

November 2002

VGP Section Newsletter #10

Dear Colleagues,

Here is the November edition of the quarterly AGU Volcanology, Geochemistry and Petrology section newsletter. This issue, together with previous newsletters, can be found archived at the VGP website (<http://vgp.AGU.org>). Please submit comments or suggestions for future issues to fagents@hawaii.edu.

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(1) SPECIAL EVENTS AT THE AGU FALL MEETING

- The VGP reception will be held on Saturday December 7 from 5:45 - 7:00 in the Moscone Center, room 132. Food and beverages will be provided (the latter generously sponsored by GERM). Our principal activity will be presentation of the Bowen Award.
- The AGU Honors Ceremony will be held on Sunday December 8 at 5:30 pm in the Marriott Hotel. Among those to be honored are the 2002 Macelwane Medal recipient, John Eiler and the 2002 VGP Fellows, Herbert Huppert, Francis Albarede, Michael Bickle, Michael Drake, Bernard Chouet, and Malcolm McCulloch. A reception immediately follows the ceremony, and the banquet begins at 8 pm. See <http://www.agu.org/meetings/fm02honors.html> for full details.
- Town Meeting at Fall AGU: Setting Priorities in Solid Earth Sciences in the U.S. Monday December 9, 6:45-8:00 pm, Moscone Center room 103. This meeting is part of an NSF-sponsored planning process for the future of the Solid Earth Sciences across sub-disciplines and among the synergistic activities of research, education and outreach. A workshop to be held at GSA in Denver on October 26, 2002 is expected to yield an initial planning document, and this Town Meeting will provide an additional opportunity for community input on priorities for Solid Earth Science and on a draft of the planning document. *Contacts: Tracy Rushmer, University of Vermont, trushmer@zoo.uvm.edu, Michael Brown, University of Maryland mbrown@geology.umd.edu*

(2) A MESSAGE FROM YOUR VGP FALL MEETING CHAIR

The VGP portion of Fall AGU is somewhat smaller than in recent years. There appear to be several reasons for this: (1) Mineral and Rock Physics (MR) contributions now have their own independent session listing, (2) there is increased competition from other meetings, such as the Goldschmidt, and (3), there are many VGP-related sessions with primary sponsorship in other sections, such as Tectonophysics.

Even so, the VGP program contains a huge number of interesting contributions, both in specially-organized symposia and in general sessions. Below is a summary of the VGP schedule. Note that it includes only sessions with primary VGP sponsorship. We are also co-sponsoring many sessions in

Mineral and Rock Physics, Tectonophysics, Seismology, Hydrology, and elsewhere. See in you San Francisco!

Volcanology, Geochemistry, and Petrology, 2002 Fall Meeting

Time Session Location Title

Friday Morning

0830 V51A MCC Hall C Applications of Synchrotron Radiation in Low-Temperature Geochemistry and Environmental Science I Posters
0830 V51B MCC Hall C Metamorphism, Ultrahigh Pressure Metamorphism, and Diamonds Posters
0830 V51C MCC 106 Evolution of the Igneous Rocks 2002 Edition I: The Rock Record, Models of Differentiation, and Assimilation

Friday Afternoon

1330 V52A MCC Hall C MORB and More Posters
1330 V52B MCC Hall C Geochronology and Related Topics Posters
1330 V52C MCC Hall C Osmium and PGEs Posters
1330 V52D MCC 106 Evolution of the Igneous Rocks 2002 Edition II: Experimental Results at High Pressure, Petrogenesis, and the Physics of the Earth

Saturday Morning

0830 V61A MCC Hall C Evolution of the Igneous Rocks 2002 Edition III: Posters
0830 V61B MCC Hall C Hydrothermal and Geothermal Posters
0830 V61C MCC 122 Applications of Synchrotron Radiation in Low-Temperature Geochemistry and Environmental Science II
0830 V61D MCC 106 Contemporary Chemical Geodynamics I

Saturday Afternoon

1330 V62A MCC Hall C Evolution of the Igneous Rocks 2002 Edition IV Posters
1330 V62B MCC Hall C Xenoliths, Mafic+Felsic Magmatism Posters
1330 V62C MCC 132 The Big Score: Twenty Years of Research on the Pu'u 'O'o - Kupaianaha Eruption, Kilauea Volcano, Hawai'i I
1530 V62D MCC 132 Hawaiian Volcanism

