

NEWS No. 4

December 2022



INTERNATIONAL ASSOCIATION
OF VOLCANOLOGY AND CHEMISTRY
OF THE EARTH'S INTERIOR

This Newsletter is intended to keep IAVCEI Members and individual scientists informed about the activities of the Association and its bodies, and the actions of the IAVCEI Executive Committee. Past issues are posted on the IAVCEI website. Your comments are welcome. The IAVCEI Newsletter may be forwarded to non-members who may benefit from the information.

FROM THE PRESIDENT



Photo by © Francesco Zizola

Dear IAVCEI colleagues,

While 2022 is just ending and 2023 upcoming, this Newsletter 2022–4 provides you with some ultimate updates on our finances, meetings, award nominations, Bulletin of Volcanology, IUGG-related business, as well as reports from a few Commissions.

The closing year permitted us to hold our very first IAVCEI meeting with in-person participants (COV11 in Heraklion) since the onset of the Covid-19 pandemic. Constrained by these peculiar circumstances, 2023 will be marked by a very dense planning, first with our Scientific Assembly in New Zealand (Rotorua) by next January–February then our General Assembly (IUGG, Berlin, Germany) by mid-July. These two major meetings of the IAVCEI will occur within a less than 6-month interval, which has never happened until now and, believe us, forced your Executive Committee to surmount quite a lot of headaches. Fortunately, at the same time we were able to support the activity of our Commissions and to offer grants to young researchers and colleagues from developing countries, while maintaining

the IAVCEI in healthy financial conditions, as detailed below by Secretary General Roberto Sulpizio. Let me highlight again that such financial support and our overall sane budget status have been made possible by the growth of our IAVCEI membership, thanks to your membership renewal and the entering of young new members. We do need to continue in that direction and attract new members!

Finally, our General Assembly next July will close the mandate of the current IAVCEI Exec and the activation of a newly elected Committee. The call for this election will be launched soon, following our Statutes and By-Laws.

In name of the IAVCEI Executive Committee, I send you my very best wishes for 2023.

Patrick Allard
December 27, 2022



A SUMMARY OF 2022 FROM THE PERSPECTIVE OF THE IAVCEI SECRETARY GENERAL

Dear members and IAVCEI followers,

a year is closing and the new one will open with the important scientific appointment of our Scientific Assembly in Rotorua, New Zealand (January 30 – February 3, 2023). I do not want to spend many words on the health of IAVCEI and the important activities we developed in 2022. Patrick has already and brilliantly highlighted them in the previous Newsletter and again in the present one.

I just wish to thank you all for your support to IAVCEI, in a year that witnessed the resumption of in-person meetings on the occasion of the COV11 in Crete. This was an important event during which the community could start feeling that the grey pandemic period was going towards an end and that the return to usual business was getting closer.

I am very satisfied to say that the COV11 conference has been a great success both in the scientific and financial aspects, with a small but significant gain for the IAVCEI budget. I'm also proud to say that, despite difficulties resulting from the pandemic and international crises, the finances of IAVCEI do remain still healthy. This allowed

us to support the community with more than 130 grants offered to young researchers and colleagues from developing countries to participate in both COV11 and our Scientific Assembly in Rotorua, for a cumulative allocation totaling around 80,000 Euros. IAVCEI also supported the renewing of Commissions activity, contributing to finance their meetings and workshops.

The engine thus restarted well in 2022. We cross the fingers for 2023, which will also see our important IAVCEI General Assembly happening during IUGG2023 in Berlin in July. I warmly invite you to participate as numerous as possible in this important Union meeting, which will also mark the end of the mandate of the current IAVCEI Executive Committee and the changeover with a new Committee.

I hope to see you numerous at both our SA2023 in Rotorua and our GA2023 in Berlin.

I wish you a pleasant and successful 2023!

Roberto Sulpizio

IAVCEI SG

IAVCEI Meetings

IAVCEI Scientific Assembly, Rotorua (New Zealand)

January 30 – February 3, 2023

Our Scientific Assembly in Rotorua is now only one month ahead. As of December 16, the local organizing Committee had received 908 in-person registrations and 74 virtual registrations. Thus, close to a thousand of participants is expected as a whole, which is quite a good number.

About 70 travel grants were offered by IAVCEI to support the participation of young researchers and colleagues from developing countries.

For updates on the scientific Program, post-and pre-conference field excursions, or any other aspect, please refer to the IAVCEI website and the link: <https://confer.eventsair.com/iavcei2023>.

Our SA2023 will be soon followed by the 8th WMO International Workshop on Volcanic Ash (IWVA-8), entitled 'Managing and mitigating volcanic risks to aviation with an explosion of science!'. This will be held in Rotorua, for 1.5 days, on February 4 to 5. The Workshop will also provide an opportunity to discuss the involvement of IAVCEI into the 5-yr UN's Initiative on Global Early Warning Systems, developed within the Sendai Framework for Disaster Risk Reduction 2015–2030 and coordinated by WMO.

