

Irish Quaternary Association

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Editor: Catherine Dalton



1. Introduction

This is my first edition of the IQUA newsletter as editor. I hope that you find the selection of events, conferences, research projects and news items informative. Please note the excellent line-up for the forthcoming IQUA Symposium 'Ireland after the ice: early migration and landscape development' on November 14th at the Geological Survey.

All contributions for the next newsletter (April 2004) should be send to me at catherine.dalton@mic.ul.ie

Nicki Whitehouse *The last glacial-interglacial (LGIT) change in Ireland: new evidence from Coleopteran records*

Michael Gibbons *Mapping the Mesolithic in Connacht in the light of new discoveries and a reevaluation of earlier finds*

Rob Marchant *Comparing records of Irish postglacial vegetation dynamics - a regionally different response*

Frank McDermot *Early Holocene climate variability in Ireland; evidence from cave deposits*

Richard Preece *Post-glacial colonization of Ireland: the evidence from land snails*

2. IQUA SYMPOSIUM

NOVEMBER 2003 SYMPOSIUM

14th November, 2003

Location: Geological Survey of Ireland (GSI), Beggars Bush, Dublin 4

'Ireland after the ice: early migration and landscape development'

The symposium this November will look at the topic of the Early Holocene of Ireland and will cover plant and animal immigration as well as climate, sea-level, archaeology and other related topics. Speakers will include:

Robert Devoy *Coastal change and sea-level rises: the legacy of glaciations on Ireland's coasts*

Chris Turney *Developing an Irish tephrochronological framework for the last glacial-interglacial transition (14-9 ka 14C BP)*

Fraser Mitchell *Postglacial tree migration into Ireland*

Peter Woodman *Which mammals are usually missing?*

3. IQUA Fieldmeetings

AUTUMN 2003 FIELDTRIP SYMPOSIUM

10th - 12th October, 2003

This year's autumn fieldtrip was to the Sperrin Mountains, between Derry and Tyrone. The trip focussed on the deglaciation of the Sperrin Mountains, which included the formation of perched, high level glaciolacustrine deltas. Attendance was relatively good, with a turnout of ten people, including the leader of the trip, Steve McCarron. Attendees included both professional and amateur geologists. This short summary of the trip describes some of what I (a hydrogeologist) feel were the highlights of the trip. For a technical description of the deglaciation of this region of the island of Ireland, see the very detailed and clear Field Guide (No. 25) written by Steve McCarron, which is well worth the read. The sites visited on the field trip fell into two themes: (1) the Ice Retreat towards the Omagh Basin and Donegal Highlands and (2) the Deglaciation of the Dungiven Basin.

We started the weekend near Gortin by visiting the first of many classic flat-top Gilbert-type deltas. These deltas were formed in several phases, then

subsequently dissected by a post-depositional steep-sided channel (the Gortin Glen). A good quarried section reveals the internal architecture of the deltas: high-angle (~40°) planar foresets consisting of sand to cobble sand, dipping towards the valley floor. These perched deltas are interpreted to have been formed in a ponded waterbody in several phases, corresponding to drops in lake level from 256 mAOD, to 210 mAOD, then 180 mAOD. The aspects that impressed me most at the site were threefold: the fact that we were standing very close to the base of what would have been a kilometres-high glacier; that the flow of meltwater and its sediment load was uphill, driven by the hydrostatic pressure caused by the weight of the glacier and sprayed out into the basin; and, the interpretation that the huge and deep lake into which the delta lobes prograded was created essentially by grounded ice margins damming meltwater. This last item is illustrated beautifully by the view down Gortin Glen (if the cloud isn't at 150 mAOD!) – the narrow valley opens up to a wide, empty and flat plane – the only way that 250 m of water could have ponded is by ultimately ephemeral ice dams.

At other locations around the area, we saw many more very impressive exposures of deltas, both foreset and topset areas, and prodelta areas, with the concomitant wide range of grain sizes (boulders to silt and clay) and depositional structures, such as cross-cutting channelised gravels, shallow foresets comprised of fine-grained material, etc. We also saw good examples of ice wedges and inverse grading. Driving around the area, flat-top structures abound, together with hummock terrain and esker ridges, showing how active this area was during the ice retreat. The extensive quarrying operations in the region reveal sections that would otherwise be unavailable for study. However, it seems a shame to think that these very important records of glacial history and climate change, and distinctive parts of the natural landscape, are being eroded by human activities on a timescale far faster than natural processes, and are in danger of being lost.

