

National Aeronautics and
Space Administration

Earth Science to Action Strategy

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(slides courtesy ESD/Sid Boukabara)



**We are at a pivotal
moment**



A new strategy to meet the moment: Earth Science to Action



The National Academies of
SCIENCES • ENGINEERING • MEDICINE

CONSENSUS STUDY REPORT

THRIVING ON OUR CHANGING PLANET

A Decadal Strategy for Earth Observation from Space



Key National Academies Guidance

**Increase the impact of Earth science
for the response to climate change**

Decadal Community Challenge

“Pursue increasingly ambitious objectives and innovative solutions that enhance and accelerate the science/applications value of space-based Earth observations and analysis to the nation and the world in a way that delivers great value, even when resources are constrained, and ensures that further investment will pay substantial dividends.”

- *Thriving on Our Changing Planet: A Decadal Survey for Earth Observations from Space, 2018*

Earth Science to Action: the basics

○ The Earth Science to Action strategy is the Earth Science Division's 2024-2034 strategic plan. This strategy is our plan of action designed to achieve our vision, mission and strategic goals.

- ESD's response to 2018 Decadal Survey and other national priorities
- Drives next iteration of programs, missions, initiatives
- Informs budget approach
- Informs employee performance expectations

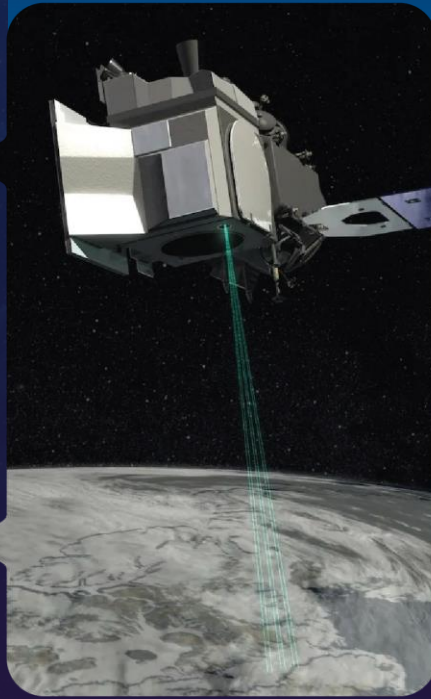


Earth Science: who's included

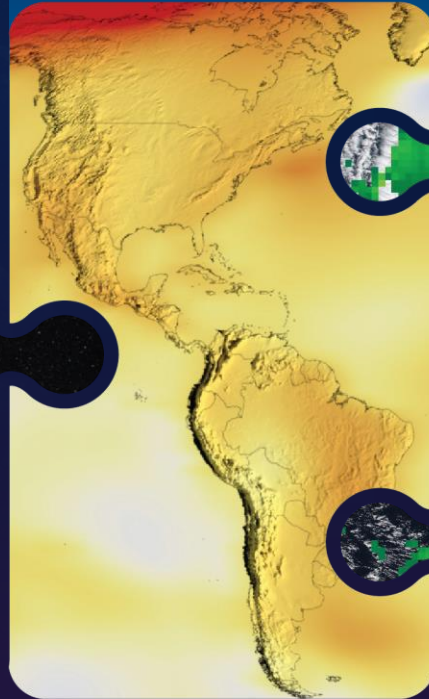
Technology



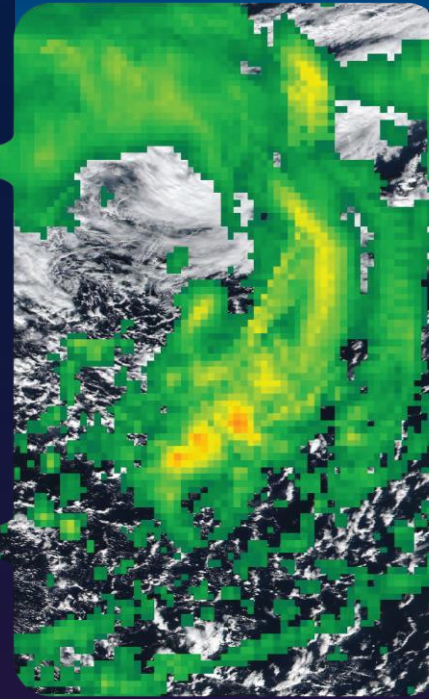
Flight



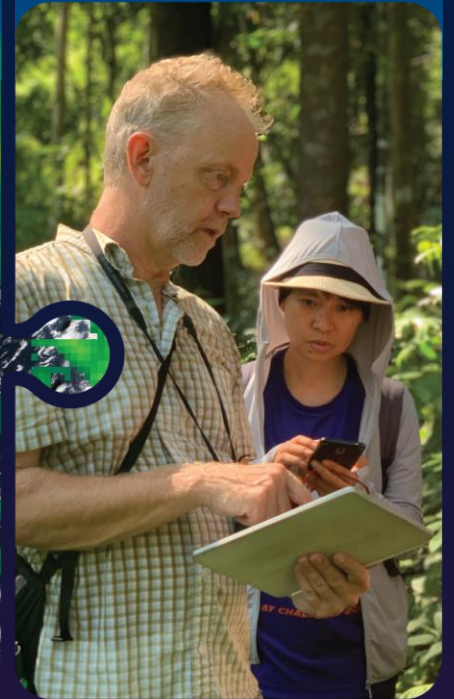
Research
and Analysis



Data and Compute

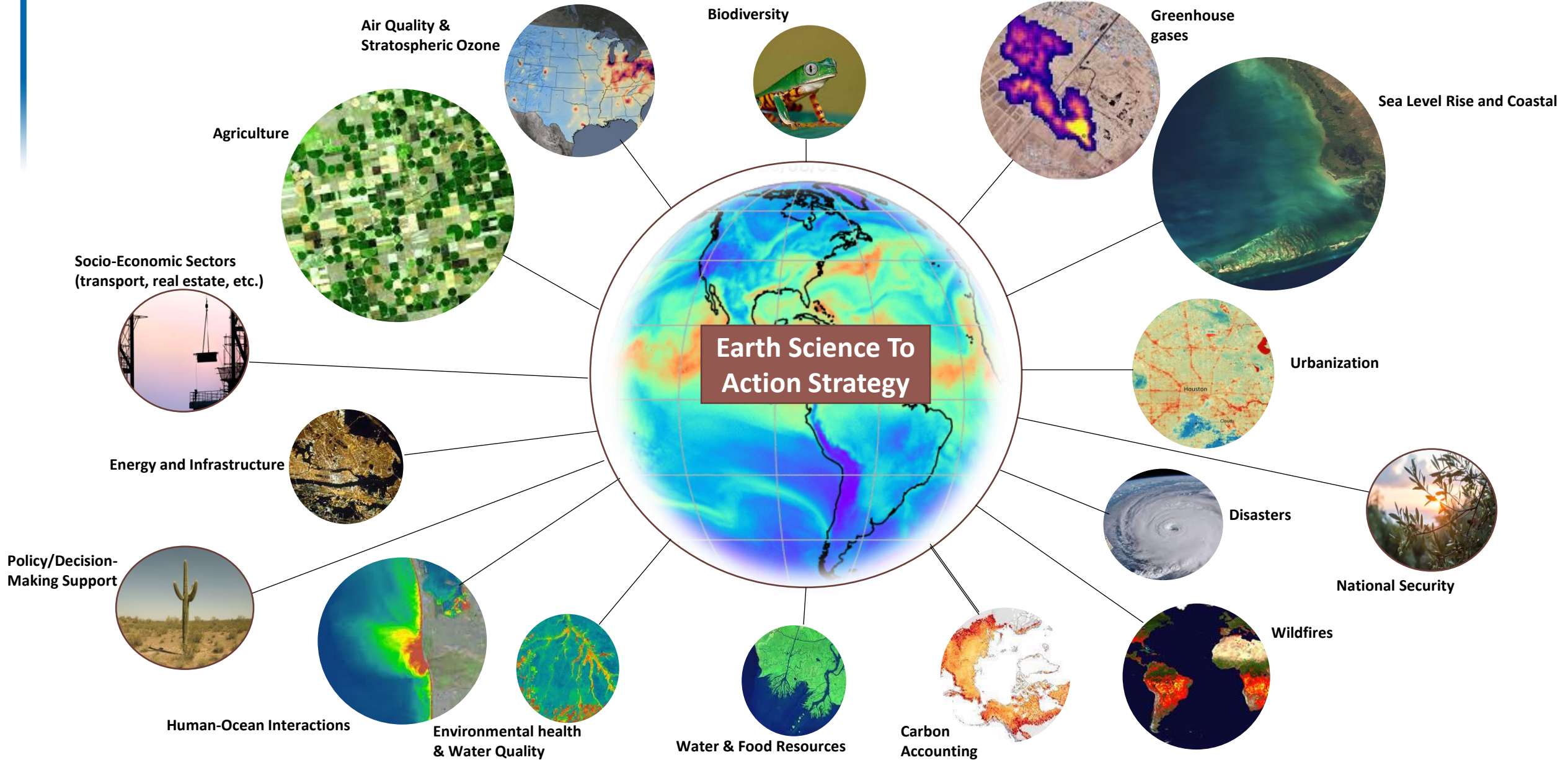


Earth Action



Focus Areas

The strategy identifies 16 systems that sustain the well being of humanity:



The background of the slide is a composite image. It features an aerial photograph of a river delta, likely the Amazon, with its characteristic branching channels. The image is overlaid with semi-transparent green and blue shapes, possibly representing land use or water flow patterns. A solid dark blue horizontal band runs across the middle of the image, containing the text 'Strategy content' in white.

