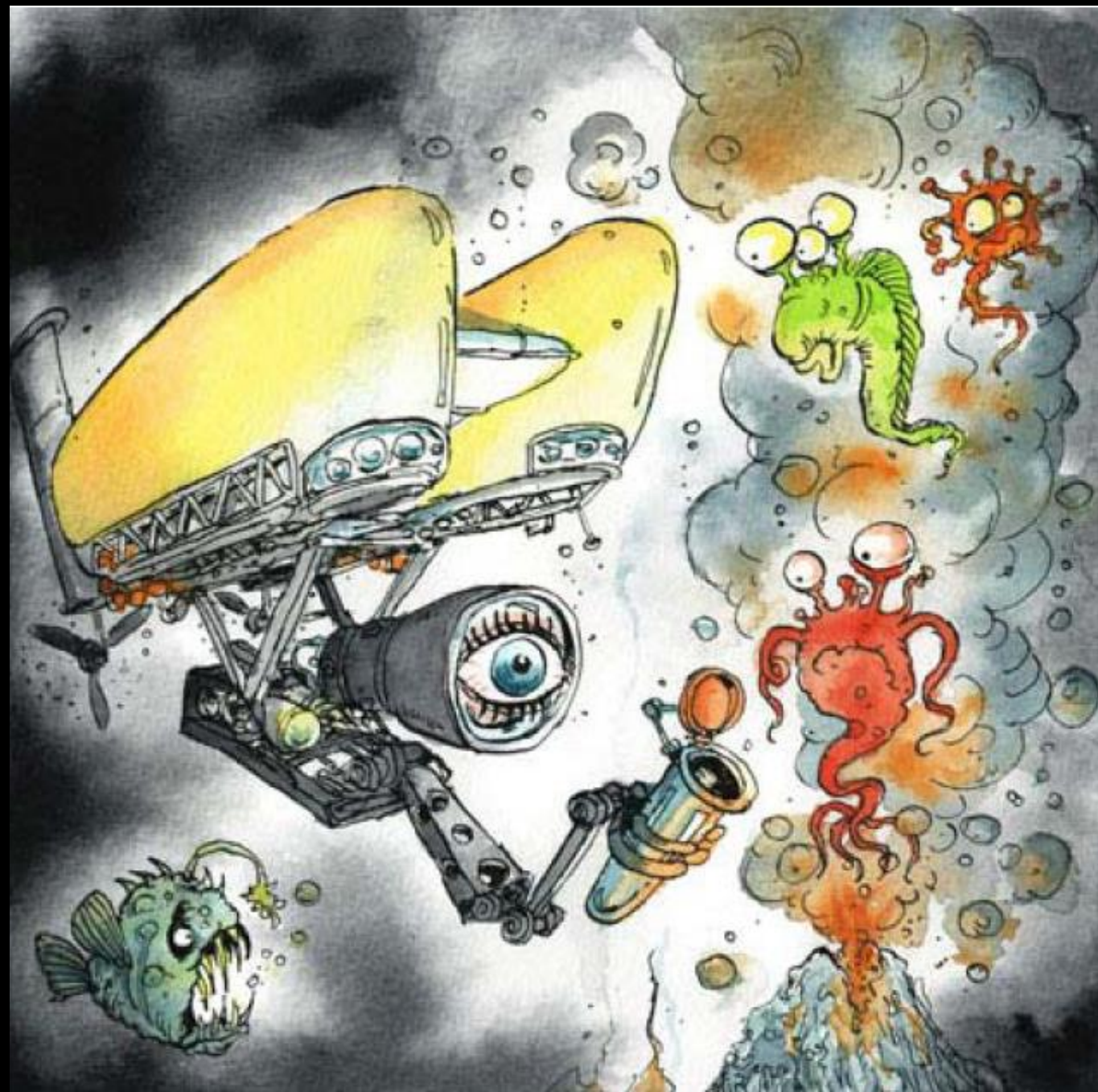


# Ocean Worlds on Earth and Beyond



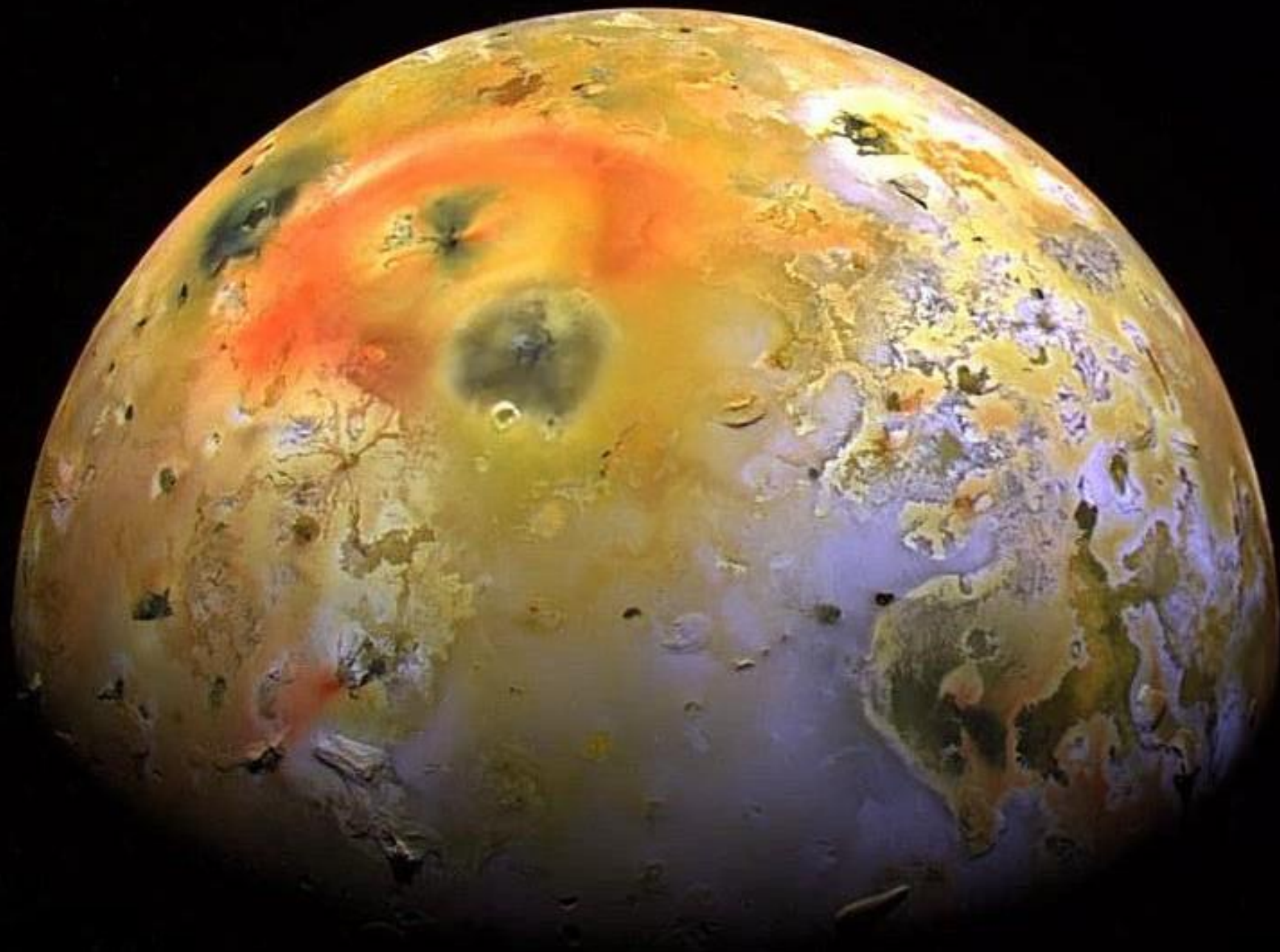
**Dr. Julie A Huber**

**Woods Hole Oceanographic Institution**



David Simonds, *Economist*







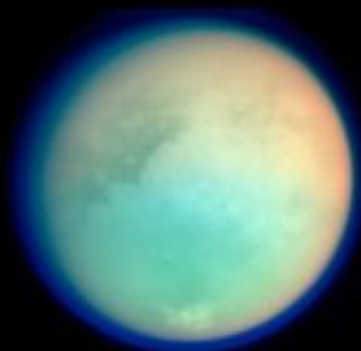
● Enceladus



Europa



Callisto



Titan



Triton



Ganymede

A black and white composite image featuring a large, detailed Earth in the center. Surrounding it are several smaller, spherical bodies, likely moons, of varying sizes and surface textures. The background is a solid black, making the celestial bodies stand out. The text "Does biology work beyond Earth?" is overlaid in white, bold, sans-serif font across the middle of the image.

**Does biology work beyond Earth?**

**How does geology shape our ocean and life on Earth?**





How does geology shape our ocean and life on Earth?

**How does life survive without sunlight?**





How does geology shape our ocean and life on Earth?

How does life survive without sunlight?

**What limits life?**



**How does geology shape our ocean and life on Earth?**

**How does life survive without sunlight?**

**What limits life?**

**How does life spread & diversify?**



How does geology shape our ocean and life on Earth?

How does life survive without sunlight?

What limits life?

How does life spread & diversify?

