August 2006
VGP Section Newsletter #25

In this issue

(1) MESSAGE FROM THE NEW VGP PRESIDENT

I have just taken over as VGP President after 2 years as President-Elect in which I served with Charlie Bacon on the AGU council and the VGP Executive Committee. We see our principal jobs as ensuring that the section is well organized, that VGP has great sessions at AGU meetings and that VGP has as big an influence as possible on the . In all these respects, Charlie Bacon has done an outstanding job as Section President. At AGU Council meetings his is always the voice of reason, which means that he has been extremely influential and universally respected. The enviable level of organization of the VGP Section is such that other Sections are adopting 'our' model. And I hope you will agree that VGP sessions at AGU meetings are stronger than ever. On behalf of the whole section then, I want to thank Charlie for the great job he has done. It is going to be a very difficult act to follow. Joining me on Council will be Alex Halliday, the new VGP President-Elect.

Stepping down with Charlie is James Brenan, who has been our Secretary for the past 2 years. The Secretary's job is in many ways more arduous than that of President because he or she has to organize the special sessions for Fall AGU. James has worked tirelessly and extremely effectively in this regard and I extend our heartfelt thanks to him for a fine job. The strength of VGP representation at Fall AGU is the major reason we have expanded to two Secretaries, Terry Plank (Volcanology and Petrology) and Craig Manning (Geochemistry) who will be taking care of the program this year.

I would also like to thank again all those VGP members who have given up their time to help with VGP committees and Awards. Many, but not all, of the names are under 'Committees' on our website (http://vgp.agu.org).

Finally, if anybody has any suggestions about how we can improve the functioning of the section or wants to know more about how the Union functions, either email me or (preferably) buy me a beer at Fall AGU.

---*Bernie Wood, VGP President* (bwood@els.mq.edu.au)

(2) BOWEN AWARDS 2006

The VGP executive committee is delighted to announce that the Bowen Awards for 2006 go to:

> ***Kathy Cashman*** () -- For her groundbreaking work on the textures of volcanic rocks and their relationships to magma chamber processes and eruption mechanisms.
>
> ***Roberta Rudnick*** () -- For her substantial contributions to the understanding of the chemical composition, formation mechanisms and physical properties of the continental lithosphere.

Congratulations!

(3) CALL FOR NOMINATIONS FOR 2007 AGU HONORS

October 15th is the deadline for nominations for Union Medals. I encourage section members to nominate deserving individuals for appropriate honors. See

(http://www.agu.org/inside/insidaguhn.html) for details of the various medals and awards, as well as past recipients and nomination procedures. Eligibility is interpreted broadly, which gives VGP members opportunities to be considered for most of the Union Medals and Awards. Our section has great breadth and we have frequently done extremely well. In 2006, at the Fall Meeting Bruce Watson will receive the Bucher Medal, Alex Navrotsky the Hess Medal, and Dan Frost a Macelwane Medal..

The following honors are relevant to VGP members:

MACELWANE MEDAL: The Macelwane Medal is given annually by the AGU for significant contributions to the geophysical sciences by a young scientist (under 36 years of age) of outstanding ability. If you are considering nominating a candidate whose contributions pertain to AGU's VGP section, you may contact *Rick Carlson*, Chair of the VGP Macelwane Committee (carlson@dtm.ciw.edu) for further information.

UNION MEDALS: There is a VGP committee to assist VGP members in competing for Union medals. It is important to identify key people well ahead of the October 15th deadline. Please check the AGU website for a description of the medals and past recipients and send your ideas for new nominees to our committee chair *Ian Carmichael* (ian@eps.berkeley.edu)

For advice or help with nominations feel free to contact the appropriate committee chair above, or e-mail Bernie Wood at bwood@els.mq.edu.au.

(4) OUTSTANDING STUDENT PRESENTATIONS, 2006 JOINT ASSEMBLY

Congratulations go to the following students who won awards for outstanding presentations at the 2006 Joint Assembly in

> *Jaqueline Getson*, V41A-22 Effect of Plagioclase Crystallization on Liquid and Magma Viscosity in the An-Di-Fo-Q System. Getson, J M, and Whittington, A, University of Missouri-Columbia, Dept. of Geological Sciences,
>
> *Yanan Liu*, V41C-03 Sulfur Concentration at Sulfide Saturation in Anhydrous Silicate Melts at Crustal Conditions. Liu, Y, Samaha, N, and Baker, D R, Earth and Planetary , 3450 ,

---*Joop Varekamp*, Education & Outreach Chair

(5) 2007 JOINT ASSEMBLY,

The 2007 Joint Assembly will be held in May 22–27, 2007. VGP sessions are being organized by *Bob Bodnar* (rjb@vt.edu) and *Gerardo Carrasco* (gerardoc@geminis.geociencias.unam.mx). The deadline for proposing a special session is September 22, 2006, so please contact one or other of the organizers to get your session included. Further details can be found at http://www.agu.org/meetings/ja07/

(6) 2006 AGU FALL MEETING INFORMATION

Abstract submission is now open. **Deadline: Sept. 1, 2006 (postal/express mail submissions); Sept. 7, 2006 (online submissions)**.

The 2006 Fall Meeting in (December 11–15) should be exciting for VGP members. The 32 special sessions sponsored by VGP represent a broad array of new, rapidly evolving topics in our discipline. In addition, there are at least three Union sessions of interest to VGP membership, as well as a host of sessions cosponsored with other sections or focus groups. Listed below are the titles, description and conveners of VGP-sponsored and relevant Union special sessions, along with titles of VGP-cosponsored sessions. Be sure to consult the AGU website for a full listing (www.agu.org). Thanks to all that submitted proposals for special sessions – your effort is what makes the Fall Meeting such a success.

---Craig Manning and Terry Plank, VGP Secretaries

Volcanology, Geochemistry, and Petrology Special Sessions:

V03 Innovations in Isotope Mass Spectrometry in Geochemistry

Isotope Mass Spectrometry is essential to geochemical research, and recent advances in technologies and methodologies have spawned new applications. We invite contributions that emphasize new developments in isotope mass spectrometry, including advances in instrumentation, establishment of isotope reference materials, techniques for high precision ratio determinations, and methods for measuring radiogenic, cosmogenic, and stable isotopes, among others.

Conveners:

Stephan Richter, IRMM-JRC-EU, Retieseweg 111, Geel, 2440 BEL, Tel: +32-14-571-701, Fax: +32-14-571-652, email: stephan.richter@cec.eu.int, and

Rebecca Thomas, DOE - New Brunswick Laboratory, 9800 S. Cass Ave Bldg. 350, Argonne, IL 60439 USA, Tel: 630-252-3892, Fax: 630-252-6256, email: rebecca.thomas@ch.doe.gov, and

Johannes Bernhard Schwieters, Thermo Electron (Bremen), Hanna-Kunath Str. 11, Bremen, 28199 DEU, Tel: +49 (0) 421 5493 287, email: Johannes.Schwieters@thermo.com, and

Ross Williams, Lawrence Livermore National Laboratory, PO Box 808 L-231, Livermore, CA 94551 USA, Tel: 925-423-8769, email: williams141@llnl.gov, and

Lang Farmer, University of Colorado, Department of Geological Sciences Campus Box 399, Boulder, CO 80309 USA, Tel: 303 4926534, email: farmer@colorado.edu

V04 Dynamics of Volcanic Explosions: Field Observations, Experimental Constraints and Integrated Modeling

The aim of this session is to elucidate the dynamics of volcanic explosions by combining the results from different scientific approaches such as theoretical modeling, laboratory experiments, field observations, and numerical simulations. Basic processes in magma, such as bubble formation and growth, degassing and fragmentation have been intensively studied by laboratory experiments and theoretical modeling, which have been improving our understanding of magma ascent process in the conduit. Geologic samples and field observations of deposits provide important information related to these basic processes over a range of time and space scales. Seismic and geodetic measurements as well as other geophysical observations provide mechanical and physical parameters of volcanic explosions that in turn give us important constraints on such basic processes and magma ascent. Accurate numerical simulations on volcanic flows in the atmosphere are now ready for applying to the prediction of volcanic hazard. We invite contributions from these many different approaches to clarify the physical and chemical parameters controlling the volcanic explosivity. Priority will be given to talks that combine field observations with simulations of eruption dynamics.

