



This issue

Special Issue on the last GLANAM workshop and fieldtrip that took place last June 2016 in Northern Ireland.

Giant Causeway

Before the start of the workshop the GLANAM members were treated with a visit to the Giant Causeway. Dwarika has prepared a short article about the day out.

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The fieldtrip

First Kasper and then Kevin will talk about the fieldtrip in Ireland, sharing the knowledge they have accumulated after 3-years worth of work in those locations (or close by)

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The last pint

Elena comments about the last nights officially spent together as a GLANAM group. Will there be more? Only time will tell.

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The last brave members of GLANAM remaining in Portrush after the fieldtrip

Northern Ireland - GLANAM workshop 2016

This June, the GLANAM annual meeting took place at Ulster University, very close to the cosy town of Coleraine. The workshop was filled with presentations from the fellows and the industrial partners Statoil ASA, E&P ASA and Volcanic Basin Petroleum Research (VBPR).

As it was one of our last GLANAM meetings, all the fellows presented their results. The lively sessions and the interest in the final output of the network made this workshop the best to date.

It was also our pleasure to see an ex Post Doc fellow of the

GLANAM project, Dr Katrien Heirman, give a talk. Katrien, now a representative of UNESCO from the department of Earth Science and Geohazard Risk Reduction Section in Paris, presented the fellows with an overview of the work possibilities after GLANAM. Many thanks to all the participants of the workshop. I would like to thank especially Kevin Schiele, Paul Dunlop and Sara Benetti for their help in organizing such a great meeting.

Dimitrios Ktenas

Giant's Causeway: One day field excursion

On Monday, June 06, 2016 a small group of GLANAM members took part in a short field excursion to the Causeway Coast, a World Heritage Site in Northern Ireland.

The main objective of the excursion was to explore the massive polygonal basalt columns, which were created by volcanic activity ca. 50-60 million years ago. We gathered in front of the tourist information desk at the Visitor's Centre before we started the excursion guided by Prof. Phil Jordan.

On our way to the Causeway Coast, we were fascinated by the beautiful landscape of this part of Northern Ireland. The most fascinating object of the excursion was, of course, the tightly packed hexagonal basalt columns which nearly resembled a human made net. For us geologists, the

remarkable formation history of the basalt columns was the most interesting topic of the excursion.



After the observation of the spectacular "The Organ" structure (photo above), we walked up the steep hills towards the top of the Antrim Plateau where we enjoyed the

beautiful view over the terrain. After a short break, we walked down to the Visitor's Centre through the flood waters and glaciers eroded plateau.

Overall, we enjoyed learning about the spectacular geology of the Causeway Coast. For me, working with seismic interpretation and imaging of volcanic sequences, it was a great opportunity to explore and experience the shape of basaltic rocks in the field. We ended our trip enjoying a nice local Irish beer at the pub (which once was Prof. Jordan's house!).

Dwarika Maharjan

The Fieldtrip - an introduction

From striation, erratic transport and drumlin orientation it is evident that the mountains in Co. Donegal at some point supported and nourished an independent ice dome (McCabe, 1987; McCabe & Clark, 2003; Ballantyne et al., 2007), that to the N, NW, WSW, is believed to have streamed down from the mountains and over the coastlines (Knight & McCabe, 1997).

Especially towards Donegal town, the SW flow direction is evident. Here the upland leading from the mountains to the coast is overridden with large Drumlin fields, with an

overall SW orientation (Knight & McCabe, 1997). ^{14}C dating of drumlins from the NW coast, constrain the formation of these to sometime between 30 and 14 ka BP (McCabe, 1996; Knight et al., 2004), and cosmogenic ^{10}Be exposure ages, dating to ~18.4 to ~15.9 from coastal sites at Malin Beg, Bloody Foreland and Malin Head, imply that the Donegal ice dome extended over these sites during LGM (Ballantyne et al., 2007).

This means that the timing of the Donegal ice dome must have been of LGM age, and that the deglaciation happened between ~18 ka to ~17.4 ka BP. Based on ice-scoured surfaces and roches moutonnées on the summits, and trimlines of the Donegal mountains, Ballantyne et al., (2007) calculate the Donegal ice dome to have a thickness of at least 700 meters at the ice centre. Ice flow reconstructions

Co Donegal supported an independent ice dome after the LGM

of the ice dome suggests that over the present coastline, ice thickness must have been ~500 meters, and the Donegal ice dome must have flown at least 20 km offshore to the N and W, on to the continental shelf (Ballantyne et al., 2007), and possible even further.

