INQUA Dublin 2019
IQUA Commemorative Newsletter

IQUA

Irish Quaternary Association
Cumann Ré Cheathartha na h-Éireann

INQUA 2019
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IQUA **Cumann Ré Cheathartha na h-Éireann**

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1. INTRODUCTION & COMMITTEE

Dear IQUA member,

Welcome to this bumper edition of the IQUA Newsletter No. 63.

After many years of planning, INQUA is finally in Dublin. Check updates on Twitter using @Quaternary_Irl and the hashtag #INQUADUB19 and follow us on Facebook https://www.facebook.com/IrishQuatAssociation.

This edition has details of our Spring Meeting and public event, Ireland & The Ice Age, held in the beautiful Botanic Gardens last April and has the regular recent publications and notices, but as this issue is special there are some interesting additions.

There's a history of IQUA and what the association is up today along with a list of IQUA field guides. There's also a Who's Who in Irish Quaternary accompanied by a showcase of some Quaternary projects going on around the country. I'll keep the editor's note short as there's a lot of good stuff to read. Enjoy.

Thanks to all the contributors to this special edition IQUA Newsletter.

Kind Regards
Martha Coleman

IQUA Committee 2019/2020

President: Dr Catherine Dalton, MIC, University of Limerick (continuing**)**
Secretary: Dr Benjamin Thébaudeau (continuing)
Treasurer: Dr Kieran Craven (continuing), GSI, Beggar's Bush, Haddington Rd, Dublin 4 (continuing)
Postgraduate Rep: Niamh Millward, UCD, Archaeology (continuing)
Website Manager: Benjamin Thébaudeau (elected)
Publications Secretary: Mark Coughlan, ICRAG (elected)
Newsletter Editor: Martha Coleman, Maynooth University, (continuing)
Ordinary Members: Dr Ellen O'Carroll, (continuing), Dr Steve Davis, UCD (continuing), Dr Rory Flood, QUB (continuing), Darren Barry, MIC, University of Limerick (continuing), Dr Sara Benetti, University of Coleraine (continuing), Dr Gayle McGlynn, Department of Geography, TCD, (continuing), Sam Roberson, BGS, (elected), Chris Randolph (elected)

Cover Images Descriptions

1. St Patricks Boys NS, Limerick, Standing on the Shoulders of Giants Exhibition
2. Camross Pingo, Co Wexford, IQUA/QRA South East Ireland Field Trip Sept 2015
3. Croghan Hill, Offaly. IQUA The Quaternary of the Central Midlands Field Trip Sept 2018
4. Frank Mitchell, Kilmore Quay, 1982
5. South West Donegal Field Trip 2017
6. IQUA Aran Islands Field Trip 2007
7. Group photo, Limerick & Shannon Estuary Region Field Trip 2014
8. Group photo, IQUA/QRA South East Ireland Field Trip Sept 2015

2. SPRING MEETING 2019

The IQUA annual spring meeting was held in the Botanic Gardens, Dublin on Saturday April 13th. The day started with the annual AGM. Following the AGM there we had three talks before lunch by Michelle Curran of NUIG, Niamh Millward of UCD and Sam Roberson of Geological Survey Northern Ireland (abstracts below). During lunch there was time to take a walk around the gardens while Dr Colin Kelleher, Keeper of the Herbarium, kindly gave an interesting Quaternary themed tour (Image right).

After lunch Dr Catherine Dalton officially launched the new IQUA booklet entitled 'Giants of the Irish Quaternary'. This publication contains profiles of a cross-section of scientists who made seminal contributions to the understanding of the Quaternary landscapes of Ireland. An associated pull-up banner exhibition on 10 of these figures was also launched and on display.

To coincide with this year's INQUA Congress being held in Ireland IQUA decided to hold a public outreach event. Expert speakers were tasked with describing elements of Quaternary research to the public. The seminar was graciously chaired by the acclaimed journalist and author Lorna Siggins. Prof Emeritus John Sweeney (Maynooth University) delved into the evolution of the climate that triggered and followed the Ice Age while Prof Peter Coxon (Trinity College Dublin) talked about the Irish landscape before the Ice Age and the changes that followed because of it. Our last talk of the day was by Dr Bethan Davies (Royal Holloway University of London) who explored the importance of teaching the events of this time period, the Quaternary, and the influence it has on our modern world (image above).

Thanks to the staff of the Botanic Gardens and to our sponsor BGS.

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The Mid-Holocene Climate Transition in The Northeastern Atlantic: Implications For Future Storminess In The Ireland / UK Region

Michelle Curran *et al*., School of Geography and Archaeology, NUI Galway

Abstract

There is increasing evidence that accelerated warming at high-latitudes is associated with increased climate variability at mid-latitudes, including the frequency and intensity of storms. However, due to short instrumental records our understanding of how ocean-atmosphere dynamics operate during warmer than present climates remains limited. Here we present a palaeoceanographic investigation of the mid-to-late Holocene transition (7,500 years) to test the hypothesis of an eastward shift of the Icelandic Low under warmer than present climate scenarios. Reconstructions of bottom water temperatures (BWT) and stable oxygen isotopes (Mg/Ca, δ18O) using the benthic foraminifera Hyalinea balthica (H. balthica) reveal warmer than present BWT of up to 2.6 ± 0.7°C and heavier δ 18O sw values of up to 0.5 ± 0.3 ‰ on the Irish Continental shelf until circa 4.1 ka. We infer from these results that Atlantic waters were more prevalent in the eastern edge of the SubPolar Gyre (SPG) and link this oceanographic signature to an eastward shift of the Icelandic Low. We then place our local record into an extra-regional context, using a combination of modern observations and existing palaeorecords, which enables us to assess the impact of changing atmospheric modes on oceanatmosphere climate linkages within the North Atlantic Region. The enhanced influence of warm Atlantic waters recirculating along the boundaries of the SPG under this scenario, would potentially have enhanced melt rates of marine-terminating glaciers on the east Greenland Shelf.

The Reconstruction of Submerged Irish Archaeological Landscapes Through The Study of Coastal Peat Deposits

Niamh Millward, School of Archaeology, University College Dublin

Abstract

Coastal peat deposits are a recognised source of well-preserved organic biological remains that can be used to reconstruct past landscapes and environmental conditions. This project seeks to survey coastal peat deposits at specific sites along the West, North-West and South-West coast of Ireland. The material that will be studied in this project includes insect remains and pollen. This project will focus on the prehistoric period in Ireland and will attempt to better understand human activity and the human relationship with coastal woodlands during prehistory. This project also hopes to preserve the information locked within coastal peat deposits, as changes in climate have led to an increase in erosion of these types of environments.

Sam, Michelle & Niamh on the day

Irish Quaternary Cycle

Two weeks along the West coast of Ireland

Sam Roberson, Geological Survey of Northern Ireland,

Abstract

The Irish Quaternary Cycle was a journey through Ireland's geological landscapes formed over the past 2.6 million years. This paper presents the 1000 km journey across Ireland, exploring the glaciated landscape and talking about how this legacy affects us today (image right). The talk describes the motivations for the journey as part of IQUA's celebration of all things Quaternary in the run up to the 2019 INQUA Congress in Dublin.

3. RECENT PUBLICATIONS

Coughlan, M., Wheeler, A.J., Dorschel, B., Long, M., Doherty, P. & Mörz, T. 2019. Stratigraphic model of the Quaternary sediments of the Western Irish Sea Mud Belt from core, geotechnical and acoustic data, *Geo Marine Letters*, Vol 39, (3) 223-237

Knight, J. and Harrison, S. 2018. Paraglacial evolution of the Irish landscape. *Irish Geography*, 51 (2), 171-186.

Knight, J. 2019. The geomorphology and sedimentology of eskers in north-central Ireland. *Sedimentary Geology*, 382, 1-24.

Knight, J. and Burningham, H. 2019. Sand dunes and ventifacts on the coast of South Africa. *Aeolian Research*, 37, 44-58.

Knight, J. and Passmore, D. 2019. Perspectives on battlefield archaeology and heritage of the Second Anglo-Boer War. In: Smit, H. and Bezuidenhout, J. (eds), *Contemporary Military Geosciences in South Africa*. Sun Press, Stellenbosch, 1-23.

Lembani, R.L., Knight, J. and Adam, E. 2019. Use of Landsat multi-temporal imagery to assess secondary growth Miombo woodlands in Luanshya, Zambia. *Southern Forests*, 81 (2), 129-140.

Linge, H., Matthews, J.A., Mourne, R.W., Nesje, A., Wilson, P. & Olsen, J. 2019. *In situ* ^{10}Be surface exposure ages from the inner part of Sunnmøre. Geological Society of Norway, *Winter Conference* January 2019, Bergen, Norway, 1, 55.

Lockhart EA, Scourse JD, Praeg D, Van Landeghem KJJ, Mellett C, Saher M, Callard L, Chiverrell RC, Benetti S, Ó Cofaigh C, Clark CD (2018). A stratigraphic investigation of the Celtic Sea megaridges based on seismic and core data from the Irish-UK sectors. *Quaternary Science Reviews*, 198, 156-170 (https://doi.org/10.1016/j.quascirev.2018.08.029).

Scourse JD, Saher M, Van Landeghem KJJ, Lockhart E, Purcell C, Callard Praeg D, Ward S, Chiverrell R, Moreton S, Fabel D, Clark CD (2019). Advance and retreat of the marine-terminating Irish Sea Ice Stream into the Celtic Sea during the last glacial: timing and maximum extent. *Marine Geology* 412, 53-68 (https://doi.org/10.1016/j.margeo.2019.03.003).

Wilson, P., Ballantyne, C.K., Benetti, S., Small, D., Fabel, D. & Clark, C.D. 2019. Deglaciation chronology of the Donegal Ice Centre, north-west Ireland. *Journal of Quaternary Science* 34, 16-28.

Wilson, P., Dunlop, P., Millar, C., & Wilson, F.A. 2019. Age determination of glacially-transported boulders in Ireland and Scotland using Schmidt-hammer exposure-age dating (SHD) and terrestrial cosmogenic nuclide (TCN) exposure-age dating. *Quaternary Research* in press.

4. IQUA NOTICES

Preserving Palaeoecological & Archaeological Heritage in wetlands: Here's hoping for a Wet Future...

WETFUTURES is a 3-year, international project funded through the Joint Programming Initiative Cultural Heritage (Heritage in Changing Environments Call, via the European Union's Horizon 2020 research and innovation programme) that will focus on these and related issues in wetland environments in Ireland, the Netherlands and the United Kingdom. The project lead is Dr Roy van Beek (Wageningen University, Netherlands) whilst Dr Ben Gearey (University College Cork, Ireland) Dr Ben Jennings (University of Bradford, UK) will lead the Irish and British components respectively. Dr Kim Davies (UCC) and Dr Rowin van Lanen (Wageningen) will be working as the post-doctoral researchers on the project.

The project will focus on key wetland environments within each country, which will act as case studies for the identification of specific threats to these landscapes, and identify ways in which the heritage of wetlands can contribute to contemporary social challenges. Negotiating and reconciling the rights and perceptions of the local, national and international populace is one of the key aspects that will be addressed within the research programme.

If you'd like more information or to discuss further please contact Dr Kim Davies (kimberley.davies@ucc.ie)

QRA Postgraduate Symposium 2019 - Registration now open
28th-30th August 2019, University of York.

The QRA Postgraduate Symposium is an annual event which gives postgraduate students from any strand of Quaternary Science an opportunity to present their research. Whether you are an MSc, MRes or PhD student, we invite you all for 3 days of discussions of Quaternary Science in a friendly and relaxed atmosphere. We welcome abstract submission for oral and poster presentations but there is no requirement to present. The symposium provides a fantastic opportunity to discover what the Quaternary Science postgraduate community is doing and to meet fellow early career researchers from across the country.

This year the symposium is hosted by the Department of Environment and Geography at the University of York. The Organising committee are a group of young researchers in the Physical and Environmental Geography Research Group (PEGRG) within the department. Registration is **now open** via this link http://qrapg2019.strikingly.com/.
Registration, Fee Payments and Abstract Submission deadline: **15/07/2019**

Contact: qrapg19@gmail.com

5. IQUA HISTORY

21st January 1933, 19 Dawson St.

Dear Sir,

You are invited to join a committee which is being informally convened with a view to the initiation of research into the flora and fauna of the quaternary deposits of Ireland, preglacial, interglacial, and post glacial, including peat bogs and implementiferous deposits. One of the main objects of the research is the establishment of a general chronological sequence for archaeological and biological purposes.

Preliminary approach has been made to Members of the Danish Geological Survey who have paid special attention to such studies, and it is hoped that a trained worker will be available who will be prepared to conduct the research and at the same time give instruction to students and others in the best methods to be followed in future work.

The committee will meet at the Royal Irish Academy at 4pm on Wednesday January 25th.

The following are being invited to join the committee

Dr. RL Praeger
Dr HH Dixon
Prof J Doyle
Mr T Hallissey
Dr RAS Macalister
Dr A Mahr
Dr PJ O'Connor
Prof HJ Seymour
Mr AW Stelfox

Yours Faithfully
A. Farringdon

Prelim Meeting 25th January 1933

Guess The IQUA Members

The Irish Quaternary Association (IQUA) originally stemmed from the Quaternary committee of the Royal Irish Academy (RIA) that first convened in 1933 and was chaired by the eminent naturalist Robert Lloyd Praeger. IQUA was officially created in 1984 under the leadership of Frank Mitchell of Trinity College Dublin who had been president of the International Union for Quaternary Research (INQUA) from 1969 to 1973 and who had led an excursion to Ireland during the 10th INQUA congress held in Birmingham in 1977 that rekindled interest in Quaternary studies in Ireland. The aim is and has always been to foster research in Quaternary studies and impart knowledge to as wide an audience as possible through annual newsletters, symposia and field meetings with associated published fieldguides that have covered several regions of Ireland. IQUA's members and committee have always reflected the multidisciplinary nature of Quaternary Science and all the Irish institutions active in landscape research

Help us correctly identify the IQUA members. If you know talk to us or email iqua.info@gmail.com

The IQUA Newsletter dates back to 1988 so on this momentous occasion celebrating INQUA Dublin 2019 here's a reprint of some interesting pieces

IQUA Newsletter no. 1, October 1988.
Linda O'Connell, Information Officer, Irish Peatland Conservation Council

Save the Bogs.

With the current rate of exploitation all raised bogs in Ireland of national and international scientific interest could be destroyed by 1993. An average of eight bogs per year are destroyed. Clara Bog, Co. Offaly has been preserved already; it was handed over to the Office of Public Works for preservation in September 1987. However, more of our bogs need to be conserved. With this aim in mind the Irish Peatland Conservation Council (IPCC) has produced an Action Plan for the protection of Irish peatlands and with the help of the Dutch Foundation for the conservation of Irish bogs and the World Wide Fund for Nature, The Netherlands, it has already raised money to purchase some of our most important threatened sites. An example of the work done is Scragh Bog near Mullingar, Co. Westmeath which was presented to the nation by the Dutch Prince Bernhard in October 1987 after they had raised money to buy it. The Dutch feel anxious that we should be learning from their mistakes. The only remnant of intact bog left in Holland is being lovingly tended by a group of Dutch scientists at Bergerveen Nature Reserve. As much as£11 million has gone into preserving this site whereas it cost about £500,000 to preserve Clara bog. Most of the animals and plants that live and grow in bogs are found nowhere else. To destroy them is to wipe out a natural community which can never be replaced. For more information on how you could become involved in the "Save the Bogs" campaign, contact the IPCC, 195, Pearse St, Dublin 2.

1st IQUA/1GA Joint Lecture. 22nd February, 1989 at UCD.

W.P. Warren (Geological Survey of Ireland.)

Quaternary Rocks - Important, Complex, Interesting But Neglected - Why?

Quaternary rocks cover more than 90% of the land surface of Ireland. They are crucial to almost all civil engineering projects, to agriculture, to the agregate extraction industry, to groundwater, to environmental protection and to mineral prospecting. They are by far our most useful and valuable rocks. Sedimentologically they are probably our most complex deposits and are unsurpassed as a teaching medium for sedimentology. They contain spectacular tectonic structures, they are extraordinarily amenable to study and can frequently be cut with a knife or spade to reveal any face of a remarkable range of sedimentary and tectonic features. Why then are these the least studied of Irish rocks and why are they almost totally ignored by our university geology departments? It is sad to have to conclude that of geologists working in formerly glaciated areas ours are among the least informed. Is this situation likely to be rectified?

IQUA Newsletter no. 20, May 1998.

F.J.G.M.

Frank Mitchell (1912-1997)

Frank Mitchell died last November after a short illness. His death at 85 has deprived us of one of our most respected and popular Quaternary scientists. It is impossible to neatly pigeon-hole his contribution to Irish science because his explored such diverse avenues. He was a genuine interdisciplinarian, a rare breed in today's science of specialisation.

His research interests were ignited by Knut Jessen from Copenhagen who had been invited by the Royal Irish Academy to undertake a palaeobotanical investigation of Irish bogs in 1934 and 1935. Frank was employed as one of Jessen's field assistants whilst still an undergraduate at Trinity College Dublin. The war delayed the publication of Jessen's investigations until 1949 but this formed the background to Frank's later research which built on this foundation. The interpretation of changes in the vegetation of prehistoric Ireland led Frank into archaeology where he brought an entirely fresh insight which was much needed at the time. The third edition of *The Irish Landscape* was published shortly before his death and this superb book encapsulates his interdisciplinary approach as it explores the interplay of geology, biology, archaeology and socioeconomics.

In addition to a very active and highly successful research career, Frank also held many distinguished administrative positions which included the Registrar of Trinity College Dublin (1952-61), President of Dublin Zoo (1958-61), President of the Royal Society of Antiquities (1957-60), President of the International Union of Quaternary Research (INQUA) (1969-73), President of the Royal Irish Academy (1976-79), Pro-Chancellor of Trinity College Dublin (1985-87), President of An Taisce (1991-93). Frank was also a founder member of IQUA (and QRA). He ran a number of field trips and was a regular contributor to meetings until very recently. Himself and Sibyl Watson became the first honorary members of IQUA in 1995.

Frank was the eternal student and this is illustrated in his compelling narrative *The Way That I Followed*. His enthusiasm never waned and in recent years he is famously reputed to have stated that he would trade his soul with the Devil in exchange for another 40 years. He was always eager to contribute to ongoing debates and was very generous of his time and encyclopaedic knowledge of the Irish landscape. A few months before his death he insisted on visiting a recently discovered interglacial peat deposit in Monaghan. He arrived brandishing a walking stick in one hand and a paper that he had published in 1951 describing the upper strata of the site in his other hand. His contribution to science was recognised by many national and international awards and distinctions which included being made a Fellow of the Royal Society in 1973.

He has left a wonderful legacy in the books and countless scientific papers that he has published (a paper on Valencia Island was submitted shortly before his death). This legacy will continue to enthuse a diversity of people with in an interest in landscape evolution for many years to come. Despite this, his enthusiasm and generosity will be sorely missed by all who knew him.

Thanks to Chris Randolph for helping out with finding past issue articles

6. IQUA TODAY

IQUA continues to be a vibrant focus of Quaternary research and debate, with over 100 members consisting of active researchers and members of the public. Every year, a spring symposium highlighting student research, a fieldtrip to locations of active research and an autumn symposium on a topical research theme are hosted. Recent fieldtrips have included the Burren, Donegal and the Midlands, while research symposia have delved into human migration and Ireland's offshore records. IQUA actively supports Quaternary research through its awards for laboratory analysis. In the run-up to INQUA 2019 there has been a concerted effort to increase awareness of the Quaternary amongst the public with many family-friendly events hosted (images below) and information leaflets produced.

IQUA has a information packed website and is prominent on social media on Twitter @Quaternary_Irl and on Facebook https://www.facebook.com/IrishQuatAssociation

7. IQUA FIELD GUIDES

No.	Year	Title	Editors	Print	PDF
35	2018	The Quaternary of the Irish Midlands	McGlynn, G., Stuijts, I. & Stefanini, B.	€ 15	--
34	2017	South West Donegal	O'Carroll, E. & McClure, M.	€ 7	€ 4
H	2016	The Quaternary Glaciation of the Mourne Mountains (QRA & IQUA)	Roberson, S., Barr, I.& Cooper, M.	€ 20	--
33	2016	The Burren, Co. Clare	Nolan, J. & Randolph, C.	€9 (b&w)	€ 4
G	2015	The Quaternary of South East Ireland (QRA & IQUA)	McGlynn, G. & Stefanini, B	€ 15	--
32	2014	Limerick and Shannon Estuary Region	Dalton, C. & OCarroll, E.	€ 7	€ 4
31	2013	North Mayo	Warren, G.M. & Davis, S.	€ 7	€ 4
F	2012	Wicklow in the Grip of an Ice Age	Coxon, P., Mitchell, F. & Wyse Jackson, P. (authors)	€ 7	--
30	2012	Roscommon & South Sligo	Stefanini, B. & McGlynn, G.	€ 7	€ 4
29	2011	North Meath	Stefanini, B. & McGlynn, G.	--	€ 4
28	2010	The Beara Peninsula	McCarron, S. & Stefanini, B.	€ 7	€ 4
E	2008	North of Ireland: Field Guide (QRA & IQUA)	Whitehouse, N.J., Roe, H. M., McCarron, S., & Knight, J.	€ 9	--
27	2007	Aran Islands	McCarron, S.	€ 7	€ 4

26	2006	Late Quaternary Environmental Change & Archaeology: Case Studies in the Lower Bann Valley & Belfast District	Swindles, G. (author)	--	FREE
D	2005	The Quaternary of Central Western Ireland (QRA & IQUA)	Coxon, P.	--	--
25	2003	Tyrone	McCarron, S.	--	--
24	2002	The Quaternary of Kilkenny (with particular emphasis on the Castlecomer Plateau)	Hegarty, S. (author)	--	€ 4
C	2001	Western Connemara	Coxon, P.	--	FREE
23	1999	Lower Bann & Adjacent Areas	Knight, J.	--	€ 4
22	1998	South Central Mayo	Barton, K.& Molloy, K.	€ 7	€ 4
21	1997	The Quaternary of the Irish Midlands	Mitchell, F.J.G. & Delany C.	--	€ 4
20	1996	Central Kerry	Delaney, C. & Coxon, P.	€ 7	€ 4
19	1995	North-West Donegal	Wilson, P.	€ 7	€ 4
18	1994	Burren, Co. Clare	O'Connell, M.	€ 7	€ 4
17	1994	Clare Island & Inishbofin	Coxon, P. & O'Connell, M.	€ 7	€ 4
16	1993	South Fermanagh, Northern Ireland	Hall, V.	€ 7	€ 4
15	1993	An Boirean / The Burren	Warren, W.P. & O'Connell, M.	--	€ 4
14	1991	North Mayo	Coxon, P., Browne, P., Condit, T., Gibbons, M., Hannon, G. & Stone, J. (authors)	--	€ 4
13	1990	North Antrim & Londonderry	Wilson, P.	€ 7	€ 4
12	1989	Waterford & East Cork	Quinn, I.M., & Warren, W.P.	--	€ 4
11	1988	Connemara	O'Connell, M. & Warren, W.P.	--	€ 4
10	1987	Offaly & West Kildare	Hammond, R.F., Warren, W.P. & Daly, D.	--	€ 4
B	1986	South-East Ulster (QRA & IQUA)	McCabe, A.M. & Hirons, K.R.	--	--
9	1986	Corca Dhuibhne	William P., Warren, C.A., Lewis, I.M., Quinn, P., Woodman, R., Devoy, J., Shaw, J., Orford, J.D. & Carter, R.W.G. (authors)	--	€ 4
8	1985	Sligo & West Leitrim	Thorn, R.H.	--	€ 4
7	1984	North East Co. Donegal & North West Co. Londonderry	Wilson, P. & Carter, R.W.G.	--	€ 4
6	1983	North-West Iveragh, Kerry	Mitchell, G.F., Coxon, P. & Price, A.	--	€ 4
5	1982	A Field Guide to Clare Island, Co. Mayo	Coxon, P. (author)	--	€ 4
4	1982	The South & East Coasts of Co. Wexford	Carter, R.W.G. & Orford, J.D.	--	€ 4
3	1980	County Tyrone, Northern Ireland	Edwards, K.J.	€ 7	€ 4
2	1979	Galtees Region	Synge, F.M.	--	--
1	1978	South County Down	McCabe, A.M.	€ 7	€ 4
A	1968	Coastal Glacial Deposits in Cork, Waterford & Wexford [pre-IQUA]	Colhoun, E. Farrington, A. Mitchell, G.F. Stephens, N. Synge, F.M., Vernon, P. and Watts, W.A.	--	FREE

Available on: http://iqua.ie/publications/field-guides/ or on IQUA stand at INQUA 2019

8. WHO'S WHO IN IRISH QUATERNARY

Archaeology and Palaeontology

D**r Laura Basell**

Email: l.basell@qub.ac.uk
Archaeology and Palaeoecology, Queen's University, Belfast

I am a geoarchaeologist specialising in prehistory. My research interests focus on developing integrated interpretations of prehistoric behavioural landscapes, in order to understand cultural and technological innovation. I am interested in the role of materiality and cultural heritage in identity creation and how population migration occurs. I am particularly interested in the emergence and spread of Homo sapiens. My practical skills lie in excavation, survey and the methodological development of digital and geospatial technologies in a cultural heritage context. Through collaboration with the late Peter Woodman, I became interested in early prehistoric Ireland. I supervise two PhD students working on human-landscape interaction in Ireland during the Mesolithic and recently began work on a project looking at prehistoric land-and seascapes of the Dingle Peninsula with Dr Ben Gearey, University of Cork.

