

Monthly momentum deposition due to diurnal and semidiurnal tides at 90-120 km and 40S-40N by WINDII/UARS measurements

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The momentum deposition due to diurnal and semidiurnal tides at 90-120 km and 40S-40N are calculated for each month in 1993 using the zonal mean winds, and amplitudes and phases of diurnal and semidiurnal tides derived from wind measurements by the Wind Imaging Interferometer (WINDII) on the Upper Atmospheric Research Satellite (UARS). The diurnal momentum deposition mainly occurs at 90-110 km with cell-like structures of alternate positive and negative regions. This structure agrees well with model simulations. The largest momentum flux of the diurnal tide is in March and April with magnitudes of up to 170 m/s/day, about five times as large as that in July. The momentum deposition due to the semidiurnal tide also has cell-like structures but is much weaker and at higher altitudes of 100-120 km. The largest momentum flux of the semidiurnal tide occurs in May-September with magnitudes of up to 80 m/s/day, about twice as large as those during the other months.