Observations of Geomagnetic Anomalies Related to the Taiwan Earthquake, December 2009

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Many previous studies indicated to the possibility of obtaining a significant signal linked to the tectonic activities. Several observations of geomagnetic variations have been interpreted as a result of changing magnetic rock properties under varying tectonic stress. Where, the change of stress field in the seismic region can cause changes in the electric conductivity structure of the Earth.

On December 19, 2009, the 6.4 magnitude Taiwan earthquake was around 15 miles from Hualien. The Taiwan earthquake struck at an approximate depth of 30 miles.

Geomagnetic data recorded at Hualien (HLN) and Amamioshima (AMA) stations were analyzed in order to clarify if there is a relation between the geomagnetic variations and the seismic activities at Taiwan in December 2009. Our obtained results indicate to anomalous geomagnetic variations in the base line in relation to the seismic activity. In addition, there are very short geomagnetic variations only few seconds before the onset of seismic activity.

Such anomalous geomagnetic variations may be explained as a result of the perturbations of the crustal stress. Where, the changes in the crustal stress can cause variations in the intensity and/or rotation of the geomagnetic vectors.