

# IAVCEI *News* 2005 No: 1

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

## Message from the President



Oded Navon  
President

Dear IAVCEI Members:

In the beginning of my letter, I would like to remind us all about the recent IAVCEI General Assembly at Pucon, Chile. It was a wonderful meeting in a wonderful location organized by a group of wonderful and dedicated people and attended by an even larger such group. Before writing this letter, I went back to my photos of Volcan Villarica, Lago Villarica, and the Grand Hotel Pucon; it is such a dear memory. I also looked at the

magnificent Volcan Lanin which we visited on this clear, clear day of the mid-conference field trip: what a beauty.

The conference was a great success. I would like to thank all those that expressed this sentiment during the conference and in letters I received after the conference. I hope that many more such letters reached our Chilean friends; they are the ones who deserve it. A lot of good science was done during this week; many ideas were presented, discussed and crystallized. I am sure that these discussions will echo in future papers and proposals or in new procedures established in volcanological observatories. Last, I am sure that much new collaboration will evolve out of contacts seeded in this assembly. I hope that our South American friends and especially our Chilean hosts have formed and will form new contacts that will lead to future collaborative studies. We received a splendid presentation of South American science and Chilean geology. The successful conference tours reflected a formidable effort in planning and preparation of routes and guide books, transportation and guidance — they were great.

I would like to take this opportunity to thank again the Local Organizing Committee, the Scientific Committee, the former IAVCEI president, Prof. Steve Sparks, the IAVCEI Secretary General, Prof Steve McNutt and the IAVCEI membership secretary, Caroline Giddings. Most of all I would like to thank the three people who undertook most of the work: Dr Jose Antonio Naranjo, Dr Hugo Moreno and the unbelievable Jorge Clavero for the months of work they invested in assuring this success. It was a great success. We all enjoyed the meeting

and many regarded it as the best IAVCEI meeting we attended. Last, I would like to thank the sponsoring bodies, the Servicio Nacional de Geología Y Minería and its National Director, Mr Luis Sugarret for undertaking the task of the organizer of the assembly, and Luisa Martinez and the Turismo Tajamar crew for organizing all the non-scientific parts.

On December 26th, 2004, just a month after we came back home, the Indian Ocean disaster hit. First, I would like to send once more our condolences to our friends in Indonesia, Thailand, India and Sri Lanka and to the people of these countries who were hurt so badly. IAVCEI, through the joint commission on Tsunamis, and as part of IUGG, have reacted and taken part in the efforts following this sad event.

The lesson we must learn from the tsunami disaster is that we must do our best to help mitigate future natural disasters. The main mission that IAVCEI must undertake is to raise the world awareness to the dangers of volcanoes. As in the case of the tragedy in India and Sri-Lanka, early warning systems may and should be built ahead of time. Volcano monitoring must start as early as possible, wherever possible. Programs for hazard mitigation may and should be prepared before a crisis starts. Educational activities should be launched and evacuation plans be tested and drilled, before the awakening of these dormant forces.

The volcanological community was shocked twice in the past, in Saint Pierre, Martinique in 1902 and in Armero, Columbia in 1985. It is our duty to try to prevent other disasters and this is being done by many volcanologists who stand on guard and by others who study volcanoes, advance our understanding and, eventually, our ability to forecast the short and long-term behavior of hazardous volcanoes. Many lives have been saved and many successes have been recorded. But we must keep our commitment to advance volcanology and to make sure that the improvements reach all places of need, that more hazardous volcanoes are monitored, that the public and the authorities are well informed, and that the risk to society is minimized as much as possible.

Another important field where IAVCEI must take a leading role is alerting the world about super volcanoes. 2005 began with a lot of activity. A report was issued by the Geological Society of London and two TV documentaries were broadcasted, drawing public attention to these dormant giants. Most volcanoes

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IAVCEI Homepage: [www.iavcei.org](http://www.iavcei.org)

## 2004 Report to IUGG



*Steve McNutt*  
Secretary-General

IAVCEI ended the year with over 840 paid individual members, the highest number yet. Thirty-three members have chosen to become Life Members, including three members who were awarded Life Membership as Honorary Members in 2003–4. The IAVCEI web page is frequently revised and updated. The web site url is [www.iavcei.org](http://www.iavcei.org). The volcano listserv administered by Arizona State University remains the official IAVCEI listserv. It has >2500 people listed, which far exceeds the IAVCEI membership.

Thus we hope to further boost the membership in IAVCEI. Three issues of the newsletter 'IAVCEI News' were mailed to members in 2004.

The highlight of the last year was the hugely successful General Assembly held in Pucon, Chile. Approximately 940 people attended the meeting from November 14–19, 2004. The five-day meeting brought together scientists and multidisciplinary experts from around the globe to discuss many aspects of volcanology with a theme of 'Volcanism and its Impact on Society'. The meeting was organized by representatives of the Geological Survey of Chile, (Sernageomin) and others, and sponsored by Sociedad Geologica de Chile and Instituto Geografico Militar (Chile) as well as IAVCEI. The meeting consisted of over 1100 abstracts presented in twelve theme sessions. IAVCEI travel grants helped pay expenses for several young scientists or scientists from developing countries.

Three outstanding volcanologists were awarded with new IAVCEI Honorary Memberships. One was awarded at Sapporo 2003: Prof Shigeo Aramaki (Japan); the other two in Pucon: Prof Hans-U. Schmincke (Germany), and Dr Robert Tilling (USA). The Thorarinsson medal was awarded to Wes Hildreth (USA), and two Wager medals to Andy Harris (USA) and Oleg Melnik (Russia). Two new awards were given for the first time in 2004: the Krafft medal to Tom Simkin (USA) and the Young Scientist award to Costanza Bonadonna (Italy).

The next IAVCEI General Assembly has been tentatively scheduled for 2008. Proposals have been received from Iceland and France and are being evaluated. Over the next few years, IAVCEI will also focus its efforts on several smaller meetings, including the IAVCEI sponsored 'Cities on Volcanoes IV' conference to be held in Quito, Ecuador in January 2006.

The IAVCEI Executive Committee met in Pucon and conducted three meetings covering many aspects of IAVCEI business.