Conveners:

Takeshi Nishimura, Tohoku University, Aramaki-aza Aoba 6-3 Aoba-ku, Sendai, 980-8578 JPN, email: nishi@zisin.geophys.tohoku.ac.jp,

Oleg Melnik, Institute of Mechanics, Moscow State University, 1, Michurinskii prospekt, Moscow, 119192 RUS, Tel: 007-495-939-5476, Fax: 007-495-939-0165, email: melnik@imec.msu.ru, and

Greg A Valentine, Los Alamos National Laboratory, Mail Stop D462, Los Alamos, NM 87545 USA, Tel: 5056650259, Fax: 5056653285, email: gav@lanl.gov

V05 Dynamics of Crustal Magma Transfer, Storage and Differentiation: Integrating Geochemical and Geophysical Constraints

This session focuses on magmatic processes within the Earth's crust and therefore forms the bridge between mantle processes and volcanism. It aims to integrate evidence from a variety of disciplines in order to make progress in the following controversial issues regarding magma dynamics and evolution: At what rates and through which mechanisms do magmas ascent through the crust? At what pressures and temperatures are they stored on their way to the surface? Are magma reservoirs small or large, shallow or deep, ephemeral or long-lasting? Where and how does magmatic differentiation take place? What are the links between magmatic processes at depth and volcanic eruption at the surface? Contributions from igneous and experimental petrology, geochronology, geochemistry, geophysics, volcanology and any other disciplines that may shed light on these and related questions are welcomed.

Conveners:
Georg Florian Zellmer, Institute of Earth Sciences, Academia Sinica, 128 Academia Road, Section 2 Nankang, Taipei, 11529 TWN, Tel: +886-2-2783-9910 ext. 602, Fax: +886-2-2783-9871, email: gzellmer@earth.sinica.edu.tw, and
Catherine Annen, Department of Mineralogy, University of Geneva, 13 rue des Maraîchers , Geneva, 1205 CHE, Tel: +41 22 379 66 23, Fax: +41 22 379 32 10, email: catherine.annen@terre.unige.ch

V06 What Makes an Eruption "Super"? New Methods Yield New Insights About Very Large Calderas and Their Eruptive Products

The explosive eruption of large volumes of silicic magma can influence climate on a global scale, and has direct catastrophic effects, in some cases spanning continents. Recent television documentaries, movies and novels speculate on the initiation and aftermath of these rhyolitic super-eruptions, thereby focusing public attention on the current state of scientific knowledge. This session aims to summarize present understanding by inviting contributions on the histories of super-eruptions and the processes leading to large-volume ignimbrite sheets, and their atmospheric aftermaths. Invited and submitted presentations will focus on new lines of research by isotopic and trace-element methods to unravel the complex histories of crystal and melt populations in super-eruption deposits. Contributions are also sought on the physics of caldera formation, pre- and post-caldera dynamics of shallow silicic magmas chambers and their associated hydrothermal systems, isotopic studies of erupted aerosols,atmospheric effects, and field, laboratory and theoretical investigations of plutonic and volcanic rocks relevant to understanding this largest scale of silicic volcanic eruptions.

Conveners:
Ilya Bindeman, , , email: bindeman@uoregon.edu, and
Jake Lowenstern, , , email: jlwnstrn@usgs.gov, and
Tom Sisson, , email: tsisson@usgs.gov

V07 Potential Field Investigations of Active Volcanic Systems

The use of potential field methods (for example, gravity and electromagnetic surveys) in the monitoring and investigation of active volcanoes can provide a wealth of information on subsurface magmatic processes. For example, geodesy alone cannot discriminate between magma and aqueous fluid intrusion at large quaternary silicic calderas. Gravity measurements, however, can constrain the mass of the intrusion, and when combined with

surface displacement data, can be used to infer the density of the intrusive fluids. Potential measurements may also be used to infer sub-volcanic structure, and are useful in tracking the evolution of active volcanic system over time. This session seeks to highlight the broad range of potential field methods applied to volcanoes, including the joint analysis of potential field and geodetic data. This includes theoretical, field-based, technology development, and modeling studies. We hope to stimulate additional discussion and interest in potential field measurements, and motivate greater use of these methods in the study of active volcanic systems.

Conveners:

Maurizio Battaglia, University of Rome I "La Sapienza", ITA, email: battag@seismo.berkeley.edu, and
Joachim Gottsmann, University of Bristol, GBR, email: J.Gottsmann@bristol.ac.uk, and
Michael Poland, United States Geological Survey, USA, email: mpoland@usgs.gov

V08 Ridge/Hot Spot Interaction: New Insights From Galapagos

Hotspots located near spreading ridges create excess magma supply and elevated mantle temperatures that profoundly affect the spreading process. Several field programs to the Galapagos, both ridge and archipelago, have returned a wealth of detailed information on the influence of this hotspot on the nearby ridge. In this session, we seek to bring together these new observations and combine them with theoretical and modeling studies of plumes and ridge-hotspot interaction. Contributions dealing with the ridge system or also the nature of the hotspot and archipelago are welcome. We also invite contributions pertaining to other ridge-hotspot interactions as a comparison to Galapagos.

Conveners:

Rachel Haymon, U.C. Santa Barbara, USA, email: haymon@geol.ucsb.edu, and
Scott M White, , Tel: 803-777-6304, Fax: 803-777-6610, email: swhite@geol.sc.edu

V09 Bridging the Volcanic and Plutonic Perspectives of Silicic Magma Evolution

Technical advances in recent years have vastly improved our ability to apply geochronometers and geothermometers to silicic magma systems, but also raised questions as to what these dates mean in relation to the long-term development and maintenance of silicic magma reservoirs. When coupled with geothermometry, geochronology can potentially provide a wealth of information on the thermal evolution of magma reservoirs. For this session, we invite contributions that address new and innovative techniques linking the plutonic and volcanic evolution of silicic magmatic systems and their thermo-chemical evolution. We encourage examples from both the volcanic and plutonic realms (or examples where both are preserved), and studies that utilize a variety of techniques, such as high-precision TIMS and/or microbeam dating of zircon (and other magmatic accessory phases), Ti-in-zircon geothermometry, and use of other thermochronometers to help constrain the T-t evolution of silicic magma systems.

Conveners:

Jennifer Matzel, Berkeley Geochronology Center, Berkeley, CA 94709 USA, Tel: 5106449284, Fax: 5106449200, email: jmatzel@bgc.org, and
Jonathan S Miller, San Jose State University, San Jose, CA 95192-0102 USA, Tel: 408-924-5015, email: jsmiller@email.sjsu.edu, and
Jorge Vazquez, California State University, Northridge, Los Angeles, CA 91330 USA, Tel: 818-677-2564, email: jvazquez@csun.edu

V10 Active Mantle Upwellings and Volcanism: What Do We Know?

