

IAVCEI News 2003 No. 2

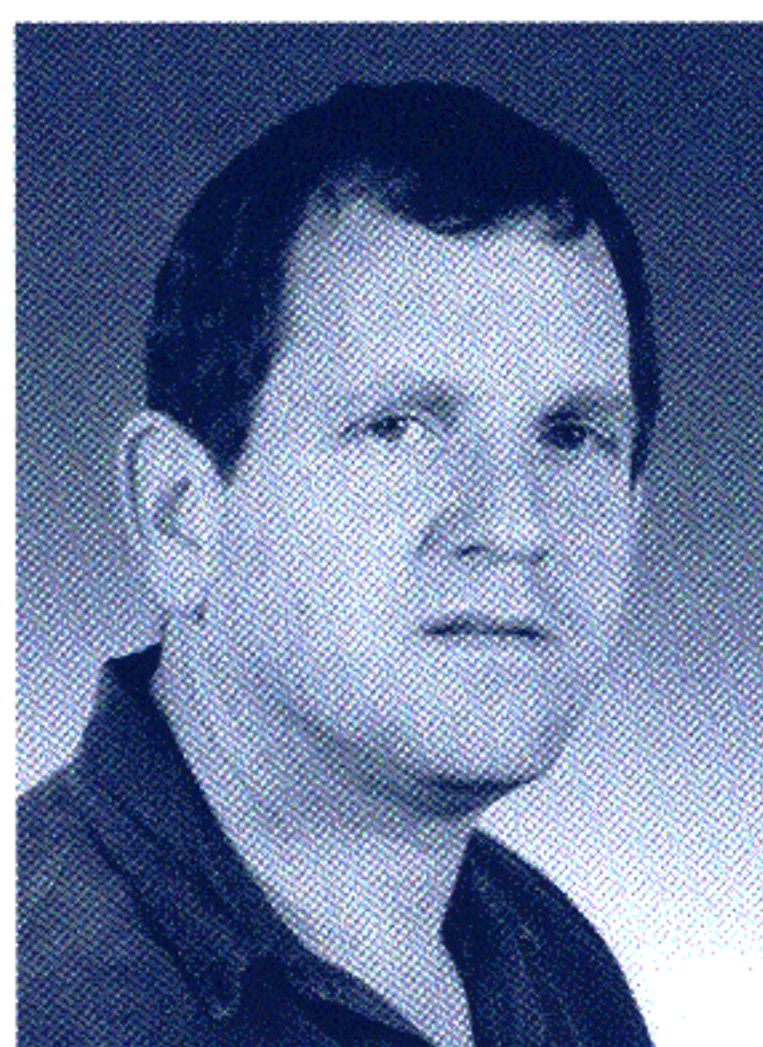
INTERNATIONAL ASSOCIATION OF VOLCANOLOGY AND CHEMISTRY OF THE EARTH'S INTERIOR

Message from the President

Dear IAVCEI members,

Steve Sparks has completed his four years of presidency and I received from him an impressive, active, and well-functioning organization. I would like to thank him for the great job he did as president. I hope I will be able to come close to the standards he set. Thank you very much, Steve, for all you did for IAVCEI.

In this first letter, I would also like to thank Steve McNutt, IAVCEI Secretary General, for his central role in IAVCEI over the past 4 years. Even more, I would like to thank him for staying in this duty for four more years. I am sure that my duty as president will be much easier with such an experienced and active Secretary General. Next I would like to thank the members of the executive committee. Those that completed their terms include: Tad Ui and Joerg Keller, the former vice presidents; Grant Heiken, the former past president; Raden Sukhyar and Bruce Houghton, former members of the Executive Committee; and Tim Druitt, who was editor of the Bulletin of Volcanology. Again, I would also like to thank those members that are staying with us: Hugo Moreno-Roa as a member of the Executive Committee; Toshitsugu Fujii and Jocelyn McPhie as the new Vice Presidents; and Steve Sparks, as the new Past President. I welcome the new Executive Committee members: Rene Solidum, Jean-Christophe Komorowski and Anita Grunder; and also John Stix our new editor of the Bulletin of Volcanology. I hope that together, and with the help of the commission leaders and secretaries and with many more volunteers, we will succeed in strengthening IAVCEI even more and in serving the volcanological community. I would also like to engage our community in many missions where volcanology is applied for the benefit of communities at risk, in spreading our science to the public, and in forwarding the understanding of volcanoes and of the Earth's interior.



*Oded Navon,
New President*

Where should we go, as scientists and as an association of scientists? Over the past decades volcanology has evolved a lot. Most important, there were several major volcanic crises that were managed successfully, saving many lives. We also succeeded in raising the public awareness of volcanic hazards. In science, we improved substantially our understanding of many volcanic processes and the underlying deeper processes in the Earth's interior. We

developed new monitoring techniques and integrated old and new monitoring tools to produce an ever-improving data base. We also proceeded impressively in integrating geophysical and geochemical data for probing the interior of the Earth. I am sure that in both volcanology and in chemistry of the Earth's interior, our active community will keep pushing the frontiers of science.

