meetings (QSCS)
- Quarry Safety Partnership (QSP)
- Minerals Information Working Group (MIWG)
- Mining and Minerals Hall Seville. (MMH)
- Department of Environment Communications and Climate Change (DECC)
- IMQS Planning & Innovation Seminar

#### IMQS SEMINARS

On 9th November 2021, The IMQS hosted an online Innovation and Skills Webinar. The presenters were:

- Nicola Nixon, President IMQS - Introduction and IMQS Updates.
- Paul O'Neill, Ireland Manager, Epiroc - Epiroc Sustainability Strategy
- Mary Whitney, Director of Education, FutureCast - FutureCast and Industry 4.0 in the Quarry and Mining Industry.
- Thierry Bernard, Managing Director, DNA Blast - Benefits of 4D Realistic Blast Simulation

On October 4th, 2022. The IMQS hosted an online Energy Management in the Extractives Industry webinar. The presenters were:

- Nicola Nixon, President IMQS - Introduction and IMQS Updates.
- Paul Gordon, SLR Consulting: Geoscience's contribution to energy storage, the hydrogen economy and renewable energy and the opportunities for the mining and quarrying sectors in carbon management.
- Kevin Donovan, Roadstone: Energy Management for Quarries.
- Daniele Novara, Easy Hydro: hydropower energy recovery from water pipes in the extractive industry.

ANNUAL REVIEW 2023 The Annual Review 2023 as well as reviews from previous years can be viewed at [www.imqs.ie](http://www.imqs.ie).

#### MINE RESCUE 2022

- Irish Salt Mining & Exploration, Boliden Tara Mines and Dalradian Gold have resumed regular training, complying with Covid-19 guidelines.
- LKAB Sweden visited Ireland in May, one day in Boliden Tara followed by a half day in Dalradian Gold and a half day in Irish Salt Mines.

#### INSTITUTE OF QUARRYING – NORTHERN IRELAND

The Institute of Quarrying (N. Ireland) held its Stone Crushers Ball in The Europa Hotel, Belfast in October 2022. Pat O'Connor, Chairman of the Institute of Quarrying (N. Ireland) branch, passed away suddenly in January 2023. We would like to convey our condolences to Pat's family and friends.

#### IMQS AGM

We held our AGM In Kingsbrook Hotel, Trim, Co. Meath on 21st February 2023.

We would like to thank Francisco Leite from Forcit Group who presented – 'How can Mining related companies support UN SDGs with O-Pitblast Solutions.'

Details of all IMQS activities can be found at [www.imqs.ie](http://www.imqs.ie). I would like to take this opportunity to thank our members, for their patronage. The society cannot exist without their continued support.

**Alan Dolan – President, Irish Mining and Quarrying Society**





## **Geothermal Association of Ireland. 2022-2023**

### **Report to Irish Geoscience Network February 2023**

#### **Membership & AGM**

- Membership has remained steady at the association throughout 2022 with new memberships from the drilling and corporate sectors.
- The latest committee meeting was held online on the 21<sup>st</sup> of December 2022. The main activities of the association were discussed the outlook for the work programme for 2023 was discussed.

#### **Website & Social Media**

- The GAI website provides updates on the association's news and members
- 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 2021 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 12 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 is actively participating 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.
- 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 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 has been actively participating in the activities of Renewable Energy Ireland ([www.renewableenergyireland.ie](http://www.renewableenergyireland.ie)) and has continued to develop scenarios around potential geothermal deployment in REI's [Renewable Heat Vision by 2030](#).
- 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.



## Get into Geoscience – Ireland 2023

*Get into Geoscience – Ireland (GiGie) is an exciting initiative to introduce second level school and university students to the Earth Sciences and demonstrate the world of careers open to geoscience graduates. The Irish chapter of Girls into Geoscience (GiG) was started in 2018 and has gone through a number of changes in the last 12 months to become Get into Geoscience. The programme is overseen by iCRAG, the Science Foundation Ireland Centre for Applied Geosciences (iCRAG) Education and Public Engagement team.*

2022-23 has been a period of transition for this programme, most notably the change from 'Girls' into Geoscience to 'Get' into Geoscience. After a period of reflection, iCRAG brought the original name of the programme to the iCRAG Equity Diversity and Inclusion team, who suggested that the use of gender-neutral terms would allow the programme to be more inclusive of those who do not identify as male or female. This opinion was supported by the iCRAG Education and Public Engagement Committee. The most important reason for changing the name of the programme is that students asked for it. After surveying almost 100 students from our target audience, their overwhelming response was to suggest we change our name to something more inclusive, and their top choice of name was 'Get into Geoscience'.

When considering programming, Get into Geoscience has had a very successful year. 2022-23 has seen the continuation of the Get into Geoscience Careers Talks, which have so far allowed us to reach over 1000 students across the island of Ireland. We are always looking for new speakers to join our cohort, if you are interested, please don't hesitate to get in touch.

In late 2022 - early 2023, we have introduced the new Transition Year programme to the Get into Geoscience remit. The Transition Year programme is a six-session programme in which transition year students work together with scientists to create and deliver mini-research projects based on a timely aspect of geoscience. This year, the projects were focused on geothermal energy with the topics of the projects including everything from 'can geothermal energy power my school' to 'what is geothermal energy policy in Ireland'. In the pilot year of the programme, the Get into Geoscience Transition Year programme has reached two schools, one in Arklow and the other in Killorglin. The programme culminates in a challenge where the students have the chance to submit their research projects to be judged by a panel of experts. If you would like to sit on our expert panel, please get in touch.

Moving forward, Get into Geoscience will continue to upscale its programming. We are intending to build upon the pilot of the Transition Year programme, and conduct further advertising of the Careers Talks to connect with further schools. We are proud of what we have achieved in 2022-23 and are looking forward to continuing our programming into 2023-24.

