



IPCC Fifth Assessment on Climate Science and Climate Policy Trends

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ICF International

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Outline



- Highlights of the New IPCC AR5 Report
- US Emissions of Important GHGs
- International Negotiations and Action in the United States
- Q&A

Climate Change 2013: The Physical Science Basis

Working Group I contribution to the IPCC Fifth Assessment Report

Highlights of the New IPCC Report

Gian-Kasper Plattner
Director of Science, IPCC WGI TSU

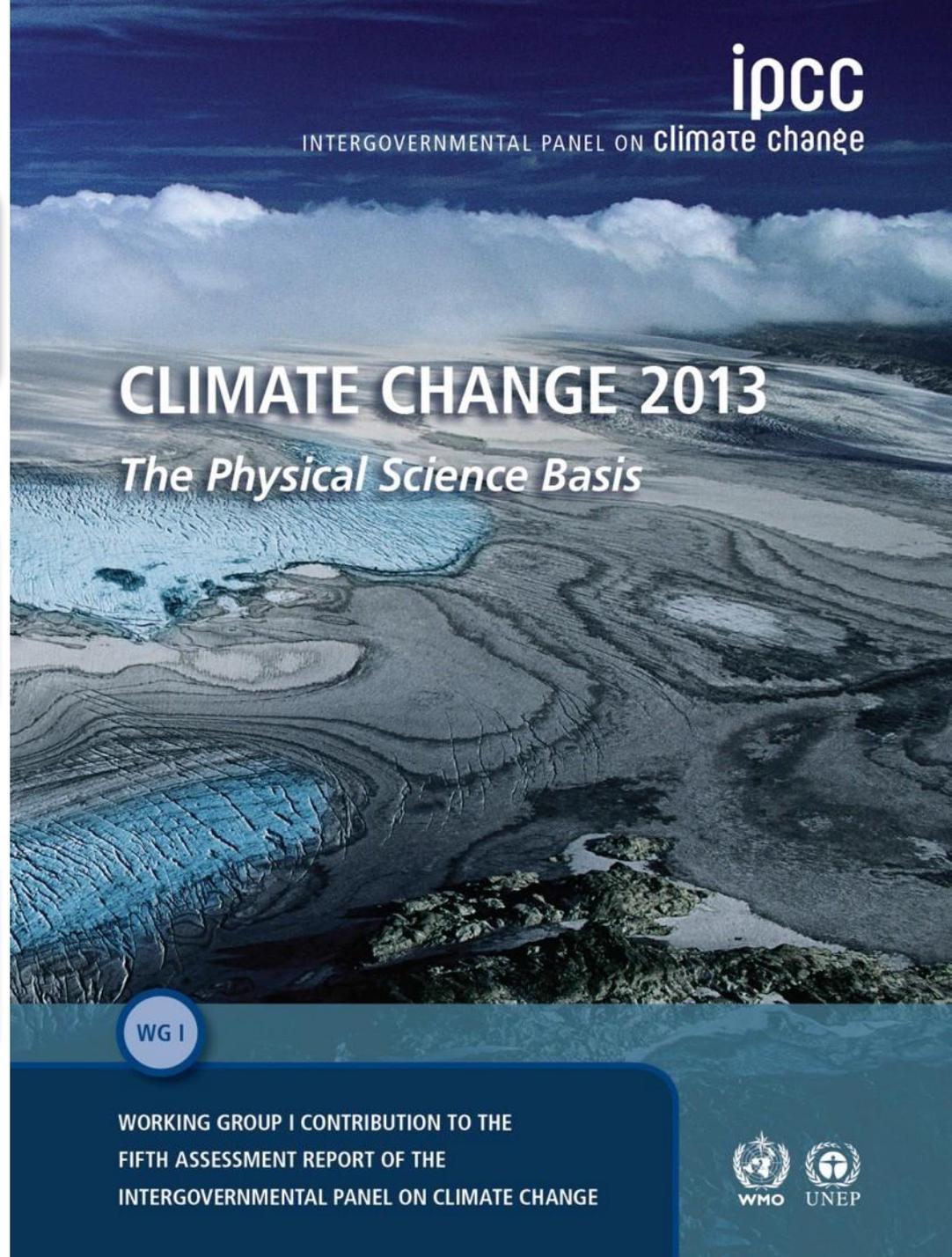
259 Authors from 39 Countries
WGI Co-Chairs & TSU Team

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Observation

Understanding

Future



ipcc

INTERGOVERNMENTAL PANEL ON climate change

CLIMATE CHANGE 2013

The Physical Science Basis

WG I

WORKING GROUP I CONTRIBUTION TO THE
FIFTH ASSESSMENT REPORT OF THE
INTERGOVERNMENTAL PANEL ON CLIMATE CHANGE



Warming in the climate system
is unequivocal

Human influence on the
climate system is clear

Limiting climate change will require
substantial and sustained reductions of
greenhouse gas emissions

Observation

What has changed?

