Operations Management Support

GWF Secretariat

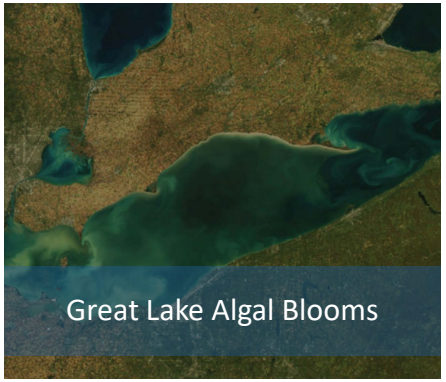
January 21, 2018

UNIVERSITY OF SASKATCHEWAN
Global Water Futures
GWF.USASK.CA

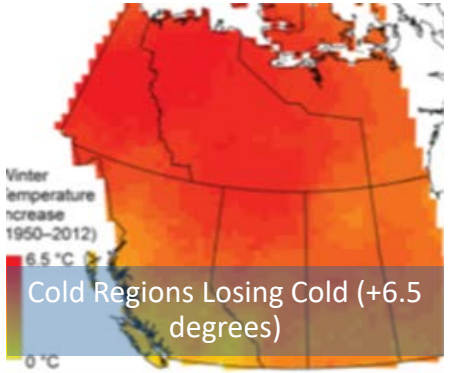
Water is essential for life and society

Our Water is at Risk & The Big Thaw


Toronto Flood (2013)


Great Lake Algal Blooms


Drought: Prairies (1999-2004)



Cold Regions Losing Cold (+6.5 degrees)


Permafrost Thaw


Unprecedented Prairie Summer Flooding


Extreme Wildfires


Yukon's Slims River Changes Flow Direction

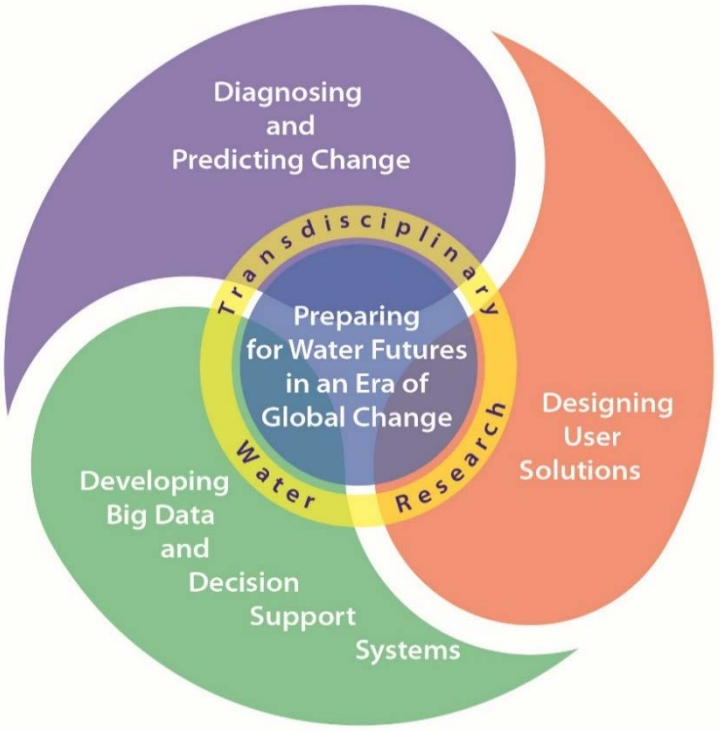
Grand Challenge: How can we best prepare for and manage water futures in the face of dramatically increasing risks?

