

National Aeronautics and  
Space Administration



# EXPLORE SCIENCE

SMD Quarterly  
Community Townhall

October 6, 2022

**Dr. Thomas H. Zurbuchen**

Associate Administrator

NASA Science Mission Directorate

 @Dr\_ThomasZ



NEWS &  
UPDATES



DIVISION  
HIGHLIGHTS



QUESTIONS &  
ANSWERS

# NASA SCIENCE MISSION DIRECTORATE

## OFFICE OF THE ASSOCIATE ADMINISTRATOR (DA000)



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Sandra Connelly



**Senior Advisor**  
Paul Hertz

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Kristen Erickson

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**DEPUTY**  
Kate Wolf

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**ASSISTANT DEPUTY ADMINISTRATOR**  
Dan Woods

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**ASSISTANT DEPUTY ADMINISTRATOR**  
Brad Bailey

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Michael New



**ASSISTANT DEPUTY ADMINISTRATOR**  
Dan Evans

### PROGRAMS



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Wanda Peters



**ASSISTANT DEPUTY ADMINISTRATOR**  
Christy Hansen

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**PROJECT MANAGER**  
Bill Ochs



**SENIOR SCIENCE ADVISOR**  
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**CHIEF TECHNOLOGIST**  
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**ASSOCIATE DIRECTOR**  
Jack Kaye



**ASSOCIATE DIRECTOR (Acting)**  
Katie Boggs

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**DEPUTY**  
Sandra Cauffman

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Craig Kundrot



**DEPUTY**  
Diane Malarik

### HELIOPHYSICS DIVISION (DJ000)



**DIRECTOR**  
Nicky Fox



**DEPUTY**  
Peg Luce



**ASSOCIATE DIRECTOR**  
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### JOINT AGENCY SATELLITE DIVISION (DN000)



