

# NASA's Science Program: Priorities and Issues

National Space Users Council  
Users' Advisory Group

Thomas H. Zurbuchen, PhD

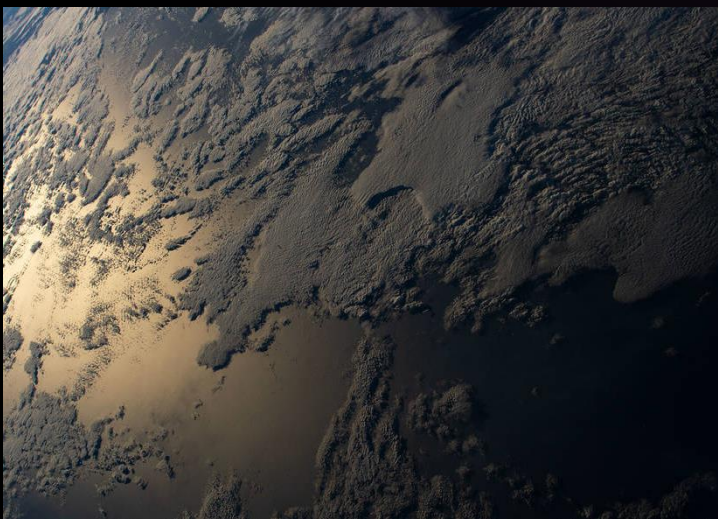
Zurbuchen@gmail.com, thomaszurbuchen.com





## Three Priorities

- 1) Major progress is needed in Climate Science – towards regional forecast and including predictive analytics. This forces a closer integration of science and application domains. Commercial partnerships are a must.
- 2) Science is critical element of Artemis and international leadership, especially in presence of international competition. Must balance human and robotics approaches, do not put on collision course against each other.
- 3) Innovation both in technology and in overall approach is and remains critical for US leadership. Every mission needs to enhance what is possible in space.