In order to keep advancing, we need to join forces with other disciplines. The old distinction between chemistry and physics of the Earth's interior must be abandoned. We

should integrate these two modes of probing the Earth as much as possible. We should also bring together, under IAVCEI, all the communities that deal with magmatic systems, so that we can learn from one another and use the ways of thought developed in one discipline to derive more knowledge from the data collected in another. I hope that researchers dealing with dikes, ore deposits, hydrothermal energy, oceanic ridge basalts, kimberlites, and many more disciplines can share their expertise with the volcanological

community. From my short experience with diamonds and volcanoes, I am sure that on one hand there are scientists in the kimberlitic community that have seen more thin sections of volcanic facies of kimberlites than most volcanologists, on the other hand, they have less chance to examine modern analogues or active volcanoes. IAVCEI must play a central

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*SEASONS GREETINGS
from
IAVCEI
We wish you a happy
and fulfilling
2004*

www.iavcei.org

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role in facilitating exchange of knowledge between its members and among the various communities that study magmatic processes. IAVCEI should provide the freeway on which all that information may flow.

We need one more freeway - the information freeway between the science centers that create all the new and wonderful science and the public. The public in places like the US or Japan lives close to that highway, so the task there seems easier, but we should take our role in projects like 'The Year of Planet Earth' to increase public awareness. More importantly, we must remember that most of the public threatened by volcanoes lives much farther away. The freeway to the public in Indonesia or Ecuador, the Philippines or Kongo, is still only a dirt road. The way to reach the public in these parts of the world it is through our fellow volcanologists and geologists that do a tremendous effort to bring modern knowledge to their people. The central task of IAVCEI as an international association must remain to facilitate the transfer of knowledge all the way from the science centers to the public in the periphery.

In order to do that, we need resources. One obvious way of doing this is by increasing the number of members. There are now only 700 members, however, we can grow by joining more volcanologists and by joining scientists from related fields. I believe that we can secure all the advantages of a small, family-like association even with 1000-1500 members. During the IUGG meeting in Sapporo I was asked by some non-members, "Why should I be a member of IAVCEI?" Similarly, some members asked, "How can I convince someone to become a member?" My answer to those questions is twofold. First, if you are a volcanologist, IAVCEI is your home association and it needs your support. In addition (and this is true for everybody who is interested in Earth science), by becoming a member you contribute to IAVCEI and we promise to use your contribution as much as we can to develop volcanology in the developing countries. We will be able to do it better with your contribution. If you can contribute more than just the membership, either financially or by volunteering, it will be greatly appreciated, and you can be certain that it will be used towards helping volcanologists from developing countries to acquire more knowledge and apply it to the benefit of their communities, helping students to attend meetings, establishing the new 'Young Scientist Award' and a few other specified important goals. Grant Heiken and Steve Sparks have volunteered to develop more ways to raise money for IAVCEI. Any ideas will be greatly appreciated.

Last, I remind all of you to mark the 14-19 of November 2004 on your calendar — hopefully the 2004 IAVCEI volcano calendar. This is the IAVCEI GENERAL ASSEMBLY 2004 in Pucon, Chile. The organizing committee is doing a great job and I am sure it will be fun and good science: an excellent program, wonderful location, wonderful hotel, and most important, wonderful volcanoes. Be there.

Oded Navon
President of IAVCEI
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Grants for Women Scientists

IUPAP Working Group on Women in Physics Supporting Women in Physics in Developing Countries

We are launching a third edition of the pilot program to fund the attendance of women from developing and eastern European countries at regional conferences and schools. We propose funding 25 women at a maximum cost of \$800 each. This would require \$20,000.

We need to receive applications for these grants **no later than 29 February 2004**. Recipients will be chosen in March by the IUPAP Working Group on Women in Physics. We will notify people by 15 April 2004.

Conditions for applicants:

Only women physicists from Eastern Europe or developing countries may apply. Those who have already received one grant are not eligible for a second grant.

For those applying for this grant we will need the following things:

1. Your complete contact information (name, address, e-mail, phone number);
2. Number of years since your PhD (or undergraduate degree for graduate students);
3. Brief description of the conference or workshop you wish to attend;
4. Brief statement of how attending the conference or school will enhance your career;
5. Letter of recommendation from one colleague; and
6. A breakdown of the amount of money required for attendance (up to \$800). For example: airfare – \$400, lodging – \$200, local transportation and food – \$200.

Send all information to Jackie Beamon-Kiene, beamon@aps.org by 29 February 2004.

IAVCEI is pleased to announce new life members

Shigeo Aramaki
Hans Schmincke
Bob Tilling
Marcus Bursik

Please consider becoming a life member — it is good for you and for IAVCEI.

