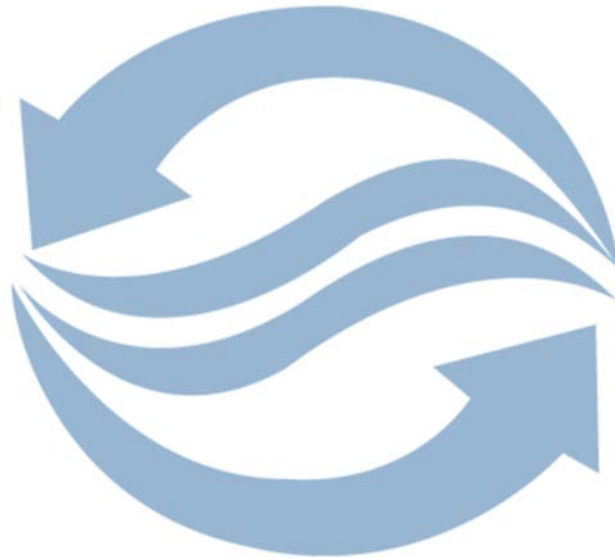


FACING CLIMATE CHANGE

January 22, 2018

Faith & the Common Good

Dianne Saxe



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Overview

- 1: Who is the ECO?
2. Why I'm so passionate about climate change
3. What you can do



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1: Who is the ECO?



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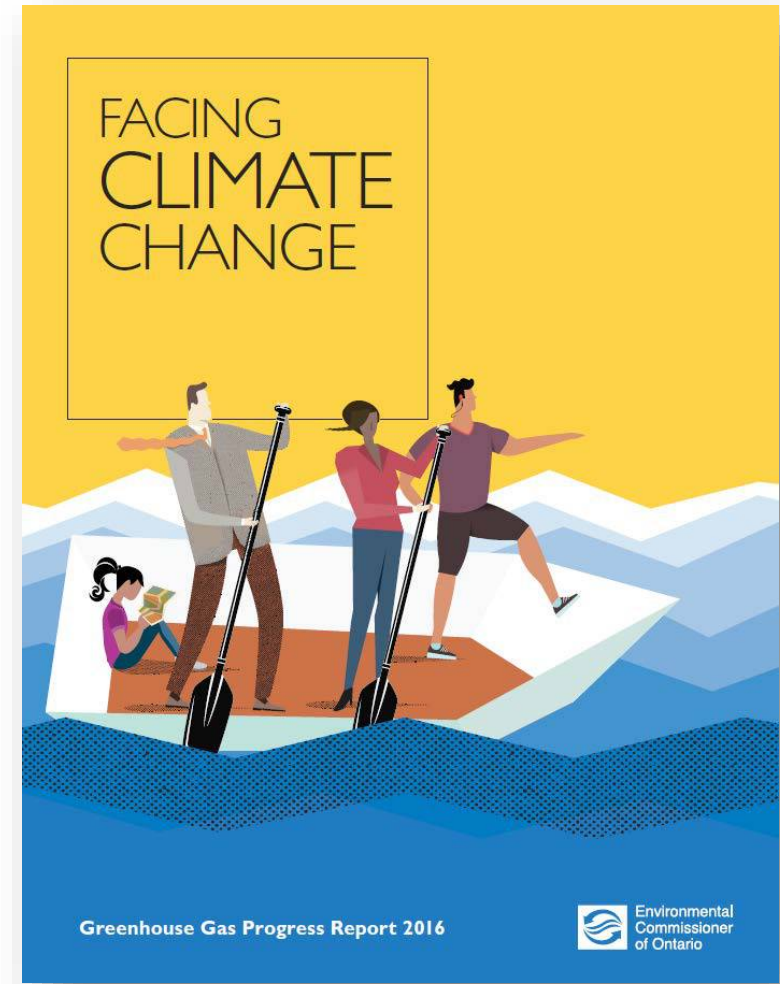
Who is the ECO?

- Impartial, independent
- Guardian of the *Environmental Bill of Rights*
- Watchdog on:
 - Greenhouse gas emissions in Ontario
 - Energy conservation
 - Environmental protection



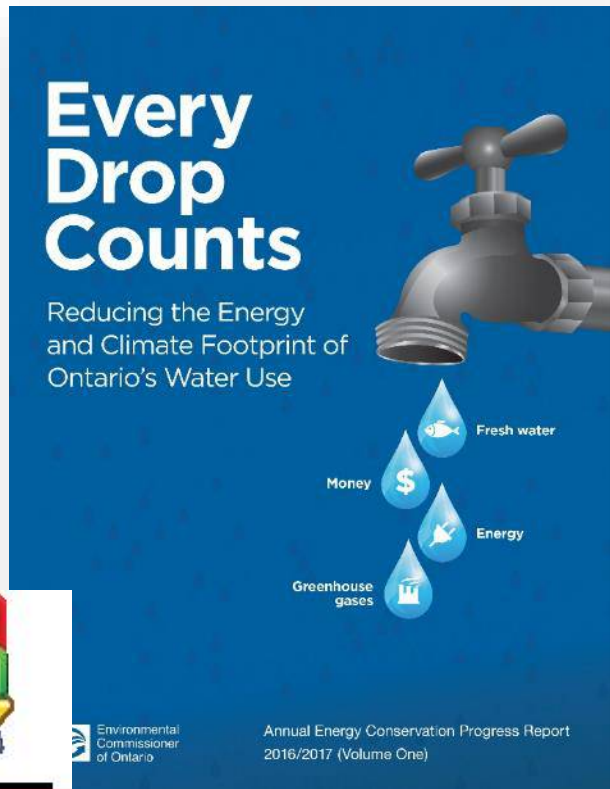
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by what I have learned
becoming Commissioner

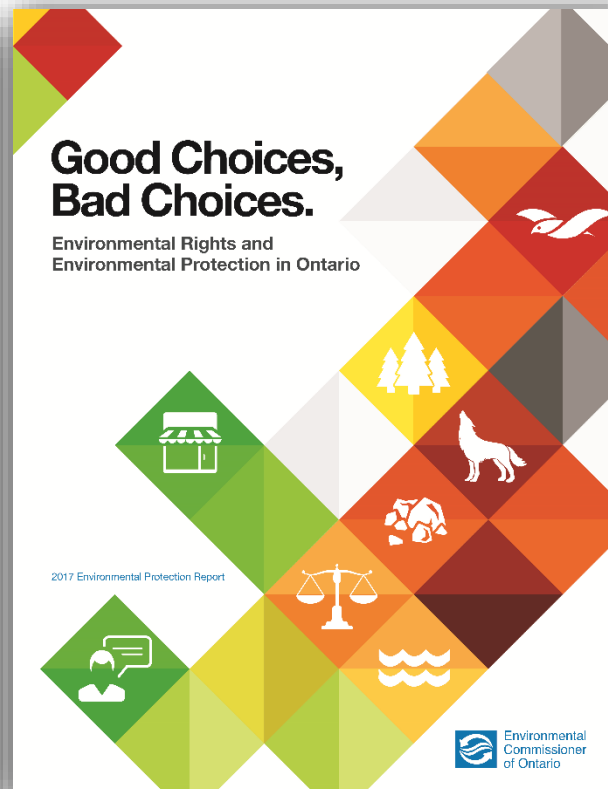


Really good reports

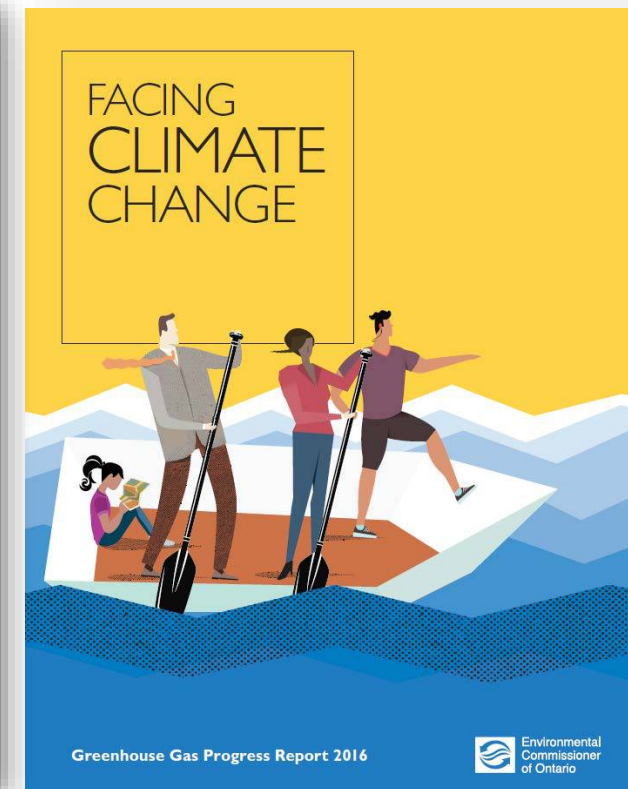
ENERGY CONSERVATION



ENVIRONMENT

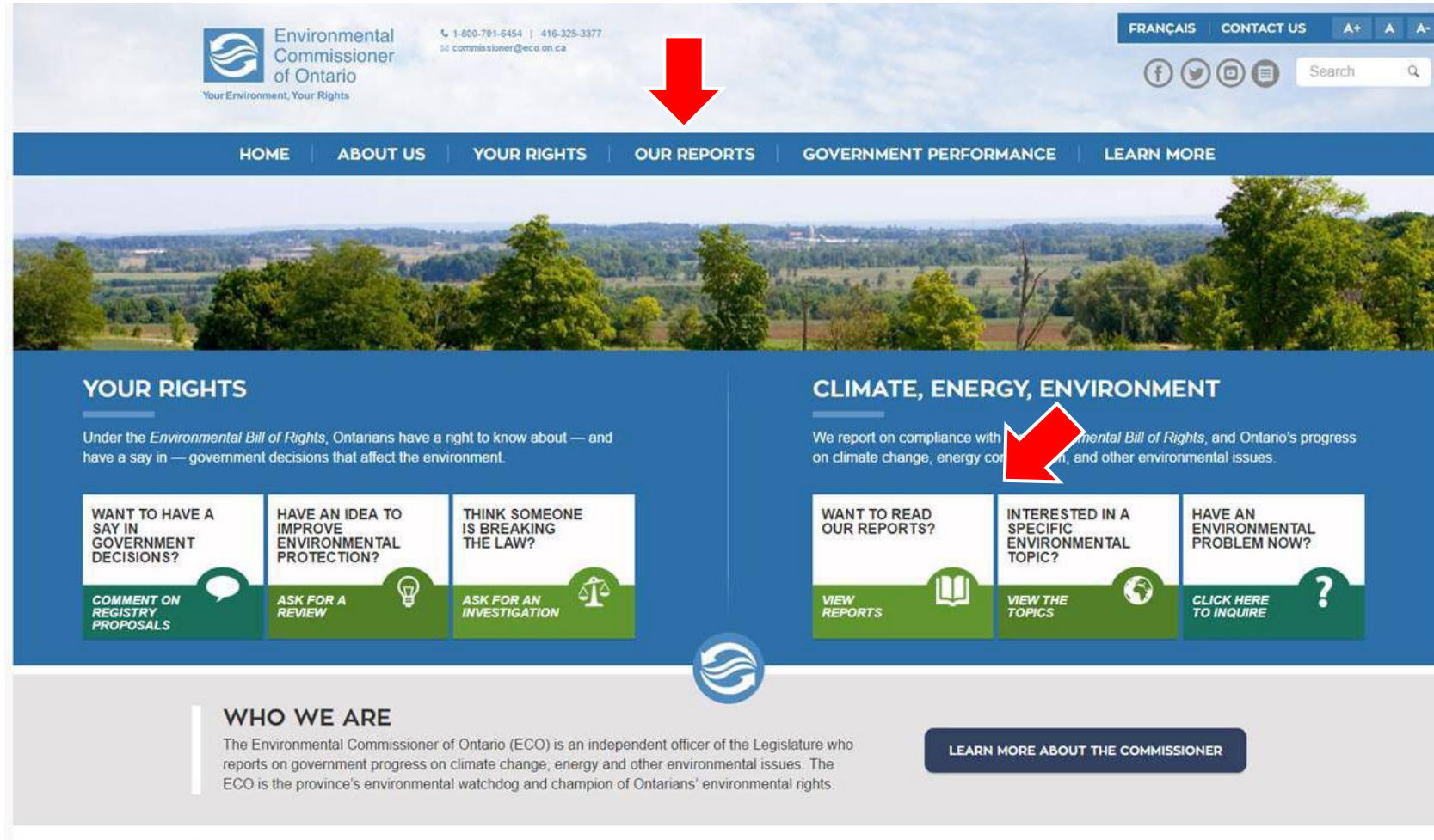


CLIMATE



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Find them here (eco.on.ca)



