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# Global Coherent Meridional Propagation of Interannual Fluctuations in Atmospheric Angular Momentum (AAM): Variability in the High-Latitude & Polar Regions

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Zonally averaged anomalies in atmospheric angular momentum (AAM) exhibit coherent, global-scale propagation to high latitudes (Dickey et al., 1992, 1999 and 2003). This propagation is connected with the ENSO cycle and exhibits spectral peaks near 2.3 years and 4.2 years that correspond to the tropospheric quasi-biennial and quasi-quadrennial oscillations. Atmospheric dissipation times do not exceed one month; hence, another climate subsystem must contain the memory for this coherent propagation. Dickey et al. (GRL, 2003) showed the ocean to be this subsystem; they used multi-channel singular spectral analysis to isolate poleward-propagating interannual and decadal modes in Pacific SST and global AAM.

In past studies, equal area latitude bands were used, dividing the global Earth into 23 equal area bands. Here we investigate AAM variations using the European Centre for Medium-Range Weather Forecasts (ECMWF) Reanalysis (ERA) - Interim version (ERA-Interim) in all analyses. The transition from mid-latitudes to high latitudes is not smooth. Here, we study this transition region in the Arctic and Antarctic Polar Regions in more detail comparing the propagation patterns of the Northern and Southern Hemispheres. Links among the Earth's subsystems are explored using AAM and other interdisciplinary data sets and various global indices.