

P05 Atmochemical halos of mercury (Hg) within the area of active volcanic edifices in Kamchatka

Nina Ozerova¹, Alexey Ozerov²

¹*Institute of Geology of Ore Deposits, Petrology, Mineralogy and Geochemistry, MOSCOW, Russian Federation*

²*Institute of Volcanology and Seismology, PETROPAVLOVSK-KAMCHATSKY, Russian Federation*

We studied the Klyuchevskoy, Bezmyanny, Mutnovsky volcanoes and the Uzon caldera. We made several flies over the crater zone of Bezmyanny volcano and recorded a series of anomalies ($n \cdot 10^{-8} \text{ g/m}^3$) at the research height of 500 m. These anomalies evidence that Hg emits into atmosphere. We made several flies over the summit crater of Klyuchevskoy volcano (4822 m) at the research height of 600 m above the crater rim. We did not reveal Hg emission. In the meantime several on-board observations over the cinder cones (Bilyukay and Bylinkinoy caused by adventive eruptions and inactive now) allowed detecting a distinct Hg emission at a height of 5-10 m above the crater rim ($n \cdot 10^{-8} \text{ g/m}^3$). We provide data on Hg content in the fluids from the bottom fumaroles of Mutnovsky volcano so that to describe the Hg concentration caused by fumaroles and emitting into atmosphere: $7 \cdot 10^{-5} \text{ g/m}^3$ in gas component and $2 \cdot 10^{-3} \text{ g/l}$ in steam condensate. The research in the Mutnovsky block (Mutnovsky and Gorely volcanoes) aimed at revealing the relationship between seismic activity (mantle depth 70-300 km), volcanic activity and the emission intensity of Hg-bearing fluids evidences on mantle level of Hg degassing in this block. We revealed two Hg halos in the near-ground atmosphere inside the Uzon caldera (foot observation), they are 3 and 1.5 km long, their contents are $n \cdot 10^{-8} \text{ g/m}^3$. The eastern halo is located within the thermal fields where the content comprises $(1-28) \cdot 10^{-6} \text{ g/m}^3$ Hg in gas phase of hot springs. The western one is out of the present hydrothermal field. Such halos were fixed at the height of 10-25 m too (hang-glider). The research of above water Hg halos within the near shore Kamchatkan-Pacific aquatorium resulted in detection of atmochemical Hg anomalous series: $n \cdot 10^{-8} \text{ g/m}^3$ (ship). According to the seismological research they are located in the fault zones that continue from the ocean on the NW continental faults. One of them - Utholoksky - controls the Hg emission in Uzon caldera. Besides, other Hg anomaly under above water conditions continue on the Kamchatkan NW fault, within the Kireunskiye springs zone with and without hydrothermal activity (helicopter, 100 m).

P06 A high resolution SO₂ time series from White Island, New Zealand

Craig Miller¹, Karen Britten¹, Jeremy Cole-Baker¹, Angela Doherty¹, Cindy Werner²

¹*GNS Science, TAUPU, New Zealand*

²*USGS, VANCOUVER, United States of America*

A high resolution time series of SO₂ emission rates from White Island volcano, New Zealand, from July 2006 to January 2008 is presented. Data are from an automatic scanning spectrometer system (miniDOAS) installed on the island in May 2006 which produces SO₂ emission rate estimates approximately every 5 minutes under favourable conditions. During this study period SO₂ emission rates have decreased from daily averages of 200-400 T/day to less than 100T/day, approaching the detection limits of the miniDOAS system. Short term variations (hourly - daily) are attributed to plume heterogeneities close to the vent where the scanners are located. Hourly miniDOAS averages compare well to COSPEC measurements made monthly even though the two measurements are made at different distances from the vent.

