

Application of SWAT in Hydrologic and Nutrient Transport Modelling of the Lake Winnipeg Watershed*

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Abstract

The quality of water in Lake Winnipeg has deteriorated during the past three decades as a result of excess nutrient loading from non-point sources in the watershed. While nutrient transport from non-point sources is driven by complex hydrologic and biochemical processes, snowmelt driven hydrologic response plays a key role in nutrient delivery to the lake.

The presentation will give an overview of the first part of the study on hydrologic modelling of two representative sub-catchments of the Lake Winnipeg watershed, namely, the upper Assiniboine catchment (area 13500 km²) in the province of Saskatchewan and the Morris catchment (area 4300 km²) in the adjacent province of Manitoba. Hydrologic calibration of SWAT (Soil & Water Assessment Tool) using two gridded meteorological input data – North America Regional Reanalysis (NARR) and Gridded Climate Dataset for Canada (GCDC) – will be discussed. Initial results of future hydro-climatic scenario simulation using four regional climate models (RCMs) will be presented.

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