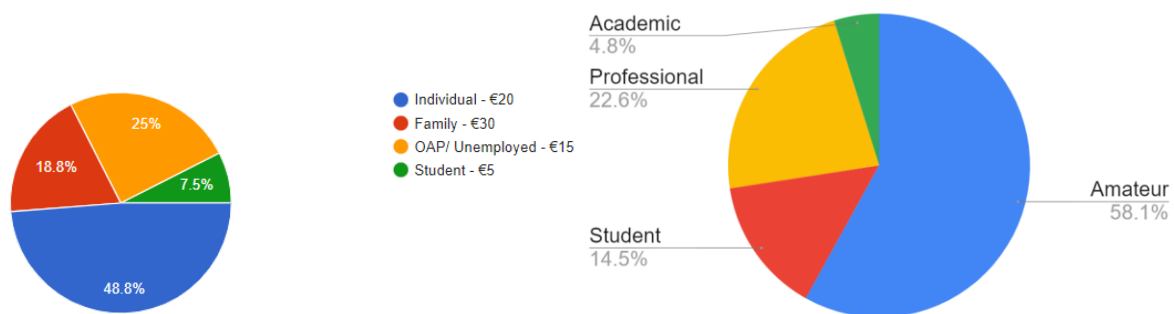
# IGA's Report for Irish Geoscience Network Meeting March 2023



The Irish Geological Association (IGA) is open to all who are interested in the geology of Ireland and beyond. Our members range from absolute beginners to professional geologists. We hold lectures and workshops each year and we organise excursions to geologically diverse locations all over Ireland. There is also an almost-annual excursion abroad too. Other events include Members' nights and our AGM. The IGA awards student prizes at the annual Irish Geological Research Meeting. We are involved with the BT Young Scientist Exhibition, G. V. Du Noyer Photographic Competition, Heritage Week and Science Week events.

## 2022 Membership

We received just over 100 memberships this year (Including family memberships). Approx. 30% of these were new members. Our membership fees remain the same. Breakdown of our membership types below, we aim to increase our student membership next year but overall are happy that we're serving a wide range of demographics from the geological community.



## 2022-2023 Events

The Irish Geological Association wishes to thank all of our leaders, speakers, workshop teachers, participants, members and sustaining members for such excellent support!

We were back to a full excursions programme in 2022, with a full programme planned by our Excursions Secretary Maria Cullen. Our lectures all remained online, as was the preference of our various speakers. This allowed us to reach far and wide for our audience and host some international speakers and a great range of topics were covered, thanks to our Lectures Secretary Patrick Roycroft.

In total we hosted 26 events this year. For the last few years, we have hosted a joint lecture along with the Cork Geological association and the Galway Geological Association. These always reach a high audience and it's something we hope to continue!

Our average lecture attendance in 2022 was 45. Our average excursion attendance was 14. On top of this we also presented 6 events as part of Heritage Week which we hope to build on this year. The Rock Roadshow we hosted in Waterford Libraray as part of Heritage Week we have also held across other libraries across the country over the last few years, ideal fro a family audience, and we hope to continue this project in 2023.

Date	Event	Attendance
Jan. 27th	IGA/ GGA/ CGA Joint Lecture by Aileen Boham (GSI/ GEBCO) on Seafloor Mapping	94
Feb. 23rd	Lecture: Chemical Weathering as a Strategy for the Large-Scale Capture and Storage of Atmospheric CO2 - Prof. Frank McDermot (UCD)	56
Mar. 16th	Lecture: Sliabh Liag by Dr. Sathbh Baxter(NUIG)	62
Mar. 30th	AGM	23
Apr. 2nd	Excursion led by Markus Pracht GSI Corestore & Ballynaguisha Quarry	14
Apr. 13th	Lecture by Jim Handry omn Dolomites of Isle of Man & N. Dublin Coast	36
Apr. 23rd	Down To Earth Museum Tour - Led by Michéle Castieux	18
May 7th	Excursion lead by Dr Robert Meehan with IAH Fore Abbey/ Lough Bane/ Slieve na Calliagh	15
May 11th	Lecture by Cr. Catherine Delaney (anchester Met. Uni.) on the Retreating Irish Ice Sheet	41
June 17th	Excursion - Geobiology workshop, Co. Wicklow Led by Maria Cullen & Howard Fox	8
June 29th	Lecture by Aodhán O'Gogáin on Carboniferour Ecosystem	31
July 29th	Excursion by Dr Aidan Dorde - Valentia	14
Aug. 3rd	Members Night	7
Aug. 13th	HW: Dunbrody Abbey with Bill Sheppard, Maria Cullen & Howard Fox	-
Aug. 14th	HW: Caving with Cork Speleological Group	-
Aug. 18th	HW: Ask A Geologist	11
Aug 19th	HW: Waterford Esturay Excursion led by Bill Speppard	-
Aug 20th	HW: Rock Roadshow, Waterford Library	-
Aug 21st	HW: Field Trip to Liugh Shinny Lead by Prof. John Walsh	34
Aug. 27th	Excursion on Ancient Volcanoes with Margaret Franklin & Maraia Cullen	9
Sept. 10th	Excursion lead by Pete Coxon - Wicklow Bus Tour	25
Sept. 14th	Lecture by Roy Starkey (National History Museum, London) on Sir Arthur Russell's Mineral Collection	30
Sept. 24th	Excursion- Gold Panning with Gordon Poole (FGS)	11
Oct. 12th	Lecture by Charlie Woodrow (Uni. of Lincoln) Jurassic Insect Sounds	36
Nov 9th	Lecture by Carla Harper (TCD) on Plant Fossils	39
Dec. 10th	Members' Nighht	Approx 20
Jan. 25th	Lecture by Prof. Phil Gibbard (Uni. Of Cambridge) on The Anthropocene	-
Frb. 28th	Lecture by Dr. Chris Stimpson (Uni of Oxford) on Himalayan Fossils	26

## 2023 Prizes

As usual we facilitated the Du Noyer and Cunningham Awards given by Geological Survey Ireland in December 2022. These were given at an in-person event in The Survey's current offices at Booterstown.

Our long tradition of sponsoring the Student Talk and Student Poster prizes at the Irish Geological Research Meeting, this year held at the Ulster Museum in Belfast, continued. Following the passing of our dear friend and IGA Honorary Lifetime Member Barry Long last year, we have given his name to this prize going forward and also increased the prize funds this year in his honour. He was a great supporter of the IGRM and geology students in general, I'm sure he would have been delighted to have this prize dedicated to him. Well done to all involved in organising a successful return to in person IGRMs.

