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Nonlinear Processes in Geophysics
Discussions

Interactive comment on "Slow strain waves in blocky geological media from GPS and seismological observations on the Amurian plate" *by* Victor G. Bykov and Sergei V. Trofimenko

S. Sherman (Referee)

ssherman@crust.irk.ru

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I will not change my quick positive responses to the questionnaire on the review of the article and add a short note about it. Peer-reviewed article is devoted to one of the controversial issues of seismology and strain (deformation) waves. They are not diagnosed by instrumental methods due to the large wavelengths and very small velocities, their presence, and the parameters are estimated by indirect methods. The theoretical proof of the deformation waves is well described in the reviewed article, and shows their parameters. Shown practical importance to seismology – using the waves as a trigger mechanism, violate the delicate balance in fault-block environment of the lithosphere with subsequent movements in the fault line between which is generated

the earthquake. Most often such arguments are used in the analysis of major faults controlling the strong (M≥5.5-6.0) earthquakes. The originality and significance of the article is determined by the following achievements. The paper first waves as a trigger mechanism used for the region Amurian plate. The author analysis of deformation wave and their parameters based on the earthquakes of medium strength and weak. Often used of a strong earthquake. The author's methodology is well justified. Additionally I want to emphasize the high importance of the article, considering the time series of the GPS observations for horizontal and vertical component of modern movements. The authors demonstrated high correlation between observed trajectories of displacements of GPS points with the theoretical curve corresponding to the breather were a singular solitary wave. This suggests the occurrence of deformation waves in the system of intersecting faults. These waves authors interpretiruya as standing "wave of compression-extension" in the block medium of the lithosphere. The paper first showed that the rate of slow deformation waves in the territory of the Baikal region and the Amur region is 5-20 km/yr and in the order of magnitude is comparable with the rate of migration of crustal deformation (10-100 km/yr) from the Japan-Kuril-Kamchatka subduction zone (Ishii et al., 1978; Kasahara, 1979; Yoshioka et al., 2015). Calculated the average rate of displacement of the maxima of weak seismic activity (2≤M≤4) along the Northern boundary of the Amur plate has a magnitude of 2.7 km/day (∼1000 km/yr), which is one to two orders of magnitude greater than the speed of slow deformation waves (ïĄ¿10-100 km/yr). This may mean that the slow deformation waves modulate the change of weak seismic activity (2≤M≤4) during the year. The established correlation migration of seismicity and deformation may indicate that the first is a consequence of the movement of tectonic stress fields in the form of slow deformation waves, causing additional burden on the successive occurrence of earthquakes. Numerous observations of migration of seismicity is difficult to explain any other reasons besides the wave-like changes in the global and local stress field. This is an original and valuable conclusion. Article V. G. Bykov and S. V. Trofimenko "Slow strain waves in blocky geological media from GPS and seismological observations on the Amurian

plate" includes a new, largely original data on the activation of seismicity with a slow deformation waves in the Amur plate and recommended for publishing.

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