

7th NOVAC Workshop

05-12 May, 2024
El Reventador volcano,
Ecuador

2nd Circular



Photo: J. Salgado/IG-EPN

Invitation

Dear colleagues and friends,

We are pleased to announce the schedule for the 7th NOVAC Workshop. The workshop will be held 6-12 May 2024 at the Instituto Geofísico, Escuela Politécnica Nacional (IG-EPN) and El Reventador volcano, Ecuador.

The Network for Observation of Volcanic and Atmospheric Change (NOVAC, <https://novac-community.org/>) is a network of volcano observatories and research institutions that operate instruments to monitor gas emissions from volcanoes. Since its inception in 2005, it has grown to become the largest worldwide geochemical network for monitoring volcanic activity and today includes over 20 partner institutions that jointly maintain instrumentation on more than 40 of the world's most active volcanoes.

The objective of this workshop is to facilitate the exchange of knowledge and experience among staff from partner institutions. The workshop is aimed at gas geochemists and field engineers working on NOVAC instrumentation. An introduction will be given to NOVAC instrumentation, software, and analysis tools, and new technology and software features will be demonstrated. Partners will share insights on volcanic systems obtained from their own gas measurements, and novel analysis of NOVAC data will be discussed. Finally, plans for the coordination of the network and future NOVAC activities will be made.

Additional information on the cost, logistics, and schedule of the workshop are provided below. We hope that you will be able to join us for the 7th edition of the NOVAC Workshop. As in previous workshops, we look forward to learning from each other and continuing to build the NOVAC community into a global resource providing observatories with high quality gas monitoring infrastructure and research opportunities.

With very best regards,

Christoph Kern

On behalf of the workshop organizing committee.

Workshop program

The scientific and technical program will focus on a range of topics relevant to NOVAC instrumentation and volcanic gas science:

- *Spectroscopy techniques*
- *Flux estimation methods*
- *NOVAC instrumentation*
- *Interpreting volcanic gas emission data*
- *Lessons learned from NOVAC partners*
- *New technology and software demonstrations*
- *Field trip to the base of El Reventador volcano*

Schedule

Participants should plan to arrive in Quito by Sunday, May 5. Workshop events will begin at 17:00 on Sunday, May 5 with an icebreaker. Participants will be picked up from Hotel Fénix and driven to this event. The workshop itself will begin with a welcome ceremony at 9:00 on Monday, May 6 at the Escuela Politécnica Nacional in Quito, Ecuador, which is close to the hotel. After the opening, the group will be transported by bus to Hostería El Reventador where they will stay the next 6 nights. The main workshop will take place there, with a mid-conference field trip to the caldera of Reventador volcano tentatively planned for Thursday, May 9. The group will be transported back to Quito by bus on Sunday, May 12, and most participants will depart Quito either the night of May 12 or on May 13.

Sunday, 5 May 2024	Most participants arrive in Quito. 17:00-19:00 Icebreaker, pickup from Hotel Fénix. Dinner at Pim`s
Monday, 6 May 2024	9:00 Workshop welcome ceremony, visit to IG-EPN. 11:00 Bus trip to El Reventador volcano. 17:00 Check In and Registration 18:00 Welcome Cocktail
May 6-11	Workshop program at Hostería El Reventador <ul style="list-style-type: none"> ➤ Talks by participants * ➤ Hands-on-exercises (hardware and software) ➤ Mid-conference field trip to El Reventador volcano
Sunday, 12 May 2024	9:00 Departure for Quito (IG-EPN/ Airport) 14:00-15:00: Lunch by the lake at Papallacta. 17:00-18:00: Arrival Quito (IG-EPN/ Airport)
Monday, 13 May 2024	Most participants depart for home

* We typically ask that all participants give a talk on a topic of their choice at the workshop. Topics can cover any of the themes mentioned above, or anything else that presenters deem relevant to workshop participants. Format details will be announced.

