

Simultaneous observation of planetary waves in the mesosphere and ionosphere Simultaneous observation of planetary waves in the mesosphere and ionosphere

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How variations of the neutral atmosphere, in particular planetary wave activity in the mesosphere-lower thermosphere (MLT), drive variations in the ionosphere has been the subject of recent attention. A method has been developed to observe planetary wave activity in the northern hemisphere (50-66° N) MLT using neutral atmosphere winds derived from meteor trail drifts observed by a longitudinal chain of Super Dual Auroral Radar Network (SuperDARN) radars. The method allows for the removal of tidal effects and provides the temporal variation of the wavenumber 1 and 2 amplitudes without the spatial-temporal aliasing present in satellite observations. The method has been extended to utilize the critical plasma frequency and virtual height of the ionospheric F-layer derived from a longitudinal chain of ionosondes. Details of the method applied to both the meteor radar and ionosonde data will be presented, and the amplitudes and temporal variations of the wavenumber 1 and 2 amplitudes in both the MLT and the F region will be compared.

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