A planned trip underground into the reopened Currighnalt Gold Mine was unfortunately cancelled. However, we did get to see more sand and gravel in compensation! We visited sand and gravel deposits in the Ballinderry valley complex where quarrying operations reveal the vast scale of some of the delta lobe systems. Our last stop finally cleared up something that had (to me) been a bit of a mystery: nearly all the high-level sand and gravel deposits we had seen over the two days were covered in blanket bog. As most of the glacial deposits were very permeable and

unsaturated, the presence of the bogs was causing me some confusion. All was revealed when very clearly-developed iron pans beneath both podzolic and partially-eluviated soils could be seen at the top of the deltaic sands and gravels. This, combined with the charcoal layer that is almost ubiquitously found at the base of the peat, prevented drainage of the soils and hence bogs developed.

The field trip was great fun and a real learning experience. Steve McCarron commented that the reason for studying the glacial deposits is to gain an insight into global climate changes. For me it has additional benefits: it opens up a whole new appreciation of the Irish landscape and its varying Quaternary landforms, and also helps me in my work as a hydrogeologist by improving my understanding of the morphology, distribution, size and composition of some important glacial deposits that can be protective layers over bedrock aquifers, or can be aquifers in their own right if they are saturated.

Our thanks are also extended to John, of Baldoney Tavern fame. His excellent food and drink managed to keep us fed and watered well into the wee small hours. The leader of the trip was Steve McCarron (smccarr@tcd.ie). The 1:50,000 Discovery series sheets 7 and 13 cover the area visited. The Field Guide is No. 25.

Natalya Hunter Williams
Geological Survey of Ireland

4. Upcoming Events

PROPOSED QRA ANNUAL FIELD MEETING 2005
TO WESTERN IRELAND (JOINT WITH IQUA)
Late March /early April 2005
Leaders and Field Guide Editors: Michael O'Connell
and Pete Coxon

The west of Ireland offers a wide range of scenery and Quaternary sites that have been worked on and published over the last 150 years. This is an opportunity for the QRA to visit classic Irish sites ranging from Neogene to Late Holocene in a variety of landscape types. The leaders have many contacts who have already participated in IQUA field meetings and who have archaeological, palaeobotanical, geomorphological experience of the Irish landscape. The leaders intend incorporating a wide diversity of material into the field trip and you can check out the latest IQUA guide available as a pdf file at <http://www.tcd.ie/Geography/Download/iqua2001ftrip.pdf> to give you an idea about the content of one day of the proposed trip. We will cover topics as diverse

as landscape evolution, interglacial stratigraphy, glacial sedimentology and landforms, karst landscapes and processes

5. Current Research Projects

Early-Mid-Holocene palaeoecology and climate change: disentangling relationship between climate, human and ecological factors and their bearing on rapid and long-term environmental (including biotic) change.

The first project in this theme is Irish early-mid Holocene palaeoenvironments at Lough Neagh, investigating the Holocene lake and floodplain fluctuations and their wider implications to climate and catchment change. The project is funded by Environment and Heritage Service (Northern Ireland). Nicki Whitehouse is co-PI with Dr Valerie Hall and work will be undertaken by Dr Gill Plunkett. Funding on this project is now complete and results are being prepared for publication. Further funding is being sought to investigate wider issues associated with this project, in particular climate changes inferred by project results.

Contact: Nicki Whitehouse
n.whitehouse@qub.ac.uk

Late glacial and early Holocene palaeoclimates and environments in Ireland and Britain.

This project aims to test the rapidity and asynchronicity of climate change; and refine quantification of palaeoclimatic data. Sites being investigated include Westwoodside Quarry, S. Yorkshire, England and Roddansport inter-tidal sequence, Ards Peninsula, Co. Down. The Yorkshire site (investigated with M. Bateman, P.C. Buckland, C. Frederick, University of Sheffield; Dr B. Gearey, University of Hull) is close to completion. The Co. Down site is being investigated with C. Turney, QUB; Dr B Gearey, University of Hull; Prof D. Keen, University of Coventry; Steve Brooks, Natural History Museum.

Contact: Nicki Whitehouse
n.whitehouse@qub.ac.uk

Origins and development of the Holocene invertebrate fauna of the British Isles and its implications for landbridges, glacial refugia, biodiversity and conservation.

