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Hybrid modelling study of the Venusian oxygen ion escape

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Abstract

We study the solar wind induced escape of oxygen ions from the Venusian atmosphere by a hybrid simulation (HYB-Venus). In the Venus' upper atmosphere atomic oxygen (O^+) is the dominant ion species. Based on observations and modelling in the last 30 years O^+ is estimated to escape from Venus approximately at the rate of 10^{25} s^{-1}. In this study we use the magnetic and particle observations from the Venus Express spacecraft and compare them to our simulation. Further, we study the O^+ escape rate and consider the energy budget of the escaping particles.