



Jet Propulsion Laboratory
California Institute of Technology

Show Me the Planets! ***NASA's Search for Exoplanets and for Life in our Galaxy***

Dr. Gary H. Blackwood

Manager, NASA Exoplanet Exploration Program

Jet Propulsion Laboratory

California Institute of Technology

February 2, 2019

The Queens Space Conference

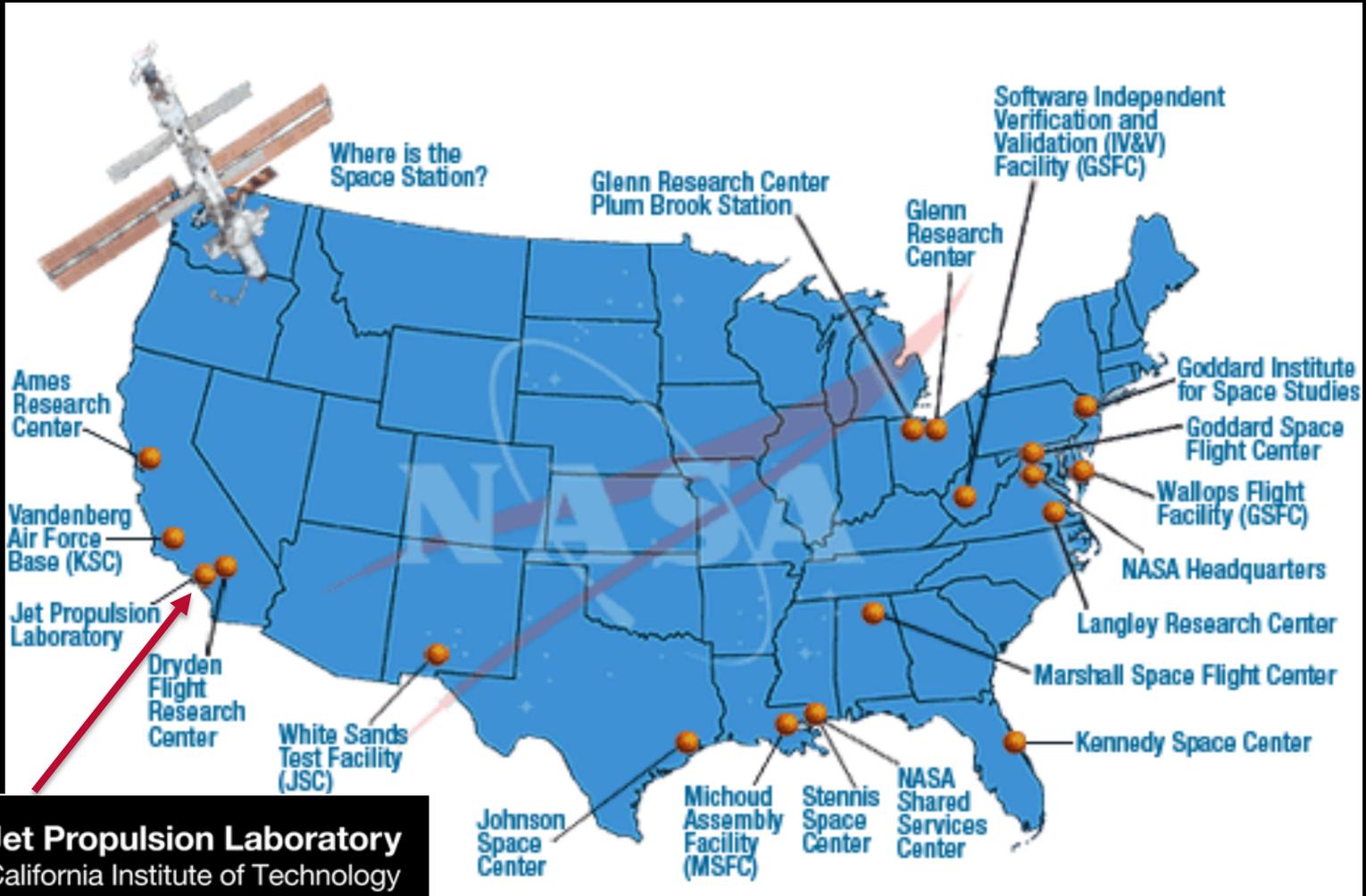
Queens University, Kingston, Ontario





NASA Highlights

Where's NASA?



