

Modeling of lithosphere-atmosphere-ionosphere coupling due to seismicity

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Abstract

Two models are developing. The first is model of energy transfer from the ground surface into atmosphere and ionosphere at the stage of large earthquake preparation. The main elements of the model are mosaic source of gas/water release at the ground surface, Gravity Waves in the atmosphere and plasma density/electric field oscillations induced by GW in the ionosphere. While this model is rather helpful for interpretation of observation data on atmosphere and ionosphere radio-sounding [1] its input parameters are not so clear and should be matched with other data, especially concerning infrasound and satellite infrared recordings. The second model is for study of aggregated seismic activity-climate variations coupling. The observation results have been recently reported [2]. Probable mechanism is deformation or stress wave initiated in the upper mantle of the Earth that leads to earthquake triggering, upward migration of liquids and temperature variation at the ground surface.

References

- [1] Molchanov O. and M. Hayakawa, Seismo-electromagnetics and related phenomena: History and latest results, TERRAPUB, Tokyo, pp.190, 2008.
- [2] Molchanov O., Climate-seismicity coupling, Report in GA EGU 2009, symp. NH3/SM6.