IAVCEI General Assembly (28th IUGG Assembly, Berlin)

July 11–20, 2023

The IAVCEI General Assembly will happen in July 2023, during the 28th General Assembly of IUGG (CityCube of Berlin, Germany). Let me remind you that the every 4 years financial allocation from IUGG to IAVCEI is directly proportional to the number of IAVCEI participants in the IUGG General Assembly. **Therefore, we encourage your largest attendance at this important Union meeting in July 2023.** In Berlin, the IAVCEI will sponsor 14 Scientific Sessions of pure Volcanology and will lead or share 20 joint Sessions with other IUGG's Associations (see below):

IAVCEI Symposia

- V01 Volcano Geodesy Techniques and Approaches for Studying and Monitoring Volcanic Processes
- V02 Modelling and Monitoring of Volcanic Ash Clouds
- V03 Uncertainty Treatment in Volcanic Hazard Analyses
- V04 Integrated Approaches to Investigate Pyroclastic Density Currents
- V05 Interactions Between Volcanic Eruptions and Climate
- V06 Geochemical and Geophysical Responses of Magma Feeding Systems and Eruption Dynamics at Active and Quiescent Volcanoes
- V07 Putting Time And Rate Constraints On Magmatic Processes; How Fast? How Long?
- V08 Volcano Geology and Mapping, Eruptive Behaviour and Hazard Assessment From Field Studies

- V09 Advanced Remote Sensing Techniques to Study Volcanic Hazards
- V10 History of Volcanology and Historical Volcanology
- V11 Planetary Volcanism: Remote Sensing, Rovers, Landers, Earth Analogues and Modelling
- V12 Toward Realistic Modelling of Volcano Deformation
- V13 Recent Advances in Volcanology
- V14 Open-vent Systems – Definitions, Longevity, and Implications

Inter-Associations Symposia

- JV01 Volcano-Ice Interactions (IAVCEI, IACS)
- JV02 Dispersal of Volcanic Particulates in the Atmosphere and the Oceans (IAVCEI, IAMAS, IAPSO)
- JV03 Hunga Tonga (IAVCEI, IAMAS, IASPEI, IAGA, IAG)
- JV04 Volcano Seismology (IAVCEI, IASPEI)
- JV05 Strain Localisation and Seismic and Volcanic Hazards (IAVCEI, IASPEI, IAG)
- JV06 Geophysics of Solar System Planets (IAVCEI, IASPEI, IAG, IAGA)
- JV07 Structure and Composition of the Earth Mantle and Crust (IAVCEI, IASPEI, IAGA, ILP)
- JA01 Machine Learning in Geo-, Ocean and Space Sciences (IAGA, IAVCEI, IAHS, IASPEI, IAMAS, IAPSO)
- JA04 Marine Geodesy and Geophysics – Opportunities & Hazards (IAGA, IAG, IASPEI, IAVCEI)
- JA08 Ground and Satellite Electromagnetic Observations Related to Earthquakes, Tsunami's and Volcanic Activity (IAGA, IASPEI (EMSEV), IAVCEI)
- JC06 Mountain Cryosphere Hazards (IACS, IAVCEI, IASPEI)
- JG03 Remote Sensing and Modelling of the Atmosphere (IAG, IAGA, IAMAS, IAVCEI)
- JG07 Modern Gravimetric Techniques for Geosciences (IAG, IAVCEI, IAPSO, IASPEI)
- JH04 Anthropocene: Perspectives From and Within Geophysics (IAHS, IAMAS, IACS, IASPEI, IAVCEI, IAG, IAPSO)
- JH06 Education & Outreach in Geosciences (IAHS, IASPEI, IAGA, IAG, IAVCEI, IACS, IAMAS, IAPSO)
- JM05 Earth System Models: Assessing the Earth System's State and Fate From Regional to Planetary Scales (IAMAS, IAHS, IACS, IAPSO, IAVCEI)
- JP05 Tsunamis (IAPSO, IASPEI, IAVCEI, IAMAS, IAG)
- JS04 Monitoring, Imaging and Mapping of Volcanic Areas (IASPEI, IAG, IAVCEI, IAGA)
- JS05 Real-Time GNSS Data and Products Usage: Interoperability and Management Challenges (IASPEI, IAG, IAVCEI, IAPSO)
- JS06 Joint Inversion of Different Geophysical Data Sets (IASPEI, IAGA, IAG, IAVCEI)
- JS09 Early Warning Systems for Geohazards (IASPEI, IAVCEI, IAHS, IAG)

The IAVCEI Union lecture will be given by Robin Matoza on the Hunga Tonga 2022 eruption, on July 18.

Key deadlines

- **Online abstract submission:** remains open until **February 14, 2023**. All accepted abstracts will be assigned a DOI. Authors of accepted abstracts will be notified by **March 17, 2023**.

- **IUGG Travel Grants Program:** same dates. Successful applicants will be notified by **March 17, 2023**. The Travel Grants Program will support students, early career scientists, and attendees from low and low-middle-income countries (according to the OECD definition) **with an accepted abstract**. For the travel grant application, please remember your abstract number and the abbreviated name of the symposium to which your abstract was submitted to.
- **Early bird registration:** will remain open until **April 28, 2023**.

Detailed information is accessible from the web portal:

<https://www.iugg2023berlin.org>



The 28th General Assembly
of the International Union of Geodesy
and Geophysics

IAVCEI Awards 2023

George Walker Award and Wager Medal

The IAVCEI Award Committee has completed his selection of the two nominees for each of these awards. Nominees from this first round will be revealed and honored on Thursday 2 February during our Scientific Assembly in Rotorua.

Another nomination call for the George Walker Award and the Wager Medal will be launched in January 2023 for a second-round awarding during our IAVCEI General Assembly in Berlin.

Thorarinsson, Fisher and Krafft Medals

The Executive Committee agreed to deliver these three IAVCEI Medals during our General Assembly in Berlin, in July 2023. The nomination call will be issued in January 2023.

