

# IAVCEI *News* 2018 No: 4

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

## FROM THE PRESIDENT

Dear Colleagues,



*Don Dingwell  
President of the  
IAVCEI*

As 2018 draws to a close we can look back on a very intense, eventful and productive year for IAVCEI. We can easily recall the impressive activities surrounding the extremely well-run COV 10 meeting at Naples, including the inaugural awarding of the new IAVCEI Award for Volcano Surveillance and Crisis Management and the announcement of the next venue on Crete. Once again, I offer, on your behalf, our deepest thanks to the organisers of that event and my congratulations to the COV committee of IAVCEI.

We can also look back on the very sound consolidation of the financial resources of the IAVCEI such that our posture going forward with plans to support volcanological research are in a position to acquire new dimensions in the coming year and in the coming presidency.

At year's end we should also pause to look back on the tragedies associated with volcanic events and associated damage to life, society and infrastructure in some of the as yet more underprivileged countries of this world. I am certain that when these events happen many of you are reminded of the reasons that you got involved in volcanology in the first place. Please keep up the fight for forecasting and mitigation.

My second point above for 2018 brings me to my first point concerning the coming year. Our election round for members of the executive committee and for the presidency will soon be upon us. Please do not fail to be a fully renewed member of IAVCEI for 2019 AND thereby to enable your participation in our elections

with your votes.

2019 will also bring us of course the landmark of the Centennial Meeting of IUGG at Montreal. Once again please attend this meeting. Abstract submission (<http://iugg2019montreal.com/>) closes on 18 February. It will be an historic event for Geosciences. If you are young enough then you can tell your future grandchildren (who might live to see the bicentennial) all about it!

On the further horizon is the next general assembly in New Zealand (<https://www.tourismnewzealand.com/news/rotorua-to-host-volcanology-conference/>) . Start planning now how you might best influence and profit from this high profile event and, through your efforts, strengthen volcanology.

Finally, I want to express what a lot of us undoubtedly feel after 2018. It has been a year with many troubling developments worldwide and somehow with a great many challenges in many of our lives. Let us hope that the peace and calm that we may find over the holiday season (for many of us) will rebuild our strength and ambitions to make science in general and volcanology in particular, more ambitious, more quantitative, more diverse and more useful than it has ever been in the past.

D. B. Dingwell  
Munich  
20 December 2018

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The IAVCEI President has appointed the election committee (term 2019-2023). They are:

**Chair:** Prof. Setsuya Nakada (Japan)

**Members:**

Prof. Patricia Mothes (Ecuador)  
Prof. Hugo Delgado Granados (Mexico)  
Prof. Pierfrancesco Dellino (Italy)  
Prof. Karoly Nemeth (New Zealand)

The submission of candidatures for renewing of President, two vice-Presidents, 4 counsellors and 1 Early Career Researcher (aged 35 or less at the time of nomination) are now open.

**The deadline is January 15, 2019.**

The candidatures have to be addressed to Prof. Setsuya Nakada, chair of the election committee, and sent by email (nkd.sty@icloud.com) following the procedure described in IAVCEI Statute and by Laws (<https://www.iavceivolcano.org/about-iavcei/statute-and-by-laws.html>).

A resume of the rules for the nomination and election procedure is in the following.

26. Only individuals who are members of IAVCEI can be nominated for election to the IAVCEI Executive Committee.

27. Only members of IAVCEI can nominate another member for election to the IAVCEI Executive Committee.

28. Candidates for election to the IAVCEI Executive Committee can be from any country, except candidates for the Presidency, who must come from IUGG member countries, according to IUGG Statutes.

29. Only members of IAVCEI can vote in the election for the IAVCEI Executive Committee.

30. Nominations for candidates for election to the IAVCEI Executive Committee, must be seconded by three other current individual members, each from countries other than that of the candidate.

31. The outgoing Executive Committee has the power to nominate candidates for particular positions on the Executive Committee, when only one, or no candidates are nominated by members.

32. Nominations must be called for and submitted to the Chairperson of the IAVCEI Nominating or Election Committee no later than six months before the General Assembly.

33. The voting process will be anonymous and conducted electronically through the IAVCEI web site and will be initiated by the Secretary General and President at least three months before, and must close no later than one month before, the IAVCEI General Assembly.

34. The Secretary General and Assistant Secretary are responsible for establishing a secure on-line voting site and process, that ensures that only IAVCEI members registered as members at a defined date can vote, and that members can only vote once.

35. A Nominating or Election Committee will be responsible for overseeing the voting process to ensure that it is undertaken in accord with the current IAVCEI statutes and by-laws.

36. The members of the Nominating Committee will be proposed by the President and endorsed by the Executive Committee no later than nine months before the IAVCEI General Assembly.

37. The Nominating Committee will consist of no less than five current individual members of IAVCEI, one of whom, usually the Past President bar one, will be nominated to be the Chairperson.

38. All nominations of candidates for election to the IAVCEI Executive Committee shall be considered by the Nominating or Election Committee, which will produce a shortlist of at least one, but no more than three candidates for each of the positions on the new Executive Committee, except for the 4 general committee positions, for which no more than 12 candidates should be proposed.

39. Not more than two candidates from the same country, can be proposed by the Nominating Committee as candidates for election to the Executive Committee as a whole.

40. The Nominating Committee is also responsible for scrutinising the results and reporting the results to the President and Secretary General within a month following the close of voting.

41. The candidate(s) with the largest number of votes for each position will be elected.

42. The President-elect must be endorsed by a majority of IAVCEI National Correspondents from IUGG member countries. A non-response from a National Correspondent will be taken to be an endorsement for the President-elect.

43. In case of a tie the Executive Committee at the time of the election will elect the candidate from among those with the same number of votes.

44. The Secretary General will communicate through the website to all IAVCEI members the results of the elections before the General Assembly, and the new officers of the Executive Committee will be officially appointed during the General Assembly.

The following documents shall be submitted as a set in nominating:

**1) a letter of nomination from the principal nominator, clearly stating the nominating position.**

**2) a short statement of acceptance from the candidate**

**3) a short resume outlining the candidate's position, research interests, and activities related to IAVCEI**

**4) one-page curriculum vitae of the candidate including key research publications, and**

**5) letters of support from three seconders.**

**D. B. Dingwell,**  
Munich, 22 December 2018

Dear IAVCEI colleague,

As many of you know from the 8th to the 18th of July, the centennial celebration of IUGG (and IAVCEI) will take place in Montreal in Canada (<http://iugg2019montreal.com>).

IAVCEI is responsible for a program contribution containing 21 symposia, and other several Union and joint symposia that encompass a wide range of scientific interest. All the information is directly accessible on the IUGG meeting site (<http://iugg2019montreal.com/v.html>). For your convenience, the IAVCEI session descriptions are also appended below. You can easily find Union and joint symposia on the website.

Please make every effort to attend this landmark in the history of the IAVCEI. Your participation will help to support the IAVCEI both scientifically and financially. Do not forget to sign in as IAVCEI member!

#### **ASSOCIATION SYMPOSIA (IAVCEI)**

##### **V01 – CELEBRATING 100 YEARS OF VOLCANIC ACTIVITY: 1919-2019**

Convener: Patrick Allard (France)

Co-Conveners: Jan Llindsay (New Zealand), Donald Dingwell (Germany), Raymond Cas (Australia), Lizzette Rodriguez (Puerto Rico), Michael Ort (USA), Eliza Calder (UK), Shan de Silva (USA), Roberto Sulpizio (Italy)

Description

Celebration of 100 years of IAVCEI. Only invited speakers.

##### **V02 – WHEN MAGMA MEETS WATER: UNDERSTANDING THE TRIGGER, THE DYNAMICS AND THE DEPOSITS OF PHREATOMAGMATIC ERUPTIONS TO BETTER QUANTIFY THE ASSOCIATED HAZARD**

Conveners: Daniele Andronico (Italy), M. de' Michieli Vitturi (Italy)

Description

The interaction of magmatic gas and magma (fuel) with water (coolant) may generate phreatomagmatic explosions, among the most hazardous volcanic phenomena. They can precede magmatic activity or evolve into long-lasting eruptions, producing abundant tephra ranging in size from ash to bombs/blocks, which sometimes generate volcanic “structures” like maars, tuff cones, and tephra rings. The intensity of this interaction is thought due to external water availability together with efficiency and rate of the heat/energy transfer, which may occur both within the volcanic conduit and outside the eruption vent. However, short-lived, impulsive explosive events related to phreatomagmatic activity may pose higher hazards than prolonged eruptions, directly threatening people close to the vent areas and potentially causing large injuries and casualties.

In this symposium, we explore phreatomagmatic events which result in short-sequences of closely-space explosions and produce an unexpected ejection of fine- to coarse-grained products. Furthermore, in view of recent events which have taken places in extreme environments (such as Iceland and Kamchatka) or in the upper slopes of volcanoes such as Etna, we encourage contributors

describing the behavior of lava in presence of ice/snow cover. In particular, we look at the ambient conditions promoting the explosive lava-snow/ice interaction, like lava thickness, effusion rate, thickness of the snow/ice layer and its type (dry/wet/porous) and temperature (close to or much lower than 0 °C).

Understanding the mechanisms and physical parameters leading to the generation of steam that expand explosively under an active lava flow or within a volcanic conduit, is a crucial step for reducing the risks to volcanologists in charge of the monitoring, but especially tourists that visit the summit of volcanoes, keeping them at proper safety distances.

##### **V03 – PHREATIC AND HYDROTHERMAL ERUPTIONS: WHAT WE REALLY KNOW ABOUT TRIGGERS, MAGNITUDE, STYLES AND HAZARDS**

Convener: Cristian Montanaro (New Zealand)

Co-Conveners: Bettina Scheu (Germany), Corentin Caudron (Singapore), Shaul Hurwitz (USA)

Description

Hydrothermal or phreatic eruptions, alias steam-driven (non-magmatic) explosive events, are frequent phenomena occurring at active volcanoes, within geothermal areas and in rather pristine environments, e.g. heralding magmatic/phreatomagmatic eruptions. Circulating hydrothermal fluids may promote both pore pressure augmentation and alteration of the host-rock, with the latter process affecting the rock petrophysical properties (e.g. porosity, permeability strength). Pressure and temperature perturbations (e.g. magmatic fluids injection or landslides) may result in the near-instantaneous vaporization of pressurised hot fluids (especially water) trapped in pores and cracks within the upper parts of shallow hydrothermal system. The flashing/expansion of fluids blasts rock apart and ejects it upward and outward developing gas and mixed gas-liquid jets, pyroclastic density currents and lateral blasts, often accompanied by intense ballistic showers. These phenomena, whose violence depends on the explosivity of the fluids driving them, and on the petrophysical properties of the host-rocks, pose serious threats in areas increasingly exploited for tourism and geothermal power, or within populated areas. Due to the complex and still largely unknown interaction of the magmatic and hydrothermal systems, steam-driven eruptions are among the most sudden and unpredictable volcanic phenomena. Incomplete or missing stratigraphic records, limited understanding of explosive failure processes, absent or unclear precursors in geophysical and geochemical signals, all result in the lack of reliable scientific models to forecast locations, triggering, and magnitude of phreatic and hydrothermal eruptions.

This symposium invites contributions from a broad range of disciplines (from field geological observations to geophysical and geochemical monitoring, from physical modelling to laboratory experiments and numerical simulation) on phreatic and hydrothermal eruptions, including reports and lessons learned from recent events, to summarize our current state of knowledge on steam-driven eruptions and discuss future research directions.

##### **V04 – MODELING VOLCANIC HAZARDS AND THEIR IMPACTS**

Convener: Sylvain Charbonnier (USA)

Co-Conveners: Leah Courtland (USA), Eliza Calder (UK), Chuck Connor (USA), Sébastien Biass (USA), Susanna Jenkins (Singapore), Annie Winson (Singapore), Thomas Wilson (New Zealand), Jenni Barclay (UK)

Description



Volcanic hazards include lava flows, debris flows and avalanches, pyroclastic density currents and ash/tephra fall, all of which have devastating consequences and impacts for the economy, transport and the environment. A key component to understanding the behavior and correctly evaluating the potential impacts of these physical processes is the development and implementation of accurate and usable forecast models and the study of hazard predictions and the subsequent geological event and the agreement/deviation of the two. Recent progress with analogue, statistical and numerical models has offered noteworthy insights into the behavior and resulting impacts of these hazardous events. We invite contributions from all those involved in experimental, statistical and numerical studies of volcanic hazards. This symposium aims to draw together modeling contributions in order to highlight new approaches, methodologies and results.

#### **V05 – MULTIPHASE FLOW PROCESSES IN VOLCANIC ERUPTIONS: EXPERIMENTAL AND NUMERICAL INVESTIGATIONS**

Convener: Eric Breard (USA)

Co-Conveners: Mattia De' Michieli Vitturi (Italy), Matteo Cerminara (Italy), Tomaso Esposti Ongaro (Italy), Joe Dufek (USA), Daniele Andronico (Italy)

##### **Description**

Our ability to forecast volcanic hazards and mitigate risks relies on understanding volcanic processes and their interactions with the substrate and atmosphere. However, volcanic processes comprise complex multiphase behaviors that involve, for instance, turbulence, from one-way up to four-way coupling, frictional stresses, compressibility, thermal non-equilibrium, making the thermo-fluid dynamic models required to simulate these processes extremely challenging to develop and validate. Aided by the development of a wide range of experiments across disciplines, significant progress in non-linear multiphase flow physics has been achieved in the past decade, while subsequent increase in computing power has allowed small-to medium size simulations to be carried out at natural scales. This symposium aims at gathering experimental investigations and multiphase numerical simulations (at all scales) that further our understanding of the physics of volcanic processes from the sub surface to aerial environments. This includes (but is not restricted to), plumes, pyroclastic currents, debris flows, lava flows.

#### **V06 – LINKING VOLCANO-SEDIMENTARY FEATURES WITH ERUPTIVE PROCESSES**

Convener: Gabor Kereszturi (New Zealand)

Co-Conveners: Guilhem Amin Douillet (Germany), Gro Birkefeldt Møller Pedersen (Iceland)

##### **Description**

Volcano-genic sediments, formed in volcanic eruptions, holds important clues to reconstruct eruptive and sedimentological processes. The textural, sedimentological and physical properties of the sediment can be recorded in the field surveys and mapping, or in experiments with a great range of techniques, such visual descriptions, compass, sieving, pycnometry, digital photography, grain shape analysis and spectroscopy. This symposium welcomes contributions from broad research fields such as sedimentology, physical volcanoes and geophysics which focuses how we can fully utilize current technologies to describe and interpret pyroclastic succession and volcano-genetic sediments. The fuller understanding of moderns and ancient volcanic deposits offers new insights into eruptive processes that govern volcanic hazards.

