

National Aeronautics and  
Space Administration

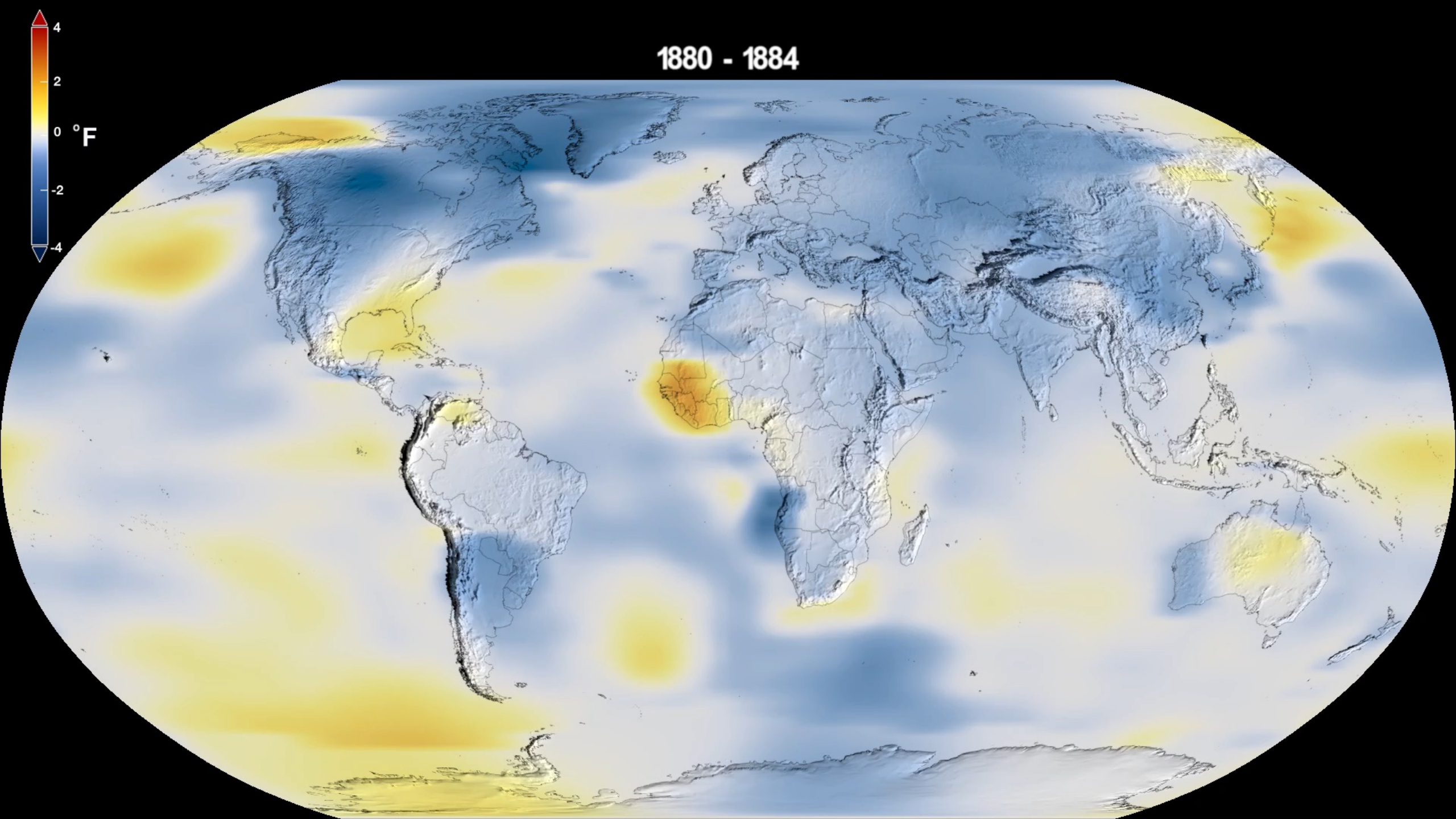
# Climate and Science Integration Across NASA

