



# IAVCEI *News* 2010 No: 1

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

## FROM THE PRESIDENT



*IAVCEI President,  
Setsuya Nakada*

This time I begin with a formal explanation of the relationship our association has with the International Union of Geodesy and Geophysics (IUGG), a relationship that it is important for IAVCEI members to understand. The IUGG acts as an umbrella organization for the activities of eight associations (IACS, IAG, IAGA, IAHS, IAMS,

IAPSO, IASPEI and IAVCEI), and this organization encompasses not only the meetings of the individual associations, but also the joint meetings of all associations at IUGG General Assemblies (GA), and the activities of the commissions of each association as well as the inter-association commissions and working groups on important global issues. IAVCEI receives funding from IUGG based on the number of IAVCEI delegates that attend IUGG General Assemblies. The IUGG itself is supported by annual membership fees paid by member countries, through their national enabling scientific organization. At a higher level, IUGG is affiliated with the International Council for Science (ICSU).

The IUGG's Executive Committee Meeting was held in Melbourne from October 9 to 11 of last year, following the previous meeting in 2008 in Karlsruhe, Germany. The Executive Committee comprises the IUGG bureau, past-president, and presidents of the 8 union associations. Association secretaries-general are also invited to attend these meetings. Joan Marti and I stayed a week in Melbourne, and on 8 October, prior to the EC meeting, the EC members and association secretaries-general met the members of the Local Organizing Committee (LOC) for 2011 IUGG General Assembly (25th GA) and visited the venue of the assembly.

The activity of IAVCEI during the year following the 2008 summer was reported to the IUGG in this meeting. The success of our science assembly in Reykjavik, with over 900 attendees, impressed the Committee, as did our newly set-up program of IAVCEI research grants. On the other hand, the Committee

pointed out two problems to us. 1) Because IAVCEI is an association of IUGG, it is not permissible for an IAVCEI delegate from a country that does not pay the IUGG annual membership fee to be elected, either as an officer or EC member. 2) The philosophy of ICSU does not allow the collection of individual membership payments, which IAVCEI presently takes. These two issues must be addressed with urgency. With respect to the first point, we shall delete the delegate's name in IAVCEI's official document. Candidates in the next election for IAVCEI officers and EC members, in early 2011, should be from IUGG countries. We can address the second point only by making payment of membership fees voluntary, but it is important that such the membership fees continue to promote our activities as well as they now do.

These issues reflect the somewhat complicated history of our association, including times in the past when we have promoted IAVCEI's activities rather independently from IUGG. Details of the history are not important, but it is important to realize that there is no merit in trying to separate IAVCEI from IUGG in the context of current flows of science in the world. IAVCEI is one of the union associations supported formally by academic communities of the member countries of IUGG. Although AGU, EGU, AOGS, etc. have made themselves visible and exciting, and in some ways may have higher profiles than IUGG, they are essentially networks that have developed a business structure. The big difference between IUGG and the other geophysical networks is that IUGG, being a formal representative of the national governmental advisory scientific organizations, has a built-in legitimacy in provision of advice to governments, intergovernmental committees and organizations, can undertake research tasks on behalf of national scientific organizations, and can play roles in advising society on key scientific issues as a major international Geounion. IUGG and the union associations can act as decision makers for the social issues to which they relate most closely. The aims of responsible science cannot be achieved without interacting with society, and remaining in IUGG provides opportunities for scientists of the member countries to be able to join the IUGG and ICSU programs in their academic and research

capacities. To remain an association within IUGG, we therefore must abide by ICSU regulations.

The General Assembly of IAVCEI within the IUGG 25th GA at Melbourne will be important in deciding the direction of our association and its relationship with other associations for the subsequent four years. In terms of the IAVCEI budget, it is important that many IAVCEI members and colleagues interested in volcanology, volcano geophysics and geochemistry attend this GA and participate in the IAVCEI scientific programs, as I have repeatedly explained in the newsletters. The number of attendees from IAVCEI community to the 25th GA will be the calculation basis for money allocated from IUGG for the following four years. *Attendees at the GA do not have to be IAVCEI members and are not required to join IAVCEI as members, but during registration they should indicate affiliation with the IAVCEI scientific program by clicking the IAVCEI box in the registration page of the 25th GA. Do not click the box of general or associations other than IAVCEI if you want to elevate the presence of our association in IUGG.*

The 25th GA will be held from 28 June through 7 July 2011. Because the meeting venue has a large capacity, it has been possible to reduce the GA's duration from 2 weeks, separated by Sunday, of the previous GA's, to only ten days. Most of the IAVCEI scientific program will in fact be held in the last 5 days of the conference. This will allow those with a firmly volcanological focus to limit their time at the meeting, and with the new 10-day schedule it will also be possible to hold inter-associational scientific sessions or meetings around the middle day of the conference. The Science Program Committee met on October 12. It comprises the chair (Peter Manins), IUGG president and secretaries general of IUGG and the 8 associations. The tentative draft of the science program was discussed, including topics of Union and inter-association symposia. A short summary of the tentative IAVCEI scientific program is provided elsewhere in this newsletter. The science program should be finalized by the end of January 2010.

