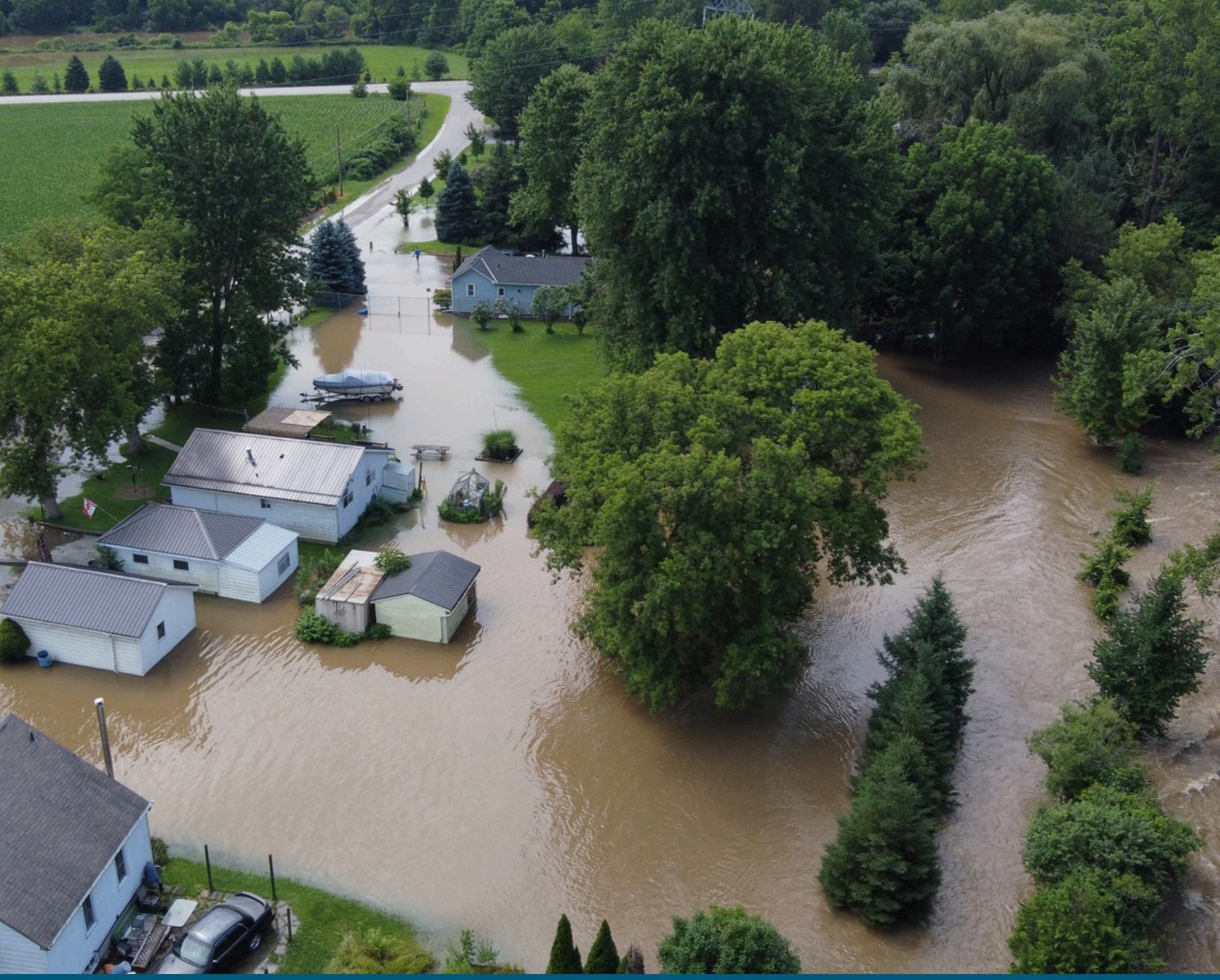

2025 Provincial Flood Forecasting and Warning Workshop

September 16-17, 2025 | Burlington, Ontario

PFFWC ONTARIO

Conservation ONTARIO
Natural Champions

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ABOUT THE WORKSHOP

ABOUT THE WORKSHOP

The Provincial Flood Forecasting and Warning Workshop aims to strengthen connections among agencies involved in flood forecasting and warning, emergency management, flow measurement, and data collection—along with other partners—to address policy and implementation needs and to provide training opportunities.

2025 WORKSHOP THEME

The theme of the 2025 Provincial Flood Forecasting and Warning Workshop is **From Data to Decisions: Flood Forecasting and Warning Strategies, Tools, and Collaboration for the Current Climate**. We are excited to bring you insightful presentations highlighting innovative approaches and lessons learned in flood forecasting and warning amid extreme and varied weather events. Sessions feature new technologies, agency collaborations, and reflections on recent storm events.

NETWORKING OPPORTUNITIES

In addition to the plenary program, registration for the 2025 Workshop includes ample networking and social opportunities, including a new evening social reception and networking dinner on September 16th (*for registrants who RSVP'd for the dinner)*. We encourage you to take time to meet and share ideas with your peers throughout the Workshop!

WORKSHOP SURVEY AND PRIZES!

