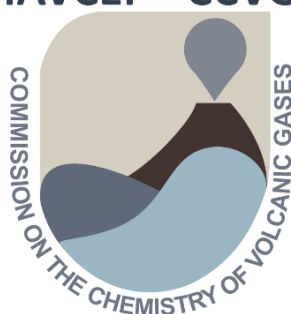


IAVCEI – CCVG



Telegram from Earth's Interior

Newsletter of the IAVCEI Commission on the Chemistry of Volcanic Gases (CCVG)

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Editorial

Dear colleagues,

We are pleased to continue the Newsletter of IAVCEI-CCVG, the Commission on the Chemistry of Volcanic Gases: “Telegram from Earth's Interior.” This newsletter remains a trusted channel for sharing developments, research highlights, and community news within our field.

This is the **first edition of the newsletter from the new board**, and we are excited to share updates on the commission's activities. This year has been active and full of engagement. We hosted the **15th CCVG Gas Workshop in Hokkaido**, bringing together colleagues from around the world to share new techniques, data, and perspectives. Planning for the next workshop is already underway, and we are excited to share two proposals for potential locations and formats—please keep an eye out for the upcoming vote!

In this issue, we continue to highlight efforts in monitoring volcanic gases globally. We thank our colleagues from **Taiwan** for their contribution on recent work in volcanic gas and hydrothermal monitoring at the **Tatun Volcano Group**. We also take a moment to remember colleagues we have lost this year and honor their lasting contributions to our community.

We are now looking for contributions to the next newsletter (**October 2026**). Please get in touch if you would like to be involved or if there's something you would like to see included.

We are excited to continue the **online seminar series** and share updates on the **CCVG website revamp**, which will soon feature summaries of past workshops and links to previous seminars. We look forward to another year of discovery, collaboration, and progress, and warmly welcome your ideas and contributions to help shape the future of CCVG.

Announcements from the board

Online seminars

We are excited to continue our online seminar series, promoting the exchange of interesting results on gas studies, new analytical techniques, sampling methods, and related topics. We are gathering videos from previous seminars to make them available anytime on a CCVG YouTube channel.

If you are interested in giving a talk in this space, please contact the members of the board. We welcome talks from everyone—observatory scientists, students, professors, and postdocs—and especially encourage early-career researchers to share their work. Contributions from a wide range of regions and backgrounds are encouraged.

CCVG webpage

We are gradually updating the commission's website. A summary of the 15th Gas Workshop will be added shortly, along with links to videos of past online seminars. Please stay tuned for the CCVG website revamp!

16th Gas Workshop

The location of 16th Field Workshop on Volcanic Gases of the Commission on the Chemistry of Volcanic Gases (CCVG) of the International Association of Volcanology and Chemistry of the Earth's Interior (IAVCEI) needs to be decided. Two proposals have been submitted, one for northern Chile, the other for Indonesia.

The two proposals will be sent shortly to all CCVG members, and the location of the next workshop will be decided by an online vote.

Results of measurements from the CCVG 2025 workshop

The data and results from the 2025 Gas Workshop in Hokkaido are being gathered by **Takeshi Ohba** (direct sampling), **Carlo Cardellini** (diffuse degassing), **Nicole Bobrowski** (remote sensing) and **Peter Kelly** (multi-GAS measurements).

Please reach out to the coordinators when your results are available so they can begin compiling the data and organizing discussions.

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pkelly@usgs.gov

Participation in the task forces of the CCVG Decadal plan

The Task Forces groups are starting their work following the Decadal Plan goals. If you are interested in joining one of the task forces, please contact the task force leader as soon as possible.

Research/Innovation: Nicole Bobrowski
nicole.bobrowski@ingv.it

Community Resources: Carlo Cardellini
carlo.cardellini@unipg.it

Peer Training: Gustavo Villarruel
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Broadening Community: Fátima Viveiros
maria.fb.viveiros@azores.gov.pt

Update of CCVG members contact list

We seem to have a fairly up-to-date CCVG members list. Please let us know of any changes in affiliation or email address to ensure you continue receiving information from the commission.

If you know someone who might be interested in joining the commission, please advise them to contact our secretary.