A workshop to recognize the 90<sup>th</sup> anniversary of IUGG and launch of the 25<sup>th</sup> IUGG GA was combined with the 2009 Priestley lecture at the CSIRO Marine and Atmospheric Research Laboratory in Aspendale near Melbourne on October 13. I gave a talk on "Volcanic activity, environment and society" as the president of IAVCEI, and there were five other speakers from other associations. The Priestley Lecture of this year was delivered by Lawrence Mysak (IAPSO president) and addressed long-term changes (from 1500 to the present) in climate, sea ice, ocean properties and wind, reconstructed using observations and a global reduced-complexity climate model. Some of his conclusions are impressive; that is, all the radiative forcings (volcanic, insolation and greenhouse gas) are involved in causing the thermodynamically driven sea-ice changes before 1800, whereas volcanic activity was the main radiative forcing agent before 1900. I felt, however, that the data on volcanic gases emitted from major historic eruptions may not be sufficient for discussion of climate effect.



## IUGG 2011 Melbourne update

### *Scientific Program Symposia Themes for IUGG2011, July, 2011, Melbourne, Australia*

Dear Colleagues,

Planning for the scientific program for the IUGG General Assembly in July 2011 in Melbourne, Australia, has commenced. After consultation with numerous colleagues, the following symposium themes have been distilled from the numerous suggestions received. These themes are an attempt to identify topical issues, that are broad enough to be inclusive, not too broad to be meaningless, and not too specific so that they cater only for a handful of conference delegates. We thank colleagues who acted as an informal program committee, who will be acknowledged in due course.

In addition to the IAVCEI specific themes, the IUGG General Assembly provides an opportunity for joint symposia with other IUGG member associations on topics of mutual interest. The resulting symposia are also listed below.

Convenors have been identified for some symposia, and others will be completed soon; when that full list, together with invited Keynote Speakers for each symposium, and a short paragraph description of the scope and the aims of each symposium are ready, they will be provided to members and other colleagues of the volcanological community.

Joan Marti and Ray Cas.

### IAVCEI SYMPOSIA THEMES

- Magma Chambers and Their Dynamics: how big are they, their time scales of formation and longevity, how do we detect them, crystals and their stories
- The Rheology of Magma: in chambers, conduits, in forming pyroclasts and in lavas
- Volcanic Conduit and Vent Processes: including linkages between ascent, vesiculation and eruption processes, learning from geophysics, understanding vent geometries, time scales of magmatic processes, the roles of storage and transport physical processes, and deposits/products
- Gases, Their Detection, and Their Roles in Magma Formation, Eruptions, Eruption Prediction, Health Hazards and Hydrothermal Alteration
- Eruption, Transport and Deposition of Pyroclasts Using Field Studies, Computational Modelling and Experiments: eruption columns revisited, fallout processes and deposits, pyroclastic density currents and their deposits
- Characteristics and Imaging of Pyroclasts - What Do They Tell Us: juvenile pyroclasts – morphology, vesicularity, crystallinity; crystal fragments – morphology, abundance, size; xenoliths – types, abundance, how incorporated, implications
- Understanding Big Volcanic Systems (Calderas, Stratovolcanoes, Shield volcanoes and LIPS): their dynamics, structure and evolution using insights from geochemistry, volcanic processes, field studies, geochronology, geodesy and geophysics
- Monogenetic Volcanism: magma generation, ascent, duration, eruption processes, deposit characteristics, tectonic and volcanological settings
- Kimberlites: magma genesis, rise history, eruption processes, deposit characteristics
- Submarine and Subglacial Volcanism: eruption styles, physical constraints, and products
- Planetary Volcanism: what's different out there, and how do we know?

- Surface Processes in Volcanic Terrains: relationships to eruptions and the hazards
- Probabilistic Volcanic Hazard Mapping: developing new methodologies, including deposit mapping, computational modeling based maps, and new statistical tools for probabilistic based hazard assessments
- Natural Resources of Volcanic Systems: processes, settings, resources
- Surface Processes in Volcanic Terrains: relationships to eruptions and the hazards
- World Volcano Observatories: roles, responsibilities, technologies, and issues

#### IUGG INTER-ASSOCIATION SYMPOSIA THEMES

- Predicting Volcanic Eruptions: geophysics, chemistry, geodesy, deposits and eruption history (IAVCEI - IASPEI - IAG)
- Physics and Chemistry of Earth materials and deep earth structure and processes (IASPEI - IAVCEI - SEDI)
- Interpreting seismological models to reconcile geophysical/geochemical models of mantle structure (IAVCEI - IASPEI)
- Using geodesy on volcanoes to understand the roles of tectonic, hydrothermal and volcanic forces in understanding ground movements and eruption triggers (IAVCEI - IAG)
- Volcanism, Atmosphere, Climate: Deliberate Intervention to Moderate Climate Change and its Impacts? (IAVCEI - IAMAS)
- Using geomagnetism to understand volcanic processes (IAVCEI - IAGA)
- Remote Sensing of Volcanic Hazards in the Pacific Rim of Fire (IAVCEI - IAMAS)
- Using electromagnetism to understand volcanic and other hazards (IAGA - IAVCEI - IASPEI - IAMAS)
- Volcanic and seismic issues related to burial of nuclear waste (IAVCEI - IASPEI)

