



IAVCEI News

2013 No: 4

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

FROM THE PRESIDENT

Dear Colleagues,



*Ray Cas
President of the
IAVCEI*

First Best Wishes for 2014 to All IAVCEI Members and Your Families

This has been a very busy and successful year for IAVCEI. A number of commission workshops and conferences, culminating in the IAVCEI 2013 Scientific Assembly in Kagoshima, Japan in July, kept many IAVCEI members, commissions and the committees busy. IAVCEI thanks everyone who contributed their time organising these meetings and to those who attended for making them

successful. As a result of these meetings IAVCEI's membership is now over 2,500, and this increases with every meeting.

On behalf of the IAVCEI Committee, I wish all IAVCEI members and their families a relaxing and safe festive season and a successful, productive and enjoyable New Year in 2014.

Update on the IAVCEI Working Group on Crisis Protocols and Best Practices Associated with Natural Disasters, Hazards and Crises

As reported in the previous IAVCEI NEWS (go to IAVCEI website to download IAVCEI News 2013 2-3, if you haven't yet done so) IAVCEI has set up a working group of

Guido Giordano (Convenor), Joan Marti, Nobuo Geshi and me met in Kagoshima to discuss ways in which IAVCEI could best provide advice for scientists involved in natural disaster crisis management. Having discussed the key issues amongst ourselves, Guido was designated to write a discussion document that would be the basis for seeking advice from colleagues experienced in such crisis management on developing guidelines for scientists in positions of responsibility. This follows the international outcry over the prosecution of the 7 scientists who were members of the Italian Risk Commission during the fatal 2008 L'Aquila earthquake disaster in central Italy. Guido has now done this after having discussions with Joan Marti and other colleagues experienced in volcanic crisis management at the VUELCO Workshop in Rome on 7 – 8 November this year. The Working Group is reviewing the draft of this discussion paper. When reviewed this draft document will be circulated for further comment to experts in the field for their feedback. Guido has approached the organisers of the CoV8 Cities on Volcanoes conference in Yogyakarta, Indonesia, to be held from 9 – 13 September 2014, to organize an open forum discussion on this topic, after which IAVCEI's guidelines will be finalized. The aim is to table the final document and guidelines at the IAVCEI2015 and IUGG General Assembly in Prague, at which comment from other associations involved in hazard assessment and crisis management (e.g. seismology) will also be solicited. This is taking time, but the importance of this issue requires careful consideration, and IAVCEI feels that as a learned society with no vested interests, it is ideally placed to provide an authoritative and balanced overview on the issues and to draw up guidelines. that will provide both a responsible view of the role of scientists in crisis management, as well as guidelines to protect their interests. Watch this space.

Cities on Volcanoes CoV8 Conference in Yogyakarta, Indonesia, 9 – 13 September, 2014.

The IAVCEI Cities and Volcanoes Commission is organising its 8th Cities on Volcanoes conference in Yogyakarta, Indonesia, in the shadows of one of Indonesia's most active volcanoes, Merapi Volcano, in September 2014. CoV conferences focus on issues related to volcanic hazard and risk management, and a significant part of the program involves contributions on risk and crisis management, including contributions from relevant civil and government organisations. See this newsletter below for further information and check the conference website for organizational details as they become available.

IAVCEI 2015 Prague, Czech Republic, 5 day Conference during 22 June to 2nd July (probably 27th June to 2nd July) – a must attend conference

Planning is well advanced for the next major IAVCEI scientific conference, the IAVCEI2015 General Assembly, to be held in the beautiful city of Prague in the Czech Republic as part of the IUGG2015 General Assembly. The recent call to IAVCEI members for symposium themes, together with the submissions from IAVCEI's research commissions has resulted in 36 individual thematic symposia, 5 symposia that will be joint symposia between IAVCEI and other IUGG Associations, 2 IUGG Union symposia, several workshops and already 9 possible fieldtrips throughout Europe and eastern Europe.

This is shaping up to be another great IAVCEI conference, so please, put this conference in your electronic diaries as a "must attend" conference. Remember, you can go to an AGU or EGU conference every year, but you can only go to an IAVCEI General Assembly once every 4 years, and probably only once in your life to one held in beautiful, exotic Prague. I hope to see you all there. The IAVCEI2015 website will become live through the IAVCEI general website early in the New Year, and will be updated regularly as information becomes available. Details of symposia titles and convenors will be available in the first IAVCEI News issue of 2014. Some further details about IAVCEI 2015 are later in this IAVCEI News issue.

Thank you to the IAVCEI Committee, Commission leaders, Working Group Members

On behalf of IAVCEI I would like to thank my colleagues on the IAVCEI Committee, IAVCEI Commission Leaders, and Working Groups members, and others working in various capacities for their voluntary contributions during 2013 on behalf of IAVCEI. Their efforts on behalf of all IAVCEI members are unpaid and additional to their normal day jobs and family life.

Finally a joke to end the year

A cute, little, 5 year old girl walks into a pet shop. She looks up at the shop attendant with her innocent eyes and asks if she can buy a guinea pig. The shop attendant, thinks, "isn't that nice, she wants to buy a pet for herself", and then asks the little girl, "What colour would you like your pet guinea pig to be little girl? We have white, black, grey, brown and dappled coloured guinea pigs." The little girl looks up at the shop attendant with a mischievous smile, and

says "Well actually, I don't think my pet python snake cares what colour the guinea pig is!"

PRODUCT WARNING: *The above should be used with great care. Told in the presence of small children it may cause lasting psychological damage, for which the manufacturer takes no responsibility.*

Best wishes again for 2014.



Ray Cas,
President,
IAVCEI
Monash University and University of Tasmania, Australia.

Bulletin of Volcanology – Springer News

Letter from the editor of Bulletin of Volcanology

The Bulletin of Volcanology is IAVCEI's journal, governed by its Executive Committee, published by Springer, with an executive editor appointed by IAVCEI, and IAVCEI-approved editorial board. As the journal's current executive editor, I am happy to present the following Bulletin of Volcanology news for the IAVCEI newsletter.

The year 2013 was the first in which BV operated without any online backlog, with all papers being printed in the monthly issue following their publication online. It was also the Bulletin's first year with 12 issues, up from the previous 10 issues per year. January 2014 will be the Bulletin's first month as an online-only publication. Though many of us will mourn the passing of BV and other journals in printed form, readers' actions show an overwhelming preference for electronic delivery and storage.

The next questions for this and other long-established journals will centre on payment and subscription models related to open-access publishing and its role in overall delivery of results to the scientific community. In my experience, most submitted journal articles are substantially improved during the review and editing process. With so much information readily accessible to readers at any time on the web, the 'gatekeeper' role of good journals seems likely to become even more important for busy readers. This role includes not only, or even primarily, the rejection of unsuitable manuscripts, but also the instigation and assessment of manuscript revision in response to reviewer and editorial input. Reviewers and editors put in time and effort so that the papers you read have better focus, fewer errors and better analysis. The Bulletin's diverse editorial board means that submitted manuscripts are likely to be handled by an editor with considerable knowledge of the manuscript's topic, and of other scientists working in the field who can provide informed reviews.

Editor Ben van Wyk de Vries completed his editorial term with the Bulletin in 2013, and I am grateful for his dedicated work over many years. I am happy to report that Takeshi Nishimura and Michelle Coombs have joined the editorial board, and look forward to working with them. We also thank Takao Ohminato, who has retired from the Bulletin after an effective but relatively brief period as editor.

Some other changes are on the way for the Bulletin. Our instructions to authors have been integrated with Springer's general ones in an effort to streamline the submission process.

After consultation with IAVCEI and among members of the editorial board, instructions regarding article length will be modified with two aims. First, to clarify that the Bulletin is an appropriate publication outlet for all volcanology papers, including concisely presented but information-rich ones that exceed our length guidelines. Second, to reaffirm that the current guideline of 7000 words (inclusive) plus 15 tables+figures should be followed if practicable. Papers of this scale are easier to find reviewers for, move more quickly through review and editing, and once published are more likely to be read through in full, than are long non-review papers. So yes, the Bulletin will publish longer papers – but extra length requires additional time and effort from reviewers, editors, and ultimately readers – if you are an author, and if you can present your story within our guideline length it is well worth doing so.

As requested by some reviewers, Bulletin reviewers will soon be able to see not only their own review online at Editorial Manager, but also the other reviewer's review (anonymous if the review was anonymous) after his or her own review is submitted. Reviewers will also be able to see the editor's decision letter.

Some general statistics are given below for the past 2 years for the Bulletin. Overall time to final-version publication is about 6 months, with most papers moving more quickly. In most cases authors receive an editor's decision about 2 months after submission; in my experience as an author with papers submitted to various journals, this is a good result.

In closing, I'd like to thank IAVCEI members for their continued support of the Bulletin. If you have specific suggestions for improving the journal's performance, I'd be happy to hear them.

James White
Executive Editor
Bulletin of Volcanology

Summary of general statistics for Bulletin of Volcanology

Pages published in

2013 – 1604 pgs [includes some papers from final special issue/thematic set]
2012 – 2458 pgs [all backlogged papers cleared]
2011 – 1609 pgs [including 3 special issues]
2010 – 1257 pgs [including 1 special issue]

Submissions

2013 – 153
2012 – 160

Paper dispositions

2013 – Accept 103 / Reject 53 (includes “resubmit” decisions)
2012 – Accept 101 / Reject 46 (includes “resubmit” decisions)

[Note – in 2012, many papers accepted in 2011 were published]

Mean time from submission to first AE decision

2013 - 63 days
2012 – 76 days

Average days to Accept

2013 – 185 days [*I'm surprised by this increase, and will investigate the cause*]
2012 - 133 days

ADVANCES IN VOLCANOLOGY

Official IAVCEI Book Series by SPRINGER

During the IAVCEI Scientific Assembly in Kagoshima, Japan, new book proposals were discussed with potential book editors/authors and the publisher. It seems that the book series is now considered by many Authors as a potential publication of new advances in volcanology. The first volume of the book series on Volcanic Lakes is nearly completed, and now it is in the production state. If you have any plan to use the AiV book series to publish books that are more than a collection of technical papers, please consider to prepare a simple proposal and email it to the series editor.