The screenshot shows the homepage of the Environmental Commissioner of Ontario. At the top left is the logo and name: "Environmental Commissioner of Ontario" with the tagline "Your Environment, Your Rights". Contact information includes "1-800-701-6454 | 416-325-3377" and "commissioner@eco.on.ca". On the top right, there are links for "FRANÇAIS" and "CONTACT US", along with font size controls (A+, A, A-) and social media icons (Facebook, Twitter, YouTube, RSS) and a search bar.

The main navigation menu includes: HOME, ABOUT US, YOUR RIGHTS, OUR REPORTS, GOVERNMENT PERFORMANCE, and LEARN MORE. A red arrow points to the "OUR REPORTS" link.

The "YOUR RIGHTS" section contains the text: "Under the *Environmental Bill of Rights*, Ontarians have a right to know about — and have a say in — government decisions that affect the environment." Below this are three buttons: "WANT TO HAVE A SAY IN GOVERNMENT DECISIONS?" (COMMENT ON REGISTRY PROPOSALS), "HAVE AN IDEA TO IMPROVE ENVIRONMENTAL PROTECTION?" (ASK FOR A REVIEW), and "THINK SOMEONE IS BREAKING THE LAW?" (ASK FOR AN INVESTIGATION).

The "CLIMATE, ENERGY, ENVIRONMENT" section contains the text: "We report on compliance with the *Environmental Bill of Rights*, and Ontario's progress on climate change, energy conservation, and other environmental issues." Below this are three buttons: "WANT TO READ OUR REPORTS?" (VIEW REPORTS), "INTERESTED IN A SPECIFIC ENVIRONMENTAL TOPIC?" (VIEW THE TOPICS), and "HAVE AN ENVIRONMENTAL PROBLEM NOW?" (CLICK HERE TO INQUIRE). A red arrow points to the "VIEW REPORTS" button.

The "WHO WE ARE" section states: "The Environmental Commissioner of Ontario (ECO) is an independent officer of the Legislature who reports on government progress on climate change, energy and other environmental issues. The ECO is the province's environmental watchdog and champion of Ontarians' environmental rights." A button labeled "LEARN MORE ABOUT THE COMMISSIONER" is located below this text.



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Free Alerts

HOME | ABOUT US | YOUR RIGHTS | OUR REPORTS | GOVERNMENT PERFORMANCE | LEARN MORE

YOUR RIGHTS

Under the *Environmental Bill of Rights*, Ontarians have a right to know about — and have a say in — government decisions that affect the environment.

- WANT TO HAVE A SAY IN GOVERNMENT DECISIONS? [COMMENT ON REGISTRY PROPOSALS](#)
- HAVE AN IDEA TO IMPROVE ENVIRONMENTAL PROTECTION? [ASK FOR A REVIEW](#)
- THINK SOMEONE IS BREAKING THE LAW? [ASK FOR AN INVESTIGATION](#)

CLIMATE, ENERGY, ENVIRONMENT

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WHO WE ARE

The Environmental Commissioner of Ontario (ECO) is an independent member of the Legislature who reports on government progress on climate change, energy and environmental issues. The ECO is the province's environmental watchdog and champion of Ontario's environmental rights.

[LEARN MORE ABOUT THE COMMISSIONER](#)

ENVIRONMENTAL REGISTRY		CONNECT WITH US	
VISIT THE REGISTRY <input type="button" value="GO NOW"/>	GET REGISTRY NOTICES THAT INTEREST YOU <input type="button" value="SIGN UP"/>	GET ECO UPDATES <input type="button" value="SIGN UP"/>	LET'S HEAR FROM YOU <input type="button" value="SHARE NOW"/>

OUR RESOURCE CENTRE IS OPEN TO THE PUBLIC [CLICK HERE FOR INFORMATION](#)



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eco.on.ca/about-us/get-eco-updates

Is it as bad as we thought?

It's worse

2: Why I'm so passionate about climate change



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Who are you working for?



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You probably know

97% of climate scientists agree:

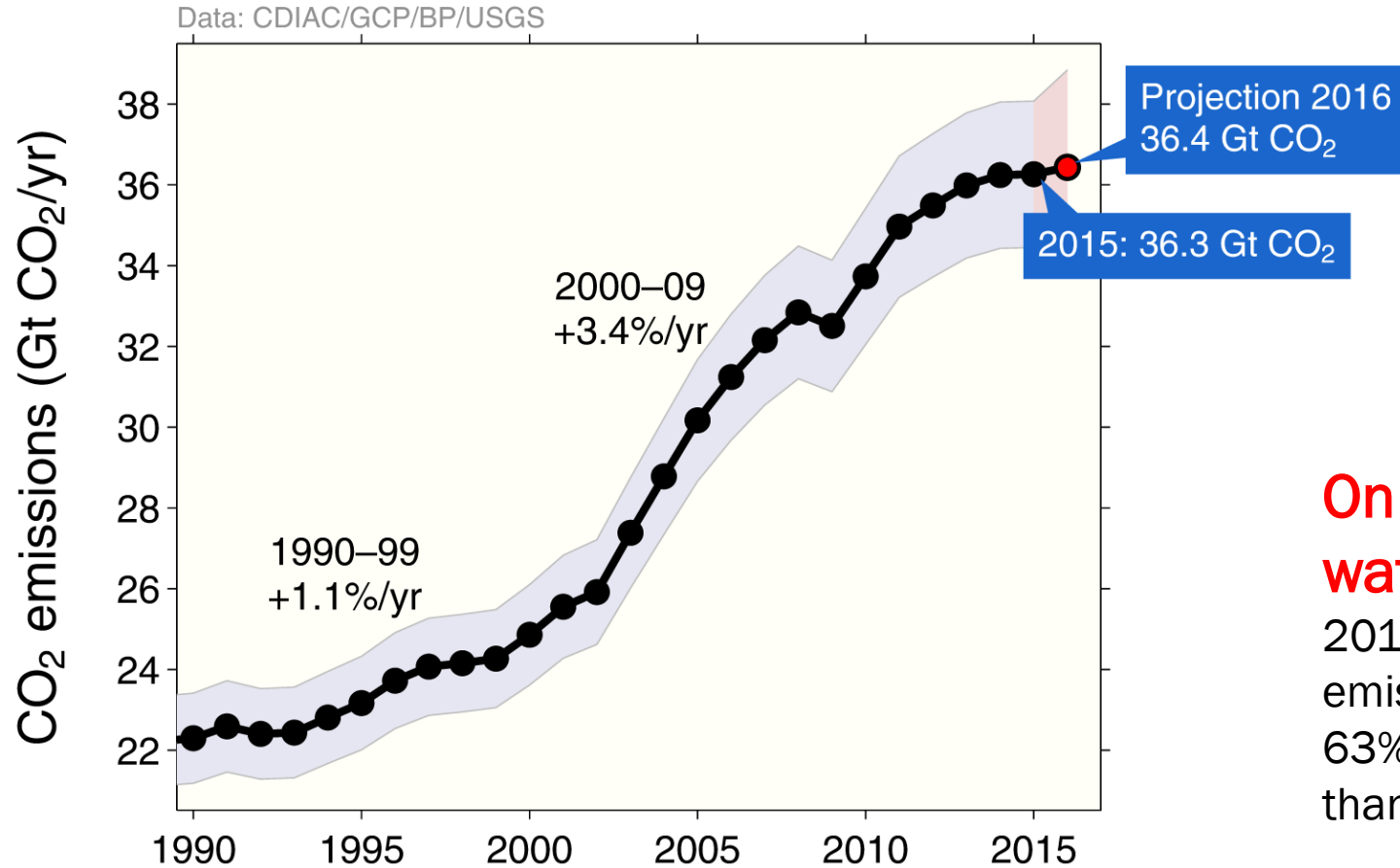
- **Climate change is:**
 - Human-caused
 - Serious
 - Caused mostly by greenhouse gases in the atmosphere that keep solar heat from escaping
 - Primary GHG is CO₂ from fossil fuels
 - Real