Strategy content

OUR VISION

A thriving world, driven
by trusted, actionable
Earth science

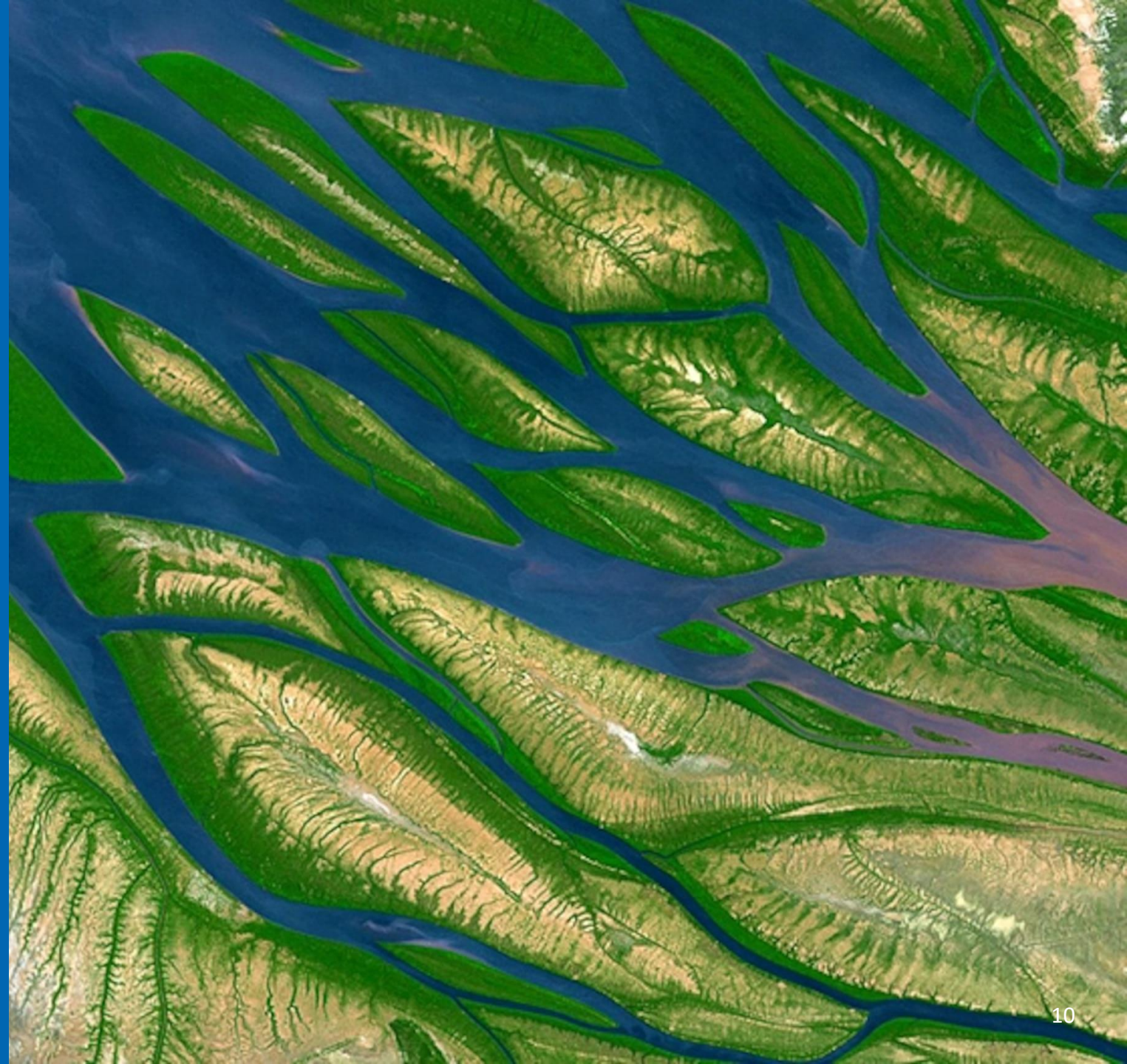


OUR VISION

A thriving world, driven by
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science

OUR MISSION

Compelled by our planet's rapid
change, we innovate and
collaborate to explore and
understand the Earth system,
make new discoveries, and enable
solutions for the benefit of all



STRATEGIC GOAL

Within a decade, we will advance and integrate Earth science knowledge to empower humanity to create a more resilient world.





Objective 1

- Holistically observe, monitor and understand the Earth system

Key Result 1.1: The most advanced Earth observing system in the world

Key Result 1.2: Cutting-edge technology

