

OCEAN WORLDS

Earth isn't the only ocean world in our solar system. Oceans could exist in diverse forms on moons and dwarf planets, offering clues in the quest to discover life beyond our home planet.

The worlds below represent the best known candidates in our search for life in the solar system -- because where there is water, there is the potential for life. As you dive below, take note of each body's ocean world status and its potential to sustain life as we know it.

EXPLORE BELOW



SIZE COMPARISON

1 AU

DISTANCE FROM SUN

ACTIVE

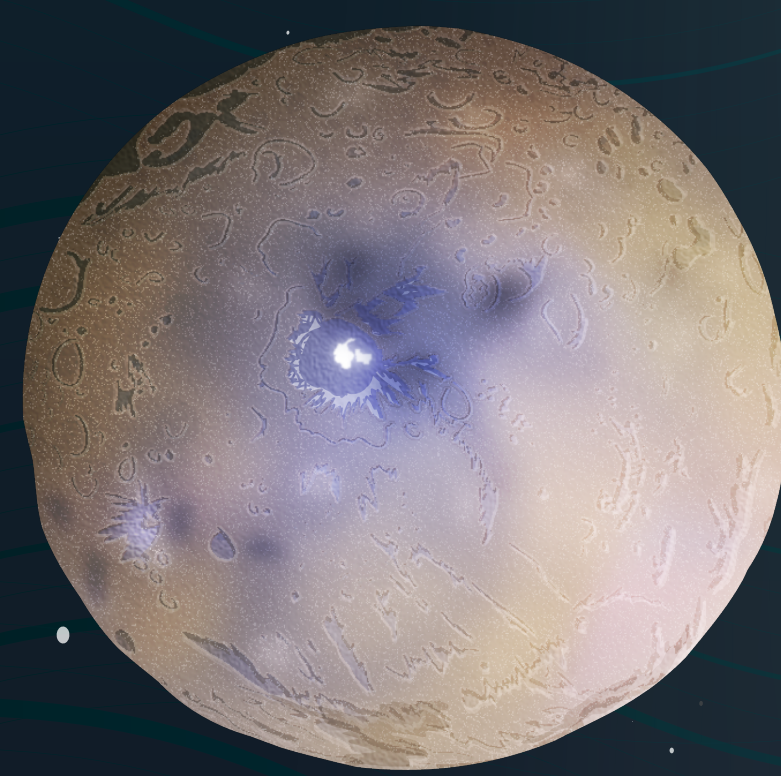
Dynamic ocean, known to support life

OCEAN WORLD STATUS

TERRESTRIAL PLANET

EARTH

Our home planet, Earth, is the only body known to have life. Called the "ocean planet," Earth's surface-land-to-water ratio is 29% land to 71% water.



DWARF PLANET

CERES

Scientists estimate that Ceres consists of about 25% water ice, of which a fraction could be in a liquid state. However, Ceres may or may not have a liquid layer or subsurface ocean. Data from NASA's Dawn mission could provide an answer.



SIZE COMPARISON

2.8 AU

DISTANCE FROM SUN

POSSIBLE

Evidence of an ocean, biological potential unknown

OCEAN WORLD STATUS



SIZE COMPARISON

5.2 AU

DISTANCE FROM SUN

ACTIVE?

