

No Time To Waste:

Understanding the IPCC's Emissions Reduction Targets & the Urgency to Act

Dr. Heidi Roop

Assistant Professor of Climate Science & Extension Specialist
Department of Soil, Water, and Climate
Co-Lead, Minnesota Climate Adaptation Partnership



UNIVERSITY OF MINNESOTA
Driven to Discover®



Intergovernmental Panel on Climate Change

SPECIAL REPORT

Global Warming of 1.5 °C

An IPCC special report on the impacts of global warming of 1.5 °C above pre-industrial levels and related global greenhouse gas emission pathways, in the context of strengthening the global response to the threat of climate change, sustainable development, and efforts to eradicate poverty. The translations of the SPM and other material can be downloaded from this [link](#)

www.ipcc.ch/sr15/

Change is here.

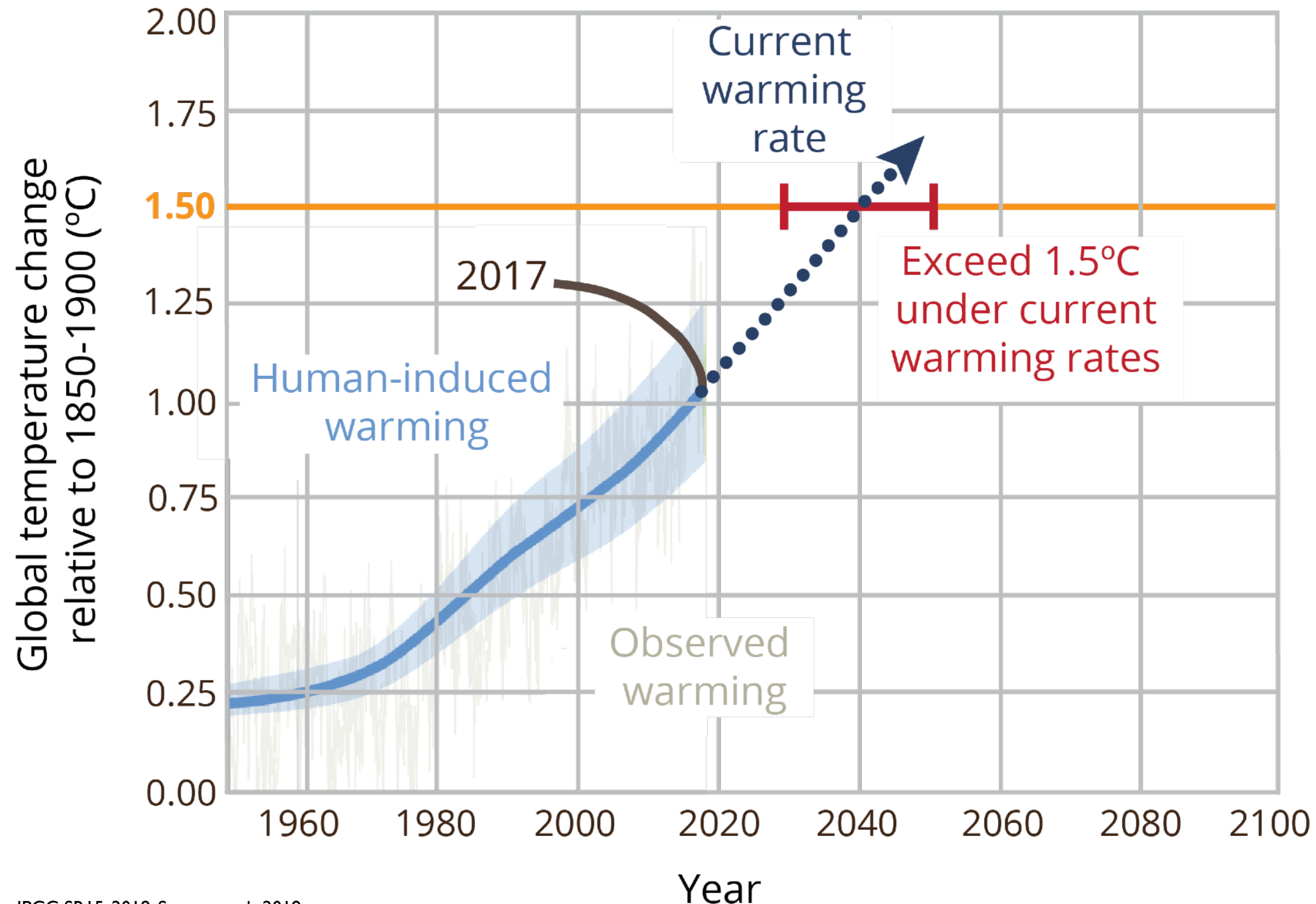






Average global temperature has increased over 2.0°F since the 1880's.



Minnesota's average annual temperature has increased by nearly 3°F since 1895.