# Upcoming 2023 Events

(More TBC)

Date	Event	Speaker/ Leader
March 28th	Lecture Geological Stories and Data Sharing	Dr. Una Farrell (TCD)
March 30th	AGM & Rock Roadshow for Members	
April 15th-16th (TBC)	Excursion to Clontibret area, Co. Monaghan	Kevin McNulty (Conroy Gold)
April 19th	Lecture on Geology in Art	Dr. Bill Sheppard
April 21st - 23rd	Wild Mind Festival, Fenit, Co. Kerry	
April 22nd	EARTH DAY	
May 19th - 28th	Biodiversity Week	
May 20th-21st (TBC)	Excursion with IAH Glen of the Downs - Biodiversity Week	Dr. Gerry Baker/ Alison Orr
June 9th - 11th (TBC)	Weekend Excursion North Donegal	Dr. Charlotte Du Plessis
Late July	International Excursion - Hebrides, Scotland	Prof. Stephen Daly (UCD)
Aug. 12th-20th	HERITAGE WEEK: Living Heritage	
Sept 23rd/24th (TBC)	Gold Panning Excursion	Frank Clissman
Date TBC	TCD Earth Science Research Laboratory Tour	Dr. Michael Stock
Dates TBC	Rock Roadshow Library Showcases	
Dates TBC	Awaiting Detail & Dates from Several Lecturers	

Please tune in to our website and social media for more details:

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

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

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

**Current yearly rates are €30 for a family, €20 for an individual and €5 per student.**

## IGA Council 2022

(AGM to take place on March 30th 2023)

<b>President:</b> Laura Smith  <b>Outgoing Vice President/ Webmaster:</b> Michele Castiaux  <b>Incoming Vice-President /Excursions Secretary:</b> Maria Cullen  <b>Treasurer:</b> Dan O'Shea  <b>Lecture Secretary:</b> Dr. Patrick Roycroft  <b>Health &amp; Safety Officer/ Minutes Secretary/ Sustaining Memberships:</b> Daniel O'Connell	<b>Cork Rep.:</b> Dr. Bettie Higgs  <b>Galway Rep. :</b> Jacinta Hennelly  <b>Student Rep.:</b>  <b>Newsletter Editor:</b> Bill Sheppard  <b>OCMs:</b> Emma-Jane Lyne  Meabh Banrion  Tom Mc Goldrick  Frank Clissman  Erica Kreuger  Stephen Callaghan
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## Geotechnical Society of Ireland

Following two quiet years, the Geotechnical Society of Ireland within Engineers Ireland had an eventful 2022 to 2023 session. Dr Trevor Orr of Trinity College was finally able to deliver his 3<sup>rd</sup> Biennial Hanrahan Lecture having been twice postponed in both 2020 and 2021. He invited Dr Michael Brown of University of Dundee to deliver the guest lecture at the event. This was the only the second event held in person at Engineers Ireland following the pandemic restrictions.

Every five years, the Society hosts a one-day conference in Portlaoise. The 2022 conference was on the topic of Geotechnical Engineering for Renewable Energy, and sponsored by ESB. More than a hundred people attended, many of us meeting in person for the first time in more than two years.

We also had two events on the topic of tunnelling in Clyde Road; a lecture on the Bank Station Capacity Upgrade by Bethan Haig of Dr. Sauer & Partners in November, and a half day seminar held in conjunction with British Tunnelling Society Young Members group in February.

Our AGM will be held in late April or early May at Clyde Road. Details are to be confirmed.

### **6<sup>th</sup> April 2022 (16:00). The 3<sup>rd</sup> Hanrahan Lecture (biennial Honorary Lecture)**

Engineers Ireland, 22 Clyde Road, Dublin 4. Hybrid event.

*How geotechnical design in Ireland and Europe has advanced with Eurocode 7.*

Dr Trevor Orr, Adjunct Associate Professor, Trinity College Dublin, The University of Dublin.

*Rapid load pile testing and the development of testing standards for non-static pile testing for use within the Eurocode.*

Prof Michael Brown, Professor of Geotechnics, University of Dundee.

### **19<sup>th</sup> October 2022 (09:00). The Geotechnical Society of Ireland Five-Year Conference.**

Midlands Park Hotel, Jessop Street, Portlaoise, Co. Laois. In-person event only.

*Geotechnical Engineering for Renewable Energy*

- *Introduction – Resilient infrastructure for decarbonised electricity.* Henry Bouchier (ESB).
- *Foundations for Solar Farms.* Richard Kelly, SMEC, Australia.
- *Research into Practice in Offshore Renewables.* Prof. Ken Gavin, Delft University of Technology, The Netherlands.
- *Overview of Geothermal Energy in Ireland.* Sean Finlay (Geoscience Ireland).
- *Shedding light on the history of Ireland's renewable energy projects: The Shannon Scheme and Turlough Hill Pumped Storage Station.* Tanya Keyes, ESB Archives.

- *An overview and benefits of ground improvement for gravity-based wind, turbine foundation design and construction.* Killian Coghlan, Cyril Plomteux, Jamie Flannery, Jerome Racinais (Menard).
- *A comparison of geotechnical design criteria for offshore monopiles.* David Igoe (TCD), Louis Lapastoure (TCD / GDG) & Soroosh Jalilvand (GDG).
- *Review of cyclic design approaches for offshore monopiles.* Louis Lapastoure (TCD / GDG), Soroosh Jalilvand (GDG), Andrea Diambra (University of Bristol) & David Igoe (TCD).
- *A multi-technique approach to characterising challenging offshore deposits: a case study in the north Irish Sea.* Mike Long (UCD) & Mark Coughlan (iCRAG / UCD / GDG).
- *Innovative weather downtime assessment tool (WDAT) for offshore Operations.* Bepo Schira, Helena Kustura, Gohar Shoukat & Indrasenan Thusyanthan (GDG).
- *A novel approach to offshore site investigation using Distributed Acoustic Sensing.* Andrew Trafford (iCRAG / UCD), Robert Ellwood (Optasense), Alastair Godfrey (Optasense), Chris Minto (Optasense), Mark Coughlan (iCRAG / UCD / GDG) & Shane Donohue (iCRAG / UCD).
- *A Review of anchoring solutions for offshore wind turbines.* Ramon Varghese (UCD), Vikram Pakrashi (UCD) & David Igoe (TCD).

### **30<sup>th</sup> November 2022 (18:30). Evening Lecture.**

Engineers Ireland, 22 Clyde Road, Dublin 4. Hybrid event.

*Bank Station Capacity Upgrade - case study of the geotechnical and engineering challenges from design to completion.*

Bethan Haig, Dr. Sauer & Partners.

### **22<sup>nd</sup> February 2023 (14:00). Geotechnical Society of Ireland Spring Seminar in association with the British Tunnelling Society Young Members group.**

Engineers Ireland, 22 Clyde Road, Dublin 4. Hybrid event.