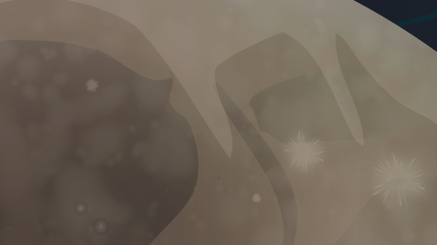
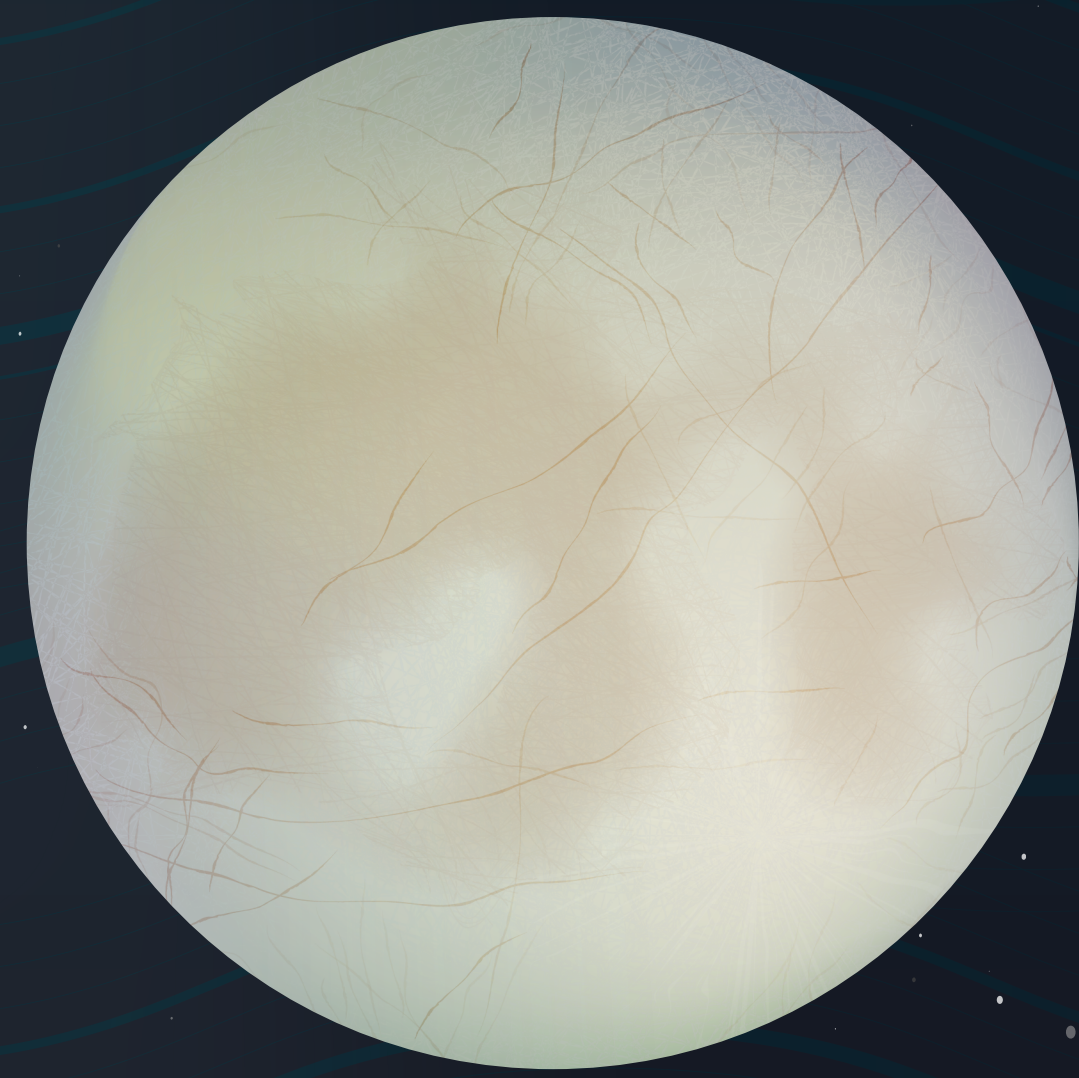
Possibly a dynamic ocean, could support life

OCEAN WORLD STATUS

MOON OF JUPITER

EUROPA

Scientists strongly suspect that a subsurface salty ocean lies beneath Europa's icy crust. Tidal heating from its parent planet, Jupiter, maintains this ocean's liquid state and could also create partially melted pockets, or lakes, throughout the moon's outer shell.