VOLCANOES

IAVCEI 2004 Calendar

Visit www.browntrout.com to find out how and where* to order
the latest IAVCEI Volcano Calendar for 2004



MOUNT ETNA, ITALY

In July 2001, a spectacular flank eruption of Mt. Etna took place on its south side. The lava destroyed much of the tourist infrastructure and stopped 6 km in front of a village. The photo shows the lower part of the fissure at an elevation of 2100 m. Mt. Etna is Italy's highest volcano with an elevation of 3350 m. In the summit area there are four central craters. ©2003 Daniela Szczepanski, Germany, <http://www.volcanoes.de>

* Browntrout, the publisher of the IAVCEI Calendar, has offices in the USA (800 777 7812), Canada (888 254 5842), Australia (1800 111 882), Japan (49 249 6913), Mexico (01 800 716 7420) and the UK (0800 169 3718).

2004 IAVCEI Calendar out now!

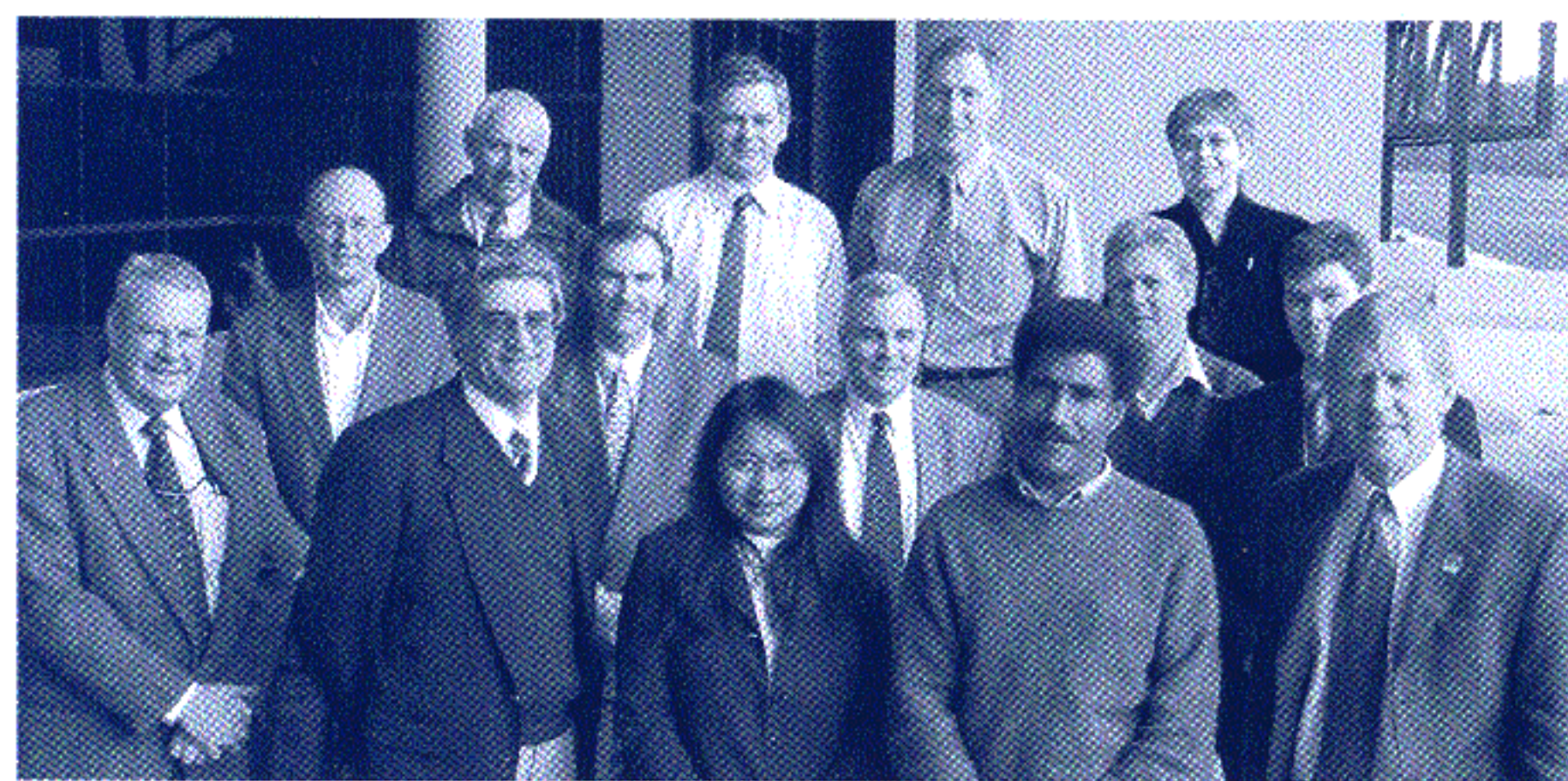
The Vulcan-Aus Group

This is a brief introduction to the Vulcan-Aus Group, a body established in the mid 1980's to promote aviation safety from volcanic ash, especially in the Asia/Pacific region.

