



The solution of fundamental problems of geodynamics, geophysics, geology and planetology

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On the base of geodynamic model of the forced gravitational swing and displacement of shells of a planet under action of a gravitational attraction of surrounding (external) celestial bodies [1], [2] the fundamental problems of geodynamics, geology, planetology, geophysics, etc. have been studied and solved.

- 1). **The mechanism of cyclic variations of activity of natural processes in various time scales.**
- 2). **The nature of eccentric positions of the core and the mantle of the Earth. A role of the Moon, the Sun, Neptune and other celestial bodies in activization of the swing of core-mantle system of the Earth.**
- 3). **Power of endogenous activity of planetary natural processes on planets and satellites.**
- 4). **The nature of correlations of natural processes with features of motion of baricenter of the solar system.**
- 5). **An explanation of influence of bodies of solar system on excitation of variations of planetary processes with Milankovitch's periods (in tens and hundred thousand years).**
- 6). **A possible explanation of geological cycles as result of excitation of solar system at its motion in a gravitational field of the Galaxy.**
- 7). **The phenomenon of polar inversion of natural processes on the Earth, both other planets and satellites.**
- 8). **Spasmodic (step-by-step) and catastrophic changes of activity of natural processes.**
- 9). **Sawtooth (gear curve) variations of natural processes.**
- 10). **The phenomenon of twisting of hemispheres (latitude zones) of celestial bodies.**
- 11). **Formation of the pear-shaped form of celestial bodies and the mechanism of its change.**
- 10). **Ordered planetary structures in spatial distribution of geological formations.**
- 12). **The phenomena of bipolarity of celestial bodies and antipodality of formations.**

Many fundamental problems of natural sciences have been obtained an explanation on the basis of developed geodynamic model (Barkin, 2002, 2009). The fundamental problems of celestial mechanics and geodynamics, geophysics and the geology, excited of scientific community in current of last decades and even centuries have been solved. The fundamental phenomena in rotation of the Earth: secular drift of a pole of its axis of rotation and non-tidal acceleration of axial rotation of a planet have received an explanation. Observable secular variations of a gravity, variations of a geopotential coefficients, secular drift of the center of mass of the Earth, secular changes of a global level of ocean and change of average levels of ocean in northern and southern hemispheres of the Earth, secular geodetic changes of the Earth in present period have been explained, etc. It is shown, that there is a uniform mechanism for many bodies of solar system of excitation of natural processes in their polar areas. In particular it is shown, that polar regions of many celestial bodies, including their soil layers, are sated by fluids. The last position obtains the precise confirmation in researches of subsoil waters and a water ice on Mars, the Moon, Mercury, etc. bodies of solar system.

A wide number of the natural phenomena has been predicted by the author and these predictions have already

obtained and obtain confirmations and an explanations in the data of modern observations and space missions. An existence of the seas in polar regions of the Titan, concentration of water ice in polar regions of Mercury, the Moon, Mars and other bodies of solar system has been predicted. The conclusion about fluid concentrations at polar regions of celestial bodies is extremely important for revealing of carbon deposits on the Earth, first of all in regions of Arctic and Antarctic.

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References

1. Barkin Yu.V. (2002) An explanation of endogenous activity of planets and satellites and its cyclisity. *Izvestia sekcii nauk o Zemle Rossiiskoi akademii ectestvennykh nauk*. Vyp. 9, M., VINITI, pp. 45-97. In Russian.
2. Barkin Yu.V. (2009) Moons and planets: mechanism of their life. *Proceedings of International Conference "Astronomy and World Heritage: across Time and Continents"* (Kazan, 19-24 August 2009). KSU, 2009. pp. 142-161.