



Titan's thermal emission spectrum: analysis of near-surface temperatures via far-infrared measurements

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We present the first systematic search of Titan's thermal emission within the far-infrared post Cassini-Huygens SOI. After Courtin and Kim 2002, near-surface temperatures of Titan may be obtained by examining the semi-transparent atmospheric window circa 515 wavenumbers. Here, the surface contribution to the measured radiance is sufficient to discern variations in topography and emissivity as a function of location and time.

Our search compares temperatures derived from measurements by the Cassini Composite Infrared Spectrometer and variations of radiance as a function of Titan's rotation derived from ground-based measurements at NASA's Infrared Telescope Facility. Were active geysering or cryovolcanism to exist at present, significant thermal anomalies should be visible to both of these far-infrared experiments. Along with other, complementary investigations, observational evidence for such geological processes is sought to support Titan's apparent resurfacing.

Courtin, R. and S. Kim (2002). *Planet. and Sp. Sci.*, 50(3): 309-321.