#### **V07 – FOSTERING THE INTEGRATION OF DEPOSIT AND MODELING STUDIES TO INVESTIGATE THE SUB-AERIAL PROCESSES OF EXPLOSIVE ERUPTIONS**

Convener: S. Barsotti (Iceland)

Co-Conveners: M. Pistolesi (Italy), A. Van Eaton (USA), D. Andronico (Italy), M. de' Michieli Vitturi (Italy)

##### **Description**

Understanding the dynamics of explosive eruptions is of paramount importance for the assessment of volcanic hazard and a major key to improve our knowledge is the study of resulting pyroclastic deposits. On one side, we know that differences in properties such as grain size, vesicularity, clast morphology and deposit geometry clearly reflect different transport and depositional processes. For example, Prof. Walker showed how grain-size characteristics and dispersal area of a pyroclastic deposit can be used to infer eruption discharge rate and intensity. On the other side, we have to face the problem that preservation of deposit is typically incomplete and, for the interpretation of such partial information about past eruptions, modeling of subaerial explosive eruptions can be extremely helpful. For example, application of inversion techniques to numerical models of ash dispersal is showing promising results. In this symposium, we encourage contributions from both field volcanologists and modelers to investigate how deposit studies can support the understanding and the modeling of volcanic processes and how modeling studies can help in the interpretation of deposit properties.

#### **V08 – MULTIDISCIPLINARY STUDIES ON VOLCANIC AND IGNEOUS PLUMBING SYSTEMS**

Conveners: Stephanie Burchardt (Sweden), Janine Kavanagh (UK)

##### **Description**

Since the processes that occur within the volcanic plumbing system prior to, during, and after volcanic eruptions are dynamic and complex, our attempts to understanding these processes must be multi-disciplinary. Recent years have seen successful attempts to study magma storage and transport using combinations of geological, volcanological, geophysical, geodetic, structural, petrological and geochemical methods. This symposium welcomes contributions on such multi-disciplinary studies, including e.g.

- studies of solidified, eroded volcanic plumbing systems
- combined petrological and geophysical reconstructions of pre-eruptive magma storage conditions
- simulations of magma storage and/or transport using analogue and/or numerical modelling

#### **V09 – THE ROLE OF LIPS IN ENVIRONMENTAL CHANGE AND BIOTIC EXTINCTIONS ON EARTH OVER GEOLOGIC TIME**

Convener: Richard Ernst (Canada)

Co-Conveners: Mike Widdowson (UK), Simon Jowitt (USA), Ingrid-Ukstins Peate (USA)

##### **Description**

This symposium, sponsored by the Large Igneous Provinces Commission ([www.largeigneousprovinces.org](http://www.largeigneousprovinces.org)), focuses attention on the growing recognition that large Igneous Provinces (LIPs) and silicic LIPs (SLIPs) (Bryan & Ferrari 2013, *GSAB*, v. 125, p. 1053–1078; Ernst, 2014 Cambridge U. Press) can be major drivers of rapid climate change (e.g., Ernst & Youbi, 2017, *PPP*, v. 478, p. 30-52; Bond & Grasby, 2017 *PPP*, v. 478, p. 3-29), including global warming (hothouse events), global cooling (icehouse

events), anoxia, stepwise oxygenation of the atmosphere, sustained chemical attack on atmospheric chemistry and ozone destruction, acid rain and ocean acidification, enhanced hydrothermal and terrestrial nutrient fluxes, and mercury poisoning. Most dramatically, Phanerozoic mass extinction events can be temporally linked to LIP emplacement. We welcome research that investigates the role of LIPs in Phanerozoic and Precambrian climate change, particularly those that utilize the sedimentary record to monitor global environmental impact, and also research that assesses selected major LIP events (and their global environmental impact) as natural timescale boundaries in the Proterozoic.

#### **V10 – PRESENT STATE OF CALDERAS**

Convener: Craig Miller (New Zealand)

Co-Conveners: Helene Le Mevel (USA), Shan de Silva (USA), Jon Stix (Canada), Nobuo Geshi (Japan), Darren Gravely (New Zealand)

##### **Description**

This symposium focuses on understanding what is the present day state of active calderas, or large magmatic systems, around the world. Studies from mafic or silicic systems are welcome. We seek to answer fundamental questions such as where is the magma? how much magma is there?, what state (i.e. temperature, melt, crystal, volatile content) is it in? These questions may be answered by geophysical or geochemical studies on caldera unrest, or from studies aimed at imaging present day magma reservoirs. We seek submissions from the geophysicists, analytic and numerical modelers, together with petrologists and geochemists, to constrain and interpret geophysical observations. The goal is to determine the hazard a caldera system poses in its present state. A larger goal would be to create a catalogue of active systems around the world to quantify the global hazard such systems represent.

#### **V11 – INTRA- AND EXTRA-CALDERA LARGE VOLUME IGNIMBRITES**

Convener: Domenico Doronzo (Spain)

Co-Conveners: Silvina Guzmán (Argentina), Claudio Scarpati (Italy)

##### **Description**

Large volume ignimbrites are a fundamental issue in geology, and particularly in volcano stratigraphy, physical volcanology, and petrology. In this symposium, contributions from integrated investigation approaches like field observations, petrology, laboratory sedimentology, theoretical modelling, and experiments on intra- versus extra-caldera lithofacies are welcome. Besides presenting the last studies in this branch of volcanology, the main goal is to update the state of the art on large volume ignimbrites in light of recent field, experimental, and modelling advances particularly relevant in caldera settings worldwide.

#### **V12 – GEOCHEMISTRY AND GEOPHYSICS OF ACTIVE CRATER LAKES**

Convener: Joop Varekamp (USA)

Co-Conveners: Coentin Caudron (Singapore), Dmitri Rouwet (Italy)

##### **Description**

Active crater lakes provide the opportunity to watch inside magmatic-hydrothermal systems.

The proto-type setting of "wet volcanoes" makes crater lakes prone to phreatic eruptions. Multidisciplinary approaches, by combining geophysical and geochemical measurements, and numerical and probabilistic modelling, have recently proven to be promising means to possibly reveal precursory signals of phreatic

and phreatomagmatic eruptions. Hence, this section seeks contributions on how to measure and monitor crater lakes in relation with the activity of the underlying volcanoes.

#### **V13 – MONOGENETIC VOLCANISM: DIVERSITY, PROCESSES, TECTONIC CONTEXTS, RISK AND GEOHERITAGE**

Convener: Karoly Nemeth (New Zealand)

Co-Conveners: Marie-Noelle Guilbaud (Mexico), Alison Graettinger (USA), Pierre-Simon Ross (Canada), Benjamin van Wyk de Vries (France)

##### **Description**

Monogenetic volcanoes are the most common manifestation of volcanism on land, and probably under the oceans. Monogenetic volcanoes range from seemingly very simple small, single magma batch eruption products, through to larger volume, compositionally diverse eruptions with complex edifices. Monogenetic volcanic fields also reflect this diversity, ranging from widely spaced, compositionally limited fields, to closely spaced fields with a wide spread of magma types.

#### **V14 – NEW APPROACHES IN GEOSITE EVALUATION AND USAGE OF VOLCANIC GEOHERITAGE IN GEOEDUCATION**

Convener: Károly Németh (New Zealand)

Co-Conveners: Ben van Wyk de Vries (France), Jon Procter (New Zealand), Cecile Olive-Garcia (France)

##### **Description**

Geoheritage studies is an emerging science developed especially over the last decade. Volcanic geoheritage research particularly evolved recently in order to provide a scientifically correct approach to describe, evaluate and promote geoheritage values of volcanic landscape, volcanic processes and volcanic hazards to various end-users and to the public. Volcanic geoheritage studies are gradually became an important element of volcanic risk education and in general part of the geoeeducational works to understand Earth System science in various levels. The newly established IAVCEI Commission on Volcanic Geoheritage and Protected Volcanic Landscapes serves the global scientific community, linking volcano science to geoscience outreach programs. In addition, volcanic geoheritage science is developing methods and standards for objective comparison of geoheritage values for all types of volcanic sites (from active young features to ancient sites). These carry significant scientific values that can be utilized in geoeeducation, geoeconservation and geoeotourism, and resilience. Volcanic geoheritage forms fundamental parts of many recent applications and promotion of UNESCO Worlds Heritage sites and UNESCO Global Geopark programs. Volcanic geoheritage is also a valuable element of local and regional projects driven by communities to establish their geoeeducational, geoeconservational and geoeotouristic programs fit to the local and regional conservation, education and touristic programs. On the basis of this recent boom of geoheritage research, the IAVCEI Commission on Volcanic Geoheritage and Promotion of Protected Volcanic Landscapes invites the full range of researchers to share their latest research in geoheritage science. We particularly interested in to see works that: 1) target understanding the place of volcanic geoheritage in Earth System Science and disaster reduction; 2) Research that targets new methods of objective geosite evaluation; 3) application of traditional pedagogical methods for geoeeducational programs to promote volcanic sciences; 4) studies intending to determine the value of volcanic geoheritage in various geoeotouristic programs; 5) Geoheritage and risk/resilience/ hazards and 6) the linkage of

traditional volcanic geoheritage knowledge to western science and defining effective methods to provide scientifically valid information to various geoconservation projects in various scales (from local to global) and multiple cultures around the world.

#### **V15 – VOLATILE CONSTRAINTS ON MAGMA PLUMBING SYSTEMS AND ERUPTION DYNAMICS AT OPEN-CONDUIT VOLCANOES**

Convener: Patrick Allard (France)

Co-Conveners: Hiroshi Shinohara (Japan), John Stix (Canada)

##### **Description**

Among the 1551 volcanoes recognized to be active on Earth, only about a hundred displays continuous eruptive activity or/and persistent degassing with sizeable plume emissions, implying that their conduit remains open. Illustrative examples include Nyiragongo, Kilauea, Etna, Stromboli, Colima, Masaya, Villarica, Merapi, Asama, Sakurajima, Ambrym, Yasur, etc. These continuously active volcanoes erupt various magma types, in different tectonic settings, and their eruptive styles cover a wide range from purely effusive (e.g. lava lakes) to violently explosive. They thus offer remarkable opportunities for real-time investigations of magmatic and volcanic processes, for deciphering the dynamics of magma plumbing systems, and for the testing of new technologies and new models. Moreover, many of these volcanoes are located in densely inhabited regions of the world, which fully justifies that they be closely surveyed.

Given the key role of magmatic volatiles in the dynamics of magma ascent and volcanic eruptions, studying the composition and flux of gas emissions from these volcanoes, as well as the pressure-related behavior of volatiles dissolved in their magmas, is one important approach to broadly understand how volcanoes work. Such studies have been widely developed in recent decades on the above volcanoes, allowing great achievements. In this symposium, we invite research contributions dealing with both field measurements, laboratory analyses, and theoretical modelling of magma degassing and volcanic gas release in relation to eruptive phenomena at open-conduit volcanoes. Cutting-edge studies involving ground-based and space-borne remote sensing tools, new unmanned platforms, and high-resolution geochemical/petrological tracers are particularly welcomed. The Symposium will be organized in order to give maximum allowance to both case studies and review talks, as well as discussions.

#### **V16 – FROM HIGH TO LOW-ENTHALPY: GEOTHERMAL ENERGY AT WORK**

Convener: Daniele Pinti (Canada)

Co-Conveners: Clara Castro (USA), Paul Baudron (Canada), Jasmin Raymond (Canada)

##### **Description**

Geothermal energy is considered a renewable form of energy that can partially fill the increasing human demand. Yet only a few countries, located in high heat flow regions of the Earth can benefit from high-enthalpy resources to produce electricity. However, low to very low enthalpy geothermal resources are increasingly in demand, especially in cold northern countries such as Canada, Norway etc. Here, heat extracted from groundwater can be sufficient for domestic heating/cooling uses, particularly in remote areas. This symposium will be devoted to all aspects of geothermal energy, from exploration to exploitation and tools (geophysics, geochemistry, geology etc.) needed to evaluate the extent of this resource.

#### **V17– LIVING WITH VOLCANOES: CHALLENGES AND BENEFITS FOR BUILDING RESILIENT AND HEALTHY SOCIETIES**

Convener: Graham Leonard (New Zealand)

##### **Description**

Volcanic risk management requires the integration of a wide range of stakeholders such as government organisations, vulnerable communities and the public, different scientific groups (academic and non-academic), private companies such as insurance, and non-governmental agencies. Given the requirement of local contingencies and the need to also align with national, and sometime international policy and frameworks (such as the ISDNR Sendai framework), the ability to effectively integrate these perspectives is vital to the effectiveness of volcanic risk management. There is increasing evidence of the need to develop more holistic and robust processes such as hazard and risk assessment strategies to negotiate the many inherent complexities. This entails the bringing together of different academic disciplinary knowledge via multi-disciplinary approaches, but also the consideration of trans-disciplinary issues that sit between disciplinary stakeholders and those stakeholders affected by volcanic risk. This symposium aims to explore state of the art research and practice surrounding both successful and unsuccessful collaboration at both multi- and trans-disciplinary levels. We invite submissions and experiences from all disciplines (especially physical sciences in the case of IUGG), because by its nature multi-disciplinary research does not fit into any one area, along with contributions from a wide range of stakeholders and from different natural hazard experiences to share lessons identified and potential solutions.

#### **V18 – MAPPING VOLCANOES. METHODOLOGY AND APPLICATIONS**

Convener: Gianluca Groppelli (Italy)

Co-Conveners: Joan Martí Molist (Spain), Natalia Pardo (Colombia), Federico Lucchi (Italy), Claudia Principe (Italy)

##### **Description**

Geological maps show the distribution at the Earth's surface of different kinds of Earth materials. But a geological map is much more than that, it is a synthesis of the knowledge on the geology of an area. It is, at the same moment, the first introduction to an area being visited, and the culmination of a geological investigation. Understanding a geological map make you able to predict what occurs at and beneath the surface, and for this reason it his of utmost importance in working on environmental, geography, archaeology, oil reservoirs, coal, aquifers, ore bodies, land subsidence, and much more. Although, geology is undergoing great changes, geological maps remain as fundamental as ever in depicting the geology of a territory. After all, they embody the very matters that set geology apart from other disciplines: dealing with real Earth materials in three dimensions and through time. Today, computer based methods are adding yet further to their power and versatility. Today, new technologies are being employed in the production of maps and in manipulating map information, and geological maps acquired new and utmost importance to promote better environmental understanding and to foster an integrated approach to the planning of future land use. This adds tremendous flexibility to the way we can use maps, but it also makes an understanding of the basic principles behind them more important than ever. This is particularly true for the geological mapping in volcanic areas. As a matter of fact, if a geological map is the basic tool for understanding the foundations of landscape, a well done geological map of a volcano has a tremendous impact on the provisional plans for the prevision and



the mitigation of the effects of future eruptions. This section is focused on old and new methods of mapping volcanoes and their influence on the present-day-used holistic approach to the cartography of volcanoes. Contributions on the changing methods in producing volcanic maps (starting from old-style maps, mainly based on lavas distribution or petrography, going up to the modern maps, based on data derived from chrono-stratigraphy and facies analysis) are welcome as well as the contribution to volcanic mapping given by historical sources, archaeological findings, structural analyses, boreholes data, and geomorphology. The utility of grouping mapped units as Eruptive units or Unconformity Bounded Stratigraphic Units, or others units typologies volcanologic maps will be an argument of interest as well as the use of Geographic Information System."

