

IAVCEI *News* 2005 No: 2

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

Message from the President



*Oded Navon
President*

Dear IAVCEI Members,

I would like to start by telling you all how proud I was about our volcanological community. Sitting at the IUGG (the International Union of Geodesy and Geophysics) Executive Committee meeting and listening to the heads of the other associations giving their reports on their general assemblies, there were reports

on small attendance of the assemblies, complaints about the high percentage of “no shows” (people who submitted an abstract, but did not attend the meeting), and reports of the resulting deficits. I was very proud to report on the extremely successful meeting at Pucon, the record attendance, and the small surplus created by late registration of additional participants. It is much better to worry about the comfort of late registrants than about financial sources to cover a deficit. We have just received the IAVCEI share of the surplus that, more or less, paid back the money IAVCEI put into organizing the convention. This is, indeed, an excellent opportunity to thank Jorge Clavero, the Local Organizing Committee and Turismo Tajamar for all their work, and for the excellent results by any scale of measurement. Going back to the first sentence, it is the right opportunity to thank the whole community for seeing the general assembly as a central event, for full attendance, for volunteering to attend sessions and fieldtrips, for contributing abstracts and interesting presentations, and for enjoying seeing each other next to these beautiful volcanoes. See you in Iceland.

Yes!! The executive committee has finally decided that we will meet on August 18–24, 2008 at Reykjavik, Iceland. Both the French and the Icelandic groups put a lot of effort into their proposals. Both proposals were excellent and the choice was very tough. Both Massif Central and Iceland offer beautiful locations, both Clairmont and Reykjavik are good venues, and both proposals ended up with similar costs. As a result, the vote in the Executive Committee was close. I guess Iceland won mostly for the sparks in any of your eyes when you first learned about the opportunity to visit Iceland and its volcanic fields. I would like to thank Jean-François Lénat, Georges Boudon, Gilles Chazot, Tim Druitt, Jean-Luc Froger, Pierre-Jean Gauthier, Jean-Christophe Komorowski, John Ludden, Olivier Roche, Marie Russias and Benjamin Van Wyk de Vries for all their good work. I would like to congratulate Armann Hoskuldsson and the Icelandic local organizing committee for their winning. We all look forward with hope for a wonderful general assembly in 2008.

As I mentioned, next general assembly will be more expensive than the previous ones. I hope that for most of us, the cheaper air fares will bring the total cost to a level that is similar to that of Chile. I promise to take care of financial assistance, so that enough volcanologists and students from south-east Asia, Africa and South America will be able to attend.

Before we all get to Iceland, there are a few more exciting conferences. In addition to conferences run by the other IUGG associations, we will have the IAVCEI 2006 Meeting in Guangzhou, China on May 14–18. The central theme is continental volcanism and magmatism and the field trips will take us to the Emishan Province and to the kimberlites and alkali basalts of Northern China Craton. In 2007, we will convene at the IUGG conference in Perugia (July 2–13). Steve McNutt, our Secretary General, and I have just been to a meeting that set the scientific

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IAVCEI Homepage: www.iavcei.org

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program for that meeting. We are receiving strong backing from the Italian Volcanological community and we are sure its going to be a wonderful conference. The location of Perugia in central Italy suggests more than just good science.

On the way to Perugia, I attended the meeting of the heads of four Earth Science initiatives:

1. The International Year of Planet Earth (IYPE)
2. Electronic Geophysical Year (eGY)
3. International Polar Year (IPY)
4. International Heliophysical Year (IHY).

All these programs, collectively treated as I*Y, are aimed at turning the years 2007–2008 into years of increased public and awareness for what Geosciences and Earth-scientists offer, and can offer, to society.

How can we volcanologists take part in this growing activity? In some cases, the link is very clear. Volcanologists who run a program on Mount Erebus in Antarctica can put a proposal to IPY. No, there is no money with IPY, but they will review your proposal, point out strengths and weaknesses, draw your attention to more possibilities for collaboration, and for adding public outreach. Most important, the IPY review panel will endorse your proposal and will issue a review that you can add to your proposal, letting the foundation know that (a) your effort is part of a larger effort aimed this year at the poles and (b) that others have examined your proposal and see it fit. Also, there is an added credibility to the paragraph that we always write about the importance of the project we suggest. Now there is a whole group shouting this together with you.

Another possible example is the benefit that WOVODAT (see www.wovo.org), the project aimed at establishing a standard data-base of volcanoes, can get by joining eGY, the electronic Geophysical Year. Again, the funds will have to come from the older sources, but government funding agencies now see it as part of a larger effort, an effort that is also important to their government who publicly declared that it should be supported. In addition, eGY is an active group who can advise our people on what will be the standards of archiving, communicating and interfacing WOVODAT with other Earth observing systems. WOVO World Organization of Volcano Observatories (WOVO) can offer eGY a strong and well coordinated network that can help others. For example, space scientists may look for a place to install some measurement equipment in Indonesia or Cameroon. The commission on Cities and Volcanoes can join the eGY or the IYPE in their

outreach and educational programs. They have been doing it for years and they can share their knowledge with other eGY projects. They can hear about new opportunities and join forces with other programs. The supervolcanoes group can join the Hazard Initiative that is a central part of IYPE as can many others. There soon will be a declaration by the United Nations that the Year of Planet Earth also will be a UN International Year. Many governments have joined the call from the UN to support such a declaration. The monitoring of an active volcano or the survey of a dormant supervolcano may turn into flag projects for such governments.