For any information about these Medals and our Awards in general please refer to the IAVCEI website at:
<https://www.iavceivolcano.org/guidelines-for-iavcei-awards/>

Bulletin of Volcanology

As you already know, Andy Harris and Frances van Wyk de Vries, the present Executive Editorial team of Bulletin of Volcanology, will step down their service in June 2023. We again acknowledge Andy and Fran for the great job they made in actively promoting BV over the past 4.5 years, attested by the substantial growth of the journal impact factor (see the IAVCEI Newsletter 2022–3).

For the outcome of 2023, they just launched a new BV submission template, soon attached to the IAVCEI website, and published in parallel an editorial that you can retrieve at: <https://link.springer.com/article/10.1007/s00445-022-01619-8>.

Following the call launched on October 10, we received two strong candidatures for the next Editor-in-Chief of Bulletin of Volcanology for the term 2023–2027. After voting, the IAVCEI Executive Committee will communicate the names of the newly appointed Executive Editor and Associate Editors. In the meantime, Andy and Fran will spend the months through June ensuring overlap and continuity with the new team.

IUGG-Related Information

International Union of Geodesy and Geophysics

IUGG Early Career Scientist Awardees 2023

The International Jury for the 2023 IUGG Early Career Scientist Award has decided to honor ten young scientists for their outstanding research in Earth and space sciences and for their international research cooperation, as listed below. The IAVCEI warmly congratulates **Jose Társilo Girona Hernandez** (University of Alaska, Fairbanks, USA) for being one of these nominees:

■ Mohd Farooq Azam

(Glaciology/Hydrology, Indian Institute of Technology – Indore, India)

for his efforts to raise Indian glaciology to international levels, for his boundless interest in Himalayan glacio-hydrology leading to reference review articles and long-term glacier monitoring.

■ Jana H. Börner

(Geomagnetism, Freiberg University of Mining and Technology, Germany)

for her contributions to electromagnetic geophysics and laboratory-based petrophysics for understanding complex environments and reactive systems.

■ Jayashree Bulusu

(Geomagnetism, Indian Institute of Geomagnetism, India)

for her path-breaking contributions to understanding low-latitude phenomena in the magnetosphere.

■ Johan Gaume

(Glaciology, Swiss Federal Institute of Technology, Switzerland)
for his seminal work on snow avalanche modeling from the initial crack in the snowpack to the full slope release and for interdisciplinary and innovative studies of geophysical mass flows.

■ Jose Társilo Girona Hernandez

(Volcanology, University of Alaska Fairbanks, USA)

for his pioneering and innovative approaches for studying the degassing and eruptive behavior of volcanoes by combining remote sensing, numerical modeling and machine learning.

■ Natalya Gomez

(Glaciology/Ocean Sciences, McGill University, Canada)

for her seminal contributions to our understanding of the connections between the cryosphere and sea level change, at the border of geophysical and climate sciences.

■ Patrick Hupe

(Atmospheric Sciences/Seismology, Federal Institute for Geosciences and Natural Resources, Germany)

for his transdisciplinary work which bridges meteorology, acoustics, and seismology, laying the foundation for future research in his field.

■ Christina Karamperidou

(Atmospheric Sciences, University of Hawaii, USA)

for her significant contributions to understanding El Niño spatiotemporal diversity and associated impacts, from paleoclimate to modern times through multidisciplinary international collaborations.

■ Xingxing Li

(Geodesy, Wuhan University, China)

for his innovative contributions in improving GNSS precise positioning and orbit determination, significantly extending the high-precision GNSS applications in geosciences.

■ Norimitsu Nakata

(Seismology, Lawrence Berkeley National Laboratory and Massachusetts Institute of Technology, USA)

for his innovative research using seismic ambient noise by pioneering a high-resolution body-wave tomography and finding time-lapse changes of subsurface elastic parameters.

IUGG's ECS Awards 2023 will be presented in July during the Award Ceremony of the **IUGG General Assembly 2023**.

Final Call for Invitations to Host the 29th IUGG General Assembly in 2027

Proposals to host the 29th IUGG General Assembly in 2027 are still being accepted and must be submitted to the IUGG Secretariat by **January 11, 2023** (six months before the next General Assembly, consistent with IUGG By-Law 6). The requirements and guidelines for the proposals are available. All proposals will be evaluated by the Site Comparison Committee, and a report will be given to the IUGG Council before its final vote. The IUGG Council, at its meeting during the 28th IUGG General Assembly in Berlin, Germany, in July 2023, will make the final selection of the venue of the 29th IUGG General Assembly.

For more information, please contact the IUGG Secretariat (Franz G. Kuglitsch, secretariat@iugg.org).

Please write to Edward W. Llewellyn, at:
ed.llewellyn@durham.ac.uk

Commissions Activities

Commission on Submarine Volcanism ECR Research Symposium

At the beginning of November, the Commission on Submarine Volcanism (CoSV) was very pleased to host its first Early Career (ECR) Research and Networking Symposium. Held online for two sessions over Atlantic and Pacific time zones, there were over 60 attendees from 22 countries, 80% of which were ECRs involved in some aspect of volcanism in marine environments.

Each session began with a plenary speaker, and then our ECRs showcased their upcoming and ongoing research projects in over 20 research and lightning presentations. Each session concluded with an hour-long online networking session with open Q+A with some mentors to discuss varying career paths, finding cruise opportunities, and applying for grants. There was some very valuable feedback from the attendees, and we look forward to hosting another CoSV ECR symposium next year! Thank you to all those who participated, it was fascinating to see the variety of early career research being worked on, from marine geophysical surveying to volcanic microtextural analysis to hydrothermal vent sampling. Well done all.