**DIRECTOR**  
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**DEPUTY**  
Charles Webb

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**DIRECTOR**  
Lori Glaze



**ASSOCIATE DIRECTOR**  
Joan Salute



**DEPUTY**  
Eric Ianson



**CHIEF MARS SCIENTIST**  
Michael Meyer



**~31.9%**

**TOTAL BUDGET  
INCREASE**

**FY17: 5.76B**

**FY22: 7.6B**



**33**

**MISSIONS  
LAUNCHED**



**108**

**HIRES**



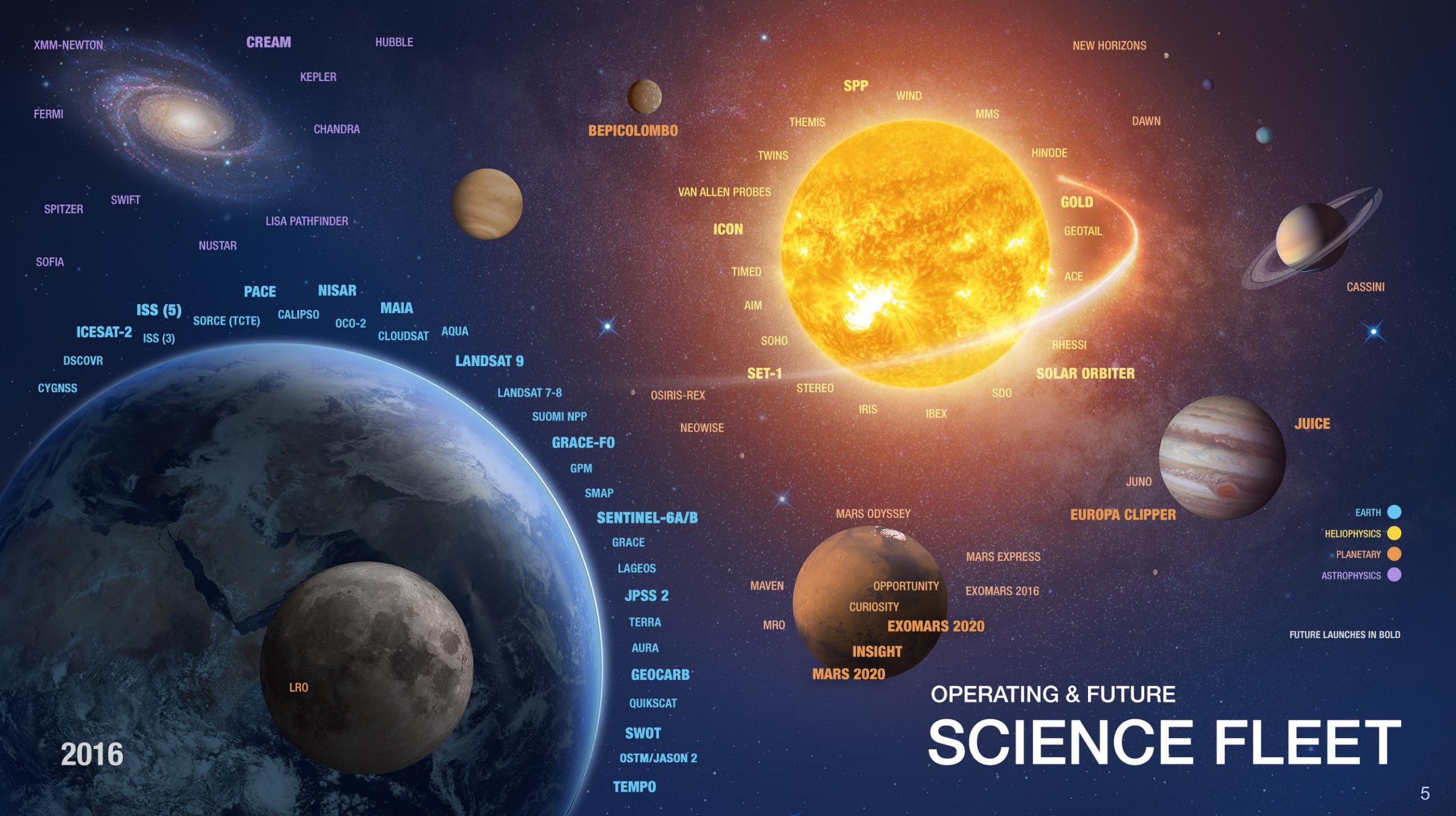
**47**

**MISSIONS  
SELECTED**



**7**

**CLPS  
SELECTED**



XMM-NEWTON

**CREAM**

HUBBLE

NEW HORIZONS

KEPLER

FERMI

CHANDRA

**BEPICOLOMBO**

**SPP**

WIND

MMS

DAWN

SPITZER

SWIFT

LISA PATHFINDER

VAN ALLEN PROBES

**GOLD**

GEOTAIL

SOFIA

NUSTAR

**ICON**

HINODE

CASSINI

**PACE**

**NISAR**

TIMED

ACE

**ISS (5)**  
**ICESAT-2**  
ISS (3)

SORCE (TCTE)

