

# Expanding Space Research Through Collaboration

## TITAN'S ATMOSPHERE IN LATE NORTHERN SUMMER FROM JWST AND KECK

Conor A. Nixon

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Titan, largest moon of Saturn, is a unique environment in the solar system. The only moon with a dense atmosphere, it appears both exotic and familiar at the same time. Methane chemistry in the upper atmosphere produces a dizzying array of hydrocarbon chemicals that infuse the atmosphere and create a dense haze that obscures the surface at visible wavelengths. In the lower atmosphere, methane takes on a role in Titan's weather cycle similar to water on the Earth: it evaporates from the surface, humidifies the atmosphere, and eventually cools and condenses into clouds, leading to methane rain, rivers and lakes.

Beginning in 2022, NASA's newest large space observatory, the James Webb Space Telescope (JWST) became operational and immediately commenced an extensive survey of the bodies in our solar system, including Titan. The first images and spectra from JWST have revealed Titan's atmospheric chemistry and weather as never before, partnering in this endeavor with large ground-based telescopes including Keck II on Hawai'i. In this talk I will describe the observational campaign and the latest findings about Titan's atmospheric composition and climate, as well as plans for future observations.

### About the Presenter

Dr Conor Nixon is a planetary scientist at NASA's Goddard Space Flight Center (GSFC) in Greenbelt, Maryland, and head of the Planetary Systems Laboratory. From 1997-2007 he was a member of the Cassini mission science team and Deputy Principal Investigator of Cassini's Composite Infrared Spectrometer (CIRS) built at Goddard. His research interests range across the atmospheres, surfaces and interiors of planets and small bodies in the solar system, with a particular focus on the atmospheres of the outer planets and their ocean world moons, including the possibilities for astrobiology. Prior to joining NASA, he was a research scientist at the University of Maryland College Park. Originally from the United Kingdom, he earned a BA in Natural Sciences from the University of Cambridge, an MS in Radio Astronomy from the University of Manchester, and an DPhil in Atmospheric and Planetary Science from the University of Oxford. Outside of work, he likes to ski, hike, run and scuba dive with his family.



Wednesday, Mar 27, at 03:30 p.m.



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### Upcoming Talks/Dates

Apr 03: Dr. Noemi Pinilla Alonso, FSI, UCF

Apr 17: TBD

### About the Series

Inspired by UCF's latest Strategic Plan, the Florida Space Institute (FSI) is undertaking new efforts to promote space research at UCF. We are thrilled to continue this Seminar Series this spring focusing collaboration, which highlights the diversity of space-related topics investigated by UCF faculty. From growing plants on the Moon to fighting astronaut osteoporosis to planetary defense nothing is off-limits in these seminars! We cordially invite you to join us to foster new collaboration opportunities and help grow space research at UCF!

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