#### **V19 – EXPERIMENTAL VOLCANOLOGY APPROACH TO INVESTIGATE MAGMA GENERATION, ASCENT AND ERUPTION**

Convener: Claudia Romano (Italy)

Co-Conveners: Kelly Russell, (Canada), Satoshi Okumura, (Japan), Diego Perugini (Italy), Alessandro Vona (Italy)

##### **Description**

Volcanic eruptions vary tremendously in style, scale, duration and frequency. What are the parameters controlling the occurrence and the nature of a certain eruption at a specific time and place? What are the physical and chemical processes leading to volcanic eruption from magma generation and rise, to transport along the conduit, to fragmentation and flow? Laboratory studies can help single out important aspects of very complex processes. In this symposium, we invite the experimental volcanology community to contribute to and discuss the critical issues that we face today. In this view, we welcome innovative and multidisciplinary contributions from experimental volcanologists and petrologists who use novel and advanced techniques to unravel magma chamber and eruptive processes and their timescales.

#### **V20 – RECENT ADVANCES IN VOLCANOLOGY**

Conveners: Michael Ort (USA), Lizzette Rodriguez (Puerto Rico)

##### **Description**

Volcanoes produce many different types of eruptions that result in varied deposits. In the 100 years since the foundation of IAVCEI, volcanology has grown as a science and the understanding of magmatic and eruptive processes has improved through time. This symposium will discuss and compare these processes and products.

#### **V21 – GENERATION, STORAGE AND TRANSPORT OF MAGMA IN PLUTONIC AND VOLCANIC ENVIRONMENTSS**

Convener: Stephan Kolzenburg (Canada)

Co-Conveners: Shane Rooyackers (Canada), Mattia Pistone (Switzerland), Danilo Di Genova (UK), Kim Berlo (Canada), John Stix (Canada), Olivier Bachman (Switzerland)

##### **Description**

Understanding the processes that govern the generation, differentiation, emplacement, storage, ascent, and eruption of magma, the timescales over which these processes operate, and the architecture of magmatic systems are important challenges in geosciences. In recent years, major advances have been made through experimentation on natural and analogue materials, computational modelling, and field, geochemical and geophysical studies of volcanic and plutonic systems. However, because magmatic systems are highly dynamic, and involve a complex plethora of chemical and physical processes that often operate far

from compositional chemical and textural equilibrium, many core questions remain open or only partially answered. Ultimately, a holistic understanding of the dynamics of such complex systems can only be obtained with multi-disciplinary approaches.

This process-oriented symposium is aimed at stimulating trans-disciplinary discussion in order to generate a holistic view of the dynamic natural processes in magmatic and volcanic environments.

Topics include but are not restricted to:

- Physical properties of magmas and lavas.
- The detection and configuration of magma storage and plumbing systems.
- Thermal, chemical and petrological evolution of magma during storage and transport.
- Timescales of magma assembly, storage and ascent.
- Deformation mechanisms in magmas and host rocks during emplacement and eruption.
- The plutonic-volcanic connection.

We especially solicit interdisciplinary studies investigating the chemical and physical development of magmatic and volcanic phenomena by cross-correlation of experimental- and/or modelling results with field- and/or analytical data.

#### **ADDITIONAL IAVCEI (JOINT) SESSIONS AT IUGG**

<http://iugg2019montreal.com/jv.html>

#### **JV01 - ADVANCES IN VOLCANO SEISMOLOGY AND ACOUSTICS IN A MULTI-DISCIPLINARY CONTEXT (IAVCEI, IASPEI)**

Convener: Jürgen Neuberg (UK, IAVCEI/IASPEI)

Co-Conveners: Jeff Johnson (USA, IAVCEI), David Fee (USA, IASPEI), Láslo Evers (Netherlands, IASPEI)

##### **Description**

Volcano seismology requires often special consideration due to the fact that the source mechanisms as well as wave propagation effects are significantly different from conventional tectonic earthquakes. Particularly for open volcanic systems, acoustic monitoring provides additional information and constraints regarding magmatic processes. Hence, seismic and acoustic monitoring of active and dormant volcanoes remains the key element of any monitoring program undertaken by volcano observatories or research institutions.

Major advances have been made in the last years allowing us to identify several categories of seismic and acoustic events, and interpret them in terms of different magmatic or tectonic processes encountered on a volcano. Attempts based on multi-disciplinary methodologies turned out to be particularly successful.

This symposium is dedicated to latest developments in volcano seismic and acoustic monitoring techniques, as well as the interpretation and modelling methodology in a wider volcanological context.

We invite contributions for both oral and poster presentations that deal with any aspects relevant to seismic or acoustic monitoring, new methodologies as well as case studies from a variety of volcanic settings. This includes advances in instrumentation, as well as theoretical approaches. Particularly welcome are studies that combine seismic and acoustic monitoring and modelling techniques with other disciplines such as ground deformation, gas monitoring, petrology and fluid dynamics of magmatic systems.

#### **JV02 - PETROLOGICAL REACTIONS FORCED BY TRANSPORT AND DEFORMATION (IAVCEI, IASPEI)**

Convener: Yan Lavalée (UK, IAVCEI)

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Co-Conveners: Michael Manga (USA, IAVCEI/IASPEI), Jihua Chen (USA, IASPEI)

#### Description

An increasing body of work is demonstrating that geochemical exchanges and petrological reactions may be strongly influenced by differential stresses and the resultant strain. In these systems a range of controlling processes and factors have been invoked or constrained, ranging from pressure solution, anisotropic diffusion, advection, shear heating, strain of the material micro- and macro-structure, and cage jumps (in colloids). Sharing these observations and interpretations between the different sub-disciplines of geoscience will help advance the next-generation petrological, mechanical and rheological models. In this symposium, we invite observational, experimental and modelling contributions in petrology, rheology, and rock physics that explore the nature of these anisotropic physico-chemical processes in relation to rocks, magmas, glasses and single-phase crystals. The discussions should aim to shed light on the implications for geological processes such as volcanic eruptions, diagenesis, metamorphic reactions, and engineering applications

#### **JV03 - STRAIN LOCALISATION AND SEISMIC HAZARDS (IAVCEI, IASPEI, IAG)**

Convener: Lori Kennedy (Canada, IAVCEI/IASPEI)

Co-Conveners: Boris Krauss (Germany, IAVCEI/IASPEI), Jeff Freymueller (USA, IAG/IAVCEI)

#### Description

Tectonic deformation is often distributed across very broad plate boundary zones, especially in continental crust. However, within these broad zones there are almost always regions of significant strain localization, such that major fault systems accommodate the majority of the total plate motion. Strain localization can be controlled by pre-existing lithospheric weaknesses, plate boundary geometry and applied forces, thermal weakening through volcanism, or a combination of factors. The extent to which strain is localised or distributed has important impacts on long-term tectonics, and on the spatial distribution of earthquake hazards. At depth, the extent of strain localization within the mantle may have important impacts on the earthquake cycle. This session will combine observational, experimental, and theoretical studies using a variety of techniques to address the mechanical properties of the lithosphere and asthenosphere within plate boundary zones, and the processes that relate to localization of strain within the crust and mantle.

#### **JV04 - ADVANCES IN TERRESTRIAL HEAT FLOW MEASUREMENT AND INTERPRETATION (IAVCEI, IASPEI)**

Convener: Shaopeng Huang (China/USA, IAVCEI/IASPEI)

Co-Conveners: Massimo Verdoya (Italy, IASPEI), Jacek Majorowicz (Canada, IASPEI), Guangzheng Jiang (China, IASPEI)

#### Description

Terrestrial heat flow is a measure of the thermal energy flux from the interior of the Earth. This parameter provides fundamental information on the Earth's energy budget, subsurface thermal structure, lithosphere thermo-tectonic history and bulk chemical composition (especially concerning the radiogenic heat-producing elements of the crust). Moreover, analyses of heat flow data are essential to evaluate the potential of geothermal energy and to reconstruct paleoclimate change on regional and global scales. Heat flow data are conventionally determined from the combination of geothermal gradient, obtained from underground temperature logs, and rock thermal conductivity measurements,

often derived from laboratory experiments. High-quality heat flow measurements require appropriate raw data reduction, because both geothermal gradient and thermal conductivity are subject to site-specific perturbations associated with geological, geographical, hydrological, and even climatic settings. The major objective of this symposium is to provide a forum for discussions on all aspects related to the terrestrial heat-flow measurements and interpretation. We welcome contributions that describe results in theoretical and/or experimental works, as well as on the use of heat flow and underground thermal data for the exploration of geothermal energy.

#### **JV05 - RECENT ADVANCES IN SUBAQUEOUS VOLCANISM DERIVED FROM ANCIENT AND MODERN VOLCANIC SUCCESSIONS, LABORATORY AND NUMERICAL APPROACHES (IAVCEI, IAPSO)**

Convener: James White (New Zealand, IAVCEI)

Co-Conveners: Karin Orth (Australia, IAVCEI), Adam Soule (USA, IAVCEI), Evi Nomikou (Greece, IAVCEI), Steffen Kutterolf (Germany, IAVCEI), Rebecca Carey (Australia, IAVCEI), Chris German (USA, IAPSO)

#### Description

Seventy percent of Earth's volcanoes are hidden beneath the surface of the oceans. Although largely 'invisible', submarine volcanoes are responsible for >75% of Earth's magma output, and the eruptions put gas, heat, and volcanic material into the hydrosphere and atmosphere as well as greatly influence biogeochemical processes.

This symposium will include presentations of both terrestrial ancient marine volcanic environments modern-day submarine volcanic systems, with the aim of enabling cross-fertilization of ideas. We call for abstracts for field, laboratory and numerical studies of submarine volcanism. We also call for abstracts that combine innovative and emerging technologies that enable breakthrough developments for advancement of knowledge in submarine volcanism.

#### **JV06 - TEPHRA HAZARD MODELLING FOR OPERATIONAL USE: CHALLENGES, SUCCESSES AND NEW FRONTIERS (IAVCEI, IAMAS)**

Convener: Sara Barsotti (Iceland, IAVCEI)

Co-Conveners: Antonio Costa (Italy, IAVCEI), Andrew Tupper (Australia, IAMAS)

#### Description

During volcanic eruptions tephra affect the surrounding environment by impacting the ground by pyroclasts fallout and the atmosphere by advected volcanic ash clouds. Our society, economy, environment is always exposed to discomforts and disruptions when similar events occur and assessing hazards associated to explosive eruptions is a crucial goal for the volcanological community. Simulating the dynamics of volcanic processes (from the magma migration to the explosion in the atmosphere) is now a well-established approach to investigate the phenomena and anticipate their possible evolution in time and space. Tephra hazard modelling is nowadays a viable tool to forecast in real-time those areas affected by contamination of ash in the atmosphere and on the ground. The aviation sector benefits significantly from these numerical tools as well as all that part of the population living nearby erupting volcanoes. However in time of crises is challenging to produce reliable forecast of an event for which estimates of the eruptive source parameters (like mass flow rate, total grain size distribution, plume height) are still unavailable or possibly affected by large uncertainty. The data assimilation process is an essential part of the operational



response to constrain the ongoing scenario and adding credibility to the model results. At the same time assessing and communicating uncertainties associated with the measurements, observations and model results is fundamental when numerical products are provided to decision-makers and other stakeholders. Operational tools need to be robust, fast, accurate and flexible. Large part of the research in the recent years have been investigating on how to improve the operational response by implementing new tool developed in more academic environments. In this symposium we welcome all contributions addressing those steps moved toward bridging science and operations within the tephra numerical modelling sector. Examples from experiences are kindly invited. Goals achieved and open questions will be essential for a fruitful discussion.

#### **JV07 - GLACIOVOLCANISM AS A PALEOCLIMATE PROXY (IAVCEI, IACS)**

Convener: Ben Edwards (USA, IAVCEI)

Co-Conveners: Kelly Russell (Canada, IAVCEI)

##### **Description**

This symposium invites contributions that focus on methods for and examples of extracting paleoclimate records from volcanic sequences formed by interactions with ice on planets. Increasingly scientists who model past climates on Earth and on Mars need data to test their models for the timing, extent and thickness of now-extinct bodies of ice. Deposits formed during interactions between volcanoes and glaciers are one of the few records that can document the exact location of past glaciers, are generally amenable to geochronologic studies, and are relatively resist to erosion by subsequent processes. While the study of glaciovolcanic deposits has been ongoing for several decades, new studies are increasingly extracting more detail information about past ice extents and even paleohydrology. We invite contributions from field and laboratory studies whose foci are extraction of paleoenvironmental data from glaciovolcanic deposits.

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## **INTAV TEPHRA CONFERENCE Workshop Report**

### **INTAV tephra conference “Crossing New Frontiers: Tephra Hunt in Transylvania”, 24 June - 1 July, 2018, Moieciu de Sus, Romania**

INTAV (International Focus Group on Tephrochronology and Volcanism), a global tephra research network within the Stratigraphy and Chronology Commission of INQUA, holds international meetings commonly every four years (previous conferences were held in the USA, New Zealand, France, Canada and Japan). Now, the “Crossing New Frontiers – Tephra Hunt in Transylvania” tephra conference took place after some delay since the last meeting in Kirishima (Japan), 2010. Arranged for the last week of June 2018, the venue of the conference was the Cheile Gradistei Fundata in the village of Moieciu de Sus – a panoramic resort location near Braşov between the Piatra Craiului and Bucegi Mountains in the southern Carpathians, Transylvania, Romania.

