

The Verification by Time Series Graph of Atmospheric Ion Change before The Western Tottori Prefecture Earthquake in 2000

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Atmospheric ion has been considered as one of the warning sign prior to an earthquake (Tributsch,1983). It has been reported that there is some relation between this anomaly phenomenon and the Kobe Earthquake (Satsutani,1996). Since the October of 1997, we have installed an Ion Counter and the characteristics of atmospheric air have been continuously monitored for positive and negative ion densities. The Western Tottori Prefecture earthquake (M=7.3) in 2000 occurred with 80Km from Okayama University of Science (OUS). This machine recorded an anomaly prior to the Western Tottori Prefecture Earthquake. In this presentation we aim to report about this anomalous phenomenon and discuss its significance. Based on these results, it is considered that an earthquake influences an atmospheric ion

Atmospheric ion has been considered as one of the warning sign prior to an earthquake (Tributsch,1983). This phenomenon was actually confirmed for the first time when the atmospheric ion was actually measured prior to the Kobe Earthquake. It has been reported that there is some relation between this anomaly phenomenon and the Kobe Earthquake (Satsutani, 1996). Since the October of 1997, we have installed an Ion Counter and the characteristics of atmospheric air have been continuously monitored for positive and negative ion densities (3channel) and distributions. The Western Tottori Prefecture earthquake (M=7.3) of October 6, 2000 occurred with 80Km from Okayama University of Science (OUS). This machine recorded an anomaly prior to the Western Tottori Prefecture Earthquake. In this presentation we aim to report about this anomalous phenomenon and discuss its significance.

It has been reported a heavy rain and thunder affected atmospheric ion. The influence of negative charged ion is bigger than positive charged ion. Therefore I paid attention to positive ion, and made Time Series graph only positive charged ion. A vertical axis has a smallest value of 3000 ion/cc.

The atmospheric ion density had changed for about three months prior to the Western Tottori Prefecture Earthquake. The Ion Counter usually has recorded about 30 times the value more than 3000 (positive charged ion) ion/cc in one year and has been changing by 500 – 2000 ion/cc. High-density ion was observed 19 times value more than 3000(positive charged ion) ion/cc during June-September period of 2000. The highest value of atmospheric ion density of this period recorded 11105 ion/cc. The Ion Counter recorded 5 times value more than 3000 (positive charged ion) ion/cc only in one day on July 11, 2000. The atmospheric ion density has stabilized after this earthquake event. Further, when an ionic occurrence began to be active, a micro-earthquake on the Western Tottori Prefecture area occurred in the about same time.

Based on these results, it is considered that an earthquake influences an atmospheric ion. These results were verified at the OUS monitoring station. At present, there is no continuous atmospheric ion monitoring station except at OUS. In the near future it is proposed to increase the number of monitoring stations, in order to facilitate a more accurate assessment of these results. By this presentation the investigation show the importance of relationship between an earthquake event and changes in atmospheric ion concentration.