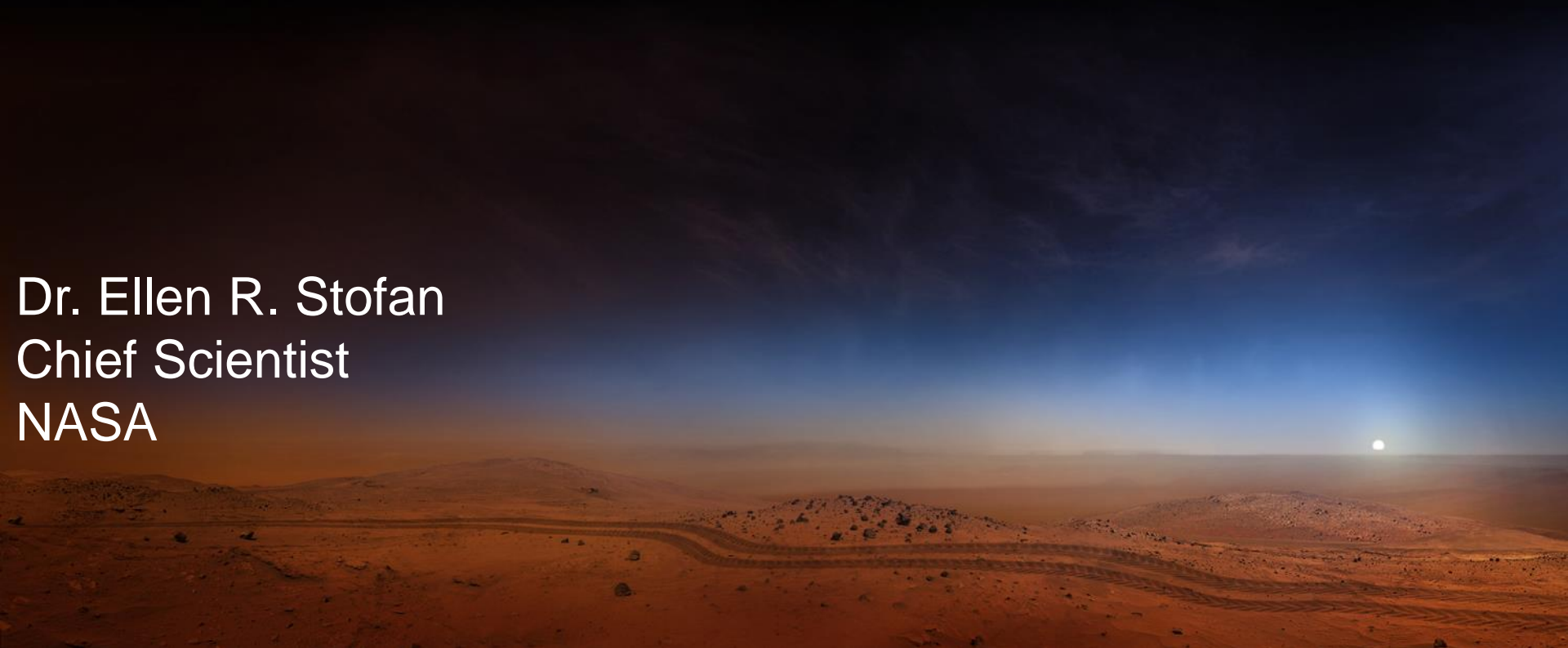
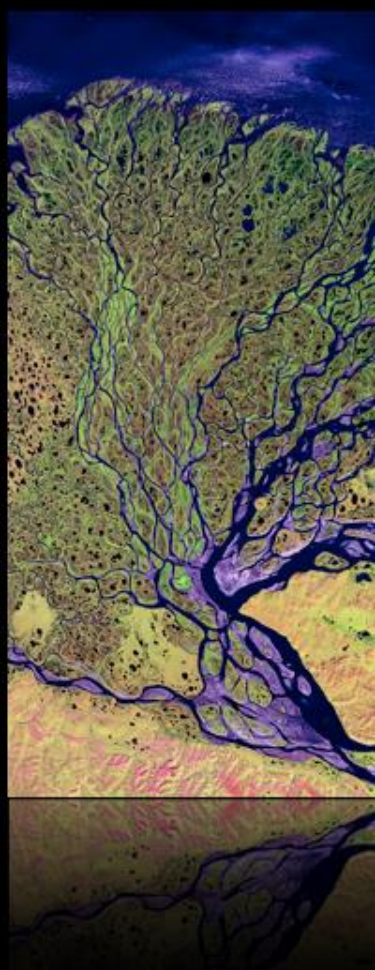