Sunday Morning

0830 V71A MCC Hall C The Big Score: Twenty Years of Research on the Pu'u 'O'o - Kupaianaha Eruption, Kilauea Volcano, Hawai'i II Posters
0830 V71B MCC Hall C Flood Basalts and LIPs Posters
0830 V71C MCC 106 Contemporary Chemical Geodynamics II

Sunday Afternoon

1330 V72A MCC Hall C Linking Chemistry and Microbiology in Seafloor Hydrothermal Systems I Posters
1330 V72B MCC Hall C Phase Equilibria, Partitioning, and Transport Posters
1330 V72C MCC 270 Lessons Learned From Santa Maria/Santiaguito, Guatemala: Implications of Long-Lived Silicic Eruptions I
1515 V72D MCC 270 From Magma to Tephra: Crystallization, Fragmentation, and

Flow I

Monday Morning

0830 V11A MCC Hall C Arc Magmatism I Posters

0830 V11B MCC Hall C From Magma to Tephra: Crystallization, Fragmentation, and Flow II Posters

0830 V11C MCC 106 Linking Chemistry and Microbiology in Seafloor Hydrothermal Systems II

Monday Afternoon

1330 V12A MCC Hall C Lessons Learned From Santa Maria/Santiaguito, Guatemala: Implications of Long-Lived Silicic Eruptions II Posters

1330 V12B MCC Hall C Volcanology Posters

1330 V12C MCC 106 Arc Magmatism II

Tuesday Morning

0830 V21A MCC Hall C Statistical Analysis of Data Recorded on Active Volcanoes: Advancements and New Perspectives I Posters

0830 V21B MCC Hall C Volcanic Gases Posters

0830 V21C MCC 106 Melt Inclusions: What Do They Tell Us? I

Tuesday Afternoon

1330 V22A MCC Hall C Melt Inclusions: What Do They Tell Us? II Posters

1330 V22B MCC Hall C Geochemistry of Soils, Ore Deposits, and Waste Sites Posters

1330 V22C MCC 121 Statistical Analysis of Data Recorded on Active Volcanoes: Advancements and New Perspectives II

Marc Hirschmann
Fall Meeting Chair

**(3) VGP AT THE AGU SPRING MEETING 2003
(EGS - AGU - EUG Joint Assembly)**

The Spring Meeting in 2003 is a Joint Assembly with the EGS and EUG, and will be held in Nice, France, 07 - 11 April 2003. Information is available from the EGS web site (or via the AGU web site under "Meetings") at <http://www.copernicus.org/egsagueug/index.html>.

Deadlines:

- 15 January 2003, 24:00 GMT Absolute Deadline for Receipt of Abstracts, information at http://www.copernicus.org/EGS/egsga/nice03/abstract_submission_txt_new.htm
- 07 March 2003 Deadline for Pre-Registration, Pre-Reservation of Accommodation and Participation in the Exhibition

Sessions of potential interest to VGP Members are listed under VGP and under TS, as follows:

Volcanology, Geochemistry and Petrology - Provisional Programme

VGP1 Magma Generation and Evolution

- VGP1.01 Open session on magma generation and evolution
- VGP1.02 Magma generation and evolution in the Earth and other terrestrial planets a 21st Century perspective - a symposium to celebrate the 70th birthday of Mike O'Hara
Convener: Niu, Y.; Co-Convener(s): Wilson, M., Stolper, E., Herzberg, C.
- VGP1.03 Water in the Earth's deep interior (co-sponsored by GD) *Convener: Ingrin, J.; Co-Convener(s): Mackwell, S.*
- VGP1.04 Extraction of melts from the mantle, petrological and geophysical constraints
Convener: Bourdon, B.; Co-Convener(s): Elliot, T., Lundstrom, C.
- VGP1.05 Geophysical and petrological models for the magmatic and tectonic evolution of ultra slow spreading centers (co-sponsored by TS) *Convener: Snow, J.; Co-Convener(s): Mevel, C.*
- VGP1.06 Magmatic (melt, crystalline and fluid) inclusion in minerals as probes into mantle structure, composition and melting processes *Convener: Sobolev, A.; Co-Convener(s): Hauri, E.*
- VGP1.07 Volatiles and rare gases in Earth's mantle and core *Convener: Porcelli, D.; Co-Convener(s): Marty, B.*
- VGP1.08 Granite Systems and Proterozoic Lithospheric Processes *Convener: Rämö, O.; Co-Convener(s): Van Schmus, W., Bettencourt, J.*
- VGP1.09 Adakites, TTGs and Sanukitoids *Convener: Rollinson, H.; Co-Convener(s): Martin, H., Polve, M.*

