

Neutral hydrocarbons chemistry in Titan's atmosphere

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Cassini and Huygens measurements provided new data on Titan's atmospheric characteristics and chemical composition. This, along with advances in our knowledge of photolytic and kinetic rates, triggered our development of a new 1-D photochemical model of Titan's neutral hydrocarbons chemistry. Improved constraints on methane mixing ratio, aerosol distribution and eddy diffusion coefficients are incorporated in the model. The net production and loss rates of the major hydrocarbons are reassessed and their condensation rates are reinvestigated. The implications for the presence of liquids on Titan's surface will be discussed. Constituent vertical profiles will also be compared to the Ion Neutral Mass Spectrometer measurements performed in the upper atmosphere.