Officers of IAVCEI for 2003–2007 are:

President	Oded Navon (Israel)
Vice-President	Jocelyn McPhie (Australia)
Vice-President	Toshitsugu Fujii (Japan)
Secretary-General	Steve McNutt (USA)

### Members of Executive

Committee	Anita Grunder (USA) Renato Solidum (Philippines) Hugo Moreno (Chile) Jean-Christophe Komorowski (France)
Past President	Steve Sparks (UK)
Editor Bull Volc	John Stix (Canada)

The Commission on Explosive Volcanism is continuing to work on compilation of a comprehensive database of all eruptions with volume >10 km<sup>3</sup> for the last 2 million years. Two commissions held workshops in September 2004: The Second International Maar Conference in Hungary, and the MEEMSV IV International workshop in France.

IAVCEI was co-applicant for a 2002 ICSU grant to support training in volcanology for Latin American scientists. The grant is to provide \$12,000 per year for three years. The second year's funds in 2004 were used to support the workshop on the Mexican Volcanic Belt in Mexico in January 2004 (\$6000) and to pay portions of travel expenses for several scientists from Costa Rica to attend the General Assembly in Pucon (\$5500). A portion of the funds were used to offset IAVCEI expenses (\$500).

IAVCEI sold several educational products in 2004. Two videos on 1) understanding volcanic hazards, and 2) reducing volcanic risk, were produced professionally under contract with IAVCEI. Over 60 videos were sold in 2004. Also, a volcano calendar for 2005 was produced by IAVCEI members and was printed and marketed by a professional calendar company. Over 5,000 calendars were sold and an additional 800 were distributed by IAVCEI to various scientific, educational, and governmental organizations. IAVCEI received a small royalty payment (1 percent) for the calendars.

A monograph based on all of the symposia under the Sapporo 2003 Union theme 'State of the Planet: Frontiers and Challenges' was published by in 2004 (Dr R S J Sparks (IAVCEI), co-editor). IAVCEI received a grant of \$5000 from IUGG to distribute 137 copies of the book to scientists in developing countries.

IAVCEI recognizes that its activities could be significantly expanded by improved fundraising. Towards this end, President Steve Sparks wrote a series of articles on fundraising for IAVCEI News in 2002, and the issues were discussed in detail at the July 2003 meeting of the Executive Committee. Secretary-General Steve McNutt worked with a lawyer and submitted forms for incorporation as a non-profit corporation in fall 2003; the non-profit status was granted in December. After meeting with a consultant, McNutt also submitted a full application for tax exempt status under section 501(c)3 with the Internal Revenue Service of the US. The application was approved by the IRS in June 2004 and IAVCEI now has tax exempt status. This status is important so that contributions may be received with a tax benefit to contributors. We are targeting 2005 as the year to launch full fund raising activities.

2004 was an exceptionally active and productive year for IAVCEI. We hope to build on the success of the Pucon General Assembly to assure the scientific and financial health and vitality of IAVCEI in the future.

## Brief Scientific Report

Between November 14 and 19 in Pucón, southern Chile, at the foot of the active Villarrica volcano, the IAVCEI 2004 General Assembly was held. The main theme of this General Assembly was “Volcanism and its impact on society.”

The scientific program consisted of 12 symposia, which were subdivided into 33 thematic sessions. These symposia covered the most important aspects of recent volcanological research, such as the impact of volcanic eruptions on climate, weather, society, etc.; as well as more traditional aspects such as volcanic petrology, geochemistry, physical volcanology, etc., and the interesting and exotic planetary volcanism. Considering the importance of volcanic activity and mineralization in Andean evolution, a series of scientific sessions devoted to the relationship between volcanism and ore deposits, and two pre-meeting field trips to well-known volcano-related ore deposits, were also organised.

The response of the international volcanological community was outstanding, with ca. 900 scientists coming from 42 countries worldwide attending the conference. The Scientific Committee received more than 1,200 contributions (twice the number received at the last GA in Bali, Indonesia), from which 1150 were accepted for presentation, making this the largest number of contributions ever received by an IAVCEI General Assembly. More than 400 of these were scheduled for oral presentation, with less than 5% of no-shows. About 700 posters were presented during the four-day meeting. A series of 14 IAVCEI Commission meetings, Information meetings and Working group meetings, also took place during the event, generally during the evenings.

Scientific activities started a week before the meeting with five excursions to volcanic areas of the Central Andes of northern Chile, in which more than 120 scientists participated, visiting volcanoes such as Parinacota, Taapaca, Ojos del Salado, Láscar, etc., and an interesting plutonic zone in the Copiapó area. Field excursions to volcanic areas of southern Chile followed the meeting. More than 90 people visited volcanoes such as Osorno, Calbuco, Lonquimay, Villarrica and Llaima. A series of intra-meeting field trips to the surroundings of Villarrica, Quetrupillán and Lanín volcanoes were organised on November 17th, in which more than 700 people enjoyed the magnificence of southern Chile’s volcanoes and scenery.

The quality of the contributions presented during the meeting, the interesting discussions generated during the field trips and the high participation of the volcanological community in all the activities have made this General Assembly one of the most interesting volcanological meetings in recent times. On behalf of both the Organising and Scientific Committees, we would like to thank all scientists whose crucial participation contributed to the scientific success of the IAVCEI 2004 General Assembly.

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threaten local communities. In that respect, their hazard is similar to those of earthquakes, storms, floods and tsunamis. However, two natural hazards – large impacts by comets or asteroids and super-volcanoes – are larger in scale and may threaten the existence of human civilization. We should alert society to the hazard of super-volcanoes. While no such giant eruption poses an immediate threat, volcanologists, governments and international agencies should pay more attention to the causes and consequences of such civilization-threatening events, study them and work out ways to mitigate their global hazard. At the same time, we must take care to act in a responsible way and provide accurate assessments of the immediate and future risks involved. I think that the questions and answers issued by the Yellowstone Volcano Observatory were very good examples of a right combination of both: the immediate hazard is small, but in the long run the threat to civilization is significant.

At the end, to the sound of Inti-Illimani playing on my computer, I would like to go back to the beginning and again thank our Chilean friends once more – what a great meeting it was!

Oded Navon, President



*Participants in a pre-meeting field trip pose with Parinacota Volcano in the background. Photo provided by Jorge Clavero*

We are looking forward to seeing you all again in Chile.