Key Publications

Basell, L., Perkins, J.&Small, J., 2019, Late Quaternary Landscape Evolution, Palaeoenvironments and Human Occupation in the North of Ireland. INQUA 2019 Field Guide ed. Quaternary Research Association, (QRA Field Guides).

Brown, A. G., Basell, L.& Farbstein, R.2017.Eels, beavers and horses: Humanniche construction in the European Late Upper Palaeolithic. Proceedings of the Prehistoric Society. p. 1-22

Brown, A. G., Basell, L. S.& Toms, P. S.2015.A stacked Late Quaternary fluvio-periglacial sequence from the Axe valley, southern England with implications for landscape evolution and Palaeolithic archaeology. Quaternary ScienceReviews.116, p. 106-1214.5.

Dr Maarten Blaauw

Email: Maarten.Blaauw@qub.ac.uk
Queen's University Belfast (UK)

I am a Senior Lecturer at the department of Archaeology and Palaeoecology, at the School of Natural and Built Environment, Queen's University Belfast. My main research lines are developing age-depth modelling approaches of sedimentary deposits dated using, mostly, radiocarbon and lately also lead-210. I developed and maintain the Bacon (Bayesian; in collaboration with Dr Christen, Mexico) and clam (classical) age-models. I also apply these age-depth models through a wide range of national and international collaborations. I teach past environmental change and my hobbies are spending time with my wife, daughter and cat, and tinkering with open-source software (Linux, R).

Key Publications

Blaauw, M., Christen, J.A., Bennett, K.D., Reimer, P.J., 2018. Double the dates and go for Bayes – impacts of model choice, dating density and quality on chronologies. Quaternary Science Reviews 188, 58-6

Blaauw, M., 2012. Out of tune: the dangers of aligning proxy archives. Quaternary Science Reviews 36, 38-49

Blaauw, M., Christen, J.A., 2011. Flexible paleoclimate age-depth models using an autoregressive gamma process. Bayesian Analysis 6, 457-474

Blaauw, M., 2010. Methods and code for 'classical' age-modelling of radiocarbon sequences. Quaternary Geochronology 5, 512-518

Aquino-López, M.A., Blaauw, M., Christen, J.A., Sanderson, N., 2018. Bayesian analysis of 210Pb dating. Journal of Agricultural, Biological, and Environmental Statistics 23, 317-333

Dr Francis Ludlow

Email: ludlowf@tcd.ie
Trinity Centre for Environmental Humanities, and Department of History, Trinity College Dublin

Francis Ludlow is Assistant Professor of Medieval Environmental History in the Department of History and Centre for Environmental Humanities, Trinity College Dublin. He has previously been a Marie Sklodowska-Curie Individual Fellow, 2016-2018, in the Department of History, Trinity College Dublin, a Postdoctoral Fellow with the Yale Climate & Energy Institute and Department of History (2013-2016), a Carson Fellow at the Rachel Carson Center for Environment and Society at LMU Munich (2013-2014), an Environmental Fellow with the Harvard University Center for the Environment, Department of History and Harvard Initiative for the Science of the Human Past (2011-2013), and a Pre- and Postdoctoral Fellow in the Trinity Long Room Hub, Trinity College Dublin (2009-2011).

Key Publications

Manning, J. G., Ludlow, F., Stine, A.R. Boos, W., Sigl, M. and Marlon, J. (2017) "Volcanic Suppression of Nile Summer Flooding Triggers Revolt and Constrains Interstate Conflict in Ancient Egypt", Nature Communications, 8, Article 900. doi: 10.1038/s41467-017-00957-y

Sigl, M., Winstrup, M., McConnell, J.R., Welten, K.C., Plunkett, G., Ludlow, F., Büntgen, U., Caffee, M., Chellman, N., Dahl-Jensen, D., Fischer, H., Kipfstuhl, S., Kostick, C., Maselli, O.J., Mekhaldi, F., Mulvaney, R., Muscheler, R., Pasteri, D.R., Pilcher, J.R., Salzer, M., Schüpbach, S., Steffensen, J.P., Vinther, B., Woodruff, T.E. (2015) "Timing and Climate Forcing of Volcanic Eruptions during the Past 2,500 years", Nature, 523, 543-549, doi:10.1038/nature14565.

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Dr Ellen O' Carroll

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Dr Ellen O Carroll is an environmental archaeologist, a licensed archaeological director, and has worked both in the commercial and research sector for over 20 years. She specialises in vegetation reconstructions and landscape dynamics through the identification and analysis of charcoal, wood, pollen and microfossil studies. She has collaborated on numerous multi-disciplinary projects including the INSTAR projects Seeing Beyond the Site and WODAN. She is currently working as a postdoctoral researcher on the European Council Funded Project FoodCult www.foodcult.eu

Key publications

OCarroll, E 2017 Structural wood and wooden artefacts, pages 459-467 in Wiggins K A place of great consequence: Archaeological excavations at King John's Castle, Limerick, 1990–8 Wordwell, Dublin

OCarroll, E. & Mitchell, F. J. G. 2017 Quantifying woodland resource usage and selection from Neolithic to post Mediaeval times in the Irish Midlands. Environmental Archaeology 22, 219-32

Reilly, E., Lyons, S., OCarroll, E., O'Donnell, L., Stuijts, I. and Corless, A., 2016. Building the towns: the interrelationship between woodland history and urban life in Viking Age Ireland. Proceedings of the European Association of Archaeologists 18th Annual meeting, Helsinki, Finland.

McClatchie, M. & OCarroll, E. 2015. Environmental Remains, Retrieval, analysis and reporting of plant macro-remains, wood, charcoal, pollen and insects from archaeological excavations, Transport Infrastructure Ireland, Dublin

Dr Ruth Plets

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Ulster University, School of Geography and Environmental Sciences, Coleraine, BT52 1SA, Northern Ireland

Ruth Plets studied Geology at Ghent University (Belgium) and Oceanography/Geophysics at the University of Southampton (UK). After a post-doc at Memorial University of Newfoundland, Ruth joined Ulster University in 2008, where she is currently a lecturer. Her research has two sides: submerged landscapes and shipwreck archaeology. What links them is her interest in using high-resolution geophysical methods for underwater research. Through seabed mapping, Ruth aims to gain a better understanding of what processes took place on the Irish continental shelf during and after the last Glacial Maximum. Ruth is also interested in the imaging and (3D) visualisation of shipwrecks.

Key publications

Late Quaternary sea-level change and evolution of Belfast Lough, Northern Ireland: new offshore evidence and implications for sea-level reconstruction. Late Quaternary sea-level change and evolution of Belfast Lough. Plets, R., Callard, L., Cooper, A., Kelley, J. T., Belknap, D., Edwards, R., Long, A., Quinn, R. & Jackson, DWT., 7 Mar 2019, (Accepted/In press) In: Journal of Quaternary Science

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Holocene Paleo-Geographic Reconstructions of the Ramore Head Area, Northern Ireland, Using Geophysical and Geotechnical Data: Paleo-Landscape Mapping and Archaeological Implications. Westley, K., Plets, R. & Quinn, R., 2014, In: Geoarchaeology: An International Journal. 29, 6, p. 411-430

Optimizing protocols for high-definition imaging of historic shipwrecks using multibeam echosounder. Westley, K., Plets, R., Quinn, R., McGonigle, C., Sacchetti, F., Dale, M., McNeary, R. & Clements, A., 1 Apr 2019, In: Archaeological and Anthropological Sciences

Characterization of buried inundated peat on seismic (Chirp) data, inferred from core information. Plets, R., Dix, J., Bastos, A. & Best, A., Oct 2007, In: Archaeological Prospection. 14, 4, p. 261-272

Prof Paula J. Reimer

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Prof Paula J. Reimer is the Director of the ^{14}CHRONO Centre for Climate, the Environment, and Chronology in the School of Natural and Built Environment, Queen's University Belfast, UK. Reimer leads the international radiocarbon calibration working group (IntCal) and is actively involved in research on carbon reservoir changes and carbon sources in sediment and soils. She is also interested in the use of stable isotopes in palaeodietary studies as a way of understanding radiocarbon reservoir effects on the accuracy of dating humans and animals subsisting on marine or freshwater resources.

Key publications

van der Sluis, L., Reimer, P., and Ogle, N., 2019, Adding Hydrogen to the Isotopic Inventory—Combining δ13C, δ15N and δ2H Stable Isotope Analysis for Palaeodietary Purposes on Archaeological Bone: Archaeometry, v. 61, p. 720-749.

Maboya, M.L., Meadows, M.E., Reimer, P.J., Backeberg, B.C., and Haberzettl, T., 2018, Late Holocene Marine Radiocarbon Reservoir Correction for the Southern and Eastern Coasts of South Africa: Radiocarbon, v. 60, p. 571-582.

Keaveney, E.M., Reimer, P.J., and Foy, R.H., 2015, Young, old, and weathered carbon-Part 1: using radiocarbon and stable isotopes to identify carbon sources in an alkaline, humic lake: Radiocarbon, v. 57, p. 407-423.

Olsen, J., Rasmussen, T.L., and Reimer, P.J., 2014, North Atlantic marine radiocarbon reservoir ages through Heinrich event H4: a new method for marine age model construction: Geological Society, London, Special Publications, v. 398.

Reimer, P.J., Bard, E., Bayliss, A., Beck, J.W., Blackwell, P.G., Ramsey, C.B., Buck, C.E., Cheng, H., Edwards, R.L., Friedrich, M., Grootes, P.M., Guilderson, T.P., Haflidason, H., Hajdas, I., Hatté, C., Heaton, T.J., Hoffmann, D.L., Hogg, A.G., Hughen, K.A., Kaiser, K.F., Kromer, B., Manning, S.W., Niu, M., Reimer, R.W., Richards, D.A., Scott, E.M., Southon, J.R., Staff, R.A., Turney, C.S.M., and Plicht, J.v.d., 2013, IntCal13 and Marine13 radiocarbon age calibration curves 0-50,000 years cal BP: Radiocarbon, v. 55, p. 1869–1887.

Dr Susann Stolze

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Susann has over 20 years of experience in paleoenvironmental research. She holds master's degrees in Biology and in Geology and received a PhD from Kiel University, Germany. Her research focuses on the reconstruction of the Neolithic vegetation dynamics, environmental changes, and human activities in the area of the Carrowkeel-Keshcorran megalithic complex, Co. Sligo. She served as consultant palynologist for archaeological agencies and worked for Aerobiology Research Laboratories Inc., Canada. In 2016, Susann joined Colorado School of Mines where she is managing the stable isotope and environmental laboratory.

Key publications

Stolze, S., Monecke, T. (2017) Holocene history of 'non-native' trees in Ireland. Review of Palaeobotany and Palynology 244, 347-355.

Taylor, K., Stolze, S., Beilman, D.W., Potito, A.P. (2017) Neolithic land-use change and associated palaeolimnological response from a small lake in northwest Ireland. The Holocene 27, 879-889.

Stolze, S., Muscheler, R., Dörfler, W., Nelle, O. (2013) Solar influence on climate variability and human development during the fourth millennium BC: Evidence from a high-resolution multi-proxy record from Templevanny Lough, County Sligo, Ireland. Quaternary Science Reviews 67, 138-159.

Stolze, S., Dörfler, W., Monecke, T., Nelle, O. (2012) Evidence for climatic variability and its impact on human development during the Neolithic from Loughmeenaghan, Co. Sligo, Ireland. Journal of Quaternary Science 27, 393-403.

Stolze, S. (2012) Environmental change and human impact during the Neolithic in the Carrowkeel-Keshcorran area: Evidence from Lough Availe. In: Stefanini, B.S. and McGlynn, G. (eds.) Roscommon and South Sligo. IQUA Field Guide No. 30, Irish Quaternary Association, Dublin, 83-90.

Prof Graeme Warren

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I am specialist in the Archaeology of Hunter-Gatherers, with my primary research mainly in the Late Glacial and early Holocene of NW Europe, especially Ireland and Britain in European context. I lead the UCD Hunter Gatherer Research Group. I have a long-standing interest in the mutually constitutive relationship between people and landscape in deep time and I co-direct a project in Glendalough focusing on the changing landscape. This includes teaching, community archaeology, heritage management and new information about an iconic Irish landscape. I am currently (2016-present) Head of the UCD School of Archaeology.

Key publications

Warren, G. M., et al. (2018). 'Little House in the Mountains? A small Mesolithic structure from the Cairngorm Mountains, Scotland.' Journal of Archaeological Science: Reports 18: 936-945.

Warren, G.M. (2017). The Human Colonisation of Ireland in Northwest European Context. In Coxon, P et al. (eds) Advances in Irish Quaternary Studies. Paris, Atlantis Press: 293-316

Finlayson, B. & Warren, G.M. (eds) (2017) The Diversity of Hunter Gatherer Pasts. Oxbow.

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I am a Research Associate in GIS & Remote Sensing at Ulster University, having previously been a post-doc at Memorial University Newfoundland. My research in Ireland has broadly focused on investigating the impact of coastal/marine processes on the archaeological record through application of GIS, remote sensing and field survey. Key themes are:

1. Investigating submerged Quaternary palaeo-landscapes and prehistoric archaeology.
2. Assessing the impact of sea-level rise and erosion on coastal archaeology.

Highlights include systematic investigation of a submerged Irish Mesolithic site, palaeo-geographic reconstructions of varying complexity for the Irish shelf, and archaeological vulnerability assessments of Northern Ireland's coast.

Key publications

Westley K., Plets R. & Quinn R. (2014). Holocene palaeo-geographic reconstructions of the Ramore Head area, Northern Ireland, using geophysical and geotechnical data: palaeo-landscape mapping and archaeological implications. Geoarchaeology: An International Journal 29(6):411-430.

Westley K. & McNeary R. (2014). Assessing the impact of coastal erosion on archaeological sites: a case study from Northern Ireland. Conservation and Management of Archaeological Sites 16(3):185-211.

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Caves, Lakes and Hydrology

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Catherine Dalton is a Lecturer in Environmental Geography in Limerick. Her research concentrates on aquatic sediments from headwaters to coastal zones using multi-proxy reconstructions of past environments (Anthropocene and Holocene timescales) with a key focus on diatoms. Catherine is Chair of the Irish Quaternary Association (IQUA) (http://www.iqua.ie/) (2014+), Director of the Maigue Rivers Trust (2016+) and was Vice-Chair of the International Paleolimnology Association (paleolim.org/) (2014-2018).

Key Publications

Dalton, C. 2018. Natural capital: An inventory of Irish lakes. Irish Geography, 51(1), 75–92.

Dalton C, Sparber K, de Eyto E 2018. Assessing sedimentation in a temperate dystrophic lake in the NE Atlantic seaboard region. Journal of Paleolimology 60(2): 117–131.

Dalton, C., Jennings, E., O'Dwyer, B.,Taylor, D. 2016. Integrating observed, inferred and simulated data to illuminate environmental change: a limnological case study. In Biology and Environment: Proceedings of the Royal Irish Academy (Vol. 116, No. 3, pp. 279-294).

Sparber, K., Dalton, C. de Eyto, E., Jennings, E., Lenihan, D. & Cassina F. 2015. Contrasting pelagic plankton in temperate Irish lakes: the relative contribution of hetero-, mixo- and autotrophic components, and the effects of extreme rainfall events. Inland Waters 5: 295310.

Dalton, C, O'Dwyer, B, Taylor, D, de Eyto, E, Jennings, E, Chen, G, Poole, R, Dillane, M. McGinnity P. 2014. Anthropocene environmental change in an internationally important oligotrophic catchment on the Atlantic seaboard of western Europe. Anthropocene 5: 9–21.

Dr Haleh Karbala Ali

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Postdoctoral Researcher at Dublin Institute of Advanced Studies (DIAS)

Haleh is a postdoctoral researcher working in the iCRAG Geohazards Research Spoke under the supervision of Prof Chris Bean from Dublin Institute for Advanced Studies (DIAS). Prior to joining DIAS, Haleh worked for five years as seismic data interpreter at National Iranian Oil Company (NIOC). Transport Infrastructure Ireland has stated a primary need to identify fluid transport conduits in karst and how karst properties change through the season. Haleh's research focusses on developing innovative ways to track changes of water flow with time in karst using passive seismic data.

Key Publications

Karbalaali, H., Javaherian, A., Qayyum, F., de Groot. P., Dahlke, S. and Torabi, S., 2018, Identification of shallow geohazard channels based on seismic attributes in the South Caspian Sea, Geophysics, 83(6), 317- 322.

Karbalaali, H., Javaherian, A., Reisenhofer, R., Dahlke, S. and Torabi, S., 2018, Seismic channel edge detection using 3D shearlets – A study on synthetic and real channelized 3D seismic data, Geophysical Prospecting, 66 (7), 1272- 1289.

Karbalaali, H., Javaherian, A., Torabi, S. and Dahlke, S., 2017, Channel boundary detection based on 2D shearlet transformation: An application to the seismic data in the south Caspian Sea, Journal of Applied Geophysics, 146, 67- 79.

Karbalaali, H., Javaherian, A., Dahlke, S. and Torabi, S., 2017, Channel edge detection using 2D complex shearlet transform: A case study from the South Caspian Sea, Exploration Geophysics, A- I.

Prof Frank McDermott

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Frank joined the School of Geological Sciences (now Earth Sciences) at University College Dublin in 1993 where he is now Professor of Geochemistry. He has broad research broad interests that include aqueous and low-temperature geochemistry, isotope geology, U-series dating and late Quaternary palaeoclimate reconstruction, with an emphasis on speleothem records. He is an associate editor and member of the Editorial Board for the journal Geochimica et Cosmochimica Acta.

Key publications

Fankhauser, A., McDermott, F. & Fleitmann, D. (2016) Episodic speleothem deposition tracks the terrestrial impact of millennial-scale last glacial climate variability in SW Ireland. Quat. Sci. Rev. 152, 104-117.

McDermott, F. et al. (1999) Holocene climate variability in Europe: Evidence from $\delta^{18}O$, textural and extension-rate variations in three speleothems. Quat. Sci. Rev. 18, 1021-1038.

McDermott, F., 2004. Palaeo-climate reconstructions from stable isotope variations in speleothems: a review. Quat. Sci. Rev. 23, 901-918.

Baldini, L., McDermott, F., Baldini, J., Arias, P., Cueto, M., Fairchild, I., Hoffmann, D. Mattey, D., Muller, W., Constantin Nita, D., Ontanon, R., Garcia-Monco, C. and Richards, D. (2015) Regional temperature, atmospheric circulation, and sea ice variability within the Younger Dryas Event constrained using a speleothem from northern Iberia. *Earth and Planetary Science Letters* 419, 101-110.

McDermott, F., Atkinson, T.C., Fairchild, I.J., Baldini, L.M. and Mattey, D.P (2011) A first evaluation of the spatial gradients in $\delta^{18}O$ recorded by European Holocene speleothems. *Global and Planetary Change 79, 3-4, 275-287.* DOI:10.1016/j.gloplacha.2011.01.005

Dr Yvonne McElarney

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Yvonne McElarney is a Freshwater Ecologist with an interest in applied ecology. She received her PhD from Ulster University and has worked for environmental consultancies, The Woodland Trust, the Northern Ireland Environment Agency and is currently employed by The Agri-Food and Biosciences Institute, Belfast. Her research is focused on using long term monitoring to inform the management of freshwater resources. Recent work involves the use of sediment cores from Lough Neagh to predict timescales of water quality recovery from internal loading of phosphorus.

Key publications

Arkhipova, K., T. Skvortsov, J. P. Quinn, J. W. McGrath, C. C. R. Allen, B. E. Dutilh, Y. McElarney, and L. A. Kulakov. 2018. Temporal dynamics of uncultured viruses: a new dimension in viral diversity. ISME Journal 12:199-211.

Elliott, J. A., Y. R. McElarney, and M. Allen. 2016. The past and future of phytoplankton in the UK's largest lake, Lough Neagh. Ecological Indicators 68:142-149.

Stevenson, M. A., S. McGowan, N. J. Anderson, R. H. Foy, P. R. Leavitt, Y. R. McElarney, D. R. Engstrom, and S. Pla-Rabes. 2016. Impacts of forestry planting on primary production in upland lakes from north-west Ireland. Global Change Biology 22:1490-1504.

Dr Aaron Potito

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School pf Geography & archaeology, National University of Ireland Galway

My research focuses on the use of lake sedimentary records, especially chironomid (non-biting midge) sub-fossils, to reconstruct past environments. Current research in Ireland includes temperature reconstructions of late Pleistocene and Holocene climates, assessment of historic and pre-historic human impacts on lake systems, and impacts of recent climate change on lake ecosystems. I am a Senior Lecturer in Geography at National University of Ireland Galway, and a member of the Palaeoenvironmental Research Unit, a collaborative research unit at NUI Galway that focuses on long-term climate change and human-environment interactions.

