What's that sparkle in Cassini's eye?

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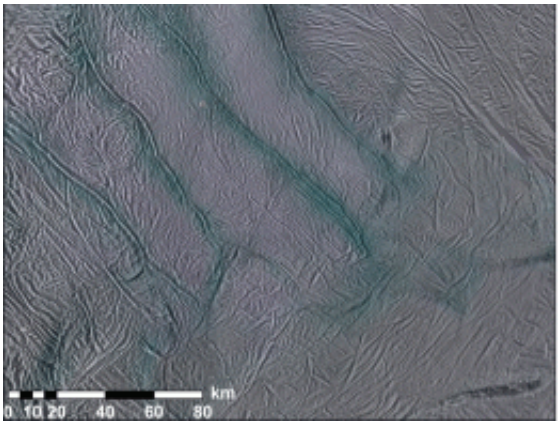

NASA's Cassini spacecraft obtained these views of the south polar area of Saturn's moon Enceladus in visible and near-visible (ultraviolet and infrared) light and synthetic-aperture radar (SAR). Credit: NASA/JPL-Caltech/SSI

The moon Enceladus, one of the jewels of the Saturn system, sparkles peculiarly bright in new images obtained by NASA's Cassini spacecraft. The images of the moon, the first ever taken of Enceladus with Cassini's synthetic aperture radar, reveal new details of some of the grooves in the moon's south polar region and unexpected textures in the ice. These images, obtained on Nov. 6, 2011, are the highest-resolution images of this region obtained so far.

The area on Enceladus observed by Cassini's radar instrument does not include the famous "tiger stripes," fissures that eject great plumes of ice particles and water vapor, but covers regions just a few hundred miles away from the stripes. Scientists are scrutinizing an area around 63

degrees south latitude and 51 degrees west longitude that appears to be very rough, a texture that shows up as very bright in the radar images.

"It's puzzling why this is some of the brightest stuff Cassini has seen," said Steve Wall, deputy team lead of Cassini's radar team, based at NASA's Jet Propulsion Laboratory, Pasadena, Calif. "One possibility is that the area is studded with rounded ice rocks. But we can't yet explain how that would happen."

Scientists are also intrigued by an area around 65 degrees south latitude and 293 degrees west longitude, which shows a close-up view of grooved, water-ice bedrock. The new images reveal undulations and other intricate patterns that had not been seen previously. They also now have measurements of the heights and depths of the grooves in this area, with the central groove measuring about 2,100 feet (650 meters) deep and 1.2 miles (2 kilometers) wide. It has slopes of about 33 degrees.

These images of Enceladus show some similarity to those obtained of Saturn's largest moon Titan. Titan's large feature Xanadu is also very bright, as are areas surrounding the crater Sinlap. Whether the bright areas seen here are due to the same, or very different, processes will be a subject of discussion as scientists continue to learn more about the moons of Saturn.

The Cassini orbiter was designed, developed and assembled at JPL. The radar instrument was built by JPL and the Italian Space Agency, working with team members from the U.S. and several European countries. JPL is a division of the California Institute of Technology in Pasadena.

Provided by JPL/NASA

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