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Water resources characterization and modelling

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WATER RESOURCES CHARACTERIZATION AND MODELLING

The water resources characterization and modelling project is one of four projects for the 2019–2024 phase under the Groundwater Geoscience Program (GGP) of the Geological Survey of Canada (GSC), Natural Resources Canada (NRCan).

Our water resources are being subjected to the increasing effects of demographic growth, industrial intensification and climate change, the repercussions of which must be quantified to ensure resource and ecosystem longevity.

Therefore, the main objective of this project is to advance knowledge and methods to give us a better portrait of water resources across Canada and to anticipate their status over time.

The project has three main aspects:

- **aquifer system characterization**
- **modelling resource dynamics**
- **predictive resource modelling**

EXPECTED OUTCOMES

The goals of this project are to:

- Develop characterization and monitoring methods. These approaches will help address new hydrogeological problems that often require a more realistic representation of aquifers. We can better understand the variables that influence aquifer systems if we use characterization and modelling methods that are based on analysing and integrating hydraulic and geophysical responses to artificial and natural disturbances.
- Conduct a case study of water resources modelling. Based on a case study of a sensitive drainage basin, we want to demonstrate the importance of integrating all components of the water cycle. Integrated water cycle modelling will allow us to contribute to better water resource management. The case study is an opportunity to develop and adapt digital tools to better represent ground and surface water resource dynamics and predict their status over time.

PARTNERS

The water resources characterization and modelling project includes several multi-institutional partnerships:

- government:
  - NRCan (Geological Survey of Canada)
  - Environment and Climate Change Canada
  - Ministère de l'Environnement et de la Lutte contre les changements climatiques (formerly the Waterborne Expertise Centre of Quebec)
- academia:
  - Institut national de la recherche scientifique
  - Eau Terre Environment Research Centre
  - Université Laval
  - Université de Rennes (France)
- municipalities:
  - Régie intermunicipale de gestion des déchets des Chutes-de-la-Chaudière

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