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Temporal variations in Titan's atmosphere from Cassini CIRS data

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We have probed Titan's stratosphere using CIRS nadir spectra taken during the past 5 years and binned over 10° in latitude for both medium (2.5 cm-1) and high (0.5 cm-1) resolutions. Latitudinal variations were previously inferred in a number of works (Flasar et al., 2005; Coustenis et al., 2007, 2010; Vinatier et al., 2007, 2009; Teanby et al., 2006, 2007, 2008). Temporal variation trends were previously reported by Teanby et al. (2008). Here, we have formed 5 yearly selections (from mid-2004 to 2009) in the FP3 and FP4 CIRS focal planes and searched for variations in temperature and composition at northern (around 50°N) and southern (around 50°S) latitudes. In general, we look for variations in temperature and composition as the season on Titan progresses. Some selections of limb data should allow us to search for temporal variations on vertical distributions. With this study we seek to refine this previous work with more data, to set constraints on seasonal models and to make predictions as to the spatial variations of the chemical composition on Titan for the upcoming years, when the season will finally become similar to the one of the Voyager encounter in 1980.

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