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Description of document: National Oceanic and Atmospheric Administration (NOAA) Climate 101 Training Slides (2023?)

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Posted date: 26-August-2024

Source of document: Freedom of Information Request
National Oceanic and Atmospheric Administration
Public Reference Facility (SOU1000)
1315 East-West Highway (SSMC3)
Room 9719
Silver Spring, Maryland 20910
[DOC FOIA Public Access link](#)
[FOIA.gov website](#)

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UNITED STATES DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
OCEANIC AND ATMOSPHERIC RESEARCH
Silver Spring, MD 20910

August 14, 2024

Re: FOIA Request DOC-NOAA-2024-000577

This letter is in response to your Freedom of Information Act (FOIA) request which was received by our office on 07/01/2024 in which you requested:

“REFERRAL FROM TREASURY: A copy of the Climate 101 Training powerpoint slides. Explanation: The Climate Literacy Working Group partnered with the National Oceanic and Atmospheric Administration and successfully published a Climate 101 training for all staff.”

We have located **one** record responsive to your request and the **one** record is being released to you in its entirety.

You have the right to file an administrative appeal, if you are not satisfied with our response to your FOIA request. All appeals should include a statement of the reasons why you believe the FOIA response was not satisfactory. An appeal based on documents in this release must be received within 90 calendar days of the date of this response letter at the following address:

Assistant General Counsel for Employment, Litigation, and Information
U.S. Department of Commerce
Office of General Counsel
Room 5896
1401 Constitution Avenue, N.W.
Washington, D.C. 20230



An appeal may also be sent by email to FOIAAppeals@doc.gov.

For your appeal to be complete, it must include the following items:

- a copy of the original request,
- our response to your request,
- a statement explaining why the withheld records should be made available, and why the denial of the records was in error.
- “Freedom of Information Act Appeal” must appear on your appeal letter. It should also be written on your envelope, or e-mail subject line.

FOIA appeals posted to the e-mail box or Office after normal business hours will be deemed received on the next business day. If the 90th calendar day for submitting an appeal falls on a Saturday, Sunday or legal public holiday, an appeal received by 5:00 p.m., Eastern Time, the next business day will be deemed timely. FOIA grants requesters the right to challenge an agency’s final action in federal court. Before doing so, an adjudication of an administrative appeal is ordinarily required.

The Office of Government Information Services (OGIS), an office created within the National Archives and Records Administration, offers free mediation services to FOIA requesters. They may be contacted in any of the following ways:

Office of Government Information Services
National Archives and Records Administration
Room 2510
8601 Adelphi Road
College Park, MD 20740-6001
Email: ogis@nara.gov
Phone: 301-837-1996
Fax: 301-837-0348
Toll-free: 1-877-684-6448

If you have questions regarding this correspondence, please contact Sabrina Tucker at Sabrina.tucker@noaa.gov or at (202) 594-7525 or the NOAA FOIA Public Liaison Tony LaVoi 843-834-3516.

Sincerely,

GRAFF.MARK.HYR
UM.1514447892

Digitally signed by
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Date: 2024.08.15 10:28:53 -04'00'

Mark Graff
FOIA Officer



Climate 101:

The Science and its Implications

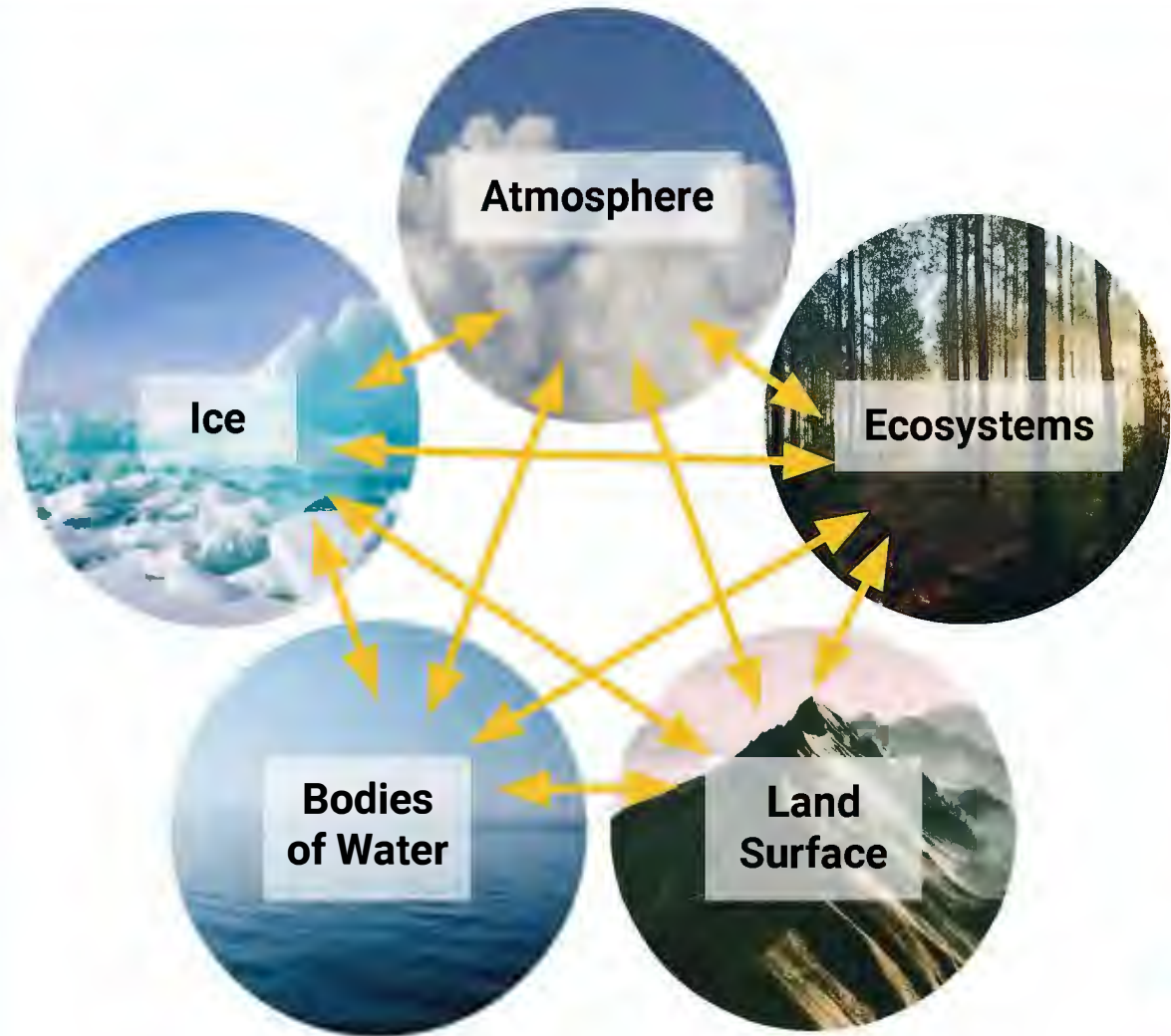
1. **Terminology**
2. **Climate Mechanics**
3. **Observations and Projections**
4. **Impacts**
5. **Response**

*The information in this presentation is drawn from large-scale **collaborative science** that has undergone **rigorous peer-review** and is informed by decades of research.*

Part 1: Learning the Terminology

Big Questions: What is the difference between weather and climate? What is climate change?

Earth's Climate System



Part 2: Climate Mechanics

Big Questions: Why and how does the Earth warm and cool? How does today's warming differ from past warming periods?



Forcings: The Drivers of Climate Change

Natural

- Large volcanic eruptions
- Ocean currents
- Shifts in Earth's orbit
- Solar variations
- Internal variability (e.g. El Niño)

Human-caused

- Fossil fuel burning
- Synthetic gases
- Industrial processes
- Land cover change
- Agriculture
- Waste management

Human emission of heat-trapping gases, particularly CO₂, is the primary cause of current global warming.