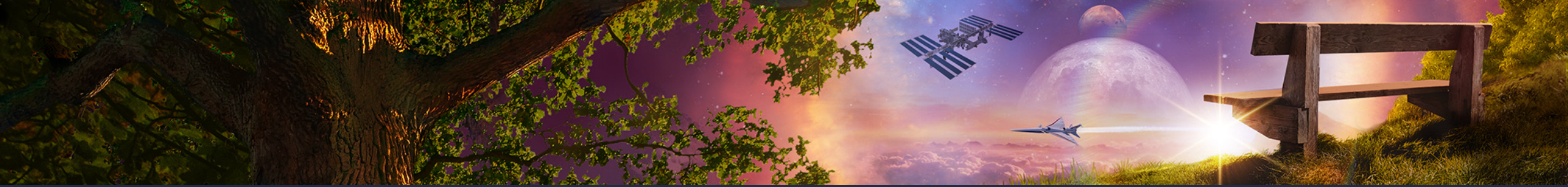
**KATE CALVIN**

NASA Chief Scientist  
and Senior Climate  
Advisor



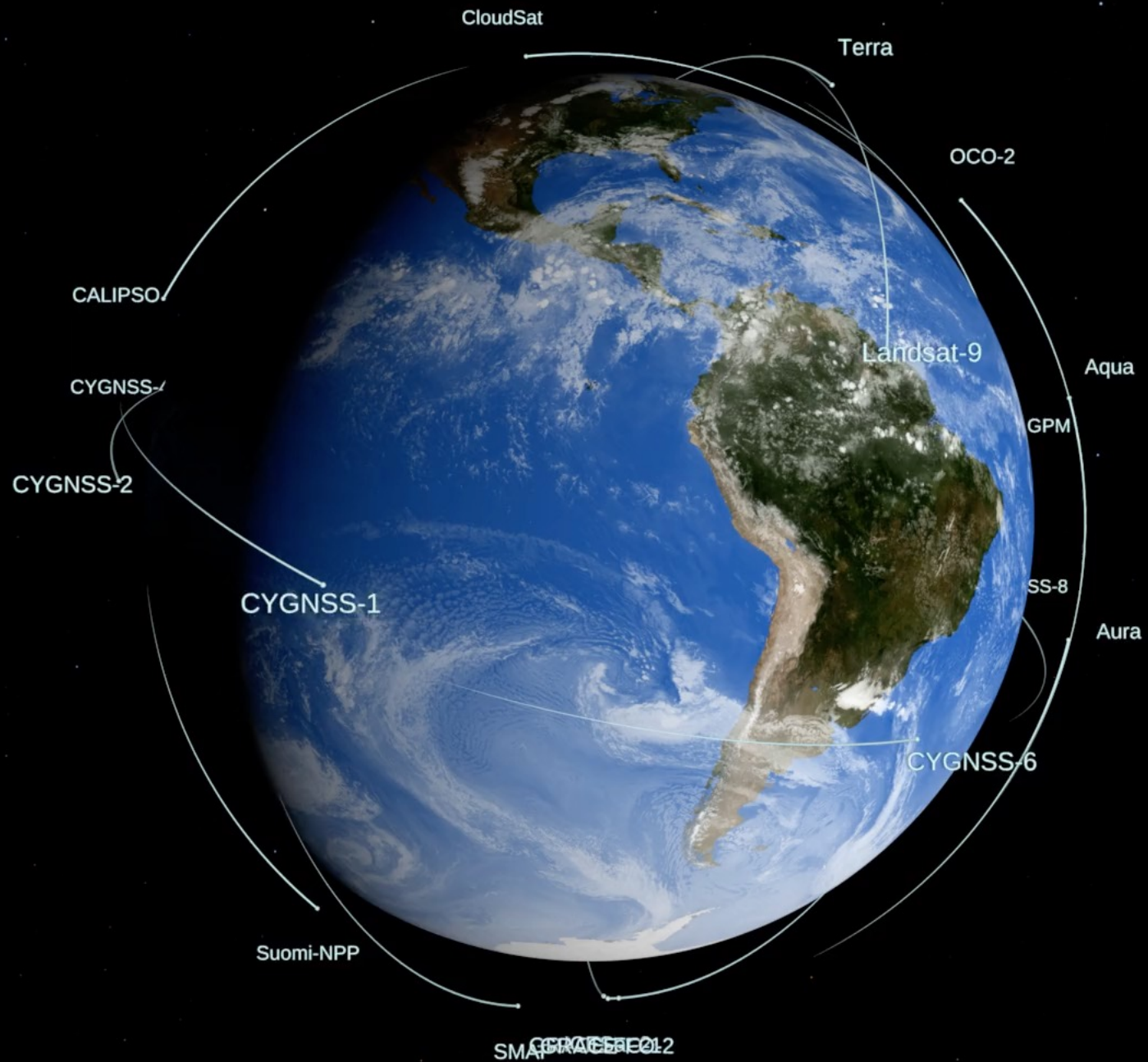
1880 - 1884





# NASA and Climate

- NASA is the U.S. space agency that provides end-to-end research about our home planet
- NASA has more than two dozen satellites and instruments in orbit, including several on the International Space Station
- NASA develops technologies that can help mitigate or adapt to climate change, like sustainable aviation technologies
- NASA provides information that aides in disaster response and informs planning
- Working to make climate change data more accessible for researchers, planners and individuals in vulnerable communities
- NASA facilities are also impacted by climate change



