



# Project Management Updates

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[www.usask.ca/water](http://www.usask.ca/water)





# Acknowledgement



Integrated Modelling  
Program for Canada  
Global Water Futures

Hayley



Stephanie



Kasra



Fuad

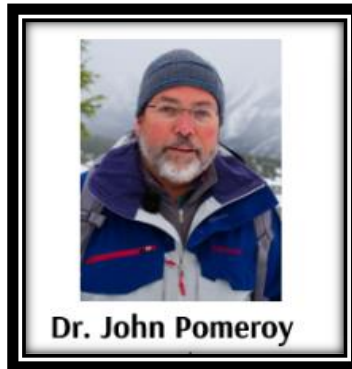


***GIWS staff: Sherry, Kelly, Michelle, Mark***

# GWF & IMPC



Integrated Modelling  
Program for Canada  
Global Water Futures



Dr. John Pomeroy



GLOBAL WATER FUTURES  
SOLUTIONS TO WATER THREATS  
IN AN ERA OF GLOBAL CHANGE

WWW.GLOBALWATERFUTURES.CA



Dr. Jay Famiglietti

**39 sub-projects**

Core Modelling Team

Integrated Modelling Team



Dr. Al Pietroniro



Dr. Martyn Clark



Dr. Saman Razavi



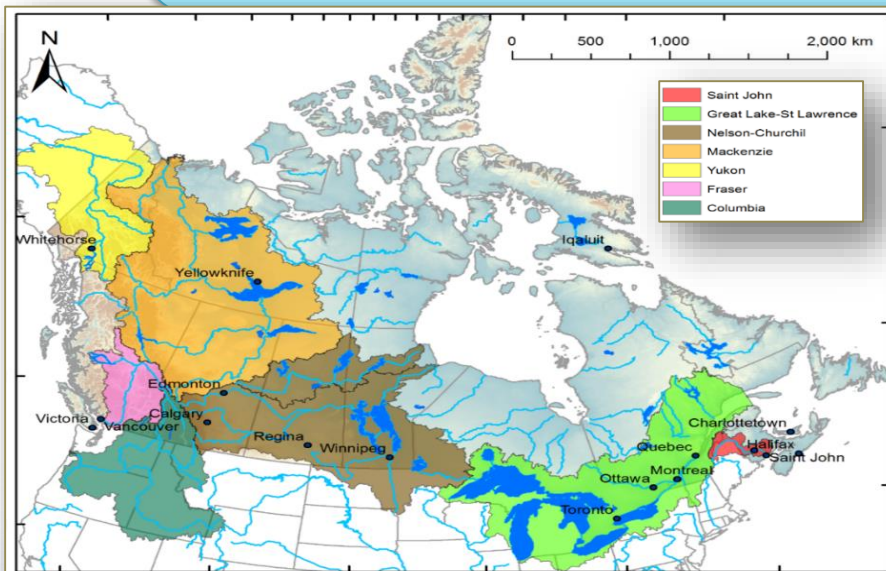


# Goal



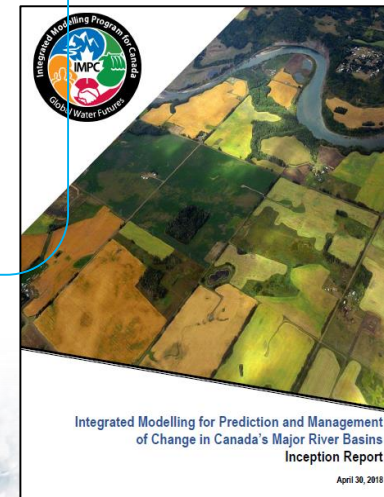
Integrated Modelling  
Program for Canada  
Global Water Futures

*IMPC* aims to develop a **pan-Canadian integrated modelling platform** to diagnose, simulate, and predict interactions **amongst natural and human-driven** water-resource components of the changing Earth and environmental systems, and to deliver optimal **decision making tools and solutions** for uncertain future water resources, considering the range of **stakeholder needs** in Canada's major river basins.