This project includes mainly Irish work, from Bog sites including Sluggan Bog and Balymacomes More, Co. Antrim. The work is partially funded by the Royal Society. The research will examine the biogeographic origins of the fauna and its significance in terms of forest composition, openness, structure, impacts of grazing animals and biodiversity over a long-term temporal perspective.

Contact: Nicki Whitehouse
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ACCROTELM is an EU 5th Framework Programme project which will run for three years from April 2003.

Research has shown that mires provide excellent data on past abrupt climate changes. These data can be integrated with complementary climate data from lakes to demonstrate the magnitude and rate of Holocene climatic variability, for use in climate modelling. This project will produce new high-resolution data and from these assess evidence for climate variability across Europe during the past 4500 yr, thus providing analyses of abrupt climate changes and their effects. The research will combine the development and refinement of proven techniques with the innovative development of biomolecular technologies and testate amoebae proxies. In this way ACCROTELM will generate continuous records of hydrological/temperature changes from mire sites in transects across Europe. These records will be compared with complementary summary data on lake-level changes, and will provide a focus on episodes of abrupt climate change. ACCROTELM will employ new methods to provide superior data and will assess the actual and potential scale of effects of abrupt climate change in Europe.

Eleven European laboratories are collaborating on the ACCROTELM project. The TCD team are responsible for generating macrofossil, pollen and humification records from Ireland and Spain.

TCD contacts:

Dr Fraser Mitchell fraser.mitchell@tcd.ie
Dr Maarten Blaauw blaauwm@tcd.ie
Ms Bettina Stefanini stefanb@tcd.ie

More details on the ACCROTELM project can be found at www.glos.ac.uk/accrotelm

IN-SIGHT Identification of reference-Status for Irish lake typologies using palaeolimnological methods and Techniques



IN-SIGHT

IN-SIGHT is an ERTDI Phase 3 funded project which commenced in January 2003 and will run for 3 years. The priority area 'Palaeolimnological Investigation for candidate reference lakes' (2002-W-LS/7), established under Phase 3 of the ERTDI Programme 2000-2006, recognised the importance of palaeolimnological research to the effective implementation of the EU Water Framework Directive (WFD). Palaeolimnological techniques are being used in to help establish baseline reference conditions in lakes, including those that have been heavily impacted by humans. The proposed IN-SIGHT project builds upon recent and current monitoring programmes in Irish lakes, results from palaeolimnology techniques developed and applied in previous research, the varied experiences of the project personnel and ideas derived in co-operation with current work in Ireland, UK and farther afield. The IN-SIGHT project has a three-tiered approach based upon three work packages that will collectively use nutrient status, pH and evidence of soil erosion as indicators of lake stability or change over the period of maximum intensification and of human activities in Ireland. Recent lake sediment cores (c. 100-200 years) were extracted from 35 lakes this summer and are currently being analysed. The project is a joint collaboration between Trinity College, University of Ulster (Coleraine), University College Dublin, University of Limerick (MIC) and University College London.

Contacts:

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 Dr Catherine Dalton catherine.dalton@mic.ul.ie
 Dr. Manel Leira leiram@tcd.ie

6. Postgraduate Research

A selection of abstracts and titles of current postgraduate research is contained in the following section.