# EARTH SYSTEM OBSERVATORY

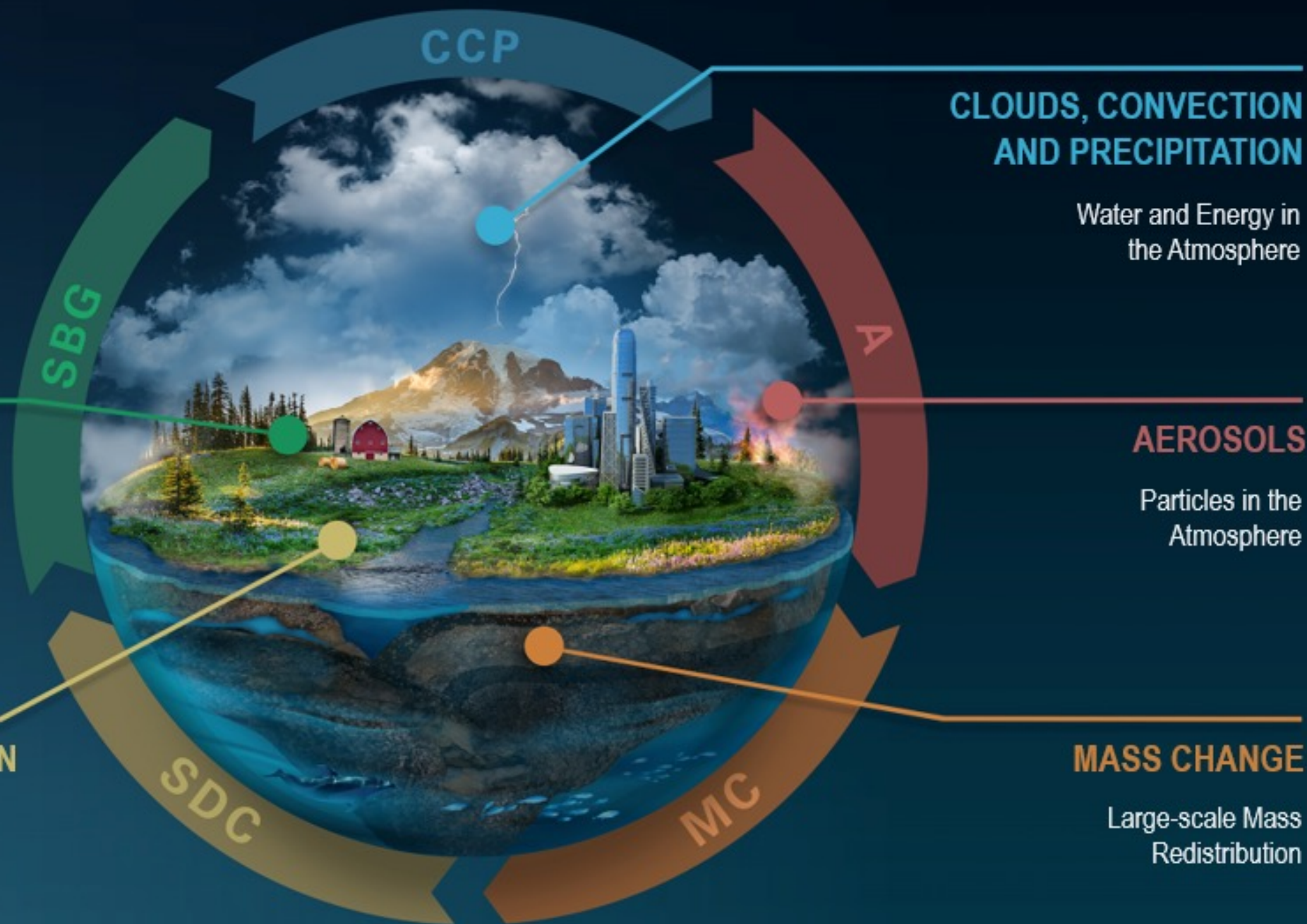
INTERCONNECTED  
CORE MISSIONS

## SURFACE BIOLOGY AND GEOLOGY

Earth Surface &  
Ecosystems

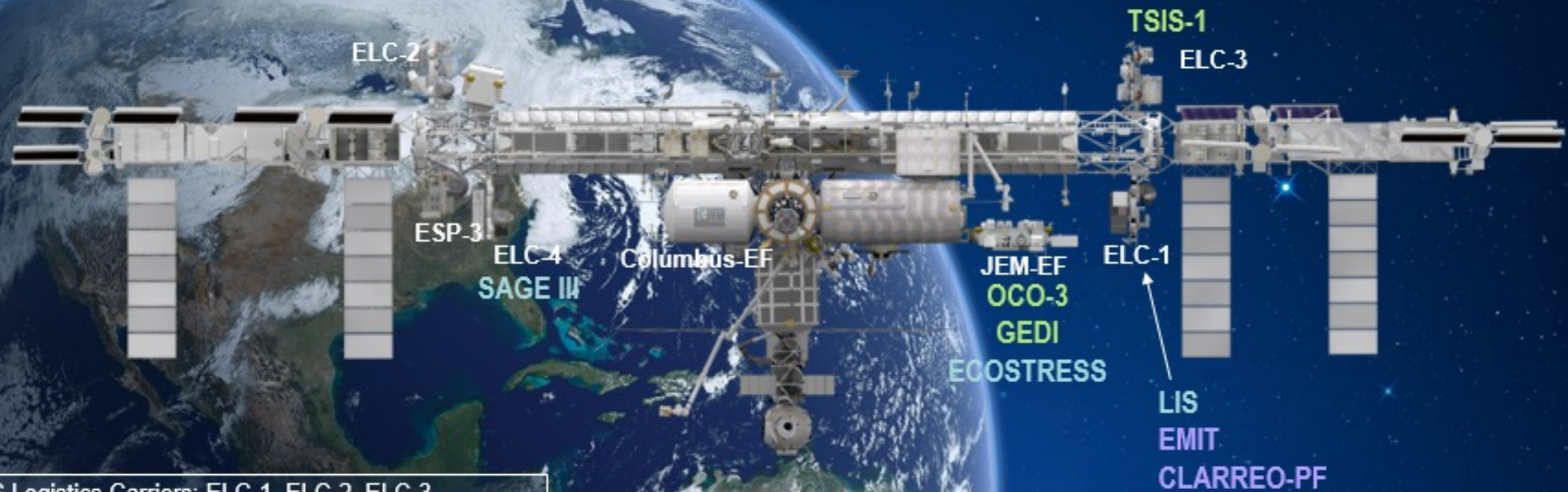
## SURFACE DEFORMATION AND CHANGE

Earth Surface Dynamics



# INTERNATIONAL SPACE STATION

## EARTH SCIENCE OPERATING MISSIONS



EXPRESS Logistics Carriers: ELC-1, ELC-2, ELC-3  
External Stowage Platforms: ESP-3  
Columbus External Payload Facility: Columbus-EF  
Kibo External Payload Facility: JEM-EF