# Planning for the Exploration of Mars and Ocean Worlds

Dr. Ellen R. Stofan  
Chief Scientist  
NASA

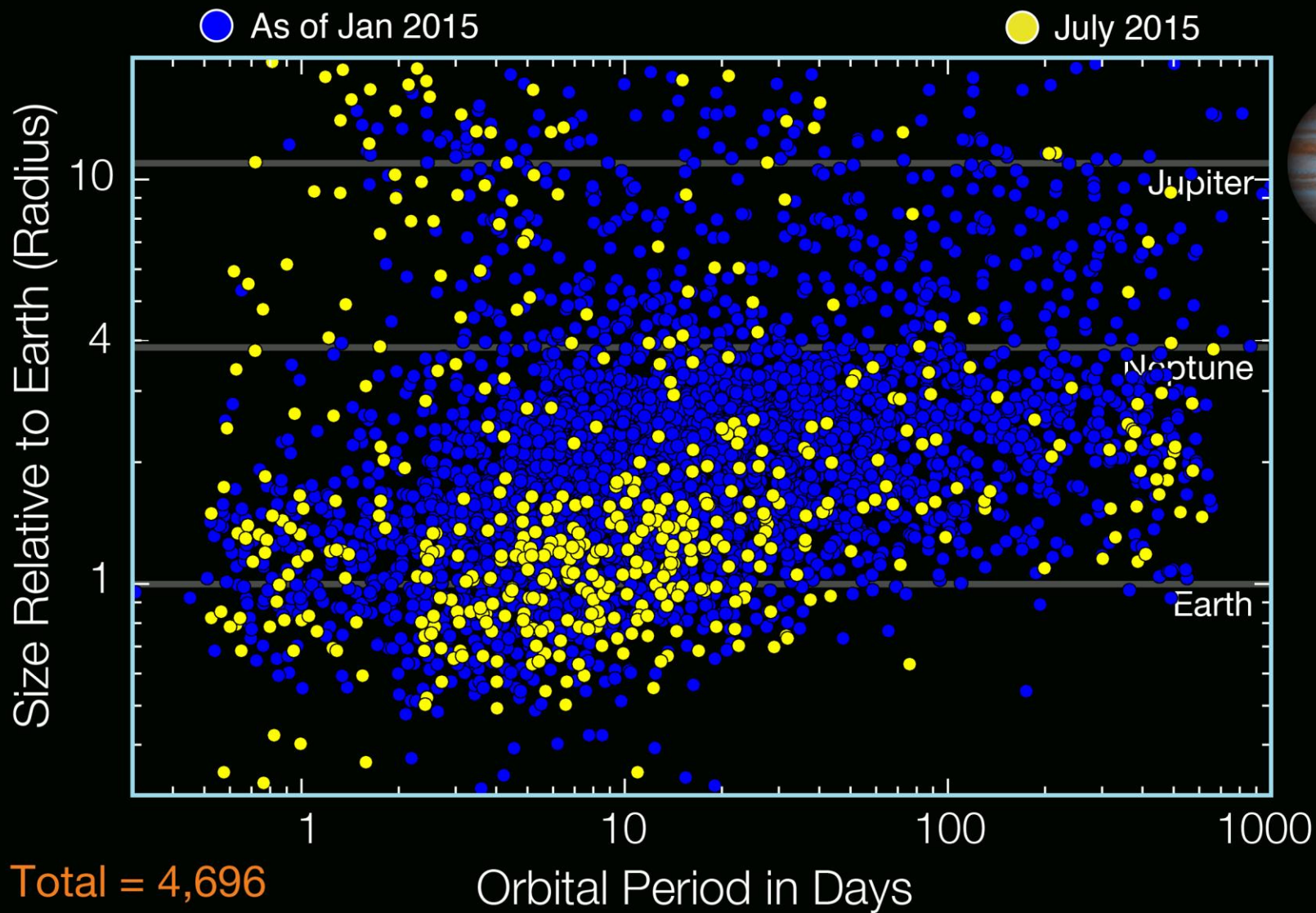




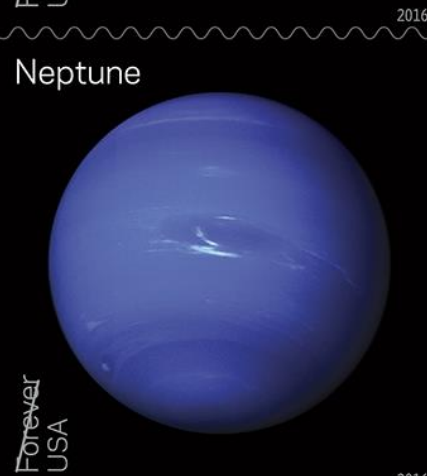
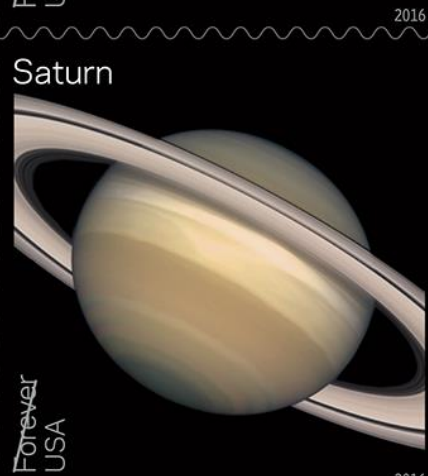
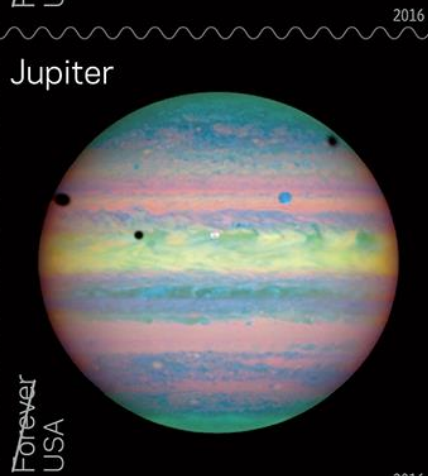
NASA SCIENCE