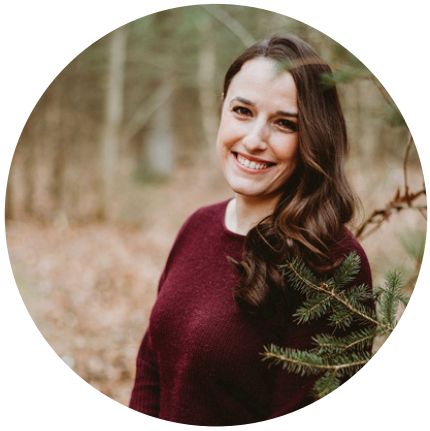
We want to hear from you! Please take a few minutes before the end of the Workshop to respond to our survey (scan the QR Code). All survey respondents are entered into a draw for prizes, generously donated by the organizing committee!

ORGANIZING COMMITTEE

Anna Ciorap
Parks Canada

Christine Phillibert
Qunite Conservation

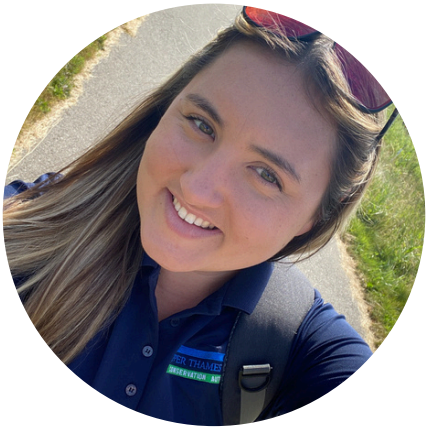
Crystal Beaton
Environment and Climate Change Canada



Emily De Cloet
St. Clair Region Conservation Authority

Holly Annand
Ontario Ministry of Natural Resources

Iryna Shulyarenko
Ontario Ministry of Natural Resources



Jessica Penz
Upper Thames River Conservation Authority

ORGANIZING COMMITTEE

Jo-Anne Rzadki
Conservation Ontario

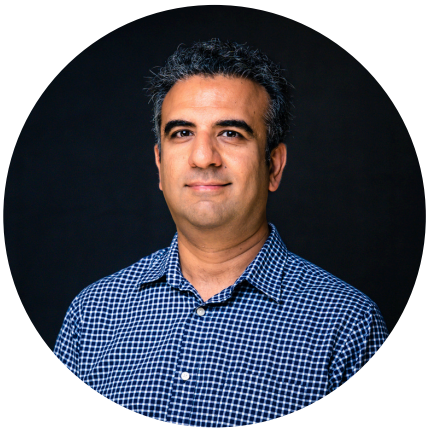
Katherine Watson
South Nation Conservation

Nicholas Fischer
Conservation Ontario

Rita Lucero
Toronto and Region Conservation Authority

Tammy Cook
Lakehead Region Conservation Authority

Trudy Kidd
Environment and Climate Change Canada



Vahid Taleban
Grand River Conservation Authority

PROGRAM

DAY ONE

TIME	TOPIC	PRESENTER(S)
8:30 a.m.	*Registration and Continental Breakfast*	
9:30 a.m.	Welcome and Opening Remarks	Ministry of Natural Resources Conservation Ontario
10:00 a.m.	Keynote Address: When the Rain Doesn't Read the Forecast: Navigating Uncertainty Together	Trudy Kidd, Environment and Climate Change Canada
11:00 a.m.	*Morning Refreshment Break*	
11:15 a.m.	Flooded with Data: Trends in Water Losses	Caroline Floyd, Catastrophe Indices and Quantification Inc. (CatIQ)
11:45 p.m.	Reservoir Policy Updates and a Review of 2024/2025 Events	Vahid Taleban, Grand River Conservation Authority
12:15 p.m.	Networking Lunch	
1:15 p.m.	Documenting Decision-Making: Understanding Liability for Flood Forecasting and Warning and Local Approaches	Chris Hummel and Stacy Porter, Gowlings WLG Christine Phillibert, Quinte Conservation Daniel King, Ausable Bayfield Conservation Authority Ken Cheney, Lake Simcoe Region Conservation Authority
2:15 p.m.	*Afternoon Refreshment Break*	
2:45 p.m.	Situational Awareness Manager (SAM): Emergency Operations Centre Digital Innovation	Daniel Loughran, Colleen Simpson, and Mike Doyle, York Region
3:15 p.m.	UAV Technology in Water Response Programs	Ben Colgan, South Nation Conservation
3:45 p.m.	Rating Curve Extension within Etobicoke Creek Watershed	Hessam Mirzaei, Toronto and Region Conservation Authority
4:15	End of Day One	
4:45 p.m.	*Social Hour*	
6:00 p.m.	*Evening Dinner Reception*	