Historical development

In the early 1980's, there were several dangerous instances of aircraft encountering volcanic ash cloud over Indonesia. The most famous of these was the British Airways flight that flew through a volcanic cloud from Galunggung in 1982, lost power in all four engines, and only averted disaster through the supreme skills of the crew and a certain measure of luck. This incident received world-wide media attention, was recorded in a book ('All Four Engines Have Failed', by Betty Tootell), and even as recently as 2002 and 2003 has been the subject of popular television documentaries in Japan and the United States of America.

Less well known however, is the number of significant aircraft encounters with ash clouds. There were several other incidents associated with the Galunggung eruptions, as well as encounters with ash clouds from other Indonesian eruptions at Colo (Una Una) in 1983 and Soputan in 1985. The cost from these encounters alone was many millions of \$US dollars. There have also been many other minor (and often not immediately reported) encounters. The extensive rerouting undertaken by airlines to avoid these encounters produces significant costs to the industry: the more safety-conscious airlines in the region are prepared to close air routes for long periods in order to avoid flying over even low level volcanic activity.



Participants at a Vulcan-Aus meeting at GA, Canberra, in June 2002. Left to right: Peter Hobson (Airservices Australia), Rod Potts (BM), Jim Arthur (front, BM and Chair), Richard Cantor (rear, QANTAS), Michael Edwards (CSIRO), Andrew Tupper (rear, BM), Ratih Woodhouse (front, consultant geologist), Graham Rennie (QANTAS), Grant Sabin (BM), Ima Itikarai (Rabaul Volcano Observatory), Shane Nancarrow (GA), Caroline Giddings (IAVCEI), Ted Williams (BM), and Wally Johnson (GA). BM - Bureau of Meteorology, GA - Geoscience Australia.

Following these early incidents, the Vulcan-Aus Group was formally established in the mid-1980s, with the objective of increasing operational safety and reducing flying costs in areas where volcanic ash may be present, especially in the Asia/Pacific region.

By the 1990s there had been further serious incidents around the world, for example during the eruptions of Redoubt in 1989 and Pinatubo in 1991. The Vulcan-Aus Group played an active part in the growing international effort to address the danger of volcanic clouds. During the 1990s, the International Airways Volcano Watch was formed under the auspices of the International Civil Aviation Organization and the World Meteorological Organization, with IAVCEI members and commissions (for example WOVO) taking an active role. The International Airways Volcano Watch has now developed near-global coverage, with VAACs (Volcanic Ash Advisory Centres) in Darwin (established in 1993), Wellington, Tokyo, Anchorage, Montreal, Washington DC, Buenos Aires, London, and Toulouse.

The Vulcan-Aus Group meets two or three times a year to review the progress of the International Airways Volcano Watch in the region, and currently has representatives from the Australian Commonwealth Bureau of Meteorology (which hosts the Darwin VAAC), QANTAS Airways Limited, Airservices Australia, Geoscience Australia, and the CSIRO Division of Atmospheric Research, with frequent guests from volcano observatories, other airlines (most recently Japan Airlines), and other organisations.

Challenges for volcanic cloud monitoring in the Asia/Pacific region

Although aircraft safety has improved markedly in the last two decades, many challenges remain. Some of these are:

- There is no accepted definition of what concentration of volcanic ash is dangerous. Low level or low concentration events (for example, a volcano constantly producing ash without a detectable explosive eruption) are essentially treated the same within the warning system as major eruptions.
- Very little warning verification data are available, and verification systems are largely undeveloped.
- As is the case for much of the world, many volcanological agencies in the region have quite limited resources for ground-based monitoring, which they must naturally allocate for protection of populated areas. Some volcanoes are in remote or dangerous locations and little ground-based monitoring is possible.
- Overlying clouds (sometimes for days or weeks at a time), or atmospheric interactions with volcanic clouds, often make remote sensing techniques for eruption detection difficult in the moist tropics.
- Tropical meteorology itself is a complex and imperfectly understood field, and historically many meteorologists have regarded volcanic clouds as being totally outside their field of expertise. More cross-disciplinary work is required to have the operational meteorological community completely comfortable with volcanic cloud monitoring.

