

The Mid-Latitude Trough and the Plasmapause Detected by DEMETER

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This paper finds the mid-latitude trough and the plasmapause by the daytime/nighttime (about 10:00/22:00 LT, local time, respectively) electron density, electron temperature, and whistler of DEMETER during 2006-2009. The electron density and the electron temperature are useful to allocate the trough, while the whistler can be used to find the plasmapause. It is found that the trough is very unclear and complex in the daytime, and however the plasmapause can be detected in both daytime and nighttime. Therefore, we focus on the relationship of nighttime trough and plasmapause in various seasons and geomagnetic actives. Results show that the mid-latitude trough tends to appear in the polarward side of the plasmapause, and the trough moves equatorward during a higher geomagnetic activity, while the plasmapause is insensitive to the activity.

Keywords: ionosphere, mid-latitude trough, plasmapause