Global Water Futures - Mission

- Improve disaster warning
- Predict water futures
- Inform adaptation to change and risk management

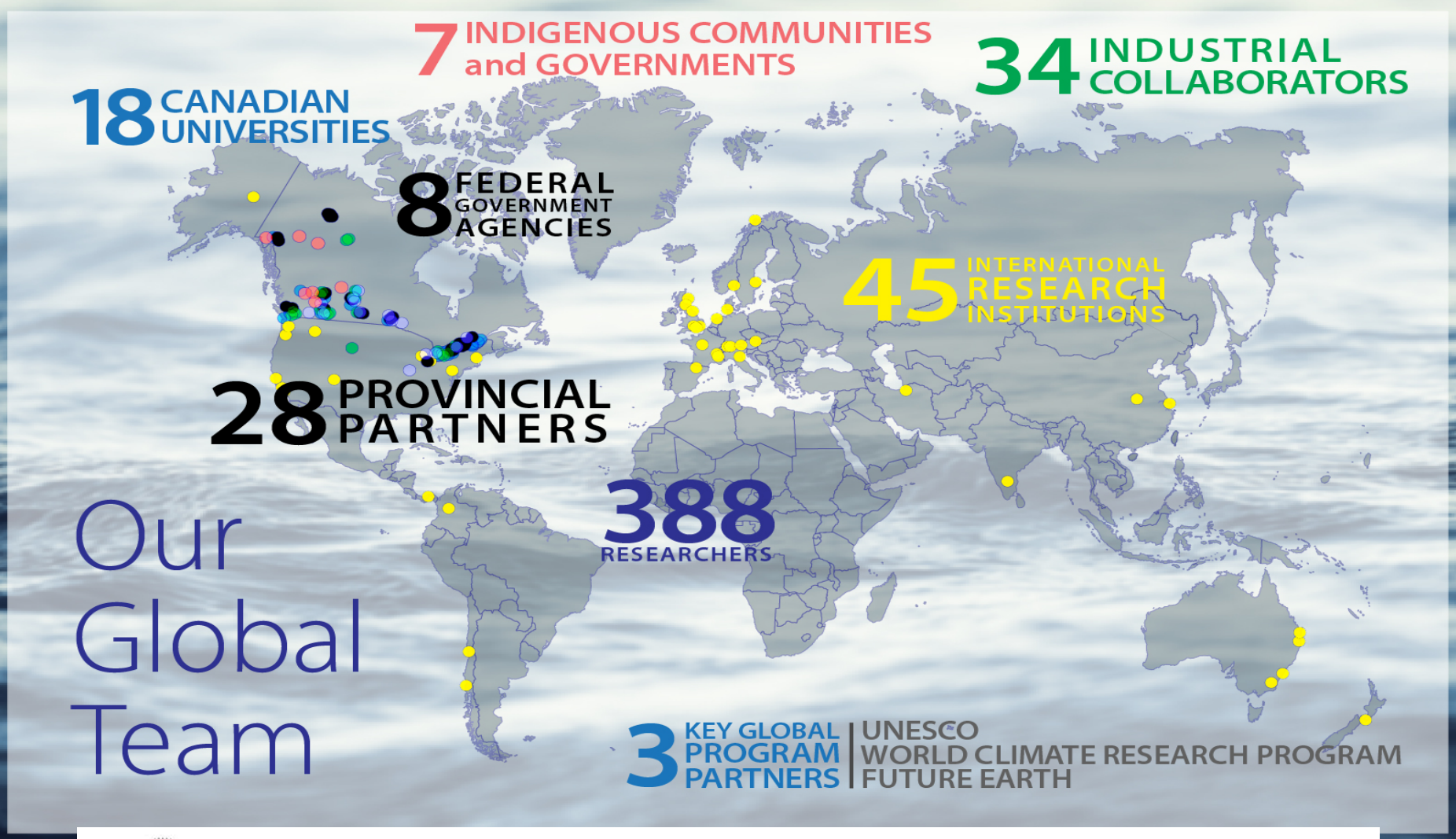
Transdisciplinary Science Pillars

- Diagnosing and Predicting Change in Cold Regions
- Developing Big Data and Decision Support Systems
- Designing User Solutions



Global Water Futures will position Canada as a:

- Global leader in water science
- Global partner of choice for water research
- Provider to Canada and the world of solutions to water threats



