



2017 Deep Volatiles Programme Fall Meeting

5 – 10th September 2017, Tenerife, Spain

Organised under the support of:

Natural Environment Research Council of the UK (NERC)



Second Circular

The Organising Committee are looking forward to welcoming you to the 2017 Deep Volatiles Programme Fall Meeting, in Puerto da la Cruz, Tenerife, Spain, in September 2017. Over 70 delegates from all over the UK, Europe and the USA have already registered for the meeting. Of all delegates, 11 invited speakers from the UK, France, Switzerland, Germany, Russia and the US will bring us the state-of-the art of the relevant research subjects; our own 20 PDRAs and two research associates will showcase the exciting results of their projects; the 13 PhD students, who are directly or indirectly involved in the Deep Volatiles programme will give talks about their primary research results and the research plans.

There will be one day field trip to the Mount Teide during the meeting, led by . For more information, please visit the webpage of the meeting:

This circular provides detailed information on transport, venue, accommodation, meal arrangements and the schedule for the meeting itself. We hope it will prove useful as you prepare for your visit.

Organizing Committee

Professor John Brodholt	University College London, UK
Professor Tamsin Mather	University of Oxford, UK
Professor Chris Ballentine	University of Oxford, UK
Professor Mike Walter	University of Bristol, UK
Ying Shields-Zhou	University College London, UK

Invited speakers:

Invited speaker	Institute
Patrick Cordier	University Lille, France
Shun Ichiro Karato	Yale University, USA
Tomoo Katsura	University of Bayreuth, Germany
John Mavrogenes	The Australian National University, Australia
Sandra Piazzolo	Leeds University, UK
Boris Gordeychik	Institute of Experimental Mineralogy RAS, Chernogolovka, Russia, Russia & Universität Göttingen, Germany
Tatiana Churikova	Institute of Volcanology & Seismology FEB RAS, Petropavlovsk-Kamchatsky, Russia & Universität Göttingen, Germany
Paul Tackley	ETH Zürich, Switzerland
Saskia Goes	Imperial College, UK
Andreas Rietbrock	University of Liverpool, UK
Rosa Angelika	European Synchrotron Radiation Facility, France

General meeting overview:

5th Sept: Arrival

Evening: The Deep Volatiles Management Committee Meeting

6th Sept: Full day meeting at the Maritim Hotel

7th Sept: Field trip to Mount Teide

8th Sept: Full day meeting at the Maritim Hotel and evening reception

9th Sept, Morning: Meeting at the Maritim Hotel

Afternoon: free time

10th Sept: Departure

Programme

06-Sep	speaker	Title
Session I		Chair: tbd
9:30-10:00	Patrick Cordier	Climb in the mantle
10:00-10:20	Andrew Thomson	Crystallographic incorporation of hydrogen in the transition zone
10:20-10:35	Isra Ezad	Grain growth kinetics of the spinel structure through the mantle
10:35-10:55	Yunguo Li	Ab initio equation of states of volatiles
10:55-11:25	Tomoo Katsura	Determination of H ₂ O partitioning between olivine and melt by a rapid-quench method
11.25 -11.45am		coffee break
Session II		Chair: tbd
11:45-12:15	John Mavrogenes	The Life and Times of Sulfur in the Crust
12:15-12:35	Marion Louvel	Controls from temperature, pH, fO ₂ , and metals (Mn, Fe, Cu) on Selenium aqueous speciation
12:35-12:50	David Edwards	Sub-solidus phases of subducted carbonate under mantle conditions
12:50-1:10pm	Helene Breton	In situ X-ray observation of hydrogenation of metallic iron under high pressure and temperature'
1.10-2.40pm		lunch
2.40 - 3pm		coffee break
Session III		Chair: tbd
3 - 3.30pm	Tatiana Churikova	Fluid variations across the Kamchatka arc
3.30 - 3.45pm	Lubomira Tomanikova	Fluid-mobile element and B isotope systematics of metasomatized mantle xenoliths from Kamchatka arc
3.45 - 4pm	Eleri Clarke	The contribution of serpentinites to subduction zone fluids
4 - 4.15pm	Simone Cogliati	Pele's hairs and tears: A new tool to track the degassing of noble gases during volcanic activity?
4.15 - 4.35pm	Alex Iveson	Volatiles and Trace elements in Kamchatka Olivines and Melt Inclusions
4.35 - 4.55pm		coffee break
Session IV		Chair: tbd
4.55 - 5.25pm	Rosa Angelika	Noble gas storage capacity of the Earth's mantle and core
5.25 - 5.45pm	James Drewitt	The fate of deeply subducted carbonate: a terminal reaction in the lower mantle
5.45 - 6pm	Bravenec Ardith	Water in the early solar system: Effect of Oxygen fugacity on water speciation and partitioning
6 - 6.20pm	Nicci Potts	The lunar interior as a window into the Early Earth
8pm		dinner