(PRE) FORMULATION ●  
IMPLEMENTATION ●  
PRIMARY OPS ●  
EXTENDED OPS ●



# *Open Science: Accessible, Reproducible & Inclusive...*

## **Creates Research That Is:**

Cited more

Creates a bigger impact

Increases transparency

Generates more  
scholarly collaborations

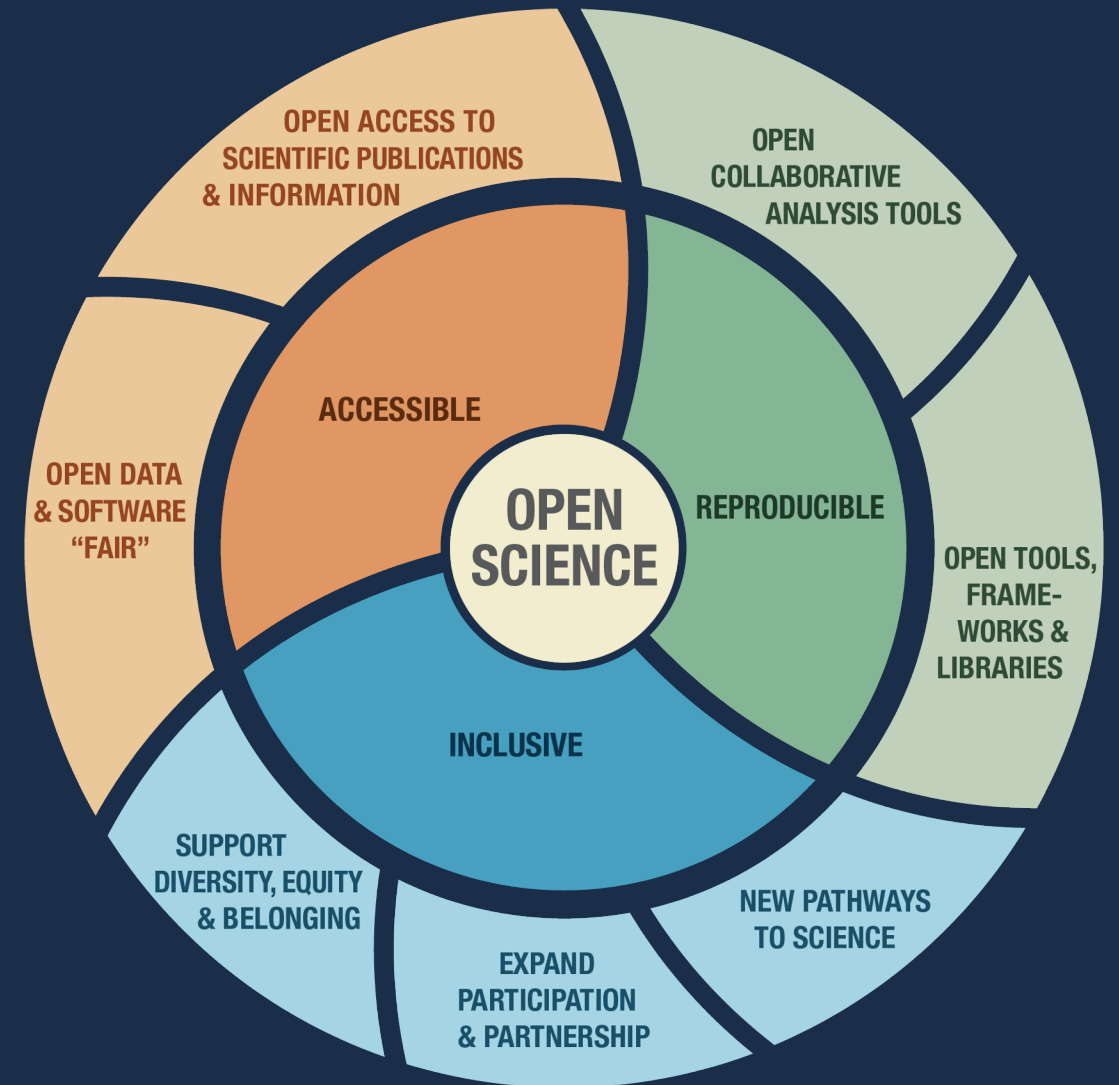
## **Inclusive Science means More:**

Collaborative projects

Access to 'hidden  
knowledge'