#### UNION SYMPOSIUM THEME (All associations)

- The Major Natural Hazards and Disasters of Our Time: the lessons, understanding, predicting, mitigating

### Jorullo 250<sup>th</sup> anniversary workshop

*Monogenetic volcanism in the Trans-Mexican Volcanic Belt and elsewhere: A multidisciplinary international volcanological congress to commemorate the 250th anniversary of Volcán Jorullo's birth in Michoacán, México.*

Over 70 delegates travelled to the beautiful city of Morelia, central Mexico from 27 September to 4 October 2009 to celebrate the 250th anniversary of the "birth" of Volcán Jorullo in Michoacán and to exchange knowledge on the current state of understanding of monogenetic volcanism. Despite the



*Volcán Jorullo, its 250 years of peace shattered by birthday celebrations at its foot involving 70 volcano scientists from around the world and around a thousand members of the local community (photo Marco Brenna).*

overshadowing global financial crisis and fears of a swine-flu pandemic, researchers and scholars from a range of fields travelled from New Zealand, Italy, Germany, France, USA, Spain, Japan and Colombia for this event, drawn not least by the exciting field-program associated with the workshop.

The meeting opened at the historical Centro Cultural Universitario in Central Morelia with a day of oral sessions on the geologic and tectonic settings of monogenetic volcanism that began with Izumi Yokoyama presenting on the geophysical characteristics of the Jorullo and Parícutin eruptions. The following day, exactly 250 years to the day of the onset of Jorullo's eruption, the group made the 30 minute hike in hot tropical conditions to the summit, along with hundreds of local school children and farmers from the area of Mata de Plátano. The sweat expended at the start the day was worth the panorama from the top, with stops and explanations concentrating on the complex sequence of eruption events that generated the Volcán Jorullo complex of cinder cones, lava flow fields and apparent debris avalanche deposits. Following our exertions, the Mayors of La Huacana and Mata de Plátano and a bemused-looking Claus Siebe opened a fiesta in honour of the eruption's anniversary back at the foot of the volcano. Following brief speeches, riotous music filled the visitor centre with accompanying dancing and copper-work demonstrations. The ubiquitous rivers of tequila and fresh coconut milk washed down a mighty repast of delicious local fajitas, capping the birthday celebrations.

Wednesday and Thursday saw a sober return to scientific presentations with posters and oral papers delivered at the UNAM campus of Morelia on the outskirts of town. The location and single-session format worked well, with all participants together for these days with lunches on site and an environment perfect for ongoing scientific and social discourse.



Sessions progressed from the petrological and geochemical aspects of monogenetic volcanism, through to tephra studies, environmental, biological and policy aspects (including geo-preservation and protection), volcanic hazard and risk and social vulnerability and papers concentrating on the Trans-Mexican volcanic belt. Hans-Ulrich Schmincke presented a



*Fiesta time: Claus Siebe (centre, immediately to the right of the microphone bearer) opening the party to celebrate the 250th anniversary of the 29 September 1759 birth of Volcán Jorullo (photo Shane Cronin).*

detailed analysis of the tephra record of the Jorullo eruption sequence, shedding new light on the complex variations of eruption styles and concurrent evolution of erupted magma. The tenor of this and many other of the presentations demonstrated how the seemingly simple nature of low-volume monogenetic volcanism belies the complexities and unknowns found on delving more deeply into their petrology, structure, eruption recurrence and relationships to tectonic and seismic processes. Clearly new insights and theories are needed to explain the complex magma mixing and evolution processes evident in these eruptions, along with how these and environmental conditions affect the eruption manifestations and consequent hazard potential. In addition, further work is needed to define means of forecasting the recurrence, location and nature of future eruptions in areas of distributed volcanism.

Following the scientific sessions, the conference party returned to the field, for a taste of the deposits and destruction associated with the eruption of Paricutin Volcano. The highlight of Friday was to sit in the ruins of the church of San Juan Parangaricutiro, listening to the story of the 1943-1952 eruption from the mouth of a man who had witnessed its relentless invasion of his village's boundaries and surrounding farmland. Following this, the group returned to the modern day with a visit to the prosperous and colourful town of San Juan Nuevo, with its new church, built in faithful reproduction of the part-buried ruins at San Juan. The vivid signs of prosperity of this town belie the troubled history that these people have had in the aftermath of the Paricutin eruption.