Key publications

Potito, A.P., C.A. Woodward, M. McKeown, and D.W. Beilman (2014) Modern influences on chironomid distribution in western Ireland: potential for palaeoenvironmental reconstruction. *Journal of Paleolimnology* 52: 395-404.

McKeown, M. and A.P. Potito (2016) Assessing recent climatic and human influences on chironomid communities from two moderately impacted lakes in western Ireland. *Hydrobiologia* 765: 245-263.

Taylor, K.J., A.P. Potito, D.W. Beilman, B. Ghilardi and M. O'Connell (2017) Impact of early prehistoric farming on chironomid communities in northwest Ireland. *Journal of Paleolimnology* 57: 227-244.

Chique, C., A.P. Potito, K. Molloy and J. Cornett (2018) Tracking recent human impacts on a nutrient sensitive Irish lake: integrating landscape to water linkages. *Hydrobiologia* 807: 207-231.

Dr Mike Simms

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Senior Curator of Natural Sciences at National Museums Northern Ireland

Responsible for the National Museum NI's geology collections and for exhibitions on many aspects of natural sciences. Research interests linked to the Quaternary include landscape evolution in Britain and Ireland, and karst landscapes, caves and karren. Broader interests beyond the Quaternary encompass Mesozoic stratigraphy, palaeoenvironments and palaeontology; meteorites and impact structures; and lichens as habitat indicators.

Key publications

Simms, M.J. and Coxon, P. 2016. The pre-Quaternary landscape of Ireland. Pp. 19-42 in P. Coxon, S.McCarron, F.Mitchell (eds), Advances in Irish Quaternary Studies. Atlantis Advances in Quaternary Science, Atlantis Press, Springer.

Simms, M.J. and Farrant, A.R. 2011. Landscape evolution in south-east Wales: Evidence from aquifer geometry and surface topography associated with the Ogof Draenen cave system. Cave and Karst Science, 38, 7-16.

Simms, M.J. and Hunt, J.B. 2008. Flow capture and reversal in the Agen Allwedd entrance series, south Wales: Evidence for glacial flooding and impoundment.

Cave and Karst Science, 34, 69-76.

Simms, M.J. 2005. Glacial and karst landscapes of the Gort lowlands and Burren. Pp. 39-63 in Coxon, P. (ed), The Quaternary of central western Ireland: Field Guide, Quaternary Research Association, London.

Simms, M.J. 2004. Tortoises and Hares: dissolution, erosion and isostasy in landscape evolution. Earth *Surface Processes and Landforms*, **29**, 477-494.

Dr Karen Taylor

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My research focuses on the application of palaeolimnological techniques to the field of environmental archaeology and palaeoclimatic reconstruction. My MLitt and PhD research explored the utility and performance of species-specific chironomid (non-biting midge) subfossil analysis combined with pollen and geochemical indicators, in the investigation of prehistoric farming impacts on freshwater lake systems. I also created the first mid to late Holocene chironomid-inferred temperature record for Ireland, providing a valuable climatic context for the development of prehistoric Irish society. My PhD research was funded by the Irish Research Council for Science, Engineering and Technology (IRCSET) and the Hardiman Research Scholarship (NUIG).

Key publications

Taylor KJ, McGinley S, Potito AP, Molloy K, Beilman DW (2018) A mid to late Holocene chironomid-inferred temperature record from northwest Ireland. *Palaeogeography, Palaeoclimatology, Palaeoecology* 505, 274-286

McGinley S, Taylor KJ (2017) Insights into past environmental and cultural change in Glencolmcille, in: OCarroll E, McClure M (Eds.), South West Donegal, Field Guide No. 34. Irish Quaternary Association (IQUA)

Taylor KJ, Potito AP, Beilman DW, Ghilardi B, O'Connell M (2017) Impact of early prehistoric farming on chironomid communities in northwest Ireland. *Journal of Paleolimnology* 57, 227-244

Taylor KJ, Stolze S, Beilman DW, Potito AP (2017) Response of chironomids to Neolithic land-use change in north-west Ireland. *The Holocene* 27, 879-88

Taylor KJ, Potito AP, Beilman DW, Ghilardi B, O'Connell M (2013) Palaeolimnological impacts of early prehistoric farming at Lough Dargan, County Sligo, Ireland. *Journal of Archaeological Science* 40, 3212-322

Coastal and Marine Processes

Dr Sara Benetti

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A marine geoscientist, with an interest in sedimentary processes and geomorphology, I have been lucky enough to gain experience in marine research through my studies and research at the National Oceanography Centre (UK), Woods Hole Oceanographic

Institution (USA), Bedford Institute of Oceanography (Canada), British Antarctic Survey (UK) and the Advanced Mapping Section at the Marine Institute of Ireland. I work with marine sediment cores, multibeam echo-sounder bathymetric and backscatter and sub-bottom data. The bulk of my current research is on the reconstruction of the extent and dynamics of the British-Irish Ice Sheet (BIIS) using geophysical and sedimentological datasets (BRITICE-CHRONO and GLANAM). More recently, I obtained funding from the European Commission for the investigation of the submarine record of volcanic eruptions in the Strait of Sicily in the Mediterranean Sea through the PANTHER project.

Key Publications

Callard L., Ó Cofaigh C., Benetti S., Chiverrell R., et al. (2018). Extent and retreat history of the Barra Fan Ice Stream offshore western Scotland and northern Ireland during the last glaciation. Quaternary Science Reviews, 201, pp. 280-302. 10.1016/j.quascirev.2018.10.002.

Small D., Benetti S., Dove D., Ballantyne C.K., Fabel D., Clark C.D., Gheorghiu D.M., Newall J., Xu S. (2017). Cosmogenic exposure age constraints on deglaciation and flow behaviour of a marine-based ice stream in western Scotland, 21-16 ka. Quaternary Science Reviews, 167, pp. 30-46. doi:10.1016/j.quascirev.2017.04.021 10.1016/j.quascirev.2017.04.021

Peters J., Benetti S., Dunlop P., Ó Cofaigh C. (2015). Maximum extent and dynamic behaviour of the last British- Irish Ice Sheet west of Ireland. Quaternary Science Reviews, 128. Pp. 48-68 10.1016/j.quascirev.2015.09.015

Sacchetti F., Benetti S., Georgiopoulou A., Shannon P.M., Haughton P.D.W., O'Reilly B.M., Dunlop P., Quinn R. and Ó Cofaigh, C. (2012). Deep water geomorphology of the glaciated Irish margin from high-resolution marine geophysical data. Marine Geology, 291-294: 113-131. 10.1016/j.margeo.2011.11.011

Benetti, S., Dunlop, P., and Ó Cofaigh, C. (2010). Glacial and glacially-related geomorphology of the north-west Irish continental margin. Journal of Maps v2010, 30-39. 10.4113/jom.2010.1093.

Dr Helene Burningham

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Helene is Associate Professor in Physical Geography at UCL Department of Geography, where she co-directs the Coastal and Estuarine Research Unit. She has over 20 years experience as a geomorphologist with particular interests in coastal system dynamics and geospatial analysis. Helene has been undertaking coastal research in west Donegal since the late 1990s, and has published several papers explaining the decadal to century scale behaviour and dynamics of coastal systems in northwest Ireland. More recently, working with several research students and the National Parks and Wildlife Service, her work has expanded to incorporate coastal ecologies, using proxies to understand coastal change over longer timescales, and exploring the complexity of, and controls on modern coastal biodiversity through several monitoring and surveying activities at the internationally important Sheskinmore Nature Reserve site.

Key Publications

Burningham, H. (2008). Contrasting geomorphic response to structural control: The Loughros estuaries, northwest Ireland. Geomorphology 97(3-4), 300-320

Burningham, H. (2005). Morphodynamic Behaviour of a High-Energy Coastal Inlet: Loughros Beg, Donegal, Ireland. In FitzGerald, D.M., Knight, J. (Eds.). High Resolution Morphodynamics and Sedimentary Evolution of Estuaries, Dordrecht: Springer, pp.215-242.

Knight, J., Burningham, H. (2015). The geomorphology of Gola, northwest Ireland. Irish Journal of Earth Sciences 33, 55-70.

Varandas Martins, S., Burningham, H. and Pinto-Cruz, C. (2018). Climate variability impacts on coastal dune slack ecohydrology. Irish Geography, 51 (2). Gardner, E., Burningham, H. and Thompson, J.R. (2019). Impacts of climate change and hydrological management on a coastal lake and wetland system. Irish Geography, in press.

Prof Andrew Cooper

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School of Geography and Environmental Sciences
Ulster University, Northern Ireland

I am an earth scientist with a particular interest in coastal geomorphology and coastal evolution at decadal to millennial timescales. I research the record of sea-level change and the geomorphological response of the coast to various driving forces including sea-level change, storms, wave and current action, and their interactions and feedbacks. In Ireland I have worked on contemporary and Quaternary coastal sediments and applied this knowledge to inform future climate change adaptation options.

Key publications

Cooper, J.A.G. (Editor) 2011. Lough Swilly: a living Landscape. Four Courts Press, Dublin. 206pp. ISBN 978–184682–307–7.

Cooper, J.A.G., Jackson, D.W.T., Navas, F., McKenna, J. and Malvarez, G. 2004. Identifying storm impacts on an embayed, high energy coastline: western Ireland. Marine Geology, 210, 261-280.

McCabe, A.M., Cooper, J.A.G. and Kelley, J.T. 2007. Relative sea level changes from NE Ireland during the Last Glacial Termination. Journal of the Geological Society of London, 164, 1059-1063.

O'Connor, M., Cooper, J.A.G. and Jackson, D.W.T. 2011. Decadal behaviour of tidal inlet-associated beach systems, northwest Ireland, in relation to climate forcing. Journal of Sedimentary Research, 81, 38-51.

Plets, R.M.K., Callard, S.L., Cooper, J.A.G., Long, A.J., Quinn, R.J., Belknap, D.F., Edwards, R.J., Jackson, D.W.T., Kelley, J.T. Long, D., Milne, G.A. and Monteys, X. 2015 Late Quaternary evolution and sea-level history of a glaciated marine embayment, Bantry Bay, SW Ireland. Marine Geology, 369, 251-272

Dr Kieran Craven

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Geological Survey of Ireland

Kieran is a Quaternary geoscientist working for Geological Survey Ireland on the CHERISH project. He is responsible for the investigation, analysis and presentation of coastal mapping sites in Ireland and Wales using UAV photogrammetry, terrestrial laser scanning and seabed bathymetric surveying. CHERISH sites are focussed in five locations across counties Dublin, Wexford, Waterford and Kerry.

Kieran graduated with a BSc in Geoscience and Environmental Biology from the University of St Andrews in 2006. Following a period in industry, he completed his PhD in Geology from Trinity College Dublin in 2013 investigating the impacts of sea-level rise on coastal environments. Kieran has in both Trinity College Dublin and Maynooth University on the impacts of the last glacial maximum to Quaternary sediments in marine environments. His most recent work using acoustic technologies to interpret seabed and subsurface environments was affiliated with the INFOMAR programme of the Geological Survey.

Key publications

McCarron, S., Praeg, D., Ó Cofaigh, C., Monteys, X., Thébaudeau, B., Craven, K.F., Saqab, M.M., Cova, A., (2018). A Plio-Pleistocene sediment wedge on the continental shelf west of central Ireland: The Connemara Fan. Marine Geology, 399, 97–114

Edwards, R.J., Craven, K.F. (2017) Relative sea-level change around the Irish coast in Coxon, P., McCarron, S. (eds) Advances in Quaternary Science: The Irish Quaternary. Atlantis Press, pp 181-215.

Craven, K.F., Edwards, R.J., Flood, R.P. (2017) Source organic matter analysis of sediments using the Bayesian mixing model package SIAR. Boreas, 46: 642-654.

Craven, K.F., Edwards, R.J., Goodhue, R., Rocha, C. (2013) Evaluating the influence of selected acid pre-treatment methods on C/N and δ13C of temperate inter-tidal sediments for relative sea level reconstruction. Irish Journal of Earth Science, 31: 25-42

Prof Robert J.N. Devoy

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Retired Staff, Department of Geography, UCC & The Marine & Renewable Energy Institute (MaREI), UCC

Professor of Physical Geography (Emeritus), University College Cork, with an international career spanning over 40 years. A lead author in the Intergovernmental Panel on Climate Change (IPCC) AR4. Also, Head of the School of Geography, Archaeology and Planning in UCC. Also, founder and Director of the Coastal & Marine Research Centre, now MaREI. Research interests include those of the coastal and Quaternary sciences, concerned most with the study of sea-level changes and palaeoenvironmental records, as applied to coastal processes, systems' functioning, modelling. Current work is on issues of tsunami and storminess impacts, as well as the *Coastal Atlas of Ireland.*

Key publications

Devoy, R.J.N., 2015. Sea-level Rise: Causes, Impacts and Scenarios for Change. In, Ellis, J. T. & D. J. Sherman (eds), Coastal and Marine Hazards, Risks and Disasters. Elsevier, Amsterdam, Chp. 8, 197-242.

Devoy, R.J.N., 2015. The development and management of the Dingle Bay spit-barriers of southwest Ireland. In, Randazzo, G., Cooper, J.A.G. and Jackson, D.W. (eds), Sand and Gravel Spits. Coastal Research Library 12, Springer International Publishing, Switzerland, Chp.9, 139-180. DOI 10.1007/978-3-319-13716-2_9.

Delaney, C.A, Devoy, R.J.N. and Jennings, S.A., 2012. Mid- to Late Holocene Relative Sea-level and Sedimentary Changes On European Atlantic Coasts: Evidence from Castlemaine Harbour, Southwest Ireland. In, P.J. Duffy, D. Butler & P. Nugent (eds), Festschrift For Professor William J. Smyth. Geography Publications, Dublin, pp. 697-746.

Roe, H. M., Coope, G. R., Devoy, R. J. N., Harrison, C. J. O., Penkman, K. E. H., Preece, R. C. and Schreve, D. C., 2009. Differentiation of MIS 9 and MIS 11 in the continental record: vegetational, faunal, aminostratigraphic and sea-level evidence from coastal sites in Essex, UK. Quaternary Science Reviews, 28, 2342-2373, doi:10.1016/j.quascirev.2009.04.017.

Cronin, A., Devoy, R., Bartlett, D., Nuyts, S. and O'Dwyer, B. (2018) 'Investigation of an Elevated Sands Unit at Tralispean Bay, South-West Ireland – Potential High-Energy Marine Event'. Irish Geography, 51(2), 229–260, DOI: 10.2014/igj.v51i2.1373

Dr Eugene Farrell

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Dr Eugene J. Farrell (@DoctorDune) is a fulltime, permanent Lecturer and Researcher in the Discipline of Geography in National University Ireland Galway. His research background is in physical geography, with a focus on process geomorphology in coastal nearshore-beach-dune environments. His primary research programme examines the response and recovery of coastal systems to short-term (storms) & long-term pressures (climate change) & development of adaptation management strategies for communities. He uses innovative UAV-based (drone) & Earth Observation (ESA, Copernicus) remote sensing techniques to monitor coastal dynamics.

Key publications

Farrell, E.J. and Bourke, M., 2019. The future geomorphic landscape in Ireland. Irish Geography.

Farrell, E.F. and Connolly, N., 2019. Historic and contemporary dune inventories to assess dune vulnerability to climate change impacts. Irish Geography.

Jackson, N.L., Nordstrom, K.F., Farrell, E.J., 2017. Longshore sediment transport and foreshore change in the swash zone of an estuarine beach. Marine Geology.

Kandrot, S., Farrell, E.F., and Devoy, R.J.N., 2016. The morphological response of foredunes at a breached barrier system to winter 2013/2014 storms on the southwest coast of Ireland. Earth Surface Processes and Landforms.

Nordstrom K.F., Jackson N.L., Farrell E.J., Rafferty P., and Tengwall, C., 2016. Restoring Sediment to Compensate for Erosion of an Estuarine Shore. Geomorphology

Dr Rory Flood

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Queen's University Belfast

I am a Coastal Geomorphologist and I am interested in the analysis and study of coastal landforms and landscapes and how these have changed over the course of the Holocene. My research has examined the evolution of the late Holocene (c. last 4,000 years) Ganges-Brahmaputra Delta, focussing on sedimentary provenance and depositional processes. I utilise geochemistry (e.g., XRF, XRD), sedimentology, and statistical modelling to understanding sedimentary dynamics.

Key publications

Flood, R.P., Barr, I.D., Weltje, G.J., Roberson, S., Russell, M.I., Meneely, J., Orford, J.D., 2018. Provenance and depositional variability of the Thin Mud Facies in the lower Ganges-Brahmaputra delta, West Bengal Sundarbans, India. Marine Geology 395, pp. 198–218. doi: https://doi.org/10.1016/j.margeo.2017.09.001

Craven, K.F., Edwards, R.J., Flood, R.P., 2017. Source organic matter analysis of saltmarsh sediments using SIAR and its application in relative sea-level studies in regions of C4 plant invasion. Boreas. doi: http://dx.doi.org/10.1111/bor.12245

Barr, I.D., Roberson, S., Flood, R., Dortch, J., 2017. Younger Dryas Glaciers and climate in the Mourne Mountains, Northern Ireland. Journal of Quaternary Science 32, pp. 104–115. doi: http://dx.doi.org/10.1002/jqs.2927

Flood, R.P., Bloemsma, M.R., Weltje, G.J., Barr, I.D., Orford, J.D., O'Rourke, S.M., Turner, J.N., 2016. Compositional data analysis of Holocene sediments from the West Bengal Sundarbans, India: geochemical proxies for grain-size variability in a delta environment. Applied Geochemistry 75, pp. 222–235. doi: http://dx.doi.org/10.1016/j.apgeochem.2016.06.006

Blake, S., Henry, T., Murray, J., Flood, R., Muller, M, R., Jones, A. G., Rath, V., 2016. Investigating the provenance of thermal groundwater using compositional multivariate statistical analysis: a hydrogeochemical case study from Ireland. Applied Geochemistry 75, pp. 171–188. doi: http://dx.doi.org/10.1016/j.apgeochem.2016.05.008

Dr Aggeliki Georgiopoulou

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I studied Geology at the University of Patras, Greece and then did a MSc in Oceanography and a PhD in Marine Geology at the National Oceanography Centre, Southampton. For my first postdoc I worked on industry 3D seismic and well data at the 3DLab of Cardiff University. In 2009 I moved to University College Dublin. During my 9+ years in Ireland I worked a lot on the marine sedimentary record of the British Irish Ice Sheet and on submarine geohazards and sedimentary processes in Irish waters and further across the world, in the Mediterranean, the Pacific and the North Atlantic. I am now based at the University of Brighton, and remain active and involved in projects working on the Irish offshore.

Key publications

Georgiopoulou A, Krastel S, Finch N, Zehn K, McCarron, Huvenne VAI, Haughton PDW, Shannon PM (2018). On the timing and nature of the multiple phases of slope instability on eastern Rockall Bank, Northeast Atlantic. Submitted in Geochemistry, Geophysics, Geosystems, 20 (2), 594-613 (2018GC007674R).

Georgiopoulou A, Benetti S, Shannon PM, Haughton PDW, McCarron S (2012). Gravity flow deposits in the deep Rockall Trough, Northeast Atlantic. In: Y. Yamada, K. Kawamura, K. Ikehara, Y. Ogawa, D. Mosher, J. Chaytor, M. Strasser, (Eds), Advances in Natural and Technological Hazards Research, Submarine Mass Movements and their Consequences, 4th Edition, Springer, 695-707.

Sacchetti F, Benetti S, Ó Cofaigh C, Georgiopoulou A (2012). Geophysical evidence of deep-keeled icebergs on the Rockall Bank, Northeast Atlantic Ocean. Geomorphology, v159-160, 63-72, doi:10.1016/j.geomorph.2012.03.005

Sacchetti F, Benetti S, Georgiopoulou A, Shannon PM, O'Reilly BM, Dunlop P, Quinn R, Ó Cofaigh R (2012). Deep-water geomorphology of the formerly glaciated Irish margin from high-resolution marine geophysical data. Marine Geology, v291-294, 113-131.

Sacchetti F, Benetti S, Georgiopoulou A, Dunlop P, Quinn R (2011) Geomorphology of the Irish Rockall Trough, North Atlantic Ocean, mapped from multibeam bathymetric and backscatter data, Journal of Maps, v2011, 60-81. 10.4113/jom.2011.1157.

Cristiana Giglio

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Ulster University, Northern Ireland

Cristiana Giglio studied Geology at University of Bologna (UNIBO) and she is currently a first year PhD researcher at Ulster University. Her research project is based on the examination of ice sheet-ocean-climate interaction in two key sites across the Atlantic Ocean: the southern marine sectors of the British-Irish Ice Sheet (BIIS) and the Newfoundland Ice Sheet (NIIS). She is particularly interested in their extensions and modalities of retreat during the last glacial period, using high-resolution marine geophysical and sedimentary data from a series of submarine ridges in both continental shelves. Through this approach, Cristiana aims to testing the character and (a)synchronicity of the (de)glacial history of the two former ice sheets in order to assess the main drivers for ice sheets decay in the Late Quaternary.
Latterly, Cristiana had the opportunity to participate to the EuroFLEETS2-funded research cruise for the PANTHER project (Strait of Sicily, Mediterranean Sea).

Key publications

Giglio, C., 2017. The marine record of eruptive events off the Pantelleria island, Strait of Sicily (Mediterranean Sea). MSc thesis, Department of Biological, Geological and Environmental Sciences. Alma Mater Studiorum A.D. 1088, University of Bologna.

Dr Joseph T. Kelly
Professor of Marine Geology

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University of Maine, School of Earth and Climate Sciences

I have a long-term interest in sea-level change and became interested in Irish sea level when I first met Andrew Cooper and Derek Jackson from The University of Ulster-Coleraine. I initially brought some geophysical equipment to Northern Ireland and we began to measure the low stand of sea level off Belfast Lough: close to 30 m and not so shallow as earlier work suggested. During my 2005 sabbatical there we began to collect cores to date the low stand. These efforts have continued to a recent project focused on the low stand from the south (Bantry Bay) to Belfast Lough.

Key publications

Cooper, J.A.G., Kelley, J.T., Belknap, D.F., Quinn, R., and McKenna, J., 2002, Inner Shelf Seismic Stratigraphy off the North Coast of Ireland: New Data on the Depth of the Holocene Lowstand. Marine Geology, v. 186, p. 369-387.

Kelley, J.T., Cooper, J.A.G., Jackson, D., Belknap, D.F., and Quinn, R., 2006, Sea-level change and inner shelf stratigraphy off Northern Ireland. Marine Geology, v. 232, p. 1-15.

McCabe, A.M., Cooper, J.A. G., and Kelley, J.T., 2007, Relative Sea Level Changes From Northeastern Ireland During The Last Glacial Termination" Journal of the Geological Society v. 164, p. 1-5.

Plets, R.M.K., Callard, S.L., Cooper, J.A. G., Long, A. J., Quinn, R., Belknap, D.F., Edwards, R., Jackson, D., Kelley, J.T., Long, D., Milne, G., Monteys, X., 2015, Late Quaternary evolution and sea-level history of a glaciated marine embayment, Bantry Bay, SW Ireland. Marine Geology v. 369, p. 251-272.

