

Planetary Science Research

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Image: Apollo 16, photo AS16-113-18289

<https://www.hq.nasa.gov/alsj/a16/images16.html#M107>



Image: Apollo 16, photo AS16-107-17436

<https://www.hq.nasa.gov/alsj/a16/images16.html#M107>

I study planetary interiors, especially Earth and the Moon

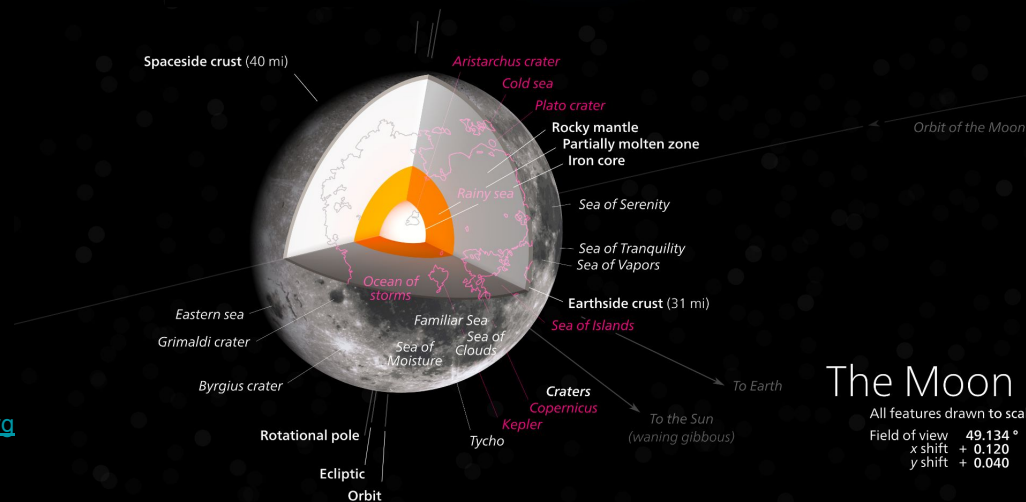
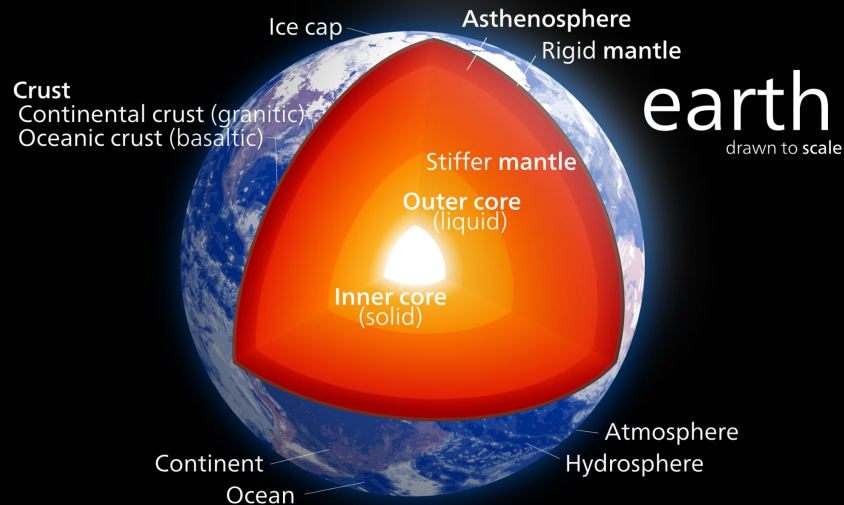


Image Credits:

[Kelvin Song](https://commons.wikimedia.org/wiki/File:Return_of_the_moon_diagram.svg)

https://commons.wikimedia.org/wiki/File:Return_of_the_moon_diagram.svg

https://commons.wikimedia.org/wiki/File:Earth_poster.svg

How I got here

- At an early age was picked up by a prestigious preparatory college
- Put on a select track for scientific research ...



... well, not really ...

... How I actually got here ...