PROGRAM

DAY TWO

TIME	TOPIC	PRESENTER(S)
8:15 a.m.	*Registration and Continental Breakfast*	
9:00 a.m.	Supporting Canadians Before and After Severe Weather	Mahan Azimi, Insurance Bureau of Canada
9:30 a.m.	The Science of Ice Jams and Break-Ups: Overview of river ice-related flooding, forecasting and mitigation	Dr. Tadros Ghobrial, Laval University
10:15	Managing the Freeze: Frazil Ice Impacts and Mitigation in the Town of Durham	Jody Duncan, Saugeen Valley Conservation Authority
10:45 a.m.	*Morning Refreshment Break*	
11:00 a.m.	From Planning to Action: Advancing Flood Preparedness in Toronto	Caitriona O'Sullivan and Jennifer Hryniewicz, Toronto Emergency Management
11:30 a.m.	Extreme Weather and Flashflood Event in the North Bay area – June 2025	Angela Mills, North Bay Mattawa Conservation Authority
12:00 p.m.	R Dashboards in Action: Practical Tools for Flow Forecasting	Alexandra Lavictoire, Lake of the Woods Control Board Secretariat
12:30 p.m.	Networking Lunch	
1:30 p.m.	Drought Decisions Made Easy: Automating Low Water Response	Daniel Post and Kathryn Starratt, Mississippi Valley Conservation Authority
2:00 p.m.	Physics Model and Machine Learning Model Applications for Flood Forecasting in the South Nation River Basin	Katherine Watson, South Nation Conservation Steve Frey, Aquanty
2:45 p.m.	*Afternoon Refreshment Break*	
3:15 p.m.	Toward Operational Flood Forecasting in Ontario Using OSWPS	Dipti Tiwari, Ministry of Natural Resources
3:45 p.m.	Hydrologic Prediction at ECCC: Recent Successes, Challenges, and Planning for the Future in Partnerships with End-Users	Jacob Bruxer, Environment and Climate Change Canada
4:15	Closing Remarks and Survey Draw	

PRESENTER INFORMATION

(IN ORDER OF APPEARANCE)

Trudy Kidd

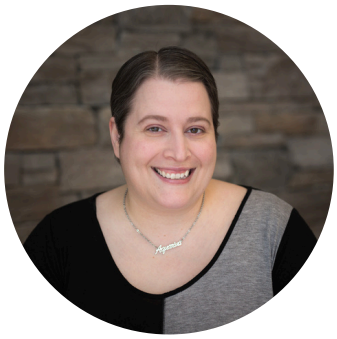
Warning Preparedness Meteorologist
Environment and Climate Change Canada

Presentation Abstract: Forecasting heavy rainfall is never simple, and in a changing climate, the challenges are growing. This presentation begins with a seasonal outlook, along with key caveats about its limitations. Then, through three recent rainfall events, we'll explore common forecasting difficulties: underdone signals, timing uncertainty, and high-impact local variability. As part of our shift towards impact-based forecasting, tools like the Ontario Vigilance Bulletin, event briefings, and upcoming colour-coded alerts are designed to support partner decision-making. As the intensity and frequency of events increase, clear communication, consistent collaboration, and a shared understanding of limitations become essential for supporting effective flood preparedness.

Biography: Trudy is a meteorologist with nearly 15 years of experience at Environment and Climate Change Canada's Toronto office. After years in operational forecasting, she now serves as a Warning Preparedness Meteorologist, supporting emergency managers, broadcasters, and other partners by turning complex weather information into concise, actionable messages. She's focused on strengthening her communication skills, deepening her understanding of risk, and helping others make informed decisions - especially during severe weather.

Caroline Floyd

Director
Catastrophe Indices and Quantification Inc. (CatIQ)

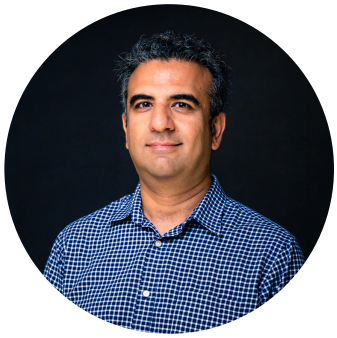


Presentation Abstract: A deep dive into the catastrophe database to present insurance claim trends when it comes to water losses. In insurance, water is generally classified into two main categories: overland flood or sewer backup. Sewer backup mostly occurs during heavy rainfall events, and overland flood during the spring freshet, though not always. How are these different types changing in loss with time?

Biography: With a background in atmospheric science and meteorology, Caroline was one of the 'they' in "They say it's going to rain" for nearly 20 years, working in both Canada and the United States as a forecaster and weather expert. Having produced forecasts for every continent (excluding Antarctica – so far), and for everything from landfalling hurricanes to ice storms to radioactive fallout, she joined Catastrophe Indices and Quantification Inc. (CatIQ) in early 2020 and became Director in July 2022.

PRESENTER INFORMATION

Vahid Taleban



Director of Flood Operations
Grand River Conservation Authority

Presentation Abstract: The GRCA operates seven reservoirs for flood management and low-flow augmentation. Following severe flooding in 1974, a Royal Commission led to the development of GRCA's first reservoir operation policies in 1978. These policies have undergone several updates, with a major revision in 2004 based on technical studies and community water needs. In 2024, the GRCA reviewed operations again, analyzing climate station precipitation and reservoir inflows to assess potential climate change impacts on reservoir management.

Biography: Vahid has been with the Grand River Conservation Authority (GRCA) since 2017, where he has been actively involved in the engineering review of development applications, as well as the coordination and execution of hydrologic, hydraulic, and floodplain mapping studies. He also contributes to flood forecasting and warning efforts across the Grand River Watershed.
Prior to joining GRCA, Vahid worked in the private sector as a water resources engineer. His experience includes leading and supporting watershed and subwatershed studies, floodplain mapping projects, environmental impact assessments, and stormwater master plans.

Chris Hummel

Associate
Gowling WLG

Biography: Both a litigator and regulatory advisor, Chris Hummel practises at the intersections of environmental law, Indigenous law, and energy law. Chris routinely advises on complex and novel legal matters, ranging from technical, science-driven advocacy to emergent issues in constitutional law.