Superimposed on the long term emission rate decline is a subtle 12-13 month cycle that may reflect annual tidal loading affects on the volcano. During the measurement period other changes occurred to the volcano system. The level of the crater lake peaked in August 2006 (after rising from late 2003) and dropped through the study period. Previous studies had shown that by August 2006 the amount of SO₂ reacting with lake waters was minimal compared to the SO₂ emitting from the volcano (Werner et al., 2008). Thus, the decline in SO₂ which tracked the decline in lake level must represent a real decrease in SO₂ flux, and not an increase in removal of SO₂ by lake water. The level of seismicity was also very low during this period with only low levels of volcanic tremor and very few LP or VT earthquakes occurring. Our ability to measure SO₂ emission rates at a high frequency during a period of quiescence will significantly improve our understanding of the nature of passive degassing at White Island. We are confident that should fresh magma enter the system we will be able to quickly detect the increase in SO₂ emission rate and respond appropriately to any increased likelihood of eruption



17 - 22 August 2008



UNDERSTANDING VOLCANOES

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Abstracts: Poster Session II



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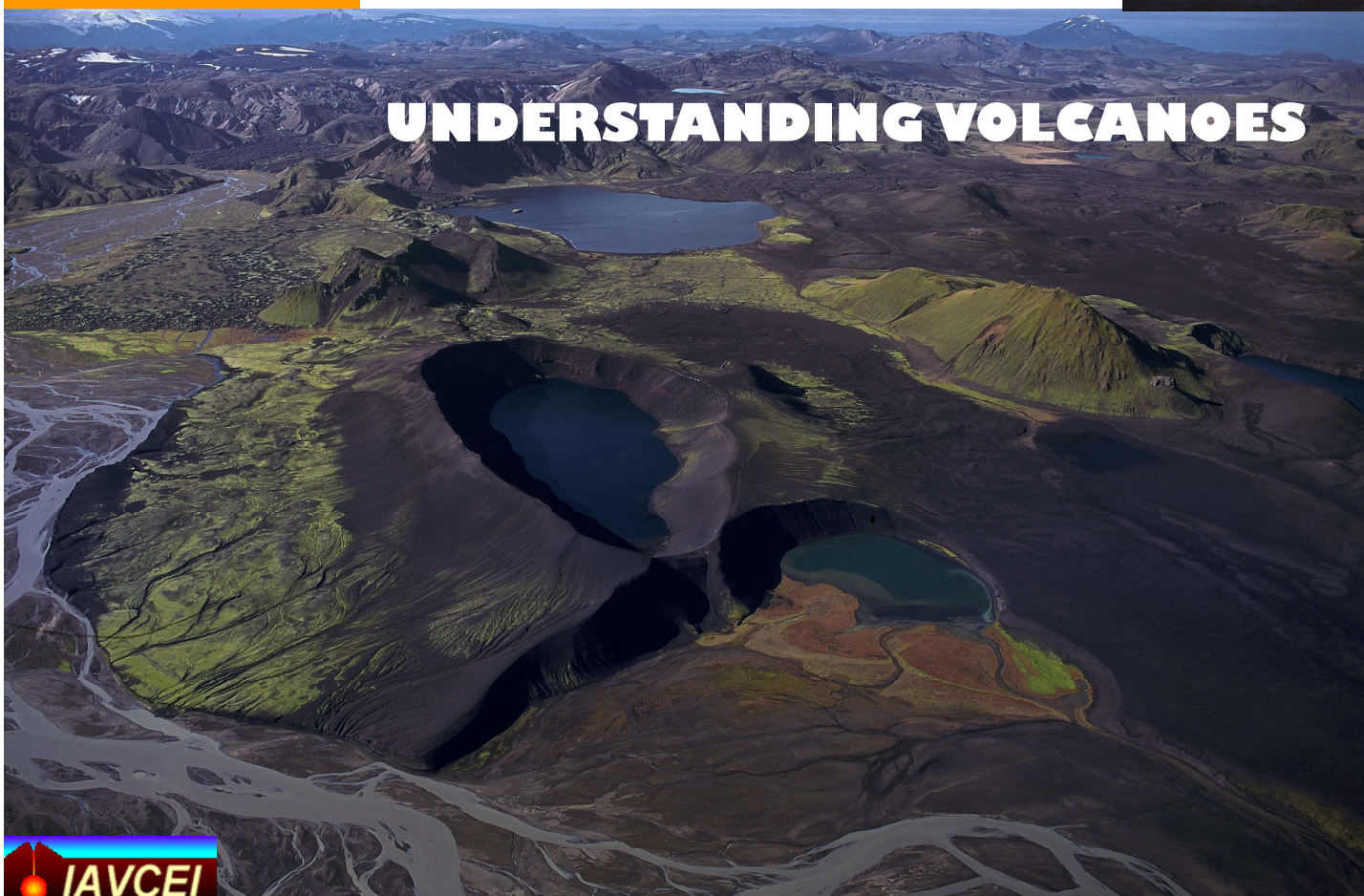
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Conference Programme