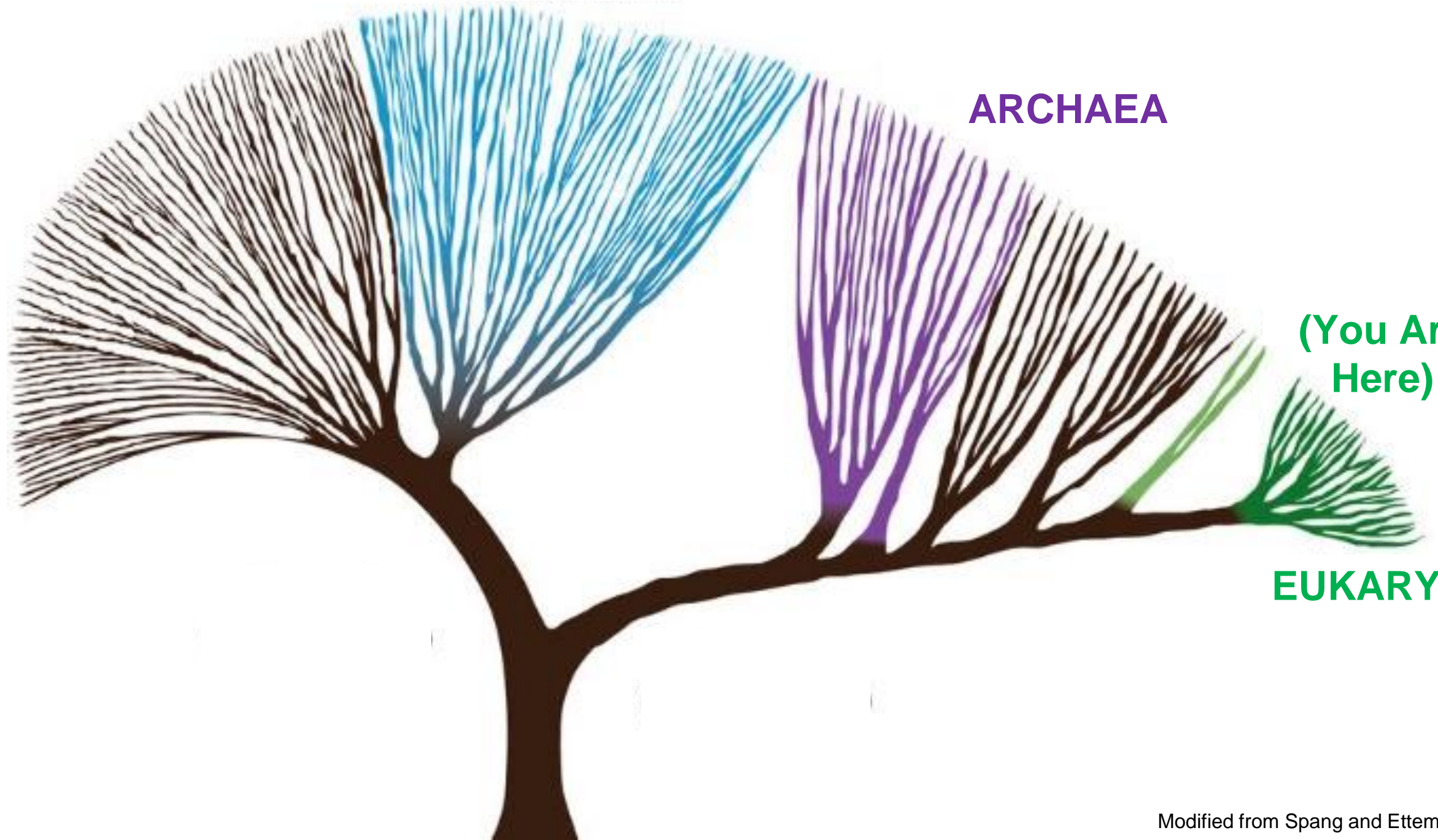
**Is life unique to Earth or common in the Universe?**