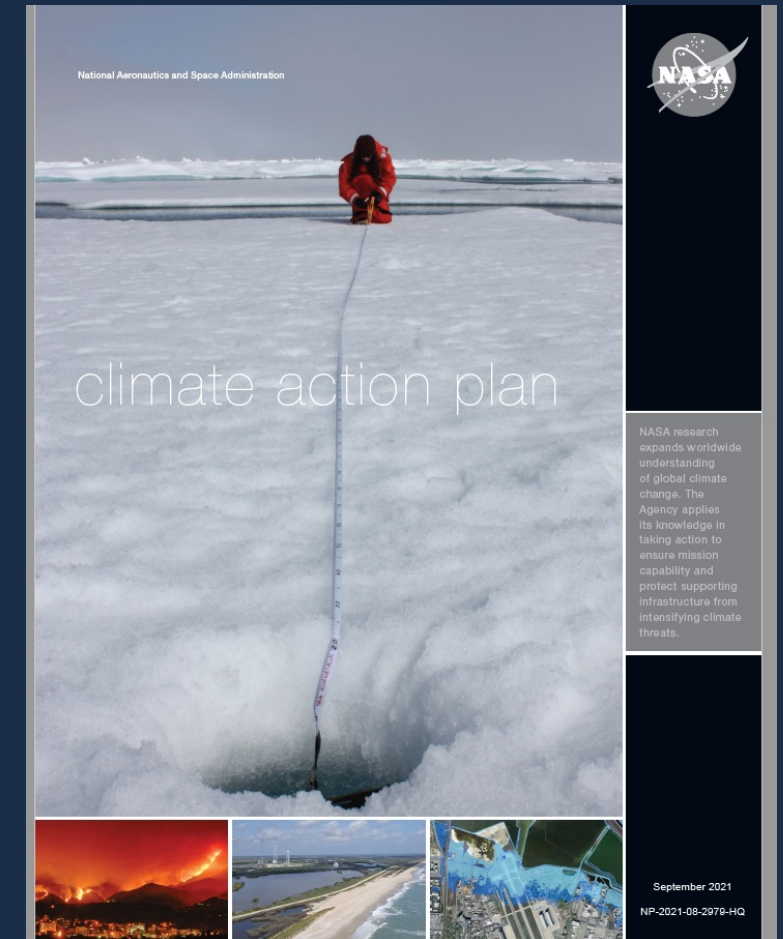
Equitable Systems

Participation



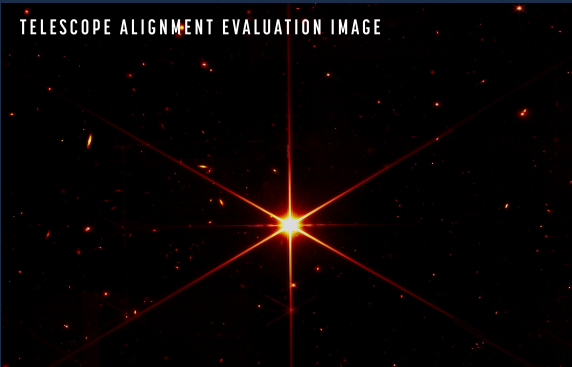
# Climate Action Plan

- Priorities:
  - Ensure Access to Space
  - Integrate Climate Adaptation into Agency and Center Master Plans
  - Integrate Climate Risks into Agency Risk Analysis and Resilience Planning
  - Update Climate Modeling to Enable Better Understanding of Agency Threats and Vulnerabilities
  - Advance Aeronautics Research on Technologies and Processes that Reduce Contributors to Climate Change



<https://www.sustainability.gov/pdfs/nasa-2021-cap.pdf>

# Other NASA Big Milestones



## James Webb Space Telescope

The world's largest and most complex space telescope completed critical mirror alignment steps and expecting first science images this summer.



## Artemis 1

Artemis I is an uncrewed flight test, the first in a series of increasingly complex missions to the Moon in preparation for human missions to Mars.



# What's Next in 2022?

- Launching several Earth science missions
- Testing an all-electric airplane
- Continuing to provide Earth observations and applied science information to those who need it
- Working to make NASA data more accessible



Thank you!