



UNIVERSITY OF
LIVERPOOL

IAVCEI Commission on Volcanic & Igneous Plumbing Systems (VIPS)

18th - 20th June 2024

1st International Conference

Hosted by the MAGMA Lab, University of Liverpool



Contents

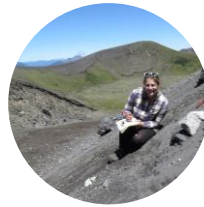
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The MAGMA Lab welcomes you to Liverpool

The MAGMA Lab is a multi-disciplinary group of geoscientists studying the behaviour of volcanic and magmatic processes, with a particular interest in magma plumbing systems.

Local organising committee (LOC):

Prof. Janine
Kavanagh



Dr. Katy
Chamberlain

Dr. Stefano
Urbani



Dr. Caitlin
Chalk

Kate
Williams



Tegan
Havard

Amanda
Valentine-Baars



Jade
Hrintchuk



Dawid
Rybak

Welcome from the IAVCEI Commission on VIPs

Welcome to the first international conference of the IAVCEI Commission on Volcanic and Igneous Plumbing Systems (VIPs)

The main goal of the commission is to provide a forum for VIPs research beyond disciplinary or methodological boundaries, to foster an integrated understanding of magma transport and storage in the crust. The commission was founded in 2016 and we are delighted to have grown to be one of the largest commissions of IAVCEI.

VIPs brings together diverse scientific disciplines including:

1. Volcano geodesy and seismology for studying active VIPs
2. Structural geology, igneous petrology and geochemistry for studying fossil, eroded VIPs, as well as active VIPs
3. Analogue, numerical and petrological modelling to constrain the dynamics and evolution of VIPs

VIPs Commission Committee Members

Catherine Annen

John Browning

Janine Kavanagh

Steffi Burchardt

Sam Poppe

Matías Clunes Squella

John Michael Ausejo

Kerys Meredith

Michael Camejo-Harry

Jade Hrintchuk

Euan Mutch

Code of Conduct

The Volcanic and Igneous Plumbing Systems Commission is a subdivision of IAVCEI and thus follows the statutes and by-laws of IAVCEI

<https://www.iavceivolcano.org/about/statute-and-by-laws/>

The VIPs commission is a representation of the global volcanology community and thus has a duty and obligation to provide a safe and welcoming environment for members and the public regardless of ethnicity, gender, sexual orientation, religion, physical ability, geographic location, career stage, age, physical appearance, and socioeconomic background. Our code of conduct must be followed during participation of all events and meetings. We expect all participants to uphold the principles of this Code of Conduct and act accordingly.

1. Inclusion

We welcome and support peoples of all backgrounds and identities, which includes but is not limited to peoples of all ethnicity, gender, sexual orientation, religion, physical ability, geographic location, career stage, age, physical appearance, and socioeconomic background.

2. Behaviour

We aim for an intellectually stimulating and supportive space for all members. Science is made richer by discussion and constructive criticism, but that is no excuse for disrespectful behaviour. We expect all members to adopt a behaviour that is professional, curious, kind, and respectful. We expect all participants to behave in a safe and responsible manner, to be mindful of how their language and actions are perceived by others, and to treat all spaces and equipment with care and respect.

Code of Conduct

3. Harassment and Unacceptable Behaviour

We have a zero-tolerance policy on harassment, inappropriate comments, and criminal offences. Harassment includes sustained disruption of talks or events, any non-consensual touch, sexual attention or innuendos, deliberate intimidation, threats of violence, stalking, and photography or recording of an individual without consent, personal insults, and advocating for any of the above-mentioned behaviour. Inappropriate comments include disrespectful or stereotyping comments about ethnicity, gender, sexual orientation, religion, physical ability, geographic location, career stage, physical appearance, and socioeconomic background as well as any sexist, racist, and/or exclusionary comments, statements, or jokes.