The Greenhouse Effect

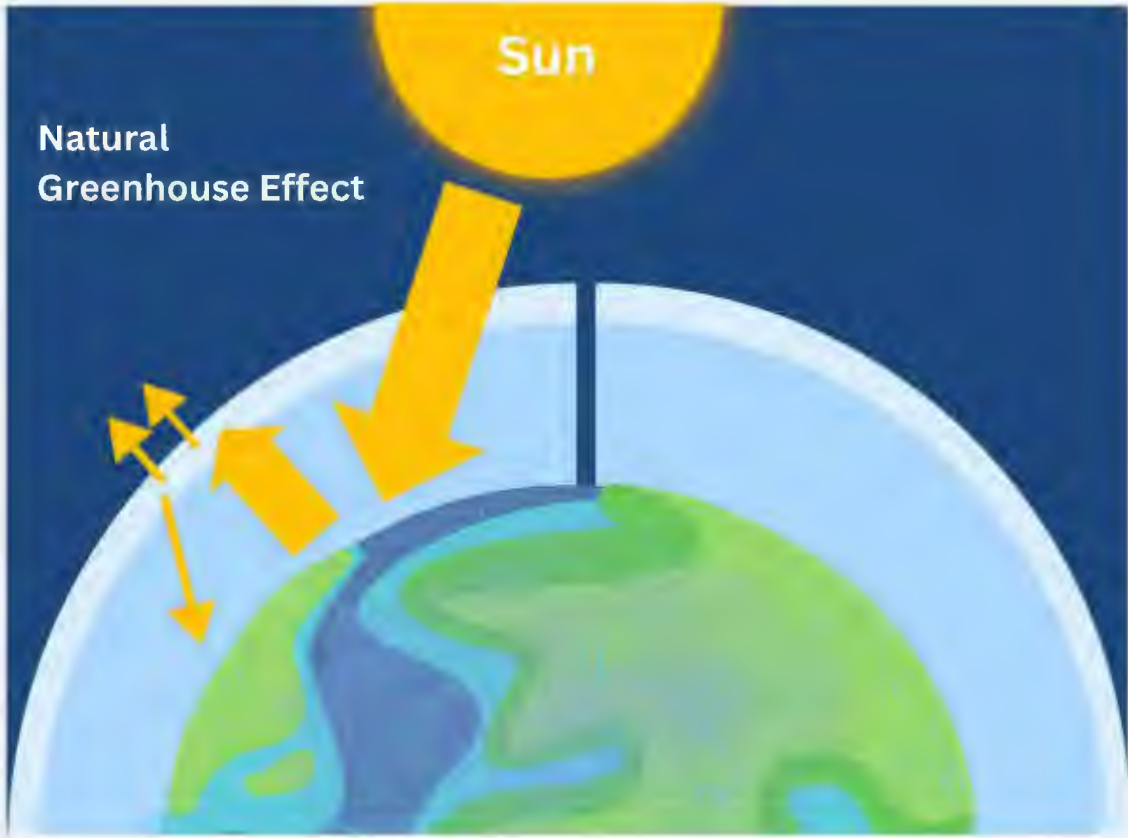


Image adapted from Environet



The Greenhouse Effect

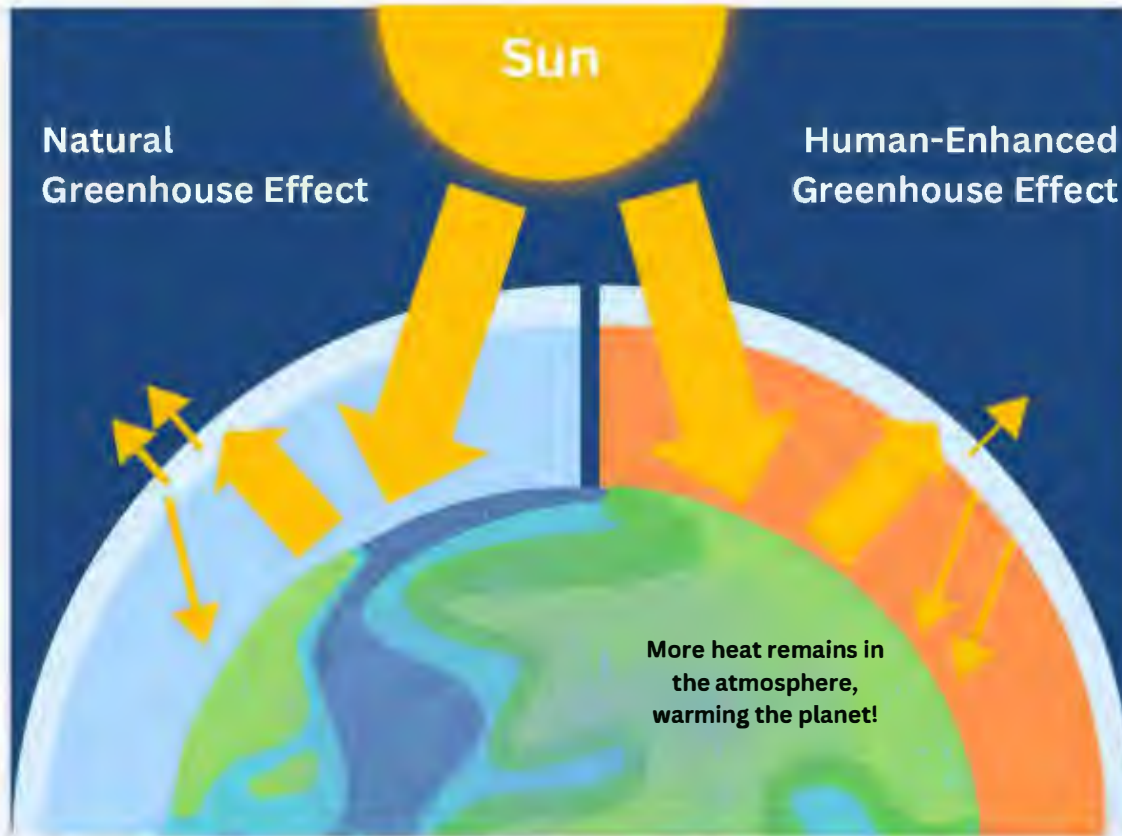
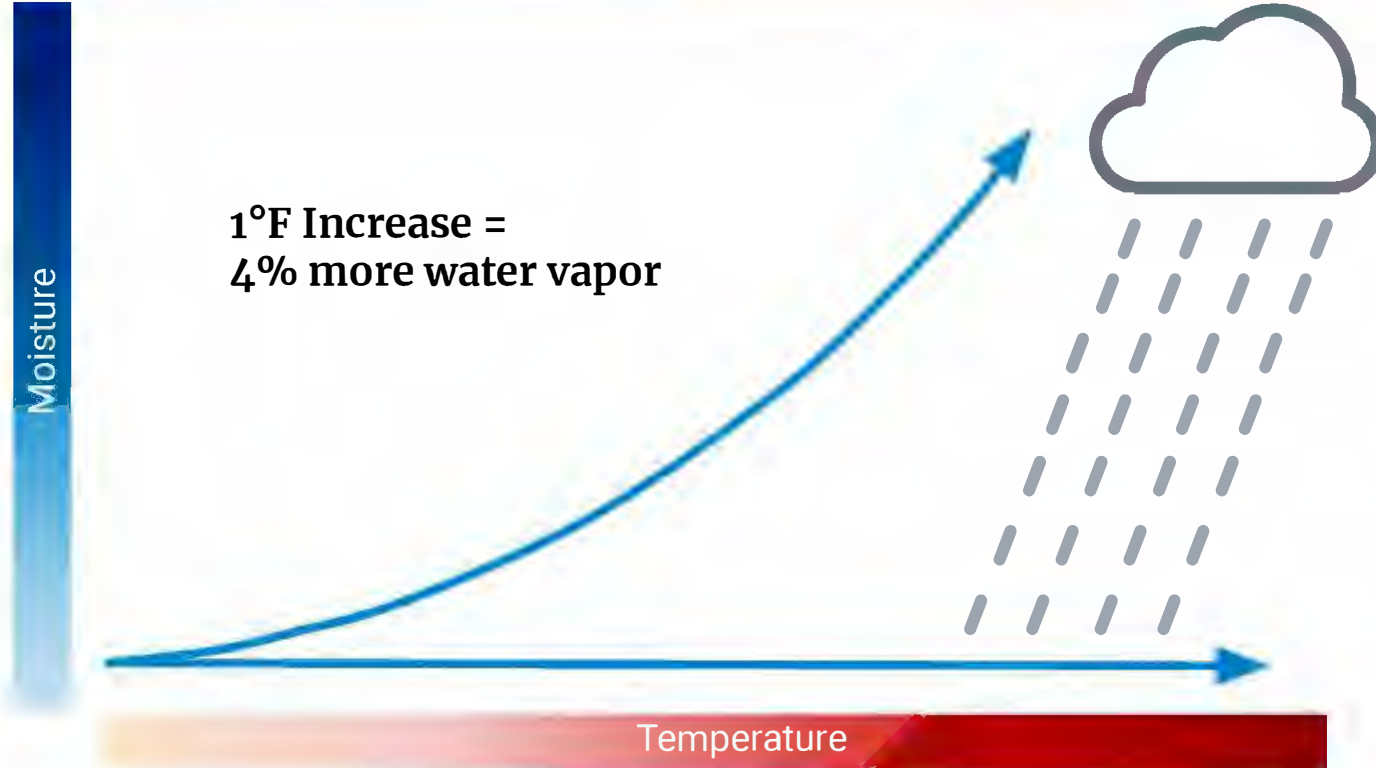


Image adapted from Environet

Warmer Air Holds More Water Vapor



Q: What is a Tipping Point?

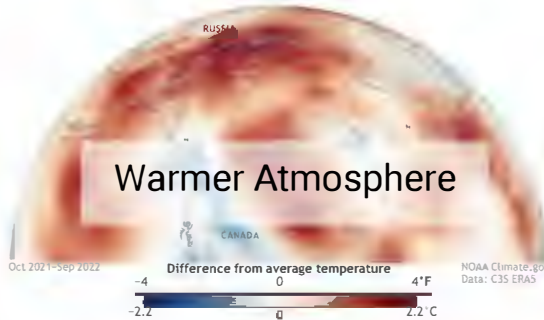
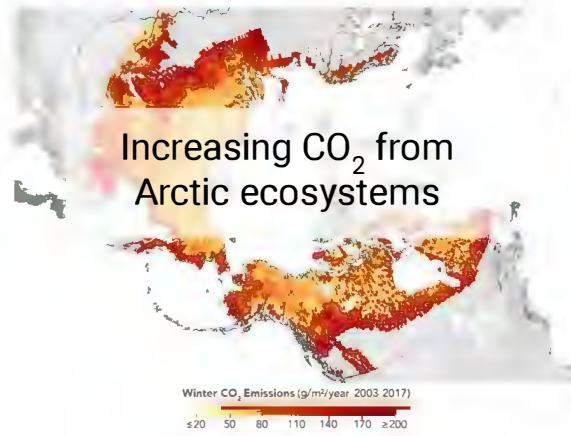
A coastal landscape with a large, dark rock formation in the foreground. A bird is perched on a ledge of the rock. The background shows a body of water and a cloudy sky.