Plets, R. Callard, L., Cooper, J.A. G., Kelley, J.T., Belknap, D.F., Edwards, R., Long, A.J., Quinn, R.J., Jackson, D., 2019, Late Quaternary sea-level change and evolution of Belfast Lough, Northern Ireland: new offshore evidence and implications for sea-level reconstruction. Journal of Quaternary Science (in press).

Dr Carlos Loureiro

E-mail: carlos.loureiro@stir.ac.uk
Biological and Environmental Sciences, University of Stirling, Stirling, Scotland

I am a coastal geomorphologist working in the impacts of extreme storm events, sea level rise and mesoscale coastal evolution, combining field and modelling approaches to understand process-response relationships in coastal and nearshore systems.
In 2012 I obtained my PhD in Geomorphology, developed in collaboration between the University of Algarve and Ulster University. From 2016 to 2019 I was a Marie Skłodowska-Curie Fellow at Ulster University working on nearshore morphological evolution on high-energy coasts in the Northwest of Ireland and Southern Africa, and I'm continuing that work currently as a lecturer in Physical Geography at the University of Stirling.

Key publications

Loureiro C & Cooper A (2018) Temporal variability in winter wave conditions and storminess in the northwest of Ireland. Irish Geography, 51 (2).
Cooper JAG, Green AN & Loureiro C (2018) Geological constraints on mesoscale coastal barrier behaviour. Global and Planetary Change, 168, pp. 15-34.
Pacheco A, Horta J, Loureiro C & Ferreira Ó (2015) Retrieval of nearshore bathymetry from Landsat 8 images: A tool for coastal monitoring in shallow waters. Remote Sensing of Environment, 159, pp. 102-116
Loureiro, C., Ferreira, O., Cooper, J.A.G., 2012. Extreme erosion on high-energy embayed beaches: Influence of megarips and storm grouping. Geomorphology, 139-140, 155-171.
Loureiro, C., Ferreira, O., Cooper, J.A.G., 2012. Geologically constrained morphological variability and boundary effects on embayed beaches. Marine Geology, 329, 1-15

Dr Denise McCullagh

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School of Geography and Environmental Sciences, Ulster University, Northern Ireland

Denise studied Geography, Archaeology and Palaeoecology at Queens University, Belfast, before completing a PhD in Marine Geology in 2019, at Ulster University, Coleraine. Her research focused on the palaeoenvironmental evolution of Galway Bay, Western Ireland, from the last glacial maximum until present day. This research involved a multiproxy examination of geophysical data and sediment cores. The key elements of this research involved environmental and relative sea-level reconstructions as well as geomorphological mapping, allowing a better understanding of the processes that have shaped Galway Bay.

Key publications

McCullagh, D., Benetti, S., Plets, R., Sacchetti, F., O'Keeffe, E. and Lyons, K. (in prep) Coastline and inshore geomorphology of Galway Bay, Western Ireland. Journal of Maps

Dr Fabio Sacchetti

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Marine Institute. Galway. Ireland
www.infomar.ie

Over the past 15 years I have built my professional career around the field of hydrographic and geophysical mapping and I am currently one of the project managers of INFOMAR, the Irish National Seabed Mapping Programme. During the past 8 years I have also being actively involved with the Irish Quaternary research community on numerous projects spanning from glacial processes, modern marine processes and coastal to deep sea geomorphology. PhD in marine science at Ulster University – School of Environmental Sciences. Project: Late Quaternary sedimentation associated with the British-Irish Ice Sheet on the NW Irish continental slope: a marine geological and geophysical investigation.

Key publications

Westley K., Plets R., Quinn R., McGonigle C., Sacchetti F., Dale M., McNeary R., Clements A.. 2019 Optimizing protocols for high-definition imaging of shipwrecks using multibeam echosounder. Archaeological and Anthropological Sciences. https://doi.org/10.1007/s12520-019-00831-6

Sacchetti, F., Benetti, S., Quinn, R., Ó Cofaigh, C., 2013. Glacial and post-glacial sedimentary processes in the Irish Rockall Trough from an integrated acoustic analysis of near-seabed sediments. Geomarine Letters. Volume 33, Issue 1, pp 49-66. doi:10.1007/s00367---012---0310---2.

Sacchetti, F., Benetti, S., O'Cofaigh, C., Georgiopoulou, A., 2012. Geophysical evidence of deep-keeled icebergs on the Rockall Bank, Northeast Atlantic Ocean. Geomorphology. 159-160, 63-72. doi:10.1016/j.geomorph.2012.03.005

Sacchetti, F., Benetti, S., Georgiopoulou, A., Shannon, P.M., O'Reilly, B.M., Dunlop, P., Quinn, R., O'Cofaigh, C., 2012. Deep-water geomorphology of the glaciated Irish margin from high-resolution marine geophysical data. Marine Geology, 291-294(0), 113-131. doi:10.1016/j.margeo.2011.11.011.

Sacchetti, F., Benetti, S., Georgiopoulou, A., Dunlop, P., Quinn, R., 2011. Geomorphology of the Irish Rockall Trough, North Atlantic Ocean, mapped from multibeam bathymetric and backscatter data. Journal of Maps, 2011, 60-81. doi:10.4113/jom.2011.1157

Dr Benjamin Thébaudeau

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Joyce Country and Western Lakes Geopark Project
Tionscadal Gheopháirc Dhúiche Sheoigeach agus Lochanna an Iarthair

Benjamin has been the geologist for the aspiring Joyce County and Western Lakes geopark project based in the western Irish counties of Mayo and Galway for the last year. Originally from France but based in Ireland since 2017, he has worked in both private and public sector (universities and GSI) in Archaeology, Geology and GIS education and has led two marine scientific missions in Irish coastal waters for his research. He has been the secretary of IQUA since 2016 and his research interests lie in outreach and education, heritage management, glacial geomorphology and map development.

Key publications

ébaudeau, Benjamin, Alan S. Trenhaile, and Robin J. Edwards. "Modelling the development of rocky shoreline profiles along the northern coast of Ireland." Geomorphology 203 (2013): 66-78.

Thébaudeau, B., Monteys, X., McCarron, S., O'Toole, R., & Caloca, S. (2016). Seabed geomorphology of the Porcupine Bank, West of Ireland. Journal of Maps, 12(5), 947-958.

Thébaudeau, Benjamin. "Geophysical Exploration for Offshore Evidence of Relict Shorelines on the Northern Coast of Ireland." PhD diss., Trinity College Dublin, 2014.

McCarron, S., Praeg, D., Ó Cofaigh, C., Monteys, X., Thébaudeau, B., Craven, K., Saqab, M.M., and Cova A., 2018. A Plio-Pleistocene Sediment Wedge on the Continental Shelf West of Central Ireland: The Connemara Fan. Marine Geology, 399: 97–114.

Dr Katrien Van Landeghem

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School of Ocean Sciences, Bangor University (UK)

I lecture in marine geology at Bangor University. My slight obsession with the bed morphology of the Irish Sea started during my PhD project in University College Cork. The Irish Sea is perfect for my studies of sediment transport and bedform dynamics, more particularly the formation of amplified sediment waves, enhanced sediment mobility around seafloor objects and its link to sustainable management of engineering projects. Its seabed also details past glacial dynamics and I reconstruct the demise of the marine-terminating ice stream it hosted. This also links to understanding seabed habitat suitability on exposed seafloor when glaciers have retreated.

Key publications

Van Landeghem, KJ, Wheeler, AJ & Mitchell, NC 2009, 'Seafloor evidence for palaeo-ice streaming and calving of the grounded Irish Sea Ice Stream: Implications for the interpretation of its final deglaciation phase.', Boreas, vol. 38, no. 1, pp. 119-131. https://doi.org/10.1111/j.1502-3885.2008.00041.x

Van Landeghem, KJ, Uehara, K, Wheeler, AJ, Mitchell, NC & Scourse, JD 2009, 'Post-glacial sediment dynamics in the Irish Sea and sediment wave morphology: Data-model comparisons.', Continental Shelf Research, vol. 29, no. 14, pp. 1723-1736. https://doi.org/10.1016/j.csr.2009.05.014

Chiverrell, RC, Thrasher, IM, Thomas, GS, Lang, A, Scourse, JD, Van Landeghem, KJ, Mccarroll, D, Clark, CD, Ó Cofaigh, C, Evans, DJ & Ballantyne, CK 2013, 'Bayesian modelling the retreat of the Irish Sea Ice Stream', Journal of Quaternary Science, vol. 28, no. 2, pp. 200-209. https://doi.org/10.1002/jqs.2616

Lockhart, E, Scourse, J, Praeg, D, Van Landeghem, K, Mellett, C, Saher, M, Callard, SL, Chiverrell, RC, Benetti, S, Ó Cofaigh, C & Clark, CD 2018, 'A stratigraphic investigation of the Celtic Sea megaridges based on seismic and core data from the Irish-UK sectors.', Quaternary Science Reviews, vol. 198, pp. 156-170. https://doi.org/10.1016/j.quascirev.2018.08.029

Scourse, J, Saher, M, Van Landeghem, K, Lockhart, E, Purcell, C, Callard, SL, Roseby, Z, Allison, B, Pieńkowski, A, Ó Cofaigh, C, Praeg, D, Ward, S, Chiverrell, RC, Moreton, S, Fabel, D & Clark, C 2019, 'Advance and retreat of the marine-terminating Irish Sea Ice Stream into the Celtic Sea during the Last Glacial: Timing and maximum extent', Marine Geology, vol. 412, pp. 53-68. https://doi.org/10.1016/j.margeo.2019.03.003

Prof Andy Wheeler

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Head of School of Biological, Earth & Environmental Sciences, Professor of Geology, University College Cork

PI, Irish Centre for Research in Applied Geosciences
FI, Marine & Renewable Energy Institute
FI, Environmental Research Institute

Professor Wheeler holds the Chair of Geology, is the Head of the School of Biological, Earth and Environmental Sciences in University College Cork and Marine Research Challenge co-lead in €22m Irish Research Centre for Applied Geosciences (iCRAG) (co-awardee). He is a marine geologist and world expert on the geology of cold-water corals and national expert on the Quaternary and contemporary geology of Irish shelf seas (H-index of 31, highest citation Science 795 citations). He leads research surveys in deep and shallow waters (hydrographic, sampling, drilling, geophysical and ROV) with discoveries featured in Nature (News in Focus), on National Geographic TV and national/international press (TV, radio, newspapers). His TEDx presentation “A Grain of Sand” has 44,442 views (YouTube).

Key publications

Roberts, J.M, Wheeler, A.J., Freiwald, A., Cairns, S. (2009) Cold-Water Corals: The Biology and Geology of Deep-Sea Coral Habitats. Cambridge: Cambridge University Press, pp.334.

Roberts, J.M., A.J. Wheeler, A. Freiwald (2006) 'Reefs of the deep: the biology and geology of cold-water coral ecosystems'. Science, 312:543-547

Conti, L.A, Lim., A. & Wheeler, A.J. (2019). High resolution mapping of a cold-water coral mound. Nature Scientific Reports, 9, 1016 https://doi.org/10.1038/s41598-018-37725-x

Wheeler, A.J., Beyer, A., Freiwald, A., de Haas, H., Huvenne, V.A.I., Kozachenko, M., Olu-Le Roy, K. & Opderbecke, J. (2007) 'Morphology and Environment of Cold-water Coral Carbonate Mounds on the NW European Margin'. International Journal of Earth Science, 96, 37-56

Thierens, M., Pirlet, H., Colin, C., Latruwe, K., Vanhaecke, F., Lee, J., Stuut, J.-B., Titschack, J., Huvenne, V., Dorschel, B., Wheeler, A.J., Henriet, J.-P. (2012) Ice-rafting from the British-Irish ice sheet since the earliest Pleistocene (2.6 million years ago): implications for long-term mid-latitudinal ice-sheet growth in the North Atlantic region. Quaternary Science Reviews, 44, 229-240.

Geotechnical Engineering

Dr Anthony Beese

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Consulting Geologist, Carraigex Geoservices, Cork

Anthony Beese is a consulting geologist who has lived and worked in Cork for thirty-five years. After reading geology at Exeter and Hull Universities, he took up a research post at University College Cork (1981-5). He established Carraigex Ltd. in 1986, and specialised in providing consultancy in the fields of engineering geology and geoarchaeology. Two collaborative projects that he has managed in recent years are: 'The medieval reclamation of estuarine Cork' (2009-12) and 'Impact of the 1755 Lisbon earthquake-tsunami on West Cork' (2015).

Key Publications

Beese, A., 2019.Ground and groundwater conditions at Cork: Implications for the Lower Lee Flood Relief Scheme. Special Report No. 713.Save Cork City.36 pp.
Beese, A., 2014. The medieval land-claim. In: Hurley, M.F. and Brett, C. (eds). Archaeological excavations at South Main Street [Cork]2003-2005, 13-26. Cork City Council.
Beese, A., 2011. The physical landscape. In: Cleary, R.M. and Kelleher, H.(eds.). Archaeological excavations at Tullahedy, Co. Tipperary. Neolithic settlement in North Munster. The Collins Press, Cork, 115-121.

Dr C. John Butler

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Armagh Observatory

John Butler is an Emeritus Research Fellow at Armagh Observatory, Northern Ireland. His past work includes research in: Cepheid Variables in the Magellanic Clouds; Multi wave length studies of late type stars; and climate studies relating to activity in the Sun. In addition, he has standardized several of the long meteorological series recorded at Armagh Observatory over the past 220 years. He has also authored several papers on the history of astronomy.

Key Publications

Cosmic Rays, Terrestrial Clouds and Global Warming, Astron, Geophys, 41, 4. 18-4.22 (2000)
Ionization, Cosmic Rays and Clouds. J. Atmos. Sol-Terr.Phys. 66, 1779-1798, (2004)
Climate Signal in Tree Rays, a Multispecies Approach. Dendrochonologia 27, 183-198 (2009)
Air Temperatures at Armagh Observatory, 1796-2002, Int. J. Climatology 25, 1055-1079 (2005)
Relative Humidity at Armagh Obsevatory, 1838-2008. Int. J. Climatology (2011)

Dr Mark Coughlan

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University College Dublin

Mark graduated with a first-class BSc in Geology from University College Cork (UCC) in 2009. He then completed his PhD in Marine Geology in 2014 at UCC under the supervision of Prof Andy Wheeler, having spent a year placement in the Marine Engineering Geology working group of Prof Dr Tobias Mörz at the MARUM centre in Bremen, Germany. He then spent 3 years working for renewable energy developers Gaelectric and is now a Post-Doctoral Research Fellow in the Geohazards and Geotechnics Spoke at the Irish Centre for Research in Applied Geosciences (iCRAG) at University College Dublin.

Key publications

Coughlan, M., Fleischer, M., Wheeler, A.J., Hepp, D. A., Hebbeln, D. and Mörz, T. (2018) A revised stratigraphical framework for the Quaternary deposits of the German North Sea sector: a geological-geotechnical approach. Boreas, Volume 47, Issue 1, pages 80–105. DOI: 10.1111/bor.12253.

Coughlan, M., Wheeler, A. J., Dorschel, B., Lordan, C., Boer, W., van Gaever, P., de Haas, H. and Mörz, T. (2015) Record of anthropogenic impact on the Western Irish Sea mud belt. Anthropocene, Volume 9 pages 56–69. DOI: http://dx.doi.org/10.1016/j.ancene.2015.06.001.

Wheeler, A. J., Murton, B., Copley, J., Lim, A., Carlsson, J., Collins, P., Dorschel, B., Green, D., Judge, M., Nye, V., Benzie J, Antoniacomi, A., Coughlan, M. and Morris, K. (2013) Moytirra: Discovery of the first known deep-sea hydrothermal vent field on the slow-spreading Mid-Atlantic Ridge north of the Azores. Geochemistry, Geophysics, Geosystems, Volume 14, Issue 10, pages4170–4184. DOI: 10.100 2/ggge.20243.

Dr Bryan McCabe

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Senior Lecturer, Civil Engineering, National University of Ireland, Galway

Dr Bryan McCabe is a Senior Lecturer in Geotechnical Engineering at NUI Galway. His research interests include deep foundations, ground improvement (soil mixing and stone columns) and microtunnelling. He has published 42 journal papers, three of which have received awards from the Institution of Civil Engineers(UK), and he has secured research funding of approximately €1m.Bryan was the recipient of a NUI Galway President's Awards for Teaching Excellence in 2012.Heis a former Head of Civil Engineering at NUI Galway (2014-2017) and is a Chartered Engineer (2006) and Fellow (2014) of Engineers Ireland.

Key publications

Duggan, A.R., McCabe, B.A., Goggins, J. and Clifford, E. (2018) Evidence of stabilised peat as a net carbon sink, ASCE Journal of Materials in Civil Engineering, Vol. 31, No. 3, 04019005.

McKeon, É.P., O'Connell, A.M. and McCabe, B.A. (2017) Laboratory foundation model with pyrite-bearing mudstone fill, International Journal of Physical Modelling in Geotechnics, Vol. 17, No. 4, pp. 204-219. [DOI:10.1680/jphmg.16.00001]

Flynn, K.N. and McCabe, B.A. (2016) Shaft resistance of driven cast-in-situpiles in sand, Canadian Geotechnical Journal, Vol. 53, No. 1, pp. 49-59. [DOI:10.1139/cgj-2015-0032]

Sexton, B.G. and McCabe, B.A. (2016) Stone column effectiveness in soils with creep: a numerical study, Geomechanics and Geoengineering, Vol. 11, No. 4 pp. 252-269. [DOI:10.1080/17486025.2016.1151556]

McCabe, B.A., Orr, T.L.L., Reilly, C.C. and Curran, B.G. (2012) Settlement trough parameters for tunnels in Irish glacial tills, Tunnelling and Underground Space Technology, Vol. 27, No. 1, pp. 1-12. [DOI:10.1016/j.tust.2011.06.002]

Prof Jennifer McKinley

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My research and teaching expertise comprises the development and application of spatial analysis techniques (Geographical Information Science and geostatistics) in ground and remote sensed earth processes, health, criminal and environmental forensics. As a Chartered Fellow of the Geological Society of London, I am Communications Officer for the IUGS-IFG (Initiative on Forensic Geology) and President of the International Association of Mathematical Geoscientists (IAMG). I have authored more than 100 scientific articles, including peer-reviewed journal articles and numerous international conference contributions. Interdisciplinary collaboration and strong partnership working underpins all of my research.

Key publications

McKinley, J., Grunsky, E., & Mueller, U. 2018. Environmental monitoring and peat assessment using a multivariate analysis of regional-scale geochemical data. Mathematical Geosciences, 50(2), 235-246. DOI: 10.1007/s11004-017-9686-x

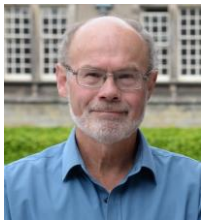
McKinley, J., Tolosana Delgado, R., Hron, K. et al. 2016. Single component map: fact or fiction? Journal of Geochemical Exploration, http://dx.doi.org/doi:10.1016/j.gexplo.2015.12.005

McKinley, J, Ofterdinger, U, Palmer, S, Jackson, C, Fogarty, D & Gavin, A 2016, Combining environmental and medical datasets to explore potential associations between environmental factors and health: Policy implications for human health risk assessments. in M Young (ed.), Unearthed: impacts of the Tellus surveys of the north of Ireland. Royal Irish Academy Science Series, Royal Irish Academy, Dublin, pp. 337-345.

Keaney, A., McKinley, J.M., Graham, C., Robinson, M. & Ruffell, A. 2013, 'Spatial statistics to estimate peat thickness using airborne radiometric data' Spatial Statistics, vol 5, pp. 3-24., http://dx.doi.org/10.1016

Tolosana-Delgado, R & McKinley, J 2016, 'Exploring the joint compositional variability of major components and trace elements in the Tellus soil geochemistry survey (Northern Ireland)' Applied Geochemistry. DOI: 10.1016/j.apgeochem.2016.05.004

Glacial Processes and Palaeoclimate



Prof Colin Ballantyne

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Professor (1994–2015) and subsequently Emeritus Professor at the University of St Andrews. My research has focused on glacial, periglacial, paraglacial and postglacial landscape evolution of midlatitude environments, particularly in Scotland, Ireland and Norway. I have published over 170 papers on these topics and am author of Periglacial Geomorphology (2018) Scotland's Mountain Landscapes (2019) and several other books and field guides. My research has been recognised inter alia by award of the Lyell Medal of the Geological Society, the Clough Medal, the Saltire Science Medal, the President's Medal and Coppock Research Medal of the RSGS and the BSG Warwick Medal.

Key Publications

Ballantyne, C.K., McCarroll, D and Stone, J.O. (2011) Periglacial trimlines and the extent of the Kerry-Cork Ice Cap, SW Ireland. Quaternary Science Reviews, 30, 3834-3845.

Ballantyne, C.K., Wilson, P., Schnabel, C. and Xu, S. (2013) Lateglacial rock-slope failures in NW Ireland: age, causes and implications. Journal of Quaternary Science, 28, 789-802.

Ballantyne, C.K. and Ó Cofaigh, C. (2017) The last Irish Ice Sheet: extent and chronology. In Coxon, P. et al. (eds.) Advances in Irish Quaternary Studies, Springer-Verlag, Berlin, 101–149.

Chiverrell, R.C., Smedley, R.K., Small, D., Ballantyne, C.K. et al. (2018) Ice margin oscillations during deglaciation of the northern Irish Sea Basin. Journal of Quaternary Science, in press

Wilson, P., Ballantyne, C.K., Benetti, S., Small, D., Fabel, D. & Clark, C.D. (2018) Deglaciation chronology of the Donegal Ice Centre, northwest Ireland. Journal of Quaternary Science, DOI: 10.1002/jqs.3077.

Dr Gordon Bromley

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The 'How' and 'Why' of Quaternary climate change, and its impacts on the surface (geomorphology, ecology, society) of our planet, are my broad areas of research interest. I employ a primarily glacial-geologic approach, coupled with cosmogenic surface-exposure and radiocarbon dating and a Big Picture vantage, to reconstruct past abrupt climate change and long-term ice sheet stability. I am also involved in exploring potential links between deglaciation and volcanism in South

America, as well as the environmental setting for the peopling of the Americas. Currently, I am leading glacial-geologic investigations in Antarctica, the tropical Andes, Ireland, and the UK.

Key Publications

Bromley, G.R.M., Putnam, A.E., Rademaker, K.M., Lowell, T.V., Schaefer, J.M., Hall, B.L., Winckler, G., Birkel, S.D., Borns, H.W., Jr., 2014. Younger Dryas Deglaciation Of Scotland Driven By Warming Summers. PNAS 111, 6215-6219.

Bromley, G.R.M., Hall, B.L., Stone, J.O., Conway, H., 2012. Late Pleistocene evolution of Scott Glacier, southern Transantarctic Mountains: Implications for the Antarctic contribution to deglacial sea level. Quaternary Science Reviews 50, 1-13.

Bromley, G., A. Putnam, H. Borns Jr., T. Lowell, T. Sandford, D. Barrell, 2018. Interstadial rise and Younger Dryas demise of Scotland's last ice fields. Palaeoceanography & Paleoclimatology 33, 412–429.

Bromley, G.R.M., Schaefer, J.M., Hall, B.L., Rademaker, K.M., Putnam, A.E., Todd, C.E., Hegland, M., Winckler, G., Jackson, M.S., Strand, P.D., 2016. A cosmogenic 10Be chronology for the local last glacial maximum and termination in the Cordillera Oriental, southern Peruvian Andes: Implications for the tropical role in global climate. Quaternary Science Reviews 148, 54–67.

