



DYNAMIC MODEL OF SUPERROTATION OF THE UPPER ATMOSPHERE IN THE POLAR REGION

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The new mechanism, explaining generation of superrotation (SR) of upper atmosphere, is proposed. It is established, that this phenomenon can be caused by high-latitude heat source (HHS), which determines the character of motion in the polar region of the atmosphere. It is revealed, that the joint action of the baric field, caused by HHS, ion friction and Coriolis force leads to generation of internal concurrent processes in the wind field, which can provide stability of stationary structure of motion. The experimental discovery of SR in the upper atmosphere gives an illustration of stationary dynamical structure of motion in F-region of the ionosphere. On the basis of analytical solution of non-linear system of equations of free convection it is shown, that SR in high latitude of the upper atmosphere represents non-linear vortex structure in the form of stationary cyclone, the existence of which is caused by HHS. Cyclone rotation of the atmosphere around the pole naturally forms the exceeding the prevailing western-eastern winds. The direction and velocity of the exceeding winds, determined by theoretical modelling of the processes are in good agreement with the experimental data.