Stacy Porter

Associate
Gowling WLG

Biography: A background in environmental and municipal planning, Stacy has previously worked at an Environmental Engineering and Consulting Firm in California and in the Planning and Regulation Department at an Ontario Conservation Authority. She has also taught planning courses for the Applied Planning – Environmental Graduate program at Fleming College.

Presentation Title: *Liability for Flood Forecasting and Warning*

PRESENTER INFORMATION

Christine Phillibert

Water Resources Manager,
Quinte Conservation

Presentation Abstract: Flood Risk Documentation Panel. Following the presentation from Gowling WLG, three Conservation Authorities will provide an overview of their daily planning cycle (DPC) and how each document decision-making in their flood forecasting and warning program.

Biography: As the Water Resources Manager at Quinte Conservation, Christine oversees the Flood Forecasting and Warning program, Low Water Response program, Floodplain Mapping updates, and management and operation of Water Control Infrastructure. She also provides technical support across other CA program areas. Christine brings a risk-based approach to all aspects of her work. In her spare time Christine enjoys spending time with family and outdoor activities such as playing sports, camping, hiking, and skiing.

Daniel King

Water Resources Engineer
Ausable Bayfield Conservation Authority

Presentation Abstract: Flood Risk Documentation Panel. Following the presentation from Gowling WLG, three Conservation Authorities will provide an overview of their daily planning cycle (DPC) and how each document decision-making in their flood forecasting and warning program.

Biography: Daniel is the Water Resources Engineer at Ausable Bayfield Conservation Authority (ABCA). His education background is undergraduate and graduated degrees in environmental and water resources engineering, and public policy. The smaller rural nature of the ABCA means that Daniel supports multiple CA programs in flood forecasting and warning, modelling and the regulations program. As with all work at Conservation Authorities it is important to have documentation for the sources of information as well as when decisions are made.

PRESENTER INFORMATION

Kenneth Cheney

Director, Flood Management
Lake Simcoe Region Conservation Authority

Presentation Abstract: Flood Risk Documentation Panel. Following the presentation from Gowling WLG, three Conservation Authorities will provide an overview of their daily planning cycle (DPC) and how each document decision-making in their flood forecasting and warning program.

Biography: A licensed professional engineer in Ontario, Kenneth Cheney is the Director of Flood Management at the Lake Simcoe Region Conservation Authority. After graduating from the University of Waterloo in 2007 in Environmental Engineering, Ken worked in private consulting in the water resources sector before joining the Conservation Authority in 2014. He manages the Flood Forecasting and Warning and Floodplain mapping Programs for the Conservation Authority.

Daniel Loughran

Corporate Data Analyst
York Region

Presentation Abstract: The YorkInfo Partnership's new GIS-based application enhances emergency response and communication by providing near real-time updates and comprehensive situational awareness for faster, more efficient incident management - together putting data to work.

Biography: Daniel has nearly 15 years of experience working with data across government, transit, and energy sectors. For the past six years at York Region, he's led the Data Service Centre and supported the Emergency Management program through digital innovation. He's held roles in GIS and data analytics, and enjoys building dashboards, maps, and automations that make data more accessible and actionable. Passionate about visualization and insight-driven decision-making, Daniel creates tools that help teams save time and work smarter. Outside of work, he's into sports, DIY projects, and family time—especially chasing his energetic two-year-old daughter around.

PRESENTER INFORMATION

Colleen Simson

Program Manager, Local Municipalities Emergency Management
York Region

Presentation Abstract: The YorkInfo Partnership's new GIS-based application enhances emergency response and communication by providing near real-time updates and comprehensive situational awareness for faster, more efficient incident management - together putting data to work.

Biography: Colleen brings over 25 years of experience in emergency services and management. After earning her Master's in Emergency Management from York University, she joined Simcoe County in 2019 as Manager of 911 and Emergency Planning. In 2023, she became Program Manager for the Northern Six (N6) municipalities in York Region, supporting emergency preparedness and legislative compliance. Prior, she served 14 years with Vaughan Fire and six with North Vancouver RCMP in 911 communications. Colleen has navigated diverse emergencies—from tornadoes to health crises—with calm and expertise. She's passionate about public safety, and yes, she may have a soft spot for motorcycles and bunnies.

Mike Doyle

Deputy Fire Chief
Town of Witchurch-Stouffville

Presentation Abstract: The YorkInfo Partnership's new GIS-based application enhances emergency response and communication by providing near real-time updates and comprehensive situational awareness for faster, more efficient incident management - together putting data to work.

Biography: Mike brings over 25 years of operational and strategic experience in the fire and emergency services sector. Most of his career was spent serving in the City of Vaughan, where he developed deep expertise in emergency operations. In 2019, he joined the Senior Command Team as Deputy Fire Chief, contributing to multiple Emergency Operations Centre (EOC) activations. He later continued in the same capacity with Whitchurch-Stouffville Fire & Emergency Services. Mike's strong analytical skills and ability to interpret critical data make him a valuable asset in any EOC environment.

