August 2007
VGP Section Newsletter #29

Dear Colleagues,

This issue of the Volcanology, Geochemistry and Petrology Section newsletter includes information on recent Bowen awardees, a GSA shortcourse, and sessions of interest to VGP members at the upcoming AGU Fall Meeting. An archived version of the newsletter with full VGP session descriptions can be found at http://vgp.agu.org.

Sarah Fagents
fagents@hawaii.edu

In this issue:

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(1) MESSAGE FROM PRESIDENT

Following the recent pattern, the Bowen Committee has recommended two Awards for 2007 and I am delighted to announce that we are making awards to *Eiji Ohtani* (Tohoku University) and *Hugh O'Neill* (). More detail below.

The Joint Assembly in Acapulco (May 22-25) was deemed to be a success in terms of increased participation and numbers of sessions and it is likely that the Joint Assembly will be held in Central and South America fairly frequently in the future.

AGU Council has spent a considerable amount of time recently discussing the kinds of sponsorship which are acceptable and the extent to which AGU should acknowledge sponsorship. The specific case in point has been Exxon-Mobil's sponsorship of a student breakfast at Fall AGU. Several Council members wish to reject Exxon-Mobil sponsorship because of the latter's support of organisations which could be characterised as 'anti-climate change'. If you have a view on this or any other AGU-related topic, I would be very pleased to hear from you. In the meantime, have a good summer.
Bernie Wood, VGP President, bwood@els.mq.edu.au

(i) Bowen Award

The Executive Committee is pleased to announce Bowen Awards to:

Eiji Ohtani () For his pioneering studies on the physical and chemical properties of Earth materials (particularly melts) under deep Earth conditions.

Hugh O'Neill () For his fundamental work on the thermodynamic properties of oxides and silicates and their application to the geochemical evolution of the Earth and moon.

Both awardees will receive their Awards at the VGP reception at Fall AGU. As last year,

there will also be a short “Bowen Session” on the morning of the reception at which the awardees will present some of the highlights of their research.

(ii) Short Course at the Geological Society of America Meeting:

A short course on Geochemical and Thermodynamic methods of inferring Paleoelevations, with applications to tectonics, will be held just before this year's GSA annual meeting. It's sponsored by the Mineralogical Society of America and the Geochemical Society. Information is at:

http://www.minsocam.org/msa/sc/paleoaltimetry_descrptn.html

The short course is convenient for anyone attending the GSA meeting because it will be held the Friday afternoon and Saturday before GSA (i.e., October 26 and 27), at one of the GSA hotels in downtown .

(2) VGP SESSIONS AT THE 2007 AGU FALL MEETING

Abstract submission is now open. **Deadline: Sept.6, 2007, 2359 UT**.

The 2007 Fall Meeting in (December 10–14) should be exciting for VGP members. The 39 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

SESSION TITLES: VGP and Union sessions (link to details below)

V01 **Volcanology General Contributions** (beginning)
V02 **Geochemistry and Petrology General Contributions**
V03 **Subduction Volcanism at Continental Margins**
V04 **Linking Precise Dates to Accurate Ages in Continental Tectonics**
V05 **Experiments and Fluids: From the to the Depths of the Earth**
V06 **A Retrospective and Prospective Look at the Geology, Petrology, Geochemistry and Tectonics of Ultrahigh Pressure Metamorphic Rocks**
V07 **Magma Fracture in Lava Domes and Conduits**
V08 **Experiments in Geoscience: Challenges and Future Directions**
V09 **Frontiers in Isotope Fractionation in Geomaterials: Theory and Experiments**
V10 **From the Arc to the Back-Arc: Linking Geochemical and Geophysical Observations with Geodynamic Models of the Mantle Wedge**
V11 **Recycling of Deep Continental Lithosphere: Consequences for the Mantle and Crust**
V12 **Spreading Ridge Interactions with Hotspots, Subduction Zones, and Transforms**
V13 **Changing Views on the Earth's Mantle**
V14 **Saucer-Shaped Sills, Injected Sands and Related Structures: Formation Mechanisms, Examples, and Extra-Terrestrial Analogues**
V15 **Volcano-Pluton Connections**
V16 **Geoscience Research For Geothermal Energy Utilization: Case Studies From**

Coso And Other Geothermal Fields
V17 **Weathering Processes Across Natural Landscape Gradients: New Isotopic and Geochemical Approaches**
V18 **Mineral-Water Interface Geochemistry and Applications to the Reactivity and Transport of Environmental Nanoparticles**
V19 **Dynamics of Gas Transport in Magma**
V20 **Hotspot Anomalies and Upper Mantle Processes: Insights from Observations and Modeling**
V21 **The Origin and Evolution of Continents: Lithospheric and Asthenospheric Perspectives**
V22 **Volcano Dynamics: Contemporary Measurements and Studies Of Active Magmatic and Tectonic Sources**
V23 **Physical and Chemical Processes in Mafic Layered Intrusions**
V24 **Magmatic Processes in Arcs and Metallogeny**
V25 **High-Pressure Metamorphism in**
V26 **Mud Volcanoes and Their Eruption Dynamics**
V27 **Tracking Magma Movement and Storage in Basaltic Edifices: From Models to Field Observations**
V28 **Observations and Techniques to Improve Prediction and Tracking of Volcanic Ash Clouds**
V29 **Explosive Eruption Dynamics: Recent Advances and Future Directions**
V30 **Fluid-Rock Interaction in the Crust and the Upper Mantle**
V31 **Lava Flow Dynamics and Morphology: Integrating Field, Laboratory and Theoretical Studies**
V32 **Halogens in Volcanic Systems and their Environmental Impacts**
V33 **Integrating Petrological, Experimental, and Field Studies of Pyroclastic Deposits: From Macro-Scale Observations to Microscopic Quantification**
V34 **Innovations in Isotope Mass Spectrometry in Geochemistry**
V35 **Seafloor Hydrothermal Systems Related to Volcanic Arcs**
V36 **New Developments in Geochronology**
V37 **The Dynamics and Longevity of Silicic Magma Systems: Volcanic and Plutonic Perspectives**
V38 **Challenges to Electron Microprobe Analysis in Geology**
V39 **Mechanisms and Consequences of the Father's Day Intrusion at Kilauea Volcano,**
U01 **Whole or Layered Mantle Convection?**
U02 **Hadean Times: From Mode to Modern Geodynamic Regimes**
U06 **Chemical Geodynamics: The Road Ahead**

SESSION TITLES: Joint with other sections (titles only - see AGU web site for details)

B16 Geomicrobiology and Environmental Biogeochemistry of Iron and Manganese
B27 Frontiers in Biomineralization Research: Processes, Geochemical Signatures and Responses to Global Change
B35 Environmental, Ecological and Biogeochemical Impacts of Natural and Synthetic Nanomaterials
B42 Isotope Metrology
DI02 Volatiles and Melts in the Earth’s Interior
DI03 The Dynamic Deep Earth: Lower Mantle Heterogeneity, Chemistry, and Flow
DI06 Mantle Phase Transitions and Seismic Discontinuities

