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## The mechanism of activation of polar atmospheric processes of planets and satellites

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One of the fundamental conclusions obtained on the basis of geodynamic model about forced relative displacements of the core and elastic mantle under of gravitational attraction of external celestial bodies is the conclusion about polar drift of the Earth core to North Pole (Barkin, 1995; 2002). This phenomenon has obtained wide confirmations in the data of observations of geocenter motion, in gravimetry measurements, in geodesy determinations of heights variations and in geoid form variations, in many geophysical and geodynamical phenomena (Barkin, 2005; 2006). It has formed a basis for other assumption - about the existence of a slow secular redistribution of air (and, in general, oceanic and fluid) masses from southern hemisphere in northern hemisphere of the Earth. This phenomenon is analogue of observable annual redistribution of atmospheric masses between northern and southern hemispheres (the change about **4.5x10(15) kg**). The significant contribution in which also brings the mechanism of gravitational influence on the atmosphere of superfluous mass of the core executing annual polar oscillation with amplitude about **21 mm**. The maximal displacement of the core to the North takes place in the beginning of year. In this period the maximal mass of atmosphere in northern hemisphere is observed. As the secular drift of the core takes place (in the direction of North Pole) on a background of described above of annual inversion change of masses between N/S hemispheres of the Earth the slow monotonous tide of atmospheric masses in northern hemisphere should be observed. From comparison of amplitude of annual oscillation of the core and velocity of its secular drift in present period we obtain an estimation for velocity of "secular" increasing of atmospheric mass in the northern hemisphere. Namely, the mass of at-

mosphere in northern hemisphere accrues with velocity about **0.4-0.5x10<sup>15</sup> kg/yr.** As consequence of this fundamental process, the polar moment of inertia of atmosphere of northern hemisphere will be decreased. The angular velocity of rotation of this part of atmosphere relatively to the Earth surface will increase. As a result we in reality observe an increasing of activity of atmosphere processes, number of hurricanes, cyclones and oth. in N hemisphere. In the southern hemisphere the opposite tendency takes place. The inversion of relative 'twisting' of atmospheres of hemispheres is made also cyclically, for example, with annual and others periods. According to our dynamic constructions in the beginning of year the angular velocity of rotation of atmosphere of northern hemisphere in the western direction, and atmosphere of the southern hemisphere - in east direction have the maximal values. Approximately in half-year the situation varies on opposite. At the end of summer the angular velocity of rotation of the atmosphere of northern hemisphere in east direction, and atmosphere of the southern hemisphere - in the western direction again accept the maximal values. These conclusions also prove to be true by the data of modern observations. The similar phenomena in reality are observed in atmospheres of other planets, some satellites and the Sun. Observations with two NASA telescopes show that Jupiter has an arctic polar vortex similar to a vortex over Earth's Antarctica that enables depletion of Earth's stratospheric ozone. The quasi-hexagonal structure at North Pole of Jupiter rotates slowly eastward at 1.2 degrees of longitude per day. The Cassini data confirm a region of warm atmospheric descent into the eye of a hurricane-like storm locked to Saturn's south pole. This 14-frame movie shows a swirling cloud mass centered on the south pole, around which winds blow at 550 kilometers (350 miles) per hour. The NASA Hubble Space Telescope images of the planet Uranus reveal the motion of a pair of bright clouds in the planet's southern hemisphere, and a high altitude haze that forms a "cap" above the planet's south pole. Some cloud motion might be due to high altitude winds on the planet. Neptune's south pole is "hotter" than anywhere else on the planet by about 10 degrees Celsius. Similar polar atmospheric cap and clouds are observed variable in the time on the Titan and on the Mars. The phenomenal laboratory for demonstration of similar atmospheric processes in own N/S hemispheres is the Sun. On the Sun we observe inversion processes in activity N/S hemispheres, in their rotation and others. The big variety of objects confidently rather allows us to speak about universality of the mechanism managing polar areas of atmospheres of celestial bodies. On this role I suggest the mechanism of the forced relative translational oscillations of the shells of these bodies. Certainly, the similar processes everyone will discovery again not only in atmospheres, but also in oceanic shells, in redistribution of all fluid masses. And the question is all celestial bodies, including planets and satellites in exoplanet systems.