Jorge Clavero  
President Scientific Committee  
IAVCEI 2004 General Assembly

José A. Naranjo  
Executive Secretary  
Local Organising Committee

## IAVCEI Krafft Medal Citation

By Chris Newhall

What a real delight it is to honor Tom Simkin this afternoon ... and to honor Katia and Maurice Krafft at the same time! Let me also thank colleagues who joined in nominating Tom for this Medal – Jörg Keller, Jim Luhr, Dick Fiske, Grant Heiken, Pete Hall, Patty Mothes, and Russell Blong.

Maurice and Katia are best known for their magnificent film footage and still photographs of volcanoes. Illustrated lecture tours and licensing of photography brought income, and it paid for their next volcano trip, but they shared their images very freely with fellow scientists. They were also much more than photographers. They were scholars — historians, sociologists, geochemists — and teachers! Their passion for volcanoes was driven not only by curiosity but also by a strong desire to share their experience to help keep people safe. They died while trying to get better footage of pyroclastic flows so that they could improve that segment of the IAVCEI video on volcanic hazards.

Thus the new Krafft Medal is to be given to those who have made generous and profound contributions – scholarly and humanitarian – to the volcanological community and to those who live in the shadow of volcanoes.

I don't have enough time to read all of the letters of support for Tom for this first Krafft Medal. So instead, I'm going to just offer a few highlights of those letters, and to note some strong parallels between Tom and the Kraffts.

Tom finished his PhD in the 1960s, at Princeton; it was a golden age of plate tectonics discovery. That included and was followed by extensive field work in Scotland and in the Galapagos.

All of us know of *Volcanoes of the World*, co-authored by Tom and Lee Siebert. Fewer, I suspect, know of the painstaking work ... combing the literature in many languages, making personal contact with many informants to check facts and figures, and to check details of the histories of the volcanoes. Few of us really appreciate the depth of the work that underlies every fact and figure in that book, and in the associated database. The same can be said of his *Krakatau* and *Parícutin* books, co-authored with Dick Fiske and Jim Luhr. Tom is a consummate scholar – delighting in discovery, paying meticulous attention to detail, and always striving to be sure that credit is given where credit is due. In a very real sense, Tom's scholarship is a statement of his own humility and his high respect for the work of others. Maurice and Katia loved good scholarship, which is surely part of why they and Tom were such kindred spirits.

Although today *Volcanoes of the World* and the corresponding database seem so natural that it's hard to imagine them not existing, they are actually the pioneering, visionary product of Tom and co-workers. They started this effort in the 1970s, before PCs, before Microsoft, before email, before the Internet, and before most of us had any idea how central databases would become in every academic field and, indeed, in our lives. It was not an easy path to blaze. While cherishing the printed book,



Tom Simkin

Photo by Boris Behncke

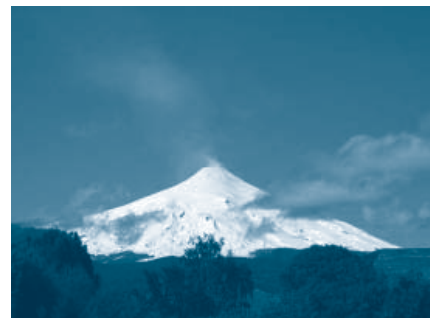
and serving as editor for the printed *Catalog of Active Volcanoes*, Tom also saw that the future of volcano data would be digital.

Perhaps by intent, perhaps not, Tom and his co-workers made the world of volcanology smaller; smaller and more closely knit. Tom organized the network of SEAN, now GVN correspondents. The *Bulletin* speeded and standardized the reporting of volcanic events. More than once, this gave Maurice and Katia a head start to the next eruption, and then their photography plus reports from local scientists would serve the rest of the community. In a letter supporting Tom's nomination, Russell Blong asked, "Without Tom Simkin, where would our community be today?" We would have noticed that the rest of the world was getting smaller, and we would have hopped on board. But I think that Tom's early vision for the database, and for the *Bulletin*, laid a wonderful foundation and got to shrinking our world about a generation earlier than it might have otherwise happened.

Tom is also one of the most thoughtful people I know. Thoughtful in the sense of being warm and generous; also thoughtful in the sense of being full of thoughts, pondering life's issues from this angle or that. Always with an eye toward fairness. On many an occasion, I've seen Tom agonize over the right thing to do. How to help colleagues who were being treated badly in their institutes. How to help those in medical straights. How to help scientists from developing countries break through the glass ceiling of colonialism. Tom was a major contributor to the IAVCEI Task Group for Crisis Protocols. Again, courtesy and fairness were major themes. And, naturally, he helped the Krafft and Conrad families through the aftermath of Maurice and Katia's tragic deaths.

This medal honors a colleague who has not only a strong publication record of his own, but has also brought our community closer together, thus enabling even more research in the process. Were Maurice and Katia still with us, they would have been worthy recipients. Sadly, they're not, but fortunately, we have another equally worthy recipient!

Colleagues, I present Tom Simkin, the 2004, and first, Krafft Medalist!



Villarica Volcano, visible from the Gran Hotel Pucon conference site. Photo by Jorge Clavero

## IAVCEI Krafft Medal Acceptance

By Tom Simkin

Well, this is terrific. I never expected anything like this, and I'm enormously grateful.

It was really enough of an honor just to be nominated by Chris and Jörg and supported by the others that Chris listed – great people who I respect very much. So it started off well. Then the real cherry on top was the link to the Kraffts: two wonderful friends who gave so much to our science. Their blend of art and science I think influenced people all over the world, and their loss was tragic. One of the nicest parts of this medal is the fact that their work on the humanitarian side of volcanology will always be recognized.

I must say that when Chris was listing my "accomplishments," I was doing some squirming, because so many of these were strongly influenced by, in some cases done by, others. So I want to spend the few minutes that have been allotted to me here in saying thanks to those other people, particularly Smithsonian colleagues.