DI07 Mechanisms of Deep Earthquakes
DI08 The Equation of State: Theories and Experiments
G02 From microns to meters and milliseconds to days: Towards integration of high-rate GPS measurements and real-time seismic data
GC26 Environmental Monitoring – Luxury or Necessity?
H05 Advances in Sensor Development and Deep Subsurface Monitoring Strategies for Repository Performance Confirmation of Hydrologic Processes and Parameters
HGR13 Interactions Between Fluids and Fractures
IN12 Building Community and Governance within Earth and Space Science Content Models
MR04 Structure and Properties of Silicate Melts
MR06 Frontiers In The Chemistry And Physics Of The Earth's Mantle
MR07 Multidisciplinary approaches in the study of planetary ices
MR08 Melts in the Deep Interior of the Earth
MR09 Diffusion, defects and transport properties in geomaterials
MR10 Quantification of Rock Fabrics
MR11 Advances in Computational Studies of Earth Materials
MR12 Structures and Properties of Earth's Interior Probed using Advanced Radiation, Laboratory Tools and Seismic Waves
NS04 Development and Applications of Airborne Methods
OS09 Mountains to ocean deep: Tracking material fluxes and processes during climatic change with new and better proxies
P02 Lava Flows: A solar system perspective
PP03 Deep Time Perspectives on Climate Change: Integrating the Signal from Models and Biological Proxies
PP12 Evolution of Ocean Chemistry: From The Rise of Oxygen to Contemporary Weathering Processes
T02 Batholiths on the Leading Edge of the Cordillera: Crustal Growth, Recycling and Focused Deformation in Continental Arcs
T04 Behavior of Mid-Ocean Ridge Axis Offsets: Tectonic and Magmatic Segmentation Along Spreading Ridges
T05 Inner Workings of Centam and IBM Subduction Factories
T06 Tectonic, Magmatic and Surface Processes in Arc-Continent Collisions
T08 Tectonic Erosion, Sediment Accretion and Mass Recycling in Subduction Zones
T10 Mantle Exhumation at Rifted Continental Margins: Magmatic and Tectonic Processes
T13 From the Trench to the Arc: Subduction along
T14 Bringing together observations and models at rifted margins and extensional basins
T16 The Mesozoic Pacific: Plate Tectonics, Volcanism, Paleoceanography, and the Geomagnetic Field
T19 The Generation Of Oceanic Lithospheric In Areas Of Low Effusive Magmatism – Where Has All The Crust Gone?
T20 Surface Processes, Crustal Rheology, or Regional Geology: What Controls the Structural Architecture of Convergent Continental Orogens?
T21 Understanding the Earth's Deep Lithosphere
T26 Continental Collision – the Lithospheric Scale
T27 The Effect of Lithospheric Elements on Mantle Processes
T29 Caribbean Subduction Zones – Past and Present

T31 Foundering lithosphere: Observations and implications, with a focus on the
T35 New Perspectives On Crustal Heat Generation And Lithospheric Thickness In Precambrian Terrains
T41 Circum-Arctic Tectonic Evolution

DETAILS of VGP and Union sessions:

V01 Volcanology General Contributions

This session provides the opportunity for contributions that fall within the broad spectrum of Volcanology, but are not directly appropriate to any of the other Special Sessions proposed for the Volcanology, Geochemistry, and Petrology Section.

Conveners:

Terry Plank, Dept. of Earth Sciences, Boston University, 685 Commonwealth Avenue, Boston, MA 02215 USA, Tel: 1 617 353 4213, Fax: 1 617 353 3290, email: tplank@bu.edu, and
Craig Manning, Dept. of Earth and Space Sciences, UCLA, , Los Angeles, CA 90095 USA, Tel: 1 310 206 3290, Fax: 1 310 825 2779, email: manning@ess.ucla.edu, and
Katherine A. Kelley, Graduate School of Oceanography, University of Rhode Island, Narragansett Bay Campus, Narragansett, RI 02882 USA, Tel: 1 401 874 6838, email: kelley@gso.uri.edu (back)

V02 Geochemistry and Petrology General Contributions

This session provides the opportunity for contributions that fall within the broad spectrum of Geochemistry and Petrology, but are not directly appropriate to any of the other Special Sessions proposed for the Volcanology, Geochemistry, and Petrology Section.

Conveners:

Terry Plank, Boston University, 685 Commonwealth Avenue, Boston, MA 02215 USA, Tel: 617 353 4213, Fax: 617 353 3290, email: tplank@bu.edu, and
Craig Manning, University of California, Los Angeles, , Los Angeles, CA 90095-1567 USA, Tel: 310 206 3290, Fax: 310 825 2779, email: manning@ess.ucla.edu, and
Katherine A. Kelley, University of Rhode Island, Narragansett Bay Campus, Narragansett, RI 02882 USA, Tel: 401 874 6838, email: kelley@gso.uri.edu (back)

V03 Subduction Volcanism at Continental Margins

This session focuses on volcanism at the edge of continents, as exemplified (but not exclusively) by the Mexican volcanic belt. Mass flow in subduction environments from the mantle to the surface is influenced by differentiation processes, crustal contamination, degassing, magma ascent rates and eruption type. Presentations are invited on volcanic products ranging from volcanic rocks, melt inclusions in crystals, and gases to xenoliths that provide insight into the origin, evolution and transport processes of such continental arc magmas. Fundamental topics to be addressed include the role of subduction volcanism in the formation of the continents, estimates on the amount of crustal contamination in a volcanic suite, the composition of the mantle wedge at continental margins, the volatile budget in specific subduction zones, and the application of the stratigraphic and petrologic history of a volcano to better predict future eruptions. We invite contributions thematically linked and/or inspired by the lasting and fundamental work of James F. Luhr.

Conveners:

Anne Helene Peslier, University of Houston, Texas Center for Superconductivity (TcSUH) 202 HSC Building, Houston, TX 77204 USA, Tel: 713-743-8283, Fax: 713-743-4004, email: apeslier@mail.uh.edu, and
Johan (Joop) C Varekamp, Wesleyan University, Earth & Environmental Sciences 265 Church Street, Middletown, CT 06459 USA, Tel: 860-685-2248, email: jvarekamp@wesleyan.edu, and

Lee Siebert, Smithsonian Institution, Global Volcanism Program National Museum of Natural History, Washington, DC 20560 USA, Tel: 202-633-1818, email: siebertl@si.edu (back)

V04 Linking Precise Dates to Accurate Ages in Continental Tectonics

Our understanding of continental tectonics is fundamentally linked to our ability to precisely and accurately date geologic events and processes. As geochronological methods become more precise, it is increasingly important to ask: "What are we dating?" A geochronometer or thermochronometer "dates" only part of an event or cycle, particularly in regions of continental crust that record protracted or multiple episodes of deposition, burial, pluton emplacement, metamorphism, deformation, fluid flow, and/or exhumation. Although improved precision allows tectonic histories to be unravelled with unprecedented resolution, it requires a comprehensive understanding of the reactions and processes responsible for growth, dissolution, reprecipitation, and alteration of minerals, such as zircon, monazite, xenotime, titanite, rutile, apatite, hornblende, and muscovite. We invite contributions that seek to establish direct links between specific reactions/processes and the ages of high- to low-T geochronometers and thermochronometers. We especially encourage contributions from studies of natural or experimental systems that use emerging techniques to constrain temporal aspects of continental tectonics, or present innovative approaches and interpretations of accessory mineral chronology.

Conveners:

Gregory Dumond, University of Massachusetts-Amherst, Department of Geosciences University of Massachusetts-Amherst 611 North Pleasant Street, Amherst, MA 01003 USA, Tel: 413-545-0175, Fax: 413-545-1200, email: gdumond@geo.umass.edu, and
Rebecca M. Flowers, University of Colorado at Boulder, Dept. of Geological Sciences University of Colorado at Boulder, Boulder, CO 80309 USA, email: rflowers@gps.caltech.edu, and
Kevin H. Mahan, University of Colorado at Boulder, Dept. of Geological Sciences University of Colorado at Boulder, Boulder, CO 80309 USA, email: kmahan@gps.caltech.edu (back)

V05 Experiments and Fluids: From the to the Depths of the Earth

Our understanding of the key role played by the chemistry of fluids and volatile-bearing solid phases in hydrothermal, metamorphic and magmatic processes can be improved significantly by novel and careful laboratory experimentation. Such experiments of the type developed and applied broadly by John Holloway provide critical (and supercritical) insights into phase and molecular stabilities, fluid compositions and thermodynamic properties, volatile solubilities, elemental partitioning and petrogenesis over a wide range of physical conditions from ocean-floor hydrothermal systems to planetary mantles. This session invites diverse contributions thematically linked to the role of fluids and volatile components in Earth processes, including the synthetic organic geochemistry of submarine hydrothermal systems, magmatic volatile solubility and behavior including volcanic degassing, the interplay between volatile element chemistry and planetary redox state, dehydration reactions and volatile cycling in subduction zones and crustal melting, high pressure materials geochemistry, and mantle petrogenesis involving volatiles. Also invited are novel experimental approaches to understanding volatile-bearing systems at elevated temperature or pressure.