VGP2 Magma Chambers and Volcanic Processes

- VGP2.01 Open session on magma chambers and volcanology
- VGP2.02 Chemical and textural insights into the kinetics of magma chamber processes
Convener: Bergantz, G.; Co-Convener(s): Davidson, J., Toplis, M., Burkhard, D.
- VGP2.03 Mechanisms and flow dynamics of volcanic eruptions (co-sponsored by NH)
Convener: Melnik, O.; Co-Convener(s): Mader, H., Hort, M.
- VGP2.04 Emplacement of Magmas in Planetary Crusts (co-sponsored by PS) *Convener: Clemens, J.; Co-Convener(s): Petford, N.*
- VGP2.05 Volcanic Conduit and Eruption Model Intercomparison (co-sponsored by NH)
Convener: Sahagian, D.; Co-Convener(s): Massol, H.
- VGP2.06 Volcano Tectonics (co-sponsored by NH) *Convener: Gudmundsson, A.; Co-Convener(s): Acocella, V.*
- VGP2.07 Advances in volcano physics (co-sponsored by NH) *Convener: de Natale, G.; Co-Convener(s): Dahm, T., Kilburn, C.*
- VGP2.08 New Monitoring Techniques Applied to Active Volcanoes *Convener: Bonaccorso, A.; Co-Convener(s): Falsaperla, S., Calvari, S.*
- VGP2.09 Geochemistry and Petrology of East African Volcanics *Convener: McHenry, L.*
- VGP2.10 Welding Processes in Volcanology *Convener: Russell, K.; Co-Convener(s): Grunder, A.*
- NH3.03 Landslides and other ground failure hazards in seismically, tectonically and volcanically active regions (co-sponsored by SM & VGP) *Convener: Wasowski, J.; Co-Convener(s): Keefer, D., Del Gaudio, V.*
- NH5.01 Volcanic hazards from explosive to effusive eruptions (co-sponsored by SM & VGP) *Convener: Dingwell, D.; Co-Convener(s): Baxter, P.*
- NH5.03 Satellite Remote Sensing of Volcanic Hazards (co-sponsored by VGP) *Convener: Mouginiis-Mark, P.*

G13 Stress Transfer Between Earthquakes, Volcanoes, and Landslides (co-sponsored by SM, GD, NH, VGP & TS) *Convener: Feigl, K.; Co-Convener(s): Sigmundsson, F.*

VGP3 Fluids and Mineralogy

VGP3.01 Open session on Fluids and Mineralogy

VGP3.02 Fluids in the lithosphere: Element and isotope mobility during water-rock interaction processes *Convener: Corteel, C.; Co-Convener(s): Andrea, D.*

VGP3.03 Zircon: Experiments, Isotopes, and Trace Element Investigation *Convener: Hanchar, J.; Co-Convener(s): Hoskin, P.*

VGP3.04 Fluid flow and transport in oceanic and continental volcano-hydrothermal systems *Convener: Hurwitz, S.; Co-Convener(s): Geiger, S., Jupp, T.*

VGP3.05 Advances and challenges in microanalytical techniques for the in situ analysis of small objects *Convener: Layne, G.*

VGP3.06 Processes at low temperatures: advances in studies of disequilibrium systems *Convener: Arkai, P.; Co-Convener(s): Livi, K., Ferreira-Maehlmann, R.*

VGP3.07 Geochronology of metamorphism, deformation and metallogenesis: crystal-chemical to tectonic scale interpretations *Convener: Bingen, B.; Co-Convener(s): Stein, H., Eide, E.*