SIZE COMPARISON

5.2 AU

DISTANCE FROM SUN

LOCKED

Trapped ocean, unlikely to support life

OCEAN WORLD STATUS

MOON OF JUPITER

GANYMEDE

Ganymede is the largest moon in our solar system, and the only moon with its own magnetic field. Recent studies indicate a large, underground saltwater ocean is present at the Jovian moon. Ganymede could in fact have several layers of ice and water sandwiched between its crust and core.



SIZE COMPARISON

5.2 AU

DISTANCE FROM SUN

LOCKED

Trapped ocean, unlikely to support life

OCEAN WORLD STATUS



SIZE COMPARISON

5.2 AU

DISTANCE FROM SUN

LOCKED

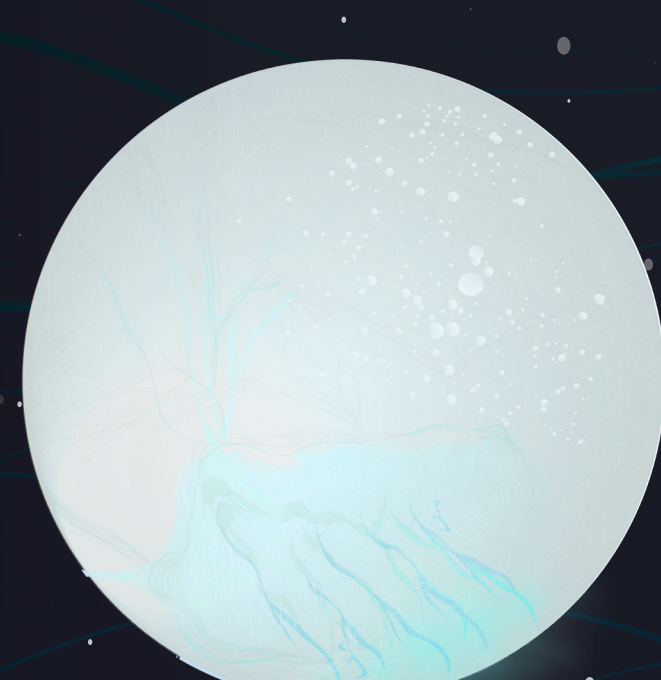
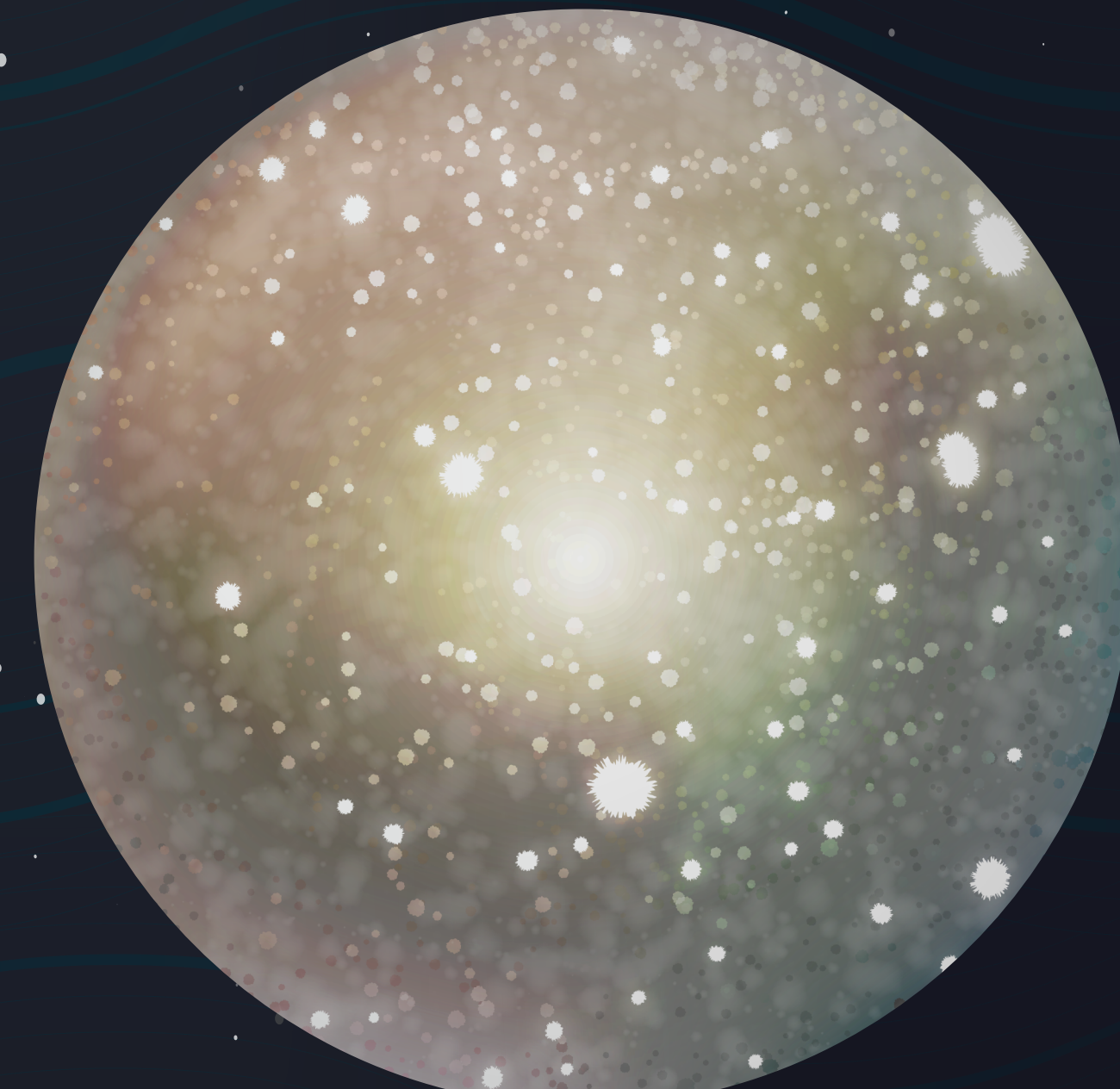
Trapped ocean, unlikely to support life