NEWS FROM NASA SMD



CLIMATE AND SOCIETY



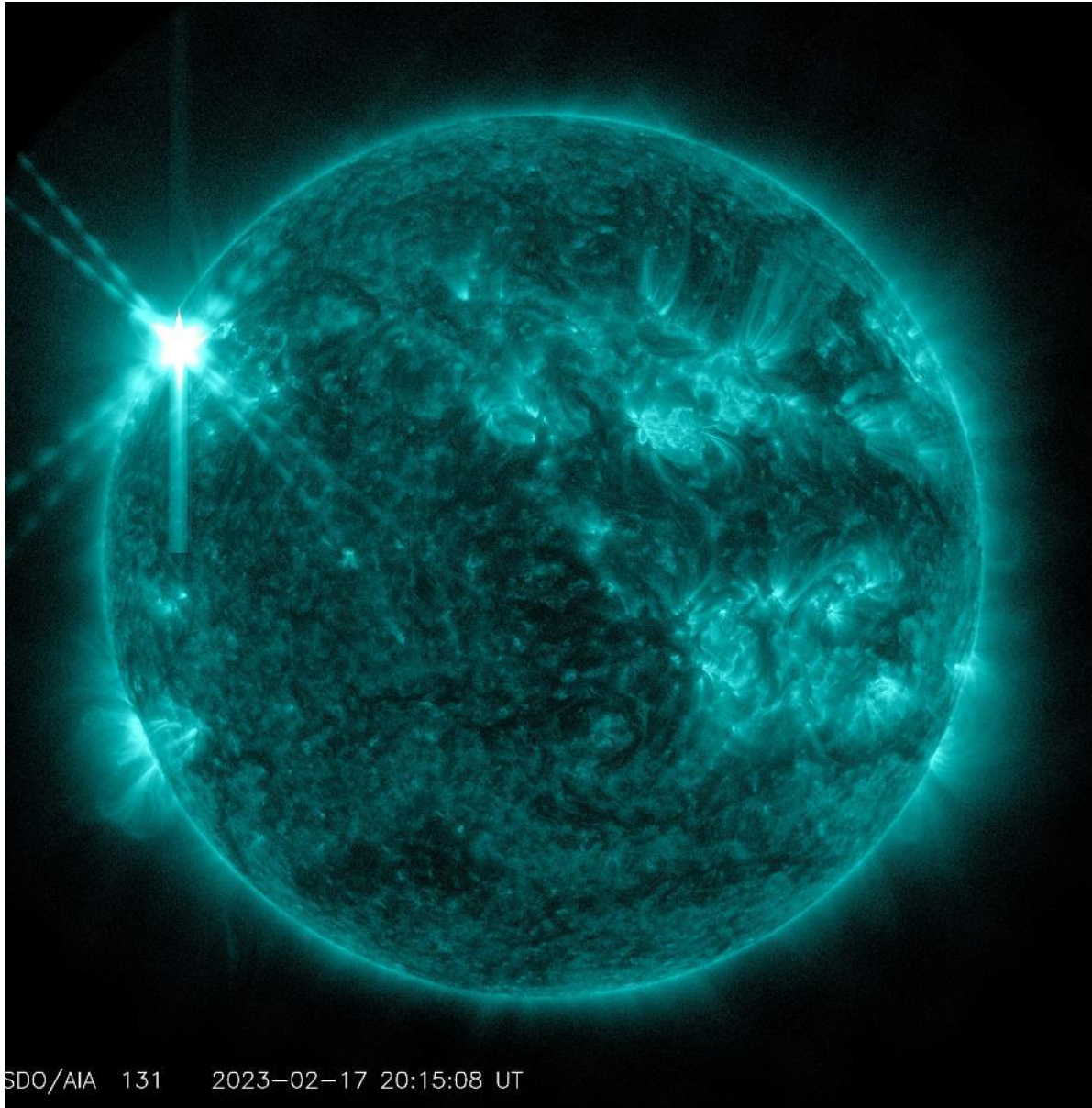
DISCOVERY, TECH

# Mars Perseverance: 2 Yrs on Mars



# Pandora's Cluster

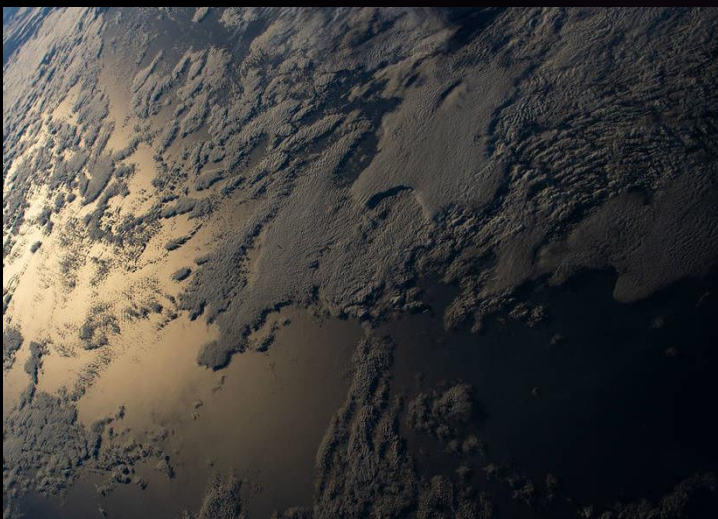