CANADA FIRST RESEARCH EXCELLENCE FUND | APOGÉE CANADA FONDS D'EXCELLENCE EN RECHERCHE

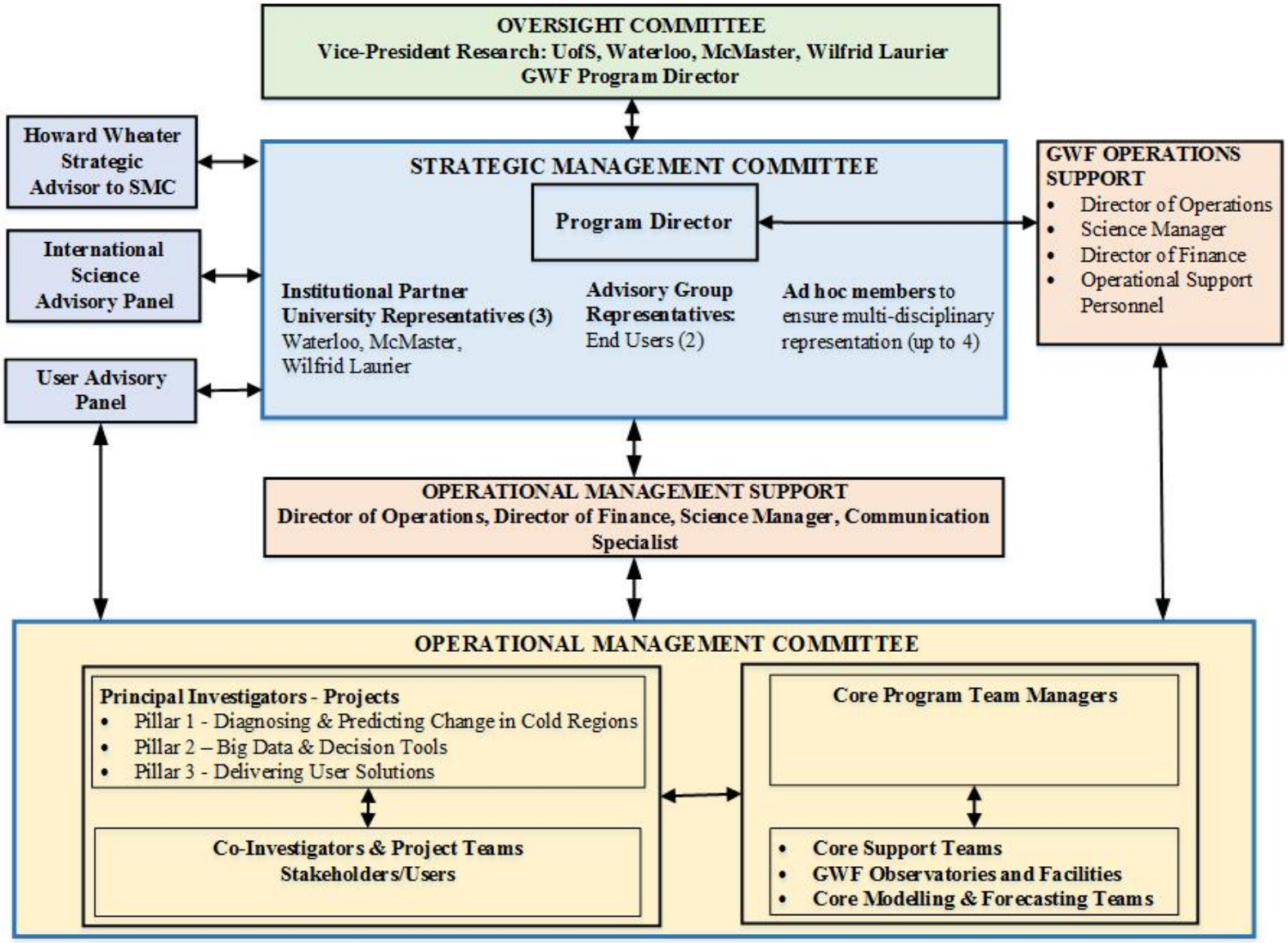
UNIVERSITY OF SASKATCHEWAN

UNIVERSITY OF WATERLOO

McMaster University

LAURIER Inspiring Lives.