Conveners:

Gordon Moore, , Dept of Chemistry & Biochemistry, , , Tel: 480-965-6598, email: gordon.moore@asu.edu, and
David Bell, Arizona State University, Dept. of Chemistry and Biochemistry, , email: david.r.bell@asu.edu (back)

V06 A Retrospective and Prospective Look at the Geology, Petrology, Geochemistry and

Tectonics of Ultrahigh Pressure Metamorphic Rocks
The session will focus on progress in the field of ultrahigh-pressure metamorphism (UHPM) in the last 20 years, and where it is projected to be 20 years from now. 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 together will provide better insights into deep subduction of continental materials and their interactions with mantle constituents. Observations on mantle xenoliths and inclusions in kimberlitic diamonds are also welcome.
Conveners:
Larissa Dobrzhintskaya, University of California at Riverside, Riverside, CA 92521 USA, Tel: 951-827-2028, email: Larissa@ucr.edu, and
Hans-Peter Schertl, Institute of Geology, Mineralogy and Geophysics, Ruhr-University Bochum, Bochum, 44780 DEU, Tel: 49(0)234/32-23520, email: hans-peter.schertl@rub.de, and
Jingsui Yang, Institute of Geology, Chinese Academy of Geological Sciences, 26 Baiwanzhuang Road, Beijing, 100037 CHN, Tel: 86-10-68994782, email: yangjsui@ccsd.org.cn (back)

V07 Magma Fracture in Lava Domes and Conduits
The fracture of silicic magma plays a key role in controlling conduit dynamics, eruption styles and the growth, deformation and stability of lava domes. In this session, we hope to draw together field observations and measurements, laboratory experiments, and modeling studies to improve understanding of how fracturing influences conduit processes and lava dome emplacement. Submissions may include models of conduit dynamics and lava dome growth that consider the effects of strain localisation and fracturing. Studies linking geophysical data such as seismicity and edifice deformation to magma fracture are also welcome, as are analyses of the geological signature of fracturing in silicic magma, such as gouge zones and tuffisite veins. We also encourage presentation of experimental work that addresses the fracture mechanics and fragmentation of magma, particularly at temperatures close to the brittle ductile transition.
Conveners:
Rosanna Smith, UCL, Department of Earth Sciences, UCL, Gower Street, London, WC1E 6BT GBR, Tel: +44(0)2076792400, Fax: +44(0)2076792390, email: rosanna.smith@ucl.ac.uk, and
John S. Pallister, CVO, USGS, Cascades Volcano Observatory 1300 SE Cardinal Court, Suite 100, Vancouver, WA 98683-9589 USA, Tel: 360-993-8964, email: jpallist@usgs.gov, and
Peter R Sammonds, UCL, Department of Earth Sciences, UCL, Gower Street, London, WC1E 6BT GBR, Tel: +44(0)2076792422, email: p.sammonds@ucl.ac.uk (back)

V08 Experiments in Geoscience: Challenges and Future Directions
Experimental studies are fundamental to advancing our understanding of geologic processes. For example, the construction of PTt paths, modeling volcanic discharge, predicting ore metal anomalies, element and isotope fractionation during melting and degassing, the fate of subducted slabs and the storage of nuclear waste in analogs of geologic materials are examples of research initiatives which could not be pursued in the absence of experimental data. While experimental data now facilitate a wealth of geochemical interpretation, there are significant challenges that face the experimental community. Among them: the interpretation of metal solubility data in light of the melt-nugget issue, the ability to equilibrate and trap complex multi-phase fluids, constraining gas fugacities in diamond anvil experiments and scaling issues. This session aims to bring together experimentalists working on the partitioning of elements in melt – crystal systems, the role of immiscible silicate – sulfide melts, diffusion in magmatic systems, element speciation in melts and fluids, and other relevant issues all of which aim to improve our understanding of natural systems. We also encourage contributions involving novel analytical techniques which are routinely fundamental to experimental advances.

Conveners:
John Mavrogenes, , , AUS, Tel: 612 6125 3678, email: John.Mavrogenes@anu.edu.au, and
Adam Simon, , Department of Geoscience 4505 Maryland Parkway, Las Vegas, NV 89154-4010 USA, Tel: 702 895 5461, Fax: 702 895 4064, email: Adam.Simon@unlv.edu (back)

V09 Frontiers in Isotope Fractionation in Geomaterials: Theory and Experiments
Recent advances in mass spectrometry allow study of a wider range of isotopic systems on ever smaller samples with increasing accuracy. These technical improvements lead to new isotopic insights into the Earth and the Solar system. Contributions of high temperature processes, diffusion and mass-independent isotope fractionation cannot be neglected any longer. Because smaller samples can be analyzed with remarkable accuracy, it is also now possible to experimentally study isotopic fractionation at extreme conditions, such as at high pressure or in mineral nanocrystals. In addition, improvements in empirical and ab initio atomistic modeling allow us to decipher subtle effects of mass differences on the dynamic and thermodynamic properties of solid and fluid materials. This session aims to bring together a wide range of scientists with interests in the study of isotopes in geomaterials. Geoscientists from, but not restricted to, experimental and theoretical mineral physics and geochemistry, field geology and computational physics, geochronology, volcanology and cosmochemistry, environmental sciences and planetology are invited to participate. The session will address the latest issues related but not limited to stable and radiogenic isotopes, to pressure and temperature effects, diffusion, mass-independent fractionation and electronic effects.
Conveners:
Mathieu Roskosz, LSPES Université de Lille1, Bâtiment C6 USTL, villeneuve d'Ascq, 59655 FRA, Tel: +33 (0)3 20 33 64 16, Fax: +33 (0)3 20 43 65 91, email: mathieu.roskosz@univ-lille1.fr, and
Razvan Caracas, Bayerisches Geoinstitut, University of Bayreuth, Universitaetstrasse 30, Bayreuth, D-95447 DEU, Tel: ++49-(0)921-553739, Fax: ++49-(0)921-553769, email: razvan.caracas@uni-bayreuth.de (back)

V10 From the Arc to the Back-Arc: Linking Geochemical and Geophysical Observations with Geodynamic Models of the Mantle Wedge
Back-arc basins (BABs) are complex tectonic environments in which oceanic crust is created at a spreading center (back-arc spreading center, BASC) in close proximity to a subduction zone. This juxtaposition results in strong spatial gradients in both geochemical and geophysical observables, providing a unique window on geodynamic and petrogenetic processes in the upper mantle. This session seeks to highlight progress in our understanding of mantle flow and melting in the mantle wedge by considering differences between arcs and BASCs, as well as between BASCs and normal mid-ocean ridges. Questions of interest include: What is the nature of the slab-derived component that contributes to arc and BASC magmatism (e.g., hydrous fluids, melts)? What is the distribution of this component within the wedge, and by what mechanism is it transported? What constraints do seismic attenuation and velocity studies provide regarding the presence of water, melt and fine-scale structure in the mantle wedge beneath BABs? How does plate kinematics (e.g., subduction angle, subduction rate, arc-back-arc separation, back-arc spreading rate) affect mantle flow and melting in arcs and BASCs? Contributions from geochemistry, petrology, seismology, geophysics, geodynamics and mineral physics are encouraged, as are contributions from researchers working in relevant Ridge and Margins focus sites (e.g., , Izu-Bonin-Mariana).
Conveners:
Paul Hall, Boston University, 675 Commonwealth Ave, Boston, MA 02215 USA, Tel: 617.353.9678, Fax: 617.353.3290, email: phall@bu.edu, and

Stephane Escrig, Harvard University, 20 Oxford Street, Cambridge, MA 02138 USA, Tel: 617.496.6983, Fax: 617.496.6958, email: escrig@eps.harvard.edu (back)

V11 Recycling of Deep Continental Lithosphere: Consequences for the Mantle and Crust
Recycling of eclogite/pyroxenite of oceanic crust and lower continental crust origins, together with the underlying lithospheric mantle (deep lithosphere), has been proposed to play a key role in plate tectonics, plume magmatism, crustal evolution and formation of chemical heterogeneities within the mantle. Although lithospheric recycling has been extensively studied in the oceanic case, direct evidence for recycling of the deep continental lithosphere into the mantle is scarce. Recent geochemical and geophysical evidence suggests that this process may occur via foundering of dense, eclogitic material produced during continental orogenesis and/or delamination of the base of the crust and during deep continental crust subduction. Important questions in this context are: What are the chemical and physical consequences of this process? What are the geological, geochemical and geophysical responses of it? How do the density, thermal and rheologic and other factors control the space and time scales of this process? Was this process also important in the Archean era? These will be among the issues to be discussed in this symposium. In addition, we invite a broad range of contributions on the subject of continent subduction and the interaction of the continental crust with the mantle.
Conveners:
Roberta L Rudnick, University of Maryland, Geochemistry Laboratory Dept. Geology, College Park, MD 20742 USA, Tel: 301 405 1311, email: rudnick@geol.umd.edu, and *Shan Gao*, Chinese University of Geosciences, Department of Geochemistry, Wuhan, 430074 CHN, Tel: 86 27 87482737, Fax: 86 27 87436107, email: sgao1962@vip.sina.com, and
Adrian Lenardic, Rice University, Dept. Earth Sciences, Houston, TX 77005 USA, Tel: (713) 348-4883, email: ajns@rice.edu, and
Rixiang Zhu, Chinese Academy of Sciences, Institute of Geology and Geophysics, Beijing, 100029 CHN, Tel: 86-10-62007912, email: rxzhu@mail.igcas.ac.cn (back)