Rademaker, K., Hodgins, G., Moore, K., Zarrillo, S., Miller, C., Bromley, G.R.M., Leach, P., Reid, D.A., Yépez Álvarez, Sandweiss, D.H., 2014. Paleoindian settlement of the high-altitude Peruvian Andes. Science 346, 466-469.

Dr Louise Callard

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My research focus is on reconstructing the dynamics of major marine terminating ice streams and identifying the underlying controls driving the behaviour of these ice streams since the Last Glacial Maximum through to present day. To achieve this, I use a combination of marine geophysical, sedimentological and geochronological techniques. To date, my research has focused on reconstructing the offshore record of the British-Irish Ice Sheet and the deglaciation of the NE Greenland Ice Stream (NEGIS). I also use marine records to reconstruct the early deglacial sea-level history preserved offshore Britain and Ireland.

Key Publications

Callard, S.L., Ó Cofaigh, C., Benetti, S., Chiverrell, R.C., Van Landeghem, K.J.J., Saher, M.H., Gales, J., Small, D., Clark, C.D., Livingstone, S.J., Fabel, D., Moreton, S.G., 2018. Extent and retreat history of the Barra Fan Ice Stream offshore western Scotland and Northern Ireland during the last glaciation. Quaternary Science Reviews, 201, 280-302.

Ó Cofaigh, C., Weilbach,K., Lloyd, M.J., Benetti, S., Callard, S.L., Purcell, C., Chiverrell, R.C., Dunlop, P., Saher, M., Livingstone, S.J., Van Landeghem, K.J.J., Moreton, S.G., Clark, C.D., Fabel, D., 2019. Early deglaciation of the British-Irish Ice Sheet on the Atlantic shelf northwest of Ireland driven by glacioisostatic depression and high relative sea level. Quaternary Science Reviews, 201, 76-96.

Scourse, J., Pienkowski, A., Allinson, B., Purcell, C., Ó Cofaigh, C., Praeg, D., Fabel, D., Lockhart, E.A., Van Landeghem, K.J.J., Callard, S.L., Saher, M., Chiverrell, R.C., Moreton, S.G., Roseby, Z., Clark, C.D., 2019. Advance and retreat of the marine-terminating Irish Sea Ice Stream into the Celtic Sea during the last glacial: timing and maximum extent. Marine Geology, 412, 53-68.

Chiverrell, R.C., Smedley, R.K., Small, D., Ballantyne, C.K., Burke, M.J., Callard, S.L., Clark, C.D., Duller, G.A.T., Evans, D.J.A., Fabel, D., van Landeghem, K., Livingstone. S., Ó Cofaigh, C., Thomas G.S.P., Roberts, D.H., Saher, M., Scourse, J.D., Wilson, P., 2018. Ice Margin oscillation of the northern Irish Sea Basin. Journal of Quaternary Science, 33, 739-762.

Plets, R.M.K., Callard, S.L., Cooper, J.A.G., Long, A.J., Quinn, R.J., Belknap, D.F., Edwards, R.J., Jackson, D.W.T., Kelley, J.T., Long, D., Milne, G.A. & Monteys, X. 2015. Late Quaternary evolution and sea-level history of a glaciated marine embayment, Bantry Bay, SW Ireland. Marine Geology 369, 251-272.

Prof Richard C Chiverrell

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As Professor in Physical Geography at Liverpool, my research focuses on several fronts: dynamics, rate and control of ice-sheet decline, the controls on sediment flux to slopes, rivers and lakes, and links between earth surface processes and human activity. I was Terrestrial Lead of £3.6 million NERC Consortium 'BRITICE-CHRONO Constraining rates and style of marine influenced ice sheet decay'. Other initiatives include developing nutrient (e.g. C, P) and palaeoflood records for lakes using sediment sequences, characterising the erosion and sediment fluxes in the wake of 'wildfires', peat ecology and hydrology, and linkages between sediment fluxes and human activities.

Key publications

Chiverrell, R. C., Sear, D. A., Warburton, J., Macdonald, N., Schillereff, D. N., Dearing, J. A., Croudace, I. W., Brown, J., and Bradley, J. (2019) Using lake sediment archives to improve understanding of flood magnitude and frequency: recent extreme flooding in northwest UK. Earth Surf. Process. Landforms, https://doi.org/10.1002/esp.4650.

Russell, F. E., Boyle, J. F., & Chiverrell, R. C. (2019). NIRS quantification of lake sediment composition by multiple regression using end-member spectra. Journal of Paleolimnology, 62(1), 73-88. doi:10.1007/s10933-019-00076-2

Small, D., Smedley, R. K., Chiverrell, R. C., Scourse, J. D., Cofaigh, C. O., Duller, G. A. T., Clark, C. D. (2018). Trough geometry was a greater influence than climate-ocean forcing in regulating retreat of the marine-based Irish-Sea Ice Stream. Geological Society of America Bulletin, 130(11-12), 1981-1999. doi:10.1130/B31852.1

Chiverrell, R. C., Smedley, R. K., Small, D., Ballantyne, C. K., Burke, M. J., Callard, S. L., Wilson, P. (2018). Ice margin oscillations during deglaciation of the northern Irish Sea Basin. Journal of Quaternary Science, 33(7), 739-762. doi:10.1002/jqs.3057.

Marrs, R. H., Marsland, E. -L., Lingard, R., Appleby, P. G., Piliposyan, G. T., Rose, R. J., .Chiverrell, R. C. (2019). Experimental evidence for sustained carbon sequestration in fire-managed, peat moorlands (vol 12, pg 108, 2018). Nature Geoscience, 12(2), 148. doi:10.1038/s41561-019-0303-0

Dr Jorie Clark

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I received my Ph.D. from the University of Ulster, Coleraine, Northern Ireland, UK, in 2007 under the supervision of Professor A. Marshall McCabe (Dissertation: New Constraints on the Deglaciation of the Irish Ice Sheet from 10Be and 36Cl dating). I am the Regional Archaeologist for the Northern Region of the U.S. Forest Service (Idaho, Montana, North and South Dakota), and a Courtesy Professor in the College of Earth, Ocean, and Atmospheric Sciences, Oregon State University.

Key publications

Clark, J., McCabe, A.M., Schnabel, C., Clark, P.U., McCarron, S., Freeman, S.P.H.T., Maden, C., and Xu, S., 2009, A cosmogenic 10Be chronology of the last deglaciation of western Ireland, and implications for sensitivity of the Irish Ice Sheet to climate change: Geological Society of America Bulletin, v. 121, p. 3-16.

Clark, J., McCabe, A.M., Schnabel, C., Clark, P.U., Freeman, S.P.H.T., Maden, C., and Xu, S., 2009, 10Be chronology of the last deglaciation of County Donegal, northwestern Ireland: Boreas, v. 38, p. 111-118.

Clark, J., McCabe, A.M., Bowen, D.Q., and Clark, P.U., 2012, Response of the Irish Ice Sheet to abrupt climate change during the last deglaciation: Quaternary Science Reviews, v. 35, p. 100-115.

Barth, A., Clark, P.U., Clark, J., Roe, G.H., Marcott, S.A., McCabe, A.M., Caffee, M.W., Cuzzone, J.K., and Dunlop, P., 2018, Persistent millennial-scale cirque-glacier fluctuations in Ireland between 24,000 and 10,000 years ago: Geology, v.46, p. 151-154.

Clark, J., Mitrovica, J.X., and Latychev, K., 2019, Glacial isostatic adjustment in central Cascadia: Insights from three-dimensional earth modelling: Geology, v. 47, p.295-298.

Dr Peter U. Clark

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Ulster University (Northern Ireland)

I am a Distinguished Professor of Earth, Ocean, and Atmospheric Sciences at Oregon State University, and Professor of Quaternary Studies at the University of Coleraine, Northern Ireland, UK. I received a Ph.D. from the University of Colorado, and have worked on Irish Quaternary geology since 1998.

Key publications

McCabe, A.M., and Clark, P.U., 1998, Ice-sheet variability around the North Atlantic Ocean during the last deglaciation: Nature, v. 392, p. 373-377.

McCabe, A.M., and Clark, P.U., 2003, Deglacial chronology from County Donegal, Ireland: Implications for deglaciation of the British-Irish Ice Sheet: Journal of the Geological Society of London, v. 160, p. 847-855.

Clark, P.U., Dyke, A.S., Shakun, J.D., Carlson, A.E., Clark, J., Wohlfarth, B., Mitrovica, J.X., Hostetler, S.W., and McCabe, A.M., 2009, The Last Glacial Maximum: Science, v. 325, p. 710-714.

Barth, A.M., Clark, P.U., Clark, J., McCabe, A.M., and Caffee, M., 2016, Last Glacial Maximum cirque glaciation in Ireland and implications for reconstructions of the Irish Ice Sheet: Quaternary Science Reviews, v. 141, p. 85-93.

Barth, A., Clark, P.U., Clark, J., Roe, G.H., Marcott, S.A., McCabe, A.M., Caffee, M.W., Cuzzone, J.K., and Dunlop, P., 2018, Persistent millennial-scale cirque-glacier fluctuations in Ireland between 24,000 and 10,000 years ago: Geology, v. 46, p. 151-154.

Prof Peter Coxon

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Primary interests involve critical aspects of the Quaternary Period including both the use of palynological techniques and geomorphology to analyse landscape change and to solve stratigraphical problems in Quaternary and Tertiary deposits. Has researched glacial, periglacial and fluvial (including flood deposits) landscapes of Ireland. Awarded Fellowship of TCD (1992) and Membership of the Royal Irish Academy (2002). President of the Irish Quaternary Association, Secretary, Vice President and President of the Quaternary Research Association and was the Secretary-General of the International Union for Quaternary Research
Currently the Chair of the Local Organising Committee of INQUA's 2019 Congress.

Key publications

Coxon, P., McCarron,S. and Mitchell, F. (eds) 2017. Advances in Irish Quaternary Studies. Atlantis Press. Paris. 316pp. DOI 10.2991/978-94-6239-219-9.

Coxon, P. and McCarron, S.G. 2009. Cenozoic: Tertiary and Quaternary (until 11,700 years before 2000) in, editor(s) Charles H. Holland & Ian S. Sanders, The Geology of Ireland (2nd Edition), Edinburgh, Dunedin Academic Press, 2009, 355 – 396.

Coxon, P. 2005. The Late Tertiary Landscapes of Western Ireland, Irish Geography, 38, (2), 111-127

Coxon,P. 2001. Understanding Irish landscape evolution: Pollen assemblages from Neogene and Pleistocene palaeosurfaces in western Ireland. Proceedings of the Royal Irish Academy, 101B (1–2), 85–97.

Alexander, R.A., Coxon, P. and Thorn, R.H. 1986. A Bog flow at Straduff Townland, Co. Sligo. Proceedings of the Royal Irish Academy. 86B, l07-l19.

Dr Cathy Delaney

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Manchester Metropolitan University (UK)

I am a glacial sedimentologist and geomorphologist, working primarily in the Irish Midlands. I use glacial sediments and landforms to reconstruct ice sheet dynamics and local conditions during former glaciations. I work primarily on deposits formed during the retreat of past ice sheets, particularly on glaciofluvial (eskers and associated landforms) and glaciolacustrine (glacial lake) sediments, using a range of approaches, including topographic modelling using LiDAR, field survey and sedimentary analyses.

Key publications

Delaney, C., McCarron, S., Davis, S., 2018. Irish Ice Sheet dynamics during deglaciation of the central Irish Midlands: evidence of ice streaming and surging from airborne LiDAR. Geomorphology 306, 235-253.

Delaney, C. 2007. Seasonal controls on deposition of Late Devensian glaciolacustrine sediments, Central Ireland: Implications for the construction of a varve chronology for the British-irish ice sheet. (in Hambrey, M., Christoffersen, P., Glasser, N., Janssen, P., Hubbard, B., Siegert, M. (eds.) Glacial Sedimentary Processes and Products. Spec. Pub., I.A.S., Blackwells, Oxford. p.149-163.

Delaney C., 2002. Sedimentology of a glaciofluvial landsystem, Lough Ree area, central Ireland: implications for ice marginal characteristics during Devensian deglaciation. Sedimentary Geology 149: 111-126.

Delaney C., 2002. Esker formation and the nature of deglaciation: the Ballymahon esker, central Ireland. North West Geography 1(2):22-33 http://www.mangeogsoc.org.uk/4_3_1_2003.htm

Delaney C., 2001. Morphology and sedimentology of the Rooskagh esker, Co. Roscommon. Irish Journal of Earth Sciences 19: 12-21.

Dr Paul Dunlop

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School of Geography and Environmental Sciences, Ulster University (Northern Ireland)

Paul is a Quaternary glaciologist who investigates glacial landscapes in both terrestrial and marine environments to reconstruct past ice sheet behaviour and better understand glacial processes. Understanding how ice sheets operate over long-time scales provides critical information on the global climate system and the processes of climate change and this research area requires a multidisciplinary approach. Paul uses a variety of techniques to investigate glacial landscapes including satellite remote sensing, GIS mapping, marine geophysics and cosmogenic nuclide, radiocarbon and Schmidt hammer dating to work out what was happening during the last Ice Age and to help age constrain glacial events.

Key publications

O' Cofaigh, C., Weilbach, K., Lloyd, J., Benetti, S., Callard, L., Purcell, C., Fabel, D. (2019). Early deglaciation of the British-Irish Ice Sheet on the Atlantic shelf northwest of Ireland driven by glacioisostatic depression and high relative sea level. Quaternary Science Reviews ***208***, 76-96. https://doi.org/10.1016/j.quascirev.2018.12.022.

Barth, A. M., Clark, P. U., Clark, J., Roe, G. H., Marcott, S. A., McCabe, AM., Dunlop, P. (2017). Persistent millennial-scale glacier fluctuations in Ireland between 24 ka and 10 ka. Geology, 46 (2), 151-154. https://doi.org/10.1130/G39796.1.

Peters, J. L., Benetti, S., Dunlop, P., & O' Cofaigh, C. (2015). Maximum extent and dynamic behaviour of the last British Irish Ice Sheet west of Ireland. Quaternary Science Reviews 128, 48-68. https://doi.org/10.1016/j.quascirev.2015.09.015

O' Cofaigh, C., Dunlop, P., & Benetti, S. (2012). Marine geophysical evidence for Late Pleistocene ice sheet extent and recession off northwest Ireland. Quaternary Science Reviews 44, 147-159. https://doi.org/10.1016/j.quascirev.2010.02.005.

Dunlop, P., Shannon, R., McCabe, M., Quinn, R., & Doyle, E. (2010). Marine geophysical evidence for ice sheet extension and recession on the Malin Shelf: New evidence for the western limits of the British Irish Ice Sheet. Marine Geology 276(1-4), 86-99. https://doi.org/10.1016/j.margeo.2010.07.010

Dr Colman Gallagher

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UCD School of Geography, Belfield, Dublin 4

As a geomorphologist, I am fascinated by landscape evolution as a response to environmental change. Focusing on the evolution of the surface and cryosphere of Mars and Earth, two planets with many environmental analogues but also significant heterologues, my work is grounded in Quaternary geomorphology and quantitative mapping. I am particularly interested in the roles of climate change and endogenic ground heating on Mars, as drivers of cryospheric destabilisation. I also research the pathways of glaciofluvial discharge from Ireland to its continental shelf and the timing and influence of deglacial processes and sea level change on subsequent landscape evolution.

Key publications

Gallagher, C., Telfer, M.W. and ÓCofaigh, C. (2015). A Marine Isotope Stage 4 age for Pleistocene raised beach deposits near Fethard, southern Ireland. Journal of Quaternary Science, 30: 754-763.

Colman Gallagher and Matthew Balme (2015). Eskers in a complete, wet-based glacial system in the Phlegra Montes region, Mars, Earth and Planetary Science Letters, 431, 96-109

Gallagher, C., Balme, M. and Clifford, N. (2018). Discriminating between the roles of late Pleistocene palaeodischarge and geological-topographic inheritance in fluvial longitudinal profile and channel development, Earth Surface Processes and Landforms 43 (2), 444-462.

Gallagher, C., Balme, M., Soare, R., Conway, S. (2018). Formation and degradation of chaotic terrain in the Galaxias regions of Mars: implications for near-surface storage of ice, Icarus 309, 69-83.

Ramsdale, J.D.,Balme, M.R.,Gallagher, C.,Conway, S.J.,Smith, I.B.,Hauber, E., et al. (2019). Grid mapping the northern plains of Mars: Geomorphological, radar, and water-equivalent hydrogen results from Arcadia Plantia. Journal of Geophysical Research: Planets, 124, 504–527.

Dr Susan Hegarty

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Dublin City University

After working as a temporary geologist in the Geological Survey of Ireland for a number of years, mapping the Quaternary sediments of county Kilkenny for the groundwater protection scheme for that county, Susan Hegarty completed a PhD on relict subglacial meltwater pathways in county Kilkenny, southeast Ireland. She is currently assistant professor in the School of History and Geography, DCU where she teaches geomorphology and GIS to undergraduate geography students.

Key publications

Hegarty S. (2004) 'Limits of Midlandian glaciation in south-eastern Ireland'. Irish Geography, 37 (1):60-76.

Hegarty S. (2012) 'The dry channels at Ballyfoyle, Co. Kilkenny: a relict landscape of subglacial water'. Irish Geography, 45 (2):175-197.

Hegarty S. (2018) 'George Victor Du Noyer's career in the Ordnance and Geological Surveys (1835-69): Geologist by profession, artist by temperament'. Proceedings of the Royal Irish Academy, Section C: Archaeology, Celtic Studies, History, Linguistics and Literature, 118C :271-298.

Susan Hegarty (2017) 'Monaghan's physical landscape: exploiting its natural resources' In: Patrick J. Duffy; Éamonn Ó Ciardha (eds). Monaghan History and Society. Dublin: Geography Publications.

Susan Hegarty (2002) The Quaternary of Kilkenny (with particular emphasis on the Castlecomer Plateau), IQUA fieldguide 24.

Lauren Knight

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University of Portsmouth, University of Worcester (UK)

I am a final year PhD researcher at the University of Portsmouth and a Lecturer in Physical Geography at the University of Worcester. My current research is focused upon the dynamics of glaciation in the Wicklow Mountains during the Last Glacial-Interglacial Transition (LGIT 20 – 11 ka BP). I am particularly interested in LGIT ice dynamics during and following the transition to topographically restricted mountain glaciation, and renewed glaciation in the region during the Younger Dryas (12.9 – 11.7 ka BP). I am now expanding upon this work, focusing on Younger Dryas glacial extent and dynamics elsewhere in Ireland.

Key publications

Knight, L., Boston, C.M., Lovell, H., Pepin, N. Younger Dryas glaciation in the Wicklow Mountains. In: INQUAXX: Field Guide, Mid-Congress Quaternary Scientific Excursions.

Knight, L. (in prep). Glacial geomorphological map of the Wicklow Mountains, Ireland.

Knight, L., Boston, C.M., Lovell, H., Pepin, N. (in prep) Younger Dryas (Nahanagan Stadial) glacial extent in the Wicklow Mountains, Ireland.

Knight, L., Boston, C.M., Lovell, H. (in prep) Last Glacial-Interglacial ice dynamics in the Wicklow Mountains, Ireland.

Prof Marshall McCabe

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Dept of Environmental Science, University of Ulster, Coleraine (Northern Ireland)

Marshall is Emeritus Professor of Quaternary Science at The University of Ulster, was educated at TCD where he obtained a Sc.D., is an honorary member of the QRA and was elected to be a member of the Royal Irish Academy. His research career initially centred on detailed sedimentological descriptions of the glacial, paraglacial and deglacial sequences around Ireland in the Irish Sea Basin. With his collaborator Peter Clark he was the first to provide a detailed radiocarbon chronology for the millennial time scale oscillations of the BIIS and possible links to changes in north Atlantic climates. Here dynamic links were discovered between the early deglaciation, later major ice sheet oscillations and ice extensive ice sheet loading which resulted in well-marked glaciomarine sequences around decaying ice margins. Where possible AMS ^{14}C ages from marine microfaunas together with cosmogenic exposure age dating provide up to 100 estimates of deglacial chronologies in Ireland. Publications are in Nature and Science and the essence of this work occurs in Glacial Geology and Geomorphology (2008).

Key Publications

McCabe, A M. and Haynes, J. R. 1996. A late Pleistocene intertidal boulder pavement from an isostatically emergent coast. Earth Surface Processes and Landforms, 21, 555-572.

McCabe, A. M. and Clark, P. U. 1996. Ice-sheet variability around the North Atlantic Ocean during the last deglaciation, Nature, 392, 373-377.

Clark, P. U., McCabe, A. M., Mix, A. C. and Weaver, A. S. 2004. Rapid rise of sea level 19000 years ago and its global implications. Science, 304, 1141-1144.

McCabe, A. M., Clark, P. U. and Clark, J. 2005. Radiocarbon constraints on the history of the western Irish ice sheet prior to the last glacial maximum, Geology, 35, 147-150.

McCabe, A. M. 2008. Glacial Geology and Geomorphology; the landscapes of Ireland. Dunedin Academic Press, Edinburgh. 274pp.

Dr Stephen McCarron

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Maynooth University
Department of Geography & ICARUS

My research involves the search for geological evidence of former ice sheet extents and dynamics on the island of Ireland and on its continental shelf. To this end I established a research laboratory at Maynooth University in 2009 to facilitate the analysis of sediment cores from palaeoclimatic archives. The Irish Sediment Core Research Facility (ISCORF) is a nationally accessible geoscience-focused laboratory comprising equipment, expertise, working and storage space dedicated to the analysis of sediment core physical properties.

Key Publications

McCarron, S., Praeg, D., Ó Cofaigh, C., Monteys, X., Thébaudeau, B., Craven, K., Saqab, M.M., and Cova A., 2018. A Plio-Pleistocene Sediment Wedge on the Continental Shelf West of Central Ireland: The Connemara Fan. Marine Geology, 399: 97–114.

Delaney, Catherine A., McCarron, S. and Davis, S. 2018. Irish Ice Sheet Dynamics during Deglaciation of the Central Irish Midlands: Evidence of Ice Streaming and Surging from Airborne LiDAR. Geomorphology, 306: 235–53.

Coxon, P., McCarron, S. and Mitchell, F.J.G., 2017. Advances in Irish Quaternary Studies. Atlantis Advances in Quaternary Science 1. Atlantis Press.

Praeg, D., McCarron, S., Dove, D., Ó Cofaigh, C., Scott, G., Monteys, X., Facchin, L., Romeo, R. and Coxon, P., 2015. Ice Sheet Extension to the Celtic Sea Shelf Edge at the Last Glacial Maximum. Quaternary Science Reviews 111: 107–12.

McCabe, A.M., Knight, J. and McCarron, S., 1998. Evidence for Heinrich Event 1 in the British Isles. Journal of Quaternary Science 13 (6): 549–68.