Another facet of this activity is the involvement of the private sector. The project leaders feel that while governments tend to support science, but are less supportive of public outreach and educational programs, the private sector is more willing to embrace these aspects of the programs. Again, we can use the framework of these initiatives to try and form connections with the private sector. We can obtain information on how to approach companies, the project data bank can carry our initiative and, perhaps, it may suit the profile sought by a company and a contact may be formed. In addition, let us not forget the other direction — we can see an interesting project on the Website and suggest it to someone we know in the private sector as a nice project to support.

What should one do to join the effort? The first step is to go to the Websites of the different I*Y projects. They are listed below. If you feel that you would like to participate, you can find forms for expressing your interest, learn when and where the next workshop will take place, and form connections with the project secretaries or leaders.

Some of these projects are in a more advanced form; some are still enduring their organizational stage. Now is the right time to join. When you do, please drop us a word, so we will know about it and monitor the activity in the field of volcanology.

Good luck and see you in Guangzhou, Perugia and Reykjavik,

Oded Navon
President

IYPE — www.isfs.org, www.yearplanetearth.org

eGY — www.egy.org

IPY — www.ipy.org

IHY — www.IHY2007.org

Preparation of Volcanic Hazard Map for Misti Volcano, Peru

The city of Arequipa — second largest in Peru (ca. one million population) — is located roughly 17 km from, and about 3 km vertically below, the summit of 5822m El Misti Volcano (Figure 1). Misti's only well-recorded historical activity was a relatively small eruption during the mid-15th century. However, numerous ash falls, pyroclastic flows, and lahars from prehistoric subplinian to plinian eruptions, as recently as 2,000 years ago, have affected the region around the volcano. The deeply incised valley of the Río Chili (Figure 1) slashes through densely populated present-day Arequipa, thus making the Río Chili drainage vulnerable to volcanic flowage hazards (e.g., pyroclastic flows and, especially lahars). Should Misti Volcano reawaken in the future, volcano hazards associated with renewed eruptive activity would pose a serious threat to the inhabitants, infrastructures, and economy of Arequipa and its environs.



Figure 1. Misti Volcano (5822m) looms above Arequipa and its surroundings; Río Chili can be seen in the foreground.

Because of its close proximity to densely populated areas, Misti has long been recognized as a potentially very dangerous volcano. Even though a number of volcano-hazards maps and assessments have been made in recent years, these have not been entirely satisfactory either in their level of detail or appropriate scale for use by decision makers for preparation of contingency plans and consideration of risk-reduction measures. In recognition of Misti's enormous potential volcanic threat, the national geological agency of Peru — Instituto Geológico Minero y Metalúrgico del Perú (INGEMMET) — recently has initiated a project to

produce a detailed geologic map (scale 1:25,000). This map will serve as the scientific foundation for an updated volcano-hazards map and accompanying hazards assessment. A preliminary version of the hazards map is scheduled for completion by mid-2006, to be followed by complementary studies, including flow modeling, to produce a refined final map.

To enhance national and international scientific and public awareness of its new Misti project, INGEMMET, together with the Facultad de Geología, Geofísica y Minas of the Universidad Nacional de San Agustín (UNSA), organized a two-day meeting (22–23 July 2005) in Arequipa: “First International Forum on Volcanic Hazards: Evaluation, Zonification, Monitoring, and Mitigation Plans: A Look at Misti Volcano” (“1er Foro Internacional: Los Peligros Volcánicos: Evaluación, Zonificación, Vigilancia y Planes de Mitigación: Una mirada al Volcán Misti”). More than 250 people participated in this forum, involving scientists from Peru and abroad, professors, students, and journalists. Most importantly, the forum participants also included national, regional, and local civil authorities, including the governor of the Department of Arequipa as well as the director of the national civil-protection agency for the region. The enthusiastic and active participation in the forum proceedings by high-ranking Peruvian government officials bodes well for the Misti project.

Another important component of the Misti project is the formation of an international Scientific Committee to advise INGEMMET scientists in the preparation of the geologic and volcano-hazard maps. This committee is composed of the following individuals:

Jersy Mariño (INGEMMET, project chief); Marco Rivera (INGEMMET); Guido Salas (Universidad Nacional de San Agustín de Arequipa, UNSA); Lourdes Caylla (INGEMMET - UNSA); Claus Siebe (Universidad Nacional Autónoma de México, UNAM); Jean-Claude Thouret (Université Blaise Pascal-IRD, France); Robert I. Tilling (Multinational Andean Project; managed by the Geological Survey of Canada).

