

A global comparison between MaRS/VeRa radio science observations of the Mars and Venus dayside ionospheres and the IonA model

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The radio science experiments MaRS on Mars Express and VeRa on Venus Express are sounding the atmosphere and ionosphere of Venus since 2004 and 2006, respectively. To date, more than 600 complete vertical electron density profiles have been recorded with each experiment for a large variety of observational parameters (solar zenith angle, latitude, local time, season, solar activity cycle).

IonA (Ionization in Atmospheres) is a fast and flexible software package for the 1D photochemical modeling of lower planetary ionospheres of Mars and Venus on the basis of the Mars Climate Database/VenusGRAM neutral atmospheres and SOLAR2000 solar flux. The underlying databases allow the direct modeling of the Mars/Venus ionospheres for the given MaRS and VeRa observational parameters (planetary longitude/latitude, zenith angle, solar activity etc.) and therefore a direct comparison between the observation and the IonA model.

This presentation will show a general comparison between the observed and modeled lower ionospheric features: the

altitude, electron density and width of the main peak and the electron content from the bottom of the ionosphere up to 250 km altitude.

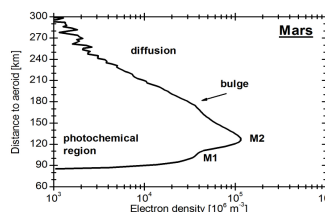


Figure 1: MaRS observation of the Mars dayside ionosphere on DoY 050, 2006 for a zenith angle of 53°.

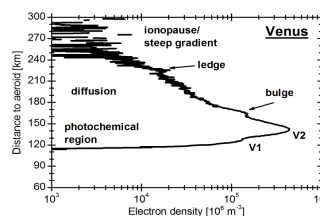


Figure 2: VeRa observation of the Venus dayside ionosphere on DoY 200, 2009 for a zenith angle of 23°.