

# A Vision: Convergence & Integration

## INTEGRATED MODELLING PROGRAM FOR CANADA - SUMMARY

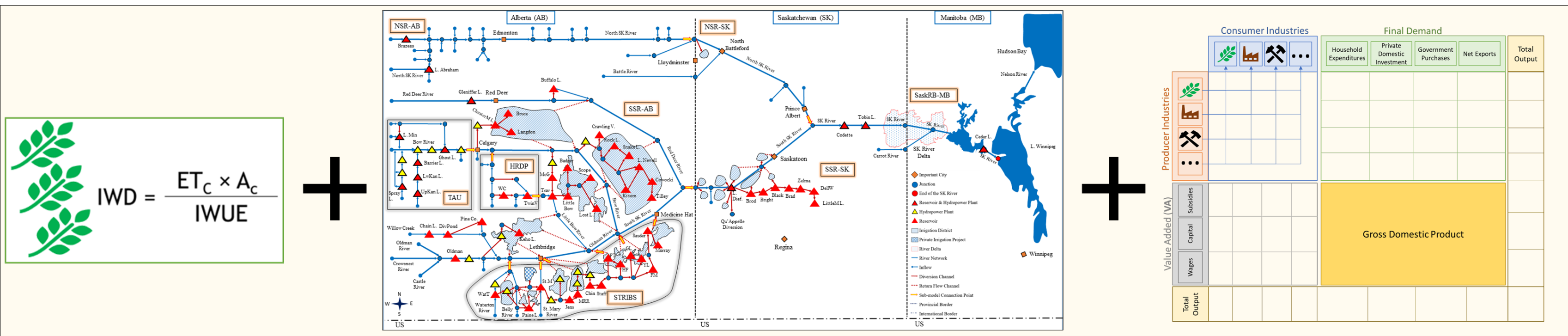
IMPC was specifically designed to link diverse research disciplines and investigator-user communities to develop and integrate complex modelling capabilities for major river basins under four interconnected themes.



CONTACTS

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## IMPC TOOLS



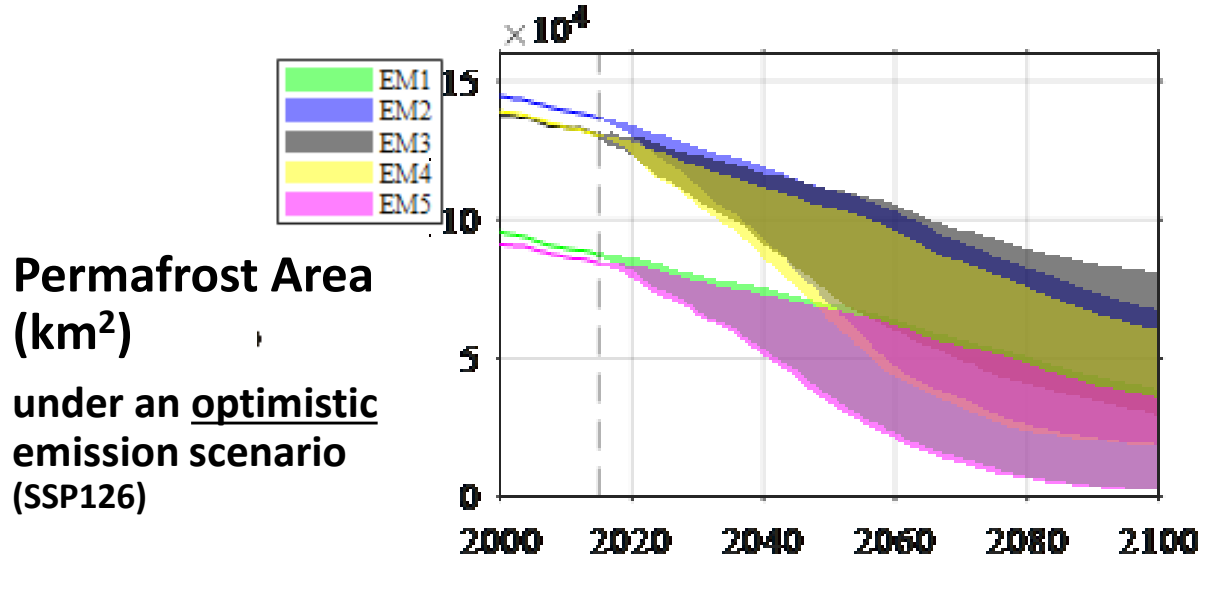
Irrigation Water Demand Model

Water Resources System Model

Hydro-Economic Model

Integrated Water Management Framework for the Saskatchewan River Basin (Leila Eamen)

## RECENT HIGHLIGHTS - NOV '22



Saman Razavi

**WRMSask model:** coupled with irrigation, and inter-regional hydro-economic model; policy and climate scenarios. Eamen, Roy Brouwer (Above, Eamen)

**Agent Based Agricultural Demand (ABAD) Model:** Rebound Phenomenon; irrigation, demand management

**Permafrost:** Liard River Basin sensitive northern regions; optimistic & pessimistic scenarios (Left, preliminary results, Abdelhamed)

**Sensitivity analysis:** VARSTOOL python package updated September 2022

Karl-Erich Lindenschmidt

**South Sask River Model:** heavy metal scenarios complete (HEC-RAS+WASP); after Gardiner Dam

**Sask River Delta 2D HEC-RAS:** scenarios complete; in discussion with N. Village of Cumberland House (Left, shear stress, preliminary, Sabokruhie)

**Naturalized flows up to Lake Diefenbaker inlet (MESH)** Next, regulated outflows (L. Diefenbaker model); possible future climate scenarios (MODSIM outputs)

Tricia Stadnyk

**Nelson-Churchill HYPE permafrost distribution:** 7 soil layers instead of 3; climate scenarios (Left, Bajracharya et al., preliminary results)

**Nelson-Churchill River Basin MiP Phases 1 & 2 complete:** Difficulty with Q, some AET errors, reasonable SWE.

Graham Strickert

**Distributed Water Science**

**Cumberland House modelling feedback Visualization tools;** HEC-RAS outputs; incorporating feedback

Carl Gutwin

**Water Explorer decision-support tool:** visualizing WRMSask Model outputs; incl. recent irrigation plans.

**EB Campbell visualization tool**

new river level display, enhanced time-series viewer to view past/present (Left, Ana-Pietje Du Plessis)

Tim Jardine

**Delta Dialogues** from talk to walk in 2023

User Engagement **Social Network Analysis** Last phase

**Story Sprints** Co-facilitating and participating in GWF knowledge mobilization team workshops

KM/Engagem ent

**Ecological Indicators** for Flow Models

**Deviations in Naturalized Flows:** Sask River Basin; well-integrated with flow models (MESH); Ecological consequences of altered flows. (Left, from presentation)

## SUMMER PROGRESS

Visualizing WRM model results: Exploring the 'Water Scenario Explorer' Saman Razavi, Carl Gutwin, Leila Eamen, Ana-Pietje Du Plessis,

Community-based models & tools in IMPC Graham Strickert, Tim Jardine, Pouya Sabokruhie, Ana-Pietje Du Plessis

Quantile Mapping Climate Model Simulations Simon Papalexiou, Chandra Rupa Rajulapati

GRIP-GL & Nelson MiP Milestones: The Great Lakes & Nelson Model Intercomparison Project Julianne Mai, Bryan Tolson