The final day of the field trip was one that all who participated will long remember! Three hours of exciting horse riding to the base of the Paricutin cone, followed by a short jaunt up its steep slopes, enabled the group to view the broad extent and variety of lava flow and pyroclastic products of this eruption, as well as see the combination of both monogenic cones and small



*In the ruins of the church of San Juan Parangaricutiro an eyewitness to the eruptions describes to the group what it was like to see his surroundings engulfed by lava from Paricutin (photo Shane Cronin).*

stratovolcanoes that characterizes this area. The less said about the three hour bone-crushing return ride, the better, but suffice to say all participants were very pleased to dismount in Angahuan. Some even still had strength to do it unassisted! I can still vividly recall riding slowly through the seemingly endless streets of the town, a fixed grimace on my Gringo face, while with grinding teeth I was determined not to show the local townsfolk that every step was a burning and crushing world of agony in my nether regions.



*Roberto Sulpizio saddling up... a classic start to another spaghetti western? (photo Shane Cronin)*

MONITORING ACTIVE VOLCANOES BY ELECTRO-MAGNETIC AND OTHER GEOPHYSICAL METHODS  
Application to Asian Volcanoes

**February 25 – Sunday 28, 2010**

PHIVOLCS auditorium C.P. Garcia AVENUE,  
U.P. Campus Diliman, Quezon City, Philippines

[www.emsev-iugg.org/emdoc/EMSEV\\_PHIVOLCS\\_2010workshop20091201.pdf](http://www.emsev-iugg.org/emdoc/EMSEV_PHIVOLCS_2010workshop20091201.pdf)



Kimberly Genareau and her backing vocalists (Nicolas Le Corvec, Shane Cronin, Jan Lindsay, Aleksandra Zawalna-Geer) at the top of Paricutin, looking uncharacteristically relaxed after their 3-hour horse ride (photo Lucy McGee).

Our creaking bones were restored by the final fiesta of the meeting, with a fantastic Mariachi band, some impromptu Torero action and a lot of dancing. Most of the group bid their farewells at this point, with a sub-group of c. 25 carrying out a further three-day excursion to the deposits of Jorullo.



Outside the re-creation of the church destroyed by Paricutin at San Juan Nuevo, this model is a less than subtle reminder to visitors of the destructive events of the eruption. When activated, the model also lights up to show the devil moving, rotating a local farmer on the spit over a fiery fountain of lava. Murals inside the church also bear graphic testament to the impacts of the eruption on the local population (S. Cronin).

The meeting was extremely rewarding and fantastically organized by Claus Siebe and his able team, including, but not limited to Marie-Noëlle Guilbaud, Gerardo Bocco, Teresa Ramírez and Victor Hugo Garduño Monroy. The Jorullo and Paricutin eruptions focused on by this conference were extremely appropriate examples to raise not only questions on magmatic and physical controls on monogenetic volcanism, but also to examine the short and long term social and economic impacts that such events have on surrounding communities. The combination of field and scientific sessions provided a unique and holistic overview of this globally very common manifestation of volcanism. This along with the associated cultural program, including a visit to artworks inspired by local volcanism, gave a deep insight not only to the Michoacán region, but also how profoundly influential volcanism has been on the social and

physical history of the area.



Between 1943 and 1952 lava flows from Paricutin (L background) buried the former towns of Paricutin and San Juan Parangaricutiro, 2 and 4 km away from the scoria cone, respectively. The upper floor and tower of the church is all that remains at San Juan (at far right) (Jan Lindsay).

## CVL 7

Workshop on Volcanic Lakes, Costa Rica  
10-21 March 2010



<http://www.ulb.ac.be/sciences/cvl/index.html>

## East Africa seismic-risk workshop

### *Advanced Workshop on Evaluating, Monitoring and Communicating Volcanic and Seismic Hazards in East Africa*

Africa has the highest percentage of volcanoes in any region of the world that are Holocene. Pressures of increasing population, civil unrest and famine have led to migration into areas on the flanks of volcanoes. In 2002, an eruption destroyed 25% of the city of Goma, Congo and forced 500,000 people to evacuate; in the Afar region earthquakes and volcanic eruptions are ongoing since 2005; Oldoinyo Lengai erupted explosively in 2007; degassing of mantle volatiles (CO<sub>2</sub>) is sometimes catastrophic (Lake Nyos) and present throughout the East African Rift; Nyamuragira is the world champion in number of eruptions with SO<sub>2</sub> emissions topping 1 million tons; high CO<sub>2</sub> concentrations in the crust can lead to brittle failure and seismic hazards. These observations highlight the need for basic and hazards-related research in East Africa.

In August 2009, 83 African, US, and European scientists gathered at the ICTP for a Workshop for the Evaluation, Monitoring, and Communication of Volcanic and Seismic Hazards in East Africa. Participants gathered with the goal of developing plans for investigations of processes leading to volcanic eruptions and large earthquakes in continental rift zones.