Editorial Manager for *Advances in Volcanology* is now fully operational. Book chapters from books accepted to be included in the book series now can be uploaded through the Editorial Manager via the following link:

<http://www.editorialmanager.com/avol>

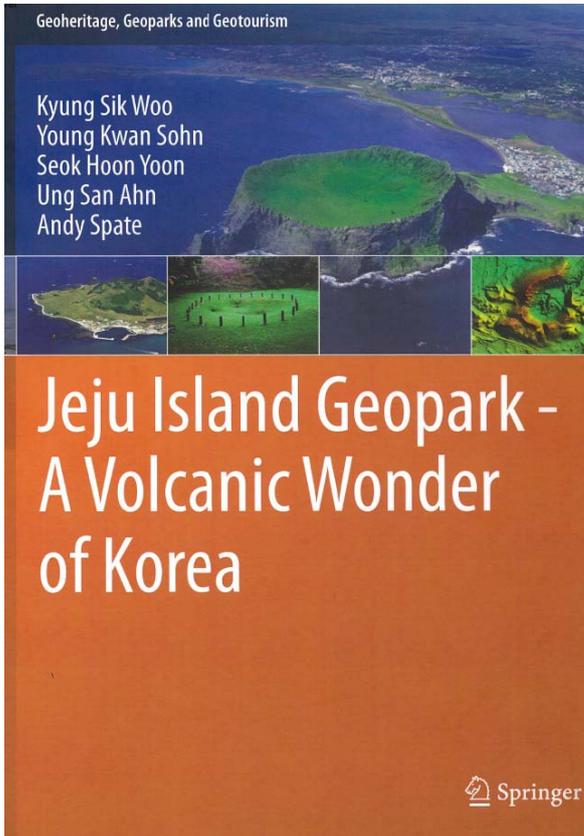
For further information or submission of book proposals please contact the Series Editor (Karoly Nemeth) on k.nemeth@massey.ac.nz

Geoheritage, Geoparks and Geotourism

New Book Series by SPRINGER

Geoheritage, Geoparks and Geotourism is a new book series published by Springer intend to provide scientifically correct but broad summary of geological sites with high geoheritage values in the world. In this new book series there will be several volumes that deal with volcanic regions in various parts of the globe. These volumes are may be in great interest for IAVCEI members. The first volume of the book series will take the reader to the volcanic geoheritage sites of Jeju Island, South Korea.

The first volume in the series on **Jeju Island Geopark-A Volcanic Wonder of Korea**, edited by *Kyung Sik Woo, Young Kwan Sohn, Seok Hoon Yoon, Ung San Ahn, Andy Spate*, was published in September this year.



A book review can be read about this book in the Bulletin of Volcanology.

The book series welcome contributions and proposals for new volumes dealing with volcanic regions and their geoheritage, geoconservation and geotouristic values. This book series could serve a major role to disseminate ideas of volcanism and volcanic hazard and therefore IAVCEI membership is encouraged to consider for potential future contributions.

**Italian Association for Volcanology (AIV)
2013 International School in Volcanology: The
Explosive Volcanism of Mafic-Alkaline Magmas**

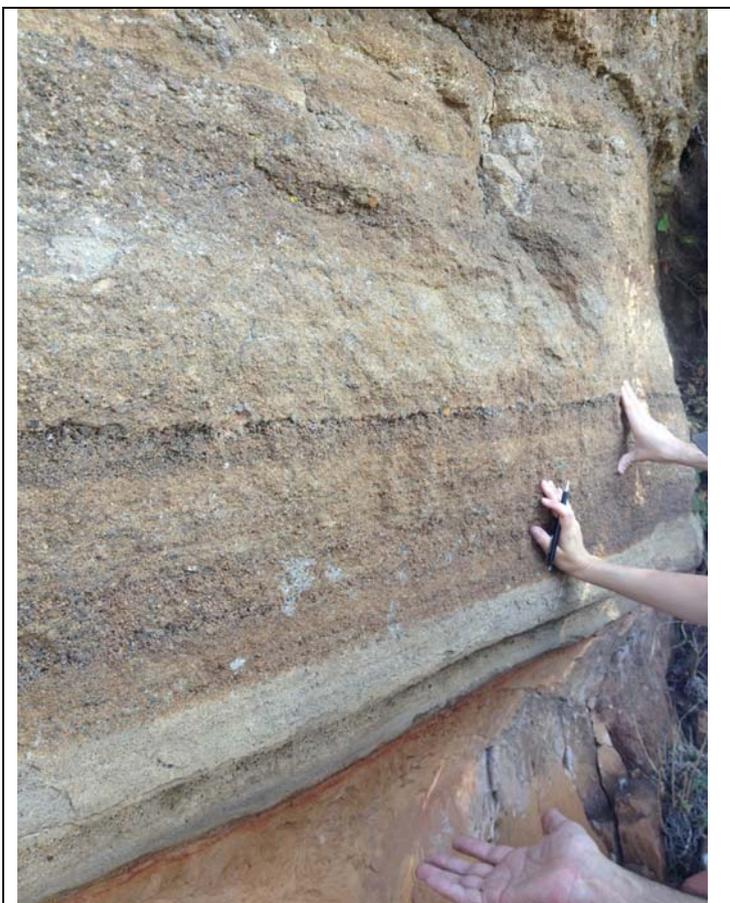
AIV hosted the 2013 International School of Volcanism in Frascati, Rome, from September 25th to 29th. The summer school focused on the most current understanding of explosive mafic-alkaline volcanism as well as the myriad of unresolved issues remaining in this field. The event was organized and led by Dr Guido Giordano and Dr Riccardo Avanzinelli, and supported with funding from IAVCEI. Nineteen postgraduate students and early career scientists attended from Canada, Costa Rica, Australia, Cameroon, USA, UK, Germany, France, Spain, Russia and Italy. The program consisted of two and a half days of presentations and discussions, as well as a day in the field looking

at the geology of the Colli Albani caldera system.



Guido Giordano explains the evolution of the Colli Albani Volcano.

The first day of presentations focused on deep magmatic processes, from sources to shallow processes. Riccardo Avanzinelli started the day with an introduction to the geodynamics of Italy and the range of Italian magma compositions from typical calc-alkaline arc rocks to intra-plate alkaline shoshonites and lamprophyres, highlighting some of the distinct geochemical signatures displayed by Italian magmatic rocks. Sandro Conticelli followed on from this, leading discussions on the roles of mantle source and assimilation-fractional crystallisation processes, specifically the debated role of carbonate assimilation. This topic was continued by Stefano Poli who presented experimental petrology results on the recycling of carbonates into the mantle. These talks highlighted the advances and challenges in understanding crustal components derived from mantle metasomatism versus crustal components derived from shallow crustal assimilation in alkaline magmatism.



Hands on learning. Paleosol, basal fall deposit, and overlying ignimbrite from one of the caldera-forming eruptions.

After long discussions over lunch, Martin Menzies started the afternoon session with a talk on tephra studies, and the wealth of information that can be derived from tiny glass shards using microanalytical techniques. Riccardo then followed with a presentation on the activity of Stromboli, linking mantle melting and eruption rates using U-series disequilibrium. Next came the poster session, which initiated many interesting discussions related to the days topics and broadened the discourse to sites and topics quite removed from the Italian volcanoes. Each participant was invited to present a poster on her/his work, and the variety of topics (from analytical techniques, to physical volcanology, to studies on specific volcanoes from around the world) highlighted the growing interest in alkaline-mafic systems. This informal session allowed participants to discuss their work and raise questions on the days' discussions over a beer or two with their peers and experts in the field.

The second day concentrated on the shallower processes operating in magmatic plumbing systems, from magma reservoirs to the surface. Kathy Cashman kicked off the day with a presentation on the eruption and storage of mafic magmas. Laura Poli and Claudia Romano took this forward with presentations on degassing, conduit flow and the rheology of explosive mafic magmas. These presentations led to interesting discussions on the mechanisms driving explosive basaltic eruptions over lunch. It seems that we have a lot to learn about what drives fragmentation and explosive eruption of these low viscosity magmas.



Albano maar crater lake.

The afternoon's presentations began with a geologic history of the Colli Albani caldera by Guido Giordano. Nobuo Geshi, from the Japan Geological Survey, then presented studies on the recent formation of the Miyakejima basaltic caldera, and other mafic calderas on the Izu-Bonin arc. This theme was continued by Raffaello Cioni, who talked about the incremental growth of the Bolsena caldera through intermediate to mafic volcanism. Roberto Scandone finished the day with a presentation on effusive-explosive transitions at Vesuvius and Stromboli.



The Fiumicino mud-volcano

Day 3 of the summer school was spent in the field looking at the products of the Colli Albani magmatic system. In the morning we went to a proximal locality on the topographic rim of the caldera, where we could clearly see the basal plinian fall deposit and the overlying ignimbrite, all containing low vesicularity scoria. We spent a fair amount of time here looking at the deposit and discussing possible mechanisms of emplacement and the processes that resulted in such a mafic magma erupting so explosively.

The next stop was at the Albano Maar crater lake. This interesting volcano has produced young base surge deposits and an historic lahar that destroyed parts of ancient Rome. The lake is the deepest in Italy, and accumulates CO₂ in a situation reminiscent of Lake Nyos in Cameroon. Some participants (and organizers) could not resist the temptation of testing the stability of the lake by diving in.

From here, we went to Fiumicino International Airport to look at the new mud volcano which opened up on August 24th. A second geyser opened up a month later. The vigorous gas emissions are essentially pure CO₂ and it was interesting to speculate on how long the gas and mud eruption might continue. It was fascinating to see and to relate the processes occurring right in front of us to the degassing discussions over the previous couple of days. After this we travelled to a couple of more distal deposits of the Colli Albani ignimbrite to compare with what we saw in the morning.



The group at the mud-volcano.

The final day of the summer school was spent back in Frascati with a morning of presentations focusing on the geophysical and geochemical signals of deep processes. Giovanni Chiodini opened the session with a talk on the fluxes and sources of non-volcanic CO₂ degassing in central Italy. This was followed by a presentation on seismic imaging of the Tyrrhenian-Apennine system presented by Claudio Chiarabba. Guido then closed the summer school with a talk on the geothermal potential of the Roman Magmatic Province.

All of the invited speakers gave excellent presentations and there was plenty of time for questions and discussions, if not following the talks, then over lunch and coffee breaks, and in the evenings over a beer or two. All the participants were encouraged to interact and learn about the complexities of explosive mafic volcanism. As became abundantly clear, decades of research on the Italian volcanoes have shaped our understanding of alkaline-mafic volcanism. Luckily, there are many unresolved issues in this fascinating field to keep the next generation busy.

[Lectures and posters pdfs can be downloaded at the AIV webpage <http://www.aivulc.it/> and then click on Area Downloads]

Julia Crummy and Maarten de Moor

REPORT to IAVCEI on the 2nd VOBP – Volcano Observatory Best Practices workshop “Communicating Hazards” Erice, Sicily, 2 – 6 November, 2013

This is an extract from a report that was sent to IAVCEI in acknowledgement of support provided for the organization of the 2nd VOBP workshop. That support was in the form of both endorsement and funds.

Scientific Report

Rationale for VOBP workshops

International sharing of experiences in order to identify and encourage best practices in disaster risk reduction is embodied in the Hyogo Framework for Action of the United Nations

International Strategy for Disaster Reduction (UNISDR). The VOBP workshop series is designed to provide an adequate venue for discussing the techniques and procedures for volcano disaster risk reduction by the actual practitioners. The synthesis of knowledge and experience from widely scattered observatories will serve to advance risk reduction practices much faster, as well as to develop a urgently needed network of consultation and assistance among the world's observatories.

