Examining Water Quality Effects of Land Management Practices

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What is this research about?
- Examining the effects of land management practices on water quality and water quantity for the 2 sq. km Steppler Subwatershed in Manitoba, Canada.
- The goal is to support spatial watershed management at the farm, field, and watershed level through integrated hydrologic modeling.

What is the research method?
- Five land management practices were modelled in imWEBs. These include small dam, holding pond, conservation tillage, forage conversion, and riparian grazing management. imWEBs was developed for daily and hourly small scale watershed modelling.
- The model is supported with high resolution LiDAR DEM, land use, land management, soil type and climate data.
- The model is calibrated and validated with measured flow and water quality data from 11 hydrologic stations.

What you need to know
- Models need to represent the actual hydrologic processes and watershed conditions. A validation of the model is required based on field monitoring data.
- Models are useful tools to study the dynamics of watershed hydrology. They can be used to assess current land management practices at different levels for spatial watershed management.
- Models can be used to evaluate various land management practice scenarios under future climate change to meet conservation objectives.

What are the monitoring techniques?
- V-notch weir at Orchard monitoring station
- Auto sampler and data logger equipment at monitoring station 9
- Circular flume at monitoring station 8

GeoSpatial data
Climate data
Management data

imWEBs
GeoSpatial data
Climate data
Management data

Time series output
Spatial output
Calibration / Validation
Hourly flow data (m³/s)
Water quality (mg/L)

GeoSpatial data
Climate data
Management data

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