Establishing a Canadian database of geoelectrical surveys of permafrost

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A new database of electrical resistivity tomography (ERT) surveys of permafrost in Canada allows everyone to easily share and access data. ERT surveys are often used to characterize permafrost, but until now, there has been no framework for data sharing. We created the Canadian Permafrost Electrical Resistivity (CPERS) database to archive and share surveys in a standardized way. Better sharing helps improve our understanding of permafrost conditions and how they change over time.

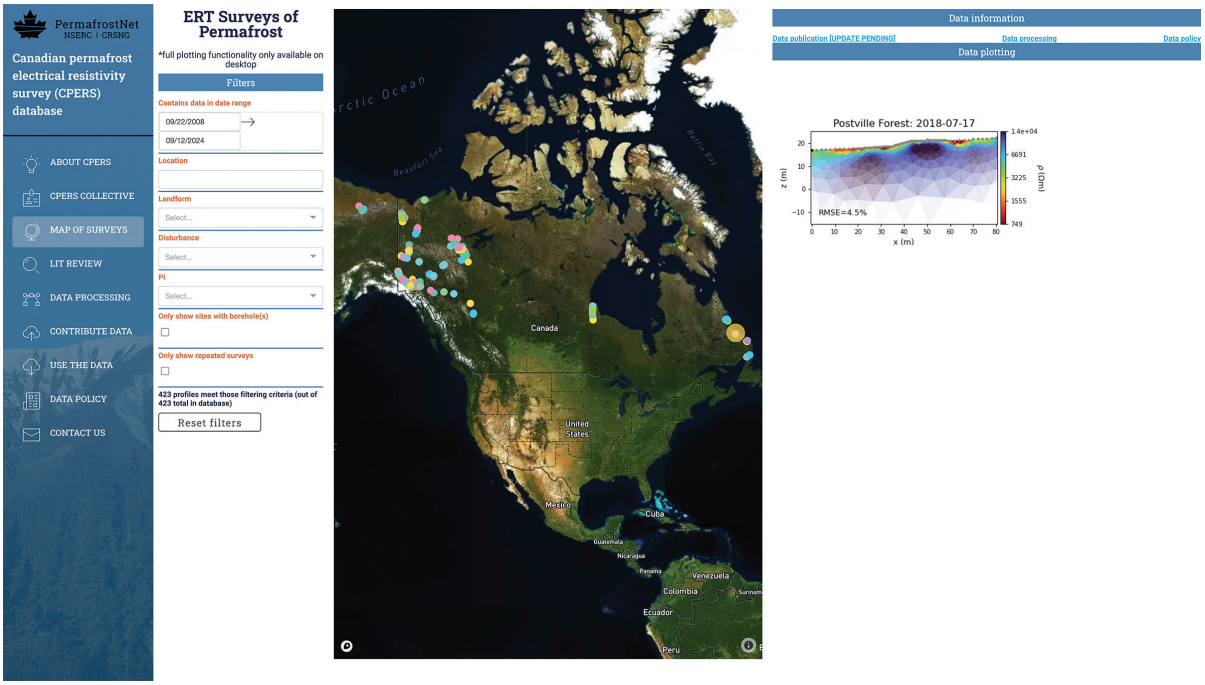

Figure 1. The CPERS website allows users to easily find and display ERT surveys of permafrost collected across Canada.

Research summary

ERT surveys are used to characterize permafrost, but in the past, sharing them was difficult. We created and populated the CPERS database and published the data in an established repository to ensure long-term accessibility (CPERS Collective, 2023). We also created an interactive web map where data can easily be discovered and plotted (https://data.permafrostnet.ca/cpers/). Researchers from the University of Ottawa, Queen's University, and the University of Alberta have already provided data for 280 ERT surveys collected between 2008 and 2022 in British Columbia, Labrador, Northwest Territories, Québec, Yukon Territory, and Alaska. We used the initial data contributions to make

large-scale interpretations of how permafrost conditions across Canada are influenced by mean annual air temperature, landform type, near-surface substrate, and surface disturbance. We also published a paper describing best practices for ERT surveying of permafrost to provide guidance for ERT data acquisition, processing, and interpretation.

Taking action

Data is essential for characterizing permafrost environments and making informed decisions about mitigating and adapting to permafrost thaw. If you would like to contribute data to the CPERS database or learn more about the project, please visit https://data.permafrostnet.ca/cpers/.

Connections to other projects

1 2 This project is part of Theme 1 — *Characterisation of permafrost* and directly relevant to Theme 2 — Monitoring of permafrost change. It is related to other network studies of electrical resistivity in permafrost regions, such as *Characterising the ice and water content of permafrost with dielectric methods* by Hosein Fereydooni.

Partners, team members and support

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