

Effects of Solar Variations on MHD Waves in the Dayside Magnetosphere: the Polar Observations

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In March and April 2001, the apogee (9 RE) of the Polar spacecraft was located near the subsolar magnetopause with its orbital plane nearly parallel to a magnetic meridian plane. Polar electric and magnetic field data acquired during the two-month interval of solar maximum have been used to study fundamental standing Alfvén waves near the subsolar meridian plane (magnetic local time = 1000–1400 hours) at magnetic latitudes from the equator to 45 degrees and at L values between 7 and 12. In the frequency band from 1.5 to 10 mHz, fundamental mode oscillations were identified based on high coherence (more than 0.7) and an approximately 90-degree phase shift between the azimuthal magnetic and radial electric field components. The fundamental frequencies are compared with those observed near the solar minimum interval. We also compare the plasma densities estimated from the Alfvén wave frequency and from Polar spacecraft potential.