Jet Propulsion Laboratory
California Institute of Technology



Caltech

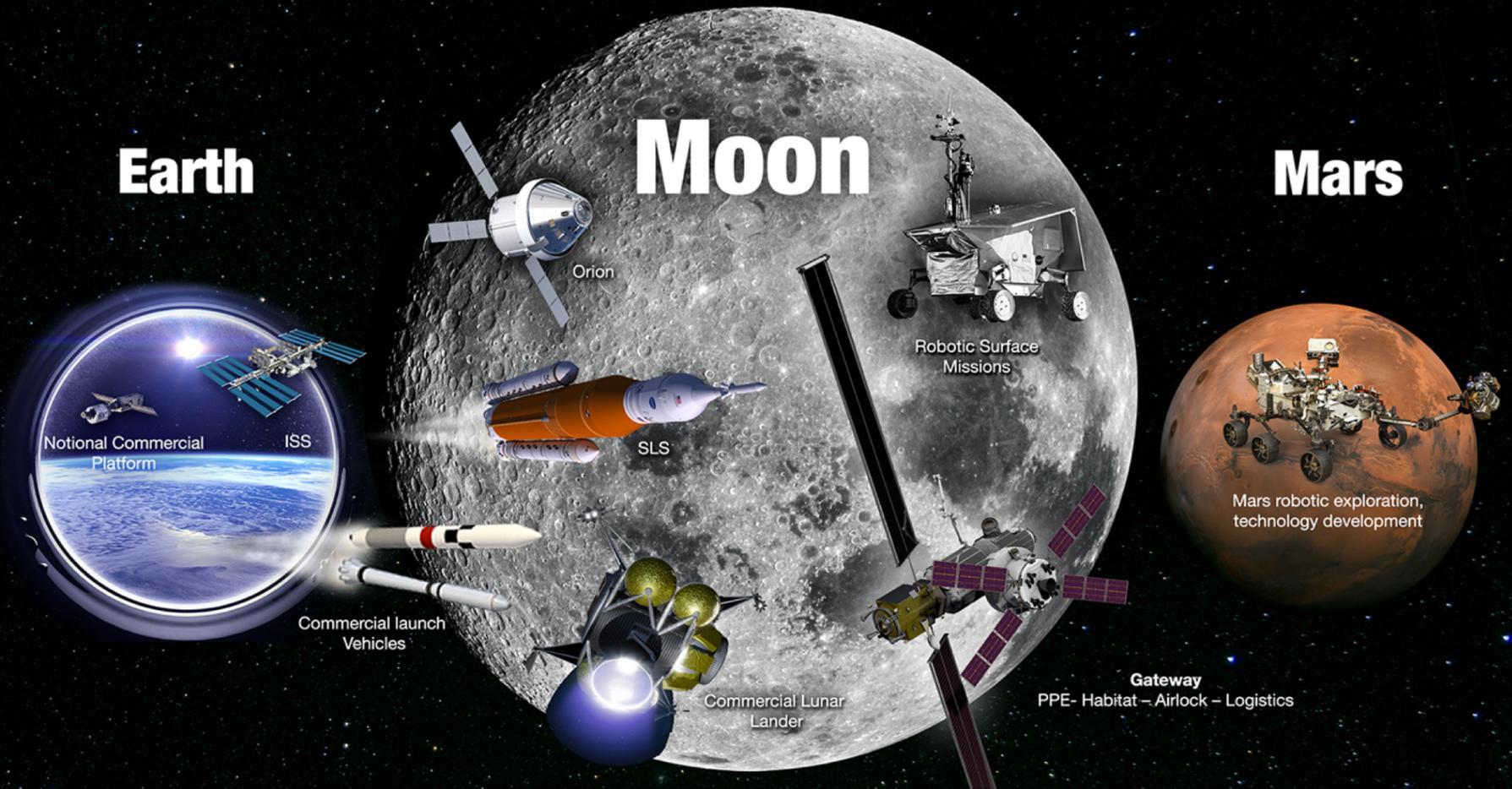
NASA Organization



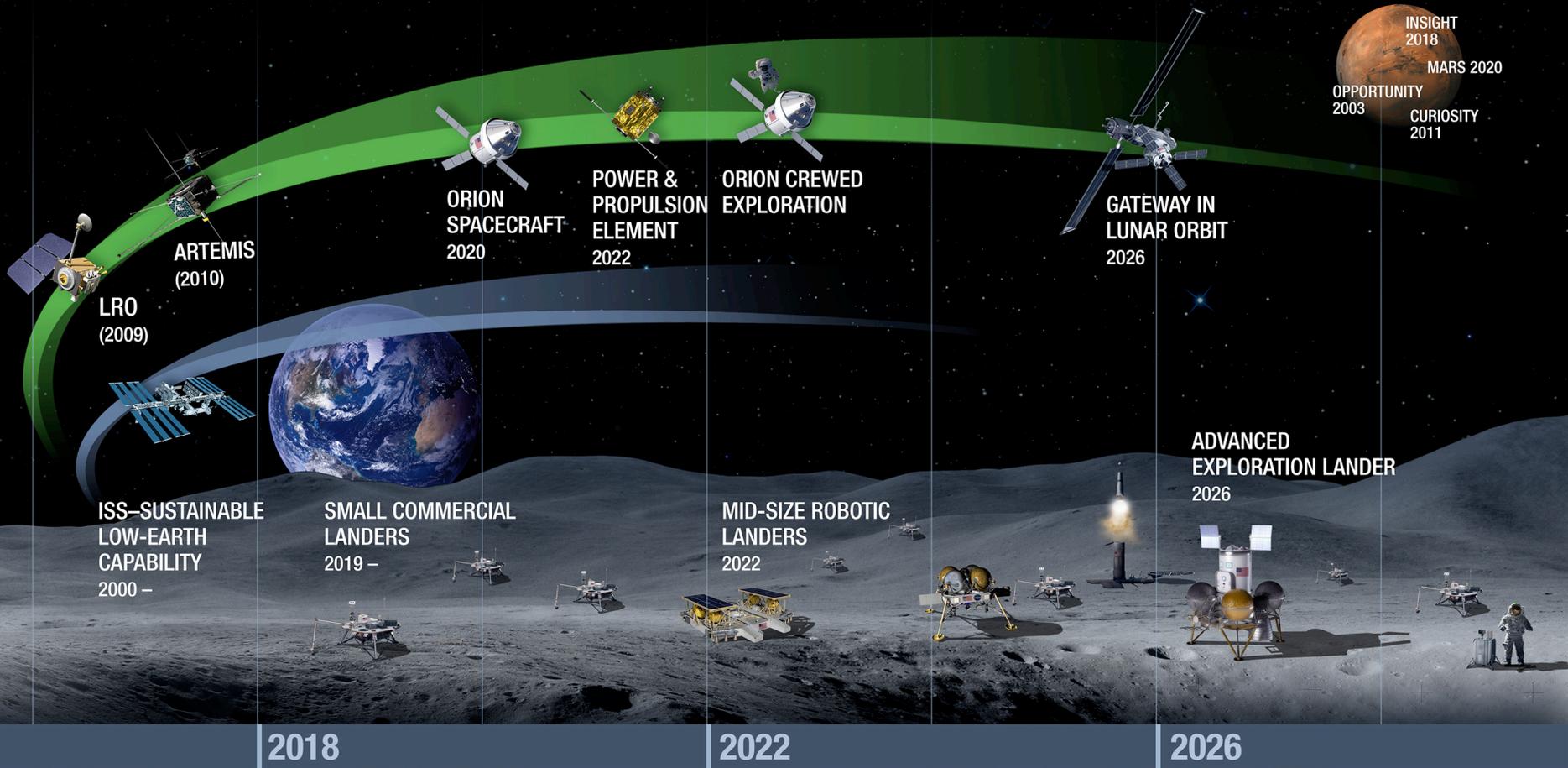
Mission Directorates:

- Human Exploration and Operations
- Science
- Space Technology
- Aeronautics Research

