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Titan's extended atmosphere

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During the Titan flybyes INCA obtained ENA images of the interaction between the atmosphere of Titan and the magnetospheric ion fluxes sweeping over Titan with sub-corotational speeds ($\sim$145 km/s). The ENA images show highly variable ENA fluxes from Titan due to the structure in the magnetospheric ion population. The ENA fluxes extend out to several 10,000 km altitude from the surface of Titan, which is consistent with a satellite population of H_2. We use a parametric neutral atmosphere model consisting of H, H_2, N, and CH_4 to simulate Hydrogen and Oxygen ENA images in the 20-80 keV range and compare to the images obtained by INCA. Several events are analyzed to investigate how the H_2 distribution falls off with altitude.

ENA=Energetic Neutral Atom
INCA=Ion Neutral Camera