A: When small changes add up over time to create larger, *cascading* changes in the climate system.

Image Source: USGS



Positive Feedback Loops: Amplifiers of Global Warming

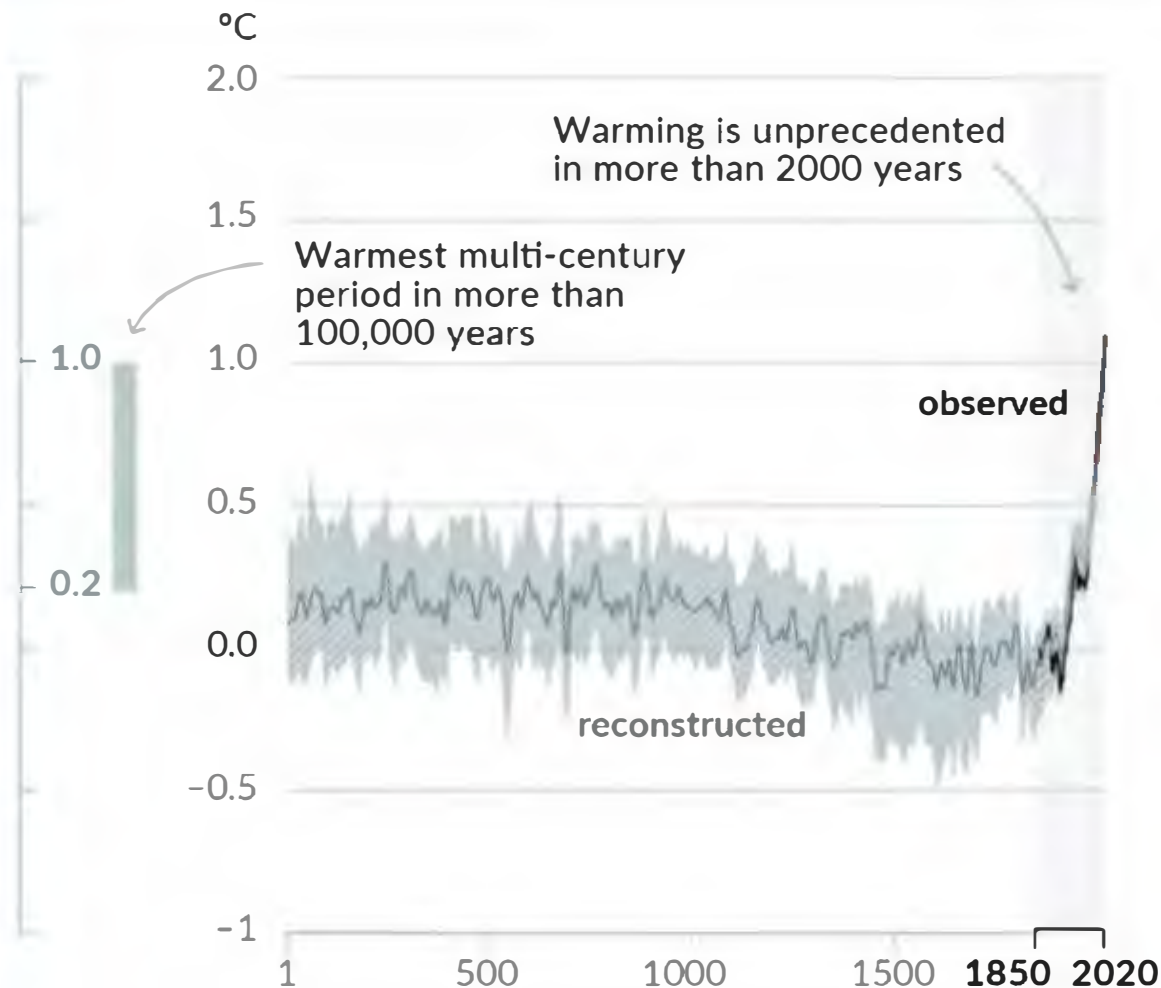


Part 3: Observed and Projected Climate Changes

Big Questions: How has the climate changed so far?
How do we know? How do experts expect it to change
in the future?

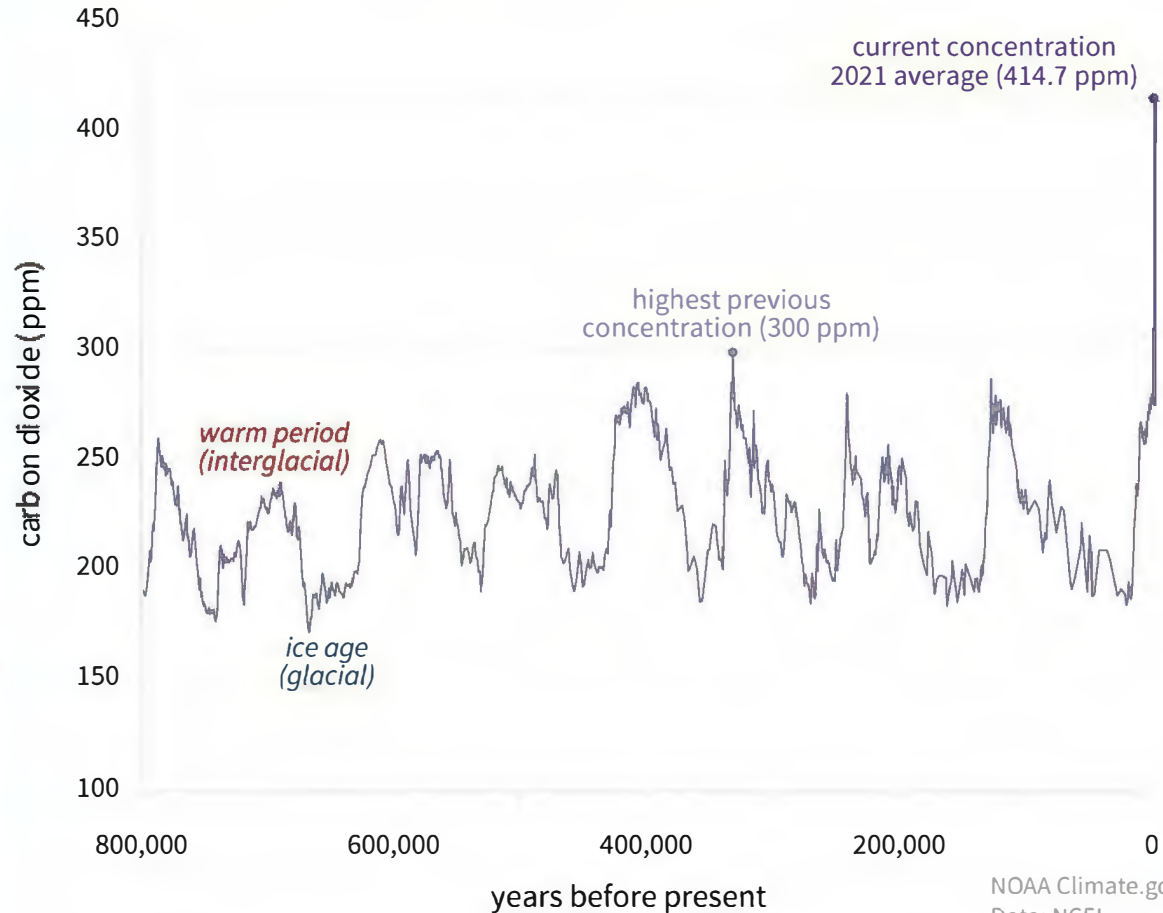


Why Is Earth Warming So Rapidly Today?



