

Field	Response
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2. Please indicate the alignment of your research expertise to one or more of the following GWF objectives/ deliverables:	Improve disaster warning – develop scientific knowledge, monitoring and modelling technologies, and national forecasting capacity to predict the risk and severity of extreme events Predict water futures – use Big Data to make informed decisions, better models to assess change in human/natural land and water systems
3.1 Please indicate the alignment of your research expertise to the GWF Science Pillar 1 – Diagnosing and Predicting Change in Cold Regions:	Hydrometeorology and Climate Change – improve understanding and prediction of how climate change influences water availability and extreme events
3.2 Please indicate the alignment of your research expertise to the GWF Science Pillar 2 – Developing Big Data and Decision Support Systems:	Big Data for Water – sensors, sensing, instrumented river basins, data analysis systems
3.3 Please indicate the alignment of your research expertise to the GWF Science Pillar 3 – Designing User Solutions:	Energy & Natural Resources – including mining and hydroelectricity

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4. Please indicate the alignment of your research expertise to one or more of the following user needs:	<p>Projects to improve environmental monitoring, including sensors, drones, satellites, river basin observatories, lake buoys, software development, chemical fingerprinting, real-time monitoring, citizen science, and integration of Big Data platforms for Cold Region water science.</p> <p>Complex system modeling and analyses reflect the growing awareness of interacting dynamics in human-natural coupled systems. These studies emphasize the inter-relationships between water resources and transportation systems, infrastructure, energy generation, mining, food production, and source water protection.</p>
5. Please list regions of Canada and the biomes (e.g. mountains, boreal forest, Great Lakes–St Lawrence), watersheds, and/or river basins where you are interested in conducting research for GWF:	<p>Montaine regions (BC, Alberta) associated with coal mining</p> <p>Boreal Forest regions (Alberta, Saskatchewan) associated with oil resources</p> <p>Prairie</p> <p>Modelling:</p> <ul style="list-style-type: none"> <li>– Research in past few years have focused on the application of physically based soil water and energy balance to soil cover systems including water and chemical transport through deep vadose zones associated with mining waste</li> </ul>
6. Please list any other expertise or recent experience (subjects, river basins, technology) not covered by above query that could help us in assessing your alignment with the GWF programme:	<p>Stable Isotopes of Water:</p> <ul style="list-style-type: none"> <li>– Use of deep, high resolution profiles of the stable isotopes of water to track net recharge into mine waste</li> <li>– Methods development for use of vapour sampling to establish depth profiles of the stable isotopes of water</li> </ul> <p>Instrumentation:</p> <ul style="list-style-type: none"> <li>– Developed a push probe to profile volumetric water content in mine waste to depths of 10–20 m</li> <li>– Continued development/understanding of geomechanics associated with soil moisture loading and aquitard characterization using grouted in – vibrating wire piezometers (Geolysimeters)</li> </ul>