Global Water Futures: Management



Global Water Futures: Projects

- 33 Projects & Core Teams
- 15 Universities
- 211 PIs & Co-Is
- 172 Partners/ Stakeholders
- Training 444 HQP over 3 years

Total $170 M funding for Pillars 1-2-3 Projects over 3 years

- $23.5 million GWF grant funding
- $26.8 million cash support
- $119.7 million in-kind support

Additional $14.6 M to support core teams over 3 years

Core Support Teams – 68 HQP

- Modelling and Forecasting
- Computer Science
- Knowledge Mobilization
- Data Management
- Technical Team

- Note: All of the above teams will be presenting tomorrow

National Hydrology Research Centre, Saskatoon

Canadian Centre for Water Forecasting and Prediction, Saskatoon

Coldwater Laboratory, Canmore, Alberta

Operations Management Support

- Facilitate Interactions: Pillars 1-2-3 & Core Projects
- Identify Research Gaps
- Identify Opportunities
- Track Progress
- Identify Financial Issues
- Identify Communication Needs

Inception Meeting Purpose & Report

- The purpose of an Inception Report for each project is to establish a set of short-term plans and broader long-term plans.
- Intended as a guidance document to help in the planning and execution of project activities, as a benchmark to gauge progress, and as a tool to help identify and resolve key problematic areas, such as lack of resources, commitments, or person-power
- Inception Report Deadline – April 30, 2018

Inception Report – due April 30, 2018

Report Contents and Guidelines (Length—11-13 pages)**:**

- Introduction, including a brief summary of the project, background information and its overarching goals as it is currently conceived (1-2 pages)
- Plan for Reaching Goals (7 pages)
  - Goal/Objectives
  - Models (which models are being deployed, which models are being developed)
  - Data/sensors (creation, management)
  - Activities (field campaigns, laboratory studies, surveys, other)
  - Linkages to Other Projects
  - Milestones/timelines
  - Deliverables
- User Engagement and Knowledge Mobilisation Plan (1 page)
- Revised Budget – detail proposed expenditures by objective/goal, by investigator and by HQP (1-2 page)
- Strategic Analysis with direction on how issues and gaps will be resolved, what needs to be done to achieve the milestones and produce the stated deliverables, and how to coordinate and integrate planned activities (1 page)

Appendix:

- List of Personnel (investigators and HQP, who is doing what)
- List all major research sites and facilities along with brief description that are supporting your project in an Appendix. Please include relevant photographs, where applicable

Upcoming Events

- January 22–23, 2018: GWF Inception Meeting, Waterloo ON
- May 6–11, 2018: 8th GEWEX Science Conference, Extremes and Water on the Edge, Canmore AB
- June 4–6, 2018: GWF Annual Science Meeting, McMaster University, Hamilton ON

Annual Science Meeting & Progress Report

- Written Progress Reports Deadline – April 30
  - Fill Participant Information and Self-Identification Form
- Provide an opportunity for all GWF researchers, students, post-docs, and affiliated support and management personnel to gather and present their science and other relevant activities
- June 3-6, 2018 at McMaster University, Hamilton

Financial Reports

- Reports to the UofS are handled by your university's central finance units
- UofS consolidates the financial reports and submitted to the CFREF Secretariat.
- The GWF Secretariat also uses the financial reports to monitor spending versus budgets
- Spending should be kept consistent with budgets, with a 20% variance being the threshold whereby we will discuss whether budgets should be amended

Communication

- 2018 Strategic Comms Plan draft will be presented tomorrow – all four universities consulted
- Builds national and international profile
- Supports HQP recruitment, partnership building and first reporting of results
- Leverages comms capacity of partners and end users
- Includes media relations and social media strategies
- Monthly e-newsletter goes out to 1,000 stakeholders
- Ensures compliance with CFREF comms guidelines

Outreach

- Promotional Booths at Professional Conferences
- Development of Scientific Promotional Materials
- Videos to Highlight Research Outcomes
- Promotion via Social Media
- Organization of Special Meetings & Conferences
- Maintain GWF Website
- Advise the GWF Young Professionals Group

Expectations of Pillars 1-2-3 Projects

- Inception Report – Submit by April 30, 2018
- Annual Reporting – Submit by April 30 every year
- Website – Mandatory for Pillar 3 projects and projects over $300,000, encouraged for all projects
- Financial Management – Detailed institutional reports
- Operational Management Meeting – Twice per year
- Communication – Provide information on significant achievements to the GWF Communication Officer

