NORTH EASTERN GEOLOGICAL SOCIETY
Newsletter October 2013
http://www.northeast-geolsoc.50megs.com

1. NEGS SPRING/SUMMER FIELD MEETING PROGRAMME

The Field Programme Secretary would appreciate hearing from members who can –

i) Volunteer to lead field trips in 2014,

ii) Inform of contacts who might possibly lead field trips

iii) Inform of particular sites or areas that they would particularly like to visit

iv) Let him know how far members are prepared to travel for field meetings.

2. NEGS AUTUMN/WINTER LECTURE PROGRAMME.

The meeting arranged for Friday **November 15th** has been changed because the *Lumiere Durham* event takes place from 14th – 17th November and access to Durham, and the University, will be quite difficult. Prof. Andrew Aplin, Durham University **(Shale Gas: Geology Matters)** has agreed to give his lecture at another time, but is unable to make the date of the **next meeting Friday 8th November**.

Report of a Presentation given by Dr. Stuart Dunning of Northumbria University on Friday October 18th.
Title: Jokulhlaup(s) Outburst Floods
Report by Gordon Liddle

Dr Dunning introduced the concept of outburst flooding through the volcanic eruption at Eyjafjallajokull, Iceland in 2010. A famous eruption, largely due to of the effects of the eruption cloud on aircraft

Iceland lies on a spreading ridge and has a series of ice caps. The Eyjafjallajokull, site has a record of 500year intervals between eruptions. The Icelandic authorities however recorded many signs of increasing activity in 2010 and alerted the scientific community. Some UK Universities funded a detailed study of the topography in the hope that any eruption could trigger outburst flooding, the effects of which could then be monitored to help with the understanding of the processes that occur.

An outburst flood is a very rapid event that modifies the area that is flooded, in this

environment the dominant landform is a sandur or outwash sand plain. Outburst flooding causes potentially very significant hazards; the understanding of the processes that occur would improve the hazard analysis and possible modifications that would minimise the hazard.

The surface of the area was mapped with the terrestrial laser scanning method. The location (amongst many others) that was monitored had a natural break around the ice covered, vent location. The break is occupied by the Gigjokull glacier. The team identified this as the most likely route of a jokulhlaup if the volcano erupted. The recording technique collects a huge amount of data but analysis and interpretation only occurs if a flood event occurs.

On April 14 a jokulhlaup occurred, melt water followed the predicted route using basal and supra glacial flows. The discharge rapidly increased as is typical of such events. Video of the location shows a massive discharge with standing waves reflecting the energy involved. On the 15th another flood occurred, even larger in volume of discharge. The first flood was dominated by water (61%) with ice fragments entrained, the second event was dominated by sediment (67%); ice was again very significant adding to moraine and rock debris. This ice later melted allowing the sediment pile to deflate and some kettle holes to form as larger ice masses melted.

The first flow was Newtonian, it modified the sandur into the typical boulder clusters. The second flow was much darker in colour, a viscous flow and lobate sediment masses formed. The proglacial lake that had existed was displaced adding to the water discharge, sediment filled the depression (possibly 50-60 metres) and was modified into terraces whilst the outlet channel was greatly enlarged. The sediment reduced the gradient of the river channel. Surprisingly the second event was followed by extended pulses of discharge, these were much smaller but numerous and they modified the topography as 15% of the total sediment was transported by these smaller events. The eruption generated a lava flow, this diverted the melt water channels but the effect appeared to be minor.
The conclusion of the study suggested that the waning stage is important whilst there is no simple link between discharge and flooding events. These conclusions are thought to represent important progress in the understanding of these events.

The large audience followed the lecture (enriched with effective audio and visual material) with challenging questions ably dealt with by Dr Dunning. The audience were very enthusiastic in their praise for the talk.

Dr. Dunning offered a web link to his paper: http://tinyurl.com/Dunning-geology
He also thanked NEGS for our token of thanks which is going towards buying climbing guides for fieldwork in the Alps - Mont Blanc is the field target area, monitoring rock fall activity – next summer.
Thanks go to Gordon Liddle for this excellent report.

Next meetings
Friday **November 8th** To be Arranged

Friday **December 13th – Members Evening.**

- Gordon Wilkinson Uluru and Kata Tjuta – the geology of a unique area
- John Waring Rocks under the microscope; making thin sections by an amateur.

- Chris Burridge Peaks, Penguins and Peninsula, some Antarctic observations.

Friday **January 17th** Dr. Richard J. Brown, Durham University
How we can understand Pyroclastic flows

Friday **February 21st** Prof. Jon Gluyas, Durham University
Getting Into Hot Water: Exalting Low-Enthalpy Geothermal Opportunity in the UK

Friday **March 21st** Brian Young, Durham University
The Stones of Durham, (with particular reference to Durham Cathedral)

Suggestions (with names, contact if possible) for speakers would be appreciated by Prof. G. Foulger. : email: g.r.foulger@durham.ac.uk

3. NEWS:
Letter of interest

HISTORIC ONE-INCH GEOLOGY MAPS

After trying (mostly too late) to rescue stocks of mid-19th Century six-inch geological maps at the BGS, 20 years ago, I had a call from a contact at the Survey, a couple of months ago, to say that he had received instructions to dispose of the folded, one-inch, ones, on linen, too. There are over a thousand of them, including a few 19th Century examples. They are all in colour, mainly based on the mid-19th Century original engravings - truly works of art. The BGS is once again in the grip of Financial Management Consultants. Knowing virtually nothing about the value of historic maps, the latter take the position that anything on the shelves which is not selling sufficient units per year, should be discarded and replaced with 'faster moving' items.

What I have arranged with my contact is that he will give me first call over those maps, for a limited time (a month or two), at a price of £10 each, excluding postage. I have already found homes for over a hundred, but there are still plenty left. The coverage is very patchy, with multiple copies in some cases. I have an index map, but it makes a very large file to send by e-mail. What I suggest is that people keen to have one or more maps should tell me what area is of interest to them, so that I can let them know what is available in that area; post code, or nearest town or village would do. Some of the maps are 'S' solid geology; the others are 'D' drift, which includes superficial (including glacial) deposits..

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4. INFORMATION

This is just an update/reminder of the current NEGS Committee status, with contact details:

Committee

Chairman: Derek Teasdale: email: d.a.teasdale@gmail.com
Secretary: Christine Burridge: email: negsec@gmail.com
Treasurer: Judy Harrison: email jaharrison.102@btinternet.com
Membership Secretary: Chris Taylor: email chris.taylor.geary@googlemail.com
Lecture Programme and University Liaison: Prof. Gillian Foulger g.r.foulger@durham.ac.uk
Field Programme Secretary: Dr. Eric Johnson eric_w.johnson@btinternet.com
Social Secretary: Position Vacant
Web editor: John Waring ne.geolsoc@ntlworld.com
Student Representative: Position Vacant
Other members:
Joan Hardy Without Portfolio (Rep. to Geologists Association)
John F Smith Without Portfolio
Dr Nigel Sprague Without Portfolio (Rep. to Natural History Society of Northumbria)
Brian Young Without Portfolio: email brian.young@hotmail.co.uk

6. ADMINISTRATION

If you receive this newsletter by post and have an email address, then please let me have it.
negsec@gmail.com Best Wishes, Chris Burridge (Secretary) Tel: 01915289707