Following the forum, the members of the Scientific Committee spent several days in the field, examining deposits of tephra falls, primary pyroclastic flows, and lahars that have reached metropolitan Arequipa, with special emphasis on the laharc terraces along the Río Chili valley. The committee members held follow-up meetings with the authorities. They also conducted

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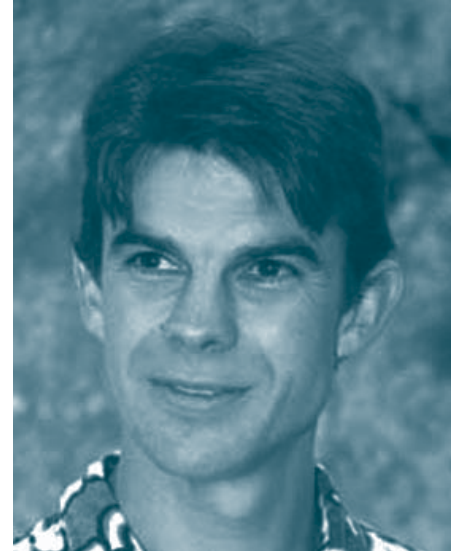
2004 Wager Medal Citation for Andrew Harris

It is very much my honor to be able to introduce a truly deserving volcanologist for the 2004 IAVCEI Wager Medal — Dr Andrew Harris. Andy, as he is more commonly known to friends and collaborators, is not shy to point out that he was born in Cornwall, which, according to Andy is a seemingly semi-independent province of the UK.

Andy's impressive academic career began at Exeter University where he earned a Bachelor of Arts degree with Honors in 1988. After a short stint in the workforce, Andy returned to academia to earn an MS in Remote Sensing from Dundee in 1992. Thereupon the Open University drafted Andy to become one of their graduate students under the impressive tutelage of Dr David Rothery. An extremely capable graduate student mentor, Dave has helped to launch the careers of a number of highly trained remote sensing volcanologists, including Dr. Harris. Andy graduated from the Open University with the Ph.D. degree in volcanology in 1996. He then moved to Hawaii after accepting a post-doc with me at the University of Hawaii at Manoa. For a year in 1998-1999, Andy moved back to Milton Keynes and the Open University, to work as a post-doc for Dave Rothery. Andy then secured faculty positions at the University of Hawaii, first as an Assistant Researcher during the years of 1999–2001, and then as a tenure-track Associate Professor from 2001 to the present.

Throughout his career, Dr. Harris has garnered numerous awards for his work. He received the Class Medal for the best MS paper from Dundee University in 1992. For the same work, he also received the Best M.S. award from the Remote Sensing Society in 1992. While at the Open University, Andy received the Remote Sensing Society Award for Best PhD dissertation in 1997. More recently, Andy received the UH Regents' Medal for Excellence in Research in 2003. Every year, this award is given to a single University of Hawaii faculty member who has demonstrated excellence in scientific research. Finally, for his work with thermal remote sensing of active volcanoes, development of thermal alerts to track eruptions, and collaborative work on volcanic processes, Andy has won one of the IAVCEI Wager Medals for 2004.

Andy benefits greatly from his tremendous work ethic and his inquisitiveness. As evidence for the former,



Andy Harris

Andy has published 66 papers either as first-author or as a co-author. That amounts to a paper every 36–52 days of his professional career thus far. Andy has over 240 conference abstracts or a staggering average of one every 12 days. Naturally, his productivity benefits from a large array of collaborations maintained with many volcanological organizations in many countries. In addition to the faculty at the University of Hawaii, Andy maintains collaborations with the Hawaii Volcano Observatory and other USGS observatories, the INGV, the University of Firenze, the University of Alaska Fairbanks, among many others. He has mentored over 14 graduate students of his own. His inquisitiveness has led him to develop real-time diagnostic tools for helping with monitoring active volcanoes. These include the GOES Thermal Monitoring Network that provides 15-minute updates of volcanic activity for the Western Hemisphere, as well as the DUCKS deployable radiometer systems which provide ground-based thermal surveillance of numerous volcanoes. The DUCKS can be easily installed and frequently are dispatched via FedEx, or in some cases, with Andy himself attached to them!

In short, I am certain that many of you will feel as I do that it has been a very great honor for me to have had the pleasure of collaborating with Dr. Harris these many years. I hope that you will now join me in offering my utmost and sincere congratulations to Andy who is one of this year's recipients of the IAVCEI Wager Medal.

Luke Flynn

2004 Wager Medal Acceptance Speech

Andy Harris, IAVCEI 2004 General Assembly,
Pucon, Chile, 19 November 2004

On a personal level, this award highlights the quite unexpected opportunity that volcanology and remote sensing has provided me. On finishing my undergraduate degree my thoughts did not extend far beyond the next year and a grand plan to travel. After many months of fund raising by working in Cornwall's worst nightclub (Quasars, Carlyon Bay, demolished 2004) I had amassed just about enough money to get as far as the Munich beer festival. There, my initial grand plan crashed and I realized an amendment was necessary. I thereby blundered into the (for me) miserable world of market research. After just a few hours I realized that the amended plan was catastrophically flawed; so I listed the top 5 things I would really like to do. At the top was remote sensing, at number five — teaching. Following a year of letter writing, Robin Vaughan intervened providing me with the opportunity to create a new direction by accepting me into the remote sensing masters course at the University of Dundee (Scotland). It was here, thanks to Robin introducing me to the unexplored satellite data set for the 1984 Krafla eruption (Iceland), that I realized volcanology was also a real opportunity. This was a revelation, for volcanology had always been a fascination to me, but did not make my initial top-five list because I had long-since concluded (at the age of ~12) it not to be a viable employment option. There followed, however, a second period of vagrant employment, during which I was responsible for the cleanliness of the Richmond Borough Council dustbin lorry depot. Dave Rothery, however, was working hard to find me a PhD and, after a year, was able to help continue the momentum and enthusiasm that Robin had helped to build. At the end of the PhD, Luke Flynn stepped in, taking me on as a post-doc. From thereon it has been the trip I initially envisioned. The support and mentoring of Robin, Dave and Luke, as well as Peter Mouginiis-Mark and Scott Rowland, was fundamental in setting an ultimate, happy, yet quite unexpected, direction. If you had come to my bar, dustbin lorry depot, or market research desk 15 or more years ago and told me that this was where I was going to be in 2005, I would have laughed (a lot) and then had you removed from the premises for I would have judged you to be quite mad (or drunk).