GWF Secretariat

- Phani Adapa, Director of Operations; 306-966-2271; phani.adapa@usask.ca
- Chris DeBeer, Science Manager; 306-966-6224; chris.debeer@usask.ca
- Kelly McShane, Director of Finance; 306-966-8744; kelly.mcshane@usask.ca
- Stacey Dumanski, Outreach Coordinator; 306-966-6351; Stacey.dumanski@usask.ca
- Mark Ferguson, Communication Specialist; 306-966-7135; m.ferguson@usask.ca
- **Note: KM, Data, Comp Sc., Tech. & Modelling Teams will make presentations tomorrow**

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Website: www.globalwaterfutures.ca

GWF User-Question Led Projects

- Climate-Related Precipitation Extremes, **Ronald Stewart**, University of Manitoba; **Francis Zwiers**, University of Victoria
- Northern Water Futures, **Jennifer Baltzer** and **William Quinton**, Wilfrid Laurier University
- Next Generation Solutions to Ensure Healthy Water Resources for Future Generations, **John Giesy**, University of Saskatchewan
- Forecasting Tools and Mitigation Options for Diverse Bloom-Affected Lakes, **Helen Baulch**, University of Saskatchewan
- Agricultural Water Futures in Canada: Stressors and Solutions, **Merrin Macrae**, University of Waterloo
- Canada's Boreal Wildlands-Society-Water Nexus, **Mike Waddington**, McMaster University

GWF User-Question Led Projects

- Prairie WATER: Sustainable Water Management for Civic and Provincial Policy Makers and Urban, Rural, and Indigenous Communities, **Jeff McDonnell** (**Chris Spence)**, University of Saskatchewan
- Integrated Modelling for Prediction and Management of Change in Canada's Major River Basins, **Saman Razavi**, University of Saskatchewan
- Mountain Water Futures, **Sean Carey**, McMaster University
- Lake Futures – Enhancing Adaptive Capacity and Resilience of Lakes and their Watersheds, **Nandita Basu**, University of Waterloo
- Transformative Technologies for Canadian Water Futures – Big Data Platform and "Smart" Watersheds, **Claude Duguay**, University of Waterloo
- Co-creating of Indigenous Water Quality Tools, **Dawn Martin-Hill**, McMaster University

GWF Projects - Basic Science, Big Data & Tools

- Southern Forests Water Futures, **Altaf Arain**, McMaster University
- Collaborative Modelling Framework for Water Futures and Holistic Human Health Effects, **Lalita Bharadwaj**, University of Saskatchewan
- Linking Water Governance in Canada to Global Economic, Social and Political Drivers, **Rob de Loe**, University of Waterloo
- Old Meets New: Subsurface Hydrogeological Connectivity and Groundwater Protection, **Grant Ferguson**, University of Saskatchewan
- Omic' and chemical fingerprinting methodologies using ultrahigh-resolution mass spectrometry for geochemistry and healthy waters, **Paul Jones**, University of Saskatchewan
- Evaluation of ice models in Large Lakes using Three Dimensional Coupled Hydrodynamic-Ice Models, **Kevin Lamb**, University of Waterloo
- Short-duration extreme precipitation in future climate, **Yanping Li**, University of Saskatchewan

GWF Projects - Basic Science, Big Data & Tools

- Diagnosing policy and governance effectiveness for agricultural water management during times of change, **Philip Loring**, University of Saskatchewan
- Linking stream network process models to robust data management systems for the purpose of land-use decision support, **Bruce MacVicar**, University of Waterloo
- Winter Soil Processes in Transition, **Fereidoun Rezanezhad**, University of Waterloo
- Global Water Citizenship - Integrating networked citizens, scientists and local decision makers, **Colin Robertson**, Wilfrid Laurier University
- Sensors and Sensing Systems for Water Quality Monitoring, **Ravi Selvaganapathy**, McMaster University
- Linking multiple stressors to adverse ecological responses across watersheds, **Mark Servos**, University of Waterloo