If you are interested in volcanic activity in the oceans, please sign up for our mailing list by emailing submarine@iaavceivolcano.org, and you can follow CoSV on social media.

CoSV Committee

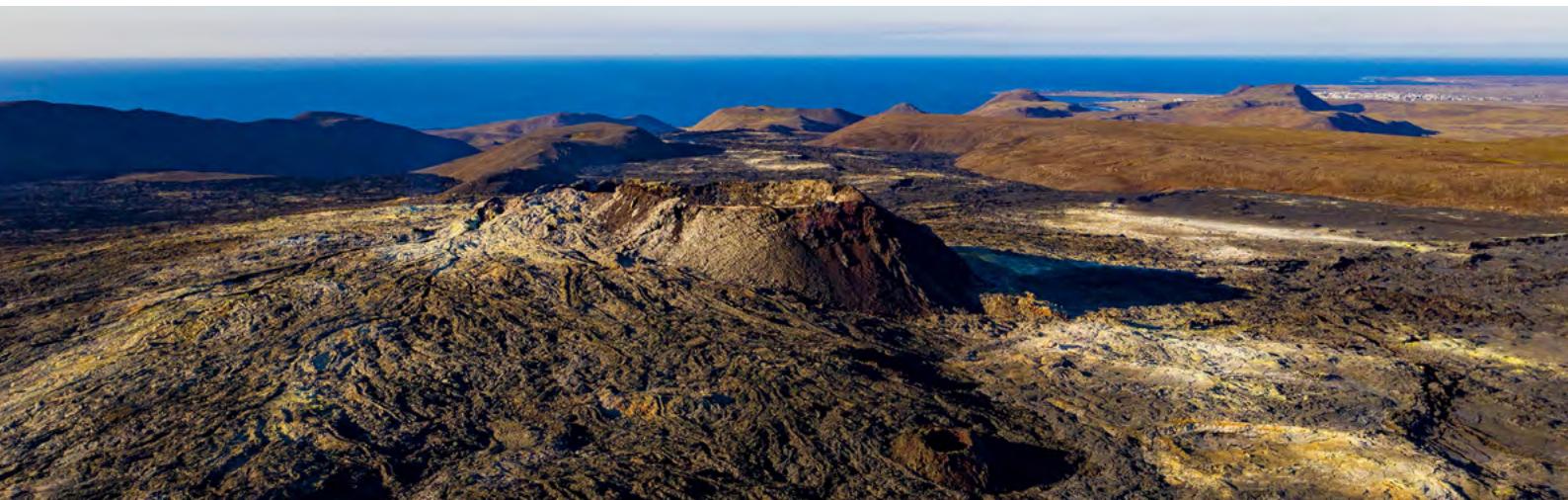


Obituary



We learned with incredible sadness that Heidy Mader, Professor at the University of Bristol, UK, just passed away in December, following a short illness. Heidy was a key figure in the volcanology group of the University of Bristol for more than 30 years, during which time she made a profound contribution to volcanology, particularly through her ground-breaking work on the rheology and physics of magma.

Heidy was Editor-in-Chief of the Journal of Volcanology and Geothermal Research from 2016 to 2021 and played a central role in modernizing editorial practices at the journal. The current editors are preparing an obituary editorial and invite you to share your thoughts, reminiscences, reflections, and any other material that might contribute to an article celebrating Heidy's life and work.



Commission on the Chemistry of Volcanic Gases: 40 years of science on volcanic gases, the 14th Field Workshop of CCVG, Peru, November 6–16, 2022



The early purpose of CCVG's Field Workshops was to "test and compare the different sampling and analyzing techniques in the same place at the same moment" (Corazza, 1986). The Commission on the Chemistry of Volcanic Gases organized its first Field Workshop in Vulcano Island in 1982. Since then, thirteen field workshops have taken place every 3 years, in Japan (1985), New Zealand (1988), Italy (1991), Indonesia (1994), Hawaii-USA (1997), Japan (2000), Nicaragua and Costa Rica (2003), Italy (2005), Mexico (2008), Kamchatka-Russia (2011), Chile (2014), and Ecuador (2017). The workshop to be held in 2020 in Japan was cancelled due to the Covid-19 pandemic and replaced by a Virtual Workshop in 2021.

For the first time Peru was the venue for the 14th Field Workshop, organized locally by the Instituto Geológico, Minero y Metalúrgico (INGEMMET), with the support of the CCVG Board and logistical help of Acción Alianza. The workshop was attended by 85 participants, including 24 Peruvian and 67 international. The attendees came from 18 different countries and about 36 % of them were female. Fourteen participants – 7 early-career researchers and 7 staff members of volcano Observatories – were invited with full-grants thanks to supports from the Volcano Disaster Assistance Program (VDAP) of USGS-USAID, the International Geoscience Programme (IGCP) of UNESCO-IUGS, the IAVCEI, and contributions of CCVG members.





The Workshop started in Arequipa with a scientific conference (5–6 November) where important advances in measurement techniques, data analysis and modeling, studies of volcanic activity and impact of volcanic gases were presented and discussed. The conference was divided into six thematic sessions covering direct sampling, remote sensing, diffuse degassing, and multidisciplinary studies. A total of 32 oral and 30 poster contributions were presented, as well as an overview of volcano monitoring in Peru.

