

## Theme 3, Project 3.1

Using the concepts of river classifications, environmental flow requirements, and aquatic ecosystem services to inform sustainable management strategies for large river basins with a focus on Canada

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## **Abstract**

In order to plan for economic development while minimizing the impact on the provision of Aquatic Ecosystem Services (AES), it is critical to understand (1) what and where ecosystem services are provided by rivers at the national scale, (2) how these services are spatially interlinked over large distances, and (3) how to ensure the lasting quality of these services through their integration into sustainable management practices of freshwater resources. Addressing such questions is challenging, in part because aquatic ecosystems are inherently complex, hierarchical and required a large-scale approach. My research will determine “What is the current state of AES in Canada and how can they be integrated to sustainable management strategies for freshwater resources?” My research has three specific goals: (1) to develop and apply a novel, holistic and multi-scale river classification scheme as a mechanism to organize the heterogeneous types of Canadian rivers at a national scale, (2) to map provision and demand of Canadian AES, and, ultimately, (3) to create guidelines for Environmental Flow (EF) requirements (quantity, quality and timing of water needed by ecosystems) that are uniquely tailored to Canadian systems. EF can be an integral part of the sustainable management of freshwater resources to maintain good ecological status of ecosystems.

**Keywords:** River classification, Aquatic Ecosystem Services, Canada, Environmental Flow Requirement,

**Geographic Location:** Include all locations that are applicable to your project, in bullet-point form.

Example: Name of location/ field site, Region, Province, Country

## **How does your project link to Canadian aquatic ecosystem services?**

AES of Canadian rivers are at the core of this project. I will use river classification and GIS techniques to map the state of Canadian AES and investigate the synergies between AES and EF requirement.