ere, now

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Highest ever CO₂ emissions



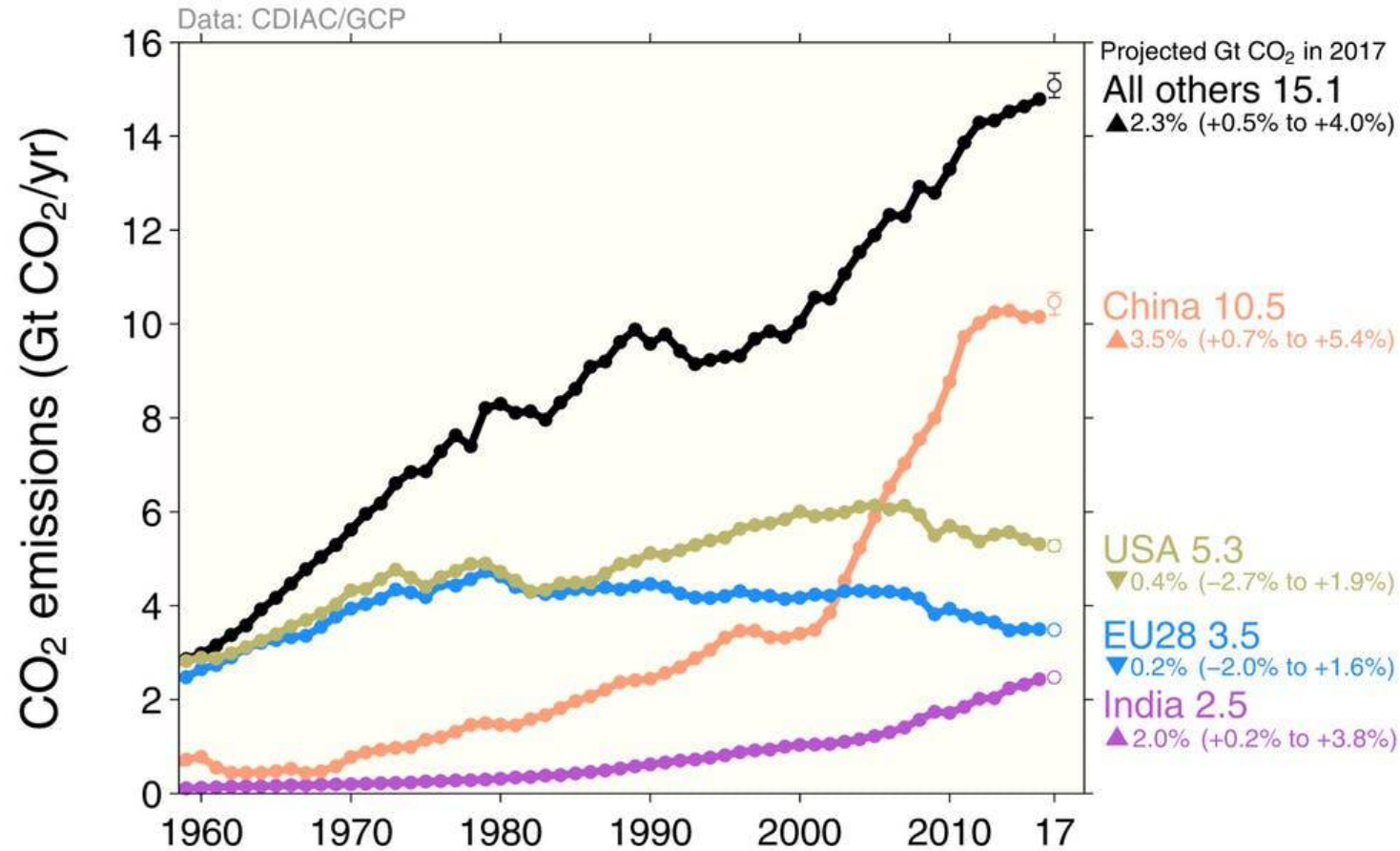
**On our
watch:**
2015
emissions
63% higher
than 1990



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Global Carbon Project

The biggest emitters vs. everyone else



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Where does the CO₂ go? (2006-2015)



34.1 GtCO₂/yr
91%



9%
3.5 GtCO₂/yr

16.4 GtCO₂/yr

44%



Sources = Sinks

31%

11.6 GtCO₂/yr



26%

9.7 GtCO₂/yr



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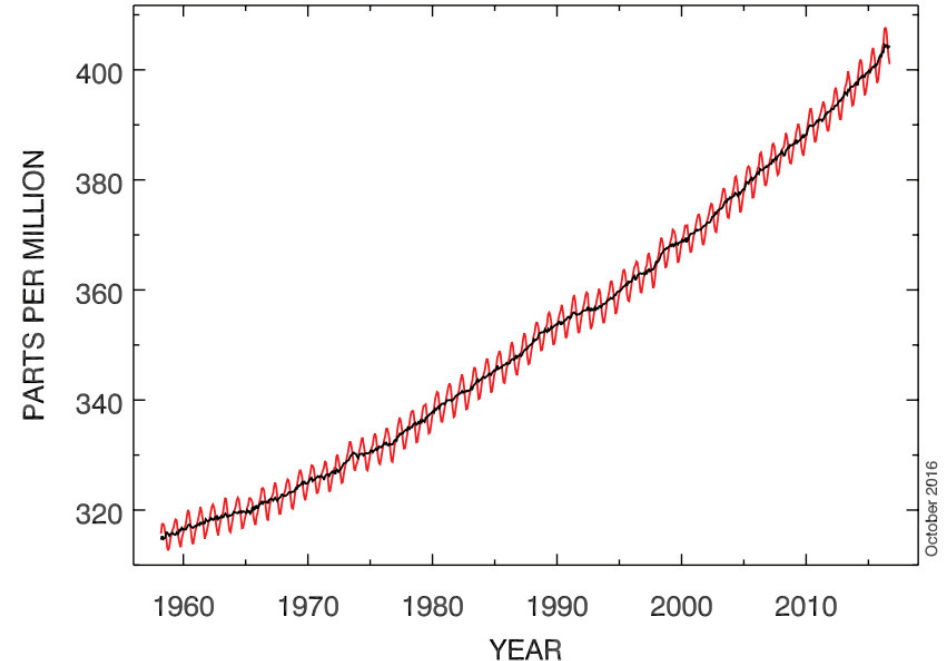
Highest air CO₂ in (human) history

- Millions of years 180 - 280
 - 1860 280
 - 1988 350
 - 2017 410 ppm
-
- Now permanently above 400 ppm



ing extra heat

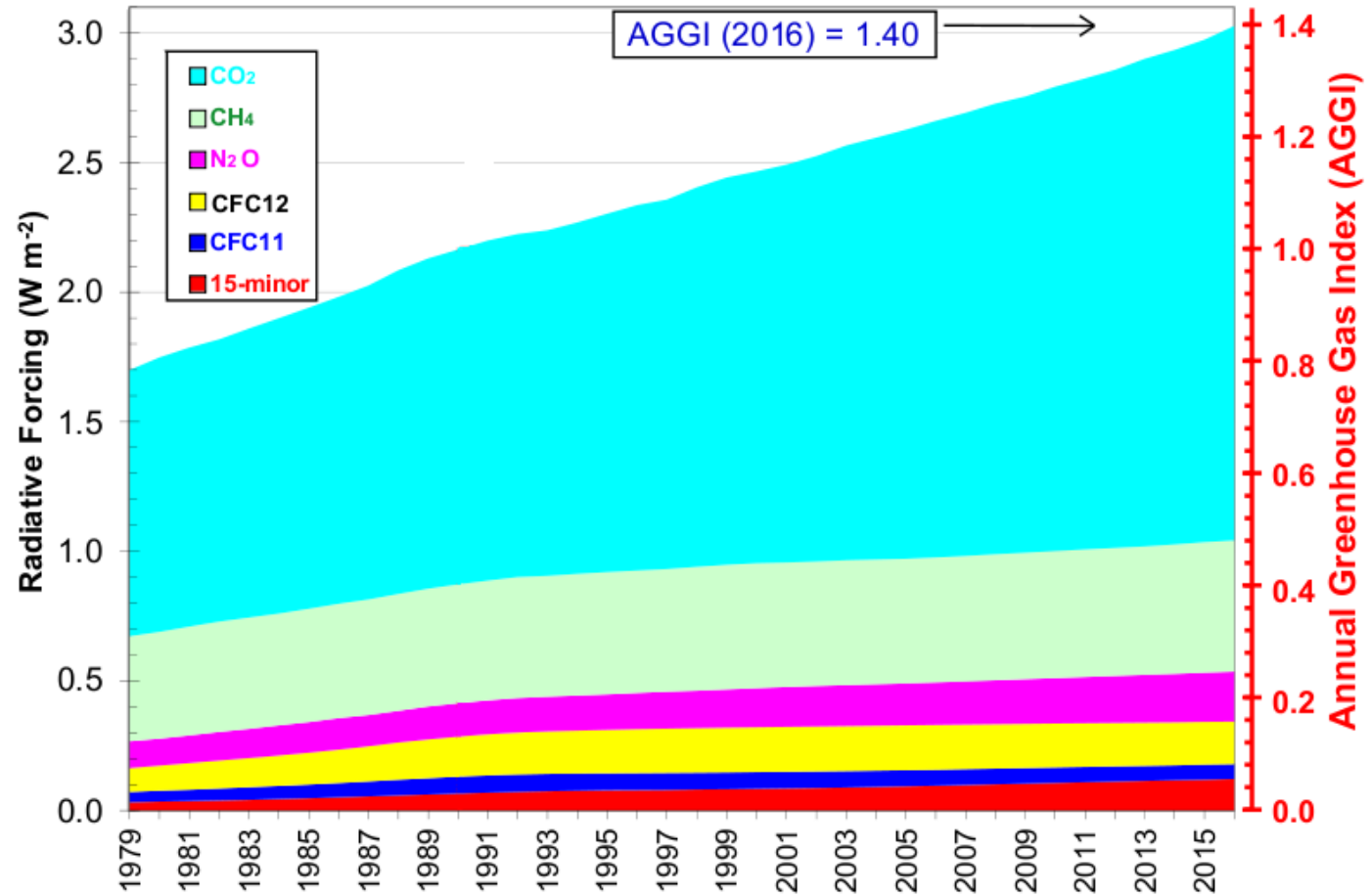
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Source: National Oceanic and Atmospheric Administration, Trends in Atmospheric Carbon Dioxide at Mauna Loa Observatory (full record), 2016.

Not just CO₂ – what's trapping heat?

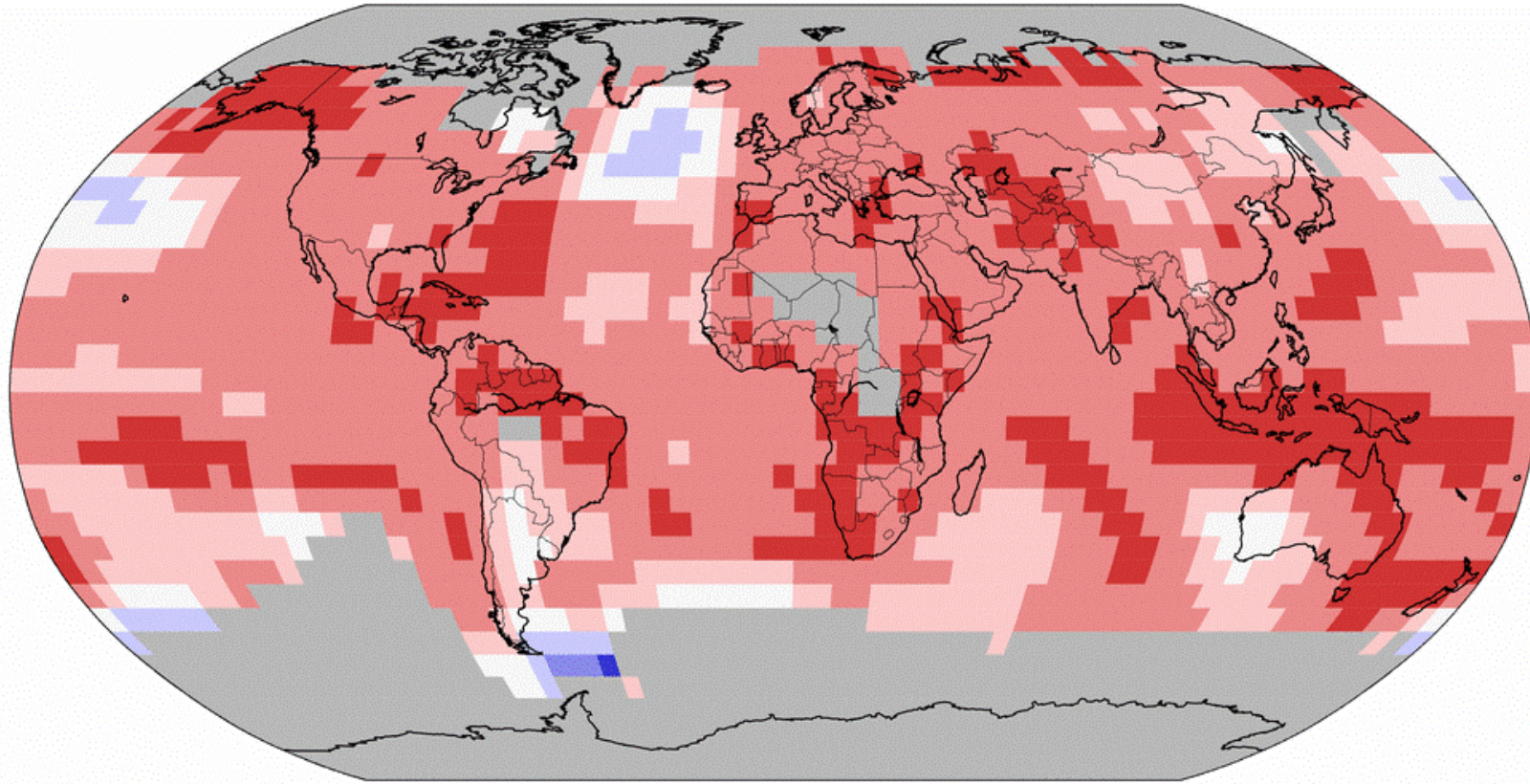
- ~50% more heat than CO₂ alone
- Methane
- Nitrous oxide



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
Source: National Oceanic and Atmospheric Administration, The NOAA Annual Greenhouse Gas Index (AGGI), 2016.