The mantle plume model remains the only comprehensive explanation for linear age-progressive and excess volcanism. Recent controversy about the mantle plume model, however, has exposed our incomplete understanding of the possible role of active mantle upwellings in explaining mid-plate and flood basalt activity. Temperatures, depths of melting, plume chemical and lithological heterogeneity in space and time, depth of origin, plume source precursor materials, and plume source age are some of the still poorly constrained parameters. An inter-disciplinary synthesis of our current knowledge of geophysical and geochemical characteristics of mantle plumes is the goal of this session.

Conveners:
Keith Daniel Putirka, California State University, Fresno, 2576 E. San Ramon Ave MS/ST 24 , Fresno, CA 93710-8039 USA, Tel: 559-278-4523, email: kputirka@csufresno.edu, and
Cornelia Class, Lamont-Doherty Earth Observatory, 61 Rte 9W, Palisades, NY 10964 USA, Tel: 1-845-365-8712, Fax: 1-845-365-8155, email: class@ldeo.columbia.edu

V11 The 2006 Eruption of Augustine Volcano, Alaska

The 2006 eruption of Augustine Volcano in south-central Alaska was preceded by roughly eight months of increasing unrest and consisted of several weeks of explosive activity followed by several months of quieter effusion of magma from the volcano's summit. This eruption provides an opportunity to closely observe the accumulation, migration and eruption of high silica andesite to dacitic magma and related processes as it exhibited both explosive and effusive behavior. We seek presentations on all aspects of Augustine Volcano and especially the 2006 eruption.

Conveners:
John A. Power, Alaska Volcano Observatory, U.S. Geological Survey 4200 University Drive, Anchorage, AK 99508 USA, Tel: 907-786-7426, email: jpower@usgs.gov,
Katharine F. Bull, Alaska Volcano Observatory, Alaska Division of Geological and Geophysical Surveys 3354 College Road, Fairbanks, AK 99709 USA, Tel: 907-451-5055, email:Katharine_Bull@dnr.state.ak.us, and
Jessica F. Larsen, Alaska Volcano Observatory, Geophysical Institute University of Alaska - Fairbanks, Fairbanks, AK 99775 USA, Tel: 907-474-7992, email: faust@gi.alaska.edu

V12 To What Depth Can Continental Crust be Subducted: Observations From Ultrahigh-Pressure Metamorphic Rocks, Experiments, and Numerical Modeling

The idea, that continental crust along with terrigenous and pelagic sediments may descend into Earth's upper and lower mantle, is widely supported by data on the ratio of some stable isotope pairs, by seismic tomography, and it is also justified by experimental data based on comparison of the densities and viscosities of mantle and crustal minerals synthesized at extremely high pressures. Ultra-high pressure metamorphic rocks (UHPM) are the best natural laboratory to study to what depth continental crust may be subducted. Sampling these rocks from different collisional orogens, and establishing the depth from which they have returned back to the Earth's surface continue to challenge our knowledge. We need a clear vision of how to bridge observations from the thin sections of natural UHPM rocks and the laboratory background to define the phases that were stable when the rock was formed, in order to see through back transformations of the crystals the history of continental crust that the thin sections come from. Due to the unprecedented surge of laboratory instrumentations and technologies, many new minerals have been synthesized at P~ 6 to >20 GPa in the KNASH, KASH, and ASH chemical systems (e.g., wadeite, topaz-OH, phase egg, K- and Na-hollandite, stishovite, and others), however, none of these

minerals (except topaz-OH) has been yet identified within natural UHPM terranes. Innovative electron beam and synchrotron radiation technologies showed that the micro- and nanoscale mineral inclusions and microstructural patterns provide valuable geological information similar to that as trace elements highlight geochemical evolution of the rocks/minerals. To get a better understanding of the complex history of the UHPM rocks one needs to define: "How do the observations on natural and laboratory-made samples fit to each other?" In this context we welcome presentations related to multidisciplinary studies of natural UHPM rocks using innovative instruments and technologies, experiments related to UHP mineral/rock synthesis and numerical modeling, which, when accumulated all together, will provide much better insights into "fate" of continental crust constituents in deep subduction zones. The main task of this session is to formulate clear statements: (1) What do we really know from the UHPM rocks about deep subduction of the crustal material; (2) How modern experimental and numerical modeling is consistent with the "facts" collected from natural rocks. This session is convened and supported by Task Force IV of the International Lithosphere Program.

Conveners:

Larissa Dobrzhinetskaya, Univerisity of California at Riverside, Department of Earth Sciences, Riverside, CA 92521 USA, Tel: 951-827-2028, Fax: 951-827-4532, email: larissa@ucr.edu, and
Yoshi Ogasawara, Waseda University, Department of Earth Sciences 1-61 Nishiwaseda, Shinjuku-ku, Tokyo, 169-8015 JPN, Tel: 421-128-2345, email: yoshi777@waseda.jp, and
Richard Wirth, GeoForschungsZentrum, 1 Telegrafenberg, Division of Experimental Geochemistry and Mineral Physics, Potsdam, D-14473 DEU, email: wirth@gfz-potsdam.de

V13 The Early Earth: Insights From Petrology, Geochemistry, and Geodynamics

This session will focus on geochemical and geophysical processes that operated in the Earth's pre-1.9 Ga history. It is during this time that several critical geodynamic events have been postulated to occur, which would have strongly influenced the subsequent evolution of the solid Earth: continental crust formation, craton stabilization, impacts, core formation and inner core crystallization, crystallization of a presumed magma ocean, depletion of the mantle, and onset of mantle convection. Some fundamental questions about these processes still remain largely unanswered. For example: What was the timing and duration of these events? To what extent did they affect each other? What were the driving forces behind such global-scale events? And what were the physical and chemical processes involved? We seek contributions from diverse fields including experimental, theoretical and observational petrology, trace element and isotope geochemistry, geodynamics and geophysics that illuminate conditions and processes in the early Earth. Specific topics may include: [1] formation and stabilization of the Hadean and Archean crust and lithosphere; [2] thermal structure and mantle convection in the early Earth; [3] melting processes and the chemical evolution of the mantle; [4] Archean subduction and evidence for early plate tectonics; and [5] core formation, inner core crystallization and initiation of the geodynamo. Of particular interest are those contributions that provide insights into the potential relationships among these seemingly disparate processes.

Conveners:

Amitava Gangopadhyay, National High Magnetic Field Laboratory, 1800 E. Paul Dirac Dr. , Tallahassee, FL 32310 USA, Tel: 850 - 645-2486, Fax: 850 - 644-0827, email: amitava@magnet.fsu.edu, and
Stephen Parman, Department of Earth Sciences, University of Durham, Science Labs,

Durham, DH1 3LE GBR, Tel: +44 (191) 334 2331, email: stephen.parman@durham.ac.uk, and
T. Mark Harrison, Institute of Geophysics and Planetary Physics, Department of Earth and Space Sciences, UCLA, 595 Charles Young Drive East, Los Angeles, CA 9009 USA, Tel: 310-825-7970, email: tmh@oro.ess.ucla.edu, and
Janne Blichert-Toft, Laboratoire de Sciences de la Terre, CNRS UMR 5570, Ecole Normale Supérieure de Lyon, 46, Allée d"Italie, 69364 Lyon Cedex 7, , FRA, Tel: +33 (0)4 72 72 84 88, email: jblicher@ens-lyon.fr

V14 Thermocubed: Combining Thermodynamic, Thermoisotopic, and Thermotectonic Data in Addressing Petrologic Problems

Fundamental questions in modern metamorphic petrology and petrogenesis are often addressed by approaches pioneered by Eric Essene through the combination of thermodynamic, thermo-isotopic, and thermotectonic data. Field and petrographic observations combined with data from thermodynamic modeling of experiments, stable and radiogenic isotopes, X-ray tomography, electron microprobe, ion microprobe, and a variety of other geochemical methods have improved our understanding of processes and phenomena such as elemental and isotopic diffusion, crystal nucleation and growth, mineral stability, geothermometry, geobarometry, P-T-t histories, and fluid-mineral equilibria. This session is an opportunity to highlight recent advances from such investigations inspired by the integrative approach of Eric Essene that further our understanding of the physical and chemical nature of metamorphic processes at scales both large and small.