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*One of the post-conference field trip targets was Lake St. Ana, the site of the last eruption in the Carpathians, ca. 28 ka ago, where participants enjoyed spectacular view during lunch. Photo by Ralf Gertisser*

The conference was organized by Daniel Veres (Romania) and Ulrich Hambach (Germany), along with a number of their students and postdoctoral helpers, and greatly supported by INTAV executive committee members Britta Jensen (Canada), Peter Abbott (UK/Switzerland), Takehiko Suzuki (Japan), Siwan Davies (UK), and David Lowe (New Zealand). A record number of 92 participants with respect to previous INTAV meetings, representing 20 countries, attended the conference, most from the UK (24), Germany (14), Romania (7) and the USA (5), and also from Denmark, Russia, Norway, Sweden, Canada, Italy, Switzerland, Turkey, Japan, China, Poland, Serbia, Hungary, Singapore, Iceland, and New Zealand. In addition to a number of sponsors, a generous INQUA grant made it possible to help 22 students (17 of them undertaking PhDs), and postdocs, to attend the meeting.



*Dávid Karátson field-trip leader tells the story of one of the last explosive eruptions from St. Ana vent around 32 ka which produced plinian pumice fall and widespread pumiceous block-and-ash flows. Photo by Ralf Gertisser*

During the conference, although the weather was foggy and rainy most days, a high-level scientific programme was realized. New research on cryptotephra in various environmental settings, new methods for detecting and analysing them including the use of X-ray fluorescence core scanners (such as ITRAX) and X-ray computed tomography (CT) imaging, as well as new analytical methods including trace element mapping of small glass shards using multiple line scans with LA-ICP-MS, can be highlighted. The participants presented 92 contributions in total: 41 orals in seven sessions, and 53 posters shown on display for the entire conference. Seven invited talks introduced the respective oral sessions, given by Sabine Wulf (UK), Michael Sigl (Switzerland),



Dávid Karátson (Hungary), Caroline Bouvet de la Maisonneuve (Singapore), Maarten Blaauw (UK), John Westgate (Canada), and Vera Ponomareva (Russia). An evening public lecture was given by Ioan Seghedi (Romania). An important and successful aspect of the meeting was the deliberate encouragement of the volcanological component of the INTAV tephrochronology spectrum, and several well-regarded volcanological groups contributed a series of top-quality research papers.



*Mid-conference field trip to the Persani Quaternary basalt field, active from ca 1.2-0.6 Ma. Stratigraphic relationships of thick pyroclastic deposits on top of a basaltic lava flow are being explained by Ioan Seghedi field-trip leader. Photo by Steve Kuehn*

Papers arising from the conference are being prepared for a special tephra-focussed issue of Journal of Quaternary Science, which will be the first such issue of this journal.



*The Persani basalt field reveals spectacular columnar-jointed basalts, in this case showing a lower colonnade and an upper entablature structure. Photo by Ralf Gertisser*

In addition to the oral and poster programme, an excellent Bayesian-based age modelling workshop was contributed by Maarten Blaauw (UK). More than 25 participants availed themselves of the opportunity to learn to develop age models, and some completed modelling using their own data. Moreover, Steve Kuehn (USA) reported on progress on the development of the INTAV global database project. On the last day, during a fabulous conference dinner, several awards were presented to distinguished colleagues. Two INTAV Honorary Life Memberships were awarded to Gudrun Larsen (Iceland) and David Lowe (New Zealand). In turn, John Westgate (Canada) was awarded a special framed certificate on the occasion of the 50th anniversary of his milestone paper (with the late D.G.W. Smith) in 1969 (published in Earth and Planetary Sciences) showing the benefits of electron probe to characterize glass shards in tephtras as a correlational tool for tephrochronology.



*Daniel Veres (l) and Ulrich Hambach (r) explain the areal distribution of Campanian tephra during the post-conference field trip. Photo by Hannah Buckland*



*Local beer was one of the main attractions during the nice conference dinners, which also featured traditional Romanian dancing and music. Photo by Alison MacLeod*

A mid-conference full-day field excursion, led by Ioan Seghedi, Daniel Veres, and Ulrich Hambach, targeted the basaltic Late Quaternary Perşani volcanic field and the touristic Dracula's castle in Bran. A three-day post-conference trip, attended by 32 participants, was led by Dávid Karátson, Daniel Veres, and Ulrich Hambach, including visits to the dacitic lava domes and proximal tephra deposits as well as the twin-craters of the Late Quaternary Ciomadul dome complex (with latest eruptions <30 ka); the mountainous impacts of the dynamic and complex Carpathian tectonism; a huge underground salt mine (Slănic); loess deposits encompassing distal tephtras and paleosols on the Wallachian plains; and spectacular mud volcanoes at Berca belching mainly methane derived from deposits ~3 km below. Perhaps the biggest attraction for tephrostratigraphers was visiting the exposure of a thick distal tephra (~0.5 m), the Y5 tephra, associated with the Campanian Ignimbrite eruption c. 39-40 ka in the Campi Flegrei, Italy.





*Certificate and special chocolate cake commemorating the 50th anniversary of the publication of John Westgate's pioneering paper (with D.G.W. Smith) in 1969. From left, Takehiko Suzuki, Cora and John Westgate, Britta Jensen, Peter Abbott, and David Lowe. Photo by Jenni Hopkins*

*Dávid Karátson (Eotvoes University, Budapest, Hungary), Daniel Veres (Romanian Academy, Institute of Speleology, Cluj-Napoca, Romania), and David Lowe (Waikato University, Hamilton, New Zealand)*

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## ADVANCES IN VOLCANOLOGY Springer Book Series

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### New Book Proposals NEEDED

If you are thinking of preparing a book that can be used as a reference item, a summary of recent research achievement or be used as a handy desktop book for research and teaching please consider the *Advances in Volcanology* book series.

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The review process and manuscript style is identical to those of Bulletin of Volcanology.

New book proposals are always welcome. Please send your proposal to discuss your ideas to Karoly Nemeth ([k.nemeth@massey.ac.nz](mailto:k.nemeth@massey.ac.nz)) and we can provide some advice to succeed your book.

*Karoly Nemeth* Series Editor – Advances in Volcanology

Dear all,

We are delighted to announce that the open access book **Observing the Volcano World: Volcanic Crisis**

**Communication** by Springer has been published, both online and as print.

The content and ebook are available online with open access on: <https://link.springer.com/book/10.1007/978-3-319-44097-2> where you can also order a hardback copy.

As part of the **Advances in Volcanology** book series, this unique collection brings together a wealth of undocumented knowledge to provide a platform for understanding how volcano crises are managed in practice, and helps to establish effective best practices. Consequently, the book brings together over 100 authors from all over the globe who work with volcanoes, ranging from observatory volcanologists, disaster practitioners and government officials to NGO-based and government practitioners to address three key aspects of volcanic crises.

The information and insights presented are essential to tapping established knowledge, moving towards more robust volcanic crises management, and understanding how the volcanic world is perceived from a range of standpoints and contexts around the globe. Divided into three parts, the book explores:

- \* **Adapting Warnings for Volcanic Hazards** reviews the unique nature of volcanic hazards, which makes them a particularly challenging threat to forecast and manage, due in part to their varying spatial and temporal characteristics.

- \* **Observing Volcanic Crises** presents lessons learned on how to best manage volcanic events based on a number of crises that have shaped our understanding of volcanic hazards and crises management.

- \* **Communicating into the Future** discusses the diverse and wide-ranging aspects of communication involved in crises, which merge old practices such as oral traditions and art and dance, and new technologies such as social media and satellite technologies to accommodate an increasingly challenging and globalised world.

We would like to thank very much all our generous sponsors, including:

- \* The Bournemouth University Disaster Management Centre, UK
- \* GNS Science, New Zealand
- \* Risk Frontiers, Australia
- \* The University of Auckland, New Zealand
- \* King's College London, UK
- \* Aon Benfield, Australia
- \* ICAO Meteorology Panel/Chief Meteorological Office, New Zealand
- \* Geophysical Institute, University of Alaska Fairbanks, USA

Kind regards,

*Deanne Bird, Kat Haynes, Gill Jolly, Bill McGuire, and Carina Fearnley*  
**The Editorial Team**

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## CALL FOR NOMINATIONS FOR THE WALKER AWARD AND WAGER MEDAL

Dear IAVCEI colleagues,

The International Association of Volcanology and Chemistry of the Earth's Interior announces a call for nominations for the 2019 Walker Awards and the Wager Medal to be awarded at the Centennial IUGG meeting in Montreal.

Please submit your nominations to the head of the Awards Committee, Prof. Donald B. Dingwell, by email ([dingwell@lmu.de](mailto:dingwell@lmu.de)) before the deadline of January 15, 2019.

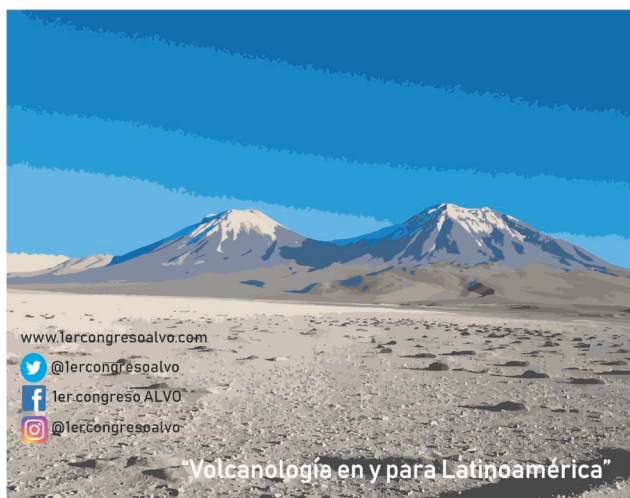
Further details about nomination procedure and eligibility can be found at:

<https://www.iavceivolcano.org/iavcei-awards/guidelines-for-iavcei-awards.html>

With best regards, IAVCEI Secretariat

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## 1ER CONGRESO ASOCIACIÓN LATINOAMERICANA DE VOLCANOLOGÍA ALVO - 3 – 7 November 2019 Universidad Católica del Norte, Antofagasta, Chile



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## INVITATION – LASI 6 – THE PHYSICAL GEOLOGY OF SUBVOLCANIC SYSTEMS: LACCOLITHS, SILLS AND DYKES

Malargüe, Mendoza, Argentina (25-29 November 2019)

### Introduction

The proposed meeting is the 6th event of the LASI (The physical Geology of subvolcanic systems: laccoliths, sills and dykes) meetings. The first occurred in Freiberg, Germany (2002), followed by several meetings in Skye, Scotland (2006), Elba Island, Italy (2008), Henry Mountains, Utah, USA (2010) and Karoo, South Africa (2012). The success of these meetings relies on a combination of outstanding and enthusiastic scientists and the visit of world-class outcrops of subvolcanic systems.

The proposed meeting builds on on-going large research projects dedicated to the study of subvolcanic systems formed in sedimentary basins and their implications on petroleum systems. These projects are based on (1) a close collaboration between Argentina and Norway through 2 PhD grants (Spacapan, CONICET; Palma, Y-TEC) and a collaborative project with YPF, (2) ambitious fieldwork in the Neuquén Basin, Argentina, and (3) the development of novel theoretical and modeling tools through large grants funded by the Norwegian Research Council. During these projects, we discovered that the Neuquén Basin is an exceptional, world-class locality for both the academic study of the formation of subvolcanic systems and the industrial study of the petroleum implications of volcanism.

The aims of the proposed LASI6 meeting are to:

- gather renowned scientists from all over the world to share the latest research on subvolcanic systems;
- share the high-quality scientific results of our on-going Argentina-Norway collaborations;
- promote the Neuquén Basin as a world-class natural laboratory for studying subvolcanic systems and their implications on petroleum systems. The proposed meeting location at Malargüe is ideal, as it is the best gate to the geology of the Neuquén Basin.

Note that since the last LASI meeting in 2012, significant new research highlighted the scientific and economic relevance of subvolcanic systems discovered in sedimentary basins all over the world (Siberia, India, New Zealand, Australia, Ireland, Argentina, China, Brazil, Africa). The proposed meeting is also a great opportunity to integrate worldwide observations to better understand the global processes governing subvolcanic systems.

### Meeting organization

The organization of the meeting is separated into two distinct groups.

The first group corresponds to the main organizers, who deal with planning, logistics, etc. These organizers are:

- Dr. Olivier Galland (University of Oslo, Norway), initiator of the conference and world expert of the mechanics of magma placement in the Earth's crust;
- Dr. José Mescua (CONICET), expert in intrusions of magma in the south of the Mendoza province;

- Dr. Héctor A. Leanza (Argentine Museum of Natural Sciences), renowned expert in the geology of the Neuquén basin;
  - Dr. Karen Mair (University of Oslo, Norway), world expert in geomechanics and fracturing;
  - Octavio Palma (Y-TEC), PhD student expert in oil implications of magmatic intrusions.
- The organization of the proposed conference will benefit from the many years, even decades, of field experience of Drs. Leanza and Galland in the Neuquén Basin.

The second group corresponds to a scientific committee, in charge of evaluating and guaranteeing the international scientific standards of the proposed summaries. The committee will involve:

- Dr. Patricia Sruoga (CONICET), Argentine specialist in volcanology;
  - Dr. Steffi Burchardt (University of Uppsala, Sweden), world expert in field studies of magmatic intrusions;
  - Dr. Sverre Planke (VBPR, Norway), petroleum geophysicist world expert in volcanic basins, and principal organizer of the previous LASI meeting in South Africa;
  - Dr. Dougal Jerram (DougalEarth, United Kingdom), world expert volcanologist and scientific communication;
- This scientific committee has been selected with great attention to guarantee gender balance, Argentine representation and high scientific standards.

### Invited Speakers

The organizing committee is pleased to receive confirmation from the following invited speakers:

- Dr. Janine Kavanagh (University of Liverpool, United Kingdom), magma emplacement in the earth's crust;
- Prof. Freysteinn Sigmundsson (University of Reykjavik, Iceland), world expert in active volcano geophysics;
- Dr. Nora Rubinstein (CONICET), renowned Argentine scientist of mineral deposits associated with magmatic systems;
- Alan Bischoff (University of Canterbury, New Zealand), expert in seismic images of magmatic sills located in sedimentary basins.

This selected list of invited speakers guarantees the gender balance, the visibility of Argentine scientists and an international scientific standard.

