



## **Polar Tidal Signatures in the Extended Canadian Middle Atmosphere Model (CMAM)**

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The polar regions in the mesosphere and lower thermosphere (MLT) are the site of unique tidal features. These tides transport and modify the chemistry of constituents throughout this region. In order to study the transport of the constituents by tidal features in the region, we need to determine the dominant components of the tides and their vertical structures and seasonal variations as the first step.

A one-year run of the extended Canadian Middle Atmosphere Model (CMAM) is used to characterize the tidal signatures in this region. Significant tidal amplitudes from wave 0 through wave 5 appear in the model run, which proves the complexity of interpretation from ground based observations. The horizontal winds and temperature signatures of the dominant components of the diurnal, semidiurnal and terdiurnal tides are discussed and their seasonal variations presented. The spatial variations of their superposition effects especially the longitudinal variability are illustrated. The semidiurnal and terdiurnal (as opposed to diurnal) migrating and non-migrating tides dominate in the polar regions. Differences between the polar regions in the two hemispheres and comparison with observations are also shown in detail in this paper.