Cost

The workshop registration fee is **\$540 USD** (United States Dollars). The registration fee includes:

- Ice breaker and dinner at Pim's restaurant on May 05.
- Lodging at Hostería El Reventador for 6 nights beginning the night of May 6 and ending the morning of May 12
- All meals beginning with lunch on May 6 and ending with lunch on May 12, as well as the icebreaker event on May 5
- Transfer from the airport to the Hotel in Quito (May 05).
- Transfer to the airport on the way back (May 12-13).
- Transportation from Quito to El Reventador volcano on May 6 and transportation back to Quito on May 12
- A mid-conference field trip to the El Reventador volcano's caldera.

Expenses not included in the workshop registration are:

- Required travel documentation
- Travel to Quito from participants' home countries.
- Expenses for lodging in Quito (the night on May 05/Hotel Fenix and the night on May12/Hotel Las Mercedes).
- Meals before lunch on May 6 and after lunch on May 12.
- Minor incidental expenses during the workshop itself.

If you want to book the night of May 05 at Fenix Hotel:

- Single room **extra charge of 55,00 USD**
- Double room **extra charge of 33,00 USD**

If you also want to book the night of May 12 at Las Mercedes Hotel

- Single room **extra charge of 42,00 USD**
- Double room **extra charge of 26,00 USD**

Funding support

With support from the United States Agency for International Development (USAID), the USGS Volcano Disaster Assistance Program (VDAP), the UNESCO/IUGS International Geoscience Programme (IGCP), and the European Geosciences Union (EGU), funding is available to support participants from Africa, Latin America, and Asia to attend the workshop. This includes funding for travel to and from Ecuador, lodging, meals, and workshop registration. Participants will still need to cover any fees incurred before or after the workshop, e.g., visa application fees or expenses related to arriving before May 5 or departing after May 13. Please indicate in the registration if you are seeking funding to attend the workshop.

Registration

To register for the workshop, please send an email to ckern@usgs.gov and copy shidalgo@igepn.edu.ec including the following information for each participant:

- Full name, exactly as it appears on passport.
- Date of birth
- Affiliation / Institution
- Position / duty within volcano observatory or research institution
- Email address
- Do you prefer a single or double room (for pre- and post-conference hotels only)?
- Do you need financial support to attend?
- If you are arranging your own travel, what days will you arrive / depart?
- Do you intend to bring any equipment? If so, what?
- Preliminary title of presentation to be shared at the workshop.

Please register by 29 February 2024 to ensure a spot. Participants who do not receive financial assistance to attend will be provided with payment information upon registering.

Hotel Information

Participants arriving on May 5 or sooner are recommended to stay at **Hotel Fénix** (<https://www.fenixhotel.ec>). This hotel is in downtown Quito, directly adjacent to the IG-EPN building. The nightly rates are \$55 for a single room, \$33 per person for a double room. Reservations will be made by the organization committee. Participants can pay upon arrival.



View of Hotel Fénix in downtown Quito (photo from website)

The main workshop will be held at **Hostería El Reventador** (<https://hosteriaelreventador.com/>). This hotel is located at the foot of El Reventador Volcano in the heart of the Ecuadorian Amazon, surrounded by natural attractions such as rivers, waterfalls, and caves. Participants should expect to share rooms as the hotel will be at capacity for the workshop. All meals during the workshop will be provided by the hotel kitchen.



Hostería El Reventador at the foot of El Reventador volcano (photo from website)

If participants require lodging upon returning to Quito, we recommend they either go back to Hotel Fénix or stay at **Hotel Las Mercedes**, which is near to Quito airport (UIO) and might be more convenient for departing flight schedules. Nightly rates at Hotel Las Mercedes are \$42 for a single room, \$26 per person for a double room.



Hotel Las Mercedes, near to Quito airport (photo from website)