The first week of the workshop focused on science planning. The goals of the planning meetings were to establish new initiatives for cooperation in East Africa, to design programs for evaluating and monitoring time and length scales of plate boundary and volcanic deformation, and to develop networks for exchange of ideas and expertise. Keynote lectures highlighted current geoscience research in East Africa covering the fields of large-scale tectonics and geophysics, petrology and geochemistry of volcanic rocks, geochemical monitoring of volcanic eruptions and gas emissions, deformation studies, volcanic and seismic hazards assessment and communication. All lectures were followed by discussions where specific priorities for future research were identified such as: the cause and timing of continental break-up, the role of magmas and volatiles from rift inception to break-up, the along axis variations of strain related to pre-rift lithospheric structure and mantle heterogeneities, the rates of faulting and magma production. It was recognized that field, analytical and modeling tools are necessary to address these issues.

A major outcome of the discussion sessions was a plan to launch an African Ph.D. program in Geohazards at Addis Ababa University and to establish a sub-Saharan Africa Geohazard Network coordinated by the University of Dar es Salaam; both initiatives are under the support and the supervision of the ICTP. The second week focused on practical training, education and outreach. An international team held lectures on GPS and InSAR fundamentals, seismic and volcanic hazards, the current East African GPS infrastructure, and hazards communication. Lab exercises included GPS and InSAR data processing and interpretation, application of software for seismic data analyses, and the Global Earthquake Model Initiative. A final discussion completed plans to launch the Ph.D. program in Geohazards and the African Geohazards Network. Activities in Trieste were web-cast to off-site participants. Lecture notes are available at:

[http://cidsagenda5.ictp.trieste.it/full\\_display.php?smr=0&ida=a08176](http://cidsagenda5.ictp.trieste.it/full_display.php?smr=0&ida=a08176)

The workshop was convened by ICTP and UNAVCO with support from NSF Award OISE- 0913230, and co-sponsored by IAVCEI, IASPEI and USAID.



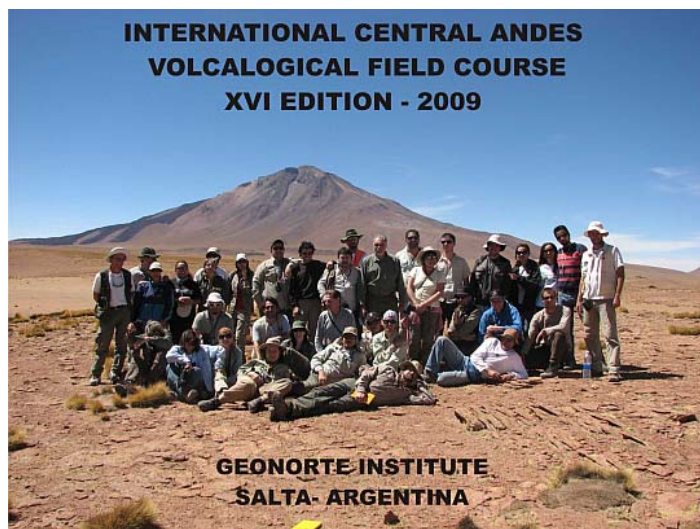
from May 31 to June 4, 2010

Tenerife 2010  
Cities on Volcanoes 6<sup>th</sup>

<http://www.citiesonvolcanoes6.com>

### Central Andes Volcanology field course

Sponsored by IAVCEI (with 5 Latin America student grants) and led by Prof. Dr. José G. Viramonte from Salta University (Instituto GEONORTE) and CONICET, the XVI Edition of the Central Andes International Volcanological field Course was developed in north-western Argentina from 23rd November to 1st December 2009. The professor staff included Dr. Marcelo Arnosio, (Salta University) Dr. Pablo Caffè (Jujuy University), Dr. Carlos



Sommers ( Federal University of Rio Grande do Sul) Dr. Raúl Becchio (Salta University) and Prof. Roberto Carniel (Udine University). Thirty five students from different countries, mostly in Latin-America, attended the course. The course is oriented toward geoscientists working on any volcanological discipline, or professionals prospecting for minerals in volcanic areas. It is a field-training course dealing with both theoretical concepts and field practice in developing interpretations of deposits and volcanic structures in the spectacular scenery of the Central Andes. The course included a one-day theoretical introduction, followed by a nine-day field trip visiting Aguas Calientes caldera, Ramadas high SiO<sub>2</sub> ring-tuff, Tocomar Volcanic Centre and their associated pyroclastic deposits. In addition, monogenetic shoshonitic volcanism, domes and typical Central Andes calcalkaline stratovolcanoes were visited.

*Report by José Viramonte, University of Salta, Argentina*

**LASI 4 Workshop**  
Physical geology of subvolcanic systems:  
laccoliths, sills, and dykes  
Moab and Mount Hillers - Utah - USA  
22-26 September 2010



<http://lasi.lmtg.obs-mip.fr/LASI4/home.html>



**Japan Geoscience Union Meeting 2010**

## IAVCEI research grants awarded

The new IAVCEI research grant scheme attracted fifteen applications. Two projects were funded, and are listed below. The quality and diversity of applications was impressive, and the selected projects attracted broad support for their social significance and applied volcanological approach.

