



The drying of Titan's dunes: A link between climate and surface morphology

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The Cassini RADAR instrument has observed a striking distribution of terrestrial-like landforms on Titan's surface, notably vast fields of linear sand dunes near the equator (Lorenz et al., *Science*, 2006) and clusters of irregular hydrocarbon lakes at high northern latitudes (Stofan et al., *Nature*, 2007). Fluvial channels are also apparent in a variety of styles and locations. Using a general circulation model (Mitchell et al., *PNAS*, 2006), we will demonstrate a mechanism by which the climatology of methane precipitation and evaporation determines the observed confinement of longitudinal dunes to low latitudes. We will further show that within our modeling framework, the observed distribution of other surface morphological features constrains the methane cycle on Titan, and therefore the general circulation of the atmosphere.