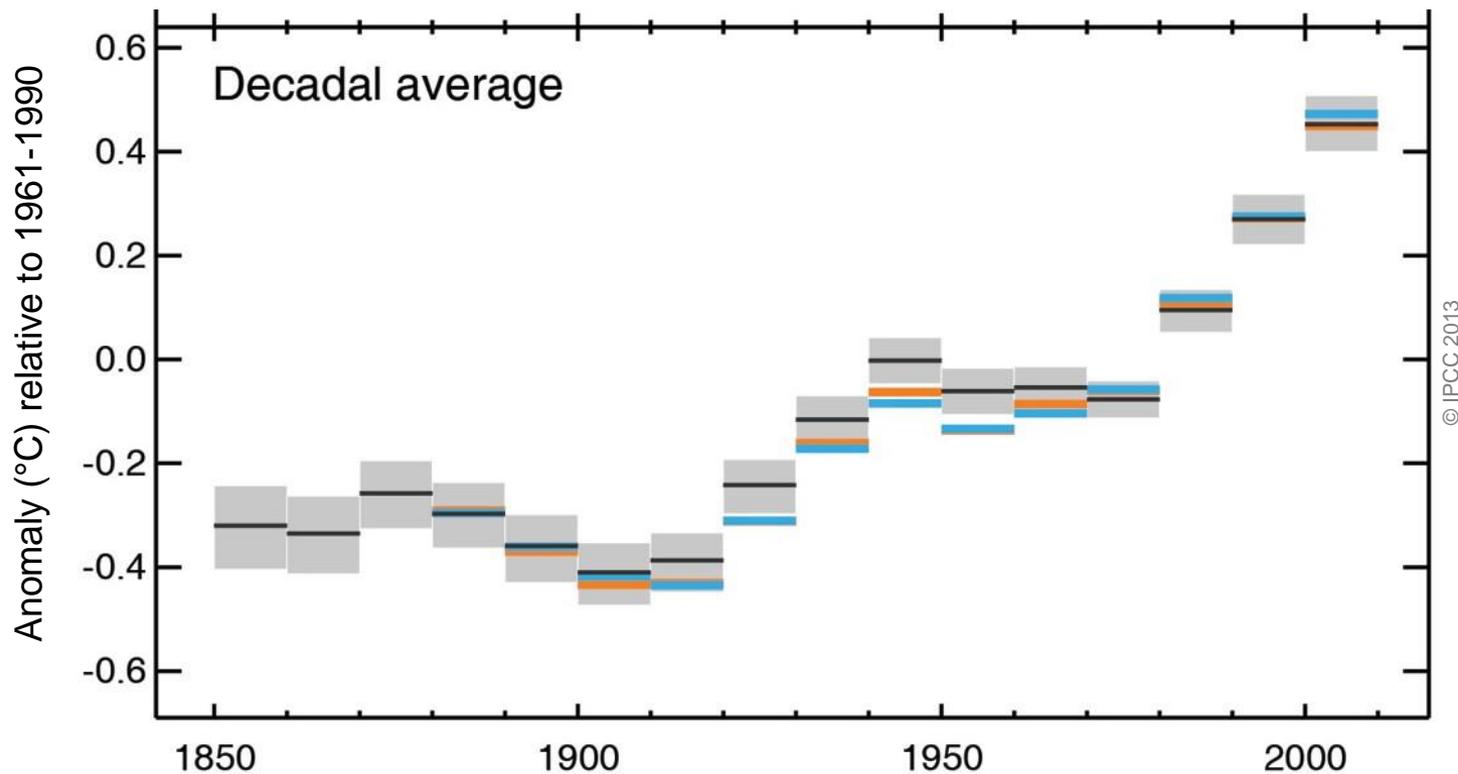
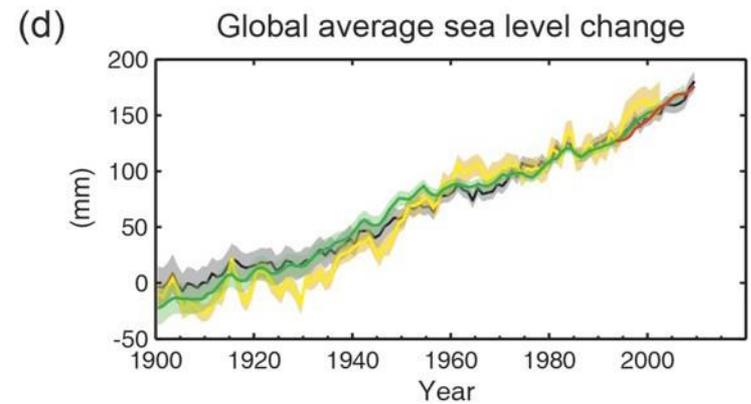
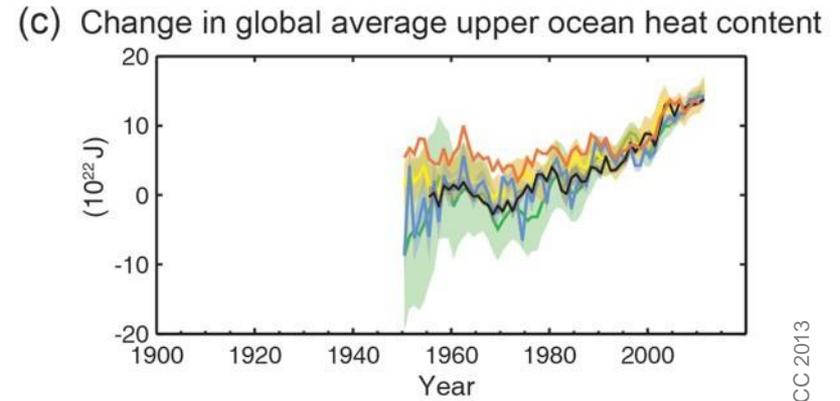
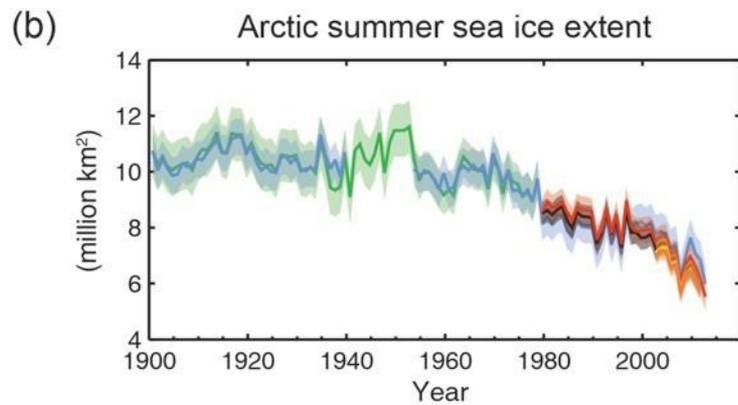
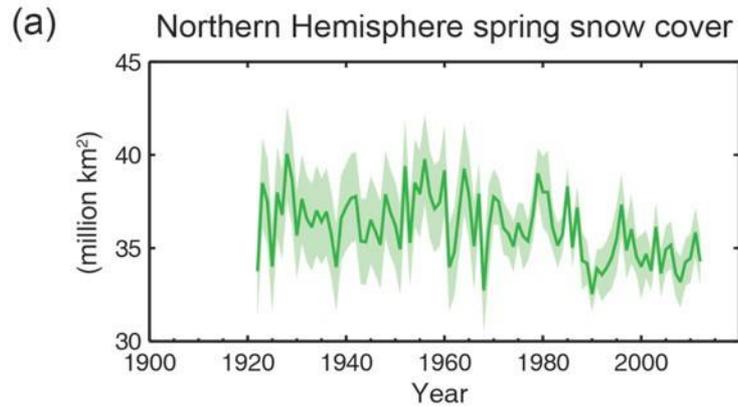


Fig. SPM.1a

Each of the last three decades has been successively warmer at the Earth's surface than any preceding decade since 1850.

In the Northern Hemisphere, 1983–2012 was *likely* the warmest 30-year period of the last 1400 years (*medium confidence*).



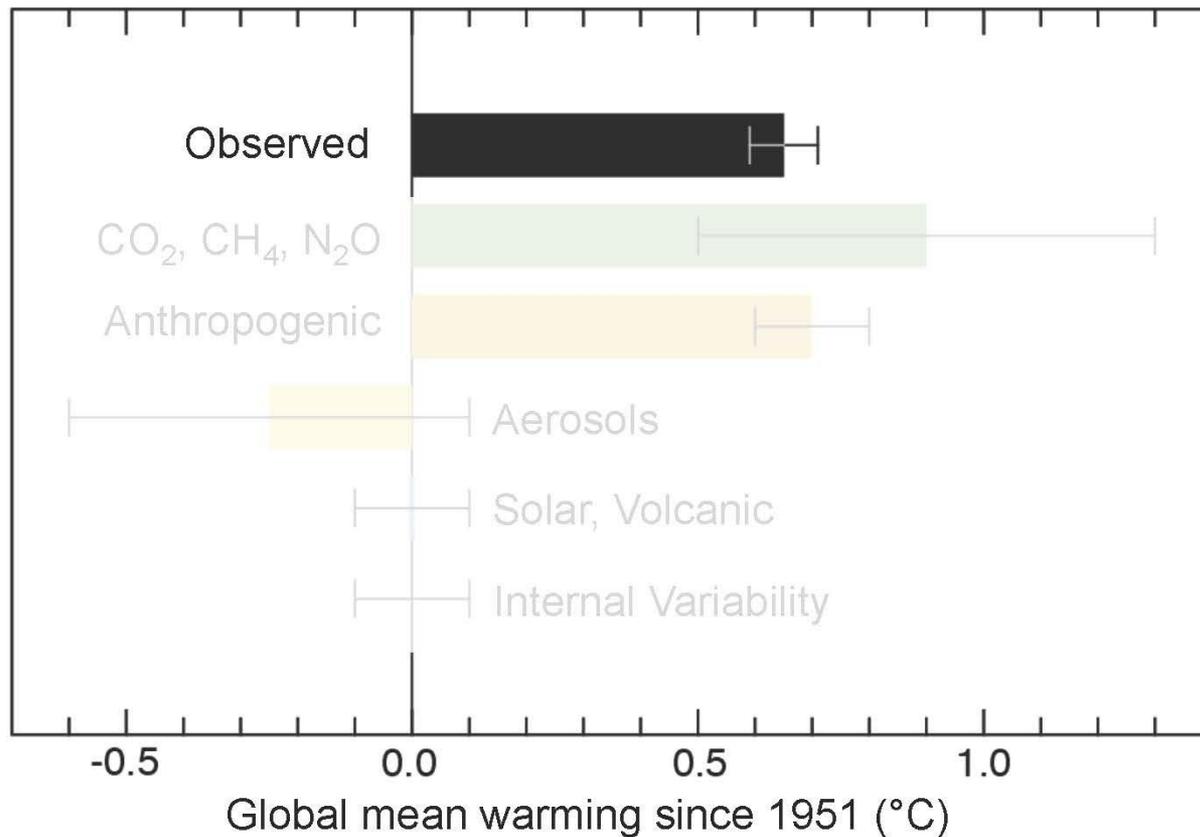
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Fig. SPM.3

Warming of the climate system is unequivocal, [...]