4. Academic Misconduct

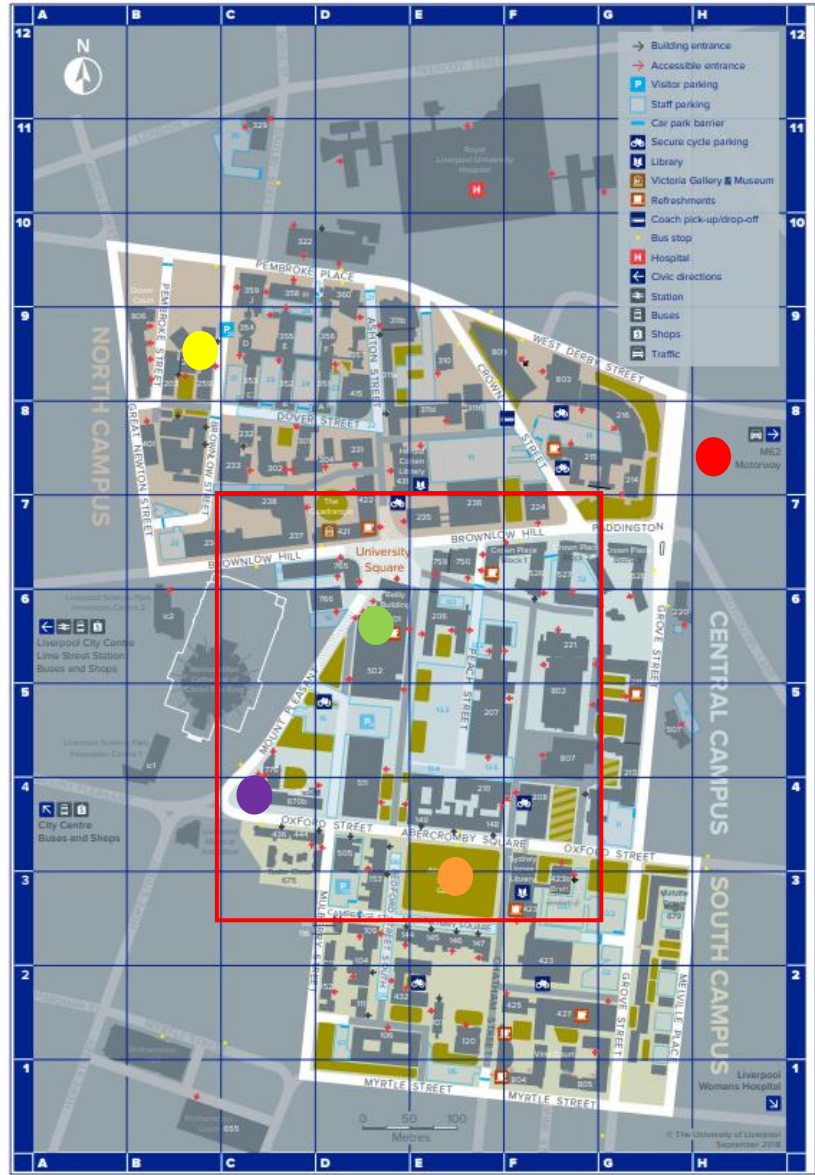
Academic misconduct includes but is not limited to plagiarism, failure to recognize contribution of others, and fabrication or falsification of research data. It is not acceptable at any VIPS events or meetings.

5. Breach of the Code of Conduct

Anyone who breaches the code of conduct is expected to immediately stop the inappropriate behaviour. Violations to the code of conduct may result in a verbal warning, removal from the premises without refund and/or banning from future events and meetings.

In the case of an incident occurring outside of a formal meeting or event, the aggrieved party or witnesses are encouraged to report it to the one of the Volcanic Igneous Plumbing Systems Commissions committee members. We understand that reporting a traumatic event is difficult, and we are committed to listening fully and compassionately. Once notified the committee member will discuss the details separately with all parties involved before choosing the appropriate next steps. Confidentiality of all incidents will be maintained as long as it does not infringe on another party rights.

