



Meteor sporadic layers at Mars

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Some of the electron density profiles observed by the radio science experiment MaRS at Mars have revealed the existence of ionospheric layers at altitudes ranging from 70 to 90 km, below the main photoionospheric peak. The low altitude peaks were detected in 75 of 465 profiles, and their presence is not limited to specific times of the day, longitude or latitude. Similar layers have been observed in the Earth's atmosphere and it is well known that they are metallic ions whose origin is the ablation of extraterrestrial dust. Theoretical models which consider meteoroid ablation show that the Martian layers at low altitude can also be explained by the presence of metallic ions, however these models are not able to explain the variability of the observations. Here we present the detection status of Martian meteor layer in MaRS electron density profiles and a comprehensive model of the ionosphere of Mars which considers the deposition and chemistry of Mg and Fe generated by the ablation of meteoroids. Model results are compared with selected MaRS electron density profiles in order to understand the existence of the sporadic layers.