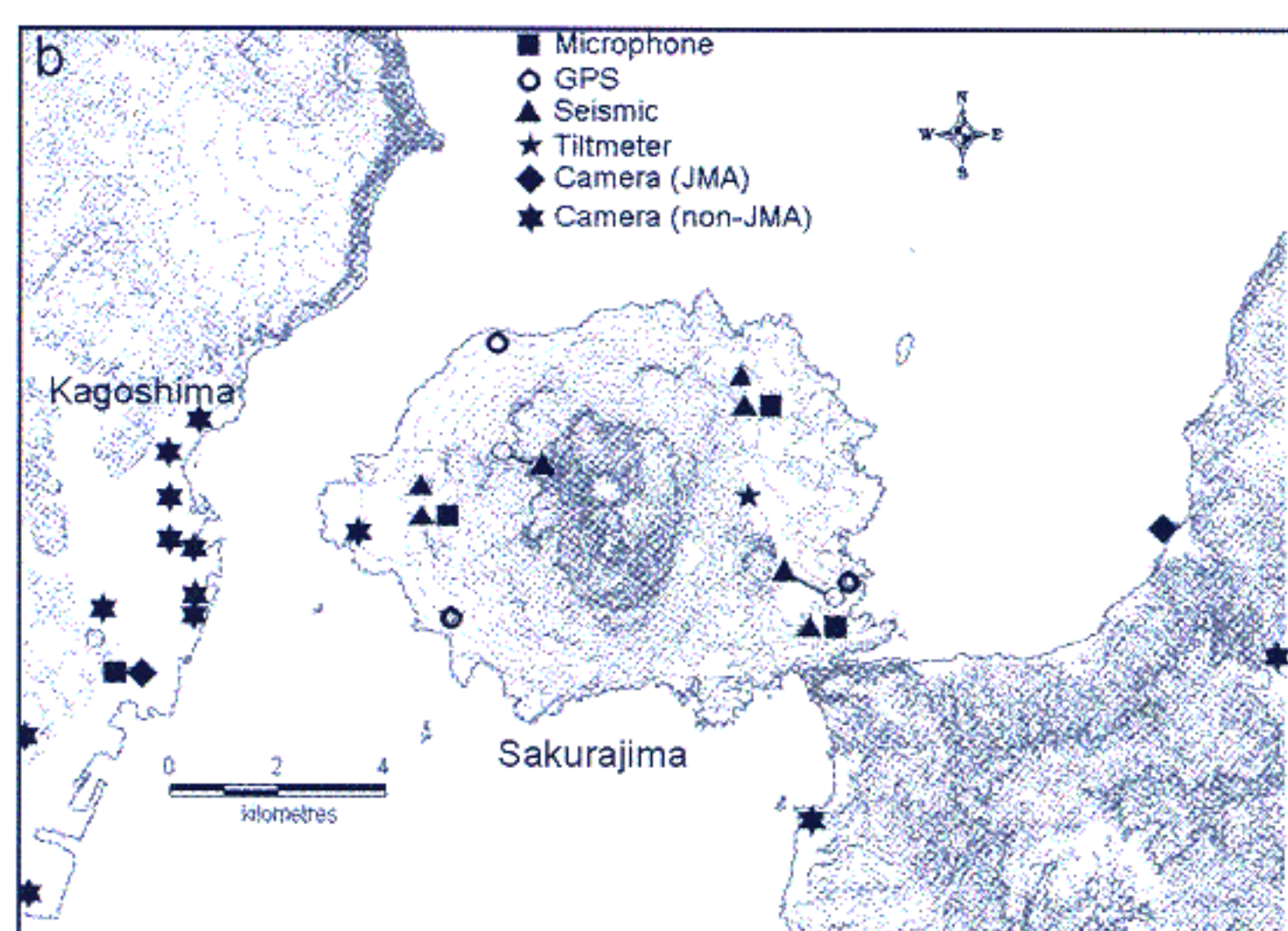
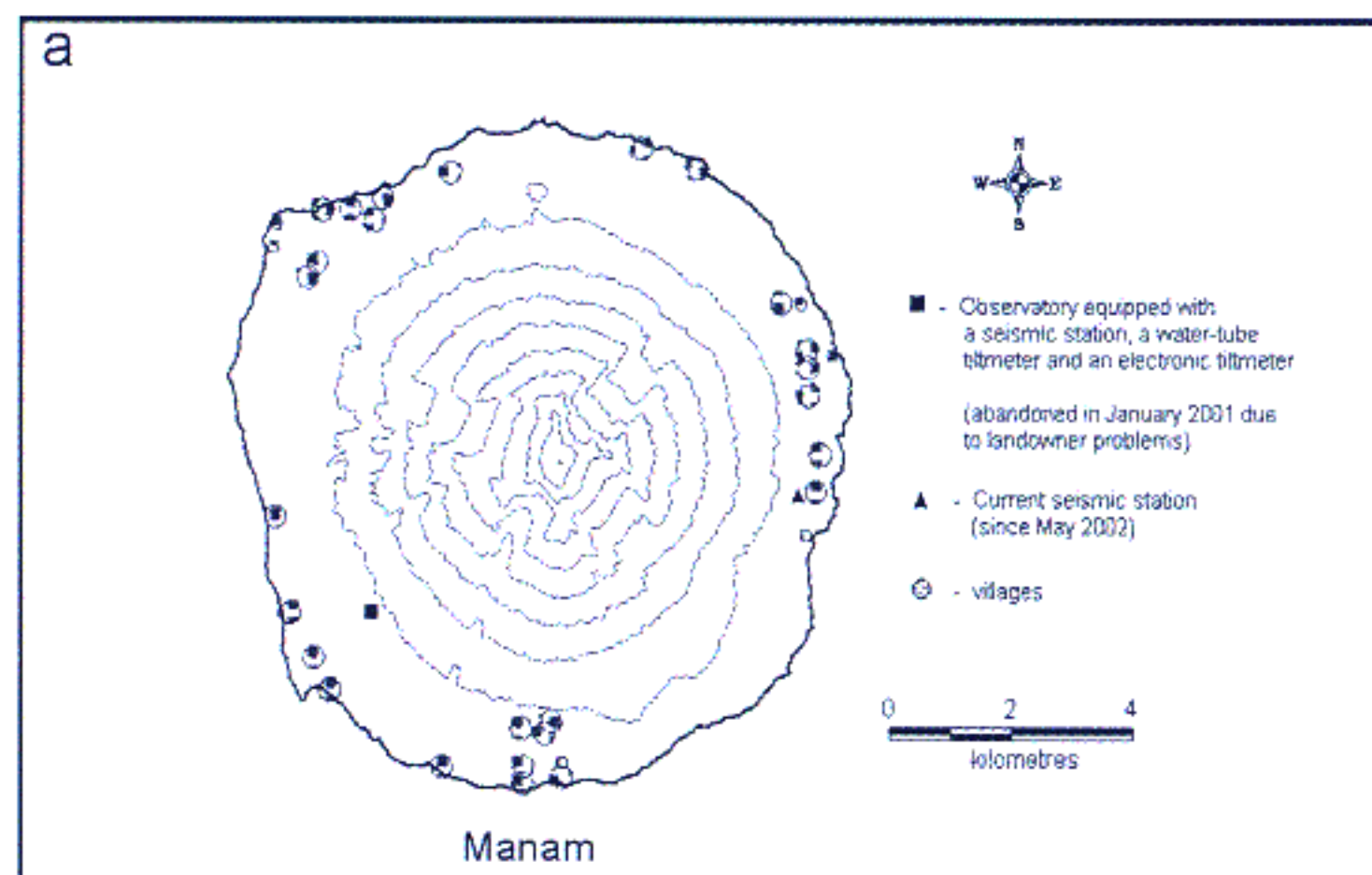
- Most countries in the region (with the notable exception of Japan) separate meteorological and volcanological functions into separate government agencies. Meteorological agencies operate under the World Meteorological Organization, which is relatively well