Dr Robert Meehan

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Self-employed consultant geologist, affiliated to Geological Survey Ireland, University College Dublin, Trinity College and the Environmental Protection Agency

Robert Meehan is a Quaternary geologist specialising in mapping sediment landform assemblages at a variety of scales, from field scale to ice sheet scale. Robert initially graduated from University College Dublin with a PhD. In Quaternary geology in 1998, having proposed new timing for drumlinsation in the north central portion of the country. He then worked for Teagasc, producing the first National subsoils (Quaternary sediment) map, between 1998 and 2006. He has worked as a self-employed consultant geologist ever since, providing mapping expertise to semi-state geoscientific bodies and environmental and organisations, and associated advice on related environmental issues.

Key publications

Meehan, R.T., Warren W.P. and Gallagher, C.J.D. 1997. The sedimentology of a late Pleistocene drumlin near Kingscourt, Ireland. Paper presented to 'Drumlin Symposium' at the XIV INQUA Congress, Berlin, 7 August 1995. Sedimentary Geology, 111, pp. 91-105.

Meehan, R.T. and Warren, W.P., 1999. The Boyne Valley in the Ice Age. Geological Survey of Ireland, Dublin, 84 pp.

Clark, C. D. and Meehan, R.T., 2001. Subglacial bedform geomorphology of the Irish Ice Sheet reveals major configuration changes during growth and decay. Journal of Quaternary Science, Vol. 16, Issue 5, pp. 483-496.

Meehan, R.T., 2012. The Making of Meath. Meath County Council, 106 pp.

Meehan, R.T., 2016. Glacial geomorphology of the last Irish Ice Sheet". In: Coxon, P., McCarron, S. and Mitchell, F., (Eds.) Advances in Irish Quaternary Studies, pp. 67-101.

Dr Andrew M.W. Newton

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Queen's University Belfast – Research Fellow
University of Manchester – Visiting Researcher

I am a seismic geomorphologist and my main research interests focus on high latitude and altitude settings. This work typically involves integrating geological, geophysical, petrophysical, and geomorphological information to better understand past and present environmental changes. I also research the subsurface with a particular emphasis on fluid flow through shallow sediments and the potential implications of this for carbon sequestration. I am interested in past, present, and future environmental changes and my research covers a number of these different areas, from glacial landforms, to lake and river ice phenology.

Key publications

Rea, B.R., Newton, A.M., Lamb, R.M., Harding, R., Bigg, G.R., Rose, P., Spagnolo, M., Huuse, M., Cater, J.M., Archer, S. and Buckley, F., 2018. Extensive marine-terminating ice sheets in Europe from 2.5 million years ago. Science Advances, 4(6), p. 8327.

Knutz, P.C., Newton, A.M., Hopper, J.R., Huuse, M., Gregersen, U., Sheldon, E. and Dybkjær, K., 2019. Eleven phases of Greenland Ice Sheet shelf-edge advance over the past 2.7 million years. Nature Geoscience, 12(5), p.361.

Newton, A.M., Huuse, M. and Brocklehurst, S.H., 2016. Buried iceberg scours reveal reduced North Atlantic Current during the stage 12 deglacial. Nature communications, 7, p. 10927.

Newton, A.M.W., Knutz, P.C., Huuse, M., Gannon, P., Brocklehurst, S.H., Clausen, O.R. and Gong, Y., 2017. Ice stream reorganization and glacial retreat on the northwest Greenland shelf. Geophysical Research Letters, 44 (15), pp. 7826-7835.

Newton, A.M. and Huuse, M., 2017. Glacial geomorphology of the central Barents Sea: implications for the dynamic deglaciation of the Barents Sea Ice Sheet. Marine Geology, 387, pp. 114-131.

Prof Colm Ó Cofaigh

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Department of Geography, Durham University, Durham, DH1 3LE, UK.

I am a glacial geologist and Quaternary scientist with a long-standing interest in the processes and patterns of glacigenic sedimentation on glaciated continental margins. I have worked extensively on Irish glacial history, both offshore and onshore, using sedimentology, geomorphology and dating to reconstruct ice sheet extent and flow dynamics during the Last Glacial Maximum. My recent work focuses on the record of ice sheet advance and retreat on the Atlantic shelf offshore of Ireland.

Key publications

Ó Cofaigh, C., Weilbach, K., Lloyd, J.M., Benetti, S., Callard, S.L., Purcell, C., Chiverrell, R.C., Dunlop, P., Saher, M., Livingstone, S.J., van Landeghem, K., Moreton, S.G., Clark C.D., and Fabel, D. (2019). Early deglaciation of the Atlantic shelf northwest of Ireland driven by glacioisostatic depression and high relative sea level. Quaternary Science Reviews, 208, 76-96.

Callard, S.L., Ó Cofaigh, C., Benetti, S., Chiverrell, R.C., van Landeghem, K., Saher, M., Gales, J., Small, D., Clark, C.D., Livingstone, S.J., and Fabel, D. (2018). Extent and retreat history of the Barra Fan Ice Stream offshore western Scotland and Northern Ireland during the last glaciation. Quaternary Science Reviews, v. 201, 280-302.

Ó Cofaigh, C., Dunlop, P. and Benetti, S., (2012). Marine geophysical evidence for Late Pleistocene ice sheet extent and recession on the continental shelf off north-west Ireland. Quaternary Science Reviews, 44, 147-159.

Ó Cofaigh, C., Telfer, M.W., Bailey, R.M. and Evans, D.J.A. (2012). Late Pleistocene chronostratigraphy and ice sheet limits, southern Ireland. Quaternary Science Reviews, 44, 160-179.

Ó Cofaigh, C. and Evans, D.J.A. (2001). Deforming bed conditions associated with a major ice stream of the last British ice sheet. Geology, 29, 795-798

Dr Lisa Orme

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Maynooth University

Lisa Orme is a lecturer in Physical Geography at Maynooth University. She is a palaeoclimatologist and her research primarily focuses on reconstructing variations in storminess and atmospheric circulation during the Holocene over the North Atlantic and Europe using sediment from peatbogs and lakes. She also creates records of past sea surface temperature using diatom analysis and has developed records from the North Atlantic and Southern Ocean.

Key publications

Orme, L.C., Miettinen, A., Divine, D., Husum, K., Pearce, C., Van Nieuwenhove, N., Born, A., Mohan, R., Seidenkrantz, M.S. (2018) Subpolar North Atlantic sea surface temperature since 6 ka BP: indications of anomalous ocean-atmosphere interactions at 4-2 ka BP. Quaternary Science Reviews, 194: 128-142.

Orme, L.C., Charman, D., Reinhardt, L., Jones, R., Barkwith, A., Ellis, M., Mitchell, F., Stefanini, B. (2017) Past changes in the North Atlantic storm track driven by insolation and sea ice forcing. Geology, 45(4): 335-338.

Orme, L.C., Reinhardt, L., Jones, R., Charman, D., Barkwith, A., Ellis, M. (2016) Late Holocene storminess reconstructions from the Outer Hebrides, northwest Scotland, and the role of the North Atlantic Oscillation. Quaternary Science Reviews, 132: 15-25.

Orme, L.C., Reinhardt, L., Jones, R.T., Charman, D., Dawson, A., Croudace, A., Ellis, M., Barkwith, A. (2015) Investigating the maximum resolution of µXRF core scanners: a 1800 year storminess reconstruction from the Outer Hebrides. The Holocene, 26(2): 235-347.

Orme, L.C., Davies, S.J., Duller, G.A.T. (2015) Reconstructed centennial variability of Late Holocene storminess from Cors Fochno, Wales, UK. Journal of Quaternary Science. 30 (5): 1-11.

Dr Michael Philcox

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Geology Dept., Trinity College, Dublin

B.A.(Mod) and Ph.D. (1961) from Trinity College, Dublin, on Carboniferous Limestone in Co. Cork. Post-doctoral fellowships in Canada, the U.S. and Liverpool University on ancient reefs. Consulting full time since 1971 for mining companies in Ireland, specializing in Carboniferous stratigraphy. Additional work in sand and gravel led to a long-term study of Quaternary deposits near Killarney; in NW Co. Kildare, and the Blessington delta. Also investigated glacially overthrust rafts (<300 m long) of Carboniferous Limestone at Kilcummin Head, Co. Mayo and deformation on Scattery Island in the Shannon Estuary.

Key publications

Harrison, S. & Mighall, T.M. (Eds.) 2002. The gravel terraces east of Killarney. The Quaternary of South West Ireland, Quaternary Research Assoc., Field Guide, pp. 105-112.

Warren, G.M. & Davis, S. (Eds.) 2013. Glacio-tectonics at Kilcummin Head, Co. Mayo, North Mayo. Irish Quaternary Assoc. Field Guide no.31, pp.39-51.

Dalton, C. & O'Carroll, E. (Eds.) 2014. Glacial sediments on Scattery Island and their deformation. In: Limerick and Shannon Estuary Region, Irish Quaternary Assoc. Field Guide no.32, pp.53-62.

McGlynn, G., Stuijts, I. & Stefanini, B. (Eds.) 2018. Stratigraphy and glaciotectonics in Campbell's gravel pit, NW Co. Kildare. In: The Quaternary of the Irish Midlands, Irish Quaternary Assoc. Field Guide, pp.123-135.

Glacial Lake Blessington: deposits, deformation, outflow features. INQUA2019 Field Guide M:GL-3.

Dr Daniel Praeg

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Marie Skłodowska-Curie Global Fellow at: Géoazur, France.
PUCRS-IPR, Brazil.
Affiliated researcher with: OGS, (Instituto Nationale de Oceanografia e Geofisica Sperimentale).

I was born on the bed of an ice sheet in Canada, and later did a PhD on one in Scotland. I came to Ireland (UCD) in 1998 and got bothered about ice margins offshore. A decade on, as a researcher in Italy, I was able to start an IPY collaboration on glaciation of the Irish-UK shelf. In 2014, aboard Irish and then UK vessels, we found subglacial deposits at the Celtic Sea shelf edge, so extending the last ice sheet 150 km seaward. Happy days! I also work on gas hydrates (the underwater cryosphere), currently in France and Brazil.

Key publications

Sejrup, H.P., Hjelstuen, B.O., Dahlgren, T., Haflidason, H., Kuijpers, A., Nygård, A., Praeg, D., Stoker, M.S., Vorren, T.O. (2005). Pleistocene glacial history of the NW European continental margin. Marine and Petroleum Geology, 22, 1111-1129.

Praeg, D., McCarron, S., Dove, D., Ó Cofaigh, C., Scott, G., Monteys, X., Facchin, L., Romeo, R., Coxon, P. (2015). Ice sheet extension to the Celtic Sea shelf edge at the Last Glacial Maximum. Quaternary Science Reviews, 111, 107-112.

McCarron, S., Praeg, D., O'Cofaigh, C., Monteys, X., Thébaudeau, B., Craven, K., Saqab, M.M., Cova, A. (2018). A Plio-Pleistocene sediment wedge on the continental shelf west of central Ireland: The Connemara Fan. Marine Geology, 399, 97-114.

Lockhart, E.A., Scourse, J.D., Praeg, D., Van Landeghem, K.J.J., Mellett, C., Saher, M., Callard, L., Chiverrell, R.C., Benetti, S., Ó Cofaigh, C., Clark, C.D. (2018). A stratigraphic investigation of the Celtic Sea megaridges based on seismic and core data from the Irish-UK sectors. Quaternary Science Reviews, 198, 156-170.

Scourse, J.D., Saher, M., Van Landeghem, K.J.J., Lockhart, E., Purcell, C., Callard, L., Roseby, Z., Allinson, B., Pieńkowski, A.J., O'Cofaigh, C., Praeg, D., Ward, S., Chiverrell, R., Moreton, S., Fabel, D., Clark, C.D. (2019). Advance and retreat of the marine-terminating Irish Sea Ice Stream into the Celtic Sea during the last glacial: timing and maximum extent. Marine Geology 412, 53-68.

Dr Sam Roberson

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British Geological Survey

Sam Roberson is a Quaternary geologist at the Geological Survey of Northern Ireland. He has a PhD in glaciology and is interested in the impact of Pleistocene ice sheets in the UK and Ireland. He is involved in field mapping and geological modelling for the survey and likes using geostatistics and programming as part of his applied research into the subsurface. Sam is an avid cyclist and recently rode the length of Ireland to promote Quaternary geology.

Key publications

Roberson, S. and Weltje, G.J. 2014. Inter-instrument analysis of particle-size analysers. Sedimentology. 61, 1157-1174.

Merritt, J.W., Roberson, S. and Cooper, M.R., 2018. A critical review and re-investigation of the Pleistocene deposits between Cranfield Point and Kilkeel, Northern Ireland: Implications for regional sea-level models and glacial reconstructions of the northern Irish Sea basin. Proceedings of the Geologists' Association, 129, 583-609.

Roberson, S., Hubbard, B., Coulson, H. and Boomer, I. 2011. Physical properties and formation of flutes at a polythermal valley glacier: Midre Lovénbreen, Svalbard. Geografiska Annaler Series A, Physical Geography. 93, 71-88.

Barr, I.D., Roberson, S., Flood, R. and Dortch, J., 2017. Younger Dryas glaciers and climate in the Mourne Mountains, Northern Ireland. Journal of Quaternary Science, 32, 104-115.
Roberson, S. and Hubbard, B., 2010. Application of borehole optical televiewing to investigating the 3-D structure of glaciers: implications for the formation of longitudinal debris ridges, midre Lovenbreen, Svalbard. Journal of Glaciology, 56(195), pp.143-156.

Dr Serena Tarlati

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Ulster University, Coleraine (Northern Ireland)

I am a geologist interested in paleoenvironmental reconstructions. During my PhD, I had the opportunity to investigate the British Irish Ice Sheet (BIIS) and the last glacial period in the North Atlantic. For this research, sediment cores collected from the Rockall Trough have been analysed using different techniques, including sedimentology, stable isotopes analysis, microfaunal and IRD investigations. These deep-water sediments provided insights on the timing of the BIIS marine extensions and retreats, together with observations on the deglaciation methods.

Key publications

Late Quaternary reconstruction of British-Irish Ice Sheet variability through the analysis of deep-water sediments from the Donegal Barra Fan and the Rockall Trough, North Atlantic. PhD thesis, 2018.
Sedimentological and microfaunal evidence for final deglaciation of the Malin Sea through meltwater release and calving events. SJG, under review.

Dr Peter Wilson

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Ulster University, Coleraine (Northern Ireland)

Peter Wilson, BSc, PhD, DSc, Emeritus Reader in Quaternary Environmental Change has undertaken Quaternary research in Ireland since 1980. Initially he worked on Holocene coastal dune evolution but has since moved into aspects of glacial, periglacial and paraglacial geomorphology particularly in mountain regions. In addition to research in Ireland, he has also been involved in research in the Falkland Islands, Norway, Scotland and northern England. He was a previous Secretary and Newsletter Editor of IQUA.

Key publications

Wilson, P., Dunlop, P., Millar, C. & Wilson, F.A. 2019. Age determination of glacially-transported boulders in Ireland and Scotland using Schmidt-hammer exposure-age dating (SHD) and terrestrial cosmogenic nuclide (TCN) exposure-age dating. Quaternary Research in press.
Wilson, P., Ballantyne, C.K., Benetti, S., Small, D., Fabel, D. & Clark, C.D. 2019. Deglaciation chronology of the Donegal Ice Centre, north-west Ireland. Journal of Quaternary Science 34, 16-28.
Wilson, P. 2017. Periglacial and paraglacial processes, landforms and sediments. In: Coxon, P., Mitchell, F. & McCarron, S. (eds), Advances in Irish Quaternary Studies. Atlantic Press, Paris, 217-254.
Wilson, P. 2017. Rock-slope failures in southwest Donegal. In: O'Carroll, E. & McClure, M. (eds), South-West Donegal. Field Guide No. 34, Irish Quaternary Association, Dublin, 51-58.
Wilson, P. & Matthews, J.A. 2016. Age assessment and implications of late Quaternary periglacial and paraglacial landforms on Muckish Mountain, northwest Ireland, based on Schmidt-hammer exposure-age dating (SHD). Geomorphology 270, 134-144.

Palaeoecology & Bogs

Dr Ruth Carden

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Adjunct Research Fellow,
School of Archaeology, University College Dublin, Belfield, Dublin 4, Ireland

My research interests straddle numerous boundaries of various research disciplines. My current primary research area focuses on Quaternary (Late Pleistocene and Holocene) fauna, ecosystems and island colonisation within Ireland and north-western Europe during the past 60,000 years. I am interested in how, when and by what means islands acquire their fauna (and flora) which is complex and multifaceted. My research interests also include the Palaeolithic of Europe, in particular the north-western region of Europe. I actively conduct research and palaeozoological analyses on Irish cave faunal remains and I have a particular interest in cervid species.

Key Publications

Carden RF et al. 2012. Phylogeographic, ancient DNA, fossil and morphometric analyses reveal ancient and modern introductions of a large mammal: The complex case of red deer (Cervus elaphus) in Ireland, *Quaternary Science Reviews* 42: 74-84.

Dowd M & Carden RF 2016. First evidence of a Late Upper Palaeolithic human presence in Ireland, *Quaternary Science Reviews* 139: 158-163

Woodman PC, Dowd M, Fibiger L, Carden RF, O'Shaughnessy J 2017. Archaeological excavations at Killuragh Cave, Co. Limerick: a persistent place in the landscape from the Early Mesolithic to the Late Bronze Age, *Journal of Irish Archaeology* 26: 1-32.

Miller H, Carden RF et al. 2016. Dead or alive? Investigating long-distance transport of live fallow deer and their body parts in antiquity, *Environmental Archaeology* 21: 246-259.

Woodman P, Higham T, Carden RF (submitted). A reconsideration of the radiocarbon dating of the MIOS Fauna from Castlepook, Co. Cork, *Quaternary Science Reviews*

Dr Ceiridwen J. Edwards

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University of Huddersfield (UK)

My research focuses on ancient DNA and I have almost 25 years' experience in the field. I have extracted and analysed DNA from contexts in Ireland dating from 40,000 to 150 years of age. Species of interest have included brown bear, giant Irish deer, red deer, cattle and horse, and I have also generated modern DNA data from Irish red fox, badger and red squirrel. I am currently involved in a project to study ancient mammalian DNA from the late glacial cave at Ballynamintra, Co. Waterford, in collaboration with Dr Richard Jennings (LJMU).

Key Publications

Carden R.F., McDevitt A.D., Zachos F.E., Woodman P.C., O'Toole P., Rose H., Monaghan N.T., Campana M.G., Bradley D.G. & Edwards C.J. (2012) Phylogeographic, ancient DNA, fossil and morphometric analyses reveal ancient and modern human introductions of a large mammal: the complex case of red deer (*Cervus elaphus*) in Ireland. *Quaternary Science Reviews* 42, 74-84.

Edwards C.J. (2012) Ancient DNA and analyses of mammalian remains from Ireland. In: *All-Ireland Mammal Symposium 2009* (eds. F. Butler & C. Kelleher). Irish Naturalists' Journal, Belfast; pp. 55-63.

Edwards C.J., Suchard M.A., Lemey P., Welch J.J., Barnes I., Fulton T.L., Barnett R., O'Connell T.C., Coxon P., Monaghan N., Valdiosera C.E., Lorenzen E.D., Willerslev E., Baryshnikov G.F., Rambaut A., Thomas M.G., Bradley D.G. & Shapiro B. (2011) Ancient hybridization and an Irish origin for the modern polar bear matriline. *Current Biology* 21, 1251-1258.

Lister A.M., Edwards C.J., Nock D.A.W., Bunce M., van Pijlen I.A., Bradley D.G., Thomas M.G. & Barnes I. (2005) The phylogenetic position of the 'giant deer' *Megaloceros giganteus*. *Nature* 438, 850-853.
Edwards C.J., Connellan J., Wallace P.F., Park S.D.E., McCormick F.M., Olsaker I., Eythórsdóttir E., MacHugh D.E., Bailey J.F. & Bradley D.G. (2003) Feasibility and utility of microsatellite markers in archaeological cattle remains from a Viking Age settlement in Dublin. *Animal Genetics* 34, 410-416.

Ben Gearey

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Department of Archaeology, University College Cork

Ben has a wide range of research interests in the theory, method and practice of environmental archaeology, palaeoecology and Geoarchaeology. Current research projects have focussed on the archaeological and palaeoenvironmental records of peatlands. He is especially interested in the intersection between peatland restoration and management and the management, promotion and protection of the archaeological resource. Other research themes include: the integration of palaeoenvironmental and archaeological chronologies, the investigation of submerged landscapes, and inter-disciplinary communication and collaboration.

Key publications

Gearey, B, Chapman, H. and Howard, A. 2016. *Down By The River: Archaeological, Palaeoenvironmental and Geoarchaeological Investigations of the Suffolk River Valleys.* Oxbow: Oxford.
Richer, S. and Gearey, B.R. 2017 'The Medicine Tree: unsettling palaeoecological perceptions of past environments and human activity', *The Journal of Social Archaeology* 17, 239-62. https://doi.org/10.1177/1469605317731013
Richer, S. and Gearey, B.R. 2018 'From Rackham to REVEALS: reflections on palaeoecological approaches to woodland and trees', *Environmental Archaeology: The Journal of Human Palaeoecology* 23(3), 286-97. https://doi.org/10.1080/14614103.2017.1283765
Griffiths, S. and Gearey, B.R. 2017 'The Mesolithic-Neolithic transition and the chronology of the Elm Decline: a case study from Yorkshire and Humberside, UK', *Radiocarbon* 59(5), 1321-45. https://doi.org/10.1017/RDC.2017.73

Dr Donna Hawthorne

Email: dj43@st-andrews.ac.uk
University of St. Andrews (UK)

My background is in paleoecology, geography and archaeology and my research up until now has crossed between these three disciplines. My PhD research, carried out at Trinity College Dublin, focused on generating lacustrine charcoal records as indicators of past fire activity, in a range of different environments across Ireland, including the Galty Mountains and Killarney National Park. Following my PhD, I worked in commercial archaeology applying paleoecological techniques to enhance archaeological understanding from traditional excavations e.g. at Dun Deardail hillfort in the Scottish Highlands. My current research is in tropical paleoecology, based at the University of St. Andrews, looking at the development history of peatlands in the Central Congo Basin.

Key publications

Hawthorne, D & Mitchell, FJG 2018, 'Investigating patterns of wildfire in Ireland and their correlation with regional and global trends in fire history' *Quaternary International*, vol. 488, pp. 58-66. https://doi.org/10.1016/j.quaint.2017.06.067
Hawthorne, D & Mitchell, FJG 2016, 'Identifying past fire regimes throughout the Holocene in Ireland using new and established methods of charcoal analysis' *Quaternary Science Reviews*, vol. 137, pp. 45-53. https://doi.org/10.1016/j.quascirev.2016.01.027
Hawthorne, D, Mustaphi, CJC, Aleman, JC, Blarquez, O, Colombaroli, D, Daniau, A-L, Marlon, JR, Power, M, Vanniere, B, Han, Y, Hantson, S, Kehrwald, N, Magi, B, Yue, X, Carcaillet, C, Marchant, R, Ogunkoya, A, Githumbi, EN & Muriuki, RM 2018, 'Global Modern Charcoal Dataset (GMCD): a tool for exploring proxy-

fire linkages and spatial patterns of biomass burning' *Quaternary International*, vol. 488, pp. 3-17. https://doi.org/10.1016/j.quaint.2017.03.046

Stracher, GB, Prat-Guitart, N, Nugent, C, Mullen, E, Mitchell, FJG, Hawthorne, D, Belcher, CM & Yearsley, JM 2019, Chapter 20 - Peat Fires in Ireland. in GB Stracher (ed.), *Coal and Peat Fires: A Global Perspective.* vol. 5, Elsevier Inc., pp. 451-482. https://doi.org/10.1016/B978-0-12-849885-9.00020-2

Adolf, C, Hawthorne, D & Colombaroli, D 2019, 'Ancient fires and indigenous knowledge inform fire policies' *Eos, Transactions, American Geophysical Union*, vol. 100. https://doi.org/10.1029/2019EO118871

Dr Angela Hayes

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Mary Immaculate College, University of Limerick

I completed a PhD in Palaeoceanography at the National Oceanography Centre, University of Southampton. I joined the Department of Geography at Mary Immaculate College in 2004. My area of research focuses on the study of planktonic foraminifera extracted from deep ocean cores, particularly from the Mediterranean Sea, and their application in Late Quaternary palaeoclimatic and palaeoecological changes.

