

Dr. Roy Rasmussen, National Center for Atmospheric Research, Boulder, USA

Roy Rasmussen received a B.S. degree in Physics and Mathematics from Wheaton College, Illinois in 1978, and a Masters and PhD from the University of California, Los Angeles in Atmospheric Sciences in 1980 and 1982, respectively, specializing in cloud physics. After receiving his doctorate, he was an Advanced Study Program postdoctoral researcher at National Center for Atmospheric Research (NCAR). He is currently a Senior Scientist and director of the Hydrometeorology Applications Program at the Research Applications Laboratory at NCAR. He is an American Meteorological Society Fellow and has ten patents and over 100 peer reviewed journal papers.

**Global Earth System Modeling of the Water Cycle at Convective Permitting Scales: How do we get there?**

Roy Rasmussen, Andreas Prein, Changhai Liu and Kyoko Ikeda
NCAR

Convective permitting modeling has been shown to reasonably capture the water cycle at continental scales for weather and climate purposes. This is in contrast to current global climate models which are challenged to capture critical water cycle elements such as the intensity, amount, duration and phase of precipitation. The next steps for convective permitting modeling is to expand this capability in a number of directions, including: 1) increasing the ensemble size to estimate model uncertainty, 2) verifying the capability of this technique over different continental, regional and local geographical regions, and 3) include the coupling to the ocean and sea ice as well as the stratosphere. A critical element to capturing the water cycle will be the inclusion of appropriately parameterized hydrological models.

This presentation will explore these challenges, including recent progress and suggested future directions.

Chief Bobby Cameron – Federation of Sovereign Indigenous Nations
Regional Chief Bobby Cameron – Assembly of First Nations

As a member of Witchehan Lake First Nation located in Treaty Six territory (northern Saskatchewan), Chief Bobby Cameron has spent the majority of his life maintaining strong ties to culture, language and identity. As an avid hunter, trapper, and fisherman – Chief Cameron advocates and understands the significance of having clean water, and the catastrophic consequences for future generations if the messages are ignored. He is currently in his 2nd term as Chief of Federation of Sovereign Indigenous Nations, a Treaty and Inherent Rights organization that represents 74 First Nations, and over 160,000 First Nation people. He also served one term as a Vice-Chief for FSIN previously. He is also the Regional Chief for the Assembly of First Nations. Chief Cameron holds a Bachelor of Arts, with a major in Indigenous Studies from the University of Regina. A devoted partner and father of six children, Chief Cameron is a strong advocate for Treaty and Inherent Rights for future generations of First Nations people.



Professor Claudia Pahl-Wostl, Institute for Environmental Systems Research (USF), Universität Osnabrück, Germany

Claudia Pahl-Wostl is full professor for resources management at the Institute for Environmental Systems Research (USF) in Osnabrück, Germany and visiting professor on water governance at the University of Saskatchewan, Canada. She is an internationally leading scholar on water governance and adaptive management of water resources. Her major research interests are adaptive, multi-level governance and management of water resources, social and societal learning and their role in sustainability transformations, and conceptual and methodological frameworks to analyze social-ecological systems. In 2012 the Bode Foundation Water Management Prize was awarded to Prof. Pahl-Wostl for the pioneering interdisciplinary work on “Governance in times of change” and comparative analyses of water governance in large river basins.



Claudia Pahl-Wostl was Co-Chair of the Scientific Steering Committee of the GWSP (Global Water System Project - a joint project of the ESSP – WCRP, IGBP, IHDP and DIVERSITAS) and is now member of the planning committee of the solution-oriented “Sustainable Water Future Programme”, a core project of Future Earth. She has participated in and coordinated several European project, e.g. the Integrated Project **NeWater** (New methods for adaptive water management) that focused in particular on the transition from current regimes of water management in a river basin to more integrated, adaptive approaches.

Claudia Pahl-Wostl is (co)author of numerous papers in peer-reviewed journals, chapters in edited books, policy briefs and popular reports. Her emphasis on interdisciplinary and community-building work is reflected in her role as editor of three books and sixteen special issues in peer reviewed journals.