Last Name	First Name		Working Title
Baillie	Warren	QUB	An investigation of fossil insects from the Toome area, Lough Neagh
Becker	Katharina	UCD	Hoards and Deposition in the Irish Bronze and Iron Age
Boyle	Clare	QUB	A statistical analysis of late glacial fossil beetle assemblages.
Brady	Conor	UCD	Earlier Prehistoric Settlement in the Boyne Valley: The Results of a Ploughzone Survey
Brooks	Anthony	TCD	Holocene sea level variations around the coastline
Bunny	Julius	TCD	Human-environmental interactions in central Africa during the late Holocene
Butler	Vincent	UCD	The Exploitation of Mammals in Anglo-Norman Dublin and its Wider Context
Chen	Guangjie	UL-MIC	Development of an Irish Ecoregion community (diatom and cladoceran) training-set using paleolimnological techniques
Cummins	Thomas	UCD	The Archaeology of Made Soils
Greene	Sharon	UCD	Settlement, identity and change on Connacht's Atlantic Isles, AD 400-1100
Kador	Thomas	UCD	People, landscapes and mobility in Mesolithic Ireland
Kavanagh	Helen	UCD	The context and chronology of Leinster Cooking Ware
Keeling	David	UCD	The Early Prehistory of Co. Sligo, N.W. Ireland (7,500-1400 BC): A Settlement and Environmental Perspective
Legg	Robert	TCD	Predictive archaeological modelling
Little	Aimée	UCD	Reconstructing memory and meanings - Mesolithic identities and landscapes in the Northern Midlands
Ludlow	Francis	TCD	Irish documentary evidence for climate changes during the historical period.
Mc Guinness	David	UCD	Irish rock basins or "Bullaun" stones: Contributions towards understanding an enigmatic field monument
Ní Cheallaigh	Máirín	UCD	The Influence of Nationalism on the Identification and Preservation of National Monuments in Ireland (From c. 1800/1850 to c. 1930)
Nolan	Tara	TCD	An environmental history of Marl Lough, Co. Mayo
Ó Riain	Diarmuid	UCD	Ireland and Germany in the 12th century - a relationship set in stone?
O'Connor	Blaze Valeska	UCD	Prehistoric Petroglyphs in the Archaeological Landscape. Contextualising Sites in Ireland and the United Kingdom
O'Dwyer	Barry	TCD	Recent environmental changes in the Lough Tay catchment
Prendergast	Frank	UCD	Archaeoastronomical perspectives on the passage tombs of Ireland
Reilly	Eileen	TCD & QUB	Woodland dynamics in the Historic period inferred from fossil beetles.
Roche	Helen	UCD	A Study of Late Bronze Age Coarse Pottery in Ireland
Rodgers	Karen	QUB	Fossil beetles from early Holocene inter-tidal peat deposits in Strangford Lough
Ronnes	Hanneke	UCD	Domestic Architecture of Polite Culture in Ireland, AD 1550-1650, and its International Context: A Study in Comparative Social Archaeology
Ruffino	Jane	UCD	Colonial and Postcolonial Landscapes: A Study in Plantation Archaeology
Ryan	Patrick	UCD	Water Supply of the City of Dublin (c. 1700-1870)
Sheehan	Treasa	UL-MIC	Sub-recent water level movements in the Shannon Estuary
Smyth	Jessica	UCD	Settlement Landscapes in Neolithic Ireland
Sullivan	Eoin	UCD	The Irishfarm in the context of the Rural Environment Protection Scheme - an archaeological perspective
Tierney	Andrew	UCD	Building Identity: An Archaeology of Gaelic Irish Castles

Early Human Influence and Environmental Change in the Antrim Uplands, Northern Ireland

Lisa Doyle (lisa.doyle@qub.ac.uk)
PhD submitted 2003, QUB
Supervisor: Dr. Valerie Hall

The varied landscape of the Antrim coast and glens had much to offer prehistoric settlers. The environment of Antrim has been substantially changed during the interim millennia. This study traces the evidence for anthropogenic influence on vegetation in the uplands during the mid-Holocene. It focuses on the level of landscape modification which occurred during the Mesolithic period and examines how foraging societies could benefit from woodland clearances. With the arrival of the Neolithic and agriculture, widespread deforestation took place and fields were created for both pasture and arable cultivation. This dramatic reduction in vegetation cover appears to have aided the development of blanket bog on the Antrim plateau.

Samples extracted from natural peat-filled hollows and ancient lake basins were examined to establish how far back human influence on the local landscape could be traced. The advent of tephra studies has made it possible to date problematic upland peats with increasing precision. The geochemical signature of each sub-millimeter shard of distal volcanic glass denotes its parent eruption and facilitates the correlation of tephra layers across western Europe. The chronological security afforded by high precision wiggle-match radiocarbon dated tephra isochrones can be directly applied to any horizon in which they have been identified. The vegetation dynamics recorded from the sites in this study are thus set within a robust and readily comparable tephrochronological timeframe. The vertical and horizontal spread of a tephra layer within an individual profile also provides a reliable indication of post-depositional displacement of micro-particles through the sediment. Pollen and non-palynomorph microfossil analysis detailed the changes in environmental conditions and vegetation composition through time. Frequencies of particulate sub-fossil charcoal were also recorded as an indication of anthropogenic firing setting. Late Mesolithic vegetation disturbance was found to be a significant contributing factor in the development of blanket bog in the uplands.