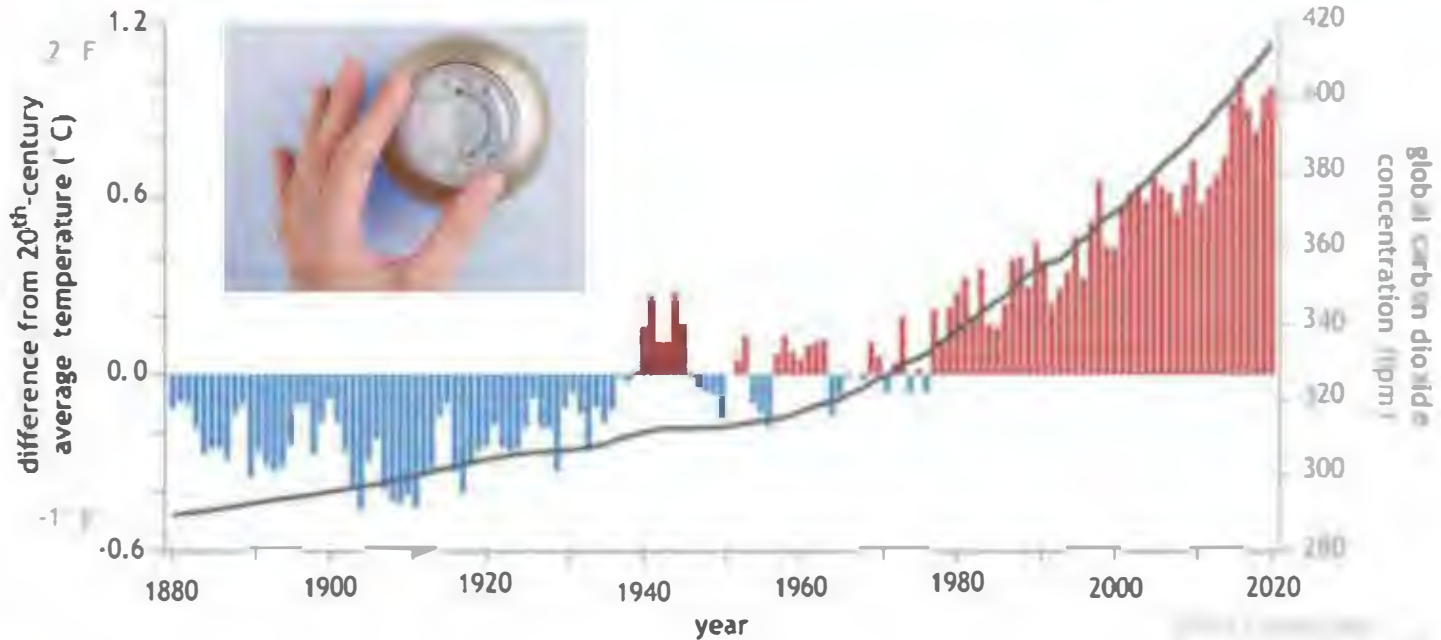
A Partial History of CO₂ on Earth

CARBON DIOXIDE OVER 800,000 YEARS



CO₂ and Temperature

Global atmospheric carbon dioxide and surface temperature (1880-2020)



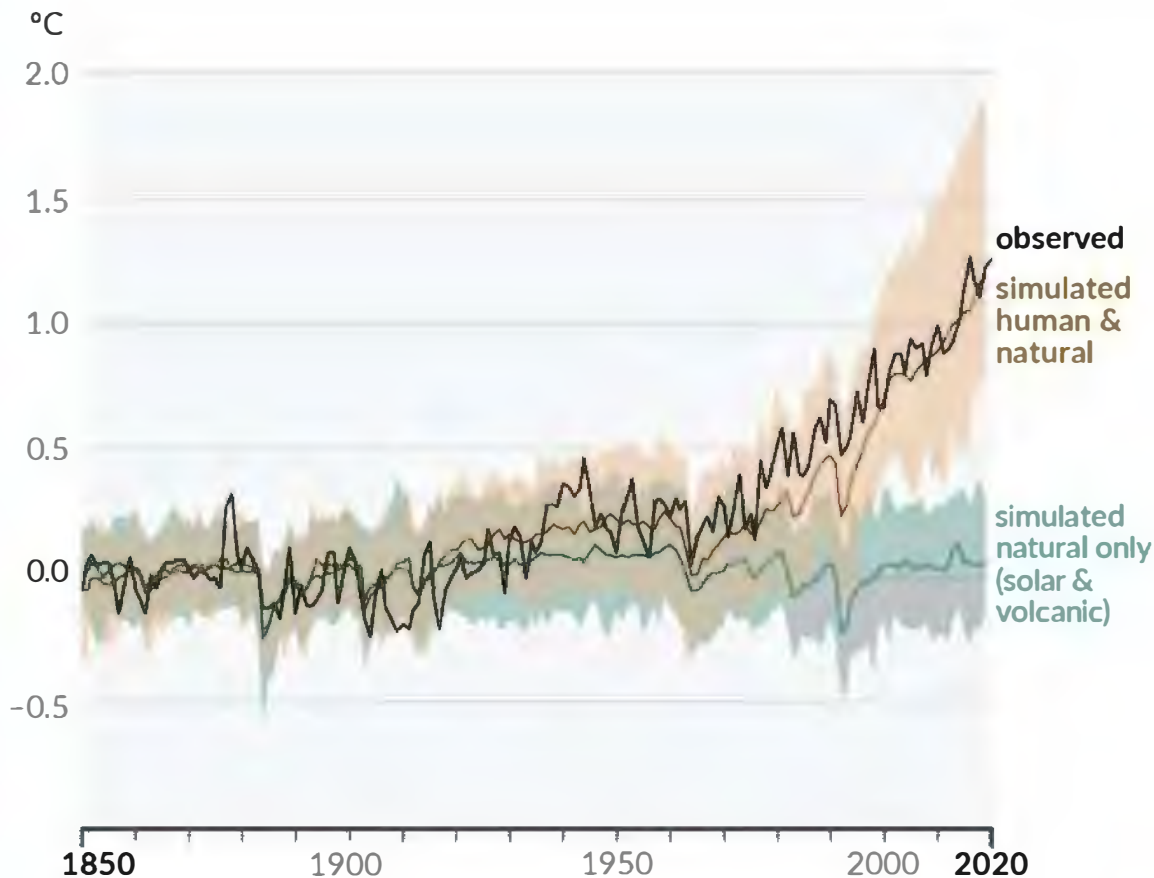
In many areas of the world, humans have been measuring and recording temperatures for *over a century*.

Tree, sediment, and ice cores serve as records of temperatures and greenhouse gas concentrations going back many *thousands* of years.

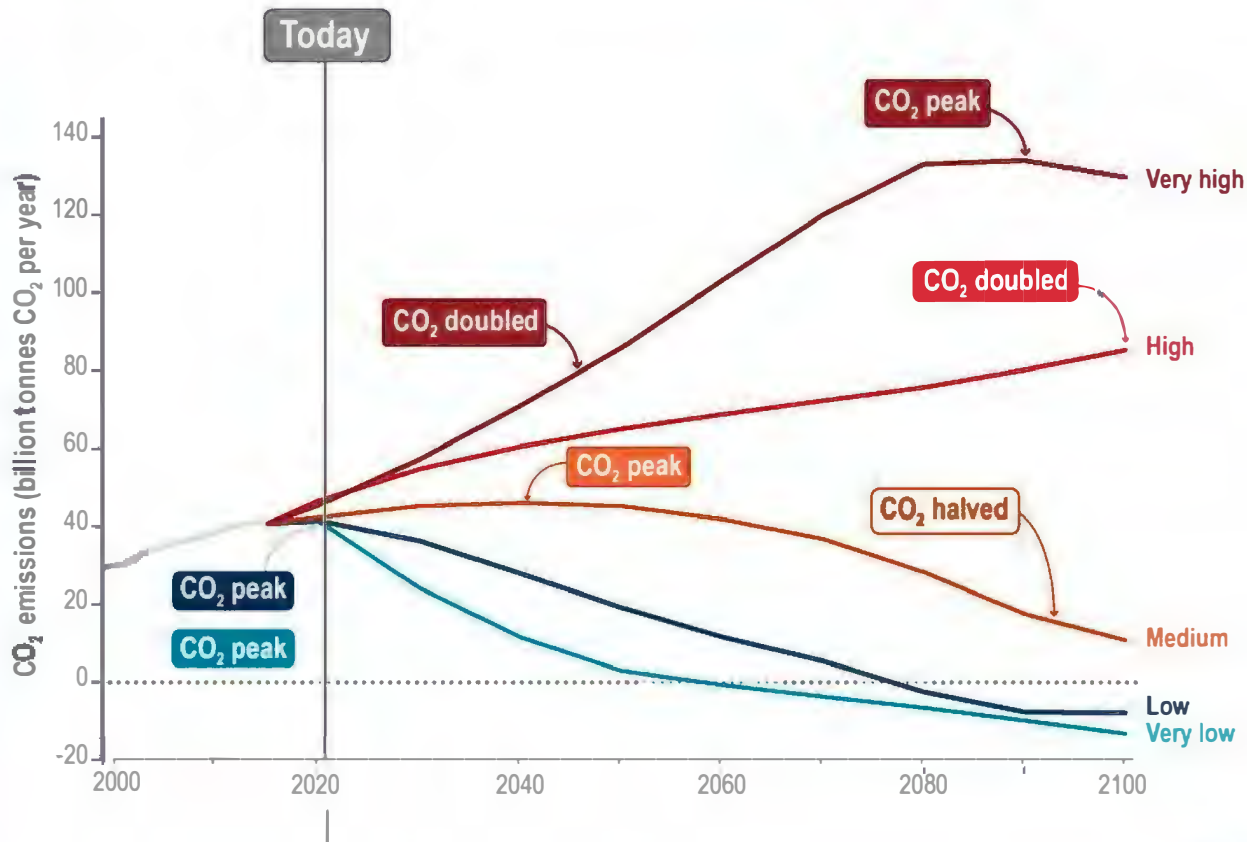
Averaging these data, we see that Earth's average surface temperature has risen by about **1.8°F (1.0°C) since 1880.**



How do we know humans are causing the problem?