Subject

“*Communicating Hazards*” was the subject and title for the 2nd VOBP workshop. Communication embraces many different aspects: what should be communicated, in what form, to whom, when, etc. Defining best practices for communicating hazards by volcano observatories implies therefore several different topics, some of which are briefly listed below:

- how observations are perceived in terms of their completeness and accuracy, and in general what's their informative content in terms of forecasts;
- how forecasts should be communicated, i.e., what's the usefulness of probabilistic evaluations and deterministic scenarios;
- what's the communication with media with respect to communication with decision-makers;
- how communication should be managed in light of clearly defined responsibilities of scientists and decision-makers;
- how effective communications should be organized with the public and a wide range of stakeholders potentially affected by volcanism;
- etc.

Volcano observatories located in different countries behave differently, as a consequence of different cultural setting and different legislation. The VOBP workshop on “Communicating Hazards” recognised such differences, and provided best practices that may be either adopted or just taken as an authoritative international reference for further developments.

Organization

The workshop has been organized as an activity of the Global Volcano Model (GVM) partnership in cooperation with INGV, USGS, NTU, IAVCEI and its WOVO Commission. The EU/FP7 projects VUELCO and NEMOH, and the NERC project STREVA, also sponsored and supported. A workshop website was designed: <http://istituto.ingv.it/1-ingv/convegna-e-seminari/archiviocongressi/convegna-2013/vobp2-workshop/view>

Steering Committee

Paolo Papale, John Eichelberger, Gill Jolly, Sue Loughlin, Charlie Mandeville

Attendance

Workshop attendance was limited to 80 people. Precedence was given to ensure participation of representatives from volcano observatories, especially when located in developing countries. A quote was reserved to PhD students and young scientists (less than 35 years). Participants included delegates from 21 volcano observatories, 20 other volcano research centers, and 3 civil protection organizations. A map of attendance is provided below.

Workshop set up

The workshop was organized over 3 full days plus 1 morning. Each full day was dedicated to a discussion pillar: Knowledge,

Responsibility, Practice, respectively (detailed below). The theme of each day was introduced by a first general presentation. Ample discussion followed each presentation or group of presentations, and an afternoon open poster session was included. Each late afternoon/evening was dedicated to open discussion and summary of the main outcomes of the day. The last morning summarized the overall outcomes of the meeting.

Annex 1. Map of workshop attendance.



- ★ 21 Volcano observatories
- ★ 20 other Volcano research centers
- ★ 3 civil protections

Discussed items and major results

Key topics of the meeting included:

Knowledge

- What are the relative values of different types of information (e.g., monitoring data, eruptive history, modelling, expert interpretation, probabilistic analysis, etc.) to observatories for use during crises, for long- and short-term hazard analysis, and for hazard mapping;

- How can the uncertainties associated with data, interpretations and models be accounted for when formulating forecasts and evaluating hazards;

- How does the level of knowledge and understanding that can be provided from observatories compare with the expectations of the decision-makers and the society; and how can observatories improve their capabilities to meet expectations.

Responsibility

- What are the respective roles and responsibilities of volcanologists and decision makers in volcanic hazard/risk management and during emergencies; how does this vary between different countries; and, is there a need and consensus for a VOBP/WOVO/IAVCEI recommendation;

- What is the assumption of responsibility by scientists and what are the legal implications when communicating forecasts to civil authorities and/or the media.

Practice

- What's the minimum/recommended information that should be communicated during phases of unrest, crisis, eruption, recovery; and, is there a need for providing different levels of information through different means/channels;

- What are the relative values of different types of information (e.g., monitoring data, eruptive history, modelling, expert interpretation, probabilistic analysis, etc.) when communicating with civil defence officials and with the media and the public; -

How uncertainties should be effectively communicated;

- How is the urgent dissemination of information required by the media and society best managed when a crisis is approaching or ongoing;

- Are there established communication protocols in the different countries, and how much do they differ; would it be beneficial to have an international protocol to guide establishment of a communication framework in different countries.

The discussion was extremely alive since the beginning and throughout all workshop days. At the end, probably everyone attending had the chance to comment, suggest, criticize, etc., and participation was very active from most people during all three workshop days. A number of people in charge of summarizing the essence of discussion for each day took several notes, that will be organized in a comprehensive report over a longer time. A **general statement**, reported above, was agreed upon during last morning dedicated to extract the major project outcomes. Such a statement is provided to all participants and sponsoring organizations with the invitation to include it in the respective websites.

Short statement agreed upon from all participants to the 2nd VOBP workshop on Communicating Hazards

To contribute to volcanic risk mitigation, Volcano Observatories provide knowledge of instrumental and visual observations at active volcanoes, interpretation of on-going volcanic processes, and volcanic hazard forecasts. Interpretations and forecasts are usually characterized by significant uncertainty, as a reflection of large uncertainties characterizing the behavior of even the most extensively monitored volcanoes. Accordingly, volcanic hazard forecasts should ideally be in the form of probability estimates.

To guarantee objectiveness in their evaluations, Observatories seek the best possible scientific knowledge, and a consensus about crisis situation among discipline experts; ensure that data and rationale for decisions are documented and available for scrutiny; and speak with a single/common voice.

To build up a common language and understanding, Observatories 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.

Venue

The Ettore Majorana Foundation and Centre for Scientific Culture of Erice (<http://www.csem.infn.it/>) is a world renowned scientific organization established in 1963 by the physicist Antonino Zichichi to offer scientists from all disciplines and from all parts of the world an ideal venue to rally around the banner of a science without secrets and without frontiers. The Centre is situated in the old pre-mediaeval city of Erice, 750 m above the Tyrrhenian Sea (Mt. Etna is visible in days with clear sky). Four restored monasteries provide an appropriate setting for intellectual endeavors. The ancient buildings and lecture halls are now named after great scientists including Enrico Fermi, Paul Dirac, Richard Feynman, and Victor Weisskopf. The Isidor I. Rabi Institute houses the Polo Sismico, the first worldwide Network of Seismological Detectors (1981), as well as living quarters for people attending sessions at the Centre.



Venue in Erice, Sicily (Italy)

**8th IAG International Conference on
Geomorphology – Paris, France
August 27th to 31st, 2013
Conference and Field Trip Report**

Date: August 27-31, 2013, Paris, France

Website: <http://www.geomorphology-iag-paris2013.com/>

The 8th IAG congress on geomorphology was held in Paris, France. Geomorphology is a dynamic science linking classical geological researches to the latest technology-driven works deal with surface processes on Earth and other Planets. Volcanic geomorphology in spite its long lasting tradition get recently more attention and gradually made its place among the very diverse subjects of geomorphology. As a reflection of this progress, the last IAG Geomorphology Congress which was held in Melbourne in 2009 a special issue was devoted for Volcanic Geomorphology in the most prestigious geomorphology journal, *Geomorphology*, which was published in 2012. The 8th IAG congress followed this tradition and thanks for the energetic personality of Prof Jean-Claude Thouret an entire scientific session was dedicated for volcanic geomorphology during this meeting in Paris.

The scientific session consisted of 14 oral presentations across a broad range of subjects from monogenetic volcanic landforms to composite volcano morphology including various volcanic processes responsible for large scale landscape modification. In addition the session emphasized methods using modeling and utilization of the latest techniques involving GIS applications.

The session has also 14 poster presentations. All together the number and quality of the presentations encouraged the session leaders to arrange and manage a new special issue on Volcanic Geomorphology for the journal *Geomorphology*.

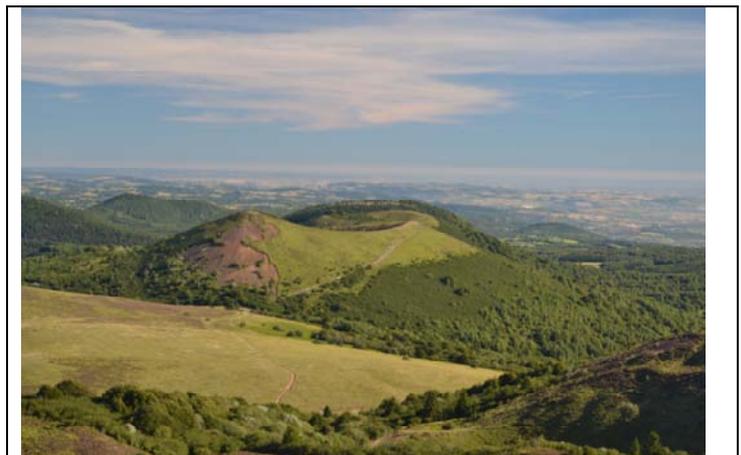
The Volcanic Geomorphology session was also supported by an interdisciplinary field trip to the central part of France to the Chaîne Des Puys volcanic region titled as “*VOLCANOES, BASINS AND CULTURAL HERITAGE OF THE AUVERGNE REGION*”. This field trip was a truly delight and provided a very balanced summary of the volcanism of the Auvergne and its consequences to landscape evolution of the region, and the link between cultural, and natural landscape of the most iconic region of France. The field trip was led by an excellent group of scientists led by J.-C. Thouret and M.-F. André, based in Clermont-Ferrand and Paris, and provided a unique opportunity for each participant

see the volcanic regions of Central France with a little bit broader view as a normal volcanic field trip would have offered it.

The complexity of the field trip reflected well about the level and diversity of the information the field trip leaders offered from river management, wet land ecology, salmon reintroduction to rivers, cultural landscape, historical site reconstruction, UNESCO World Heritage projects of the Chaîne Des Puys, volcanic debris avalanche formation, lava dome growth to understanding of monogenetic volcanism in intracontinental settings.



The iconic landmark of Puy de Dome in central France (Photo by K Nemeth)



One of many young and well preserved scoria cones of the Auvergne in central France (Photo by K Nemeth)

The field trip also provided an in depth sight to the process involved to develop the application of the region to be listed as an UNESCO World Heritage site.



A person work on paleomagnetism could just dream to have a photo with this iconic sign ... (Photo by K Nemeth)



Well-designed and scientifically correct information boards along the study path of the Lemptégy scoria cone geosite. More information about the site please read the following paper: *M. S. Petronis, A. Delcamp, B. van Wyk de Vries (2013) Magma emplacement into the Lemptégy scoria cone (Chaîne Des Puys, France) explored with structural, anisotropy of magnetic susceptibility, and Paleomagnetic data. Bull Volc 75: 753* (Photo by K Nemeth)



Benjamin van Wyk de Vries enthusiastic explanation of the Lemptégy scoria cone eruption was a delight for the field trip participants (Photo by K Nemeth)

Overall the field trip was a fantastic opportunity to all the participants wanted to see one of the most beautiful region of France and learn about its geoheritage and volcanology.



Good friend during the field trip in France, a good honest local wine ready to be consumed in a restaurant in the Lake Pavin maar lake shore (Photo by K Nemeth).