OCEAN WORLD STATUS

MOON OF JUPITER

CALLISTO

Callisto's cratered surface lies at the top of an ice layer, which is estimated to be about 60 miles (100 km) thick. An ocean, which is thought to be at least 6 miles (10 km) deep, could be directly beneath the ice.



MOON OF SATURN

ENCELADUS

Scientists predict that a regional reservoir about 6 miles (10 km) deep lies under a shell of ice 20 to 25 miles (30 to 40 km) thick at Enceladus' south pole. This underground ocean is thought to feed the moon's impressive jets, which spray from deep fissures (called "tiger stripes") in the moon's surface.



SIZE COMPARISON

9.5 AU

DISTANCE FROM SUN

ACTIVE

Dynamic ocean, could support life

OCEAN WORLD STATUS



SIZE COMPARISON

9.5 AU

DISTANCE FROM SUN

LOCKED?

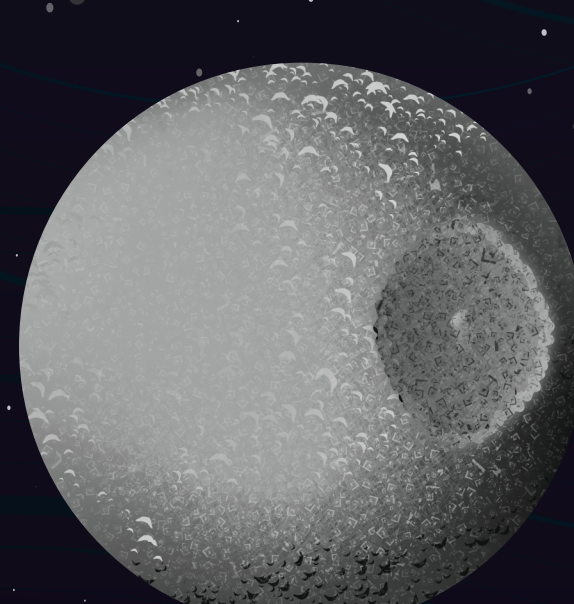
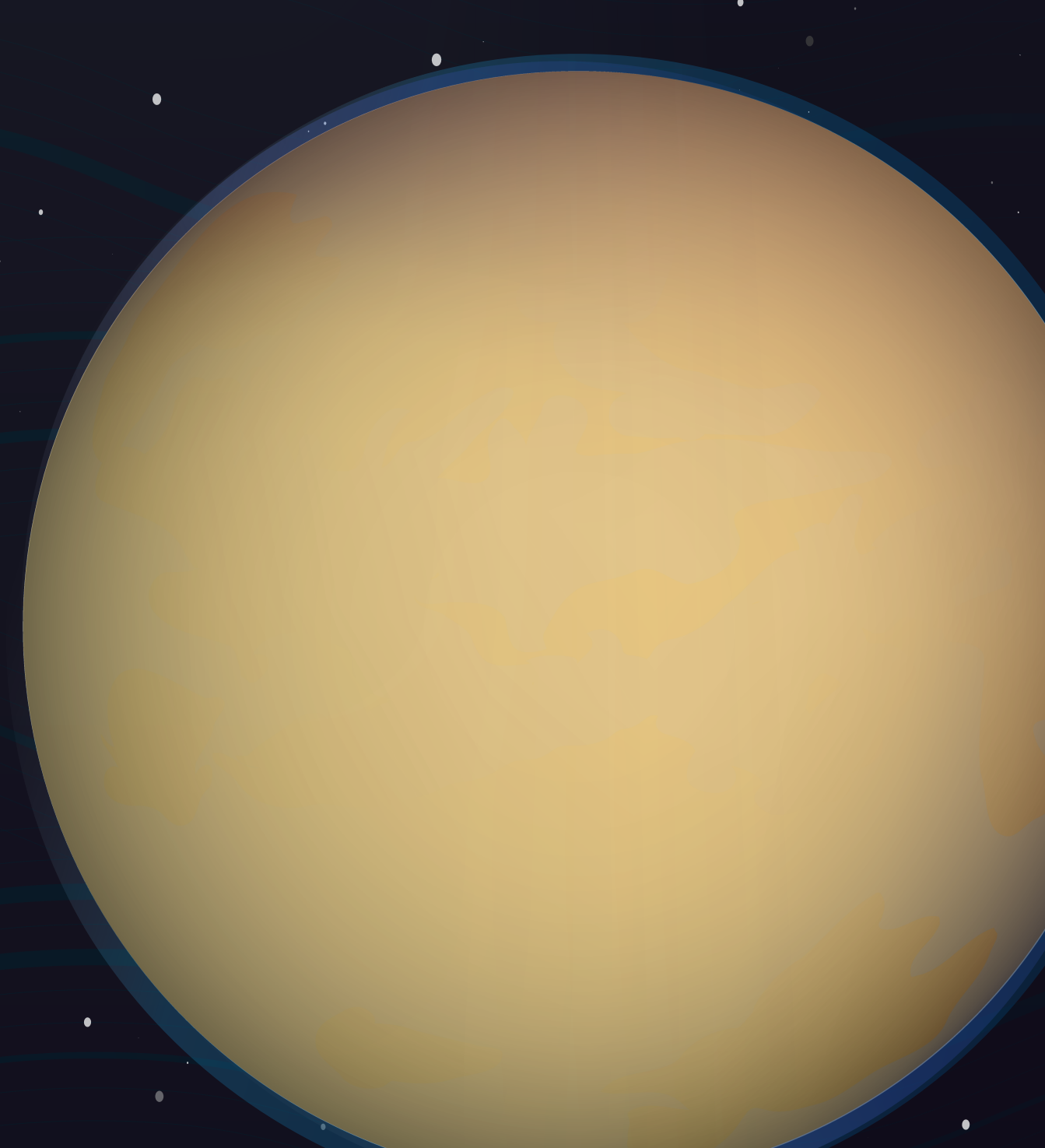
May have a trapped ocean, unlikely to support life if ocean is trapped

OCEAN WORLD STATUS

MOON OF SATURN

TITAN

Titan is believed to have a salty subsurface ocean -- as salty as the Dead Sea on Earth -- beginning about 30 miles (50 km) below its ice shell. It is also possible that Titan's ocean is thin and sandwiched between layers of ice, or is thick and extends all the way down to the moon's rocky interior.



