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Causal mechanism of Luminous phenomena in 2001 Shizuoka Earthquake (M5.1), Japan

Yoichi Noda[1*], Masashi Kamogawa[2], Toshiyasu Nagao[3], Kazuo Tanaka[4]

[1]Real-time EQ Info. Consortium, [2]Dpt. of Phys., Tokyo Gakugei Univ., [3]EQ Prediction Res. Center, Tokai Univ., [4]Department of Info. Sci., Gifu Universit

M5.1 earthquake occurred in Shizuoka, middle of Japan, at 23:57 (LT) on April 3 of 2001. The epicenter was located in 35.0N and 135.1E. During the earthquake, luminous phenomena of which color was blue were observed at 100 km distance from the epicenter and associated with seismic waves. In this paper, we investigate whether these luminous phenomena were natural or not because the color looks like man-made electrical discharge. The luminous phenomena appeared after the seismic waves arrived. The luminous phenomena were recorded by the video camera which is routinely operated by local broadcasting station. The luminosity could be estimated to be equivalent to the night-lighting for baseball and football stadiums. According to a number of eyewitness reports near the luminous emission, there was no specific explosion sound such as cloud-to-ground lightning. Neighboring factories, electric power company, and train company reported that there was no anomaly such as electric leakage. We found that the neon signboard on the building was destroyed after the earthquake, which is candidate of the luminescence source. However, mechanical clash of the neon signboard emitted no light in our laboratory experiment. So far, we could not conclude that physical mechanism of the luminous phenomena.

Keywords: Earthquake, Earthquake light