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Ontario's 36 Conservation Authorities



Northern CA Climate Change Workshop
February 16-17, 2010
Sudbury, Ontario

Compilation of Climate Change initiatives within Southern
Ontario CA'S



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Many Southern CA's are involved in addressing Climate Change from both a Mitigation and Adaptation perspective.

The following presentation presents a glimpse at some of these activities, past and ongoing.



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Mississippi Valley CA

Outreach and Education

- 2-day public workshop featuring expert speakers from various sectors highlighting potential climate change impacts, challenges and opportunities in the Mississippi Valley
- Inter-agency (ministries/municipalities/health units) workshop to consider barriers to local adaptation efforts and need for collaboration
- Published report on local climate change impacts and adaptation opportunities in the Mississippi Valley CA



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Mississippi Valley CA

Water Management Infrastructure

- Completed study of climate change impacts on water control structures and reservoir operating policies
- expected shift in runoff patterns (70% increase in fall/winter stream flows, 30% reduction in spring freshet occurring 6-7 wks earlier, 45% reduction in summer low flows persisting 28% longer)
- greater flood risk in winter
- shift in runoff patterns incompatible with current reservoir operation policy (drawdown regime/timing)
- 25% additional reservoir capacity required to satisfy current summer water supply objectives



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Mississippi Valley CA

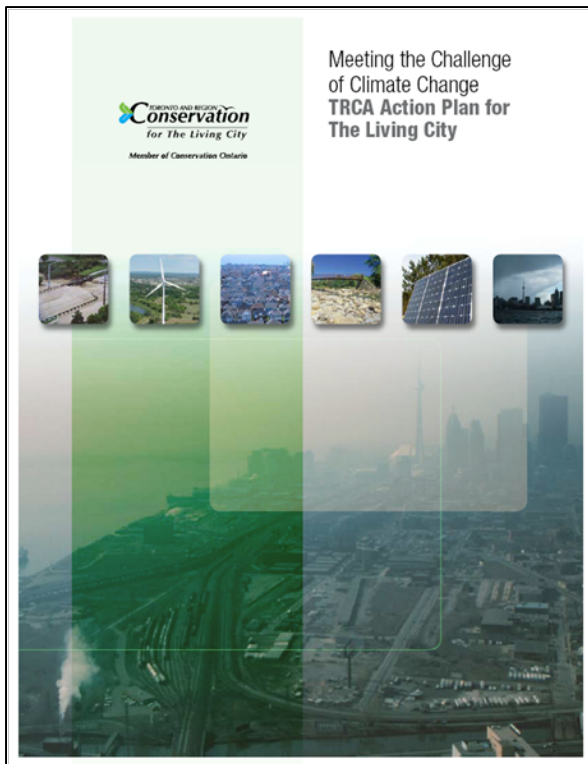
Water Management Infrastructure

- On-going investigations
 - assess structural/operational response measures to projected runoff patterns
 - surface water quality impacts and municipal waste assimilation implications

Fisheries

- Collaboration with Queen's University (Dr. J. Casselman) in understanding the relationship between fish, fisheries and water management in changing climate

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Meeting the Challenge of Climate Change: TRCA Action Plan for The Living City (April 2008)

- Reviews all areas of TRCA business in context of climate change
- A balanced response: adaptation AND mitigation



