

4th Biennial Workshop on Subduction Processes emphasizing the Kurile-Kamchatka-Aleutian Arcs

Linkages among tectonics, seismicity, magma genesis, and eruption in volcanic arcs.

Institute of Volcanology and Seismology FED RAS and Kamchatkan Experimental Methodical Seismological Department of
Geophysical Service RAS
Petropavlovsk-Kamchatsky

August 21-27, 2004

SECOND CIRCULAR and CALL FOR ABSTRACTS

The 4th international workshop on the Kurile – Kamchatka – Aleutian volcanic arcs, among the most active of volcanic areas in the Pacific region including oceanic-continental transitions, will be held August 21-27, in Petropavlovsk-Kamchatsky, Russia. The dynamic regimes of these zones will give us an understanding of along-strike changes in parameters of subduction and how these impact volcanism, tectonics and seismicity. This understanding will allow the further development of models for subduction zone processes.

The workshop will consider geodynamics of the Kurile-Kamchatka-Aleutian volcanic arcs, magma genesis and tectonics; subduction seismicity; volcanic eruption mechanisms; seismicity of volcanic centers and volcanic hazards. Themes for special discussion are

- Ongoing eruptions and recent major earthquakes,
- Remote sensing monitoring and research, and
- Volcanic and tectonic deformation.

An anticipated result is a special volume on the current state of knowledge of North Pacific subduction processes.

ABSTRACT DEADLINE: June 1st, 2004

Abstracts are limited to two pages with figures and references. There should be a minimum 2.5 cm margin on all sides, and a minimum font size of 12 points. Submit abstracts electronically to Pavel Izbekov pavel@gi.alaska.edu and Oxana Evdokimova evdokimova@kcs.iks.ru. Any common format is accepted: simple text, Microsoft Word®, Acrobat PDF®, with figures as GIF or JPEG files. Please contact the local organizing committee for help with abstract submittal, if needed.

TENTATIVE SCHEDULE AND SCIENTIFIC SESSIONS (SUBJECT TO REVISION)

Saturday, August 21

15:00 – 18:00 Check-in and registration at the Institute of Volcanology and Seismology

19:00 – 21:00 Icebreaker

Sunday, August 22

9:00 – 9:30 Introduction and welcome

9:30 – 12:30 Scientific session: Ongoing eruptions and recent major earthquakes

Lunch

14:30 – 18:00 Scientific session: Remote sensing monitoring and research

Monday, August 23

09:00 – 12:30 Scientific session: Volcanic and tectonic deformation

Lunch

14:30-17:00 Scientific session: Volcanic arcs, magma genesis and tectonics

18:00 – 21:00 Informal discussion in the Paratunka hot springs followed by a dinner

Tuesday, August 24

Excursions

Wednesday, August 25

09:30 - 12:30 Scientific session: Seismicity and geo- and magma-dynamics

Lunch

14:30 – 18:00 Scientific session: Seismicity and geo- and magma-geodynamics

Thursday, August 26

Excursions

Farewell party

Friday, August 27

09:00 -11:30 Discussion of new international collaborations and educational exchanges

11:30 –12:30 Concluding remarks

Lunch

Afternoon free time

Language of the meeting:

The official languages of the workshop are Russian and English. Simultaneous translation to and from Russian and English will be provided during oral sessions. Abstracts submitted either in Russian or in English will be accepted, although the authors are encouraged to submit both Russian and English versions of their abstracts.

Steering committee:

Boris Ivanov and Evgenii Gordeev, Petropavlovsk-Kamchatsky, Russia
Minoru Kasahara and Mitsuhiro Nakagawa, Sapporo, Japan
Jon Dehn and John Eichelberger, Fairbanks, AK, USA

Local organizing committee:

Evgenii Gordeev (chairman), Boris Ivanov (vice-chairman), Alexander Vikulin, Olga Girina, Oxana Evdokimova, Ivan Melekestzev, Vladimir Leonov, Aelita Razina, and Victor Kazantsev
KEMSD : Victor Chebrov, Vadim Saltykov, and Yulia Kugaenko.