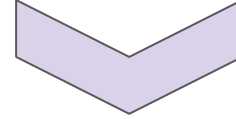


*Orange juice made here

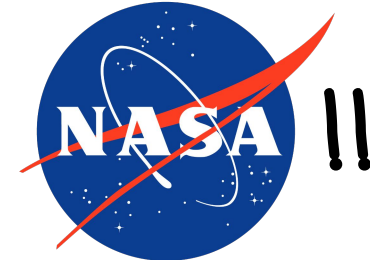
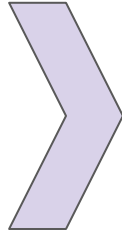
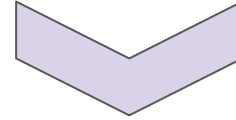


Went to school (yay!)

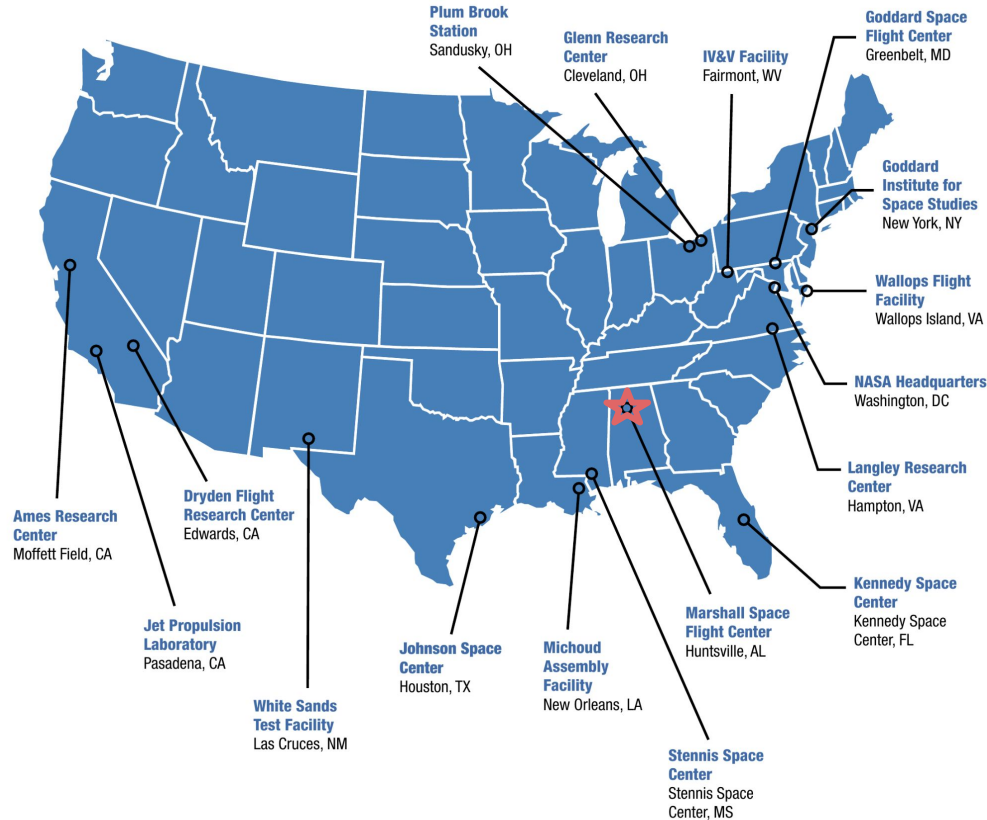
- Associate degree at Daytona State College
- Bachelor degree in astrophysics at UCF
- PhD in geology/Geophysics at UF (Go Gators! ...please)
- Post-doc at UF



A Water Management District!