# New Kepler Planet Candidates

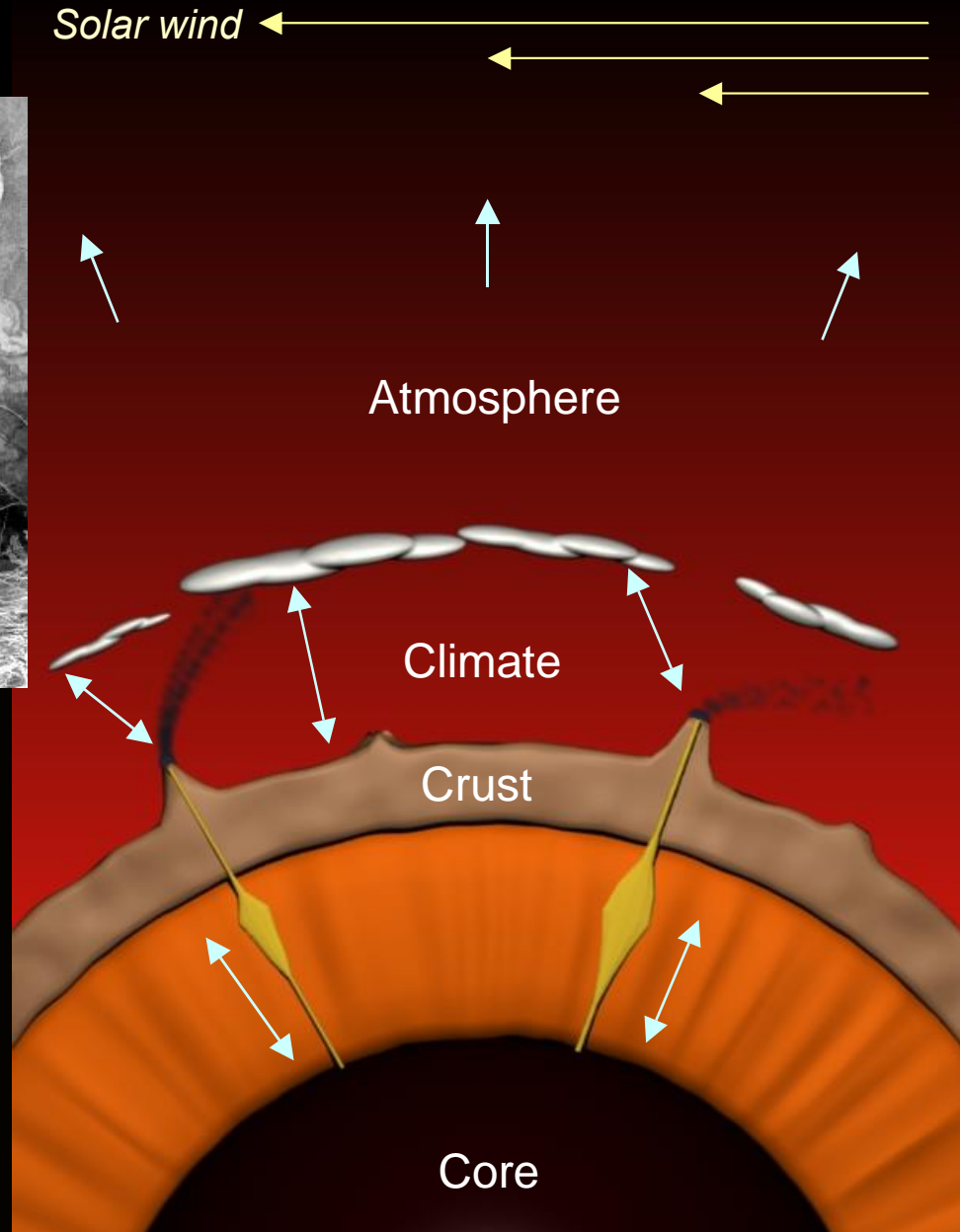
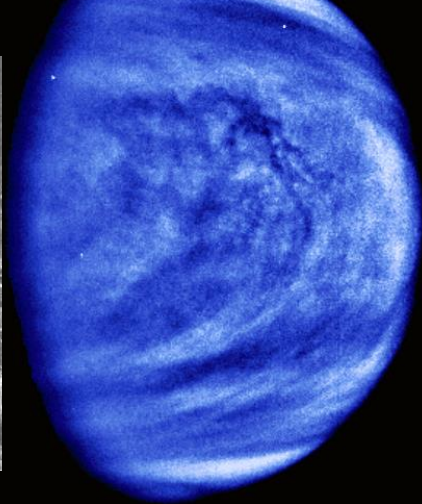
