

FSU Meteorology Seminar Series, Fall 2020



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What shapes Ice Shell of Enceladus?

Abstract

Beneath the icy shell encasing Enceladus, a small icy moon of Saturn, a global ocean of liquid water ejects geyser-like sprays into space through fissures concentrated near the south pole, making it one of the places with the highest potential of finding extraterrestrial life. The existence of an ocean has been attributed to the heat generated in dissipative processes associated with the deformation of Enceladus by tidal forcing. However, it remains unclear whether heat is mostly generated in its ice shell or silicate core, and what gives rise to the dramatic asymmetry between the northern and southern hemispheres. Answering these questions is crucial if we are to understand the dynamics behind the active south pole and to unravel patterns of ocean circulation, tracer transport and biosignatures important for the habitability and detectability of potential life. In this presentation, we discuss how we might infer the partition of heat generation between ice shell and core, and demonstrate how the hemispheric asymmetry of ice shell topography could form out of initial random perturbations through mode growth.

Zoom Link

<https://fsu.zoom.us/j/93591419276?pwd=Q3NrS3hNM2hzNnFVWkFzbWZBeTc1QT09>

Time: Thursday, Oct. 15, 2020 @ 3:30 PM
Host: Dr. Zhaohua Wu
Note: Pre-seminar virtual social will start at 3:00 PM.
Please join us and meet the speaker.