Highest temperatures in human history



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Record
Coldest


Much
Cooler than
Average


Cooler than
Average


Near
Average

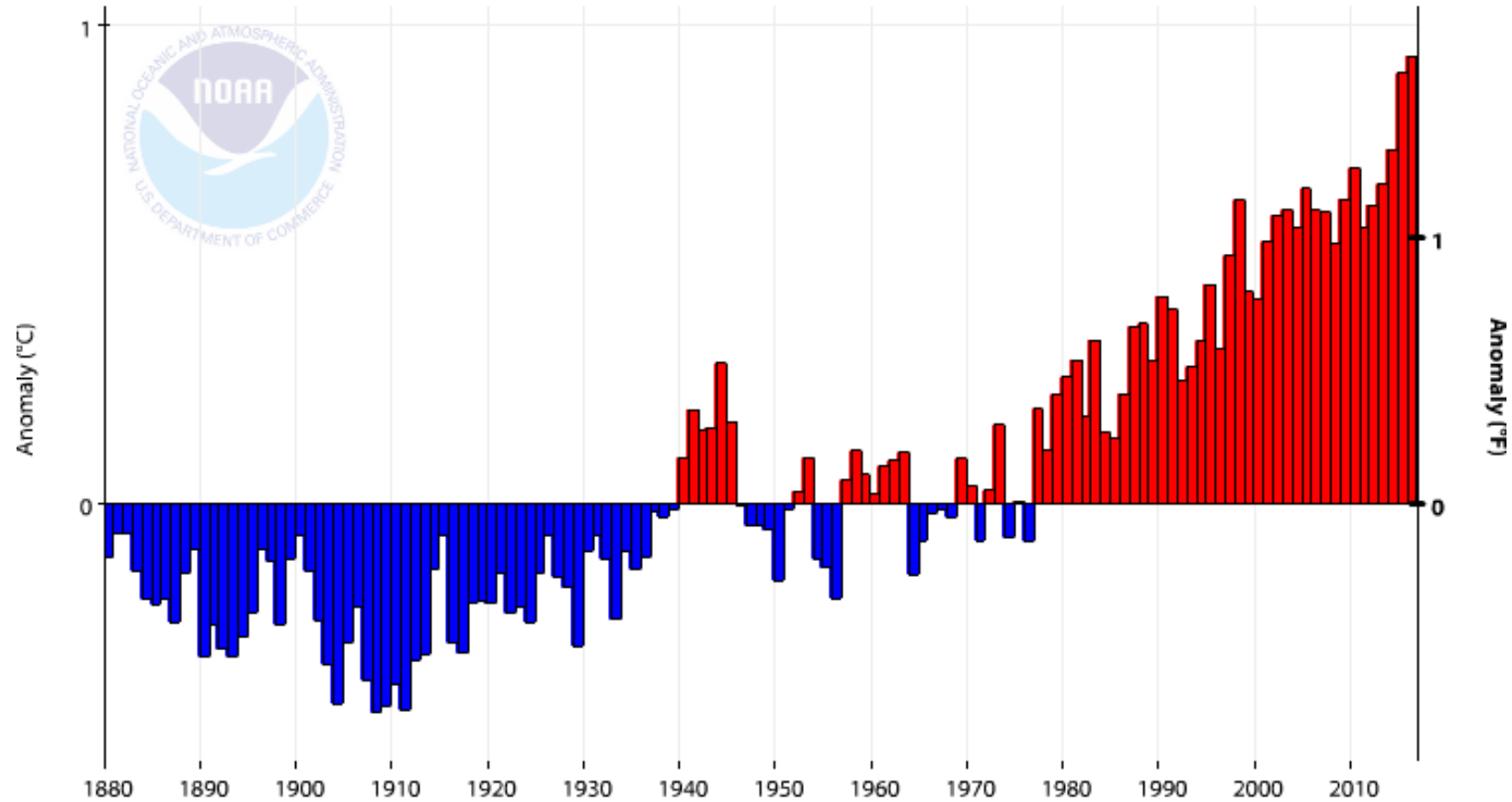

Warmer than
Average


Much
Warmer than
Average


Record
Warmest

20th Century “normal” is gone

Global Land and Ocean Temperature Anomalies, January-December



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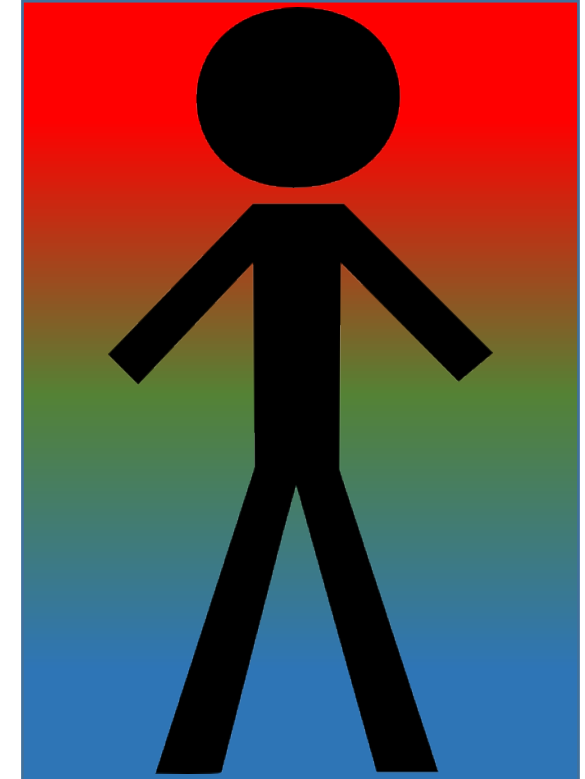
“Global Warming”?

- ≠ Everywhere always warmer
- Higher average temperatures
 - But unevenly distributed
 - Disruption of natural cycles
- More damaging, more unpleasant extremes



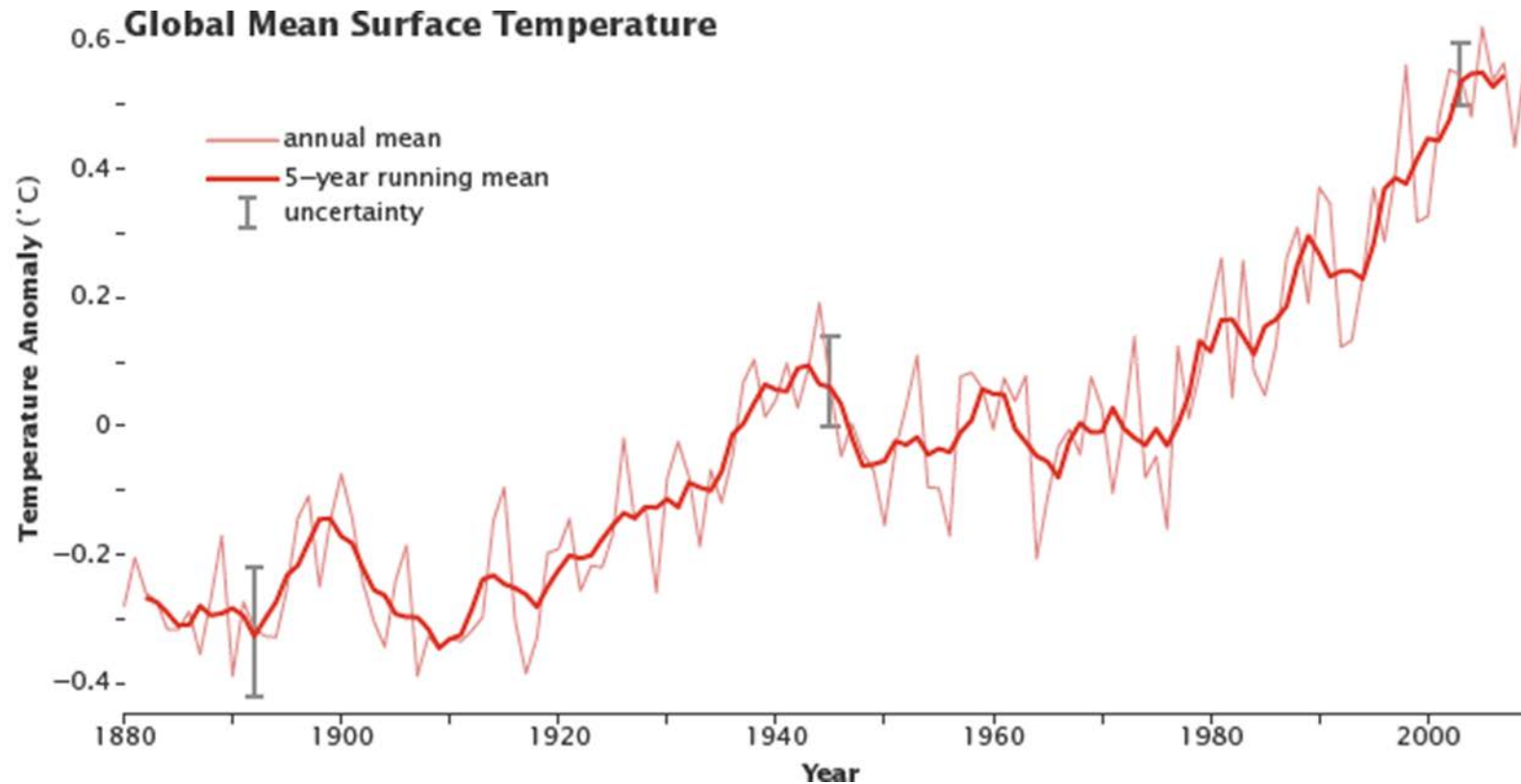
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TOO HOT!