Moon to Mars



NASA Exploration Campaign



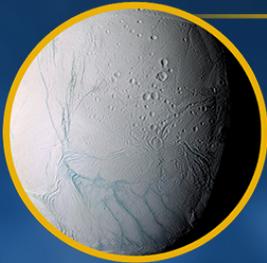
NASA Science Mission Directorate



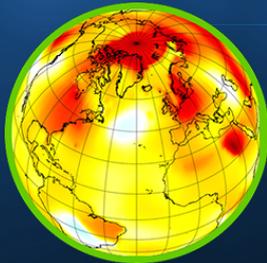
NASA's Key Science Themes



**Discovering the
Secrets of the
Universe**

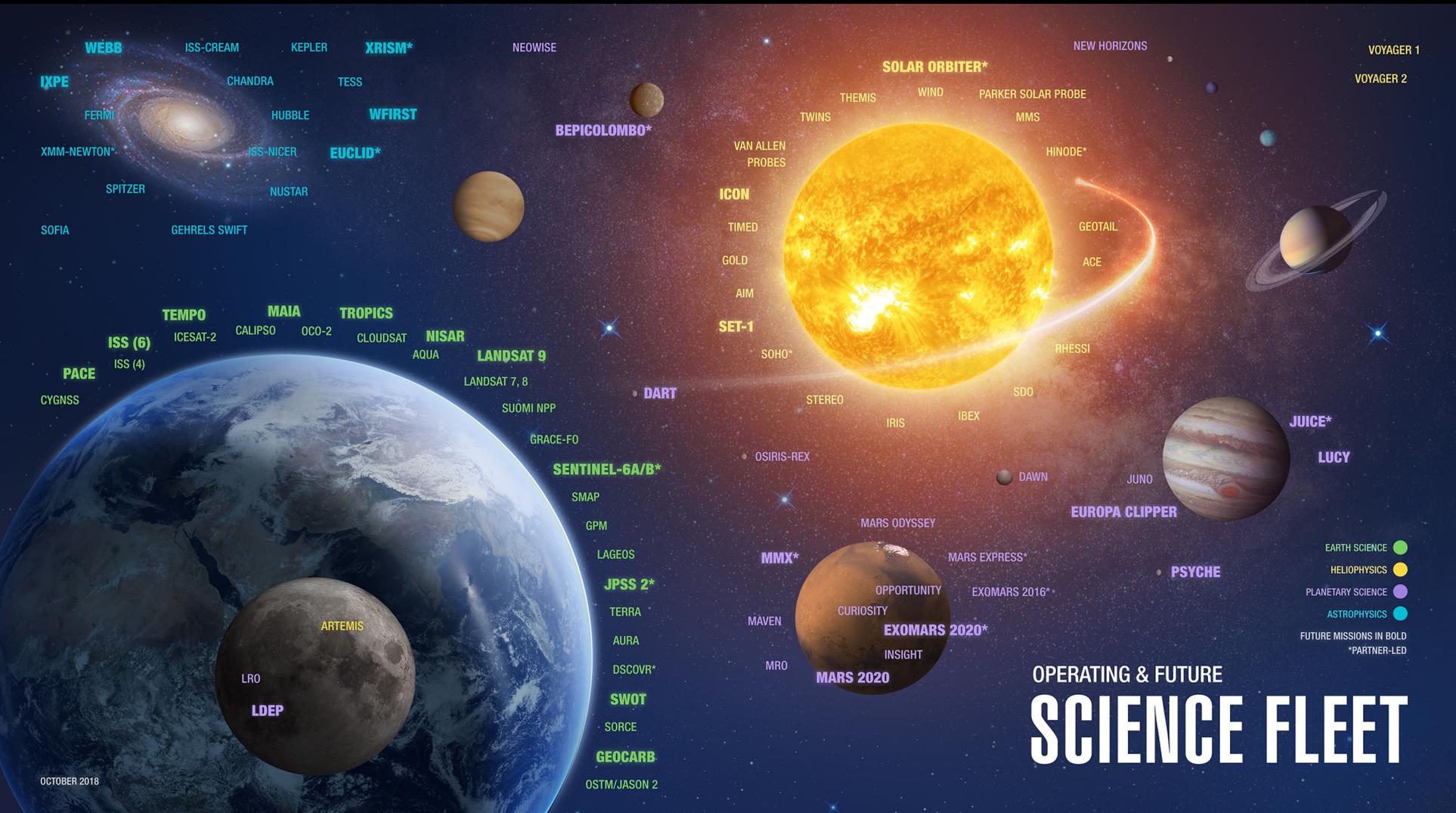


**Searching for
Life Elsewhere**



**Safeguarding and
Improving Life on Earth**

Science Fleet



OCTOBER 2018

Credit: NASA

Science Mission Directorate

Science by the NUMBERS



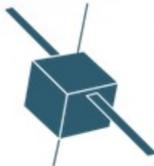
TECHNOLOGY INNOVATION
~\$400M Invested Annually



RESEARCH
~10,000 U.S. Scientists Funded
~3,000 Competitively Selected Awards
~\$600M Awarded Annually



SPACECRAFT
105 Missions
85 Spacecraft



SMALLSATS/CUBESATS
31 Science Missions
24 Technology Demos



SOUNDING ROCKETS
16 Science Missions
3 Tech/Student Missions



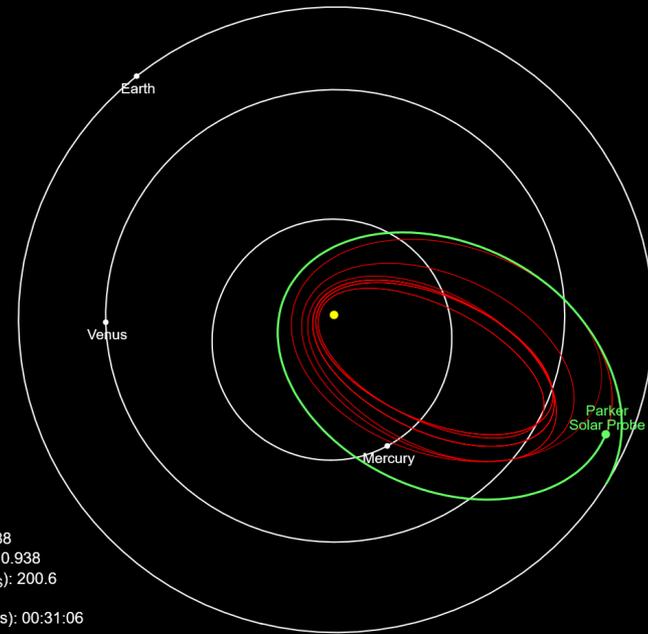
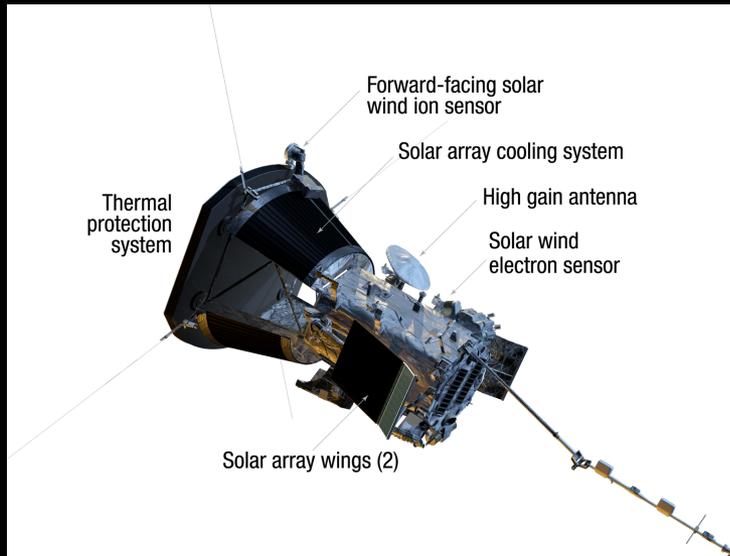
EARTH-BASED INVESTIGATIONS
25 Major Airborne Missions
8 Global Networks



