

Impacts on Titan: Do They Splash or Thud?

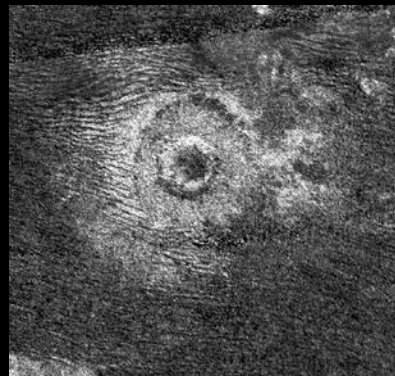
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The lack of craters on Titan at mid-to-high latitudes where the elevation is lower has been perplexing, but a comparison to Earth environments could provide a potential answer.

- After observing the unequal crater distribution on Titan, the team examined seven scenarios that could account for this correlation with elevation. The explanation that was deemed most reasonable was that comets and other solar system debris that impact Saturn's moon Titan splash into wetlands, leaving only subtle traces in a marine environment.
- Similar to terrestrial submarine impacts, on Titan many impacts could have fallen on extensive wetlands or a global sea that could have existed on Titan in the last few hundred million years. Such wetlands would be fed by an aquifer of liquid methane or ethane.
- Since the inventory of these hydrocarbons likely fluctuated over time, the preservation of features in some impacts at lower elevations would also be an expected feature.

An Example of an Earth Crater that Disappeared in a Shallow Sea

A 35 million-year-old impact crater (outlined in white) went undiscovered in Chesapeake Bay until 1994. The hidden 50-mile wide crater hints at how some of Titan's impact craters could have disappeared into a shallow ocean.



Momoy Crater:
One of many seen at
high elevations

*C.D. Neish and R.D. Lorenz
(2014), Icarus.*

Could Impact Craters be Hiding in Wetlands?

There are fewer craters (black dots) in Titan's lower elevations (regions in green), which may signal the presence of past or present wetlands. Xanadu (inside the white oval) is the only low-lying area with numerous craters. A white star marks the 2005 landing spot of the Huygens Probe.