07-Sep	field trip
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08-Sep	Speaker	Title
Session V		Chair: tbd
9:30-10:00	Shun Ichiro Karato	Anisotropic plasticity of hydrated olivine and its geodynamic implications
10:00-10:20	Jacob Tielke	Water weakening of olivine during dislocation creep
10:20-10:35	Srinivasan Mahendran	Numerical modeling of dislocations in Olivine (Mg ₂ SiO ₄): an atomic-scale study
10:35-10:55	Joshua Muir	The effect of water on calcium perovskite phase transitions
10:55-11:25	Sandra Piazzolo	Trace element mobility in minerals induced by deformation and reactions
11.25 -11.45am		coffee break
Session VI		Chair: tbd
11:45-12:15	Boris Gordeychik	Olivine structures in high-Mg basalts of the Shiveluch volcano (Kamchatka)
12:15-12:35	Steve Turner	Whole rock and melt inclusion chemistry of basalts and andesites from the southern Andes indicate mantle wedge hydration (and oxidation?) via melts from a slab mélange
12:35-12:50	Callum Reekie	Fe-Cu Isotopes and Sulphide Saturation in the Disko Island Basalts, West Greenland
12:50-1:10pm	Duane Smythe	Chalcophile element partitioning between monosulfide solid solution and sulfide melt
1.10-2.40pm		lunch
2.40 - 3pm		coffee break
Session VII		Chair: tbd
3 - 3.30pm	Andreas Rietbrock	How wet are subducting slabs?
3.30 - 3.45pm	Daniel Cox	Constraining the distribution of the chalcophile elements within a subduction zone
3.45 - 4pm	Simon Matthews	Using volatile-trace element systematics to infer mantle volatile heterogeneity
4 - 4.20pm	Rosie Jones	Insights into the mantle zoo: evidence from noble gas compositions and combined geochemical-geodynamical modelling
4.20 - 4.40pm	Heye Freymuth	New tracers of the slab: Molybdenum and Uranium isotope ratios in arc lavas
4.40 - 5pm		coffee break
Session VIII		Chair: tbd
5 - 5.30pm	Saskia Goes	VoiLA: Volatile recycling at the Lesser Antilles arc
5.30 - 5.50pm	Graeme Poole	Mass-independent isotope anomalies in meteorites: constraining the origin of Earth's volatiles

5.50 – 6:10pm	Matthew Price	Investigating mantle processes using spherical mantle models
6:10 - 6.25pm	Nuzhat Tabassum	Water in Silicate Inclusions in Diamonds
8pm		dinner

09-Sep	Speaker	Title
Session VIII		Chair: tbd
9:30 – 9:50am	Martha Pamato	Pre-melting phenomena in fcc metals?
9:50 - 10.05am	Kiran Chotalia	Water, viscosity and mantle convection: the effects of weakening and mixing
10:05 -10:20am	Jac Van Driel	Shear induced grain boundary migration in MgO
10:20 -10:50	Paul Tackley	Influence of water on long-term mantle evolution and plate tectonics
10.50 -11.20am		coffee break
Session X		Chair: tbd
11:20-11.40am	John Wheeler	The effects of stress on reactions in the Earth: sometimes rather mean, usually normal, always important
11.40-12:00	Andy Nowacki	A low-velocity pipe-like structure at the base of the mantle beneath Hawaii inferred from focussing of seismic waves
12:00-12:15	James Panton	Isotopic evolution in spherical mantle convection models
12.15 - 12.35	Jack Walpole	Evidence for new structures in the lowermost mantle from seismic anisotropy
12.35 - 1pm		Concluding remarks

Venue

The meeting will be held at the meeting room at the Maritim Hotel, Puerto da la Cruz. The website of the hotel is: <https://www.maritim.com/en/hotels/spain/hotel-tenerife/hotel-overview>

Address

Maritim Hotel Tenerife
El Burgado
38410 Puerto de la Cruz - Los Realejos
Spain

Distances

Airport on the island's south:	95 km
Airport on the island's north:	30 km
Loro Parque:	0.5 km
Playa Jardin garden beach:	0.8 km
Centre of town (Puerto de la Cruz):	2 km



Conference check-in

The registration desk will be open in the afternoon of the 5th Sept (from 2pm to 7pm) and the morning session of the 6th September (from 9am to 1pm). A key for paid meals will be given to you by check-in.

Instructions for presenters

All presentations should be given in English.