Key Result 1.3: Integrated and trusted Earth system data

Key Result 1.4: Scientific breakthroughs to better understand Earth



Objective 2

- Deliver trusted information to drive Earth resilience activities

Key Result 2.1: Models that capture the intricacies of the Earth system

Key Result 2.2: Co-designed solutions and tools to support users

Key Result 2.3: Science-based information we can trust and act on

Key Result 2.4: Promotion of Earth information as a national asset



Aren't we already doing this?

Our work has been excellent to date but...

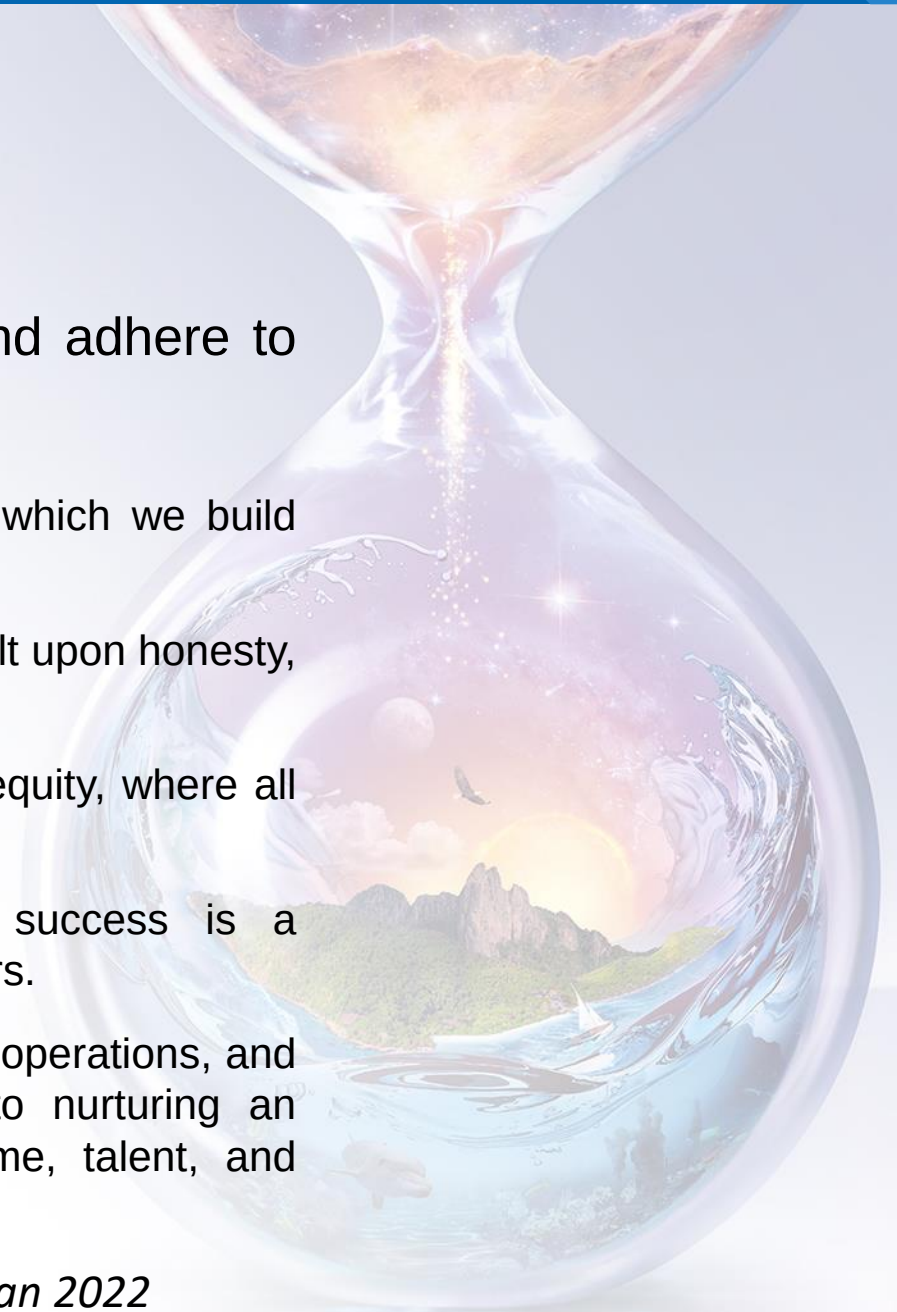
In our new Earth Action paradigm, we will be accelerating the use of Earth science to support policy and decision-making for society's well-being. Here are three key pillars.

