

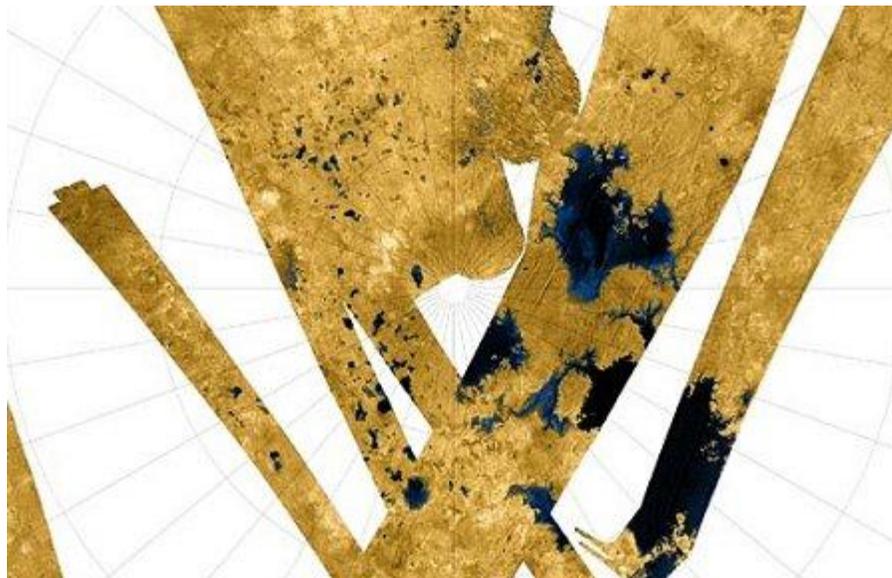
New Lakes Discovered on Titan

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October 12, 2007: Newly assembled radar images from the Cassini spacecraft are giving researchers their best-ever view of hydrocarbon lakes and seas on the north pole of Saturn's moon Titan, while a new radar image reveals that Titan's south pole also has lakes.

Approximately 60 percent of Titan's north polar region (north of 60° latitude) has been mapped by Cassini's radar. About 14 percent of the mapped region is covered by what scientists believe are lakes filled with liquid methane and ethane:



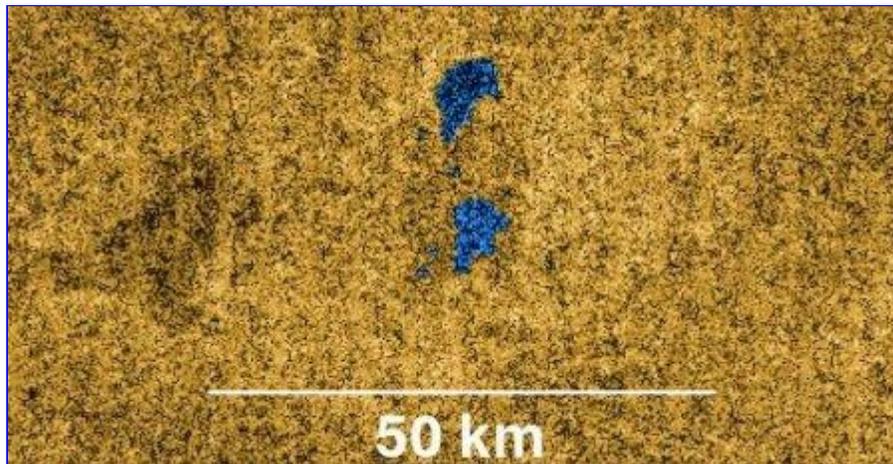
Above: A false-color mosaic of Titan's north pole. [\[More\]](#)

The mosaic image was created by stitching together radar images from seven Titan flybys over the last year and a half. At least one of the pictured lakes is larger than Lake Superior.

"This is our version of mapping Alaska, the northern parts of Canada, Greenland, Scandinavia and Northern Russia," says Rosaly Lopes, Cassini radar scientist at NASA's Jet Propulsion Laboratory. "It's like mapping these regions of Earth for the first time."

Lakes and seas are very common at Titan's high northern latitudes where winter is now underway. Scientists say it rains methane and ethane there, filling the lakes and seas. These liquids also carve meandering rivers and channels on the moon's surface.

Now Cassini is moving into unknown territory: the south pole of Titan. On Oct. 2, the spacecraft executed a flyby in which a prime goal was the hunt for southern lakes. Lopes explains: "We wanted to see if there are more lakes present there and, sure enough, there they are, three little lakes smiling back at us."



Above: Two of three newfound lakes near Titan's south pole. [[More](#)]

"Titan is indeed the land of lakes and seas," she adds. "It will be interesting to see the differences between the north and south polar regions." It is now summer at Titan's south pole. A season on Titan lasts nearly 7.5 years, one quarter of a Saturn year, which is 29.5 years long. Monitoring seasonal changes in the lakes will help scientists understand the processes at work there.

They are already making progress in understanding how the lakes may have formed. On Earth, lakes fill low spots or are created when the local topography intersects a groundwater table. Lopes and her colleagues think that the depressions containing the lakes on Titan may have formed by volcanism or by a type of "karstic erosion" which leaves a depression where liquids can accumulate. [Karstic lakes](#) are common on Earth. For example, in parts of Minnesota and central Florida there are hundreds of such lakes.

"The lakes we are observing on Titan appear to be in varying states of fullness, suggesting their involvement in a complex hydrologic system akin to Earth's water cycle. This makes Titan unique among the extra-terrestrial bodies in our solar system," says Alex Hayes, a graduate student who studies Cassini radar data at the California Institute of Technology in Pasadena.

"The lakes we have seen so far vary in size from the smallest observable, approximately 1 square kilometer, to greater than 100,000 square kilometers, which is slightly larger than the Great Lakes in the Midwestern U.S.," Hayes says. "Of the roughly 400 observed lakes, 70 percent of their area is taken up by 'seas' greater than 26,000 square kilometers."

Future radar flybys will map terrain even closer to the south pole. Stay tuned for more lakes!



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