

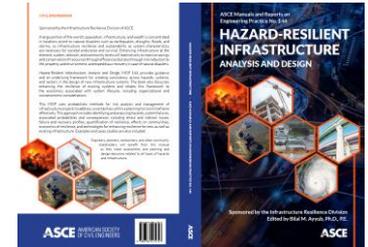
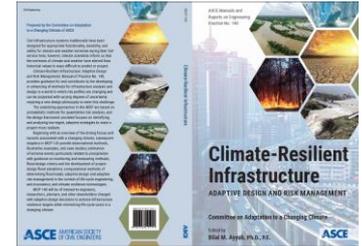
# 2023 Fall Conference

Dan Walker, Ph.D., A.M. ASCE  
EA Engineering, Science, and Technology, Inc. and  
University of Maryland, College Park

# Understanding Trends in the Emerging Climate Service Sector

Dan Walker\*, Ph.D., A.M. ASCE  
University of Maryland, College Park, USA  
*and*  
EA Engineering, Science, and Technology, Inc. (PBC)

October 19, 2023



Recently Released

The views I'm presenting are mine, and not necessarily those of EA, U. of Maryland, ASCE, or NOAA and are intended to be thought provoking

# What's Hot?

- ☐ Environmental, social, and corporate governance (ESG)
- ☐ Diversity, Equity, and Inclusion
- ☐ Social Science
- ☐ Addressing Nonstationarity In Engineering Design
- ☐ Natural and Nature-based Solutions for Climate Resilience
- ☐ Codes and Standards

# State Farm Halts Home-Insurance Sales in California

Insurers have faced higher costs and wildfire risks

Capital Weather Gang

## Southwest drought is the most extreme in 1,200 years, study finds

The past 22 years rank as the driest period since at least 800 A.D.



**Weather**

[Climate](#)

[Extreme Weather](#)

[Capital Weather Gang](#)

[Environment](#)

[Climate Lab](#)

## Historic downpour in Fort Lauderdale dropped 88 billion gallons of rain

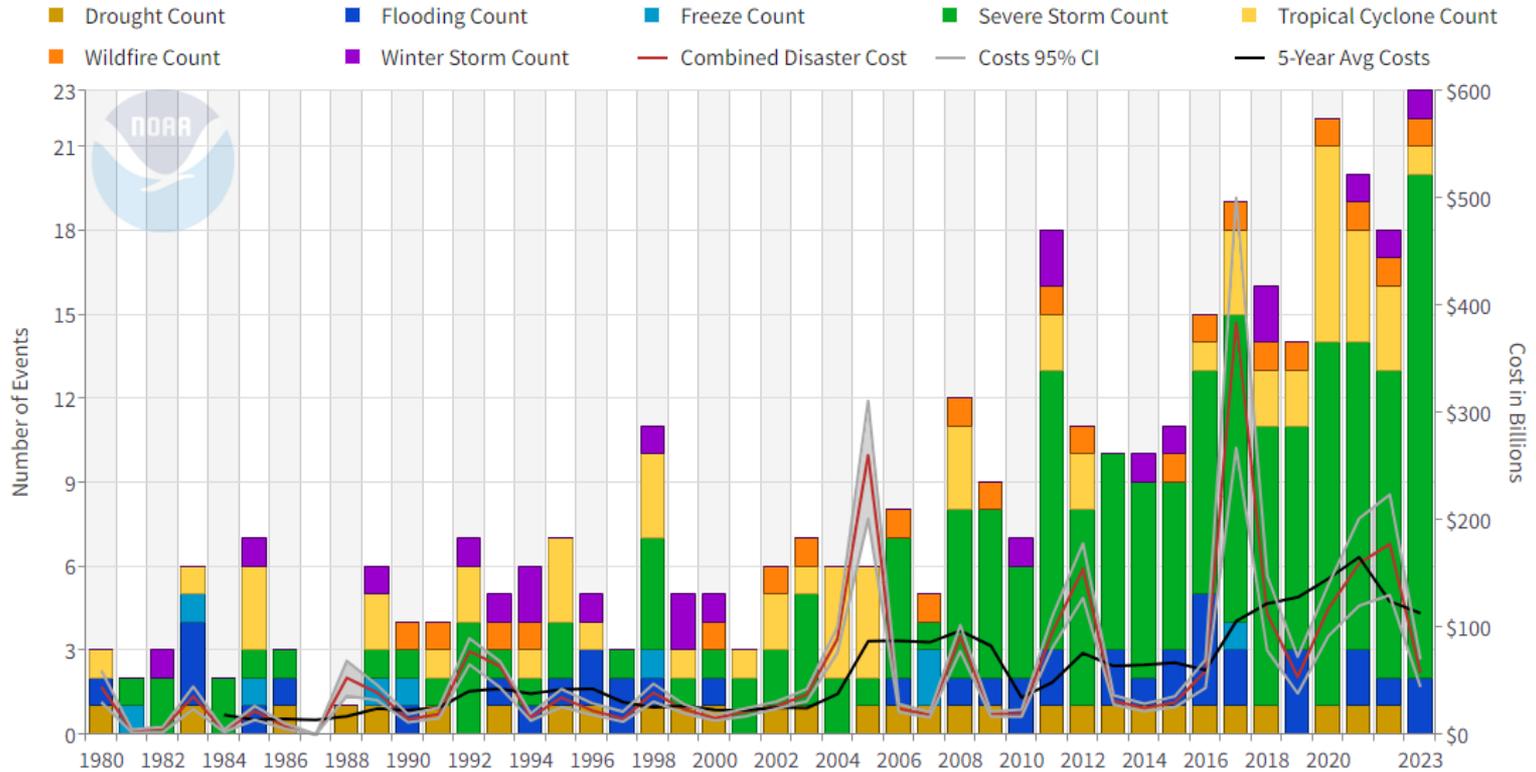
The water would have covered the entire state of Florida in 0.07 inches of water

