

IT'S ALL ABOUT

Enceladus' Reconnaissance for Astrobiology (ERA)

A quick infographic summarizing our mission to this far away satellite.



HABITABILITY EVIDENCE

THE 3 REQUIREMENTS FOR AN HABITABLE ENVIRONMENT

LIQUID WATER

HYDROTHERMAL ENERGY SOURCE

CARBON-BEARING ORGANIC MOLECULES

Enceladus

THE KNOWN

Data from Cassini (est. 2004) open the doors for questions regarding this Icy Moon, however, we are faced with limited data.

ZONE OF INTEREST

The south pole provides insight into both the rock-water interactions as well as chemical alteration from the ejections to the E-Ring. It is important to characterize chemical alteration due to possible destruction of potential biosignatures

METHANE

AMMONIUM

[H][H]

MOLECULAR HYDROGEN

[H]C[H]

METHANE

[H]C#N

HYDROGEN CYANIDE

[NH4+]

AMMONIUM

[H]O[H]

WATER

KNOWN COMPOUNDS

Organics present open a big question regarding habitability and proposals for New Frontiers missions after Titan, Europa and Uranus.

ASSESSMENT

Mission data provides a direct measurement of the system and can analyze the half life of possible biosignatures

E-RING SPOTLIGHT

The ejecta from the plumes form what is know as Saturn's E ring. Contrasting the plume from the surface and E-ring can help determine changes in composition and viability of molecules after the trajectory

Mission Analysis

Importance

Mission goals

Harbors all components needed to support known life

Provides a good analog for further Icy Worlds exploration considering low UV exposure

(HRMS) + (CE-LIF)

MISE.2 Mapping Imaging Spectrometer for Enceladus

Study the transition of the ejections from the plume towards the E-ring

Look for evidence of molecular species, specially chirality

MISSION STRUCTURE

The organizational structure determines how the main components of the mission play out to ensure mission success and proper analysis of the planetary system.