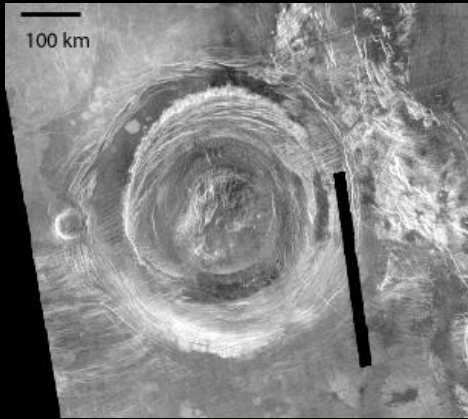
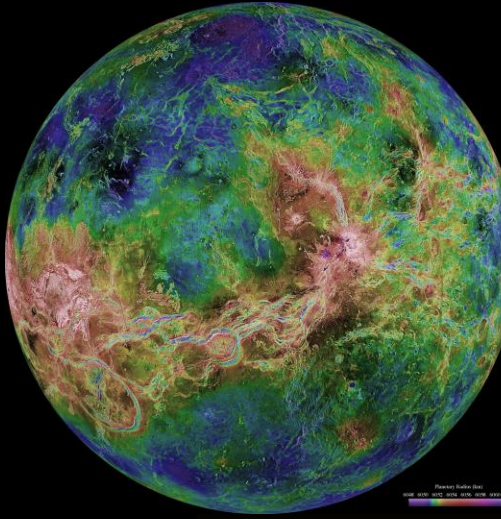
*As of July 23, 2015*