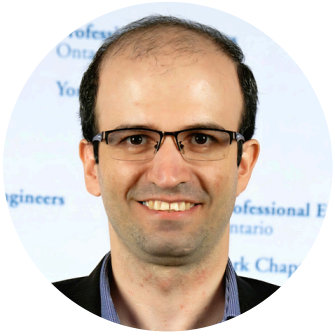
PRESENTER INFORMATION

Ben Colgan

GIS Specialist
South Nation Conservation Authority

Presentation Abstract: This presentation examines the integration of UAV (drone) technology into South Nation Conservation's watershed management programs. It begins with practical considerations for starting a UAV program, including cost, licensing, training, and research and development. The presentation then highlights how drones can support flood forecasting and warning systems through enhanced surveillance, improved communications, and flood model validation. Broader operational applications such as conservation monitoring and enforcement are also discussed, offering insight into how UAVs can strengthen environmental data collection and decision-making.

Biography: Ben Colgan has been with South Nation Conservation since 2020, bringing a background in environmental sciences to his role as GIS Specialist. As SNC's GIS lead, Ben oversees the geospatial components of all projects across the organization, supporting technical, engineering, and environmental initiatives. Ben is responsible for the management of SNC's spatial data infrastructure, including proprietary and external datasets.



Hessam Mirzaei

Engineer, Flood Risk Management
Toronto and Region Conservation Authority

Presentation Abstract: This presentation outlines a project to extend rating curves at key TRCA stream gauges within the Etobicoke Creek Watershed to enhance flood forecasting and hydrologic modeling. Using updated LiDAR, survey, and gauge data, the study evaluates three methods: the Divided Channel Method, 1D HEC-RAS, and 2D MIKE FLOOD models. Sensitivity analyses and model refinements were performed to capture complex urban hydraulic conditions. The findings inform best practices for rating curve development, highlighting the importance of accounting for backwater effects, overbank storage, and flow hysteresis in high-flow conditions.

Biography: Hessam Mirzaei is a water resources engineer specializing in flood risk management, hydraulic modeling, and stormwater infrastructure. He currently works at TRCA, where he supports a range of hydrotechnical projects, including floodplain mapping, infrastructure assessments, and climate resilience planning. Hessam holds a Ph.D. in Civil Engineering from Queen's University and is a licensed Professional Engineer in Ontario. With over five years of experience in both public and private sectors, he has developed strong expertise in numerical modeling, data analysis, and the application of GIS and LiDAR in water resources engineering.

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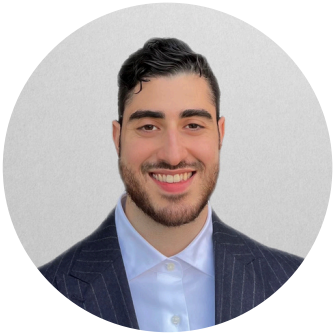


Mahan Azimi

Director, Catastrophic and Emerging Risk Policy
Insurance Bureau of Canada

Presentation Abstract: As flood and other climate-related disasters intensify across Canada, the role of the property and casualty (P&C) insurance in adaptation and resilience has never been more critical. This session will provide a look at how the P&C insurance industry is responding to the growing threats of flood and other natural hazards, while advocating for a more resilient Canada.

Biography: Mahan Azimi serves as the Director, Catastrophic and Emerging Risk Policy within the Catastrophic Risk and Climate Policy team at IBC, where he oversees initiatives related to flood, earthquake, and cyber risks.

Prior to joining IBC in 2021, Mahan gained valuable experience working in the federal government and in private sector consulting. Mahan holds a master's degree in political science from York University and a bachelor of arts from the University of Toronto.

Dr. Tadros Ghobrial

Associate Professor
Laval University

Presentation Abstract: River ice encompasses a range of processes, including the formation, evolution, transport, accumulation, dissipation, and deterioration of different types of ice. These processes are influenced by the dynamic interactions between the prevailing hydrometeorological conditions and channel morphology. The presence of ice in rivers can significantly reduce the channel capacity to convey the discharge and often results in ice-related flooding. This presentation covers the physical processes behind ice formation and breakup as well as ice-related flood hazards. Advances in ice-related flood forecasting and mitigation will be presented.

Biography: Dr Ghobrial is an associate professor at Laval University, currently conducting several research projects focused on river ice processes, ice-structure interaction, and ice-related flooding. He supervises over a dozen students and collaborates with federal and provincial agencies such as Environment Canada and the Ministry of Public Safety of Quebec. He is a member of the Committee on River Ice Processes and the Environment (CRIPE), and Canada's representative on the Committee on Ice Research of the International Association for Hydro-Environment Engineering and Research. He has co-authored more than 50 publications, is a guest editor of the Canadian Journal of Civil Engineering and is an active reviewer of several journals.

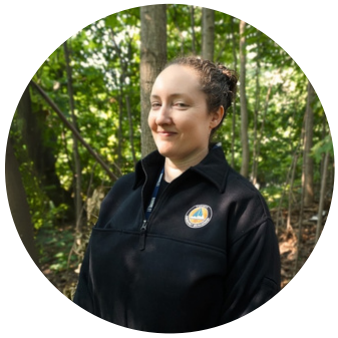
PRESENTER INFORMATION

Jody Duncan

Flood Forecasting and Warning Coordinator
Saugeen Valley Conservation Authority

Presentation Abstract: This presentation will provide an overview of the frazil ice flooding challenges in the Town of Durham, located in the Municipality of West Grey. It will cover the geographic and climatic conditions contributing to frazil ice formation, a historical review of significant flood events and current management efforts and strategies used by SVCA. The session will conclude with next steps and key takeaways for other communities facing frazil ice or other similar concerns.

