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

Yoichi Noda[1]; Masashi Kamogawa[2]; Toshiyasu Nagao[3]

[1] REIC; [2] Dep. of Phys., Tokyo Gakugei Univ.; [3] Earthquake Prediction Res. Center, Tokai Univ.

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. Factories near the area, electric power company, and train company reported that there was no anomaly such as electric leakage. Furthermore, the luminous area could be estimated by the eyewitness reports. On the other hand, in the last large earthquake (M6.4 Shizuok EQ in 1935), the ground surface only near this area strongly shaked. Therefore, the underground structure might be related to the mechanism of the luminous phenomena.