Late Quaternary Environmental Change in the Western Mediterranean

Karen Sheeran
(sheerank@tcd.ie)
Current PhD. TCD
Supervisor: Prof. Pete Coxon

This research focuses on reconstructing environmental changes on the Balearic island of Mallorca during the Quaternary period. Previous research on Quaternary deposits in Mallorca has identified sediments of diverse environmental origin. Sediments have been classified as aeolianite palaeodunes, fluvial flood deposits, marine beach sands and palaeosols.

Presently this research is focusing on pollen preserved in the palaeosols which are exposed along the NE and SW coastlines of Mallorca. Initial results show that these palaeosols are oxidised and as a result their pollen content is very low. However it is hoped that indicator species may be recorded which will allow for an environmental interpretation to be made. The key goal is to elucidate the characteristics of these soils and reconstruct late Quaternary environmental and vegetational changes.

Funding: Postgraduate Research Scholarship funded by the Irish Research Council for Science Engineering and Technology (IRCSET).

7. Notices

INQUA

International Union for Quaternary Research



New information regarding INQUA will from now on be posted to the following website:
<http://www.inqua.tcd.ie/>

INQUA, the International Union for Quaternary Research, was founded in 1928 by a group of scientists seeking to improve understanding of environmental change during the glacial ages through interdisciplinary research. The current Secretary General for the period 2003-2007 is **Professor Peter Coxon** (Trinity College Dublin). INQUA's basic goal (promoting improved communication and international collaboration in basic and applied aspects of Quaternary research) is achieved mainly through the activities of its commissions and committees:

Commissions (2003-2007):

- Coastal and marine processes
- Palaeoclimate
- Palaeoecology and Human Evolution
- Stratigraphy and Geochronology
- Terrestrial Processes

Chris Turney, Queen's University Belfast is now President of the INQUA Sub-Commission for Tephrochronology and Volcanology (SCOTAV) c.turney@qub.ac.uk

Prof. Valerie Hall, Queen's University Belfast is now Vice President of the INQUA Stratigraphy and Chronology Commission v.hall@qub.ac.uk

David Taylor, Geography Department, Trinity College is now Secretary for INQUA Commission on Palaeoecology and Human Evolution and Nicki Whitehouse, Queen's University Belfast is a Member.

taylor@tcd.ie & n.whitehouse@qub.ac.uk

Journal Homepages on the Internet

Quaternary International

<http://www.elsevier.com/locate/quaint>

Quaternary Research

<http://www.elsevier.com/locate/yqres>

Quaternary Science Reviews

<http://www.elsevier.com/locate/quascirev>

IGBP - International Geosphere-Biosphere Programme



IGBP is an international scientific research programme built on interdisciplinarity, networking and integration. It addresses scientific questions where an international approach is the best or the only way to provide an answer, adds value to a large number of individual, national and regional research projects through integrating activities to achieve enhanced scientific understanding. The Irish Committee on Climate Change is the Irish adhering body for the international IGBP.

<http://www.igbp.kva.se>

Classic Book on Palaeoecological Research Strategy Returns to Print

A valuable reference work for those involved in of Quaternary palaeoecology, palaeohydrology, paleolimnology, paleoclimatology and similar fields has just been brought back into print: "Handbook of Holocene Palaeoecology and Palaeohydrology," edited by Bjorn E. Berglund. This book was originally published in 1986 and was a breakthrough in standardizing methods applied in palaeoecology and palaeohydrology. Particular attention was paid to Holocene environmental changes in the temperate zone, but

most methods can be applied to older Quaternary deposits and to areas outside the temperate zone. After being out of print for many years, the book has recently been returned to print by The Blackburn Press, making it again available to scholars, libraries, researchers and students who would like to own or replace a copy of this classic book.

For more information on the book, see: <http://www.blackburnpress.com/haofhapaandp.html>

8. Recent Publications

Cole, E. E. and Mitchell, F.J.G. 2003. Human impact on the Irish landscape during the late Holocene inferred from palynological studies at three peatland sites. *The Holocene*, 13, 507-515.

Hall, V.A. 2003. Vegetation history of mid-to western Ireland in the 2nd millennium AD; fresh evidence from tephra-dated palynological investigations. *Vegetation History and Archaeobotany* 12, 7-17.