- *Transferrable Lessons in Tunnelling. Trends and New Technologies for Smarter, Larger, Leaner and Greener Designs.* Si Shen & Arabel Vilas Serín, TYPSA.
- *Innovation. SCL adaptations to traditional methods. Recent Examples.* Phil Astle & Eoin Murphy, OTB Engineering.
- *TSYM and Harding Prize: Designing Tunnels in Central London: Innovations and Challenges.* George Doulikas, STRABAG UK Ltd & Benjamin Lafarga, Mott MacDonald.
- *Large Diameter Underwater Caisson Sinking in Sand.* Ronan Royston, Ward & Burke Construction Limited.





## **Report from the Irish UNESCO Global Geoparks Committee – 2022**

*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

### **Active UGGp applications:**

- The application submitted to UNESCO from the Joyce Country and Western Lakes Aspiring UNESCO Global Geopark (UGGp) in November 2021 was withdrawn by the geopark in September 2022. A new revised application was submitted to UNESCO from the Joyce Country and Western Lakes Aspiring UNESCO Global Geopark (UGGp) in November 2022. The IUGGC offered support to Joyce Country Western Lakes in relation to their reapplication via a number of online meetings and sharing of information. The final application dossier was submitted and verified before sending on to UNESCO via the National Commission in Dublin.
- In 2022 The Mourne Gullion Strangford Aspiring UNESCO Global Geopark received confirmation of a successful evaluation carried out the previous November 2021, postponed from Summer 2020 due to the Covid-19 pandemic. As this area is entirely in NI, the application was submitted through the UK National Committee for UNESCO via the UK Committee for UNESCO Global Geoparks. This is the fourth UNESCO Global Geopark on the island of Ireland and is a significant achievement and addition to our geological heritage.

### **UGGp revalidations:**

- In 2021 Cuilcagh Lakelands UGGp (formerly Marble Arch Caves UGGp) were revalidated and have since been asked to resubmit a new Geopark application to UNESCO, due to their proposed change in size relative to the original geopark boundary. A full reapplication to UNESCO was done in November 2022. The IUGGC supported Cuilcagh Lakelands UGGp in relation to their application. The final application dossier was submitted and verified and due to its transnational status was submitted via both the National Commission in Dublin and the National Commission in London.
- Both Copper Coast UGGp and the Burren Cliffs of Moher UGGp will be revalidated by UNESCO during 2023. Both geoparks submitted their revalidation documentation to UNESCO in Spring 2023.



# The Open University Geological Society Ireland Branch

OUGS Ireland Branch

Branch Organiser Report at AGM 14<sup>th</sup> January 2023

This year was a very uneventful year. All lectures were done on Zoom.

No actual field trips. Early in the year some members went to the National Museum of Ireland in Dublin where there was a Geology Exhibition.

One field trip was organized to go to the Copper Coast on the Southeast of Ireland. Many people did apply, but at the last moment most applicants dropped out probably due to illness, or distance, so this trip had to be cancelled.

Our AGM this year was our first face to face meeting for some time.

So hopefully things will be much better in 2023.

Phyllis Turkington  
Branch Organiser

# Winter newsletter of the Geomorphology Association of Ireland

## Introduction

Dear Members,

Delighted to introduce this first newsletter of the Geomorphology Association of Ireland (formerly IGGy) and to welcome any new members into what is a growing community of enthusiastic geomorphologists/geoscientists in Ireland and beyond. This newsletter will function as a platform for various announcements that may be of interest on many levels.

Our current rebranding to the 'Geomorphology Association of Ireland (GAI)' (<https://www.irishgeomorphology.ie/>) reflects a new approach to the group where we want to make things more inclusive and bring in, not just geoscientists working and living in Ireland, but also the Irish diaspora scattered around the world who are also making contributions to the field. Our formal launch will be in the first half of 2023, so watch this space!

We want to make membership of the GAI rewarding and worthwhile and to offer unique benefits to include such things as an annual Field award (more info later), access to research and teaching info and a network of like-minded researchers, reductions in sister organisations and events to name but a few.

Best wishes,

Professor Derek Jackson President, GAI; MRIA, FRGS, FBSG

## Recent events

### Coastal geomorphology in action

During October the first student cohort of the new Bachelors in Climate and Sustainability (BCES) at DCU went into the field to visit Malahide and Killiney beaches as part of GY239 (Introduction to the Oceans and the Marine Environment). The 2nd year students were investigating sediment dynamics, wave energy, longshore drift and the impacts of coastal protection structures (see below). After a sunny start at Malahide on Day 1, they overcame some challenging conditions at Killiney on Day 2 and pushed through the wind and rain to collect all of the data they needed! Their overall task is to produce a report assessing the vulnerability of the different sites to the impacts of sea level rise and coastal erosion and propose solutions for their sustainable management.

To learn more, contact Dr Niamh Cullen: [niamh.d.cullen@dcu.ie](mailto:niamh.d.cullen@dcu.ie)



Sea walls and groynes at Malahide Beach. Photo credit Aaron McNiffe (Photo credit: Aaron McNiffe)

### BEFLUX Summer School

Wahaj Habib (PhD candidate, Trinity College Dublin) attended a “summer” (arctic summer ☺) school in September this year. The summer school named “BEFLUX” was kindly sponsored by the UArctic (University of the Arctic) and was focused on the Environmental monitoring in the Arctic, with a particular focus on greenhouse gas flux studies. There were 18 participants (PhD Students) from 11 different countries. The school was based in the University of Oulu, Oulanka Research Station. The research station is tucked away in the river valley of Oulanka within the Oulanka National Park, Finland. The course consisted of lectures and hands-on training including analysing existing observational data from in-situ sensors i.e., Eddy covariance towers, static/automatic chambers as well as obtaining own data from the field. The field data collection was based on state-of-the-art automatic chambers and UAVs. The main aim of the course was to develop a basic knowledge about climate change as a scientific phenomenon, and how it interacts with and drives natural arctic ecosystems.

To connect with Wahaj, email him at: [habibw@tcd.ie](mailto:habibw@tcd.ie)



## 8th Irish Geomorphology Scientific Workshop

Maynooth University Geography hosted the GAI's 8th Irish Geomorphology Scientific Workshop on the 10th of December 2021. The event was organised by Ro Charlton with the help of Kate de Smeth (UCD Geography), and Mick Bolger.

Held annually, the aim of the Scientific Workshop is to share research, enhance interdisciplinary communication and develop new opportunities through collaboration, bringing together academic researchers, those working in state agencies and public bodies, consultants, and individuals with an interest in geomorphology and the Irish landscape. The Workshop was held online and attracted over 100 participants from Ireland, UK, Portugal, Germany, Turkey, the United States, Canada, India and Venezuela.