Climate change

A lot of Arctic infrastructure is threatened by rising temperatures

# Natural Disaster Events in the US

United States Billion-Dollar Disaster Events 1980-2023 (CPI-Adjusted)

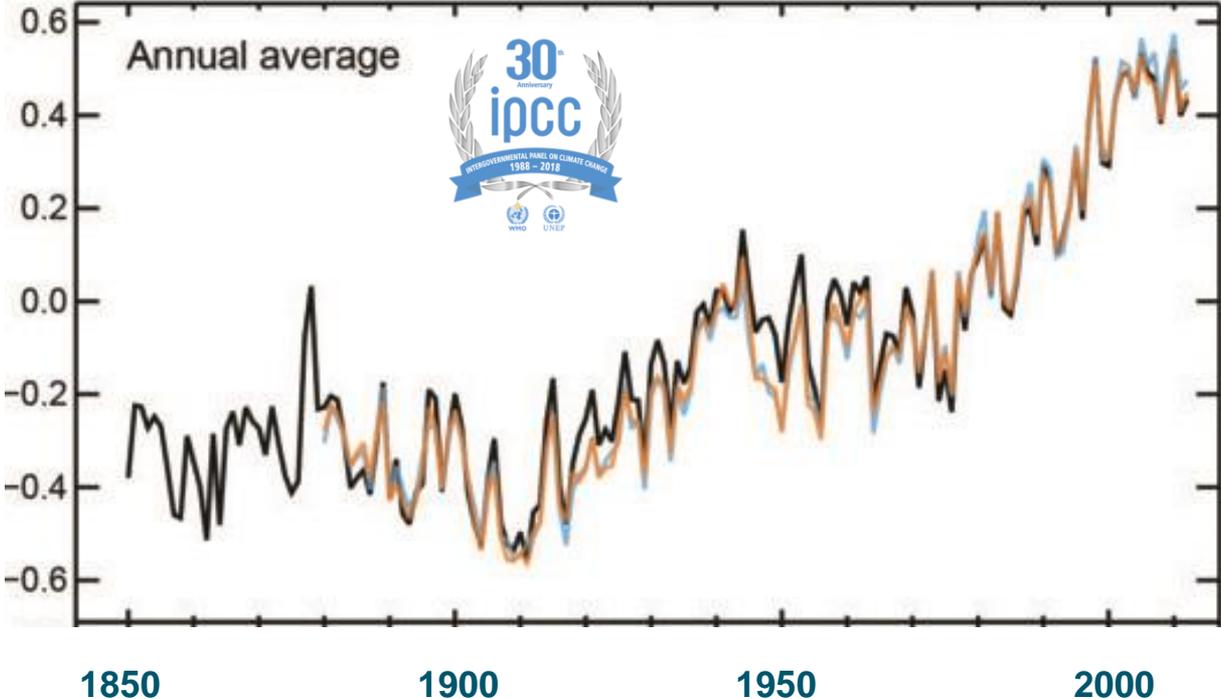