TOO COLD!

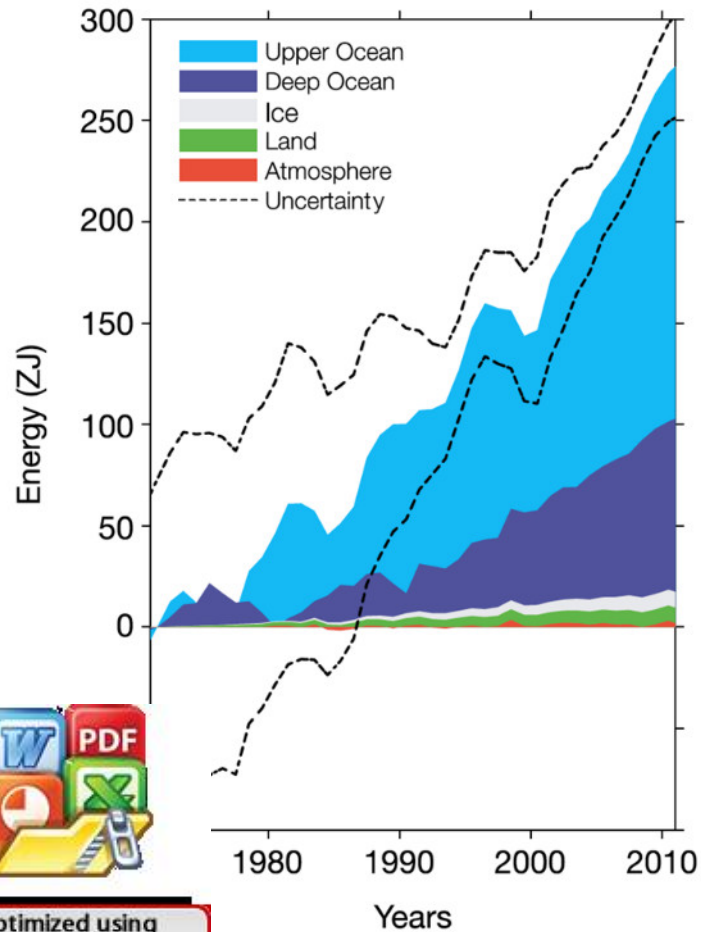
Only 1% of the heat in the air



Source: National Aeronautics and Space Administration, Earth Observatory: 2010 Features – Global Warming, 2010.

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93% of the extra heat is in oceans, lakes

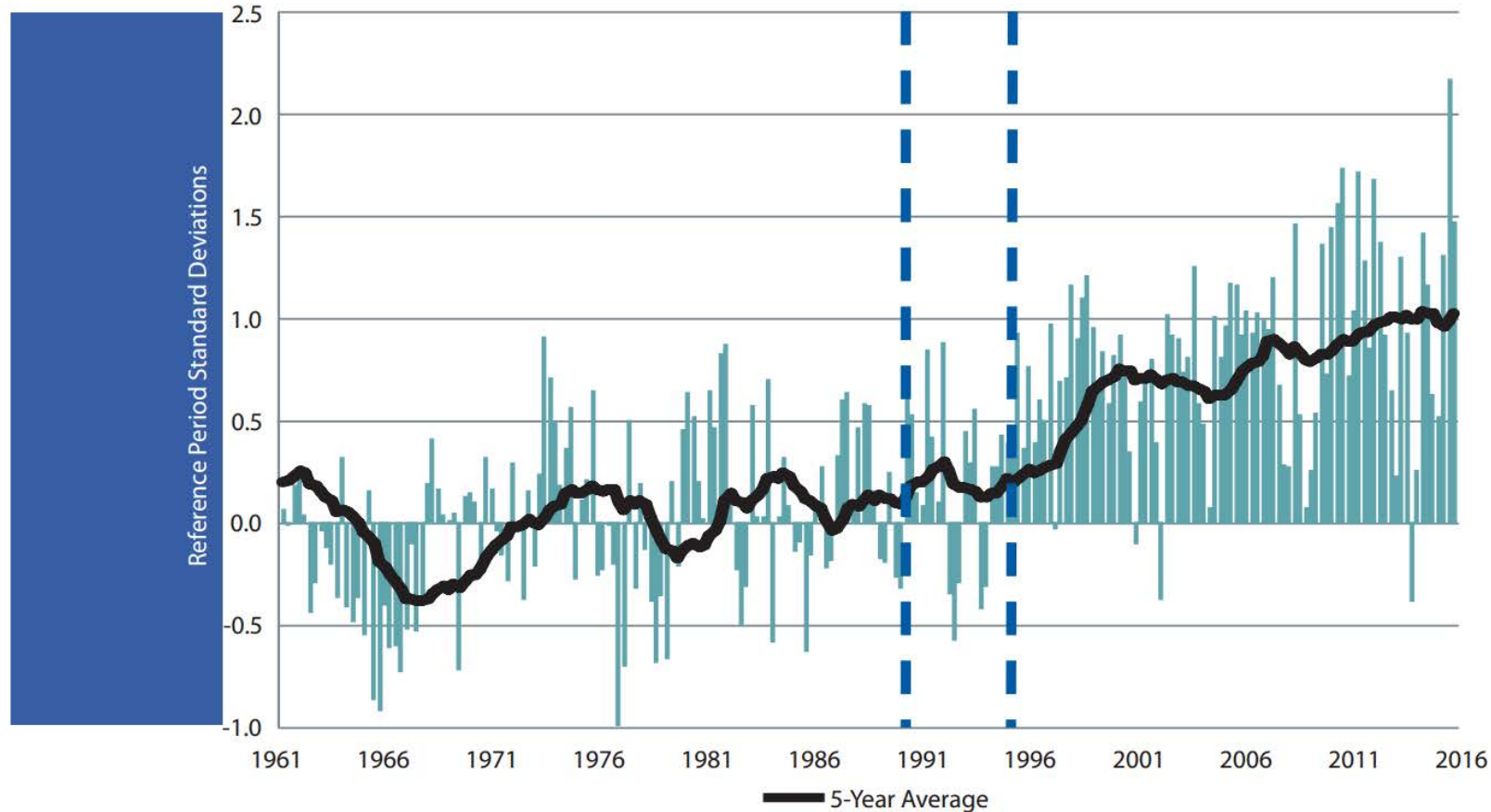


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Source: Intergovernmental Panel on Climate Change, Chapter 3: Observations: Oceans in Climate Change 2013: The Physical Science Basis (contribution of Working Group 1 to the Fifth Assessment Report of the Intergovernmental Panel on Climate Change), 2013.

Extreme events already tripled

Figure 3. The Actuaries Climate Index for Canada and the United States.



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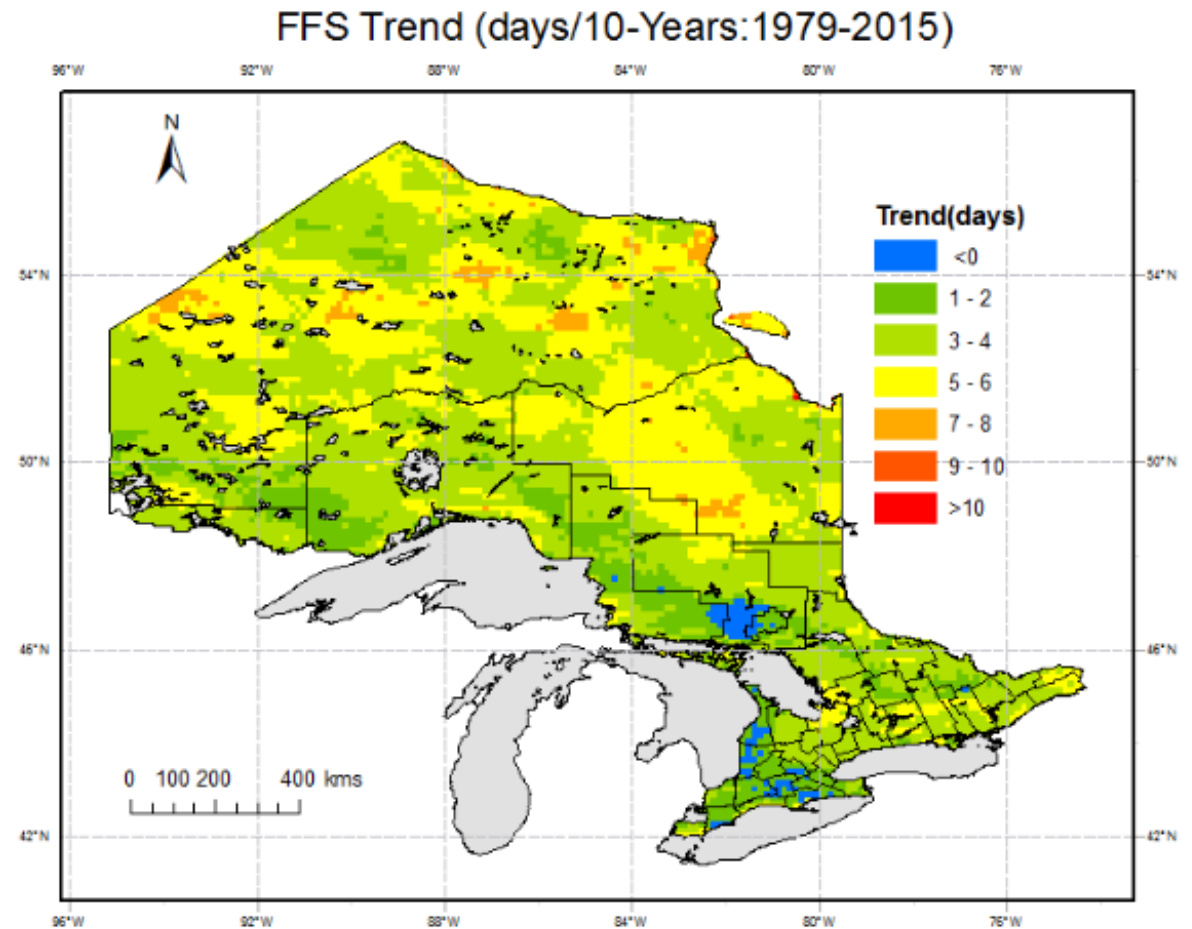
Source: Actuaries Climate Index, [Executive Summary](#)

Ontario Warming Faster Than Average

- Ontario frost-free season increasing by **1-13 days** each decade
- **Differs by region**
 - Latitude, topography, water...



