

Planetary Lunch Seminar (PLS)

Open to the EAPS community and beyond

Rose Palermo
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Tuesday, Oct. 20th
12:30pm

<https://mit.zoom.us/j/93780807887>

Exploring signatures of coastal erosion processes in the shoreline morphology of Titan's seas



Within our Solar System, sustained surface liquid bodies have only been identified on Earth and the Saturnian moon Titan. The shoreline morphology of Titan's hydrocarbon seas may provide clues about the climatic and geologic history of this icy moon. However, the type and nature of the processes affecting shoreline evolution remain unknown. Observations from Cassini and calculations from wave modeling both suggest that waves can develop in Titan's surface liquid, potentially driving coastal erosion. Processes not controlled by waves, such as dissolution, could also have a measurable effect on shoreline morphology. River incision and sea level change further modify the north polar landscape. To untangle the history of these coasts, we use a combination of landscape evolution models and measurements of shoreline shape to examine how shoreline morphology may reflect the relative influences of different coastal erosion mechanisms. Applying our model-

informed measurement technique to the coasts of Earth and Titan provides us a framework to test whether Titan's coastlines bear a measurable signature of wave erosion or uniform retreat.

9/15/20	Fall Meet and Greet		
9/22/20	Theron Carmichael	Harvard/CfA	Using the TESS mission to explore the substellar mass-radius diagram
9/29/20	Ed Rivera Valentin	LPI	The water cycle on a salty Mars: Implications for present-day habitability
10/6/20	Prajwal Niraula	MIT	Shedding light on planetary phase curves using stellar cases
10/13/20	Planetary Hangout		
10/20/20	Rose Palermo	MIT	Exploring signatures of coastal erosion processes in the shoreline morphology of Titan's seas
10/27/20	No PLS – DPS		
11/3/20	No PLS – Election Day		
11/10/20	Sukrit Ranjan	MIT	Aqueous N and S on early Earth and implications for origins-of-life chemistry
11/17/20	Amy Steele	Univ. Maryland	Constraining the composition of planetary material around white dwarf stars
11/24/20	No PLS – Thanksgiving week		
12/1/20	Seth Jacobson	MSU	Searching in the asteroid belt for evidence of giant impacts
12/8/20	No PLS – AGU		
12/15/20	Artem Burdanov	MIT	SPECULOOS exoplanet search and its prototype on TRAPPIST

For more information, contact Jason Soderblom (jms4@mit.edu)