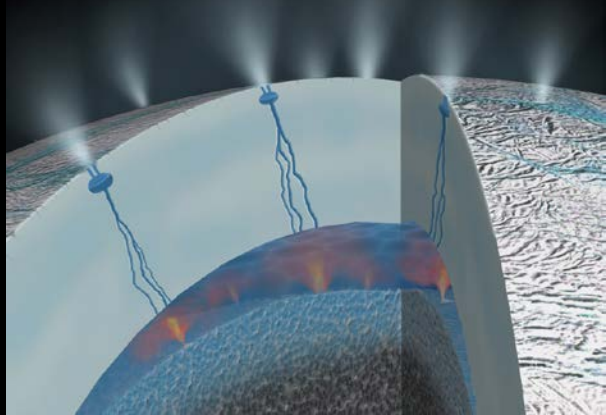


Telltale Geyser Dust from Enceladus Seafloor Vents

Cassini discovers the first evidence for ongoing seafloor hydrothermal activity on a body other than Earth. Hydrothermal activity occurs when seawater infiltrates and reacts with a rocky core, emerging as a heated, mineral-laden liquid. This new finding opens the possibility for prebiotic or even biotic chemical mixtures to “slow-cook” inside Saturn’s moon Enceladus, where the ocean meets hot rock.



There is a strong possibility that hot water rises from seafloor vents on Enceladus. This raises the potential for habitable environments beneath the ice crust of this small, active moon.

- Silica nanoparticles were captured by Cassini’s cosmic dust analyzer. Analysis revealed these particles came from Enceladus’ seafloor.
- Laboratory experiments indicate that these dust particles must have formed on the seafloor at temperatures above 90° C (194° F). This is a much hotter environment than scientists thought existed inside the icy moon, suggesting that seafloor hydrothermal activity is occurring.
- Similar activity is observed around mid-Atlantic seafloor vents, where some extreme life forms reside.
- This result shows that Enceladus’ plume activity is an eruptive process that begins in its core and is not limited to the near-surface.