That group starts with Bill Melson, who began volcanology at the Natural History Museum in the '60s. He hired me in 1967, for which I'm obviously grateful, and only 6 months later he was instrumental in starting that wonderfully-named Smithsonian organization, the Center for Short-Lived Phenomena. Its first director was Bob Citron. Bob's boundless enthusiasm was reflected in starting the part of our program that I think remains our strongest element, namely the network of volcano watchers all over the world. That group has grown and, without it, volcanology would not be where we are today. It has been terrific – you've been terrific.

We were not in the volcano reporting business very long before we realized how badly organized the information was; a new volcano would erupt and we would really have to scramble to learn anything about its background. So in 1971 we started our database, when the word was not yet very well known. We started with IAVCEI. We started with the Catalog of Active Volcanoes, constructed largely in the '50s and '60s. We then added the compilations of the Volcanological Society of Japan, started in 1960, and the more recent eruptions from our Center for Short-Lived Phenomena. Much early help came from a student working half time at the museum, Lindsay McClelland; a name that many of you will remember.

After about 3 years, Lindsay was sufficiently excited by volcanology that he went off to grad school, and we had to look for somebody to take his place. We hired Lee Siebert, and that was one of the best things we've done. Lee has worked hard for 30 years now on the database, bringing in many hundreds of Holocene volcanoes – perhaps the most dangerous volcanoes of the world, but not included in prior compilations. It's not just his adding of Holocene volcanoes, though, it's his refining – ever refining – the database for which we all owe great thanks to Lee.

Lindsay returned to the Smithsonian in 1976 to preside over nearly 200 monthly bulletins during a 16-year period – a truly heroic effort. He deserves great thanks for nurturing our network and all that it's done. And during this time, our database continued to grow, with valuable contributions from fellow data junkies like Chris Newhall, Russell Blong, and John Latter.

In the mid-1980s, Dick Fiske helped to find funding for our work and, in a sense, to formalize what has become the Global Volcanism Program. I stepped down from the program in '95, and Jim Luhr has been carrying it on since. Although Lindsay left in '92, we have since made the great additions of Rick Wunderman, Ed Venzke, Paul Kimberly, and Gari Mayberry. So those are the names of the main people that have been such allies and teammates during the past 38 years. But I want also to give thanks to my wife, Sharon, and not just for putting up with me for 40 years. Her contribution to volcanology has been to preside over a wonderfully warm kitchen that has fueled many, many conversations with visiting volcanologists. All that talk has been fun, and some of it, I think, has even been useful.

Those are the people that I've wanted to thank by name, but I now want to ask those that are here to stand and share a bit of this limelight with me – Sharon, Lee, Jim, Gari . . . [applause] . . . But I'd like to take it one step further and ask every one of you who have ever supplied information to the Smithsonian – be it an eruption report, a part of an eruption report, a correction to our database – to stand as well. I know a lot of you out there are in that category, and it would be gratifying to me – and educational to everybody – if you would also stand . . . [applause as over 100 rise, with smiles all around] . . . YOU share in this award. Thank you!



*The mid-week field trip to Villarica Volcano was very well attended. Photo by Jorge Clavero*

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**Invite a colleague  
to join IAVCEI!**

**IAVCEI Award Winners 2004**

## Thorarinsson Medal Citation for Wes Hildreth

By Judy Fierstein, November 19, 2004

Two auspicious events occurred in the year 1912 that ultimately had great effect on the fledgling field of volcanology: In January, Sigurdur Thorarinsson was born; and, in June, Novarupta sent ash around the world during an eruption now known as the century's largest. Twenty-six years later, while Thorarinsson was absorbed in graduate work that launched his pioneering career developing the fundamental principles of tephrochronology, Edward Wesley Hildreth was born. Just before young Sigurdur handed in his PhD thesis, an even younger Wes was greatly affected by another eruption—not nearly as big Novarupta, but big enough to make a lifelong impression on a 4 1/2-year-old boy. That 1943 front-page photo of brand-new Parícutin growing — from out of nowhere — was the first newspaper article he ever read. He's been an avid newspaper reader ever since, following worldwide social and political developments with as much vigor as he pursues scientific interests. And, that front-page photo sparked his imagination, wonder, and curiosity—three of the most fundamental characteristics of the man I know today.

Just a year after Parícutin, Thorarinsson published his thesis and Wes, an ocean away and 5 years old, was ready to do a little exploring on his own. He made his first map as he spent hours walking the streets of his Dedham, Massachusetts neighborhood and rendered his interpretation of it on paper. Well, he's come a long way since then. Loving to explore then and now, few people follow Sigurdur Thorarinsson's pioneering spirit in volcanology as fully as Wes Hildreth. For nearly 30 years, his insights have shaped and defined volcanology and igneous petrology, from the origin and evolution of magmas to the processes and products of explosive eruptions. Perhaps Aldo Leopold expressed it best: "Of what avail are forty freedoms without a blank spot on the map?" Wes' passion is in those wild, unexplored places where new knowledge is created—whether on Mt. Adams chasing lava contacts never before mapped, discovering calderas in the high Andes of Chile and Argentina, or in the laboratory generating some of the most comprehensive, highest-quality geochemical data sets in existence — Wes tackles major conceptual problems in petrology and volcanology by turning the world into an open-air laboratory.

In Long Valley he put the Bishop Tuff on the map; The Chilean Andes bore the "MASH" concept and discovery of a half-dozen calderas and many more volcanoes; and developing the 1912 Novarupta story has been a career-long relationship. There's Yellowstone, Katmai, the Cascades, and Pantelleria — all part of an exceptionally productive career with data sets interpreted in novel and often provocative ways, which have catalyzed collaborations and friendships with colleagues around the world.

Along the way have been many influences of circumstance and people, including many of you in this room. Political science studies at Harvard sharpened his analytical abilities; Nearly 60 years of running honed inner discipline and drive, his first backpack traveled with him from Alaska to Mexico;



Wes Hildreth

and it took Ian Carmichael to focus Wes' natural wanderlust inclinations. I think, though, that it is his canine friend, Welsh corgi Maddy, who has effected the biggest changes in the last decade or so. Maddy has softened Wes more than his wife and colleague Gail — or I — ever could.... and she'll follow him anywhere. And when she gets tired — he'll even carry her!