Conveners:

Michael Cosca, University of Lausanne, Institute of Mineralogy and Geochemistry BFSH-2, Lausanne, 1015 CHE, email: mcosca@unil.ch, and
John Bowman, University of Utah, 135 South 1460 East Browning Building - Room 719, Salt Lake City, UT 84112-0011 USA, email: bowman@earth.utah.edu, and
Zachary Sharp, University of New Mexico, Department of Earth and Planetary Sciences , Albuquerque, NM 87131 USA, email: zsharp@unm.edu, and
John Valley, University of Wisconsin, Dept. of Geology and Geophysics, Madison, WI 53706 USA, email: valley@geology.wisc.edu

V15 Crystal-Scale Records of Magmatic Processes

In order to understand the information about the composition and the dynamics of the Earth's mantle that is provided by the chemistry of magmas, it is necessary to deconvolve the geochemical signatures of crustal transport and storage from those that reflect melt production, migration and transport through the mantle. There is a growing recognition that chemical variations within crystals in magmatic systems can record many of these crustal processes, which may be averaged (and therefore obscured) in the chemistry of the silicate liquids. For example, trace-element zoning in crystals can preserve information about the changing chemical conditions within a magma system, while geochronometers based on diffusion of major and trace elements within crystals can provide information on the duration of crystal residence at high temperatures. Absolute ages of crystals can be determined by in-situ dating of accessory phases by U-Th or U-Pb dating, and average crystal ages can be determined through U-series ages of bulk mineral separates. In this session, we will explore the chemical and temporal records of magmatic processes that are contained within crystals. We encourage contributions from a wide range of fields including observational, experimental and theoretical studies in geochemistry, petrology,

and mineral physics, concerning the timescale of magmatic processes recorded by minerals: for example, growth, resorption, and recrystallization of phenocrysts, storage and recycling of crystals within magmatic systems, and diffusion in mantle-derived xenoliths. We especially encourage submissions that combine multiple techniques applied to the same system.

Conveners:

Kari M Cooper, University of California, Davis, Department of Geology One Shields Ave , Davis, CA 95616 USA, Tel: 530-754-8826, Fax: 530-752-0951, email: kmcooper@geology.ucdavis.edu, and
Sylvie Demouchy, University of Minnesota, Dept. Geology and Geophysics Pillsbury Hall, room 108 310 Pillsbury Drive SE, Minneapolis, MN 55455 USA, Tel: 612-626-0572, email: demou005@umn.edu

V16 Tephra Dispersal and Sedimentation: Field Studies, Modeling, and Hazard Assessment

This special session will bring together scientists with active research interests and expertise in the application of tephra studies to developing numerical models of tephra dispersion and sedimentation. Tephra produced by volcanic eruptions poses a substantial risk to the aviation industry and tephra fall out represents a significant public health and societal hazard. Accurate forecasts of particle dispersal and fall out are critical during volcanic crises and are important components of volcano hazard assessments where both short- and long-term volcanic risk must be estimated. The session will highlight recent work on the analysis of tephra hazards and the integration of field studies and numerical modeling of particle transport and fall out. The session will also address topics such as: (1) strengths and weaknesses of existing numerical models for tephra transport and sedimentation, (2) tephra databases for model validation, calibration and development, (3) new techniques for collection and monitoring of tephra during eruptions, (4) critical assessments of existing techniques for the study of tephra deposits, (5) long-distance transport of volcanic ash and methods for hazard assessment at large distances from source volcanoes, (6) environmental and societal impacts of tephra fallout, (7) risk mitigation, (8) communication of tephra hazards and warnings with the public and other physical scientists, (9) future collaborative opportunities and needs.

Conveners:

Christopher F Waythomas, U.S. Geological Survey, Alaska Volcano Observatory, 4230 University Drive Suite 201, Anchorage, AK 995008 USA, Tel: 907-786-7122, Fax: 907 786-7150, email: chris@usgs.gov, and
Costanza Bonadonna, Centre d"Etude des Risques Géologiques (CERG), Université de Genève, 13, rue des Maraîchers, Geneva, CH-1205 Ge CHE, Tel: +41 22 379 3055, Fax: +41 22 379 3210, email: Costanza.Bonadonna@terre.unige.ch, and
Peter Webley, Arctic Region Supercomputing Center/Alaska Volcano Observatory, University of Alaska Fairbanks (UAF), 909 Koyukuk Drive, Suite 108D, Fairbanks, AK 99775-6020 USA, Tel: 907-474-1542, email: pwebley@gi.alaska.edu

V17 New Imaging Approaches for Detecting Topographic or Surface Change

Many fields within the geosciences require the detection of surface change, in either position or appearance. This may relate to resurfacing by deposition during floods or eruptions, to surface removal by erosion and avalanches, or surface deformation by magma intrusion or landsliding. The methods used vary from monitoring individual features to repeated topographic reconstructions. Traditional imaging techniques such as aerial photography and satellite imaging are now being augmented by technologies and

approaches developed in fields such as computer vision. We invite contributions describing the application of alternative techniques for the purpose of surface monitoring. This includes the development of novel imaging instruments or deployments and the use of techniques such as oblique photogrammetry and reconstruction from video footage. Applications involving merging data from a variety of imaging or other sensors (e.g. laser scanners) are welcome, with problems either laboratory- or field-based. This session hopes to bring together techniques used over a wide spectrum of disciplines, demonstrating their practical application and the advances made in imaging processes.

Conveners:
Mike James, Lancaster University, Environmental Science Department, Lancaster, LA1 4YQ GBR, email: m.james@lancs.ac.uk, and
Benjamin van Wyk de Vries, Univeristé Blaise Pascal, Laboratoire Magmas et Volcans (UMR-CNRS 6524) Observatoire du Physique du Globe Univeristé Blaise Pascal 5 Rue Kessler, Clermont-Ferrand, 63038 FRA, email: b.vanwyk@opgc.univ-bpclermont.fr

V18 Breaking the Container: The Role of Solid Rock Surrounding Volcanic Systems

Before an eruption can occur, the solid rock surrounding a magmatic system must be broken to provide a pathway to the surface. As a result, the physical properties and stress state of the host rock play a significant role in determining the likelihood and timing of eruptions, as well as the structure of emplaced magma bodies. Conversely, changes in the state of the host rock (e.g., changes in stress magnitude or orientation, changes in the extent of fault slip or brittle failure) reflect processes occurring within the magmatic system and at the magma-rock interface. Indications of rock failure (e.g., high frequency seismicity) or changes in the stress state of the solid rock may be measured, providing a basis for forecasts of the likelihood and timing of eruptions. Overall, a thorough understanding of how magma interacts with its host rock will clarify the conditions that lead to the formation of magmatic conduits and will identify physical controls on magma ascent and eruption. This session aims to synthesize new insights and observations on the relations between processes within magmatic systems and changes in the state of the surrounding host rock, as well as on the influence of the host rock on the structure of the magmatic system and the likelihood and timing of eruption. We invite in particular theoretical studies of the physical mechanisms driving failure of the rock around an active magmatic system, observational studies of systematic patterns of mechanical failure at active volcanoes (e.g., microearthquake studies, studies of stress change, studies of volcano-fault interactions, analog experimental studies), and presentations of new approaches to eruption forecasting based on quantifiable observations of changes in the state of rock surrounding magmatic systems.

