



National Aeronautics and
Space Administration

NASA SCIENCE

Committee on Astrobiology and
Planetary Sciences

Gina DiBraccio, Ph.D.

NASA Planetary Science Division Director (Acting)

October 21, 2024



PSD LEADERSHIP UPDATES



Gina DiBraccio, PSD Director (Acting)



*Eric Ianson, PSD Deputy
Director/MEP Director/RPS
Director*



*Shannon Fitzpatrick,
Associate Director for Flight
Programs*



*Kathleen Vander Kaaden,
PSD Director of Research
Programs (Acting)*



*Kelly Fast, Planetary Defense
Officer (Acting)*



*Lindsay Hays, Senior
Scientist for Mars
Exploration*



*Becky McCauley-Rench,
Program Scientist for
Astrobiology (Acting)*



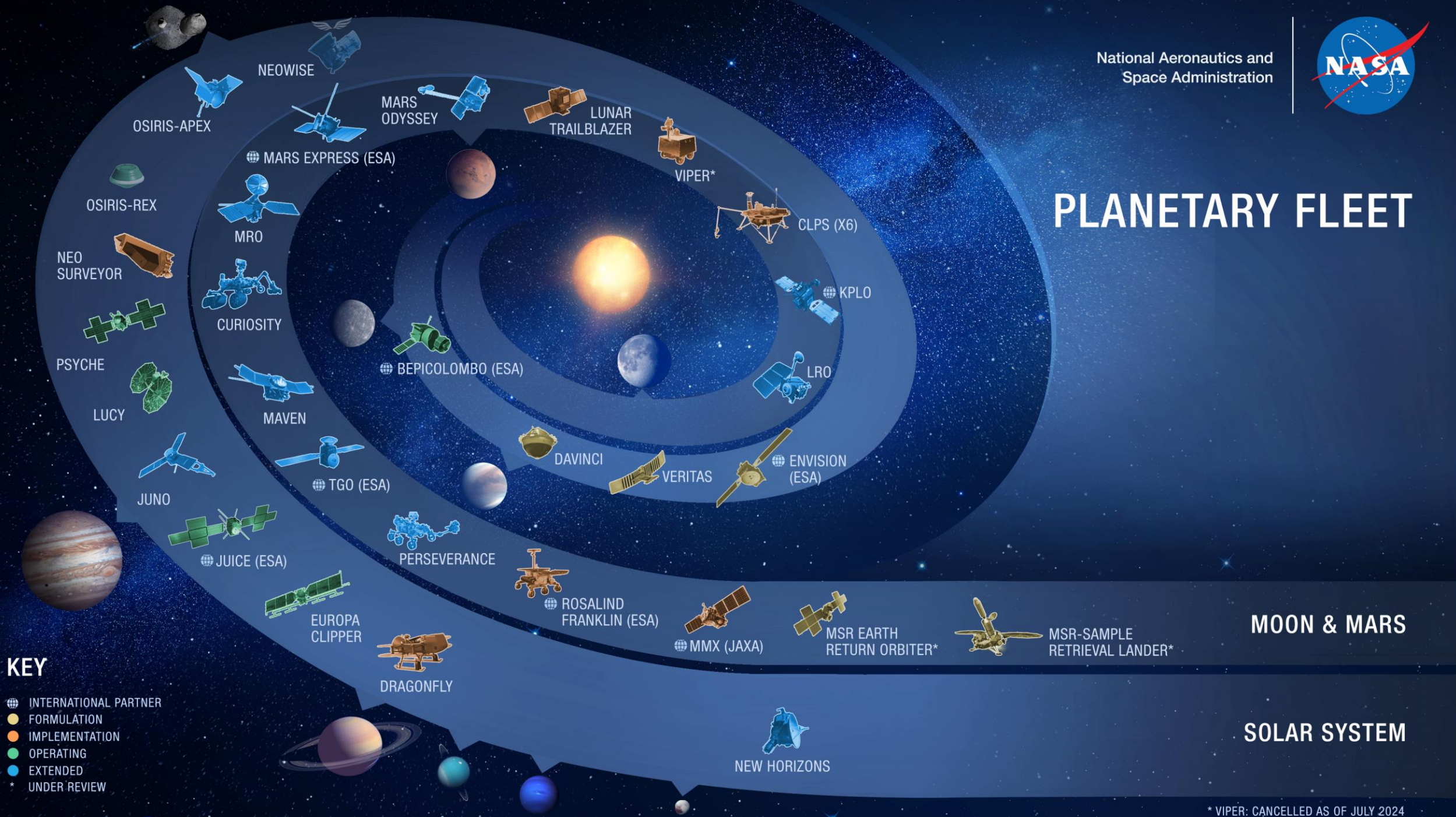
*Delia Santiago-Materese,
Discovery Program Scientist*



Mission Updates



PLANETARY FLEET



Europa Clipper

Launched: October 14, 2024

Jupiter orbit insertion: April 2030





Hera launched!