SDO/AIA 131 2023-02-17 20:15:08 UT



Vincent Ledvina, Alaska



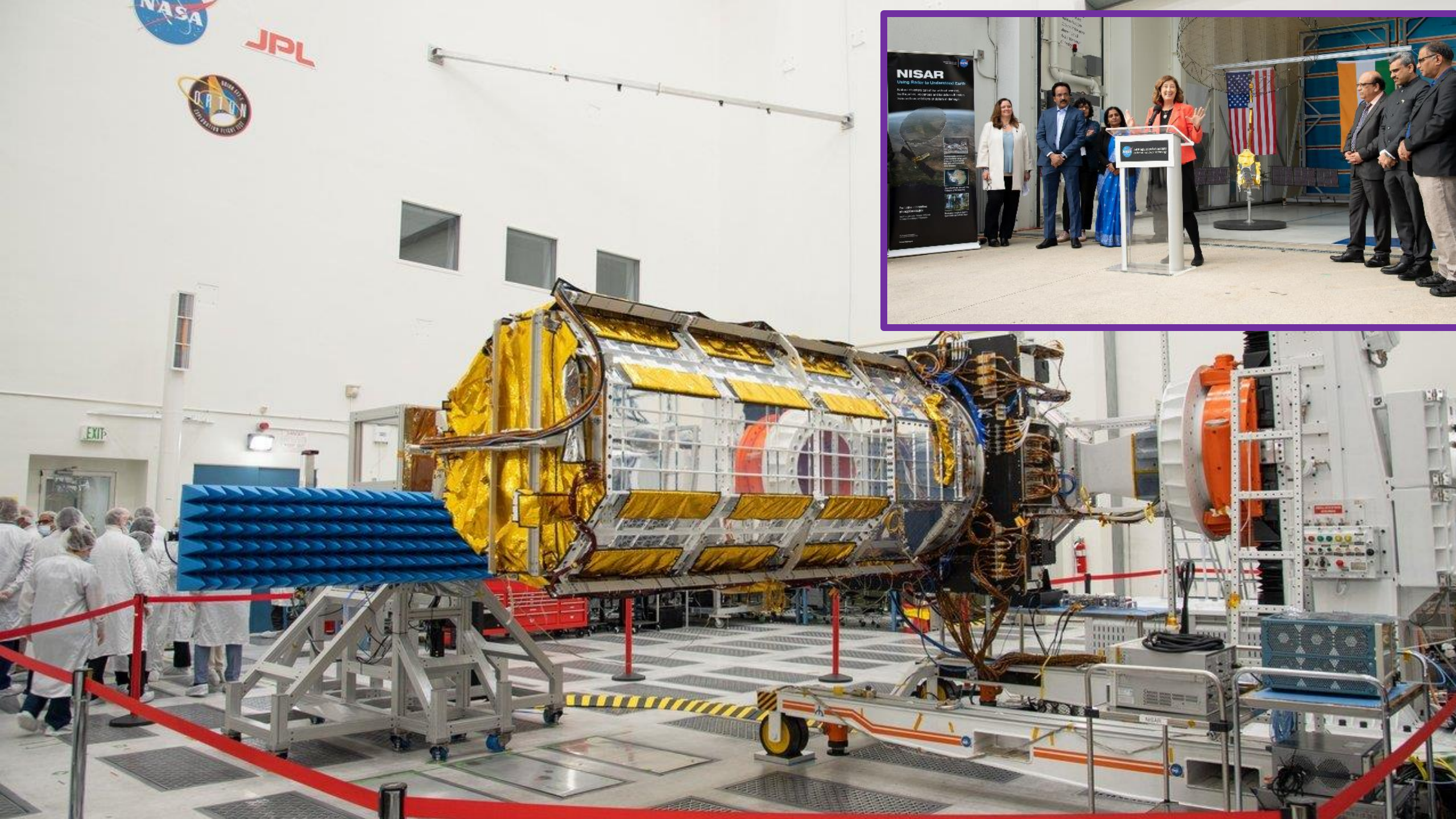
NEWS FROM NASA SMD



CLIMATE AND SOCIETY



DISCOVERY, TECH





# EARTH SYSTEM OBSERVATORY

