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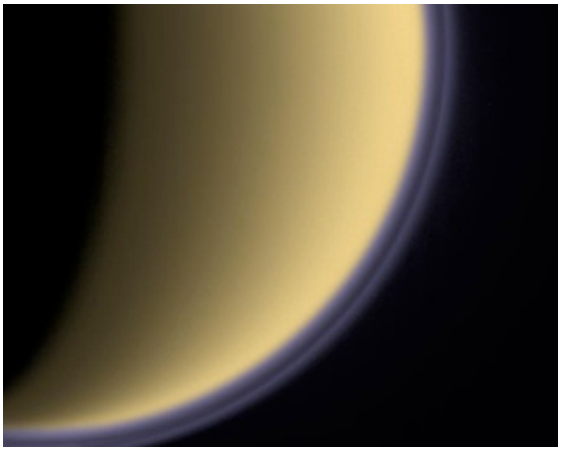
It's raining hydrocarbons on Saturn's mysterious moon

By John Matson in 60-Second Science Blog



Titan, Saturn's largest moon, has a curious abundance of methane, both in its atmosphere and in massive liquid pools on the surface. As with Mars, the presence of the relatively short-lived compound on Titan raises questions about its origin. (Methane comes largely from biological processes on Earth, but other celestial bodies might have different primary sources for the hydrocarbon, such as subsurface geologic activity—Titan appears to be something of a long shot for sustaining life.)

Satellite data from NASA's Cassini mission continue to provide clues as to the workings of Titan's methane cycle. A new paper in *Geophysical Research Letters* details the latest findings from Cassini, including a vast system of hydrocarbon (methane and ethane) lakes near the poles that appear to be replenished by seasonal precipitation from storm clouds. One of the lakes, whose discovery was announced last summer, is comparable in surface area to Lake Ontario.

The ultimate source of this vast supply is still an open question—on geologic timescales Titan's methane should be destroyed by photochemical reactions, so something must be replenishing it. (A 2007 *Scientific American* article by planetary scientist Sushil K. Atreya of the University of Michigan at Ann Arbor discusses some of the processes, both geologic and biological, that might do so.) There may be huge amounts of the stuff venting from Titan's surface, possibly pointing to chemical reactions with a subsurface ocean of water.

PHOTO OF TITAN AND ITS HAZY ATMOSPHERE: NASA/JPL/SPACE SCIENCE INSTITUTE