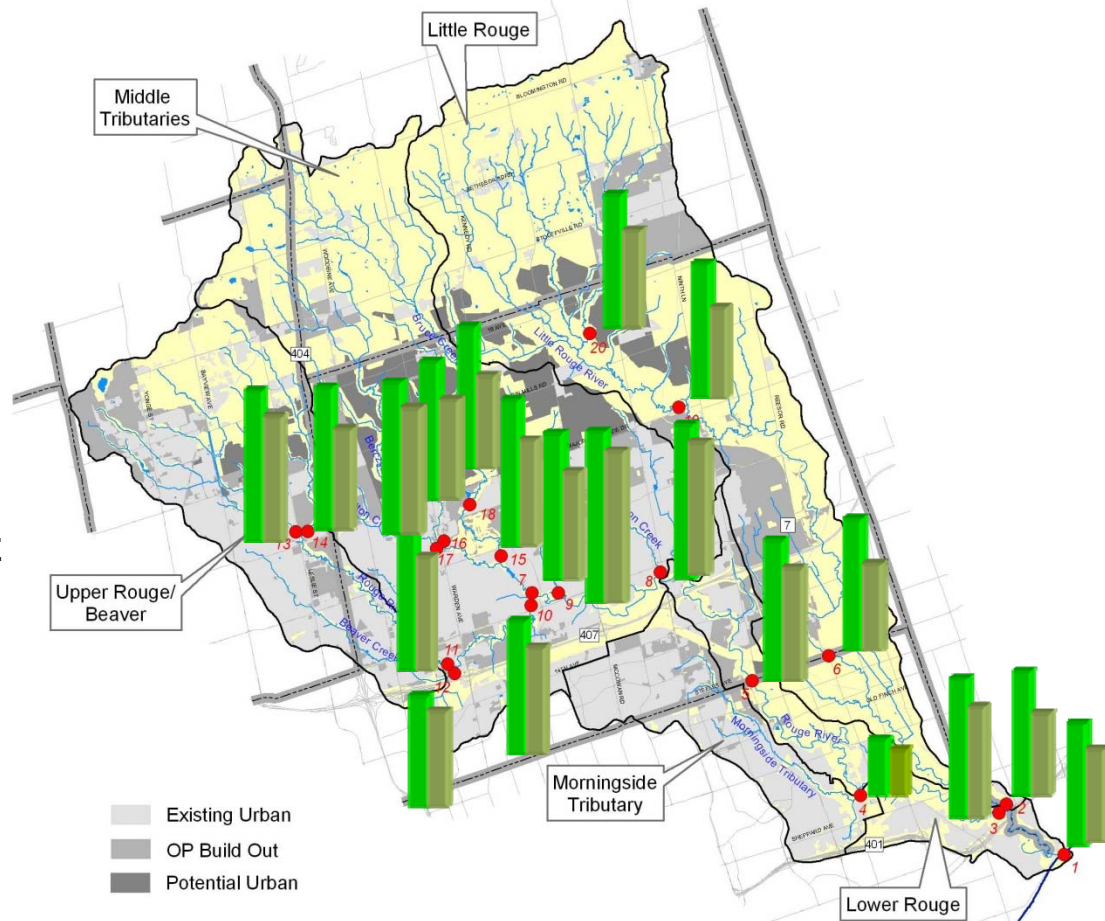
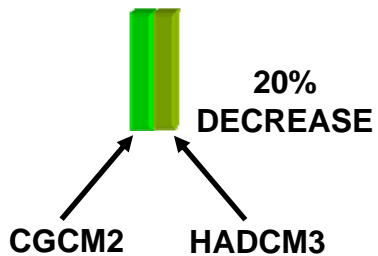
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**Watershed planning
climate change scenarios**



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Public Infrastructure Engineering Vulnerability Committee (PIEVC):

National pilot study on vulnerability
of flood control dams to climate
change





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Examples of Other Initiatives

Project	Partner(s)
Regional IDF curve development	Environment Canada, municipalities, GTA CA's
Climate change mainstreaming standards	CSA, York University
Climate Change Training for Source Protection Areas and Committees	MNR, MOE (Ontario RAC Project)
Climate Change Strategy for Region of Peel	Region of Peel (proponent), local municipalities, CVC
Current and Future Toronto Area Climate Drivers	City of Toronto (proponent), Environment Canada
Implications of Climate Change to TRCA Natural Heritage Systems	