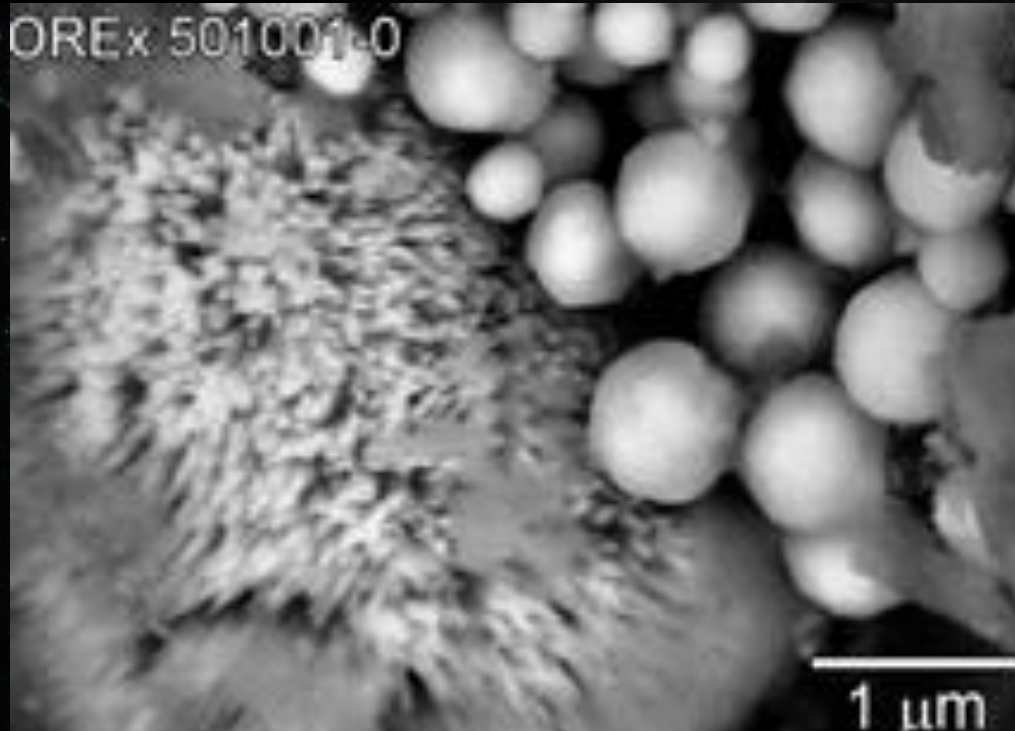
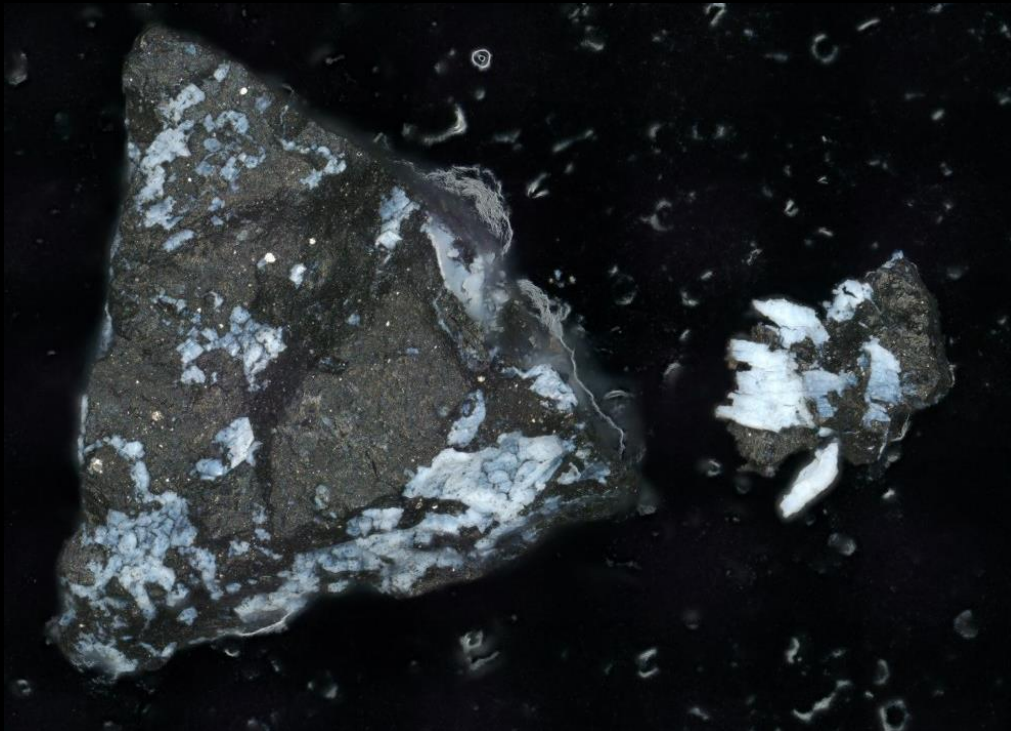




OSIRIS-REx: Sample Surprises

Sample catalog: <https://curator.jsc.nasa.gov/osirisrex/index.cfm>

Lauretta et al., 2024, Asteroid (101955) Bennu in the laboratory: Properties of the sample collected by OSIRIS-REx, *Meteoritics & Planetary Science* ([doi:10.1111/maps.14227](https://doi.org/10.1111/maps.14227))



Top: Sample exchange with JAXA in August 2024

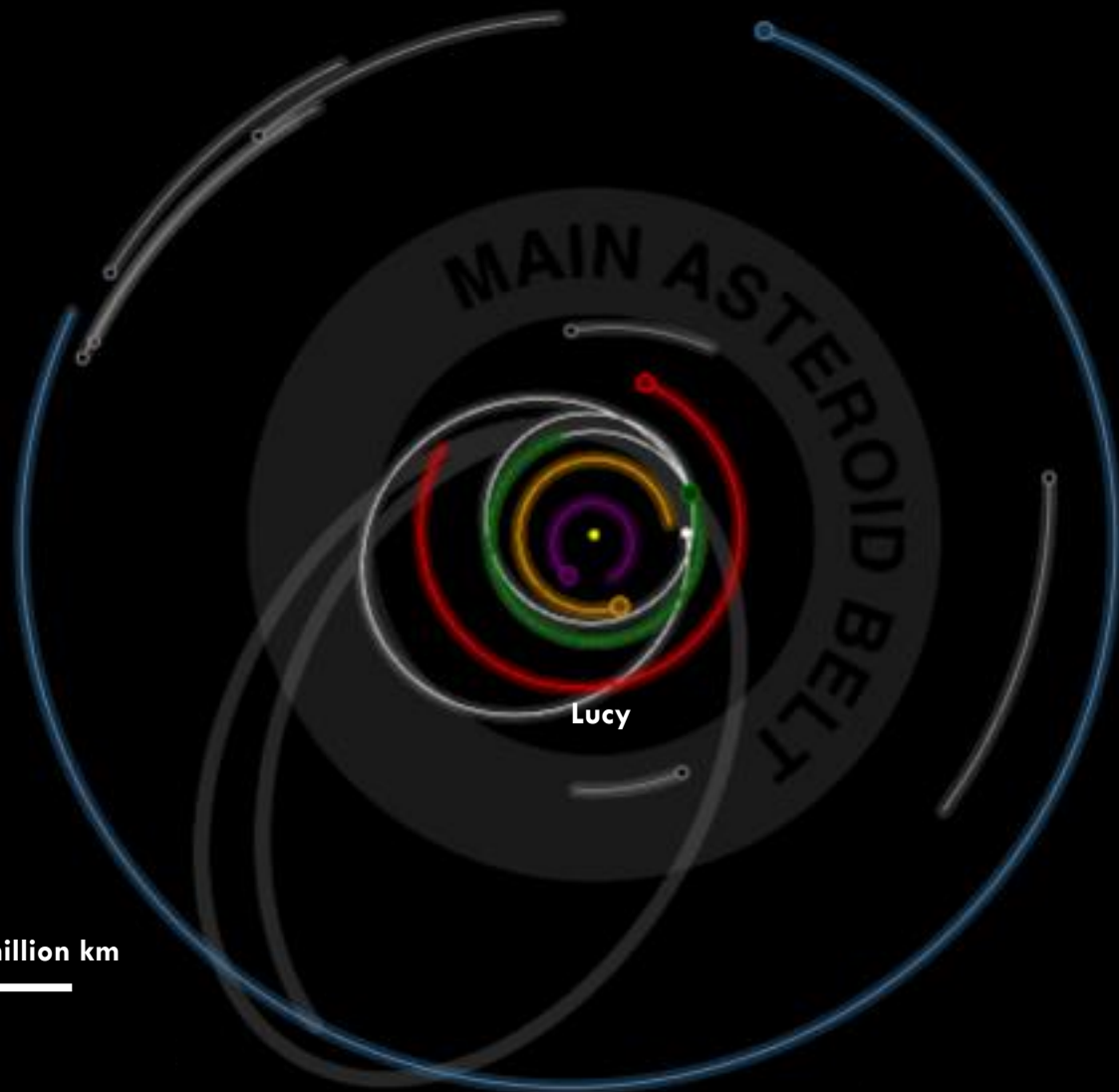
Left: Bennu particle (about 1 mm long) with crust of bright phosphate

