

Interactive  
Comment

## ***Interactive comment on “Influence of a single lightning on the intensity of an air electric field and acoustic emission of near surface rocks” by S. E. Smirnov and Y. V. Marapulets***

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The authors are grateful to all the reviewers for attentive reading of the manuscript. Their useful remarks will improve the article.

The following remarks will be taken into consideration in the final variant of the paper:

1. The paper describes a single lightning discharge which was registered by instrumentation and was visually observed by one of the experiment participants.
2. The reviewers fairly noted that in general case the law of lightning energy reduction with distance does not follow the law  $1/r^2$  Reduction of energy with distance from

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the place of discharge cloud-to-ground occurs complex law, which requires additional evaluation tool observations. We have presented arguments for the evaluation and the  $1/r^2$  law did not go into details of this process. According to our colleagues, they broke down geophysical instrumentation, which is located a few kilometers from lightning. However, the study of current distribution in the soil (telluric current) from lightning is beyond the scope of our manuscript.

3. Formula (2) will be substituted by numerical values of formula (1) variables.

4. As it was fairly noted by one of the reviewers, we really receive only wave lengths and evaluate source size from it. There are simple formulas for that, for example, in the paper: Brune J.N. Tectonic stress and the spectra of seismic shear waves earthquakes // J. Geophys. Res. 1970. V. 75. N 26. P. 4997-5009.

5. We shall add the values of dynamic ranges of electric field strength into the text. Measurement of electric field was carried out in two channels. The first channel has resolution of 0,25 V / m and dynamic range of  $\pm 200$  V / m. The second channel has resolution of 2,5 V / m and dynamic range of  $\pm 2000$  V/ m. Measurements were taken into account when processing record both channels.

6. Conduction current density, shown in Fig. 3, was calculated in the following way: We had two units. One measured the conductivity of the air, another one - gradient potential of the electric field. Conduction current density was calculated as product of these quantities.

7. tau should really represent the time necessary for charge redistribution within the global system of Earth-cloud-ionosphere.

8. technical remarks of all the reviewers.

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Interactive comment on Solid Earth Discuss., 4, 627, 2012.

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