MOON OF SATURN

MIMAS

Research suggests that Mimas has either a subsurface ocean or that its core is shaped like a football. If Mimas is hiding a liquid water ocean, it lies 15 to 20 miles (25 to 30 km) beneath the moon's impact-battered surface.



SIZE COMPARISON

9.5 AU

DISTANCE FROM SUN

POSSIBLE

Evidence of an ocean, biological potential unknown

OCEAN WORLD STATUS



SIZE COMPARISON

30.1 AU

DISTANCE FROM SUN

POSSIBLE

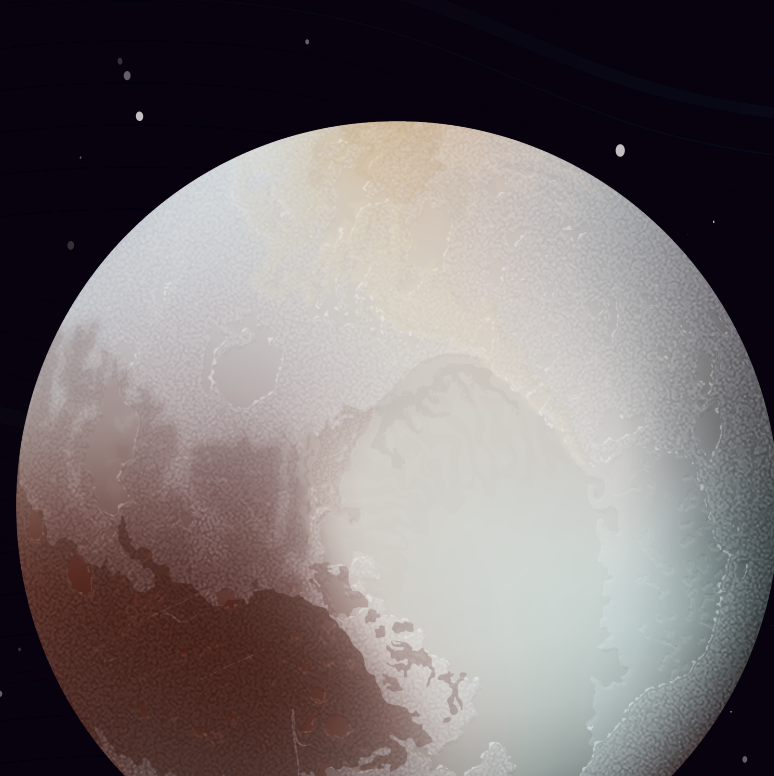
Evidence of an ocean, biological potential unknown

OCEAN WORLD STATUS

MOON OF NEPTUNE

TRITON

Active geysers on Triton spew nitrogen gas, making this moon one of the known active worlds in the outer solar system. Volcanic features and fractures mark its cold, icy surface, likely results of past tidal heating. A subsurface ocean at Triton is considered possible, but is unconfirmed.



DWARF PLANET

PLUTO

A world of many unknowns, Pluto could have rings and perhaps a subsurface ocean. Data from NASA's New Horizons mission will provide new insights about this unexplored world.



SIZE COMPARISON

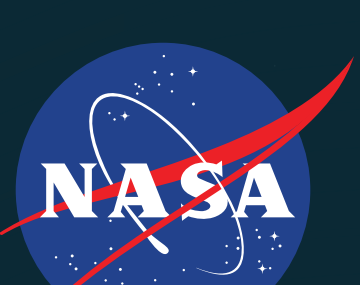
39.5 AU

DISTANCE FROM SUN

POSSIBLE

Evidence of an ocean, biological potential unknown

OCEAN WORLD STATUS



WE'RE *OUT THERE*

oceanworlds.nasa.gov