Understanding

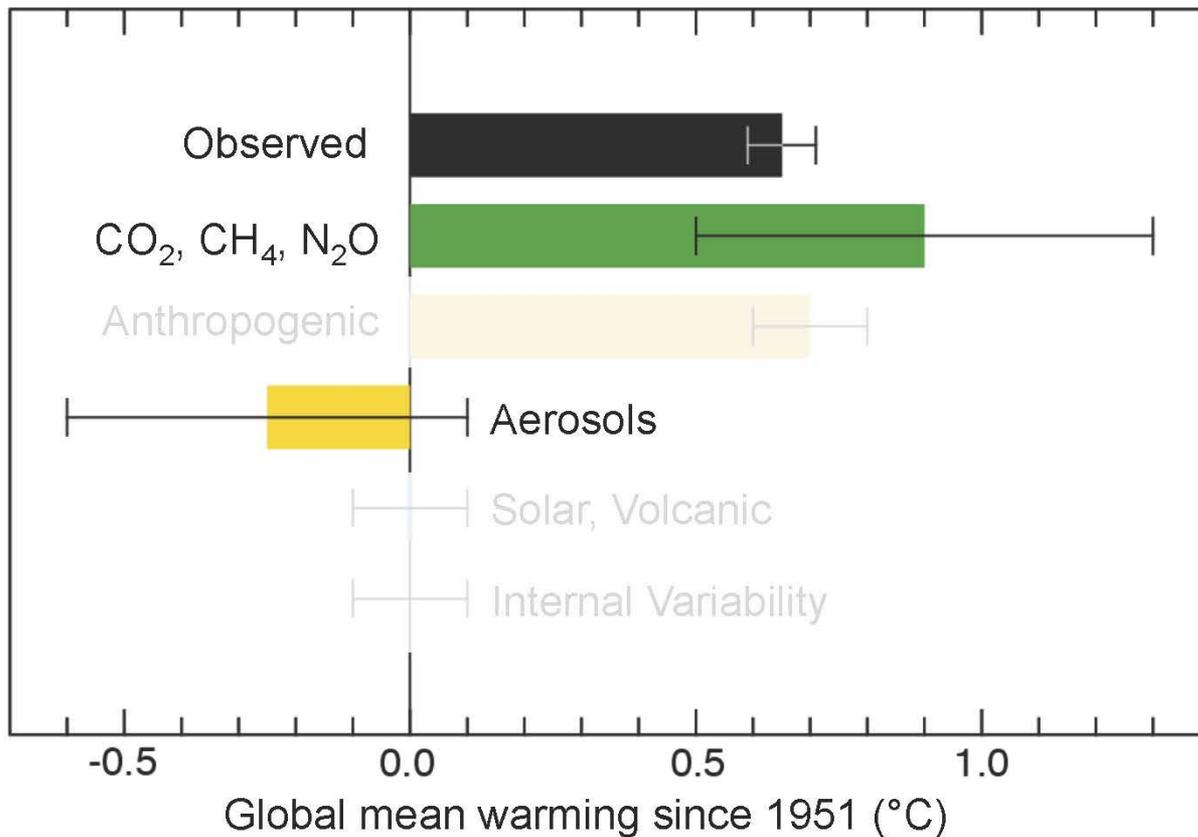
Why has it changed?



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Fig. TS.10

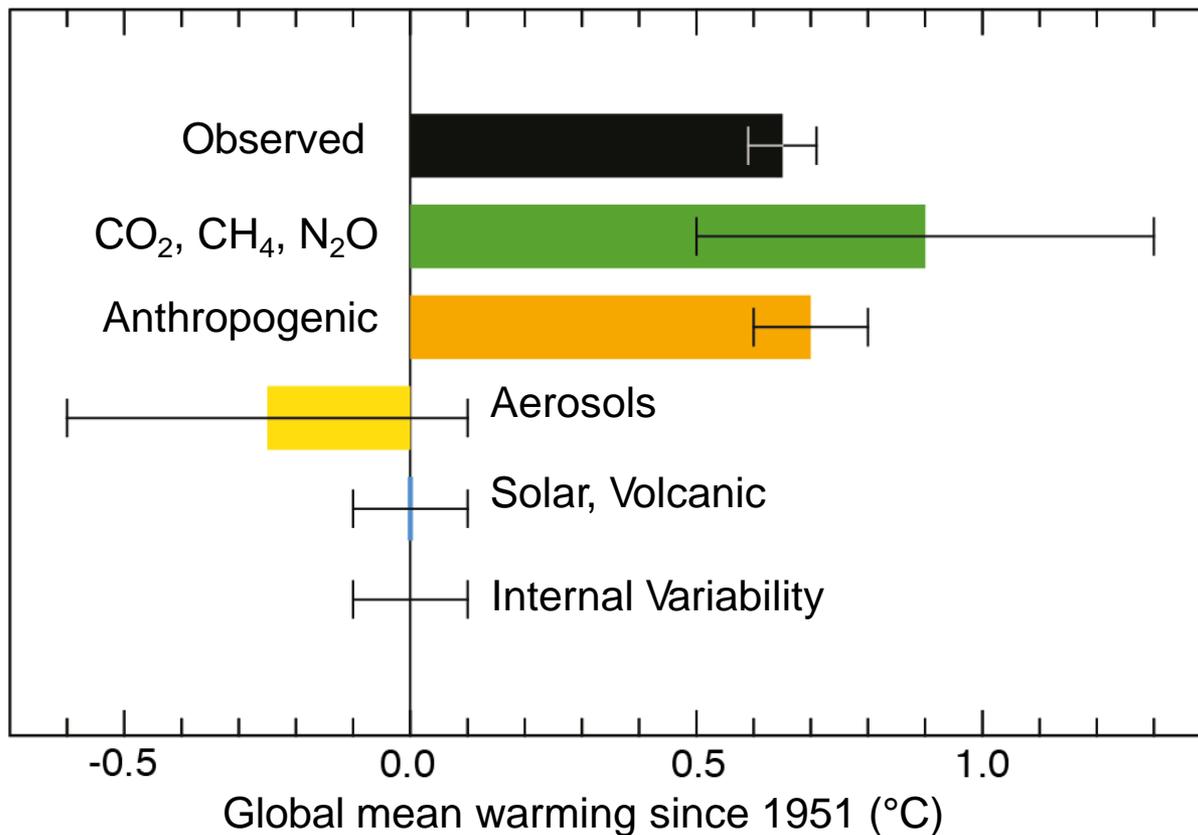
The observed warming 1951–2010 is approximately 0.6°C to 0.7°C.