I have worked with Wes for most of his 27 years at the USGS. He took me, fresh out of school, on my first ever backpacking trip — to the Valley of Ten Thousand Smokes, Alaska. There, I learned about perseverance in solving problems and in understanding geologic processes by thinking, evaluating, and reevaluating — and in never taking anything for granted, even under physically challenging conditions. Through the years, I've learned how hard-won small bits of data accumulate to reveal the histories of entire volcanic fields; how understanding geologic relationships in the field provides an unequalled framework for geochemical, isotopic, and radiometric data; how well-honed curiosity, acute observations, and willingness to do the work to "get it right" add up to truly world-class scientific works; and how to compile a variety of data and observations to weave a geologic story. The legacy of Wes Hildreth is indelibly marked in the geological literature and will clearly remain so for many decades to come. His profound impact on volcanology is fitting of recognition with the Thorarinsson Medal.



Field trip participants view volcanoes and local vegetation.  
Photo by Jorge Clavero

## Thorarinsson Medal Acceptance

By Wes Hildreth

Thank you, Judy! President Navon, Colleagues, Comrades:

The very first day I ever left my home country, my first stop was Iceland. The pilot dipped his wing and circled Volcán Surtsey, then erupting through the sea. A decade later, I came late to volcano studies, but I imagined Sigurdur Thorarinsson down there on the beach, beckoning to me — 40 years ago. Now, thanks to so many of you here today, my imaginary circle has closed.

Thorarinsson was born on a farm, where he soon realized that the postglacial volcanic and climatic history could be investigated by digging holes in the ground. All of Iceland became his outdoor laboratory, where he fathered the field of tephra studies and documented regeneration times of silicic magmas at Hekla. When I was starting out, his work influenced me strongly — toward both volcanic geology and magmatic petrology. Sigurdur was also a poet. And wherever Icelanders gather, his verses are still sung — usually in warming huts — after cold wet days of fire and ice.

Personally, I want to take this opportunity to comment on four things:

**First:** Good fortune: I'm one of the luckiest dogs ever to wield a hammer and shovel. My parents were not university-educated, but they exposed me early to the fascinations of geography and travel; and an educational meritocracy paved my way through Harvard and Berkeley. I dropped out of grad school during the bitterness of Vietnam, but an amazingly forgiving and open academic system allowed me to return for another chance. I've no illusions about the advantages of my birthplace—or the opportunities I was provided by that system — sustained by imperial wealth and power.

**Second:** Colleagues: I value nothing more dearly than the respect and confidence of you, my worldwide colleagues, making today's recognition so gratifying. All the same, I'm a little uneasy up here, as I know there are others among us equally deserving.

Most important, though, is the company I've kept. Mentors and colleagues who educated me included Roy Bailey, Paul Bateman, Bob Christiansen, Garniss Curtis, Mike Dungan, Tony Ewart, Alex Halliday, Marvin Lanphere, Stephen Moorbath, Patrick Muffler, Jim O'Neil, Dallas Peck, Mitch Reynolds, Herb Shaw, Robert L. Smith, Clyde Wahrhaftig, and Harry Whittington. I owe most to Ian Carmichael, who took me on when I was a risky untrained maverick and made me get my act together. Charlie Bacon and Gail Mahood were there in the beginning and ever since — my sea-anchors, keeping my head to the wind. As a beginner, I was inspired by the work of Shigeo Aramaki, Hans-Ulrich Schmincke, Pete Lipman, and Steve Sparks, whose efforts to span the spectra of physical and petrological volcanology I've always aspired to emulate. Later on, Bruce Houghton and Colin Wilson stretched me, sometimes very thin, in helping me further appreciate and sometimes approach that ideal.

**Third:** Fieldwork: As Judy pointed out, my spiritual attraction has indeed always been "to the blank spot on the map." Reluctance to be trapped in a city or an office was part of what kept me on the road in the '60s — when I found refuge in the mountains and confidence in wilderness logistics. Mapping a little-known area and working out an eruptive stratigraphy became my greatest pleasure — aesthetically as well as intellectually. The necessary tedium begins when you bring the samples home. Many of my best ideas began in the field, often in a sleeping bag, staring up at the stars of the southern hemisphere. Fieldwork in high places is its own reward, but the special individuals who wanted to accompany me there on foot were almost always a bonus. Becoming a volcano-naturalist was as close to 19th century-style exploration as I could ever get.

But only a fool does true wilderness fieldwork alone. Two months after my Alaskan field partner, Dave Johnston, was blown away by Mount St. Helens, I took to Katmai an untested young greenhorn who'd never worn a backpack. A few years later, she climbed to the summits of Tupungato and Aconcagua while I collapsed at 6000 m. She's still here 25 years on, keeping me running — a pillar of reliability, competence, common sense, and unselfish dedication to the welfare of the whole team. Without Judy Fierstein's strength, mettle, and upbeat tenacity, much of what we've accomplished in Alaska, the Andes, and the Cascades would simply never have been done.

**Finally:** Institutions: Harvard set my personal standards and gave me a broad understanding of politics, anthropology, history, and (above all) writing — and even a bit of the sciences. Berkeley, our great public university, provided the unique atmosphere that drew me back into the earth sciences. Through a Convenio with the Universidad de Chile, Berkeley also introduced me to Beatriz Levi, Don Luis Aguirre, Enrique Tidy, Alvaro Tovar, Pancho Montecinos, Mario Vergara, Pancho Munizaga, and the redoubtable Estanislao Godoy; and (through them) to Hugo Moreno, Leo López, Alfredo Lahsen, and Pancho Hervé. Moyra Gardeweg introduced me to the Servicio, which encouraged our work and to which we all owe so much for organizing this memorable meeting. All these geologists fostered our Andean fieldwork and contributed to my love and admiration of their great country.

My home institution, the USGS, supports us generously and enables us (within the context of programmatic missions) to pursue curiosity-driven science, thereby optimizing our imagination, innovation, and productivity. As one who had been alienated from institutions by the betrayals of 1963 to 1973, it's a pleasure to affirm my appreciation for the survey and the other academic and research institutions I mentioned. When our political institutions seem dimmest, the beacon of our earth-science institutions can keep us on track and help dispel our gloom.

Especially rewarding is to be part of IAVCEI, which brings us together from all over the world, and which likewise binds together the physical and compositional aspects of our investigations of magma and its behavior and products. Few institutions have ever been so altruistic and so dedicated to the common welfare of the world's people and their environment. Where else does nationalism count so little and solidarity so much?

