Niagara Municipalities: Best Practice Mitigation of Weather and Climate - Projections

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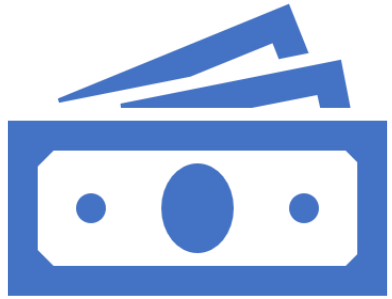
Obligations

Protect the people of the Niagara Region against potential climate hazards



Prevent those hazards from having a substantial economic impact

Goals

FIND AN APPROPRIATE REGIONAL CLIMATE MODEL FOR THE NIAGARA REGION

IMPLEMENT ADAPTATION AND MITIGATION STRATEGIES

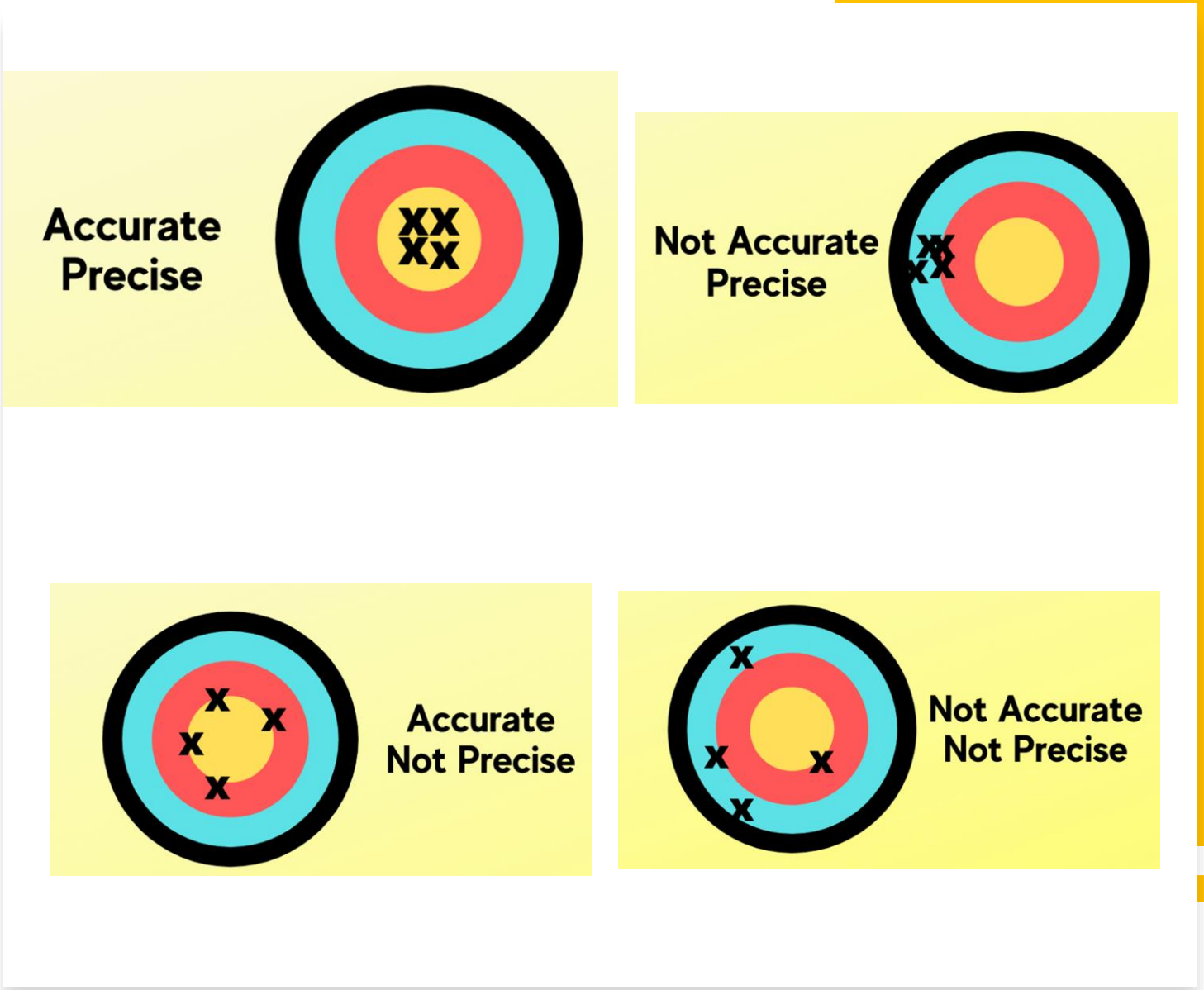
Mission Statement - Niagara

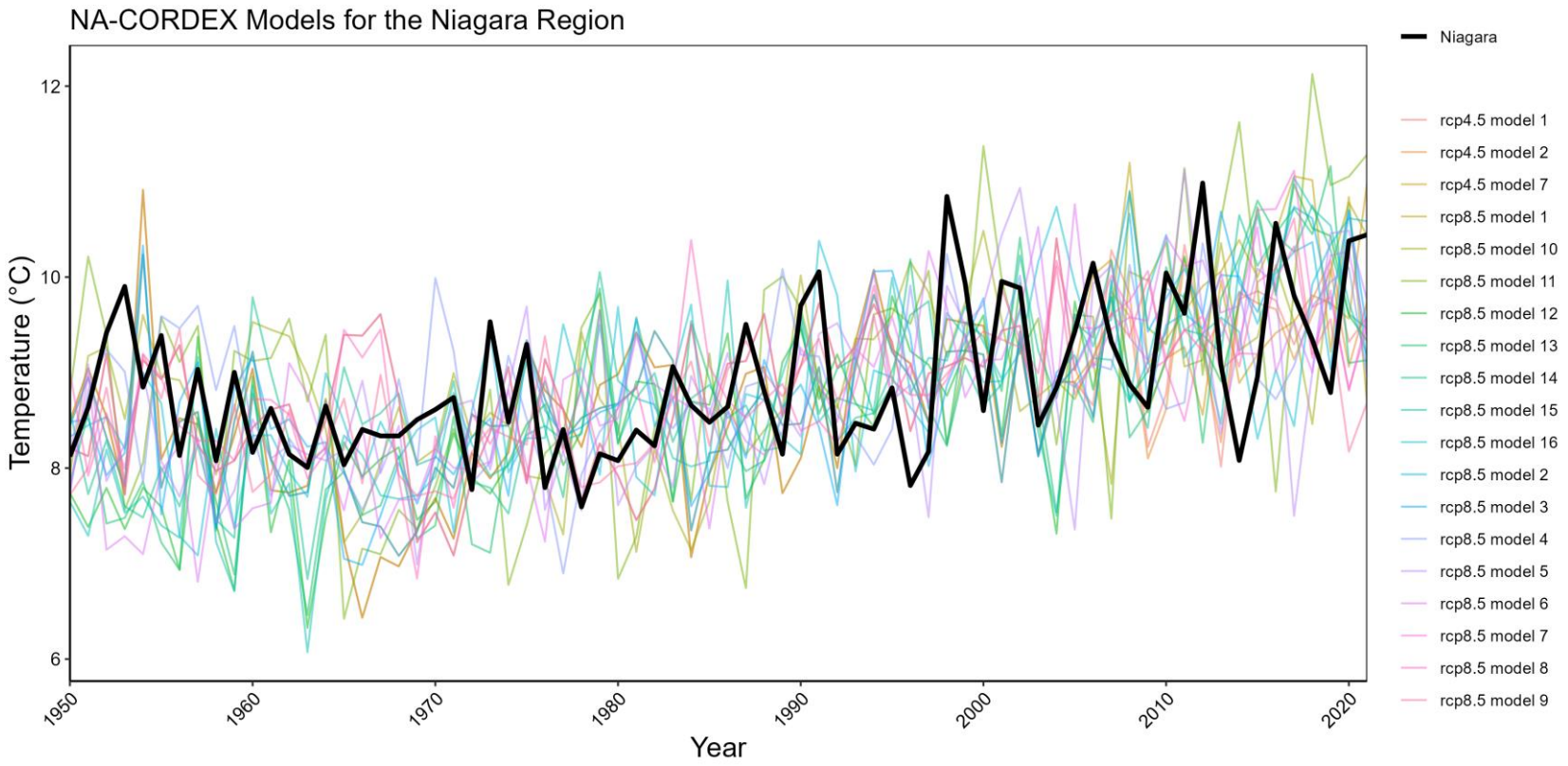
- “…climate change is increasingly impacting Niagara communities, making it crucial to mitigate and adapt to current and future changes in order to grow and protect the community into the future.”

- “The purpose of the Climate Change Discussion Paper is to provide information on climate change in order to develop policies for the new Niagara Official Plan.”