Biography: Jody Duncan is the Flood Forecasting and Warning Coordinator at Saugeen Valley Conservation Authority, bringing nearly a decade of experience in environmental sciences, with the past two years dedicated to conservation authority work. His career spans roles in provincial government, private industry, and conservation sectors, with a strong focus on fisheries science, aquatic biology, and hydrology. Jody is deeply committed to applying his scientific expertise to support local watershed resilience and environmental stewardship. Outside of work, he enjoys spending time at his family cottage in Temagami, where his appreciation for Ontario's natural landscapes continues to grow.



Caitriona O'Sullivan

Manager, Planning & Preparedness
Toronto Emergency Management

Presentation Abstract: This session will highlight the role of Toronto Emergency Management (TEM) in flood preparedness, response, and recovery. It will showcase how TEM supports City divisions, agencies, and corporations in planning for flood emergencies, including the development of Toronto's Flood Coordination Response Plan. The presentation will outline the Plan's purpose, structure, and key actions. The session will conclude with a forward-looking discussion on priority areas to enhance flood resilience and inter-divisional coordination across the city.

Biography: Caitriona O'Sullivan is an emergency management professional with extensive experience at both provincial and municipal levels. As Manager of Planning & Preparedness at Toronto Emergency Management, she leads collaborative planning for hazards such as heat, flooding, and pandemics.

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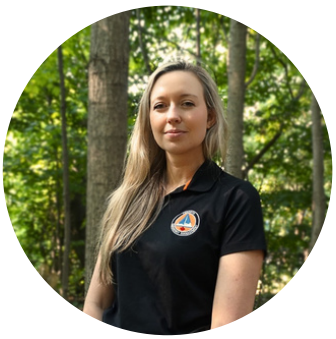


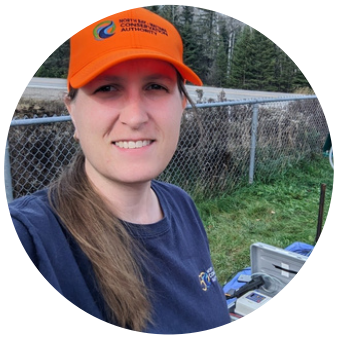
Jennifer Hryniewicz

Coordinator
Toronto Emergency Management

Presentation Abstract: This session will highlight the role of Toronto Emergency Management (TEM) in flood preparedness, response, and recovery. It will showcase how TEM supports City divisions, agencies, and corporations in planning for flood emergencies, including the development of Toronto's Flood Coordination Response Plan. The presentation will outline the Plan's purpose, structure, and key actions. The session will conclude with a forward-looking discussion on priority areas to enhance flood resilience and inter-divisional coordination across the city.

Biography: Jennifer Hryniewicz is an emergency management professional with a unique interdisciplinary background in healthcare and special event operations. As Toronto's flood planning lead, she brings a strategic approach to preparedness and incident response.

Angela Mills



Water Resources Specialist
North Bay-Mattawa Conservation Authority

Presentation Abstract: A severe storm passed through the North Bay-Mattawa Conservation Authority's jurisdiction on June 21, 2025, with a downburst going through the Samuel de Champlain Provincial Park and surrounding area, leaving behind fallen trees, damaged infrastructure. This presentation will highlight the impacts of this event, and Flood Forecast and Warning program challenges in the context of smaller and northern CAs.

Biography: Angela graduated from undergraduate and graduate programs in Geography at the University of Waterloo, with a focus on hydrology-related studies. She worked in water quality, hydrogeology, ecology and source protection related programs at several Conservation Authorities in southern Ontario before finding her way to the North Bay-Mattawa Conservation Authority in 2021. She leads the surface water quality and groundwater monitoring programs, assists with Source Protection programs, and has been part of the flood forecasting and low water response programs for the past 3 years.

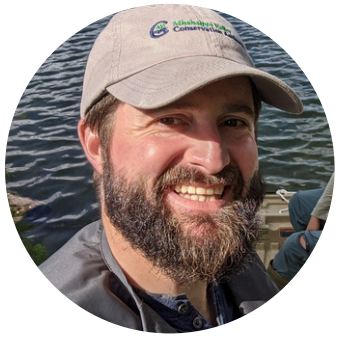
PRESENTER INFORMATION

Alexandra Lavictoire

Senior Water Resources Engineer
Lake of the Woods Control Board Secretariata

Presentation Abstract: Flow forecasting is vital for many water management groups but often relies on costly or overly complex commercial platforms. The Lake of the Woods Secretariat, a small team managing the Winnipeg River basin, developed custom R dashboards to streamline forecasting and data review. These tools support interactive forecasts, precipitation analysis, and snow data mapping, enhancing the team's efficiency and operational capabilities. This presentation will share practical insights into how water management teams can use R dashboards to build modern, cost-effective forecasting tools tailored to their needs.

Biography: Alexandra Lavictoire is the Senior Water Resources Engineer at the Lake of the Woods Secretariat and has worked in this group for over 10 years. Her experience ranges from data analysis to hydrological modelling and operational water management. Alexandra is passionate about connecting hydrological science with water management practice and public understanding. She serves as the co-chair of the International Rainy-Lake of the Woods Adaptive Management Committee and on the executive team of the Canadian Society for Hydrological Sciences.



