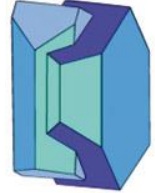




# VMSG



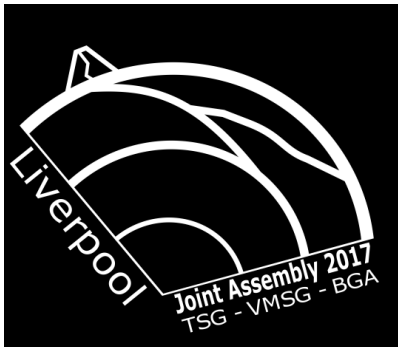
## Volcanic and Magmatic Studies Group

December 2016 Newsletter (No. 33)

Welcome to the final VMSG newsletter edition of 2016!

### VMSG Conference 2017 - Liverpool

By Jackie Kendrick & Yan Lavallée (University of Liverpool)



The University of Liverpool are delighted to be hosting the first joint meeting of the Volcanic and Magmatic Study Group (VMSG), the Tectonic Study Group (TSG), and the British Geophysical Association (BGA).

The conference expands on the usual VMSG format and aims to celebrate the latest developments in volcanology, tectonics and geophysics and their research communities. We have put together an engaging scientific programme which presents the latest discoveries and advances in each discipline, exploring and discussing the plethora of cross-disciplinary research that is pushing the frontiers in Earth Sciences across the UK and overseas. The programme includes specialist sessions, merged sessions, free workshops and more, as well as a packed social calendar including Meet & Greet, Ice-breaker and Conference Dinner & Party.

#### Science Sessions:

- Heterogeneity in the Earth: From micro to macro scale
- The volatile Earth: The role of liquids and gases in the dynamic solid Earth
- Tectonic and magmatic processes during continental extensional tectonics and rifted margin formation
- Seismology, geodesy and remote sensing: Methodologies and applications
- Jon Davidson Memorial Session: Magma genesis, storage and transport
- The structure and mechanics of fault zones
- Georesources and geohazards in an evolving planet
- Gas, aerosols, ash and the atmosphere
- Microstructures and deformation

- Earth's deep interior
- Physical volcanology
- Earthquakes, palaeoseismology, and rates of fault slip: from milliseconds to millions of years
- New frontiers in experimentation, rock physics and magma rheology

#### Keynotes:

**Freysteinn Sigmundsson**, University of Iceland

**Othmar Muntener**, University of Lausanne

2016 VMSG Award Winner **Yan Lavallée**, University of Liverpool

2017 VMSG Thermo-Fisher Award Winner **Sue Loughlin**, British Geological Survey

**John Ludden**, British Geological Survey

#### Summary Programme:

##### Tues 3<sup>rd</sup> January

17:00 – 21:00. Meet & Greet event at McCooley's Liverpool. Join us for a drink!

##### Wed 4<sup>th</sup> January

09:00 – 10:00. Front desk opens

10:00 – 11:00. Welcome and Keynote

11:15 – 17:15. Science sessions running in parallel (VMSG, TSG, BGA)

13:45 – 14:10. Lunchtime seminar: How to start writing!

17:15 – 19:00. Ice-breaker and poster session.

##### Thu 5<sup>th</sup> January

09:00 – 17:30. Joint scientific programme

13:10 – 13:50. Student Forum

17:30 – 18:00. Prize Ceremony

19:00 – 02:00. Dinner & Party at the Camp and Furnace.

##### Fri 6<sup>th</sup> January

09:00 – 15:30. Science sessions running in parallel (VMSG, TSG, BGA)

13:15 – 14:00. AGM's

15:30 – 16:00. Prize Ceremony

18:30 – 01:00. Pub Crawl

#### Workshops:

##### Tue 3<sup>rd</sup> January

3D model building, fault displacement and seal analysis, and restoration in Move

Organizers: Dr. Cathal Reilly, Dr. Hugh Anderson, Dr. Roddy Muir (Midland Valley Exploration)

### Sat 7<sup>th</sup> January

Experimental methods in Earth Sciences

Organizers: Prof. Yan Lavallee, Dr. Jackie Kendrick (University of Liverpool)

Quantitative scanning electron microscopy (SEM) techniques in the Earth Sciences: an introduction to Electron backscatter diffraction (EBSD) and Quantitative Evaluation of Minerals (QEMSCAN).