NASA Facilities and Centers

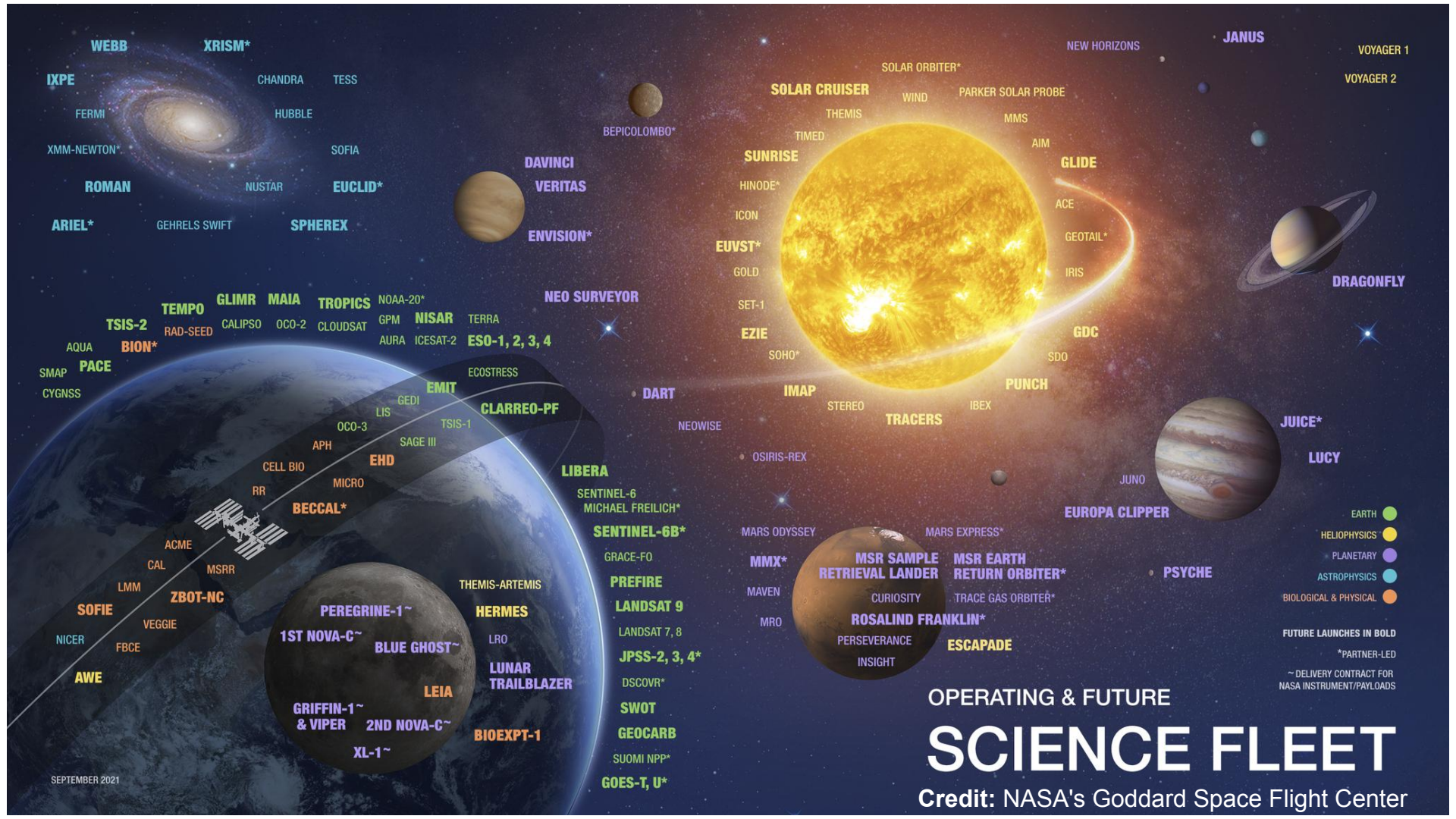


Lots of NASA centers!

