

CCSU
DEPARTMENT OF MATHEMATICAL SCIENCES

COLLOQUIUM

Friday, April 28

3:00 – 4:00 PM

Maria Sanford, Room 101

**MODELING THE ATMOSPHERIC
CIRCULATION OF SATURN'S MOON, TITAN**

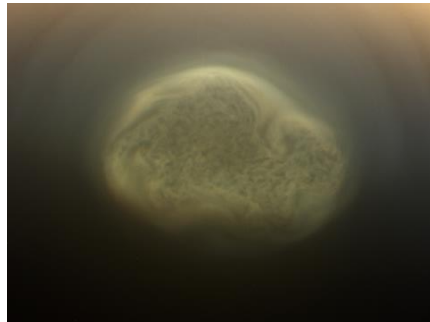
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(PhD Candidate in Earth and Planetary Sciences)

Abstract: The atmosphere of Titan, the largest moon of Saturn, is of special interest in understanding planetary atmospheres. At the surface, the pressure is 50% greater than Earth's, the temperature is 92 K (-294 °F), and there exists an active hydrology which cycles methane (the second most abundant molecule on Titan) through the troposphere. Higher in the atmosphere, there exists a jet of winds moving eastward at over 200 m s⁻¹ (400 mph), called the stratospheric polar jet. Understanding how this jet forms and evolves over the course of a Titan year (nearly 30 Earth years) can help to constrain the atmospheric distribution of molecules with a relevance to astrobiology.

In this talk, I will discuss my recent research using a computational General Circulation Model (GCM), which solves the primitive equations of meteorology (including the Navier-Stokes, thermodynamic, mass continuity, hydrostatic, and state equations), to constrain the processes that govern the evolution of Titan's polar jet. This talk will be at a level suitable for anyone who has taken Calculus 1 or has an interest in planetary science.



A stratospheric cloud of hydrogen cyanide about 900 km (550 miles) wide above Titan's southern autumn pole.

For information about the speaker please visit <https://people.earth.yale.edu/profile/nicholas-lombardo/about>.

To join us online use the following link: <https://ccsu.webex.com/meet/gotchev>

For further information: gotchevi@ccsu.edu; 860-832-2839; <https://mathcolloquium.sites.ccsu.edu/>