Daniel Post

Data Systems Lead
Mississippi Valley Conservation Authority

Presentation Abstract: The Mississippi Valley Conservation Authority (MVCA) launched an automated Low Water Response (LWR) system in June 2025 to enhance watershed management. Integrated into the Daily Planning Cycle via WISKI, it offers real-time low water data and automated recommendations. Key features include 30/90-day rolling trend analysis, a weighted point system for watershed status, and staff-wide decision support. The system was validated using historical drought data and proven reliable. Future improvements will add trend visualizations, monitoring optimization, and new indicators like evaporation and reservoir levels.

Biography: Daniel Post is the Data Systems Lead at the MVCA. Prior to his career in software development, he worked in logistics, education, and forestry in diverse locations including Afghanistan, Tonga, and northern British Columbia. After shifting careers to software development, Daniel moved from Vancouver to Ontario, joining the MVCA in 2021. At the MVCA, he leads the Data & Monitoring group and focuses on gathering environmental data and developing digital tools to present this data in a clear and user-friendly way for professionals and the public alike.

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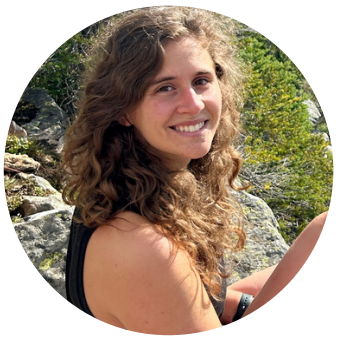


Kathryn Starratt

Warning Preparedness Meteorologist
Environment and Climate Change Canada

Presentation Abstract: The Mississippi Valley Conservation Authority (MVCA) launched an automated Low Water Response (LWR) system in June 2025 to enhance watershed management. Integrated into the Daily Planning Cycle via WISKI, it offers real-time low water data and automated recommendations. Key features include 30/90-day rolling trend analysis, a weighted point system for watershed status, and staff-wide decision support. The system was validated using historical drought data and proven reliable. Future improvements will add trend visualizations, monitoring optimization, and new indicators like evaporation and reservoir levels.

Biography: Kathryn Starratt is a Water Resources Specialist at the MVCA with a background in Environmental Engineering from the University of Waterloo, specializing in Pollution Treatment and Control. She brings experience in environmental consulting and project management. At MVCA, she supports drought and flood forecasting initiatives, serves as a rotating duty officer, and contributes to watershed monitoring. Kathryn also helps manage data collection, capital infrastructure projects, and floodplain mapping and modelling.

Katherine Watson

Coordinator, Early Warning Systems and Watershed Plans
South Nation Conservation

Presentation Abstract: The South Nation River Watershed (SNW) is a mixed-use watershed in Eastern Ontario that is well instrumented from a surface water, groundwater, and soil moisture perspective, making it a good test area for emerging technologies, including Machine Learning and Artificial Intelligence. This presentation will detail interim findings from an ongoing Regional Flood Mapping project, wherein a set of different fully-integrated groundwater – surface water models, are being compared to neural network-based models for streamflow prediction, and to 1-dimensional hydrodynamic models for flood inundation mapping. As part of the investigation, Aquanty's artificial intelligence (AI) streamflow prediction technology has been incorporated into SNC's Web-Tool, and the AI capability for inundation mapping is being studied.

Biography: Kat coordinates SNC's Water Response Programs, including the Flood Forecasting and Warning and Low Water Response programs. She is an active member on several Provincial Committees including the Provincial Flood Forecasting and Warning Committee and the Ontario Hydrometric Program Coordinating Committee and enjoys working with external partners to advance Early Warning Tools to better protect people and their property.

PRESENTER INFORMATION

Steven Frey, PhD

Director of Research Services
Aquanty

Presentation Abstract: The South Nation River Watershed (SNW) is a mixed-use watershed in Eastern Ontario that is well instrumented from a surface water, groundwater, and soil moisture perspective, making it a good test area for emerging technologies, including Machine Learning and Artificial Intelligence. This presentation will detail interim findings from an ongoing Regional Flood Mapping project, wherein a set of different fully-integrated groundwater – surface water models, are being compared to neural network-based models for streamflow prediction, and to 1-dimensional hydrodynamic models for flood inundation mapping. As part of the investigation, Aquanty's artificial intelligence (AI) streamflow prediction technology has been incorporated into SNC's Web-Tool, and the AI capability for inundation mapping is being studied.

Biography: Steve received his PhD. degree from the Department of Earth and Environmental Science at the University of Waterloo, in 2011. He is currently a Senior Scientist at Aquanty, and an Adjunct Assistant Professor at the University of Waterloo. His current research focuses on the development and application of fully-integrated groundwater – surface water simulation models for climate change impact analysis and hydrologic risk assessment.

Dipti Tiwari

Hydrologist, Aquatic Research & Monitoring Section
Ministry of Natural Resources

Presentation Abstract: The state of the science in modelling flow conditions at the provincial scale is rapidly evolving, opening the potential to generate information that helps the MNR address water related business information needs. OSWMS (Ontario Surface Water Modelling System) is one modeling approach being developed as part of the Ontario Hydrological Modelling Assessment (OHMA) project, a collaboration between the University of Waterloo and Ministry of Natural Resources. The development of OSWMS and initial results from the operational deployment of OSWPS will be presented.