According to the IAVCEI rules, official membership is granted only through payment of IAVCEI membership fees. All benefits are described here:

<https://www.iavceivolcano.org/membership/>

News

Recent events

15th Gas Workshop, Japan

31 August -7 September 2025

The report on the 15th Gas Workshop is accessible on the CCVG webpage: https://ccvg.iavcei.volcano.org/content/uploads/sites/7/2025/09/report_on_the_15h_workshop_ccvg_final.pdf

Future events

Goldschmidt – Montreal, Canada **12-17 July 2026**

Session 04f – From source to surface: advancing studies of magmatic systems with data-driven computational approaches

Theme 04: Magmatism and Volcanism: Impacts and Consequences

Conveners: Marthe Klöcking, Philippe Robidoux, Sarah Shi, Behnaz Hosseini, Zachary T Eriksen

Session 04g – Advances in Hydrothermal Geochemistry: From Molecular-Scale Processes to Natural System

Conveners: Kono Lemke, Andri Stefánsson

Session 04h – Tracking volatiles and their stable isotope ratios from the mantle to the surface: understanding magmatic and tectonic systems

Conveners: Frances Deegan, Monika Rusiecka, Hirochika Sumino

Session 05p – Advancing the understanding of geothermal processes and reservoir fluid geochemistry: novel approaches and pathfinders

Conveners: Angela Seligman, Philippe Robidoux, Bruce Mountain, Mariana Patricia Jacome Paz, Fátima Viveiros

Joint CVL-CCVG Workshop, Italy **September 2027**

A workshop bringing together the communities of the CCVG and CVL commissions under the theme “Trace elements and isotopes” is planned for September 2027. The workshop will take place near Rome, with Lake Albano and Solfatara di Pomezia as fieldwork locations.

We will keep you posted about the event, sharing the circular when available.

Obituaries

Alain Bernard

It is with great sadness that we announce the passing of Alain Bernard on 14 October 2025. He died after a long illness, surrounded by his family, following his last wishes.

Alain was a passionate and inspiring volcanologist. He taught at the Université libre de Bruxelles (ULB) throughout his career, passing on his passion to several generations of students, some of whom became volcanologists around the world. He started his career during the infamous Soufrière (Guadeloupe) eruption, then worked in Indonesia as part of the Tazieff team with pioneering work at Merapi volcano on volcanic gases. He made numerous significant scientific discoveries, particularly through his study of volcanic lakes <https://iavcei-cvl.org/cvl-hall-of-fame/>, which were one of his favorite topics. He also discovered anhydrite phenocrysts following the 1991 Pinatubo eruption. His strong personality left no one indifferent and has left an indelible mark on the volcanological community and at the ULB.

Corentin on behalf of G-Time

Bill Rose

It is with deep sadness that we announce the passing of Professor Emeritus William (Bill) Rose on July 17 2025 at his home in Eagle Harbor, Michigan.

Bill was born in Detroit, Michigan in 1944 and spent his formative years in New Mexico. He obtained a BA in Geography and Geology from Dartmouth College in 1966. He remained at Dartmouth for his PhD, advised by Richard Stoiber, which marked the beginning of a lifelong association with the volcanoes of Central America and especially Guatemala. After earning his PhD in 1970, Bill joined the faculty at Michigan Technological University in Houghton, MI. He dedicated his entire 41-year faculty career to Michigan Tech, serving as Chair of the Department of Geological and Mining Engineering and Sciences (GMES) from 1990 to 1998. He received the AGU Bowen Award in 2002 and was elected a Fellow of AGU in 2013.

Bill's many scientific contributions include pioneering studies of the composition of volcanic plumes and their impact on the atmosphere and aviation. During his PhD, he recognized that the numerous persistently active, accessible vents of Central American volcanoes were an ideal natural laboratory for studies of volcanic emissions. Subsequent annual visits to sample active fumaroles and ash deposits throughout Central America (including the major 1974 eruption of Fuego volcano, Guatemala) provided new insights into the interactions between ash particles, aerosols and gases in volcanic emissions, such as scavenging of sulfur and chlorine by ash. This was followed by a novel series of aircraft missions to sample Central American volcanic plumes in-situ, in collaboration with scientists from NCAR, the USGS and NASA.

In the 1980s, this new data on volcanic

plume composition, coupled with the major eruptions of Mount St Helens in 1980 and El Chichón in 1982, led Bill to develop an interest in the potential hazards to aviation from volcanic eruption clouds, years ahead of any major scientific efforts on this topic. Beginning in the late 1980s, Bill was also among the first volcanologists to use satellite remote sensing data to study volcanic clouds and he became a well-recognized leader in the field. In addition, he pioneered the use of weather radar to detect volcanic ash clouds. With his graduate students, he used satellite data to develop the first quantitative retrievals of ash mass and particle size in volcanic clouds and investigated ash/aerosol interactions, aviation hazards, and distal ash fallout patterns at Augustine, Redoubt, El Chichón, Mount Spurr, Cerro Hudson, and Pinatubo.