Never give up your dream that our political institutions, too, may someday evolve in such directions—toward comradeship without borders, toward knowledge without frontiers, toward economic and social justice without boundaries. I'm gratified to be part of IAVCEI, very proud of our Chilean hosts, and grateful to you all for the honor of being here. Thank you so very much!

### Citation for Costanza Bonadonna Young Scientist Award

*By Chuck Connor*

This is the first time the IAVCEI Outstanding recent graduate award is being made. This new IAVCEI award is designed to honor the achievements of an outstanding recent graduate in the broadly defined field of volcanology.

In many respects, graduate students and graduate work represent the heart and soul of IAVCEI. The graduate students attending this meeting will drive the organization forward in the coming decades, do the new science, and very likely overshadow many aspects of the research we are discussing here in Pucon. So it is particularly appropriate to acknowledge the contributions of one recent graduate who has already made just that kind of substantial impact on volcanology – Dr. Costanza Bonadonna.

Costanza received her initial training in volcanology at the University of Pisa, working under the direction of Prof. Mauro Rossi and Giovanni Macedonio. She clearly benefited greatly from working in the dynamic group at Pisa, because she quickly found her career path in study of eruption columns and tephra fallout.

She began her PhD work at the University of Bristol where, like many graduate students, she had the good fortune of engaging in research at Montserrat volcano under the direction of Steve Sparks. The very day she arrived in Montserrat marked the onset of vulcanian explosions. This volcanic crisis was a turning point for Costanza. Mapping tephra deposition from these explosions and forecasting hazards associated with tephra dispersion became the focus of her research at Bristol. In the course of this work she developed the first probabilistic hazard maps for tephra dispersion on Montserrat. Her innovative approach was a blend of physically reasonable models of volcanism, numerical simulations, and probabilistic assessment. I am convinced this approach will become standard in hazard forecasting and really change the way we use volcanological data and models to mitigate volcanic hazards.

Along the way, Costanza was a Marie Curie Fellow funded through the EU, received an outstanding student paper award at the AGU, received a Presidents award from the Geological Society of London, held a SOEST Young Investigator fellowship at the University of Hawaii where she obtained NSF funding for tephra studies in Nicaragua, and most recently was named the Geological Society of America Young Women Scientist of the Year. And I am very happy to say that Costanza is now a member of the faculty at the University of South Florida where

she will continue to flourish as an innovative volcanologist and energize a new crop of graduate students with a blast of her unique enthusiasm.

Costanza, keep your spirited outlook. Take chances with science, and seize the new approaches, and step past the common wisdom. We will all be better for it.



*Costanza Bonadonna*

### Young Scientist Award Acceptance

*By Costanza Bonadonna*

I'm really flattered to be here tonight and receive this award. I'm also really honored to be one of the awardees at this incredible IAVCEI meeting.

I would like to begin by apologizing to the people I'm not going to mention in the next 5 minutes, due to obvious time constraints, however I can't articulate enough how important a role these people have played in my personal and professional development through their guidance, support and inspiration. I think what makes a place really special is the people that you meet there, and I feel I've been blessed to have been guided everywhere I've been by the exceptional scientists I have been connected with every stop along my journey.

In the next 5 minutes I will only have the time to give you a general idea behind the logic that took me from Colignola, Italy...to Pisa...to Bristol...to Montserrat...to New Zealand...to Hawaii and at present to Tampa.

I was originally inspired to get involved in volcanology by Franco Barberi, who lectured at my high school where he showed a video of when he tried to divert a lava flow from Etna in 1983. It was my final year at high school, and during his lecture I began to realize that volcanology is a scientific discipline where it is possible to find a balance between science, human society and nature. It became quite clear to me, though, that nature is always a step ahead somehow... always providing new challenges.

So, I decided to attend the University of Pisa to learn how to deal with these challenges, but during my time there I also realized that there is a whole world outside Pisa and I felt compelled to begin to explore it. I want to thank my supervisor at Pisa,



Mauro Rosi, who supported me since the first day I told him I wanted to go to England and further my studies, making this whole adventure possible.

I left Pisa and went to Bristol, England, where I met Steve Sparks. For some strange reason...still unknown to me...Steve provided me complete support since the beginning despite my not having a clue what I was going to do and even though I was still an undergraduate and he was expecting to have a graduate student. I guess the fact that I could not speak a word of English when I got there helped...as it gave me the chance to catch up with science while I was learning English from direct exposure.

Anyway, there are no words to describe how grateful I am to Steve for what he's done, and what a great person, great scientist and great supervisor he actually is. His work and his commitment to science and society speak for itself. Not only has he taught me physical volcanology, but he really taught me how to be a scientist and work in a team respecting and learning from everyone's contributions. The essence of what Steve had instilled in me is that you can achieve anything you want as long as you are passionate about it and you really believe in yourself. Steve even convinced me to get into computer modelling.

In the direction of computer modelling, I must thank Gianni Macedonio for introducing me to computer programming and making FORTRAN fun and exciting. Gianni is a great scientist that I feel lucky to have met early in my career as he really motivated me to use numerical modeling to describe volcanic processes.

Computer modeling took me to Montserrat where for the very first time, I began to experience and appreciate the connection between science and humanity and I began to feel that what I was doing had a distinct purpose. I feel lucky for having been given the opportunity to be in Montserrat when it was all happening, observing first hand the volcanic processes I was asked to model and be exposed to so many amazing people there. I can only nominate a few, but I really appreciate the help of the people that supported tephra studies when tephra was not trendy, people like Sue Laughlin, Gill Norton, Richie Robertson, Paul Jackson, Graham Ryan, Peter Baxter and Tim Druitt.

While in the midst of learning all I could about computer modeling and fluid dynamics at Bristol, I was fortunate enough to have traveled to New Zealand to work with Bruce Houghton, who instilled in me the importance of accurate field work and how it affects the final product in computer modeling.