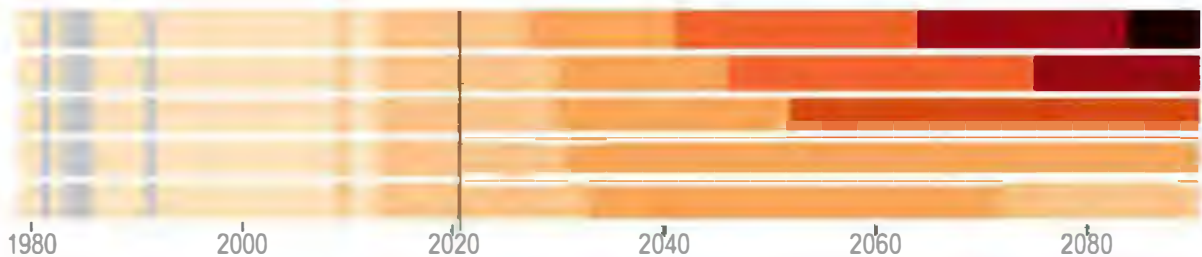
Possible Future CO₂ Scenarios



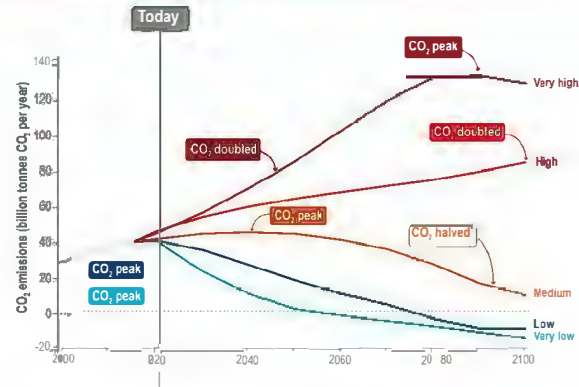
Global Temperature Projections

Global warming since 1850–1900 (°C)

0 0.5 1 1.5 2 3 4



Today



Very high

High

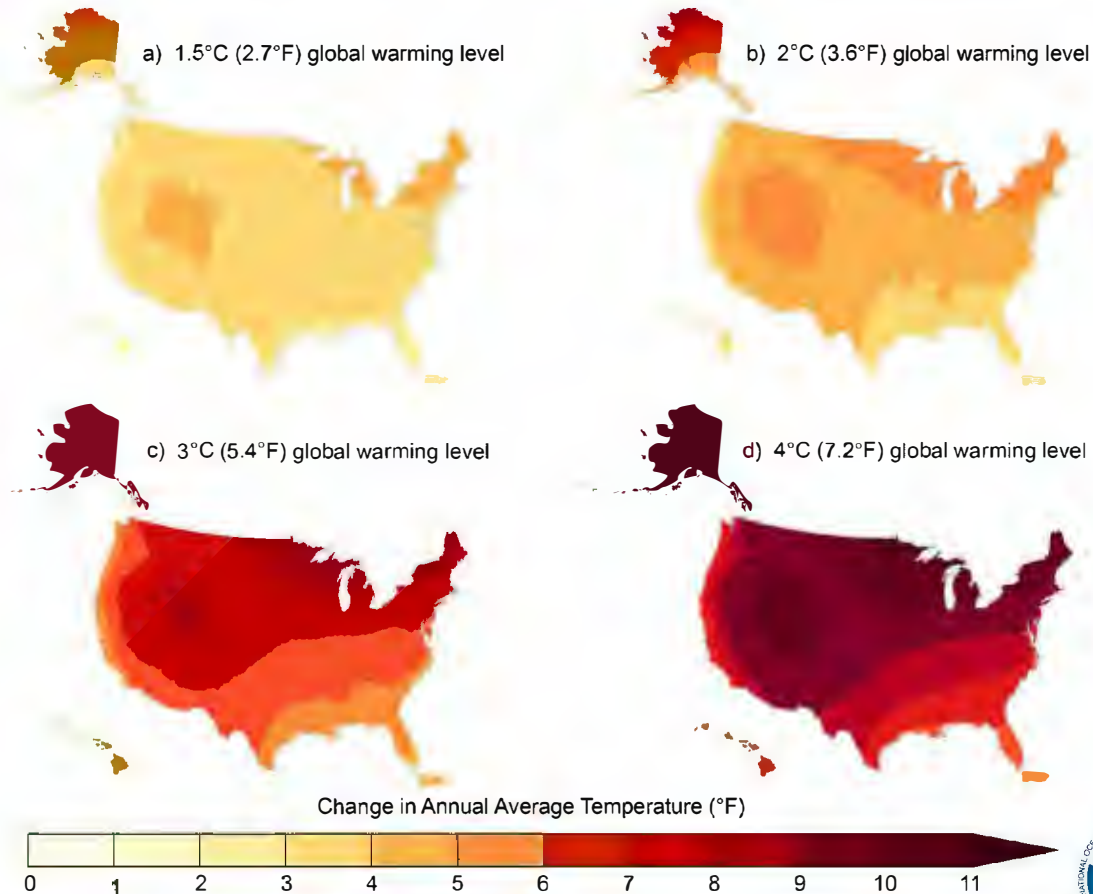
Medium

Low

Very low

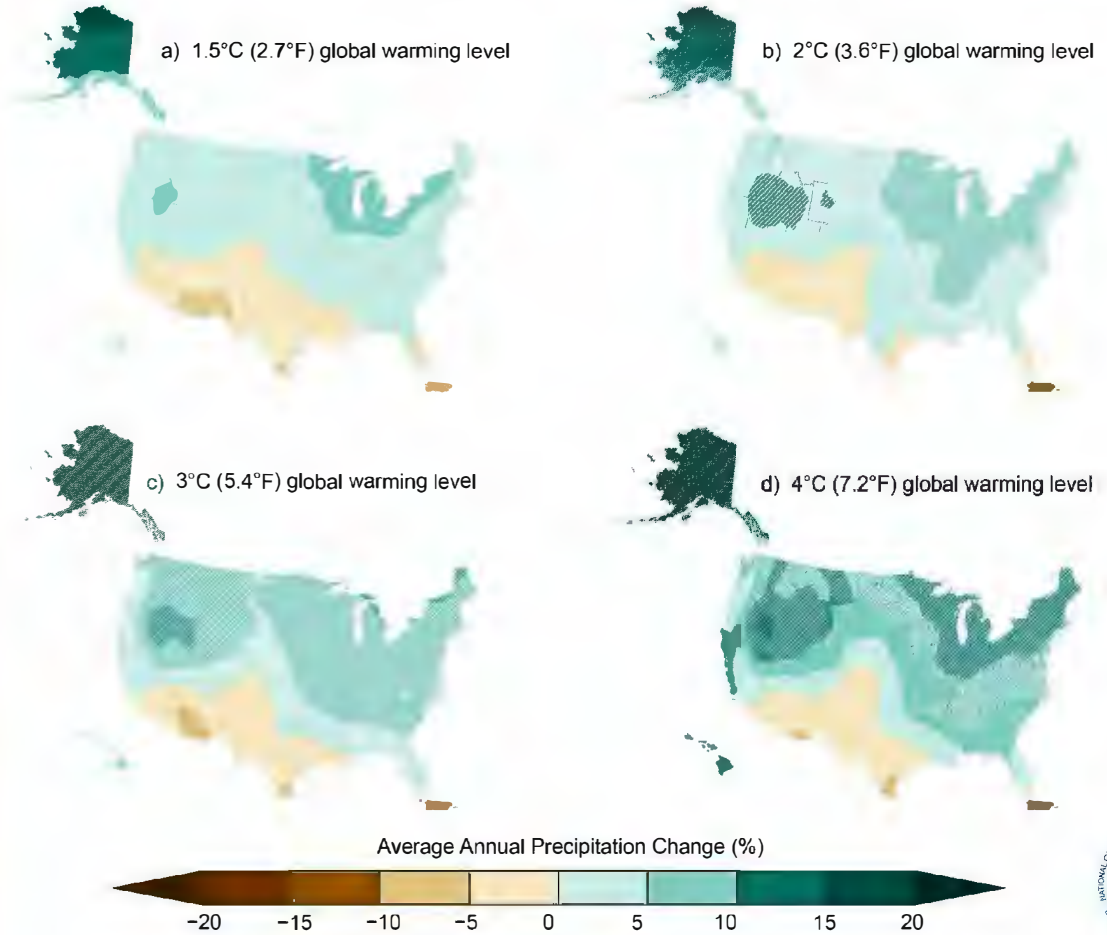
Projected Warming Varies by Location

Projected US Temperature Changes at 1.5°C, 2°C, 3°C, and 4°C of Global Warming



Global Temperature Affects Projected Precipitation

Projected US Precipitation Changes at 1.5°C, 2°C, 3°C, and 4°C of Global Warming



Part 4: Climate Change Impacts

Big Questions: How is our world being impacted? Will I be affected? What does climate change look like where I live?