## Inception Report:

- **Objectives**
- **Milestones**
- **Deliverables**
- **Timelines**



### A1: Atmospheric Modelling

Coupled atmospheric-hydrologic modelling to represent feedbacks under scenarios of change

### A2: Hydrologic Modelling

Improving process representations to better simulate snow, glacier, groundwater, and permafrost

### A3: Water Quality Modelling

Integrating land-surface and in-stream water quality processes into hydrologic modelling

### A4: River Ice Modelling

Integrating river ice processes into hydrological modelling for operation and flood forecasting

### A5: Modelling Intercomparison

Model intercomparison and multi-model analysis for improved prediction

### A6: Floodplain Mapping

Improving floodplain mapping in flood sensitive watersheds

### A7: Characterization of Uncertainty

Enabling decision making under uncertainty and identifying & reducing dominant controls of predictive uncertainty

## 4 Research Themes 14 Sub-projects

### THEME A: Integrated Earth Systems Modelling

### THEME B: Water Management Modelling



### THEME C: Decision Making under Uncertainty

### THEME D: User Engagement and Knowledge Mobilization

### B1: Basin-wide Water Resource Modelling

Developing a basin-wide water resources model to simulate different operational policies of existing and future water infrastructure

### B2: Environmental Demands

Developing hydro-ecologic metrics for environmental demands in water management

### B3: Hydro-economic Modelling

Developing an integrated hydro-economic model to assess the direct and indirect impacts of policy decisions based on socio-economic water valuation studies

### D1: Outreach and user engagement

Inclusion of user community representatives on modeling team, and iterative, two-way sharing of information between scientists and users

### D2: Decision Support Systems

Developing decision support systems with advanced visualization tools



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### **Transdisciplinary:**

- **5 Universities**
- **10 Gov. agencies**
- **>10 User communities**
- **3 Indigenous groups**

### **IMPC Integrates**

- **Atmospheric science**
- **Hydrology**
- **Water resource**
- **Ecology**
- **Social science**
- **Computer science**
- **Economics**

### **Phase I:**

**\$1.65M for 3 yrs  
(Jun 2017-Aug 2020)**

### **Phase II: ?**

**Sep 2020-Aug 2023**

# Project Structure



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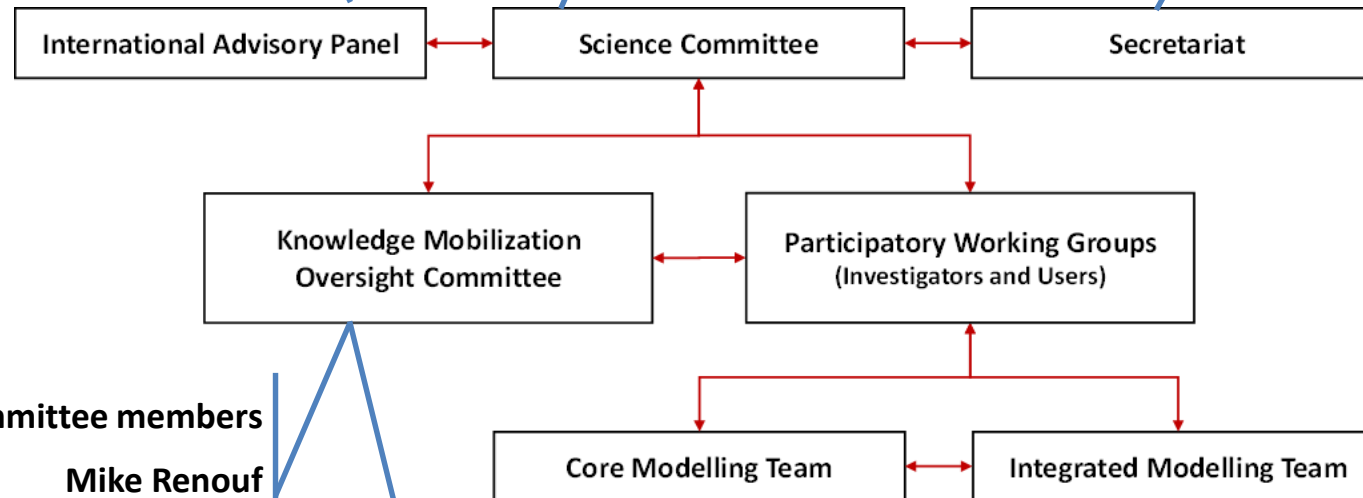
**Eric Wood** (Princeton U)  
**Hoshin Gupta** (U Arizona)  
**Steven Chapra** (Tufts U)  
**Casey Brown** (U Mass.Amherst)  
**Thorsten Wagener** (U of Bristol)  
**Patrick Reed** (Cornell U)