And of course my PhD was made extra special by all the people I've met in Bristol who shared with me my everyday life and everyday disasters...people like Stuart Kearns, Eliza Calder, Rob Watts, Ed Lewellyn, Claire Horwell, Sue Couch, Chloe Harford, Hugh Dixon and Gari Mayberry. I particularly wish to thank Jeremy Phillips who made me realize that fluid dynamics is not just a pretty fancy word but that it can be actually used to characterize and describe physical processes. A special thanks also to Jorge Clavero for introducing me to the beauty of Chile... forcing me to help him out in the field there. In Bristol I was also lucky to be surrounded by stimulating people like Andrew Hogg, Oleg Melnig and Gerald Ernst.

Well...after 7 years in England I felt like I needed to dry out and get some sun...and so I headed to Hawaii...where I was further inspired by amazing people like Julia Hammer, Andy Harris, and of course Mike Garcia who was always there at just the right times with insight and motivation which encouraged me in ways immeasurable. I want to also thank Don Swanson for his continual support and guidance on my understanding of explosive volcanism in Hawaii.

And finally I want to thank Chuck and Laura Connor for introducing me to a completely new level of computer modeling and probabilistic analysis and, above all, for supporting me in this new phase of my life and my career in Tampa.

I also want to further acknowledge that all along the way I had the amazing support of my family, in particular my mother who believed in me even when I didn't...and of my friends in Pisa... and even Livorno...friends like Riccardo Leoni, il Benve, Laura Pioli and Lucia Gurioli that helped me keep my Italianism up.

So, during these years, I've learned that science means collaboration and combination of different perspectives and disciplines. I've learned a lot from these collaborations and I'm planning to keep on doing science and studying volcanic processes with a very open mind in order to tackle the ever-present "new" challenges. Most assuredly, I will continue to do my best to maintain the crucial connection between field investigations, computer modeling and lab experiments that I'm planning to integrate in my future research.

I can't describe how humbled I am to be recognized for my contributions to volcanology in a room full of the very people whose contributions to our science have charted the course of volcanology to where it stands today.

I thank you all very much for this award and the recognition of my work.



*Local children wear international costumes during the opening ceremonies at Pucon, 2004. Photo by Jorge Clavero*

## In Memorium George Walker (1926 – 2005)

George Patrick Leonard Walker (born March 2, 1926) was one of Britain's outstanding geologists of the last few decades and one of the most influential volcanologists in the world. George was brought up in London and then moved to Northern Ireland at the age of 12. As a teenager he became fascinated by geology and the minerals in the lavas of Antrim. He read geology for the BSc Honours and Master of Science degrees at Queens University, Belfast and then completed his training with a PhD in mineralogy in 1956 at Leeds University under the supervision of Professor W.Q. Kennedy. He was appointed to a lectureship at Imperial College in 1954 where he developed a reputation as an outstanding mineralogist, specializing in zeolites in ancient basalt lavas.

He exploited his knowledge of zeolites brilliantly in his seminal geological studies of eastern Iceland, where his flair as a field geologist and ability to make critical observations and fundamental inferences about volcanic processes emerged. Over several years he mapped the lavas, zeolite zones, and structure of a large part of the east coast of Iceland. He used the distribution of the zeolite zones in the lavas and principles of burial metamorphism to relate the burial depth of the lavas to ocean ridge processes in the rift zones of Iceland. His work was one of the first studies to gather geological evidence for sea-floor spreading and included ground-breaking insights into how the process operated; an outstanding intellectual tour-de-force at the inception of the theory of plate tectonics. He also recognised and documented the central volcanoes of Iceland with their tendency to produce silicic magmas. In the Hebrides and Iceland he was one of the pioneers in documenting the characteristics and significance of mixing between basic and silicic magmas. His studies of composite lava flows, dykes and shallow intrusive net-veined complexes were pioneering at a time well before the idea of magma mixing had become popular. He trained some outstanding graduate students, including Ian Carmichael, Ian Gibson and David Blake, and was an inspiration to many young Icelandic geologists, such as Haraldur Sigurdsson and Kristjan Saemundsson. His research revolutionized understanding of the geology of Iceland and in 1977 George was one of the rare foreign citizens to be awarded the Icelandic Order of the Falcon conferred by the President of Iceland.

In the late 1960s and through the 1970s George increasingly focused on volcanic eruptions, geological studies of young active volcanoes and studies of pyroclastic deposits. He began work on Mount Etna and early recognised the importance of non-Newtonian rheology on governing lava emplacement and morphology. His 1973 paper on the length of lava flows can be regarded as one of the great classics of volcanology. This paper in particular illustrates one of the great strengths of George's science, namely his remarkable intuition about physical processes. George had little training in maths or physics. Here, however, he grasped the fundamental competition between flow and cooling and established the controls from field data, long before models that discussed Peclet numbers and thermal entry lengths were published.



*George P L Walker*

George's research on pyroclastic deposits and the implications of field relations and field-gathered data to the physics of explosive eruptions in the 1970s were revolutionary. He was much influenced by the work of field volcanologists such as Thorarinsson in Iceland, R.L. Smith in the USA and Aramaki and Kuno in Japan, who had pioneered a quantitative and systematic approach to the documentation of pyroclastic deposits. George took this approach an important step further by using his intuitive reasoning to create seminal insights into the causative processes. At Imperial College he developed a research group, which included Ron Croasdale and Basil Booth and involved an enthusiastic cohort of PhD students, including Steve Self, Geoff Wadge, John Wright, Colin Wilson and myself. George recognised that intuition and inductive reasoning based on field observations and data could only take you so far and that there also needed to be scientists with physical and mathematical backgrounds involved. He thus began collaboration with Lionel Wilson and encouraged his research students to start thinking about a more physics-based quantitative approach. He was at the height of his powers in the 1970s and numerous classic papers were published, many of which remain widely cited today as the starting point of the revolution of physical volcanology as a quantitative science.

George combined supreme observational skills and a remarkable ability to integrate apparently unconnected observations into coherent conceptual models that gave powerful new insights into how volcanoes worked. He adopted a highly quantitative approach of gathering prodigious quantities of systematic data and using his great imaginative powers and intuition to extract major advances in understanding. His work remains the foundation of much contemporary understanding in volcanology. He, more than any other individual, played a major role in turning volcanology from a largely qualitative and descriptive enterprise to a robust and quantitative science. Among his many achievements in this period were finding the controls on lava flow emplacement, elucidating the relationships between the geology of pyroclastic deposits and the explosive eruptions that formed them, advancing understanding of what controls the morphology of volcanoes and establishing new ways to assess volcanic hazards.

