



What is the BGA?

The BGA is a joint association of the Geological Society of London and the Royal Astronomical Society. It aims to promote geophysics in the UK and has an active political voice, regularly contributing documents to national enquiries and committees. As such it is important that it represents the views of the strong geophysics postgraduate community that we have in the UK. We need your input! Email your postgraduate representative Finn with any queries or suggestions you might have for the committee and we will make sure to address it.

Explosive Earth

Communicating Geophysical Research to the Public



Cambridge Volcano
Seismology



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In August 2014, a magmatic rifting event occurred in the Bárðarbunga volcanic system in central Iceland, and was undoubtedly the best geophysically recorded event of its kind to date. The intrusion of the 46 km long dyke led to a spectacular fissure eruption at Holuhraun, lasting for 6 months and creating the world's newest flood basalt (with a volume of 1.6 km³).

During the 10 day propagation, geophysical monitoring and regular overflights by the Icelandic meteorological office enabled the dyke to be closely observed. Real-time earthquake locations tracked the leading edge of the intrusion, while continuous GPS and regular SAR acquisitions allowed working calculations of the intruded magma volume.

Seismologists from the University of Cambridge operate a dense seismic research network in the region, and initiated a rapid fieldwork response as soon as the dyke intrusion began. They used helicopters, snow scooters and 4WDs to deploy more seismometers directly over the tip of the intruding dyke, installing the final sensors just hours before the dyke first ruptured the surface. The resultant network of 72 broadband sensors gives an unprecedented micro-seismic dataset enabling detailed analysis of the seismicity accompanying the rifting event.

Following some of the first studies to come out of the Bárðarbunga-Holuhraun intrusion and eruption, the volcano seismology group at the University of Cambridge are creating a high impact exhibit to be displayed at the Royal Society Summer Science Exhibition July 4th – 10th 2016. The exhibit will focus on eruptions at Icelandic volcanoes, using interactive activities to demonstrate different eruptive scenarios and explain how earthquakes can be used to reveal where molten rock is moving underground. The event provides the opportunity to share knowledge about monitoring and the behaviour of volcanic systems, to over 10,000 members of the public, both at the exhibition itself and through the media.



Related Publications

Strike-slip Faulting during the 2014 Bárðarbunga-Holuhraun Dike Intrusion, Central Iceland

Thorbjörg Ágústsdóttir et al., *Geophysical Research Letters*, 2016

Triggered earthquakes suppressed by an evolving stress shadow from a propagating dyke

Robert Green et al., *Nature Geoscience*, 2015

Segmented lateral dyke growth in a rifting event at Bárðarbunga volcanic system, Iceland

Freysteinn Sigmundsson et al., *Nature*, 2015

The @vardyquake Phenomenon

Anatomy of a seismic news event

It started with a conversation over canapes at the opening of a new seismology museum display, realising that the museum was less than a mile from Leicester City Football stadium, I suggested that we might detect seismic signals each time Leicester scored a home goal. As the museum was open most match-days we ended up installing a seismometer at a nearby primary school and setting up the @vardyquake outreach project with Leicester Geology undergraduates.

Named after Leicester's striker, the @vardyquake twitter account rapidly attracted followers and the University issued a press release. We could indeed detect small seismic signals, equivalent to magnitude 0.1-0.3 earthquakes, from 500m (although not yet a home goal by Vardy!) The story was picked up by the local paper, then regional TV and then the UK national press. Eventually Reuters put an article out which was picked up globally, with over 375 articles published as far afield as Nepal, Uganda, Malaysia, USA and Australia.

Paul Denton, School Seismology Project Leader, BGS

Interested in setting up your own "football quake" monitoring system? Contact Paul at pdenton@bgs.ac.uk

Congratulations!

The BGA Committee sends huge congratulations to Laurence Cowton, from the University of Cambridge, for winning the Outstanding Student Paper Award for seismology at the AGU Fall Meeting 2015.

His presentation, titled "Volumetric Measurements of a Thin CO₂-Saturated Layer Through Time at the Sleipner Field, North Sea" was enough to take home the prize.



Future BGA Sponsored Meetings

Martian Gullies and their Earth Analogies

The workshop is focussed on gullies but can encompass contributions on associated landforms, such as recurring slope lineae (RSL), glacier-like forms, "solifluction" lobes, patterned ground, impact craters, dunes, etc, with the caveat that they impact on our understanding of gully-formation or modification. We encourage both established Mars-researchers and those new to the field to attend and contribute.

Date: 20th-21st June 2016

Location: Geological Society of London

UK Antarctic Science Conference

The conference welcomes everyone working on Antarctic or Southern Ocean science, including techniques such as in situ measurements, numerical models, laboratory experiments or remote sensing. The conference welcomes all science disciplines, including cryosphere, earth, atmosphere, marine, climate and life sciences.

Date: 5th-7th July 2016

Location: University of East Anglia

BGA PGRiP 2016

We are pleased to announce that the 2016 BGA Postgraduate Research in Progress meeting will be at UCL. The meeting brings together geophysics postgraduate students from across the UK and will feature the 2016 Bullerwell Lecture, given by Dr. Pippa Whitehouse.

Date: 1st-2nd September 2016

Location: University College London

British Seismology Meeting

The British Seismology Meeting (BSM) 2017 aims to bring together seismologists from the UK and abroad to present and discuss a wide range of seismological research. This conference invites professional seismologists from both industry and academia to discuss methods and results from all areas of seismology.

Date: 5th-7th April 2016

Location: Reading Town Hall

Recent Postgrad Publications

Mapping the ice-bed interface characteristics of Rutford Ice Stream, West Antarctica, using microseismicity, Central Iceland - Emma Smith et al., *Journal of Geophysical Research*, 2015

Three billion years of crustal evolution in eastern Canada: Constraints from receiver functions Laura Petrescu et al., *Journal of Geophysical Research*, 2016

A joint electromagnetic and seismic study of an active pockmark within the hydrate stability field at the Vestnesa Ridge, West Svalbard margin - Bedanta Goswami et al., *Journal of Geophysical Research*, 2015

If you have any examples of recent publications or postgraduate outreach that you would like to feature in the next issue of the Postgraduate Newsletter then email Finn at F.Illsley-Kemp@soton.ac.uk