After the 1994 Rabaul eruption in Papua New Guinea, Bill used satellite data to demonstrate the first detection of an ice-rich volcanic plume. This discovery initiated a major research effort to understand the role of hydrometeors in volcanic clouds, which remains very active today.

Alongside his scientific efforts, Bill worked tirelessly to build capacity for geological hazard mitigation in Latin America and ensure that discoveries in his field were put to practical use. He accomplished this by organizing and funding international workshops, editing special publications, training Latin American graduate students and scientists, and facilitating field missions. Bill's work on satellite-based volcanic cloud detection and aviation hazard mitigation achieved global impact by frequent outreach to advanced users in the network of Volcanic Ash Advisory Centers (VAACs), which monitor volcanic ash clouds for the aviation community.

Bill was a highly creative science

educator. At Michigan Tech, he initiated several innovative educational programs, including the first Peace Corps Masters International (PCMI) program focused on geological hazard mitigation, which embedded MS students in communities throughout Central America and in Indonesia. The PCMI program was among the first concerted efforts in 'social geology', a concept now widely adopted to improve mitigation of natural hazards. Bill also instigated the University Consortium in Earth Hazards (EHaz), a North American mobility project focused on geological hazards, and the International Masters in Volcanology and Geotechniques (INVOGE) program in cooperation with universities in France and Italy. Together, these programs started numerous graduate students on the path towards successful international careers in geoscience.

Bill traveled the world studying volcanoes, but his heart remained firmly anchored at home in Upper Michigan's Keweenaw peninsula, a region shaped by ancient volcanism and famous for its native copper deposits. After retiring in 2012, Bill devoted himself to illuminating the unique geoheritage of the Keweenaw in the hope that, one day, it might become the first UNESCO Geopark in North America; a fitting tribute to a career dedicated to geoscience, community and outreach.

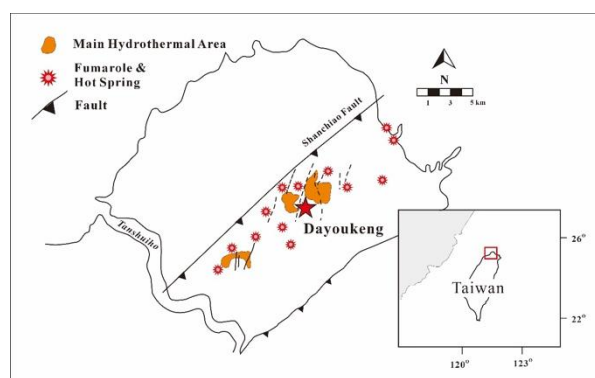
Simon Carn

Volcanic Fluids Monitoring around the world

The Tatun Volcano Group: Monitoring an Active Yet Quiescent Volcano in Northern Taiwan

The Tatun Volcano Group (TVG) in northern Taiwan is the country's most closely monitored volcanic area and one of the few volcanic systems located adjacent to a major metropolitan region, lying just north of the Taipei Basin, home to more than seven million people. Although no magmatic eruption has occurred in historical time, geological studies indicate that the most recent eruptions may have occurred as recently as ~6 ka, classifying the TVG as an active volcanic system under modern volcanological criteria.

Today, the TVG is characterized by vigorous fumarolic degassing, acidic hot springs, frequent microseismicity, and active hydrothermal circulation. These manifestations make it an exceptional natural laboratory for studying long-resting but active volcanic systems. Since its establishment in 2011, the Taiwan Volcano Observatory - Tatun (TVO) has developed an integrated monitoring network combining seismic, geodetic, geochemical, and thermal observations to better understand the state of unrest beneath the volcano.



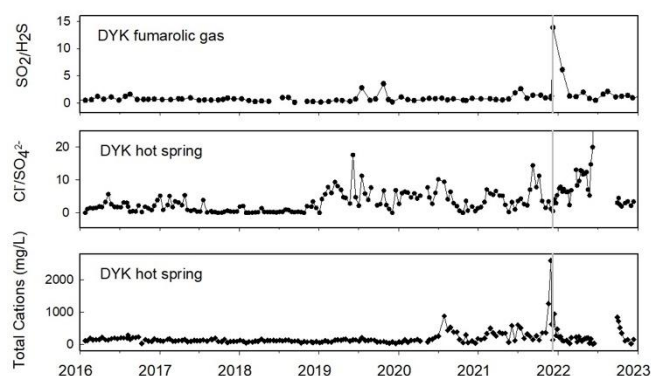
Overview of the Tatun Volcano Group (TVG) in northern Taiwan, showing the distribution of major hydrothermal areas and fumarolic fields. The Dayoukeng (DYK) geothermal area is the most active fumarolic field and the primary focus of ongoing monitoring by the Taiwan Volcano Observatory - Tatun (TVO).