BALLOONS
13 Science Payloads
1 HASP with up to
12 student experiments

Parker Solar Probe

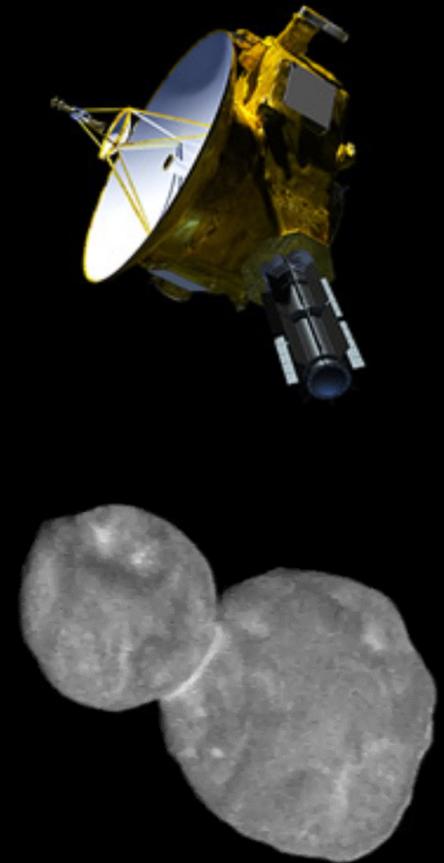
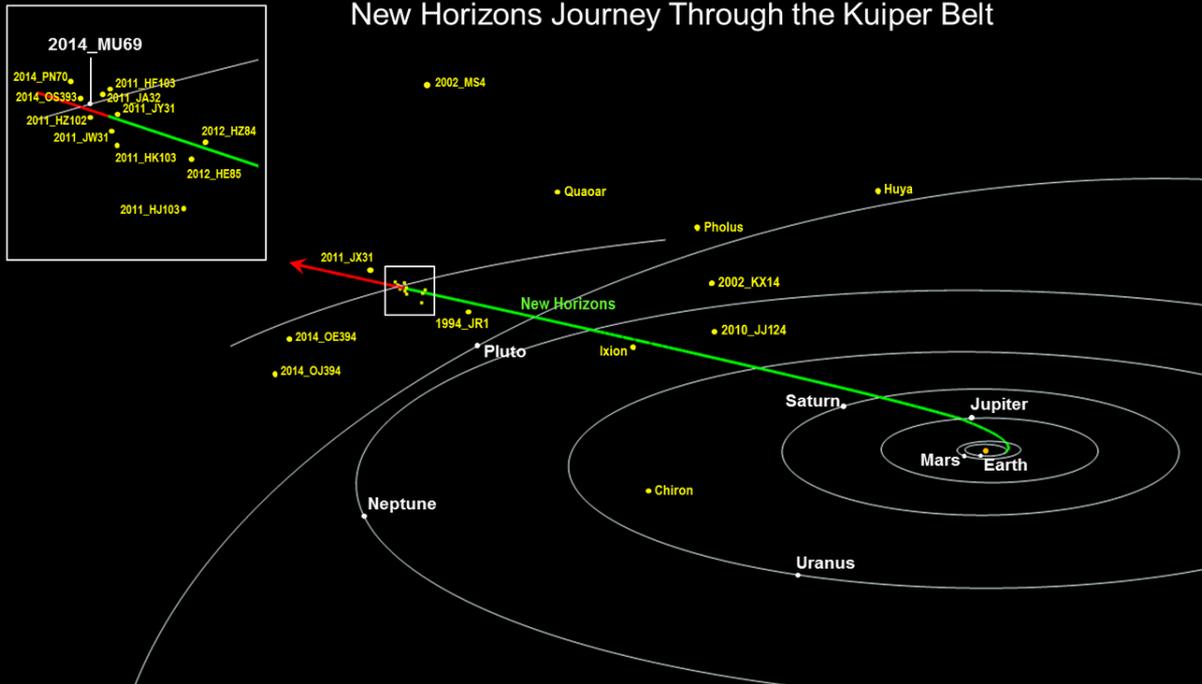
A NASA Mission to Touch the Sun



Credit: NASA/NRL/
Parker Solar Probe

New Horizons at Ultima Thule

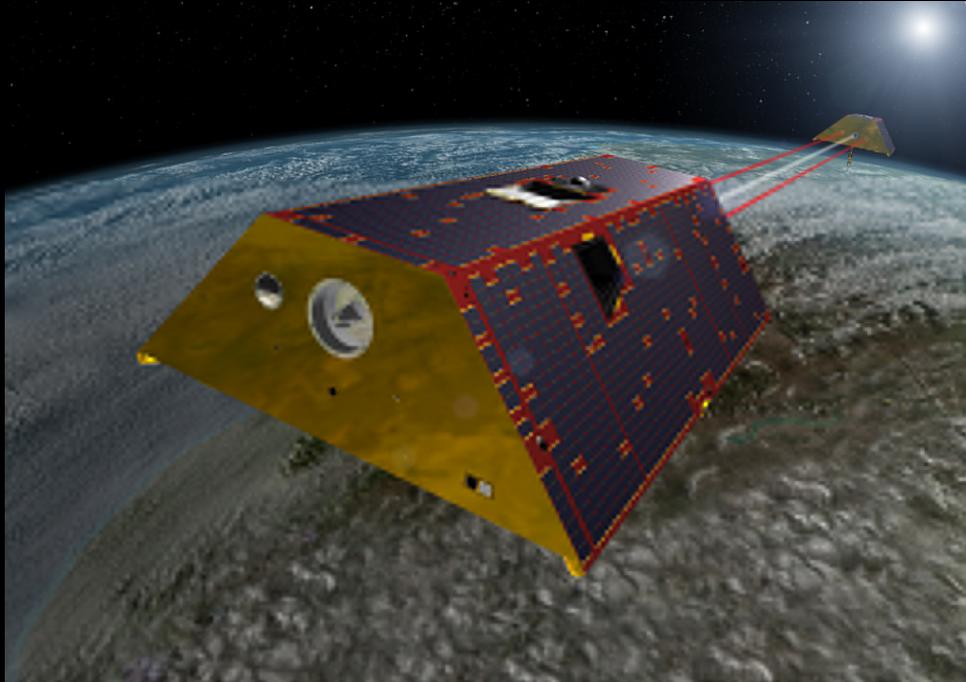
“Beyond the Borders of the Known World”



Credit: NASA/JHU/APL/SRI

GRACE Follow-On

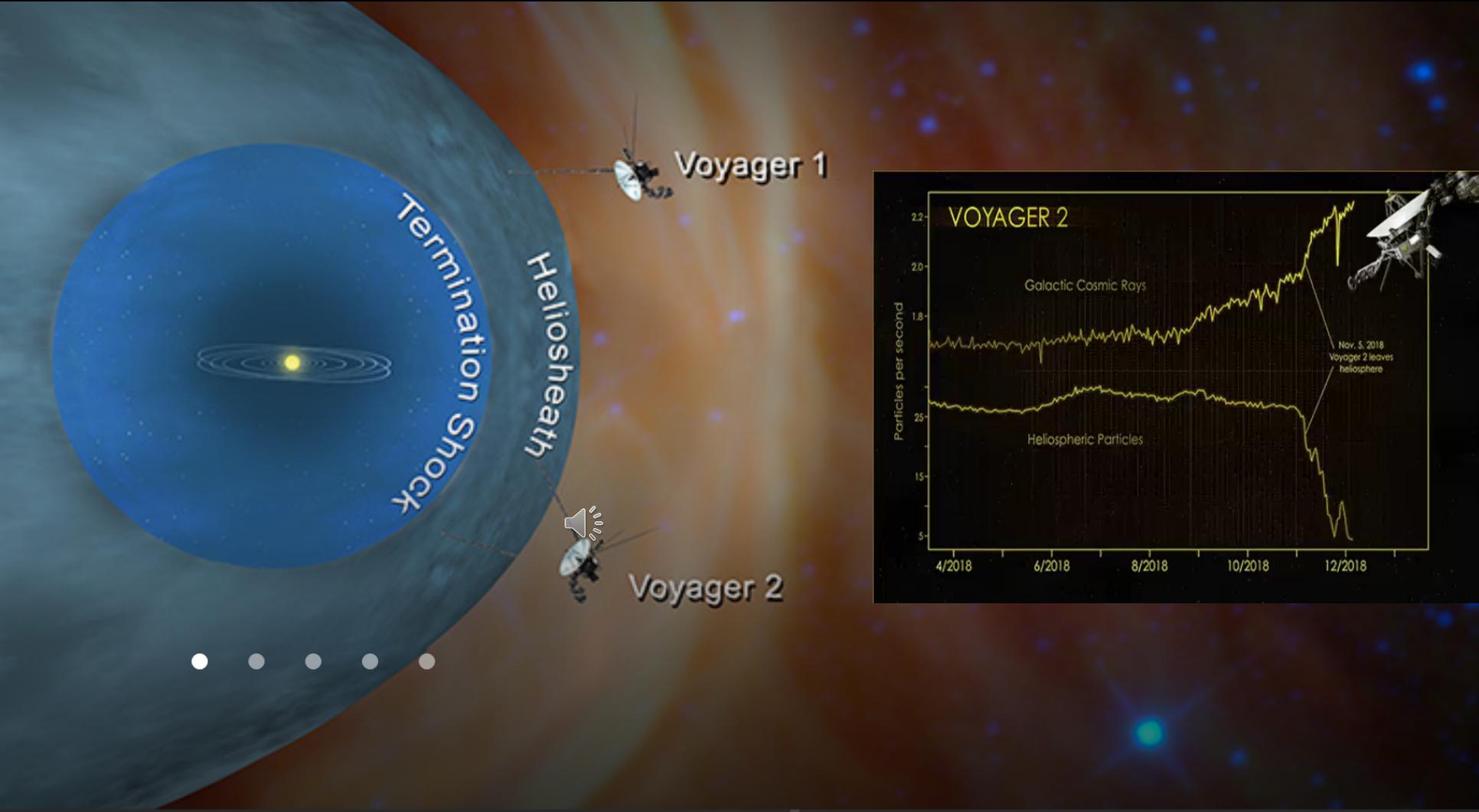
Tracking Earth's Water Movement Across the Whole Planet