Luck, revelation, effort, persistence and support all played their role. However, I was also fortuitous to become involved in the world of remote sensing at a pivotal moment for volcanology. In the early 1990's remote sensing was still a relatively unexplored volcanological field. The years since have been exciting, fast moving ones during which our ability to use satellite remote sensing has increased exponentially. Led by a close, but inter-disciplinary and multi-national group, the last 15 years has witnessed a huge growth in our remote sensing capabilities for volcano studies. The parallel result has been the development of a coherent, open and friendly volcano remote sensing community — a group within which I have been lucky enough to be involved. Remote sensing provided the data, but the global remote sensing community provided the opportunities, support, encouragement and inspiration. In addition, remote sensing (as well as geography — my undergraduate roots) is necessarily multi-disciplinary, and this ethic has been the foundation for many further ground (as well as space) -based projects and collaborations.

The many opportunities that have come my way through volcanology and remote sensing would not have been possible without one thing: support. This is particularly true when your work is based firmly on a multi-disciplinary focus, where the close collaboration and backing of all of my colleagues has been utterly essential in this forward motion. Thus, I really need to thank as many of my collaborators as I can for their support, help, guidance and input. This support has been fundamental at all levels from logistical (salary, field issues, etc.), to academic (data collection opportunities, discussions over beers/runs, etc.) and personal (advice, tolerance, encouragement, etc.). The unrelenting reliability and support of my mentors and colleagues has also provided one all-important and key asset: friendship. In making my thanks I will begin in Sicily and move anti-clockwise around the world to finish in Hawaii.

In Catania, Sonia Calvari has always provided me with her full scientific and logistical support, enabling us to tackle many new lava flow effusion and thermal issues; her hard and dedicated work is much appreciated. I also thank all at INGV-Catania, especially Daniele Andronico, Mike Burton, Luigi Lodato, Marco Neri, Margherita Polacci and Letizia Spampinato for being such fine hosts, collaborators and friends. Further north, Tuscany provided me with three things: my wife, a decent soccer team (Livorno, Serie A — unlike

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2nd INTERNATIONAL MAAR CONFERENCE

September 2004 saw the completion of a very successful meeting devoted to the volcanology, structure, sedimentology, petrology, paleontology and physics of maars and diatremes, held in Germany, Hungary and Slovakia. Jointly sponsored by IAVCEI and IAS, the Second International Maar Conference brought together workers from 28 nations interested in how these volcanoes, second only to scoria cones in abundance on continents and islands, are supplied with magma, grow and fill. The wide-ranging scientific program also addressed how geophysical techniques can inform us about the deep structure of diatremes, how far 'damage zones' extend into country rock surrounding them, and can better constrain the size and structure of maar-diatreme volcanoes hidden beneath sediment or vegetation. The detailed climatic record provided by sediments and fossils within maar lakes was another topic of interest.



Group photo of the IAVCEI-IAS 2IMC in front of the conference venue at the Gerébi Kúria, Lajosmizse, Hungary.

The meeting kicked-off in Würzburg, Germany, for three days of 'The Maar Engine – Workshop on Experimental Volcanic Molten Fuel-Coolant Interactions.' For many of us, this was our first chance to see the experimental equipment employed in the wide range of physical modeling of explosive magma-water interaction and materials science that has contributed so much to our understanding of volcanic processes in the past three decades. Bernd Zimanowski, Ralf Büttner and graduate students in the research group led a tour of the Würzburg experimental lab, of which the range of high-speed camera equipment, plus the reinforcing of the power system, and the building were most impressive —

when an explosion is triggered the whole department shakes on its foundations! Bernd led a discussion of the physics of fuel-coolant interactions, supported by summaries of transport and sedimentation within phreatomagmatic systems (Pierfrancesco Dellino) and the volcanology of maar-diatreme volcanoes (Volker Lorenz). Unfortunately Ken Wohletz was unable to attend this meeting; his contributions to the workshop and subsequent discussions were missed. As is always the case, the workshop threw up as many new questions as it answered. Many new lines of inquiry were identified that can extend the fuel-coolant model to a wider range of magma types and magma-water contact conditions, plus build on the work that matches clast morphologies formed under known conditions with those formed during natural explosions to expand our arsenal of diagnostic tools for reconstructing eruption histories. The transport of debris from explosion sites, often deep within vents, to the surface, the impact of discrete explosions on transport and deposition systems, and the range of fragmentation mechanisms that might act on clasts and country rock during and subsequent to transport away from explosion sites were all hot topics.