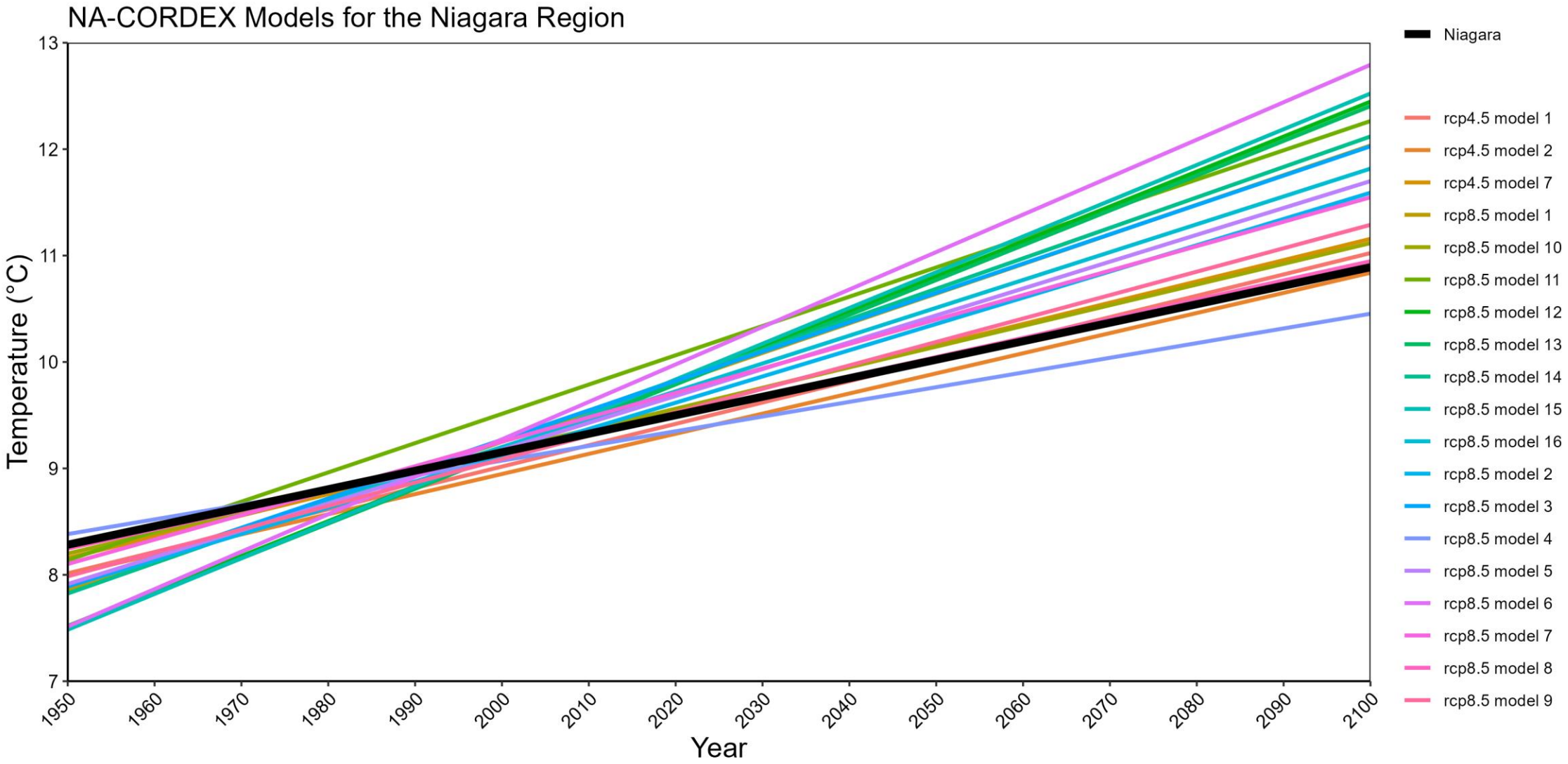
- New Niagara Official Plan: Climate Change Discussion Paper, 2019

