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Mechanism of biannual cyclicity of ocean and atmosphere processes and phenomenon “El Nino”

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In the report the data of modern geodetic and geophysical observations testifying for the benefit of the author hypothesis (Barkin, 2002) about unity of the mechanism of variations of activity of natural processes of the Earth are discussed. This mechanism is the mechanism of the perturbed relative swing, small turns and mutual deformations of the core and the mantle and other shells of the Earth under the gravitational differential influence on the part of external celestial bodies. Observed displacements of the centre of mass of the Earth (with a wide spectrum of frequencies) on our geodynamic model are caused first of all by identical relative displacements of the centers of mass of the core and the mantle. Thus the superfluous mass of the core by its motion induces the tides, both in the elastic mantle, and in atmosphere and ocean. These tides, naturally, the most direct image influence on the activity practically of all planetary natural processes. Told proves to be true by observed cyclicities and phases of the corresponding atmospheric and oceanic processes. On the basis of GPS data of observations for period 1993 - 2003.8 oscillations of geocenter with the periods characteristic for the phenomenon El Nino, for atmospheric and oceanic processes have been determined (Tatevian et al, 2004; Barkin et al., 2007): **2.1 (3.9 mm)**; **2.1/2 (1.8 mm)**; **2.1/3 (1.4 mm)**; **2.1/4 (3/4 mm)**. In brackets the estimations of conditional amplitudes are presented in mm. The oscillation with amplitude of **3.9 mm** occurs to the basic period of **2.1** approximately in the plane of meridian **90 E** and has mainly the polar character. The oscillation of **1.8 mm** occurs to the period of **2.1/2** approximately along the Greenwich equatorial axis. The equatorial oscillation with period of **2.1/3** is characterized by amplitude of **1.4 mm**. The

oscillation (with amplitude of **3.4 mm**) occurs to the period of **2.1/4** approximately in the plane of Greenwich meridian. The oscillation of geocenter with period of **8.0 +.-0.4 yr** and significant amplitude (**11.2 mm**) is allocated. At what it, as well as oscillation with period of **2.1 yr**, occurs approximately in the plane of meridian **90 E**. And also has mainly polar character. The oscillation with period **3.24 +/-0.5 yr** (and amplitude of **4.5 mm**) occurs along the equatorial axis of the zero meridian. The oscillation with period of **3.6 +/-0.1 yr** and amplitude of **7.0 mm** has polar character. On our geodynamic model the similar cyclicities characterize relative displacements of the Earth shells and, hence, they should be shown in all natural processes, including El Nino. Really, the spectral analysis of long temporal series of indexes SOI since 1866 yr till 1996 yr and index DT since 1851 yr till 1996 yr has allowed to reveal oscillations with periods **6 yr**, **3.6 yr**, **2.8 yr**, **2.4 yr**. A feature of the revealed periods is noticed - all of them are to some extent multiple to the period of precession of lunar orbit in **18.6 yr** and to the Chandler period of the pole motion of **1.2 yr** (Sidorenkov, 2002). The atmospheric and oceanic tides with mentioned (and others) cyclicities caused by the gravitational attraction of displaced superfluous mass of the core (relatively to elastic mantle) are studied. The obtained results confidently prove to be true the data of studies of spectrums of variations of gravity and variations of heights on gravimetric station (measurements on absolute gravimeters in 1996-2000; Kaftan et al., 2004). In more wide sense discussed here mechanism of the mutual interaction and oscillations of the Earth shells directs, dictates and controls all known phenomena: ENSO, NAO, Northern and Southern Annular Modes, Pacific Decadal Oscillation and others dominant modes of variability.

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