

## Atmospheric tidal wave in the polar mesosphere observed with MF radar

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Global-scale waves such as tidal wave and planetary waves play an important role in the dynamics of the mesosphere and the lower thermosphere. MF and meteor radars are used for studies on atmospheric waves in the mesosphere and lower thermosphere and many results have been reported so far. About tidal waves in the polar mesosphere, the previous studies suggest importance of migrating tides caused by heat absorption of solar radiation and non-migrating tides generated by sun asynchronous sources such as latent heat effect. The radar data used for these studies have been observed over 10 years, which is nearly one cycle of solar activity relating to the source of atmospheric tidal waves. The one solar cycle data allow studies for long term variation and statistical analyses of atmospheric tidal waves.

The MF radar located at Tromsø (69.6 deg N, 19.2 deg E), which measures neutral winds in the polar mesosphere at a height region of 70-91 km, has been continuously operated since November 1998. In this study, we report annual variation and solar activity dependence of the mean wind and tidal waves by analyzing wind data for about 10 years. The Poker Flat MF radar in Alaska (65.1 deg N, 147.5 deg W) has been also operated during the same period. As the Tromsø and Poker Flat MF radars are located at nearly same latitude, it is possible to derive information on the zonal wavenumber of atmospheric waves by applying the longitudinal difference between the two MF radars. We will also present the results obtained with the Poker Flat MF radar and discuss the zonal wavenumber based on the tidal phase at the two sites.