ATMOSPHERIC EXCITATION OF EARTH'S ROTATION: COMPARISON OF THE SPECTRUM OF THE LENGTH-OF-DAY AND AXIAL COMPONENT OF THE ANGULAR MOMENTUM FUNCTION OF THE ATMOSPHERE

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It is shown that the fluctuations observed in length-of-day, for periods from 10 to 180 days, can be fully explained by the combined effect of the redistribution of angular momentum between the Earth and its atmosphere, and tidal deformations of the Earth's body. The tidal effect scaling factor k/C is found to be equal 0.945 ± 0.021. The small discrepancies between the observed and excited amplitudes of the dominating semi-annual and annual terms can very probably be caused by the influence of zonal stratospheric winds, neglected in the routinely calculated atmospheric angular momentum functions. On the other hand, the observed long-periodic components in the length-of-day (with periods of 2.4 y and 6.0 y) cannot be explained by any of the two discussed influences.

Key words: Rotation of the Earth – atmospheric excitation – Earth tides