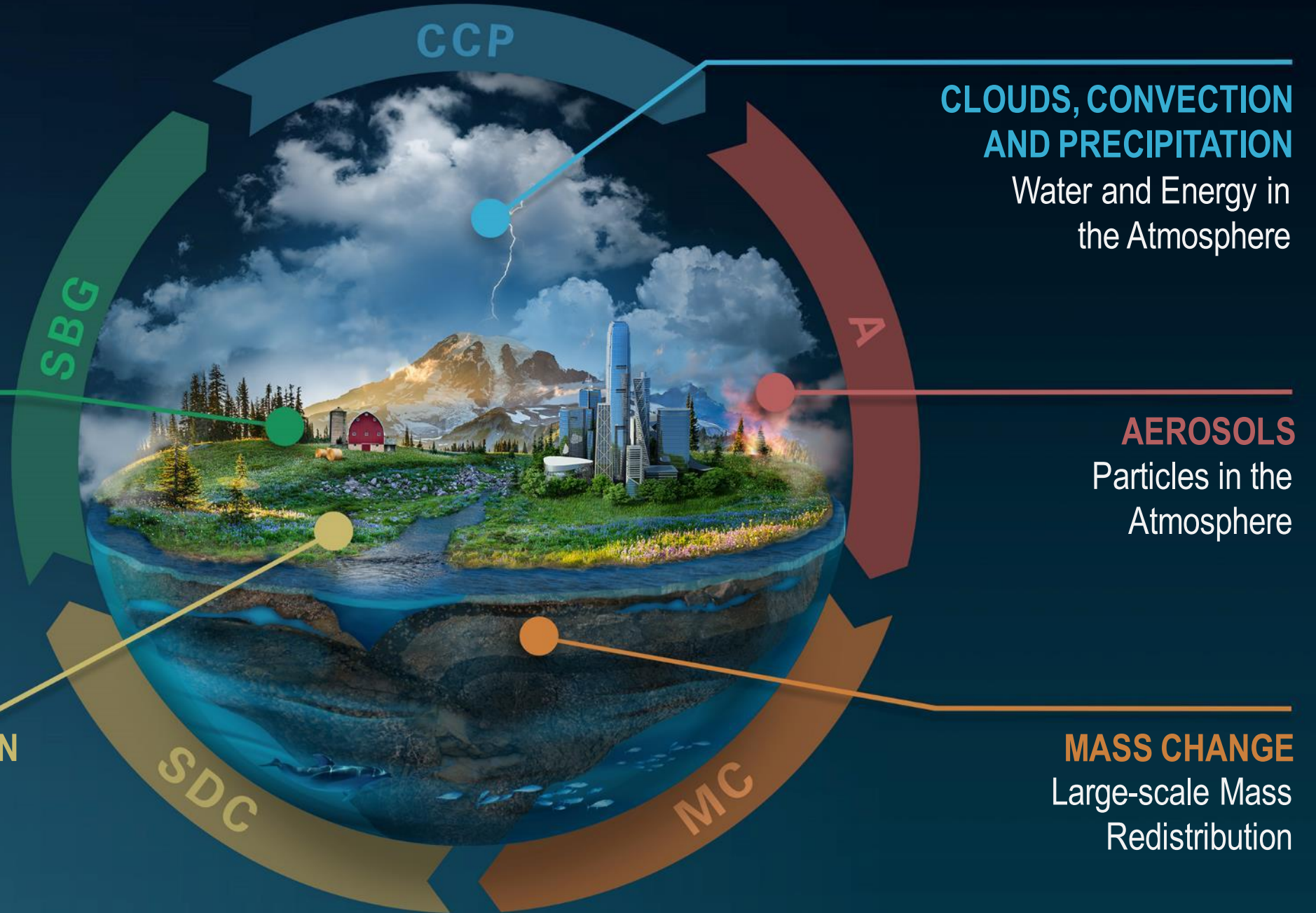
INTERCONNECTED CORE MISSIONS

## SURFACE BIOLOGY AND GEOLOGY

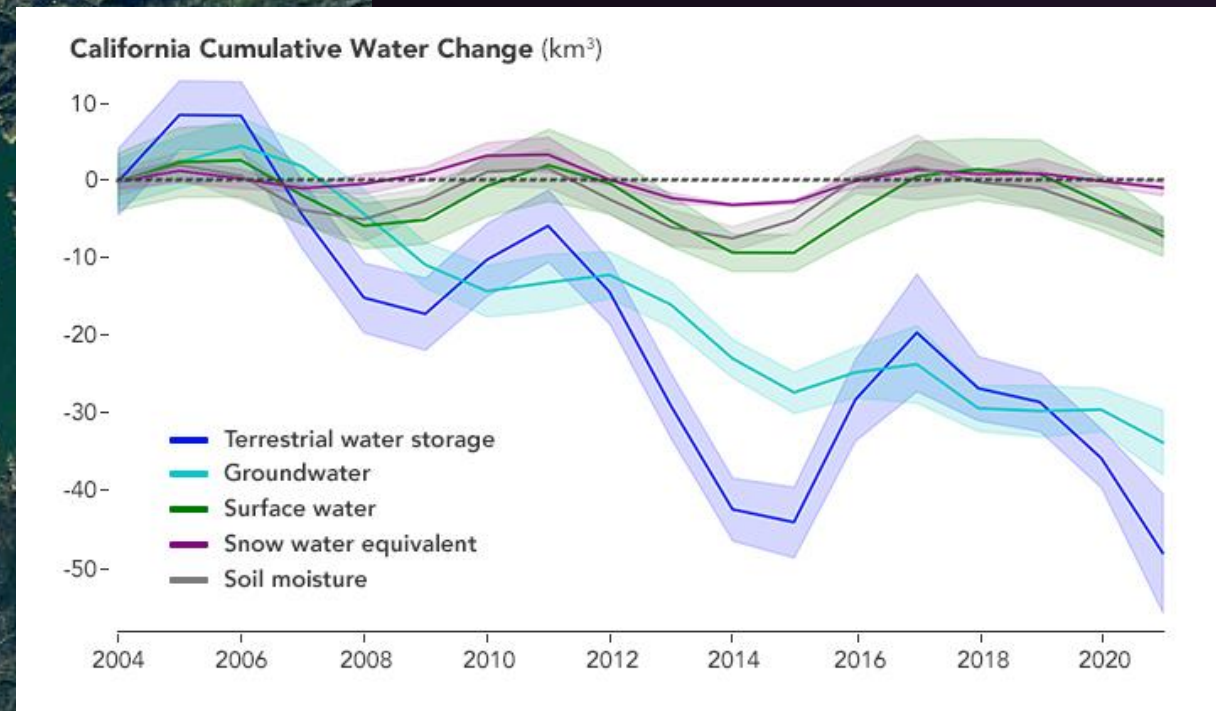
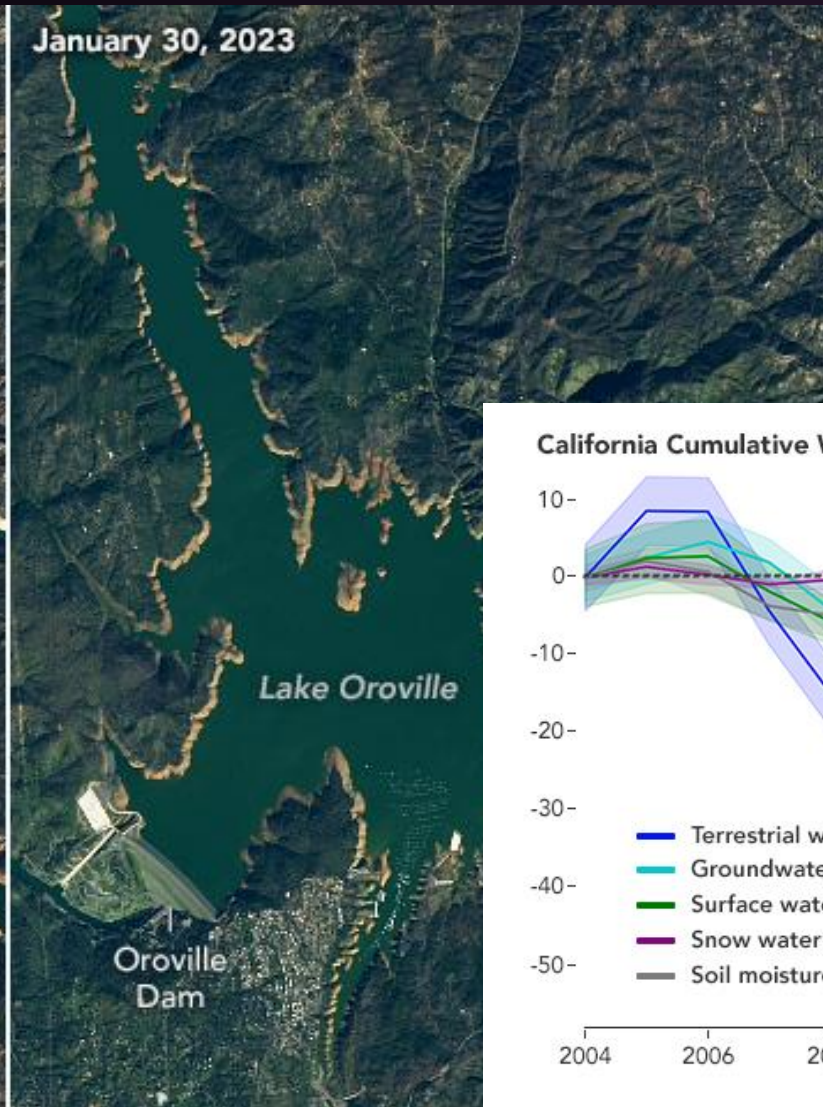
Earth Surface & Ecosystems