If current rates of warming continue, warming could reach 2.7°F (1.5°C) as soon as 2030.

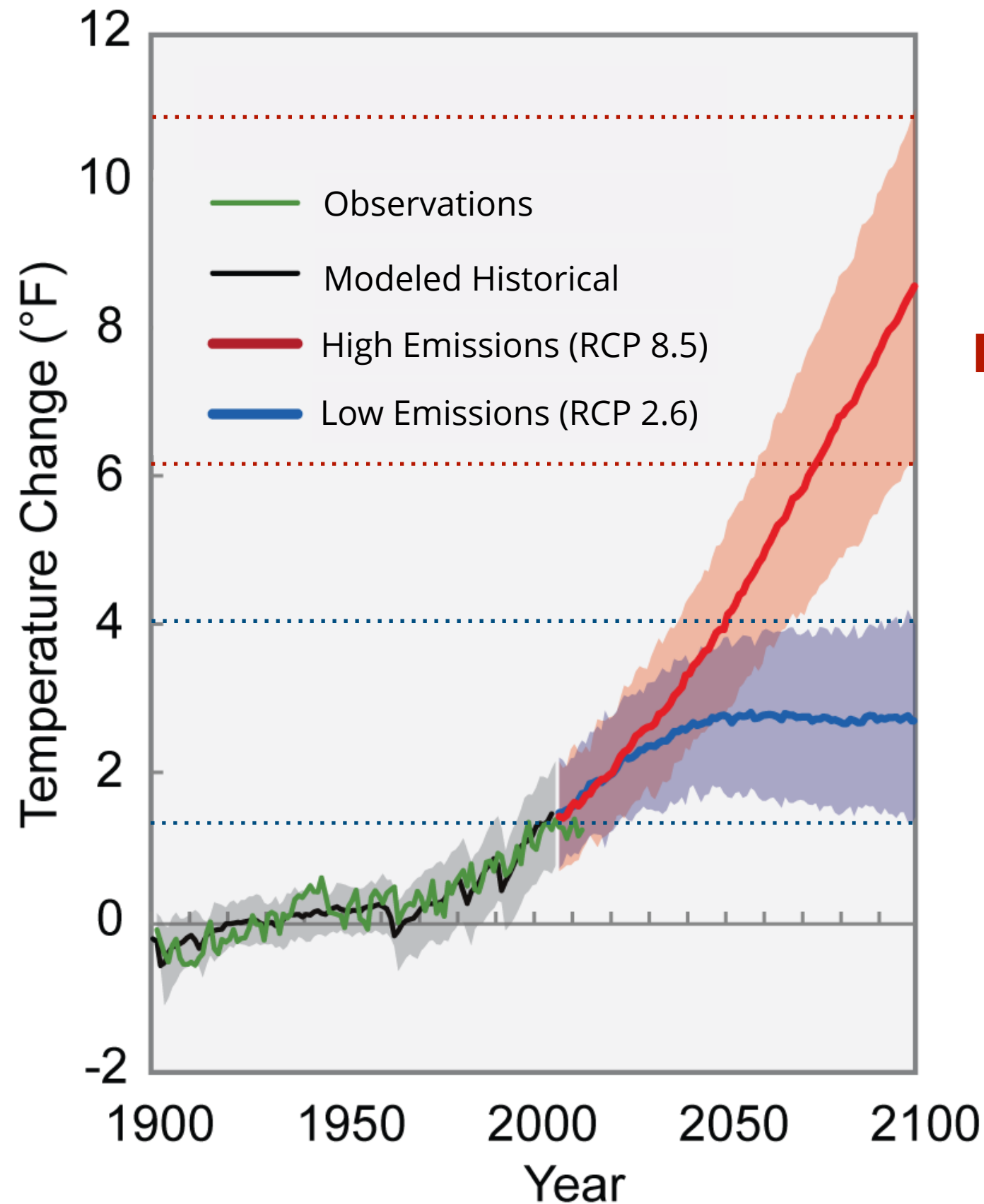


		1.5°C	2.0°C	Impacts of 2.0°C
 Extreme Heat	Global population exposed to heatwaves	~4 billion	~6 billion	~2 billion more people
 Agriculture & Fisheries	Reduction in global maize harvests	10%	15%	1.5x worse
	Decline in marine fisheries	4.5 million metric tons	6.0 million metric tons	33% worse
 Water Resources	Global population exposed to new or aggravated water scarcity	4%	8%	2x worse
	People exposed to drought each month	114.3 million	190.4 million	76.1 million more people
	Additional global population affected by river floods	106.4 million	141.9 million	35.5 million more people
 Economy	Global costs of warming	\$54 trillion	\$69 trillion	\$15 trillion more
	U.S. Gross Domestic Product (GDP) losses	0.6%	1.2%	2x worse

Costs and challenges worsen with additional warming.

