



Kinematics and dynamics of the Earth hemispheres

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In accordance with developed geodynamical conception (Barkin, 1995 - 2002) the mechanism of gravitational interaction of the Moon and Sun with non-spherical, non-homogeneous shells of the Earth generates big additional mechanical forces (and moments) between neighboring shells. Dynamical studies show that centers of mass of the core and the mantle systematically are displaced along definite radial directions in the Earth body. These displacements have place in different time-scale. Acting of these forces in the geological time-scale leads to the slow relative translational displacement and slow rotation of the core and mantle. As result the global tectonic reconstruction (including plate tectonics), reformation of the planetary crack system, transformation and redistribution of the plastic and fluid masses (including plumes) are realized and observed. The secular displacement of the center of mass of the core relatively to the center of mass of the mantle was predicted (Barkin, 1995) and in last years has obtained a confirmation on the base of data of Space Geodesy observations (Jin Shuanggen and Zhu Wenyaoyao, 2003). This trend of the Earth core leads to deformations and to inversion changes of the Earth geodesy surface. As consequences the contrast variations of intensity of many natural processes must be observed (and are observed) in the opposite hemispheres. In particular it was expected that a one hemisphere is “swelled or inflated” and another is compressed. This phenomenon was called earlier as “formation of fluxes on the Earth surface” or geodesy inversion phenomenon (Barkin, 1999, 2002). The observational data have confirmed the detected planetary “flux phenomenon” (Jin Shuanggen and Zhu Wenyaoyao, 2003). The global planetary form changes have been studied on the space geodetic data obtained from VLBI, GPS and SLR measurements. The maximal velocity of lengthening of parallel circles of southern hemisphere about 8-10 mm/yr has been established. Mentioned theoretical results and results obtained by Space Geodesy methods practically confirm

main positions of the new global geodynamical conception of Yu. Barkin and in particular the prediction of the secular relative motion of the centers of mass of the core and mantle (Barkin Yu.V., Jin Shuanggen, 2005). We consider these joint and parallel results as discovery of the secular trend of the core relatively to the deformable mantle in direction to the North Pole with velocity about 4-6 cm/yr in present epoch.