Updated: September 11, 2023

Powered by ZingChart

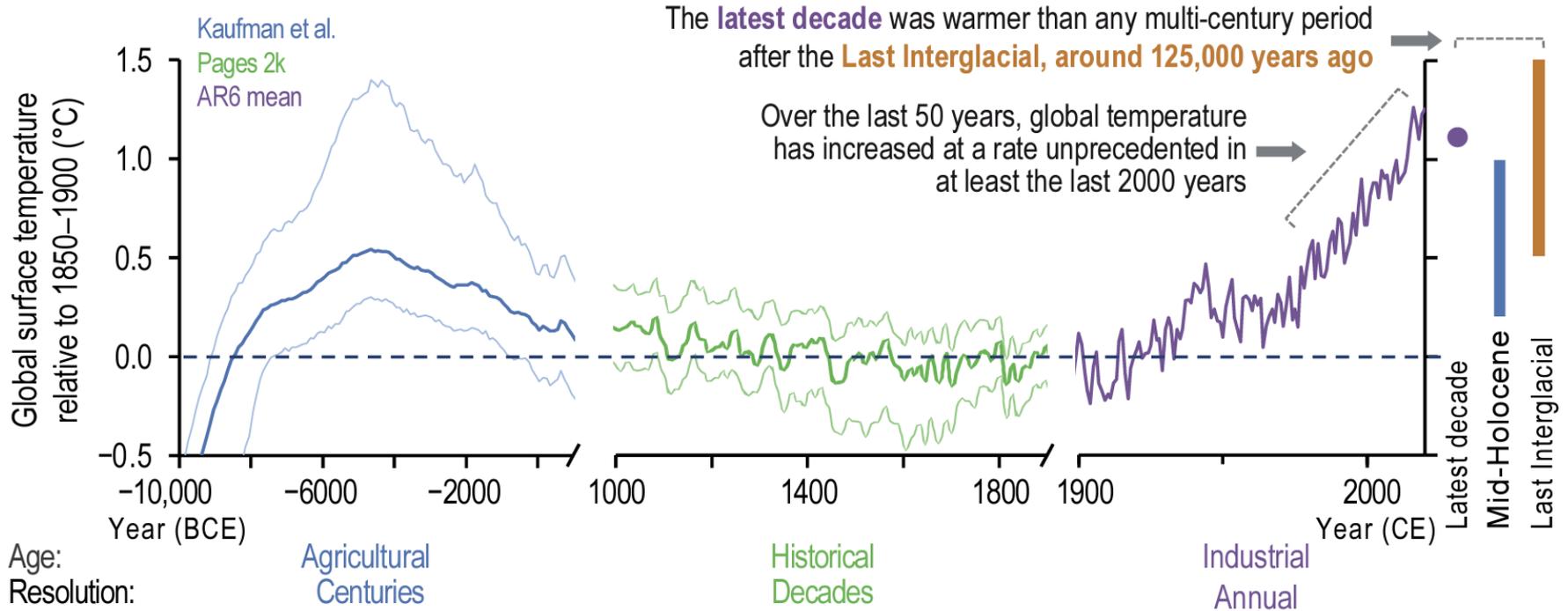
# Classic View of Climate Change

Observed globally averaged combined land and ocean surface temperature anomaly 1850–2012