Key publications

Hessler, I., Harrison, S.P., Kucera, M., Waelbroeck, C., Chen, M.T., Anderson, C., De Vernal, A., Fréchette, B., Cloke-Hayes, A., Leduc, G. and Londeix, L., 2014. Implication of methodological uncertainties for mid-Holocene sea surface temperature reconstructions. *Climate of the Past*, *10*(6), pp.2237-2252, doi: 10.5194/cp-10-2237-2252, 2014

Members, MARGO Project, C. Waelbroeck, A. Paul, M. Kucera, A. Rosell-Melé, M. Weinelt, R. Schneider et al. "Constraints on the magnitude and patterns of ocean cooling at the Last Glacial Maximum." *Nature Geoscience* 2, no. 2 127-132, 2009

Rohling, E.J., Hayes, A., Mayewski, P.A. and Kucera, M., Holocene climate variability in the Eastern Mediterranean, and the end of the Bronze Age, in: Bachhuber, C. and Roberts, R.G. (eds.) *Forces of Transformation: The End of the Bronze Age in the Mediterranean*.
BANEA Publication Series 1, Oxbow Books, Oxford, pp.2-5, 2009

Hayes, A., Kucera, M., Kallel, N., Sbaffi, L. and Rohling, E.J., Glacial Mediterranean sea surface temperatures based on planktonic foraminiferal assemblages. *Quaternary Science Reviews*, *24*(7-9), pp.999-1016, 2005.

Hayes, A., Rohling, E.J., De Rijk, S., Kroon, D.T. and Zachariasse, W.J., Mediterranean planktonic foraminiferal faunas during the last glacial cycle. *Marine Geology*, *153*(1-4), pp.239-252.1999.

Prof Henry Lamb

Email: hfl@aber.ac.uk
Aberystwyth University (UK) and Trinity College Dublin

Henry Lamb is a palaeoecologist with expertise in lake-sediment coring, pollen analysis, and X-ray fluorescence geochemistry of lacustrine sediments. His principal research is on Plio-Pleistocene climate dynamics and human responses in eastern Africa, focusing on how climatic changes may have influenced the origin and dispersal of early humans (hspdp.asu.edu/). He is also involved in the Lake Suigetsu 2006 Varved Sediment Core project (www.suigetsu.org/). In Ireland, he is part of the CHERISH Project (Climate, Heritage and Environments of Reefs, Islands and Headlands, http://www.cherishproject.eu/en/), and has published on the vegetation history of the Burren, western Ireland. He was recently appointed as an adjunct professor in the Botany Department, Trinity College Dublin.

Key publications

Lamb, H., Bates, C. R., Bryant, C. L., Davies, S., Huws, D. G., Marshall, M. H. & Roberts, H. M. 2018 150,000-year palaeoclimate record from northern Ethiopia supports early, multiple dispersals of modern humans from Africa. *Scientific Reports* 8, 1077.

Viehberg, F., Just, J., Dean, J. R., Wagner, B., Franz, S. O., Klasen, N., Kleinen, T., Ludwig, P., Asrat, A., Lamb, H., Leng, M. J., Rethemeyer, J., Milodowski, A. E., Claussen, M. & Schäbitz, F., 2018 Environmental change during MIS4 and MIS 3 opened corridors in the Horn of Africa for *Homo sapiens* expansion. *Quaternary Science Reviews* 202, 139-153.

Trauth, M., Foerster, V., Junginger, A., Asrat, A., Lamb, H. & Schaebitz, F., 2018. Abrupt or Gradual? Change Point Analysis of the Late Pleistocene-Holocene Chew Bahir Record from Southern Ethiopia. *Quaternary Research* 90, 321-330.

Roberts, H.M., Charlotte L. Bryant, Dei G. Huws, Henry F. Lamb 2018 Generating long chronologies for lacustrine sediments using luminescence dating: a 250,000 year record from Lake Tana, Ethiopia. *Quaternary Science Reviews* 202, 66-77.

Schlolaut, G., Staff, R. A., Brauer, A., Lamb, H., Marshall, M. H., Ramsey, C. B. & Nakagawa, T., 2018 An extended and revised Lake Suigetsu varve chronology from ~50 to ~10 ka BP based on detailed sediment micro-facies analyses. *Quaternary Science Reviews* 200, 351-66.

Robin Lewando

Email: westcorkpalaeo@gmail.com
West Cork Palaeo
University College Cork

I am researching the palaeoecology of West Cork as evidenced by the sediments from lowland lakes and bogs; the site currently being analysed has yielded an almost complete Holocene record. This project will be wide ranging and interdisciplinary with a view to broadening the interest and involvement of the local community. The results will be made available on the project website and presented locally to communities, schools, and societies. I hold qualifications in Agricultural Science from Cirencester, Geological Science from the OU and Archaeology and Geography from UCC. Contact is welcomed. www.westcorkpalaeo.com

Professor Fraser J.G. Mitchell

Email: fraser.mitchell@tcd.ie
Trinity College Dublin

Fraser Mitchell is Professor in Quaternary Ecology based in the Botany Department, Trinity College Dublin. He is an ecologist and palaeoecologist specialising in vegetation dynamics in woodland and peatland ecosystems exploring drivers such as climate, fire and human activity. He has completed research on sites throughout Ireland as well as in Britain, Spain, Poland, USA, Australia and Thailand. He was instrumental in establishing the Irish Pollen Site Database www.ipol.ie and plays an active role in the Irish Quaternary Association (IQUA). He is one of the editors of *Advances in Irish Quaternary Studies* published in 2017. More details at www.tcd.ie/Botany/people/fmitchll/

Key publications

Hawthorne, D. & Mitchell, F. J. G. 2018. Investigating patterns of wildfire in Ireland and their correlation with regional and global trends in fire history. *Quaternary International* 488, 58-66.

Stefanini, B. S., Oksanen, P. O., Corcoran, J. P. & Mitchell, F. J. G. 2018. Appraising the cohesion of palaeoenvironmental reconstructions in north-west Spain since the mid-Holocene from a high temporal resolution multi-proxy peat record. *The Holocene* 28, 681-694.

Coxon, P., McCarron, S. & Mitchell, F. J. G. (eds.) 2017. *Advances in Irish Quaternary Studies*. Paris: Atlantis Press, 316 pp. Chapman, H. and Gearey, B. 2013. *Modelling Archaeology and Palaeoenvironments in Wetlands.* Oxbow: Oxford.

McGeever, A. H. & Mitchell, F. J. G. 2016. Re-defining the natural range of Scots Pine (*Pinus sylvestris* L.): a newly discovered microrefugium in western Ireland. *Journal of Biogeography* 43, 2199-2208.

Mitchell, F. J. G., Stefanini, B. S. & Marchant, R. 2013. A catalogue of Irish pollen diagrams. *Biology and Environment-Proceedings of the Royal Irish Academy* 113B, 103-135.

Dr Karen Molloy

Email: Karen.molloy@nuigalway.ie
National University of Ireland, Galway

Based at the Palaeoenvironmental Research Unit, School of Geography and Archaeology, I am a pollen analyst specialised in reconstructing vegetation and climate change in Ireland over the past 12,000 years since the end of the last Ice Age. Much of my work has focussed on the identification of anthropogenic indicators in pollen records with a view to elucidating human impact in the landscape and the role people have played in shaping their environment through land clearance and farming from the Neolithic through to medieval times.

Key publications

Michael O'Connell and Karen Molloy (2019) 'Aran Islands, western Ireland: farming history and environmental change reconstructed from field surveys, historical sources, and pollen analyses' *Journal of the North Atlantic*, 38:1–27

Carlos Chique, Karen Molloy, and Aaron P. Potito (2017) 'Mid-Late Holocene Vegetational History and Land-use Dynamics in County Monaghan, Northeastern Ireland–the Palynological Record of Lough Muckno'. *Journal of The North Atlantic*, 32 :1-24

Michael O'Connell and Karen Molloy (2017) 'Mid- and late-Holocene environmental change in western Ireland: New evidence from coastal peats and fossil timbers with particular reference to relative sea-level change'. *The Holocene*, 27 (12):1825-1845

Karen Molloy and Michael O'Connell (2016) Farming impact in Ireland from the Neolithic to recent times with particular reference to a detailed pollen record from east Galway. Pp. 27-43, In: O'Connell, M., Kelly, F. and McAdam, H.J. (Eds.). *Cattle in Ancient and Modern Ireland: Farming Practices, Environment and Economy*. Cambridge Scholars Publishing, Newcastle upon Tyne, UK. 230 pp.

Dr Charlotte O'Brien

Email: charlotte.o'brien@durham.ac.uk
Durham University (UK)

Charlotte manages the palaeo-environmental section of the commercial archaeology unit at Durham University. Following her undergraduate degree in botany at Trinity College Dublin, she completed a PhD at Coventry University using pollen and plant macrofossils to reconstruct the vegetation history of the Médoc region, South West France. She subsequently undertook postdoctoral research focusing on the environmental archaeology of lake dwellings in Central Ireland, and has contributed to research of vegetation change on the Mizen Peninsula. She has worked on a number of archaeobotanical assemblages from excavations across Ireland. Her current palaeoenvironmental work involves the analysis of plant macrofossils, charcoal, waterlogged wood and land snails.

Key publications

Brown, A.G., Davis, S.R., Hatton, J., O'Brien, C., Reilly, F., Taylor, K., Dennehy, E., O'Donnell, L., Bermingham, N., Mighall, T., Timpany, S., Tetlow, E., Wheeler, J., & Wynne, S. (2016) The environmental context and function of burnt-mounds: new studies of Irish Fulachtaí Fiadh, *Proceedings of the Prehistoric Society* 82, 259-290

Mighall, T.M., Timpany, S., Blackford, J.J., Innes, J.B., O'Brien, C.E., O'Brien, W. & Harrison, S. (2008) Vegetation change during the Mesolithic and Neolithic on the Mizen Peninsula, Co. Cork, south-west Ireland. *Vegetation History and Archaeobotany* 17: 617-628

O'Brien, C.E., Selby, K.A., Ruiz, Z., Brown, A.G., Dinnin, M.H., Caseldine, C.J., Langdon, P.G. & Stuijts, I. (2005). A sediment-based multiproxy palaeoecological approach to the environmental archaeology of lake dwellings (crannogs), Central Ireland. *The Holocene* 15(5): 707-719

Selby, K.A., O'Brien, C.E., Brown, A.G. & Stuijts, I. (2005). A multi-proxy study of Holocene lake development, lake settlement and vegetation history in Central Ireland. *Journal of Quaternary Science* 20(2): 147-168

Brown, A.G., Hatton, J., O'Brien, C.E., Selby, K.A., Langdon, P.G., Stuijts, I. & Caseldine, C.J. (2005). Vegetation, landscape and human activity in Midland Ireland: mire and lake records from the Lough Kinale-Derragh Lough area, Central Ireland. *Vegetation History and Archaeobotany* 14: 81-98

Michael O'Connell (Professor emeritus)

Email: michael.oconnell@nuigalway.ie
National University of Ireland Galway (Palaeoenvironmental Research Unit)

Michael O'Connell, based in NUI Galway, has been involved in research, teaching and administration since the mid 1970s. His research interests include long-term environmental change with particular focus on farming impact, woodland history and climate change, using a variety of techniques and especially pollen analysis. As Professor emeritus he continues to research and publish. He is an elected member of the Royal Irish Academy and a Humboldt Fellow. He serves on the editorial board of *Vegetation History and Archaeobotany*, having previously (1990–2000) been copy editor. He served as chairperson of the Agricultural History Society of Ireland (2014–2017).

Key publications

O'Connell, M. and Molloy, K. 2019. Aran Islands, western Ireland: farming history and environmental change reconstructed from field surveys, historical sources, and pollen analyses. *Journal of the North Atlantic* 38, 1–27.

Ghilardi, B. and O'Connell, M. 2013. Early Holocene vegetation and climate dynamics with particular reference to the 8.2 ka event: pollen and macrofossil evidence from a small lake in western Ireland. *Vegetation History and Archaeobotany* 22, 99–114.

Feeser, I. and O'Connell, M. 2009. Fresh insights into long-term changes in flora, vegetation, land use and soil erosion in the karstic environment of the Burren, western Ireland. *Journal of Ecology* **97,** 1083–1100.

O'Connell, M. and Molloy, K. 2001. Farming and woodland dynamics in Ireland during the Neolithic. *Biology and Environment (Proc R Ir Acad, Ser B)* 101, 99–128.

O'Connell, M., Huang, C.C. and Eicher, U. 1999. Multidisciplinary investigations, including stable-isotope studies, of thick Late-glacial sediments from Tory Hill, Co. Limerick, western Ireland. *Palaeogeography, Palaeoclimatology, Palaeoecology* 147, 169–208

Mr James Perkins

Email: jperkins01@qub.ac.uk
Queen's University Belfast

Project Title: Niche Construction and Plant Use in the Mesolithic

My research project focuses on examining the land-use and plant-use of Ireland's first Mesolithic (8000BC-4000BC) settlers within a broader European context. Archaeological and palaeoenvironmental evidence has recently been used to suggest that some Mesolithic "hunter-gatherers" in Europe actively managed woodlands but this has never been tested in Ireland. My research seeks to redress this situation by combining extant archaeobotanical data with new, high-resolution archaeobotanical and palynological analyses. The results will be interpreted using niche construction theory (NCT) to explore the nature, impact and timing of Ireland's first people's palaeoenvironmental interactions, substantially improving our understanding of Mesolithic hunter-gatherer settlement patterns and subsistence strategies.

Key publications

Perkins, J., Basell, L., and Plunkett, G., 2018. A pollen study of a Late-Mesolithic/Early Neolithic 'platform' on Derragh Island, County Longford. In McGlynn, G. Stuijts, I and Stefanini, B. (eds.). The Quaternary of the Irish Midlands. IQUA Field Guide.

Dr Gill Plunkett

Email: g.plunkett@qub.ac.uk
Archaeology & Palaeoecology, School of Natural and Built Environment, Queen's University, Belfast

I am an archaeologist, palaeoecologist and tephrochronologist, with a particular interest in the causes and timing of past environmental change, and its impact on past societies. My love of Irish peatlands began when I worked as a wetland archaeologist, but I soon found other ways to interrogate the secrets of those bogs. I've specialised in palynology, specifically with a view to reconstructing past landscape change and land-use histories, and in tephrochronology. I apply tephrochronology in peatland and ice core records as both a dating tool and as a means of exploring past volcanic impacts on climate, environment and society.

Key publications

Plunkett, G. & Pilcher, J.R. 2018 Defining the potential sources region of volcanic ash in northwest Europe during the Mid- to Late Holocene. *Earth-Science Reviews* 179, 20–37.

Plunkett, G., Coulter, S.E., Ponomareva, V.V., Blaauw, M., Klimaschewski, A. & Hammarlund, D. 2015 Distal tephrochronology in volcanic regions: Challenges and insights from Kamchatkan lake sediments. *Global and Planetary Change* 134, 26-40.

Plunkett, G., McDermott, C., Swindles, G.T., Brown, D.M. 2013 Environmental indifference? A critique of environmentally deterministic theories of peatland archaeological site construction in Ireland. *Quaternary Science Reviews* 61, 16-31

Plunkett, G. 2009 Land-use patterns and cultural change in the Middle to Late Bronze Age in Ireland: inferences from the pollen record. *Vegetation History and Archaeobotany* 18, 273-295.

Plunkett, G. & Swindles, G.T 2008 Determining the Sun's influence on Late Glacial and Holocene climates: a focus on climate response to centennial-scale solar forcing at 2800 cal. BP. *Quaternary Science Reviews* 27, 175-184.

Dr Helen M. Roe

Email: h.roe@qub.ac.uk
School of Natural and Built Environment,
Queen's University Belfast

Major research foci include (i) applications of benthic protozoans (e.g. testate amoebae, foraminifera) in biomonitoring and remediation; (ii) the use of palaeoecological and geochemical techniques for understanding the character, timing and impacts of climate and land-use change; and (iii) ecosystem resilience, regime shifts, and recovery in freshwater systems, particularly following contaminant loading (e.g. nutrients, metals).

Key publications

Roe, H.M. et al. (2017). Re-assessing the vertical distribution of testate amoeba commumities in surface peats: implications for palaeohydrological studies. *European Journal of Protistology*, 60, 13-27.

Roe, H.H.,Patterson, R.T. (2014). Arcellacea (testate amoebae) as bio-indicators of salt contamination in lakes. *Microbial Ecology,* 68, 299-213.

Roe, H.M., Patterson, R.T. & Swindles, G.T. (2010). Controls on the contemporary distribution of lake thecamoebians (testate amoebae) in the Greater Toronto Area and their potential as water quality indicators. *Journal of Paleolimnology,* 43, 955-975.

Roe, H.M., Coope, G.R., Devoy, R.J.N., Harrison, C.J.O., Penkman, K.E.H., Preece, R.C. & Schreve, D.C. (2009). Differentiation of MIS 9 and MIS 11 in the continental record: vegetational, faunal, aminostratigraphic and sea level evidence from coastal sites in Essex, UK. *Quaternary Science Reviews,* 28, 2342 – 2373.

Dr Helen Shaw

Email: Helen.shaw@mu.ie
Maynooth University, ICARUS / Department of Geography

I am a Lecturer in Biogeography at Maynooth University. Prior to moving to Ireland. I worked in the UK; undertaking a PhD at Stirling University examining the stand-scale ecological history of the Glen Affric pinewoods in Scotland; and Post-doctoral research at Lancaster University investigating the post-medieval ecology and management of upland landscapes. These were followed by teaching roles at Liverpool John Moores and University of Wales Trinity Saint David. I have a strong interest in quantified palaeoecology and was part of both the PolLandCal and LandClim networks led by Professor Mari Jose Gaillard and funded by Nordforsk. More recently I have been working with colleagues on the representation of grazing from coprophilous fungal spores and am just starting a project with Dr Ro Charlton at Maynooth University examining the palaeoecological history of the landscape around the river Suck.

Key publications

Shaw H., Whyte I. (2013) Land management and biodiversity through time in upper Ribblesdale, North Yorkshire, UK: Understanding the impact of traditional management. In: Rotherham I. (eds) Cultural Severance and the Environment. Environmental History, vol 2. Springer, Dordrecht

Plunkett G, McDermott C, Swindles GT, Brown DM. 2013. Environmental indifference? A critique of environmentally deterministic theories of peatland archaeological site construction in Ireland. *Quaternary Science Reviews.* 61, pp. 17-31

Shaw, H. and Tipping, R., 2006. Recent pine woodland dynamics in east Glen Affric, northern Scotland, from highly resolved palaeoecological analyses. *Forestry*, *79*(3), pp.331-340.

Bunting, M.J., Farrell, M., Broström, A., Hjelle, K.L., Mazier, F., Middleton, R., Nielsen, A.B., Rushton, E., Shaw, H. and Twiddle, C.L., 2013. Palynological perspectives on vegetation survey: a critical step for model-based reconstruction of Quaternary land cover. Quaternary Science Reviews, 82, pp.41-55.

Dr Bettina Stefanini

Email: stefanb@tcd.ie
Stiftung für Kunst, Kultur und Geschichte

Until 2018 when I became the head of a large art foundation in Switzerland, I worked as a palynologist and lecturer in Maynooth University. I am interested in the spread of peatland and in past agricultural practices and their environmental impact. I updated and curated the Irish pollen site database IPOL (2012) My PhD (2008) differentiated between human induced and natural vegetation change. Within this project I studied fossil pollen and proxy climate indicators from Ireland and north-west Spain. I studied environmental sciences at Trinity College, Dublin.

Key Publications

Stefanini, B. S., Oksanen, P. O., Corcoran, J. P., & Mitchell, F. J. G. (2018). Appraising the cohesion of palaeoenvironmental reconstructions in north-west Spain since the mid-Holocene from a high temporal resolution multi-proxy peat record. The Holocene, 28 (5), 681-694.

Roche, J., Mitchell, F., Waldren, S., & Stefanini, B. (2018). Palaeoecological Evidence for Survival of Scots Pine through the Late Holocene in Western Ireland: Implications for Ecological Management. Forests, 9(6), 350.

Stefanini, B., & McGlynn, G. (2015). Palaeoenvironmental change in the Comeragh and Monavullagh Mountains. In G. McGlynn & B. Stefanini (Eds.), The Quateranry of SE Ireland. Dublin: Irish Quaternary Association.

Mitchell, F. J. G., Stefanini, B. S., & Marchant, R. (2013). A Catalogue of Irish Pollen Diagrams. Biology and Environment: Proceedings of the Royal Irish Academy, 113(1), 1-31.

Kiely, G., Leahy, P., Ludlow, F., Stefanini, B., Reilly, E., Monk, M., & Harris, J. (2010). Extreme Weather, Climate and Natural Disasters in Ireland. Wexford: Environmental Protection Agency.

Dr Ingelise Stuijts

Email: ingelise@woodarch.eu
The Discovery Programme: Centre for Archaeology and Innovation Ireland (Retired)

Ingelise specialised in palynology (Late Pleistocene and Holocene vegetation of West Java, Indonesia. Rotterdam: Balkema 1993). In 1997, her focus shifted to Irish wood/charcoal research. Important projects undertaken were the Lisheen Mines and Dublin's West End Viking excavations for Margaret Gowen & Co. In 2002, she was appointed Director of Environmental Research for the Discovery Programme working with Lake Settlement, Medieval Rural Settlement and LIARI projects. 'WODAN' was an 'INSTAR' project supported by the Heritage Council (2008). 'WODAN' established an online wood/charcoal database creating consensus rules for charcoal research. Collaboration with Professor Liam Downey (Agricultural History Society of Ireland) led to various publications on historical food products.

Key publications

McGlynn, G., Stuijts, I., Stefanini, B., 2018. The Quaternary of the Irish Midlands. IQUA Fieldguide, 246 pp.

Stuijts, I., and Downey, L., 2016. Historical Farm and Fish Food Products prominently consumed by the general Irish population, from earlier times. Teagasc, Oak Park Carlow, 48 pp.

Stuijts, I., O'Donnell, L., Lyons, S., 2011. Cloud-computing in anthracology – experiences with the WODAN online database in Ireland. Saguntum extra, Valencia, 6 pp.

Stuijts, I., 2005. Wood and charcoal identification. Chapter 7. In: The Lisheen Mine Archaeological Project 1996-8. Eds. M. Gowen, J. Ó'Neíll, M. Phillips. Wordwell: 137-185.

