



## **About some mechanisms of the mean global sea level rise**

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The mechanism of perturbed relative small displacements (and rotations) of the Earth shells (the core, the mantle etc.) under of a differential gravitational attraction of external celestial bodies is responsible for formation of qualitatively new oceanic and atmospheric tides caused by a gravitational attraction of a displaced core and deformable mantle (Barkin, 2005). These tides are characterized by a wide spectrum of frequencies and various style of displays in opposite hemispheres of the Earth (in particular in northern and southern). The mentioned mechanism has allowed to explain divergences between the theory and the observations which have been found out by Blewitt et al. (2001) at studying of a style of global seasonal deformation of the Earth. The annual polar oscillation of the outer core and accompanying deformations of the mantle give the significant contribution to value of the observable load moment and to observable annual oscillation of the Earth centre of mass. On the other hand the gravitational attraction of displaced core substantially determines (and organizes) redistribution of atmospheric and oceanic masses between northern and southern hemispheres, i.e. determines process and cyclicity of formation of load on the Earth surface. From here it follows, that any other oscillations of the core (with other frequencies and form) and its linear trend will determine also the related phenomena of redistribution of oceanic and atmospheric masses, loading planetary deformations of the mantle, and also the appropriate variations of sea level. Here we obtain some upper evaluations of mean sea level rise on the base of value of velocity of linear trend of the Earth centre of mass in 6.69 mm / yr (Tatevian et al., 2004). The component of this drift caused by the polar trend of the core and by corresponding deformation of the mantle characterizes slow redistribution of water masses from a southern hemisphere in northern which leads to increasing of mean sea level with small velocity 0.33 mm / yr. The velocity

of secular increasing of load on the mantle has been evaluated approximately on the known value of amplitude of the appropriate load moment making annual oscillation (for atmospheric and oceanic masses). It results in inversion of radial deformations of the mantle (similar and proportional to the annual mode), but increasing linearly in the time with velocity 1.81 mm/yr on South Pole and decreasing with the same velocity on North Pole. On equator radial displacements are equal to zero. The mentioned displacements of the Earth surface determine deformations of the ocean bottom and finally result in rise of mean sea level with velocity about 0.18 mm / yr. One more component in slow change of mean sea level is caused by the trend of the centre of mass, due to linearly increasing oceanic and atmospheric masses in northern hemisphere. By our evaluations it makes 0.40 mm / yr. Thus, the total effect results in rising of mean sea level with velocity consists about 0.91 mm / yr, that gives some additional positive arguments to solution of “ attribution problem ” about the unknown (lost) mechanism of increasing of mean sea level (Miller, Douglas, 2004).

### **References.**

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