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Interactive comment on “Earth’s rotation variations and earthquakes 2010–2011” by L. Ostřihanský

L. Ostřihanský

ostrih@tiscali.cz

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The paper of Dr. Riguzzi and her colleagues is well known to me. I very appreciate the complete model of the plate tectonics driven by horizontal component of tides. Results concerning the polarity of plates boundaries of westward moving plates, about energy supplied for Earth’s deceleration and latitudinal distribution of seismicity are very similar to those I have presented (Ostřihanský 1997; Ostřihanský 2004). In my paper I compared directly LOD daily values with the occurrence of earthquakes and I received results that earthquakes correlate with LOD extremes. In Riguzzi’s paper the increment of earthquakes correlation with increment of LOD in global data (Varga et al. 2005) and Wang’s et al. (2000) decadal LOD variations are fully discussed. In my paper I deal with sidereal LOD variations and long-time earthquake repetitions in the period of Meton’s

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cycle, which I considered as more convincing. I agree also that an imagination of the mantle mainstream parallel with the Moon's orbit can be useful in many cases characterizing the movement of the lithosphere, however I consider also forces acting in north-south direction. In the past I overestimated the Eötvös force however the Great Sumatra earthquake of 26th December 2004, which was triggered in the moment of the full Moon, LOD minimum, i.e. in maximum Moon's declination and winter solstice confirmed me in existence of the variable torque acting in north-south direction, which not only deviates the Earth's axis of rotation but triggers the largest earthquakes. Extremely interesting are also repetitions of these earthquakes in periods of the Meton's cycle. For this reason the Indian plate, Pacific plate and the African plate have their peculiar northward movements however influenced by the westward component. These earthquakes are connected with nutation and also I would like to mention very important paper of Chinese geophysicists (Du et al. 2011) who proved the 18.6 periodicity of earthquakes occurrence in 15 sites of the Earth. However the earthquake is not triggered in moment of 0° length ascending node of Moon's orbit, where its inclination to ecliptic is maximum, but in its maximum declination corresponding to LOD minimum and in the full Moon when Moon and Sun are on the line and create the largest torque. For this reason the earthquake repetition has to occur in Moon's position repetition, i.e. $19 \text{ years} = 235 \text{ synodic months}$ or $235 + 19 = 254 \text{ sidereal months}$. I have noticed that earthquakes in Alaska occur in 19 years cycle but always for 2-3 months later. It is caused that not only the nutation north-south torque acts but also the westward torque and the resultant of these vector torque triggers earthquake but out of syzygy or LOD extremes, only the 19 year period remains but inaccurately being for several months extended or shortened. In Alaska 19 years periods are longer, in California shorter with exception of earthquakes 16. 04 1899 and 21. 04 1918 with delay for only 5 days. Disastrous earthquake San Francisco 18. 04 1906 occurred between them. (I repeat from my paper: The lunisolar torque acting on the Earth trying to rectify the Earth's bulging to the plane of ecliptic and the Moon's orbit is $\approx 1.2 \text{ 1022 N m}$ (Stacey 1977) and the torque caused by tidal bulging is only 5.1 1016 N m (Burša 1987) and

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considering only 0.1 Pa stress of LOD variations (Wang et al 2000) the continental plate of 300 km thickness and 10000 km length situated on equator exerts torque $\approx 2 \times 10^{19}$ N m). It is a shame for geophysicists that an unknown Californian amateur recognized that in California earthquakes are triggered in 19 years cycle or in n-multiple of this number. I recommend viewing his 3 videos on Internet. He also claims that earthquakes do not occur in equinoxes what follows from it that earthquakes are triggered in maximum torque in solstices. Histogram compiled on Internet data (Fig. (9) shows minimum earthquakes in August and in September but number of earthquakes in April is surprisingly high. I set up synoptical table for possible earthquake repetitions in California (Tab.3).

Ostríhanský, L.: The causes of lithospheric plates movements. (Charles University Prague, Chair of Geography and Geoecology), 1997. <http://geo.mff.cuni.cz/~ostrihansky/> Ostríhanský, L.: Plate movements, earthquakes and variations of the Earth's rotation, Acta Univ. Carol.-Geologica, 48, 89-98, 2004. Varga, P., Gambis, D., and Bizouard, C.: The relation between the global seismicity and the rotation of the Earth. Observatoire de Paris. Systemes de reference temps-espace UMR8630/CNRS, pp115-121, 2005. Wang, Q.-L., Chen, Y.-N., Ciu, D.-X., Wang, W.-P. & Liang, W.-F.: Decadal correlation between deformation and variation in length of day of the Earth, Earth Planets Space, 52, 989-992. 2000. Du, P-R., Zhao, J-M. and Gao, X-L.: The 18.6 year periodicity of great earthquakes. Chinese J. Geophys. (in Chinese), 54 (9), 2256-2262, DOI: 10.3969/j.issn.0001-5733.2011.

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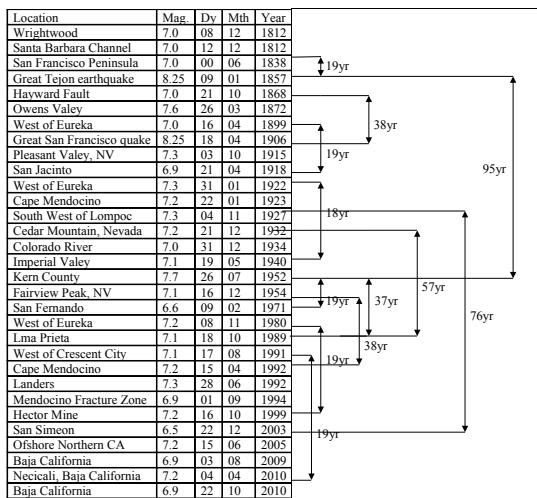
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Tab. 3. 19 years repetition of major Californian earthquakes and their multiples.

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Fig. 1.

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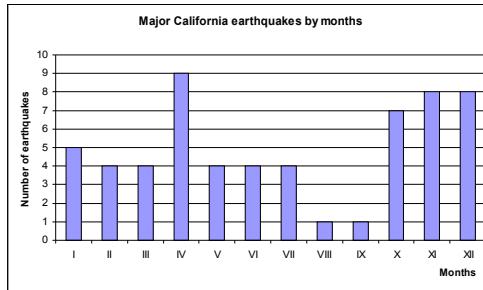


Fig. 9 Distribution of major Californian earthquakes over 6.2 magnitude by months
1700 -1999.

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Fig. 2.