CALIPSO

OCO-2

**MAIA**

CLOUDSAT

AQUA

**LANDSAT 9**

AIM

SOHO

**SET-1**

STEREO

IRIS

IBEX

SDO

**SOLAR ORBITER**

RHESSI

CYGNSS

LANDSAT 7-8

OSIRIS-REX

NEOWISE

**GRACE-FO**

GPM

SMAP

**SENTINEL-6A/B**

GRACE

LAGEOS

**JPSS 2**

TERRA

AURA

**GEOCARB**

QUIKSCAT

**SWOT**

OSTM/JASON 2

**TEMPO**

STEREO

IRIS

IBEX

SDO

JUNO

**EUROPA CLIPPER**

**JUICE**

EARTH

HELIOPHYSICS

PLANETARY

ASTROPHYSICS

FUTURE LAUNCHES IN BOLD

2016

LRO

MAVEN

MRO

MARS ODYSSEY

OPPORTUNITY

CURIOSITY

**EXOMARS 2020**

**INSIGHT**

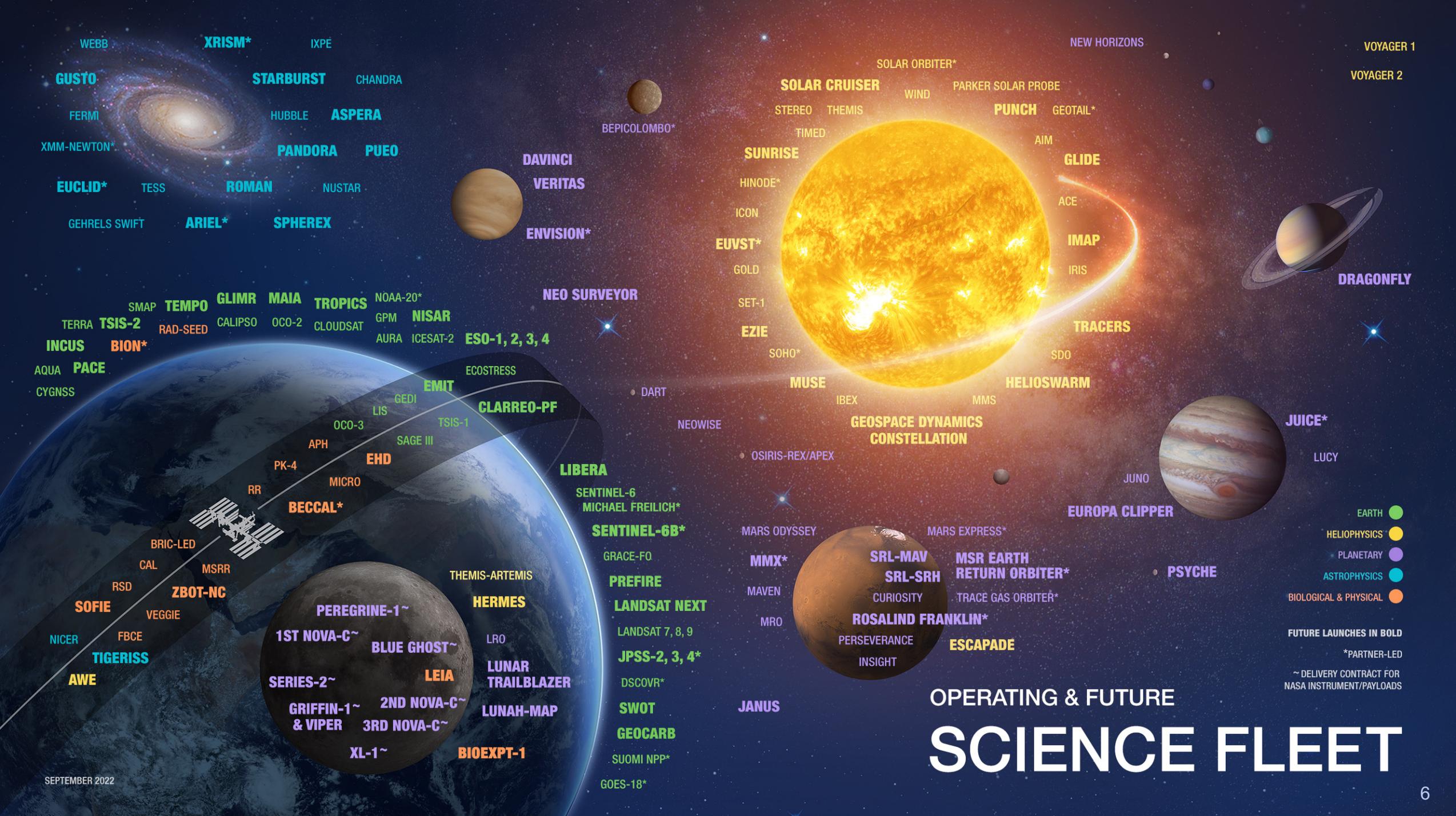
**MARS 2020**

MARS EXPRESS

EXOMARS 2016

OPERATING & FUTURE

# SCIENCE FLEET



WEBB XRISM\* IXPE  
 GUSTO STARBURST CHANDRA  
 FERMI HUBBLE ASPERA  
 XMM-NEWTON\* PANDORA PUEO  
 EUCLID\* TESS ROMAN NUSTAR  
 GEHRELS SWIFT ARIEL\* SPHEREX