## SURFACE DEFORMATION AND CHANGE

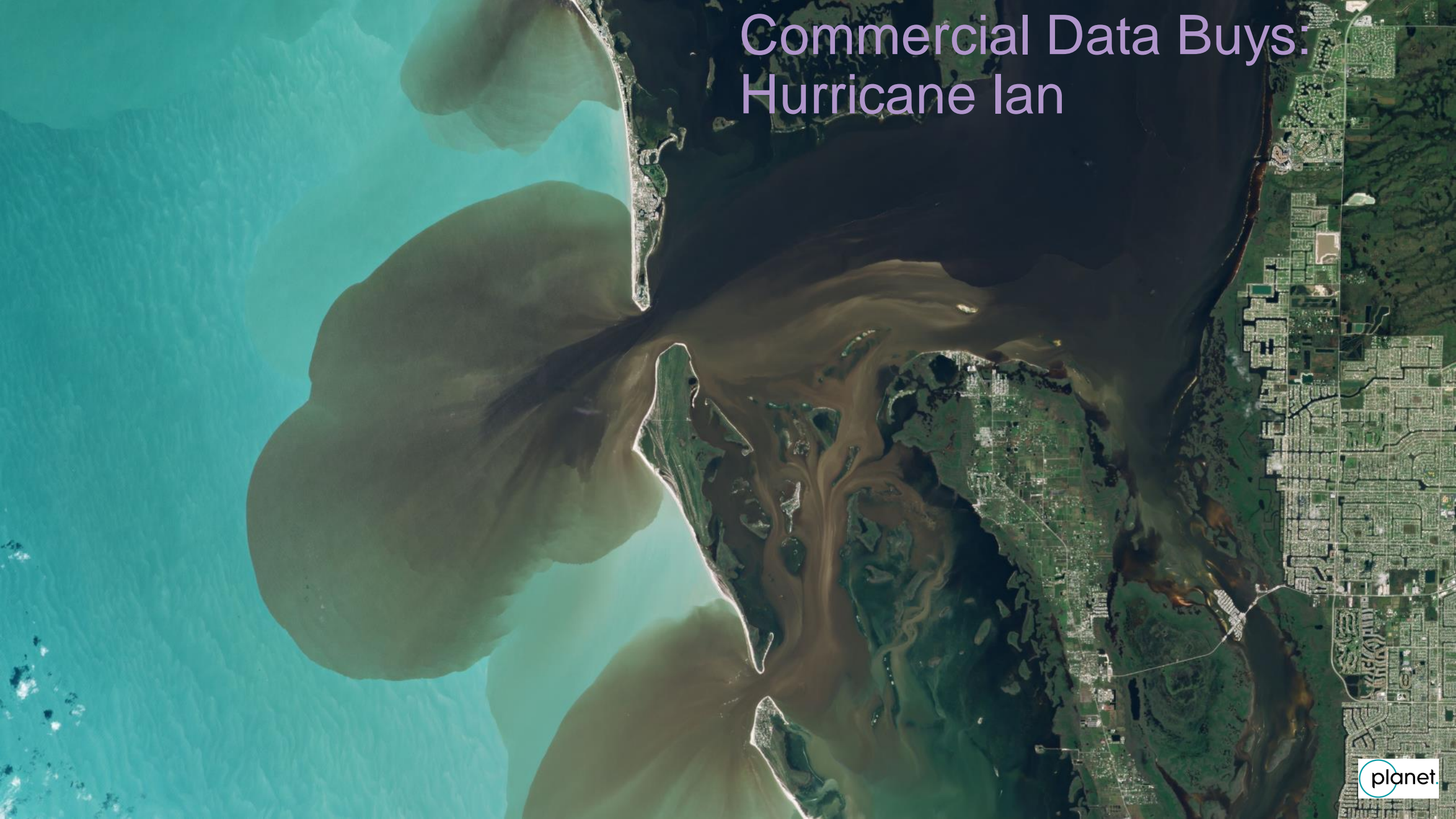
Earth Surface Dynamics



# Water: Surface and Below Surface

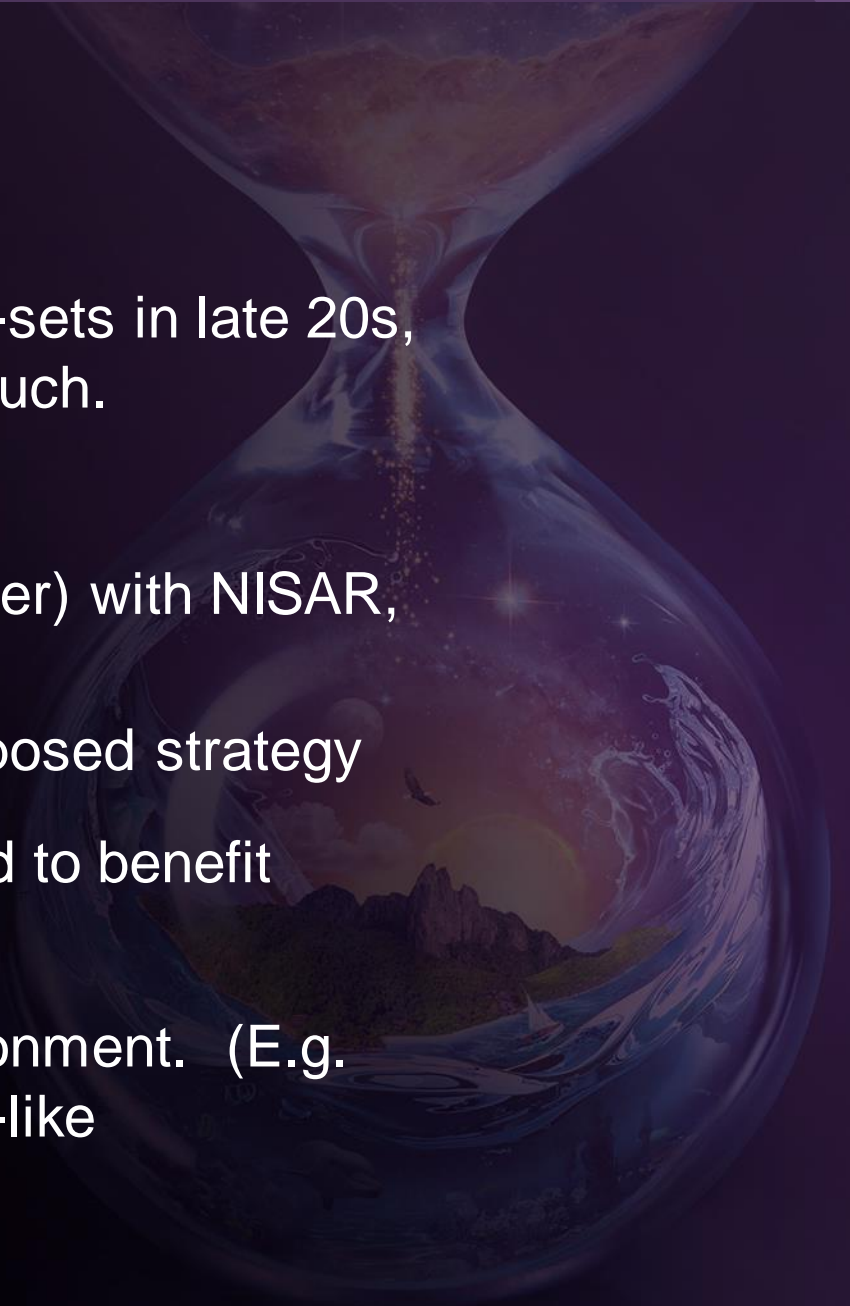


# Commercial Data Buys: Hurricane Ian



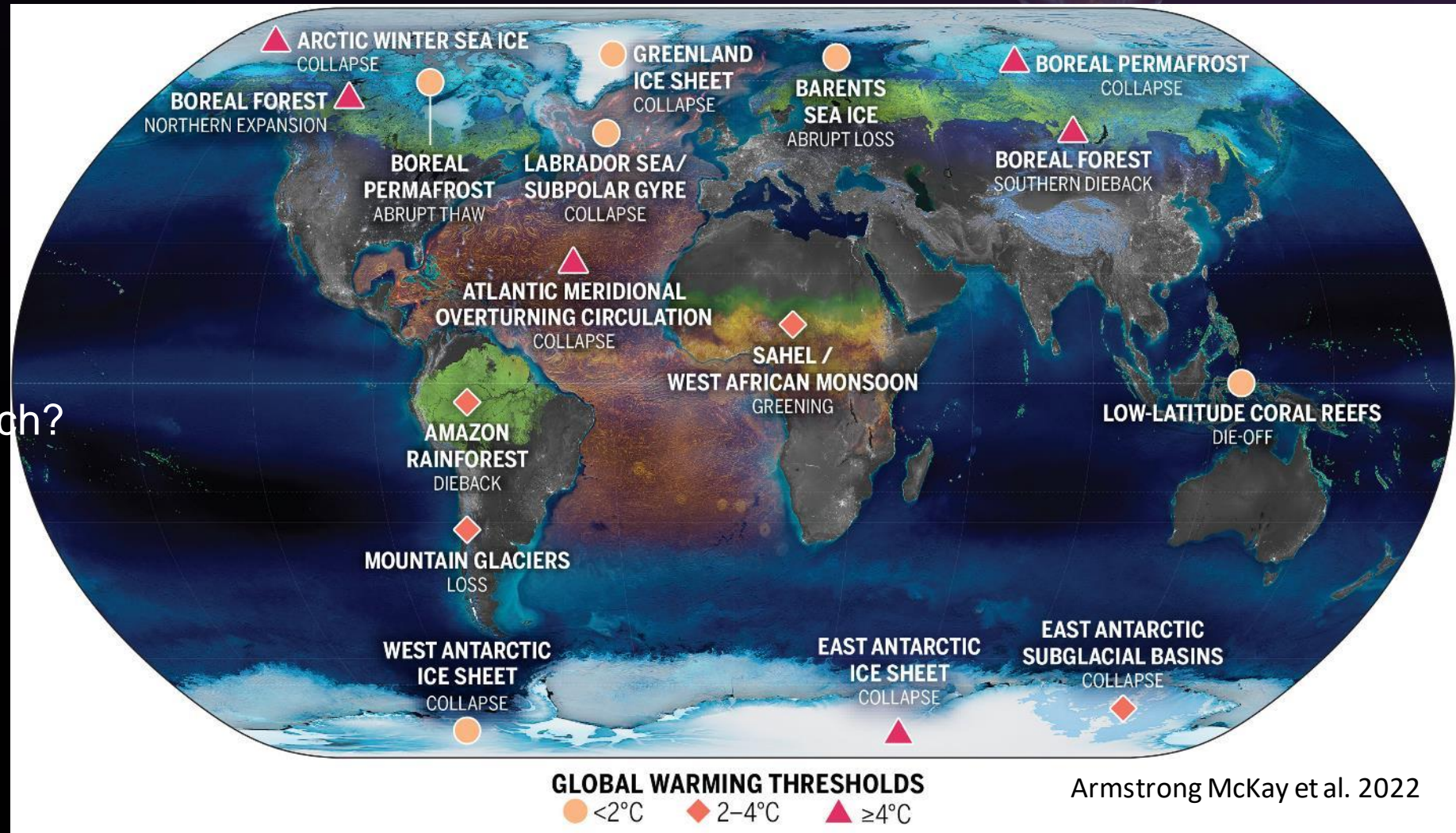
# Challenges, Issues

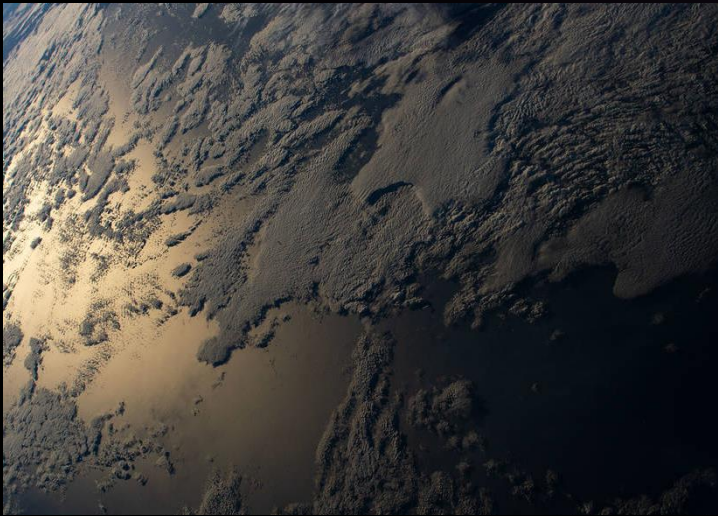
- Strategy is in trouble, threatening continuity of key data-sets in late 20s, and reducing likelihood that system can be studied as such.
- Lack of funding due to
  - Performance issues (CV19, suppliers, technical, other) with NISAR, and GeoCarb
  - Lack of ability to gain support on Capital Hill for proposed strategy
- Roles of all gov players remains unclear reducing speed to benefit user. Role of commercial data is increasing.
- As speed matters, we need to adapt more to new environment. (E.g. “Spacecraft as a service”, standardized buses., or SDA-like approaches)



# How Important are Climate Tipping Points

- Tipping points may be important
- What does it mean?
  - Urgency of research?
  - Translation scale and speed?