Tuesday 19 - Poster Sessions

Poster Area

Time: 16:30 – 18:00

1-d Intraplate volcanism - continents and oceans, from scoria cones to large igneous provinces

- 1-d P01 The age and petrogenesis of Palaeogene flood basalt volcanism in NE Ireland. Cora McKenna, John A. Gamble, Ian Mitchell, Paul Lyle
- 1-d P02 The Miocene - Pliocene Chilcotin Group: intermittent, low-volume basaltic volcanism on the Interior Plateau, Canadian Cordillera. Graham Andrews, Kelly Russell
- 1-d P03 The maar of Birket Ram and its amphibole megacrysts: a possible relation between phreatomagmatism and water-rich magmas. Uri Shaanan, Yishai Weinstein, Ram Weinberger, Oded Navon
- 1-d P04 Plio-Quaternary back arc volcanism of Northern Patagonia. Miguel Haller, Gabriela Massafiero
- 1-d P05 The monogenetic volcanoes of the Xalapa region, eastern Mexican Volcanic Belt: distribution and morphology of the volcanic vents. Sergio Raul Rodriguez, Wendy Barrera-Morales, Paul Layer, Esmeralda González-Mercado
- 1-d P06 The structure of Kilauea's magmatic plumbing system and magma residence times inferred from the chemistry of historical (1790-1979 AD) rift zone lavas. Jared Marske, Michael Garcia, Aaron Pietruszka, Marc Norman, J. Michael Rhodes
- 1-d P07 The temporal evolution of Boa Vista, Cape Verde. Charlotte Dyhr, Paul Martin Holm
- 1-d P08 Seismicity and structure at Los Tuxtlas Volcanic Field, Veracruz, Mexico
Juan-Manuel Espindola, Araceli Zamora-Camacho, F. Pacheco, M. Godínez
- 1-d P09 Sedanka monogenetic lava field, northern Kamchatka- Pleistocene to Holocene volcanic activity beyond the Pacific plate subduction. Oleg Dirksen, Lilia Bazanova, Mikhail Puzankov
- 1-d P10 The recent volcanism in Gran Canaria (Canary Islands, Spain): mantle sources and magma evolution. Domingo Gimeno, Meritxell Aulinas-Juncà, Francisco José Perez-Torrado, José Luis Fernandez-Turiel, Laura Font, Alejandro Rodriguez-Gonzalez, Geoff Nowell
- 1-d P11 The Pb- Sr- Nd- and Hf isotopic Signature of the Mantle Sources of the Kap Washington Group Volcanics and the Peary Land Dykes (N. Greenland). Helene Duprat, Paul Holm, Sigurjón Þórarinnsson, Christian Tegner
- 1-d P12 Elemental and isotopic constrains on the source of the Lisbon Volcanic Complex. Rui Miranda, João Mata, Pedro Terrinha, Maria do Rosário Azevêdo

1-f Bimodal magmatism: Integrating volcanological, geochemical and geophysical constraints on petrogenetic processes