VGP3.08 Noble gas and isotope tracing of basin fluid origin, transport and interaction (co-sponsored by ERE) *Convener: Co-Convener(s): Ballentine, C.*

VGP3.09 Precise dating of key geological events: techniques and methodologies leading to the goal of true ages (co-sponsored by NH) *Convener: Arnaud, N.; Co-Convener(s): Renne, P.*

VGP3.10 Gas hydrates and the mechanisms of release of methane gas into the atmosphere and ocean *Convener: Westbrook, G.; Co-Convener(s): Suess, E., Reeburgh, W., Paull, C.*

VGP3.11 Characterising the thermodynamics and kinetics of reactions at mineral-water interfaces *Convener: Oelkers, E.; Co-Convener(s): Stipp, S.*

VGP3.12 Waste disposal in geological formations (co-sponsored by ERE) *Convener: Peyaud, J.*

VGP3.13 Natural Onshore Hydrocarbon Seeps *Convener: Van der Meer, F.; Co-Convener(s): van Rensbergen, P., Hale, M.*

VGP3.14 Natural Glasses, amorphous material and nuclear waste (sponsored by IMA-EMU) *Convener: Neuville, D.; Co-Convener(s): Farnan, I., Galoisy, L., Salje, E.*

VGP3.15 Open session on Physics and Chemistry of Minerals (sponsored by IMA-EMU) (co-sponsored by ERE) *Convener: Vaughan, D.; Co-Convener(s): Effenberger, H.*

VGP3.16 Mechanisms of Mineral reaction and Isotopic Exchange (sponsored by IMA-EMU) *Convener: Baronnet, A.; Co-Convener(s): Putnis, A.*

VGP3.17 Gold and platinum-Group Minerals: from experimental mineralogy and microanalysis to deposit modelling (sponsored by IMA-EMU) (co-sponsored by ERE) *Convener: Kojonen, K.; Co-Convener(s): Merkle, R.*

VGP3.19 "Heavy" Stable Isotope Fractionation: Mechanisms and Methods *Convener: Anbar, A.*

VGP3.20 Formation and Recognition of Large Porphyry-Related Ore Deposits and Their Placement and Modification within Orogenic Cycles (co-sponsored by TS) *Convener: Stein, H.; Co-Convener(s): Hannah, J.*

VGP3.21 Quantifying diagenesis to low-grade metamorphism: Old shoes and new paths *Convener: Rahn, M.; Co-Convener(s): Potel, S.*

VGP3.22 Anelasticity of minerals and rocks: from dislocations and pore fluids to planetary

scale *Convener: Bagdassarov, N.; Co-Convener(s): Gueguen, Y.*

VGP3.23 Physical properties of lower mantle and core forming phases (co-sponsored by GD) *Convener: Badro, J.; Co-Convener(s): Farber, D., Fiquet, G.*

NH9.01 Hydrologic and Geomorphologic Assessment of Glacial Outbursts and Lahar Events (co-sponsored by HS, CR & VGP) *Convener: Armstrong, A.; Co-Convener(s): Evans, S*

NH10.04 Volcanic risk (co-sponsored by VGP) *Convener: Dingwell, D.; Co-Convener(s): Macedonio, G.*

Full descriptions of VGP sessions at

http://www.cosis.net/members/meetings/skeleton/view.php?p_id=50

Tectonism and Sedimentary Processes - Provisional Programme

TS2 Orogenesis

TS2.01 Accretionary orogens and supercontinents through geologic time *Convener: Cawood, P.; Co-Convener(s): Kröner, A., Windley, B.*

TS2.02 The deep structure of continents: focus on results from Europrobe & Lithoprobe (co-sponsored by SM) *Convener: Bock, G.; Co-Convener(s): Daly, S., Clowes, R., Kukkonen, I., Gregersen, S., Rabbel, W., Hjelt, S., Gee, D.*

TS2.03 The Central and South American Trench System *Convener: Kopp, H.; Co-Convener(s): Bialas, J.*

TS2.04 Orogenic Processes During the Building of Pangaea *Convener: Brown, D.; Co-Convener(s): Franke, W.*