Duration of oral presentations will be three type of lengths: (1) 30 minutes (25 minute speaking plus 5 minutes for questions/changeover); (2) 20 minutes (15 minute speaking plus 5 minutes for questions/changeover) and (3) 15 minutes (10-12 minute speaking plus 3-5 minutes for questions/changeover). Presentations should be brought on a memory stick in Powerpoint or PDF format, and loaded on to the machines in the meeting room prior to the start of the session in which the talk is allocated.

Evening reception/dinner

An evening reception will be held in the **main restaurant**, the Maritim Hotel, from 7:30-9:30 pm on the evening of Friday 8th September. The reception will offer a three courses meal and cover up to 2 drinks per person. No extra drinks ordered will be paid by the programme. This event offers an opportunity to mingle with fellow participants while sampling a selection of locally-produced food and beverages.

Airport transport

The Maritim Hotel in Puerto da la Cruz is well connected to both North and South Airports of Tenerife. There will be a few scheduled shuttle buses arranged for our delegates on the 5th Sept and on the 10th Sept. Please send emails to our programme with your arrival and departure time and airport on the 5th or 10th Sept. No shuttle service will be arranged by the programme manager outside of these two days without special agreement. If your arrival time does not coincident with the arranged shuttle buses, please get in touch with our programme manager, Ying Shields-Zhou, y.shields-zhou@ucl.ac.uk.

City centre, entertainment and places to visit

There are free shuttle buses from the hotel to the city centre. You can also use local cab (€4-5) to travel to the city centre. Please consult the hotel concierge for transport options to the city.

Puerto da la Cruz is a very lively town. There are plenty of local pubs and restaurants. The recommendation list from the hotel is as below:

There is a walking route just by the hotel. The full route will take ~2.5 hours with fantastic view.

The best zoo in Europe and world's second best –LORO PARQUE- is just 5-minute walk from the hotel. And the Puerto de la Cruz's Garden Beach – Playa Jardin- is not far either.

The supermarkets and shops on the island have long opening hours. Normally till 10pm, Sundays till 8pm.

*******Important Visa Information*******

Some of our delegates might need visa to enter Spain. Please apply for a Schengen Visa early enough. To apply for the visa, your passport will need to have at least 6 months valid before the expired date. If you need an invitation letter, please contact Ying Shields-Zhou. y.shields-zhou@ucl.ac.uk

Accommodation:

The accommodation during the meeting will be in the same hotel, Maritim Hotel, Puerto da la Cruz.

Field trip: 7th Sept, 9am to 7pm

Field trip leader: Dr. Sebastian Watt

Field trip demonstrator: Daniel Cox

Volcanic Processes on Tenerife

Seb Watt

Tenerife is the largest and highest of the Canary Islands, and is notable for the diverse range of compositions and volcanic processes (from minor basaltic rift volcanism to major ignimbrite-forming explosive eruptions) represented in an ocean-island intraplate setting. There are outstanding exposures across the island, representing different stages of island construction and magma system development. The earliest shield-building stages formed thick sequences of basaltic lavas, exposed in deeply incised terranes at the NE and NW corners of Tenerife. This period was followed by the development of the long-lived Cañadas central volcanic system, erupting a wide range of compositions (basanite to phonolite) and the source of very large explosive eruptions that deposited extensive ignimbrites and pumice fall deposits exposed across the southern half of the island. The central region today forms a large horseshoe-shaped caldera, shaped both by major explosive eruptions and large island-flank landslides. Within the caldera, there are two relatively young composite volcanoes, Pico de Teide and Pico Viejo. Alongside activity at the Cañadas system, basaltic rift volcanism has continued outside the caldera, forming scoria cones and lava flows, such as those produced in the most recent eruption in 1909.

The one-day field trip will focus on the caldera region and mafic volcanism on the NE and NW rifts. The extensive pyroclastic deposits on the southern side of the island (Bandas del Sur) will not be visited due to time constraints, but are well exposed on routes to the airport. The trip will approach the caldera from the east, viewing evidence for major flank collapses and discussing the growth and development of the island as a whole, and also investigating the nature of rift volcanism outside the caldera. We will then cross the caldera to examine the lava flow and scoria cone of the 1909 Chinyero eruption, as well as older lava flow and tube structures. Finally, we will return to the caldera to observe the variety of lava morphologies and compositions exposed around the base of Pico Viejo, Teide and the more ancient units at the Roques de Garcia, finishing with a discussion of the processes that produce the diverse range of magma compositions and eruption styles on Tenerife, and that have also controlled the morphological development of the island.



A and B:
Los Roques de Garcia (eroded caldera fill) within the Las Cañadas caldera

C: An example of pahoehoe lava on the island

D: A scoria and pumice deposit

All photos are from Daniel Cox.



*The photos are only to present some interesting volcanic features on Tenerife, they are not directly tied with the fieldtrip.