V12 Spreading Ridge Interactions with Hotspots, Subduction Zones, and Transforms
This session will focus on the magmatic, geochemical, and tectonic phenomena that occur where active spreading ridges (mid-ocean ridges, back-arc spreading centers) interact with hotspots, subduction zones, and transform faults. Spreading ridges influence and are influenced by interactions with other plate boundaries or hotspots. The complex and dynamic interactions include unusual volumes, locations, and styles of magmatism, mixing of magmas and sources between the different regimes, and complex tectonic effects. Geochemical tracers and enhanced magmatic volumes typical of hotspots can be found along ridges tens or hundreds of kilometers from the interacting hotspot. Subduction of an active ridge can create slab windows beneath the overriding plate leading to forearc volcanism near the triple junction, and arc-affinity lavas have been found along near-trench mid-ocean ridges. The proximity of a ridge to a major transform can dramatically alter the volume and geochemical characteristics of ridge magmas including the generation of silicic lavas or enriched MORB at ridge-transform intersections. We invite contributions from all areas of research aimed at a better understanding of the effects of interactions between spreading ridge systems and other major tectonic features.
Conveners:
John Chadwick, University of North Carolina, Charlotte, Charlotte, NC 28223 USA, Tel: 704-687-5947, email: djchadwi@uncc.edu, and
Mike Perfit, University of Florida, Gainesville, FL 32601 USA, Tel: 352-392-2128, email: perfit@geology.ufl.edu, and
Randy Keller, Oregon State University, Corvallis, OR 97331 USA, Tel: 541-737-7648, email: kellerr@geo.oregonstate.edu (back)

V13 Changing Views on the Earth's Mantle
Through multi-disciplinary, collaborative research, the last decades have seen major advances in observations and knowledge of the Earth's mantle. This session aims at bringing together the mantle scientific community of geochemists, geodynamicists, seismologists and mineral physicists to highlight recent insights and discoveries about the volumes of various mantle reservoirs (upper mantle, lower mantle, D", etc.), the extent of their interactions, the scale of mantle convection and the role of compositional and mineralogical variations. The session will provide a platform for integrating recent results into a process-oriented and observation-based model of the mantle.
Conveners:
Dominique Weis, University of British Columbia, Earth and Ocean Sciences 6339 Stores Road, Vancouver, BC V6T1Z4 CAN, Tel: 16048221697, Fax: 16048226088, email: dweis@eos.ubc.ca, and
Rob D van der Hilst, Massachusetts Institution of Technology, Earth, Atmospheric and Planetary Sciences 77 Massachusetts Avenue, Room 54-522, Cambridge, MA 02139 USA, Tel: 16172536977, Fax: 16172589697, email: hilst@MIT.EDU, and
William M White, Cornell University, Earth & Atmospheric Sciences Snee Hall, Ithaca, NY 14853 USA, Tel: 16072557466, email: white@geology.cornell.edu (back)

V14 Saucer-Shaped Sills, Injected Sands and Related Structures: Formation Mechanisms, Examples, and Extra-Terrestrial Analogues
Magma and fluidized sand can develop bowl- or saucer-shaped structures that are increasingly recognized by field observations and by detailed seismic imaging in petroleum provinces (, , Greenland, Siberia, , , Norwegian and). The intrusions can affect organic matter maturation, oil migration pathways, the plumbing systems of hydrocarbon reservoirs, and they may also form aquifers. The aim of this session is to investigate the origin of saucer-shaped intrusions and genetically related structures in terms of properties of the crust and injected liquid, water and volatile contents, and depth of emplacement of individual intrusions. We invite contributions on saucer-shaped intrusions, either magmatic or fluidized sand in origin, with their associated settings, deformation, peripheral structures and physical processes controlling their final geometry. Contributions on potential extra-terrestrial analogues are welcome.
Conveners:
Stephane Polteau, Physics of Geological Processes, Faculty of Mathematics and Natural Sciences, University of Oslo, PO BOX1048, Blindern, Oslo, N-01316 NOR, Tel: +47 22856446, Fax: +47 22855101, email: polteau@fys.uio.no, and
Joe A. Cartwright, 3DLab, School of Earth, Ocean and Planetary Sciences, Cardiff University, Main Building, Park Place, Cardiff CF10 3YE, Wales, UK., Cardiff, CF310 3YE GBR, email: joe@ocean.cf.ac.uk, and
Richard E. Ernst, Ernst Geosciences, 43 Margrave Avenue, Ottawa, ON, Canada K1T 3Y2, and Dept. of Earth Sciences, Carleton University, Ottawa, ON, Canada K1S 5B6, ON CAN, Tel: 1 613 733 0887, email: Richard.Ernst@ErnstGeosciences.com (back)

V15 Volcano-Pluton Connections
The recognition that some upper crustal plutons are assembled incrementally over timescales that are comparable to the lifetimes of individual volcanic centers has reignited debate about connections between the volcanic and plutonic records. Are plutons being assembled under active volcanoes? Or is there a disconnect in space and time between plutonism and volcanism? Do some plutonic rocks represent the unerupted crystal residue of magmas that fed successive volcanic eruptions, and thus are complementary to coeval volcanic deposits? Do other plutons provide samples of the magmas that feed volcanoes, and thus, are texturally modified equivalents

of coeval volcanic rocks? Do shallow plutons at crustal levels of volcanic deposits record briefer and simpler assembly and consolidation histories than deeper larger intrusions that may be the composite homogenized products of multiple successive eruptive events? In this session, we will explore the similarities and differences in the temporal, petrologic, and chemical records of magmatism preserved in volcanic and plutonic rocks.

Conveners:

Drew S Coleman, University of North Carolina, Department of Geological Sciences CB#3315, Chapel Hill, NC 27599-3315 USA, Tel: 919 962-0705, Fax: 919 966-4519, email: dcoleman@unc.edu, and
Peter W Lipman, US Geological Survey, MS910 345 Middlefield Rd, Menlo Park, CA 94025 USA, Tel: 650-854-9199, email: plipman@usgs.gov (back)

V16 Geoscience Research For Geothermal Energy Utilization: Case Studies From Coso And Other Geothermal Fields

Geothermal exploration and development is by necessity a multidisciplinary effort. At the Coso geothermal field in eastern , petrology, reflection seismology, array seismology, geologic mapping, geodesy, geochemistry, potential fields, InSAR, analog modeling, and many other techniques have been used to understand the origin of the resource, characterize its extent, and assess the potential for sustained power production. We invite contributions that focus on the ways in which diverse datasets from Coso and other geothermal fields can be synthesized to understand the occurrence and production of geothermal energy.

Conveners:

Allen Glazner, of , Dept. of Geological Sciences CB# 3315, , , Tel: 919-962-0689, email: afg@unc.edu, and
Jeffrey Unruh, William Lettis & Associates, Inc., , email: unruh@lettis.com, and
Egill Hauksson, California Institute of Technology, Seismological Laboratory MS 252-21, , email: hauksson@gps.caltech.edu (back)

V17 Weathering Processes Across Natural Landscape Gradients: New Isotopic and Geochemical Approaches

Natural environmental gradients can provide critical insights regarding physical and chemical weathering processes. These processes are often revealed by examining isotopic and geochemical trends at related sites that vary in climate, landform age, erosion rates, atmospheric deposition, or hydrologic regime (e.g. permafrost thaw or clay accumulation). We invite contributions that focus on new categories of environmental gradients, and contributions that highlight new isotopic approaches (stable, cosmogenic or radiogenic) to advance our understanding of the physical, geochemical and biogeochemical evolution of landscapes across different types of natural gradients.