The broad theme of the Workshop was Geomorphology in Environmental Management, with the Keynote delivered by Professor Andrew Cooper (Ulster University), who provided a fascinating and thought-provoking talk on Understanding and predicting coastal change: geomorphological perspectives, that led to much discussion afterwards.

The research presented included coastal, peatland, fluvial and planetary geomorphology. Research presentations encompassed a wide range of spatial and temporal scales, combined with new datasets and innovative new methodologies in the context of climate change impacts and the impacts of human activity. Research students and early career researchers were well-represented among the speakers.

To watch the talks, please refer to the Latest News section on the GAI website homepage (<https://www.irishgeomorphology.ie/>).

## Member profiles



Hi! I'm Louis Gilet and I am a physical geographer currently working as a postdoctoral researcher on the RePEAT project (PI: Dr. John Connolly) (<https://sites.google.com/view/project-repeat/home>), within the Department of Geography at Trinity College Dublin. The project aims to refine our knowledge of the extent of Irish peatlands and of the land use changes they have undergone over the past 200 years. Prior to this post, I worked as a research and teaching assistant for different universities in Paris and at the Laboratory of Physical Geography (LGP). I hold a PhD in fluvial geomorphology from Paris 1 Panthéon-Sorbonne University (2019). I have now been working

for several years on the evolutionary trajectory of hydrosystems, studying the changing interactions between biophysical processes and anthropogenic influences.

To learn more about Louis' work, take a look at his ResearchGate profile (<https://www.researchgate.net/profile/Louis-Gilet>) or contact him at [giletl@tcd.ie](mailto:giletl@tcd.ie)





Hi! I'm Ciara Ryan and I work in Inland Fisheries Ireland as a Research Officer. My project is nested within the larger Hydromorphology team within the Research Division at IFI

(<https://www.fisheriesireland.ie/what-we-do/research>). The larger team covers a range of topics including river habitat, barriers to fish passage, as well as rare and protected fish including lamprey, shad, salmon and eel for example.

Currently I am working on the Environmental River Enhancement Programme (EREP) which is funded by the Office of Public Works (OPW). The OPW are statutorily obliged to conduct routine arterial drainage maintenance operations on 11,500 kilometres of inland waterways. The EREP is a long-term

programme which aims to promote strategies for reducing the adverse environmental effects of drainage, as well as to recognise and implement opportunities for environmental gain. The project allows us to collect catchment-scale data on hydromorphology and fish as part of routine monitoring, and conduct site-specific research projects.

I really enjoy my work as it's a very applied role and has a nice balance of field and office-based tasks, meaning we can spend a good portion of our time outdoors, in any and all weathers! Working across all OPW schemes means I get to see a lot of the country, an aspect which I like as you really familiar with different catchments. I like the challenges of working at different scales within catchments and working with the OPW on strategies to improve river corridor hydromorphology. Moreover, the team working on the EREP within IFI are exceptional colleagues which makes working on this project very enjoyable.

To connect with Ciara, email her via LinkedIn: <https://www.linkedin.com/in/ciarafleming/>

## Feature article: UCD Drone Summer Course



Contact: Dr Tine Ningal ([tine.ningal@ucd.ie](mailto:tine.ningal@ucd.ie))

The UCD School of Geography successfully conducted its second drone summer course in June 2022. Three courses of two days each were offered in June and close to 30 participants attended that comprised academics, researchers, students, professionals, and drone enthusiasts from within Ireland and internationally. One participant came all

the way from Mozambique! The UCD Earth Institute collaborated in subsidising 50% of the fees for UCD postgraduates to attend the course.

The content of the course was updated to reflect the changes in the drone industry and a component on global navigation satellite systems (GNSS) was included this time. Dr Sojan Mathew (<https://www.champlain.edu/academics/champlain-abroad/champlain-abroad-dublin/faculty-and-staff-dublin/matthew-sojan>) who is an expert in GNSS was involved in

delivering the lectures and practical around GNSS technology. Dr Ankur Sati also assisted with the course (<https://people.ucd.ie/ankur.sati>).

A new component introduced in this course was drone demonstration where the participants get to fly small consumer grade drones weighing less than 250 grams to gain first-hand experience on starting, taking off, manoeuvring, stopping the drones and getting used to other functions such as taking photographs, video footages and experimenting with built-in functions.

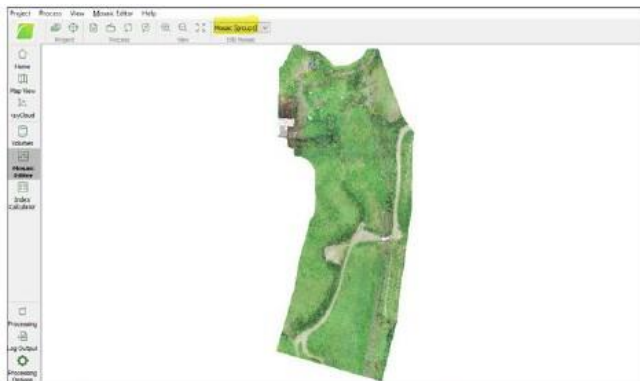


Figure 34. Result of orthomosaic (photomap) as a single georeferenced image

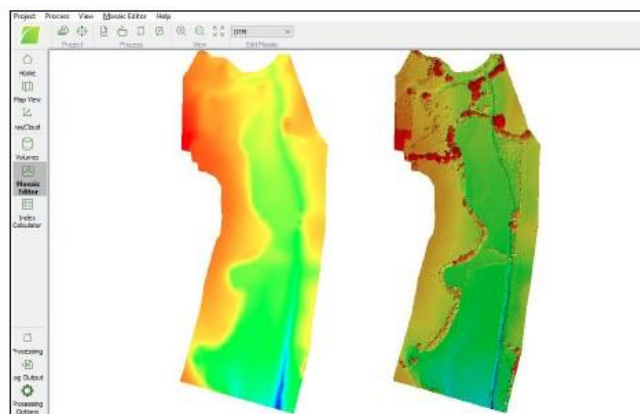


Figure 35. Result of a Digital Terrain Model (bare earth) and Digital Surface Model (DSM) showing the topography. Subtracting DTM from DSM will produce vertical structures with height differences. This can be useful when estimating heights of objects such as trees, building, and other landmarks.

