Climate and Science Integration Across NASA

DR. KATE CALVIN
NASA Chief Scientist and Senior Climate Advisor
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
International Space Station
After 50 years of Landsat, discovery of new commercial and scientific uses is only accelerating.

For half a century, NASA-built Landsat satellites have been recording Earth’s surface, gathering science-grade imagery in various spectral bands. That data yields valuable information for farmers, water managers, food manufacturers, and countless others. It has also become the basis for many mapping applications for navigation, geolocation, and data visualization.
New Image Analysis Supports New Farming Techniques

Perennial Inc. of Boulder, Colorado, learned how to use data from Landsat and other satellites to determine soil carbon levels. Now the company helps farmers who want to earn carbon credits for changing their practices, food companies that want to reduce their carbon footprints, and many others.
Disaster Response
SERVIR

Farmers in East Africa regularly face droughts, but are seldom covered by insurance.

The government of Kenya created a pilot insurance program for one county to help the farmers, but their methods required costly field data collection.

SERVIR, a joint NASA and USAID program in collaboration with regional technical organizations, and NASA Harvest have built the capacity of the Kenyan government to reduce the cost of data collection by 70%.

Now, the government has scaled the program nationwide, and individuals insured against crop loss have grown from 900 to over 1.4 million over the past few years.
Sustainability Efforts at NASA
NASA Climate Action Plan

Strategic priorities in NASA’s climate action plan include:

• Ensuring access to space
• Integrating climate adaptation into NASA’s master plans
• Integrating climate change into risk analysis and resilience planning
• Updating climate modeling to better understand threats and vulnerabilities
• Advancing aeronautics research to reduce contributors to climate change
NASA and DEIA

Diversity and Inclusion

We define diversity broadly as “the entire universe of differences and similarities” and inclusion as “the full participation, belonging, and contribution of organizations and individuals.”

Equity

We define equity as “the consistent and systematic provision of fair, just, and impartial treatment to all individuals, including individuals who belong to underserved communities that have been denied such treatment.”

Accessibility

We define accessibility as “the capability for full and independent use by all people, including people with disabilities, of technology, programs, and services through inclusive design, construction, development, and maintenance of facilities.”
NASA’s Earth Information Center
Recent and Upcoming Earth Science Launches

**2022**
- July: EMIT (ISS)
- November: OMPS-Limb (JPSS-2/NOAA)
- December: SWOT

**2023**
- January: MURI
- March: SNOOPI
- April: TEMPO*
- May: TROPICS 2, 3**

*Agency LRD March 2023
**Agency LRD November 2023
Thank you!