Impacts of Warming Scenarios

	At 2.7°F (1.5°C)	At 3.6°F (2°C)
Coral Reefs	Very severe, irreversible damage	Very severe, irreversible damage
Arctic Ice	Severe and widespread impacts	Very severe, irreversible damage
Crop Yields	Increased impacts	Severe and widespread impacts
Flooding	Increased impacts	Severe and widespread impacts
Heat-related illness and death	Increased impacts	Severe and widespread impacts

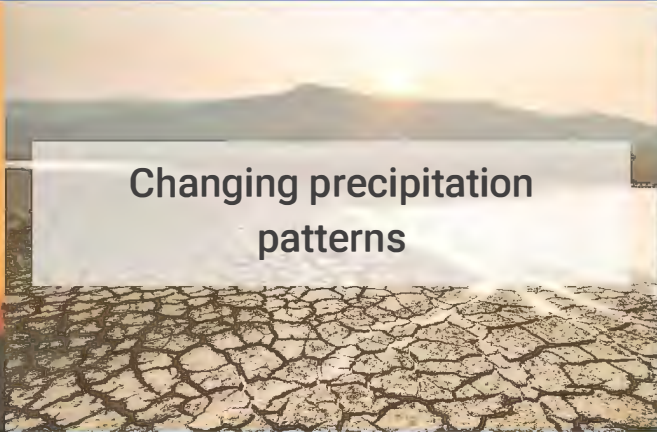
Source: IPCC SR1.5




We're already experiencing a warmer world




Higher temperature extremes



Changing precipitation patterns




Increased rainfall intensity



Increased wildfire frequency and intensity



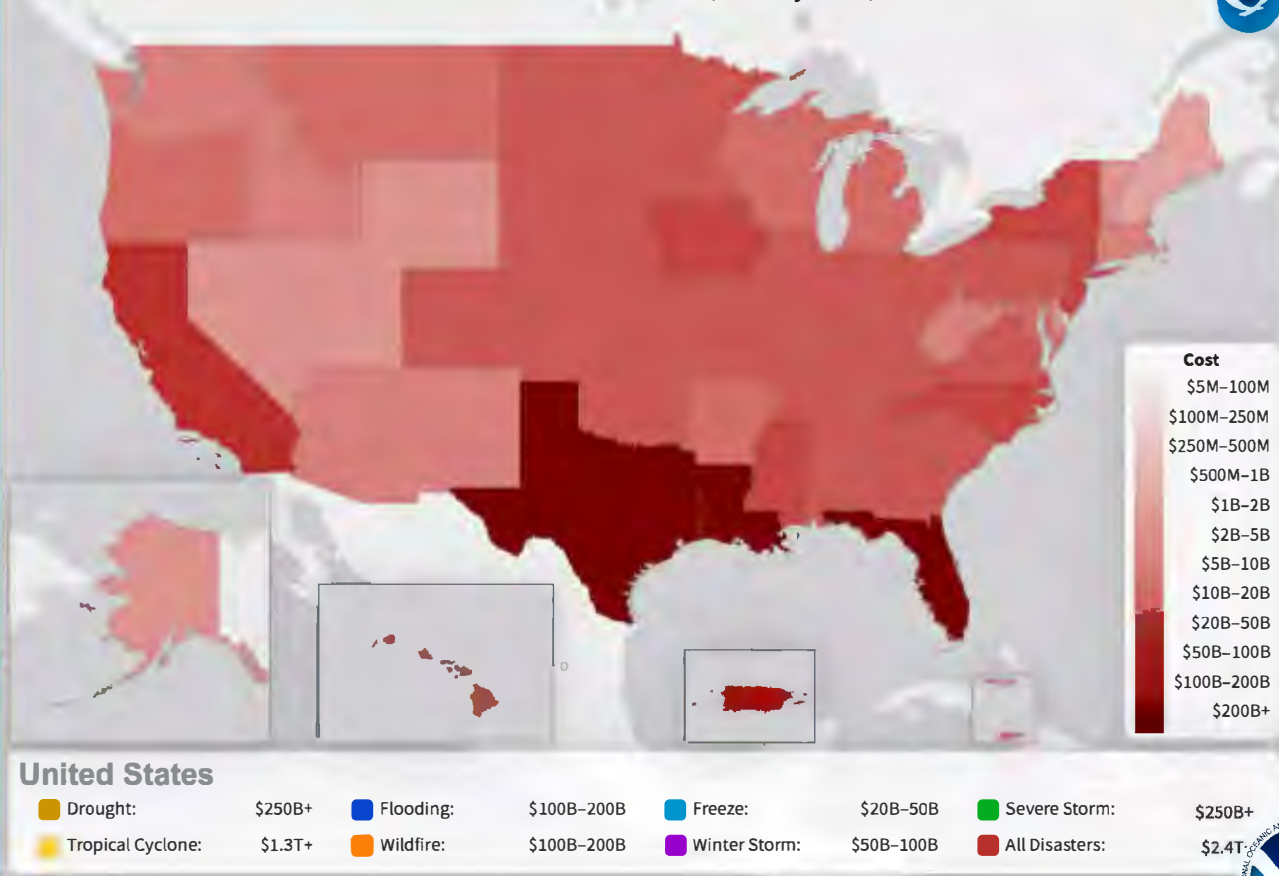
Stronger storms



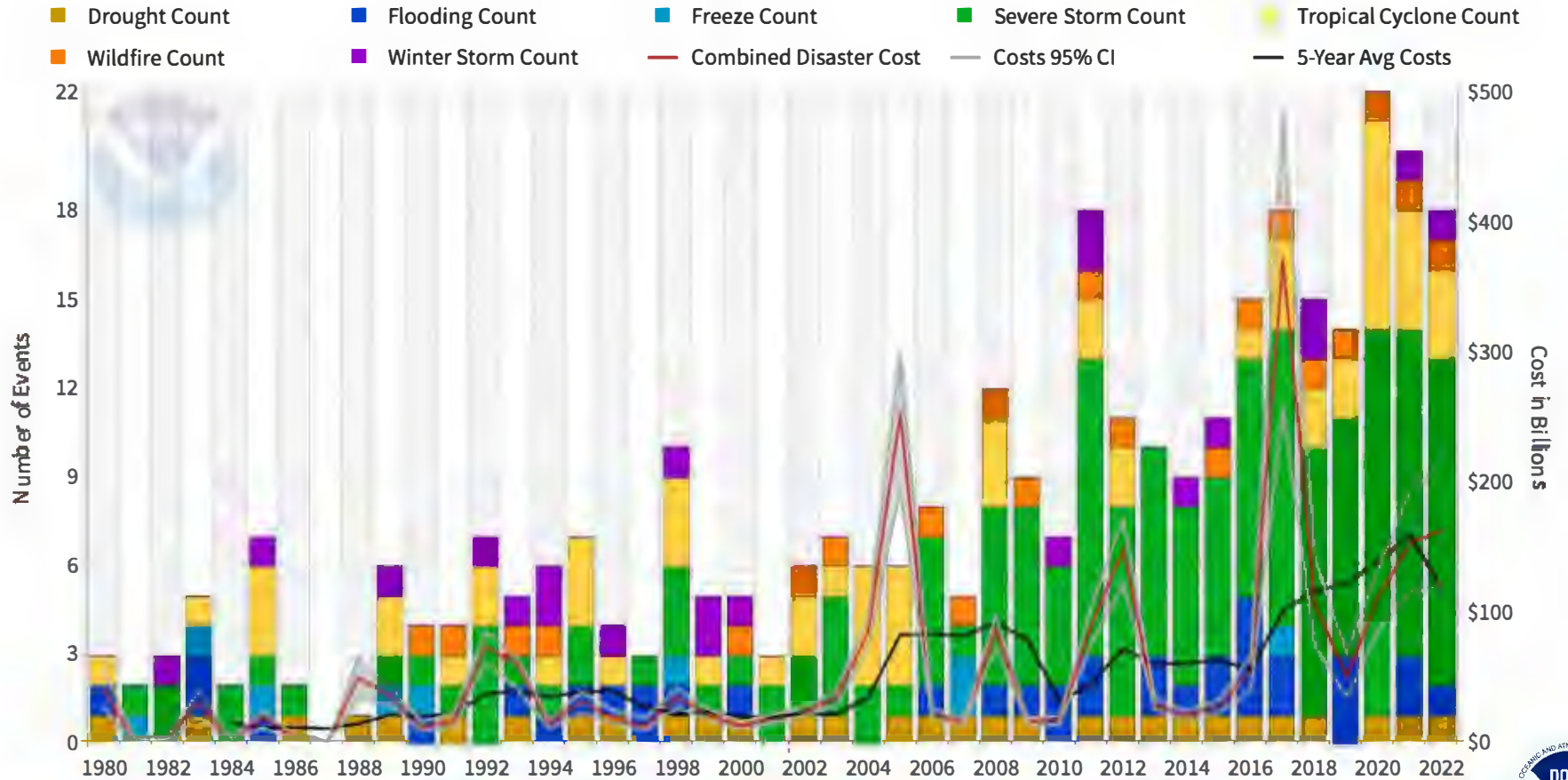
Rising sea levels

Billion Dollar Disasters since 1980

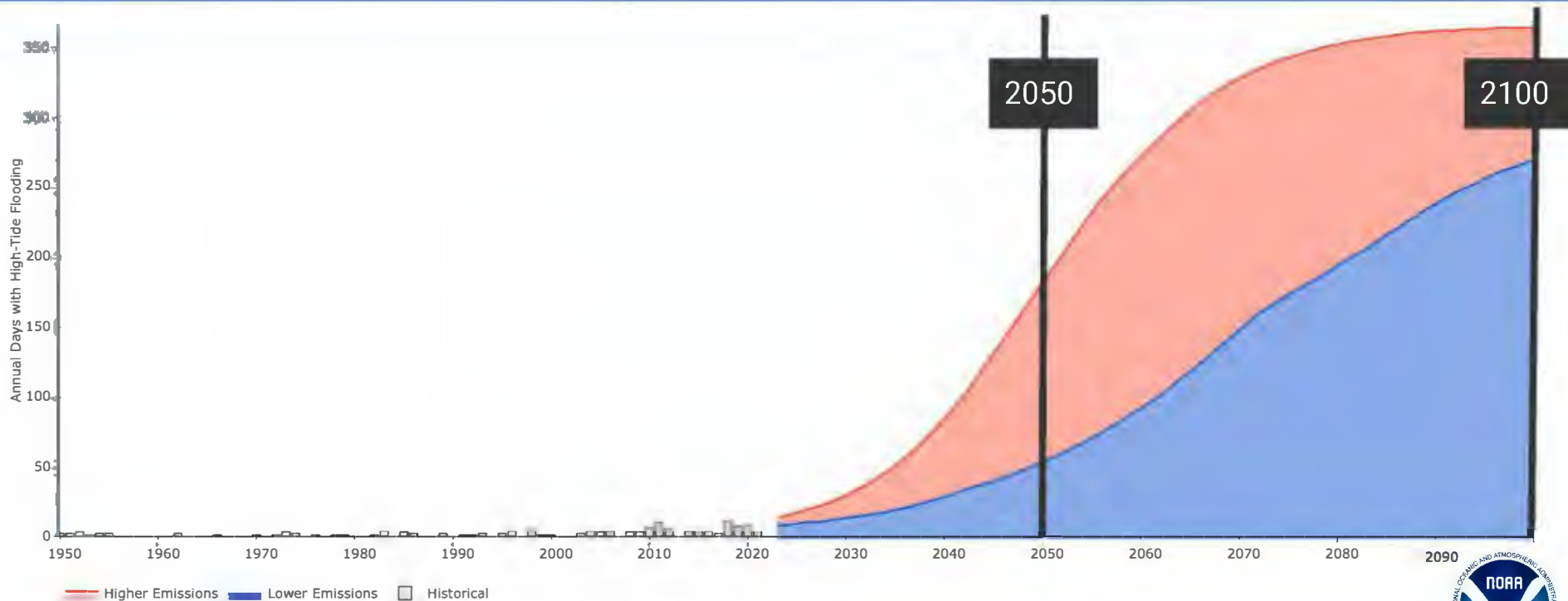
1980-2022 Billion-Dollar Weather and Climate Disaster Cost (CPI-Adjusted)



United States Billion-Dollar Disaster Events 1980-2022 (CPI-Adjusted)



How We Experience Climate Impacts: High-tide Flooding in Baltimore



Source: NOAA Climate Explorer





Source: NOAA Sea Level Rise Viewer

COMMUNITIES OF COLOR

Some communities of color living in risk-prone areas face cumulative exposure to multiple pollutants

Adaptation plans that consider these communities and improve access to healthcare help address social inequities.

OLDER ADULTS

Older adults are vulnerable to extreme events that cause power outages or require evacuation.

Checking on elderly neighbors and proper emergency communication can save lives.

CHILDREN

Children have higher risk of heat stroke and illness than adults.

Adults can lessen risk by monitoring exertion and hydration.

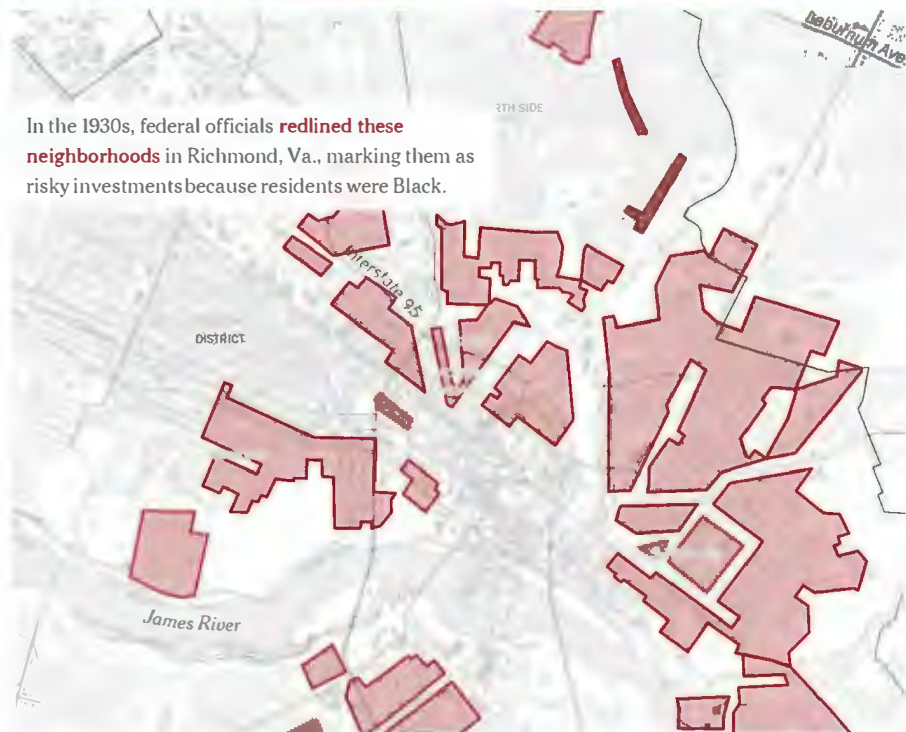
LOW INCOME COMMUNITIES