SMAP TEMPO GLIMR MAIA TROPICS NOAA-20\*  
 TERRA TSIS-2 RAD-SEED CALIPSO OCO-2 CLOUDSAT GPM NISAR  
 INCUS BION\* AURA ICESAT-2 ESO-1, 2, 3, 4  
 AQUA PACE  
 CYGNSS  
 ECOSTRESS  
 EMIT  
 CLARREO-PF  
 OCO-3 LIS GEDI  
 APH SAGE III  
 PK-4 EHD  
 RR MICRO  
 BECCAL\*  
 BRIC-LED CAL MSRR  
 RSD ZBOT-NC  
 SOFIE VEGGIE  
 NICER FBCE  
 TIGERISS  
 AWE  
 PEREGRINE-1~  
 1ST NOVA-C~ BLUE GHOST~  
 SERIES-2~ LEIA  
 GRIFFIN-1~ 2ND NOVA-C~  
 & VIPER 3RD NOVA-C~  
 XL-1~ BIOEXPT-1  
 THEMIS-ARTEMIS  
 HERMES  
 LRO  
 LUNAR TRAILBLAZER  
 LUNAH-MAP

DAVINCI  
 VERITAS  
 ENVISION\*

NEO SURVEYOR

LIBERA

SENTINEL-6  
MICHAEL FREILICH\*

SENTINEL-6B\*

GRACE-FO

PREFIRE

LANDSAT NEXT

LANDSAT 7, 8, 9

JPSS-2, 3, 4\*

DSCOVR\*

SWOT

GEOCARB

SUOMI NPP\*

GOES-18\*

DART

NEOWISE

OSIRIS-REX/APEX

MARS ODYSSEY

MMX\*

MAVEN

MRO

JANUS

SOLAR ORBITER\*  
 SOLAR CRUISER  
 STEREO THEMIS WIND PARKER SOLAR PROBE

SUNRISE

HINODE\*

ICON

EUVST\*

GOLD

SET-1

EZIE

SOHO\*

MUSE

IBEX

MMS

GEOSPACE DYNAMICS  
CONSTELLATION

OSIRIS-REX/APEX

MARS ODYSSEY

MMX\*

MAVEN

MRO

JANUS

SRL-MAV

SRL-SRH

CURIOSITY

ROSA LIND FRANKLIN\*

PERSEVERANCE

INSIGHT

MSR EARTH  
RETURN ORBITER\*

TRACE GAS ORBITER\*

ESCAPADE

NEW HORIZONS

VOYAGER 1

VOYAGER 2

PUNCH

GEOTAIL\*

GLIDE

ACE

IMAP

IRIS

TRACERS

SDO

HELIOSWARM

JUNO

EUROPA CLIPPER

PSYCHE

JUICE\*

LUCY

DRAGONFLY

EARTH ●

HELIOPHYSICS ●

PLANETARY ●

ASTROPHYSICS ●

BIOLOGICAL & PHYSICAL ●

FUTURE LAUNCHES IN BOLD

\*PARTNER-LED

~ DELIVERY CONTRACT FOR NASA INSTRUMENT/PAYLOADS

# OPERATING & FUTURE SCIENCE FLEET

# NASA Science Accomplishments

1. Built SMD Leadership team to perform at highest standard
2. Prioritized and committed to creating the best teams we can, which requires a diverse and inclusive workforce
3. Committed to innovation as a guiding value to achieve leadership
4. Established partnership with human exploration and space tech towards an integrated Artemis program
5. Integrated Biological and Physical Sciences division into SMD
6. Established novel partnerships with commercial entities, enabling new science and better science value (CLPS, Commercial data buys, service models, small launch, etc. )
7. Strengthened partnerships with established and emerging space agencies by implementing a strategic vision for international collaboration that advances science

# NASA Science Accomplishments

1. Increased emphasis on High-Risk / High-Impact Science within the R&A Program and technology demonstrations
2. Infused SmallSat capabilities into science missions
3. Launched 18+ novel Earth Science missions, focused on ice, sea level, CO2, etc.
4. Established the Earth Systems Observatory as the next generation and integrated capability
5. Parker Solar Probe, Heliophysics Observatory
6. Perseverance and Ingenuity, Successful start of Mars Sample Return
7. James Webb Space Telescope in operation, Roman on track
8. Planetary defense, including DART and NEO-Surveyor
9. Return to Venus
10. ...