Right: Magnetite spheres with radially projecting needles next to dodecahedral crystals



Lucy

150 million km



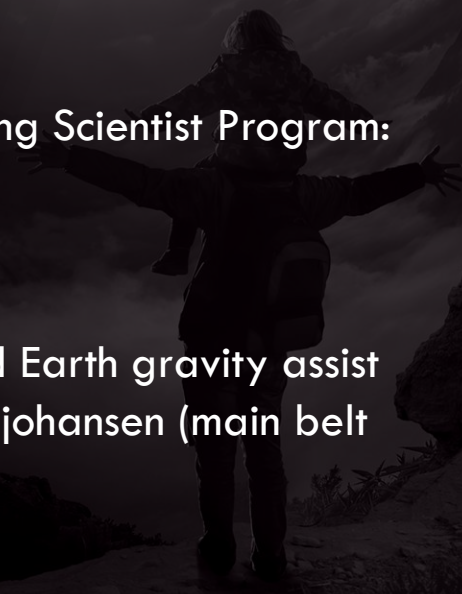
Dinkinesh Encounter:

- Paper focused on Dinkinesh encounter: Levison et al., 2024, A contact binary satellite of the asteroid (152830) Dinkinesh, *Nature* ([doi:10.38/s41586-024-0378-0](https://doi.org/10.38/s41586-024-0378-0))
- Dataset is now in PDS and in scope for DDAP in ROSES-2024

Lucy in the L4 Trojans Participating Scientist Program: proposals under review

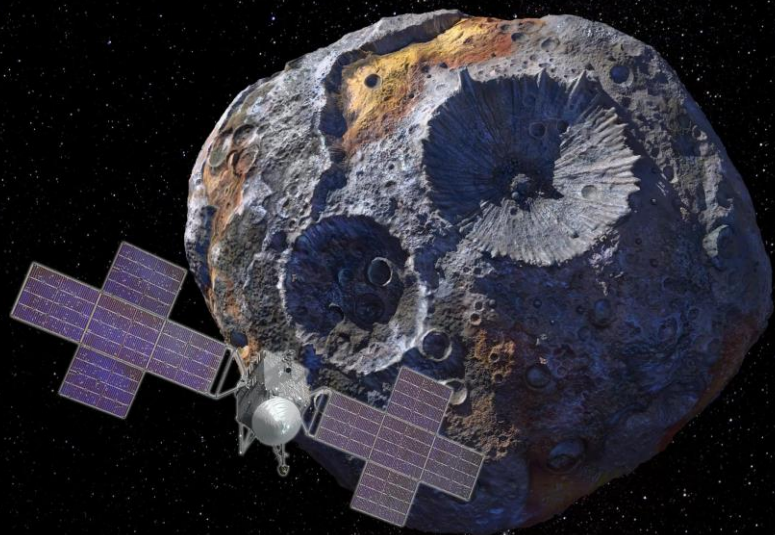
Upcoming events:

- December 12, 2024: Second Earth gravity assist
- April 2025: Flyby of Donaldjohansen (main belt asteroid)
- 2027: Start of Trojan tour





Psyche

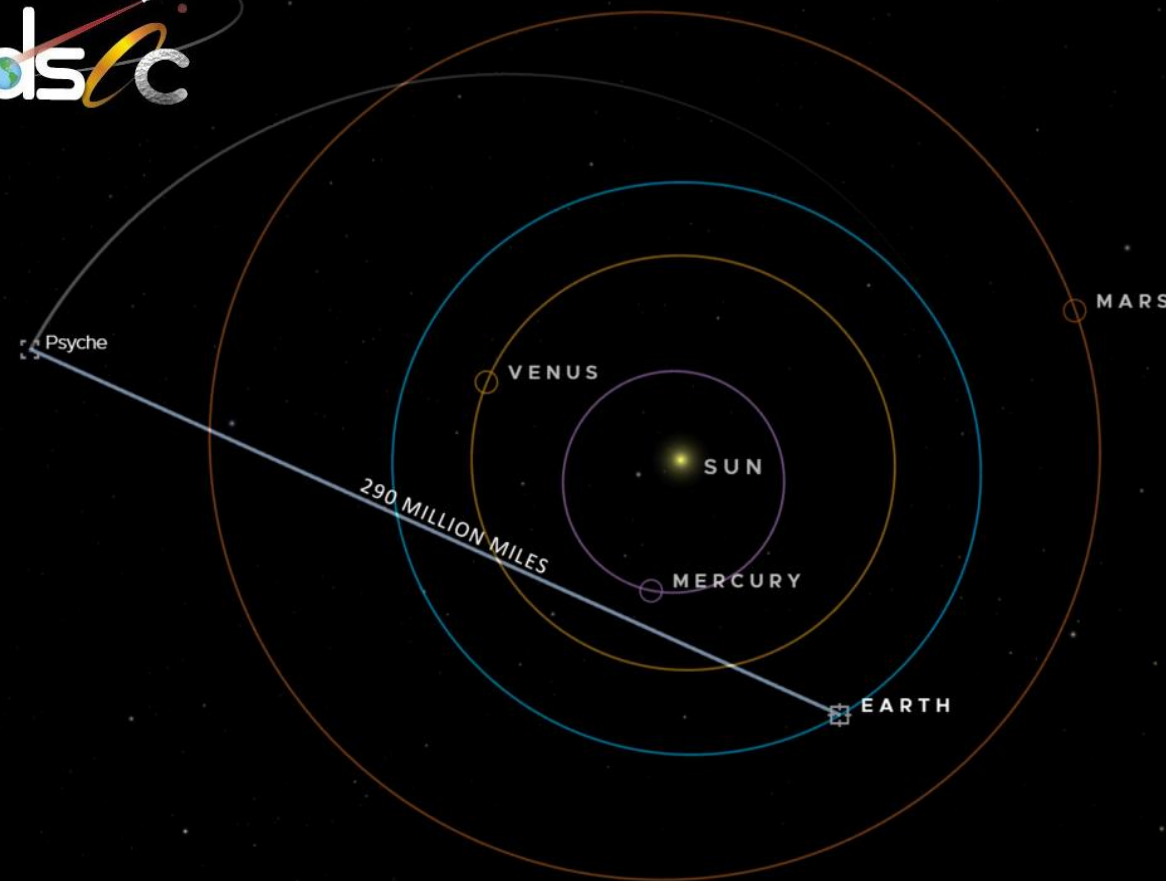


Upcoming events:

- May 2026: Mars gravity assist
- August 2029: Arrival at Psyche



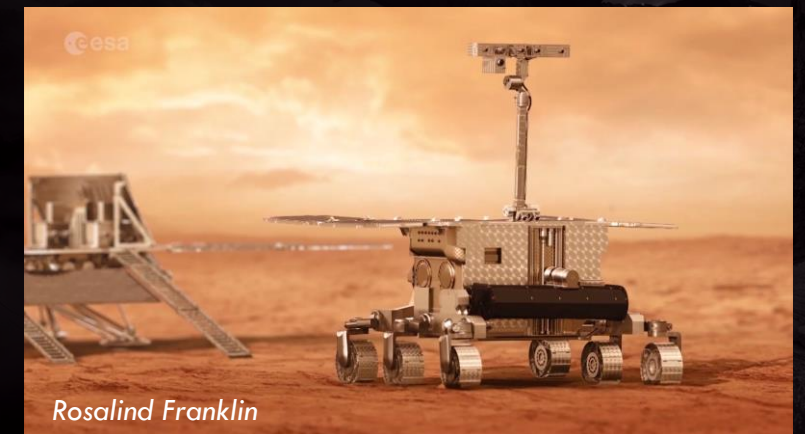
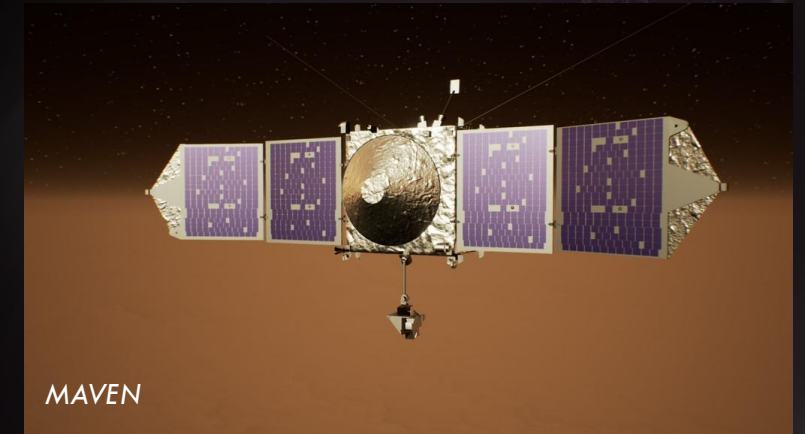
JULY 29, 2024



Deep-Space Optical Communications (DSOC) experiment on Psyche transmitted a message from a distance of 460 million km on July 29, 2024

Mars Updates

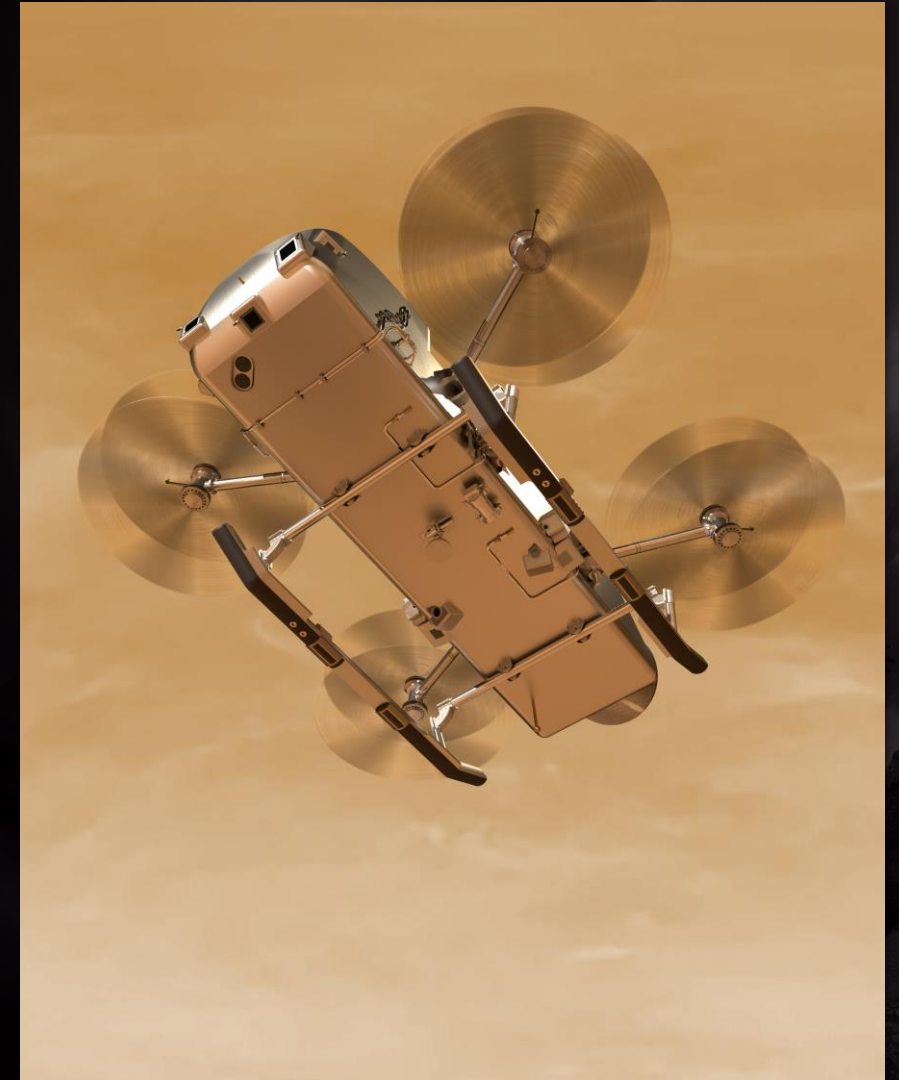
- MAVEN celebrated 10 years in orbit around Mars on September 21!
- Perseverance: traveled >31 km and collected 25 samples (and 3 witness tubes)
- **Rosalind Franklin Mission**
 - NASA and ESA signed Memorandum of Understanding (MOU) in May – formally expanded NASA's contributions:
 - Launch vehicle: acquisition process has started
 - MOMA instrument elements
 - Radioisotope heater units
 - Engines for descent module
 - Navigation support
 - NASA's Rosalind Franklin Support and Augmentation (ROSA) project passed KDP-A/B and is now in Phase B
 - Preliminary Design Review (PDR) will be held in December
- Feedback on Mars Future plan has been incorporated and will be sent to internal NASA stakeholders for review soon – roll-out planned at AGU