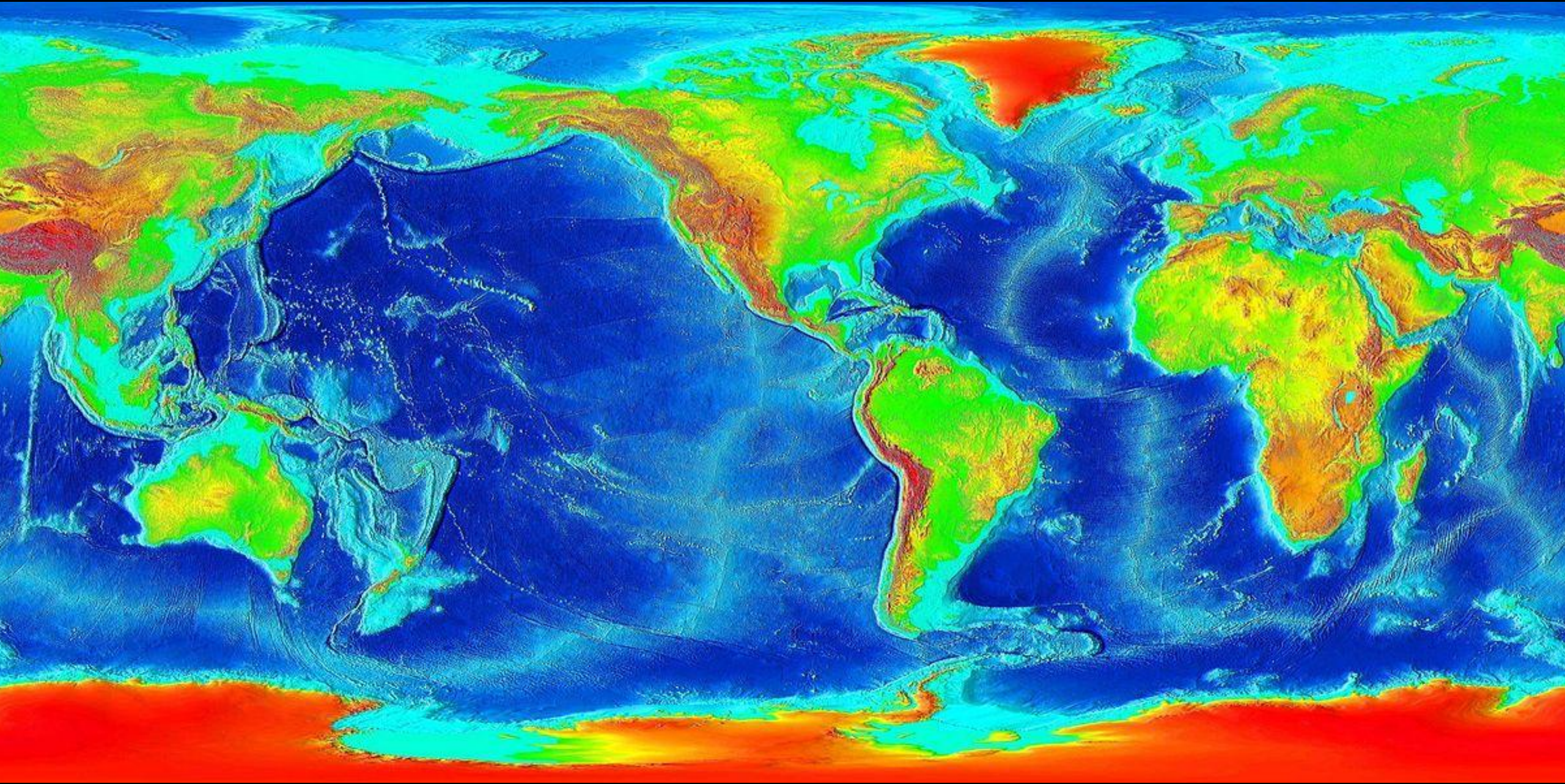
**BACTERIA**

**ARCHAEA**

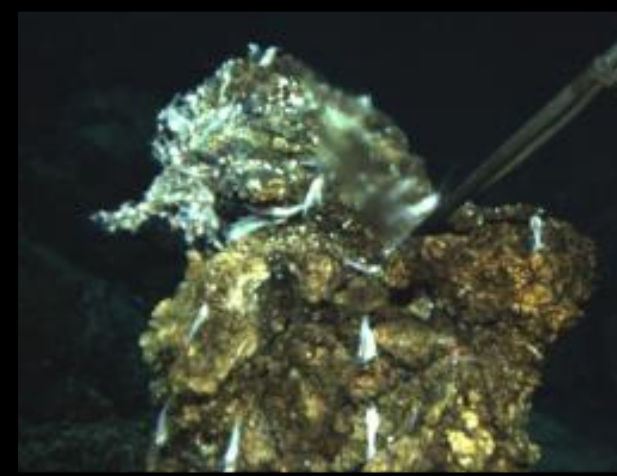
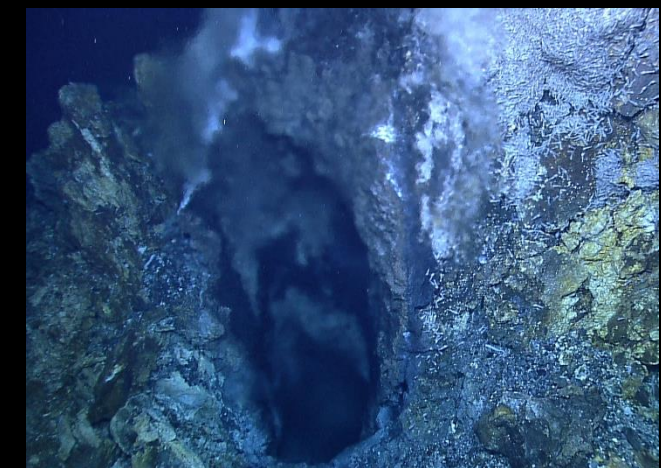
**(You Are Here)**