Following inter-calibration exercises, fieldwork activities took place between 7 and 13 November at *Sabancaya* (5967 m asl), *Ubinas* (5672 m), and *Ticsani* (5408 m) volcanoes. An optional field trip was organized on November 15–16 to the summit of *El Misti* volcano (5822 m), with 18 participants. Hosted in the town of Chivay, all groups started field activities around Sabancaya. These included water sampling at the hot springs of La Calera, diffuse degassing mapping around the Pinchollo geyser in Colca Valley, and remote sensing of the gas and ash plume from passive/explosive degassing at Sabancaya volcano. Direct sampling activities continued at Ticsani volcano, with overnight at the town of Moquegua, while diffuse degassing and remote sensing measurements were done at Ubinas volcano, with stay

in Arequipa. Direct measurements included a wide range of techniques for the analysis of major volatile species and trace elements, including isotopic compositions, in waters, soils and fumaroles. Remote sensing activities included measurements of plume gas flux and composition using both established and novel techniques, including passive diffuse UV, direct solar UV and FTIR, and thermal emission.

All groups rejoined in Arequipa for a final day of meetings and workshops. Three simultaneous data analysis workshops were conducted with focus on remote sensing, direct sampling, diffuse degassing, and the MultiGAS technique. The Board presented a plan for a Decadal Plan for CCVG, aimed at defining community goals for the next ten years, whose progress will be checked on every workshop. This Decadal Plan will target “big questions”, “technical developments”, “infrastructure”, and “community” themes. A simplified new structure of the Board, with two co-leaders and one secretary, was approved. Other specific roles were assigned to 3 coordinators of a working group on data comparison from the workshop, 1 organizer/coordinate of the next workshop, and 4 Decadal Plan coordinators. The plenum of CCVG approved these proposals and elected the new Board with Tobias Fischer and Silvana Hidalgo as co-leaders and Artur Ionescu as secretary.



Two proposals for the next Field Workshop in 2025 were presented, Sicily and Hokkaido, and one proposed as a future venue, the Philippines. Following the voting majority the **15th Field Workshop will be held in Hokkaido-Japan**, as proposed by Takeshi Ohba and colleagues.

Social activities included a celebration highlighting the 40-yr anniversary of the First CCGV Workshop (retrospective by Dario Tedesco), traditional Peruvian dancing performances, a football match (at 2335 m asl!), and a closing dinner and party.

The CCGV Board 2017-2022, led by Santiago Arellano and Franco Tassi, expresses his warm thanks to INGEMMET/Acción

Alianza, in particular to Fredy Apaza, Pablo Masias and Olga Hernández; to IAVCEI, represented by its president Patrick Allard; VDAP, directed by Jake Lowenstern; to IGCP, and all members of the CCGV community for their participation and support during the last five years that concluded with a memorable workshop in Peru.

Reference

Corazza, E., Geothermics, 15, 2, 197-200, 1986.

For a more extended report on the 14th Field Workshop of CCGV please visit the website: <https://ccvg.iavceivolcano.org/field-workshops/14th-field-workshop-arequipa-peru-2022/>



COMMISSION OF VOLCANIC GEOHERITAGE AND PROTECTED VOLCANIC LANDSCAPES

Volcanic Geoheritage and the role of IAVCEI

Karoly Nemeth^{1,2,3}, Thomas Casadevall⁴, Joan Martí⁵, Mohammed Rashad Moufti⁶

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⁴Geosciences Barcelona, CSIC, Barcelona, Spain; ⁵U.S. Geological Survey, Denver, Colorado, U.S.A.; ⁶King Abdulaziz University, Saudi Arabia

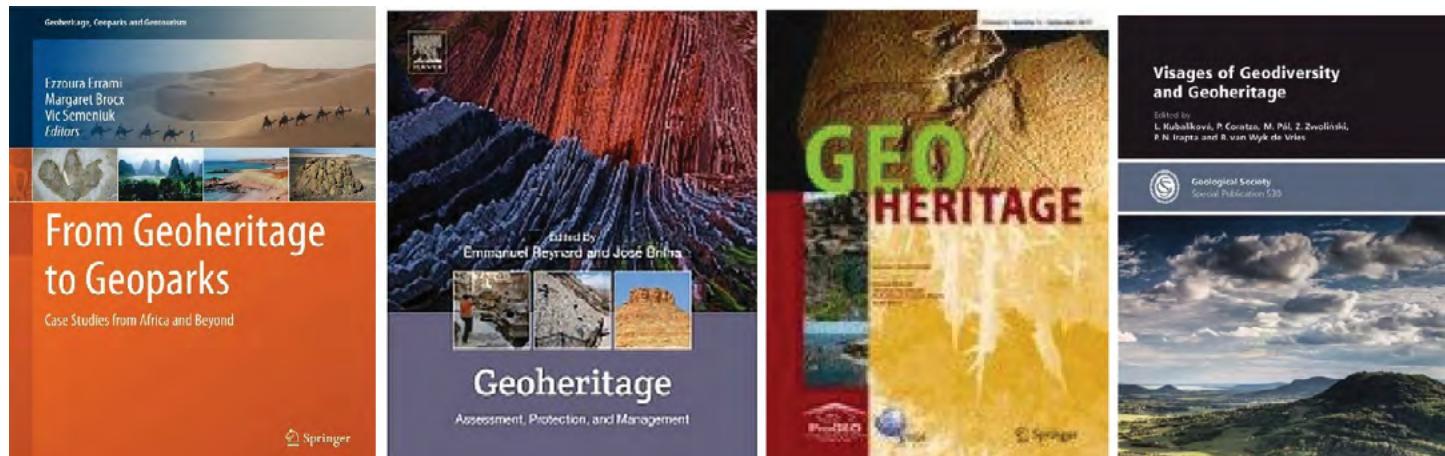


Figure 1. Some examples of the diverse books appeared recently dealing with geoheritage including the subject's premier magazine *Geoheritage* (Springer).

