

## **Some new aspects of the electron density structures in the Martian ionosphere**

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Electron density structures in the Martian ionosphere are studied using ionograms obtained by the Mars Advanced Radar for Subsurface and Ionospheric Sounding on the Mars Express spacecraft. The electron densities at the peak of the density structures can be smaller or greater than that of the background ionospheric peak. The present study shows that the weak density structures can be found anywhere on the globe, whereas the stronger ones are particularly observed in regions of strong magnetic fields. Detailed characteristics of the density structures and their relation to the background ionosphere are investigated using the Chapman relations. While the weak density structures occur at altitudes above from the main layer, the largest density structures are found to occur at altitudes below the main ionospheric layer. It is shown that the large density structures can occur in all seasons, while the largest density structures can only occur at solar longitudes between  $180^\circ$  and  $310^\circ$ . The results of the present study are interpreted considering the role of neutral atmospheric dynamics on the density structures.