

Precursor observed by movements of aero-ionization measurement prior to the pacific coast of tohoku earthquake in 2011

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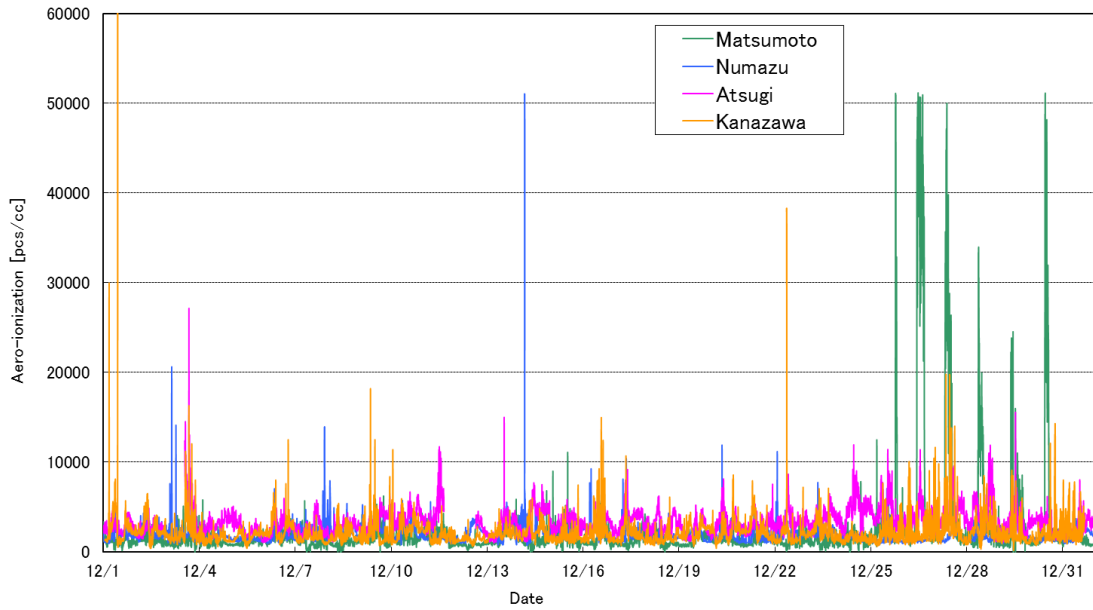
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1. Introduction

Earthquake predictions that predict when, where, how much of an earthquake will happen, is one of the most important theme in Japan. In this study, we aim at correct information of earthquake predictions by means of measurements for aero-ionization in many measuring points. Before the 3.11 earthquake (the pacific coast of tohoku earthquake in 2011), in our network of measurement an unusual behavior appeared. This study reported the unusual behavior in detail.

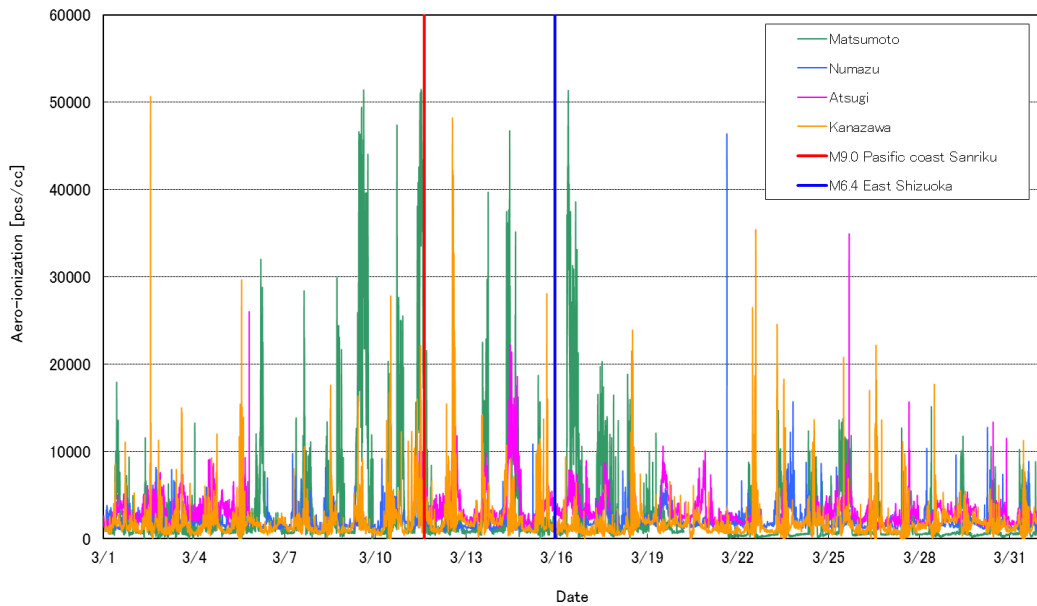
2. Experimental method

The experimental apparatus is based on Gerdien-condensor method, was developed by COMSYSTEM Co. Ltd. The apparatus has been setting up in a campus of Kanagawa Institute of Technology (KAIT), and aero-ionization value have been measured in 24 hours. The same apparatus were setting up at 6 regular measuring points in Japan, i.e., Numazu, Matsumoto, Kanazawa, Kyoto, Kohchi, and Atsugi. And 11 sub-measuring points have been setting up for supporting aero-ionization the network system of e-PISCO [1]. The schematic figure of this network system was shown in Fig.1. The data of ionization was sent to the headquarters of e-PISCO and was opened in a website.



Movements of aero-ionization in Dec. 2010

Fig. 2: The graph of aero-ionization in Dec. 2010



Movements of aero-ionization in Mar. 2011

Fig. 3: The graph of aero-ionization in Mar. 2011



In our experience, for one large earthquake ($M=7.0$) cause less than 5 times of unusual behavior for aero-ionization, based on this experience we succeed in predictions for the day of Chuetsu earthquake in 2004 and of Iwate-Miyagi earthquake in 2008 and so on [2]. On the contrary, for the 3.11 earthquake both behavior and period of aero-ionization have the new case, and we cannot predict the earthquake.

4. Conclusions

Now, for correct information of earthquake predictions, many method have been challenged. The method of aero-ionization observation is one of them. Because all of them have some demerits each other, in the present a better way is combination of some methods. Although for the prediction of earthquakes, many discussions occurred academically, many challenges should be executed by means of various methods.

References

- [1.] <http://www.e-pisco.jp/>, 2012.
- [2.] Hiroshi Ohsima, Naoyuki Yada, Atmospheric ion change before earthquakes, Proc. of the 7th General Assembly of Asian Seismological Commission and Seismological Society of Japan, 2008 Fall meeting, p. 41, 2008.