Geoheritage as a new science field in the global stage

For the last 25 years there has been an unprecedented growing interest in the Geosciences for topics related to **geoheritage**. Geoheritage is best defined as Nature's abiotic diversity (geodiversity) that carries significant scientific value (Brilha 2016; Brilha 2018). Overall, the way these elements of geodiversity are protected form the basis of geoconservation. This conceptual framework has been evaluated, developed, and evolved in dramatic speed in the last decade as reflected well in the fast-growing appearance of scientific papers in the literature with geoheritage themes, as well as growing citations to those works well beyond the narrow subjects they may cover.

The growth of Geoheritage research in the last two decades is illustrated by the establishment of dedicated scientific journals, such as *Geoheritage* (Springer), and by its mentioning in numerous other top level research journals and leading publishing houses book portfolio (Fig. 1).

Among these books, one of the most comprehensive summary is given by the book « *Geoheritage: Assessment, Protection, and Management* » published by Elsevier (Reynard and Brilha 2017): it is the first book to cover the topics of geoheritage, geodiversity, geoconservation and geoeducation in a holistic perspective, also offering practical guidance to understand the relationship of geoheritage to other subjects such as landscapes, conservation, and tourism. Key research outputs about geoheritage and geodiversity appeared in highly reputable science journals influencing the global interest of geoheritage research (Gray 2008; Brilha et al. 2018; de Vries et al. 2018; Brocx et al. 2019; Schrodt et al. 2019).

Geoheritage also became one of the backbone aspects of activities within the International Union of Geological Sciences [<https://www.iugs.org/>]. Currently IUGS runs several activities around geoheritage and natural hazards such as the [IGCP Project 692 Geoheritage for Geohazard Resilience](#) (Fig. 2).



Figure 2. Logo of the UNESCO IGCP 692 project that took a key role recently to link geoheritage and geohazard resilience including volcanic hazards.

IUGS also recently completed a major IGCP Project 731 that collected the First 100 IUGS Geological Heritage Sites that culminated in a publication of an extremely useful record of the current state of the topmost geological sites on Earth (Hilaro et al. 2022). [The book can be downloaded from their site freely](#). In addition, during the 60th Anniversary of IUGS in Zumaia, Spain, in October 2022 a declaration was issued to call for more focussed action toward Earth Heritage (Fig. 3).

Members of the Commission were strong contributors to the IUGS First 100 Geological Heritage Site list both in form of proposing sites and evaluating proposals. As the result of this, out of the one hundred selected sites **seventeen volcanology sites were included in the list based on their volcanic geoheritage values**.



Figure 3. The Zumaia Declaration supported by IAVCEI [<https://iugs-geoheritage.org/the-iugs-zumaia-declaration/>].

Volcanic geoheritage and the IAVCEI

Volcanic geoheritage research is a growing science field, as clearly demonstrated in the number of research outputs over the last 10 years. Beside the traditional journal publications, a set of excellent books on the volcanic geoheritage elements of various regions appeared since 2013 within the Springer Book Series, Geoheritage, Geoparks and Geotourism (Fig. 4, below). These reflect the growing global interest to have high quality, scientifically valid summary about geoheritage elements of volcanic terrains. A special issue on Volcanic geoheritage was successfully managed in Geoheritage, the premier journal of geoheritage research (Springer), by Nemeth et al. (2017).

In light of this dramatic growth of geoheritage research, we explore where IAVCEI fits into this global movement and what the **IAVCEI Commission of Volcanic Geoheritage and Protected Volcanic Landscapes** has achieved since its establishment.

Spectacular volcanic landscapes and regions are becoming increasingly recognized as critical areas to protect and conserve for the unique geoscientific aspects they represent and as places to enjoy and learn about the science and history of our planet. There is an increasing national and international interest related to “Geoheritage”, “Geoconservation”, “Geoparks” and “Geotourism” with a growing appreciation and linkage of these concepts with modern Earth sciences and Volcanology. Most notably, “UNESCO Global Geoparks”, those with active volcanoes, attract an increasing number of visitors annually and have proven to be excellent tools to educate the public about “Earth Sciences”. At the same time, many Geoparks are seen to be areas for recreation and significant sustainable economic development through geotourism. However, due to the increasing interest on these geological sites, they also demand increasing scientific knowledge to guarantee the best presentation and dissemination of information of their geological values, as well as for the safety and the security of their visitors by conducting accurate hazard assessment.

In order to develop further the understanding of volcanism and Earth Sciences in general, and to elucidate the importance of volcanology for Society, a new Commission on Volcano Geoheritage and Protected Volcanic Landscapes (VGPL) was established in 2014. It aimed at promoting an exchange of



information and experiences between organizations and people responsible for managing and/or working in protected volcanic landscapes; explaining the importance of knowledge for raising awareness of volcanic landscapes at a territorial scale; and for sharing knowledge and raising awareness regarding experiences in management, education and geotourism in protected volcanic landscapes. This Commission defined five main issues where its actions could fit in. These are: 1) Contributing with scientific knowledge to the management of protected volcanic areas; 2) Identification of scientific values of protected volcanic areas; 3) Evaluate threats to the integrity of volcanic landscapes from activities such as agricultural practices and livestock grazing, forestry practices, mining of volcanic materials, geothermal development, and development of built infrastructure; 4) Communicating heritage values through education and interpretation; and 5) Geotourism as a factor of economic and community sustainable development in protected volcanic areas.