### Participants

Expected participants:

- Argentinian academics (Mendoza, Salta, Buenos Aires) and students (travel grants);
- Argentinian and Norwegian petroleum geologists: YPF, Y-TEC, Chevron, Total, Statoil (now Equinor);
- The conference organisers and their students and postdocs;
- Internationally renowned keynote speakers and their students;
- International scientists: Norway (Oslo), Sweden (Uppsala), UK (Imperial College, Durham, Liverpool, DougalEarth), Germany (Freiberg, Potsdam), France (IPG Paris, Toulouse, Lyon, Clermont-Ferrand), Italy (Pisa), USA (Pittsburgh, Norwich, Iowa, East Carolina), China (Zhejiang, Nanjing, Beijing), Australia (Monash), New Zealand (Canterbury, Otago), India (?), Brazil (Rio de Janeiro).

### Activities during the meeting

#### Proposed activities:

**24 Nov. 2019:** pre-conference field trip. For the participants who want, we will plan a pre-conference field excursion in the Payenia volcanic province. This volcanic province, together with the Laguna Llanquanelo, are outstanding natural areas, candidates for UNESCO World Heritage.

**25 Nov. 2019:** first conference day. The day will be organized in topical sessions addressing specific aspects of subvolcanic systems (dykes, sills, laccoliths, hydrocarbons, climatic impact). Given the numerous research groups potentially involved, it is likely that the number of participants will be higher than the number of oral presentations that can be scheduled. Thus, many participants will have poster presentations, instead of oral presentations. Importantly, long periods will be specifically dedicated to individual poster presentations. Conference dinner: "asado" at the hotel.

**26 Nov. 2019:** second conference day. Similar format as first conference day.

**27 Nov. 2019:** first day of field excursion. The topics of the day will be (1) introduction to the regional geology and (2) volcanic-bearing petroleum systems. The main stops of the day will be:

introduce the main geological formations of the area;

- Los Cavaos oil field, owned by YPF, along the Río Grande Valley, where oil fields are currently producing from subvolcanic systems that are buried;

- El Manzano, at the foot of the Cordillera Azul, 10 kilometers west of the producing oil field. There, the regional tectonics exhumed field analogues of the producing oil fields hosted in subvolcanic sills. Fantastic outcrops expose all the elements of the volcanic-bearing petroleum systems. Our group has studied this outcrop in great details. It is a perfect locality for intense discussions;

- Return to Malargüe.

**28 Nov. 2019:** second day of field excursion. The topic of the day will be emplacement mechanisms of subvolcanic systems. The main stops of the day will be:

Cuesta del Chihuido, south of Malargüe. Along RN40, several roadcut outcrops expose volcanic conduits and geological structures that are exceptional for revealing the mechanisms of formation of these conduits.

The presentation of these outcrops will be facilitated by the fact that we published several articles;

- Las Loicas, along RN145. We plan a hike to climb on the mountain next to the road RN145 to show an exceptional outcrop we are studying. It exhibits large volcanic conduits and geological structures that show the complex processes controlling their formation. It is a textbook example, perfect for triggering scientific discussions and inspiration;

- Return to Malargüe.

**29 Nov. 2019:** third day of field excursion. The aim of the day will be a geological route on the way back to San Rafael. The main stops of the day will be:

- Cerro Alquitran (or Cerro Petroleo), 30 km north of El Sosneado. There a volcanic conduit stands in the middle of a producing oil field. Overall, oil naturally seeps from the walls of the volcanic conduit. This is a unique, world-class outcrop that illustrate the link between subvolcanic systems and petroleum;

- The return to San Rafael will follow the Atuel Cañon and Valle Grande, where numerous textbook geological outcrops will be visited.

### Presented works

The provisional works to be presented include the numerous results from our Argentina-Norway collaborative projects:

- Geological field study of exposed subvolcanic systems in the Neuquén Basin;
  - Geophysical studies of producing hydrocarbon-bearing subvolcanic systems;
  - Theoretical studies from recent new generation of laboratory and numerical models of subvolcanic systems.
- In addition, we also include the presentations of the keynote speakers.

### Results diffusion

Building on the former LASI events, we aim at ambitious and wide diffusion of the results presented during the proposed meeting. The diffusion strategy englobes:

- Publication of the book of abstracts as volume of the Argentine Geological Association, Special Publications
- Publication of the field guide of the field trip as Publication of the E Series of the Argentine Geological Association
- Social media: Facebook page (<https://fr-fr.facebook.com/LASI-6-Malargue-Argentina-532311177171452/>), Twitter, etc.
- Special volume of an international publication, such as *Frontiers in Volcanology*.

*LOC of LASI6*  
**ILP2019**

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## SEDIMENTARY BASINS INTERNATIONAL LITHOSPHERE PROGRAM TASK FORCE VI

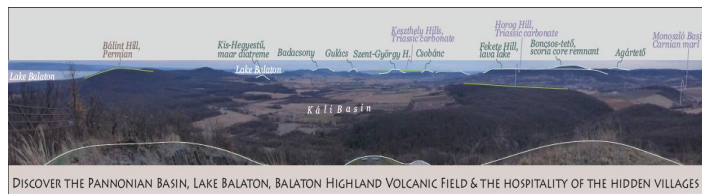
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**Balaton Highland, Hungary 15-18 October, 2019**

### Understanding the multi-scale formation and evolution of orogens and sedimentary basins

Please consider to join to this interdisciplinary workshop. The main themes of the workshop will be centered around the following key aspects:

- Dynamics of sedimentary basins and the underlying lithosphere
- Tectonic control of sedimentation
- Analogue and numerical modelling - crustal and lithospheric processes
- Dynamics of landscape evolution
- **Volcanism and related processes at all scales**
- Rock-fluids interactions in sedimentary basins
- Mineral-, hydrocarbon- and geo-thermal resources
- Geohazards



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## 8TH INTERNATIONAL MAAR CONFERENCE PETROPAVLOVSK-KAMCHATSKY, RUSSIA 24-30 AUGUST 2020

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**Dear colleague,**

On behalf of the Local Organizing Committee and the International Association of Volcanology and Chemistry of Earth's Interior (IAVCEI) I am pleased to invite you to the 8th International Maar Conference (8IMC), which will be held in Petropavlovsk-Kamchatsky, Russian Federation, on 24-30 August, 2020. The 8IMC is a multidisciplinary congress on maar volcanoes, crater-lakes, and monogenetic volcanism (see information below).

We hope you will consider presenting the results of your research in the next IMC.

Best regards,

*Alexei Ozerov, chair of the 8IMC.*

### SCOPE

Since the first "International Maar Conference" (IMC) meeting, the series has become one of the most successful discussion forums in volcanology, mainly because it provides a unique opportunity to bring together people from many different volcanological fields (geologists, physical volcanologists, sedimentologists, modellers, geophysicists, petrologists, etc.) with researchers from environmental and post-volcanic subjects. Previous IMC meetings have been held in volcanic areas that present different problems in terms of eruption dynamics, products, and landforms. The venue of the next IMC will be Kamchatka – one of the most volcanically and seismically active regions on Earth. Besides 30 active volcanoes, Kamchatka hosts more than 20 monogenetic volcanic fields located both in frontal and back-arc settings. This volcanic region provides a unique place for holding this multidisciplinary volcanological forum due to its highly active nature. We suggest making a special focus at 8IMC on the subduction dynamic and its influence on the onset and development of monogenetic volcanism and phreatomagmatism.

The conference will include five days of scientific sessions, which will combine keynote speakers, oral presentations and posters. The field trips which will be scheduled during this meeting, will allow the participants to explore the diversity of volcanic landforms of this area focusing on monogenetic volcanism and phreatomagmatism.

### PROPOSED SCIENTIFIC SESSIONS TOPICS

- Morphology and structure of maars and monogenetic volcanoes;
- Eruption mechanism of maars and associated volcanoes;
- Monogenetic volcanoes: eruption dynamics, magma plumbing systems, structure, physical and petrological modeling;
- Geochemistry and petrology of monogenetic volcanism and phreatomagmatism;
- Volcanic hazard and risk assessment in monogenetic volcanic fields;
- Maar lakes and environment;
- Maars and monogenetic volcanoes in geoheritage and geoconservation.



Additional proposals for scientific sessions can be sent to [a.volynets@gmail.com](mailto:a.volynets@gmail.com) until May 1st, 2019

## IMPORTANT DATES TO REMEMBER RELATED TO THE 8IM

Grant application deadline: January 30, 2020

Abstract submission deadline: February 15, 2020

Pre-conference volcanological field school for young scientists: August 10-23, 2020 (preliminary)

Conference: August 24-30, 2020

Intra-conference field trip: August 26-27, 2020 (preliminary)

Post-conference field trip: August 31- September 4, 2020 (preliminary)

## VENUE

All scientific sessions and posters presentation of the 8IMC will be held at the Conference Hall of the Institute of volcanology and seismology (IVS) FEB RAS, located in Petropavlovsk-Kamchatsky, Kamchatka, Russia.

## TENTATIVE LIST OF FIELD TRIPS

### I. Pre-conference

Mutnovsky and Gorely volcanoes – for bachelor, master and PhD students

For students and PhD candidates it is possible to participate in Mutnovsky volcanological field school, co-organized by University of Alaska, Fairbanks and Institute of volcanology and seismology FEB RAS. The school will be held in Mutnovsky and Gorely volcanoes area (Kamchatka) approximately from August 10 to August 23, 2020. Details can be found at <https://www.uaf.edu/geology/academics/international-volcanology/> and at Facebook page of the school. Application must be submitted directly to the field school organizers. Amount of places is limited, it is important to send application in time.

**II. Intra-conference field trips** (each is 1 day in duration): August 26-27, 2020. Days may be changed due to the weather conditions!

**Field trip 1.** Uzon Caldera and Valley of Geysers (helicopter trip, 20 people per one helicopter; 2 groups). Flight time to the Valley of Geysers ~ 1h 20min (one way).

Uzon-Geysernaia twin calderas form a 9 x 18 km depression, which originated as a result of large explosive eruptions in the late Pleistocene time. Associated ignimbrite sheet covers an area of 1700 km<sup>2</sup>. A single <sup>14</sup>C date on a paleosol, underlying the Uzon-Geysernaia pyroclastic deposits, suggests an age of this eruption of 39 600±1000 BP (Florensky, 1984; Braitseva et al., 1995).

Valley of Geysers and Uzon caldera are part of Kronotsky Reserve. Valley of Geysers is a narrow canyon 4 km wide, 400 m deep and 8 km long, carved by the Gersernaya River. More than 40 geysers and numerous pulsating springs, mud and water caldrons, steam jets and other geothermal features are concentrated in this small area. This is one of the largest geyser fields in the world and the only one in Eurasia. Anomalously high biodiversity and high contrast of natural conditions and microclimate are observed here.

The northwestern part of the caldera (or Uzon caldera) hosts a

large geothermal field and numerous hot and cold lakes. Present geothermal activity is concentrated in a 0.3 x 5 km zone filled with boiling springs, gas-steam jets, mudpots, small mud volcanoes, hot lakes and springs with colonies of blue-green algae and thiobacteria (Piip, 1937; Pilipenko, 1976; Karpov, 1992; Leonov et al., 1991). Some of the lakes are located in the craters of phreatic eruptions. The most recent phreatic eruption took place in 1989 and created a 14 m wide crater.

The Uzon caldera hosts a few Holocene volcanic vents. The only definitely Holocene magmatic feature is a tuff ring filled with Dalnee Lake. A number of phreatic eruptions took place within the Uzon caldera during the Holocene time. Some of those have been dated: a crater enclosing Khlodidnoe Lake formed 1.5-2 ka BP; Bannoe Lake ~3.5 ka BP. Deposits from a phreatic eruption with an age of 7.7 ka BP have been also identified but their source is unknown (Egorova, 1993).

<http://www.kscnet.ru/ivs/volcanoes/holocene/main/main.htm>

**Field trip 2.** Karymsky volcano and Academii Nauk Caldera (helicopter trip, 20 people per one helicopter; 2 groups). Flight time to Karymsky volcano ~40min (one way).

The Karymsky volcano and Academy Nauk caldera belong to a chain of volcanoes, calderas, and maars, the location of which is controlled by a local north-trending fault. Magmas erupted during Holocene time along the fault varied in composition from basalts to rhyolites, andesites and dacites being the most voluminous. Basalt eruptions in the Karymsky–Academy Nauk area have been rare and subordinate in volume. Karymsky is a 5300-yr-old andesitic stratovolcano located in the center of an 7900-yr-old caldera (Braitseva and Melekestsev, 1991). During the past 500 yr, the volcano has been in a state of frequent but intermittent activity. In the twentieth century Karymsky had 7 periods of continuous Vulcanian eruptive activity, each lasting from 4 to 15 yr (Ivanov, 1970). The Academy Nauk caldera is centered 9 km south of Karymsky on the same fault system. Since its caldera-forming event (ca. 40 ka), the volcanic activity within the caldera was confined to phreatomagmatic eruptions of basalt that have occurred at least twice since 5 ka (Belousov and Belousova, 2001). These eruptions formed distinctive maars in the northern and southern parts of the caldera. The eruption on January 2, 1996, happened after 13 yr of dormancy, began with simultaneous eruption of andesite from the central vent of Karymsky volcano and basalt from a new vent, which formed in the northern part of Academy Nauk caldera. The phreatomagmatic eruption of the Academy Nauk center was over in 18 h (Izbekov et al., 2002), whereas Vulcanian eruption of Karymsky continues until now.

**Field trip 3.** Tolmachev Dol monogenetic volcanic field and Chasha Maar (onland trip, transportation by all-terrain vehicle; maximum 44 people)

Tolmachev Dol is a lava plateau northeast of Opala volcano. It host numerous Late Pleistocene and Holocene basaltic cinder cones. The latest eruption, which formed a cinder cone and a large lava flow in the far northwestern part of the plateau, occurred only 1600-1700 years BP as suggested by stratigraphic position of its erupted products between OP (1500 years BP) and KS1 (1800 years BP) marker ash layers (Oleg Dirksen, personal communication).

The most unusual Holocene event at Tolmachev Dol was an

eruption of about 1 km<sup>3</sup> of rhyolitic tephra from a large Chasha ("Chalice") crater in the northern part of the plateau. The eruption took place about 4600 14C years BP. Its ash layer, coded OPtr, is a good marker in the regions between Avachinsky volcano in the north and Mutnovsky volcano in the south. <http://www.kscnet.ru/ivs/volcanoes/holocene/main/main.htm>

**III. Post-conference:** August 31- September 4, 2020 (4 nights). Tolbachik areal volcanic field (onland trip, transportation by all-terrain vehicle; maximum 44 people)

Tolbachik areal volcanic field, or Tolbachinsky Dol is situated in Central Kamchatka Depression, almost 600 km away from Petropavlovsk-Kamchatsky. The total area of the lava plain is 875 km<sup>2</sup> (Braitseva et al., 1984). It adjoins two stratovolcanoes (Ostry and Plosky Tolbachik) and consists of two flanks, located at the SSW and NE slopes of Plosky Tolbachik edifice. There are more than 120 cinder cones up to 300 meters high in TD; they are located along the SW-NE fissure. Due to the two big eruptions happened here during the last 50 years (Great Fissure Tolbachik Eruption in 1975-76 and Tolbachik fissure eruption in 2012-2013) this area is very well studied by a variety of methods.