Conveners:

Kate Maher, US Geological Survey, 345 Middlefield Rd MS 73, Menlo Park, CA 94301 USA, Tel: (650)329-4978, email: kmaher@usgs.gov, and
Stephanie Ewing, U.C. Berkeley, Center for Isotope Geochemistry, Department of Earth & Planetary Science 301 McCone Hall, Berkeley, CA 94704 USA, Tel: (510)643-5063, email: saewing@nature.berkeley.edu (back)

V18 Mineral-Water Interface Geochemistry and Applications to the Reactivity and Transport of Environmental Nanoparticles

Decades of intensive spectroscopic and microscopic investigation combined with chemical modeling of the solid-water interface have provided a wealth of detailed information about the rates and mechanisms of reactions between solutes and mineral surfaces. Recent scientific

interest in the reactivity and environmental behavior of both natural and synthetic nanoparticles has provided a new focus area for fundamental studies of the solid-water interface. This session occupies an interdisciplinary realm spanning geochemistry, hydrology, mineralogy, spectroscopy, environmental chemistry, and nanoscience. We seek contributions from investigators presenting (i) studies of the structure and reactivity of the solid-water interface, especially relating to the emerging interest in nanoparticle reactivity and mobility, (ii) results from the application of spectroscopic and microscopic tools to particle-water and single crystal surface-water interfaces, and (iii) investigations with implications for the potential use of 'engineered' nanoparticles for environmental remediation.

Conveners:

Bruce A. Manning, San Francisco State University, Department of Chemistry & Biochemistry 1600 Holloway Ave., San Francisco, CA 94132 USA, Tel: 415-338-1292, email: bmanning@sfsu.edu, and
William H. Casey, University of California, Davis, Department of Chemistry One Shields Avenue, Davis, CA 95616 USA, Tel: 530-752-3211, email: whcasey@ucdavis.edu (back)

V19 Dynamics of Gas Transport in Magma

Emission of juvenile gases is a feature of active volcanoes both during eruption, and during periods of quiescence. Gas transport is driven by buoyancy and may be facilitated by the rise, growth, and coalescence of bubbles, by the flow of gas through bubble and/or fracture pathways which permeate the magma, or by some dynamic combination of the two. The nature of the journey that the gas takes, from exsolution to emission, exerts a fundamental control on the observed eruptive behaviour. Submissions are sought which consider any aspect of the transport of gas through magma and the volcanic system in general. Experimental, numerical, or theoretical treatments of the development of permeability in magma are particularly welcome as are studies which link the mechanism of gas transport to eruptive style. Priority will also be given to research which exploits field observations and measurements of surface gas emissions to elucidate subsurface gas transport processes

Conveners:

Edward W Llewellin, University of Durham, Department of Earth Sciences, Durham University, Science Labs, Durham, DH1 3LE GBR, Tel: +44 (0) 191 33 42336, email: ed.llewellin@durham.ac.uk, and
Martin O Saar, University of Minnesota, Department of Geology and Geophysics 310 Pillsbury Drive SE, Minneapolis, MN 55455 USA, Tel: 612-625-7332, Fax: 612-625-3819, email: saar@umn.edu, and
Oliver Spieler, University of Munich, DEU, email: ospieler@web.de, and
Helge Gonnermann, University of Hawaii, Honolulu, HI 96822 USA, Tel: 808 956 5036, email: helge@hawaii.edu (back)

V20 Hotspot Anomalies and Upper Mantle Processes: Insights from Observations and Modeling

Anomalies found in hotspot regions offer clues to the dynamic evolution of the upper mantle and lithosphere in these areas. Many processes are important to creating these anomalies, such as mantle melting, melt transport, upwelling of mantle material, and physical and thermal interactions with the lithosphere. Observations include seismic velocity anomalies, excess volcanism both on and off-axis, changes in mid-ocean ridge axis morphology and location, gravity anomalies and a range of anomalous geochemical data. Studies ranging from petrologic experimentation to fluid dynamical computation have often invoked the mantle-plume hypothesis, but the details of how plume-lithosphere dynamics and plume chemistry are manifest in hotspot anomalies are still being explored. This session strives to bring together evidence from

observations of hotspot anomalies and modeling to provide a clearer picture of the dynamics of hotspot affected regions, and to help illustrate the strengths and weaknesses in hotspot theories across a variety of disciplines.

Conveners:

Todd Anthony Bianco, SOEST, of , , email: rixctf@soest.hawaii.edu, and
Eric Mittelstaedt, SOEST, of , , email: mittelst@hawaii.edu, and
Peter Van Keken, , email: keken@umich.edu (back)

V21 The Origin and Evolution of Continents: Lithospheric and Asthenospheric Perspectives

Whereas there has been much debate over the origin of the continental crust, constraining the formation and evolution of the underlying continental lithospheric mantle is also important, as it is the link between surface observations and deep mantle processes, both in the present and in the past. This session will focus on the lithospheric mantle beneath continents: how it forms and evolves, how it relates to crust formation, how it interacts with the asthenosphere and how it is affected by plumes. Key questions include: what can petrology, geochemistry, and geodynamic models tell us about lithosphere formation and stabilization in the present and in the deep past? What hypotheses can now be ruled out by existing data? What are the geologic, dynamic and geochemical consequences of lithosphere-asthenosphere interaction? What are the influences of melting, melt transport, and melt-rock reaction on the thermal state and rheology of the deep lithosphere? In what novel ways can we use petrogenetic processes to determine continental dynamics, past and present? We invite contributions in the areas of (but not limited to) petrology and geochemistry of xenoliths and mantle-derived magmas, geodynamic modeling, gravity and heat flow studies, rheology of the lithospheric mantle, and seismic studies of the lithosphere, asthenosphere, and even the uppermost part of the transition zone. Case studies in cratons or tectonically active areas are also welcome.

Conveners:

Madalyn Blondes, , , email: madalyn.blondes@yale.edu, and
Catherine Cooper, Carnegie Institute of , , , email: cooper@dtm.ciw.edu, and
Jessica Warren, Woods Hole Oceanographic Institution, , email: jmwarren@whoi.edu, and
Cin-Ty Lee, , email: ctlee@rice.edu (back)

V22 Yellowstone Volcano Dynamics: Contemporary Measurements and Studies Of Active Magmatic and Tectonic Sources

Recent observations of the volcanic system and its globally significant hotspot document the highly dynamic nature of this singular magmatic-tectonic system. New studies recognize continual and sometimes rapid variations in crustal deformation, earthquake activity, hydrologic flow, geyser periodicity and thermal output. The underlying controls on these diverse phenomena likely include variations in magma intrusion rates, bedrock permeability, regional stresses, climatic factors, and interaction amongst variable sources. Progress in understanding the geodynamics of this complex system requires a synthesis of ideas from a wide range of earth-science specialties. This session seeks contributions related to understanding active changes in the system, whatever their nature or cause. Contributions from new observations are sought from studies of real-time seismic and GPS networks, systematic monitoring from geochemical and hydrologic networks, remote sensing, integrative modeling of magmatic and tectonic processes, and implications for volcanic, seismic and hydrothermal hazards.

Conveners:

Jacob B Lowenstern, U.S. Geological Survey, VHZ, MS 910 345 Middlefield Road, Menlo Park, CA 94025 USA, Tel: 650-329-5238, Fax: 650-329-5203, email: jlwnstrn@usgs.gov, and
Robert B Smith, University of Utah, Department of Geology and Geophysics 135 South 1460

East Room 702, Salt Lake City, UT 84112 USA, Tel: 801-581-7129, email: rbsmith@mines.utah.edu, and
Henry Heasler, Yellowstone National Park, Yellowstone Center for Resources P.O. Box 168, Bldg. 27, Mammoth, WY 82190 USA, Tel: 307-344-2441, email: Henry_Heasler@nps.gov
(back)

V23 Physical and Chemical Processes in Mafic Layered Intrusions
Mafic layered intrusions are a keystone in our understanding of many magmatic systems. Their geodynamic significance is considerable because they represent one fundamental mode of magma transfer from the upper mantle to the crust. They have occurred through geologic times from the Archean (e.g., Stillwater Complex) to the Tertiary (e.g., Skaergaard Complex) on all five continents. Some of them are related to Large Igneous Provinces and many are host to sizeable economic deposits (PGE, chromium, vanadium, nickel). This session will gather recent advances in the geochemistry, petrology and physics of mafic layered intrusions. We encourage presentations of multidisciplinary and innovative approaches from specialists in all disciplines.
Conveners:
Eric C. Ferré, Southern Illinois University, Carbondale, Department of Geology Southern Illinois University, Carbondale, IL 62901 USA, Tel: 618-453-7368, Fax: 618-453-7393, email: eferre@geo.siu.edu, and
Bruce D. Marsh, Johns Hopkins University, Department of Earth & Planetary Sciences Johns Hopkins University, Baltimore, MD 21218 USA, Tel: 410-516-4652, email: bmarsh@jhu.edu
(back)