NEWS &  
UPDATES



DIVISION  
HIGHLIGHTS



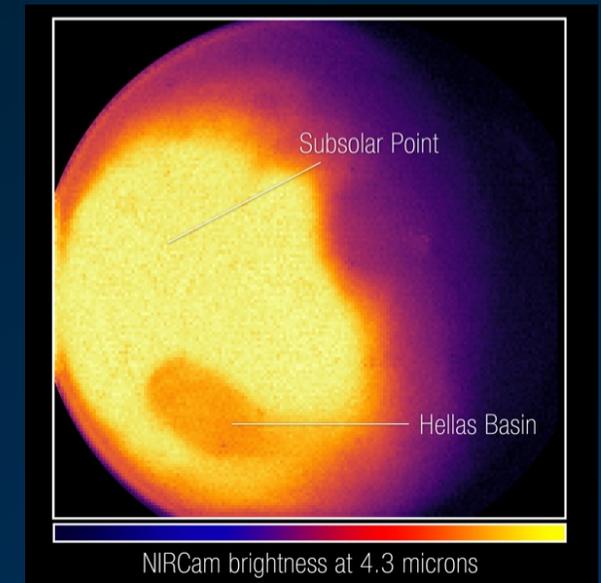
QUESTIONS &  
ANSWERS

# Division Highlights

- Astrophysics – Mark Clampin
- Biological and Physical Sciences (BPS) – Craig Kundrot
- Heliophysics – Nicky Fox
- Planetary Science – Lori Glaze
- Earth Science Division – Julie Robinson

# Astrophysics Division Highlights

- Selected four Explorer Program missions for Step 1 studies:
  - MIDEx: Ultraviolet Explorer (UVEX)
    - Survey and Time-domain Astrophysical Research Explorer (STAR-X)
  - MOs: Moon Burst Energetics All-sky Monitor (MoonBEAM)
    - Large Area Burst Polarimeter (LEAP)
- Trans-Iron Galactic Element Recorder for the International Space Station (TIGERISS) has been chosen as the latest NASA Astrophysics Pioneers mission
- SOFIA completed its science mission on September 30 after more than 12 years in operation (first light May 26, 2010)
- The 2022 Fort Sumner fall Balloon Campaign successfully conducted:
  - 2 engineering test flights (Salter, Mullenax)
  - Student experiment platform flight (HASP)
  - Heliophysics flight (BALBOA)
  - 2 astrophysics flights (PICTURE-C, TINMAN)
- Next Astrophysics Advisory Committee (APAC) meeting is October 17-18, 2022



*Webb's first images of Mars, captured by its NIRCam instrument Sept. 5, 2022 [Guaranteed Time Observation Program 1415]*



*Teams prepare the hand-launch balloon for the TinMan mission. Ft. Sumner, NM, September 22*

# BPS Division Highlights

## Launches:

- Artemis I (TBD): yeast, fungi, algae, and seeds (BioExpt-01)
- NG-18 (NET Nov. 6): multi-generational plant experiment (Plant Habitat-03)
- SpX-26 (NET Nov. 15): materials science (FAMIS), bacteria (BRIC-26), plants (Veg-05)

## Events:

- NASEM Committee on Biological and Physical Sciences in Space (CBPSS) Oct. 19-21
- American Society for Gravitational and Space Research (ASGSR) conference Houston, TX, Nov. 9-12
- Inaugural Biological and Physical Sciences Advisory Committee (BPAC) meeting Nov. 15-16

## Solicitations and selections:

- BPS has three upcoming selections and solicitations, find out more [HERE](#)