Field trip participants at the Lake Pavin maar lake (Photo by K Nemeth)

Dr Karoly Nemeth
Massey University

**IAVCEI 2015 GENERAL ASSEMBLY
AT THE 26TH IUGG GENERAL ASSEMBLY 2015**

Prague, Czech Republic

“Active and ancient volcanoes – helping to understand each other”

June 22 – July 2 2015

Web: <http://www.iugg2015prague.com/>

In the future issues of the IAVCEI News there will be a selection of articles about the conference venue, conference organization, scientific sessions and the host nation of the IUGG – IAVCEI 2015 meeting. Part of this series of articles we also will feature research projects, field locations, or research groups working in Central Europe to get an attention by the volcanologists community to help to decide to participate on the IUGG – IAVCEI 2015 meeting in Prague and join to one of the fieldtrips offered in the region. To facilitate this process we also encourage research groups from Central Europe to directly send articles to IAVCEI News.

Permo-Carboniferous volcanic successions of the northern Bohemia-Silesia-Lusatia (Czech Republic, Germany, Poland) and the VENTS Project

The nearest IAVCEI General Assembly will take place in 2015, in Prague, the Czech Republic, in the heart of the Variscan Bohemian Massif. Of the several field trips which are being planned for the Assembly, some would led to the Sudetes in

Lower Silesia (SW Poland), to the Krusne Hory / Erzgebirge along the Czech – German border, and into Saxony and Lusatia regions in SE Germany. Although erupting or, at least, dormant volcanoes can rather hardly be spotted in these parts of Europe, there may be related reasons to attend some of the trips, even for those who are more keen to work on active volcanoes and study ongoing volcanic processes. The volcanic specialties of the region are ancient volcano-sedimentary successions with associated deeper-level plutonic bodies, which provide a rich record of magmatism associated with changing geodynamic settings of the Bohemian Massif over Late Proterozoic and Phanerozoic times. Among these, there are prominent outcrops of Carboniferous and Permian, dominantly calc-alkaline rhyolites, andesites and related rocks (Figs. 1-4); this volcanic heritage of the Variscan epoch witnessed the transtensional collapse of the Variscan orogen, following the Palaeozoic convergence and collision of Gondwana and Laurussia continents. Various levels of former volcanic and magmatic systems, from lavas and tuffs interstratified with sedimentary rocks, through shallow subvolcanic zones dominated by sills, laccoliths and dykes, down to the deeper plutonic complexes where magmas were born and evolved in complex fractionation and mixing processes are well exposed. This creates opportunities for multidisciplinary studies integrating geological, volcanological, and petrological approaches and bridging various aspects of volcano-related research.



Fig. 1: Columnar joints and flow foliation in c. 293 Ma Wielislawka Rhyolite, the North-Sudetic Basin, SW Poland.



Fig. 2: Late Carboniferous / Early Permian trachyandesite laccolith (ta) in a succession of sedimentary rocks and rhyolitic tuffs (s, rt) inside a diatrema, the Intra-Sudetic Basin, SW Poland.

In the northern part of the Bohemian Massif the Late Palaeozoic volcanic complexes straddle the boundaries of the Czech Republic, Germany and Poland. Political circumstances of the second half of the XXth century in many cases hampered free international scientific collaboration; in consequence one may see geological structures terminating abruptly at political boundaries in several geological maps issued in previous years. Recognizing the potential of joint trans-boundary research, a group of earth scientists studying the Carboniferous-Permian volcanic rocks in SW Poland, SE Germany and northern Bohemia, arranged a workshop in 2006 in the town of Bolków (crowned with medieval castle built upon Cambrian metabasalts and adjacent to Permian rhyolites and ignimbrites) in the Polish Sudetes (historical region at the Czech/German/Polish boundaries). After a few days of field trips, presentations and discussions, the participants decided to initiate the VENTS Project (Fig. 5), as a platform for contacts, communication, collaboration, exchange of ideas and meetings of scientists sharing interest in the Late Palaeozoic volcanism in the Bohemian Massif and vicinity (<http://www.vents.ing.uni.wroc.pl/>). Following the Bolkow meeting, a series of field workshops has been organized: at Turnov in northern Bohemia (2007), at Freiberg in Saxony (2008) and recently at Teplice at the foot of the Erzgebirge range (2012). One meeting (in 2009) was also held in the Krakow region to the east, where the Permian volcanics emerge in front of the Carpathian nappes. The VENTS Project, initially scheduled for the period 2006-2012, now takes a second breath, as several joint studies are in progress. The research focus is currently on the Teplice-Altenberg Volcanic Complex (TAVC), the site of large-scale ignimbrite eruption in the Erzgebirge region across the Czech-German border, among others associated with important Sn and Li mineralisations; on the Rozmital Andesites, a succession of intermediate-composition tuffs and lavas postdating another regional ignimbrite in the Intra-Sudetic Basin, at the Czech-Polish boundary; and on the Wielisławka Rhyolites, an excellent example of shallow-level intrusion with spectacular columnar joints, cropping out in the North-Sudetic Basin.



Fig. 3: Examining Permian andesite tuffs overlain by lavas at Rozmital, the Intra-Sudetic Basin (the Czech side).



Fig. 4: Manuel Lapp examining coarsely porphyritic rhyolites with subhorizontal cooling columns belonging to a major conduit system of the TAVC rhyolites.

Recent work in these regions included also extensive SHRIMP dating of the volcanic rocks as well as petrological and geochemical studies. The year 2015 will be, hopefully, a good time for some regional summaries and an opportunity for discussions on a wider forum.

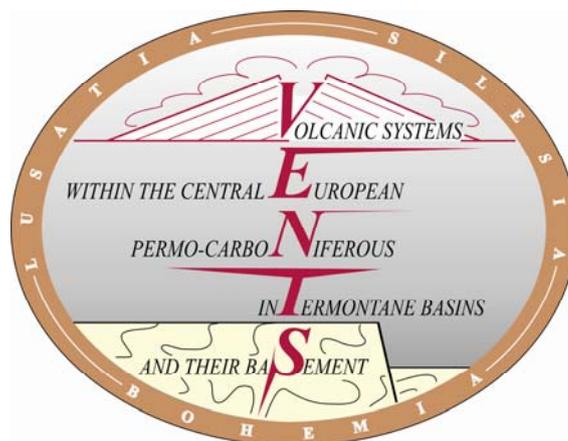


Fig. 5. The logo of the VENTS project.

Looking forward to see you in Prague!
Questions and Comments please contact any of the Project managers:

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5th International Students Geological Conference Budapest, Hungary 24-27 April 2014 2013

<http://www.isgc2014.elte.hu>

IAVCEI made a strategic move to support young scientists and scientific programs especially in scientific programs initiated, managed and primarily run by young scientist to promote volcanological researches. Such support is the key to provide a firm scientific background for young generations to pursue volcanological researches as well as to get familiar to the volcanic community. In this progress IAVCEI actively supports ideas and promotes activity in this front. In April 2014, young earth scientists will gather in eastern Central Europe to share ideas and expand horizons. IAVCEI is happy to support such gathering especially if there are large and strong volcanological aspects of the meeting in a region that is considered to be emerging in volcanic sciences such as the 5th International Students geological Conference, Budapest, April 2014. If you are young scientist and wish to have a fantastic time, please consider to attend on this meeting. IAVCEI also call ideas similar to this conference where IAVCEI can stand behind as a supporting organization.

The 5th ISGC will be held in Budapest (24th-27th April, 2014). This conference is now a well-known event for young geologists (mostly PhD and MSc students and young researchers) in Eastern-Central Europe, however participants from the US, South America or Russia, Japan are also expected. As you can see on our homepage ([isgc2014.elte.hu](http://www.isgc2014.elte.hu)), there we be organized plenty of oral and poster sessions.

For volcanologists the most recommended sessions are of:

- 1) "Mineralogy, Petrology, Geochemistry & Volcanology",
- 2) "Economic Geology and Mineral Resources",
- 3) "Quaternary Geology" and the
- 4) "Open Session".

Many workshops and fieldtrips will be organised, among them two are associated with volcanology:

- 1) "Epithermal system and ore potential of the Tokaj Mountains (NE Hungary)" and
- 2) „Miocene volcanism, landscape evolution and zeolite mineralization in the Visegrád Mts”.

A keynote talk of Professor Szabolcs Harangi will also concern with volcanology.

Members of the scientific board of the session MPG&V are:
Szabolcs Harangi, DSc, full professor, head of the Dept. of Petrology and Geochemistry, Eötvös University; head of the Volcanology Research Group of Hungarian Academy of Sciences and Eötvös University
Theodoros Ntaflos PhD, ao. Univ. prof., Dept. of Lithospheric Research, University of Vienna
Tivadar M. Tóth, DSc, full professor, head of the Dept. of Mineralogy, Geochemistry and Petrology, University of Szeged
Mihály Pósfai, DSc, corresponding member of the Hungarian Academy of Sciences, full professor, Dept. of Earth and Environmental Sciences, University of Pannonia

An IAVCEI support is a great help to organize the 5th ISGC. This

is a very good opportunity for young scientists to meet each other and talking about their latest results of research and -among other fields of science - to strengthening volcanology in Eastern-Central Europe.

The IAVCEI donation to organize the session: "Mineralogy, Petrology, Geochemistry & Volcanology" and the field trip of „Miocene volcanism, landscape evolution and zeolite mineralization in the Visegrád Mts”.

During the 5th ISGC IAVCEI will be promoted and the conference will facilitate to convince young volcanologists from the region to join to IAVCEI. The 5th ISGC could be viewed as a precursory event to the IAVCEI General Assembly, 2015 (Prague, Czech Republic) which will be heavily promoted during the 5th ISGC.

Hope to see you in Budapest ...!

Tamás Sági

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REPORT TO IAVCEI

2nd IUGG-WMO Workshop on Ash Dispersal Forecast and Civil Aviation

Geneva, Switzerland, 18-20 November 2013

<http://www.unige.ch/sciences/terre/mineral/CERG/Workshop2.html>

Summary: The 2nd IUGG-WMO workshop on Ash Dispersal Forecast and Civil Aviation was held under the sponsorship of the World Meteorological Organization (WMO), the University of Geneva, the International Union of Geodesy and Geophysics (IUGG), the International Association of Volcanology and Chemistry of the Earth's Interior (IAVCEI), the British Geological Survey (BGS) and the UK Met Office. Ninety-five participants from 18 countries representing various academic institutions, operational agencies (including all 9 VAACs) and stakeholders gathered at the Geneva Headquarters of the WMO (Geneva, Switzerland) from 18 to 20 November 2013, resulting in a total of 47 invited talks and 32 posters. This report summarizes the objectives of the workshop and its main conclusions.

