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ROLE OF VOLCANOES IN THE GLOBAL MERCURY BUDGET PROJECT

Échantillonnage du mercure atmosphérique et des principaux gaz d'origine volcanique près d'un volcan. Crédit : Feiyue Wang.

Canada's environment is disproportionately affected by mercury compared to many other countries. Mercury is one of the main metal contaminant priorities for the Canadian government. The concern is because of demonstrated human health effects across multiple communities and a particular concern about consumption of fish, seafood and certain marine mammals in the Arctic.

Currently, most of the mercury deposited in Canada is transported from the global atmospheric pool, which reflects a mix of worldwide natural and anthropogenic sources. The source has changed because Canada no longer releases large amounts of mercury from industrial emitters.

It is difficult to determine how much of this pool is from natural geogenic sources and also difficult to distinguish natural from anthropogenic mercury. Therefore, it is in Canada's national interest to support globally directed science on this issue.

EXPECTED OUTCOMES

This project will, for the first time:

- measure mercury emissions from the vents and fumeroles near the Icelandic volcanoes;
- characterize the emitted mercury in terms of stable mercury isotope ratios, as well as the inorganic geochemistry of the gases and particulates. The research will look for a unique elemental ratio or isotopic signature for specific volcanic or geothermal systems.

These data will contribute to the large geogenic mercury database that is being developed from other sampling campaigns, which will eventually be made available to global mercury modellers.

The project will improve the characterization of the natural mercury background across Canada. When the characterization is complete, anthropogenic mercury inputs from local resource development and long-range industrial sources can be assessed.

This study will also help local communities to understand quantitatively what the true natural contribution to mercury levels is in areas such as in the Arctic and sub-Arctic.

PARTNERS

The project partners include the Geological Survey of Canada, other federal departments such as Environment and Climate Change Canada, the University of Manitoba, Aarhus University (Denmark), and the Iceland Meteorological Office (Reykjavik).

CONTACT

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