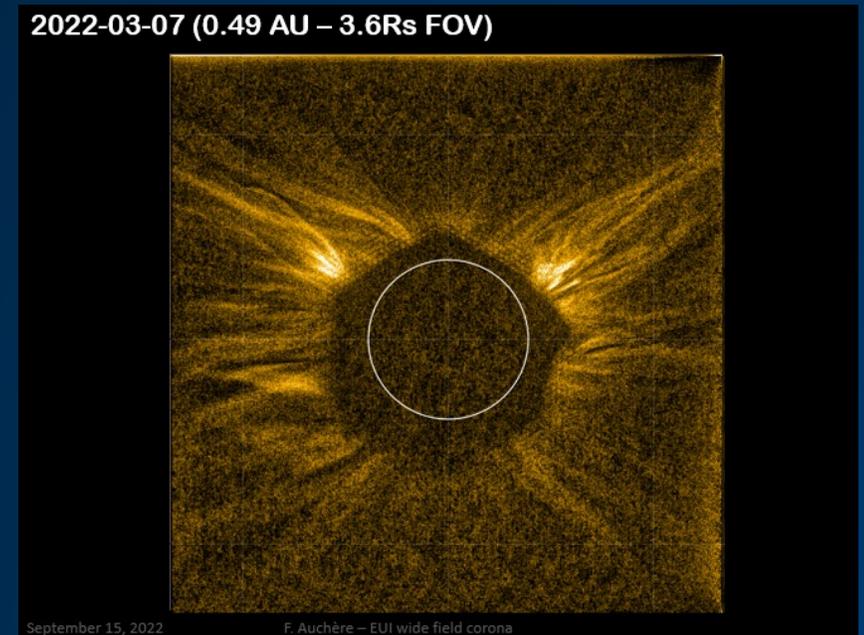


# Heliophysics Division Highlights

- NASA Sounding Rocket Symposium August 15-19 and HPD leadership visit to Wallops Flight Facility
- New image taken by Solar Orbiter Extreme Ultraviolet Imager (EUI)
- Two 2022 Explorers Final Announcements of Opportunity Released September 7
- GDC Internal Review Board Findings and Response
- Heliophysics Community Town Hall October 24



HPD Leadership visit to WFF in August 2022



Captured from Solar Orbiter Extreme Ultraviolet Imager

# Planetary Science Division Highlights

## DART:

- Successful Dimorphos impact on September 26!

## InSight

- Available power continues to drop – science operations expected to cease sometime this fall
- For latest updates: <https://blogs.nasa.gov/insight/>

## Psyche (Janus)

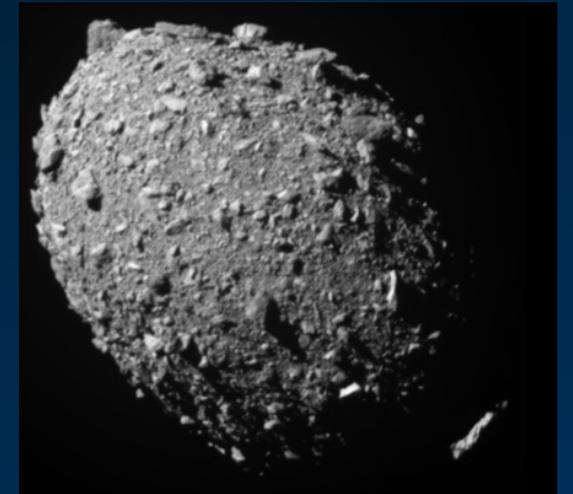
- Continuation/termination review will take place early November 2022

## ESSIO

- [Payloads and Research Investigations on the Surface of the Moon 3 \(PRISM-3\)](#) call is open: Step-1/Step-2 proposals due Oct 24/Dec 20, 2022

## Mars Sample Return

- Working to certify 'Three Forks' in Jezero Crater as location for initial Perseverance sample cache depot, i.e., potential landing site for the Sample Retrieval Lander (SRL)



