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## What value do we gain from isotope-abled simulation of the water cycle?

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Calibration of hydrological models is challenging in remote, high latitude regions where hydrometry data are minimal. The vast water resources and complex hydrology of Canada necessitate the use of models to predict future changes in water supply, yet often with high amounts of uncertainty, in part, from poorly calibrated models. In this paper, we demonstrate the utility of isotopes for improving the amount and type of information available for model calibration using the isoWATFLOODTM model. We show that adding additional information to calibration does not hurt model calibration statistics, improves model validation, and offers additional feedback on internal flow paths and hydrologic storages that can be useful for informing model calibration. The inclusion of isotopes in model calibration reduces the number of realistic parameter combinations, resulting in more representative model calibrations and improved long-term simulation of large-scale water balance.

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