



## **Model of generation of small-scale non-stationary current systems in the atmosphere connected to earthquakes**

V.A. Liperovsky (1), C.-V. Meister (2), V.V. Bogdanov (3), E.V. Liperovskaya (1), and D.H.H. Hoffmann (2)

(1) Institute of Physics of the Earth, Moscow, Russia (liper@ifz.ru), (2) Technical University Darmstadt, Germany (c.v.meister@skmail.ikp.physik.tu-darmstadt.de), (3) Institute of Cosmophysical Research and Radio Wave Propagation, Petropavlovsk-Kamchatsky, Russia

The model of the generation of small-scale current systems (and local strong electric fields) in the atmosphere a few days before earthquakes - and possibly also during a few days after the event - proposed some years ago is further developed. In the model, the existence of clouds of dusty plasmas consisting of aerosols, ions and electrons is suggested. An additional ionization of the clouds is connected with radon emanation out of regions of the preparation of strong earthquakes. The related formation of mosaic-like spatial distributions of charge separation, and the correspondingly generated electric fields of  $3 \cdot 10^2 - 10^5$  V/m, as well as rather large atmospheric areas of increased electrical conductivity are assumed to have physical consequences which may be observed near the Earth's surface, in the atmosphere, and in the ionosphere using optical and radiophysical methods. In the work, new results of the analysis of such possible consequences are presented. Amongst others, spectra of infrared emissions are studied, especially spectral intervals of carbon dioxide emissions with centres at 4.3, 4.2, 9.4, 10.4, and 15.0  $\mu\text{m}$ . Links between investigated electrical disturbances in the atmosphere and ionospheric disturbances which may be observed by vertical sounding experiments are examined. Instabilities in current systems and the turbulization of charged clouds are analysed. The possible investigation of the described phenomena using radio-location techniques is discussed. Thus, it is proposed to search for additional radio-locational interferences in the atmosphere in seismo-active regions.