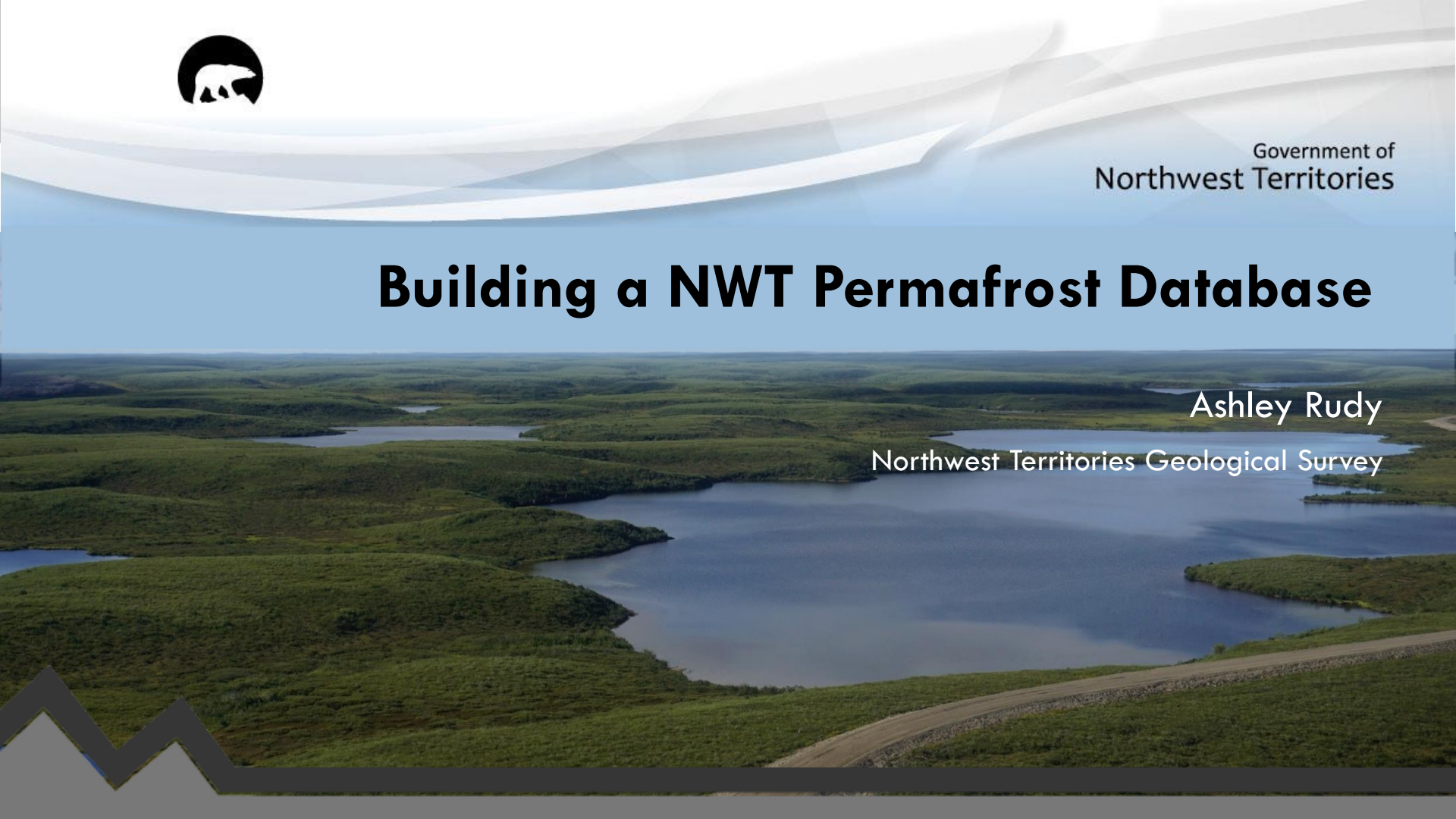
Government of
Northwest Territories

Building a NWT Permafrost Database



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Northwest Territories Geological Survey

Goal

Develop a NWT Permafrost Database to improve organization and accessibility of the data, contribute positively to project planning, and environmental and regulatory monitoring, and create a culture of data sharing.