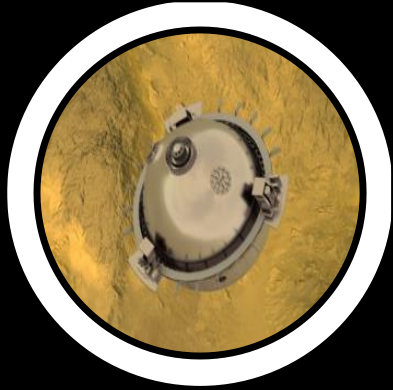
Dragonfly



- In November 2023, the Agency postponed formal confirmation of mission until release of FY25 President's Budget Request (PBR)
- With the release of FY25 PBR, Dragonfly was confirmed on April 16, 2024
 - Mission has proceeded into Phase C
 - Launch Readiness Date: July 2028
- Project is now working towards Mission Critical Design Review (CDR) in April 2025
 - Subsystem CDRs are ongoing
- Launch Vehicle Procurement is underway, and selection is on schedule for Fall 2024



Back to Venus



DAVINCI (2031/2032)

*Deep Atmosphere Venus Investigation of Noble
Gases, Chemistry, and Imaging*



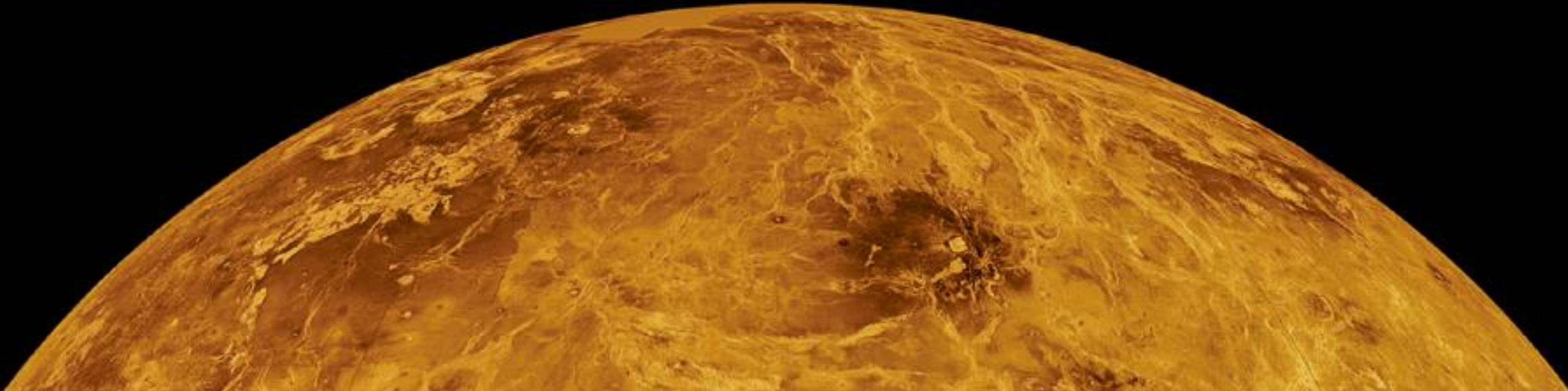
Envision (2031)

*ESA Medium-Class Mission
NASA contribution includes VenSAR
(Synthetic Aperture Radar)*



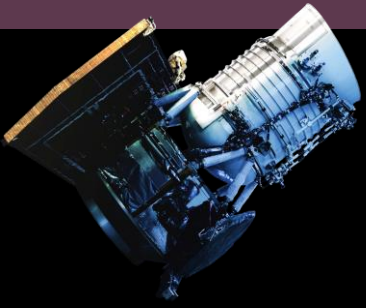
VERITAS (2031/2032)

*Venus Emissivity, Radio Science,
InSAR, Topography, & Spectroscopy*





Planetary Defense



Farewell to NEOWISE!



Final NEOWISE image showing part of Fornax constellation (July 31, 2024)



Comet NEOWISE in 2020

NEO Surveyor

- Progressing towards Project Critical Design Review (CDR) in February 2025
 - Mission System CDR being held late October 2024
 - Spacecraft CDR scheduled for early December
- Good progress being made in flight hardware build and assembly
- LRD: September 2027



NEO Surveyor mirrors undergoing inspection (top) and telescope optical bench under construction (right) at JPL, August 2024