Low income families are at risk of physical and mental illnesses during flooding and in crowded shelter conditions.

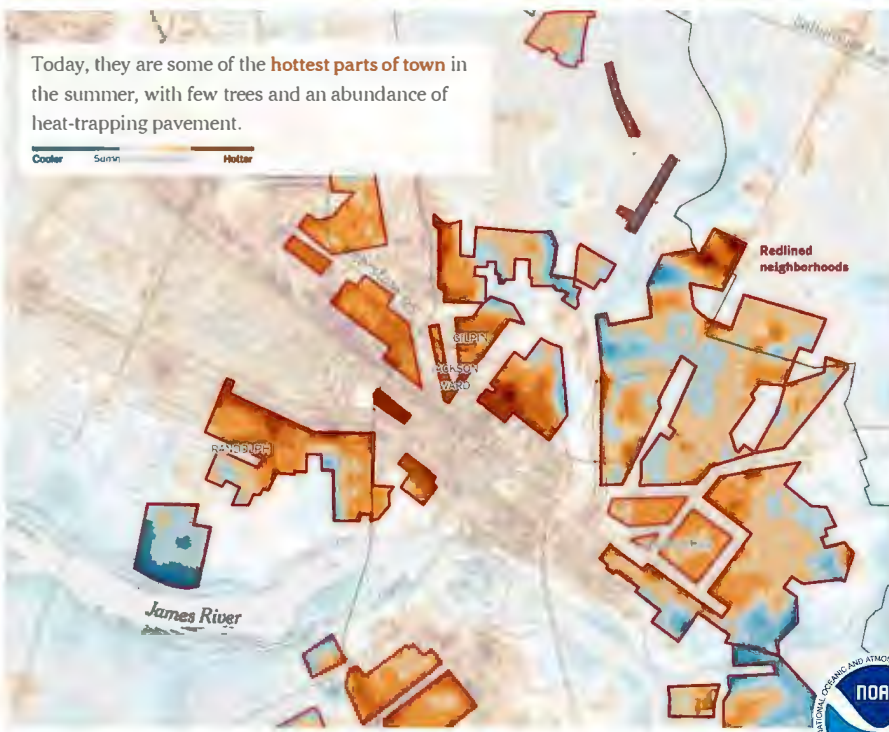
Comprehensive disaster management can improve resiliency for people with limited resources.

Climate impacts are not experienced equally

In the 1930s, federal officials **redlined these neighborhoods** in Richmond, Va., marking them as risky investments because residents were Black.



Today, they are some of the **hottest parts of town** in the summer, with few trees and an abundance of heat-trapping pavement.



Source: New York Times, "How Decades of Racist Housing Policy Left Neighborhoods Sweltering," August 24, 2020.

Climate and Compounding Risk



Exposure to PM2.5 Emissions



Asthma Rate



% Population of Color



% Low Income Population

Part 5: How We Respond

Big Questions: At this stage, what actions can be taken to mitigate and adapt to climate change and its impacts? Why do we need to take action?



Q: How can we avoid the worst impacts of climate change?

A: Mitigation and adaptation

Image Source: NOAA



Mitigation

Human intervention to reduce the amount of greenhouse gases in the atmosphere.

Helps us make future climate change less severe.

Adaptation

The process of adjusting to current and future climate conditions.

Helps us build resilience and minimize destruction and suffering from climate change already locked in.

BOTH are absolutely necessary!

Mitigation Actions With the Largest Impact by 2030

1. Deploying solar energy
2. Conserving existing ecosystems
3. Deploying wind energy
4. Carbon sequestration through agriculture
5. Restoring ecosystems
6. Fuel switching in industry
7. Electric and fuel efficient cars, trucks, and buses
8. Shifting to sustainable diets
9. Efficient building codes
10. Improving forest management



