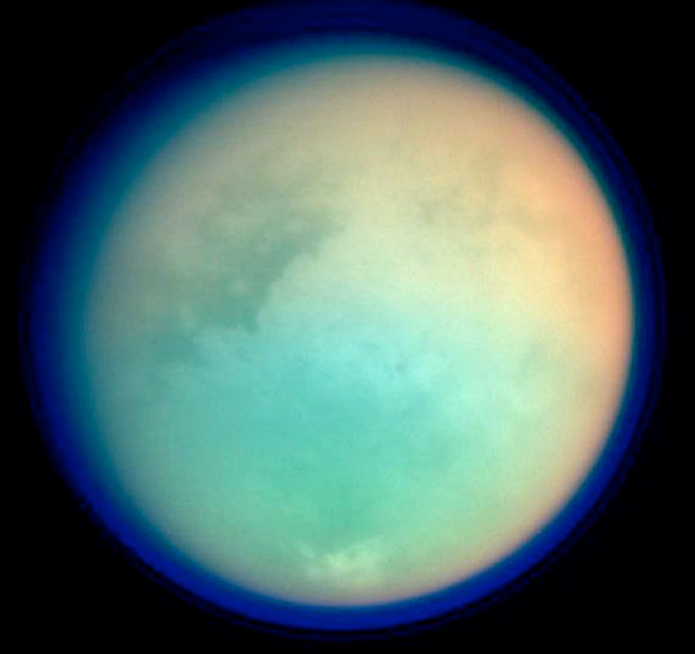


# Titan's Atmosphere Responds to Sunspot Cycle

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**Observations of Titan's atmosphere have revealed that its chemistry fluctuates with the Sun's 11-year sunspot cycle.**

- Titan is the only moon in the solar system with an atmosphere as thick as the Earth's, although its make-up is different: 98% nitrogen, 1.4% methane and trace amounts of other gasses including organic compounds. As with all bodies in the solar system, seasonal changes in the chemistry of Titan's atmosphere have been observed as it and Saturn orbit the sun.

- Using the Cassini Ion and Neutral Mass Spectrometer, observations of the nitrogen and methane in Titan's atmosphere showed that as the solar sunspot activity was at a minimum, the methane was present in high concentrations whereas as the solar activity increased, the proportion of methane decreased by almost half.
- The destruction of methane by UV radiation led to production of larger, more complex hydrocarbons as the reactive pieces of methane recombined into larger compounds.
- Although breakdown of methane occurs within weeks, replenishment from lower in the atmosphere takes much longer: methane concentrations that dipped during the last maximum in 2013 are not predicted to recover the previous peak until late 2015.