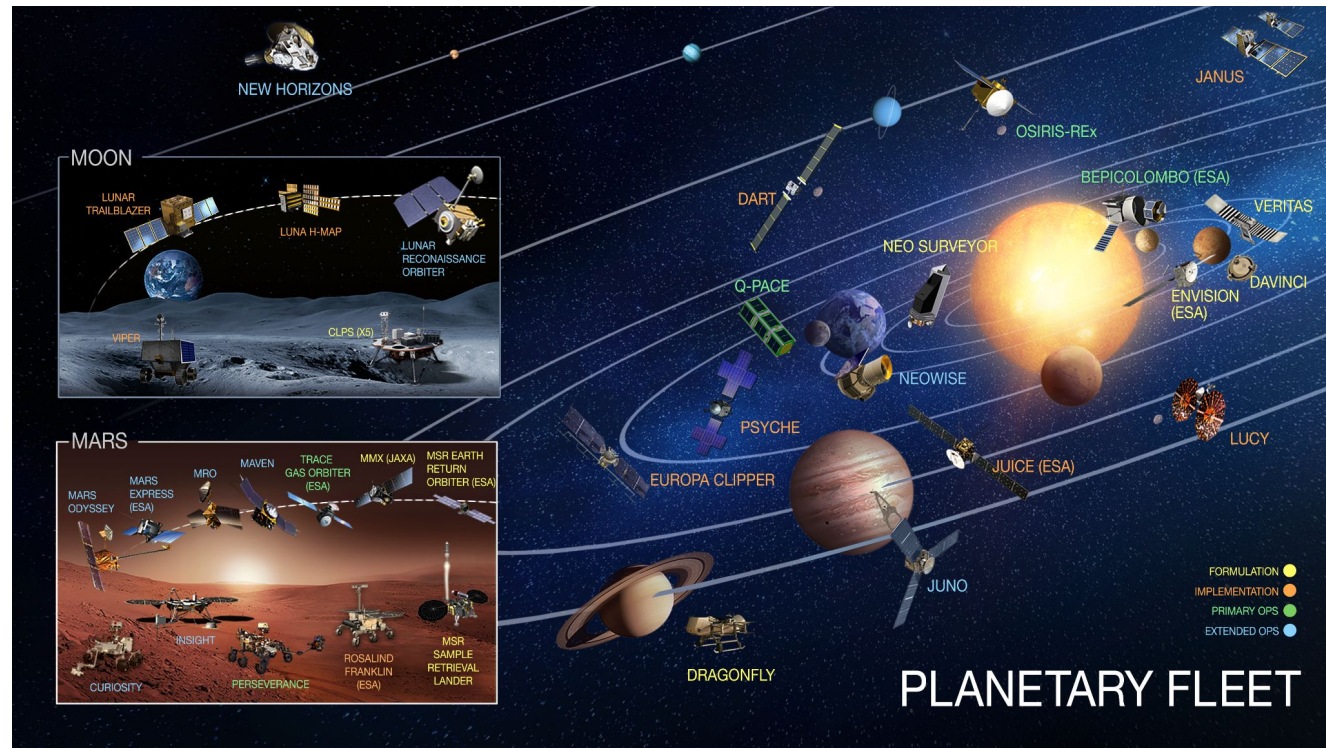
Each have a unique mission!

I am located at Marshall Space Flight Center, where the star is

Marshall develops space transportation and propulsion technologies, conducts fundamental research, and leads and manages NASA missions