The course content introduced drones as a disruptive technology and its evolution over time, highlighting the various application and its rapid proliferation to date. There are many drone software available, however, in the course, Pix4Dcapture and Pix4Dmapper were used. The hands-on exercises provided sufficient material with data on ground control points (GCPs) gathered using the GNSS receivers and the overlapping photographs captured by the drone. The photogrammetry tool in Pix4Dmapper was used to create georeferenced outputs such as orthomosaic (photomap), digital surface model (DSM) and digital elevation model (DEM) (see below). Other activities include undertaking measurements such as determining distances, computing areas and volumes

using the drone data. The software generates point clouds which can be imported into other applications such as GIS analysis, mapping, modelling and more. These are but some of the information that can be derived from drone data.

At the end of the second day, the participants received their certificates of attendance and were asked to provide feedback which would be useful in improving future drone courses. Generally, the participants enjoyed the drone course and affirmed that they learned new skills while making various recommendations for consideration.

The next drone course will take place between May and July 2023. Keep an eye out for more information at: <https://www.ucd.ie/geography/shortcourses/>

## Did you know?

The European Geosciences Union (EGU) has opened the call for abstracts for the EGU General Assembly in 2023 in Vienna, Austria. The window for abstract submission is 01 Nov 2022- 10 Jan 2023. More information can be found here: [https://egu23.eu/about/deadlines\\_and\\_milestones.html](https://egu23.eu/about/deadlines_and_milestones.html)

The Women Advancing River Research seminar series continues to bring fascinating fluvial geomorphology insights. Previous presentations and registration for upcoming talks can be found here: <https://www.cee.psu.edu/events/women-advancing-river-research.aspx>

## Get in touch

To join the GAI or contribute to the newsletter please contact the GAI committee: [iGeomorphology@gmail.com](mailto:iGeomorphology@gmail.com)

We welcome submissions for all sections of the newsletter, including job advertisements and grant and conference announcements. Don't forget you can also email the GAI community any time using the listserv, or by emailing us to send out on your behalf. We'd love to hear from you!

Best wishes to everyone as we approach the end of the year, 'til next time!

GAI Committee

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

The DIAS Geophysics section had an eventful year in 2022. Our researchers have continued to attend conferences remotely and in person, and have continued to present posters, talks and seminars throughout the year at EGU, EAGE, ORFEUS, ICEG and AGU, SPIN Workshops, De-risking Ireland's offshore wind potential workshop, IAH2022 and an online seminar at Geoazur, Sophia Antipolis, France.

Three new PhD students and several new post docs started in DIAS working on volcanoes, geothermal energy & ocean related topics.

This year was busy with terrestrial and marine fieldwork. DIAS team also took part in deploying temporary research networks across the world such as Iceland, Etna, Galapagos, Western Mexico and Mount St. Helens using DIAS marine, MT and seismic infrastructure and equipment pools. DIAS team also took part in several short offshore surveys, around Ireland.

Three new permanent seismic stations were commissioned in collaboration with GSI increasing Irish National Seismic Network (INSN) network capability significantly: ITIP (North Tipperary), IMIC (Mitchelstown Cave) and IMAC (Macroom, Co. Cork). A MoU was signed with GSI to start a "Community Seismology Programme (CSP)" to be led by the Geophysics Section in DIAS. The programme will build on the Seismology in Schools programme and will be steered by a new project officer to be employed at the INSN initially for a three year period.

Ongoing international collaborations with researchers in University of Kiel, University of Iceland, Icelandic Meteorological Organisation, 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, IMPROVE, DIG, DEEP, SPIN, IGUANA, ESA 3D Earth, POROCLIM and HEKLA, as well as ongoing individual level interdisciplinary work with our research partners around the world.

Two new small scale projects under GSI short call have been awarded: HI-RES (Hibernian Regional Geoelectrical Structure) strengthening the collaboration with the DIAS Astronomy & Astrophysics Section on completing a dataset of magnetotelluric soundings across Ireland, and MANGO project in collaboration with the Marine Institute at the SmartBay facility in Galway Bay for underwater acoustic monitoring.

Dr Emma Chambers was awarded a three year fellowship to work on geothermal (GRANNUS – Geothermal Resource Assessment beneath Ireland using subsurface imaging), funded by SEAI research development and demonstration funding programme 2022.



It was also a busy year with publications, 10 publications in the period in the following journals Geophysical Journal International, Scientific Data, Geochemistry, Geophysics, Geosystems, Earth and Planetary Science Letters, Journal of Space Weather and Space Climate, Solid Earth, Marine and Petroleum Geology, Scientific Reports, Nature Communications.

This year was also an eventful with outreach and public engagement. Two public lectures took place in late October/early November as part of the Samhain agus Science lecture series. "Strange Sounds from the Underworld" by Prof. Chris Bean and Dr Martin Mollhoff took place in Mitchelstown Cave at the site of the latest INSN seismic station. The second was an online talk with Prof. Mark Williams (University of Leicester) titled "Are we living in the Anthropocene?". Both were well received by the public and generated a lot of interest across social media platforms.

In conjunction INSN's IMIC permanent station at Mitchelstown cave an educational poster is now displayed near the cave entrance describing the work carried out by the INSN.

The INSN also operates two displays at the "Down to Earth" exhibition in Collins Barracks: a "make your own earthquake" display with a LEGO seismometer and a real-time monitor showing the most recent global and local seismic events detected by INSN stations.

Culture Night took place on Friday 23rd September and marked our first in person public event in Merrion Square since 2019.

Dr Emma Chambers has been involved in the "Letters to a Pre-Scientist" program which connects school aged children with STEM professionals through a penpal program. The aim of the program is to inspire the next generation of scientists and to demystify the idea of STEM careers and options for students who don't have contact with STEM professionals in their everyday lives.

DIAS Geophysics ran a field module for undergraduate students in UCD; undertook collaborative talks and workshops with Girls Into Geoscience; and the co-created international arts / science collaborations at the international STUDIOPIA Art residency project, across Europe.



## **Update from the 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. It was established on 1 January 2021 resulting from a restructuring of the geoscience functions within DECC. Two new divisions namely the Geoscience Policy Division and the Geoscience Regulation Office replaced the Exploration and Mining Division (EMD) and Petroleum Affairs Division (PAD).

The reputation of the GSRO is aligned with the current DECC Statement of Strategy under Strategic goal 05: Ensure best in class governance and regulation – Ireland will have robust, transparent and effective regulatory frameworks in place to support a sustainable society and economy and a well-protected environment. This includes “Effective operation of the newly established Geoscience Regulation Office in licensing, monitoring and enforcement of minerals, mining, petroleum and geothermal sectors.”

The GSRO is responsible for managing the regulation, licensing, compliance and enforcement roles for mineral and petroleum exploration, production and decommissioning, and in addition geothermal regulation and enforcement when policy and legislation are in place.