GRACE Data 2002-2017

Credit: NASA / JPL

Voyager 2 Leaves Our Solar System



Credit: NASA/JPL-Caltech



Outliers



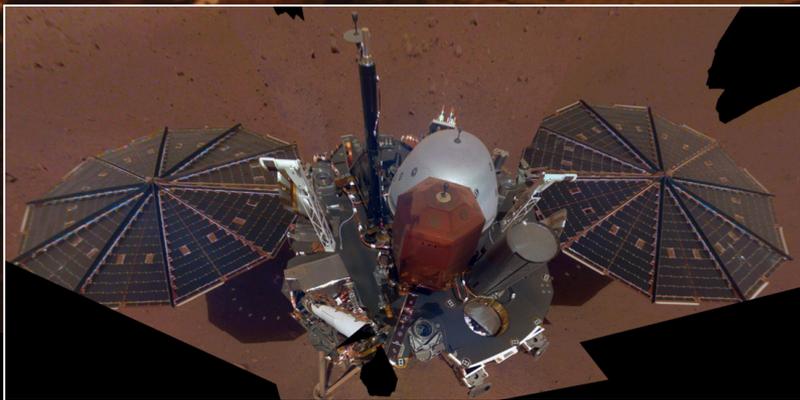
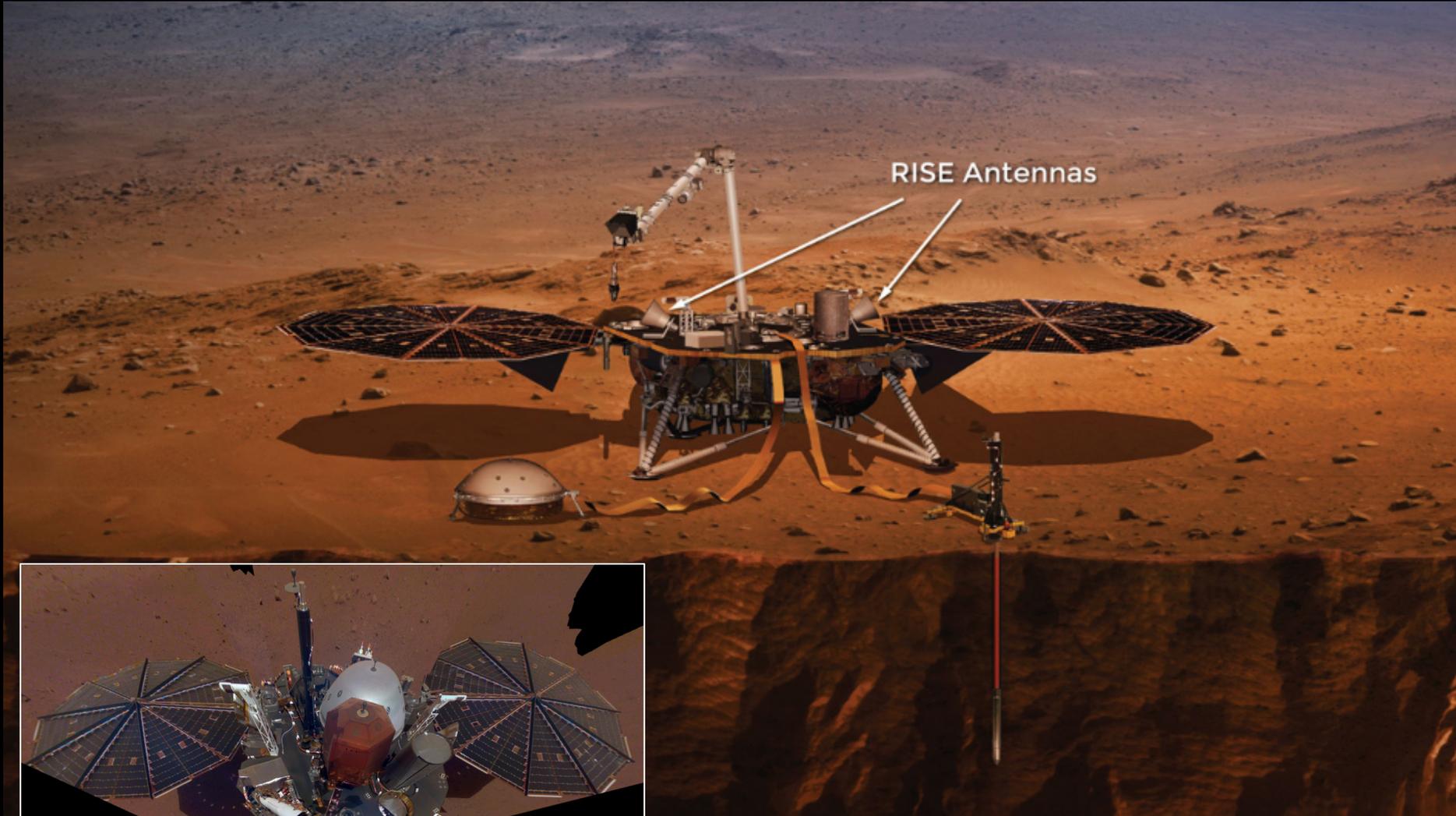
THE STORY OF SUCCESS