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Project	Partner(s)
GTA Climate Trends Study	(EC) undertaken by Bill Hogg
Radar Based Flood Forecasting and Radar data layers	EC, GRCA
GTA regional municipalities steering group for collaboration on climate change (with focus on adaptation).	Peel, York, Halton, Durham Regions, Toronto , GTA CA's
Sustainable Neighbourhood Retrofit Action Plans (SNAPs) - address climate change adaptation and mitigation at the catchment/neighbourhood scale in existing urban communities.	Toronto, Brampton, Richmond Hill
Host a Regional Climate Modeling Scoping workshop BCVP on Feb 5th to prepare an assessment of Science and Modeling Capacity in Ontario	York University



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Credit Valley Conservation

Climate Change Initiatives

- Assessing threats and vulnerabilities relating to floodplains, infrastructure and natural heritage systems
- Identifying adaptive needs, priorities and opportunities
- Assisting municipal partners with the evaluation of adaptive measures and alternatives
- Reducing CVC's carbon footprint



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Credit Valley Conservation

Climate Change Initiatives

- Reaching out to and educating stakeholders
- Supporting urban and rural stewardship
- Factoring in climate change in carrying out CVC's plan input, plan review and regulatory functions
- Ongoing tracking of domestic and international research into climate change impacts and responses.



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Grand River Conservation

GRCA Climate Change Activities

- Surface water modelling – water balance and water quality climate change scenarios
- Groundwater modelling – locating and protecting key recharge areas (creating Adaptive Capacity)
- Incorporating weather radar in flood forecasting
- Enhancing low water response programs in anticipation of more severe drought
- Promoting watershed resiliency in urban and agricultural areas (innovative stormwater management, stream buffers)



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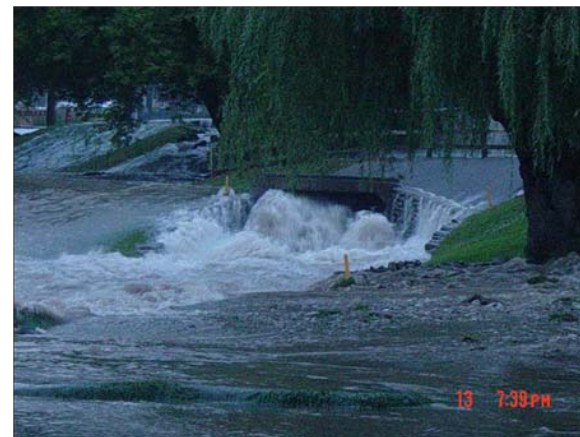
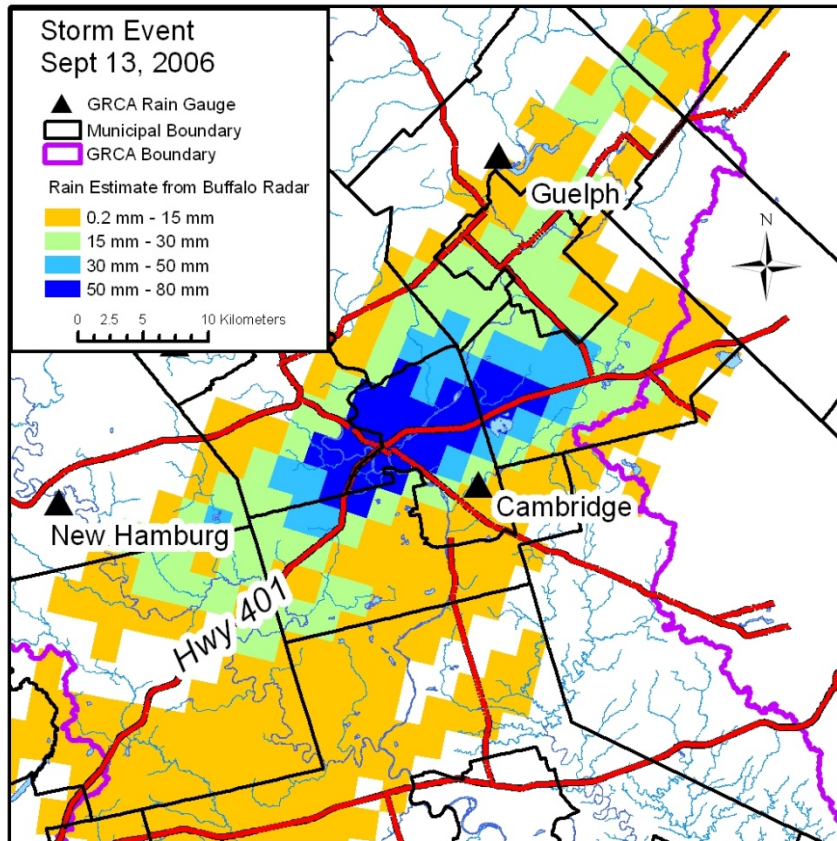
Grand River Conservation