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Fig. TS.10

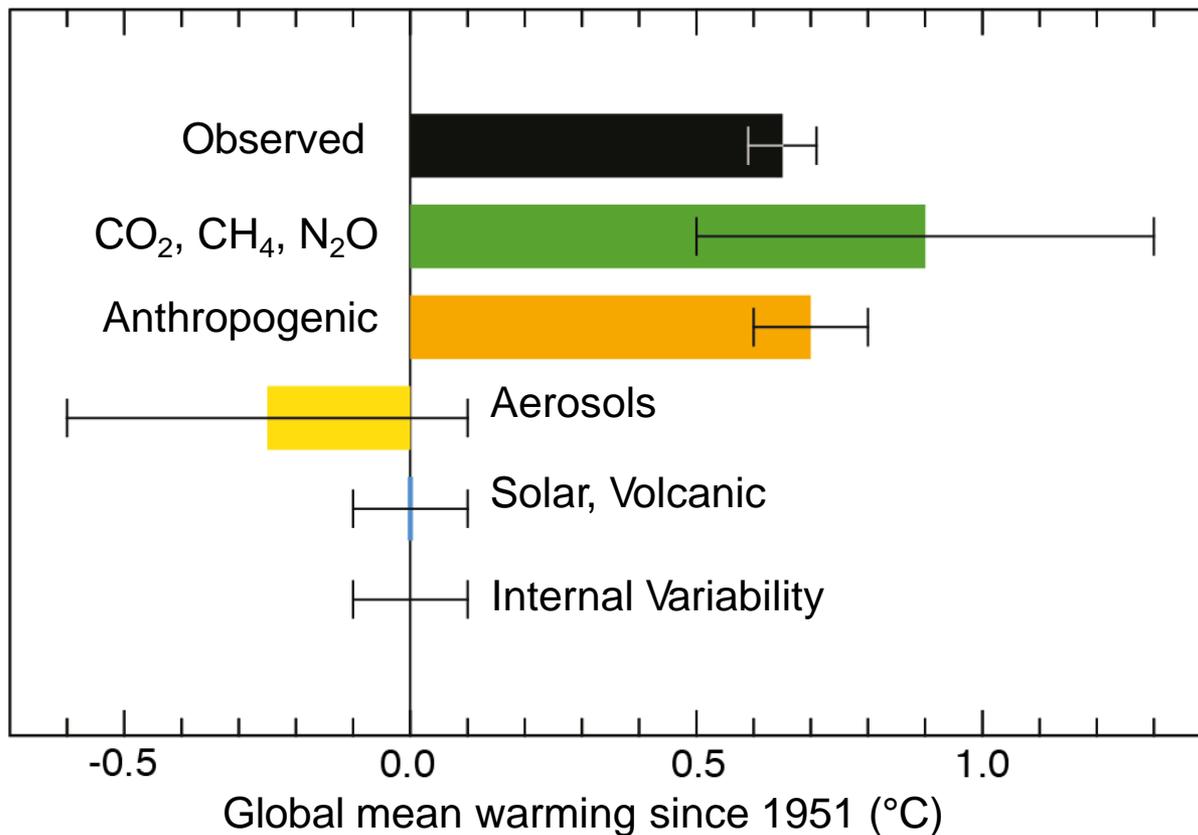
It is *extremely likely* that human influence has been the dominant cause of the observed warming since the mid-20th century.



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Fig. TS.10

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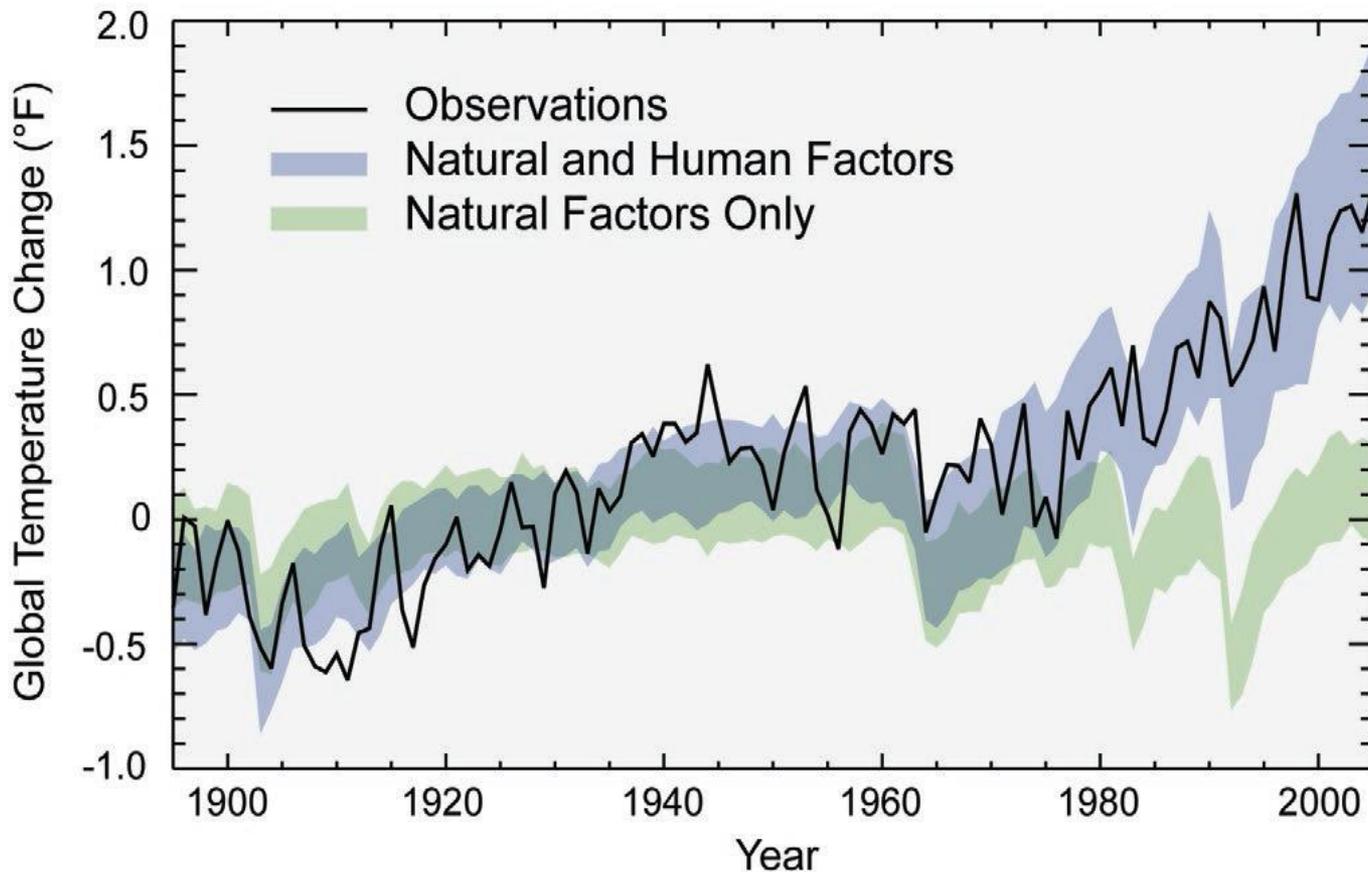


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Fig. TS.10

Human influence on the climate system is clear.