V24 Magmatic Processes in Arcs and Metallogeny
This session will focus on the interaction of physical and chemical processes during magmatic evolution in island and continental arcs, and how these affect the genesis of ore deposits related to felsic magmas. The session aims to address formation of the massive metal and sulfur anomalies that characterize these deposits by taking a broad view of the magmatic system, including processes in the magma sources and the deeper part of the system. We welcome contributions from igneous petrologists, economic geologists, numerical modelers, geochemists and geophysicists describing any aspect of these magmatic systems. Studies based on field, experiments or theoretical approaches are invited.
Conveners:
Roberto F Weinberg, School of Geosciences, Monash University, Clayton, VIC VIC 3800 AUS, Tel: 61 3 99054902, Fax: 61 3 99054903, email: Roberto.Weinberg@sci.monash.edu.au, and
Andy Tomkins, School of Geosciences, Monash University, Clayton, VIC VIC 3800 AUS, Tel: 61 99054901, Fax: 61 99054903, email: Andy.Tomkins@sci.monash.edu.au (back)

V25 High-Pressure Metamorphism in Southeastern Europe
New age determinations on metamorphic rocks of the Balkan region and the Carpathian arc show that the crystalline fragments outcropping in SE Europe can be significantly different in age, such that they record orogenic processes ranging from Pan-African to Alpine times. Associated high-pressure rocks indicate that it is likely that the last 600 million years has seen multiple continent-continent collision events. Existing data indicate a complex evolution involving various plate-margin interactions, subduction-collision episodes and terrane amalgamations. The information can be fully utilized only by combining results from metamorphic petrology, geochronology, paleomagnetic and other investigations. This session will bring together contributions from all these disciplines to give new insight into this complex collage of crystalline complexes in .
Conveners:
Gavril Sabau, Geological Institute of , 1 Caransebes st., , 012271 ROM, email: sabau@igr.ro,

and
Hans-Joachim Massonne, Institut fuer Mineralogie und Kristallchemie, Universitaet Stuttgart, Azenbergstr. 18, , D-70174 DEU, email: h-j.massonne@imi.uni-stuttgart.de (back)

V26 Mud Volcanoes and Their Eruption Dynamics
It is commonly agreed that the main engine driving mud volcanism is the overpressure from methane-rich fluids linked with hydrocarbon formation at greater depth. However, recent models focus on alternative mechanisms such as dewatering of thick clay-rich sedimentary units, high temperature gradients triggering geochemical reactions at shallow depth, and rise of supercritical fluids from great depths. Offshore mud volcanoes are frequently associated with the presence of gas hydrates. Gas hydrate dissociation may be coupled with the mud volcano eruptions or feed seepage sites associated with precipitation of methanogenic carbonate. The search for mud volcanoes on other planets (e.g. Mars) represents a new approach to identify the presence of water and hydrocarbons and thus the exploration for extraterrestrial life. This session aims to bridge the gap between studies of onshore and offshore mud volcanoes. We welcome contributions on eruption dynamics, long-term monitoring, numerical modeling, fluid geochemistry and plumbing systems.
Conveners:
Adriano Mazzini, PGP, University of Oslo, Department of Physiscs, Sem Saelandsvei 24, Blindern, Oslo, 0316 NOR, Tel: +47 228 56108, Fax: +47 228 55101, email: adriano.mazzini@fys.uio.no, and
Sverre Planke, Volcanic Basin Petroleum Research, Oslo Innovation Park, Oslo, 0349 NOR, email: planke@vbpr.no, and
Grigorii Akhmanov, Moscow State University, Department of Petroleum Geology Vorobjevy Gory, Moscow, 119991 RUS, email: akhmanov@geol.msu.ru, and
Christian Berndt, Southampton Oceanography Centre, University Road, Southampton, SO17 1BJ GBR, email: cbe@soc.soton.ac.uk (back)

V27 Tracking Magma Movement and Storage in Basaltic Edifices: From Models to Field Observations
Recent data indicate that large volumes of magma in basaltic systems may be injected into an edifice from a shallow reservoir without being easily detected by any geophysical sensors. A fraction of the magma does not erupt, but has large effects on fluid pressures and local stresses inside the edifice. Lack of knowledge of the stored magma volume and movement limits our ability to develop realistic numerical models that can be applied to real basaltic systems. The finding of geophysically invisible intrusions suggests the need for an interdisciplinary approach, using geophysical, geochemical, and geological models and datasets collected on active volcanoes worldwide, to address the problems of magma storage and movement within large edifices. The main goals of this session are 1) to test the ideas suggesting large magma injections in edifices using field data and modeling 2) to help define a new strategy for upgrading monitoring networks on active edifices. Presentations from geological, geophysical and geological modelers as well as field observers will be welcome.
Conveners:
Nicolas Houlie, Berkeley Seismological Laboratory - UC Berkeley, 205, Mc Cone Hall, Berkeley, CA 94720-4760 USA, Tel: +15106422601, Fax: +15106435811, email: houlie@seismo.berkeley.edu, and
Seth Moran, USGS Cascades Volcano Observatory, 1300 SE Cardinal Ct, Vancouver, WA 98683 USA, Tel: (360) 993-8934, email: smoran@usgs.gov, and
Agust Gudmundsson, Geoscience Centre, University of Gottingen, Goldschmidtstr. 3, , D-37077 USA, Tel: 49 (0) 551 397 930, Fax: 49 (0) 551 399 700, email:

Agust.Gudmundsson@gwdg.de (back)

V28 Observations and Techniques to Improve Prediction and Tracking of Volcanic Ash Clouds

Volcanic ash can cause severe damage to jet aircraft engines in landing, takeoff, or during high altitude transport. Volcanic ash can also damage fuel lines, abrade internal and external surfaces, and shut down major airports. Tracking and predicting the movement of these ash clouds is an important factor in mitigating the hazards posed to thousands of passengers who fly daily in close proximity of potentially active and currently active volcanoes. Recent effort has grown out of findings by the International Civil Aviation Organization's (ICAO) International Airways Volcano Watch Operations Group (IAVWOPSG) that ash-cloud trajectories could be more accurately modeled and their hazards anticipated if parameters on volcanic ash release rates, height distributions in the atmosphere, ash properties, and other factors, were better characterized. We invite contributions on the techniques and observations that are used for detecting, monitoring, tracking, predicting, and characterizing the properties of volcanic ash clouds.

Conveners:

Larry Garver Mastin, U.S. Geological Survey, 1300 SE Cardinal Court Bldg. 10, Suite 100, Vancouver, WA 98683 USA, Tel: 360-993-8925, Fax: 360-993-8980, email: lgmastin@usgs.gov, and

Peter William Webley, ARSC, University of Alaska, Fairbanks, Arctic Region Supercomputing Center Alaska Volcano Observatory 909 Koyukuk Drive, Fairbanks, AK 99775-6020 USA, Tel: 907-474-1542, Fax: 907-450-8603, email: pwebley@gi.alaska.edu (back)

V29 Explosive Eruption Dynamics: Recent Advances and Future Directions

Explosive volcanic eruptions are an agent of rapid landscape evolution, a source of gases and aerosols that have regional and global climate impact, and a hazard to numerous population centers. The behavior of these eruptions is dependent on the flow dynamics of the entire volcanic system, from the magmatic plumbing system to atmospheric dispersal. Until recently, many of these dynamics have been obscured by the inherent difficulty of direct observation and the time-dependent, spatially heterogeneous nature of explosive eruptions. This session focuses on recent synergistic advances in field observation techniques, detailed deposit assays, numerical simulations, and experimental approaches that have begun to reveal the internal dynamics of explosive eruptions. We invite presentations on conduit and near-vent dynamics and the particle-laden plumes and pyroclastic density currents they generate. We particularly encourage presentations that make connections between subfields and highlight the crucial observation required to constrain theoretical descriptions of eruptive behavior.