### SUPPORTED PROJECT 1:

***Weaknesses and strengths in Latin America facing volcanic crises: A research for the improvement of national capabilities and international cooperation***

*Lead Applicant :*

Hugo Delgado (hugo@geofisica.unam.mx) - Dpto. de Vulcanología, Instituto de Geofísica, Universidad Nacional Autónoma de México (UNAM)

*Supporting Applicants:*

Guillermo Alvarado Induni (GAlvaradoI@ice.go.cr) - ICE.UCR – COSTA RICA

Hugo Yepes ( hyepes@igepn.edu.ec ) - INSTITUTO DE GEOFISICA- ECUADOR

Jersy Mariño ( jmarino@ingemet.gob.pe ) - INGEMET- PERU  
Felipe Aguilera ( felipe.aguilera@uda.cl ) - UNIVERSIDAD DE ATACAMA – CHILE

José Viramonte ( viramont@unsa.edu.ar ) - UNIVERSIDAD NACIONAL DE SALTA – ARGENTINA

How support will benefit IAVCEI's strategic goals as outlined in its Statutes ( [www.iavcei.org](http://www.iavcei.org) ):

This proposal will make a diagnosis on the state of institutional capabilities at Latin American countries. It is expected to obtain a realistic view on the existence of qualified human resources, instrumental and laboratory capabilities, volcano-surveillance networks, appropriate protocols, agreements and institutional cooperation, among others, in the Latin American region to face volcanic crises. This diagnosis should enhance regional-international cooperation that will help to minimize the effects of volcanic eruptions. This proposal should result in the identification of the means to tackle the weaknesses in volcanological research in order to find the ways for the improvement of studies that will help to mitigate the impact of eruptions in the Latin American countries. These actions are in accordance to objectives b) and d) of IAVCEI.

**Objectives:**

**Main:** Identify weaknesses and strengths in the Latin American regions when facing volcanic crises in order to find the best way to improve national capabilities in the countries of the region and enhance international cooperation.

**Subordinate:** 1) Carry out a detailed survey on the existence of qualified human resources in the Latin American region; 2) Survey on the existence of volcano-surveillance networks and their current state (instrumental gaps, weaknesses, team and institutional fortitudes, etc.); 3) Search for the existence of qualified laboratories for the analyses of volcanic products (lavas,

ashes, aerosols), geochemical (of volcanic rock and fluid samples) and geophysical analyses, instrumental capabilities, availability of satellite imagery (type, frequency, etc.) and infrastructure to process it. 4) Look and review existence of approved specific protocols for facing volcanic crises; 5) Review inter-institutional coordinating agreements, regional and international. Evaluation of their performance; 6) Look for the existence of volcanic hazards maps (thematic, scale, etc.) for the attention, follow up, mitigation and decision making during volcanic crises at every region of Latin America (Mexico-Central America; Colombia-Ecuador-Peru-Chile-Argentina) under potential eruptive hazards and risks; 7) Develop a tool for the improvement and optimize the attention of volcanic crises at every country of the Latin American region and improve international cooperation.

### SUPPORTED PROJECT 2:

***Ice-filled calderas in the 21st Century: consequences of volcanic unrest and environmental change***

*Lead Applicant :*

Prof. David Pyle (david.pyle@earth.ox.ac.uk) - Department of Earth Sciences, University of Oxford, UK

*Supporting Applicants:*

Dr Jennie Gilbert (J.S.Gilbert@lancaster.ac.uk) - Lancaster Environment Centre, University of Lancaster, UK

Dr Luis Lara (lelara@sernageomin.cl) - Head, Volcanic Hazards Program, SERNAGEOMIN, Chile.

Dr Andres Rivera (arivera@cecs.cl)- Centro de Estudios Científicos, Valdivia, Chile.

Dr Jorge Clavero Ribes (jclavero@energiandina.cl) -Energia Andina, Chile.

How support will benefit IAVCEI's strategic goals as outlined in its Statutes ( [www.iavcei.org](http://www.iavcei.org) ):

**This project:**

\* Will advance the study of volcanic processes, in particular the processes acting during eruptions at ice-filled calderas;

\*Will extend international cooperation between UK and Chilean scientists;

\*Will support two international scientific discussion meetings, stimulate the publication of scientific research papers on volcanology, and contribute to the training of young scientists;

\*Will advance the awareness of hazard and risk at glaciated volcanoes, and advance understanding of the implications of changing climate for hazards at ice-filled caldera volcanoes.



## Objectives:

1. The primary objective is to advance understanding of the coupled glacio-volcanic evolution of high latitude calderas, and improve understanding of the hazards associated with rejuvenation of magmatic activity and changing climate at ice-filled calderas. This will be achieved by bringing together UK volcanologists and Chilean volcanologists and glaciologists, to focus on a case study of a young ice-filled caldera volcano in southern Chile. Outcomes from this field study will include geological and hazards maps of volcán Sollipulli, and mapping of the morphology of the ice-filled caldera.

