



Information models of EOP in the study of geophysical processes of the planetary scale

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Fundamental importance is the study of fundamental problems of high-precision astrometric interpolation and prediction of Earth rotation parameters (EOP). Such a forecast may have important practical significance and be a good natural indicator of various geophysical processes of global scale (El Niño, Southern Oscillation, earthquakes, etc.).

In this work the phenomenon of beats and the global component of the seismic process are studied. Scientific and practical interest to study the oscillations of the Earth's pole on the period of the beats, when there are significant anomalies (irregular deviations) of the pole trajectory. On the period of the beats, when the amplitude of the pole oscillation is minimal, we have established a manifestation of high-frequency lunar oscillations. A mathematical model [1] to explain anomalies in the process of beating with 6-year period of geophysical nature (atmospheric effects, ocean currents, seasonal phenomena on Earth's surface) has been constructed. It is shown that the anomalous effects are most clearly manifested in the period of beats.

One explanation for "spike" of large earthquakes around the Earth (February-April 2010) in the frames of the constructed models of the rotational-translational motion of the Earth were significant fluctuations in the Earth pole coordinates (x_p , y_p) and the length of day $lod(t)$, due to luni-solar perturbations. Is a natural assumption about the joint influence of tidal deformations and rotational motion of the Earth on each other under the influence of external perturbations. There is a situation where the frequency spectrum of the axial rotation of the Earth can be arbitrarily close to the frequencies of oscillations of the pole.

In the neighborhood of the considered commensurability the forced rotational-oscillation motions of the system have a resonant character. It can be a trigger mechanism of increasing of global seismic activity and, consequently, to lead to increasing of the number of major earthquakes (Haiti, Chile, China, Afghanistan, etc.).