Conveners:

Josef Dufek, of , , Dept. of Earth and Planetary Science 307 McCone Hall, , , email: dufek@berkeley.edu, and

Darcy Ogden, of , , Earth and , , email: dogden@pmc.ucsc.edu (back)

V30 Fluid-Rock Interaction in the Crust and the Upper Mantle

The presence of fluids in the crust and the upper mantle has fundamental consequences for many petrologic processes, such as the genesis of magmatic rocks, mineral reactions, rates and mechanisms of nucleation and growth of minerals, mineral solubility, isotope transport, mass transfer and partial melting. We invite contributions in the field of metamorphic and igneous petrology which address the questions and problems of fluid-rock interactions in different geological settings, and on different scales, in order to advance our understanding of the fundamental processes controlling fluid-rock interactions in earth's crust and mantle. Field,

experimental and theoretical studies ranging from shallow crustal regimes to subduction zones and the upper mantle are welcome.

Conveners:

Thomas Müller, Rensselaer Polytechnic Institute, , email: mullet@rpi.edu, and
Anke Wohlers, of , , email: Wohlers@ucla.edu (back)

V31 Lava Flow Dynamics and Morphology: Integrating Field, Laboratory and Theoretical Studies

Understanding the dynamics and morphology of active lava flows, lakes and domes requires field study, laboratory-based measurements and theoretical treatment. Field studies allow us to define, describe and parameterize characteristic phenomena, such as emplacement styles, velocities, and heat/mass fluxes, as well as associated flow regimes, morphologies and their characteristic dimensions and time scales. Our ability to achieve such field parameterization has recently been advanced by availability of high-quality digital camera data, ground-based laser and LiDAR measurements, and hand-held thermal imagers. Laboratory studies allow definition of characteristic crystallization rates and vesicularities, as well as compositional, temperature, vesicle and crystal dependent rheology. These can be used in one-, two- and three-phase treatments of the erupted lava to determine flow viscosity and yield strength, and the role these play on the subsequent emplacement dynamics. Finally, theoretical treatments allow the physics and dynamics of flow emplacement to be defined. Emplacement properties and styles can be modeled and explained, and the influence of the pre-existing topography can be determined. Emplacement models ultimately allow flow modeling for emplacement prediction; the results of which can be tested against field data. This session seeks to review our current understanding of active lava emplacement through integration of field study, laboratory-based measurements and theoretical modeling.

Conveners:

Andrew Harris, University of Hawaii, HIGP/SOEST, 1680 East-West Road, Honolulu, HI 96822 USA, Tel: 808-956-3157, Fax: 808-956-6322, email: harris@higp.hawaii.edu, and
Alan Whittington, University of Missouri-Columbia, Department of Geological Sciences, 101 Geology Building, Columbia, MO 65211 USA, Tel: (573) 884-7625, Fax: (573) 882-5458, email: whittingtona@missouri.edu (back)

V32 Halogens in Volcanic Systems and their Environmental Impacts

Halogens play a significant role in volcanic systems and can have pronounced impacts on Earth's atmosphere and environment. This session will focus on results of experiments, measurements on active volcanoes and their rocks, atmospheric measurements, and theoretical models that investigate the role of halogens in volcanic systems and how they affect the Earth system.

Conveners:

Don R Baker, McGill University, 3450 rue University Earth and Planetary Sciences, Montreal, QC H3A 2A7 CAN, Tel: 1-514-398-7485, Fax: 1-514-398-4680, email: donb@eps.mcgill.ca, and *Alessandro Aiuppa*, University of Palermo, ITA, email: aiuppa@unipa.it, and
James Webster, American Museum of Natural History, USA, email: jdw@amnh.org (back)

V33 Integrating Petrological, Experimental, and Field Studies of Pyroclastic Deposits: From Macro-Scale Observations to Microscopic Quantification

Explosive volcanic eruptions involve magma fragmentation and emplacement of air fall and pyroclastic density currents. Examination of the deposits allows assessment of the style and dynamics of eruption and deposition, whereas experimental and petrological studies focus on the roles of crystallization, vesiculation, and magma chemistry in determining eruption and emplacement style. Taken together, constraints from experiments, natural pumice samples, and

physical volcanology lead to a better understanding of the system conditions and magma properties that determine eruptive style. This session will focus on the role of petrologic experimentation, analyses and modeling in linking magma ascent dynamics, fragmentation and the character of the resulting deposit. We invite presentations focusing on explosive volcanism at all scales and across a broad spectrum of volcanoes and magma types.

Conveners:

Lucia Gurioli, University of Hawaii, G&G/SOEST, 1680 East-West Road, Honolulu, HI 96822 USA, Tel: 808-956-9819, email: gurioli@hawaii.edu, and
Jessica Larsen, University of Alaska Fairbanks, Geophysical Institute Alaska Volcano Observatory University of Alaska Fairbanks, Fairbanks, AK 99775 USA, Tel: (907) 474-7992, Fax: (907) 474-5163, email: faust@gi.alaska.edu (back)

V34 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, Institute for Reference Materials and Measurements (IRMM-JRC-EU), Retieseweg 111, Geel, 2440 BEL, Tel: +32-14-571-701 (-652), Fax: +32-14-571-863, email: stephan.richter@ec.europa.eu, and
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Rebecca Thomas, New Brunswick Laboratory, DOE, 9800 S. Cass Ave., Bldg. 350, Argonne, IL 60517 USA, Tel: 630-252-3892, Fax: 630-252-6256, email: rebecca.thomas@ch.doe.gov, and
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V35 Seafloor Hydrothermal Systems Related to Volcanic Arcs

Hydrothermal venting at back-arc spreading centers and at submerged island-arc volcanoes display both similarities and differences when compared to systems found on mid-ocean ridges, with differences attributed to a range of factors including the composition of the substrate (basalt, andesite, rhyolite, dacite), contributions of magmatic volatiles to the hydrothermal system, and the depth and structure of the substrate. For example, recent studies in the southwest Pacific (, , Kermadec and Mariana Arcs) are providing evidence for volatile input (based on both alteration assemblages and vent fluid compositions). This session seeks contributions on any topic related to submarine volcanic arc hydrothermal systems.

Conveners:

David Butterfield, of , Joint Institute for the Study of the Atmosphere and Oceans 7600 Sand Point Way NE, Seattle, WA 98115 USA, Tel: 206 526 6722, Fax: 206 526 6054, email: dab3@u.washington.edu, and
Wolfgang Bach, , DEU, email: wbach@uni-bremen.de (back)

V36 New Developments in Geochronology

Geochronology provides constraints on many events and processes in Earth and planetary sciences. This session will take stock of recent developments in instrumentation, techniques, theory and data analysis which lead to more accurate constraints for rates and time scales of geologic processes. We will emphasize research that exemplifies the union of petrology and other disciplines with geochronology (including thermochronology). Examples include studies that address the significance of ages of nominally igneous minerals (e.g., coupled geochemical and geochronological characterization of erupted and/or intrusive crystal populations); successes in radio-isotopic dating of previously stigmatized (e.g., Ar/Ar dating of glasses) or novel materials that facilitate new areas of investigation; insights into the controls on diffusion parameters (e.g., radiation damage, melt inclusions, etc.); advances leading to better intercalibration where multiple geochronometers are used; and technical advances (e.g., multicollector Ar/Ar; U-series by LA-MC-ICPMS).

Conveners:

Justin Simon, University of California at Berkeley/ Berkeley Geochronology Center, 483 McCone Hall Department of Earth and Planetary Science University of California at Berkeley, Berkeley, CA 94720-4767 USA, Tel: 510 642-9524, Fax: 510 642-9520, email: simon@eps.berkeley.edu, and
Roland Mundil, Berkeley Geochronology Center, USA, email: rmundil@bgc.org, and
Paul Renne, University of California at Berkeley/ Berkeley Geochronology Center, USA, email: prenne@bgc.org, and
David Shuster, Berkeley Geochronology Center, USA, email: dshuster@bgc.org (back)

V37 The Dynamics and Longevity of Silicic Magma Systems: Volcanic and Plutonic Perspectives

New studies of plutonic and modern and ancient volcanic sequences are shedding light on the evolution of silicic magma systems. Evidence for magma chamber longevity and the nature and rates of processes is preserved on a wide range of scales, from those of field relations to zoning of and inclusions within single crystals. These lines of evidence, together with theoretical studies and geophysics of active systems, provide insights into the dynamic processes that shape the evolution of magmatic systems (e.g. magma storage; segregation of melt and crystals; replenishment, interaction of magmas, and rejuvenation of stagnant magma; eruption). Our understanding of the magmatic history of a system relies on the preservation and exposure of the rocks that are its products and is amplified when both volcanic and plutonic segments can be studied. This session focuses on new evidence for and views on the dynamic histories of dominantly felsic magmatic systems, bringing together modern and ancient, plutonic and volcanic, and empirical and theoretical perspectives and approaches.