- **Be user centered:** Prioritize info exchange with end users to allow their experiences to inform future programs
- **Build bridges:**
 - Build structural and cultural bridges between research, technology, flight, data, and Earth action elements
 - Identify and remove barriers to collaboration
- **Scale up:** Scale up existing efforts to get NASA science and data into hands of end users to solve real-world challenges

NASA Core Values

As part of our NASA Earth science enterprise, we adopt and adhere to the fundamental five NASA core values:

- **Safety:** NASA's constant attention to safety is the cornerstone upon which we build mission success.
- **Integrity:** NASA is committed to maintaining an environment of trust, built upon honesty, ethical behavior, respect, and candor.
- **Inclusion:** NASA is committed to a culture of diversity, inclusion, and equity, where all employees feel welcome, respected, and engaged.
- **Teamwork:** NASA's most powerful asset for achieving mission success is a multidisciplinary team of diverse, talented people across all NASA Centers.
- **Excellence:** To achieve the highest standards in engineering, research, operations, and management in support of mission success, NASA is committed to nurturing an organizational culture in which individuals make full use of their time, talent, and opportunities to pursue excellence in conducting all Agency efforts.



Areas of Emphasis

Augmenting NASA's core values of integrity, teamwork, and excellence, Earth science identifies three additional values critical to mission success:

- **Trustworthiness:** Our work is undertaken with transparency and attention to detail and with quality-control processes in place to ensure a high level of credibility and quality. We engage with our partners, users, and stakeholders, as well as the public, with a sense of responsibility, truthfulness, and humility to establish and maintain social trust. **We share all aspects of what we do (data, science, knowledge, methodologies) to the maximum extent possible** to ensure high confidence in our findings.
- **Innovation:** We initiate and encourage activities with a potential to improve our mission, even if the end result is uncertain. We take **thought-out risks** to ensure we can explore bold and innovative ideas, keep us at the edge of science and technology, and allow us to advance the state of the art and remain an innovation hub for Earth science.
- **Collaboration:** We work collaboratively, **we co-develop with our partners and users**, and reach out across agencies, across sectors, nationally and internationally, to achieve maximum value and build added-value partnerships.



Earth Science to Action Strategy

Earth Science to Action



Virtuous Cycle

- User needs inform next iteration of programs, missions and initiatives

Public Understanding & Exchange

- Put more scientific understanding into public sphere
- Deliver applied science to users
- Participate in multi-way info exchange
- Use input to inform subsequent work

Solutions & Societal Value

- Offer models, scientific findings and info through Open-Source Science principles
- Support climate services
- Provide science applications and tools to inform decisions

Earth System Science & Applied Research

- Grow scientific understanding of Earth's systems
- Develop predictive modeling for science applications and tools to mitigate, adapt and respond to climate change

Foundational Knowledge, Technology, Missions & Data

- Technology innovation
- Earth observations missions
- Data collected from space, air and ground

What Do We Mean by Collaboration/ Partnership



Urgency

Responsibility

Leadership





NASA
earth

science.nasa.gov/earth

Your Home. Our Mission.