damage (requiring engine replacement) flying through eruption clouds.

Recent activities

Vulcan-Aus is pursuing a wide range of activities to help address the challenges described above. Recent activities include:

- Investigation and discussion of volcanic incidents affecting aviation.
- The promotion of the need for more volcanic monitoring resources to be available for volcanological agencies.
- The production and distribution of a volcanic ash awareness poster for the region.
- Research collaborations between Vulcan-Aus members, and with universities and other organizations, and promotion of better links between the meteorological, aviation, and volcanological communities.
- The dedication of resources for developing improved VAAC software and for specialist work in the Darwin VAAC and the Bureau of Meteorology Research Centre in Melbourne.
- The development of closer communications with volcanological and meteorological agencies in Papua New Guinea, the Philippines, and Indonesia.
- Formal and informal lobbying to the International Civil Aviation Organisation for improvements to the structure and practice of the International Airways Volcano Watch.



Relative monitoring resources for the similarly active and populated volcanoes of (a) Manam, Papua New Guinea and (b) Sakurajima, Japan. For Sakurajima, facilities operated by Japan Airlines, the Sakurajima Volcano Observatory, and local governments have been omitted for clarity. Although Manam is remote in global terms, it lies near the main air routes between Japan and Australia. Information courtesy Rabaul Volcano Observatory and Japan Meteorological Agency. After Tupper A & Kinoshita K, 2003, 'Satellite, air and ground observations of volcanic clouds over islands of the southwest Pacific', *South Pacific Study*, 23, 2, 21-46.

structured with long standing procedures for free data exchange and resource sharing. Volcanological agencies tend to be more isolated and to have had little historical interaction with meteorological agencies. A further complication arises when attempting to couple the time scales for aviation operations (minutes to hours) with volcanological time scales (hours to).

- Even when an eruption is promptly reported and satellite techniques work well, the potential for dangerous incidents remains. In the Asia-Pacific region, two eruptions in 2000 highlighted shortcomings in the system. During the February 29 eruption of Mayon, while the eruption itself was well observed, aviation communications were poor and warnings were not properly received. Failures in aviation procedures were also apparent in the extremely dangerous eruption of Miyakejima on August 18, despite the prompt issue of a warning by Tokyo VAAC. At least two international aircraft in controlled airspace suffered significant

We believe that the overall situation is improving. Communications between participants in the International Airways Volcano Watch have improved markedly in the past few years. For example, before and during the eruption of Ruang in September 2002, which produced a volcanic cloud approximately 20km high, the Indonesian Directorate of Volcanology and Geological Hazard Mitigation (formerly VSI) contacted the Darwin VAAC several times to ensure that the eruption of this remote volcano was known. In addition to the efforts of the Rabaul Volcano Observatory in Papua New



Volcanic ash awareness poster distributed by the Vulcan-Aus Group in 2002.