Organizers: Dr. Elisabetta Mariani, Prof. Richard Worden (University of Liverpool)

Digital Elevation Models (DEM) in Earth Sciences

Organizers: Dr. Felix von Aulock, Dr. Pablo Gonzalez (University of Liverpool), Dr. Mike James (University of Lancaster)

Reconstructing geomaterials in 3D using x-ray tomography

Organizer: Dr. Katherine Dobson (Durham University)

### Mon 9<sup>th</sup>- Wed 11<sup>th</sup> January

NERC Advanced Training Workshop: Python solutions for management of continuous seismic data and ambient noise interferometry

Organizers: Dr. Silvio De Angelis (University of Liverpool), Dr. Thomas Lecocq (Royal Observatory of Belgium), Dr. Corentin Caudron (Royal Observatory of Belgium), Prof. Florent Brenguier (Institut des Sciences de la Terre, Grenoble)

To keep up to date with the latest conference updates, check out our [website](#), follow us on twitter @GeoLiv2017 or join the facebook group Joint Assembly.

#ComeTogether2017

## Student activities

### **Oliver Lamb**

I'd like to thank the Volcanic and Magmatic Studies Group for their invaluable support for my attendance of the 2016 Annual Workshop of the European Seismological Commission – Working Group on Volcano Seismology, held on the beautiful Italian island of Stromboli in September.

As part of my attendance I was able to present a portion of my PhD research entitled 'Relative velocity change at Volcán de Colima: Seismic and Experimental observations'. Using continuous seismic data from late 1998, when the current eruption at Volcán de Colima began, we investigated the influence of ascending magma on seismic wave propagation in the edifice. We detected hundreds of repeating volcanic earthquakes during the swarm preceding the first eruption of lava at the summit. In turn, we used these repeating events to see if earthquakes were traveling faster or slower through the edifice as the activity progressed. In contrast to previous work on other volcanoes, our preliminary results suggest that no changes were induced by magma ascent at Volcán de Colima. Back in the University of Liverpool, we carried out laboratory

experiments where we cracked andesite from Volcán de Colima under tension and listened to the acoustic emissions. Using these emissions, we demonstrated that velocity changes can be induced under a tensile environment. Ultimately, I hoped this presentation would demonstrate the potential of using a multi-disciplinary approach to understanding magma ascent dynamics.

The workshop gave me an excellent opportunity to meet volcano seismology researchers and students from across the world, and discuss a range of topical issues currently being studied at active volcanoes. The relaxed and informal setting, as well as the small group size, created an ideal environment to share ideas, receive crucial feedback, and establish collaborations for future research projects. It also gave me the chance to spend 6 days on Stromboli, one of the most famous and beautiful volcanoes in the world. The 'Lighthouse of the Mediterranean' is one of the best-studied volcanoes with many ground-breaking concepts in volcano-seismology derived from data collected on the island. I will never forget the magical show of strombolian explosions from the summit vents as the sun set over the Aeolian Islands!



## Field Activities

Involved in any field campaigns, got some great volcanological and magmatic photo's to share? This is the section for you!