Campus Map



- The Spine (H8) ●
- 126 Mount
- Pleasant (C4) ●
- The Guild (D6) ●
- The Jane
- Herdman Building (B9) ●

A full campus map PDF is located here:

<https://www.liverpool.ac.uk/files/docs/maps/liverpool-university-campus-map.pdf>

Workshops

Tuesday 18th June - Workshops

11:00	WELCOME, REGISTRATION & COFFEE
11:30	Workshop Part 1
12:30	LUNCH
13:30	Workshop Part 2
15:00	COFFEE BREAK
15:20	Workshop Part 3
17:00	END OF DAY 1 - WORKSHOPS END
18:00	ICEBREAKER - THE FONT
19:00	ICEBREAKER END

Real-time VIPS observations using analogue experiments

Prof. Janine Kavanagh, Dr. Caitlin Chalk
(*The Jane Herdman Building, the Map Library – B9*)

Exploring crystal histories – the petrological and geochemical toolbox

Dr. Katy Chamberlain & Dr. Geoff Kilgour
(*The Guild, Elizabeth Gidney Suite – D6*)

Photogrammetry as a tool for studying active and fossil VIPS

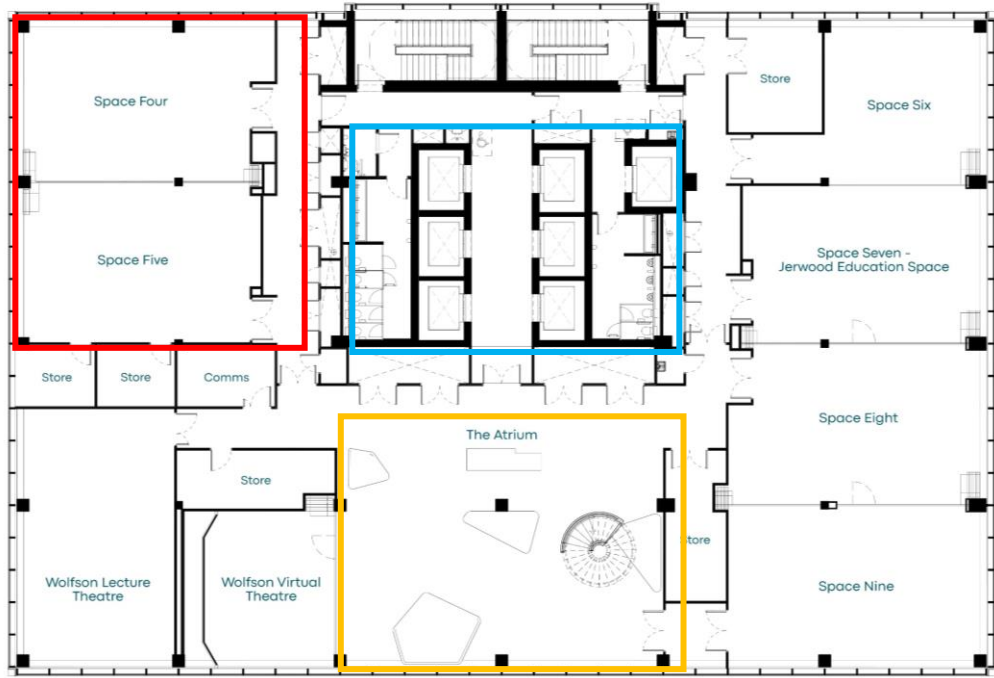
Prof. Steffi Burchardt & Dr. Stefano Urbani
(*126 Mount Pleasant, room 202 – C4*)

A full campus map PDF is located here:

<https://www.liverpool.ac.uk/files/docs/maps/liverpool-university-campus-map.pdf>

Conference Venue Information

The conference on the **19th and 20th of June** will take place on the **12th floor** of **The Spine**
2 Paddington Village,
Liverpool, L7 3FA.