- 1-f P01 Correlations of zoning in plagioclase populations: A fingerprint for magma mixing. Heather Wilson, Mark Jellinek
- 1-f P02 Magma plumbing system of Mt Fuji, Japan. Kaneko Takayuki, Atsushil Yasuda, Toshitsugu Fujii
- 1-f P03 Magma evolution of potassic trachybasalt in the Tianchi Volcano, Changbaishan, China. Qicheng Fan, Jianli Sui, Ni Li, Qian Sun
- 1-f P04 Bimodal dikes from the South Shetland Islands (Antarctic Peninsula) - evidence for a hitherto unknown magmatic process fractionating Nb and Ta? Stefan Kraus
- 1-f P05 Bimodal magmatism and mixing on a mid-ocean ridge: an example from the 9° 03'N overlapping spreading center, East Pacific Rise. Dorsey Wanless, Mike Perfit, Ian Ridley, Emily Klein
- 1-f P06 Linking central and regional Tertiary volcanism in eastern Iceland; The Thingmuli volcano. Gilles Charreteur, Karsten Haase, Christian Tegner
- 1-f P07 Pre-eruptive conditions of the Bruno-Jarbridge Rhyolite, Snake River Plain-Yellowstone hotspot track: first experimental results. Renat Almeev, Lars Kuschel, Francois Holtz, Henrietta Cathey, Barbara Nash
- 1-f P08 The 516 ka Biscuit Basin rhyolites of Yellowstone caldera: tapping of differentiating magma reservoirs. Guillaume Girard, John Stix
- 1-f P09 Volcanism along the Northern Margin of Oregon's High Lava Plains, a Bimodal Province. Michael Lademarco, Anita Grunder
- 1-f P10 Pb-isotopic systematics of the Hekla rock suite. Gudrun Sverrisdottir, Saemundur Ari Halldorsson, Niels Oskarsson, Gylfi Sigurdsson, Karl Gronvold
- 1-f P11 Overview of silicic magma composition produced during the last 15 Ma in Iceland. Erwan Martin, Olgeir Sigmarsson
- 1-f P12 B-O-Th isotope systematics in basaltic and silicic tephra from Iceland. Olgeir Sigmarsson
- 1-f P13 Somun Curá post- plateau stage: large bimodal complexes, northern Patagonia. Argentina. Flavia Salani, Marcela Remesal, María Elena Cerrado

2-g Advances in geochemical volcano monitoring

- 2-g P01 **The Ultra-Violet Imaging Camera - Instrument Calibration and Field Results.** Peter Holland, Matthew Watson, Thomas Bouquet, Hiroko Yamamoto, Jean Francois Smeckens, Ryan Townley, Jeremy Phillips
- 2-g P02 **Petrological Monitoring of 2004 - 2006 Galeras volcano eruptions, Colombia.** Gloria Patricia Cortés, Setsuya Nakada, Satoshi Noguchi, Marta Lucia Calvache
- 2-g P03 **Unmanned aerial vehicle measurements of volcanic carbon dioxide fluxes.** McGonigle Andrew, A Aiuppa, G. Giudice, G. Tamburello, A.J. Hodson, S. Gurrieri
- 2-g P04 **Degassing through the permeability in volcanic systems.** Amy Collinson, Jurgen Neuberg
- 2-g P05 **Atmochemical halos of mercury (Hg) within the area of active volcanic edifices in Kamchatka.** Nina Ozerova, Alexey Ozerov
- 2-g P06 **A high resolution SO₂ time series from White Island, New Zealand.** Craig Miller, Karen Britten, Jeremy Cole-Baker, Angela Doherty, Cindy Werner
- 2-g P07 **222Rn monitoring in soil gas before, during and after the 2002-2003 and 2007 Stromboli eruptions.** Alessandra Sciarra, Fedora Quattrocchi, Barbara Cantucci, Daniele Cinti, Nunzia Voltattorni, Luca Pizzino
- 2-g P08 **Radiative transfer in volcanic plumes.** Christoph Kern, Leif Vogel, Tim Deutschmann, Tobias Sommer, Ulrich Platt
- 2-g P09 **Mercury emissions in volcanic gases from Mt. Etna, Italy.** Salvatore Giammanco, Joël Kotnik, Vesna Fajon
- 2-g P10 **Combined monitoring of CO₂ efflux, 222Rn and 220Rn in soil gas on Mt. Etna: a new geochemical tool for volcano surveillance.** Salvatore Giammanco, Marco Neri, Salvatore Consoli, Manuela Lopez, Francesco Calvagna
- 2-g P11 **Installation and first results from a remote-controlled automatic FTIR spectrometer on Stromboli.** Alessandro La Spina, Michael Burton, Roland Harig, Tommaso Caltabiano, Salvatore Giammanco, Filippo Mure
- 2-g P12 **Measuring Volcanic Gases and Ozone in Volcanic Plumes using Electrochemical and Solid-State Sensors.** Tjarda Roberts, Christine Braban, Darryl Dawson, Ray Freshwater, Paul Griffiths, John Saffell, Tony Cox, Clive Oppenheimer, Rod Jones
- 2-g P13 **Automatic SO₂ fluxes from Mt Etna UV Scanner array.** Giuseppe Salerno, Michael Burton, Clive Oppenheimer, Tommaso Caltabiano, Daniele Randazzo, Nicola Bruno, Vincenzo Longo
- 2-g P14 **Storage conditions and evolution of andesitic magma prior to recent eruption of Unzen: Natural samples and phase equilibria experiments.** Roman Botcharnikov, Francois Holtz, Renat Almeev, Hiroaki Sato, Harald Behrens
- 2-g P15 **Rare-earth element distribution in El Chichon Crater Lake water, Chiapas Mexico.** Ofelia Morton-Bermea, Maria Aurora Armienta, Silvia Ramos