Form of Workshop:

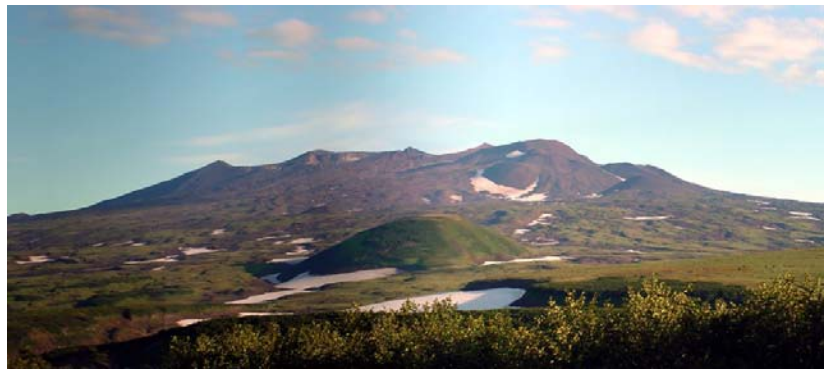
Invited speakers are asked to talk for 20 minutes. Poster presentations are welcome, no more than two from a participant.

Meeting venue:

Institute of Volcanology and Seismology FED RAS (IVS) and Kamchatkan Experimental Methodical Seismological Department GS RAS (KEMSD), Petropavlovsk- Kamchatsky.

EXCURSIONS

Gorely is an active, 1829-m-high volcano located 65 km southwest of Petropavlovsk-Kamchatsky. Three overlapping stratocones form a NW-trending ridge situated in the middle of a 10-km-diameter Pleistocene caldera. The top of the volcano is crowned by 11 superimposed craters, some of which are occupied by acidic lakes of spectacular turquoise color. Erupted magmas have varied from basalts to andesites. The first historical records of the eruptive activity at Gorely were made in the 19th century; explosive eruptions were observed in 1828, 1832, 1855, and 1869. In the 20th century seven eruptions occurred: 1929, 1930, 1931, 1947, 1961, 1980-1981, and 1984-1986.



View of Gorely from SW, by Pavel Izbekov

The 1980-1981 eruption produced some 25,000 metric tons of juvenile and 45,000 tons of lithic material, covering an area of 500 km². During the 1984-1986 eruption, gas-ash clouds reached an altitude of 600 m above the crater and more than 1,500,000 tons of ash were erupted. At present the volcano is dormant.

We offer a day trip to Gorely volcano on a 4WD cabin lorry. The group will leave Petropavlovsk-Kamchatsky at 9:00 AM. After a 2.5-hour ride it will reach the floor of the Gorely caldera and begin the hike to the top of the volcano. The group is expected to visit summit craters of Gorely and return to the lorry in 6 hours. The anticipated arrival to Petropavlovsk-Kamchatsky is 8:00 PM. The field trip fee is \$50, which includes the transportation and a modest lunch.

Mutnovsky volcano is an active, 2323-m-high volcano located 70 km southwest of Petropavlovsk-Kamchatsky, just outside the Gorely caldera. It is one of the most spectacular and compositionally complex volcanoes in southern Kamchatka. Mutnovsky volcano is a composite of four overlapping stratovolcanoes, which developed similarly. After reaching a certain critical height and volume, each cone terminated its

activity. Then, the position of the feeder shifted, and the cycle repeated again resulting in the formation of another cone. During the 20th century, there were five explosive eruptions: 1904, 1916-17, 1927-29, 1939-40, and 1960. A large phreatic explosion excavated a new crater in 2000. Fumarole temperatures approach 600°C.



View to the crater of Mutnovsky, by Pavel Izbekov

Participants of this day trip will hike into the craters of Mutnovsky and observe the variety of modern hydrothermal processes such as active fumaroles, boiling mud pots, hot acidic streams, and thermal areas. These processes form a wide variety of minerals including native sulfur, alunite, opal, hematite, ammonium chloride, laurencite, molysite, thenardite, apthitalite, millosevichite, gypsum, alunogen, halotrichite, pyrite, melnikovite-pyrite, marcasite, cinnabar, chalcopyrite, and pyrrotite.

The day trip to Mutnovsky volcano is offered on the same day as the trip to Gorely. Participants of both trips will leave Petropavlovsk-Kamchatsky and return at the same time. The field trip fee is \$50, which includes transportation and a modest lunch.

Avachinsky is a classical Somma-Vesuvius type volcano located just 30 km north of Petropavlovsk-Kamchatsky. The absolute height is 2751 m, whereas the height of the somma is 2317 m in its eastern part. The eccentric active cone rises above the somma's edge for 400-1000 m. At the base, the cone is about 4 km in diameter; it is crowned by a crater 350 m in diameter.