Planetary Missions and Our Solar System

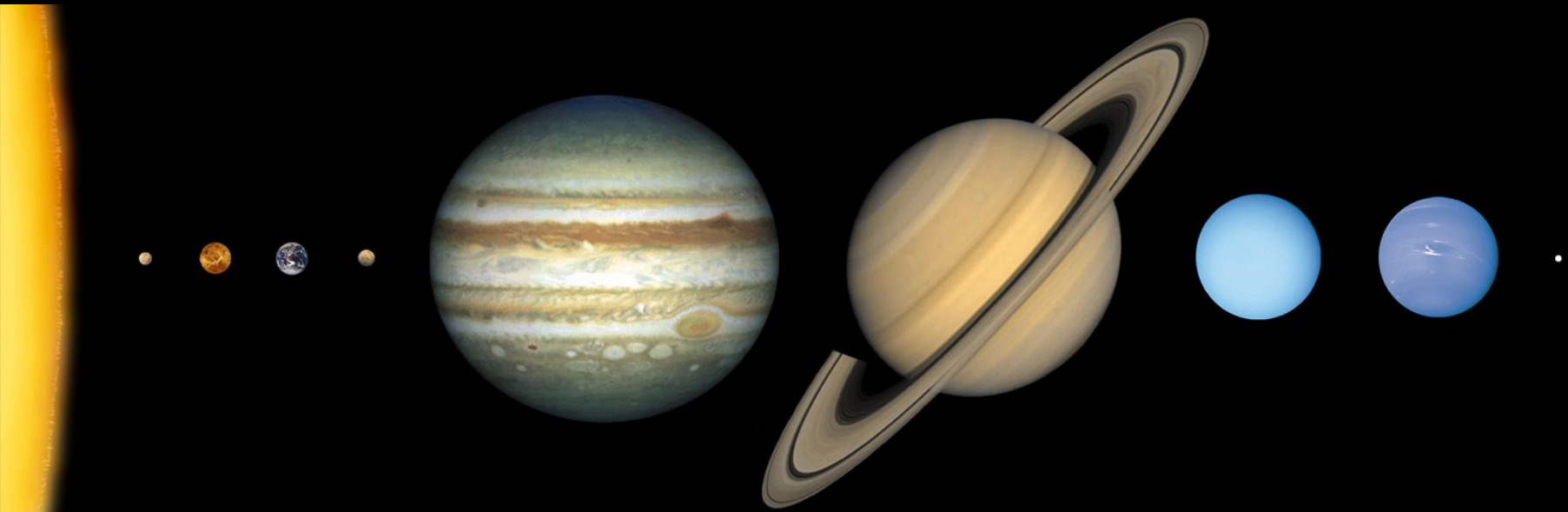


Credit: NASA's Goddard Space Flight Center

NASA site to explore and learn about the solar system

<https://solarsystem.nasa.gov/solar-system/our-solar-system/overview/>

Let's talk about planets. See any planets here?



Credit: www.nasa.gov

Is Pluto a planet?



Credit: NASA/JHUAPL/SwRI

What's the definition of a planet?



Credit: NASA/JHUAPL/SwRI

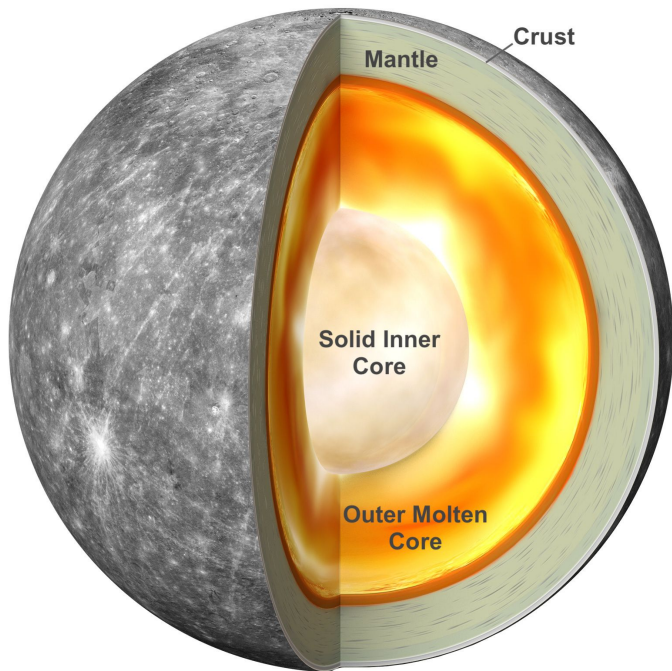
What are Moons? Are they like planets?