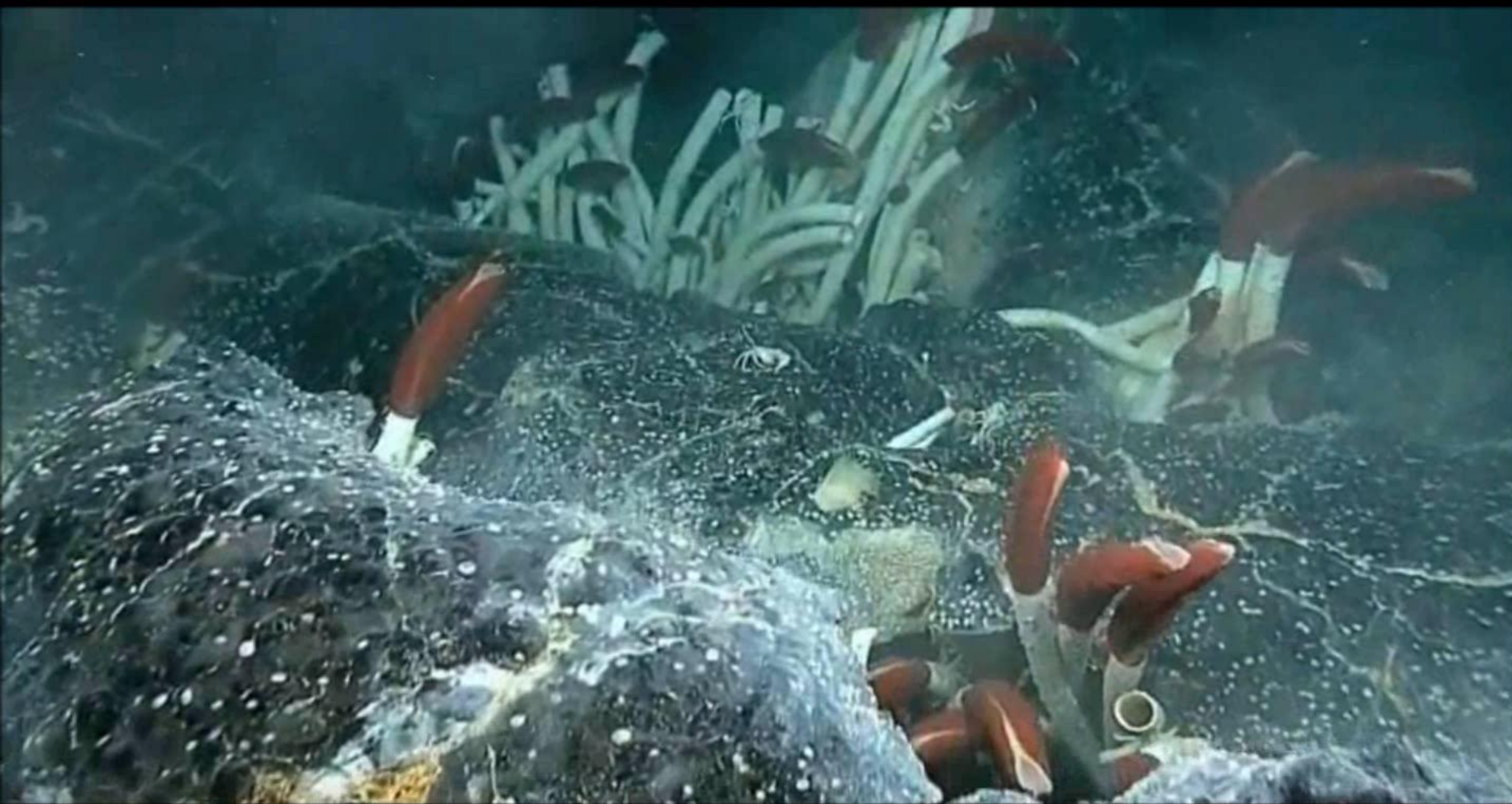
**EUKARYA**





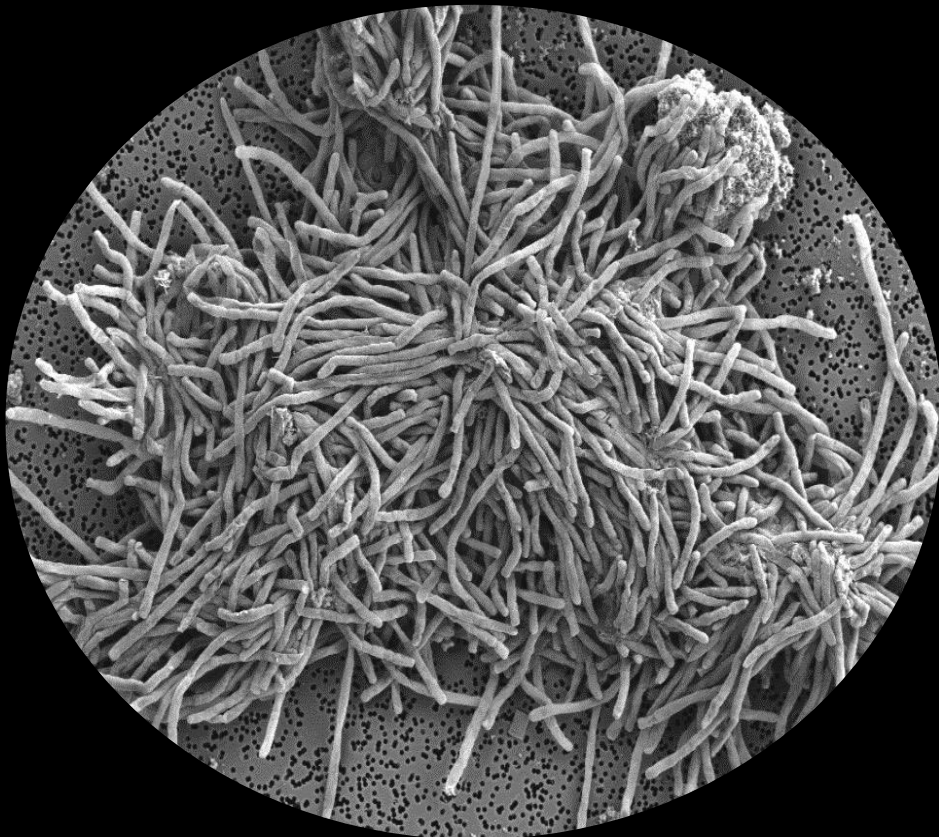




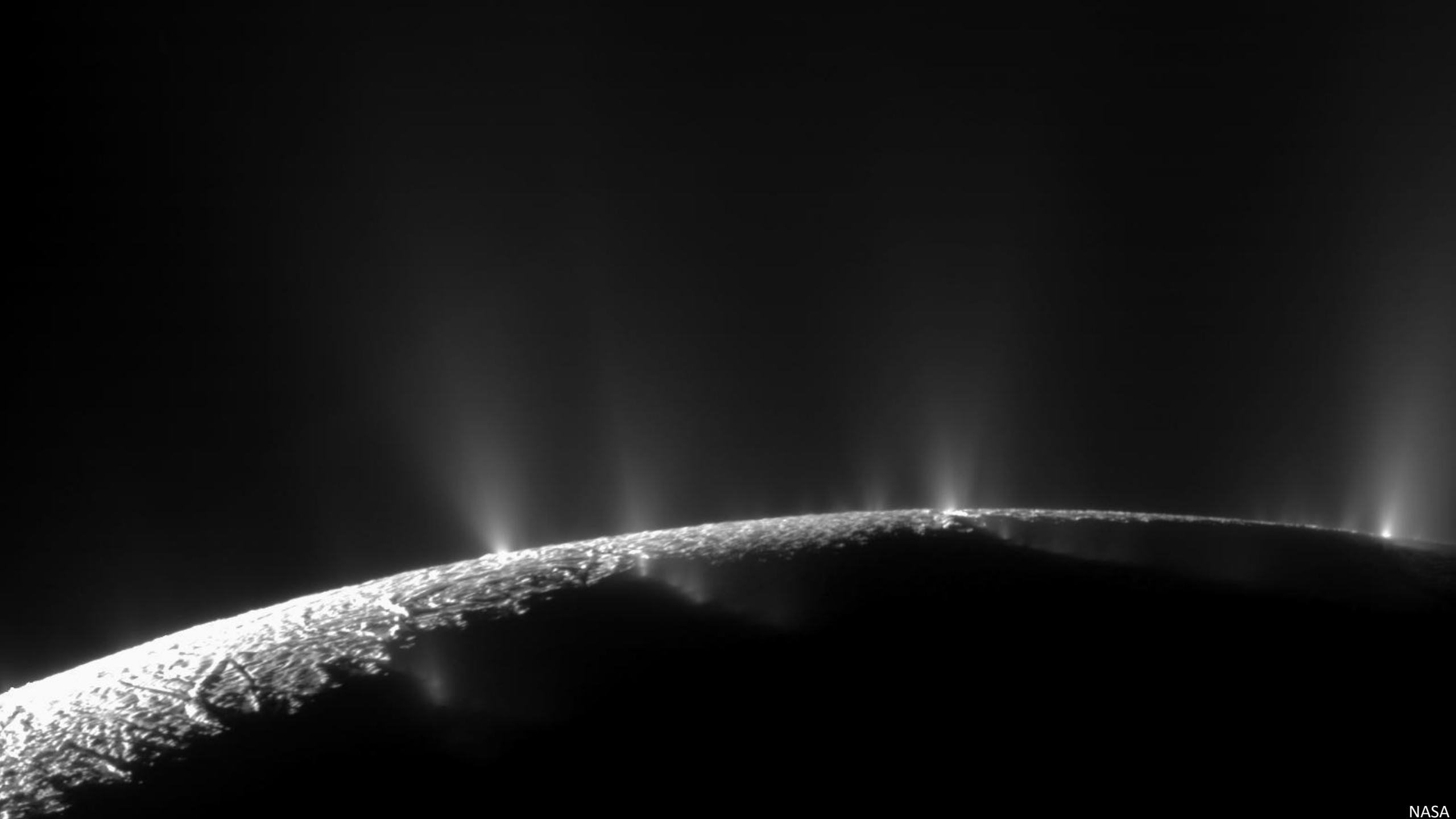


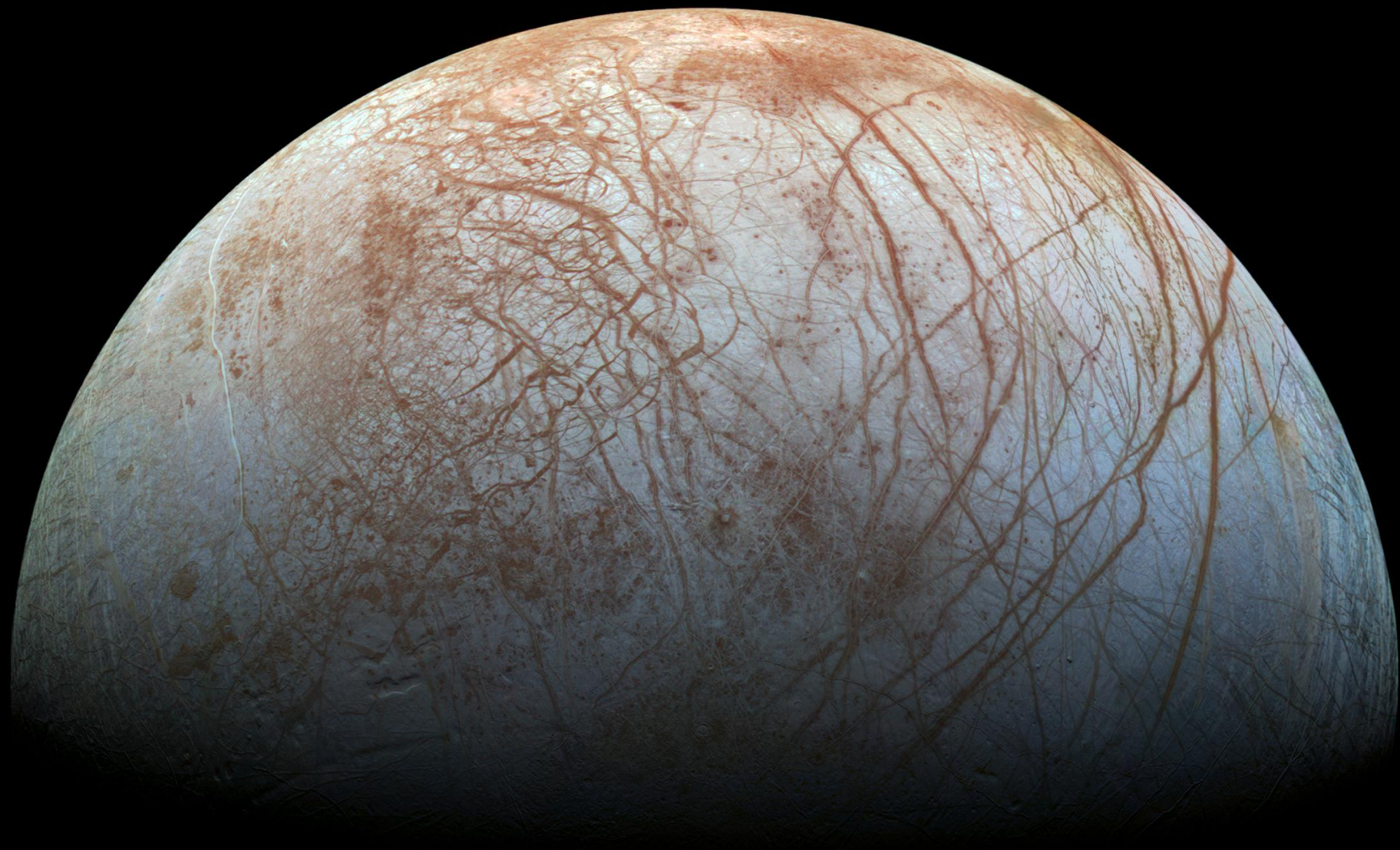