GWF Projects - Basic Science, Big Data & Tools

- Crowdsourcing Water Science, **Graham Strickert**, University of Saskatchewan
- Storms and Precipitation Across the continental Divide Experiment (SPADE), **Julie Theriault**, University of Quebec at Montreal
- SAMMS: Sub-Arctic Metal Mobility Study, **Brent Wolfe**, Wilfrid Laurier University
- Adaptation governance and policy changes in relation to a changing moisture regime across the southern Boreal Forest, **Colin Laroque**, University of Saskatchewan
- Significance of Groundwater Dynamics within Hydrologic Models, **Walter Illman**, University of Waterloo
- Diagnosing and mitigating hydrologic model uncertainty in high latitude Canadian watersheds, **Tricia Stadnyk**, University of Manitoba

GWF Projects - Basic Science, Big Data & Tools

- Land surface-atmosphere moisture feedbacks: the role of soil and wetland storage in the prairies, **Andrew Ireson**, University of Saskatchewan
- Improved understanding and prediction of water storage in the southern boreal forest, **Warren Helgason**, University of Saskatchewan

Core Support Teams

- **Knowledge Mobilization** – UofS-Steelman, WLU-Blay-Palmer, UW-Kevin Boehmer (UofS-RS-1, UW-RS-1, WLU-RS-1)
- **Computer Science** – UofS-Schneider, UW-Lin (UofS-RS-2, UW-RS-1)
- **Data Management** – UofS-Pomeroy, McM-Carey, WLU-Baltzer, UW-Lin (UofS-Tech-1, McM-Tech-1, WLU-Tech-1)
- **Research Technicians**
  - UofS – 6 (Airborne Cold Regions Observatory, Water Isotope Ecohydrology Laboratory, Boreal Forest and Prairies – 2, Canadian Rockies Hydrological Observatory – 2)
  - UW – 5 (Remote Sensing, Smart Sensors Network, Water Quality and Aquatic Ecosystem, Smart Watershed – 2)
  - WLU – 5 (Ecosystem Resilience, Hydrometeorological, Permafrost, Water Quality, Biomonitoring)
  - McM – 4 (Yukon Research Sites – 2, Northern Boreal Plains, Ontario Observatories)

GWF Integration of National Water Modelling & Observation Strategies

- Core support teams to deliver national modelling capability, new observational science and knowledge mobilization
- User focussed research questions
  - How will the hydro-climatic conditions of Canadian watersheds change in response to global climate change and changes to the environment, particularly to new extremes?
  - What will be the future of water quality in response to hydro-climatic changes, agricultural activities, industrial developments, land use change, and water management?
  - How can basin-wide water management and decision making process be improved under the new hydro-climatic and water quality conditions, where there are vast social, economic, and environmental issues?

Multiscale Comprehensive Modelling Approach

- Fine scale hydrological, water quality, atmospheric, cryospheric, fire and crop models – mountains, agriculture, forests
- Large scale hydrological modelling coupled to atmospheric models – core of a national water prediction and forecasting system
- Large scale water quality modelling driven by hydrological models and feeding to water management and decision support models
- Decision analysis and support system
  - Water resources modelling
  - Shared vision model
  - Decision optimization model

