



## **Large-scale traveling ionospheric disturbances monitored by GPS receivers during the magnetic storm on October 29, 2003**

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GPS TEC data was used in this report to analyze the large scale traveling ionospheric disturbances in Asia-Australia region during the magnetic storm on Oct.29, 2003. We applied a cross-spectral analysis to evaluate the TID propagation parameters (i.e. period, horizontal phase speed and wave direction). The results are summarized as follows:

1. We found Large scale TIDs in all the six locations covering Asia and Australia. The TIDs occurs between 0600 and 1200 UT after the sudden commencement of the magnetic storm.
2. The period of TIDs is between 3 and 4 hours, and the phase speeds widely range from 300 to 400 m/s. In Asia, the TIDs propagate southward. The wave azimuth is  $210^\circ$  in near-equator region, showing the influence of coliolis force. In Australia, the TID propagates northward. The north-eastward propagating TID is also found in equator region.
3. Comparing the wave parameters with the dispersion curves for ducted gravity waves, we found the TID may be caused by ducted gravity waves.