It will take about 1 full day to get to Tolbachinsky Dol (may be more, depends on the condition of the roads). Participants need to have the individual field equipment (sleeping bags, backpacks, etc – the full list will be provided later). The field trip includes 3-4 nights camping in the field.

## **HOW TO GET TO PETROPAVLOVSK-KAMCHATSKY (PK)**

Airport Elizovo of Petropavlovsk-Kamchatsky is situated only 30 km from the city. It is connected to Moscow, Vladivostok, Khabarovsk by regular daily flights; during summer there are direct flights to Fairbanks, USA (once in a week); direct connection with Southern Korea airports is under discussion at the moment. August and September are high seasons in Kamchatka. It is advised to book flights well before the trip (not later than March), otherwise the price will be rather high.

Regular bus services connect Elizovo with Petropavlovsk-Kamchatsky, taxi service is also available. A shuttle bus service from the airport will be arranged by the LOC at certain hours of the days before and after the meeting.

## **VISA FOR INTERNATIONAL PARTICIPANTS AND ACCOMPANYING PERSONS**

All those from outside Russia who would like to participate in 8IMC must plan to apply for Russian visa well in advance. An invitation letter is required for your visa application. So that we can provide the letter, please fill out the questionnaire (will be available at website of the conference soon) and send it together with an electronic copy (JPEG) of the two first pages of your passport to Oxana Evdokimova [evdokimova@kscnet.ru](mailto:evdokimova@kscnet.ru) not later than April 1st, 2020.

## **GRANT APPLICATIONS**

We can offer a limited number of grants that can provide support for registration and/or partial expenses (accommodation and meals), depending of available funding and number of applications. Students, young researchers and scientists attending

from developing countries are encouraged to submit their applications.

Information on the application procedure will be announced soon.

## **INFORMATION ABOUT PETROPAVLOVSK-KAMCHATSKY**

Weather: August in PK is generally sunny with occasional rain and a typical daytime temperature of 18°C. A period of heavy rain is possible.

Costs: We anticipate that costs for food and lodging will be average about \$120/day, but the actual prices will be known only in 2020. Local currency is Russian rubles. Dollars and euro can be exchanged to rubles at Currency Exchange in any bank offices. There are ATMs in the city. Visa and MasterCard are accepted in many places.

Accommodation: Hotels "Edelweiss", "Petropavlovsk", "Avacha", "Oktyabrskaya", "Arsenyev" are available. The cheapest suite fee is around \$100 at the "Edelweiss" with basic facilities and is in easy walking distance to the IVS location. Hostels for cheaper accommodation are available as well. It is also possible to book the hotel in Paratunka hot springs resort area, which is situated about 70 km away from the city. LOC will organize shuttle bus from Paratunka to the conference venue at conference dates. The information about hotels and hostels is available at [www.booking.com](http://www.booking.com). Early booking is highly advisable, because August is a hot season in Kamchatka.

Entertainment for accompanying persons: if you have free time, it is possible to take part in the marine or onland tourist excursions starting from the city and organized by various tourist agencies. One can climb Avacha volcano or go by boat to Pacific ocean (with a possibility to observe killer whales in nature) or have a walk at Khalaktyrka - the longest black-sand beach not far away from the city. There are as well helicopter excursions to Kuril lake – largest in Asia spawning grounds of Pacific salmon and place of inhabitation of a largest population of brown bears.

## **Local Organizing Committee**

Alexei OZEROV IVS FEB RAS - Chair of the conference

## **International Advisory Board**

**Roberto SULPIZIO** IAVCEI Secretary General  
**Károly NÉMETH** Massey University (New Zealand)  
**Xavier BOLÓS** Universidad Nacional Autónoma de México

## **LOC Members**

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**Yulia MOROZOVA**  
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Logistical advisor  
**Marina BELOUSOV**  
IVS FEB RAS  
Logistical advisor  
**Ilyas ABKADYROV**  
IVS FEB RAS  
Logistical advisor  
**Olga KHUBAEVA**  
IVS FEB RAS  
Logistical advisor

Conference webpage management and maintenance, technical support of the conference:

**Leonid PTASHINSKY, Sergey VASILIEV** (IVS FEB RAS)

Conference WEB page is COMING SOON!  
<http://www.kscnet.ru/ivs/conferences/maar2020/en/>

#### Scientific Committee

##### Chair

**Károly NÉMETH** / Massey University (New Zealand)

##### Members

**Alexei OZEROV** / Institute of volcanology and seismology FEB RAS (Russian Federation)

**Anna VOLYNETS** / Institute of volcanology and seismology FEB RAS (Russian Federation)

**Vera PONOMAREVA** / Institute of volcanology and seismology FEB RAS (Russian Federation)

**Yulia KUGAENKO** / Kamchatka Branch of Geophysical Survey of RAS (Russian Federation)

**Alexander BELOUSOV** / Institute of volcanology and seismology FEB RAS (Russian Federation)

**Ian SMITH** / The University of Auckland (New Zealand)

**Joan MARTÍ** / Consejo Superior de Investigaciones Científicas (Spain)

**Giovanni SOSA-CEBALLOS** / Universidad Nacional Autónoma de México (Mexico)

**Gabor KERESZTURI** / Massey University (New Zealand)  
**Dmitri ROUWET** / Instituto Nazionale di Geofisica e Vulcanologia, Sezione di Bologna (Italy)  
**Yuri TARAN** / Universidad Nacional Autónoma de México (Mexico)  
**Alison GRAETTINGER** / University of Missouri (USA)  
**Mitsuhiko NAKAGAWA** / Hokkaido University (Japan)

## CITIES ON VOLCANOES CONFERENCE Naples, Italy

### Recommendations of COV10 Workshop 3: Communicating Volcanic Hazards

Cities on Volcanoes 10 (COV10) Workshop 3 entitled *Communicating Volcanic Hazards*, sponsored by the World Organisation of Volcano Observatories, brought together over 40 volcano observatory scientists, emergency managers, academics, and students to consider scientists' communications with government officials regarding volcanic unrest and hazards. (Note: The equally critical media and societal communication were out of scope for this workshop). We present the outcomes of this workshop.



There is currently an absence of authoritative and internationally-accepted sources to guide the consistent production of effective hazard communications between volcanologists and risk-mitigation decision-makers. To address this gap, in 2013 at the Volcano Observatory Best Practice 2 workshop (VOBP2) in Erice, Sicily, volcanologists from all over the world started to draft an international reference to serve as a framework for hazard communication practices.

The outcomes of VOBP2 (as summarized in Pallister et al. JAV, under review) are generally endorsed by the participants of the COV10 Workshop 3, acknowledging that the VOBP2 was developed by volcano observatories for volcano observatories, while the participants of the COV10 Workshop 3 reflect a broader scientific and risk-mitigation decision-maker community. The VOBP2 outcome statements are:

1. To guarantee objectiveness in their evaluations and



before releasing alerts, warnings or forecasts, observatory leader(s) seek the best possible knowledge and a consensus about the situation among discipline experts, ensure that data and rationale for decisions are documented and available for scrutiny, and speak with a single/common voice. In crisis situations consensus must be achieved quickly. Rapid consensus is facilitated by preparation and practice of procedures in advance of crises.

2. For rapid and accurate information dissemination, observatories convey hazard information in standardized formats, use probabilistic analyses and direct modes of communication (e.g., public webpages, e.g., with front page alerts and warnings), social media, and automated messaging). International formats have been adopted for Volcano Observatory Notifications to Aviation (VONAs) and provide a good example of the value of standardization, especially for ash hazards, which cross international borders.

3. To maximize the use of hazard forecasts from volcano observatories for risk mitigation purposes (e.g., via evacuations, re-routing air traffic, etc.), observatories should communicate directly and regularly with mitigation authorities (e.g., emergency management and civil defense agencies, police and military, VAAC's, aviation authorities) and at all appropriate levels (national to local).

4. To build a common language and understanding and to establish trust and credibility, observatories should engage with stakeholders (from civil authorities to the general public) at all phases of the emergency cycle; ensure constant flow of information; continuously evaluate and improve effectiveness of communication strategies; and communicate messages tailored to the specific stakeholders, keeping such messages meaningful. A number of sources for improving public communication of technical information are available in the social science literature, as well as from scientific organizations (e.g., <https://sharingscience.agu.org/jargon-and-how-to-avoid-it/>).

The following statements resulting from COV10 Workshop 3 are intended to be a valuable complement to the VOBP2 statements.

1. We recommend the continued development of dynamic international reference sources (e.g. using checklists supported by existing examples) that respect the differing social, economic, cultural and legal traditions of the world's many volcanic regions. A reference source (such as one targeting hazard maps), developed over time by the global volcano hazards community and addressing the responsibilities of both observatory and non-observatory scientists, would serve as an authoritative framework for new, and the revision of existing, communication policies, arrangements and protocols. Sharing of working practices can and should result in the evolution of the references and, of greater importance, the emergence of shared and dynamic standards of good practice suitable within a global society that rightly has high expectations and demands greater accountability. *Note: There are currently two active working groups in the IAVCEI commission of Volcanic Hazard and Risk - Hazard Mapping and Communications). Both groups are working towards best practice/guidelines/considerations documents.*

2. The participants of the workshop recognize the social and political factors that enter the characterization and determination of volcanic alert levels, and aspire to a long-term

goal of using probabilistic analysis to inform warnings, in close cooperation with civil authorities in order to provide them with the most comprehensive picture of their knowledge and understanding of the ongoing processes, together with the uncertainties associated with that knowledge and understanding.

3. We recommend open communication between early career scientists and technicians and senior members of the volcanological community in order to collaborate and share experiences. Senior members of the volcanological community ideally include students/early-career researchers/technicians as observers in exercises and training programs. Where possible, observatories responsible for monitoring and crisis operations plan ahead to provide experiences for early-career scientists, which enable their future participation during complex crisis situations. For example, research and development collaborations, post-graduate appointments, and volunteer relationships with observatory colleagues provide relationships and experience that can enable contributions during complex crisis situations.

4. We recommend that volcano communications practitioners build close collaborations with the academic and professional public information design communities. We also seek to be clear as to when we are talking about scientist-stakeholder (e.g., emergency managers) communication compared to public information and engagement.

5. (*Modified from VOBP2 commentary, see Pallister et al. JAV, in review*) There was a general consensus on the need to acknowledge the separated competences, roles and responsibilities in the whole decision-making process aimed at reducing volcanic risk. Specifically, the latter ideally requires the scientific quantification of uncertainties involved in hazard forecasts and possible scenarios, the assessment of the risks using appropriate risk metrics, the evaluation of the impact of possible different risk mitigation actions, and a decision-making process that merges the above with practical, social and political factors. Because of the close relationship between communication and responsibility, the observatory and the other involved partners should cooperate in carefully constructing their communication standards in agreement with their respective roles and responsibilities.

Submitted by COV10 W3 conveners on behalf of workshop participants.

COV10 W3 conveners: *Natalia Deligne (GNS Science), Carolyn Driedger (USGS), Warner Marzocchi (INGV), Paolo Papale (INGV)*

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## **IAVCEI CITIES AND VOLCANOES COMMISSION**

### **Cities on Volcanoes 10 conference in Naples 2018**

It's been an exciting year for the IAVCEI Cities and Volcanoes Commission. The Cities on Volcanoes 10 conference in Naples was the largest yet, and facilitating knowledge exchange and many scientific discussions. We acknowledge the hard work of the local organizing committee. At COV10, we announced the next host city: Cities on Volcanoes 11 will be in Crete, Greece during

May 23-27, 2020. Look for more details in upcoming IAVCEI newsletters.

The purpose of COV conferences is to bring together volcanologists, city authorities, sociologists, psychologists, emergency managers, economists and city planners to evaluate volcanic crises preparedness and management in cities and densely populated areas. In 2019, the CAV commission will be calling for nominations and proposals for COV12, which we anticipate will be in 2022. In the meantime, we encourage you to start thinking about whether you and your colleagues could host COV12, and/or if there is a place you really think would be a great place, do get in contact with locals and offer support/encouragement.

For more information about the Cities and Volcanoes Commission, and/or to join us (all IAVCEI members welcome), visit <https://vhub.org/groups/cav>.

**CAV Executive:** *Carolyn Driedger (leader; USA), Thomas Wilson (New Zealand), Graham Leonard (New Zealand), Natalia Deligne (New Zealand), Gustavo Villarosa (Argentina). Secretary: Carina Fearnley (UK)*

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## FIRST MEETING OF YOUNG CHILEAN VOLCANOLOGISTS

### Concepción, Chile

The evening of November 20th of this year, the 1st Meeting of Young Chilean Volcanologists was held in Concepción, Chile during the XV Chilean Geological Congress, where it brought together students and professionals that dedicate themselves to the study of volcanoes in Chile, with the purpose of creating a cooperative alliance between them.

The activity began with the words of Álvaro Amigo Ramos, the chief of the National Volcanic Vigilance Network, who pointed out the importance of developing the field of volcanology in a country like Chile, followed by Rayen Gho, who spoke about the work carried out by the Young Latin American Volcanologists (Jóvenes Volcanólogos Latinoamericanos, JVLA), which is part of the Latin American Association of Volcanology (Asociación Latinoamericana de Volcanología, ALVO).

Subsequently, roundtables were formed during which the discussion focused on the main problems facing the training of volcanologists (in both higher education and in the workplace), possible solutions, and motions to accomplish the latter. Each roundtable's dialogue was presented to all the participants, and was analyzed in order to recognize obstacles and opportunities, and to come up with different ideas to effectively see the alliances through.



The main conclusion that arose from this meeting is that we are privileged with a natural laboratory and that a high quantity of information is generated by the Southern Andes Volcanological Observatory, however, the lack of awareness of other researchers/institutions, the delay in the delivery of data, and the insufficient channels dedicated to volcanology training (few internship opportunities, absence of volcanology courses in some curriculums) are the major obstacles facing the field in the country. These issues can be resolved by sharing material and study areas through databases, programs or tools; using means such as social media to make information known regarding internships, field work, and thesis topics; educating researchers with a sense of the importance of collaboration and interdisciplinary work; among other ideas.