Comet Tsuchinshan-ATLAS

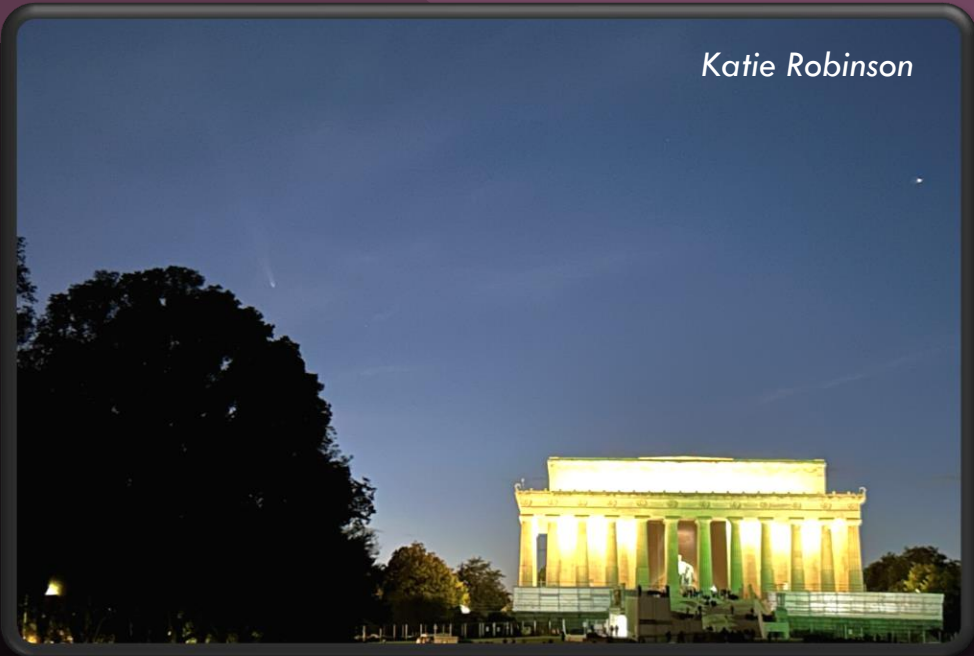
Hannah Jang-Condell



Kelly Fast



Katie Robinson



Henry Throop



Apophis Plans

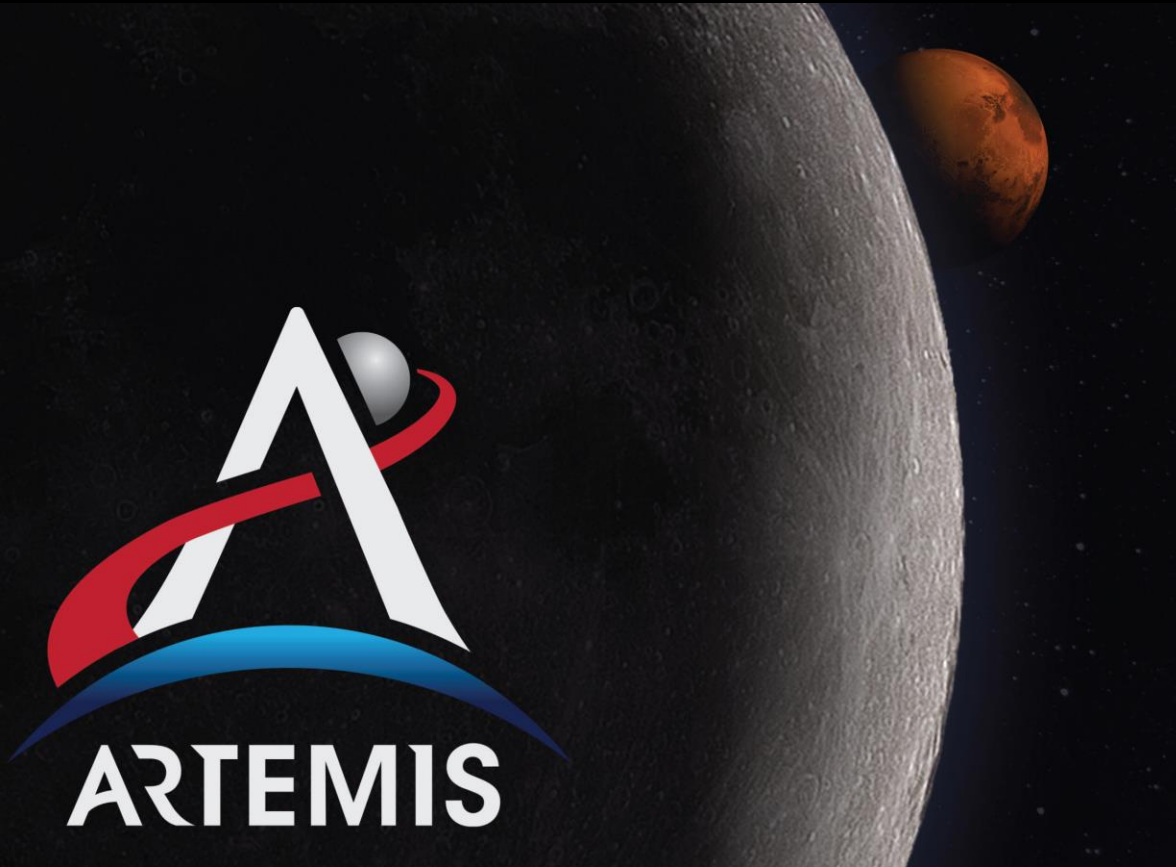
- Apophis close Earth encounter provides a unique opportunity for planetary defense and planetary science
- Excited for ESA's RAMSES mission
 - In 'preparation' phase until 2025 ESA ministerial
 - NASA is exploring options to contribute to the mission
- Request for Information (RFI): Apophis 2029 Innovation (A291) Using the Janus Spacecraft
 - Responses due October 28
- Coordination on mission planning and ground-based observations are encouraged through International Asteroid Warning Network (IAWN)
- OSIRIS-APEX continues successful flight operations:
 - Apophis rendezvous: June 2029 (after Apophis' closest approach to Earth)





Lunar Activities

Lunar Science Updates



- **Integrated Lunar Science Strategy:** Final version coming soon
- Lunar Terrain Vehicle Instruments Program (F.13) **Step-1 proposals due October 23**
- Payloads and Research Investigations on the Surface of the Moon (PRISM): Stand-Alone Landing Site-Agnostic (SALSA) draft (F.11) has been released – **final solicitation coming soon**
- SSERVI CAN-5 draft expected November/December