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Mercury

- Terrestrial (*rocky*) planet
- Thin atmosphere
- Diameter: 3,032 miles (4,879.4 kilometers)

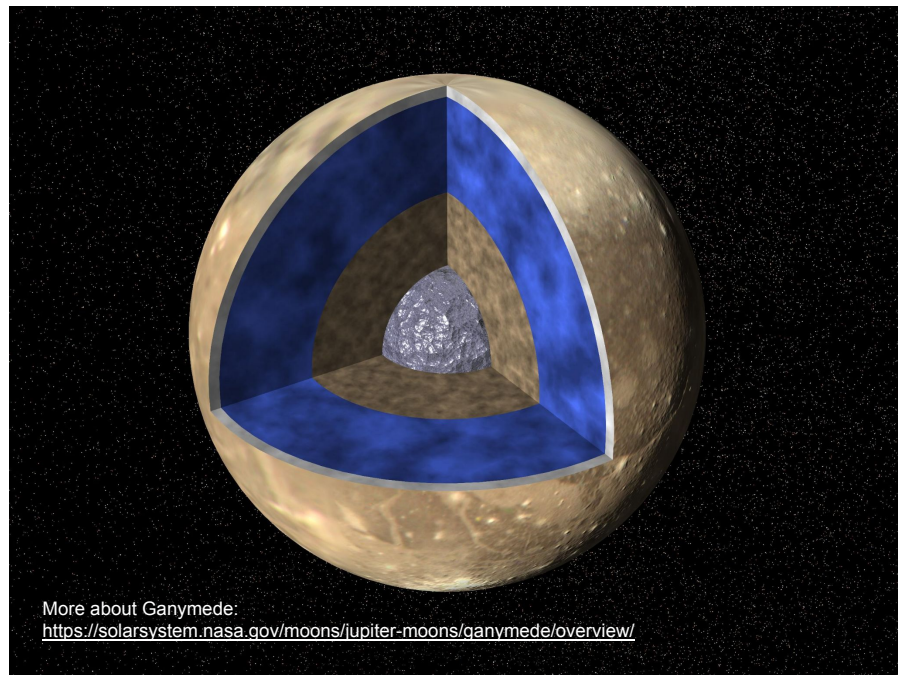
Credit: NASA's Goddard Space Flight Center



Ganymede

- Terrestrial (*rocky*) moon (Jupiter)
- Thin Atmosphere
- Diameter: 3,270 miles (5,262.4 kilometers)

Credit: NASA/JPL



More about Ganymede:

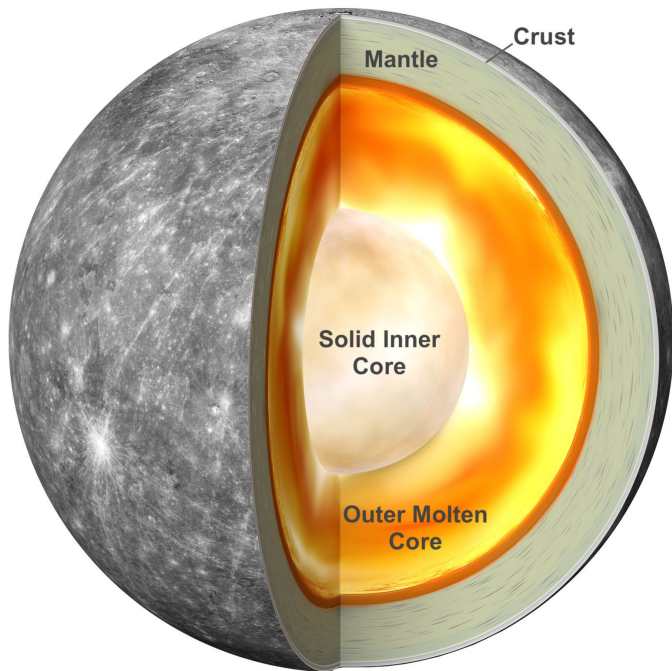
<https://solarsystem.nasa.gov/moons/jupiter-moons/ganymede/overview/>