Thus, future tasks consist in creating an application or web portal with volcano information (what research is conducted on each one and who is in charge of it); generating instances other than congresses to meet amongst us, and also to share our research with the community; and organizing seminars with government institutions.

This meeting was a milestone in the Chilean volcanological community, as it is the first of its kind, where we were able to pinpoint the most important challenges we must deal with and begin the journey towards finding ways to overcome them. We look forward to becoming a more open and collaborative community of geoscientists!

For more information, contact us at [volcajoveneschile@gmail.com](mailto:volcajoveneschile@gmail.com), or visit our social media at [www.fb.cl/volcajoveneschile](http://www.fb.cl/volcajoveneschile) and [@volcajoveneschile](https://www.instagram.com/volcajoveneschile).



## INTERNATIONAL GEOLOGICAL CONGRESS 2020

### NEW DELHI, INDIA CALL FOR PRESENTATION RELEVANT IAVCEI

It is with great pleasure that we send you the 2nd Circular of the IGC 2020 for your perusal.

**Theme 15: Volcanology:** Geological, Archeological and Contemporary we will be conducting the following symposium:

#### **15.1 Continental Flood Basalts and related Volcanics: Current status of knowledge and future work possibilities**

Stephen Self (USA), Raymond A. Duraiswami (India), Hetu Sheth (India)

#### **15.2 Island Arc Volcanics**

Hiro Yamagishi (Japan), Martin Jutzeler (Australia), Tapan Pal (India)

#### **15.3 Volcanism and its influence on human civilization**

Karoly Nemeth (New Zealand), Loyc Vanderkluyzen (USA), Makarand Bodas (India), Himanshu Kulkarni (India)

We solicit that you kindly register for the IGC and encourage peers and research scholars do the same. You are also requested to circulate the 2nd Circular and request for Abstract submissions and participation.

Merry Christmas and Happy New Year...

*Raymond Duraiswami*  
Department of Geology  
SP Pune University,  
Pune 411007  
India      *Makarand Bodas*  
Geological Survey of India  
State Unit, Maharashtra  
Pune 411006  
India

### CALL FOR MANUSCRIPT GEOHERITAGE SPECIAL ISSUE

**Volcanoes as geo-cultural heritage – communication, education, valorisation**

#### **Guest Editors:**

- Professor Felix Riede, Arhus University (DK – lead guest editor)
- Professor Karoly Nemeth, Massey University (NZ)
- Jazmin Scarlett, Newcastle University (UK – early career researcher)
- Assistant Professor Karen Holmberg, New York University (USA)

#### **Main scope**

Specific places and aspects of geology are increasingly framed as geoheritage in the context of communication, education and valorisation. Many volcanoes the world over have a long history of interaction with human communities characterised by the exploitation of the resources they provide as well as the risks and impacts they periodically generate. In the wake of the increasing inclusion of interdisciplinary perspectives in volcanology, this special issue therefore focusses on all aspects of this geo-cultural heritage, the tangible (sites, objects, instruments, remains) or even intangible (memories, narratives, indigenous knowledge) results of the long interaction of people with the environment.

Framing volcanoes, their benefits and the risks they pose, through the lens of heritage potentially provides a vernacular that is actionable for natural as well as human scientists, various publics and policy-makers alike. Heritage signals ownership and can drive community empowerment.

Heritage also has economic traction both within research funding as well as within tourism and development, and it can be explored through the vast amounts of theoretical, conceptual and empirical research that already has been conducted on some, albeit mainly cultural, aspects of heritage.

Finally, a deep understanding of the social contexts in which an eruption takes place is important to understand how changes in vulnerability, risk, and resilience can cause different impacts from one eruption to the next – geo-cultural heritage may here serve as a nexus of research and outreach.

In this spirit of inter- and transdisciplinary engagement, this special issue of Geoheritage invites papers on volcanic geo-tourism, on volcano education and outreach in museums, galleries or other public-sector contexts, but also papers that situate past, present or future volcanism within the framework of geo-cultural heritage.

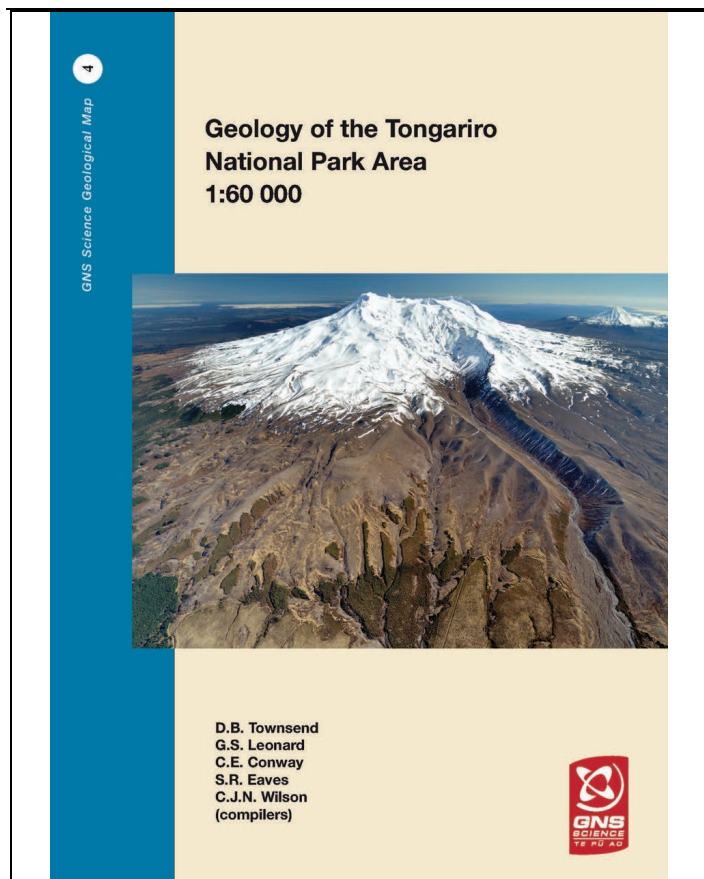
If you wish to submit a manuscript, please do it via the Geoheritage (Springer) website selecting the special issue.

Kind regards

*The Guest Editors*







Townsend, D.B.; Leonard, G.S.; Conway, C.E.; Eaves, S.R.; Wilson, C.J.N. (compilers) 2017 Geology of the Tongariro National Park area. Lower Hutt, N.Z.: GNS Science. GNS Science geological map 4. 1 sheet + 109 p., scale 1:60,000.

This new geological map is welcomed as a major addition to our knowledge of Tongariro National Park World Heritage Area. Tongariro National Park (TNP) encompasses a spectacular, active and diverse volcanic landscape. With the summit peaks between 1967 and 2797 metres above sea level, the volcanoes stand high above the surrounding land creating a striking visual presence with strong spiritual, physical, recreational and aesthetic associations.

These associations are augmented by small glaciers on Ruapehu and seasonal snow, which the map shows have had an influence on the landscape in the past far greater than most people realise. TNP contains one of the most active composite volcano complexes in the world. It has a wide diversity of mainly volcanic landforms brought about by powerful processes of volcanism and erosion over a time period of almost a million years.

The map provides novel and fundamental insights into these processes and landforms.

You can access the book via  
<https://shop.gns.cri.nz/gnsgm4/>

Hayes, J.L.; Tsang, S.W.; Fitzgerald, R.H.; Blake, D.M.; Deligne, N.I.; Doherty, A.; Hopkins, J.L.; Hurst, A.W.; Le Corvec N.; Leonard, G.S.; Lindsay, J.M.; Miller, C.A.; Németh, K.; Smid, E.; White, J.D.L.; Wilson, T.M. 2018 The DEVORA scenarios: multi-hazard eruption scenarios for the Auckland Volcanic Field. Lower Hutt, N.Z.: GNS Science. GNS Science report 2018/29. 138 p.; doi: 10.21420/G20652

Auckland is the most populous region in New Zealand with 1.6 million residents and accounts for over one third of New Zealand's Gross Domestic Product (GDP). The Auckland metropolitan area is built upon the intraplate Auckland Volcanic Field (AVF), which poses a considerable threat due to the highly exposed people and infrastructure of Auckland. The Determining Volcanic Risk in Auckland (DEVORA) research programme was established in 2008 as a collaborative effort between GNS Science, numerous New Zealand based universities, and both local and central government agencies to improve volcanic hazard and risk management in Auckland. Since DEVORA's inception, substantial advances have built on earlier research by using tools and approaches from geological, volcanic hazard, engineering, and societal risk disciplines. Volcanic eruption scenarios can integrate findings from each of these disciplines and produce outputs that benefit stakeholders. The 'Mangere Bridge' eruption scenario illustrated the impact an AVF eruption could have on Auckland's urban functionality in a series of papers published in the Journal of Volcanology and Geothermal Research. However, this is but one scenario: the impacts of an AVF eruption could differ substantially depending on the specific area of Auckland that is affected by an eruption. The geologic record shows that eruption size, duration, style and sequence vary considerably within the AVF. Here, we build upon the Mangere Bridge eruption scenario and present seven new eruption scenarios that cover the spectrum of credible eruption phenomena expected from a future AVF eruption. The scenarios are based on research on AVF volcanic hazards and analogous eruptions from around the world. Our expectation is for the scenarios to be used within AVF volcanic impact and risk studies and to support volcanic risk mitigation and asset management practices.

You can access the book via  
<http://shop.gns.cri.nz/publications/science-reports/2016-to-current/2018/>

The Latin American Studies Book Series

Elizabeth Mazzoni  
Jorge Rabassa *Editors*

# Volcanic Landscapes and Associated Wetlands of Lowland Patagonia

 Springer

This book presents the most relevant basaltic plateau exposures in the provinces of Neuquén (northern Patagonia) and Santa Cruz (southern Patagonia), and analyzes their geomorphological and morphometric characteristics. The existence of wetland ecosystems near the volcanic plateaus is quantified, thus providing indexes that describe the quantitative relationships between these landscape features. These indexes also make it possible to estimate the development of these wetlands in non-surveyed areas, opening the door for studying remote, isolated areas by means of remote sensing images. In turn, the book proposes a numerical classification system for this type of landscape that summarizes the main geomorphological and hydrological characteristics.

**You can access the book via**

<https://link-springer-com.ezproxy.massey.ac.nz/book/10.1007/978-3-319-71921-4#about>

## ROCAS VOLCANICLÁSTICAS

Depósitos, Procesos y Modelos de Facies



Ivan A. Petrinovic  
y Leandro D'Elia



Asociación Argentina  
de Sedimentología  
Publicación Especial N° 3

**Publicación Especial N°3**  
**Asociación Argentina de Sedimentología**  
**ROCAS VOLCANICLÁSTICAS**  
**Depósitos, Procesos y Modelos de Facies**

Ivan A. Petrinovic (CICTERRA – UNC/CONICET)  
y Leandro D'Elia (CIG – UNLP/CONICET)  
ISBN: 978-987-96296-6-6; 184 p. ; 30 x 21 cm; color

### CONTENIDOS

**Capítulo 1:** la volcanología, los volcanes y sus productos  
**Capítulo 2:** procesos eruptivos, origen, transporte y depositación de rocas volcánicas  
**Capítulo 3:** modelos de facies de edificios volcánicos  
**Capítulo 4:** volcanes, cuencas y sistemas sedimentarios: modelado de facies de sucesiones volcánicas en el registro geológico y en erupciones recientes  
**Capítulo 5:** la volcanología aplicada aplicaciones en la asignación de peligrosidad volcánica presentación

Socios AAS: \$800 + gastos de envío

No socios AAS: \$1200 + gastos de envío ver medios de pago

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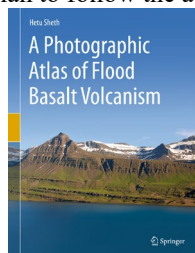
## A PHOTOGRAPHIC ATLAS OF MONOGENETIC VOLCANISM [Springer]

Edited by Karoly Nemeth

### Call for images of monogenetic volcanoes and relevant processes, rocks and textures.

#### Basic Concept

This book is planned to be similar in style as the recent Springer book *A Photographic Atlas of Flood Basalts* by Hetu Sheth. The style, volume, page number, number of figures and the structure of the proposed book plan to follow the above mentioned book.



Monogenetic volcanism is the most common manifestation of volcanism on Earth and in the Solar System. Researches in the past 15 years became very intense and they formed a very significant part of volcanology. This process resulted the formation of the Commission of Monogenetic Volcanism in the umbrella of the International Association of Volcanology and Chemistry of the Earth's Interior. The activity of the commission formed a very active community where the latest research results channelized among experts. The commission also stand behind major scientific conferences such as the International Maar Conference and workshops. This process formed a network of experts with fundamental knowledge of monogenetic volcanism across the globe. Due to the fact that most of the meetings took place in various but significant monogenetic volcanic fields the past 15 years generated a wealth of images of monogenetic volcanoes and associated features from micro to outcrop scales. The proposed book intends to capitalize on this rapid information growth and provide an up-to-date snapshot of our current understanding of monogenetic volcanism and associated geological features. The book will follow a scientifically correct and accepted structure illustrated by the best possible imagery the global community could provide.

#### Basic chapter concepts

Each of the book chapters will follow a simple and easy to use structure. The main chapters will start with a fully referenced, maximum 10 book page text where the basic concepts are outlined with 1-2 line drawings. These parts of the book will also sum up the main definitions and fully referenced that.

#### Chapter outline

1) Basic concepts of monogenetic volcanism: This chapter will introduce the concept of monogenetic volcanism, main definitions, basic processes and will provide some conceptual line drawings. The Introduction will be followed by photos, mostly from the landform perspective.

2) Scoria cones: 2-4 pages definition of scoria cones followed by a set of images with short but focused captions

3) Spatter cones: 2-4 pages definition of spatter cones followed by a set of images with short but focused captions

4) Tuff rings: 2-4 pages definition of tuff rings

followed by a set of images with short but focused captions

5) Maars: 2-4 pages definition of maars followed by a set of images with short but focused captions

6) Tuff cones: 2-4 pages definition of tuff cones followed by a set of images with short but focused captions

7) Lava fields: 2-4 pages definition of lava fields followed by a set of images with short but focused captions

8) Pyroclast transportation processes: this chapter after a 2-4 pages short summary will cover the basic pyroclast transformation modes associated with monogenetic volcanism. The image set will cover outcrop scale pictures of base surge deposits, phreatomagmatic fallout beds, accretionary lapilli beds, reworking, erosion channels, dune bedded units etc.