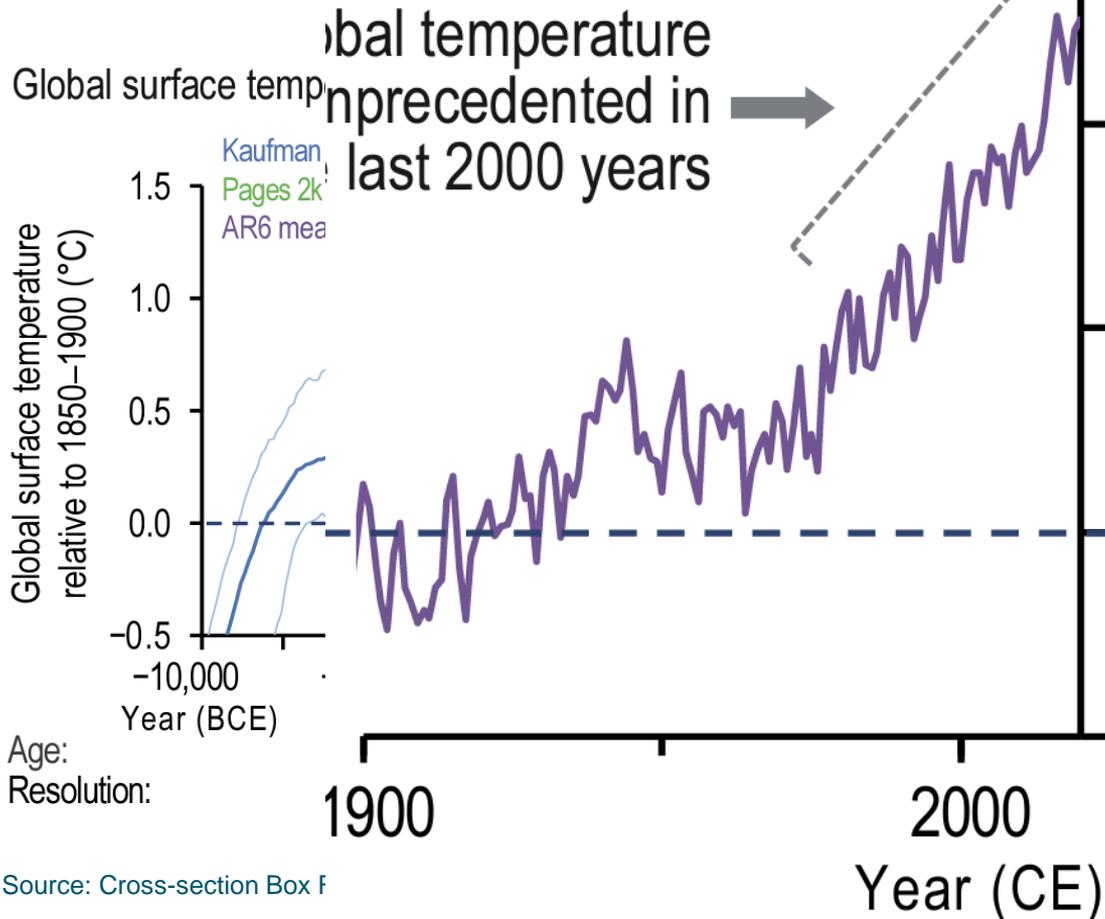
# Changes in surface temperature

Global surface temperatures are more likely than not unprecedented in the past 125,000 years



Source: Cross-section Box Fig. 1a of the IPCC AR6 Technical Summary (2021)

