

Day One - Track Two

Wednesday, March 21st, 2018

1:00 p.m. – 1:30 p.m.

Making Silt Smart and Other Outcome-based Monitoring Systems “Smarter”

Presenter: Paul Villard, GEO Morphix Ltd

Biography



Dr. Paul Villard has been involved in research related to geomorphology. His research has covered topics including sediment transport, channel evolution, measurement techniques, urban impacts, and river restoration. He has been involved in projects throughout Canada, the United States and overseas. He is currently the Director and Principal Geomorphologist at GEO Morphix Ltd.

Abstract

Outcome-based erosion sediment control monitoring programs aim to limit construction-related sediment from entering waterbodies. Silt smart, one outcome-based approach to monitoring and managing sites, can reduce the intensity and duration of events. Although shown to be effective, one criticism is the effort required to address false alarms. To address this, the triggers need to get “smarter.” Silt smart dictates triggers based on an environmental threshold for turbidity above background conditions. Triggers are a function of environmental sensitivity. This approach assumes exceedance is associated with construction. Unfortunately, false alarms can be triggered by litter, upstream events, or other natural inputs not from the monitored site. We propose a more intelligent alarm system to reduce false alarms. The approach considers natural sediment sources between monitoring stations that can result in false alarms; provides methods to identify the signatures associated with natural debris (e.g. leaf litter, or woody debris); and finally, recognizes events from upstream of the construction and alarms associated with transit time between stations. These approaches allow us to create more intelligent monitoring protocols to reduce the number of false alarms making the monitoring system more robust. It should be noted that outcome-based alarm systems are important, but they are not the only potential measure of the success of mitigation approaches on sites.

Learning Objectives

1. Refinement of outcome-based monitoring systems for erosion and sediment control management;
2. Improving efficiency associated with "smarter" turbidity alarm systems; and
3. Alternative methods for measuring success of erosion and sediment control on sites.