Knight, J. 2003. Geomorphic evidence for patterns of late Midlandian ice advance and retreat in the Omagh Basin. *Irish Geography*, 36 (1), 1-22.

Knight, J. 2003. A note on the formation of ventifacts at Castlerock, Northern Ireland coast. *Irish Journal of Earth Sciences*, 21, 41-47.

Knight, J. 2003. Temporal changes in subglacial meltwater activity: field evidence from the late Devensian in the north of Ireland. *Sedimentary Geology*, 160 (4), 291-307.

Wastegaard, S., Hall, V.A., Hannon, G.E., van den Bogaard, C., Pilcher, J.R., Sigurgeirsson, M.A. and Hermanns-Audardottir, M. 2003. Rhyolitic tephra horizons in northwestern Europe and Iceland from AD 700s-800s: a potential alternative for dating first human impact. *The Holocene* 13, 277-283.

Molloy, K. O'Connell, M (in press). Holocene vegetation and land-use dynamics in the karstic environment of Inis Oírr, Aran Islands, western Ireland: pollen analytical evidence evaluated in light of the archaeological record. *Quaternary International*.

Abstract

A detailed Holocene pollen record, elaborated in the project TIMECHS, is presented from An Loch Mór, a deep lake at the north-eastern end of Inis Oírr, Aran Islands, western Ireland. Woodland development in

the early Holocene is broadly comparable, as regards the general sequence of tree spread and overall woodland composition, to that known from mainland sites in the nearby Burren and Connemara. The main trees in the early Holocene woodlands were *Quercus*, *Pinus* and *Ulmus*. *Corylus* and a variety of tall shrubs including *Betula*, *Juniperus*, *Rhamnus catharticus*, *Ilex*, *Viburnum opulus* and *Sorbus* had an important role. *Taxus* expanded and attained dominance for a short period in the later Neolithic and then persisted in small numbers until at least the beginning of the early Medieval period (late 6th century AD). Other notable features included substantial opening-up of woodland cover prior to the Elm Decline, a well-defined Landnam in the early Neolithic (after the Elm Decline), considerable though varying human impact throughout the Bronze Age and continuing into the Iron Age, a distinct regeneration phase that involved regeneration of woody plants—mainly *Juniperus*, *Corylus* and *Taxus*—in the late Iron Age, i.e. the so-called Late Iron Age Lull, and renewed farming activity in the early Medieval period with *Secale* being introduced in the early 8th century AD. The final demise of woodlands took place between the 13th and the beginning of the 16th centuries though minor amounts of woody vegetation probably persisted on Inis Oírr until at least the late 18th century. The palynological record is discussed in the light of the available archaeological and historical information, and with particular reference to the recently completed archaeological excavations at Dún Aonghasa, the largest stone fort on the Aran Islands.

9. News items

Landslides in the news, October 2003

'The Geological Survey of Ireland says an extreme weather event caused last month's landslides in north Mayo, and has warned that further slides could occur in upland areas with similar geological and weather conditions. The geologists who wrote the report also rule out the construction of the radar station on Dooncarton Hill, and do not find any link with overgrazing, or with Enterprise Energy Ireland's gas terminal preparations in the Glengad area' © The Irish Times

'More landslides could occur in mountainous peat areas if there is heavy rainfall, according to an NUI Galway geologist. Prof Mike Williams, of NUI Galway's geology department "As the peat dies and shrinks, many little root systems attached to

the bedrock also die. With nothing holding it, it doesn't need anything to set a movement off. It could be the one last little root dying which causes a major shift" © The Irish Times

'The West was rocked by another landslide last night with a community fearful after a large area of bog and vegetation rolled down a mountainside. In all, about 70 acres of bog and debris is thought to have moved a significant distance down a mountainside in the Slieve Aughty range, close to where a large wind energy farm is being developed' © Irish Independent

Read about previous landslides:-

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, 107-119.

Alexander, R.A., Coxon, P. and Thorn, R.H. 1985. Bog flows in south-east Sligo and south-west Leitrim. *in: Sligo and West Leitrim. Irish Association for Quaternary Studies Field Guide No. 8.* (1985) pp 58-76. (Ed. R.H. Thorn) IQUA. Dublin.

Coxon, P., Coxon, C. and Thorn, R.H. 1989. The Yellow River (County Leitrim, Ireland) flash flood of June 1986. *in: Bevan, K and Carling, P. (eds.) Floods -Hydrological, Sedimentological and Geomorphological Implications of Floods.* pp 199-217, Wiley.