US Global Change Research Program— Humans are Affecting the Global Climate System

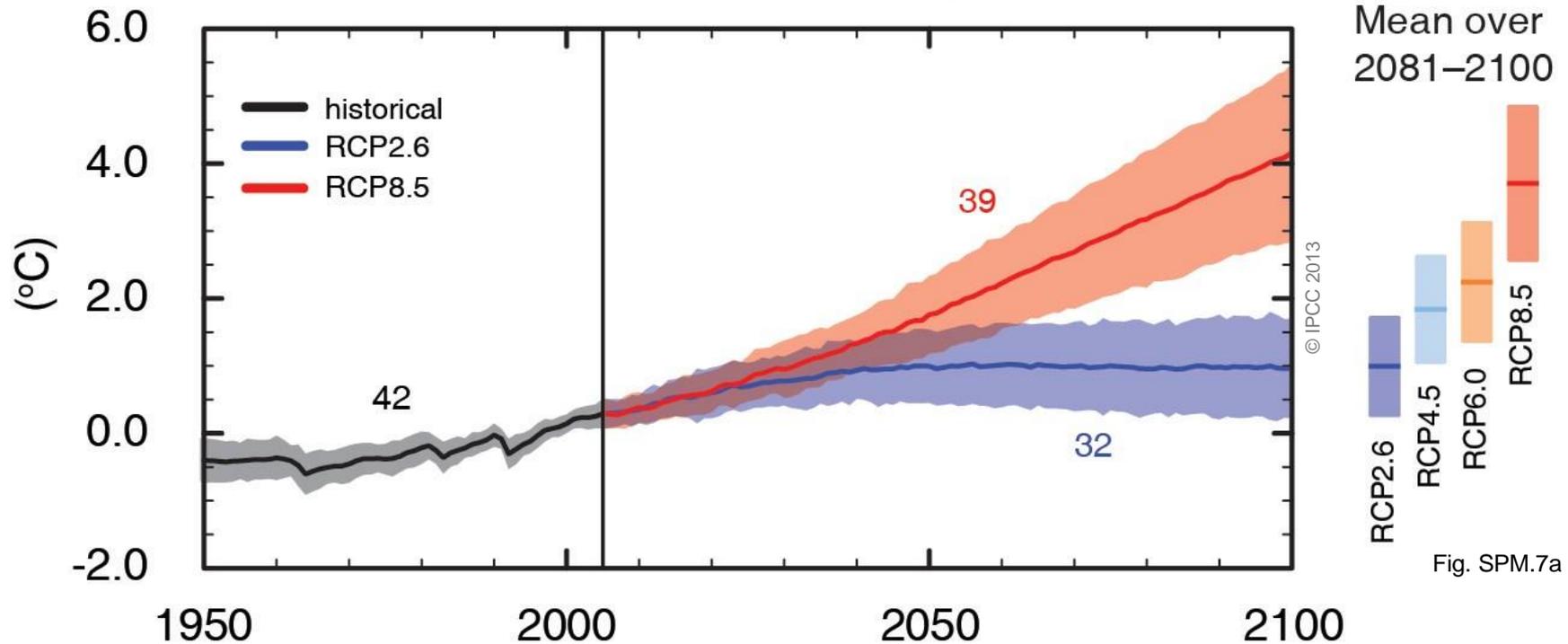


US Third National Climate Assessment, US Global Change Research Program, May 6, 2014.

Future

How will it change?

Global mean surface temperature change from 1986-2005



Global surface temperature change for the end of the 21st century is *likely* to exceed 1.5°C relative to 1850–1900 for all scenarios except RCP2.6.

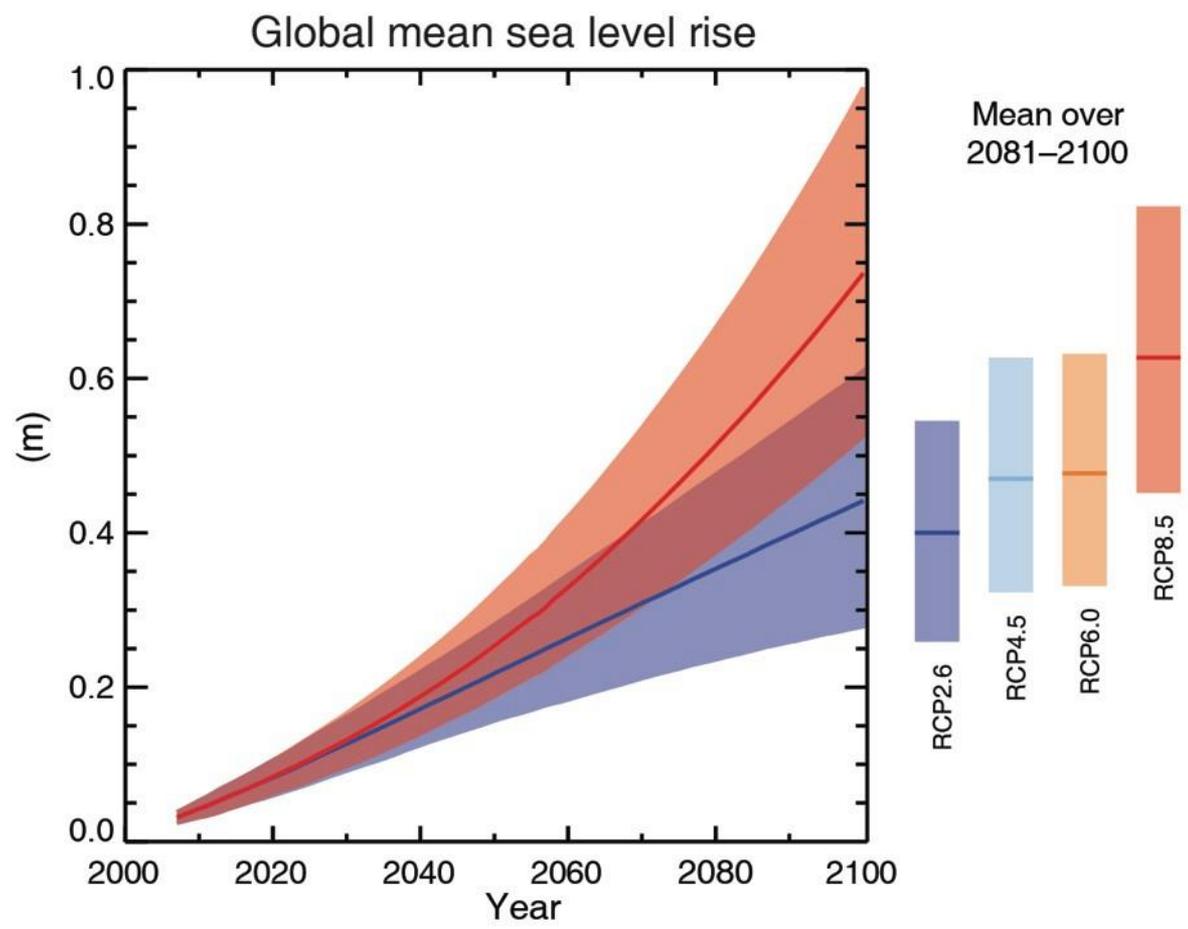


Fig. SPM.9

Global mean sea level will continue to rise during the 21st century and *virtually certain* beyond 2100