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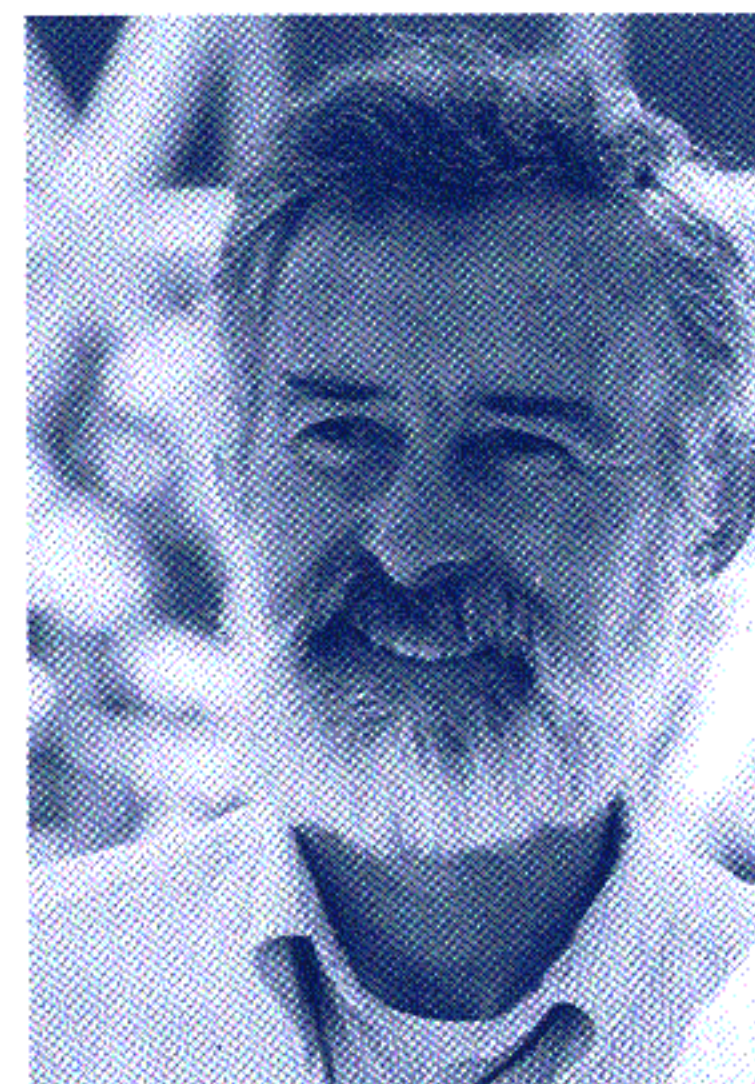
Roy A Bailey (1929–2003)

Roy A Bailey, a geologist for more than four decades with the US Geological Survey (USGS) in Washington, DC, Reston, Virginia, and Menlo Park, California died 13 July at his home in Santa Cruz. He was 73 years old. Roy is recognized within the volcanological community as a leading expert on large silicic volcanic systems, especially the Valles Caldera in central New Mexico, calderas of the Taupo Volcanic Zone in New Zealand, and, perhaps most notably, the Long Valley Caldera – Mono Craters volcanic field in eastern California. He was known as a particularly keen observer of outcrops and field relations.

Born 28 July 1929 in Providence, Roy was raised in Barrington, Rhode Island. He received a BA in geology from Brown University in 1951, his MSc from Cornell University in 1953, and was a Fulbright Scholar at Auckland University, New Zealand, in 1956. After working 16 years as a geologist, he returned to graduate school at Johns Hopkins University from 1969 to 1971, completing his PhD in 1978 under the USGS Employee Training Program. Roy had a lifelong enthusiasm for the outdoors; at age 17, he was the youngest trail crew leader for the Appalachian Mountain Club in New Hampshire. He enjoyed hiking, mountain climbing, and white-water canoeing, in addition to being an avid bird watcher, nature photographer, and all-around naturalist.

Roy began his USGS career as camp cook and geologic field assistant in New Mexico during the summers of 1950–52. He then became a full-time geologist with the USGS in 1953, retiring in 1995 after 42 years of service. Following retirement, he continued working essentially full-time as a Pecora Fellow (1995–1997) and as Scientist Emeritus with the USGS Volcano Hazards Team (1997–2003). His research with the USGS focused primarily on the study of large silicic volcanic systems. His fruitful collaboration with Robert L. Smith and Clarence S. Ross led to publication of classic papers on resurgent calderas and chemical zonation in magma reservoirs. Roy's principal field efforts involved the geologic mapping of the Valles Caldera (Jemez Mountains, central New Mexico) and the Long Valley volcanic field in eastern California. Through careful mapping of the volcanic rocks in eastern California, he was able to identify the source of the widespread Bishop Tuff as a large resurgent caldera at the base of the eastern Sierra Nevada escarpment, now known as Long Valley caldera.