10. Forthcoming Conferences

Rapid and catastrophic environmental changes in the Holocene and human response (IGCP 490)
4 - 18 January 2004.

<http://www.brunel.ac.uk/depts/ges/igcp490/maur2004.htm>

Holocene climate in the Alps: toward a common framework ?

15 - 18 January, 2004, Aix-Les-Bains, France

<http://www.univ-savoie.fr/ufr/cism/actua/climalp/bienvenue.html>

Environ2004

14th Irish Environmental Researchers' Colloquium
University of Limerick 30 January - 1st February 2004

ASLO/TOS Ocean Research Conference.

15 - 20 February 2004

<http://aslo.org/honolulu2004/submission.html>

4th International Congress on the Archaeology of the Ancient Near East. Paleoclimate Proxy Data for

Reconstructing Holocene Environments of West Asia. 29

March - 3 April 2004 Berlin, Germany

http://www.ngdc.noaa.gov/paleo/meetings/icaane2004_worshop.html

Paleosols: memory of ancient landscapes and living bodies of present ecosystems

7-11 June 2004, Florence, Italy
<http://www.issds.it/paleo/>

International Palynology Congress.

Granada July 4-9 July 2004
www.11ipc.org/

Climate Change and Aquatic Systems, Past, Present & Future

21 - 23 July, 2004 University of Plymouth, U.K.
<http://www.biology.plymouth.ac.uk/climate/climate.htm>

32nd International Geological Congress (32IGC)

20 - 28 August, 2004, Florence, Italy
<http://www.32igc.org/default1.htm>

Ostracod Analysis

(David Horne)
 Course Dates: 19th - 23rd January 2004

Introduction to Palaeoceanography

(Dr Mark Maslin and Dr Andrew Ridgeway)
 Course Dates: 26th - 30th January 2004

Chironomids: Water Quality and Climate Change

(Steve Brooks and Dr Les Ruse)
 Course Dates: 2nd - 6th February 2004

Introduction to Benthic Foraminiferal Analysis

(Dr Mike Kaminski, *Earth Sciences, UCL*)
 Course Dates: 23rd - 27th February 2004

Numerical Analyses of Biological and Environmental Data

(Professor John Birks and Dr Gavin Simpson)
 Course Dates: 1st - 12th March 2004

Stable Isotopes and Environmental Change

(Professor Tim Atkinson, Dr Melanie Leng *et al*)
 15th - 19th March 2004

11. Training Courses

Alpine Ecosystem courses in Swedish Lapland

A one-year program in subarctic-alpine Ecology and GeoEcology for master students via Umea University has recently commenced. The course, which has modules that can be taken individually or as full year program has a close connection to ongoing research at Climate Impacts Research Centre (CIRC) and are based at Abisko Scientific Station, northern Sweden. The courses are held in English (unless otherwise stated), and are open to international students. One part of the GeoEcology course is paleolimnology.

For more information:

http://www.eg.umu.se/circ/index_eng.html
http://www.eg.umu.se/circ/abisko_ver3.pdf

Short Courses available at the Environmental Change Research Centre (ECRC), University College London.

<http://www.geog.ucl.ac.uk/ecrc/training.stm>

Introduction to Plant Macrofossil Analyses

(Prof. Hilary Birks)
 Course Dates: 1st - 5th December 2003

12. Job Opportunities

ASSISTANT LECTURER IN GEOGRAPHY
 TEMPORARY FULL-TIME APPOINTMENT
 Mary Immaculate College, University of Limerick

Applications are now invited for a full-time post of two and a half years duration, commencing February 2004, as Assistant Lecturer in Geography. The area of specialisation sought is environmental / physical geography, other than biogeography. Applications from specialists in geomorphology, and meteorology & climatology are particularly welcome, as well as from those with interests in environmental management and policy. Applications from specialists in other areas will be considered where these complement the existing strengths of the Department (<http://www.mic.ul.ie/geography/geoghome.htm#contents>).

For more information please contact Personnel Officer, Mary Immaculate College. Tel: (353) 061 204585. Closing date for applications Friday 14th November 2003 at 2 p.m.

IQUA Sponsors

http://www.nhm.ac.uk/	http://www.roadstone.ie/	http://www.gsi.ie/	http://www.epa.ie/
			

