

IDENTIFICATION AND VALIDATION OF EXTREME WEATHER INDICATORS FOR AGRICULTURAL PRODUCTION AND RURAL RESILIENCE IN ONTARIO

Project Update



May 2015

Research Purpose

Through this project, we aim to develop information that increases the understanding of end-users regarding the uncertainty associated with climate indicators and downscaled climate projections so that such datasets can be used in planning models and analyses. Related objectives are assessing the validity of different climate model projection datasets to generate these indicators, and enhancing information on the limitations, considerations and assumptions associated with using such projections in adaptation planning and risk analysis at the landscape scale. The main objective of this project is to produce spatially distributed climatological indicators pertaining to agricultural production and rural resilience, which represent extreme weather impacts associated with climate change.

Context

For several years, initiatives have been ongoing in a variety of contexts, including Canada and Ontario, to characterize agricultural vulnerability and identify key indicators of agro-ecological and rural resilience to climate change and extreme weather. Much of this work was recently compiled and analysed in the Intergovernmental Panel on Climate Change (IPCC)'s *Fifth Assessment Report* and Natural Resource Canada's (NRCAN) *Canada in a Changing Climate* report. A key outcome of these analyses was a reinforcement of the notion that the impacts of climate change must be addressed at a local scale by characterizing and responding to risks and vulnerabilities in an integrated fashion. A key finding within the IPCC and NRCAN syntheses is that, while climate change brings potential for increased yields in Canada due to overall longer growing seasons, this benefit will only be realized if the hazards associated with climate change are addressed and managed through adaptation and risk management.

To better understand the impacts of climate change on Ontario agro-ecological and rural systems, it is necessary to identify indicators related to climate change by combining information on local climate with agricultural production and rural system impact data. These indicators use historical data to identify temperature, precipitation and wind related extreme weather events and their impacts. For example, crop losses or infrastructure damage related to these events. In addition, the indicators will help project future extreme weather events to help estimate the burden of climate change-related crop losses, and impacts to agricultural practices rural well-being in the next century.

Project Background

This study will focus on developing and validating a set of spatially distributed extreme indicators in two landscapes in Ontario, Canada: (1) the Greater Toronto Area (GTA), and (2) eastern Ontario. [see over...]

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The research tasks undertaken in this study contribute to Agriculture and Agri-Food Canada's (AAFC) response to the identified need of producing information that will contribute to a multi-year project. This multi-year project is focused on developing and modeling adaptive management responses to extreme weather and climate change in two rural communities in Ontario.

Project Tasks, Deliverables and Timelines

Phase 1	Project set up. Deliverable 1: Draft validation criteria, methodology, and datasets.	✓
Phase 2	Historical threshold analysis. Deliverable 2: Draft summarizing impact thresholds	✓
Phase 3	Future Analysis Outcome 3: Draft summarizing future climate time series, validation process and accompanying database	✓
Phase 4	Final report.	In progress
Phase 5	Deliverable 4: Final database of DST model inputs Outcome 5: List of adaptation alternatives for stormwater management.	In progress

Project Participants and Funders

This report was prepared with funding support from Agriculture and Agri-Food Canada and in-kind support from the Ontario Climate Consortium and York University. We would like to acknowledge the valuable contributions of representatives from the following: Trent University, Canadian Forest Service, International Institute for Sustainable Development, Greater Toronto Agriculture Action Committee, University of Regina, Environment Canada, and Ontario Ministry of Agriculture, Food and Rural Affairs.

Key Audiences (Users)

This technical report is intended to be used by regional and municipal officials, decision makers and interest groups within the agricultural sector for planning purposes.

Contact

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