Two field trips complemented the conference schedule (with the same trip run both pre- and post-meeting to allow people to join either); one trip, led by Ulrike Martin and Károly Németh, visited the Mio/Pliocene maars and diatremes of western Hungary, while the other, led by Jaroslav Lexa and Vlastimil Konečný, toured the Mio/Pleistocene southern Slovakian maar-diatreme field. Both field trips were well attended and provided a great opportunity to see some countryside, admire the local geology and discuss the rocks and processes on the outcrop. Many eroded diatreme structures form the highest-standing part of the landscape and are the sites of castles or fortifications, which lends a touch of history and drama to the outcrops. The outcrops are often in quarries, (some still active) and intra-vent structures, where maar lake sedimentology, tephra rings and the margins of lava lakes are beautifully exposed. The work during the Hungarian field trip was leavened by visits to vineyards and restaurants that doubled as a chance to experience Hungarian culture, and is an aspect that will remain at least as memorable as the geology for most of the participants.

The conference itself convened in a rural setting outside Budapest, and comprised four days of oral and poster sessions that encompassed the whole range of current research into maar-diatreme volcanoes. An organizational point appreciated by many people was

that all sessions ran consecutively, meaning that we could all attend every session — for a conference of this size (108 participants) this was a great way to ensure everyone had a chance to enjoy the full breadth of the science. Hans-Ulrich Schmincke started the conference with his plenary talk ‘External Forcing of Volcanic Eruptions’, which unified many of the advances in volcano science in the past three decades to illustrate how the ‘big picture’ is developing. While it is rewarding to note that some of the feedbacks involved are now approaching a state of adequate description, those that still require detailed work before we can begin to accurately model the long and short term behavior of volcanoes will continue to offer stimulating and challenging research questions for some time to come.



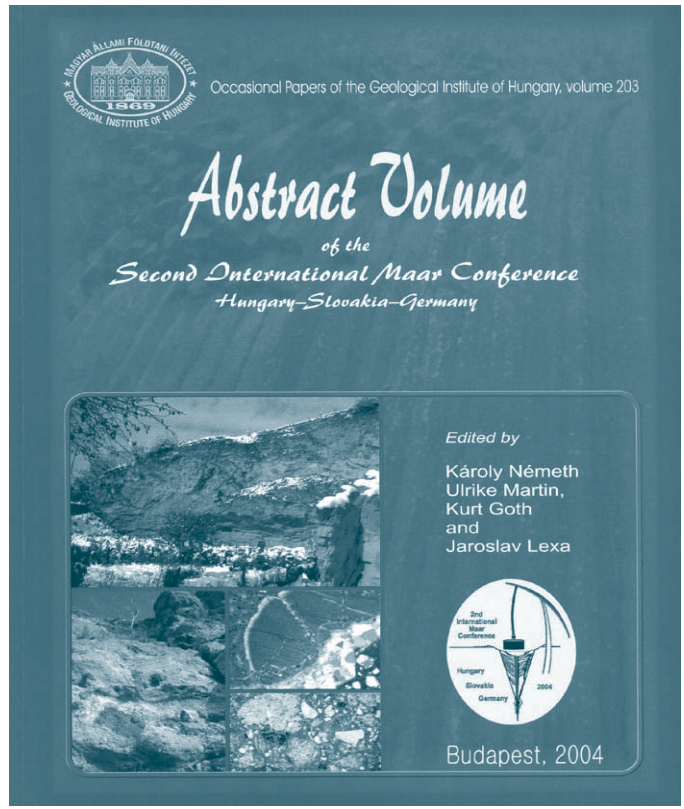
Filakovo diatreme, one of the visited sites on the field trips to Southern Slovakia.

Early sessions covered the geology and volcanology of maars and their associated tephra deposits, discussions of diatremes and their root zones, and the structural and economic geology of maar-diatreme volcanoes and their root zones. The latter was bolstered by participation of workers interested in the geology of kimberlite pipes, description of which were beautifully illustrated by a wealth of drill core data and sophisticated (and well-constrained) computer models of diatreme geometry. Later sessions discussed the geology of intrusive and extrusive rocks associated with maar volcanoes, geophysical contributions to mapping and modeling their shallow and deep structure, and some new models for fragmentation and sedimentation of fine ash within eruption columns. Presentations concerned with limnology and sedimentology of maar lakes, surtseyan volcanism, volcanic fields and polygenetic volcanoes rounded out the scientific program. An interesting addition to the conference was a discussion of how our work is important to the public, covering hazards, environmental protection, new approaches

to geoscience education and the creation of geoparks to preserve significant geological features. Hungary and Germany have both seen the establishment of new geoparks in the past decade, and we were offered many suggestions as to how best to promote earth science and volcanology through the geoparks concept — with the caveat that that if we do nothing to assist with informing the public, then we are bound to accept whatever alternative information is offered as representative of current thinking in volcanology!

The conference came to an end with presentations of student awards, and the suggestion that we should reconvene in Mexico in 2009 for the next Maar Conference. The gala dinner was preceded by a display of traditional horse-riding skills and accompanied by gypsy music and plenty of Hungarian wine, and provided a great wrap-up for a fantastic meeting. On behalf of the participants, I would like to extend our thanks for the organizing committee for putting together a great conference of truly international scope and attendance, that provides both a benchmark for our current understanding of maar-diatremes and a springboard for future work on these interesting volcanoes.