2-h Data processing, statistics and pattern recognition in Volcanology

- 2-h P01 **Data processing and pattern recognition in an intelligent system to aid in tephra layer correlation.** Sara Hanson-Hedgecock, Marcus Bursik, Galya Rogova
- 2-h P02 **Global synthesis and analysis large magnitude explosive volcanic eruptions.** Natalie Ortiz, Steve Sparks, Laura Hobbs, Hayley Dunning, Natalia Deligne
- 2-h P03 **A Monte Carlo simulation of precursory seismicity at subduction-zone volcanoes.** Clare Matthews, P.R. Sammonds, C.R.J. Kilburn, G. Woo
- 2-h P04 **Probabilistic tephra dispersal and impacts from long duration, multiple explosive stage events.** Susanna Jenkins, Christina Magill, Anthony Hurst
- 2-h P05 **Volcanic tremor and local earthquakes at Copahue volcanic complex, Southern Andes, Argentina.** Araceli García-Yeguas, Jesus Miguel Ibanez, Edoardo Del Pezzo, Cintia Bengoa, Araceli García-Yeguas, Alberto Caselli, Gabriela Badi, Javier Almendros
- 2-h P06 **Merging Pre-Historical Eruption Datasets: Methods and Lessons for Stochastic Models.** Mark Bebbington, Michael Turner, Shane Cronin

2-m Geophysical and remote sensing techniques in the study of plumes and pyroclastic currents

- 2-m P01 **Ions, vapors and/or nanoparticles penetrating volcanic edifices?** Johannes H. Obenholzner, Jeff Parks, Mark Edwards, Paolo Fulignati
- 2-m P02 **Computational Simulations of Unsteady Plume Dynamics from Steady Vents.** Darcy Ogden, Gary Glatzmaier, Emily Brodsky, Kenneth Wohletz
- 2-m P03 **Grímsvötn 2004: Weather radar records and plume transport models applied to a phreatomagmatic basaltic eruption.** Björn Oddsson, Magnús Guðmundsson, Guðrún Larsen, Sigrún Karlsdóttir
- 2-m P04 **Spatial variation of efficiency of turbulent mixing in eruption columns.** Yujiro Suzuki
- 2-m P05 **Ground-based Doppler radar monitoring of ash plumes at Popocatepetl volcano.** Sébastien Valade, Franck Donnadieu, Carlos Valdes Gonzales, E. Guevara Ortiz

3-c Subaqueous explosive volcanism

- 3-c P01 **Insights into subaqueous explosive eruptions from the fluid mechanics of underwater chemical explosions.** Joseph Walder
- 3-c P02 **Investigation into the explosivity of shallow-subaqueous basaltic eruptions.** Rachel Murtagh, James White
- 3-c P03 **Origin and emplacement of water supported pumice flows: evidence from an ancient volcanic succession in Central Thailand.** Grace Cumming, Sharon Allen, Jocelyn McPhie, Ron James
- 3-c P04 **Magma-water interaction observed around the upper and lower part of subaqueous rhyolitic lava flow, Kozu-Shima Is. Japan.** Izumi Sakamoto