around 125,000 years ago



Global surface temp

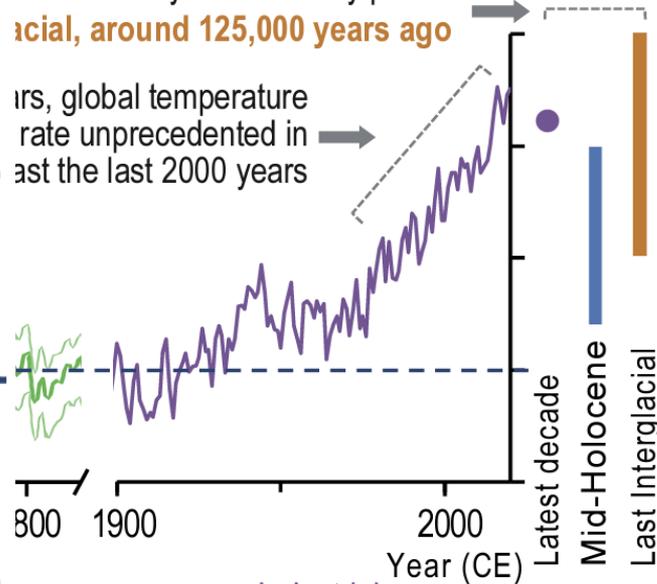
Global temperature unprecedented in last 2000 years

Kaufman, Pages 2k, AR6 mea

ature

In the past 125,000 years, warmer than any multi-century period since the last glacial, around 125,000 years ago

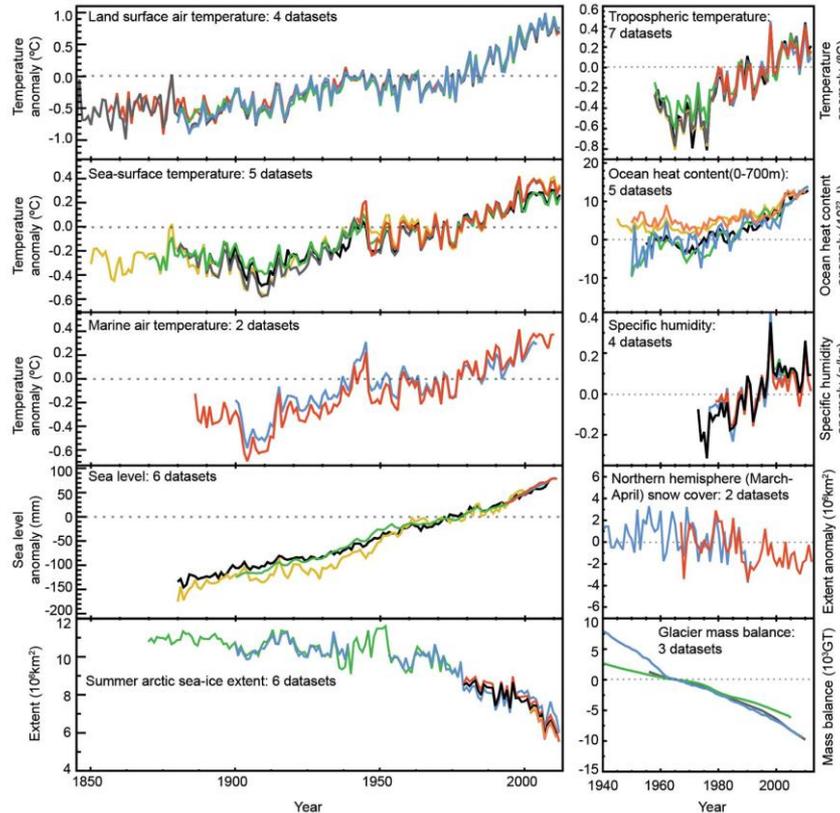
In the past 125,000 years, global temperature rate unprecedented in last the last 2000 years



Age:  
Resolution:

