

Magnetic Signals from Earthquake Faulting: Aftershock of 2008 Iwate-Miyagi Nairiku Earthquake, NE Japan

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To date, there are few reports on successful observation of co-seismic changes of magnetic fields in time scale of seconds. We just know a few reports that seismomagnetic offset changes of 1.2 and 0.3 nT were observed before/after the Parkfield earthquake. However, these past observation results are given by total field proton precession magnetometers with a sampling period of 10 min. This sampling rate is too low to observe the dynamic changes of magnetic fields with fault movement. For seismomagnetic observations, we employed flux-gate magnetometers whose specifications are the measurement accuracy of 0.01 nT with the sampling interval of 1 sec.

Fortunately, our observation site happened to be situated within the epicentral distance of 26 km from the June 14, 2008 Iwate-Miyagi Nairiku earthquake of M 7.2, NE Japan. In this study, we present successful observation results of Earth's magnetic field offset changes due to the piezomagnetic effect caused by earthquake faulting in aftershocks of 2008 Iwate-Miyagi Nairiku Earthquake.