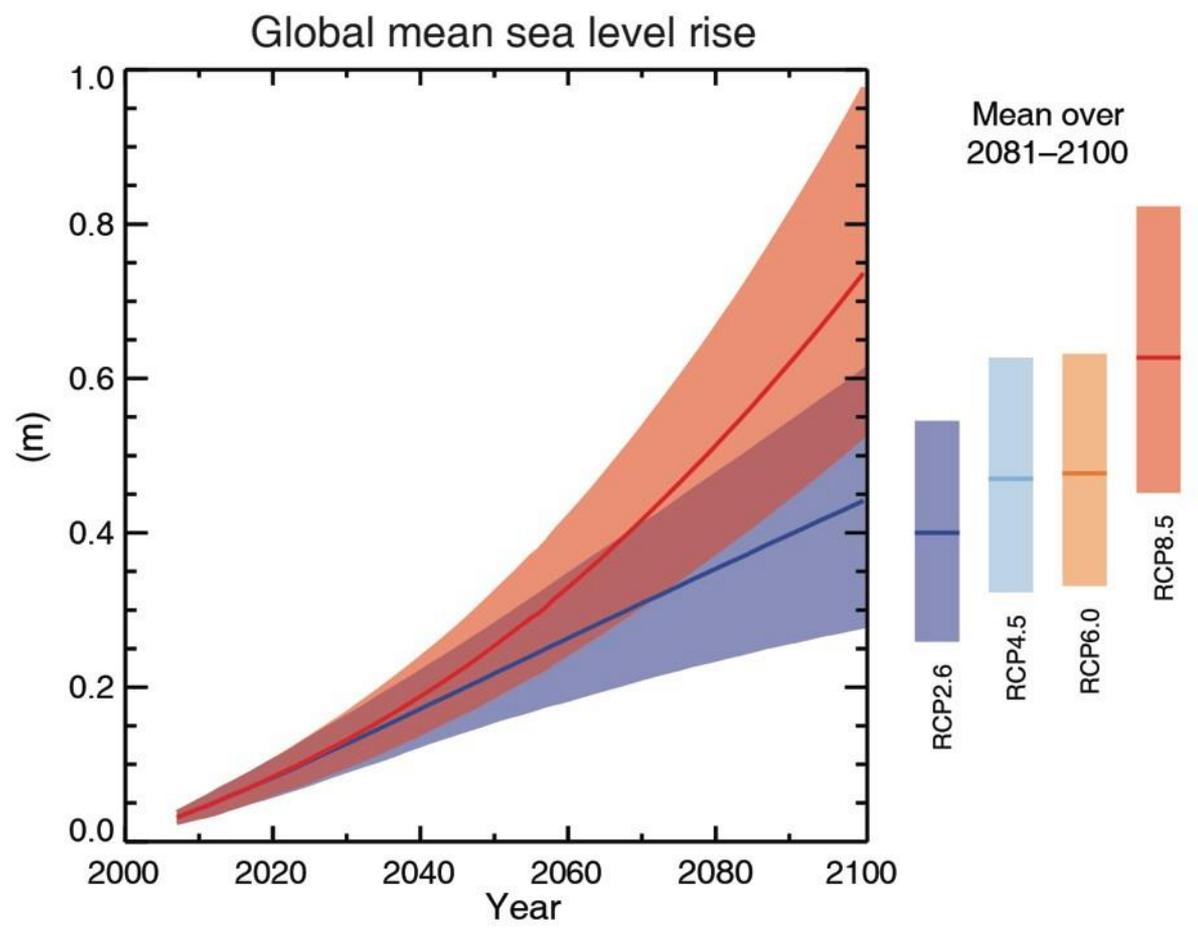
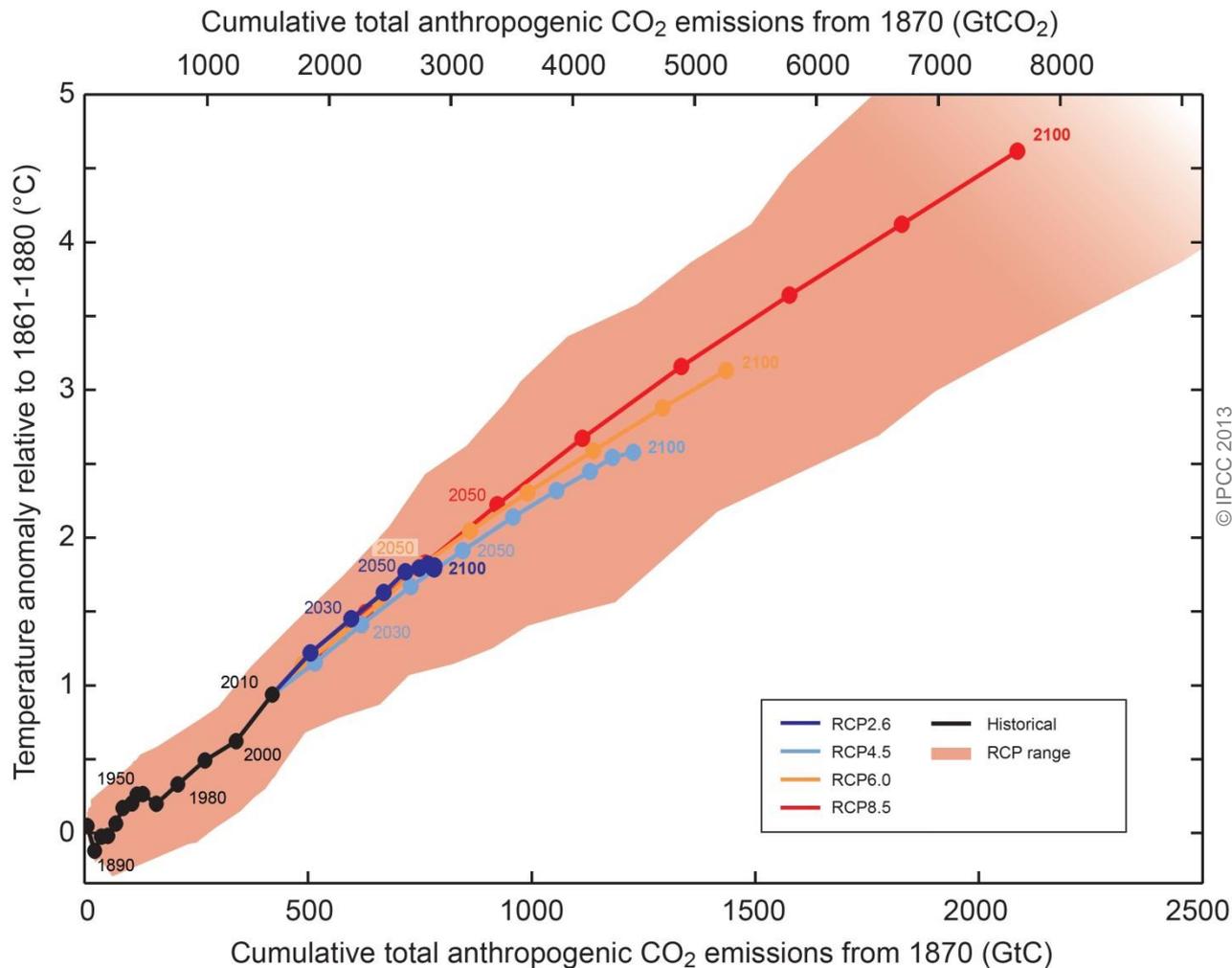


Fig. SPM.9

RCP2.6 (2081-2100), *likely* range: 26 to 55 cm

RCP8.5 (2081-2100), *likely* range: 45 to 82 cm



© IPCC 2013

Fig. SPM.10

Limiting climate change will require substantial and sustained reductions of greenhouse gas emissions.