Posters and oral presentations

Lunch and coffee break

Toilets

Registration is in the foyer on the ground floor

Inclusivity & sustainability

Inclusivity and accessibility

- Disabled toilets are available on the 11th floor of the Spine, and gender-neutral toilets are available on the ground floor of The Spine.
- A space for breast feeding, a prayer room and a quiet space are available on the 11th floor of The Spine. Please speak to a LOC member for access.
- The main entrance to The Spine is wheelchair accessible, and there is lift access to the higher floors from the ground floor.

Sustainability

The Spine has won several awards from their commitment to maintaining a sustainable space. We are committed to keeping the conference as sustainable as possible by reducing the number of printed handouts and asking attendees to use the mugs provided for drinks. We also ask that attendees use waste recycle facilities where possible.

Accommodation

There is a wide array of accommodation available in Liverpool at a range of prices.

More options, links and contact details are available on the website:

<https://vipscommission.org/international-conference/logistics/>



The Novotel

The Novotel at Paddington Village

Delta Hotels by Marriott Liverpool

Hope Street Hotel



Aloft Hotel

Aloft Hotel Liverpool

Leonardo Hotel Jurys Inn Liverpool

Hard Days Night Hotel

Holiday Inn Liverpool City Centre

School Lane Hotel

Radisson Red Hotel



Hard Days Night Hotel

The Liner at Liverpool

Places of Interest



The Mersey Waterfront

The Albert Dock is a key part of the Liverpool skyline. There are restaurants and bars by the waterfront, as well as the Beatles Museum, and the Museum of Liverpool.



Sefton Park

Sefton Park is located out of the city centre, where you can visit the Palm House (glass-panelled conservatory). Lark Lane is also a great place for cafes.



The Baltic Triangle

The Baltic Triangle is a great place for food and drink, with lots of independent stalls and live music.

Social Programme

Tuesday 18th June - Icebreaker



Our Icebreaker event will be held from 6pm on the 18th of June at The Font (1 Arrad St, Liverpool L7 7JE)

Wednesday 19th June – Conference Meal



Our Conference Meal will be held from 7pm on the 19th of June at Chamber 36 (45-49 Berry St, Liverpool L1 9DF)

Sponsors

We are grateful to the following sponsors for their support of the conference and travel bursaries.



**UK Research
and Innovation**



**nature
geoscience**

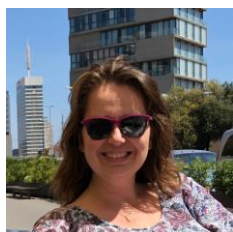




Keynote Speakers

Prof. Janine Kavanagh

Chair of Volcanology at the University of
Liverpool, United Kingdom

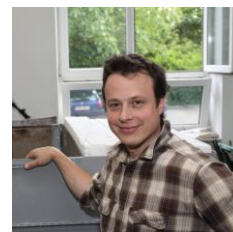


Dr. Adelina Geyer

Scientific staff at CSIC, Barcelona

Dr. Prokop Závada

Dynamics of Orogens and Rock Deformation team
at the Institute of Geophysics (Czech Academy of
Sciences)