# Venus







# JOURNEY TO MARS



All elements needed for a human Mars mission are in development now.



International and commercial partnerships

## EARTH RELIANT

NOW - MID-2020s

International Space Station operation through commercial development of low-Earth orbit  
Development of deep space systems life support and human health

## PROVING GROUND

2018-2030

Regular crewed missions and spacewalks in cislunar space  
Verify deep space habitation and conduct a yearlong mission to validate readiness for Mars  
Demonstrate integrated human and robotic operations by redirecting and sampling an asteroid boulder

## EARTH INDEPENDENT

NOW – 2030s and beyond

Science missions pave the way to Mars  
Demonstrate entry, descent, and landing and in-situ resource use  
Conduct robotic roundtrip demonstration with sample return in the late 2020s  
Send humans to orbit Mars in the early 2030s



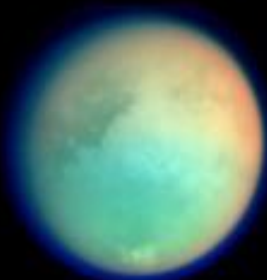
● Enceladus



Europa



Callisto



Titan



Triton

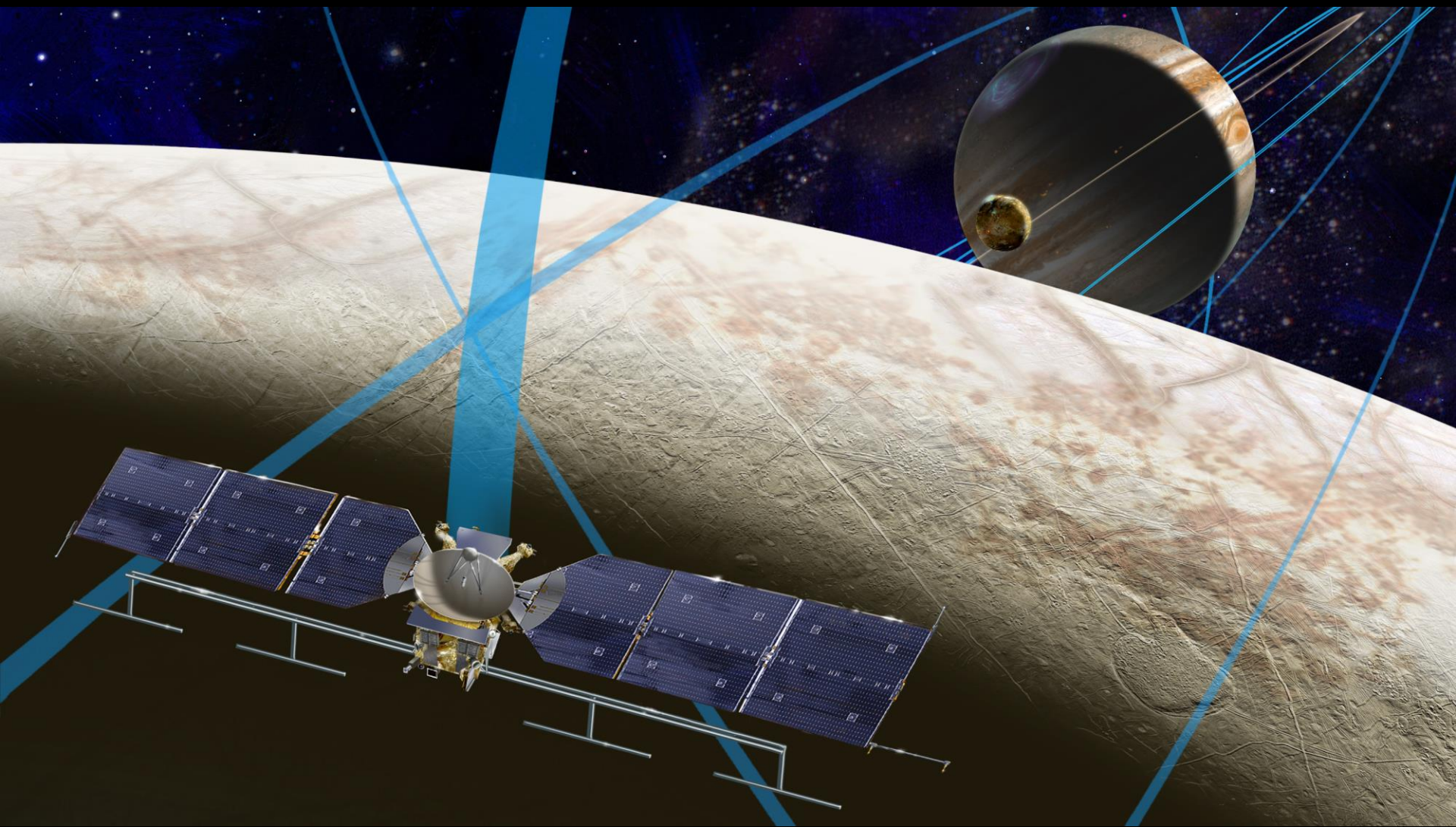


Ganymede

*Shown to scale*

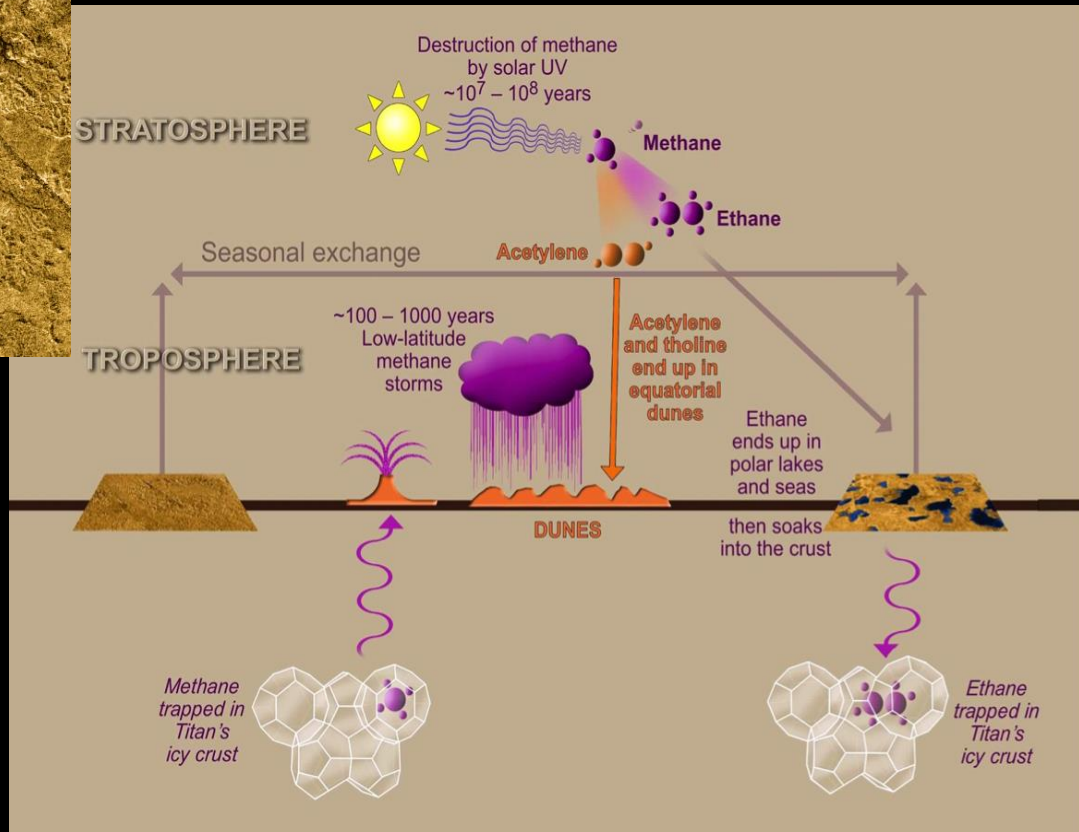
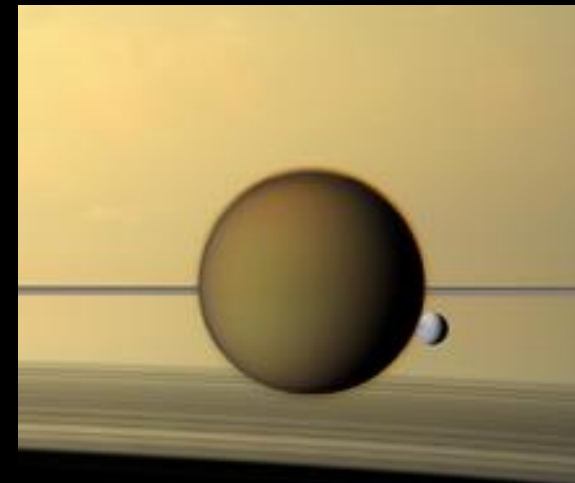
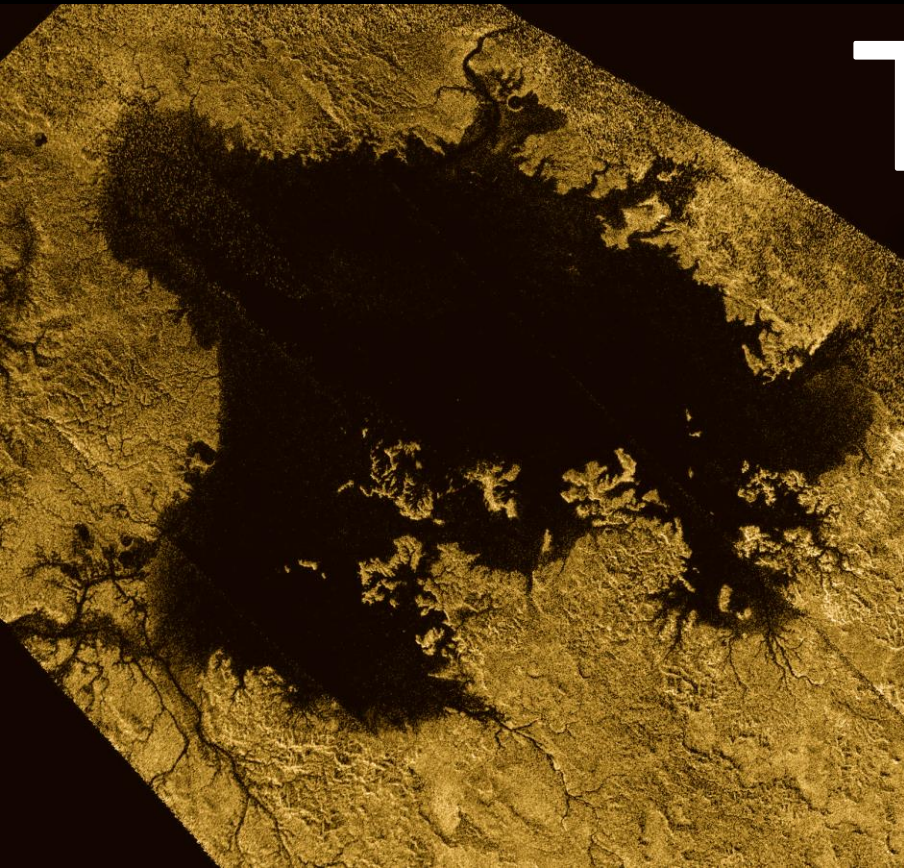








# Titan



After Lunine and Atreya,