Among the geothermal areas in the TVG, Dayoukeng (DYK) is of particular interest because it exhibits the strongest fumarolic activity and the highest measured helium isotope ratios in the region, suggesting a relatively direct connection to deep magmatic or hydrothermal sources. Continuous gas and hot spring monitoring at DYK has revealed notable temporal variations in gas composition and fluid chemistry over recent years.



Fieldwork at the Dayoukeng geothermal area, where vigorous fumarolic degassing is continuously monitored as part of the Taiwan Volcano Observatory - Tatun (TVO) volcanic surveillance program.

Between 2019 and 2022, multiple geochemical parameters—including HCl/CO₂, SO₂/H₂S, helium concentrations, and hot spring ion chemistry—showed significant fluctuations, accompanied by elevated seismicity and measurable ground deformation in the DYK area. In late 2021, a short-lived new fumarolic vent appeared above the main DYK vent and remained active for approximately 20 days, accompanied by mud splattering and strong degassing. These observations may indicate a minor hydrothermal disturbance or localized steam-driven eruptive event within the hydrothermal system.



Selected geochemical monitoring parameters from the Dayoukeng geothermal area showing pronounced variations during the recent unrest episode. From top to bottom: fumarolic $\text{SO}_2/\text{H}_2\text{S}$ ratio, hot spring Cl/SO_4 ratio, and total major dissolved cations ($\text{Na}^+ + \text{K}^+ + \text{Ca}^{2+} + \text{Mg}^{2+}$). The vertical gray line marks the appearance of the temporary new fumarolic vent in December 2021.

Following this unrest episode, recurrent small-scale mud ejection events continued intermittently in the DYK area between 2022 and 2024, with activity gradually declining only in 2025. This prolonged unrest suggests that the shallow hydrothermal system remained in an elevated state for several years after the 2021 event.

Importantly, while these observations confirm that the Tatun volcanic system remains active, current evidence suggests that the activity is dominated by hydrothermal and degassing processes rather than signs of imminent magmatic eruption. Instead, the principal near-term hazard is considered to be localized phreatic or hydrothermal activity, particularly in the most active fumarolic areas.

The TVG represents a valuable case study of an active but quiescent volcanic system in a densely populated setting. Continued multidisciplinary monitoring is essential for understanding its long-term behavior, improving hazard assessment, and constraining the coupling between magmatic input and shallow hydrothermal processes.



Surveillance images showing the emergence and disappearance of a temporary new fumarolic vent above the main fumarole at Dayoukeng between December 2021 and January 2022. The vent remained active for approximately 20 days before fading.

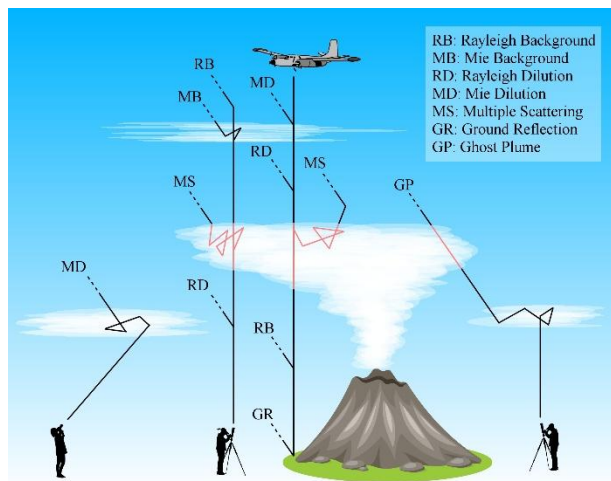
Text and images by Hsiaofen Lee

Review Article

Ultraviolet and visible remote sensing techniques have become essential tools for investigating volcanic gas emissions and monitoring volcanic activity. A recent publication provides a comprehensive review of the current state of volcanic gas remote sensing, with a particular focus on linking measurement and data analysis methods to the underlying physical principles that govern light transmission through the atmosphere. The review includes example applications and offers an outlook on how future technological advances could enhance our understanding of key Earth system processes. The paper is open access and available free of charge.

Kern, C. (2025). Ultraviolet and visible remote sensing of volcanic gas emissions. *Journal of Volcanology and Geothermal Research*, 468, 108423.

<https://doi.org/10.1016/j.jvolgeores.2025.108423>



Text and image by Christoph Kern



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<https://www.iavceivolcano.org>

CCVG website:

<https://ccvg.iavceivolcano.org/>

CCVG Facebook page:

<https://www.facebook.com/CCVG.IAVCEI/>

To send comments or information to be considered in a future newsletter please contact celinema@vedur.is (secretary).