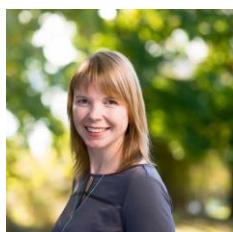


Dr. Geoff Kilgour

Volcanologist at GNS Science, New Zealand

Dr. Antonio Costa

Senior researcher at the INGV – Senzione di
Bologna























Prof. Steffi Burchardt

Associate professor in structural geology at
Uppsala University, Sweden

Conference Programme

Wednesday 19th June







09:00	ARRIVAL COFFEE & REGISTRATION	
09:30	INTRODUCTION & HOUSEKEEPING	
	SESSION 1 - chaired by Katy Chamberlain	
09:50	 Janine Kavanagh (Keynote)	Modelling magma movement in dykes and sills: Insights from minerals, magnetism and mixing experiments
10:10	 Lorenzo Mantiloni	The Role of Gravity in the State of Stress of Dynamic Magma Mush Reservoirs:
10:25	 Chiara Montagna	Modeling sub-surface volcanic processes with MagmaFOAM
10:40	 Diego Morata	Melt inclusion study from the Quaternary Pudahuel Ignimbrite in the Andean Southern Volcanic Zone
10:55	 Orlando Quintela	Magma batch emplacement in the Slaufudalur pluton, SE Iceland
11:10	COFFEE BREAK	
	SESSION 2 - chaired by Stefano Urbani	
11:30	 Geoff Kilgour (Keynote)	Mantle to surface monitoring of an andesite magmatic-hydrothermal system
11:50	 John Browning	Unravelling volcano-tectonic interactions at the Nevados de Chillan volcanic complex, Southern Andean Volcanic Zone, Chile
12:05	 Kate Williams	Re-conceptualising our understanding of magnetic and crystal fabrics in the Whin Sill
12:20	 Mike Burton	Exceptional eruptive CO ₂ emissions from intra-plate alkaline magmatism in the Canary volcanic archipelago
12:35	 Tobias Mattsson	Tracing Laccolith Growth with Palaeomagnetism
12:50	LUNCH	
	SESSION 3 - chaired by Jade Hrintchuk & Dawid Rybak	
13:50	 Prokop Závada (Keynote)	The interplay of deformation and current volcanic activity on the Reykjanes peninsula, Iceland - some insights from analogue modelling
14:10	 Manfredo Capriolo	The mush-dominated plumbing system of Large Igneous Provinces unveiled by glomerocrysts and melt inclusions
14:25	 Caitlin Chalk	Shedding (laser) light on three-dimensional fluid flow in dykes
14:40	 Melina Höhn	Petrographic and geochemical investigation of the magma plumbing system underneath the Rabaul Caldera, Papua New Guinea.
14:55	COFFEE BREAK	
15:15	POSTER SESSION	
17:00	END OF DAY 2	
19:00	CONFERENCE MEAL AT CHAMBER 36	

-  Modelling plumbing systems processes
-  Magma transport & tectonics
-  Magma plumbing systems & georesources
-  Volcanic-plutonic connection
-  Monitoring volcanic plumbing systems
-  Other VIPS-related topic

Conference Programme

Thursday 20th June







09:00	ARRIVAL COFFEE & REGISTRATION	
	SESSION 4 - chaired by Caitlin Chalk	
09:30	Antonio Costa (Keynote)	Advancements in volcanic conduit modelling: A decade of development, applications, and future perspectives
09:50	Gloria Arancibia	The Nevados de Chillán Volcanic Complex as a structurally controlled multiple magmatic system.
10:05	Barbara Bonechi	Direct observation of magma degassing and crystallisation via HP-HT X-ray transparent Internally Heated Pressure Vessel (IHPV)
10:20	ROUND TABLE 1 - chaired by Janine Kavanagh	
11:00	COFFEE BREAK	
	SESSION 5 - chaired by Tegan Havard & Kate Williams	
11:20	Adelina Geyer (Keynote)	Understanding the internal dynamics of magma reservoirs: A pending challenge
11:40	Oleg Melnik	Numerical simulation of the formation of rhyolitic melt at Krafla volcano, Iceland
11:55	Halldór Geirsson	Interconnected neighbouring volcanic systems and tectonic drivers of magmatic activity: crustal deformation during the Reykjanes Peninsula unrest 2020-2024, Iceland
12:15	Ed Llewellyn	Localization in basaltic fissure eruptions
12:30	LUNCH	
	SESSION 6 - chaired by Katy Chamberlain	
13:30	Oliver Higgins	Plagioclase-phyric basalts record variable crystal accumulation on millennial timescales beneath Wolf Volcano, Galápagos
13:45	Sonja Greiner	The influence of variable host rock cohesion and magma viscosity on intrusion-fault interaction: Insights from laboratory models
14:00	Stefano Urbani	Complex magma flow dynamics recorded in fossil dykes: insights from the Reyðarfjörður dyke swarm, eastern Iceland
14:15	Steffi Burchardt (Keynote)	Deformation related to magma transport in the Earth's crust - not just in the host rock
14:35	ROUND TABLE 2 - chaired by Janine Kavanagh	
14:50	COFFEE BREAK	
15:10	ROUND TABLE 3 - chaired by Janine Kavanagh	
15:40	IAVCEI VIPS COMMISSION	
16:00	END OF DAY 3 - CONFERENCE END	