Introduction: As a consequence of the severe disruption to air traffic generated by the 14 April 2010 Eyjafjallajökull eruption in Iceland the tephra-dispersal community had to revise monitoring and forecasting methodologies in order to provide a more robust and reliable response to the social needs. A new multidisciplinary scientific community joined for the 1st IUGG-WMO workshop on Ash dispersal Forecast and Civil Aviation (Geneva, 18-20 October 2010) to promote stronger interactions between the volcanological and the operational forecasting communities, and the resulting outcomes served as a road-map for research. During the last three years (2010-2013) a great deal of scientific progress has been made in the characterisation of volcanic eruptions and in ash dispersal modelling and forecasting as a result of increased multidisciplinary collaboration. A large number of projects and consortia have been funded worldwide that cover multiple aspects of ash dispersal, ranging from the expansion of remote sensing networks and capabilities for the characterization of the distal field to the real-time characterization of the source. However, recent volcanic crisis (i.e. Grímsvötn

2011, Iceland; Cordón-Caule 2011, Chile) demonstrated how some specific needs remained (e.g. accurate description of the source term) and proposed new challenges (e.g. resuspension of deposited volcanic ash) that motivated the organization of the 2nd workshop.

Objectives: The main objectives of the 2nd workshop were to discuss: 1) progress since 2010 and on-going projects; 2) operational response to recent eruptions: practice and challenges; 3) characterization of Eruption Source Parameters (ESP) and; 4) ash and gas dispersal modelling. Specific objectives included: i) to review and institutionalize the interaction between meteorological, atmospheric, volcanological, modelling and remote sensing communities, ii) to develop strategies for a closer working relationship and further collaboration between the aviation industry and the scientific community, iii) to document progress from the 1st IUGG-WMO workshop, iv) to identify best practice modelling strategies to support operational implementation and, v) to identify and develop concepts to address current challenges. These objectives were covered during three days of dedicated talks, posters, break-out sessions, and extensive plenary discussions (focusing on operational challenges, characterization of the source term and ash and gas dispersal modelling) in combination with a document compiled before the workshop gathering the opinions of the participants on the most pressing challenges in our communities and the efforts made across disciplines to overcome them.

Conclusions:

1. Current knowledge and capabilities. The research carried out by the communities represented at the 2013 workshop has been considerable and has provided some new methods and techniques to improve eruption onset detection, better constrain initial plume height, mass eruption rate and grain size distribution as well as provide improved observations of the downwind plume and clouds for comparison with the VATDM's. Improvements since 2010 have been done in: 1) characterization of ESP and cloud, including source plume modelling, proximal observations of ESPs, distal observations of ash clouds by satellites and in-situ using aircrafts, inverse modelling of source terms, re-suspension of ash and volcano observatory monitoring; 2) ash dispersal modelling, including model physics and model validation; 3) operational forecasting, including communication and collaboration, training, use of and access to observational data, modelling enhancements, understanding uncertainty, and new services and operational pull-through.

2. Challenges and recommendations. The breakout groups and plenary discussions held during the workshop defined some of the continuing and new research challenges that need to be approached. These include: 1) characterization of the observations and source term, including pre-eruptive ESP for scenario planning, measuring source terms at the vent, and distal cloud measurements; 2) ash dispersal modelling, including the improvement of quantification of ESP, model uncertainty, data assimilation, ensemble forecast, aggregation, and plume-atmosphere interaction; 3) operational forecasting, including use of and access to observational data, modelling enhancements, understanding of uncertainty and communication and collaboration.

3. Hazard communication and aviation sector. Several topics were identified as the main challenges for hazard communication

and for the aviation sector.

Outcomes: as a result of the Workshop, several documents are being compiled by the Organizing Committee with the collaboration of the participants and will be posted at the workshop webpage:

- Program and book of abstracts
- Consensual Document
- Other documents
 - o D1. List of participants
 - o D2. Data acquisition Table (update of the Table compiled during the 1st workshop)
 - o D3. Model document (update of the Model document compiled during the 1st workshop)
 - o D4. Table of on-going projects since 2010
 - o D5. Table of organizations
 - o D6. Table of on-line resources

A. Folch (arnau.folch@bsc.es),
IUGG-WMO liaison officer

Active Volcanism & Continental Rifting with special focus on the Kivu rift zone (AVCOR2013) - November 12-14, 2013 Hotel Serena, Gisenyi, Rwanda.



Introduction

The second Active Volcanism and Continental rifting (AVCOR-2013) workshop was held from November 12 to 14 in Gisenyi-Rubavu District, in the Western Province of Rwanda. It was co-organized by the Rwanda Energy and Water Sanitation Authority (EWSA), the Royal Museum for Central Africa (RMCA, Belgium), the National Museum of Natural History (NMNH, Luxembourg), and the Delegation of the European Union in Rwanda.

The conference focused on the Kivu rift area, which is one of the denser populated areas of Africa, facing large socio-economic development challenges.

The meeting fully encountered the expected two-folds objectives that were:

- Primarily, reviewing the current scientific knowledge about active volcanism and continental rifting by 1) gathering East African Rift (EAR) experts from various disciplines and 2) discussing the modern model(l)ing approaches and observational techniques, such as remote sensing, radar interferometry, GPS, geochemistry, etc.

- Secondly, bridging the gap between the scientific research community and the institutions concerned by geohazards (government, civil protections, NGO's, donors...) and therefore foster the dialog between these to worlds.

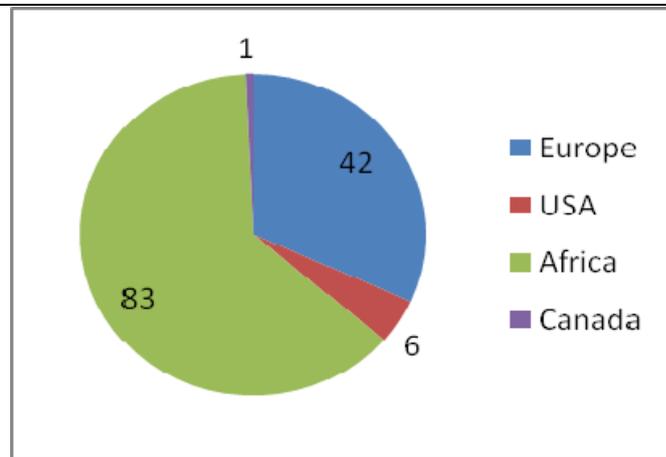
The workshop was followed by a 3-day training course on hazard assessment and decision making during volcanic crisis.



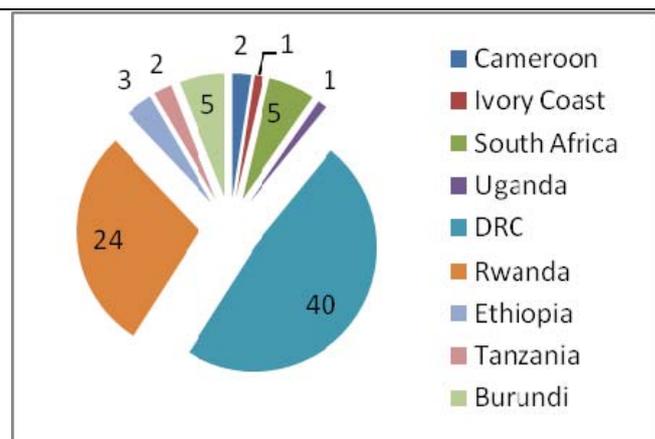
From left to right: Mr Prosper Mubera (Rw) – EWSA (Head of Communications), Mrs Caroline Michellier (Be) – RMCA (Org. Com.), Mr Benoît Smets (Lux.) – ECGS (Org. Com.), Dr Katcho Karume (DRC) – GVO (Dir. Gen., Sc./Org. Com.), Dr Nicolas d’Oreye (Lux.) – NMNH/ECGS (Sc./Org. Com.), Dr François Kervyn (Be) – RMCA (Sc./Org. Com.), Mrs Augusta Umutoni (Rw) – EWSA (Org. Com.), Mr Diego Zurdo (EU) – EU Delegation in Rwanda, Mr Marc Pecsteen (Be) – (Ambassador of Belgium), Mr Ntare Karitanyi (Rw) – EWSA (Dir. Gen.), Mr Joseph Makundi (DRC) – (Civil Protection of North Kivu)

Attendance

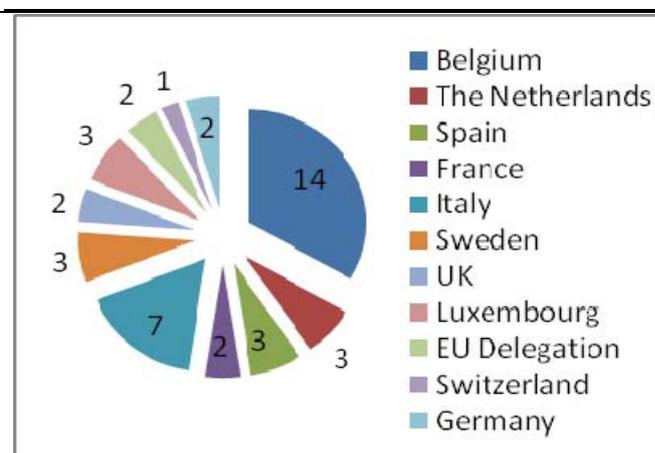
The meeting was attended by a total of 132 participants coming from Africa, Europe, and the United States. As expected, the meeting has recorded an important participation from Rwanda and the DRC. It is worth mentioning the large participation of the local institutions (50 participants), which demonstrates the geohazard’s concern in the region. International institutions were also significantly represented.



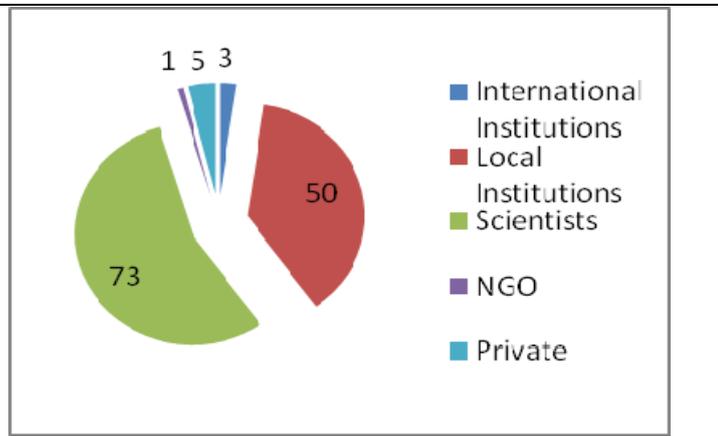
Distribution of participants by region of origin



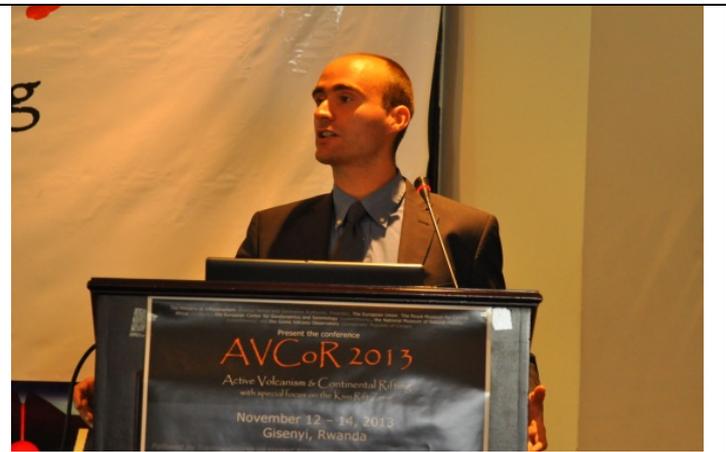
Distribution of African participants by countries



Distribution of European/American participants by countries



Distribution of participants by affiliation



Mr. Diego Zurdo represented the EU Head of the Delegation in Rwanda

Event overview

The opening ceremony:

AVCOR-2013 was officially opened by the Director General of EWSA, Mr. Ntare KARITANYI representing the Minister of State in charge of Energy and Water in the Ministry of Infrastructure. Mr. Diego Zurdo, representative of the EU Ambassador in Rwanda, gave a speech insisting on the need of addressing problems globally and on the need for all actors to collaborate more intensely. The Ambassador of Belgium, Mr. Marc Pecsteen, presented, on behalf of the Director General of the RMCA, the implication of that institution in the region and the different axes of intervention. He also stressed the link between geohazards and some of the domains where Belgium is committed, like the geothermal program.