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When, not if

- Milder winters
 - Ice roads, winter sports, snow cover
- Wetter springs, faster melts
- Hotter, drier summers

- Storms, floods, droughts
- Forest fire



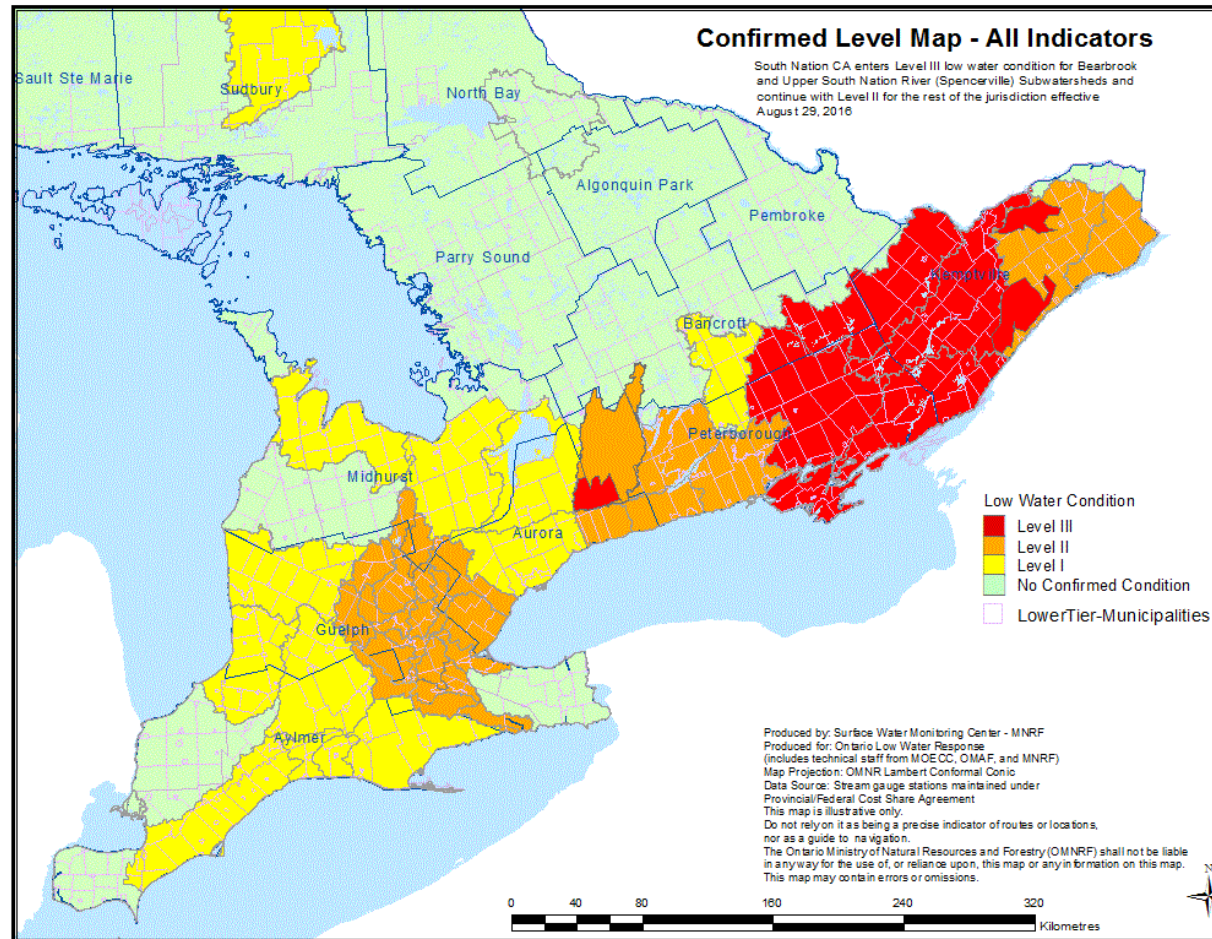
ve species



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2016 Drought

Conditions as of July 31, 2016



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2017 floods

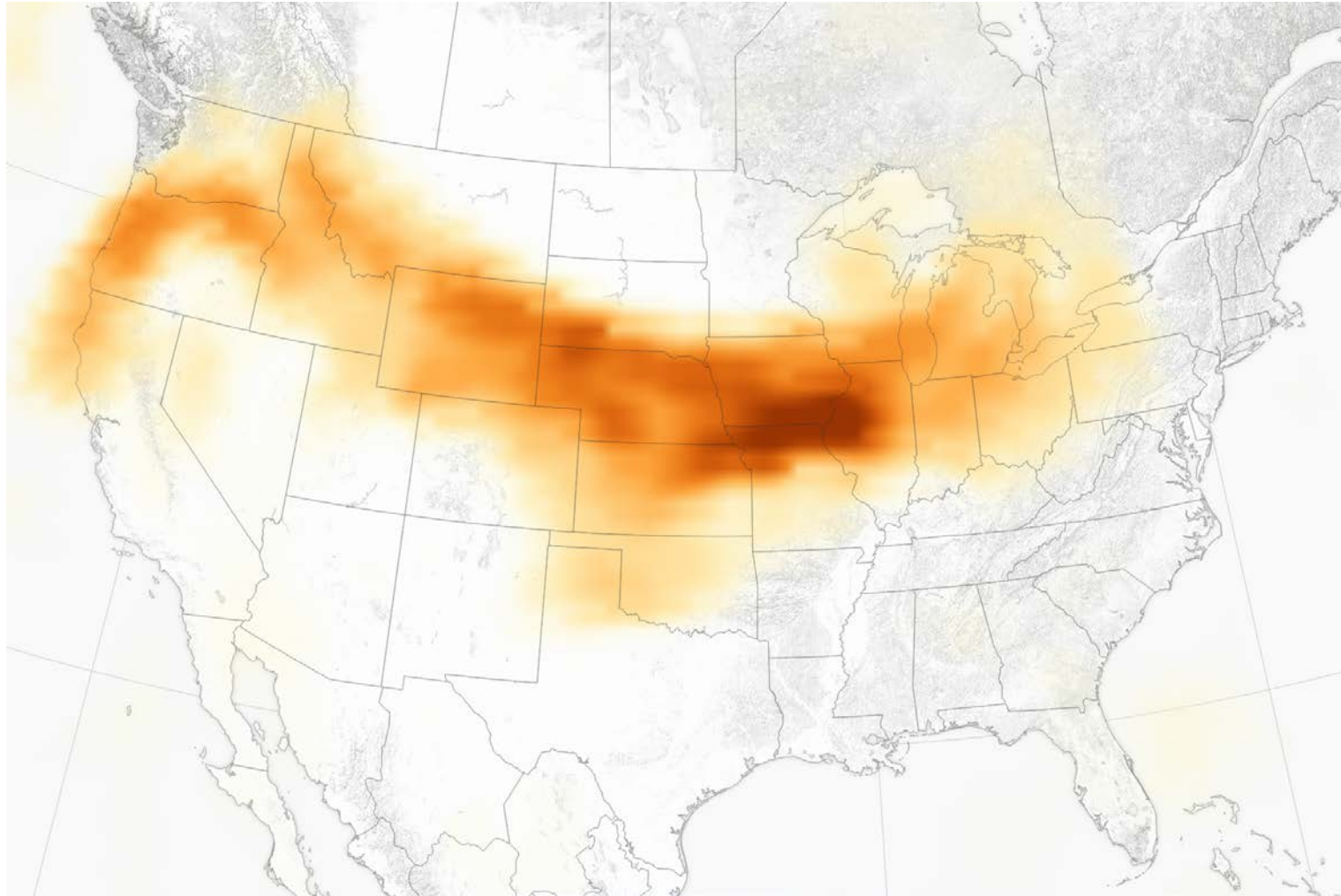


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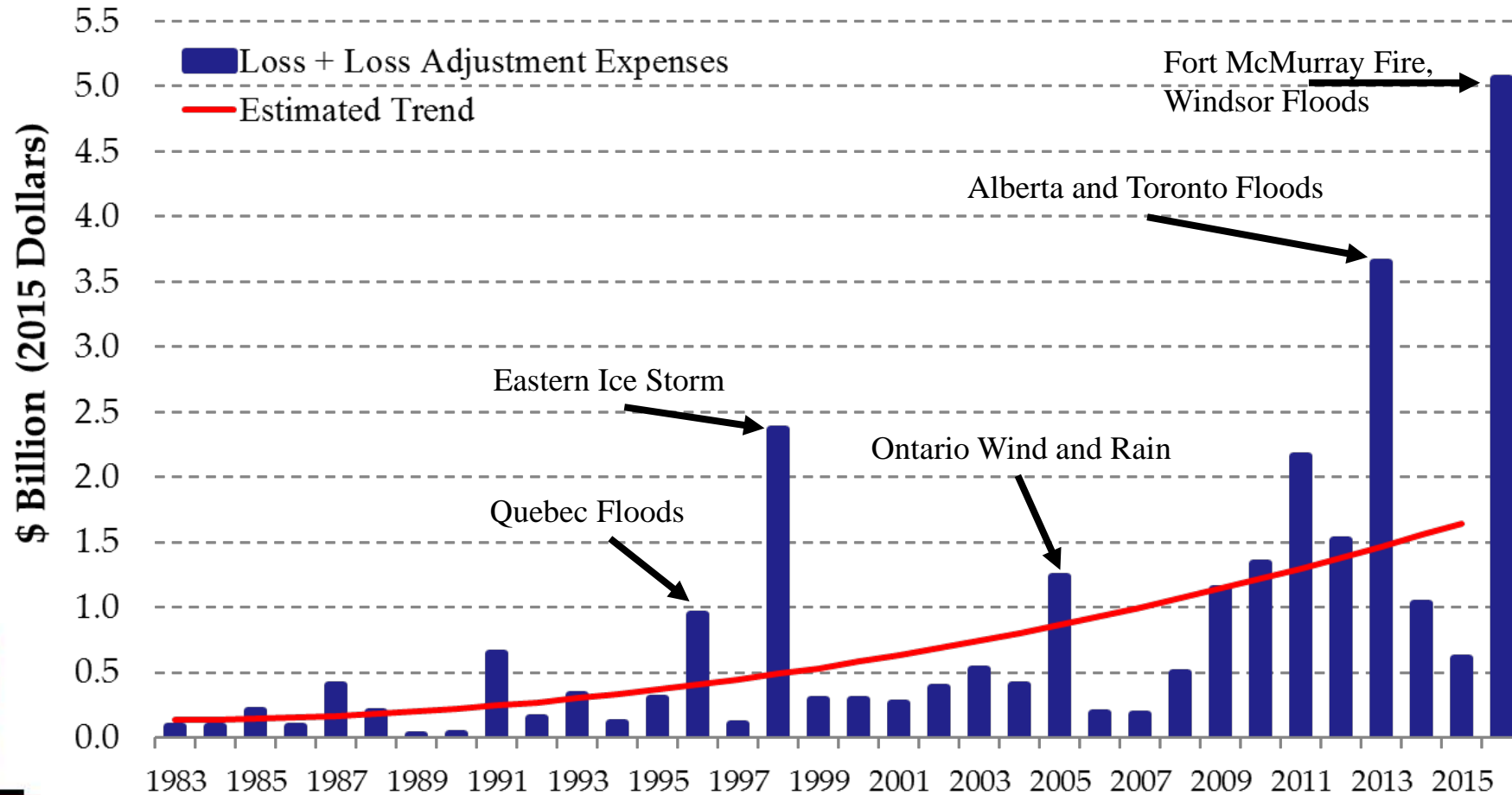
Photo credit: Viv Lynch. Used under CC BY-NC-ND 2.0

