



## **Dependence of the secondary layer of the Martian ionosphere on solar zenith angle**

**H.R. Liao**, J.S. Wang

School of Earth and Space Sciences, Peking University, Beijing 100871  
(hairenliao@hotmail.com)

The behaviors of both the peak altitude and density of the Martian ionospheric primary layer have been intensively investigated. On the contrary, the study on the secondary layer is mainly focused on the photo-chemistry processes. The observed behaviors of the secondary peak, or that of the peak altitude and the peak density, have not been emphasized. In this paper, we analyze the data set of the Martian ionosphere measured by the Mars Global Surveyor (MGS) Radio Science(RS) experiment from December 24, 1998 to July 2, 2003. For more than 98% of the observed over 3000 ionospheric electron density profiles, the secondary peak can be distinguished. The solar zenith angle dependence of the peak altitude and density of the secondary layer is explored, and the results show that the secondary is a "better" Chapman layer than the primary layer. These dependences, however, is also modulated by the season. The different variation ranges in altitude of both peaks provide an explanation why for about 2% profiles the secondary layer cannot be discerned.