The GSRO has a statutory obligation to provide 6 monthly reports to the Oireachtas. Activities in 2022 can be viewed at these links (Jan to Jun and Jul to Dec 2022)

[gov.ie - Six Monthly Reports to the Oireachtas on Mineral Exploration and Mining in Ireland](https://www.gov.ie/en/publications-and-resources/publication/six-monthly-reports-to-the-oireachtas-on-mineral-exploration-and-mining-in-ireland/)  
([www.gov.ie](https://www.gov.ie/))

[gov.ie - Six Monthly Reports to the Oireachtas on Petroleum Exploration and Development in Ireland](https://www.gov.ie/en/publications-and-resources/publication/six-monthly-reports-to-the-oireachtas-on-petroleum-exploration-and-development-in-ireland/)  
([www.gov.ie](https://www.gov.ie/))

Other relevant information provided by the GSRO can be accessed at:

[gov.ie - Guidelines for Mineral Exploration](https://www.gov.ie/en/publications-and-resources/publication/guidelines-for-mineral-exploration/) ([www.gov.ie](https://www.gov.ie/))

**Clare Morgan**

**Head of the Geoscience Regulation Office, Ireland**



## **Irish Geoscience Network: Geological Survey Ireland, 2022 update and 2023 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.

2022 was another challenging year for Geological Survey Ireland operations with gradual easing of COVID-19 restrictions on fieldwork; however, the bulk of our intended programme was completed with the exception of Tellus. Additional challenges resulted as we settled into our two new locations in Booterstown and Citywest, Dublin and adjusted to the new reality of blended working. However there were exciting developments with a new EU focus on Critical Raw Materials and in Ireland, ongoing increased awareness of the potential of Geothermal Energy. In addition, in a belated celebration of Geological Survey Ireland's 175<sup>th</sup> anniversary we commissioned a major TV documentary "The Island" and continued our exhibition Down to Earth at Collins Barracks.

### **Programme updates.**

#### **Tellus Project.**

2022 was a difficult year for Tellus as following instruction from the department numerous contracts for services were ended or not continued. This resulted in a significant decrease within the Tellus team and along with the slow pace of procurement, the decision was made to suspend all survey activities in 2022. Hopefully 2023 will be more successful with plans in place to continue both airborne geophysics and soil geochemistry sampling and analysis in 2023, however a lack of resources remains a significant issue.

#### **Marine and Coastal Unit.**

INFOMAR, the national marine mapping programme, completed the sixth year of its Phase II programme, which will see all Irish waters mapped by 2026. In 2022 total marine mapping achieved was 5605 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 coastline of west Co Galway and the Irish Sea east of Dublin. Offshore mapping was undertaken by the Marine Institute vessels in the Celtic Sea, using the R.V. Celtic Voyager and then its replacement, the newly commissioned R.V. Tom Crean. Shipwrecks continue to be investigated and recorded as part of INFOMAR mapping, working in conjunction with National Monuments Underwater Archaeology Unit (DHLGH). Sediment sampling was also carried out by Geological Survey Ireland in Dublin as part of the EMFF funded Coastal Sediment project, and by the Marine Institute off Co. Cork as part of the ongoing INFOMAR ground-truthing initiative. It is planned in 2023 to extend inshore survey coverage along the coasts of Kerry, Galway, and Mayo, along with offshore areas on the inner Atlantic and outer Celtic Sea shelves.

### **Groundwater and Geothermal Unit.**

**Catchment-based Groundwater Resource Assessments (GW3D):** These studies and reports will more comprehensively support the supply of clean drinking water (guidance for better resource identification) and WFD management (understanding the catchments). *GW3D Leinster Region (2019 - 2022)*: the 32 Catchment Reports are currently being finalised and will be published over the coming weeks as they are signed off. Fieldwork at two sites (Wexford and Oak Park) was completed in 2022, supporting some of the report study recommendations. Procurement for *GW3D Shannon and Corrib Catchments (2023 – 2027)* is at an advanced stage and we are working with DECC Procurement Unit to finalise this process. It is hoped that this project will commence in the next month or so. **GWClimate (2018 – 2022)** continued to monitor and model groundwater flooding at turloughs, installed long term groundwater monitoring sites (both datasets available on GWLevel.ie), completed modelling on EPA long term borehole data, published updated groundwater flood maps and progressed work on a groundwater drought susceptibility map. Geological Survey Ireland has published an RFT (2023 – 2027) to further progress this work to include climate change modelling and forecasting. **CatchmentCARE InterReg North-South** will conclude at the end of April. **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 one tracer test have been completed, which has allowed the catchment area to be re-evaluated. Geological Survey Ireland has been involved in the transposition of the EU Recast Drinking Water Directive into Irish legislation. This involvement will continue into the implementation phase with Geological Survey Ireland having a role in groundwater source protection.

**Geothermal Energy:** The National Geothermal Database Project will enter a new phase in 2023 and will focus on delivery of new national maps of geothermal resources. After the success of the first National Geothermal Energy Summit in November 2022, Geological Survey Ireland will host this event on an annual basis. GGU continue to work closely with TU Dublin and other stakeholders to assess the feasibility of deep geothermal heat in Dublin city centre.

### **Geological Mapping (Quaternary & Bedrock Geological Mapping).**

Bedrock geological mapping, in follow-up to Tellus surveying, was carried out in Wexford, with publication of a 1:50k map and data package delivered in 2022. Deep (1.03km) borehole core logging and sampling was aimed at further resolving the Carboniferous stratigraphy of the northwest midlands. A report on the geological logging of a deep geothermal borehole at Grangegorman included stratigraphic and fracture logging, in support of geothermal interpretation of the borehole. An onshore – offshore digital compilation map data package for NW Galway Bay was developed in support of proposed ORE developments in the area to be developed further in conjunction with INFOMAR offshore digital data. A hyperspectral analysis pilot study commenced to examine the feasibility and application of interrogating our hyperspectral data as a tool to support bedrock mapping. Quaternary mapping in Wexford focussed on coastal geology to contribute to erosion/protection work, with an expanded area targeted in 2022. A Field Guide to South Mayo, authored by Dr John Graham, including a new 1:50k map, was launched in 2022. In support of the Just Transition Project we compiled a digital geological bedrock and Quaternary data package for the relevant area.

