

Goddard Scientists Use Webb to Map Surprisingly Large Plume Jetting from Saturn's Moon Enceladus

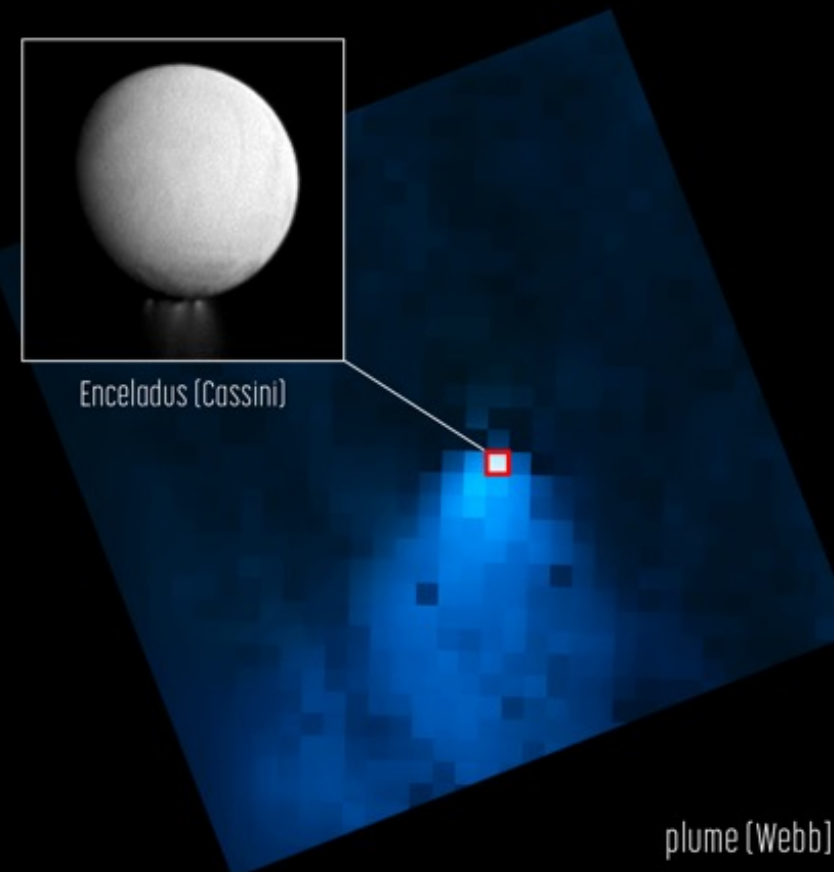


A water vapor plume from Saturn's moon Enceladus spanning more than 6,000 miles has been detected by researchers using NASA's James Webb Space Telescope, giving scientists a direct look at how this plume feeds the water supply for the entire system of Saturn and its rings.

The jets leave behind a donut-shaped torus of water, co-located with Saturn's outermost and widest ring – the dense "E-ring," and astronomers have determined that roughly 30 percent of the water stays within this torus. The other 70 percent escapes to supply the rest of the Saturnian system with water.

Enceladus is an ocean world just 313 miles across, but is one of the most exciting scientific targets in the Solar System in the search for life beyond Earth. A reservoir of salty water lies under the icy outer crust of Enceladus, and geysers spew jets of ice particles, water vapor, and organic chemicals out of crevices in its surface.

In the coming years, discoveries from Webb will help inform future planetary missions that will look to explore the subsurface ocean's chemistry, how thick the ice crust is, the moon's potential for life, and more.



The James Webb Space Telescope shows a water vapor plume jetting from the southern pole of Saturn's moon Enceladus, extending out 20 times the size of the moon itself. Credits: NASA, ESA, CSA, STScI, and G. Villanueva. Image Processing: A. Pagan (STScI).