Conveners:
Diana C. Roman, University of South Florida, 4202 E. Fowler Avenue SCA 528, Tampa, FL 33620 USA, Tel: 1 (813) 974-2236, Fax: 1 (813) 974-2654, email: droman@cas.usf.edu, and
Christopher Kilburn, University College London, UCL Benfield Hazard Research Centre, Department of Earth Sciences, Gower Street, London, WC1E 6BT GBR, Tel: +44 (0)20 7679 7194, Fax: +44 (0)20 7679 2390, email: c.kilburn@ucl.ac.uk

V19 Tectonics, Petrology, and Geochemistry of Ultraslow Spreading Ridges: Recent Advances

This session will highlight our understanding of the tectonics, petrology and geochemistry of ultraslow-spreading ridges, as has been pioneered by the lasting contributions of Dr.

Henry Dick. Recent research activities on ultraslow-spreading ridges are dramatically improving our understanding of how mid-ocean ridge processes work, and this session will provide opportunities for diverse research disciplines to discuss findings and reach a new level of understanding. Tectonics of oblique spreading, thermal structure of ultraslow ridges, crustal accretion processes, scale lengths of chemical and isotopic heterogeneities, importance of melt-rock reaction, and source variability and basalt chemistry are among potential topics of discussion.

Conveners:

Nobumichi Shimizu, Woods Hole Oceanographic Institution, , WHOI-G&G, Woods Hole, MA 02543 , Tel: 5082892963, Fax: 5084572175, email: nshimizu@whoi.edu, and
Stanley Hart, Woods Hole Oceanographic Institution, , WHOI-G&G, Woods Hole, MA 02543 , Tel: 5082892837, Fax: 5084572175, email: shart@whoi.edu

V20 Origin, Storage, and Transport of Water in Earth's Mantle

Water in the Earth's mantle exerts a strong influence over the chemical and physical properties of the deep interior. We invite contributions to this multidisciplinary special session; topics will include the origins of Earth's water during its early formation, the storage of water in nominally anhydrous mantle minerals, the influence of water on mantle properties, and the exchange of water among Earth's reservoirs. Topics of particular interest include the delivery of water to Earth during accretion; solubility and diffusion of water in natural and experimental minerals; partitioning of water between minerals and melt; the role of water in partial melting and its abundance in basaltic magmas; and the influence of water on mantle density, viscosity, seismic velocity and anisotropy.

Conveners:

Erik H Hauri, Carnegie Institution of Washington, Department of Terrestrial Magnetism 5241 Broad Branch Rd. NW, Washington, DC 20015 USA, Tel: 202-478-8471, Fax: 202-478-8821, email: hauri@dtm.ciw.edu, and
Tony Withers, University of Minnesota, Department of Geology & Geophysics, Minneapolis, MN 55455 USA, email: withe012@umn.edu, and
Julie O'Leary, California Institute of Technology, Division of Geological and Planetary Sciences, Pasadena, CA 91125 USA, email: oleary@gps.caltech.edu

V21 Seamounts: The Intersection of the Biosphere, Hydrosphere, and Lithosphere

Seamounts offer rewarding targets for a wide range of science disciplines. They act as "stirring rods" to ocean circulation, with exciting marine biological habitats, food webs, prolific fisheries, and hydrothermal vents. Deep seamount corals on record ancient currents, and seamounts play a critical role in studying plate motion or plate extension, lithosphere flexure or the composition of the Earth's mantle. This session aims to attract contributions of all science disciplines involved in seamount research to foster interdisciplinary work and to help seamount researchers network with each other.

Conveners:

Hubert Staudigel, Scripps Institution of Oceanography, UCSD-0225, La Jolla, CA 92093-0225 USA, Tel: 858 534 8764, email: hstaudigel@ucsd.edu, and
Julie Huber, Marine Biological Laboratory, 7 MBL Street, Woods Hole, MA 02543 USA, email: jhuber@mbl.edu, and
Anthony Watts, University of Oxford, GBR, email: Tony.Watts@earth.ox.ac.uk, and Tim Shank, Woods Hole Oceanographic Institution, USA, email: tshank@whoi.edu, and
Stanley Hart, Woods Hole Oceanographic Institution, USA, email: shart@whoi.edu, and Robert Embley, NOAA-PMEL, USA, email: Robert.W.Embley@noaa.gov

V22 Lessons From the Izu-Bonin-Mariana and Central American Subduction Factories

Presentations are invited that discuss all aspects of the Izu-Bonin-Mariana and Central American subduction zones, including subduction input, forearc processes and the origin and evolution of magma and crust. These systems have been integrated research study sites for several nations in recent years. This session will disseminate results from and between these efforts. Presentations are encouraged to integrate information for each site, to compare results from one site to the other, and to consider possible IODP and continental drilling opportunities. Topics might include: character and origin of the crust; relationship between suduction input and output in the forearc and volcanic arc; how differences in the mantle wedge or subduction parameters affect magma composition; reasons for spatial and temporal variations in magma composition, including volatiles; and flux estimates.

Conveners:
Jim Gill, of , , , , Tel: 831-459-3842, email: jgill@pmc.ucsc.edu, and
Yoshiyuki Tatsumi, Institute for Research on Earth Evolution (IFREE), , 237-0061 JPN, Tel: 81-46-867-9760, email: tatsumi@jamstec.go.jp, and
Kaj Hoernle, IFM-GEOMAR, , D-24148 DEU, Tel: 49-431-600-2642, email: khoernle@ifm-geomar.de

V23 The Dynamic Reaction: Interactions of Metamorphic Reactions and Deformation in Nature, Experiments, and Models

This session will examine the results of experimental, field-based, and modeling approaches to investigating the interactions of physical and chemical processes during metamorphism; for example, how deformation may drive metamorphic reactions and influence the generation and preservation of high-grade mineral assemblages, and how metamorphic reactions can affect deformation mechanisms and strain localization. At a larger scale, these relationships are significant for interpreting processes and paths from exhumed metamorphic rocks and for understanding crust and mantle dynamics.