Dimorphos

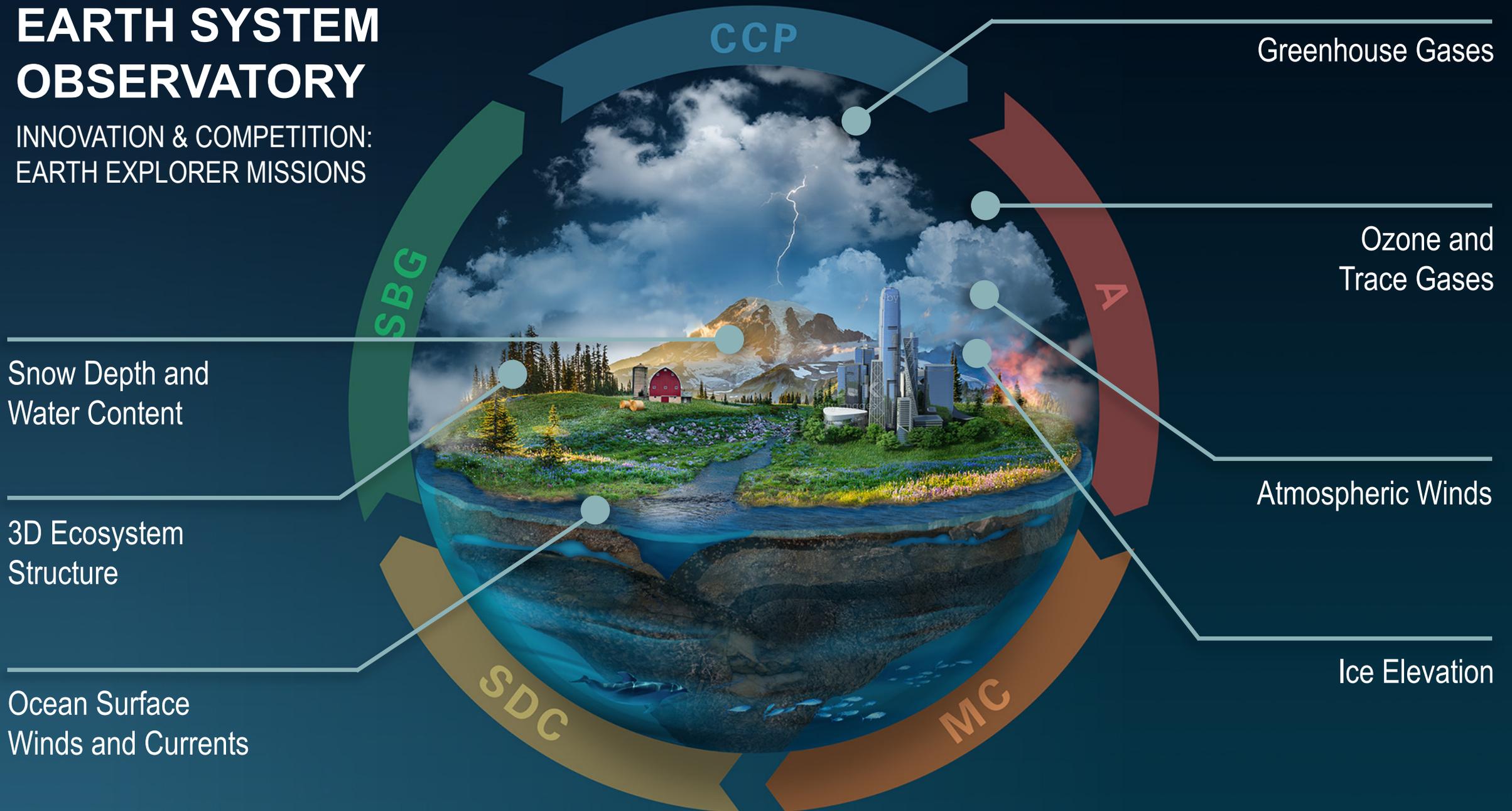


Last complete image (~100 ft across) from DRACO. Taken ~7 miles from impact and 2 seconds before impact



# EARTH SYSTEM OBSERVATORY

INNOVATION & COMPETITION:  
EARTH EXPLORER MISSIONS





NEWS &  
UPDATES



DIVISION  
HIGHLIGHTS



QUESTIONS &  
ANSWERS

# EXPLORE



With Us