The role of the Commission and promising results

The Commission supported the preparation of an updated version of the **World Heritage Volcanoes** (Fig. 5) for the **International Union for Conservation of Nature (IUCN)** (Casadevall et al., 2019) [<https://portals.iucn.org/library/node/48448>]. This document now forms the core of basic volcano science for anyone planning to prepare nominations for areas or properties to achieve World Heritage status based on the global recognition of geoheritage values where volcanoes and volcanic rocks are located. The book also identified those volcanic features and areas which have so far not received enough recognition such as monogenetic volcanic fields. Grounded on this effort, the IAVCEI Commission on Monogenetic Volcanism is currently planning to build a global inventory of volcanic fields where potential future protected areas including geoparks may be developed.



Figure 5. Cover of the *World Heritage Volcanoes* book.

VOLCANDPARK conferences

VOLCANDPARK is the international conference devoted to the management, the raising of awareness, and geotourism in protected volcanic areas. The conferences provide the

opportunity to bring together people from many different fields (scientists, administrators, politicians, tour operators, etc), any of whom may become involved in some way in territorial planning, management, and promotion of protected volcanic areas (national and natural parks, natural reserves, etc.). The first VOLCANDPARK took place in 2012 in Olot (Spain), in La Garrotxa Volcanic Zone Natural Park, and the second conference was held in Lanzarote, Canary Islands, Spain, in November 16-20, 2015. The commission is currently in discussions to present the third VOLCANDPARK conference in 2024 in Central Europe (Czech Republic, Hungary, Poland and/or Romania) where UNESCO Global Geoparks with strong volcanic geoheritage are in operation.

As geodiversity is all around us, the Commission participated in various geodiversity promotional programs. Geodiversity (including volcanic geodiversity) is all the parts of nature that are not alive, including everything from minerals and fossils to soils and spectacular landscapes [<https://www.geodiversityday.org/what-is-geodiversity>] (Gray 2018, 2021). Current research explores the way how geodiversity can be measured and applied to various spatial scales commonly employing advanced technologies such as remote sensing or GIS (Zwoliński et al. 2018; Pal and Albert 2021; Zakharovskyi and Nemeth 2021; Erikstad et al. 2022; Goncalves et al. 2022; Jaya et al. 2022; Najwer et al. 2022). The Commission was one of the supporting organizations to achieve to set the International Geodiversity Day on 6 October (Fig. 6) [<https://www.geodiversityday.org/>]. Through the VGPVL Commission, IAVCEI thus became visible as one of the scientific Societies standing behind this global movement.



Figure 6. Logo of the International Geodiversity Day.

Summary

Since 2014, when the *IAVCEI Commission on Volcanic Geoheritage and Protected Volcanic Landscapes* was established, the global science has fully embraced geoheritage and geodiversity research as an emerging and very impactful research field. Volcanic geoheritage research somehow followed this trend but not as strongly as expected since the Commission was formed. The research remains rather fragmented and individually driven rather than as a collective effort where a major organisation like IAVCEI is visible. As the VGPVL Commission Leadership is about to change, here we call the volcano community to consider more activity and apply to be one of the facilitators of volcanic geoheritage research within IAVCEI. Please send nominations of people who wish to continue this work to the email address of k.nemeth@massey.ac.nz (Karoly Nemeth).

We encourage that the official journal of IAVCEI, *Bulletin of Volcanology*, be considered as a potential publication platform around volcanic geoheritage and geodiversity research. As the subject is very important and linkable to various aspects with general public interest (e.g., conservation, education, outreach, hazard resilience), ideally *Bulletin of Volcanology* could establish a dedicated section and subject editor to encourage and facilitate this new research field to become more and more visible. In the last few years major Journals, such as *Frontiers in Earth Science* or *Geosciences* (MDPI), made this step of promoting geoheritage research or offered special issue to showcase the diversity of geoheritage research. The result is clear and through this subject the visibility of Earth Science increases both to other scientists and for the public.

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COMMISSION ON VOLCANIC AND IGNEOUS PLUMBING SYSTEMS (VIPS)

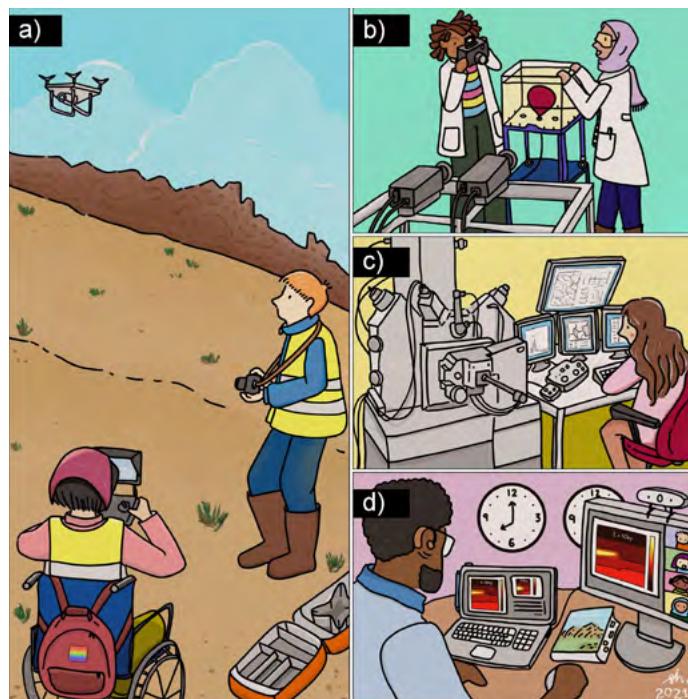
Activity Summary

We launched a new website

In January 2021, we launched our new website: <https://vipscommission.org/>. Since then, the website has been focal point for the activities of the commission. The VIPS commission included in its committee a team of bloggers who publish interviews, VIPS events, new items, ECR stories, etc. We also produced a series of documents that are available on the website and that define the core values and orientation of the commission, including a new constitution, our privacy policy, a code of conduct for meetings and events, and guidelines for organizers.