Conveners:
Donna L Whitney, Geology & Geophysics, of , , Tel: 612-626-7582, Fax: 612-625-3819, email: dwhitney@umn.edu, and
Caleb W. Holyoke, , , email: Caleb_Holyoke_III@brown.edu

V24 Recent Deep-Sea Eruptions: Phenomena Observed Before, During, and After

Most (>70%) of Earth's volcanic eruptions occur unseen in the deep-sea, along mid-ocean and back-arc ridges, at arcs along subduction zones, and above mantle plumes. Rare opportunities to detect and observe eruptions at depth have revealed an astonishing host of transient and rapidly-evolving seafloor, subseafloor, and water column phenomena that precede, accompany, and follow the eruptions. Recent dike intrusion and eruptive events along the East Pacific Rise at 8°-11°N and on the Endeavour Segment of the Juan de Fuca Ridge provide new opportunities to observe responses of seafloor hydrothermal-biological systems to the fundamental process of crustal creation along the mid-ocean ridge. Both locations are Integrated Study Sites of the NSF-sponsored Ridge2000 program. Meanwhile, in the western Pacific, studies of an ongoing deep-sea eruption since 2004 at NW-Rota 1 Volcano in the Mariana Arc provide the first direct visual observations and sampling of an explosive eruption accompanied by degassing of submarine lavas. These studies were made as a part of NOAA's Ocean Exploration program in 2004 and 2006, and by JAMSTEC in 2005. In 2005, another Ocean Exploration program documented

evidence of a recent eruption of Vailulu'u Seamount, a mid-plate volcano above the Samoan mantle plume. Unique suites of time series experiments at all of these sites are detecting and characterizing environmental conditions leading up to and following seafloor eruption/intrusion events. This session will explore the nature of the physical-chemical and biological systems before, during and after recent deep-sea eruptions, in a variety of geologic settings.

Conveners:

Rachel M. Haymon, of , , Dept. of Earth Science, , , Tel: 805-893-3718, Fax: 805 893-2314, email: haymon@geol.ucsb.edu, and
Suzanne Carbotte, Lamont-Doherty Earth Observatory, Columbia Univ, , email: carbotte@ldeo.columbia.edu, and
Joseph Resing, NOAA-PMEL and , email: Joseph.Resing@noaa.gov

V25 Biological and Nonbiological Sulfate Reduction in the Earth's History

This session will focus on the importance of bacterial sulfate reduction (BSR) and thermochemical sulfate reduction (TSR) in the Earth history, especially in: (a) the evolution of the biosphere, hydrosphere and atmosphere, and (b) the formation of petroleum and mineral deposits. This session will bring together inorganic geochemists, organic geochemists, isotope geochemists, geomicrobiologists, biochemists, sedimentologists, Precambrian geologists, paleontologists, petroleum geologists, economic geologists, and astrobiologists to exchange recent data and ideas on the following important questions: (1) What are the limiting conditions and detailed mechanisms for BSR and TSR?; (2) What are the geochemical and mineralogical characteristics (e.g., multi sulfur isotope fractionations; carbon isotope fractionation) of BSR and TSR products?; (3) When did SRB evolve?; (4) How have SRB influenced the natures of local and global ecosystems?; (5) Has the local and/or global importance of SRB and TRB changed through geologic history?; and (6) What does the sulfur isotope record of sedimentary rocks tell us about the evolution of the biosphere, hydrosphere and atmosphere?

Conveners:

Yumiko Watanabe, Penn State University, 434 Deike, University Park, PA 16802 USA, Tel: 814-865-4340, Fax: 814-863-2001, email: yxw129@psu.edu, and
Martin B Goldhaber, U.S. Geological Survey, MS 973 Denver Federal Center, Denver, CO 80225 USA, Tel: 303-236-1521, email: mgold@usgs.gov

V26 Understanding Fractionation in New Stable Isotope Systems

Recent improvements in analytical techniques and instrumentation have led to the discovery of isotopic fractionations in a host of new elements. Knowing what causes these fractionations is key to the development of new geochemical tools based on non-traditional isotope ratio measurements. This session will focus on experimental, theoretical, and empirical studies that seek to calibrate stable isotope fractionation effects or to unravel underlying fractionation mechanisms. Isotopic systems of interest include, but are not limited to, Li, B, Mg, Si, Cl, Ca, Cr, Fe, Zn, Mo, Hg and Tl.

Conveners:

Edwin A. Schauble, UCLA, Dept. of Earth and Space Sciences Box 951567, Los Angeles, CA 90095-1567 USA, Tel: 310-206-9292, email: schauble@ucla.edu, and
Laura Wasylenki, Arizona State University, , Tempe, AZ 85287-1404 USA, Tel: (480) 727-8137, Fax: (480) 965-8102, email: laura.wasylenki@asu.edu

V27 Snake River Plain as a Probe of Mantle-Lithosphere-Climate Dynamics

The track of the Yellowstone hotspot – from its initial impingement on the North American continent to its present influence in western Wyoming – produced a unique and world-class record of hotspot-continent dynamics that is still active today. In this session, we will explore the volcanic and tectonic response of the Snake River Plain and adjacent provinces to the influence of the hotspot and how this informs our understanding of continental dynamics, the geochemical and thermal evolution of Earth, climatic response to these drivers, and assess how, as the scientific community readies itself for an upcoming EarthScope campaign, we can make better use of these records. We invite contributions that link geochemical and geophysical perspectives on the lithospheric response to the influence of the hotspot, including interactions between magma sources, magma-crust interaction, and lithosphere restructuring. We also invite contributions that link the paleo-climatic and paleo-environmental records of the Snake River Plain to global models of climate evolution. We are especially interested in contributions that employ innovative new techniques and ideas.

Conveners:
John W. Shervais, Logan, Uta 84341-3029 USA, Tel: 435 797-1274, Fax: 435 797-1274, email: shervais@cc.usu.edu, and
Mary Reid, Northern Arizona University, Flagstaff, AZ USA, Tel: 928-523-7200, email: mary.reid@NAU.EDU, and
Barry B. Hanan, San Diego State University, San Diego, CA 92182 USA, Tel: 619 594-6710, email: bhanan@mail.sdsu.edu, and
Alexander Prokopenko, University of South Carolina, Columbia, SC 29208 USA, Tel: 803-777-3983, email: sasha@geol.sc.edu

V28 Insights Into Magma Plumbing Systems and Subvolcanic Processes From Studies of Volatile Elements, Melt Inclusions, Volcanic Gases, and Microlite Growth

This session will explore the record of ascent, degassing, crystallization, mixing, and eruption processes provided by studies of melt inclusions and try to integrate these results with complementary records provided by crystal and groundmass textures and volcanic gas studies. Volcanic plumbing systems within the upper crust are recognized as highly dynamic and geometrically complex networks of interconnected dikes, sills, pipes and storage reservoirs. Compositional data on melt inclusions and their host crystals provide a high-resolution record of processes in this dynamic zone and are particularly valuable for preserving information on magmatic volatile contents. Studies of the flux and composition of volcanic gases complement the melt inclusion record of shallow degassing processes, and are especially valuable for understanding low-solubility gases like CO2. Textural data on quenched matrix glasses also provide a complementary record of shallow degassing and microlite formation, and their consequent effects in causing rapid rheological transitions in erupting materials. We seek presentations that explore and integrate these diverse approaches to better understand the complexities of magma ascent and eruption.

Conveners:
Kathy Cashman, , , email: cashman@uoregon.edu, and
Adam Kent, Oregon State University, , email: kentad@science.oregonstate.edu, and
Paul Wallace, , , email: pwallace@uoregon.edu, and
Tobias Fischer, of , Department of Earth and Planetary Sciences, , Tel: 505 277 0284, email: fischer@unm.edu

V29 Applications of Physical Chemistry to Understanding the Origin and Evolution of Earth's Crust

With ongoing improvements in instrumentation, geoscientists routinely measure – with ever-increasing spatial resolution – vanishingly low element concentrations and miniscule differences in isotope ratios in phases within crustal rocks. These data must then be interpreted in the context of pressure and temperature controls on element distribution among fluid and solid phases, rates of diffusive transport through earth materials at different P-T conditions, and even the disequilibrium chemical processes that may be associated with crystal dissolution and growth. Well-designed experiments not only provide input for geochemical modeling and hypothesis testing but also insights into how natural processes operate. They provide the tools needed to interpret measurements made on natural samples and to understand the geologic processes that produced the end result. This session invites science contributions thematically linked to the innovative and lasting work of Bruce Watson, the 2006 Bucher Medalist, including the transport and distribution of chemical components in crystals, fluids, and melts; geochemical and petrologic studies of rocks and minerals from all levels of the crust; and novel design and application of laboratory experiments in geochemistry.

