This research group uses state-of-the-art equipment and techniques to generate new knowledge about the occurrence, distribution, and quality of water in the environment. The role of water as an essential component of the environment and key driver of climate system, and the impact of human activities on the quality and quantity of water are also studied. That research has strong field, laboratory, and modelling components. Together with our graduate and senior undergraduate students we conduct world-class research on climate change, soil water, ecohydrology, wetlands, contaminant hydrogeology, arctic and cold regions hydrology, vadose zone hydrology, hydroclimatology, and hydrologic models including physical, statistical and neural network models.

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- Hydrometeorology; Biometeorology; Climatology
- Forest carbon and water cycles;
- Evapotranspiration; Ecosystem and land surface-atmosphere interaction models;
- Global climate models;
- Air pollution; Environment and health

Sean K. Carey, Professor, Email: careysk@mcmaster.ca
- Hydrology
- Climatology
- Cold Regions
- Reclamation

Paulin Coulibaly, Professor, Email: couliba@mcmaster.ca
- Hydrologic modeling and forecasting
- Climate variability/change impact on water resources
- Hydroinformatics: Statistical and dynamic data-driven methods in hydrology
- Hydrologic data assimilation
- Water resources

James E. Smith, Professor, Email: smithja@mcmaster.ca
- Water flow and contaminant transport in the subsurface
- Vadose zone hydrology, soil water physics, hydrogeology; multiphase flow through porous media
- Nonaqueous Phase Liquid (NAPL) behaviour and remediation in the subsurface
- Organic contaminants in groundwater systems
- Soil Sciences, applied modelling of subsurface flow and transport.

J. Michael Waddington, Professor, Email: jmw@mcmaster.ca, Website: ecohydrology.mcmaster.ca
- Field experimental manipulations, lab experiments and ecohydrological modelling to examine the interactions of soil, water, vegetation and the atmosphere
- Effect of wildfire and drought on watershed and wetland ecohydrology
- Wildfire hydrology in a changing climate
- Vegetation dynamics, ecosystem restoration and peat resource sustainability