**Saman Razavi**  
**Al Pietroniro**  
**Howard Wheeler**  
**Pat Gober**  
**John Pomeroy**

**Program Manager:**  
Amin Haghnegahdar

**Data Manager:**  
Amber Peterson

**GIWS admin. staff**



## Committee members

**Mike Renouf**  
Prairie Provinces Water Board

**Wayne Jenkinson**  
International Joint Commission

**Bob Holliday**  
Partners for Saskatchewan River Basin

**Knowledge Mobilization Specialist**  
Stephanie Merrill  
**User Engagement Specialist**  
Hayley Carlson



# Lead Investigators



**Dr. Saman Razavi**  
Principal Investigator  
University of Saskatchewan



**Dr. Jay Famiglietti**  
Canada 150  
Research Chair



**Dr. Martyn Clark**  
University of  
Saskatchewan



**Dr. Karl-Erich  
Lindenschmidt**  
University of Saskatchewan



**Dr. John Pomeroy**  
Canada  
Research Chair



**Dr. Amin Elshorbagy**  
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Saskatchewan



**Dr. Patricia Gober**  
University of  
Saskatchewan



**Dr. Tricia Stadnyk**  
University of  
Manitoba



**Dr. Tim Jardine**  
University of  
Saskatchewan



**Dr. Yanping Li**  
University of  
Saskatchewan



**Dr. Al Pietroniro**  
Environment Canada



**Dr. Bryan Tolson**  
University of Waterloo



**Dr. Paulin Coulibaly**  
McMaster's University



**Dr. Howard Wheeler**  
University of  
Saskatchewan



**Dr. Carl Gutwin**  
University of  
Saskatchewan



**Dr. Graham Strickert**  
University of  
Saskatchewan



**Dr. Roy Brouwer**  
University of Waterloo

# International Advisors



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**Dr. Hoshin Gupta**  
University of Arizona



**Dr. Casey Brown**  
University of Massachusetts  
Amherst



**Dr. Eric Wood**  
Princeton University



**Dr. Patrick Reed**  
Cornell University



**Dr. Steven Chapra**  
Tufts University



**Dr. Thorsten Wagner**  
University of Bristol



# Knowledge Mobilization Oversight Committee



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**Amin Haghnegahdar**  
Program Manager  
University of Saskatchewan



**Stephanie Merrill**  
Knowledge Mobilization Specialist  
University of Saskatchewan



**Hayley Carlson**  
User Engagement Specialist  
University of Saskatchewan



**Mike Renouf**  
Prairie Provinces Water Board



**Bob Halliday**  
Partners for Saskatchewan River Basin



**Wayne Jenkinson**  
International Joint  
Commission

# User Community

started with 10, now over 21



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Statistics  
Canada



Natural Resources  
Canada



Agriculture and  
Agri-Food Canada



Environment and  
Climate Change Canada



US Army Corps  
of Engineers®



SaskPower



City of  
Saskatoon



UNB

UNIVERSITY OF  
NEW BRUNSWICK



# International Links



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WORLD  
METEOROLOGICAL  
ORGANIZATION



INTERNATIONAL  
Environmental  
Modelling  
and Software  
SOCIETY



International Association  
of Hydrological Sciences



Climate Change  
Service



United Nations  
Educational, Scientific and  
Cultural Organization



French National Committee  
for the International  
Hydrological Programme



Swedish Meteorological and Hydrological Institute



The National Academies of  
SCIENCES • ENGINEERING • MEDICINE



Canadian  
Meteorological and  
Oceanographic Society  
La Société Canadienne  
de Météorologie et  
d'Océanographie



University Corporation for  
Atmospheric Research



Canadian Society for  
Civil Engineering



CWRA ACRH

Canadian  
Water  
Resources  
Association  
Association  
Canadienne  
des Ressources  
Hydriques



