

Climate Projections

Baseline of 1976-2005 compared to future time-frame 2051-2080 under high emission scenario (RCP8.5)

Warmer

annual **+4.2°C** Rise in average **annual** temperatures
(Baseline 8.6°C; Future scenario 12.8°C)
*w/out humidex

winter **+4.7°C** Rise in average **winter** temperatures
(Baseline -3.4°C; Future scenario 1.3°C)

+5.2°C Rise in **minimum** **winter** temperatures
(Baseline -7°C; Future scenario -1.8°C)

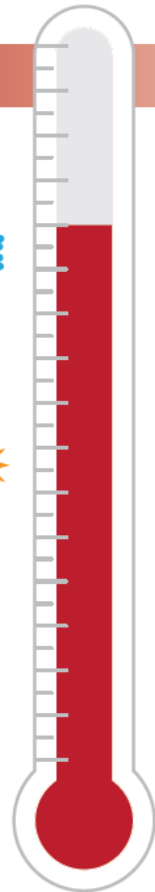
summer **+4.6°C** Rise in **maximum** **summer** temperatures
(Baseline 25.7°C; Future scenario 30.3°C)
*w/out humidex

Hottest day of the year

Baseline **34.2** increasing to **36.5°C** in 2021-2050

Expected to **reach 39.0°C** in 2051-2080

*average w/out humidex

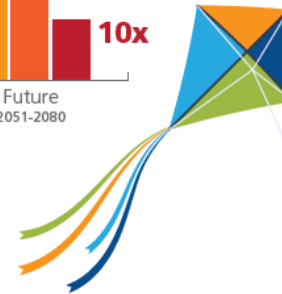
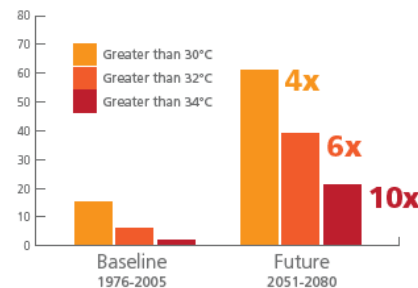


Hot season almost doubled

(Baseline 70.5 days; Future scenario 123.7 days)

Heat alerts and Heat waves

Annual number of and average length of heat waves are to increase



Wetter

Increase in **heavy precipitation days over 10 & 20mm**

Increased intensity, duration and frequency (IDF) of precipitation events

Windier and Wilder

Increase in **wind gusts over 70 & 90 km/hr** the threshold at which Environment Canada would issue a **High Wind Warning** in Ontario

Freezing rain to increase in winter months

Fluctuating **great lakes levels**

Increased **thunderstorm activity** with increased temperatures



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(Baseline 8.6°C; Future scenario 12.8°C)
*w/out humidex

winter **+4.7°C** Rise in average **winter** temperatures
(Baseline -3.4°C; Future scenario 1.3°C)

+5.2°C Rise in **minimum winter** temperatures
(Baseline -7°C; Future scenario -1.8°C)

summer **+4.6°C** Rise in **maximum summer** temperatures
(Baseline 25.7°C; Future scenario 30.3°C)
*w/out humidex

Hottest day of the year

Baseline **34.2** increasing to **36.5°C** in 2021-2050

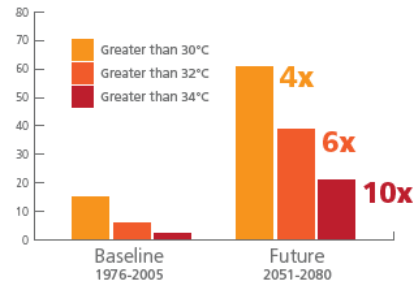
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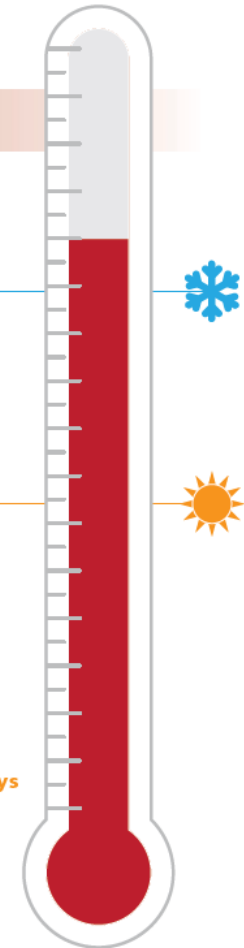


Impacts

Increased **vector-borne disease** and **invasive species** migration and lifespan

Average winter temperatures **above freezing**
Freezing rain and **ice storm events** to increase as winter temperatures warm
Power outages
 Decrease in **snowfall accumulation** and more mixed precipitation

Halton Region **heat warning issued** when temperatures are expected to reach **31°C for 2 consecutive days**
 Temperature-related **morbidity and mortality**
 Increased use of **splash pads, pools** and **green space**
 Increased **energy use** in summer months
Stress to steel and concrete structures
Over twice the number of cooling degree days – the threshold where people turn on their A/C
 Longer, warmer **growing season**



Climate Projections

Baseline of 1976-2005 compared to future time-frame 2051-2080 under high emission scenario (RCP8.5)

Wetter

annual
+78 mm
Increase in average annual precipitation by ~10%



spring & winter
+35 mm
Increase in both spring and winter precipitation by ~17%

Increase in **heavy precipitation days over 10 & 20mm**

Increased intensity, duration and frequency (IDF) of precipitation events

Impacts

- Public and private property **flooding**
- Increased **erosion** and overland runoff = decrease in water quality
- Fast-moving rivers and creeks = **safety risks**
- Harbour capacity** and **operational impacts**

Windier and Wilder

Increase in **wind gusts** over **70 & 90 km/hr** the threshold at which Environment Canada would issue a **High Wind Warning** in Ontario

Freezing rain events to **increase by 45%** with rising temperatures



Fluctuating **great lakes levels**

Increased **thunderstorm activity** with increased temperatures



Impacts

- Downed trees** causing
 - **Decrease in canopy cover**
 - **Tree stress**
 - **Creek and roadway blockages**
 - **Power outages**
- Personal injury**
- Easterly winds cause increased Lake Ontario **wave action** and water levels causing shoreline **flooding and damage**