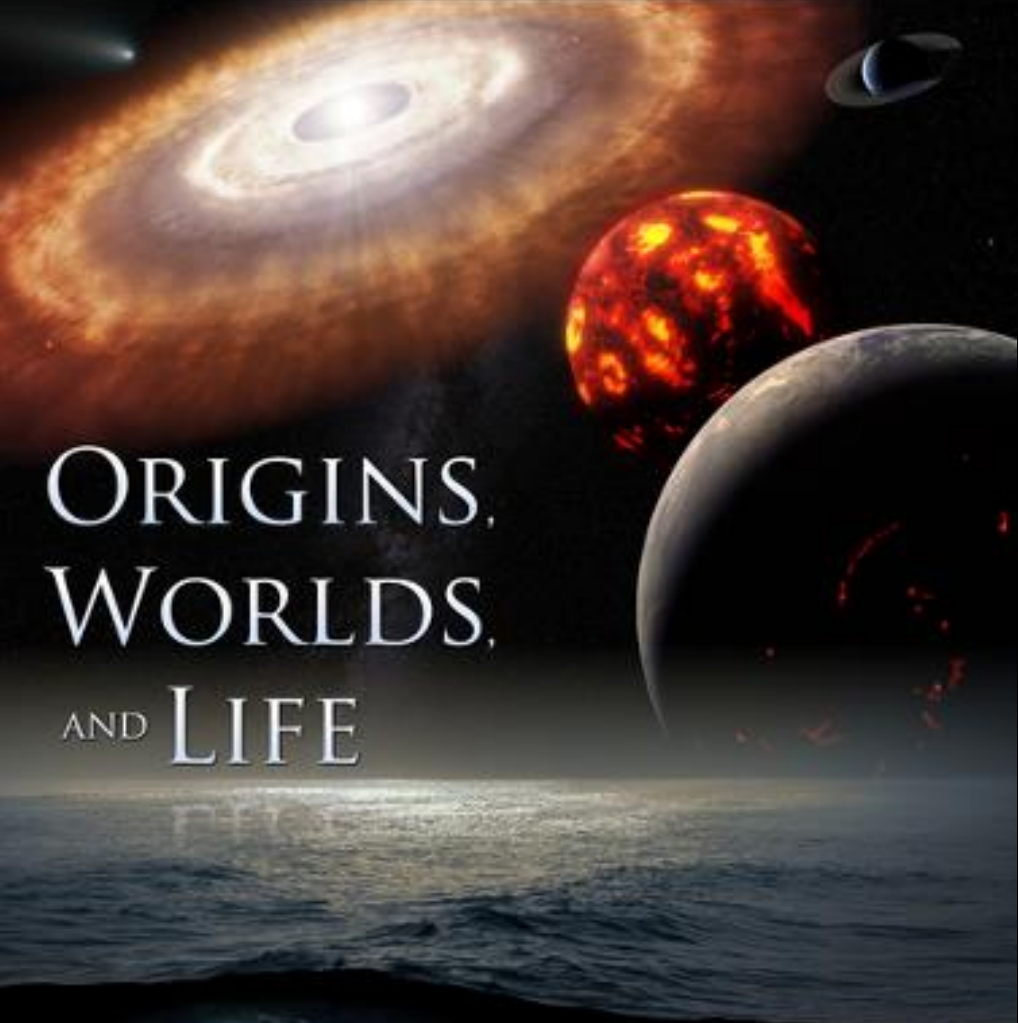
NEWS FROM NASA SMD



CLIMATE AND SOCIETY

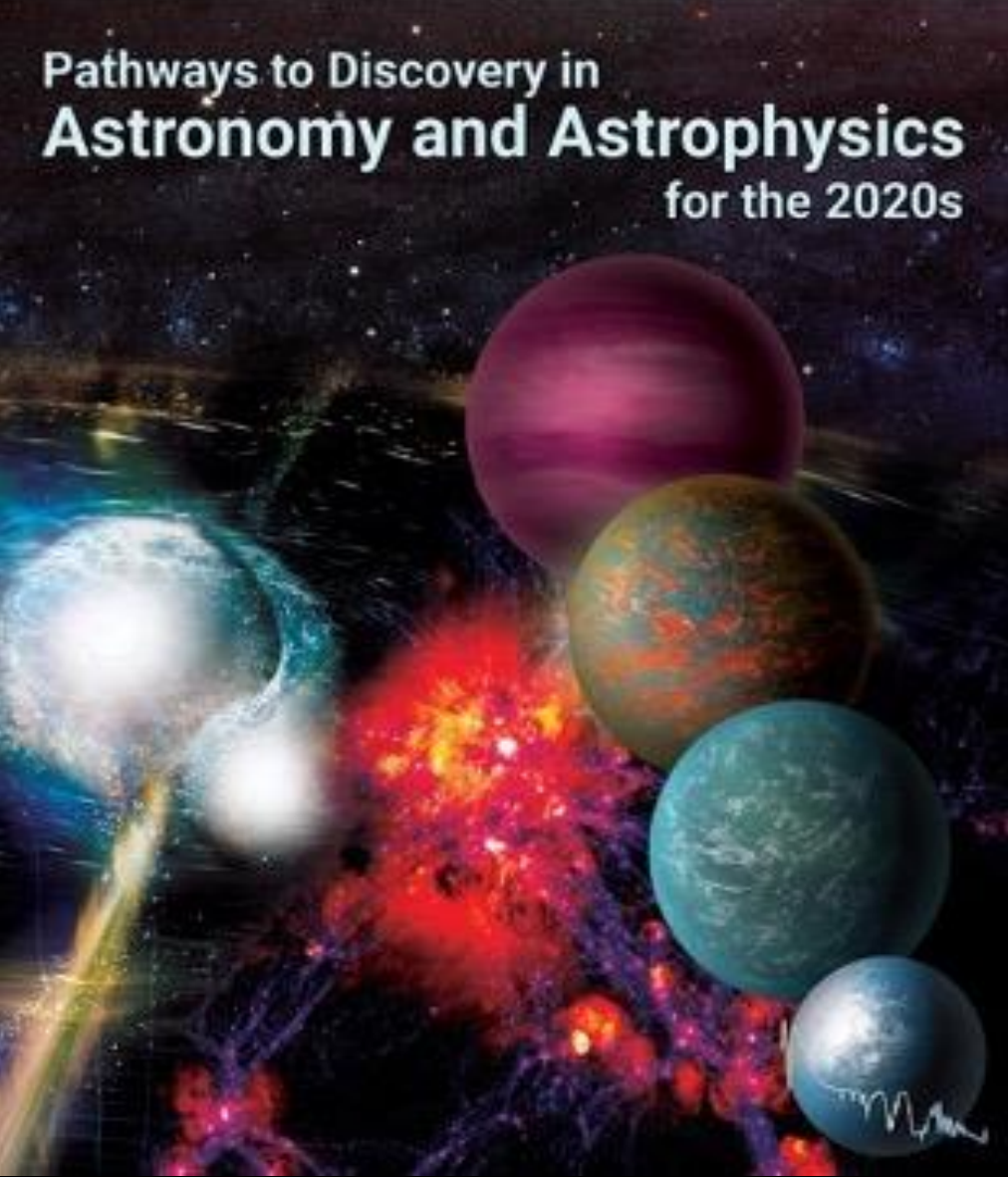


DISCOVERY, TECH



ORIGINS,  
WORLDS,  
AND LIFE

A Decadal Strategy  
for Planetary Science & Astrobiology  
2023–2032



Pathways to Discovery in  
**Astronomy and Astrophysics**  
for the 2020s

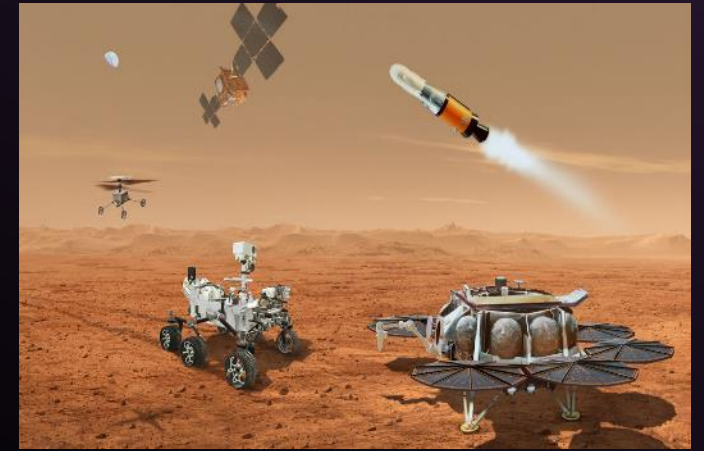
# Driving Towards Tech/Programmatic Success



Clipper with LRD 2024



Roman with LRD  
2026/7

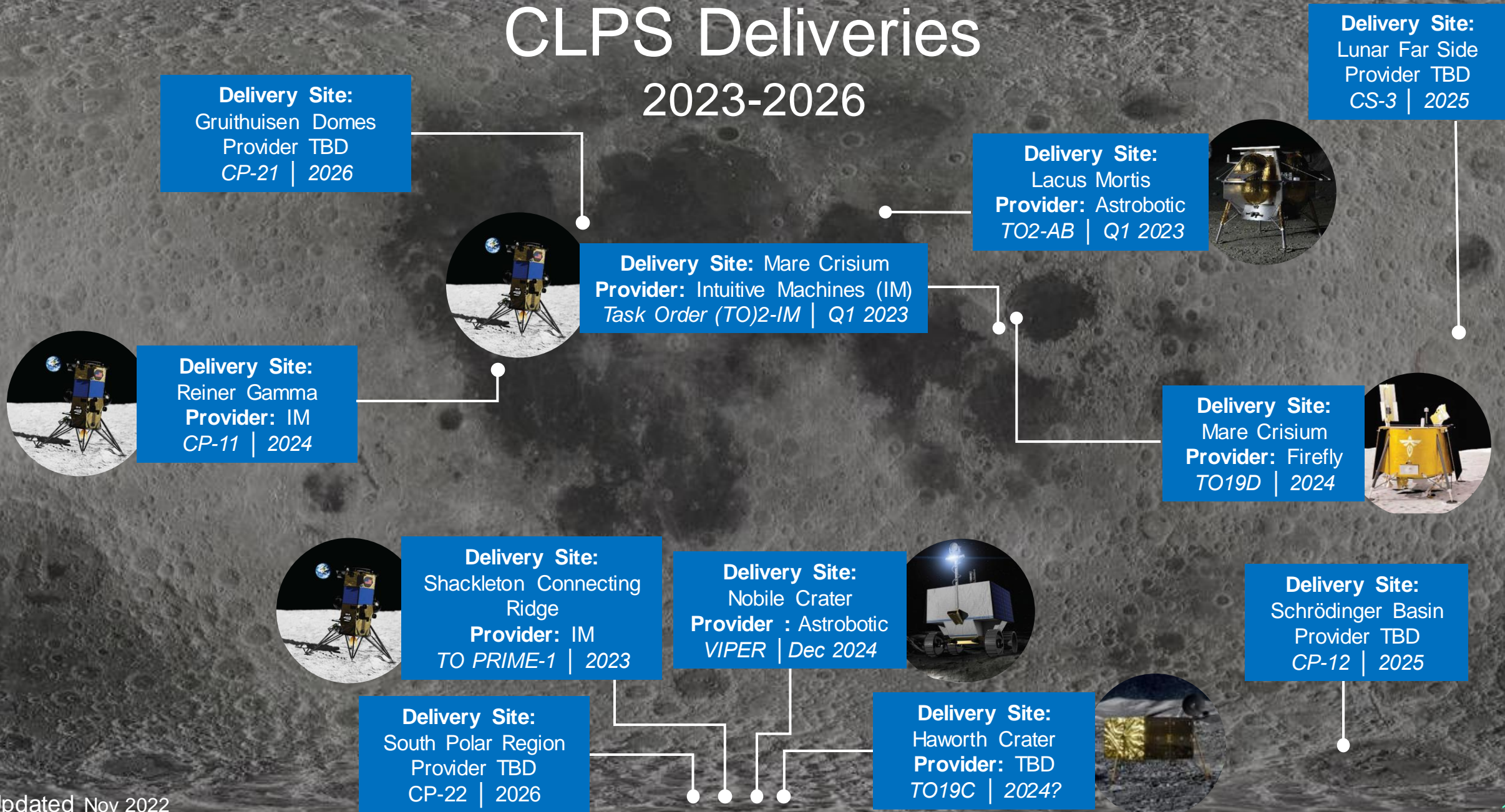


Mars Sample Return,  
LRDs: 2027, 2028



# CLPS Deliveries

## 2023-2026



# Key Ingredients to Leadership

- Consistency of purpose with alignment, bi-partisan support
- Focus on entire stakeholder communities – not just within NASA, but focused on commercial, international partners and eventually the science and application communities
- Drive towards new technologies and approaches – each mission should enhance the space new missions are conceived in
- Keep learning from mistakes. We will make mistakes, but please (!) not the same ones
- Bring the World along for the ride to inspire the next generation of explorers



# Habitable Worlds Observatory



## Three Priorities

- 1) Major progress is needed in Climate Science – towards regional forecast and including predictive analytics. This forces a closer integration of science and application domains. Commercial partnerships are a must.
- 2) Science is critical element of Artemis and international leadership, especially in presence of international competition. Must balance human and robotics approaches, do not put on collision course against each other.
- 3) Innovation both in technology and in overall approach is and remains critical for US leadership. Every mission needs to enhance what is possible in space.



EXPLORE

With Us