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OF ARIZONA



UNIVERSITY OF  
NOTRE DAME



Gorgan University of  
Agricultural Science and  
Natural Resources



Canadian Space  
Agency  
Agence spatiale  
canadienne

# Link to other GWF projects



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## **Prairie Water**

Dr. Christopher Spence, ECCC  
Dr. Colin Whitfield  
University of Saskatchewan



## **Ag Water Futures**

Dr. Merrin Macrae  
University of Waterloo



## **Northern Water Futures**

Dr. Jennifer Baltzer  
Wilfrid Laurier University



## **FORMBLOOM**

Dr. Helen Baulch  
University of Saskatchewan



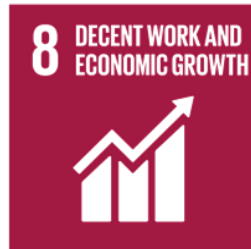
# Link to UN GOALS



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SUSTAINABLE  
DEVELOPMENT **GOALS**  
17 GOALS TO TRANSFORM OUR WORLD



# Timeline



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## Look Into The Future





# Website, Twitter, ...



Integrated Modelling  
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- Website [gwf.usask.ca/impc](http://gwf.usask.ca/impc)
- Meetings
  - Reports, Presentations, Posters
- Twitter [@IMPCwatermodels](https://twitter.com/IMPCwatermodels)
  - Main outreach/update source



# Annual Meetings



Integrated Modelling  
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1. Kick-off workshop (14-15 Sep. 2017)
  - *Inception report, planning*
2. 1<sup>st</sup> annual meeting (18-19 July 2018)
  - *Progress, interim results and plan*
3. 2<sup>nd</sup> annual meeting (12-13 June 2019)
  - *Progress, interim results, plan to complete, Phase II*
4. 3<sup>rd</sup> annual meeting (17-18 June 2020)
  - *Final report/results, Phase II updates*

TENTATIVE



# Other Meetings



Integrated Modelling  
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- Current Meetings:
  - Theme A ~~biweekly~~ Monthly modelling meetings
    - organized by Amin Haghnegahdar
  - Theme B, monthly water management
    - organized by Mohamed Elshamy
  - Theme C & D: User Engagement/KM meetings
    - organized by Hayley Carlson
- Ongoing meetings for each project as needed lead by investigators.





# This meeting by Numbers

- **152 Invitees, 92 Participants**
  - last year 115 invitees, 90 in-person & WebEx
- **15 Organizations**
  - Agriculture & Agri-Food Canada
  - Alberta Advisor
  - **University of New Brunswick**
  - **City of Saskatoon**
  - Environment & Climate Change Canada
  - Manitoba Infrastructure and Transportation
  - Northern Village of Cumberland House
  - Partners for the Saskatchewan River Basin
  - Prairie Provinces Water Board
  - **Saskatchewan Chamber of Commerce**
  - **SaskPower**
  - University of Gorgan, Iran
  - University of Manitoba
  - University of Saskatchewan
  - University of Waterloo
  - Water Security Agency







# Important Dates & Deadlines

- **Bi-annual reports** *15 March 2018*
  1. *15 September 2018*
  2. *15 March 2019*
  3. ***15 September 2019***
  4. *15 March 2020*
  5. *15 July 2020*



# Progress Summary



Integrated Modelling  
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- 54 contributing HQPs
  - 10 MSc, 16 PhD, 17 Post-docs, 7 Research Associates, 5 Research Scientists, and 4 Visiting Scholars
  - Fully or partially funded by IMPC (other sources, mainly the core GWF)
- >49 refereed papers, 22 invited & 84 non-invited presentations
- >34 international collaboration and leadership roles
- > than 14 Radio/TV/Text interviews
- >3 Magazine and Newspaper articles
- 8 institutional, national, & international awards
  - Fellowship of the Royal Society of Canada,
  - Research Chair in Water Resources Economics
  - Young Scientist Award of Canadian Geophysical Union
- IMPC/GWF connected >62 individuals from various types of partners and knowledge user communities (Academic, International, Governmental, Industry, and Indigenous communities).
  - Trips and meetings with Indigenous groups
  - By-invitation consultation meeting on Saskatchewan's Climate Change Strategy by Saskatchewan Ministry of the Environment
  - By-invitation meeting with Saskatchewan Chamber of Commerce ...





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