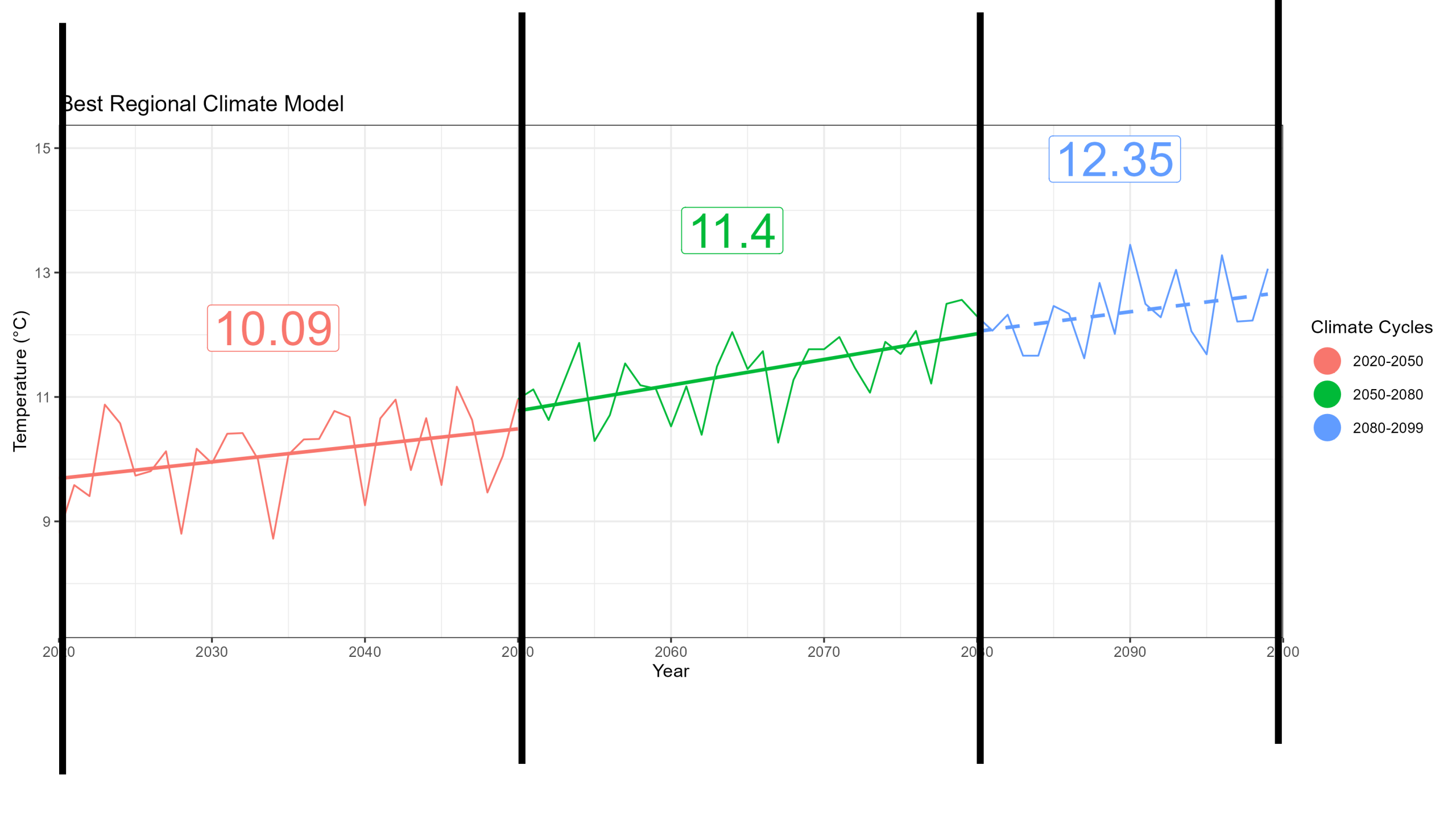
Accuracy & Precision





Which models do we pick?


NA-CORDEX Models for the Niagara Region
Temperature (°C)
13
12
11
10
9
8
7
1950
1960
1970
1980
1990
2000
2010
2020
2030
2040
2050
2060
2070
2080
2090
2100
Year
Niagara
rcp4.5 model 1
rcp4.5 model 2
rcp4.5 model 7
rcp8.5 model 1
rcp8.5 model 10
rcp8.5 model 11
rcp8.5 model 12
rcp8.5 model 13
rcp8.5 model 14
rcp8.5 model 15
rcp8.5 model 16
rcp8.5 model 2
rcp8.5 model 3
rcp8.5 model 4
rcp8.5 model 5
rcp8.5 model 6
rcp8.5 model 7
rcp8.5 model 8
rcp8.5 model 9


Best Regional Climate Model
10.09
11.4
12.35
Temperature (°C)
15
13
11
9
2030
2040
2060
2070
2090
Year
Climate Cycles
2020-2050
2050-2080
2080-2099

Climate Variable	1976 – 2005	2021 – 2050	2071 – 2100
Mean Temperature °C	8.8	10.13	12.2
Hot days/Year (Maximum daily temperature reaches 30°C or more once in a 24-hour period)	26	46.1	67.6
True hot days/Year (Maximum daily temperature reaches 30°C or more and minimum temperature in greater than 20°C or more once in a 24-hour period)	9.1	23.4	44.2
Heat waves/Year (2 or more true hot days in a row)	2.5	5.1	8.4

Economic & Health-related Impacts

Health-related trends:

- Hot days (temperature reaches 30℃+ in a 24-hour period)
- Heat waves (two or more true hot days in a row)
- Cold days (temperature reaches -15℃ in a 24-hour period)

Wine production-related trends:

- Frost days (temperature fluctuates above and below 0℃ in a 24-hour period)

Recommendations

- Planting trees
- Attribution studies
- Paving over less area when building subdivisions
- Make buses hybrid
  - Shut off the engine if they are stopped for a long time.

Best Info & Best Data ⟹
Best Projection⟹
Best Mitigation Solutions