### ***Kamchatka Fieldwork; volcanoes, helicopters and bear avoidance***

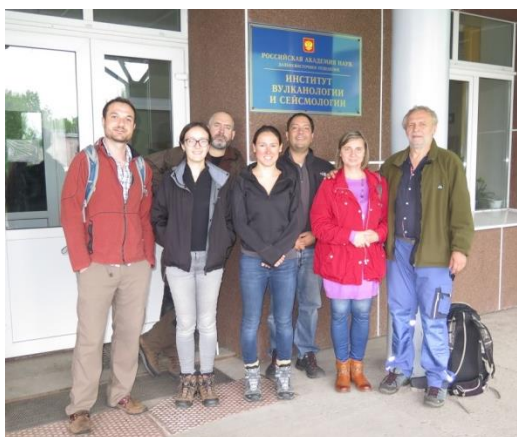
*By Rosie Jones*



*Our camp site and the eruption of Klyuchevskoy volcano on 23<sup>rd</sup> July 2016.*

In July 2016, Dr Steve Turner, Dr Ivan Savov, Ľubomíra Tomaníková and myself joined Russian colleagues, Prof. Tatiana Churikova and Dr Boris Gordeychik, in Kamchatka to collect samples for the NERC funded consortia project 'Mantle volatiles: processes, reservoirs and fluxes'. We spent 3 weeks collecting samples of volcanic scoria and mantle xenoliths in order to study the fate of volatiles (specifically H<sub>2</sub>O, C, O, N, B, and the noble gases) in subduction zones.

In order to investigate the release of volatiles during the progressive dehydration of the subducting Pacific oceanic plate beneath Kamchatka (considered a type example of a 'cold' subduction zone) we sampled a number of volcanic centres with a wide across- and along-arc extent. These included the volcanoes Avachinsky, Bakening, Shiveluch and Klyuchevskoy. For more information and pictures please visit our blog page at <http://www.deepvolatiles.org/kamchatka-fieldtrip>



*The British-Russian team outside the Institute of Volcanology and Seismology in Petropavlovsk, Kamchatka. From left to right – Steve Turner, Ľubomíra Tomaníková, Mikhail Yarin, Rosie Jones, Ivan Savov, Tatiana Churikova and Boris Gordeychik.*

### VMSG PhD Graduates

A celebration and acknowledgement of volcanic and magmatic geoscientists who have recently graduated with a PhD. Well done to all!

### Dr Stefan Lachowycz

The University of Oxford

*Records of and controls on temporal variations in activity at arc volcanoes*

10/2015

### Notices

**Upcoming conferences, workshops, & field courses of relevance to the VMSG community:**

- EGU – 23<sup>rd</sup>-28<sup>th</sup> April, 2017, Vienna. Including:
  - TS6.3  
<http://meetingorganizer.copernicus.org/EGU2017/session/23885>

### Young narrow rift margins, failed rift basins and their ancient analogues

Convener: Philip Ball

Co-Conveners: Luc Lavier, Danny Stockli, Gianreto Manatschal

Not all continental rifts evolve to the stage of continental breakup and seafloor spreading. Some rifts evolve rapidly to their final stage and result in continental separation and seafloor spreading. Others take 10's of million years to localize and initiate seafloor spreading systems.

This session would like to focus on new research that integrates geological, geochemical, geophysical datasets to address questions regarding: (i) the processes that influence the early stages of rift development, segmentation, localization, and why some rifts fail while others succeed. (ii) Whether young narrow rifted margins (e.g. Red Sea, Gulf of Aden) are geologically, geochemically, geodynamically distinct from mature evolved passive margins.

We invite contributions and examples from present-day rift systems, failed rift arms and fossil margins. We would encourage studies covering a range of tectonic regimes including, active-passive, volcanic, magma-poor, orthogonal, oblique and sheared rift basins.

- GMPV4.9  
<http://meetingorganizer.copernicus.org/EGU2017/session/24711>

### Intrusion-induced roof uplift and forced folds

Convener: Craig Magee

Co-Convener: Benjamin van Wyk de Vries

Sill and laccolith emplacement at shallow crustal levels is commonly accommodated by the uplift (folding) of overlying strata and free surface. The location and geometry of the uplifted strata, which can be termed a 'forced fold', typically mirrors the structure of the underlying tabular intrusion. This session aims to bring together a range of Earth Scientists, who employ different techniques, to discuss the mechanics of roof uplift/forced folding above shallow-level, tabular intrusions. We are particularly interested in work that attempts to bridge the gap between the two currently rather disparate disciplines of active and ancient examples of roof uplift above sills and/or laccoliths.