Climate Change 2013: The Physical Science Basis

Working Group I contribution to the IPCC Fifth Assessment Report

Further Information
www.climatechange2013.org

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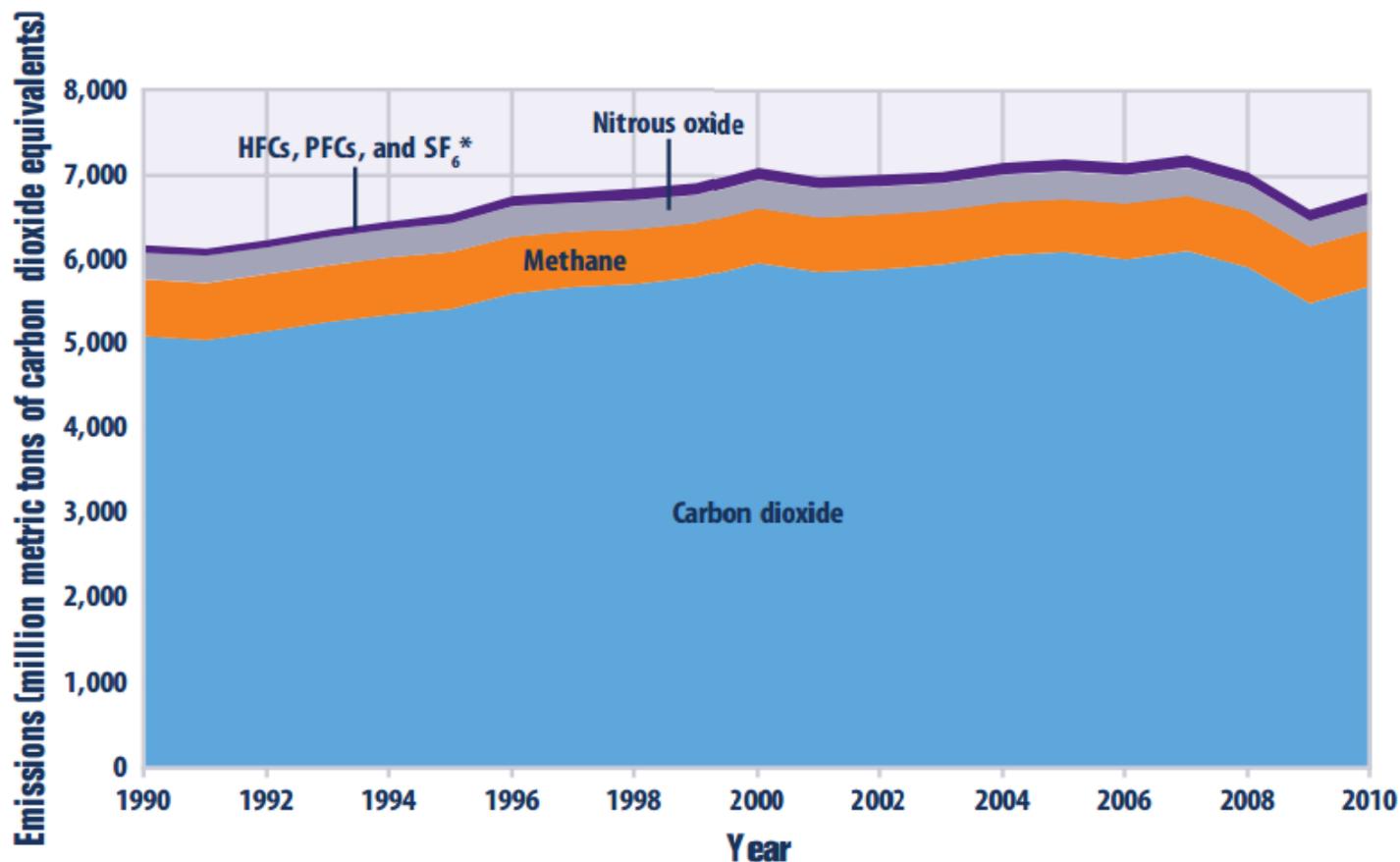


US Emissions of Important GHGs

“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.”

-IPCC AR5 Summary for Policymakers

U.S. Greenhouse Gas Emissions by Gas, 1990-2010



* HFCs are hydrofluorocarbons, PFCs are perfluorocarbons, and SF₆ is sulfur hexafluoride.

Source: EPA (2012). Climate Change Indicators in the United States, 2012.
<http://www.epa.gov/climatechange/science/indicators/index.html>



US Sources and Emissions of SF₆

- Electrical Transmission and Distribution
- Magnesium Production and Processing
- Semiconductor Manufacture

74% REDUCTION



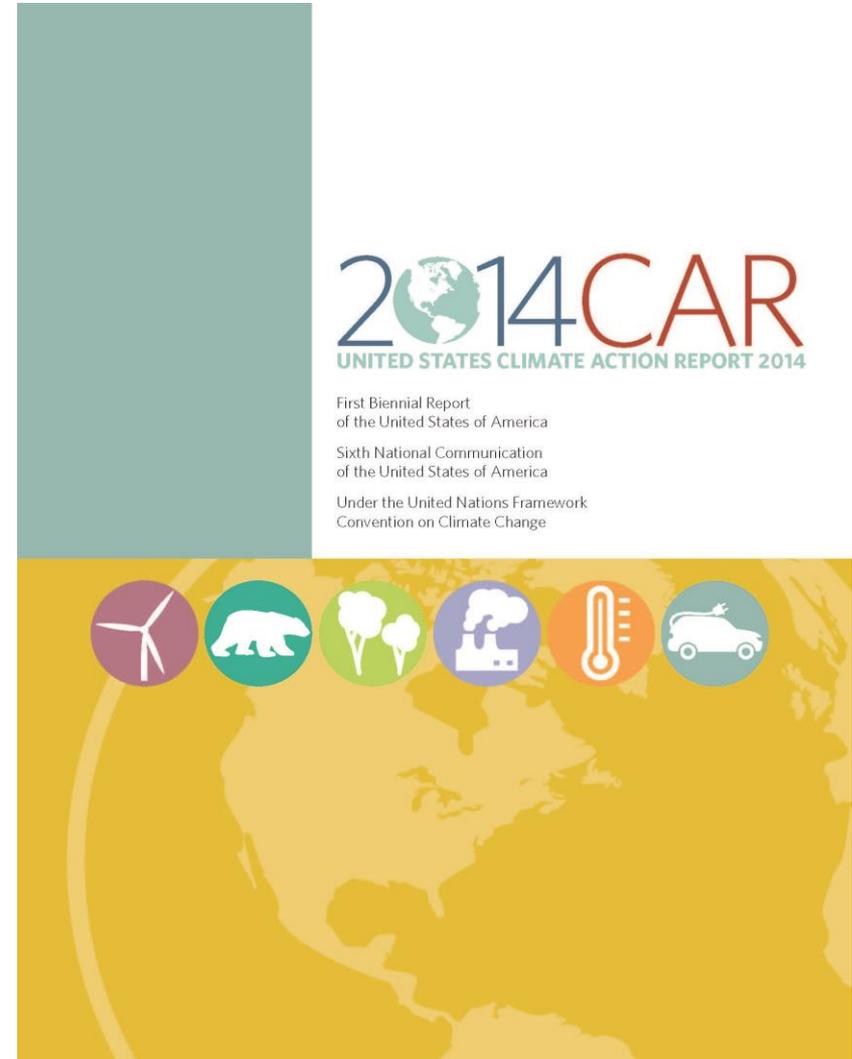
Gas/Source	1990	2005	2008	2009	2010	2011	2012
SF₆	32.6	14.7	10.7	9.6	9.8	10.8	8.4
Electrical Transmission and Distribution	26.7	11.0	8.4	7.5	7.2	7.2	6.0
Magnesium Production and Processing	5.4	2.9	1.9	1.7	2.2	2.9	1.7
Semiconductor Manufacture	0.5	0.7	0.5	0.3	0.4	0.7	0.7
Total	6,233.2	7,253.8	7,118.1	6,662.9	6,874.7	6,753.0	6,525.6
Net Emissions (Sources and Sinks)	5,402.1	6,223.1	6,137.1	5,701.2	5,906.7	5,772.7	5,546.3

Source: EPA (2014). Inventory of U.S. Greenhouse Gas Emissions and Sinks: 1990-2012. April, 2014.