# New frontiers in limits for life: On Earth & beyond

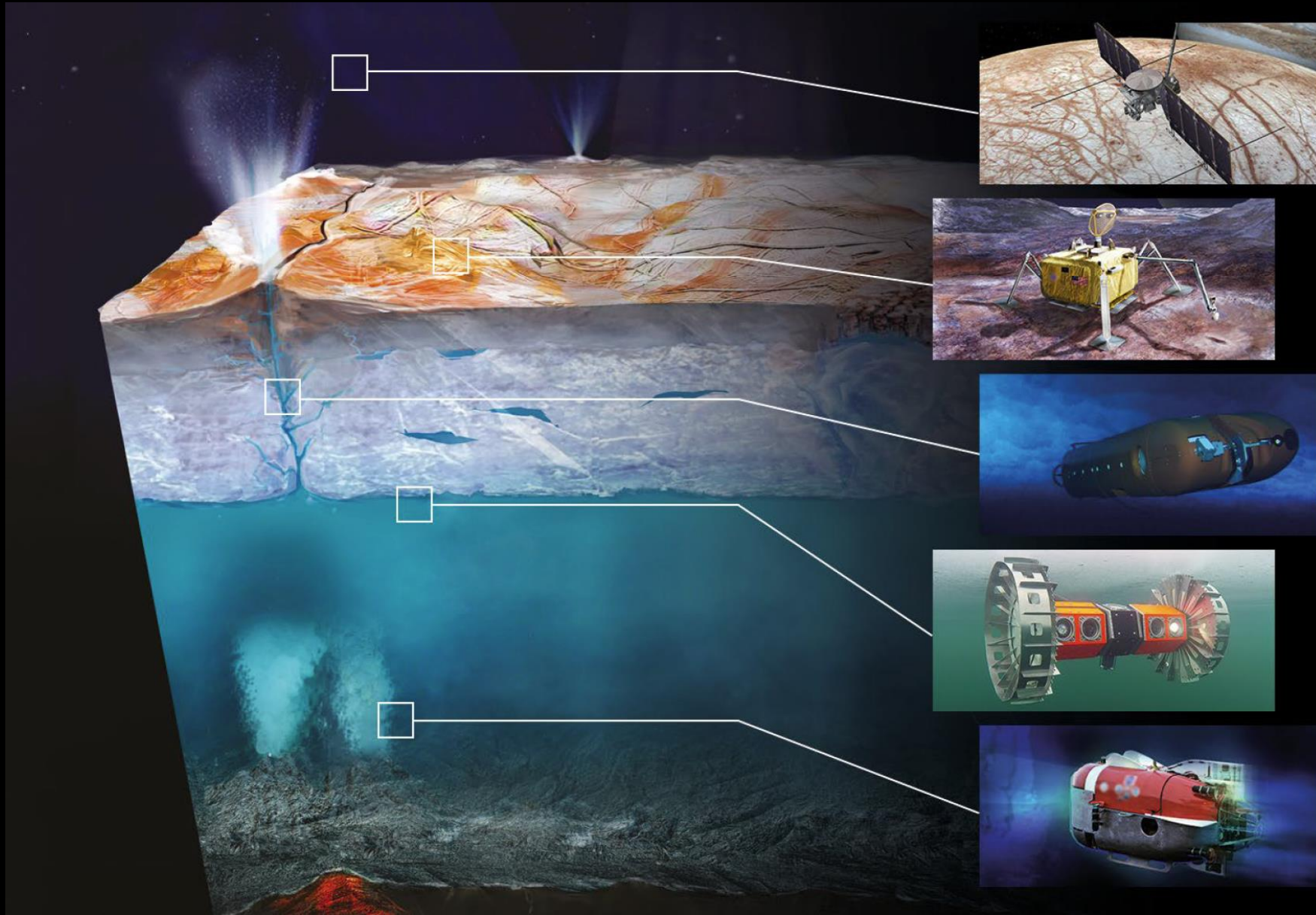


- Life 1.5 miles beneath the seafloor
- Microbes thriving in volcanic eruptions
- Expanding diversity of known life on Earth





# Ocean Worlds: A New Field of Research



# NASA Makes Dual Investment in Ocean Worlds Research at the Woods Hole Oceanographic Institution

June 21, 2019



Agency funds five-year effort to understand the potential for life in outer solar system and establishes a new Network for Ocean Worlds