View of Avachinsky from PK, by Sokorenko A.V

During the last 250 years eruptions occurred in 1737, 1772, 1779, 1789, 1827, 1837, 1855, 1878, 1881, 1894-1895, 1901, 1909, 1926-1927, 1938, 1945, and 1991. One of the biggest was the ash eruption of June 15-16, 1779, when ash dusted the ships of Cook's squadron in Avacha bay. A pyroclastic flow in 1894-1895 was preceded by an earthquake, whereas the eruption of 1926 poured out a short lava flow on the southern slope below the crater. Effusion of lava flows also occurred in 1827, 1901 1909, and 1938. During the most recent eruption in January 1991, lava has completely filled the 220-m-deep crater. At present, a vigorous fumarolic activity is observed in the crater area.

There will be a day trip to Avachinsky volcano that leaves Petropavlovsk-Kamchatsky at 8:00 AM. The ride takes about 3 or fewer hours depending on the road conditions. The strenuous ascent starts at 11:00. Participants will hike for 4-5 hours to the top of the volcano and then will return in about 1 ½ hours. The

anticipated arrival in Petropavlovsk-Kamchatsky is 8:00 PM. The field trip fee is \$50, which includes the transportation, lunch, and light snacks.

Karymsky is a 1536-m-high stratovolcano that occupies most of a 5-km-diameter Holocene caldera. It is one of the most active volcanoes of the Eastern Volcanic Front of Kamchatka, with more than 20 eruptions occurred since 1771. Most of the eruptions are moderate in size and produce magmas of a uniform andesitic composition.

The current eruptive cycle of Karymsky began in January 1996 with simultaneous eruption of andesite from the central vent of Karymsky volcano and basalt from a new vent, which formed in the northern part of the neighboring Academy Nauk caldera. The phreatomagmatic eruption of the Academy Nauk center was over in less than 18 hours, whereas the eruption of Karymsky continued. At present, the activity



View of Karymsky from the south, by Pavel Izbekov

is confined to the summit crater of Karymsky, where regular explosions occur every 5-15 minutes sending ash-and-steam plumes to an altitude of 500-1500 meters.

The helicopter flight will start at 10:00 AM assuming good weather conditions. The participants will be picked up one hour prior to the flight at the Institute of Volcanology and Seismology and will ride to Yelizovo airport. The flight to Karymsky will take about one hour. After an overflight of Maly Semiachik volcano with its spectacular crater lake, the helicopter will land in the Karymsky caldera, at the foot of the Karymsky volcano. After a short excursion to the lava flows of Karymsky, the group will fly to the neighboring Academy Nauk caldera, where a new vent has been formed as the result of the 1996 eruption. On the way back to Petropavlovsk-Kamchatsky, the participants of this tour will enjoy views of Zhupanovsky, Koryaksky, and Avachinsky volcanoes. The field trip fee is \$150, which includes the transportation and modest lunch.

Transportation:

Magadan Airlines flies each Friday from Anchorage to Petropavlovsk-Kamchatsky. Because of the International Dateline, the Friday morning flight from Anchorage arrives in Petropavlovsk on Saturday morning. The Friday night flight from Petropavlovsk arrives in Anchorage early Friday morning. The meeting is arranged to accommodate this flight schedule. There are also daily flights between Moscow and Petropavlovsk, as well as frequent flights from Khabarovsk and Vladivostok.

Weather:

August in Petropavlovsk-Kamchatsky is generally sunny with occasional rains and daytime temperatures averaging +18°C. However, there is always a possibility of heavy rain.

Costs:

We anticipate that costs for food and lodging will average about \$100/day. There will also be a registration fee of about \$250 to cover group events and transportation.

Accommodation:

Hotels “Edelweiss”, “Petropavlovsk”, “Avacha” and “Oktyabrskaya” are available. The cheapest suite fee is around \$62 at the “Edelweiss” with basic facilities and within an easy walking distance to the IVS and KEMSD location.

Financial support:

The organizers anticipate support by the Far East Division of Russian Academy of Science (FED RAS), Russian Foundation for Basic Research (RFBR), Minnauka of Russian Federation, US Geological Survey (USGS), National Scientific Foundation (NSF), National Aeronautical and Space Administration (NASA), and the UAF Geophysical Institute (UAF/GI), and International Arctic Research Center (UAF/IARC).

If you are interested in receiving subsequent circulars regarding this meeting, please contact Oxana Evdokimova (evdokimova@kcs.iks.ru).

US participation will be coordinated by UAF/GI through Jon Dehn (jdehn@gi.alaska.edu) and Pavel Izbekov (pavel@gi.alaska.edu).

Japan participation will be coordinated through Hokkaido University by Minoru Kasahara (mkasa@eos.hokudai.ac.jp) and Mitsuhiro Nakagawa (nakagawa@ep.sci.hokudai.ac.jp).

The updated information will be posted at www.avo.alaska.edu/kasp