Credit Valley Conservation

State of our Watershed

Review of Trends and Opportunities

Climate Change

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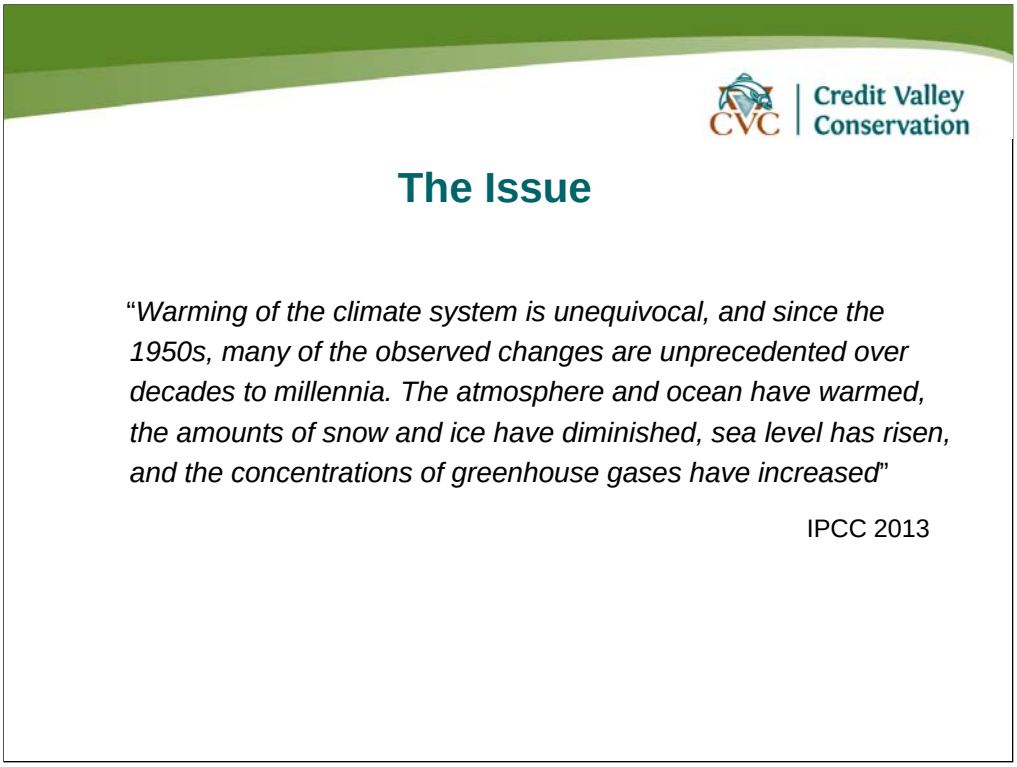
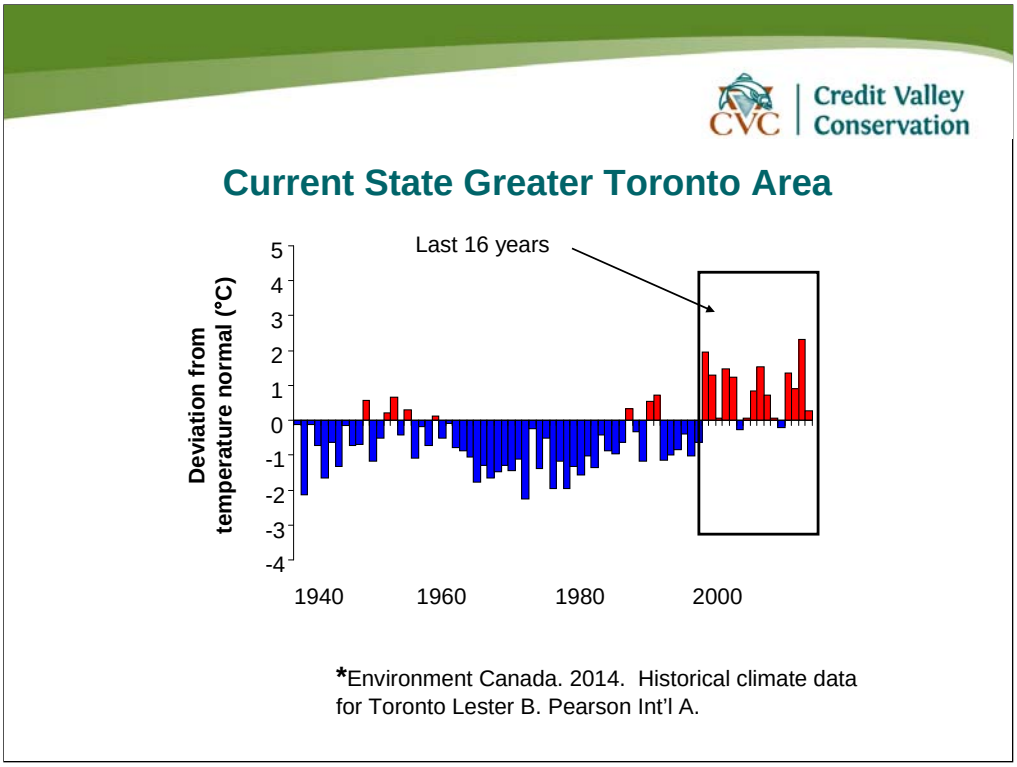


