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New results on the Martian ionosphere derived from MGS database

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Some new results on the behaviors of the main electron density maximum of the Martian ionosphere are reported in this paper.
Usually the ionospheric peak altitude will mainly be seen varying with the solar zenith angle. Herein reported are examples that other variations of the peak altitude can be discriminated from that the solar zenith angle dependence. One is identified as the local time variation and the other example is identified as the latitudinal variation. Both phenomena can be interpreted in the frame of the Chapman theory.
After necessary corrections, the main peak altitude in the southern hemisphere is systematically lower than that in the northern hemisphere. The most direct explanation is that the season of either hemisphere at the same solar longitude is not the same. By employing the neutral density of the lower atmosphere also obtained by MGS/RS into discussion, it is found that this north-south asymmetry can be well understood in the frame of the photochemistry theory.

Keywords: Martian ionosphere; Main peak; Chapman theory.

References

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[2] Zou et al., North-south asymmetry in Martian ionosphere observed by MGS/RS and its interpretation in the frame of photochemistry theory. Submitted to JGR, 2005