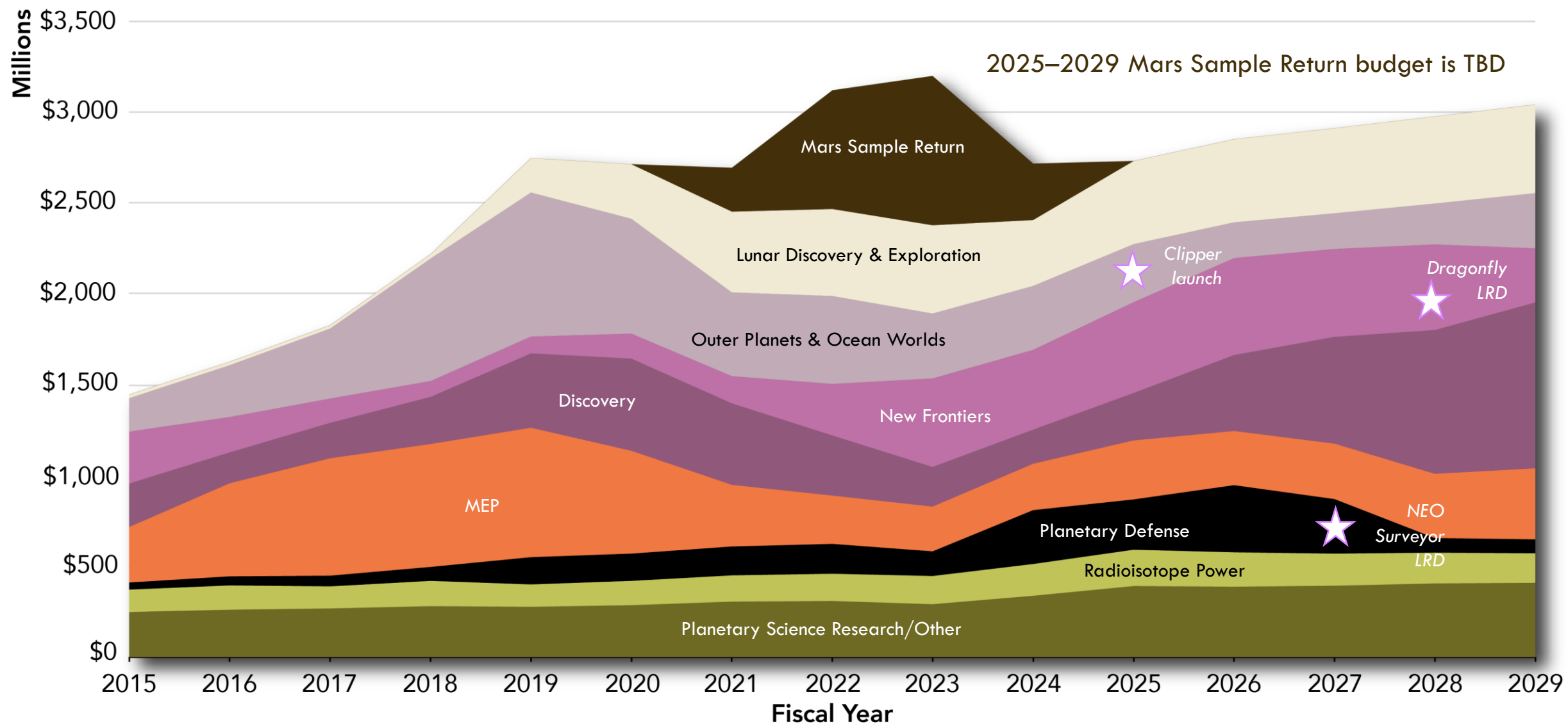
Upcoming Studies

- South Pole-Aitken Basin Sample Return and eXploration (SPARX) Science Definition Team call for nominations expected by the end of October (will be open for 30 days)
- NASEM study on key destination across the Moon to address Decadal-level Science Objectives with Human Explorers – study task approved



Budget

PSD BUDGET 2015–2029



2018–2024: Enacted

2025–2029: From President's Budget Request (PBR)



Future Mission AOs

- Next New Frontiers (NF) AO final release will be no earlier than 2026
 - NASA is awaiting response from NASEM Committee on Astrobiology and Planetary Sciences (CAPS) on assessment of the target list for the next NF AO (considering the lists for NF5 and NF6)
- PSD will hold two peripheral meetings at LPSC regarding NF5
- Unlikely to be solicitations for Discovery or SIMPLEx in the next two years



Community

Community Updates

- **Dual Anonymous Peer Review** (DAPR) will be the default style for all ROSES-2025 program elements
- ROSES-2023 was third full year of **No Due Date** (NoDD) experiment in select PSD research programs
 - Analysis and evaluation of NoDD is underway to determine if it will be used in ROSES-2025
- Eight new facilities selected through **Planetary Science Enabling Facilities** program (ROSES-2024, C.17)
 - PSD-supported facilities: <https://science.nasa.gov/researchers/planetary-science-enabling-facilities>
- ROSES-2024 **Planetary Science Early Career Award** (C.18) proposals due December 5, 2024
 - Read solicitation carefully for eligibility requirements
- Independent Study Team has reviewed NASA Postdoctoral Program (NPP)
 - NASA has received draft report and is formulating the response; these will be made public once review of recommendations is completed
- Upcoming meetings:
 - Planetary Science Advisory Committee (PAC): November 12–13, 2024
 - AGU PSD townhall: December 11, 2024 at 12.30 pm Eastern

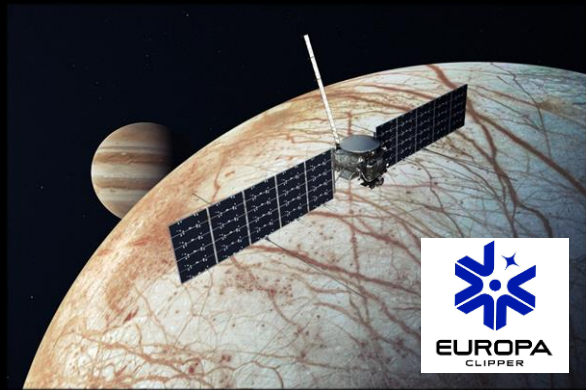


PSD IDEA Activities

Many things going on, including:

- Planning 1st NASA Engagement Day at NASA HQ with local HBCUs, MSIs, community colleges (February 2025)
- PSD participation in:
 - Annual conferences:
 - National Society of Black Physicists (NSBP)/National Society of Hispanic Physicists (NSHP)
 - American Indian Science and Engineering Society (AISES)
 - Society for the Advancement of Chicanos/Hispanics and Native Americans in Science (SACNAS)
 - 2024 Advancing IDEA in Planetary Science conference (this week)
- NSBP/NSHP Student leadership and Development summit: supporting leadership development at HBCUs and MSIs

Here to Observe (H2O) Program – New Teams Added



Ohio & Puerto Rico Space Grant Consortia
Robert Romero (Ohio Aerospace Institute)
Prof. Gerardo Morell (U. of Puerto Rico)
Dr. Rachel Klima (Europa Clipper Liaison)



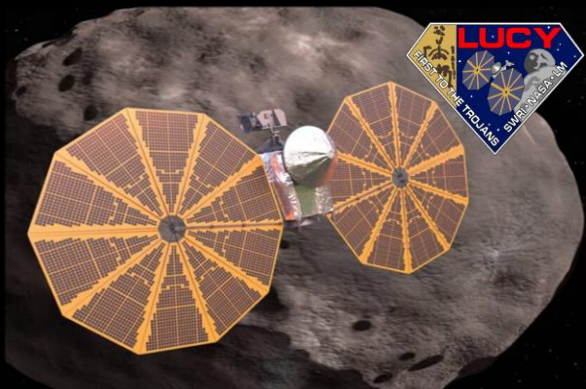
Kingsborough Community College
Prof. Steven Jaret (KBCC)
Dr. Alexandra Pontefract (Dragonfly Liaison)