Mr. Marc Pecsteen, Belgium Ambassador



Mr. Ntare Karitanyi, Director General of EWSA officially open the AVCOR-2013 Conference on Nov. 12th 2013.

5 scientific sessions, 50 talks, 8 keynote lectures, and 42 posters:

The conference was divided into five scientific sessions. Each of them started with a keynote lecture that provided a larger view on the context of the session. Posters, which were also orally presented, were displayed throughout the whole meeting. The contributions were balanced between African and European-American participants.

- Session 1** (4 talks / 2 posters) : Geodesy, ground deformation measurements and modeling of deformations associated to volcanic, tectonic or landslide activity.
KEYNOTE : D.S. Stamps, E. Calais, E. Saria, G. Iaffaldano. Present-day kinematics of the East African Rift
- Session 2** (13 talks / 11 posters): Geochemistry, volcanic plume, rock and water.
KEYNOTE : A. Umutoni et al.. Lake Kivu Monitoring Program
KEYNOTE : D. Tedesco, O. Vaselli, F. Tassi. Lake Kivu a unique lake : a resource or a treat for the local population ?
- Session 3** (6 talks / 9 posters) : Geomorphology, structural aspects.
KEYNOTE : D. Delvaux, B. Smets. Neotectonic setting of the Kivu rift segment within its intraplate Central African context
- Session 4** (7 talks / 12 posters): Seismology, tectonic activity and volcano related seismology.

KEYNOTE : A. Ayele. Recent seismicity of the Main Ethiopian and implication for earthquake and volcanic risks

• **Session 5** (9 talks / 6 posters): Volcano monitoring (remote sensing, ground based techniques...).

KEYNOTE : N. d'Oreye, B Smets. The importance of multidisciplinary volcano monitoring: insights from the Nyamulagira 2010 eruption (D.R. Congo)

• **Session 6** (11 talks / 2 posters): Risk, vulnerability and society issues.

KEYNOTE : P. Pigeon. How to understand and to reduce hazard-centered risk prevention policies limitations?

KEYNOTE : F. Kervyn, GORISK, GeoRisCA, Vi-X, RGL-GEORISK teams. Science for Society in Central Africa: the geohazards contribution

Special working group on vulnerability:

A special working group was organized in the evening of the 13th November, gathering scientists and the institutions representatives concerned by geohazards. The main objective was to discuss and better define the concept of vulnerability applied to the specific context of the Kivu? region. About 50 persons participated to this open discussion, contributing also to the identification of vulnerability indicators. This working group provided an interesting input for the vulnerability assessment targeted in the GeoRisCA project.



Splinter meetings :

Splinter meetings were organized on 14th November. Each meeting was initiated by a general question as a debated starter:

1. **Tectonic:**

What are the controlling mechanisms of the rifting and associated and induced phenomena (volcanisms, seismicity, mass movements, gas release...)?

2. **Monitoring:**

Relevant data: Which are they? How to acquire them? Sharing, optimization and exploitation matters.

3. **Hazards, vulnerability, and risks:**

Identification, assessment and communication to decision makers.

All the participants were invited to actively contribute to each discussion. The discussions main points were compiled into recommendations that were restituted at the closing ceremony.



Social event:

BELSPO offered an official lunch on 12th November to all the attendees of the opening ceremony.

Closing ceremony and restitution of recommendations:

The closing ceremony was introduced by the restitution of the recommendations compiled after the splinter meeting discussions. The closing speech was pronounced by Mrs. Augusta Umutohi, on behalf of the Director General of EWSA.

Outputs of the conference

Recommendations:

As an important output of the meeting, recommendations were formulated after the group discussions held during the splinter meetings. The recommendations are presented in the annex but the headlines are presented here:

From the discussions about the rifting mechanisms and associated phenomena, the following aspects have emerged as non-dissociable pillars or lines of actions that should be addressed: 1/ the main scientific questions, 2/ the knowledge management, and 3/ the capacity building. As a general recommendation, the progress of the understanding of rift mechanisms relies on an appropriate balance of these three non-dissociable aspects.

Concerning the monitoring, there is a consensus about the lack of data and the need for long baseline data to support studies and make steps towards early warning systems. Ground based systems, as well as space borne remote sensing data are claimed to reinforce the monitoring of the main geohazards (earthquakes, Lake Kivu stability, volcanism, mass movements, climate, etc.). Another important point highlighted by the participants is the need of collaboration. From the scientific point of view, collaboration involves interdisciplinarity, inter-country communication, and (meta)data exchange schemes. With an improving awareness and a monitoring of higher quality, communication towards the public must be improved.

From the risk and vulnerability discussion groups, an emerging recommendation converges towards a better involvement of the population in the mapping/monitoring processes (participative approach), as well as in the decision-making processes. Scientists

must communicate properly to the decision makers and with the greatest care to the public, hence avoiding rumors and misunderstandings. Public awareness should be improved with dedicated educational programs.

Networking:

AVCOR-2013 was a rare opportunity for such an audience to meet and exchange with a wide range of interlocutors about top priority scientific questions on active tectonic and volcanism interactions, associated geohazards, societal and institutional related concerns like awareness, prevention, management, and remediation. Informal agreements have been scheduled between different participating representatives of institutions who identified potentially shared interests. Participant's feedback was unanimously positive and a request for organizing further AVCOR meetings was clearly formulated.

Post conference training course

The conference was followed by a training course organized by a team from the Institute of Earth Sciences *Jaume Almera* (CSIC; Spain). Dr. Joan Marti, Rosa Sobradelo and Stefania Bartolini have given a course "e-tools designed to long and short term hazard assessment and decision making during volcanic crisis".



Twenty eight selected participants from the attendees of the conference were trained on a number of e-tools designed to long and short term hazard assessment and decision making during volcanic crisis. The tools included:

VORIS (VOLcanic Risk Information System): it is a GIS-based tool for volcanic hazard assessment. Its main objective is to provide the user with tools required for generating volcanic risk scenarios and hazard maps for different volcanic hazards, based on numerical simulations of those hazards.

HASSET: Event tree structures are part of the most useful and necessary tools in modern volcanology to assess the probabilities of occurrence of possible volcanic scenarios and their potential impacts on urbanized areas. HASSET, a Hazard Assessment Event Tree probability tool is built to estimate these probabilities and to assess the most relevant sources of uncertainty from the corresponding volcanic system.

Decision Model: Understanding the potential evolution of a volcanic crisis is crucial to improve the design of effective mitigation strategies. This is especially the case for volcanoes of

densely-populated regions, where inappropriate decisions may trigger widespread loss of life, economic disruption and public distress. An objective real-time methodology was presented to help evaluate the evolution of an emergency and to assess the risk at each stage of the decision process, in order to assist decision making with the implementation of mitigation actions.

Pan-American Advanced Studies Institute: Magma-Tectonic Interactions in the Americas, León, Nicaragua, 5-17 May 2013 Conference Report

Subduction zones produce the largest magnitude earthquakes and magmatism in close proximity. Links between earthquakes and volcanism have been studied, but the triggering mechanisms and processes remain elusive. Our understanding of how volcanoes respond to earthquakes, both near and distant, is still rudimentary. Likewise, the role that active volcanoes play upon adjacent fault zones to change stress distributions and trigger earthquake activity is also mysterious and poorly documented. Nevertheless, our increasing comprehension of detailed subduction tectonics is revealing that local zones of extensional stress in the overriding plate provide pathways for magma and fluid circulation. And there is increasing evidence that adjacent volcanoes and fault zones may be sensitive recorders of each others' activity, as revealed by subtle changes in parameters such as micro-earthquakes, frequency content on spectrograms, and fluid movements in the crust. On 5 September 2012, a M7.6 subduction earthquake, located 12 km offshore from the Nicoya Peninsula, Costa Rica, was immediately followed by a spectacular array of tectonic and volcanic activity throughout the Central American Volcanic Arc. This triggered behavior demonstrates that such events are capable of inducing a wide range of responses in a regional context.

To address these issues, a group of scientists assembled for a Pan-American Advanced Studies Institute (PASI) on Magma-Tectonic Interactions in the Americas, held 5-17 May 2013 in León, Nicaragua. Participants included researchers, postdoctoral fellows, and graduate students from every country in the Americas with active volcanoes and active tectonics, as well as one participant from Iceland. The workshop was designed to be interdisciplinary in nature, with lectures on theory, hands-on practical sessions, and field excursions. Participants were given opportunities to collect and analyze their own data during the PASI. The participants presented posters during informal evening sessions, in order to share their current research and exchange ideas with the group. A series of open discussion sessions were held at specific intervals during the workshop, culminating with a series of breakout sessions at the end to make specific recommendations for future steps forward.



Participants at León Viejo, with Momotombo volcano and Lake Managua behind. Photo taken by Gregor Lucic, McGill University

The first day of the workshop was a fieldtrip to introduce participants to the volcanoes and tectonics of the Nicaraguan portion of the Central American volcanic arc system. We first visited Apoyo caldera, which erupted large volumes of dacite magma about 24,000 years ago, and is cut by arc-normal faults that accommodate northwest-directed forearc motion. We then ventured to Masaya caldera, a basaltic system adjacent to Apoyo, which has experienced violent caldera-forming eruptions during the past 6,000 years and is currently characterized by degassing and tremor from the central pit crater complex. Our third stop was at the Tiscapa maar volcano in the capital city of Managua (population ~1.2 million). This city is particularly vulnerable to shallow upper plate earthquakes in a transtensional zone (e.g., the 1931 and 1972 earthquakes that destroyed the city and killed > 2,500 and >11,000 people, respectively), which also facilitates the rise of mafic magmas, resulting in monogenetic volcanism. We then drove northwestward, passing the dacitic Chiltepe-Apoyeque volcanic complex, which has had a number of large explosive eruptions in the past 20,000 years. Since this complex is close to Managua, future eruptions pose an additional threat to the city. We ended the field excursion at León Viejo, which was once the capital of Nicaragua, but is now an archeological site. The city was abandoned in the early 17th century after a series of earthquakes in the area and eruptions from nearby Momotombo volcano. The fieldtrip amply demonstrated the interplay of tectonics and volcanism in this part of the Nicaraguan arc, as well as the impact upon past and present human activity.

