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Summary on relative and absolutely calibrated 2-cm λ radiometry of Titan

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The Cassini Radar passive microwave radiometer (13.78 GHz , $\sim$ 2.2 cm λ) is used to observe the thermal emission from Titan's surface at resolutions ranging from 5 – 500 km and at a variety of emission angles and polarizations.

Early data led to preliminary calibration of the high-resolution radiometry data acquired during the SAR mode (SAR-radiometry) and construction of 2-cm λ brightness temperature maps. Initial results showed brightness temperature ranging from 64 to 89 K and general inverse correlation between radar reflectivity and radiometry, suggesting diverse scenarios for the physical and compositional properties of Titan's surface.

Nearly the entire surface has been observed through T30, enabling the construction of a mosaiced global map of the surface brightness temperature at normal incidence with new brightness temperature range from 72 to 92 K. Our knowledge of the nature of Titan's surface in key regions – the equatorial dune fields, the northern seas, and the Huygens probe landing site temperature – enables us to absolutely calibrate this map. Implications for surface composition and physical properties are better constrained;

an equator to pole temperature difference of about 1-2 K is determined.