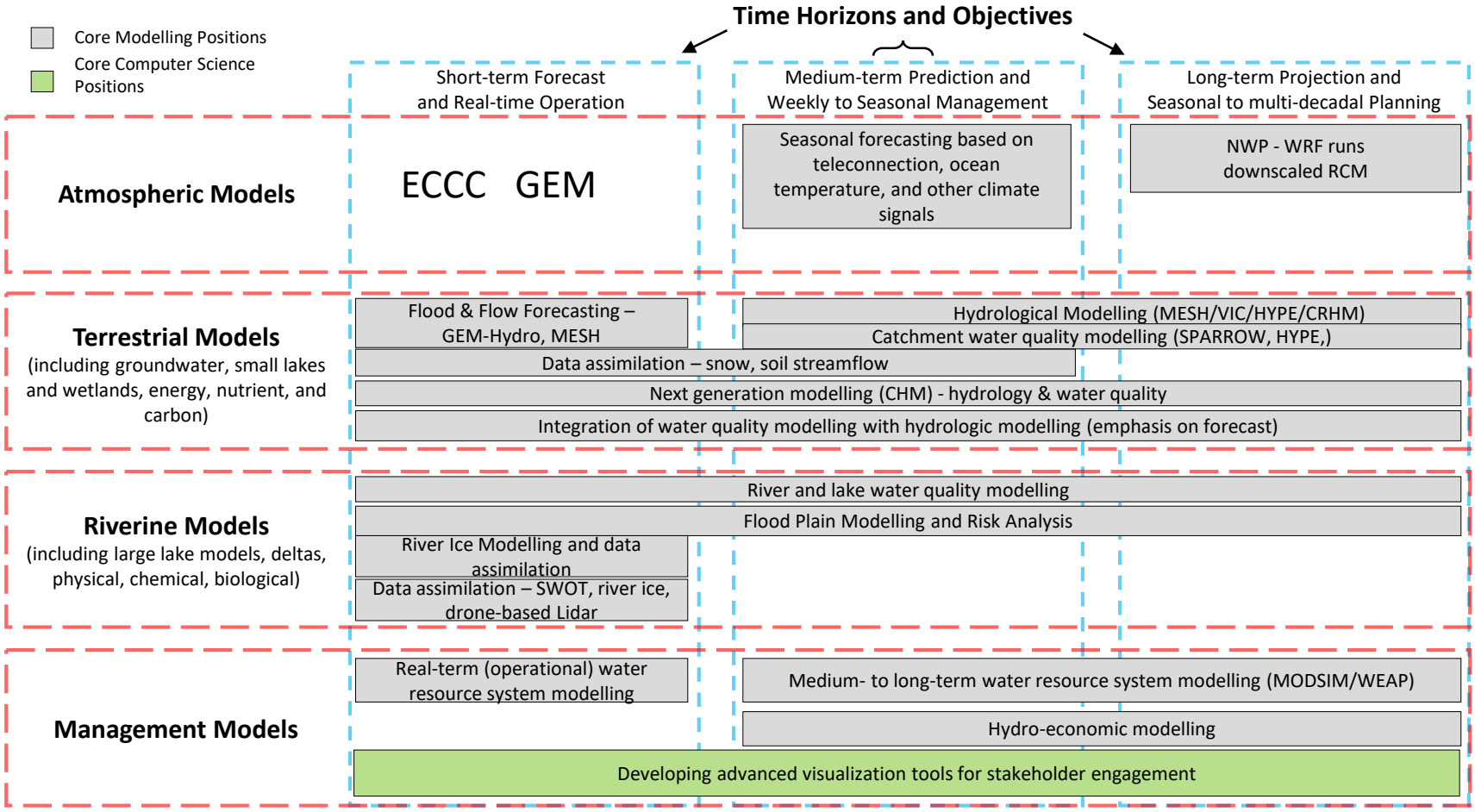
Core Team – Modelling & Forecasting

- Hydrological and Water Quality Development
  - Flood Forecasting (UofS-RS-2*)
  - Seasonal and Drought Forecasting (UofS-PDF-1)
  - Floodplains (McM-PDF-1)
  - Data Assimilation (UofS-PDF-1, UofS-Eng-1*, UW-PDF-1)
  - River Ice Modelling (UofS-PDF-1)
  - Water Quality (UofS-PDF-1, UW-PDF-1)
- Climate Change and Diagnostic Applications
  - Climate - high resolution pan-Canadian (UofS=RS-1, UofS-PDF-2*, UofS-GS-1)
  - Hydrological Modelling (UofS-RS-1, UofS-PDF-2*, UW-PDF-1)
  - Next Generation Modelling (UofS-RS-1, UofS-PDF-1, UofS-RO-2*)
  - Catchment, River and Lake Water Quality (UofS-RS-1, UofS-PDF-1, UW-RS-1, UW-PDF-1, McM-PDF-1)
- Water Resources Systems
  - Water Resources (UofS-RS-1, UofS-PDF-1, UW-PDF-1)

*denotes UofS supplemental funding

currently a team of 30

GWF National Integrated Modelling Strategy



GWF National Modelling Strategy