We Choose: Emissions of Greenhouse Gases

Determine the Amount of Warming



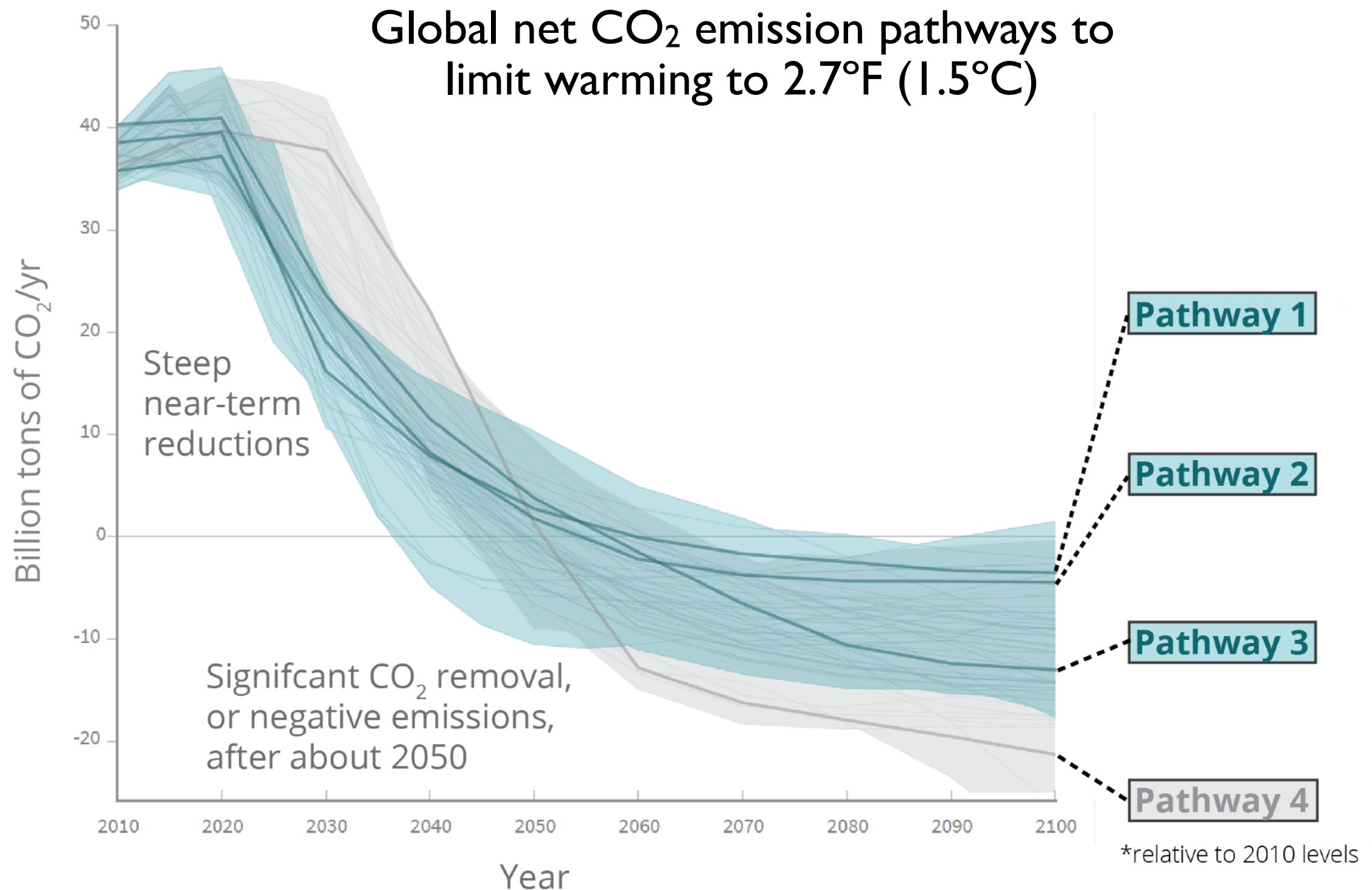
**Projected
warming under
HIGH emissions**

**Projected
warming under
LOW emissions**

Global CO₂ emissions need to fall to **net-zero by mid-century** to avoid 2.7°F (1.5°C) of warming.

Many paths get us there.

Time is of the essence.



The **sooner** emissions are reduced,
the **less-drastic** those reductions will
need to be, and the **easier** it will be to stay
below 2.7°F (1.5°C) of warming.



Dr. Heidi A. Roop

University of Minnesota

Department of Soil, Water, and Climate

@heidiroop | hroop@umn.edu

UNIVERSITY OF MINNESOTA
EXTENSION
Driven to DiscoverSM

CFANS
COLLEGE OF FOOD, AGRICULTURAL
AND NATURAL RESOURCE SCIENCES