Water Governance – from diagnosis to transformative change

Many water related problems can be attributed to governance failure at multiple levels of governance rather than to the resource base itself. At the same time our knowledge on water governance systems and conditions for success of water governance reform is still quite limited. For a long time research and policy have been dominated by the futile search for simplistic panaceas to solve complex water governance problems.

The key note will introduce a diagnostic approach to identify governance failures and persistent sustainability problems but as well leverage points for transformative change. A diagnostic approach takes into account the complexity of social-ecological systems in a systematic fashion and supports context-sensitive analysis and a transferability of insights among similar classes of problems and contexts. The potential of such an approach to identify coordination failures and support the implementation of the SDGs will be illustrated by cases from Europe, Africa and Asia. The keynote will further elaborate on the relevance and potential of such an approach to address water governance challenges in the Canadian context.

Dr. Helen Jarvie, Centre for Ecology & Hydrology, Wallingford, U.K.

Helen's research encompasses river-system biogeochemistry with particular emphasis on nutrient (phosphorus, P, and nitrogen, N) cycling and water quality, from watershed to global perspectives. A major area is the role of nutrients in river eutrophication worldwide, and how improved nutrient stewardship can help ensure the future resilience of our river water quality and water resource security. Given that society is reliant on P to grow our food, and that phosphate rock is a non-renewable resource, Helen's research also explores how improved P stewardship can ensure future food security and meet water-quality goals.



Helen is a Principal Scientist in Hydrochemistry at the Centre for Ecology & Hydrology, Wallingford, U.K. She is also an Adjunct Professor in Fluvial Sciences at the University of Arkansas, USA; a Visiting Professor in Environmental Chemistry at Plymouth University, UK; and a Visiting Professor in Water Quality Science at the University of Tokyo, Japan.

Eutrophication and the nutrient conundrum: challenges and opportunities for water-quality management

We cannot grow our food without the nutrients phosphorus and nitrogen, but inefficiencies in our nutrient use have led to widespread losses to water bodies. Eutrophication is now a pervasive threat to our water quality and water security. This presentation explores the drivers of eutrophication, and how transitions between nutrient limitation and nutrient impairment have impacted the functional integrity and ecological health of our rivers, from headwaters to the river-basin scale. Improved stewardship of nutrients will be vital in optimising the balance, and minimising the trade-offs, between agricultural production, urban development, waste management, and the quality and security of our water resources. Addressing these challenges will require collaboration across all sectors of society, to improve our nutrient use efficiency through the entire food system: from farm, to fork, to wastewater management and disposal.

Dr. David Grimes, President, World Meteorological Organization

David Grimes, president of the World Meteorological Organization, a Brock University graduate, has been Assistant Deputy Minister and head of Environment and Climate Change Canada's Meteorological Service since July 2006. His leadership has resulted in its transformation and modernization, including a realization of substantial investments into the Service. Over his 40-year career with the Meteorological Service his accomplishments – in weather forecast operations, the Canadian Climate Centre and science-policy development – were many.

**Thoughts on Water: Challenges and Opportunities for Canada**

Focus of the talk will be related to the issues and concerns that pertain to Canada in terms of water resources. In some respects the audience would be very familiar with these issues, but Canada is not unique to many of the issues faced around the world. Over the last five years, the United Nations has been preoccupied on the challenges of water and in particular as to how it relates to Countries achieving the Sustainable Development Goals. World Meteorological Organization has reflected on these dimensions over the last two years, organizing both a high level summit in 2018 and special session of its Commission on Hydrology to consider a path forward. The talk will shape these directions in a context for Canada.

Scott White, Editor of [The Conversation Canada](#)

Scott White is Editor of [The Conversation Canada](#). Previously, he was Editor-in-Chief of The Canadian Press and Vice-President, Content Strategy and Business Development at Postmedia Network. He has an MBA from the Rotman School of Management at the University of Toronto and is a graduate of the journalism program at Ryerson University.



Telling Your Research Story

Presented on behalf of the GWF Communications Core Team

This session is a chance for academics to learn how they can get their research and knowledge known to a wider, non-academic audience. Scott will take you behind the scenes to show how authors work with *The Conversation's* editors to create content that is often viewed across the country and around the world. Authors have access to a dynamic analytics dashboard which shows how many times their articles are viewed and what media outlets have published them. Participants are encouraged to bring story ideas to the presentation.