Radar Data in Flood Forecasting

- Initial work led by Long Point Region CA in 2006
- In 2007 GRCA developed an automated hourly radar process using the Digital Precipitation Array data product from NEXRAD
- The GRCA's radar tracking system was implemented in May 2008 and displays accumulation summaries from 1 hour to 7 days
- 2009 enhanced to support output to the GRIFFS flood forecasting system
- Sept 2009 the hourly accumulation data made available to the public via GRCA web-GIS application
- In addition to operational monitoring, a research project has been done to examine spatial patterns of rainfall and 1 hour intensities using NEXRAD radar data from 1996-2008
- Further enhancements to the operational radar tracking for 2010 include daily and monthly synoptic totals and alarming

Grand River Conservation

Why Use Radar?





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Upper Thames River Conservation

CFCAS Project (Canadian Foundation for Climate and Atmospheric Science) entitled “Assessment of Water Resources Risk and Vulnerability to Changing Climatic Conditions.

- This study undertook a risk analysis of existing guidelines and management practices in the Upper Thames river basin with respect to critical hydrological exposures that could lead to failure of the water resources system under a changing climate.

(<http://www.eng.uwo.ca/research/iclr/fids/cfcas-climate.html>)



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Upper Thames River Conservation

CCIAP (Canadian Climate Impacts and Adaptation Project): Climate Change and Extreme Rainfall-related Surface Runoff Risks in Ontario.

- Upper Thames CA participated with Grand, Rideau and Toronto CA's on Environment Canada's study on assessing changes in flood risks related to a changing climate. Study centered around assessing current synoptic drivers for flooding and anticipated changes to these in a changing climate.
- (http://www-pcmdi.llnl.gov/ipcc/project_detail.php?ipcc_subproject_id=602)



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Upper Thames River Conservation

Seasonal Flood Changes under Climate Change in the Upper Thames River Watershed. UTRCA, Slobodan P. Simonovic Consulting.

This ongoing study will expand upon the CFCAS study and to aid the CA to:

1. Examine potential hydrologic effects on rural and urban sub-watersheds, determine critical seasonal event exposures, such as potential dominance of summer storms or spring melt.
2. Develop more complete information from the study for assessing risk management with regard to Provincial flood plain policy, Authority policy, and operational risk associated with the flood control system including dams.



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3. Further analysis of the June 2000 flood event through modeling and relevant risk interpretation across the watershed to assist in considering implications on potential for changes to flood plain management policy.
4. Investigate implications of adaptive land use practices such as increasing forest cover to reduce potential increasing flood risk.



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CA Web Addresses & CC Contact

- <http://www.mvc.on.ca/>
 - Paul Lehman
- <http://www.trca.on.ca/>
 - Ryan Ness / Don Haley
- <http://www.creditvalleycons.com/>
 - John Kinkead
- <http://www.grandriver.ca/>
 - Dwight Boyd
- <http://www.thamesriver.on.ca/>
 - Mark Helsten