Solid Earth Discuss., 7, C1166–C1168, 2015
www.solid-earth-discuss.net/7/C1166/2015/

Solid Earth
Discussions
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Interactive comment on "Acoustic–electromagnetic effects of tectonic movements of the crust – borehole survey" *by* V. N. Uvarov et al.

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Received and published: 1 October 2015

Review of Manuscript: NHESS Version: 01

'Acoustic–electromagnetic effects of tectonic movements of the crust – borehole survey by Uvarov et al.

The paper reports on borehole radiophysical properties performed in a seismically active region. The authors show the presence of anomalously high signals associated to acoustic-electromagnetic radiation. Four types of spectral anomalies are recorded corresponding mainly to shear and bulk relaxations of tectonic stresses. The reported results are interesting in the frame of the seismic electromagnetic investigation. However I cannot recommend publication of this paper before numerous changes. Several

suggestions are given below to improve the content of the manuscript.

Abstract This Section should emphasis on: (a) the type of borehole investigation, (b) the used instruments, (c) the different spectral signals, and finally (d) the origin of the acoustic-electromagnetic signals. The Abstract must not exceed 10 sentences.

Introduction The main cited references are written in Russian language. It is not simple to follow and to understand the content of this Section. I suggest to the authors to divide the 'Introduction' in three parts: (a) Laboratory experiments on rock samples accompanied by acoustic and electromagnetic emission (e.g. Ogawa et al., Electromagnetic radiation from rocks, J. Geophys. Res., 90, 1985; Freund, Charge generation and propagation in igneous rocks, J. Geodyn., 33, 2002; Mori et al., 2009). (b) Acousto-electromagnetic properties of a borehole: Propagation and attenuation (e.g. Beer-Lambert law; Jiles, 1995) (c) Seismic activity and acousto-electromagnetic emission: Summary of the Uvarov et al. (2010, 2012) papers.

Data Investigation This Section should include three sub-sections: (a) Kamchatka borehole experiment: The authors can use the text of Section 3 in the old version (see Section 3 Experiment: Page 1454-1455, Lines 9-23) and should emphasis on the explanation of Fig.1. (b) Spectro-chronogram of lithospheric signal: it will be useful to divide this sub-section in two parts 1. Spectral description of the main components displayed in Fig.2 2. Types of lithospheric and atmospheric signals (i.e. Fig. 3) (c) Lissajous diagram: This part will explain the aim of the phase between the acoustic and electromagnetic signals (i.e. Fig.4)

Discussion In this Section, the authors should: (a) Summarize the main results and give first interpretation(s) (b) Compare their results to the Laboratory Experiments (c) Explain how their interpretations 'fit', or not, the classical lithospheric-atmospheric-ionospheric models proposed to explain the seismic electromagnetic precursors. (e.g. Hayakawa, On the fluctuation spectra of seismo-electromagnetic phenomena, Nat. Hazards Earth Syst. Sci., 11, 2011; Molchanov O. and Hayakawa, M.:

Seismo-electromagnetics and related phenomena: History and latest results, TERRAPUB, Tokyo, 2008; Hayakawa, M. and Molchanov, O. A.: Seismo Electromagnetics: Lithosphere-Atmosphere-Ionosphere Coupling, Terra Scientific Publishing Company (TERRAPUB), Tokyo, 2002)

Conclusion This Section may include (a) Summary of the main outcomes of this study (b) Data interpretations and their relationship to previous investigations (c) Future perspective(s)

Interactive comment on Solid Earth Discuss., 7, 1447, 2015.