Conveners:

Denise Kelly Honn, University of Nevada, Las Vegas, 4505 Maryland Pkwy, Las Vegas, NV 89154 USA, Tel: 702-895-4301, email: dkhonn@gmail.com, and
Calvin F. Miller, Vanderbilt University, Earth & Environmental Sciences 2301 Vanderbilt Place Station B 35-1805, Nashville, TN 37235 USA, Tel: 615-322-2232, email: calvin.f.miller@vanderbilt.edu, and
Jonathan S. Miller, San Jose State University, San Jose, CA 95192-0102 USA, Tel: 408-924-5015, email: Jonathan.Miller@sjsu.edu, and
Guilherme Gualda, Vanderbilt University, Earth & Environmental Sciences 2301 Vanderbilt Place Station B35-1805, Nashville, TN 37235 USA, Tel: 615-322-2976, email: ggualda@uchicago.edu (back)

V38 Challenges to Electron Microprobe Analysis in Geology

2008 will be the 50th anniversary of the first commercial electron microprobe (MS85). A lot has changed, and a lot hasn't. In electron microprobe microanalysis (EPMA), we still struggle to produce "good results" with highly automated machines and fast computers. This session will address some of the continuing challenges of EPMA: evaluating standards, recognizing peak shifts in Al, Mg and Si, correcting for secondary fluorescence (e.g. for trace-element EPMA), dealing with element volatility, problems with conductivity and particularly problems with EPMA of ____ (feldspar, garnet, carbonate, ilmenite, glass -- fill in your favorite material here).
Conveners:
John Fournelle, University of Wisconsin-Madison, Dept of Geology & Geophysics 1215 West Dayton St., Madison, WI 53711 USA, Tel: 608-262-7964, Fax: 608-262-0693, email: johnf@geology.wisc.edu, and
John Donovan, CAMCOR/University of Oregon, Dept of Geological Sciences 1272 University of Oregon, Eugene, OR 97403 USA, Tel: (541) 346-4632, email: donovan@uoregon.edu, and
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V39 Mechanisms and Consequences of the Father's Day Intrusion at Kilauea Volcano,
On the morning of June 17, 2007, seismicity and deformation monitoring indicated that a dike had begun to intrude the upper East Rift Zone of Kilauea volcano, . Over the following days, the dike propagated in distinct pulses, culminating in a small eruption on June 18/19. The intrusion disrupted the ongoing Pu`u `O`o-Kupaianaha eruption, caused about a meter of widening of the East Rift Zone, and was associated with both deflation of the summit region and collapse at Pu`u `O`o. Numerous different types of geophysical and geological observations characterized the event, making it one of the best imaged examples of dike intrusion. This session will explore the causes, processes, and consequences of the Father's Day intrusion at Kilauea, including propagation of the dike, Kilauea's magma plumbing system, and the impact of the intrusion on 's mobile south flank. Presentations that focus on intrusive activity at other basaltic volcanoes, especially those that address the mechanics of dike emplacement and post-intrusion effects, are also encouraged.
Conveners:
Mike Poland, U.S. Geological Survey, Hawaiian Volcano Observatory P.O. Box 51, National Park, HI 96718-0051 , Tel: (808) 967-8891, Fax: (808) 967-8890, email: mpoland@usgs.gov, and
Tim Orr, U.S. Geological Survey, Hawaiian Volcano Observatory P.O. Box 51, National Park, HI 96718-0051 , email: torr@usgs.gov (back)

<u>There are at least three Union sessions of interest to VGP membership:</u>

U01 Whole or Layered Mantle Convection?
The scale of mantle convection has been one of the most debated issues in earth sciences since the plate tectonics revolution. Various geochemical, seismological and geodynamical arguments have been used at different times in favor or against whole mantle convection. Recently, seismic images of slabs penetrating into the lower mantle have been offset by evidence for slab stagnation in the transition zone. Thermo-chemical models of whole mantle convection are revealing possible compositional layering. Isotopic evidence for distinct geochemical reservoirs has not been definitively dismissed. This session will provide the forum for a multi-disciplinary review of the arguments of proponents on both sides of the issue, with emphasis on specific experiments that could help to resolve it.
Conveners:

Barbara A. Romanowicz, Univ. of California at Berkeley, Seismological Laboratory, 215 McCone Hall, Berkeley, CA 94720 USA, Tel: 510 643 5690, Fax: 510 643 5811, email: barbara@seismo.berkeley.edu, and
Louise H. Kellogg, University of California at Davis, Department of Geology, One Shields Avenue, Davis, CA 95616 USA, Tel: 530 752 3690, email: kellogg@geology.ucdavis.edu, and
Donald DePaolo, University of California at Berkeley, Department of Earth and Planetary Science, 301 McCone Hall, Berkeley, CA 94720 USA, Tel: 510 643 5064, email: depaolo@eps.berkeley.edu (back)

U02 Hadean Times: From Magma Ocean Mode to Modern Geodynamic Regimes
This session is devoted to the understanding of the petrological, geochemical, and geodynamical processes that took place in the Hadean Earth, at all depths and at all scales, leading from the magma ocean to a modern geodynamic regime. From the segregation of the core, to the formation of the continental crust, through the various stages of crystallization of the magma ocean, extraction of melts with ensuing depletion of the mantle, and onset of convection and plate tectonics. We seek contributions from petrology, trace element and isotope geochemistry, and geodynamics. More specifically, we welcome contributions related to: [1] core formation; [2] formation of the Hadean crust and lithosphere; [3] crystallisation and melting processes in the magma ocean and evolution of the mantle; [4] the earliest stages of plate tectonics; [5] thermal evolution, mantle convection and crustal recycling; [6] inner core crystallization initiation of the magnetic field.
Conveners:
Janne Blichert-Toft, Ecole normale superieure de Lyon,FRA, email: jblicher@ens-lyon.fr, and
James Badro, Institut de physique du globe de Paris, FRA, email: badro@ipgp.fr, and
Frederick J. Ryerson, Lawrence Livermore National Laboratory, , email: ryerson1@llnl.gov, and
Stephane Labrosse, Ecole Normale Superieure de Lyon, 46 Allee d"Italie, Lyon, 69364 FRA, email: stephane.labrosse@ens-lyon.fr (back)

U06 Chemical Geodynamics: The Road Ahead
It has now been 25 years since the term “Chemical Geodynamics” was coined. It embraces multiple disciplines that together attempt to unlock the secrets of the evolution, composition, dynamics and linkages between the surface and the deep interior of the Earth. Mafic crust is formed at spreading ridges, chemically interacts with the ocean and is veneered with sediment during plate aging. Continental erosion and weathering provides the material for the sediment veneer. Subduction subjects the sediment/ocean crust/mantle lithosphere package to a bewildering array of chemical and physical processes at a wide range of pressures and temperatures. One outcome is the extraction of components, via arc magmatism, that build new continental crust. The lithospheric residues of this subduction process are recycled into shallow and/or deep mantle, and subjected to a myriad of mixing, stirring and aging processes during mantle convection on all scale lengths. Some may be hidden from sight for eternity, some are recycled to the surface via upwelling plumes or via general circulation, transiting back through the upper mantle and eventually back into the ridge factory. Thus, on this Silver Anniversary, it is time to take stock and look forward. While geochemistry is the major discipline equipped to reveal the timing, evolutionary and compositional aspects of the geodynamic cycle, the geophysical disciplines contribute understanding of the present state of the planet and its internal dynamics. Progress has come and will come from the interfacing of these disciplines. This session intends to ask an assembly of scientists from diverse disciplines to look ahead, from a synoptic view of where we stand and where the roadblocks are. We will be targeting especially interdisciplinary presentations, to show how synergetic research amongst their fields can energize progress, and provide a view of where Chemical Geodynamics is headed.

Conveners:
R. Hart, Woods Hole Oceanographic Institution, , Woods Hole, MA 02543 , Tel: 508-548-1656, email: shart@whoi.edu, and
Albrecht W. Hofmann, Max Planck Institute for Chemistry, Postfach 3060, , D-55020 DEU, email: hofmann@mpch-mainz.mpg.de, and
Nobumichi Shimizu, Woods Hole Oceanographic Institution, Woods Hole, MA 02543 , email: nshimizu@whoi.edu (back)