-  Modelling plumbing systems processes
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Poster Session













Wednesday 19th June






No.		Presenter	Title
1	Yellow	Maggie Williams	GeoHub Liverpool: Supporting teachers and students in Geology for over 30 years
2	Teal	Brooke Benz	Gabbros at Askja: The Bringers of Chaos
3	Green	Rahul Subbaraman	Icelandic Nodules – Windows into Actively Evolving Mush
4	Green	Tegan Havard	Modelling dyke remobilisation using gelatine analogue
5	Dark Blue	Matías Poblete	Dynamics and conditioning factors of Holocene explosive and effusive eruptions at Lonquimay volcanic complex, Southern Andes of Chile.
6	Green	Claire Harnett	Modelling host rock deformation and surface displacement during magma intrusion
7	Light Green	Brendon Rolfe-Betts	Magma evolution and lateral collapse in shield-stage volcanism of Fogo, Cape Verdes
8	Dark Purple	Hilary Downes	Messages from the magma mush: glass-bearing plutonic xenoliths from Fogo, Cape Verde
9	Green	Stanley Yip	Exploring the effects of magma and crustal heterogeneity on volcano deformation
10	Green	Stanley Yip	Magma accommodation and ground movement analysis: testing the reliability of analytical volcano deformation models
11	Green	Sara Crozier	Using Triple-Fe to distinguish mush vs melt storage systems.
12	Green	Matías Clunes	Influence of crustal structures in dyke propagation: observations from analogue modelling
13	Dark Purple	Kurimi Iwahashi	Variations in the temperature and composition of high-crystallinity magma reservoirs on the scale of hundreds of years to tens of thousands of years
14	Dark Blue	Chiara Petrone	The February-March 2021 lava fountains events of Mt. Etna South-East crater (SEC): insights from clinopyroxene.

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Poster Session

Wednesday 19th June

No.		Presenter	Title
15		Xavier de Bolós	Geophysical insights into magma plumbing system and subsurface hydrothermal activity of Lānaʻi volcano (Hawaiian Islands)
16		Ceri Allgood	Complex dyke architecture suggests flow localisation during magma propagation
17		Alexandra Morand	Analogue experiment of magma reservoir fracturing under different magma buoyancy.
18		Réka Lukács	Peraluminous to metaluminous magma transition within a magmatic plumbing system: evidence from zircon, garnet and amphibole crystal chemistry
19		Jasmine Dibben	Using a 3D seismic velocity anomaly to delineate a deforming magma reservoir at Soufrière Hills Volcano
20		Dawid Rybak	Synchronous intrusion of a dyke pair: experimental simulation
21		David Neave	Interpreting clinopyroxene records of magma redox with thermodynamic models
22		Oleg Melnik	Magma Chamber Formation by Dike Accretion and Crustal Melting: 2D Thermo-Compositional Model.
23		Jade Hrintchuk	Investigating magma flow dynamics using plagioclase alignment in the Little Mount basaltic dyke, Victoria, Australia
24		Alex Walton-Keeffe	Tracing the source conditions of Central Andean ignimbrites through Machine Learning thermobarometry and thermodynamic modelling
25		Harangi Szabolcs	Rapid reactivation of long-standing crystal mush by mafic magma recharge: the 135 ka Ciomadul Mic eruption, eastern-central Europe
26		Catherine Annen	The IAVCEI Commission on VIPS

-  Modelling plumbing systems processes
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Notes

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Notes

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