Conveners:

David A. Wark, Rensselaer Polytechnic Institute, , Tel: 518 276 2674, Fax: 518 276 2012, email: warkd@rpi.edu, and
John C. Ayers, , , Tel: 615-322-2158, email: john.c.ayers@vanderbilt.edu

V30 Observations and Interpretations of Low-Frequency Earthquakes in Volcanic and Nonvolcanic Environments

Events with dominantly low-frequency (0.5 - 5 Hz) waveforms are one of the major classes of seismic events recorded by seismometers at volcanic systems. Low-frequency (LF) events have also been observed in subducting slabs, mainly in conjunction with so-called episodic tremor-and-slip episodes. At volcanic systems LF events are commonly observed in association with volcanic unrest or eruption, an observation that has led to the dominant paradigm that LF events are generated by vibrations in a fluid- or gas-filled crack. This model has been tested in the laboratory and shown to be consistent with observations at a number of erupting volcanoes. However, recent observations and research have highlighted that ordinary stick-slip failure may produce LF earthquakes in certain volcanic settings due to exceptionally high strain rates within the magma, low rupture velocities, and/or complexities in the path between source and seismometer. The goals of this session are to investigate the range of mechanisms that may produce LF events and the range of settings in which various types of LF events occur. We particularly seek contributions that elucidate methods to distinguish mechanisms and pinpoint processes.

Conveners:

Seth C Moran, U.S. Geological Survey - Cascades Volcano Observatory, 1300 SE Cardinal Ct., Bldg 10, Vancouver, WA 98683 USA, Tel: 360993-8934, email: smoran@usgs.gov, and
Emily E Brodsky, University of California at Santa Cruz, Department of Earth Sciences UC Santa Cruz 1156 High St., Santa Cruz, CA 95060 USA, Tel: 831 459-1854, email: brodsky@pmc.ucsc.edu, and
Masatoshi Miyazawa, Colorado School of Mines, Center for Wave Phenomena Colorado School of Mines, Golden, CO 80401 USA, Tel: 303 384-2479, email: mmiyazaw@mines.edu

V31 Mineral-Fluid Reactions in Carbon Systems Science

The dynamic interface between solid and solution controls the spatial and temporal geochemical evolution of many natural systems. Understanding bio-mineral-fluid interfaces and interactions requires investigating monomineralic and heterogenic systems at field-, micro-, and nano- scales. The aim of these different research perspectives is to advance our predictive capacity for field and geochemical processes and reactions from global carbon cycling to sequestration of anthropogenic carbon in geologic and oceanographic environments. We seek abstracts that provide modeling, experimental, and field insights for kinetic rates, reaction mechanisms, and other processes fundamental to our knowledge of carbon systems.

Conveners:

John Kaszuba, Los Alamos National Laboratory, Earth and Environmental Sciences Mail Stop J514, Los Alamso, NM 87545 USA, Tel: 505 665-7832, Fax: 505 665-4955, email: jkaszuba@lanl.gov, and

James GM Thom, University of British Columbia, 6339 Stores Road , Vancouver, BC V6T 1Z4 CAN, Tel: 604-612-7518, email: jthom@eos.ubc.ca

V32 Recent Advances in the Measurement of Volcanic Emissions

Advances in technology are facilitating a revolution in ground and space-borne measurements of volcanic gases and aerosols are undergoing a technical revolution at several spatial scales. For example, DOAS is quickly replacing COSPEC as the technique most used to determine SO2 emission rate measurements. Plume tomography and imaging techniques are being developed to investigate plume dynamics and transport, and satellite-based retrievals of volcanogenic species are becoming ever more sophisticated as newer and more sensitive sensors are launched. In this session we hope to engage the broad community of researchers from diverse backgrounds with an interest in measuring volcanic emissions. These might include those from physical volcanology, climatology, hazard mitigation, environmental sciences and health.

Conveners:

Matthew Watson, University of Bristol, Wills Memorial Building, Queen's Road, Bristol, BS8 1RJ GBR, Tel: +44 117 3315009, Fax: +44 117 9253385, email: Matt.Watson@bristol.ac.uk, and

Gregg Bluth, Michigan Technological University, 1400 Townsend Drive, Houghton, MI 49931-1295 USA, Tel: +1 906 487 3554, Fax: +1 906 487 3371, email: gbluth@mtu.edu, and

Clive Oppenheimer, University of Cambridge, Downing Place, Cambridge, CB2 3EN GBR, email: co200@cam.ac.uk

V33 Melt Migration: From Source to Pluton, From Experiment to Field

In this Session we will explore melt migration from its small-scale segregation at the source, through its extraction from the source, to transport through and emplacement within the crust. We accept contributions from all fields, particular field observations, experimental contributions and modelling approaches. We are particularly interested in contributions that elucidate processes of melt transport and interaction with deformation.

Conveners:

Roberto Weinberg, Australian Crustal Research Center, School of Geosciences, Monash University, Clayton Campus, Clayton, Vic 3800, AUS, Tel: 61 3 99054902, Fax: 61 3 99054903, email: Roberto.Weinberg@sci.monash.edu.au, and

Michael Brown, Laboratory for Crustal Petrology, Department of Geology, University of Maryland, Geology Building (#237), College Park, MD 20742-4211 USA, Tel: 301 405

4080, Fax: 301 314 7970, email: mbrown@geol.umd.edu

V34 Bubbles in Magmas

Understanding how bubbles nucleate and grow, and how vesicular magma degasses or fragments, are central to understand why volcanoes erupt the way they do. We invite contributions on all aspects of volatiles in magmas. We solicit contributions that address topics related to bubbles in magmas, including volatile diffusivities and solubilities, bubble nucleation and growth, magma degassing and fragmentation, feedbacks between degassing and crystallization, and ascent dynamics.

Conveners:

Michael Manga, UC Berkeley, CA, USA, email: manga@seismo.berkeley.edu, and *Margherita Polacci*, Istituto Nazionale di Geofisica e Vulcanologia, ITA, email: polacci@ct.ingv.it

There are at least three UNION sessions of interest to VGP membership:

U01 Consequences of Subduction and the Evolution of the Mantle

The chemical and physical properties of subducted oceanic lithosphere are not well-known, but control many aspects of Earth's convective/tectonic state as well as it's thermal history. Subduction of oceanic crust links the genesis of basalts at ridges to that at arcs, and ultimately to ocean-island magmatism, while seismic tomography images suggests that there are multiple depths of slab processing in the mantle. A recently discovered deep mantle phase change and 142Nd isotopic observations have inspired new ideas for the role of the deep mantle and the importance of early Earth subduction processes. However, many fundamental questions regarding the fate of subducted lithosphere remain: What are the thermal, chemical, and mineralogical states of the slab at different depths in the mantle? How much of the slab is lost to arc magmatism? How easily is a subducted plate mixed back into ambient mantle? Where do ancient plates reside in the mantle? What is the contribution of recycled lithosphere in the sources of oceanic island basalts, basalts of large igneous provinces and MORBs? We welcome studies from geochemistry, geodynamics, seismology and mineral physics, and in particular studies that combine approaches from different disciplines, in an effort to integrate the nature of subduction with deep mantle processes.

