Convergence: the Integrated Modelling Program for Canada

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Water models have been developed for many disciplines, each capturing separate snapshots of hydrologic systems. However, hydrology is complex and in constant flow. It is inefficient and costly to model water in many separate pieces. There was a need to combine the strengths of different water-related disciplines into integrated tools, and soon for northern regions such as Canada where climate change is already having an impact. The IMPC team has approached the "integration challenge" by bringing together experts in climate science, water resources management, engineering, snow hydrology, ecology, economics, social sciences, computer science, and traditional ecological knowledge. The work under IMPC would not have been possible without the collaborative spirit of many external researchers, practitioners, and stakeholders from academia, government bodies, boundary organizations, and the private sector. Some of what IMPC has explored includes…

Climate model downscaling & fine-resolution forcing; Refining routines for snow & glacier hydrology ; Water quality modelling; Water quality-hydraulic model coupling; River ice flood forecasting; Permafrost mapping; Indicators and mechanisms of spring flood generation; Flood inundation mapping; Sensitivity & uncertainty analysis; Model intercomparison; Water resource management, irrigation, and economic model coupling; Ecological indicators & sustainable flow boundaries; Incorporation of local perspectives and TEK; Delta Dialogues.

IMPC is a Pillar 3, User-Question Led Project of Global Water Futures.