El Reventador Volcano

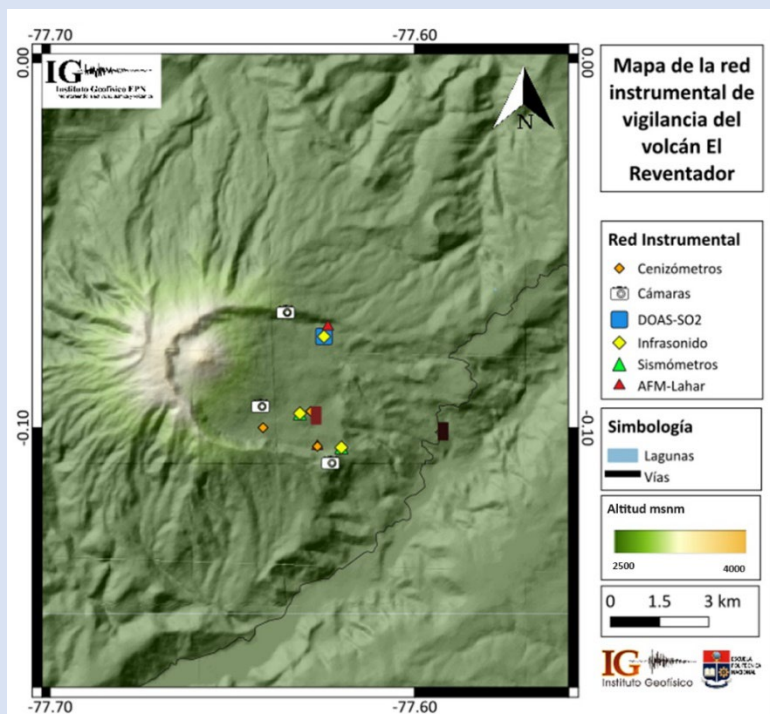
El Reventador activity started suddenly on November 3, 2002 (Hall et al. 2004). This volcano had no dedicated monitoring network at that time but some precursory signals were recorded at the regional seismic stations installed 45 km to the west. This eruption is still the largest in magnitude recorded in the last century in the Ecuadorian arc, with a VEI of 4 and an eruption column reaching 17 km above the vent.

PDCs destroyed a recently built but empty oil pipeline and the ash covered a vast area towards the west including Quito (90 km from the vent). Airport operations as well as schools remained closed for at least 1 week, until the ash deposits were cleaned. Since then, the IG-EPN installed a monitoring network. The activity shifted to a more effusive style after December 2002, producing dozens of lava flows during the last 21 years (Naranjo et al. 2016; Arnold et al. 2017, 2019). These lava flows are andesitic in composition, and they remain inside the volcano's amphitheater without producing any impact to the population.



El Reventador volcano viewed from the southeast on May 2023 (M. Almeida/IG-EPN)

Eruptive activity continues until the present day and is characterized by gas and ash emissions and explosions, lava flows, and small PDCs (Samaniego et al. 2008a, b; Naranjo et al. 2016; Arnold et al. 2017; Vásconez et al. 2022b). The volcanic cone has suffered drastic morphological changes during these two decades of activity (Almeida et al. 2019). The monitoring network includes broad band seismometers, infrasound sensors, one NOVAC-type I DOAS instrument, visible, UV, and IR cameras, and lahar monitors (AFM). Satellite-based monitoring complements the ground network.



El Reventador monitoring network. The “Hostería El Reventador” is located on the dark brown rectangle and the caldera camp is on the light brown rectangle.

Measurements of SO₂ by mobile DOAS performed in September 2020 and December 2022 yielded a flux of 800 t/d and 200 t/d respectively. During the mid-conference field trip, remote sensing measurements will hopefully be possible. Participants will need outdoor clothing with rain protection and anticipate wet, muddy conditions.

Airport

The Mariscal Sucre International Airport of Quito (UIO), is the largest and most modern airport in Ecuador, located about 18 kilometers east of Quito, in the town of Tababela. It is one of the two international airports available in Ecuador. Once travel plans have been made, we can help you to book airport transfers to and from the hotels on May 5 and May 12/13.

Invitation letters

If you require an invitation letter or a letter or plan to bring instrumentation to the workshop and would like a letter for customs, please send a request to Silvana Hidalgo (shidalgo@igepn.edu.ec).

Organizing Committee

The 7th NOVAC Workshop is being jointly organized by the Instituto Geofísico Escuela Politécnica Nacional, Ecuador, the USGS-USAID Volcano Disaster Assistance Program, the UNESCO/IUGS International Geoscience Programme, and members of the NOVAC Steering Committee.

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Please contact Christoph Kern and Silvana Hidalgo for any questions.