Biography: Dipti Tiwari is a hydrologist with a Ph.D. in Hydrology from Université de Sherbrooke with experience in hydrological modeling, flood forecasting, spatial data analysis, model calibration and climate impact analysis. At the Ministry of Natural Resources, Dipti has contributed to flood frequency analysis, trend analysis over WSC stations in Ontario, climate scenario modeling using RAVEN, and scientific knowledge transfer through collaboration with the University of Waterloo. Dipti brings strong scientific reporting, analytical, and communication skills developed through collaborative research and inter-agency projects.

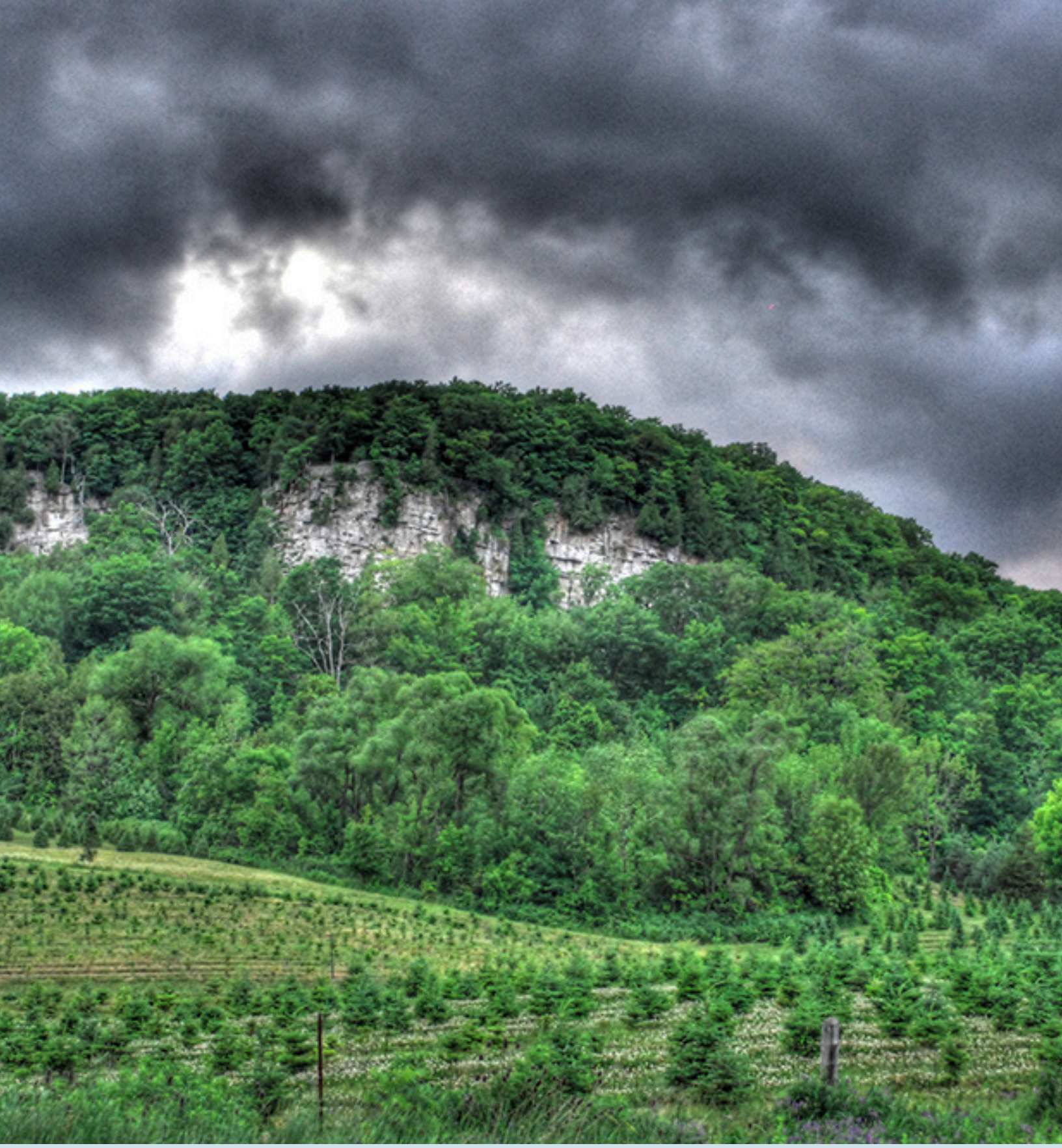
PRESENTER INFORMATION

Jacob Bruxer

Section Head, Water Management Services - East
Environment and Climate Change Canada

Presentation Abstract: This presentation will provide an update on hydrologic prediction products and services at Environment and Climate Change Canada (ECCC). It will highlight progress made in recent years, focusing on collaborative efforts, including within Ontario and with various other partners across the country. Discussion will also include the adjustments and strategies being considered to incorporate end-user feedback, overcome current challenges and enhance partnerships for improved flood forecasting across Canada. The session also serves as an opportunity to solicit additional input from partners to help further guide ECCC's hydrologic prediction priorities.

Biography: Jacob Bruxer has been a water resources engineer with the National Hydrological Service (NHS) of Environment and Climate Change Canada since 2005. Currently, he manages the Water Management Services – East section, leading engineering and scientific support on international transboundary water issues within the Great Lakes – St. Lawrence River basin, and contributing to the delivery of Hydrologic Prediction products and services aimed at federal, provincial and various other partners involved in flood forecasting and water management across Canada.



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