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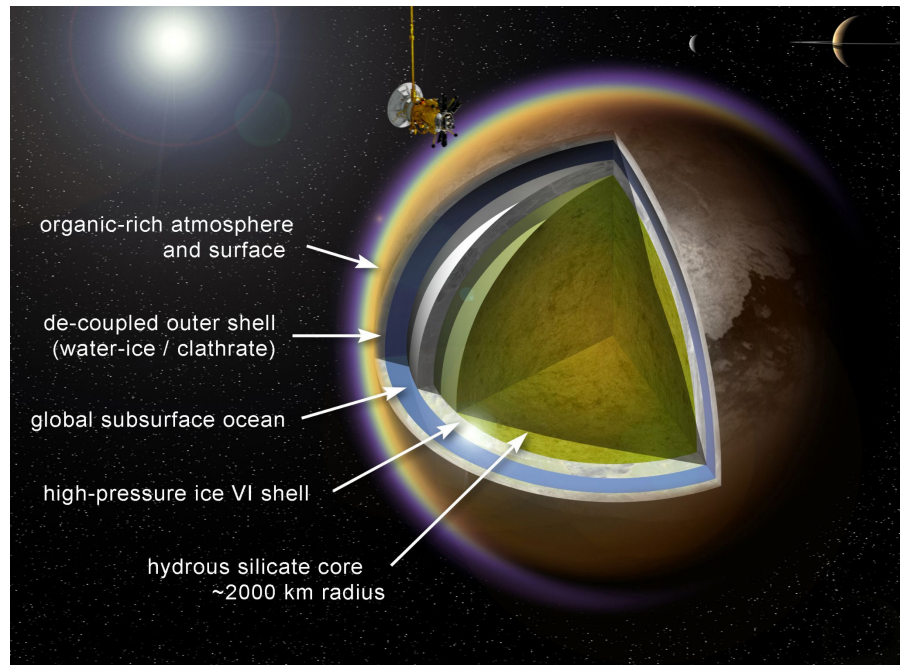


Titan

- Terrestrial (*rocky*) moon (Saturn)
- Thick atmosphere
- Diameter: 3,200 miles (5,149.4 kilometers)

Credit: A. D. Fortes/UCL/STFC

https://www.nasa.gov/mission_pages/cassini/multimedia/titan20120223L.html

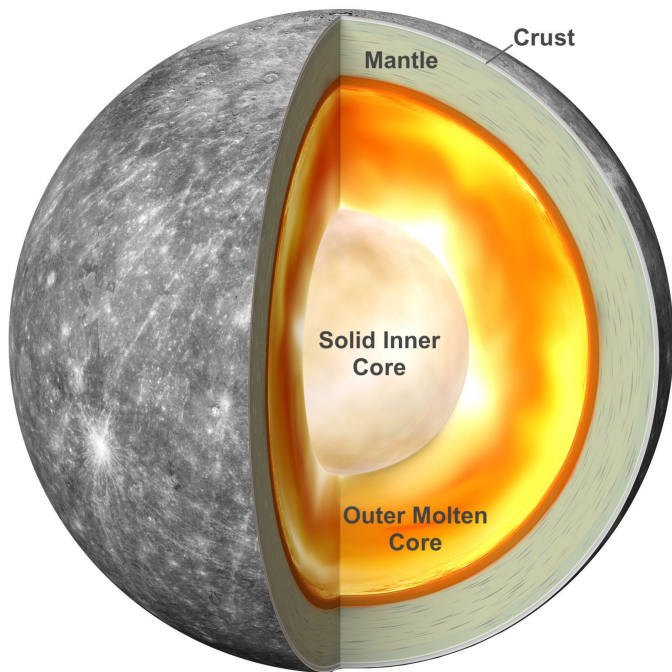


What if Titan orbited Mercury?

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Credit: NASA's Goddard Space Flight Center