Dr Graeme T. Swindles

Email: g.t.swindles@leeds.ac.uk
School of Geography, University of Leeds (UK)

Graeme Swindles has quite broad research interests in Earth System Science and works on topics concerning both past and present environmental change. His work crosses the disciplines of ecology, palaeoecology and geology. He works in a diverse range of environments from Arctic tundra to tropical rainforests in a range of locations including South and Central America, Canada, Sweden, Britain, Ireland and Alaska. In Ireland, he has focused on peatland palaeoecology and processes through time, reconstruction of Holocene climate change, volcanic ash (tephra) records and human-environment relations through the combination of archaeological and palaeoenvironmental data.

Key publications

Plunkett G, McDermott C, Swindles GT, Brown DM. 2013. Environmental indifference? A critique of environmentally deterministic theories of peatland archaeological site construction in Ireland. *Quaternary Science Reviews.* 61, pp. 17-31

Swindles GT, Lawson IT, Matthews IP, Blaauw M, Daley TJ, Charman DJ, Roland TP, Plunkett G, Schettler G, Gearey BR, Turner TE, Rea HA, Roe HM, Amesbury MJ, Chambers FM, Holmes J, Mitchell FJG, Blackford J, Blundell A, Branch N, Holmes J, Langdon P, McCarroll J, McDermott F, Oksanen PO, Pritchard O, Stastney P, Stefanini B, Young D, Wheeler J, Becker K, Armit I. 2013. Centennial-scale climate change in Ireland during the Holocene. *Earth-Science Reviews.* 126, pp. 300-320

Rea HA, Swindles GT, Roe HM. 2012. The Hekla 1947 tephra in the north of Ireland: Regional distribution, concentration and geochemistry. *Journal of Quaternary Science.* 27(4), pp. 425-431

Swindles GT, Blundell A, Roe HM, Hall VA. 2010. A 4500-year proxy climate record from peatlands in the North of Ireland: the identification of widespread summer 'drought phases'?. *Quaternary Science Reviews.* 29(13-14), pp. 1577-1589

Swindles GT, Charman DJ, Roe HM, Sansum PA. 2009. Environmental controls on peatland testate amoebae (Protozoa: Rhizopoda) in the North of Ireland: Implications for Holocene palaeoclimate studies. *J PALEOLIMNOL.* 42(1), pp. 123-14

Thanks to Sara Benetti, Niamh Connolly, Catherine Dalton, Cristiana Giglio and Lisa Orme for collecting the Who's Who and Showcase Projects

9. IRELAND'S SHOWCASE PROJECTS

BRITICE CHRONO

The BRITICE-CHRONO project constraining rates and style of marine-influenced ice sheet decay.

Project website at; http://www.britice-chrono.group.shef.ac.uk/

The BRITICE-CHRONO project comprises a consortium of over 40 palaeo-glaciologists, covering expertise in terrestrial and marine geology and geomorphology, geochronometric dating techniques and the modelling of ice sheets and oceans. It ran over 2012-2018 with £3.7 M of NERC funds plus use of NERC's research ships and dating facilities. The chief aim was to conduct a systematic and directed campaign to collect and date material to constrain the timing and rates of change of the marine-influenced sectors of the collapsing British-Irish Ice Sheet. These data are being used to answer hypotheses related to marine-influenced sectors undergoing rapid collapse (e.g. the role of topographic factors), catchment piracy versus steady retreat, and probing the glaciological meaning of Ice-Rafted Debris (IRD) events. We compiled landform evidence to make a Glacial Map and GIS database (Fig 1.), and by terrestrial fieldwork and seabed coring we extracted samples for dating ice sheet advance and retreat of the Irish Ice Sheet at the locations in Figure 2. Publications report the sedimentology, stratigraphy, the 462 new dates for British-Irish Ice Sheet, and the glacial context of investigated sites. These form the basis to build a series of reconstructions of ice sheet behaviour as the margins withdrew from the continental shelf and across the marine-to-terrestrial transition. An ice sheet wide reconstruction from 31 to 15 ka years BP (at 1 ka intervals) is assembled that combines ice sheet modelling with the new BRITICE-CHRONO and published legacy data.

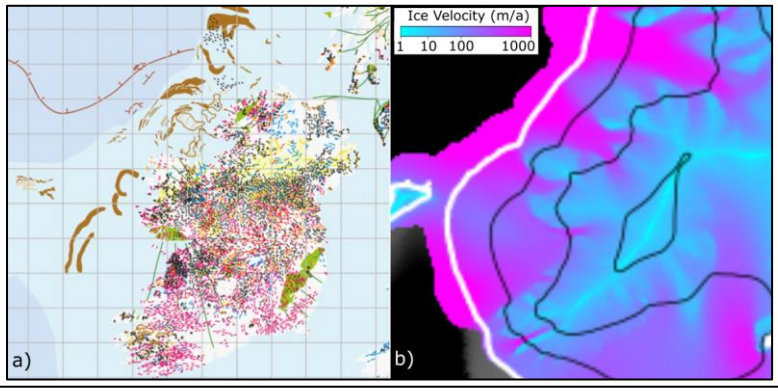


Figure 1. a) Compiled Glacial Map of landforms pertaining to the Irish Ice Sheet. The map and GIS data are published (Clark et al 2018) and can be downloaded at full resolution from https://www.sheffield.ac.uk/geography/staff/clark_chris/britice_v2/index. Additionally, and more user-friendly, is the Esri ArcGIS online application that permits you to pan and zoom across the landscape with a background location map and to use place name searches to find glacial landforms. Access this from http://www.briticemap.org/. Much of the Irish mapping comes from the PhD of Sarah Greenwood, her papers and reconstructions are noted below b) Preliminary ice sheet model of the Irish Ice Sheet covering the same

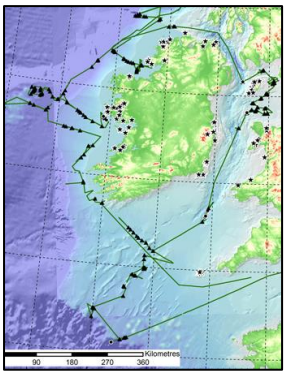


Figure 2. Location of BRITICE CHRONO samples collected from seabed cores and terrestrial fieldwork. These have been used for dating ice sheet advance and retreat by radiocarbon, cosmogenic and luminescence methods

Collaborators: Led by Chris Clark, with a steering group of Derek Fabel, Colm O'Cofaigh, Richard Chiverrell, James Scourse & Richard Hindmarsh, & with project administrator Jenny Doole. Transect Leaders were: Tom Bradwell, David Evans, David Roberts, Richard Chiverrell, James Scourse, Colm O'Cofaigh, and Sara Benetti. Co-investigators and collaborators included: Riccardo Arosio, Colin Ballantyne, Mark Bateman, Grant Bigg, Sarah Bradley, Matt Burke, Louise Callard, Siwan Davies, Dayton Dove, Geoff Duller, Jeremy Ely, Stewart Freeman, Jenny Gales, Niall Gandy, Ed Gasson, Lauren Gregoire, Elena Grimoldi , Mike Hambrey, Anna Hughes, Stephen Livingstone, Ed Lockhart, Danny McCarroll, Alicia Medialdea, Claire Mellett, Glen Milne, Xavier Monteys, Steve Moreton, Sally Morgan, Henry Patton, Anna Pienkowski, Dave Pollard, Daniel Praeg, Catriona Purcell, Sabrina Renken, Margot Saher, Kevin Schiele , Hans Petter Sejrup, David Small, Rachel Smedley, Serena Tarlati, Katrien van Landeghem, Kasper Weilbach & Peter Wilson

CHERISH

The CHERISH project (Climate, Heritage and Environments of Reefs, Islands and Headlands) – 'Climate Change and Coastal Heritage' – is a €5.2 million five year project funded by the European Union's Ireland Wales 2014-2020 European Territorial Co-operation (ETC) programme. The project supports specialist organisations in Ireland and Wales to employ cutting-edge technologies to analyse coastal and island archaeology and heritage sites most affected by climate change, coastal erosion, storminess and rising sea levels.

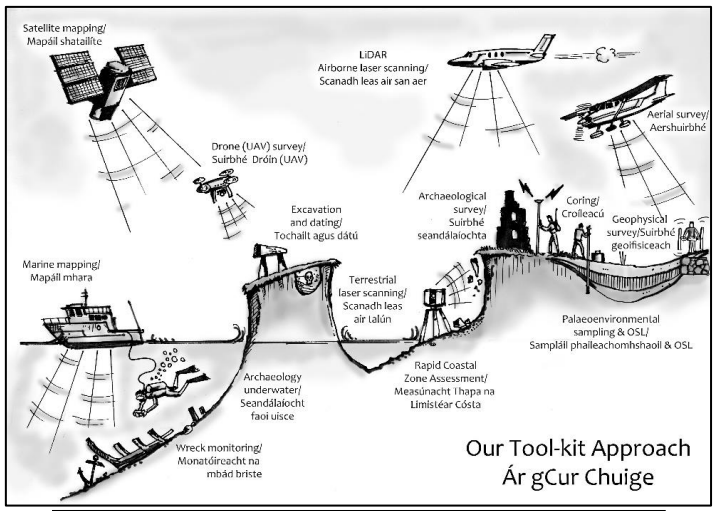
Geological Survey Ireland together with the Discovery Programme: Centre for Archaeology and Innovation Ireland (Heritage Council) are collaborating with The Royal Commission on the Ancient and Historical Monuments of Wales (Project Lead) and Aberystwyth University: Department of Geography and Earth Sciences on this project as well as communities in counties Dublin, Wexford, Waterford and Kerry to widely disseminate the results and best practice for future climate change adaptation.

Website: http://www.cherishproject.eu/en/

Project Partners:
Geological Survey Ireland: www.gsi.ie
Discovery Programme: http://www.discoveryprogramme.ie/
Royal Commission on the Ancient and Historical Monuments of Wales: https://rcahmw.gov.uk/
Aberystwyth University: https://www.aber.ac.uk/en/dges/

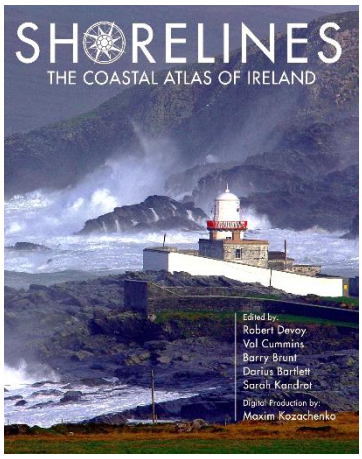
Area 11: Skomar Island

Kilmichael Point, Co Wexford



Cherish Survey Approaches with Irish language

Shorelines: The Coastal Atlas of Ireland



Visually stunning, accessible and an academic tour de force; *Shorelines: The Coastal Atlas of Ireland* will resonate with everybody who has a connection to Ireland and anybody with an interest in coasts.

The coast, the place where Ireland starts and ends; the real Ireland, home for some 55% of its population and most of its major cities. The coasts have been shaped by both long-term geological controls and also geomorphologically, since Lateglacial times and the Holocene, by the work of marine action, rivers, ice and gravity. Coastal environments contain varied, and often long records of recent Quaternary Earth history, as well as of its processes functioning, including records of storms, tsunamis and sea-level changes (Figure 1). Much of the mapping of Ireland's geology began with study of the coasts' widespread rock exposures, with approximately 50% the coastline comprised of hard rock cliffs. Situated on the eastern margin of the North Atlantic, Ireland forms an ideal environment to study many of the generic processes and components of coastal environments.

Ireland as surrounded by ocean, has often been referred to as an "island nation". The importance of the coastal zone to Ireland is extremely high, given its economic value from tourism and recreation, fishing, aquaculture, renewable energy, ports and linked industries and its environmental significance. Although there are existing guides about Ireland's coastal geology, marine biology, geography and history, these are fragmented and mostly of a local nature. There is no single text that explores the coast of Ireland as a whole, from both the physical and social perspectives. Shorelines will fill this gap by both educating and engaging the public on the importance of the coastline for Ireland. *Shorelines: The Coastal Atlas of Ireland* is to be published by Cork University Press in 2020.

Shorelines will be an 800 page, 33 chapter book publication covering a wide range of themes including historic maritime traditions, marine biology and modern maritime industries that support Ireland's coastal communities. The atlas is due to be published by Cork University Press in 2020 as part of their celebrated atlas series from University College Cork's Geography Department. Edited by Robert Devoy, Val Cummins, Barry Brunt, Darius Bartlett and Sarah Kandrot, with digital production by Maxim Kozachenko, the publication involves the work of over 100 voluntary text contributors.

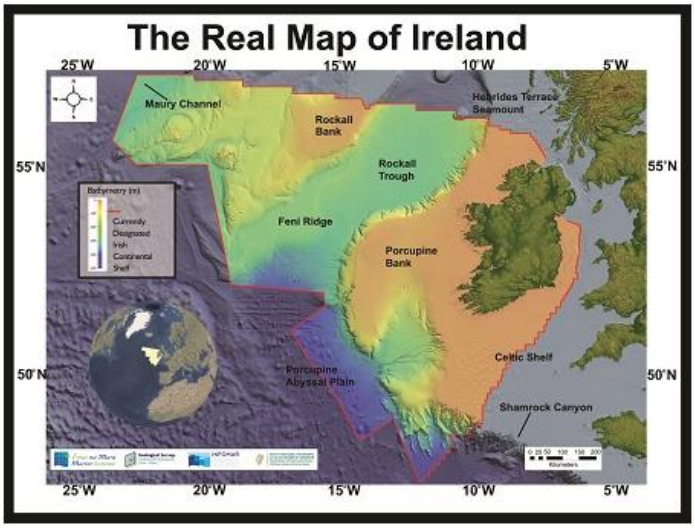
Figure 1. Aerial view from Tralispean Bay, County Cork toward the entrance of Lough Hyne and over Tranabo Cove (centre right). The site records the impact of the 1755 Lisbon Earthquake generated tsunami, evidenced by thick sands sequences, which are deposited on these coasts at elevations of up to c. +18 meters Ordnance Datum (Cronin et al., 2018. *Irish Geography*, 51 (2), 229-260) [Photograph Source: Max Kozachenko].

The INFOMAR Programme

INFOMAR (Integrated Mapping for the Sustainable Development of Ireland's Marine Resource) is a twenty year programme to map the physical, chemical and biological features of Ireland's seabed. INFOMAR is funded by the Department of Communications, Climate Action and Environment (DCCAE), and delivered by joint management partners Geological Survey Ireland and the Marine Institute. The programme has placed Ireland centre-stage as global leaders in marine stewardship, seabed mapping, research and development of marine resources.

The programme delivers a wide range of benefits to multi-sectoral end-users across the national blue economy with an emphasis on enabling our stakeholders. Demonstrated applications for the use of INFOMAR's suite of mapping products include: Shipping & Navigation, Renewable Energy, Fisheries Management, Aquaculture, Marine Leisure & Tourism, Infrastructure, marine archaeology, Environmental Monitoring, Coastal Behaviour and Climate Action.

The scope of the programme relates to a geographic area covering some 220 million acres (880,000Km2), which is ten times the size of the island of Ireland. This area includes the deep abyssal water depths of the Rockall Trough, the shallower continental shelf and very shallow coastal and inshore waters which taken together make up Ireland's marine resource.



With the first ten year phase (2006-2016) now complete, we are beginning to see how this knowledge has the potential to offer benefits for the island of Ireland. A range of diverse navigational, environmental, cultural and international legislative obligations must also be addressed. There remains a crucially important body of work to follow in mapping our valuable inshore and offshore waters before the programme completion in 2026.

INFOMAR data outputs have been used in over 500 peer review scientific publications, books and general outreach articles covering a variety of marine related topics from deep-water corals to icesheet limit reconstruction.

Further information regarding the latest INFOMAR surveys and research activity can be found at www.infomar.ie
Publications: https://www.infomar.ie/index.php/rd-and-education/publications?field_r_d_and_education_publicat_target_id=32
Partnerships
https://www.infomar.ie/index.php/partnerships

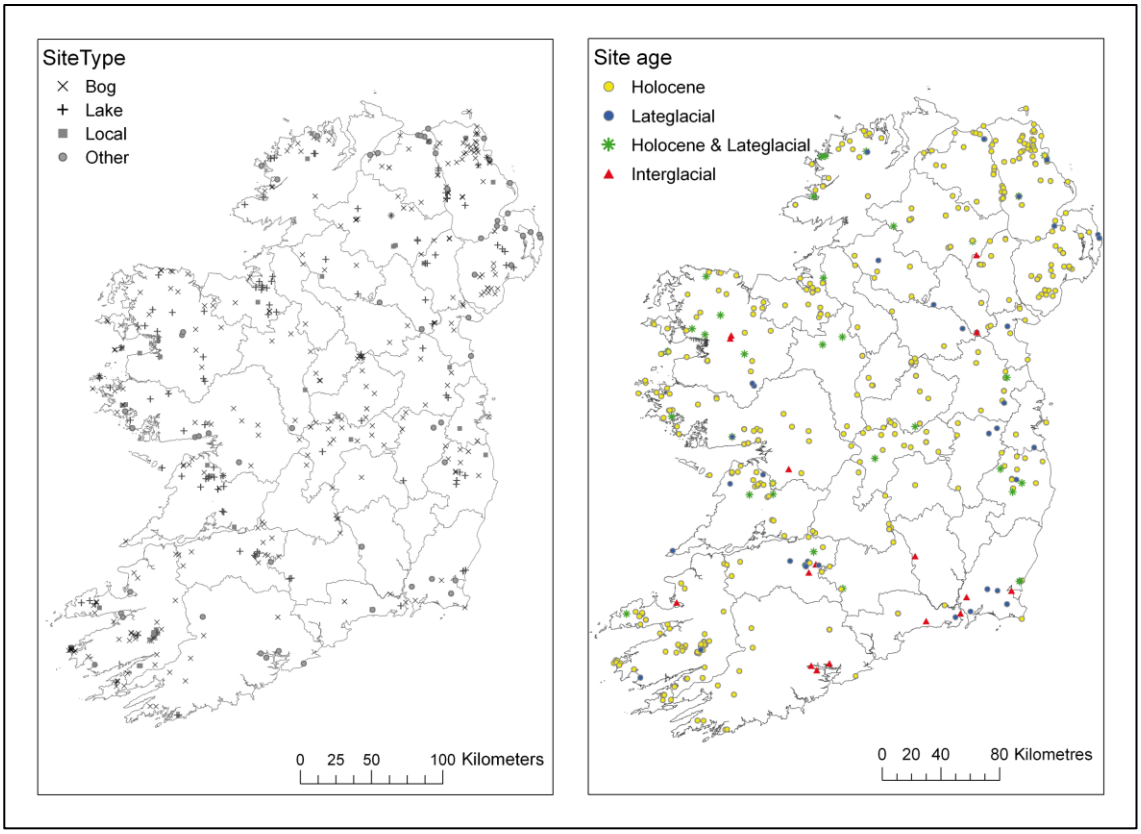
IPOL THE IRISH POLLEN SITE DATABASE

The Irish Pollen Site Database (IPOL) is a catalogue of Irish pollen diagram metadata covering the Quaternary period. It catalogues the location, site type, age range, chronology and publication sources of all available pollen diagrams on the island of Ireland. The pollen count data, when available in digital format, have been uploaded to the Neotoma Paleoecology Database (https://www.neotomadb.org/).

This is an ongoing project which now catalogues over 500 pollen diagrams distributed throughout Ireland from a variety of site types (Fig. 1). Full count data for approx. 60 pollen records have been uploaded to Neotoma. In addition to peer-reviewed publications, we have striven to capture pollen diagrams that appear in the grey literature (archaeological reports, student theses etc.) which have tended to be more obscure.

The site table is available to download as a spreadsheet and as an access database from the IPOL website (http://www.ipol.ie/), and site markers for display in Google Earth (kmz files) are also available for download. More details on the project can be found in Mitchell et al. (2013). This project is ongoing and so we encourage you to make submissions via the IPOL website of pollen diagram metadata that may be missing. We intend IPOL to facilitate future research in Ireland by documenting existing data sources and sites with potential for further study, as well as highlighting locations that have yet to be the focus of palynological investigations.

Publication:
Mitchell F.J.G., Stefanini, B.S. and Marchant, R. (2013) A catalogue of Irish pollen diagrams. Biology and Environment-Proceedings of the Royal Irish Academy, 113B, 103-135.



Left: Map of Ireland depicting locations and site types of pollen records within the IPOL database. Bog = peat deposits (including raised bog and blanket bog); Lake = lake sediments; Local = sites representing local pollen, such as small hollows, mor humus and soil deposits; Other = all other site types, including pingos, marine sections and a range of archaeological settings. Right: Map of Ireland depicting locations of pollen records within the IPOL database according to age category and age

The Tellus Programme

The Tellus Programme is Ireland's ground and airborne geoscience data acquisition programme, collecting geochemical and geophysical data to inform the management of Ireland's natural resources and environment. The programme, run by Geological Survey Ireland (GSI), a Division of the Department of Communications Climate Action and Environment (DCCAE), involves two types of surveying – airborne geophysical surveying using a low-flying aircraft, and ground-based geochemical surveying of soil, stream water and stream sediment. To date over 50% of the Republic of Ireland and all of Northern Ireland has been surveyed and plans are underway to survey the remaining 50% of the country. The data collected by Tellus is used by a wide range of stakeholder groups across Ireland, particularly mineral exploration, environmental management, agriculture, human health and third level researchers in these areas.

The **Tellus airborne geophysical survey** comprises measurements of magnetic field, gamma-ray spectrometry and electromagnetic data. The high resolution data collected is an invaluable tool for effectively 'seeing through' Ireland's often deep glacial deposits and extensive peat cover. The data collected is being used to revise the GSI's quaternary and surface bedrock geology maps, assist in mineral exploration, identify potential areas of contamination and map areas of radon risk.

The **Tellus geochemical survey** is characterizing the baseline chemistry of soils, stream water and stream sediments across Ireland, taking samples at a density of approximately one every 4km^2. Multi-element laboratory analysis of these samples allows a suite of some 55 maps to be produced, which are important for both agricultural productivity and environmental management, particularly for improving our understanding of how trace elements, essential for animal and crop health, are distributed in the environment.

Tellus works with different programmes within the GSI as well as with other agencies and researchers to develop user-centric data products. One of these projects 'Terra Soil' launched in October 2018 is a joint research collaboration with Teagasc (the states agricultural research and development authority) will produce new agricultural advice using Tellus data and soil samples. It represents a new, multidisciplinary approach to smart agriculture and brings together geologists and agronomists in order to meet the challenges of increasing agricultural productivity and protecting the environment. Tellus data is also being used to inform the management of waste-licenced Soil Recovery Facilities. This will assist the Environmental Protection Agency with the development of an approach for establishing '*Geochemically Appropriate Levels*' for the acceptance of greenfield/non-greenfield soil and stone into soil recovery facilities. Projects for mineral prospectivity mapping, are also being developed.

Further information regarding the latest Tellus surveys, survey findings and research collaborations can be found at www.gsi.ie/tellus

Tellus Soil Sampling

Sunrise with aircraft at Kerry Airport

Tellus Sediment Sampling

A Sample Of What IQUA's Been Up To