



UNIVERSITY OF SASKATCHEWAN

Global Water Futures

GWF.USASK.CA



Global Water Futures Programme
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Global Water Futures: Solutions to Water Threats in an Era of Global Change

Progress Report #1 – Feb. 27, 2017

Background

In September 2016, the University of Saskatchewan (UofS) was awarded \$77.8 million from the Canada First Research Excellence Fund (CFREF) to lead the "Global Water Futures: Solutions to Water Threats in an Era of Global Change" (GWF) initiative—the largest university-led water research program ever funded worldwide. With additional partner funding, the total program budget is \$143.7 million over seven years. GWF aims to transform the way communities, governments, and industries prepare for and manage water-related risks in an era of unprecedented change.

The UofS-led water research network involves more than 380 Canadian university researchers at 18 universities from a wide range of disciplines, 19 federal and provincial agencies, seven Indigenous communities and governments, 39 industrial collaborators, 15 non-governmental agencies, and 45 international research institutes. Researchers will work with international organizations such as UNESCO, the World Climate Research Programme, and Future Earth in developing the tools and models to mitigate water disasters, protect the environment, and take advantage of economic opportunities.

The GWF Mission

GWF's overarching goal is to deliver risk management solutions—informed by leading-edge water science and supported by innovative decision-making tools—to manage water futures in Canada and other cold regions where global warming is changing landscapes, ecosystems, and the water environment. Specifically, the GWF mission is to:

- Improve disaster warning—develop scientific knowledge, monitoring and modelling technologies, and national forecasting capacity to predict risk and severity of extreme events;
- Predict water futures—use Big Data to make informed decisions, with better models to assess change in human/natural land and water systems; and
- Inform adaptation to change and risk management—propose governance mechanisms, management strategies, and policy tools to reduce the risk of water threats, design adaptive strategies, and enhance economic opportunities.

Progress to Date

- GWF has established an 11-member Strategic Management Committee (SMC) composed of representatives from the four institutional partners (University of Saskatchewan, University of Waterloo, McMaster University and Wilfrid Laurier University), two key stakeholders (Environment and Climate Change Canada and Health Canada), and other specialists that ensure a broad representation of disciplines and regions. The SMC is chaired by GWF Program Director Howard Wheeler and co-chaired by Associate Program Director John Pomeroy. The SMC reports to Karen Chad, U of S Vice-President Research (VPR), who is the formal holder of the \$77.8-million CFREF grant. Chad is advised by an oversight committee, consisting of the four partner university VPRs and Wheeler.
- The SMC has approved a four-tier funding model for developing GWF research projects:



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EXCELLENCE
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- Funding to support core GWF water forecasting and prediction, observational and technical projects that include data management, collecting critical measurements at observatories and laboratories, knowledge mobilization, and developing enhanced computational methods and user interfaces with complex information;
- Seed funding for workshops to identify disciplinary research needs and opportunities;
- Directed funding to targeted groups to develop transdisciplinary user-led projects in alignment with GWF deliverables; and
- An open call for proposals to identify new opportunities and accelerate research development.
- A \$10-million science budget has been created for disciplinary workshops and research that is transformative in advancing GWF capabilities. This budget will support a first request for proposals for Pillars 1 and 2 (Basic Science and Big Data) that is anticipated to be released in June 2017.
- The SMC allocated \$28 million for proposals that address a key focus—engaging with users to develop solutions to user needs through transdisciplinary science.
 - As part of the GWF proposal, 138 letters of support were secured. In November and December, a survey conducted via four consultants provided a user needs report.
 - The SMC issued the request for proposals for “Transformative Solutions to User and Stakeholder Needs” for a budget of \$10 million over three years.
 - The SMC envisions funding trans-disciplinary proposals driven by user needs that could have a regional, river basin or pan-Canadian focus and leverage user support as identified in the user needs report.
 - The available funding is mostly for hiring highly qualified personnel, with the expectation that major equipment purchases will be met from other sources.
 - The SMC held information sessions at the four partner institutions to inform researchers of the programme progress, answer questions, and outline the process for developing letters of intent (LOI).
 - On January 30th 2017, a total of 33 LOIs were received for a total funding request of more than \$37 million.
 - The LOIs were carefully reviewed by the SMC in conjunction with independent advice and recommendations from the International Science Advisory Panel (ISAP) against the six criteria outlined in the call for proposals. The SMC accepted the ISAP’s recommendations and consequently 14 LOIs have been invited to submit full proposals for this round of funding. Given the quality of the LOIs, GWF increased the total funding envelope from \$10 to \$14 million for this round of funding.
- A first request for proposals for Pillars 1 and 2 (Basic Science and Big Data) will be announced in in June 2017.

GWF Core Modelling and Technical Support

GWF core support provides the necessary underpinning for certain core program objectives and deliverables, specifically:

- National capability for the modelling needed to deliver key programme goals; and,
- Capability for observational science, in particular with respect to key observatories.

GWF will provide core support teams for the programme as follows:

- Knowledge Mobilization Support Team
- Computer Science Team – Human Computer Interface and Re-engineering Codes
- Observatories, Observations, and Data Management Team

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- Modelling Core Team
 - Hydrological and Water Quality Forecasting
 - Climate and Diagnostic Hydrological & Water Quality Modeling
 - Water Resources Modelling

Oversight Committee Membership

- **Karen Chad**, VPR U of S
- **George Dixon**, VPR UWaterloo
- **Rob Baker**, VPR McMaster U
- **Robert Gordon**, VPR WLU
- **Howard Wheeler**, CERC in Water Security, U of S

Strategic Management Committee Membership

- **Howard Wheeler**, CERC in Water Security, U of S
- **John Pomeroy**, CRC in Water Resources & Climate Change, U of S
- **Patricia Gober**, Professor, U of S
- **Helen Baulch**, Saskatchewan Centennial Chair, U of S
- **Philippe van Cappellen**, CERC in Ecohydrology, UWaterloo
- **Dave Rudolph**, Professor, UWaterloo
- **Sean Carey**, Professor, McMaster U
- **Jennifer Baltzer**, CRC in Forest & Global Change, WLU
- **Ronald Stewart**, Professor, UManitoba
- **Al Pietroniro**, Research Scientist, ECCC
- **Peter Berry**, Senior Policy Analyst, Health Canada

International Science Advisory Panel Membership

- **Anthony Jakeman**, Director, Integrated Catchment Assessment and Management (iCAM) Centre, Fenner School of Environment and Society, Australian National University
- **Blanca Jimenez Cisneros**, Director of the Division of Water Sciences UNESCO
- **Eric Kasischke**, Department of Geographical Sciences, University of Maryland, U.S.A.
- **Dennis Lettenmaier**, Distinguished Professor, Department of Geography, University of California at Los Angeles, U.S.A.
- **Xin Li**, Director of Laboratory of Remote Sensing and Geospatial Science at CAREERI/Chinese Academy of Sciences (CAS), CHINA
- **Claudia Pahl-Wostl**, Professor for Resources Management, University of Osnabrück, Germany
- **Roy Rasmussen**, Senior Scientist, National Center for Atmospheric Research, U.S.A.

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