Murray McClintock
University of Otago, Dunedin, New Zealand



Cover page of the Abstract Volume of the IAVCEI-IAS 2IMC in the series of the Occasional Papers of the Geological Institute of Hungary (vol. 203). Abstracts are available at www.iavcei.org under meetings – past meetings.

Wager Medal for Andy Harris — Continued from page 5

Bristol Rovers, Division 4) and Maurizio Ripepe. Maurizio was responsible for showing me a new and spectacular multi-disciplinary research direction. His understanding, insight, openness and vision has enabled us to come a long way in five short years. In Tuscany, I also thank Francesco Mazzarini, Maria Teresa-Pareschi, Laura Pioli and Mauro Rosi, as well as Roberto Carniel up in Udine, for their extensive help, collaboration and hospitality.

In the United Kingdom, I thank Dave Rothery for his continued support; his enthusiasm remains inspiring. I also need to thank all at the Open University, including Steve Self, Steve Blake and John Murray, the Open University Geological Society, especially Chris Arkwright and Duncan Woodcock, and many others in the British volcanological and remote sensing communities (including ex-pats). Here I just have time to mention Kate Evans-Jones, Adam Maciejewski, Peter Miller, Clive Oppenheimer, Harry Pinkerton, Paul Rollin, Nicki Stevens, Ben Van Wyk de Vries, Geoff Wadge, Matt Watson, Alan Whittington, Lionel Wilson and Martin Wooster.

In Michigan, Bill Rose opened many new doors, introducing us to and leading us through the amazing opportunity that was Guatemala, as well as further friends including Greg Bluth, Yvonne Brannan, Elly Bunzendahl, Simon Carn, Julio Cornejo, Rudi Escobar-Wolf, Oto Matthias, Jim Vallance and, of course, Sam Bonis. In Mexico, I thank Servando de la Cruz Reyna and Nick Varley for the further support, opportunities and collaborations they have provided. Thanks, too, to Andres Pavez for his collaboration from France and Chile.

In Alaska, Ken Dean has always been a source of inspiration, from the early days his ground breaking work using satellite data for operational volcano monitoring served as a blueprint that brought us all much success. Respect, too, to Jon Dehn who has provided the five most essential components of collaboration: dedication, hard work, reliability, inspiration and humor. Likewise, time spent in the south with Dave Schneider and Rick Wessels has been productive and fun.

Finally to Hawaii, where many thanks go to the Hawaiian Volcano Observatory staff, particularly Don Swanson, Jim Kauahikaua, Christina Heliker, Jeff Sutton, Tamar Elias and Rick Hoblitt, as well as David Okita, for their extensive support during our many campaigns, experiments and deployments. Special

thanks to Carl Thornber and Dave Sherrod for their help in creating the GOES monitoring tools and the DUCKS.

Last but not least to the University of Hawaii. The support and guidance of Luke Flynn and Peter Mouginis-Mark has been essential and will always be appreciated. Without them this would not have been possible and I would be back in my bar in Cornwall. What's more, this group has provided exemplary role models in helping forge this opportunity. Likewise, the scientific company and friendship of Milton Garces, Bruce Houghton, Scott Rowland and Rob Wright makes Hawaii such a productive and happy place to work. Having tolerated me for almost 10 years now, Luke, Pete and Scott merit special thanks.

My work would not have been half as much fun without those who have worked directly with me in Hawaii: Costanza Bonadonna, Eliza Calder, Steve Clegg, Mark Davies, Steve Donegan, Harold Garbeil, Jo Gottsmann, Leon Geschwind, Keith Horton, Laszlo Keszthelyi, Nicole Lautze, Emanuele Marchetti, Aisha Morris, Eric Pilger, Dawn Pirie, Steve Sahetapy-Engel, Thor Thordason, and Glyn Williams-Jones; as well as all the UH staff and students with whom I have been lucky enough to be involved. Finally, I must thank my students and post-docs who have worked so tirelessly to help achieve so many objectives. Matt Patrick took our work in directions I knew not possible — I could not have wished for a more dedicated, insightful, good humored and hard working PhD student. Lucas Moxey inspired me with his hard and dedicated work, completing an outstanding remote sensing masters in spectacular fashion. John Bailey, likewise, impressed me as a loyal, utterly trustworthy and hard working ally during many seasons on Stromboli, Vulcano and Etna. Jeff Johnson worked tirelessly to ensure the success of many data collection campaigns and projects during a frantic and hectic period. Jeff Witter, likewise, worked in his own unique, happy and dedicated manner to finish anything I cared to place on his desk.

My apologies to those I have not had time to thank in this speech, and I know that there are many. Thus, as with those whom I have named — to all those who are not named but with whom I have had the pleasure to work: thank you. Most of all, though, I am grateful to my wife, Lucia Gurioli, for showing me that there is more to life than lava flows — there are pyroclastic density currents too.

Andy Harris

Catania, 12-15 June, 2005

2004 Wager Medal Citation for Oleg Melnik

I am delighted to give the 2004 Wager Medal recipient citation to Oleg Melnik, who is a good friend and excellent colleague. Modeling of volcanic flows began in the 1970s in the West with the pioneering research of people like Tom McGetchin and Lionel Wilson. There was also important research in Russia at this time, particularly by Yurii Slezin who also developed one of the first conduit flow models and was the first to apply catastrophe theory to help explain volcanic phenomena. However, this work was not well known in the West. In 1985 Oleg Melnik started as a student at Moscow State University in the Theoretical Mechanics Department where he was strongly influenced by the research of Slezin and mentored by Professor Alexei Barmin. He started to extend the ideas of Slezin and to introduce kinetic parameters into mathematical models of conduit flow.