MALCOLM
GLADWELL

#1 bestselling author of *The Tipping Point* and *Blink*

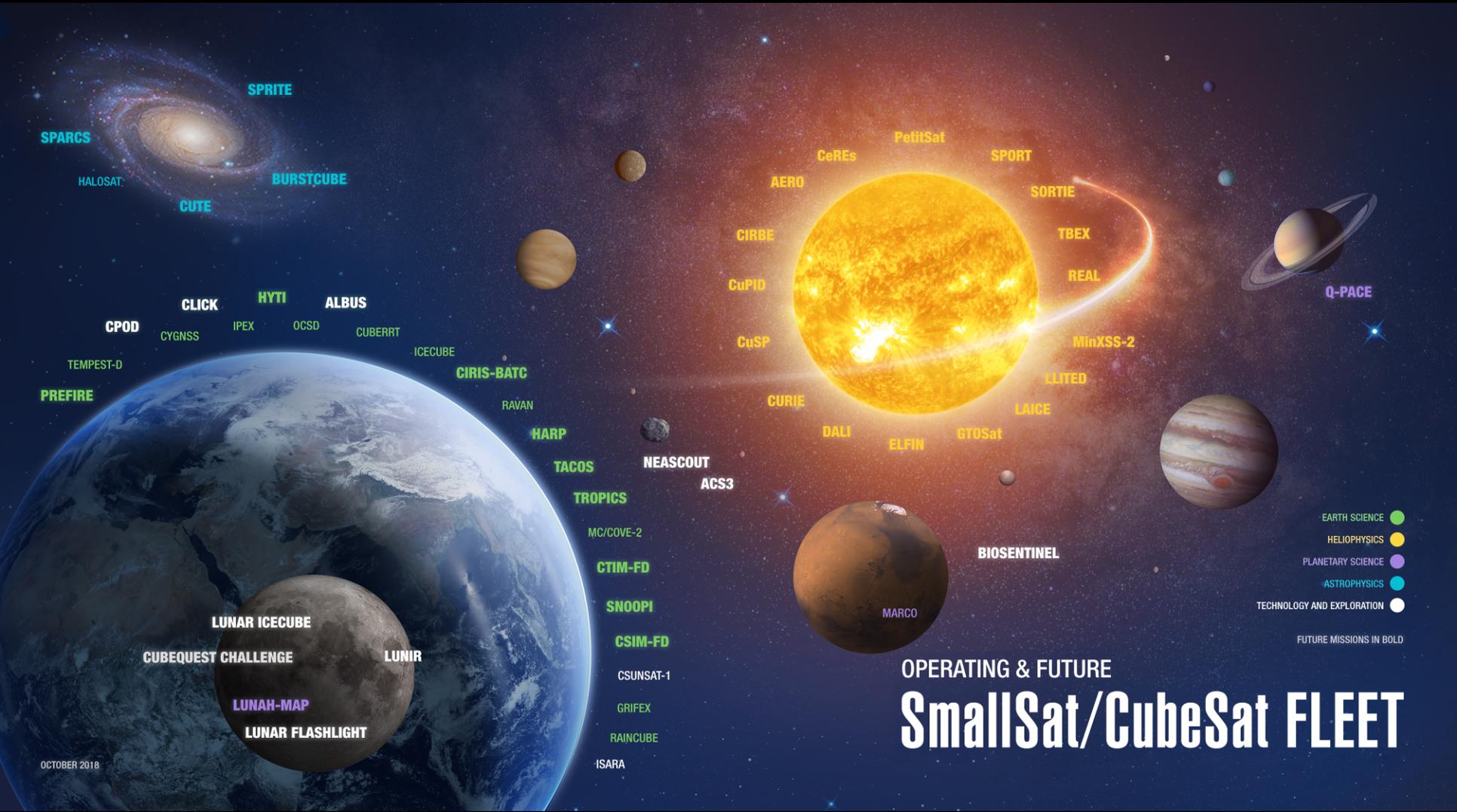
InSight Landing on Mars

November 2018



Credit: NASA/JPL-Caltech

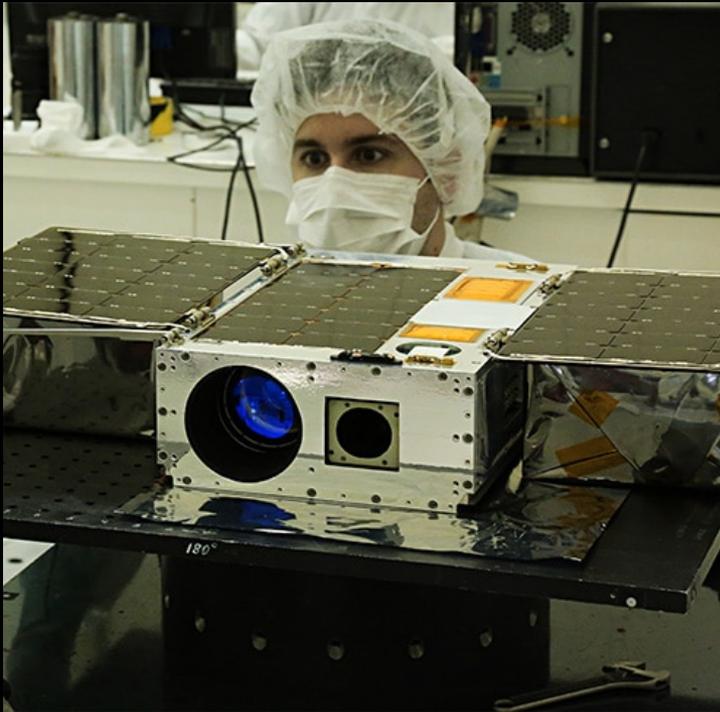
SmallSat / CubeSat Fleet



OCTOBER 2018