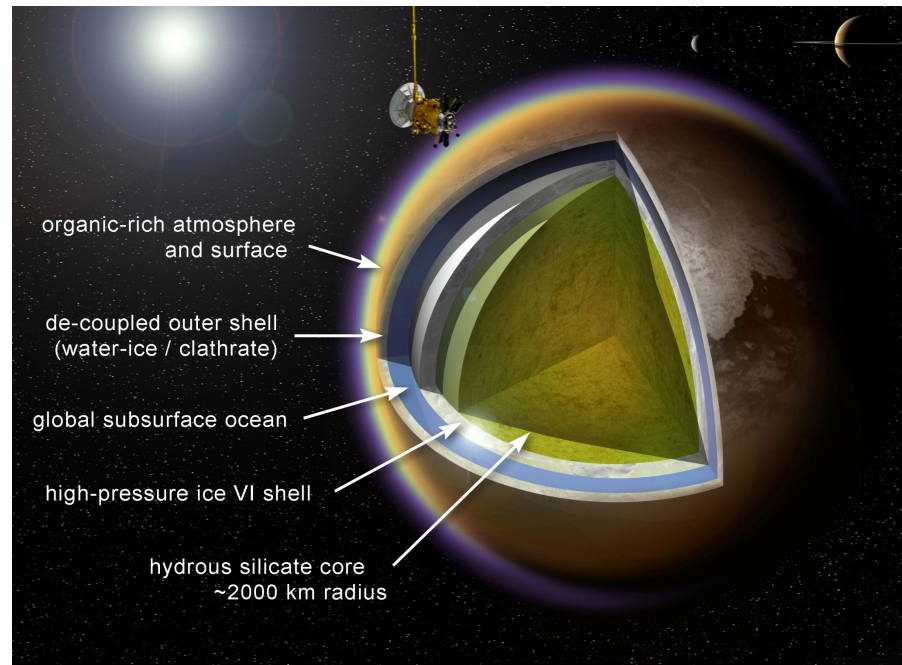


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Are these real planets?

Confirmed rogue planet: PSO J318.5-22

https://en.wikipedia.org/wiki/PSO_J318.5%E2%88%9222

Credit: N. Metcalfe & Pan-STARRS 1 Science Consortium

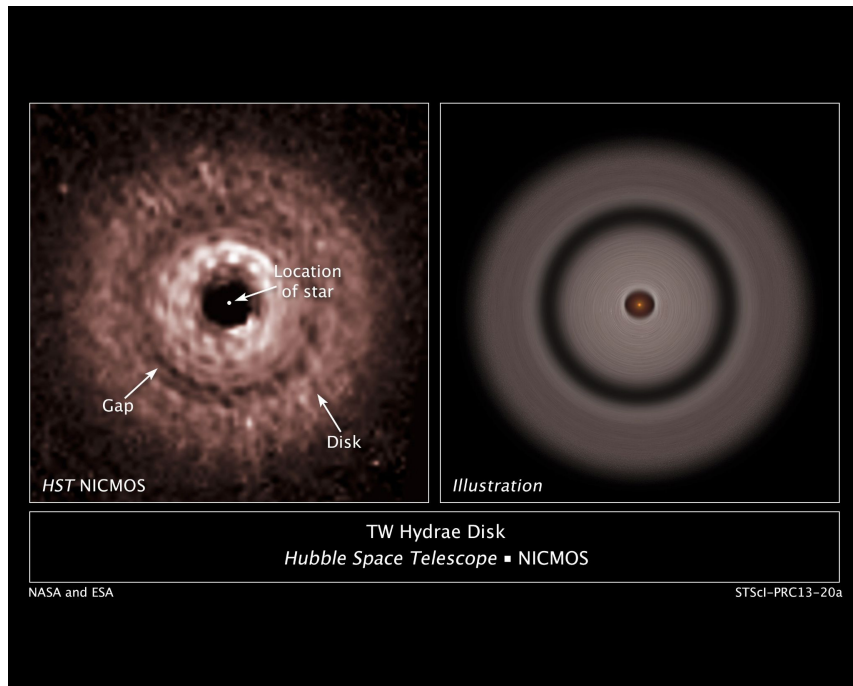


Protoplanetary (still new) disk around TW Hydrae

<https://www.nasa.gov/content/nasas-hubble-uncovers-evidence-of-farthest-planet-forming-from-its-star/>

Credit: NASA, ESA, J. Debes (STScI), H. Jang-Condell (University of Wyoming), A. Weinberger (Carnegie Institution of Washington), A. Roberge (Goddard Space Flight Center), G. Schneider (University of Arizona/Steward Observatory), and A. Feild (STScI/AURA)

More on exoplanets: <https://exoplanets.nasa.gov/>



So what is a planet?



Credit: NASA/JHUAPL/SwRI