George left Imperial College in 1978 to take up a Captain James Cook Research Fellowship of the Royal Society of New Zealand based at the University of Auckland. In New Zealand he devoted his energy to a seminal study of the young explosive volcanism of the North Island of New Zealand centred on Lake Taupo, which he recognized as a volcano of astonishing violence. Colin Wilson was doing his PhD at the time and came out to New Zealand with George to complete their seminal study of the Taupo ignimbrite, which must be the most significant study of a single pyroclastic deposit and still without any close rival as a piece of physical volcanology based on field work.

He took up the Gordon MacDonald Chair in Volcanology at the University of Hawaii in 1981, which is regarded as the most prestigious academic post in the field. He continued his highly innovative research, focusing on the evolution of basaltic volcanoes and returning to his interests in the morphology and dynamics of basalt lava flows and the role of basalt dykes in the formation of large basaltic volcanoes. He continued to make major contributions, particularly to understanding the internal structure of basaltic lavas and basaltic volcanoes. He inspired a new generation of young volcanologists, such as Scott Rowland, Thor Thordarson and Mike Knight.

He retired in 1996 and returned to the UK to live in Gloucester, but continued his research. He held an honorary position at the University of Bristol. George's achievements in science were recognized by many awards, including election as Fellow of the Royal Society of London in 1975, an Honorary Fellowship of the Royal Society of New Zealand in 1987, recipient of an Honorary Doctorate at the University of Iceland, and the Wollaston Medal, which is the highest award of the Geological Society of London. He was awarded the Thorarinsson medal by IAVCEI in 1989.

George will also be remembered for his contributions to education. He was a brilliant teacher of students and devoted much of his time to encouraging and nurturing young scientists. Mineralogy is, commonly, not at the top of the list of exciting topics for geology undergraduates, yet George's mineralogy classes at Imperial were renowned for their clarity and inspiration. George's first love, however, was for field geology and there was nothing he liked better than showing students how to read the rocks on field classes or training postgraduate students how to extract the secrets of nature by simple systematic observations and logical deduction. George was supremely fit and could see off most students in marches across Scottish mountains and volcanoes in exotic and remote places. An extended line of exhausted but still enthusiastic students or colleagues as the sun set was a common feature of field trips led by George. In Hawaii he spent a lot of time at schools talking about geology and volcanoes. He also helped and encouraged many scientists from the developing world where most active volcanoes are located. He inspired thousands of people from primary school children to undergraduates to PhD students to eminent professors.

George was a quiet man who never sought the limelight. He was at his happiest in the field in remote parts of the world making observations that changed our understanding of volcanoes forever. He was devoted to geology and much of his work was done on a shoestring budget, sometimes also at his own expense.

He will be remembered with admiration for his genius and great affection by everyone who crossed his path. He was a devoted husband and father and leaves his wife Hazel, daughter Alison, son Leonard and grandson Matthew. (George Walker: 2 Mar. 1926 to Jan. 2005).

### George Walker Tribute Fund and Book Auction

George Walker passed away on 19th January 2005. IAVCEI are paying tribute to George by naming the young scientist prize the Walker Prize and are seeking to raise funds from the volcanology community. The prize is to be awarded to two young scientists who must be nominated within 4 years of completing their PhD. One of the two prizes will take account of achievements in difficult circumstances as well as scientific excellence with the expectation that recipients will emerge from resource-poor countries. This fund is particularly appropriate to pay tribute to George who gave his time generously to educating young scientists and helping scientists from many nations.

George's family have already made a generous contribution to the fund that supports the prize. They have also agreed that his large book collection should be auctioned and the proceeds paid into the fund. Friends and colleagues of George from the volcanology community are invited to make a donation to the Walker fund. Donations can be made directly to IAVCEI in US dollars and sent to Steve McNutt at IAVCEI making it clear that the donation is for the Walker fund. Note that IAVCEI has charitable status under the IRS 501(c)3 regulations so that US citizens can make a donation tax free.

George has a large collection of books on volcanoes and these will be auctioned to the community with the proceeds being paid into the Walker Prize Fund. Some of the books are of historic interest and some are important books that are out of print. A few have special messages from the author to George. To participate in the auction you should email Steve Sparks (Steve.Sparks@bristol.ac.uk) and obtain the catalog spreadsheet. The catalog contains information about the condition of the book and a guide value. You can then send Steve Sparks a bid and the highest bid will get the book. Bidding will take place with a closing date of 31st August.

Direct donations to the Walker fund should have checks made out to "IAVCEI – Walker Fund" and mailed to:  
Steve McNutt  
UAFGI  
P.O. Box 757320  
Fairbanks, AK 99775-7320 USA

Please include your return address and a receipt will be mailed to you.

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**Electronic Geophysical Year Website**  
<http://www.egy.org>

## Future Meetings

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

**Oct 15–21, 2005** contact: jgottsma@ija.csic.es

Cities on Volcanoes 4, Quito, Ecuador

**January 23-27, 2006** contact: mhall@igepn.edu.ec

IAVCEI 2006 China, Continental Basalt Volcanism

**May 14–18, 2006** contact: xlhuang@gig.ac.cn

Walker Symposium, Iceland

**June 12–17, 2006** contact: www2.norvol.hi.is/page/nord-vulk\_walker

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

**June 19–23, 2006** contact: www.igsoc.org/

IUGG General Assembly, Perugia, Italy

**July 2007** contact: www.iugg.org

IAVCEI 2008 Gen. Assembly, venue to be announced soon

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

Further information may be found on the IAVCEI web site at [www.iavcei.org](http://www.iavcei.org)

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A permanent sign has been erected in a park in Pucon to commemorate the Nov. 2004 IAVCEI meeting. Photo by Jorge Clavero

### MEMBERS BY YEAR

1996	549
1997	558
1998	456
1999	656
2000	579
2001	588
2002	705
2003	715
2004	840

*This issue was edited by Steve McNutt, Secretary-General, and Jon Dehn, Deputy Secretary-General, IAVCEI. Layout and Design by Jane Nanto*