The next day participants listened to a series of overview talks on the links between volcanism, magmatism, tectonics, and earthquakes. The following days were spent on a blend of theory and practical exercises on the use of the Global Positioning System (GPS) applied to arc tectonics and volcanism, low-frequency and high-frequency seismicity, petrology and melt inclusion applications, and volcanic gas studies with focus on spectroscopic techniques and isotopic signatures of volcanic gases. The workshop philosophy was highly interdisciplinary, allowing participants to venture beyond their scientific comfort zones to learn about cutting edge approaches and techniques in a hands-on fashion. As a result, all participants were able to both appreciate and use integrated datasets during the workshop for a fuller understanding of volcano-tectonic interactions.

We also spent two days during the workshop conducting fieldwork at Cerro Negro volcano near León. This basaltic volcano has erupted repeatedly and violently since 1850, commonly showering ash on León and nearby communities. The volcano has strong tectonic control manifested by vent alignments, and its eruptions can be closely preceded and followed by tectonic earthquakes. The first fieldwork day comprised an overview of the volcano as well as demonstrating seismic and GPS methodologies. The second fieldwork day focused on volcanic gases including fumarole sampling, diffusive flux measurements, and ground-based spectroscopic remote sensing. Participants then spent the following day analyzing the observations and information they had collected on the volcano. A primary goal of these field campaigns was to show participants how to collect a wide variety of data in the field, and then process them rapidly afterwards. A second objective was to demonstrate the value of synthesizing and integrating the different datasets for a broader understanding of a volcanic system.



Participants examining geology and degassing at the active Santiago crater of Masaya volcano. Photo by Gregor Lucic.

We used the last day of the workshop to organize a series of breakout sessions in which participants targeted key goals and projects for future collaborative work. Given the remarkable scientific and geographical diversity of the group, we realized that we were in an unusual position to make some important advances and contributions to our understanding of volcano-tectonic interactions. The main foci which were identified are as follows:

- We will plan for the next eruption of Cerro Negro volcano. In a sense, Cerro Negro can be considered as another “Parkfield-type” experiment; since the likelihood of an eruption is very high in the next 5-10 years, we agreed that intensive, integrative studies and monitoring of this remarkable volcano should begin immediately. Cerro Negro’s eruptive activity appears to be coupled with local and regional tectonics, so a better understanding of the feedbacks between the volcano’s activity and tectonic activity is clearly needed. Furthermore, the very short warning times prior to an eruption are problematic from both a scientific and a societal viewpoint. Participants highlighted key questions including characterizing the source, storage, and transport of magma, identifying subtle precursory signals prior to an eruption, and forecasting the specific site of the eruption.
- The 5 September 2012 Nicoya, Costa Rica earthquake (M7.6) appeared to trigger multiple fault systems and volcanoes throughout Central America. By contrast, the 27 August 2012 El Salvador earthquake (M7.4), which occurred only several days earlier, did not result in significant triggered activity. This difference highlights the variable role such earthquakes play in triggering other phenomena. The participants realized that we

have a superb opportunity to carefully document the events of September 2012. These data will yield significant insight into both triggering processes and criteria, which can then be used to identify volcanoes and fault systems that may be in a “critical” state, that is, a regime that has an elevated probability of triggered activity, such as an eruption, increased earthquake activity, and/or enhanced degassing.

- Central American volcanoes seem to show little or no deformation. Yet studies of degassing behavior indicate that endogenous growth of volcanoes is an important process. How can we reconcile this apparent paradox? We need to investigate recharge into magmatic systems, including magma migration and multi-level storage processes. How might magma recharge events be linked to changes in the local stress field? A related issue is that certain volcanoes exhibit extreme restlessness (e.g., Telica in Nicaragua, Turrialba in Costa Rica, and Nevado del Ruiz in Colombia) but either do not erupt or erupt sporadically. Understanding this enigmatic behavior is essential for monitoring purposes and forecasting future activity.

- Capacity building is a very important component from several viewpoints. Young scientists from developed and developing countries alike have good integrative skills, which are ideal for volcano-tectonic research. Large and varied datasets are now available to be mined and exploited, and young scientists have the ability to tap such resources. As stated earlier, a main goal of the PASI was to introduce participants to the many different datasets and scientific tools that are currently available. Hence the participants are in an excellent position to conduct integrative and collaborative research on volcano-tectonic interactions.

- It was also proposed that a new group of Latin American “Decade Volcanoes” be identified that are worthy of intensive, integrated studies over the next 10 years. We liked the idea of setting specific time windows to facilitate a group of researchers converging on targeted volcanoes in order to make an array of simultaneous measurements, with further studies and synthesis during the following years.

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Volcanic Geoheritage Reports

Kemenes Volcano Park - Hungary

In the future we wish to have reports on works published in IAVCEI News about **geoeducation, outreach programs and geoconservation projects** across the globe. So, if you have anything you wish to share with the IAVCEI Community, please don’t hesitate to send your report in to one of the next issues of IAVCEI News.

Please also know that the journal **Geoheritage (Springer)** now listed on Thomson Reuters Web of Sciences database and its articles can be access through Web of Sciences. Articles deal with volcanic geoheritage are encouraged now to be submitted to this Journal.

The visitor center of Kemenes Volcano Park, located in the small rural town of Celldömök in Hungary, was opened on Earth Day, 22 April 2013. Being the first permanent popular-scientific attraction in Eastern Central Europe devoted purely to volcanoes, its main purpose was to give an up-to-date and attractive overview on volcanology. Since the visitor center lays only 200 km west of Budapest and 150 km far from Vienna and Bratislava – capitals of Hungary, Austria and Slovakia, respectively – the location yields a fantastic opportunity to attract interested people or those simply spending their holidays around..



Visitor center of the Kemenes Volcano Park in Hungary with an unusual but impressive futuristic architecture in front of the Sag-hegy, a Pliocene monogenetic volcano (Photo by D Karatson).

I was involved in this European Union-funded project when the building of the visitor center had already been erected. The iconic building was realised following a national architectural contest announced by the Celldömök City Council in 2009. It was the Földes Architects who won entry from as many as 44 submitted projects. The site was chosen near the town, at the foot of Ság Hill, a 5 million year-old basaltic volcano quarried till the 1950’s. As the architects declare, the concept of the building is that “the raw materials, the homogeneous grey of the concrete, the lava-inspired colour of the corten steel, and the flue-like arrangement of the space, deliver the spirit and essence of a volcano”. To give enough space for the installations, a number of steel “match boxes” puncture the cube-shaped, five-storey building, forming self-contained screening rooms and exhibition spaces. The “volcano house” was selected among the top 10 buildings in Hungary in 2013.



Interesting arrangement of information tablets on volcanoes across the globe (Photo by D Karatson)

I was highly impressed by such a concept at first sight. Getting acquainted with the interior of the building, one can pass below red cubes, grey, rough walls and bridges, which in one hand enables the visitor to feel the impressive power of nature, and on the other hand to remember the industrial past of the region conserved in the nearby basalt quarry. My scientific concept, that is, presenting the state-of-art of volcanological knowledge in such a challenging building, was twofold. First, I wanted to meet the highest scientific standard in volcanology – from theory to practice, from materials to forms, from the Earth's giant forces to the benefits that volcanoes provide to mankind. The second main goal was to target the largest possible audience, from children to retired people, from students to scientists, presented in English and German language in addition to Hungarian. Given the wide experience of the curator colleagues, namely the Narmer Architecture Studio who was charged to realize the plans, an extraordinarily interactive exhibition, addressing almost all senses, has been installed, and the condensed information has been presented in an elegant style with high artistic value.

The **Exploration Room** offers tangible experience for both young and old. In addition to volcanoes as expedition targets, including an ongoing Hungarian Ojos del Salado high-altitude expedition studying climatological changes, interactive models of explosive and geyser eruptions as well as earthquake simulators can be seen here. Children can put on a volcanologist suit for lava sampling with gloves and helmet, and measure the difference between the weight of same-sized lava rock, scoria and pumice. The room can be used – and have been used many times by now – as a classroom equipped with a large screen.



Young generations get familiarized by volcanism in the education centre (Photo by D Karatson)

The **Hall of the Earth's Fire** introduces the processes occurring in the interior of Earth, the building materials of volcanoes, as well as the typical shapes that volcanoes may take. The visitor can get acquainted with the basics of plate tectonics, discover the microscopic world of rock-forming minerals by looking into small holes hiding crystals' photomicrographs, and get information on fundamental igneous rock types including juvenile clasts as well as world's famous columnar basalts. Elementary volcanic landforms such as scoria cone, composite volcano, fissure vent etc. can be studied on scale models. The 2011 geological map of Etna, draped over a three-dimensional maquette of Etna and surrounded by pictures and movie clips on selected eruptions, is seen as in the centre of the hall.



Etna in a 3D model attracts young students (Photo by D Karatson)

The **Room of the Universe**, a dark and mysterious cabin with spectacular backlight graphics, takes us to the far-away planets and moons of Solar System, especially Mars, Venus and the Jupiter-moon Io. In addition to two large, featured maps of Mars and Venus, detailed information is available on radar mosaics and digital elevation maps of selected landform types. Moreover, in the middle of the room, interactive space journeys to volcanoes at the most interesting celestial bodies as well as Earth's Moon can be simulated. Last but not least, Io's rotating globe depicts the surface of the volcanically most active body of Solar System.



Older generations also interested in exploring volcanism across the Solar System (Photo by D Karatson)

In the **Simulation Room** the visitor learns about different lava surfaces from readily flowing basalt to highly viscous obsidian flow. Children can touch and even step over pahoehoe and aa lava surface to feel the difference. On large interactive screens, lava flows and explosive eruptions as well as erosive processes acting on volcanoes can be simulated by high-tech computer animations.



Exciting to dress to be ready to collect lava samples ... (Photo by D Karatson)

In the **Volcano Theatre** the standard types of effusive and explosive eruptions, showing details of famous volcanic catastrophes, are introduced in a spectacular 20 min-long film. In areas between the latter halls additional information tells about the devastating volcanic eruptions (“cold” and “hot” death, i.e. lahars and pyroclastic flows) as opposed by the building forces of volcanoes (geothermal energy, spas, mineral water, fertile soil and building stones). Moreover, using touch screens, the visitor can get acquainted with the life and work of renowned volcanologists from all over the world.