With the political changes of the early 1990s, Oleg, along with many other talented Russian scientists, started to develop much stronger links with international science. Oleg arrived in Bristol on a visit to British Aerospace in connection with his other research interest in magneto-hydrodynamics. We discussed volcanic eruption mechanics and it soon became clear that Oleg represented a formidable talent who could bring new concepts and Russian scientific traditions into volcanology. Over the last eight years Oleg has developed some highly influential and novel models of conduit flows during both lava dome and explosive eruptions. In the case of his models of large magnitude explosive eruptions, coupled to magma chamber dynamics, he has shown that multiple stable flow rates can occur with abrupt transitions between different rates. He has pioneered the study of transient explosive volcanic eruptions and provided explanations of different eruptive styles (e.g. Vulcanian versus Plinian), due to kinetic controls. His work on conduit flows in lava dome eruptions has demonstrated the strong non-linearities of volcanic systems and has coupled together magma ascent, crystallization kinetic, degassing and associated rheological changes. These models help explain fluctuating discharge rates and provide the physical framework for interpreting seismicity and ground deformation.

Oleg Melnik has emerged as a major talent in the theoretical side of volcanology. He joins other prominent mathematicians and physicists who have received the Wager Medal, notably Claude Jaupart, Ginni Macedonio and Andy Woods. Like these Wager medalists, Oleg combines outstanding abilities as a mathematician with deep intuition about the physics of natural systems. By awarding the Wager Medal to Oleg, IAVCEI also is acknowledging the major contribution of his science to volcanology.

R S J Sparks
Bristol University, UK

2004 Wager Medal Acceptance Speech



Oleg Melnik

Dear Colleagues,

My life is full of luck. This year I joined IAVCEI and received the Wager Medal. I am very proud that this is the first medal that goes to Moscow State University and, indeed, to Russia.

In modern science, results rarely come from individual efforts. I thank my teacher,

and now colleague, Professor Alexey Barmin, who is here today to share my success. He was excited by the beauty and complexity of fluid mechanical problems that volcanoes present. After a trip to Kamchatka, where he met a local volcanologist Yurii Slezin, Alexey suggested a student project in the Mechanics Department of Moscow State University. Luckily for me, I wanted to travel to Kamchatka and decided to take on this topic. In the mid-1980s physical volcanology was a young science, maybe 10 years old. I have learned much from Alexey during these years and we continue to collaborate successfully.

My second good fortune was that I became acquainted with Professor Steve Sparks from Bristol University. Steve's influence on my research is enormous. He gives me the perspective of volcanic geology and available data in terms of physics (pressures, temperatures, etc.). I can then understand it with my background. Many of his suggestions finally emerged as equations and plots in our papers.

Continued on page 11

**In Memorium
Robert W Decker
(1927–2005)**



*Photo by S. Edward Spauling
(January 1975),
Dartmouth College Library*

Robert W. Decker, volcanologist and former IAVCEI President, died on June 11, 2005. Bob was born in Williamsport, PA. He received a BS from MIT in 1949, a MS in 1950 and went on to a PhD Sc from Colorado School of Mines in 1953, doing doctoral research on the Ruby Mountains of Nevada. He then served on the faculty at Dartmouth College from 1954 to 1979. He twice served as chair of the Department of Earth Sciences at Dartmouth and was revered as a master lecturer. At Dartmouth in the early 1960s many students attended lectures of the best professors without taking the class formally. Bob filled the lecture hall at his 'Rocks 1' with unenrolled walk-ins. He became Professor of Geophysics and helped make the Dartmouth Earth Sciences Department a place where talented people, who would otherwise have never thought of the idea, become committed natural scientists. A sabbatical leave to Indonesia in 1959–60 led to his interest in volcanology, and he subsequently undertook volcanological work in Iceland, Alaska and the Cascades. Among the students he influenced were Dave Harlow, who later played an important role in the Pinatubo forecasting experience and Pall Einarsson (Lamont Doherty Earth Observatory-Columbia) who helped Bob directly test the sea-floor spreading hypothesis by making geodetic surveys across the Mid-Atlantic Ridge in Iceland. Bob believed in great field educational experiences and pushed many students and colleagues on the Dartmouth faculty to study volcanoes. Noteworthy among these was Richard Stoiber, a longtime colleague who shared his fervor and enthusiasm for science, and who was introduced to active volcano studies in Central America by Bob. For more than two decades, Decker, Stoiber, Robert C. Reynolds, John Lyons and Andrew McNair were the faculty that made Dartmouth Earth Sciences an outstanding student-focused educational environment. This stellar faculty made quality teaching, student mentorship and

research their top priority; they supported students above all. Bob was the most gracious and accessible of that group of superb mentors. From 1975–79, in his final years at Dartmouth, Bob served as IAVCEI President and his leadership helped the organization grow and broaden.