- Volcanoes at the Weston Library, Bodleian Libraries, Oxford. 10 Feb – 21 May 2017. Open 10-5 daily; 11-5 on Sundays. Free admission.

A new exhibition curated by David Pyle uses a spectacular selection of eye witness accounts, scientific observations and artwork to chart how our understanding of volcanoes has evolved over two millennia. The exhibition traces the history of encounters with volcanoes from Pliny the Younger's account of the dramatic eruption of Vesuvius in 79 CE to early Renaissance explorers who reported strange sightings of mountains that spewed fire and stones. It also explores how scientific understanding of volcanoes and the Earth's interior have developed over time, from classical mythology and early concepts of subterranean fires to the emergence of modern volcano science, or volcanology, in the 19th century. The exhibition brings together science and society, art and history.

Highlights include:

- Fragments of 'burnt' papyrus scrolls from the ancient Roman town of Herculaneum, which were buried during the 79 AD eruption of Vesuvius
- The earliest known manuscript illustration of a volcano, in the margins of a 14th century account of the voyage of St Brendan, an Irish monk who sailed across the north Atlantic
- Stunning illustrations of the Earth's subterranean fires from Athanasius Kircher's 17th century work *Mundus Subterraneus*
- Spectacular 18th century studies of Vesuvius, by early volcanologist William Hamilton
- Lava and rock samples, sketches, charts and scientific equipment from 19th century volcanologists, travellers and explorers including Alexander von Humboldt, George Poulett Scrope, Charles Daubeny, Isabella Bird and Constance Gordon Cumming

Link to a preview in the Guardian:

<https://www.theguardian.com/world/2016/nov/22/explosive-history-volcanoes-bodleian-exhibition-vesuvius-oxford>

### ***Volcanic Plumes: Impacts on the Atmosphere and Insights into Volcanic Processes***

(Peer review open-access MDPI - ISSN 2076-263)

Submission deadline: 31 March 2017 (deadline might be extended, if needed).

This Special Issue is aimed at presenting state of the art, multi-disciplinary science concerning all aspects of volcanic plumes, of relevance to the volcanology, climatology and atmospheric

science communities. Authors are encouraged to submit articles with respect to the following topics:

- Volcanic plume observation and modelling
- Volcanic degassing and aerosol
- Atmospheric impact of volcanic eruption
- Volcanoes/Climate interactions
- Eruptive processes
- Volcanic degassing dynamics
- In-plume chemical processes
- Plume dispersion

Featured authors as Clive Oppenheimer, Alessandro Aiuppa, Stefano Corradini, Tjarda Roberts and others colleagues have already preliminary accepted to submit a contribution for this Special Issue.

For further information, please visit,

[http://www.mdpi.com/journal/geosciences/special\\_issues/volcanic\\_processes](http://www.mdpi.com/journal/geosciences/special_issues/volcanic_processes).

Giuseppe Salerno, Pasquale Sellitto, and Andrew McGonigle (guest editors).

### **VMSG Distribution List**

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### **Editorial**

Many thanks to those who have contributed to this issue. Please forward any articles, comments or notices of events, workshops and conferences before 1<sup>st</sup> February 2017, for inclusion in the next newsletter. All previous newsletters are available for download from the website.

As this will be my last VMSG newsletter as editor, I would like to thank everyone who has contributed to and supported the newsletter over the past two years. It has certainly been enjoyable to piece together these newsletters and find out what is going on within the VMSG community. All the best.

**Dr Craig Magee** ([c.magee@imperial.ac.uk](mailto:c.magee@imperial.ac.uk))