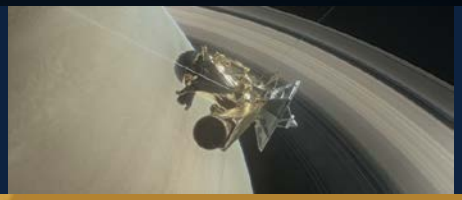


Titan's Hydrocarbon Gold

For the first time, scientists have been able to estimate both the depth and volume of Titan's lakes and seas (see color image of Ligeia Mare) using data from Cassini's radar instrument. The lakes and seas are composed primarily of methane, the simplest hydrocarbon.

On Earth, methane is gaseous at ambient temperatures, while on Titan it is far more abundant and commonly found in both gaseous and liquid forms. Collectively, the volume of liquid hydrocarbon exposed on Titan is equivalent to:

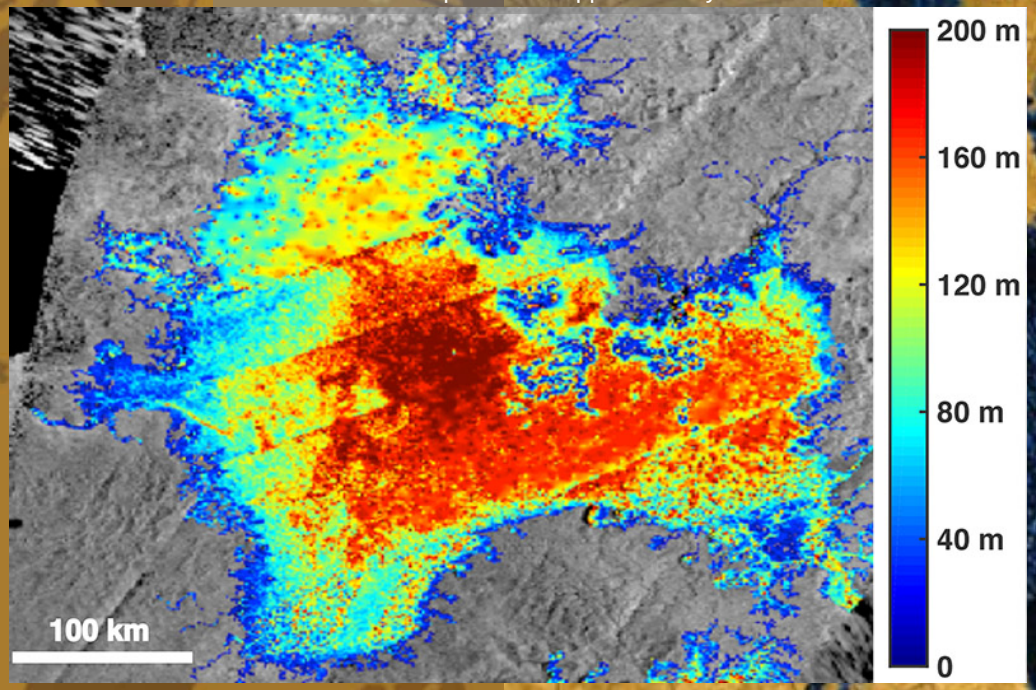
- 14 times the volume of Lake Michigan,
- 35 times the mass of Earth's fossil fuel reserves, and
- 300 times the mass of Earth's proven natural gas reserves.

In addition, the lakes and seas hold only a fraction of Titan's total hydrocarbon stockpile—the atmosphere holds *seven times more*!

The source of methane in Titan's atmosphere and lakes is a mystery at this time. However, Cassini's determination of the methane abundance of Titan's lakes provides an important clue to its possible origins.

The background image was obtained from multiple RADAR operating modes and resolutions. False coloring is used to distinguish bodies of liquid hydrocarbon (dark blue) from dry land (tan).

The image below was illustrates the depth of Ligeia Mare. Maximum depths reach approximately 200 m.



Hayes, A. G., The Lakes and Seas of Titan, *Annual Review of Earth and Planetary Sciences*, 44, 57-83, 2016.