

## Observation of Seismo-Atmospheric Electric Field Variation

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Observations of seismo-electromagnetics have been dramatically developed. Frequency of these observations ranged widely from DC-ULF to VHF Band. However, there is practically no observation of atmospheric electric field associated with earthquakes, although there are some eyewitness reports of earthquake-related macroscopic anomalies that might be explained by atmospheric electric field variation before earthquakes. Moreover, the ionospheric disturbance associated with earthquakes was studied by Liu et al. (2000) who statistically demonstrated that the maximum plasma frequency in the ionosphere decreases before earthquakes. In order to understand the disturbance mechanisms, two types of mechanism could be suggested such as Mechanical Effects and Electromagnetic Effects. In the mechanism of Electromagnetic Effects, especially Electric Field Effects, it has been suggested that there is a relationship between the atmospheric electric field and the ionospheric disturbance. There are also some supportive theoretical works and laboratory experiments for the suggestion. If this suggestion is right, there should be a positively charged area on the ground surface. Therefore, it is important to confirm the existence of the charged area on the ground surface before earthquakes. We have developed a system to measure the atmospheric electric field by using corona current measuring device that is relatively insensitive to noises and easy to maintain. So far, we have installed five observation stations in Taiwan and nine stations in Japan. During our observation, we found a number of interesting signatures that might be related to earthquakes after carefully considering other atmospheric activity such as thundercloud, rainfall and so on. Signatures appeared only in areas around large earthquakes. These may be the first observations on the seismo-atmospheric electric field.