

Numerical simulation of co-seismic electromagnetic signals in porous media

Qinghua Huang^{1*}, Dan Zhang¹, Hengxin Ren²

¹Department of Geophysics, Peking University, ²School of Earth and Space Sciences, University of Science and Technology of China

Field observations indicated the existence of the electromagnetic signals accompanying with natural earthquakes. Such co-seismic electromagnetic signals may provide some useful information of earthquake process. So it is becoming an interesting topic in geophysical community. Unfortunately, the generation mechanisms of co-seismic electromagnetic signals are not well understood at the current stage. In this study, we simulate numerically the co-seismic electromagnetic signals in layered porous media by using the generalized reflection and transmission coefficients method. We focus on the characteristics of electromagnetic signals generated by a double couple point source or a finite fault source in different models. The effects of source time function type and center frequency have been investigated. The numerical results show that the co-seismic electromagnetic signals depend on the model structures and the rupture sources. The simulation results also indicate that seismic waves and electromagnetic signals have good correlations in both the waveform and the dominant frequency.

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