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# Atmospheric excitation functions for Earth rotation and high frequency scales

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We are focusing on the highest frequency scales of atmospheric excitation of Earth rotation, and we note a diurnal signal in the polar motion excitation terms, likely due to atmospheric tides, that is seasonally modulated and appear to have two distinct modes, one in January to February, November to December, and a second in April to September. The months of March and October appear to be periods of transition between these two modes. Higher subdiurnal frequencies of polar motion excitation functions based on an atmospheric model are being investigated as well. In addition, we have reconsidered the calculations of atmospheric excitations of Earth rotation by including revised accounting in a set of atmospheric reanalyses. By including the wind terms integrated to the bottom topographic boundary of the atmosphere rather than an isobaric bottom level yields differences in polar-motion related functions that can be considerable, and more coherent with the geodetic excitation functions of polar motion. The differences in the axial Earth rotation function, however, are negligible.