Climate Change is emerging as the defining challenge of our time.

Following much research and analysis, the Intergovernmental Panel on Climate Change concludes that:

"Warming of the climate system is unequivocal, and since the 1950s, many of the observed changes are unprecedented over decades to millennia. The atmosphere and ocean have warmed, the amounts of snow and ice have diminished, sea level has risen, and the concentrations of greenhouse gases have increased"

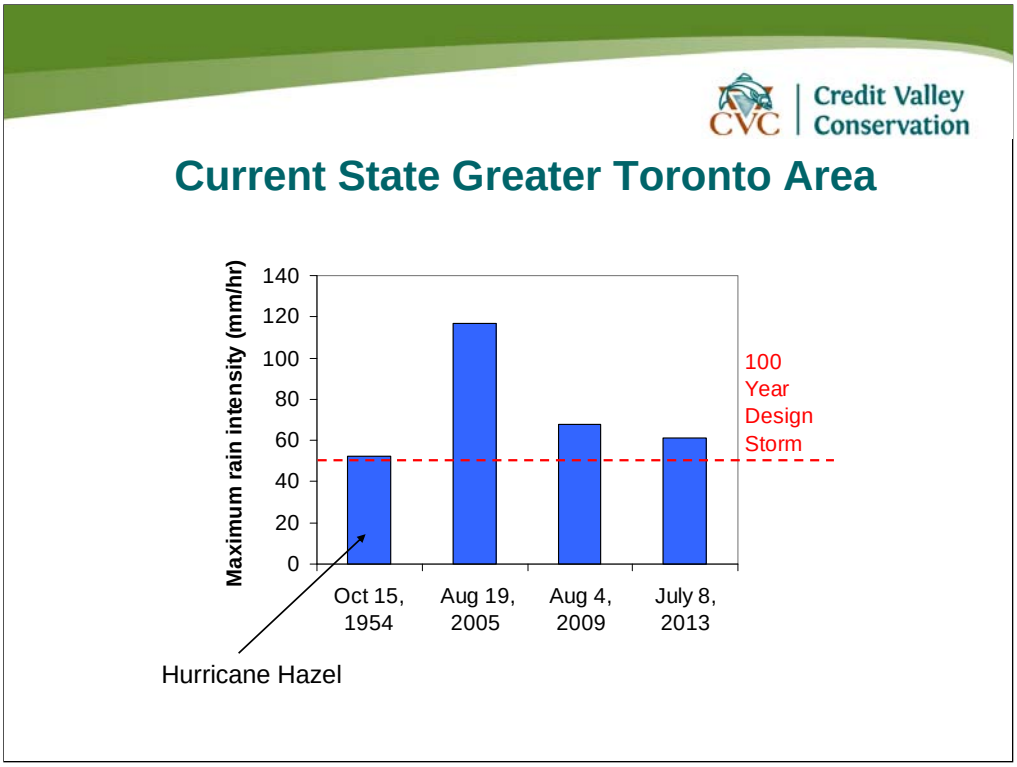
Although Southern Ontario is not expected to be the most vulnerable region to climate change, increased air temperatures and changes to precipitation patterns will have a significant impact on the Credit River watershed.



Changes in climate are already evident:

This figure shows warmer average annual temperatures in recent years. The center line represents the 30 year normal (which is the average from 1981-2010), with red bars indicating years that are above average and the blue bars indicating years that are below average.

The last 16 years are warmer and unlike any period of time dating back to the late 1930's.



High Intensity rainfall events have become more common in the Greater Toronto Area with a number of events occurring over the past decade that approached or exceeded the 100-year return period. These include: Toronto - August 19, 2005; Mississauga - August 4, 2009; and Mississauga - July 8 2013.

This figure shows that these three events had greater 1 hour maximum rainfall intensities than Hurricane Hazel and the 100 year design storm.

Despite these large rain events, the Ministry of Natural Resources reports that Ontario has experienced lower than average precipitation and low water levels since 1998.