9) Micro-textural features associated with monogenetic volcanism: this section will cover thin section, BSE, SEM and other micro-textural images relevant with monogenetic volcanism. The imagery will cover fundamental concepts of recognition of various processes on the basis of micro-textural features such as chilled pyroclasts, microlites, micro-vesicles, mud cover, palagonitization etc.

10) Regional monogenetic volcanism: this chapter will provide at least a single image of the most common monogenetic volcanoes, and/or monogenetic volcanic fields to provide a hand on information to any reader who just would like to get an impression about the monogenetic volcanoes commonly referred to in scientific literature. Locations will include iconic sites from the Eifel (Germany), Chaîne des Puys (France), Garrotxa (Spain), Tihany (Hungary), Auckland Volcanic Field (New Zealand), Al Haruj (Libya) etc. The list will be order on the basis of number of appearance of specific locations in the mainstream scientific literature.

11) Index – that will be linked to the images and to the main body text.

12) References cited in the main text parts

13) Comprehensive list of references as suggested readings

14) Dictionary relevant to monogenetic volcanism

#### Book technical details

The book is planned as a A4 size hard cover, full colour book in print and in as an e-book. The book will have about 500 pages total volume. That will contain about 500 images selected from worldwide contributors.

Each of the contributor will get access to the published e-Book.

**The book is planned to be completed and the draft handed over to Springer in end of July 2019. Images should be sent by 30 April, 2019 (the earlier the better ...).**

**If you plan to contribute to this book please send an email to K Nemeth to [k.nemeth@massey.ac.nz](mailto:k.nemeth@massey.ac.nz) with an outline of your contribution and number of images.**

**Images can be sent directly to the email address provided above and/or via shared drives (GoogleDrive, Dropbox etc). Each image should contain a max 5 sentences description, a geographical location info and credit to its source.**

**Thank you!**

*Karoly Nemeth (Massey University, New Zealand)*



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## REPORT ON THE ACTIVITY OF THE IAVCEI COMMISSION ON VOLCANIC AND IGNEOUS PLUMBING SYSTEMS (VIPS)

**Commission chairs:** Janine Kavanagh and Steffi Burchardt

**ECR representative:** Fiona Iddon (PhD student, representative until October 2018), new representatives: Emma Rhodes and Tobias Schmiedel

### Goals and objectives of the commission:

VIPS comprise a network of structures that store magma in the crust and transport it to the surface to feed volcanic eruptions. These igneous structures include dykes, sills, laccoliths and larger magma bodies. VIPS assemble to form plutons and batholiths and are the building blocks of the continental crust. They also have strong associations with significant mineralisation and ore deposits around the world. The complex geometric structure of VIPS and the physical-chemical processes that control their development and evolution are key parameters controlling the magnitude and style of volcanism that occurs at the Earth's surface. Understanding VIPS therefore has significant social and economic implications, making the study of VIPS an integral discipline within volcanology.

The study of VIPS requires a multidisciplinary approach. Diverse scientific disciplines have targeted the study of VIPS, including (1) volcano geodesy and seismology for studying active VIPS, (2) structural geology, igneous petrology, and geochemistry for studying fossil VIPS, and (3) analogue, mathematical, and petrological modelling to constrain the dynamics and evolution of VIPS. Although researchers in all of these disciplines aim to understand the same system, they traditionally operate independently, which frequently leads to contradictory and inconsistent views. This lack of communication between disciplines is problematic as method-based approaches alone are insufficient to fully understand VIPS. Moving towards a process-based approach by integrating various disciplines is key to derive a comprehensive understanding of VIPS.

The main goal of the new IAVCEI commission on VIPS is to provide a forum for VIPS research beyond disciplinary or methodological boundaries, bringing together expertise from across the global VIPS community to answer fundamental questions regarding magma transport and storage in the crust.

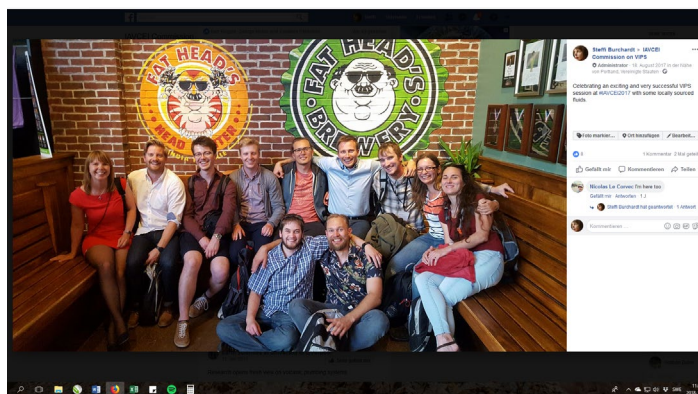
**Blog and social media:** The VIPS commission entertains a blog called Focus on VIPS (<https://focusonvips.wordpress.com/>) with regular blog posts highlighting ongoing and newly published VIPS research. The blog is written by guest bloggers who are mainly early-career researchers, and includes summaries of recent papers, accounts of recent meetings, and book reviews. A new blog post is published approximately every other week and spread on our social media channels Twitter (@VIPScommission), Facebook

(<https://www.facebook.com/search/top/?q=iavcei%20commission%20on%20vips>), and Instagram (@focusonvips).

### Conference activities:

At the IAVCEI General Assembly in Portland 2017, the VIPS commission hosted a session with the title "Structure and Evolution of Magmatic Plumbing Systems." The session received 48 oral and 59 poster presentations, which made it the largest

session at the conference. The scope of the session was to foster a multidisciplinary approach to studying magma plumbing systems, which was very well received. The contributions of the session covered a wide range of scales (crystal to global) and disciplines; many of them were in fact multi-disciplinary. Among the oral presenters, 35% were female and 27% were early career researchers.



A similar session is now being advertised for the IAVCEI/IUGG conference in Montreal 2019.

### Workshops and field activities:

The VIPS commission is organising the 6th LASI (LAccoliths, Sills and dykes) conference in Mendoza, Argentina which will be held during November 2019 (<http://lasi6.org/>). Previous LASI conferences have been pivotal for the formation of the VIPS community, bringing together researchers working on different aspects of magma plumbing systems. The organising committee, chaired by Olivier Galland from the University of Oslo, is currently looking for additional funding. The scientific committee has outlined the following sessions:

1. Emplacement processes of dykes, sills, laccoliths, plutons
2. Volcanic plumbing systems in active volcanic areas
3. Field observations, geophysics, laboratory, numerical and theoretical modelling
4. Magma-sediment interactions: contact aureoles, magma contamination, phreatomagmatic activity and hydrothermal venting, and climate implications
5. Economic geology of subvolcanic systems: hydrocarbons, shale gas, water and ore deposits
6. The plumbing systems of mud volcanoes and their analogies to igneous plumbing systems

The meeting will take place over 5 days and include contributions from leading VIPS researchers. A highlight of the workshop will be 3 days in the field to visit the intrusions and volcanoes of the Neuquén basin. Follow updates at <http://lasi6.org/>, in ResearchGate and on Facebook.

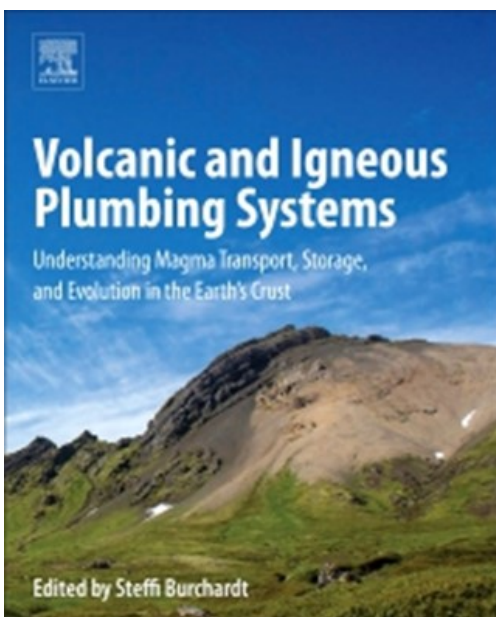
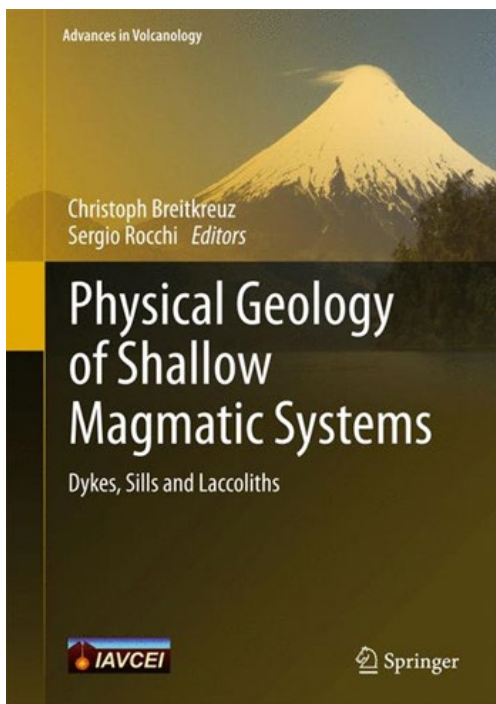
### Books:

2018 has seen the publication of two new books dedicated to the subject of volcanic and igneous plumbing systems:

*Breitkreuz, C. & Rocchi, S. (Eds.): Physical Geology of Shallow Magmatic Systems. Dykes, Sills and Laccoliths. Springer.*

*Burchardt, S. (Ed.): Volcanic and Igneous Plumbing Systems. Understanding Magma Transport, Storage, and Evolution in the Earth's Crust. Elsevier.*

Both books are intended to give graduate students a broad overview of the state of the art of research on magma storage and transport.



#### Contact

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[Steffi.Burchardt@geo.uu.se](mailto:Steffi.Burchardt@geo.uu.se)

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## FUTURE EVENTS

### for IAVCEI member's interest

#### IAVCEI Volcanic Geology Workshop - 2019

**Date:** 26 February – 5 March, 2019

**Venue:** Massey University, Palmerston North, Ohakune and New Plymouth

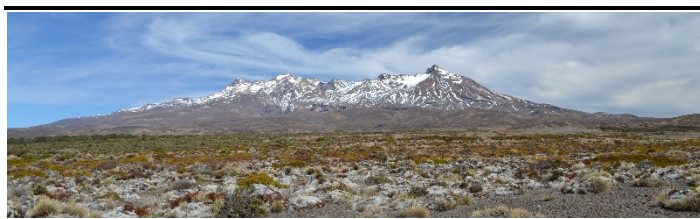
**Contact:**

Karoly Nemeth – e-mail: [k.nemeth@massey.ac.nz](mailto:k.nemeth@massey.ac.nz), phone: +64-479-1484

Jon Procter - e-mail: [J.N.Procter@massey.ac.nz](mailto:J.N.Procter@massey.ac.nz)

Website: [www.massey.ac.nz/iavcei2019](http://www.massey.ac.nz/iavcei2019)

This conference is supported by the **IAVCEI Commission on Volcanic Geology and Monogenetic Volcanism**



#### 10th Workshop of the IAVCEI Commission on Volcanic Lakes,

Taupo-New Zealand, 17-25 March 2019

**For further information on CVL10-NZ:**

<https://iavcei-cvl.org/2018/11/13/cvl10-workshop-new-zealand-march-2019/>

**Abstract submission deadline:** 20 December 2018 (send to [a.mazot@gns.cri.nz](mailto:a.mazot@gns.cri.nz))

**Registration deadline:** 31 January 2019, on <http://shop.gns.cri.nz/iavcei-sessions/> (sessions only) or <http://shop.gns.cri.nz/iavcei-full/> (full workshop)

**Contact person:** Dmitri Rouwet

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#### 27<sup>th</sup> IUGG General Assembly

Montreal, Canada

8-18 July, 2019

**Website:** <http://iugg2019montreal.com/>

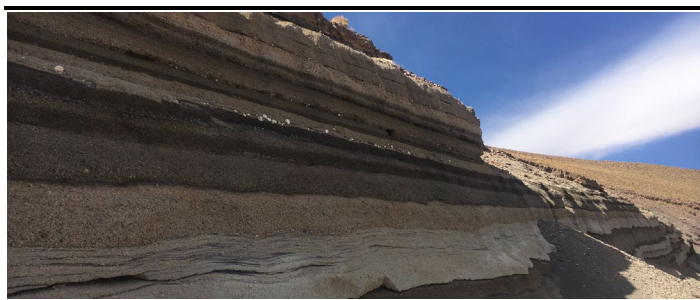
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#### Goldschmidt 2018

Barcelona, Spain,

from 18-23 August 2019.

**Website:** <https://goldschmidt.info/2019/>



**34th IAS Meeting of Sedimentology**

Rome, Italy,  
from 10-13 September 2019.

Website: <http://iasroma2019.org/>

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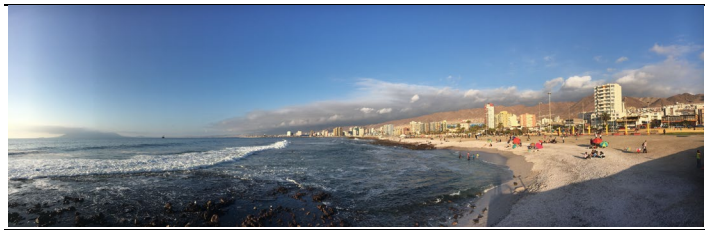
**1st ALVO Conference**

3 – 7 November 2019

Antofagasta, Chile

Website: [www.lercongresoalvo.com](http://www.lercongresoalvo.com)

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**Sixth LASI Meeting on “The Physical Geology of Subvolcanic Systems: Laccoliths, Sills and Dykes”**

Malargue, Argentina

25-26th November 2019

Website: [www.lasi6.org](http://www.lasi6.org)

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Next Issue of the **IAVCEI News** will be published on 15<sup>th</sup> **April 2019**. Articles, notes, news or any items relevant to the IAVCEI community must be submitted by **5<sup>th</sup> April 2019** to be published in the next Issue.

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***Editor-in-Chief***

***Károly Németh***

*Massey University, Palmerston North*

*Any correspondence, news items could be sent to:*

***k.nemeth@massey.ac.nz***

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**IAVCEI Web-site Coordinator** (University of Bari)

***Eugenio Nicotra*** – email: ***[eugenio.nicotra@unict.it](mailto:eugenio.nicotra@unict.it)***

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**If you have any idea or plan to have IAVCEI involved in the IUGG Outreach Programs, please contact Karoly Nemeth via [k.nemeth@massey.ac.nz](mailto:k.nemeth@massey.ac.nz)**