Finally, in the **Room of the Volcanoes of the Carpathian Basin**, one peeps into the astonishingly colourful volcanic activities of the Carpatho-Pannonian Region that came to an end only less than 30 thousand years ago. As a main attraction in the centre of the room, an animation of the geographical setting and main tectonic-geologic units, projected over a terrain maquette of the Carpathian Basin, guides through earth history in a 5 min-long clip. Selected volcanic areas of the region, including deeply eroded but still preserved Miocene volcanoes around the Danube Bend as well as Plio-Pleistocene alkali basalt buttes and maars

scattered in the basin, are displayed in the room, along with info on contributing geologists since the 19-20th centuries. An attached cabin designed for book reading offers a set of “classical” literature on volcanology (e.g. Volcanic Successions, Vulcanismus, Volcanoes—a Planetary Perspective, and the “Red Bible” of Mount Etna).



Volcanic regions of the Carpathian- Pannonian Region in Central Europe on display (Photo by David Karatson).

On the same floor, **Ság Hill Room** is a small room ending the exhibition. As a last stop of the tour, after having learned everything about volcanoes, one may have a rest by the jaw-dropping view of Ság Hill which opens up in front of the visitors... besides a nice collection of local wines around.

Helped by a number of volcanologist experts, hereby I wish to thank many Hungarian contributors and those from abroad, among others Augusto Neri, Massimiliano Favalli, Alessandro Fornaciai, Stefano Branca, Gerhard Wörner, Ralf Gertisser, and Hugh Tuffen. On behalf of them and all other colleagues participated, I expect the readers of IAVCEI News to take a visit soon to this new volcanological attraction of Hungary.

David Karatson
Eötvös University, Budapest

The impressive visitor center of Kemeš Volcano Park is much more than a volcano museum. It is a journey that takes you inside every relevant aspect concerning volcanoes, treated at a highly scientific level, yet in simple and clear language. Inside the building, the shape and colors which aim at reminding a volcano, visitors pass through the multi-functional exploration room, the

hall of Earth's fire where a 3D model of Etna yields a fantastic view, the magnificent room of the Solar System, the simulation room where visitors can witness the hazardous volcanic processes simulated by high-tech computer. The journey into the destructive power of volcanoes continues in the volcano theater where a spectacular film about devastating eruptions is continuously running. The journey takes an end in a room dedicated to the volcanoes of the Carpathian Basin and in the Ság Hill Room where the visitor can enjoy the close view of a Pliocene basalt volcano.

As a researcher, in volcano modelling, the most relevant aspects I found at Kemeses Volcano Park visitor center are the completeness of the topics covered (which span from the simulation of volcanic processes to volcanic hazard, from field analysis to the origin and nature of volcanoes) as well as their high scientific level, resulting from the fruitful collaboration between the volcanologist expert and a number of eminent European scientists in volcanology. As a whole, Kemeses Volcano Park allows both children and adult visitors to learn about volcanoes in an entertaining way, planting the seeds for a new generation of Hungarian volcanologists.

Massimiliano Favalli
INGV Pisa, Italy

The Kemeses Volcano Park in Hungary: from the original concept to the realization

At the end of 2009, an European Union (EU)-sceptic group in the U.K. published a list summarizing the freakiest projects in Europe that was funded by the EU and what could be considered just a waste of money. In this list, one could find the project of Kemeses Volcano Park in Hungary saying that it is odd establishing a volcano park in an area, where there is no active volcano, but only a flat plain with a few mounds, remnants of the past volcanic activity. Since I was who put forward the idea of the Kemeses Volcano Park, I immediately contacted the chief of the organization and explained what is behind this proposal and why this project could have a benefit also to the local economy. After a short e-mail conversation I could convince this man and the Kemeses Volcano Park project was removed from the disgrace list. Nevertheless, I knew that the volcano park idea was a high-risk thought, since geology is a poorly understood and poorly integrated field of science in society and therefore it is often difficult to explain what is the benefit of it and how this can be used to help people, how this can be used to promote tourism, among others.

The idea to establish a volcano park goes back to the early 1990's, when having an inspiration from the International Volcanological Congress held in Mainz, Germany, I started volcanological work in Hungary. Using the freshly published terminology and field work techniques, I supervised MSc students from the Eötvös University, Budapest to reconstruct the development of the 3-8 Ma basaltic volcanoes in the western part of the Pannonian Basin, Hungary. Soon, we could achieve notable results. Among them, the recognition of a new maar-type development in Tihany by Károly Németh and his co-workers is a well cited paper in the *Journal of Volcanology and Geothermal Research* (JVGR 111(1-4): 111-135). Another basaltic volcano, the 5 Ma Ság hill provided an exceptional good opportunity to have an insight into the structure of a basaltic volcano and reveal the complex volcanic

evolution with initial phreatomagmatic eruptions followed by strombolian and hawaiian volcanic activity and formation of a lava lake. So far, more than a dozen high quality papers have been published on the basaltic volcanoes of the Carpathian-Pannonian region making this area as a kind of natural laboratory of basaltic volcanism. The success of the Second International Maar Conference in Hungary in 2004 corroborated the international recognition. Meanwhile, a new volcanological school was formed at the Eötvös University, the root of the present MTA-ELTE Volcanology Research Group, which is funded by the Hungarian Academy of Science for 2013-2018. These early and our later volcano-petrologic studies as well as the further works by our colleagues in Hungary and the surrounding countries have made it clear that the wide range of volcanic activity in the Carpathian-Pannonian region for the last 20 Ma has left a treasury of volcanic features what is worth showing to the public. I thought that the stories hidden in this volcanic heritage is so exciting that they have to be explained particularly to the local people who could be proud of the natural wonder in their backyard. I had no doubt that a volcano park in this area has relevance and this could help tourism and as a consequence it could promote economic improvement. Yes, this was an ambitious plan in our country, but I knew the successful example of the Vulkaneifel in Germany and I had a great inspiring experience in Vulcania near Clermont-Ferrand in France.



Perfectly exposed pyroclastic successions of the Ság-hegy phreatomagmatic volcano, part of the open air exposition sites of the Kemeses Volcano Park in western Hungary (Photo by Sz Harangi)

Luckily, the advent of the EU-based funding provided a good opportunity to realize this dream and I could convince the Mayor of the local town at Ság hill and the Head of the National Park that they should step forward and using the volcano park idea they should submit the proposal. This was successful and after a careful preparatory work it was a great feeling taking part in the signing ceremony that launched the realization part of the project in April, 2010, just when the most violent phase of the Eyjafjallajökull eruption started. The project involved two integrated parts. A newly built Volcano House at the foot of Ság hill was planned to host an interactive exhibition with many novel attractions with the aim to introduce people into the wonderful and often frightful world of volcanoes. The second part was equally important and involved a volcano path with explanation panels through the inner part of the Ság hill, where the remnants of the cliffs could tell the colourful story about the formation of the basaltic volcano. It comprised also an open-air 'volcano playground' with interactive tools just next to the newly renovated

Ság Museum. Our intention was to guide the visitors from the Volcano House right into the heart of the ancient volcano and vice versa. Nevertheless, the main challenge of this project was the build-up of the Volcano House, the visitor centre of the volcano park and the realization of the exhibition.



Explanation boards in the open-air study path at Sag hill (Photo by Sz Harangi)

The concept of the exhibition in the Volcano House was to help the visitors to be touched by the spirit of natural wonders, particularly by the volcanic phenomena. We wanted to show how volcanoes work, how volcanism form our planet and particularly how significant role it had in the evolution of the Carpathian-Pannonian region and how volcanic eruptions influence society. As in science, we designed a virtual path from the source to the surface. Get an experience, live through the melt generation process in the mantle, observe closely what is going on in a magma chamber just before the eruption, get a feeling when earthquake strikes the ground and take part in the mysterious journey into the upper mantle and go back with the magma with an awesome eruption. Volcanoes and volcanic eruptions give not only a spectacular beauty, but people have to know more also about their destructive power. We planned a virtual visit to Plymouth in Montserrat, a town what was destroyed by the eruption of the Soufrière Hills in 1997. Once it was a paradise and now abandoned ruins everywhere. How could this happen? People have to know that many such “Pompeji- and Plymouth-cases” occurred even during the last centuries. They have to know about St. Pierre, Armero, Parícutin and San Juan Parangaricutiro, among others! Take this experience to home, think about and come back again with your friends; that were our aim with the exhibition.

The first part of the project, i.e. the open-air attractions with the Ság Museum was opened in 2012. However, just at the end of the realization work, the town council along with the architect group changed the original concept and they wanted a different style of exhibition in the Volcano House. Involvement of Dávid Karátson in this new realization stage guaranteed however, that the strict scientific control could remain. Although he designed a different implementation, the original aim, i.e. providing a notable introduction into the world of volcanoes and create an exhibition centre unique in this region was achieved. The Volcano House, the visitor centre of the Kemeses Volcano Park was opened in April 2013. I hope that this could indeed help the local economy and promote volcano tourism in this region along with the new geoparks in Hungary, such as the nearby Bakony-Balaton Geopark and the Novohrad-Nógrád Geopark, both basically constructed on the local volcanic heritage. I kindly invite the IAVCEI community and everybody to visit this region, discover the natural wonders and of course the volcanological heritage of

this area and have an experience in the Kemeses Volcano Park. I am indebted Károly Németh who offered this opportunity to share the concept of the Kemeses Volcano Park in Hungary.\



Old quarry buildings used for educational purposes to provide information on Plio- Pleistocene basaltic volcanism in western Hungary from a global perspective (Photo: Sz Harangi)

Please note that a fieldtrip is planned adjacent to the IAVCEI 2015 (Prague) meeting to visit the Plio-Pleistocene monogenetic volcanic fields in western Hungary, including Sag hill.

Some selected references to the volcanic geology of Sag hill and other monogenetic volcanic fields in western Hungary.

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FUTURE EVENTS for IAVCEI member's interest

21st General Meeting of the International Mineralogical Association (IMA2014)

Johannesburg, South Africa
1 – 5 September 2014

Web: <http://www.ima2014.co.za/>

Cities on Volcanoes 8



Yogyakarta, Indonesia
September 9-13, 2014

Web: <http://citiesonvolcanoes8.com/>

XX Congress of Carpathian Balkan Geological Association

24 to 26 September 2014
Tirana, Albania.

Volcanological Special Sessions

Web: <http://www.cbga2014.org/>

5th International Maar Conference

Queretaro, Mexico – 17 -22 November 2014

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8th International Symposium on Eastern Mediterranean Geology

Muğla, Turkey
2014 (date to be confirmed)

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V Collapse Caldera Workshop "Caldera Volcanism and Society"

7-11 December 2014 Taupo, New Zealand

Web: <http://staff.aist.go.jp/geshi-nob/CCC/webs/main.htm>



XXVI. IUGG 2015 – IAVCEI 2015 General Assembly,

Prague, Czech Republic.

22 June – 2 July, 2015

Web: <http://www.iugg2015prague.com/>

Suggestions for IAVCEI symposia scientific themes are invited. Ideas from IAVCEI Commissions are especially welcomed. Please send your ideas to any of the IAVCEI Executive Committee members and/or Commission leaders.



Next Issue of the **IAVCEI News** will be published on **15th April 2014**. Articles, notes, news or any items relevant to the IAVCEI community must be submitted by **5th April 2014** to be published in the next Issue.

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