## Further objectives are:

2. To review current understanding of glacio-volcanism in southern Chile, including compiling a dataset of the timing of caldera formation in the Andes.
3. To assess the potential of ice cores from ice-filled calderas as archives of Holocene climate and volcanism.
4. To stimulate further international cooperation and research activities in the field of glacio-volcanism through the support for an international meeting, publication of a Geological Society of London/IAVCEI Special Publication, and through the development of joint research-grant proposals.
5. Beneficiaries include participating scientists (broadening understanding through knowledge and skills transfer); young researchers (training and networking opportunities); and Chilean, UK and international agencies, through an enhanced understanding of hazards at ice-filled calderas, and of how hazards and impacts might change over the 21st Century.

## CEV Workshop: plumes and PDC's

### *IAVCEI Commission on Explosive Volcanism Workshop*

*"Advances in studies of volcanic plumes and pyroclastic density currents"*

*Clermont-Ferrand, 26-29 October 2009*

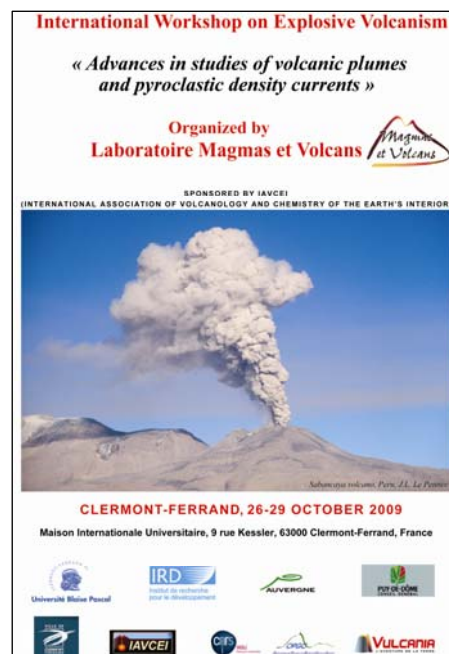
An international workshop on explosive volcanism entitled "Advances in studies of volcanic plumes and pyroclastic density currents" was held at the Maison Internationale Universitaire in Clermont-Ferrand (France) during October 26-29, 2009. The workshop was organized jointly by the Laboratoire Magmas et Volcans (<http://www.obs.univ-bpclermont.fr/lmv/>) and the IAVCEI Commission on Explosive Volcanism.

The aim of the meeting was to complete an up-to-date overview of recent advances in studies of volcanic plumes and pyroclastic density currents, and accordingly focused on three linked themes:

- Field measurements (geophysical and deposit-based) to parameterize process dynamics.
- Numerical models and laboratory experiments to understand the basic physics and dynamical processes.
- Use of measurements and models in monitoring and hazard assessment.

The main goal was to integrate these themes to obtain a better understanding of the processes from at-vent emission, through ascent, dispersion and flow, to deposition and impact on local and global communities. Specific issues dealt with were, for example, measurement of particle concentrations, velocity, temperature, entrainment of the ambient medium, and use of these values in numerical and analog models designed to simulate the dynamics of an explosive event.

The workshop consisted of three core themes, each being led by invited keynote speakers, followed by specific talks (15mn + questions) and discussions, facilitated by the limited number of invited participants (50), covering state of the art and main problems for each of the scientific issues. In addition, a few posters were displayed throughout the week to promote discussions during coffee breaks. A document is provided on the IAVCEI website to summarize the key issues raised during the workshop discussions.



Funds were raised through the University of Clermont-Ferrand, the Institut pour la Recherche et le Développement (IRD), the Conseil Régional d'Auvergne, the Conseil Général du Puy-de-Dôme, and the city of Clermont-Ferrand, to cover accommodation costs for all participants. Clement weather, nice restaurants serving local food, the architecture of old buildings downtown Clermont-Ferrand, a few minutes away from meeting venue, and the beautiful view on the dominating quaternary volcanoes of the Chaîne des Puys contributed to offer a pleasant stay to everyone.

A half-day visit of the European Center of Volcanism (VULCANIA) was held during the workshop, in order to provide attendants an overview of the modern means to share our knowledge in volcanology and communicate toward the general public about catastrophic natural phenomena that occur on our planet and the related major challenges for the 21st century.

The local organizing committee (Franck Donnadiou and Olivier





Roche, Laboratoire Magmas et Volcans), supported by the IAVCEI Commission on Explosive Volcanism (Amanda Clarke and Lucia Gurioli).

