

## AGW Power Variation Around the Height of Mesospheric Wind Reversal Observed with Tromso MF-Radar

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This paper presents a result of the analysis on the altitude variation of AGW (Atmospheric Gravity Wave) power around the height of the wind reversal by making use of the data from Tromso MF-radar.

In the present analysis, the daily variance of the observed wind with respect to its base value has been substituted for the AGW power in each altitude. Under the condition of negligible dissipation, the AGW variance can be accepted to increase exponentially with increasing altitude in the rate of  $1/H$  and calculated with the help of an appropriate scale height ( $H$ ) model.

The result reveals that the variance of the observed wind tends to be considerably lower than its idealized level around the height of directional reversal.

Dominant component of the mesospheric zonal wind tends to change its direction with increasing altitude: generally from westward to eastward in summer and from eastward to westward in winter. This paper presents a result of the analysis on the altitude variation of AGW (Atmospheric Gravity Wave) power around the height of the wind reversal by making use of the data from Tromso MF-radar.

In the present analysis, the daily variance of the observed wind with respect to its base value has been substituted for the AGW power in each altitude. The base value has been assumed to be composed of the DC component and the 24-, 12-, 8-, and 6-hour tidal harmonics and obtained by least squares fit to the observed data. The altitude variation of the DC component is used to detect recersal height of the dominant wind component.

Under the condition of negligible dissipation, the AGW amplitude increases exponentially with increasing altitude in the rate of  $1/2H$  ( $H$  is the locally defined scale height of the neutral atmosphere). The altitude variation of the idealized AGW variance, therefore, can be calculated with the help of an appropriate scale height model and compared with the observed variance.

The result reveals that the variance of the observed wind tends to be considerably lower than its idealized level around the height of directional reversal. This might be an observational evidence to support a speculation that the AGW dissipation plays an important role in the mechanism of mesospheric wind reversal.