Exogenous model of global tectonics

Pavel Kalenda (1), Ivo Wandrol (2,3), Tomáš Kopf (2), Karel Frydrýšek (3), Libor Neumann (4), Václav Procházka (5), and Lubor Ostřihanský (6)

(1) IRSM Czech Academy of Science, geophysics, Prague, Czech Republic (pkalenda@irsm.cas.cz), (2) Silesian University, Opava, (3) VSB - Technical University of Ostrava, (4) Anect a.s. Praha, (5) Česká geologie, o.s., (6) Nad Palatou, Prague

We present a new model of lithosphere-plates movement based on three pillars:
1) The thermoelastic wave, which was described first of all by Berger (1975),
2) The ratcheting mechanism, which was described for asphalt buckling and/or lithosphere evolution by J. Croll (2006, 2007), and
3) the solar irradiance energy, as quantified by IPCC (2007).

The thermal wave, which is generated by solar irradiance on the surface, penetrates into depth, and subsurface rocks are expanded. The deformation spreads to the surrounding of expanded rocks and to the depths. Such elastic wave is called thermoelastic wave and has dominant periods of one day, one year, (short) climate periods (AMO, PDO and other oscillations), Milankovich periods (14000 – 120000 years) and longer climate periods.
This deformation concerns prevalently the continental lithosphere and not lithosphere covered by ocean or thick layers of unconsolidated sediments. This non-uniform deformation of continental and/or oceanic plates leads to opening of the cracks, faults and/or rifts during the period of continental contraction. The ratchets can fulfil such free spaces and openings. During the next period of continental expansion, such faults, cracks or rifts cannot reach the same positions as before, which leads to increasing stress, which accumulates on the discontinuities especially between continental and oceanic crust (Kalenda et al. 2012).
Such process can accumulate a portion of the solar energy reaching the solid surface rocks. Then we can explain the whole energy budget of seismic and volcanic activity (1022 J/year) only by solar irradiance. Only 4 % of total solar irradiance of the Earth's surface (1024 J/year) is enough to cover all budget of lithosphere plate movement. No other resources are necessary.
Because this new model of the lithosphere plate movement is not accepted at that moment by the mainstream, it is necessary to publish it in the section Geoethics, as a one of the examples of the behaviour of the Science as a whole.

References
Berger, J. (1975): A Note on Thermoelastic Strains and Tilts, 1975, J. Geophys.Res., 80, pp. 274-277.
Croll, J.G.A. (2006): From asphalt to the Arctic: new insights into thermo-mechanical ratcheting processes. III Int. Conf. On Computational Mechanics. Lisbon, Portugal, 5-8 June.
Croll, J.G.A. (2007): A new hypothesis for Earth lithosphere evolution. New Concepts in Global Tectonics Newsletter, no. 45, December, 2007, 34-51.
IPCC (2007): IPCC Fourth Assessment Report: Climate Change 2007 (AR4).
http://www.ipcc.ch/publications_and_data/publications_and_data_reports.shtml
Kalenda P. et al. (2012): Tilts, global tectonics and earthquake prediction. SWB, London, 247pp.