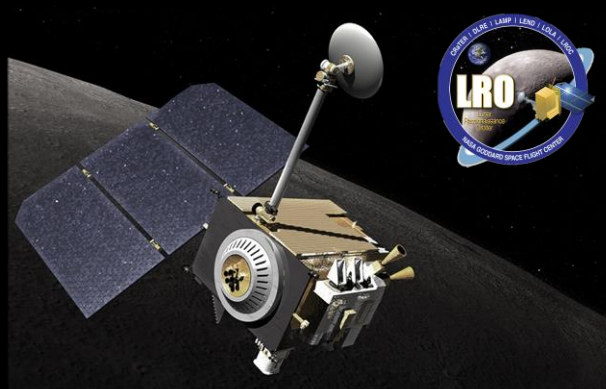
New Mexico State University
Prof. Nancy Chanover (NMSU)
Dr. Erika Kohler (DAVINCI Liaison)



Kutztown University
Prof. Erin Kraal (KU)
Nicole Spanovich (M2020/Perseverance Liaison)



Univ. of Arkansas at Pine Bluff
Prof. Richard Walker (UAPB)
Dr. Katherine Kretke (Lucy Liaison)



New Mexico Institute of Mining & Tech.
Prof. Raúl Morales-Juberías (NMT)
Francisco Andolz (LRO Liaison)



Virginia State University
Prof. Dawit Haile (VSU)
Dr. Ashwin Vasavada (Curiosity Liaison)



California State University, Channel Islands
Prof. Kevin Hayakawa (CSUCI)
Dr. Amy Mainzer (NEO Surveyor Liaison)

Europa ICONS

- Inspiring Clipper: Opportunities for Next-generation Scientists
- New NASA internship program (2024 inaugural year)
- Goals: **To develop and sustain a Europa Science community that represents the diversity of the US population by the time of Clipper's Jupiter orbit insertion and to poise these next generation scientists to lead the extended mission**
- Mentors: Europa Clipper science team members
- Student interns spend summer at mentors' institutions and do real science
- In 2024:
 - 40 students (3 of whom also involved with H₂O), from 17 states and Puerto Rico





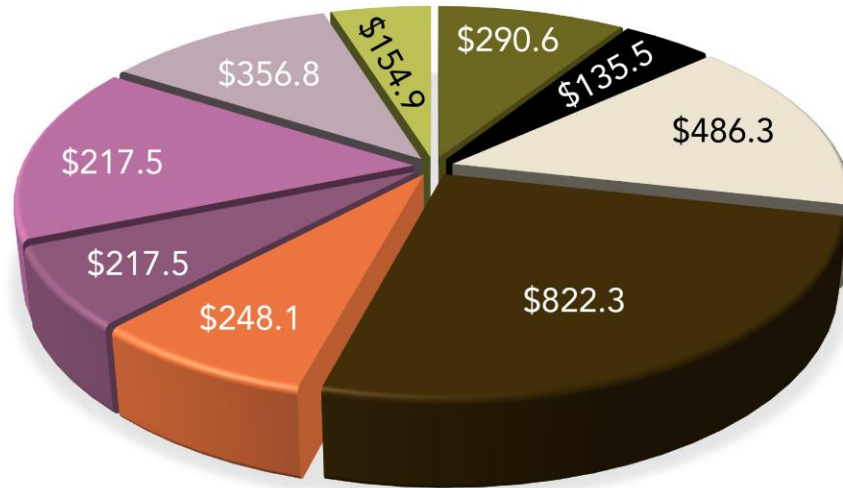
Lastly



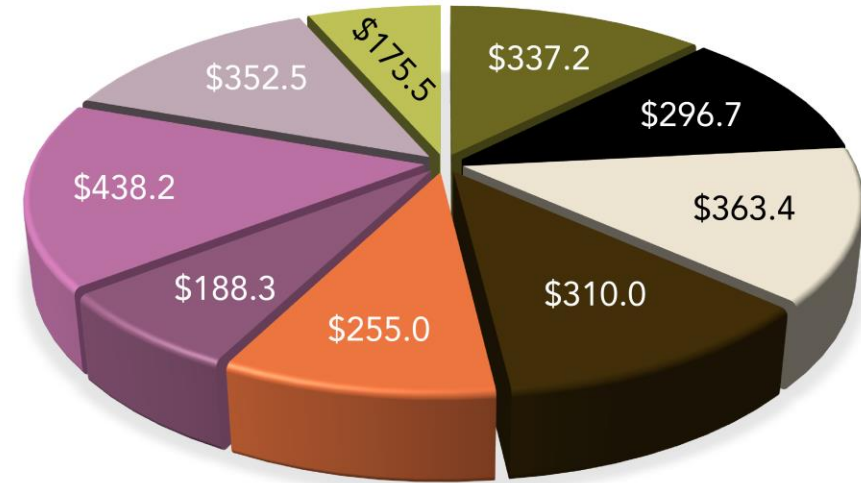
Through the Eyes of NASA



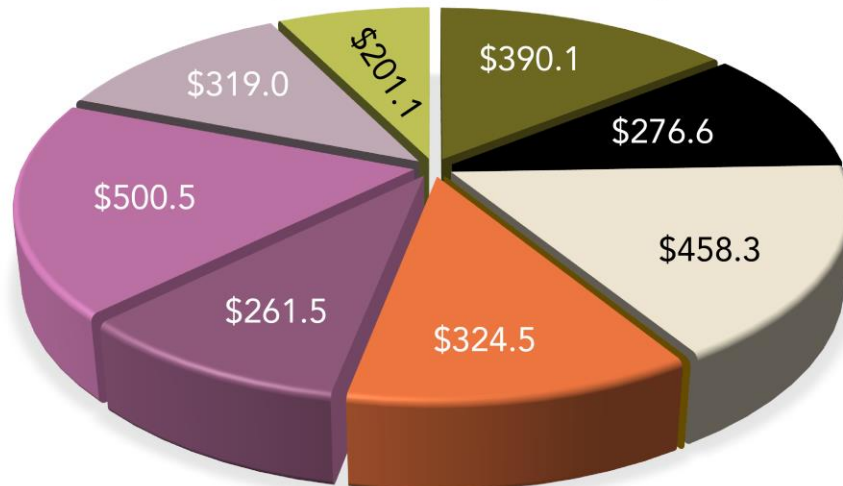
FY23 Actual (Total: \$3,200.0M)



FY24 Actual (Total: \$3,383.2M)



FY25 Request (Total: \$2,565.8M)



2025 Mars
Sample Return
budget is TBD

- Planetary Science Research/Other
- Planetary Defense
- Lunar Discovery and Exploration
- Mars Sample Return
- Mars Exploration
- Discovery
- New Frontiers
- Outer Planets & Ocean Worlds
- Radioisotope Power