NSERC Canadian Network for Aquatic Ecosystem Services

Theme II, Project 2.2: Experimental manipulations to test the effects of forest management activities on physical, chemical and biological indicators of aquatic ecosystem services from headwaters of forested landscapes

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Abstract

Many communities worldwide receive drinking water from forested watersheds, which are now subject to changes in land use and development. These changes can result in water quality degradation through higher amounts of inorganic and organic particles, which can carry heavy metals, host gastrointestinal illness-causing viruses, or coliforms. A common measurement to assess drinking water quality is turbidity, however, studies have shown that relationships between turbidity and organic/inorganic particles may be more complex than previously thought. This is due to variation in light scattering off of particle of different sizes and textures, and how the light scattering is measured by different instruments. Additionally, sources of these particles, and if they are naturally occurring or anthropogenically altered, have been shown to be largely unknown. Therefore, the link between turbidity sources, measurement techniques and the actual particles in the water column requires more analysis to provide a better understanding of how to assess water quality. If turbidity has a complex response to different particle types and with different land uses, then we expect when combining these in the lab and comparing to field analysis we can create a model to understand this relationship.

Keywords: Drinking Water, Land Use, Turbidity, Best Management Practices

Geographic Location: Vancouver and Victoria, British Columbia, Canada

How does your project link to Canadian aquatic ecosystem services?

This project analyses how turbidity functions in streams out of forested catchments, including both natural and anthropogenic factors. This will then serve to provide a platform for how forested streams can continue to provide clean water, such as management recommendations, and considerations for future regulations.