We committed to Equality, Diversity, and Inclusion (EDI)

Equality, Diversity, and Inclusion (EDI) is a core value of the commission, and we want all people interested in VIPS to feel welcome in our community and to have a same sense of belonging independently of their origin, ethnicity, ability, language, gender, sexual orientation, or age. With this purpose in mind, we published on our website a code of conduct for meetings and events and guidelines for organizers. To help educate ourselves, we assembled resources that we made available on our website that include videos, articles, reports, and other supports on the theme of EDI in geosciences.

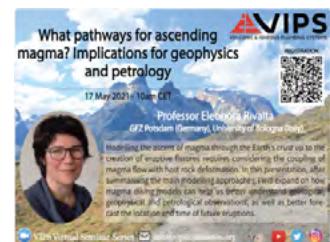


The VIPS committee's vision of a diverse and inclusive research community studying VIPS using different approaches and methods including (a) field geologists, (b) experimentalists, (c) petrologists and geochemists, and (d) numerical modelers. From Burchardt et al., 2022.

We organized virtual seminars and sessions in conferences

In 2021, the VIPS commission held a Virtual Seminar Series. Professor Jon Blundy from University of Oxford gave a seminar entitled "From volcanoes to Green Mining: the implications

of transcrustal magmatic systems", Prof. Eleonora Rivalta from GFZ Potsdam and University of Bologna gave a seminar entitled "What pathways for ascending magma? Implications for geophysics and petrology", and Dr. Sam Poppe from the Polish Academy of Sciences gave a seminar entitled "How can we reconcile models with geology? Deformation modes induced by magma intrusion in planetary crust". Two of the seminars are available on our YouTube channel <https://www.youtube.com/channel/UCkpYGN1JDEg7GojvfssweQ>. Conference sessions on VIPS were organized at EGU 2021, AGU 2021, EGU 2022, and AGU 2022. In the new year, we will have sessions at IAVCEI 2023 and IUGG 2023.

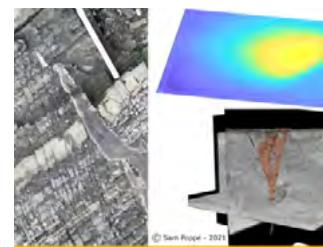


"From volcanoes to Green Mining: the implications of transcrustal magmatic systems"
Professor Jon Blundy, University of Oxford

13 JAN 2021

What pathways for ascending magma? Implications for geophysics and petrology

VIPS Virtual Seminar Series
17 MAY 2021



How can we reconcile models with geology? Deformation modes induced by magma intrusion in planetary crust

VIPS Virtual Seminar Series
3 DEC 2021

Virtual seminars held by VIPS in 2021

We involved Early Career Researchers (ECR)

Early Career Researchers play a major role in the activities of the commission. Our constitution stipulates that 30 % of the committee members are Early Career Researchers. Our blog editors, social media managers and or new 2023 EDI officer are ECRs.

In January 2022, we launched a brand new series of monthly virtual ECR coffee times for the ECRs and students within the VIPS community, and have opened this up more broadly to VIPS members. This is a time for those within the VIPS community to get to know each other chatting over a coffee (or other beverage) in the virtual world of Gather Town.

We welcomed new committee members

We recently welcomed three new members in our blog editing team: Michal Camejo-Harry based at the University of Oxford where she combines petrology and seismology for gaining insight into the depths and timescales over which magmas make their way to the surface, with a view towards eruption forecasting; Jade Hrintchuk who is a PhD student at University of Liverpool where she is researching the plumbing systems of volcanic fissure eruptions, particularly studying the Budj Bim Volcanic Complex in Australia; and Euan Mutch who is a postdoctoral research fellow at the Lamont Doherty Earth Observatory, Columbia University (USA) and who combines expertise in experimental petrology, geochemical microanalysis and state-of-the-art numerical modelling to understand the generation, storage and eruption of magma on Earth and other planetary bodies.



Michal Camejo-Harry
new Focus on VIPS
Blog Editor



Euan Mutch
new Focus on VIPS
Blog Editor

Starting in January 2023, Sam Poppe from the Polish Academy of Sciences will join the committee and will oversee Equality Diversity and Inclusion. Sam's research aims to understand how magma moves below our feet and deforms the rocks around it and ultimately the Earth's surface, to better inform volcanic activity and eruption forecasts.

Also in January 2023, Catherine Annen, our current vice president, will replace Janine Kavanagh as president of the commission.

In 2023, we will recruit a new vice president and new committee members to take on the role of events and fieldtrips organizer.



Jade Hrintchuk
new Focus on VIPS
Blog Editor



Sam Poppe
overseeing EDI
from January 2023

VIPS new committee members