US Projections of SF₆ Emissions



- Submitted to United Nations Framework Convention on Climate Change (UNFCCC)
- Actions taken nationally and internationally to mitigate, adapt to, and assist others in addressing climate change
- Offers projections for GHG emissions due to voluntary partnerships such as SF₆ Partnership

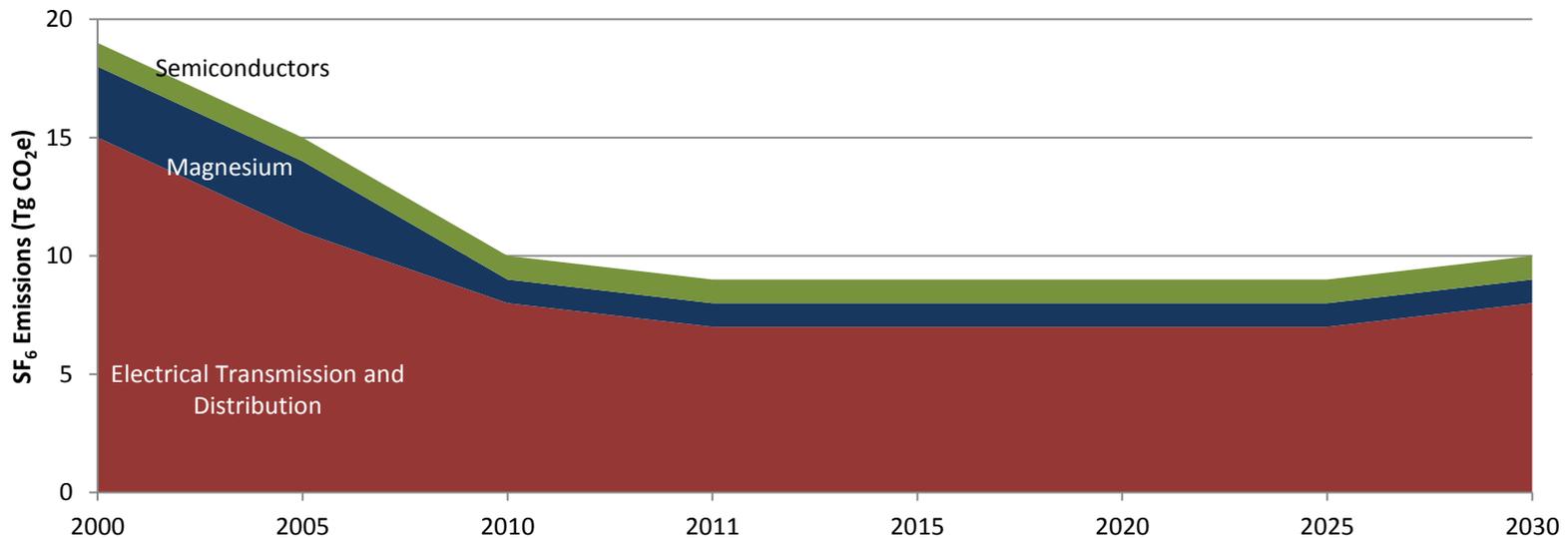


US Projections of SF₆ Emissions

Select U.S. Non-CO₂ and Non-Energy CO₂ Emission Sources by Gas (Tg CO₂e)

Gas and Source	Historical GHG Emissions ^a				Projected GHG Emissions			
	2000	2005	2010	2011	2015	2020	2025	2030
Sulfur Hexafluoride (SF₆)								
Electrical Transmission and Distribution	15	11	8	7	7	7	7	8
Magnesium	3	3	1	1	1	1	1	1
Semiconductors	1	1	1	1	1	1	1	1

^a Historical emissions and sinks data are from U.S. EPA/OAP 2013. Bunker fuels and biomass combustion are not included in inventory calculations.





International Negotiations and Action in the United States

[Call out text goes here]

Past and Upcoming COPs



- Recent actions at COPs:
 - Establish Green Climate Fund--\$100B annually
 - General commitments for reductions and limit warming
 - Extend Kyoto Protocol for a second period
 - REDD+ programme--\$280M
 - Commitment to limit warming to no more than 2 degrees C

- COP 20: Lima, Peru: December 2014

- Working towards a new global post-2020 agreement at COP 21 in Paris in 2015
 - Legally-binding agreement among countries, developed and developing
 - Fully funding the GCF
 - Providing for climate resilience

U.S. Congressional Actions



- 176 bills on climate change have been introduced in the 113th Congress (2013-2014)
 - 108 bills that are intended to advance climate action
 - 68 bills that would hinder climate action
 - 45 bills that would curb EPA's ability to regulate greenhouse gas emissions from power plants.

- Likelihood of passage—Very small

New Sources Pollution Standards (NSPS)



- **June 1, 2014:** Issue similar rule which would apply to new, modified, and reconstructed affected facilities in specific source categories

June 2015: Final rule due



January 2014: Proposed new source performance standards for carbon dioxide emissions from new fossil fuel-fired power plant. Limit new power plants to 1,000 or 1,100 lbs of CO₂ per MWh

June 2016: Implementation plans due

Executive Actions



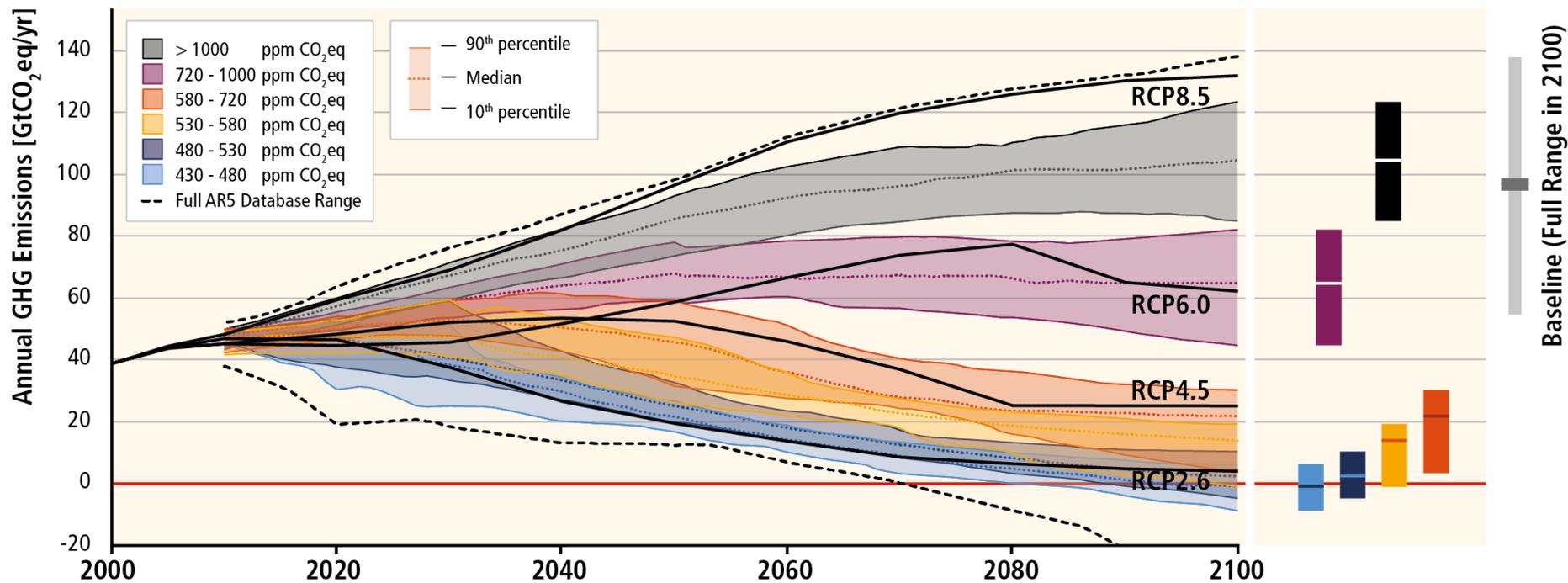
- *The President's Climate Action Plan: June 2013*
 1. Cut Carbon Pollution in America
 2. Prepare the United States for the Impacts of Climate Change
 3. Lead International Efforts to Combat Global Climate Change and Prepare for its Impacts

“We will respond to the threat of climate change, knowing that the failure to do so would betray our children and future generations. Some may still deny the overwhelming judgment of science, but none can avoid the devastating impact of raging fires and crippling drought and more powerful storms. The path towards sustainable energy sources will be long and sometimes difficult. But America cannot resist this transition, we must lead it. We cannot cede to other nations the technology that will power new jobs and new industries, we must claim its promise.”

President Obama, Second Inaugural Address, January 2013

74% reduction in SF6 is impressive, but preventing dangerous climate change will require massive shifts in energy and land use patterns by mid-century.

GHG Emission Pathways 2000-2100: All AR5 Scenarios



Q&A