TS2.05 Heat and mass transfer from depth: Metamorphism and Crustal Melting in Orogenesis - from Microstructures to Tectonics *Convener: Brown, M.; Co-Convener(s): O'Brien, P., Rushmer, T., Vanderhaeghe, O., Hudson, N.*

TS2.06 Uplift, mountain building, denudation, and climate *Convener: Bickle, M.; Co-Convener(s): Gallagher, K., France-Lanord, C., Ehlers, T., Schlunegger, F.*

TS2.07 Comparing modelled and observed quantities in convergent orogenic belts *Convener: Riller, U.; Co-Convener(s): Oncken, O., Cruden, A.*

TS2.08 The lithosphere: Thermal perspectives of crustal and upper mantle processes *Convener: Kukkonen, I.; Co-Convener(s): Furlong, K.*

TS2.09 Paleotopography *Convener: Andriessen, P.*

TS3 Basins and Margins

TS3.04 Continental breakup above mantle plumes *Convener: Ebinger, C.; Co-Convener(s): Maguire, P., Furman, T.*

TS5 Ocean Crust

TS5.01 Open Session on Ocean lithosphere

TS5.02 Composition and Structure of the Ocean Crust and Mantle: Ophiolites and Modern Ocean Crust *Convener: Dick, H.; Co-Convener(s): Ildefonse, B., MacLeod, C.*

TS5.03 Structure, evolution, and hydrothermalism of oceanic core complexes *Convener: Canales, J.; Co-Convener(s): Escartin, J.*

TS5.04 Hotspot-Ridge interaction: Iceland and other ridge centred hotspots *Convener:*

Marquart, G.; Co-Convener(s): Schmeling, H.

TS5.05 InterRidge - Sea-floor natural laboratories on ridge axes *Convener: Escartin, J.;*

Co-Convener(s): German, C., Devey, C., Delaney, J.

TS5.06 Mantle exhumation at the transition from rifting to seafloor spreading *Convener:*

Müntener, O.; Co-Convener(s): Manatschal, G.

TS5.07 High resolution acoustic imaging and geological sampling studies of young ocean floor *Convener: Searle, R.; Co-Convener(s): Lin, J.*

Full descriptions of TS sessions at

http://www.cosis.net/members/meetings/skeleton/view.php?p_id=49

Michael Brown

University of Maryland

Spring Meeting Chair

(4) ELECTRONIC PUBLISHING AT AGU

AGU's move towards electronic publishing has brought some successes such as the launching of G-cubed, but all this did not happen without hick-ups. The VGP publication committee solicits opinions on this topic. Please e-mail your concerns and opinions to hstaudigel@ucsd.edu (see also VGP August newsletter, item 9, http://vgp.AGU.org/newsletter_0208.html)

Hubert Staudigel

Publications Committee Chair

(5) MACELWANE MEDAL NOMINATIONS

This Fall there were no recommendations from the VGP section for the 2003 Macelwane Medal. Our committee was convened late and could not identify any candidates that we felt were competitive. However, we are soliciting suggestions from VGP section members for next year. This medal recognizes significant contributions to the geophysical sciences by an outstanding young scientist. Candidates must be less than will be 36 years old on January 1 of the year of presentation.

Michael Garcia (mogarcia@hawaii.edu)

(6) IN MEMORIAM: HERBERT R. SHAW (1930-2002)

Herbert R. Shaw, Scientist Emeritus with the U.S. Geological Survey's Volcano Hazards Team, passed away in his home in mid-August from complications of long-standing medical conditions. He is survived by his daughter Andrea, who lives in Ocean Shores, Washington. Herb joined the Branch of Experimental Geochemistry and Mineralogy (in Washington, D.C.) of the U.S. Geological Survey in 1959, upon completion of his doctoral dissertation on mineralogical studies in the Bunker Hill mine, Idaho, under Prof. Charles Meyer at the University of California, Berkeley. In 1976, Herb transferred to the USGS Western Regional Center in Menlo Park, where he worked until retiring in 1995.