Conveners:

Rhea K. Workman, , ,, email: rworkman@gps.caltech.edu, and Alex Sobolev, of Sciences, RUS, email: asobolev@mpch-mainz.mpg.de, and
Magali Billen, of , , , , email: billen@geology.ucdavis.edu, and
Bill McDonough, , , , email: mcdonoug@geol.umd.edu, and Norman Sleep, , email: norm@geo.stanford.edu

U02 New Views of the Core-Mantle Boundary Region

The core-mantle boundary region is the least understood region in the Earth's interior, but our understanding of this region has rapidly been evolving in the past years since the improved resolution of seismic studies and the discovery of the post-perovskite phase transition. In addition to a considerable degree of chemical heterogeneities (including the presence of partial melt) already expected to this region, the post-perovskite phase transition provides an additional way of interpreting relevant seismological observations. The dynamics of the lowermost mantle is also likely to be influenced by this exothermic phase transition and chemical heterogeneities as well as possible change in transport properties due to electronic spin transition of iron. Furthermore, this boundary region

plays an essential role in the coupled core-mantle thermal evolution, which likely controls the rate of core cooling and the degree of basal heating for mantle convection. In this special session, we hope to bring together (1) observational studies on the seismic structure of the core-mantle boundary region, (2)experimental and theoretical studies on the material properties of the lower(most) mantle, and (3) theoretical, numerical and experimental studies exploring the dynamics of this boundary region as well as the thermal evolution of the coupled core-mantle system.

Conveners:

Jun Korenaga, Yale University, New Haven, CT 06520 USA, Tel: 203-432-7381, email: jun.korenaga@yale.edu, and
Lianxing Wen, State University of New York at Stony Brook, Stony Brook, NY 11794 USA, Tel: 631-632-1726, email: lianxing.wen@sunysb.edu, and
Kei Hirose, Tokyo Institute of Technology, JPN, email: kei@geo.titech.ac.jp, and
Allen K. McNamara, Arizona State University, Tempe, AZ, USA, email: allen.mcnamara@asu.edu

U03 New Light on an Old CoreThe last decade has seen many exciting discoveries about the Earth's core.

Seismic studies have revealed intricate anisotropic structure and the super-rotation of the inner core. Geodynamic modeling has found a surprisingly young age for the inner core. High-pressure experiments have indicated unexpected combinations of lighter elements in the core and new mechanisms for core formation. Geochemical observations have suggested possible survival of core signature to the Earth's surface. The time is ripe for mineral physicists, geochemists, seismologists and geodynamicists to re-examine the fundamental issues concerning the 4.5 billion year old core under the new light of recent observational, experimental, and computational results.

Conveners:

Stefanie Japel, New Mexico State University, MSC-3D Physics Department, Las Cruces, NM 88001 USA, Tel: 505-646-4446, email: Japel@nmsu.edu, and
Jie Li, University of Illinois, Urbana Champaign, Department of Geology 245 Natural History Building 1301 West Green Street, Urbana, ILL 61801 USA, Tel: (217) 333 7008, email: jackieli@uiuc.edu, and
Heather Watson, Geophysical Laboratory, Carnegie Institution of Washington 5251 Broad Branch Road, N.W. , Washington, DC 20015 USA, Tel: 202-478-8934, email: h.watson@gl.ciw.edu

In addition, VGP is cosponsoring a number of special sessions with other sections or focus groups (titles only - see AGU web site for details):

Biogeosciences:

B10 Climatic and Environmental Significance of Charcoal in the Geologic Record

Education and Human Resouces:

ED17 Teacher Professional Development Programs Promoting Authentic Scientific Research in the Classroom
ED22 Incorporating Public Policy and Outreach in Graduate Curricula of the Earth and Environmental Sciences

Geomagnetism and Paleomagnetism:

GP03 Recent Advances in the Application of Magnetic Fabric Studies and Paleomagnetism

to Rock Deformation

Earth and Space Science Informatics:
- IN11 Visualization of Four Dimensional Geophysical Fields
- IN15 Unifying Discovery, Access, and Knowledge Extraction From Space and Geoscience Virtual Data Repositories
- OS25 Proxies and Processes: New Developments in Tracking Oceanic Change

Mineral and Rock Physics:
- MR03 Earth's Core: Formation, Composition, Structure
- MR04 Structural Refinement Studies for Minerals Under High-Pressure Conditions
- MR05 Ironworkers Reunion: Iron in the Earth and Planets
- MR06 Thermodynamics in Geochemistry, Petrology, and Mineral Physics
- MR07 Composition and Dynamics of Earth's Mantle: Current Frontiers and Grand Challenges in Elasticity, Phase Transitions, and Rheology Studies
- MR08 Fluids in the Earth's Interior
- MR09 Clathrates Under Compression: Planetary, Environmental, and Energy-Related Applications
- MR10 Advances in Pressure Determination at High Temperature
- MR11 Transport Properties of the Deep Earth
- MR13 Radioactivity: Abundance, Distribution, Heat Production, and its Influence on the Dynamics and Chemistry of Earth’s Deep Interior
- NG08 Geothermal Reservoir System

Nonlinear Geophysics:
- NG09 Application of Nonlinear Geophysics to Forecasting Extreme Events

Ocean Sciences:
- OS12 Past, Present, and Future Role of the Ocean in Modulating Atmospheric Carbon Dioxide

Planetary Sciences:
- P18 Instruments for in Situ Exploration of Planets: How Do They Measure Up?

Public Affairs:
- PA02 Educating the Public About Science Through the Media: Lessons Learned and Ways Forward

Paleoceanography and Paleoclimatology:
- PP09 Greenhouse/Ice House Climates: An Organic Proxies Perspective

Seismology:
- S11 Geophysical Structure and Dynamics of the Western United States
- S13 Bipolar Seismology

Tectonophysics:
- T03 Dynamics of Orogenic Belts and Continental Plateaus
- T05 Structural, Petrologic, and Seismic Segmentation of the Cascades Subduction Zone
- T06 The Geodynamics of Lithospheric Extension

T13 Flat Slab Subduction in Central Mexico
T14 GeoFrame: A Geologic Framework for EarthScope's USArray
T16 New Observations From the Mantle Wedge: Consequences for Water, Petrology, Melt, and Flow
T20 Quantifying Interactions Between Exhumation, Climate, and Tectonics
T22 Fluid-Induced Faulting: Geophysical, Geochemical, and Hydraulic Signatures
T25 Extensional Processes Leading to the Formation of Basins and Rifted Margins, From Volcanic to Magma-Limited
T27 Phenomenology, Mechanisms, and Hazard Implications of Episodic Aseismic Slip, Tremor, and Earthquakes
T28 Advances in (U-Th)/He Geochronology
T29 Crustal Fabric, Seismic Anisotropy, and Deformation
T32 New Observations of Dike Injection Episodes in Extensional Terrains
T38 Development of the Gulf of California and Other Young Divergent Plate Boundaries Along Tectonically Active Continent Margins
T36 Interpreting the Tectonics of the Pacific Rim Using Plate Kinematics and Slab Window Volcanism
T40 The 17 February 2006 Philippine Landslide