Database will include:

- Legacy of permafrost data collected through partnerships with academic and government institutions, and industry
- Data associated with existing and planned linear corridors
- Community development, mitigation and adaptation planning
- Academic collaborations

Datasets

Geotechnical data retrieved from boreholes

- Linear corridors i.e. ITH, MVH, SGP

  Examples: Alignment, embankment, granular inventories, bridge piles
- Construction in communities
- Academic collaborations

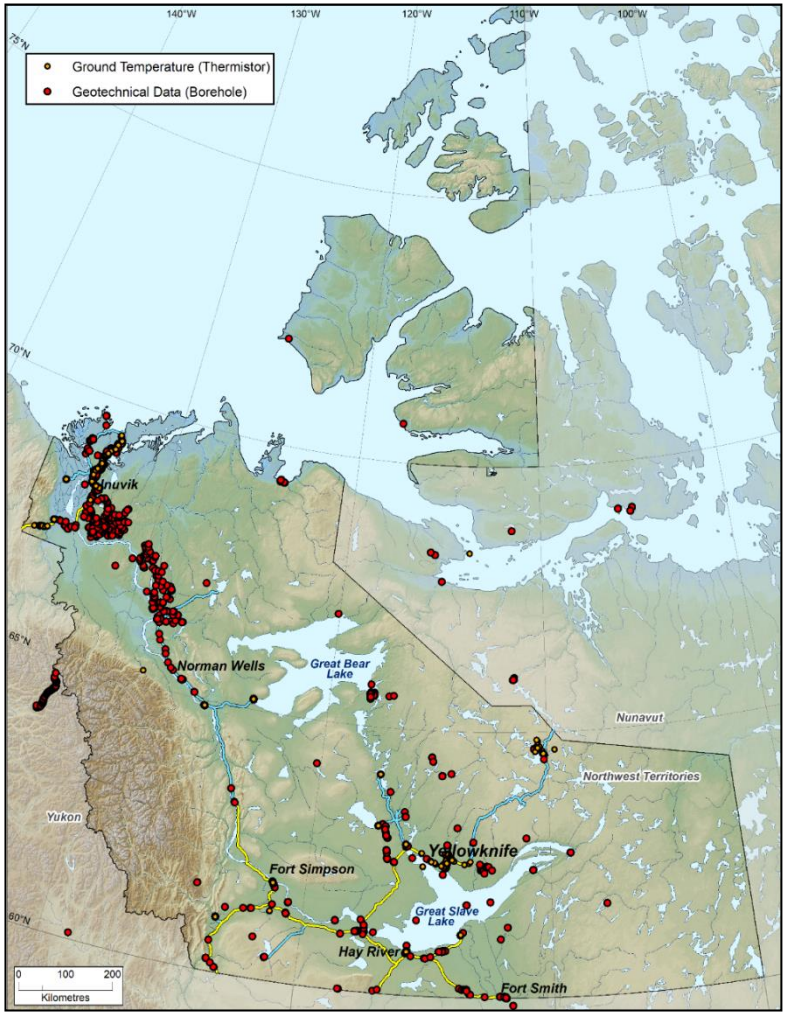
Ground temperature

- Linear corridors incl. shallow and deep thermistor cables on and off the Right of Way
- NWT permafrost monitoring network
- Academic collaborations

Spatial

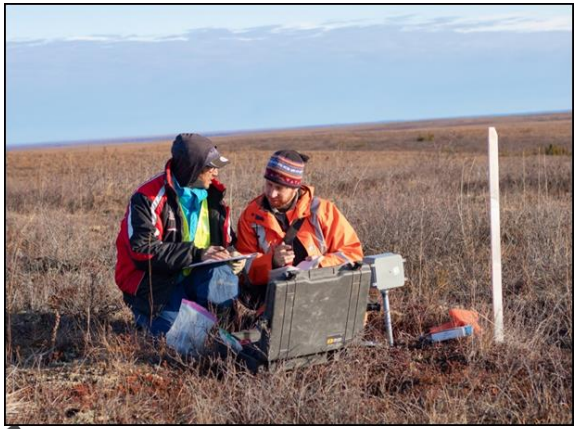
- Mass movement inventories
- Territory-wide thermokarst maps developed through a territorially driven collaborative

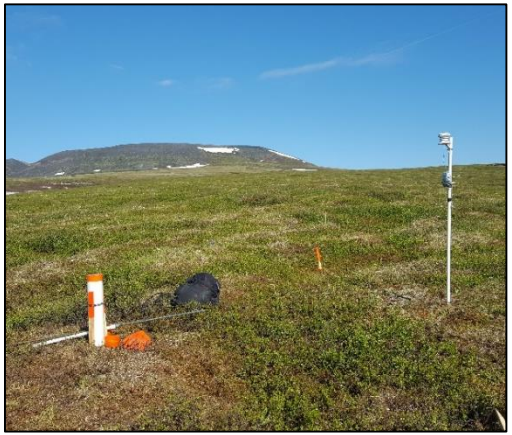
Compiled Data



Current Status

- Developed Geotechnical and Ground Temperature templates for metadata and raw data to ensure standardization amongst datasets
- Data released as NTGS Open Reports (http://webapps.nwtgeoscience.ca/WebAppsV2/SearchHome.aspx)
- Database is being developed within GNWT and will provide a web interface to search and download permafrost data collected in the NWT
- Working on a DOI strategy
- Working with PermafrostNet to ensure interoperability between databases