The impacts of climate change are evident today and are only expected to intensify as the rate of climatic change accelerates in the near future.

Although climate model projections vary, the general consensus for Southern Ontario is that annual average temperatures will increase by 2.5 to 3.7°C by the year 2050.

These projections far exceed the increase of 1.5°C observed over the last 60 years.

Over that same time period, total annual precipitation is expected to decrease by roughly 10%.

It is also expected there will be an increase in extreme weather events which include: rain, snow, drought, heat waves, wind and ice storms.

These changes will impact the Credit River watershed in many ways, for example:

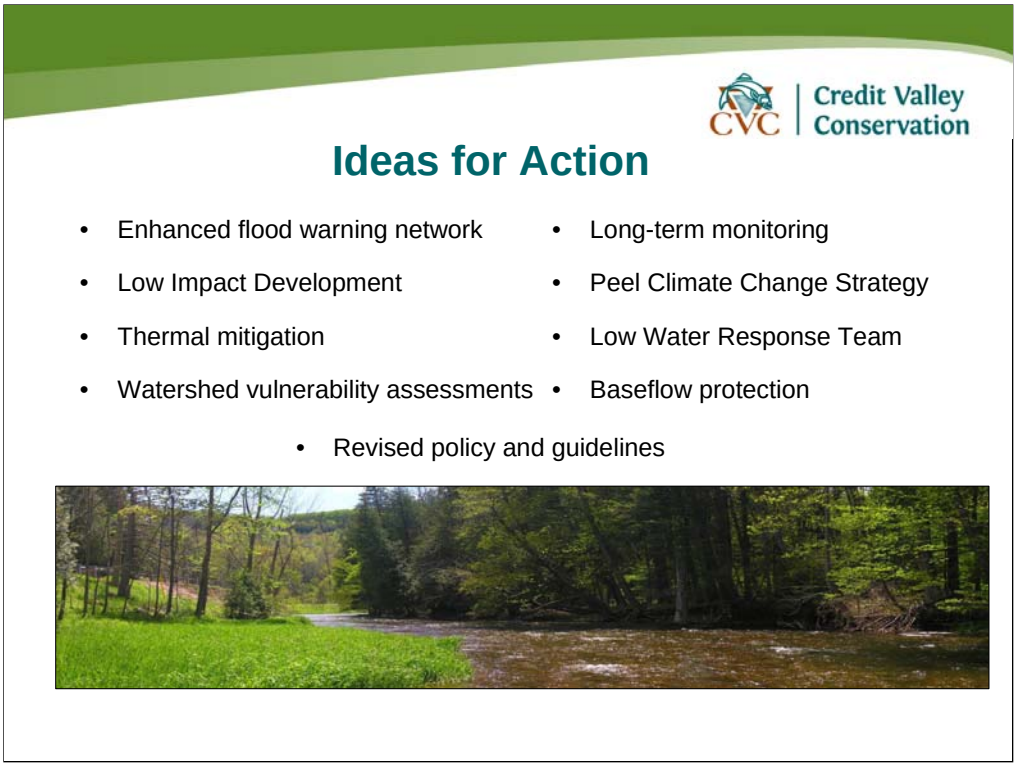
•Low precipitation and periods of prolonged drought will affect water quantity including groundwater systems and stream baseflow.

•Water quality will be affected by warmer water temperatures and more frequent algal blooms.

•Terrestrial and aquatic communities will be affected by heat stress and changes in habitat suitability. This could result in the loss of native species and restrict the range of the Credit Rivers coldwater fish community.

•Agriculture could be impacted by extreme weather including floods and drought.

•There will be damage to natural and built infrastructure through the flooding of rivers, streets and buildings



Credit Valley Conservation has taken steps in recent years to better prepare for the challenges of a changing climate:

•Increased flood risk has led to the implementation of an enhanced flood warning network.

•Advancements to stormwater management are evident through Low Impact Development and other flood prevention practices.

•In addition to flood warning and prevention, current long-term monitoring programs are an essential component of adaptive management and understanding the potential for climate related impacts.

•Thermal mitigation can be achieved through riparian tree planting and stream baseflow can be protected through informed water resource management.

•Credit Valley Conservation must continue to work with partner agencies on initiatives such as the Peel Climate Change Strategy and Ontario's Low Water Response Team.

•Going forward, the continued assessment of watershed vulnerabilities that range from natural heritage features to critical infrastructure will be integral to improve our understanding of climate change impacts, support plans for mitigation and adaptation, and help build resilience at a watershed scale.

•Furthermore, revised policy and guidelines are required at all levels to ensure the protection of these valuable resources.

Credit Valley Conservation

SIXTY YEARS

Our Heritage to Conserve