With Herb Shaw's passing, the USGS, and indeed the entire geoscience Community, lost one of its most notable scientific luminaries, whose work profoundly influenced investigations of igneous systems. He was amazingly eclectic in his scientific interests, including paleontology (while an undergraduate at Berkeley), hydrothermal alteration, experimental geochemistry and petrology, magma rheology, general volcanology, thermal modeling, nonlinear dynamics of the Earth and cosmos, and

fractal geometry in linguistics.

Although he was actively involved in various field-oriented projects in his early career with the USGS, through the 1970s and into the 1980s Herb Shaw was primarily known as an experimentalist, conducting innovative laboratory studies of hydrogen osmosis, hydrogen-gas fugacity, diffusion of water in rhyolitic melts, viscosities of magmas, and rheology of basalt. In collaboration with the staff of the Hawaiian Volcano Observatory (HVO), in 1965 he invented a rotational viscometer and made the first-ever field measurement of the viscosity of basalt in a borehole within the crusted-over Makaopuhi lava lake at Kilauea Volcano. In 1972, Herb published an empirical method to calculate melt viscosity from chemical composition— a landmark contribution that, with modifications is still in use today. Beginning in the mid-1970s, Herb focused increasingly on the physics and dynamics of magma transport and their implications for igneous systems, from regional to earth scales. Herb Shaw definitely was an extraordinary thinker, never settling for the conventional or mundane. Although often "ahead of their time", and thus controversial, many of his publications were seminal and revolutionary.

Herb Shaw also inspired a number of younger colleagues, notably as a Visiting Professor at Berkeley in the mid-1970s. During this time, Shaw greatly influenced many graduate students, including some current members of the Volcano Hazards Team (Charlie Bacon, Wes Hildreth), with his thought-provoking seminars, quick wit, and easy company. Among these students was Frank Spera (now Professor at UCSB), who pursued a career in magma rheology as a result of Shaw's papers and personal interaction with Herb Shaw.

Herb's work also had important practical applications in the USGS Geothermal Research Program. He and Robert L. Smith (former USGS Geologist) devised a realistic model of igneous-related geothermal systems that linked the size, longevity, and cooling of magma reservoirs. This model and its ramifications served as the scientific foundation for the USGS' national assessments of geothermal resources in 1975 and 1979. In the late 1970s, Herb was tapped by the Nuclear Regulatory Commission, when he served as a consultant to Sandia National Laboratories on risk-assessment methodology and strategies for management of high-level radioactive waste.

In 1980, Shaw turned to analyses of fault and stream branching, self-similarity, attractor theory, chaos, fractals, and other unconventional approaches. Again, he was far ahead of mainstream thinking at that time in applying multidisciplinary nonlinear dynamics to geological and cosmological processes. In a highly productive collaboration lasting into the early 1990s, Herb worked with Bernard Chouet (now a member of the USGS Volcano Hazards Team) and published a series of high-impact papers applying nonlinear dynamics and fractal theory to seismic tremor, gas-piston events, and magma transport at Kilauea Volcano. During this same period, Shaw and James G. Moore (now Scientist Emeritus, Volcano Hazards Team) published a provocative article in *Eos* (1988) linking magmatic heat from the global mid-oceanic ridge system and the El Niño cycle. More recently, Herb produced a 744-page book titled *Craters, Cosmos, and Chronicles: A New Theory of Earth*, published by Stanford University Press in 1994. While this ambitious and comprehensive volume is not easily read and understood by the casual reader, scholars in the cosmology field have pronounced it as one of the most compelling works in the 20th century.

The career-long contributions of Herb Shaw, the scientist, are well recognized and appreciated within and outside the USGS. He received the Meritorious Service Award of the Department of Interior and was a Fellow of the American Geophysical Union and the Geological Society of America. However, less is known about Herb Shaw, the individual, in part because he was a very private person and in part because, for most of his career, he had the habit of sleeping days and working nights. However, his

friends and close associates knew him to be an approachable guy generous to a fault, witty and engaging in conversation, extremely well read, and an avid follower of the arts and culture scene. Herb also was a talented poet, gifted sculptor and painter, and a superb tennis player with a huge serve. In every aspect of his scientific and private life, Herb Shaw embodied the Renaissance man, and he will be missed by all those who knew or worked with him.

Robert I. Tilling

USGS Volcano Hazards Team