Wildfire smoke



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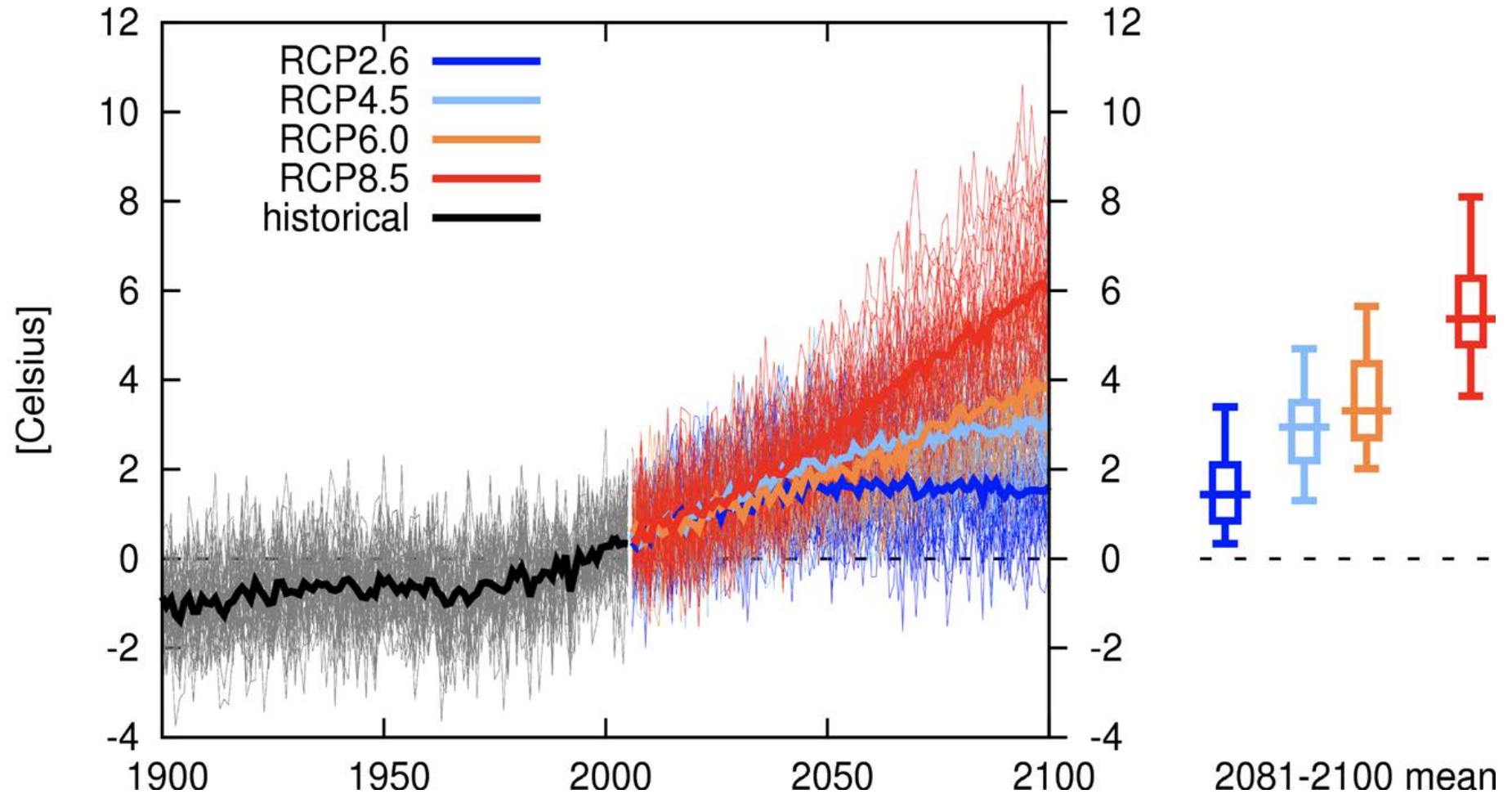
Catastrophic insured losses – Canada



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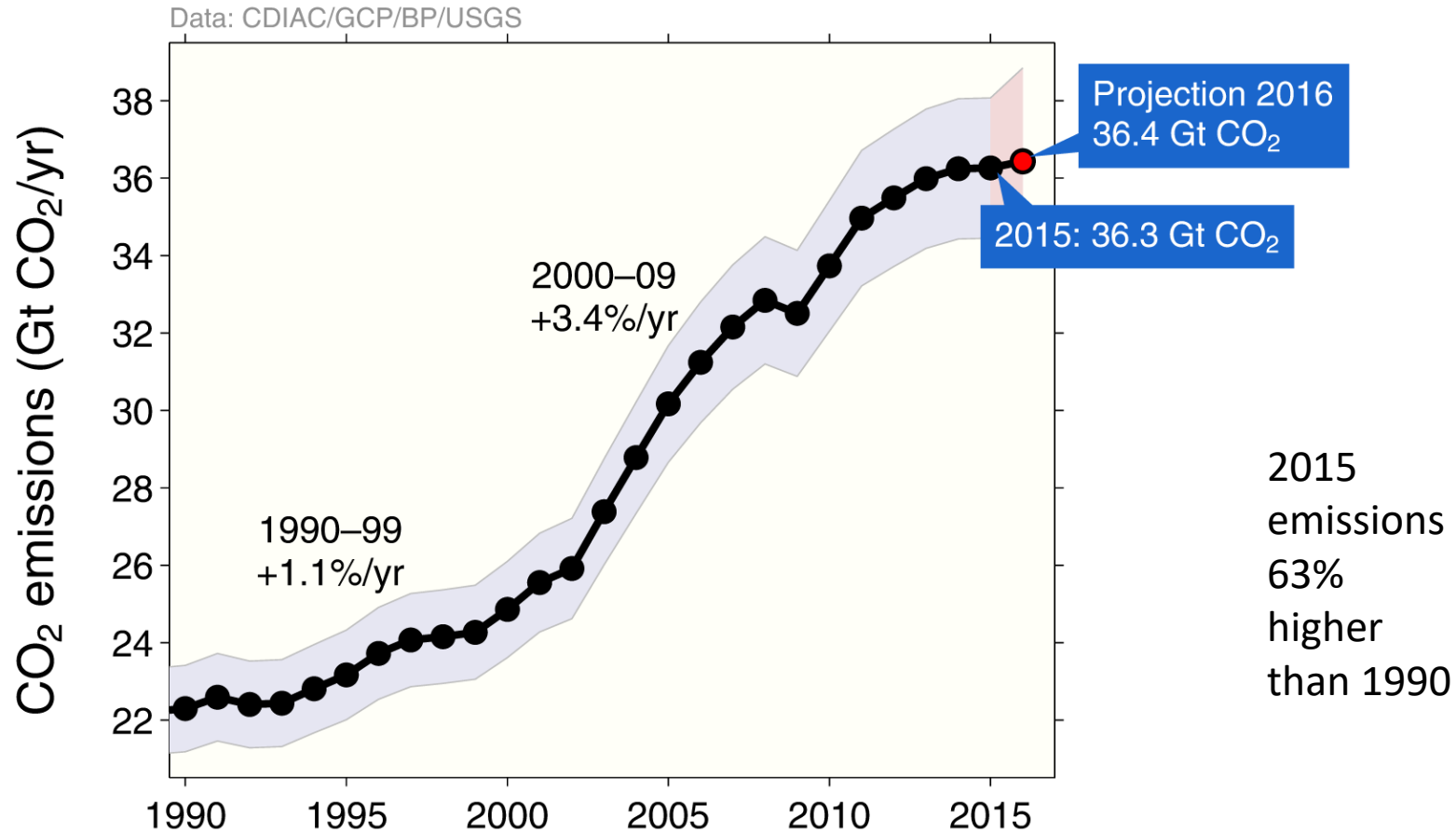
Source: Insurance Bureau of Canada, Lapo Calamai

How much worse? Depends on emissions



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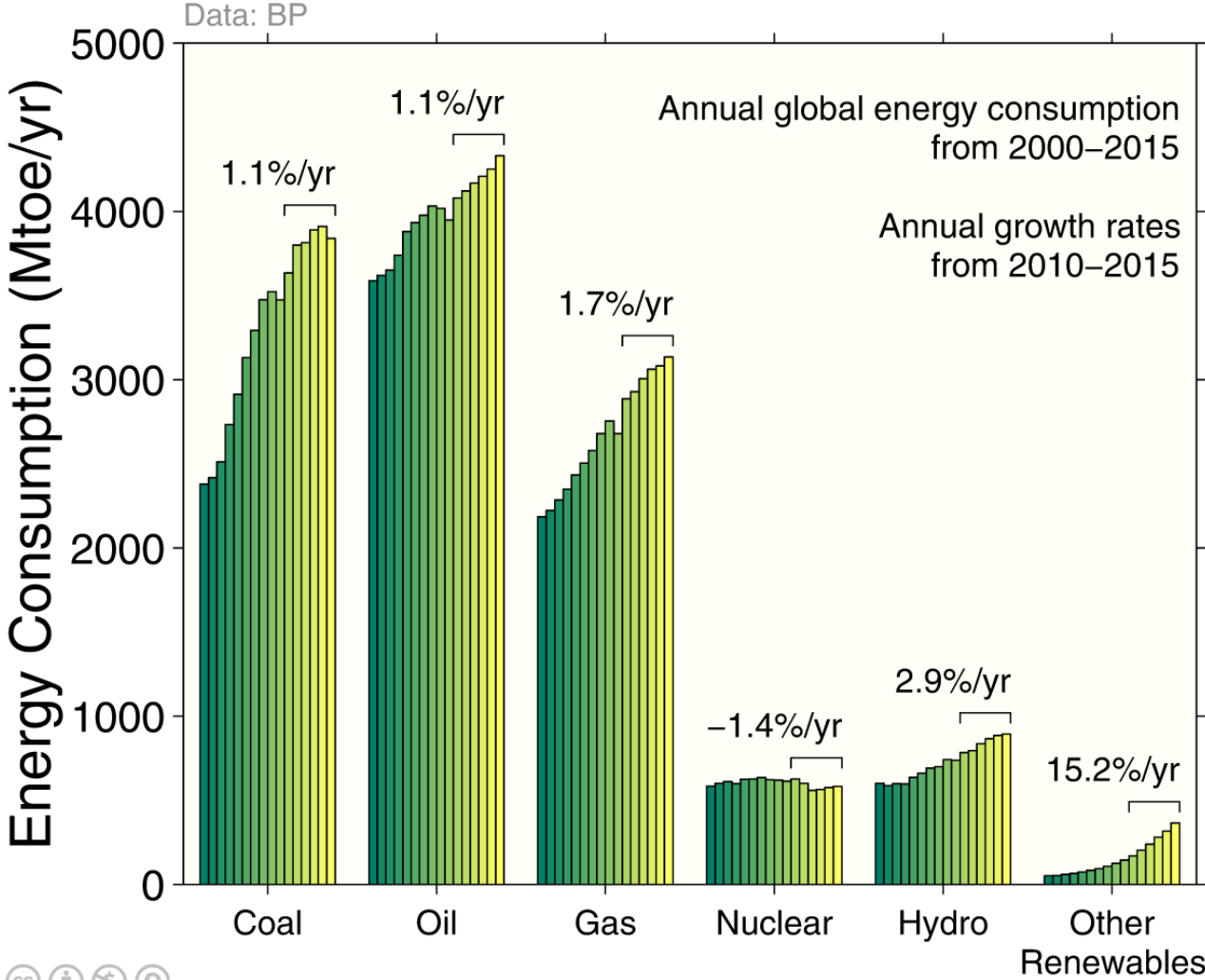
Because emissions skyrocketed