### **Geological Heritage.**

Limerick County and Cork city Geological Heritage audits were published in 2022 and the audit of Cork County (phase 2 of 3) was completed. The Cork County audit will be published in 2023. We continue to support the geologists in the 3 UNESCO Global Geoparks. Joyce Country & Western Lakes project re-submitted their application to UNESCO in November 2022, now establishing the project as

an Aspiring UNESCO Global Geopark. Six Geoheritage grants were awarded to diverse community-led projects around the country. The programme co-published with Wicklow County Council a 'Popular' county geoheritage book for the public and is also working closely with the Longford County Heritage Officer to publish a similar book for that county. The books are based on the Geological Heritage audits completed for both counties and were commenced originally by Matthew Parkes and his co-authors of the respective audits.

### **Minerals.**

The Minerals programme is continuing its extensive collaborations with European partners across a wide range of raw materials projects. Development is continuing to work on a new quarry database, and technical expertise will be provided to the Dept. of Housing and the relevant market surveillance authorities, particularly focused on deleterious materials in construction products. 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, including an improved National Borehole Database, data collation for underexplored areas and Mineral Prospectivity Mapping in collaboration with the Tellus programme in the north-west midlands. A comprehensive review of all industry boreholes from the Open Files has been completed and published on the Geological Survey Ireland data viewer. This has increased the known boreholes by approximately 50% and is the completion of Phase 1 of an overall borehole database development project. Geological Survey Ireland published a research report which quantifies the metal requirements to meet Ireland's energy and electro-mobility targets within the Climate Action Plan. The report was commissioned by the Geoscience Policy Division and will support the development of Ireland's minerals policy as we move into the green transition.

The Sandyford corestore continues to operate as the National Geological Corestore with a regional branch now established in Birr, Co Offaly. The hyperspectral scanner got an upgrade in 2022, including the acquisition of a medium wave hyperspectral camera to complement the existing high resolution RGB and short wave IR. A significant quantity of core from industry sources has been accepted into the national collection and will be catalogued and made available for stakeholder access.

### **Information Management.**

Geological Survey Ireland is continuing to develop the Irish Geoscience Data Centre (IGDC). Progress has been delayed due to resourcing issues.

**Communications:** Public and stakeholder events were changed or curtailed at the start of 2022 due to the COVID-19 pandemic. The BT Young Scientist and Technology Exhibition was online in January but we continued to have a virtual presence and continued to sponsor a special award. Our first public event, indeed the first public event for all our partner organisations, was the Down to Earth Open Day in May 2022.

Geological Survey Ireland returned to the National Ploughing Championships in Laois in September 2022 and was part of the Government of Ireland village. Down to Earth – Exploring Ireland Geology: The exhibition will run until Sunday, 5 November 2023, with geologists on duty on 3 days a week from now until then. The annual open day will take place in early June. The focus for the remaining months is to encourage school visits. As part of the 2020 175<sup>th</sup> anniversary celebrations, Geological Survey Ireland/DECC part-funded and developed a 3-part tv series, The Island. The series was first broadcast in September 2022 on RTÉ and BBC NI. The series attracted a total viewership of over 818,000 and approximately 25% of the audience share. Geological Survey Ireland also took part again in 10 Things to Know About...focusing this year on the Circular Economy and Geothermal potential for Ireland. A number of publications are in production and we hope to have the online shop and customer centre back, operating from Citywest shortly.

**Education:** We worked with iCRAG to develop and deliver a workshop for JCT STEAM on Geothermal energy and delivered an online course of all Geological Survey Ireland/iCRAG JCT workshops in May. We also worked with iCRAG and volunteer teachers on developing Leaving Cert Geography resources. All resources will be available on the website. We will continue with these programmes in 2023. Geological Survey Ireland will deliver an online workshop for JCT Geography and is in the final stages of producing an education resource on the geology of Galway which aligns with the national curriculum.

## **Research.**

The Geological Survey Ireland Research Programme represents and supports Irish geoscience research activities at a national level. In 2022, it awarded 14 new Short Call Grants across a range of topics and several projects co-funded with partner funding agencies. For example, a project with EPA investigating biodiversity using Tellus soil data as a proxy, and two large-scale projects were awarded under the SFI Frontiers for the Future Programme – these are both in the area of climate change assessing climate variability in the past and using geological records to estimate climate impact in the future. Funding was also awarded to support post-cruise analysis from the International Ocean Discover Programme and two projects co-funded with European funding agencies under the ERA MIN3 and Geothermica ERANet programmes. Geological Survey Ireland also partnered with the Fulbright Commission to sponsor an incoming geoscience researcher and scholar visiting TCD. The Geological Survey also renewed the agreement with the Dublin Institute for Advanced Studies to support the Irish National Seismic Network operated by the Geophysics Section at DIAS. More information about the network is available at [www.insn.ie](http://www.insn.ie). Also in partnership with DIAS, it established a new Community Seismology Programme which start in 2023 and aims to increase the visibility and engagement in seismology and geophysics in the education sector and local communities.

We saw an increase in the use of the facilities at the Geological Survey Ireland-funded Earth Surface Research Laboratory in TCD for research purposes with a number of pilot projects and larger funded projects accessing the facilities for high -end geochemical analysis. In 2022 Researchers' Night took to the road with an evening in Ollscoil na Gaillimhe including talks from modellers, palaeontologists, and engineers all presenting on the theme of climate change in the geological record.

The Geological Survey Ireland Research team also participated in a number of national and international initiatives to promote and support geoscience research.

**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) and Dublin Institute of Advanced Studies board. Geological Survey Ireland continued to participate in 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 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).

**Geoscience Ireland:** 2022 was this programme first full year funded by members fees and EU projects and no longer operating as a Geological Survey Ireland Programme (see report elsewhere).

**Staffing:** 2022 saw a reduction in Geological Survey Ireland permanent staff with the retirement of three long term cartographic staff and our Principal Geologist Brian McConnell, all leaving with huge corporate and scientific knowledge. Geological Survey Ireland also moved to larger Contracts for Services resulting in a change to our mix of permanent and contract staff. We continue to run a successful Graduate Geologist programme recruiting 6 graduates for 11 months each year.

**The Geological Survey Ireland 2023 activity map will be available on our website [www.gsi.ie](http://www.gsi.ie) shortly.**



Geoscience Ireland (GI) has 35 members with a turnover of €1.17Bn in 2022, an increase of 13% on 2021. Employment increased by 365 to 4,491, an increase of 9%.

The Geo Drilling Apprenticeship sponsored by GI and IMQS, and delivered by SETU, saw its fourth year commence with 8 apprentices. The first 18 Apprentices from 2021 and 2022 received their Certificates in January 2023. IGI's support, and that of other IGN members, for the Apprenticeship is greatly appreciated.

Sean Finlay,

Director,

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