#### List of participants

Felipe Aguilera	U. Atacama, Chile
Santiago Arellano	U. Chalmers, Swe
Sara Barsotti	INGV Pisa, It
Costanza Bonadonna (Keynote)	U. Geneva, Swi
Rose Burden	U. Bristol, UK
Alain Burgisser	U. Orléans, Fr
Marcus Bursik (Keynote)	U. Buffalo, USA
Mike Burton	U. Pisa, It
Eliza Calder	U. Buffalo, USA
Simon Carn (Keynote)	U. Michigan State, USA
Ray Cas (Keynote)	U. Monash, Au
Kirsten Chojnicki	U. Arizona State, USA
Raffaello Cioni	U. Cagliari, It
Amanda Clarke	U. Arizona State, USA
Franck Donnadieu	U. Clermont, Fr
Tim Druitt	U. Clermont, Fr
Joe Dufek	U. Georgia Tech, USA
Gerald Ernst	U. Ghent, Bel
Tomaso Esposti Ongaro	INGV, Pisa, It
Thomas Giachetti	U. Clermont, Fr
Guido Giordano	U. Roma, It
Mathieu Gouhier	U. Clermont, Fr
Lucia Gurioli	U. Clermont, Fr
Andy Harris	U. Clermont, Fr
Silvana Hidalgo	IGEPN Quito, Ecuador
David Jessop	U. Clermont, Fr
Karim Kelfoun	U. Clermont, Fr
Tak Koyagushi (Keynote)	U. Tokyo, Jap
Philippe Labazuy	U. Clermont, Fr
Jean-Luc Le Pennec	IRD, U. Clermont, Fr
Gert Lube	U. Massey, NZ
Michael Manga	U. Berkeley, US
Anne Mangeney	IPG Paris, Fr
Severine Moune	U. Clermont, Fr
Clive Oppenheimer (Keynote)	U. Cambridge, UK
Olivier Roche	IRD, U. Clermont, Fr
Pablo Samaniego	IRD, U. Clermont, Fr
Jean-Francois Smekens	U. Arizona State, US
Roberto Sulpizio	U. Pisa, It
Sébastien Valade	U. Clermont, Fr
Loyc Vanderkluyzen	U. Hawaii, US
Hugo Yepes	IGEPN Quito, Ecuador

## 10<sup>th</sup> CCVG Volcanic gases workshop report:

### *Commission on the Chemistry of Volcanic Gases 10<sup>th</sup> workshop, México 2008*

The Tenth CCVG Field Workshop was held in Mexico City (México) on 10-20 November, 2008 and was supported by the Institute of Geophysics, UNAM. We had more than 100 participants from 24 countries (Argentina, Belgium, Chile, Colombia, Costa Rica, DR Congo, Ecuador, France, Germany, Guatemala, Italy, Japan, Mexico, Nicaragua, Peru, Philippines, Portugal, Puerto Rico, Russia, El Salvador, Sweden, Taiwan, United Kingdom and U.S.A.) 68 papers were presented (abstracts of talks given during the pre-field conference), covered a wide range of the gas geochemistry techniques including: 1. Ground- and satellite based remote sensing of volatile emissions; 2. Aerosol studies; 3. Analyses of volatiles in melt inclusions of igneous minerals; 4. Chemical and isotopic composition of leached pumice and ash; 5. Measuring of diffuse degassing of volcanoes; 6. Direct sampling of volcanic gases using Gigenbach bottles and other direct sampling techniques.

A special electronic volume of "Geofisica Internacional" edited by H. Delgado will issue soon with about 30 extended abstracts of the Workshop conference.

The general program included:

1. Two days of conference (oral and poster sessions), including the visit to CENAPRED (Centro Nacional de Prevencion de Disastres).
2. Four days of fieldwork performed on the slopes of Popocatepetl and Colima volcanoes (two days in every volcano) with measuring the gas fluxes from the craters and diffuse degassing from their flanks. The fieldwork related to Colima volcano was hosted by University of Colima.
3. Three days of fieldwork at El Chichón, where a large group of gas geochemists climbed down into the El Chichon crater for sampling gases directly from fumarolic vents, bubbling gas from the crater lake and measuring fluxes of the diffuse CO<sub>2</sub> from the crater floor. Also gas and water samples were taken from El Azufre springs, ~ 20 km NE of El Chichón.

New officers were elected for 2009–2011 period. It was decided that the next gas workshop will be developed in Kamtchatka (Russia) during summer 2011. Finally, in one of the first activities of the new CCVG organizing committee, was renewed the web page ([http://vulcanologia.uda.cl/index\\_archivos/page0005.htm](http://vulcanologia.uda.cl/index_archivos/page0005.htm)). **Yuri Taran**, CCVG Leader. Instituto de Geofisica, UNAM, Mexico **Nicole Bobrowski**, CCVG Secretary. Institut fuer Umweltp Physik, University of Heidelberg, Germany, **Felipe Aguilera**, CCVG Editor and Webmaster. Departamento de Geología, Universidad de Atacama, Chile

## CCW 2010

Collapse Caldera Workshop 2010

La Réunion Island

"Dynamics of caldera: collapse and unrest"

October 3-9, 2010



<http://www.geosciencesreunion.fr>