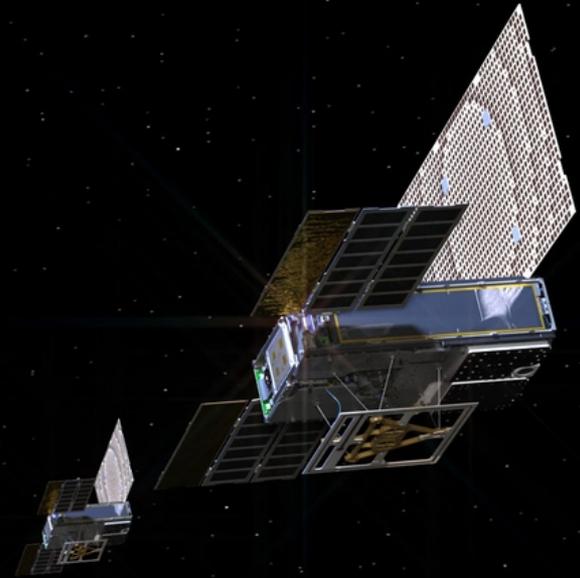
Credit: NASA

Two Recent Cube Sats



ASTERIA

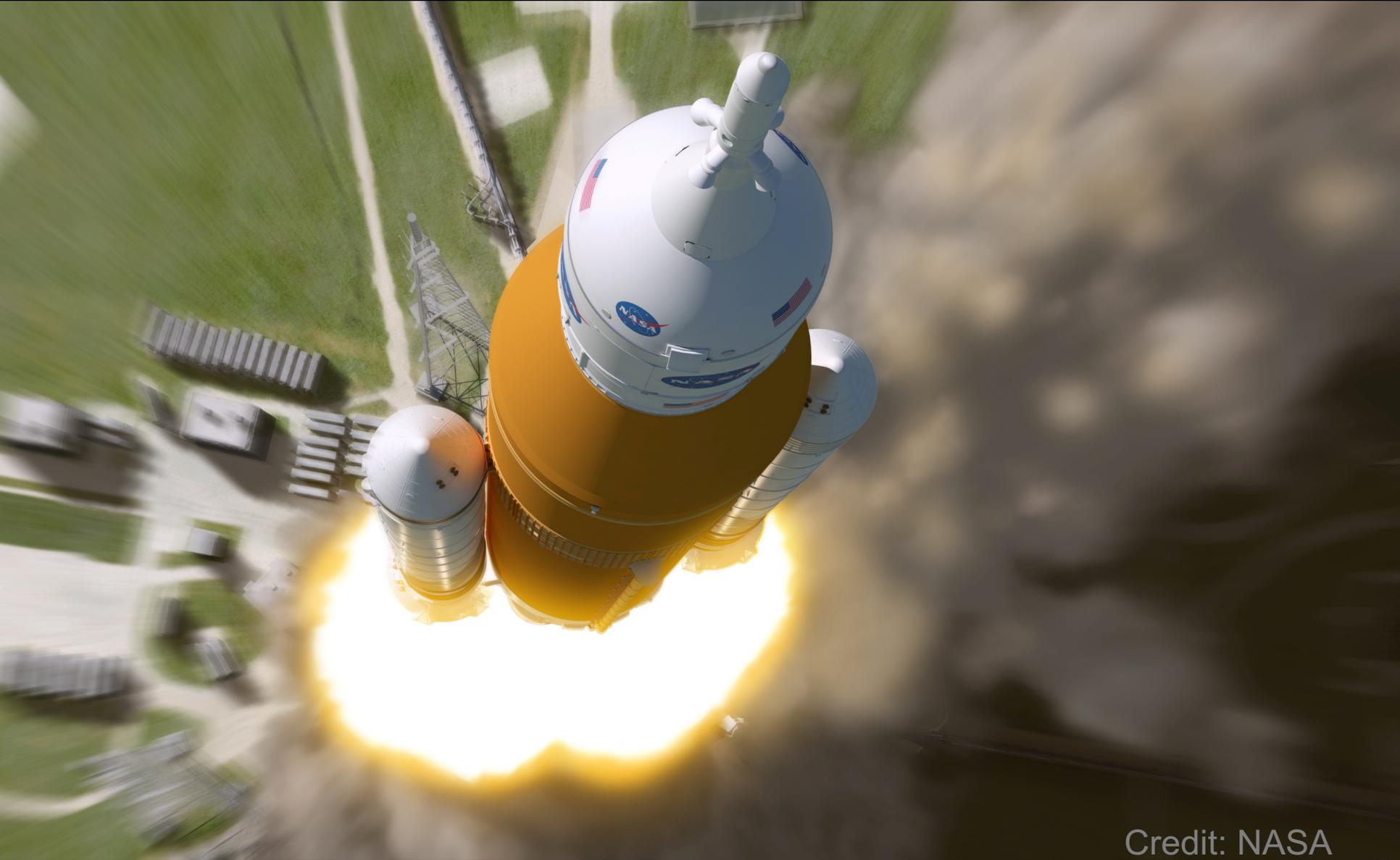
Arcsecond Space Telescope



MarCO

Mars Cube One

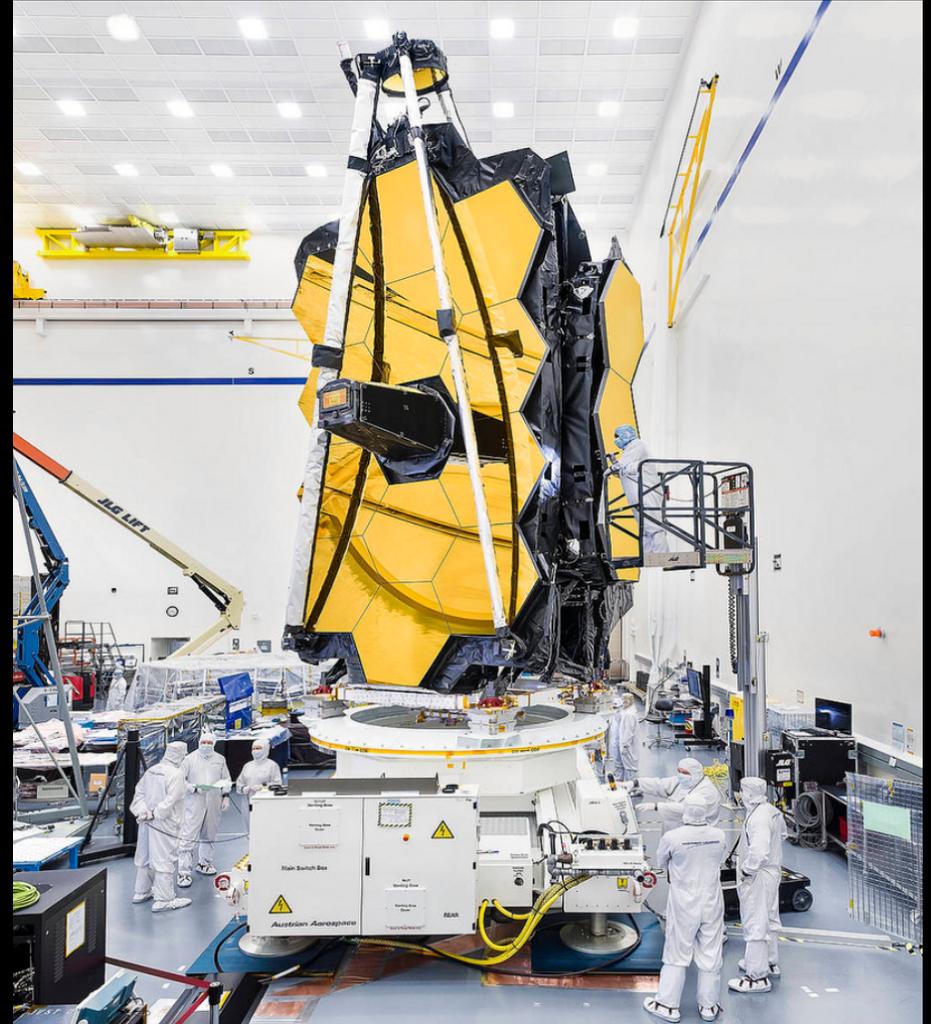
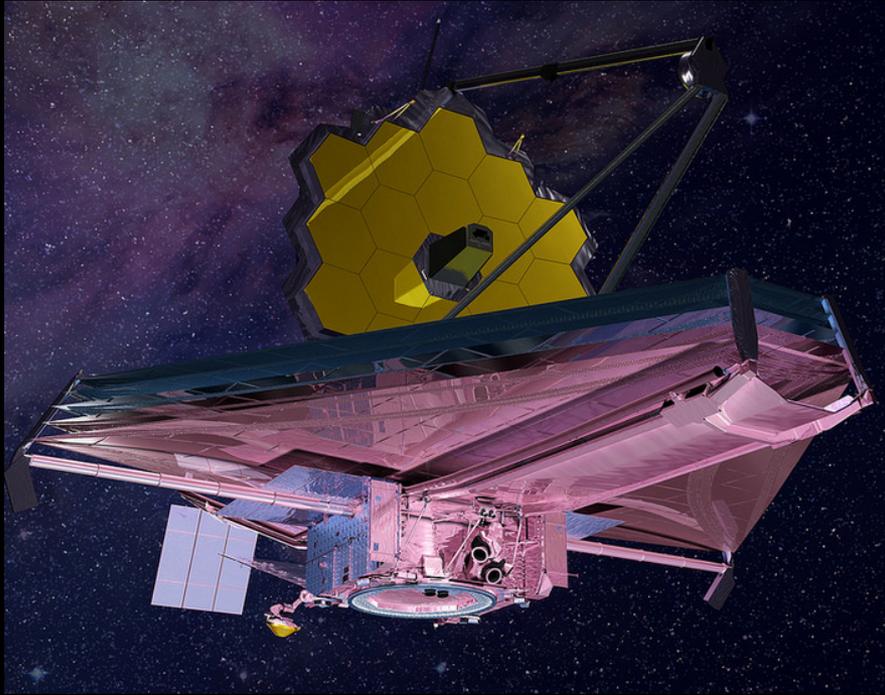
Space Launch System