In 1979 Bob left Dartmouth to join the USGS and serve as Scientist in Charge at the Hawaiian Volcano Observatory from 1979–84. Bob was an energetic and personable SIC. He was especially interested in geophysical monitoring techniques and pushed the development of electronic distance measurements and other techniques that helped HVO to better understand Kilauea and Mauna Loa. Bob's leadership in the skillful management of monitoring and public/media communications during the 1984 Mauna Loa eruption was full of quality and grace.

Bob moved to California in 1984 and used his professorial skills, sharpened in 'Rocks 1' lectures, in a new outreach effort. With his wife, Barbara, he wrote books about science, especially volcanoes, for everyone. These books are full of outstanding photographs which demonstrate a considerable artistic ability that complements the writing. In all, the Deckers wrote 15 successful books about volcanoes and national parks, the latest being *Volcanoes in the National Parks* (www.doubledeckerpress.com).

Bob's proudest accomplishment was his leadership in the establishment of the Center for the Study of Active Volcanoes (CSAV) at the University of Hawaii Hilo in 1989 (<http://www.uhh.hawaii.edu/~csav/>). CSAV's mission is to provide training and information about monitoring volcanoes and mitigating volcanic hazards. This center has trained more than 100 volcanologists from all around the ring of fire. In his honor, there is now a Robert Decker Memorial Scholarship that provides funding for CSAV students from developing countries (Center for the Study of Active Volcanoes University of Hawaii at Hilo 200 West Kawili Street Hilo, Hawaii 96720-4091).

We salute a great volcanological leader and generous friend who had an exemplary career that touched many and communicated broadly and beautifully.

Bill Rose
September 20, 2005

*Preparation of Volcanic Hazard Map for Misti Volcano, Peru
— Continued from page 3*

a 'non-technical' field excursion for the officials to several well-known sites within central Arequipa that dramatically demonstrate direct evidence of the destructive impacts of lahars and other hazards that have occurred in recent centuries.

Along with Vesuvius, Misti provides another example of a potentially highly dangerous volcano located very close to a densely populated urban area. The new volcano-hazards map being produced by INGEMMET represents an important first step in responding to a future eruption of Misti Volcano, which will pose a formidable challenge for the emergency managers and citizens of Arequipa. Of course, for any program of volcano-risk reduction to be effective, systematic, real-time monitoring of the volcano must be undertaken and sustained, to document the baseline (normal) behavior of Misti Volcano. Such baseline data would enable the early detection of the onset of volcanic unrest, allowing scientists to make short-term forecasts of a possible impending eruption and the civil authorities to execute contingency plans, including timely evacuations if needed. To date, seismic and geodetic monitoring of the volcano is transient and/or inadequate. Permanent telemetered monitoring networks must be established to complement the hazards map and assessment to provide government officials the best possible scientific information in managing a volcanic crisis at Misti Volcano.

Jersy Mariño,

INGEMMET
Lima, Peru

*Wager Medal Acceptance by Oleg Melnik — Continued from
page 9*

I would also like to thank many people in the Institute of Mechanics of Moscow State University where I worked for nearly 15 years and people from the Earth Science Department in the University of Bristol. They were very open to discussions of the problems that I had and helped me a lot.

My special thanks go to my current PhD students Alexander Starostin and Elena Vedeneeva and some of my undergraduate students. We are now getting exciting results together.

Finally, I would like to say "Thank you" to my wife Olga and my three children. They are very far away from here now, but passionately waiting for my arrival.

From year to year physical volcanology matures and I saw many exciting presentations at Pucon, showing a wide spectrum of problems, beautiful models and impressive results. With the improvement of accuracy and widening of the range of laboratory techniques modelers face an enormous amount of data. Our challenge is to try to suggest relevant physical mechanisms that are responsible for what is observed and measured. The interiors of volcanoes, to a large extent, remain a black box, but we make holes in it and put some light into the interior. In this sense mathematical modeling is a special tool because it already allows us to bring different signals together and make a clear picture of a volcanic system as a whole. It's a long way to go, but it's an exciting road.

I thank IAVCEI for supporting me.

Oleg Melnik

VOLCANOES

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Future Meetings

Workshop on Caldera Volcanism: Analysis, Modeling and Response, Tenerife, Spain

Oct 15-21, 2005

contact: jgottsma@ija.csic.es

Chapman Conference on the Effects of Basement, Structure, and Stratigraphic Heritages on Volcano Behavior, Tagaytay City, Philippines

Nov 16-20, 2005

contact: www.agu.org/meetings/cc05hcall.html

Cities on Volcanoes 4, Quito, Ecuador

January 23-27, 2006

contact: www.igepn.edu.ec/citiesonvolcanoes

IAVCEI 2006 China, Continental Basalt Volcanism

May 14-18, 2006

contact: www.iavcei2006.org

Walker Symposium, Iceland

June 12-17, 2006

contact: www2.norvol.hi.is/page/nordvulk_walker

International Symposium on Earth and Planetary Ice-Volcano Interactions, Reykjavik, Iceland

June 19-23, 2006

contact: http://www.igsoc.org/

IUGG General Assembly, Perugia, Italy

July 2-13, 2007

contact: www.iugg2007perugia.it

IAVCEI 2008 General Assembly, Reykjavik, Iceland

Aug 18-24, 2008

contact: armh@hi.is

IAVCEI 2012 Alaska, Centennial of 1912 Katmai Eruption (tentative)

June 2012

Further information may be found on the IAVCEI website at www.iavcei.org.

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2004 – 2007

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