When not studying calderas, Roy participated in monitoring restless or erupting volcanoes in the West Indies and New Zealand and has visited many volcanoes in Alaska, Hawaii, Japan, Italy, Greece, and Turkey. During the 1960s, he was an instructor in the NASA Apollo training program, tutoring astronauts in the recognition of lunar volcanic features by comparing them to similar features on Earth. During 1980–83, Roy served as the coordinator of the USGS Volcano Hazards Program that was greatly increased



in size and complexity after the 1980 eruption of Mount St. Helens. In this managerial role, he deftly guided the Survey's expanded monitoring and research activities in Hawaii, Alaska, and conterminous U.S. In 1983, he rotated back into a research position and resumed studies of the Long Valley volcanic field, where escalating seismicity and magmatic unrest raised concerns about the possibility of an eruption. In 1989 and again in 1992, he spent several months as an exchange scientist with the New Zealand Geological Survey, where he participated in monitoring White Island and Ruapehu volcanoes and in mapping ignimbrites of the Taupo Volcanic Zone, a region of nested large silicic calderas. His most recent work on the Long Valley caldera magmatic system will soon be published as a USGS Professional Paper titled 'Eruptive History and Chemical Evolution of the Precaldera and Postcaldera Basalt-Dacite Sequences, Long Valley, California: Implications for Magma Sources, Current Magmatic Unrest, and Future Volcanism.'

Roy was a Fellow of both the Geological Society of America and the Mineralogical Society of America and held membership in the American Geophysical Union and the Commission on Explosive Volcanism of the International Association of Volcanology and Chemistry of the Earth's Interior. Throughout his long and distinguished career, Roy Bailey was recognized by his peers — both within and outside the USGS — for his perceptive geologic observations and exceptional mapping skills. From his carefully documented studies on the products and processes of large explosive eruptions, he has contributed tremendously to the understanding of the evolution of caldera systems.

With the untimely death of Roy Bailey, the USGS and the volcanologic community has lost one of its esteemed practitioners and a highly respected colleague. Always soft-spoken, earnest, and friendly, he in every way was a gentleman and scholar in his professional and personal life. In addition to his wife of 45 years, Trice, he is survived by daughters Tara Bailey Deller of Santa Rosa, Deirdre Bailey of Santa Cruz, and Moana Bailey Hendrix of San Andreas; sisters Carolyn Gill of London, England, Rosalind Kosheleff of Los Gatos, and Cheryl Wilson of Amherst, Massachusetts; and five grandchildren.

New IAVCEI Executive Committee 2003-2007

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Guinea, Air Niugini has opened access to its in-house pilot reporting system and shown that it is perfectly feasible for any regional airline to keep detailed records of volcanic activity. The Darwin VAAC is developing a formal memorandum of understanding with the Philippine Institute of Volcanology and Seismology (PHIVOLCS) so that complementary role of each organisation is clearly understood. The continued spread of the Internet, and the work of centralised bodies such as the Smithsonian Institution's Global Volcanism Program has made a global volcano watch much easier, although of course many volcanoes are still unmonitored and are far from the Internet's reach.

Questions for IAVCEI members

Vulcan-Aus is seeking to expand its membership to include further representation from the Asia/Pacific, including airlines and volcanological observatories. We are also seeking ideas from IAVCEI members about the following:

- a) How can we better integrate the International Airways Volcano Watch with more traditional, ground oriented volcanic hazard mitigation?
- b) Are there ways that we can use the resources available to aviation and meteorological organisations better to support volcanic monitoring? For example, can pilot reporting and meteorological remote sensing information be better communicated to, and used by, volcanological authorities?
- c) Is it possible to develop global volcanism networks in a way that relies less on personal good relations for the prompt transmission of information?

The Group can be contacted through its secretarial address, vulcan_au@bom.gov.au, by facsimile at +61 3 9669 4695, or by mail at GPO Box 1289K, Melbourne 3001, Australia. The chair of the Group is Mr Jim Arthur, Regional Director of the Bureau of Meteorology, Northern Territory, Darwin, Australia (J.Arthur@bom.gov.au).

Andrew Tupper
Bureau of Meteorology

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Future Volcanology Meetings

Penrose Conference, Neogene Continental Margin Volcanism

Puebla, Mexico
12-16 January 2004
contact: ger@geociencias.unam.mx

2nd International Symposium on Volcanic Ash and Aviation Safety

Washington, DC, USA
June 2004
http://www.ofcm.gov/homepage/text/spc_proj/volcanic_ash/volash2.html

International Geological Congress

Florence, Italy
16-26 August 2004
contact: www.iugs.org

2nd International Maar Conference

Hungary-Slovakia-Germany
15-19 September 2004
contact: nemeth_karoly@hotmail.com

IAVCEI 2004 General Assembly

Chile
14-19 November 2004
contact: iavcei@sernageomin.cl

IAVCEI 2006 China, Continental Basalt Volcanism (tentative)

Cities on Volcanoes 4

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

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

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

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and Jim Gardner: Deputy Secretary General

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