Kasper Weilbach

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The group enjoys the views from one of Ireland's drumlins

The fieldtrip - second day

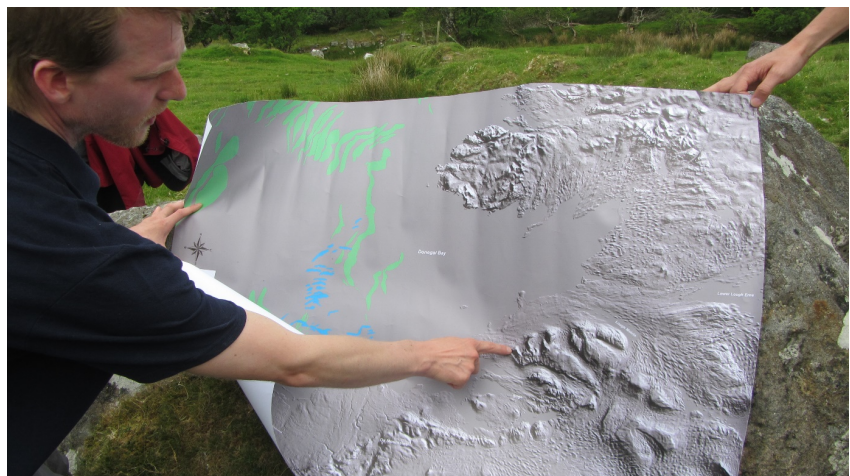
On the second day of the fieldtrip we visited the southern coastline of Donegal Bay where abundant glacial landforms, glacial erratics and glacial sediments tell a biographical story of past ice sheets, once covering the entire area of Donegal Bay and beyond.

At Mount Benbulbin, which is close to Sligo town, Kevin, the local GLANAM fellow spoke about ice-flow patterns suggesting past ice streaming into Donegal Bay (photo on the right). An Ice-landfall chronology was obtained from Cosmogenic Nuclide (CN) dating on erratics. Results inform us that at this site the ice retreated from offshore to onshore more than 13 ka ago. This was during the initial warming after the LGM. At

Killala Bay, the dynamic behaviour of the last ice sheet becomes evident.

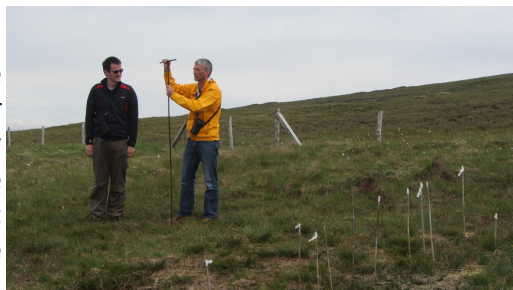
Oriented moraines in the south of Donegal Bay mark the terminal position, and subsequent recession of an ice lobe that readvanced into Donegal Bay. The ice went

through Killala Bay at ca. 17.6 cal ka BP, after the main LGM ice sheet had retreated. The pattern of recessional moraines can be traced back onshore and CN dating of erratics constrains the onshore retreat of the post LGM re-advance to the Oldest Dryas.



At a point further along the coast to the west we stopped at Céide Fields for a guided tour on early Irish settlements. We learned that this Neolithic settlement contains the oldest known field systems and is the largest found in the world (top right, Colm and Paul experience the thrill of archeology).

We ended the day by visiting a nearby site of glacial deposits at Belderg Pier and tried to relate observed



evidence in the field to published interpretations. This left us with enough food for thought on our long journey back to Sligo town.

Kevin Schiele

Last night(s) and goodbyes

I was asked to write a few words on our final night together but, funnily enough, I am pretty sure we had not only one, but three different ones.

After the “official” meeting, the Coleraine University team took us to a nice restaurant, famous for its great views on the Atlantic Ocean. Even though a very thick fog swallowed Portrush and we couldn’t see a meter ahead, the night became simply more mystic and we had a great time, finishing off with a pint of Guinness at the harbour.

The “second” last night took place in Sligo, at the end of our fieldtrip. We didn’t have dinner all together, but managed anyway to find ourselves all in the same small pub (for a pint

of Guinness, of course), where musicians were playing live, great Irish music and were making us laugh (and, let’s be honest, almost cry a little).

Finally, with only a few people left in Coleraine before the flights home, we went for pizza and for a walk on the beach, took funny pictures and said goodbye for the third time.

I don’t know which one is my favourite... so we should probably go out for a fourth time to decide!

Elena Grimoldi

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