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Global Carbon Project

And are still growing



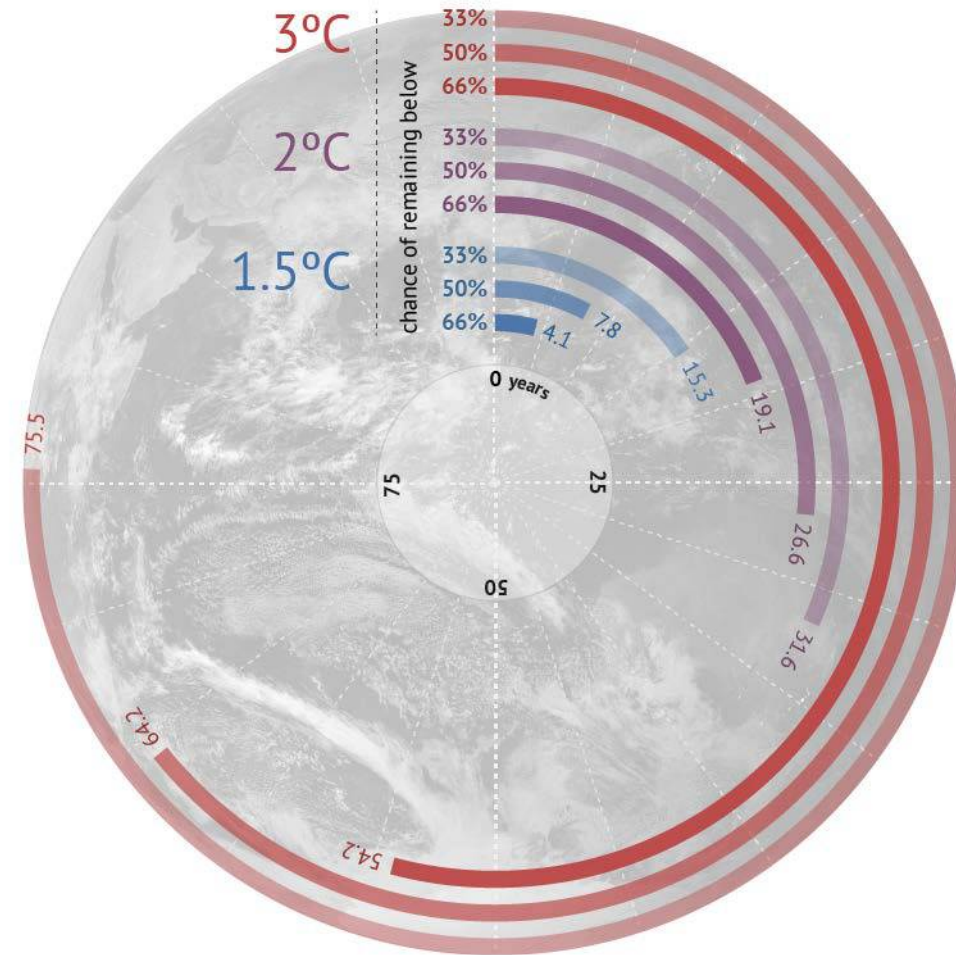
Source: [BP 2016](#); [Jackson et al 2015](#); [Global Carbon Budget 2016](#)



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Carbon budget running out

If we want a 2/3 chance of staying $<2^{\circ}\text{C}$, most of proven fossil fuel reserves can not be burned



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What else have we unleashed?

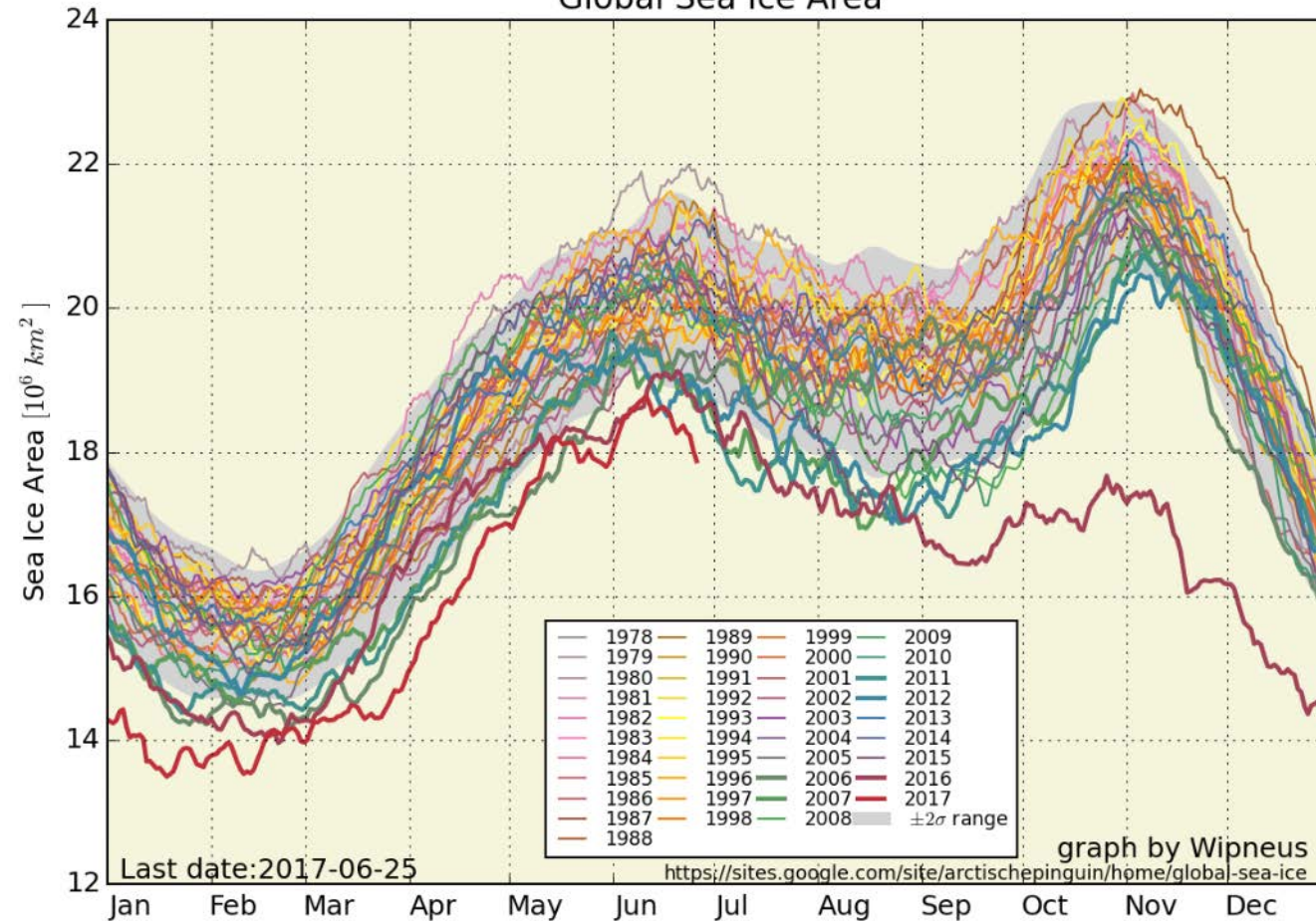
- Permafrost
- Soil carbon loss
- Forest die-back
- Ocean current changes
- Loss of sea ice
- **What would a tipping point look like?**



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Global sea ice

from NSIDC sea ice concentration data
Global Sea Ice Area



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Is it too late?

- We are in for big changes
- There is still a little time to have an impact on what's coming
- Our choices, right now, matter



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But Ontario is doing so much right

Coal power plant closures

Price on carbon **

GGRA/Action Plan **

Starting on adaptation



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Technology improving fast

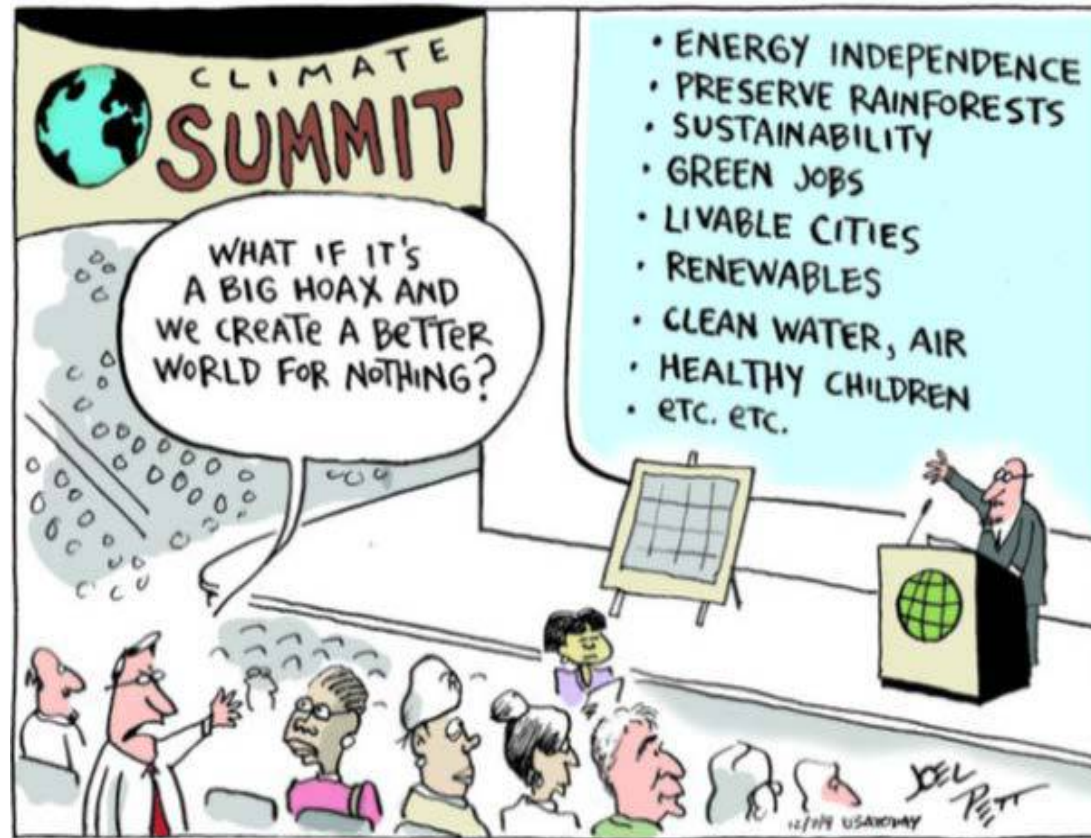


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3: What you can do



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Knowledge + Action = Hope



can do everything, but everyone can do something

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What Can I Do?

- Climate cannot be left entirely up to government

Reduce your carbon footprint

Get ready to adapt

Speak up



It's not too late to make a difference

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Questions?

Download the *Facing Climate Change* report
and the Introduction to Cap and Trade in Ontario document: eco.on.ca

Contact us: commissioner@eco.on.ca

Environmental
Commissioner
of Ontario



Commissaire à
l'environnement
de l'Ontario



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