Source: Cross-section Box F

# The Various Faces of Climate Change

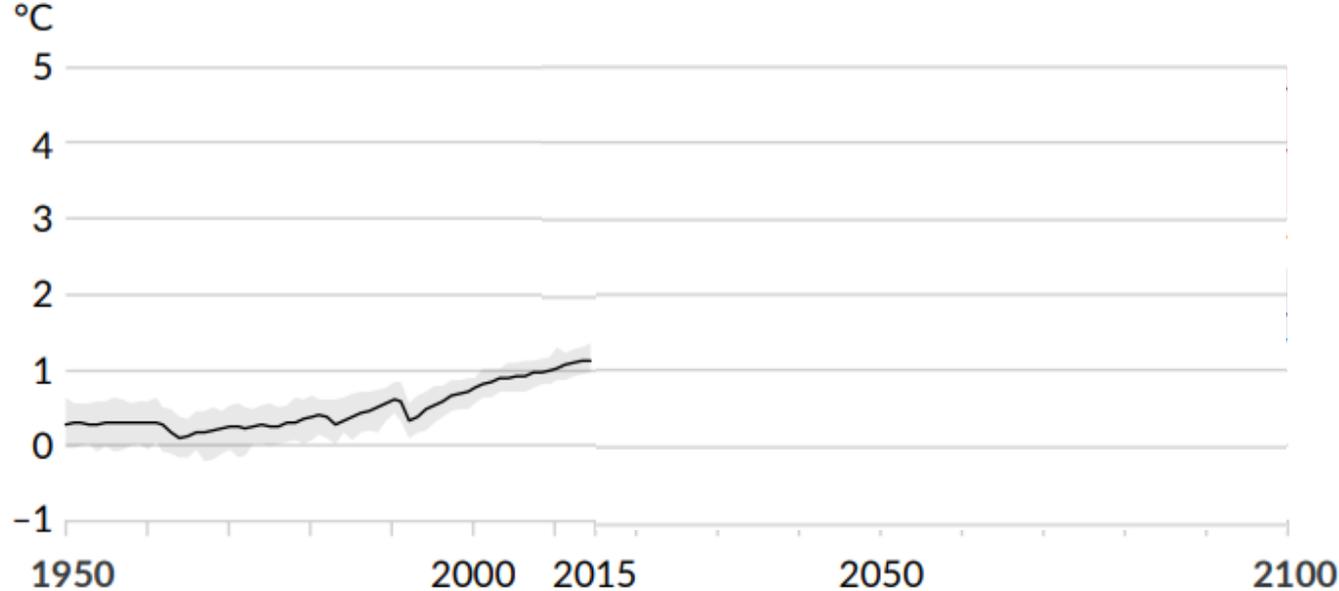


- Multiple independent indicators of a changing climate
- Data represent anomalies of the mean
- Together, they provide evidence that the world has warmed since the late 19th Century.

Mean anomalies of various climate indicators. Source: FAQ 2.1, Fig. 2 of the IPCC WG1 AR5.

# Implications of Nonstationarity

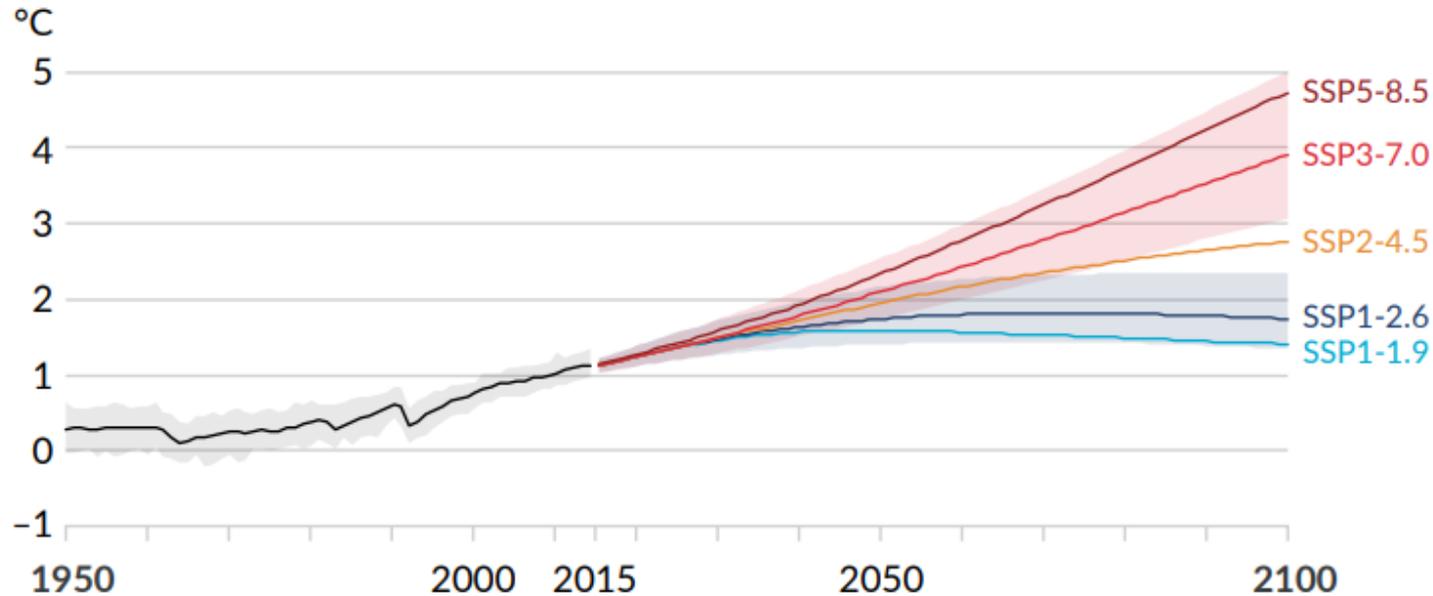
Global Surface Temperature relative to 1850 -1900