Credit: NASA

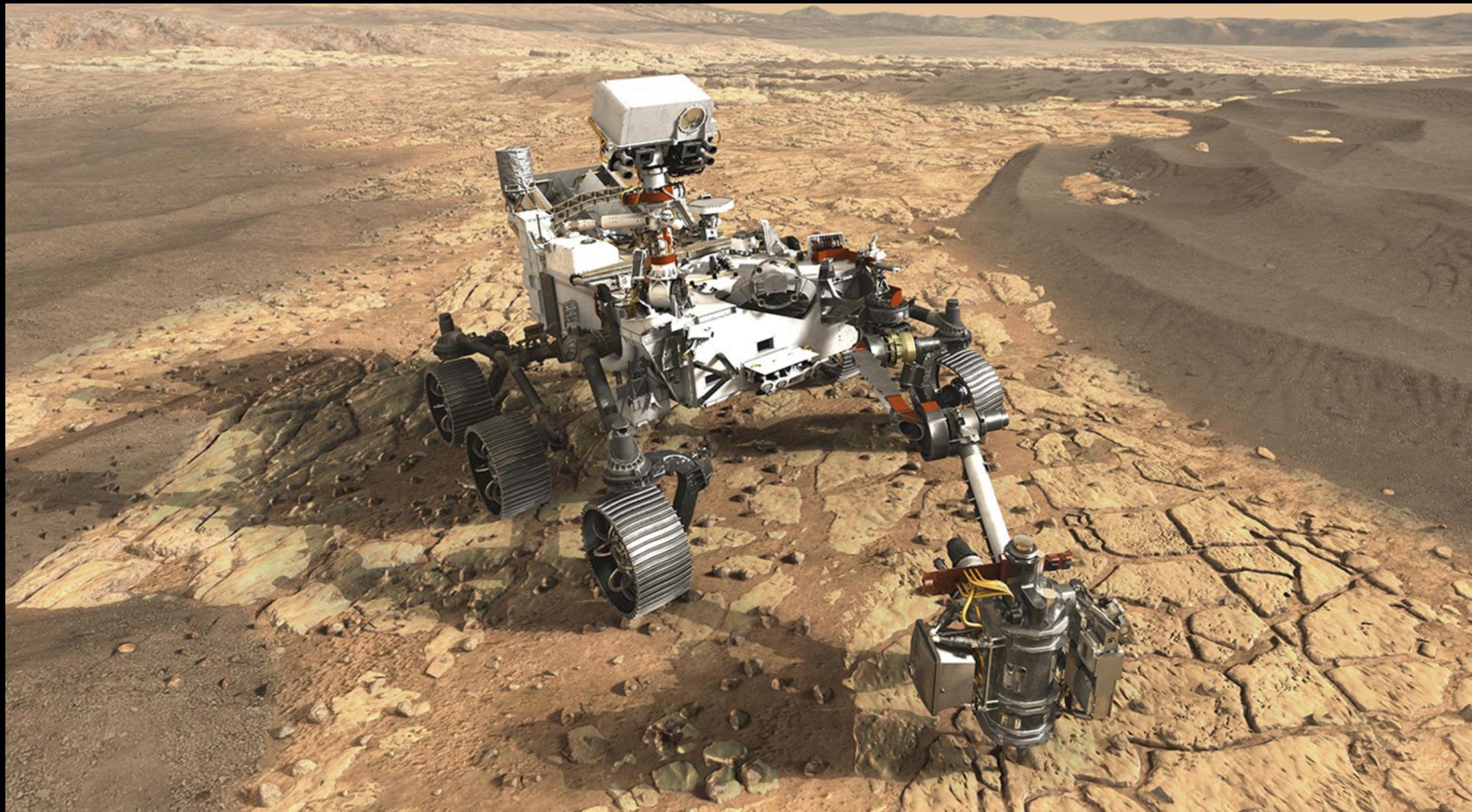
James Webb Space Telescope

2021 Launch



Mars 2020

July 2020 Launch



Jet Propulsion Laboratory

Pasadena, California

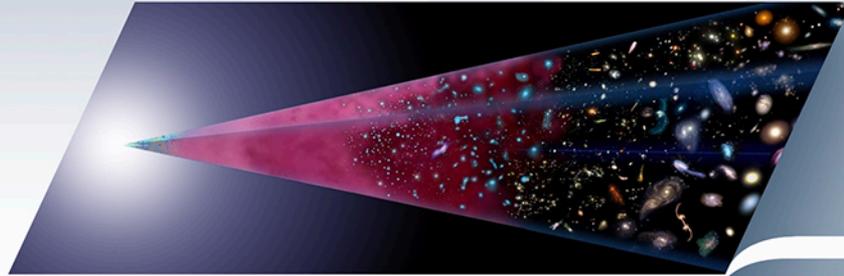


Why Astrophysics?

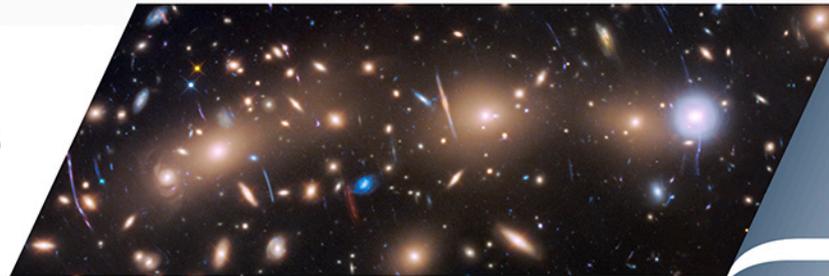
Astrophysics is humankind's scientific endeavor to understand the universe and our place in it.



How did our universe begin and evolve?



How did galaxies, stars, and planets come to be?



Are we alone?

