Streamflow Generation: Processes and Perceptual Models

A half-day professional development course for working professionals and post-secondary learners.

LIVE ONLINE SESSION

Wednesday, May 12, 2027	9:00 a.m. – 1:00 p.m. CST
Standard Registration Fee: $300	SENS Student & Alumni: $200

Most practitioners addressing issues related to the flow of water in streams use models to solve problems and predict outcomes. But those models are often based on antiquated notions of how catchments generate streamflow.

Streamflow Generation: Processes and Perceptual Models is a half-day course that provides an equation-free description of what we know, what we think we know, and what we need to know regarding flow pathways, sources, and travel times of water through headwater catchments.

Taught by field hydrologist Jeffrey McDonnell, the course traces the evolution of scientific understanding from early twentieth-century field measurements through modern isotope tracer studies and contemporary perceptual models of catchment behavior.

Learning Competencies

- The historical development of streamflow generation concepts and rainfall-runoff theories.
- How isotope tracers transformed catchment hydrology research.
- Modern understanding of water storage and release at point, hillslope, and catchment scales.
- The development and application of perceptual models in hydrology.
- Current opportunities and challenges related to hydrological connectivity, residence times, and transit time distributions.
- The importance of fieldwork and field discovery in advancing hydrological science.

Course Structure

This short course is delivered as a four-hour live online session. The format combines lecture, discussion, and participant questions, focusing on how conceptual understanding of streamflow generation has evolved and how it informs current hydrological science and practice.

Instructor

Jeffrey McDonnell, OC, FRSC is a field hydrologist and University Distinguished Professor of Hydrology at the University of Saskatchewan. His research focuses on streamflow generation and the use of stable isotopes for tracing the water cycle.

He has taught this course for more than 20 years and is the author of the 2026 Oxford University Press open-access text *Streamflow Generation: Processes and Perceptual Models.*

ENROLL HERE

Enrolment is limited. Register early to secure your spot.