Summary for Policymakers. In: Climate Change 2021: The Physical Science Basis, IPCC

# Looking Back to Look Forward

Global Surface Temperature relative to 1850 -1900



Summary for Policymakers. In: Climate Change 2021: The Physical Science Basis, IPCC

# Greater Emphasis on Systems

## ADAPTATION STRATEGIES



# Integrating Natural Systems and Process into Engineering Design



*A rendering of a horizontal levee design that achieves storm and flood risk reduction while increasing habitat value.*

The ASCE logo consists of the letters 'ASCE' in a bold, white, sans-serif font. To the left of the letters is a stylized graphic of three horizontal lines of varying lengths, suggesting a wave or a structural element.

# STRATEGIC PLAN

2023-2028

## VISION

Engineered and natural systems work in harmony for the benefit of humanity.

## MISSION

Lead the civil engineering profession to sustainably advance and protect the health, safety and welfare of all.

## COMMITMENT TO OUR MEMBERS

Inspire, connect, and serve our global membership to maximize their professional and personal growth and magnify their lifelong professional impact.

## STRATEGIC SHIFTS

### SOCIETY

**Innovate.** Define and drive creative development and renewal of future-ready infrastructure.

**Advocate.** Promote and facilitate civil engineering leadership in developing equitable solutions to global challenges.

### PROFESSION

**Inspire.** Energize and cultivate a diverse, inclusive, and engaged civil engineering community.

**Stimulate.** Accelerate development and adoption of emerging technologies, analytics, and systems thinking.

### MEMBERSHIP

**Magnify.** Amplify our collective impact through a vibrant, engaged, and growing membership.

**Deliver.** Effectively manage our resources to provide exceptional value to members.

PAGE 1 OF 2

<https://inspire.asce.org/>



**Infrastructure Innovation & Adaptation for a Sustainable & Resilient World**



### Hotel & Venue

[Hyatt Regency Crystal City](#)

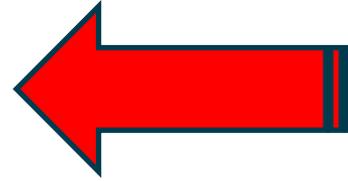
2799 Richmond Highway  
Arlington, VA 22202

### Important Dates

OCT 19  
2022 [Call for Abstracts Open](#)

- Nature-based Solutions in the Arctic: An ASCE Workshop, Reston, VA October 24, 25, 2023
- ASCE INSPIRE Workshop on Nature-based Solutions (NbS), Arlington, VA, November 17, 2023

## Tools



## Challenges

Planning, permitting, funding  
Codes and standards  
Ecosystem Management  
Transformative Adaptation

Market forces  
Complex governance  
Political realities  
Entrenched Interests

# Looking over the horizon

- ❑ Compound effects of climate change on other environmental concerns
- ❑ Climate risk at contaminated sites
- ❑ Climate impacts on remediation technologies
- ❑ Constraints on industry capacity
- ❑ Federal agency capacity to manage grants and contracts

# Questions?