Examples of Adaptation Strategies

Water

- Water conservation
- Increasing permeable surfaces

Built Environment

- Planting urban trees
- Changing development patterns

Ecosystems

- Prescribed fires
- Habitat restoration

Health

- Investing in public health
- Building cooling centers

Transportation

- Raising or moving infrastructure
- Building evacuation routes

Energy

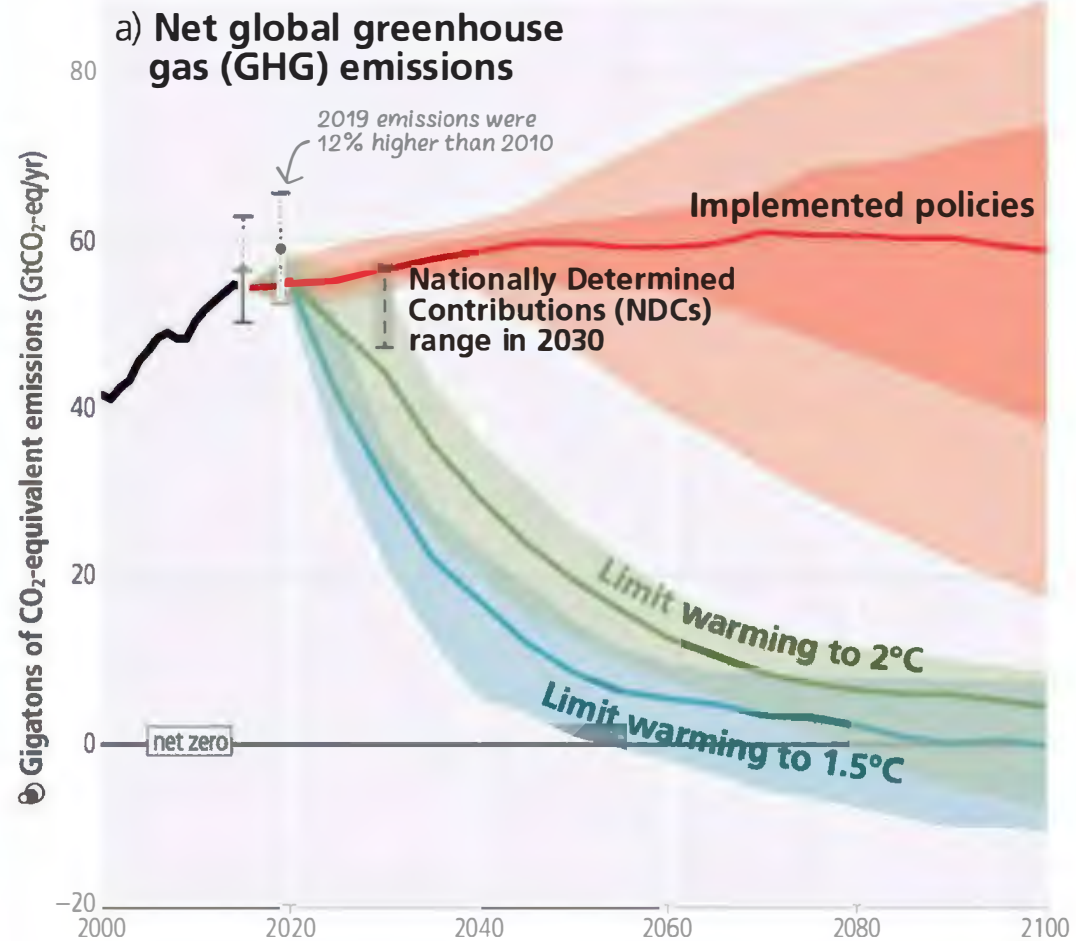
- Renewable energy
- Microgrids and batteries

Marine

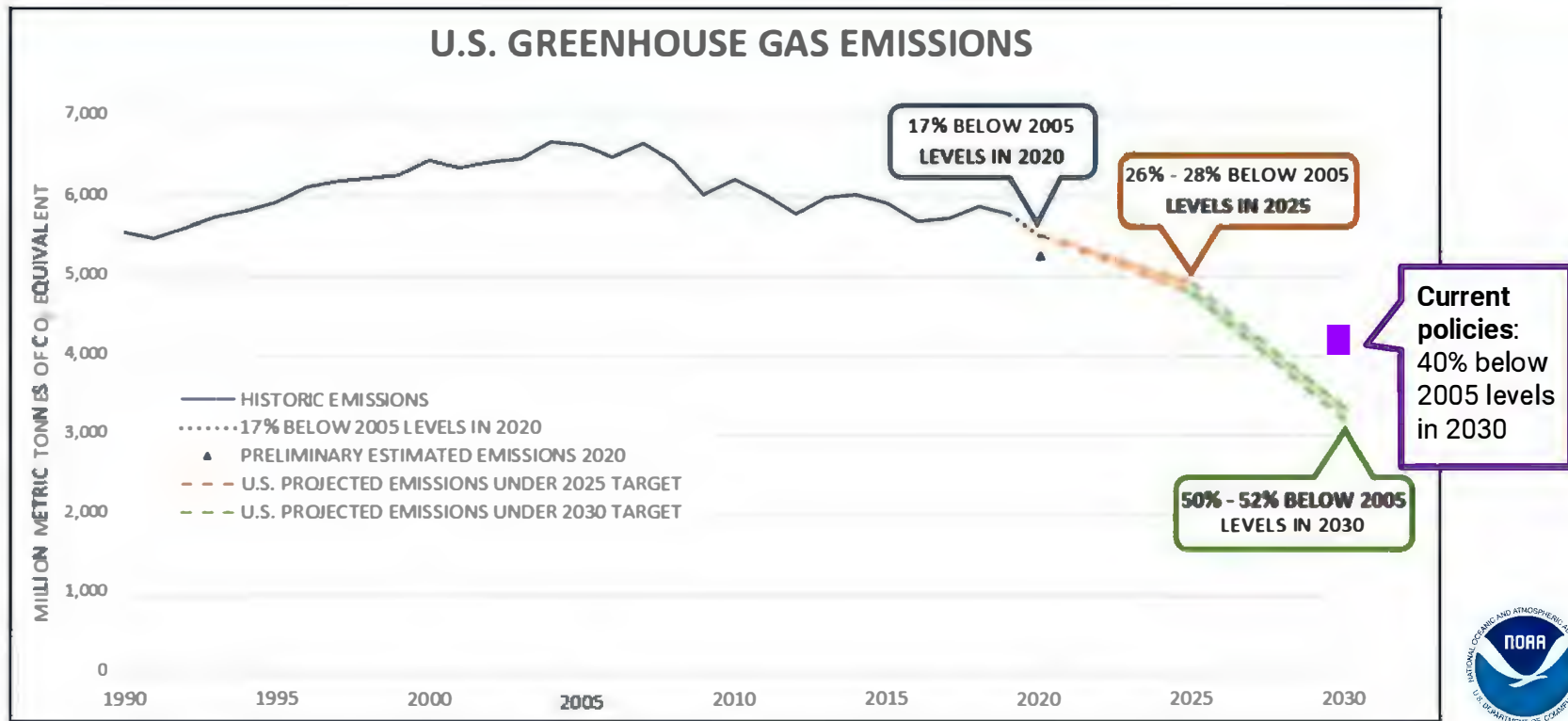
- Relocating away from coasts
- Building living shorelines



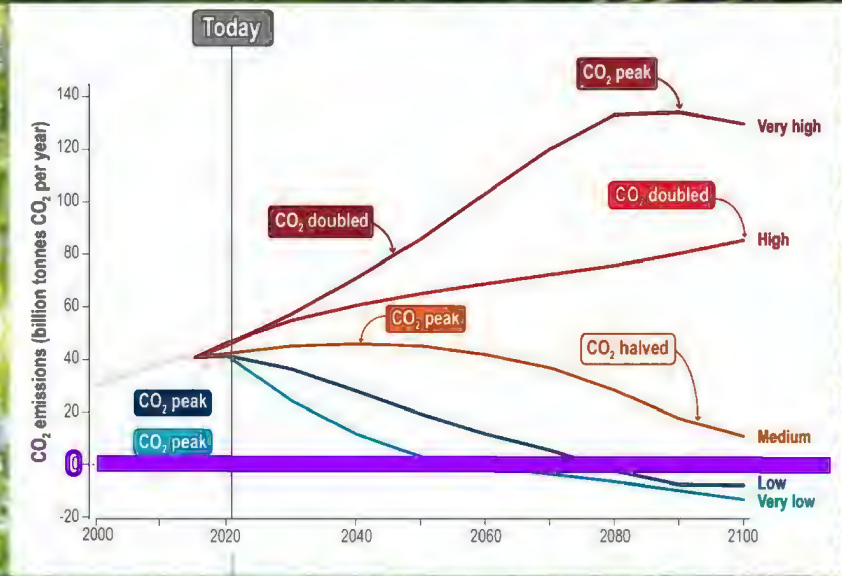
Current Progress Towards Global Climate Goals



The United States' Climate Commitment

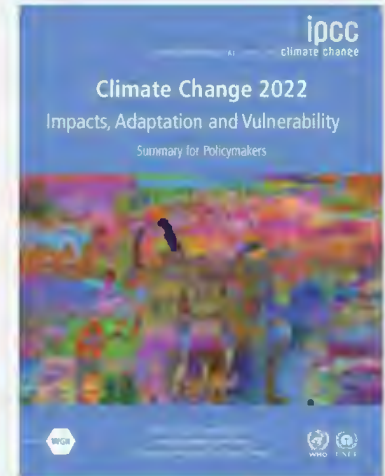


Q: What does Net Zero mean?



A: Greenhouse gas emissions and reductions from a given project, area, or building are equal.

Where can I go to learn more?



climate.gov
toolkit.climate.gov
nca2023.globalchange.gov
ipcc.ch



Key Takeaways

1. Scientists agree: humans are causing our world to warm at an unusually rapid rate.
2. Climate change is increasingly harming human health, the economy, built environments, and natural ecosystems.
3. Climate change impacts everyone, but its impacts are generally experienced first and worst among disadvantaged and underserved communities.
4. **We can avoid the worst impacts of climate change – we're already working on it, but we need to accelerate our efforts.**



There is no Planet B.



We're all in this together. Let's get to work!

Questions?

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CLIMATE PROGRAM OFFICE

ADVANCING SCIENTIFIC UNDERSTANDING OF CLIMATE, IMPROVING SOCIETY'S ABILITY TO PLAN AND RESPOND

Global Temperature Projections