Published Data

- Cameron, E.A., Lantz, T.C., O'Neill, H.B., Gill, H.K., Kokelj, S.V., and Burn, C.R., 2019. Permafrost Ground Temperature Report: Ground temperature variability among terrain types in the Peel Plateau region of the Northwest Territories (2011-2015); Northwest Territories Geological Survey, NWT Open Report 2017-009, 8 pages and data.
- Connon, R., and Quinton, W., 2020. Permafrost Ground Temperature Report: Scotty Creek research station, Northwest Territories; Northwest Territories Geological Survey, NWT Open Report 2019-007, 8 pages, ground temperature data, and appendix.
- Gruber, S., Brown, N., Stewart-Jones, E., Karunaratne, K., Riddick, J., Peart, C., Subedi, R., and Kokelj, S.V., 2019. Permafrost Ground Temperature Report: Ground temperature and site characterisation data from the Canadian Shield tundra near Lac de Gras, Northwest Territories, Canada; Northwest Territories Geological Survey, NWT Open Report 2018-009, 8 pages, ground temperature data, and appendix.
- Ensom, T., and Kokelj, S.V., 2020. Permafrost Geotechnical Report: Inuvik to Tuktoyaktuk Highway stream crossing and alignment boreholes, Northwest Territories; Northwest Territories Geological Survey, NWT Open Report 2019-009, 6 pages, geotechnical data, and appendix.
- Rudy, A.C.A., Kokelj, S.V., Morse, P.D., and Ensom, T., 2020. Permafrost Geotechnical Report: Inuvik to Tuktoyaktuk Highway Sentinel Program Boreholes, Northwest Territories; Northwest Territories Geological Survey, NWT Open Report 2019-008, 7 pages, geotechnical data, and appendix.
- Ensom, T., Morse, P.D., Kokelj, S.V., MacDonald, E., Young, J., Tank, S., Subedi, R., Grozic, E., and Castagner, A., 2020. Permafrost Geotechnical Borehole Data Synthesis: 2013–2017 Inuvik-Tuktoyaktuk region, Northwest Territories; Northwest Territories Geological Survey, NWT Open Report 2019-012; Geological Survey of Canada, Open File 8652, 78 pages, geotechnical data, and appendices. https://doi.org/10.4095/321869
- Ensom, T., Kokelj, S.V., Morse, P.D., and Kamo McHugh, K., 2020. Permafrost Ground Temperature Data Synthesis: 2013–2019 Inuvik-Tuktoyaktuk Highway region, Northwest Territories; Northwest Territories Geological Survey, NWT Open Report 2019-020; Geological Survey of Canada, Open File 8656, 13 pages and appendix. https://doi.org/10.4095/321870
- Ensom, T., Kokelj, S.V., and Kamo McHugh, K., 2020. Permafrost Ground Temperature Report: Inuvik to Tuktoyaktuk Highway stream crossing and alignment sites, Northwest Territories; Northwest Territories Geological Survey, NWT Open Report 2019-014, 8 pages, ground temperature data, and appendix.
- Rudy, A.C.A., Grozic, E., and Kokelj, S.V., 2020. Permafrost Geotechnical Report: Remediation at Gunghi Creek on the Inuvik to Tuktoyaktuk Highway, Northwest Territories; Northwest Territories Geological Survey, NWT Open Report 2019-010, 6 pages, geotechnical data, and appendix.
- Rudy, A.C.A., Kokelj, S.V., and Ensom, T., 2020. Permafrost Geotechnical Report: Inuvik to Tuktoyaktuk Highway embankment boreholes, Northwest Territories; Northwest Territories Geological Survey, NWT Open Report 2019-011, 7 pages, geotechnical data, and appendix.
- Rudy, A.C.A., Kokelj, S.V., and Ensom, T., 2020. Permafrost Ground Temperature Report: Inuvik to Tuktoyaktuk Highway embankment sites, Northwest Territories; Northwest Territories Geological Survey, NWT Open Report 2019-016, 8 pages, ground temperature data, and appendix.
- Rudy, A.C.A., Kokelj, S.V., Morse, P.D., and Ensom, T., 2020. Permafrost Ground Temperature Report: Inuvik to Tuktoyaktuk Highway Sentinel sites; Northwest Territories Geological Survey, NWT Open Report 2019-017, 8 pages, ground temperature data, and appendix.