ESTABLISHMENT OF NPO JAPAN EARTHQUAKE PRECURSOR COMPREHENSIVE OBSERVATION CENTER (JEPCOC) AND EXPERIMENT OF EARTHQUAKE OCCURRENCE PREDICTION

Japan Geoscience Union Meeting 2015

2015/5/26

NPO Japan Earthquake Precursor Comprehensive
Observation Center(JEPCOC)
Director General SAITO Yoshiharu

Purpose and Overview

- NPO JEPCOC has been established on January 7 2015
- NPO JEPCOC is operated by hardware engineers who develop observation system, software engineers who develop data collection and display system and ordinary people who observe various phenomenon
- Observe direct emission wave
- ordinary people who observe various phenomenon
- Observation Equipment
 Develop and Manufacture by ourselves
- Experiment of dissemination of practical EQ prediction

Overview

- Multi-method at multi-point observation is performed; first of all, we inspect correlation between actual occurred earthquake and observed anomaly
- We start from Tree Bio-electric Potential (TBP) observation and dual frequency observation at multi-frequency band and we try prediction of earthquake occurrence in the near future.
- We plan to cooperate with other groups which are observing tidal level deviation, air ionization, and so on.
- Frequency band of EM observation is VLF (3~30kHz, under development), LF (30~300kHz), MF (300~3MHz), VHF (30MHz~300MHz) and UHF (300MHz~3GHz, under development)

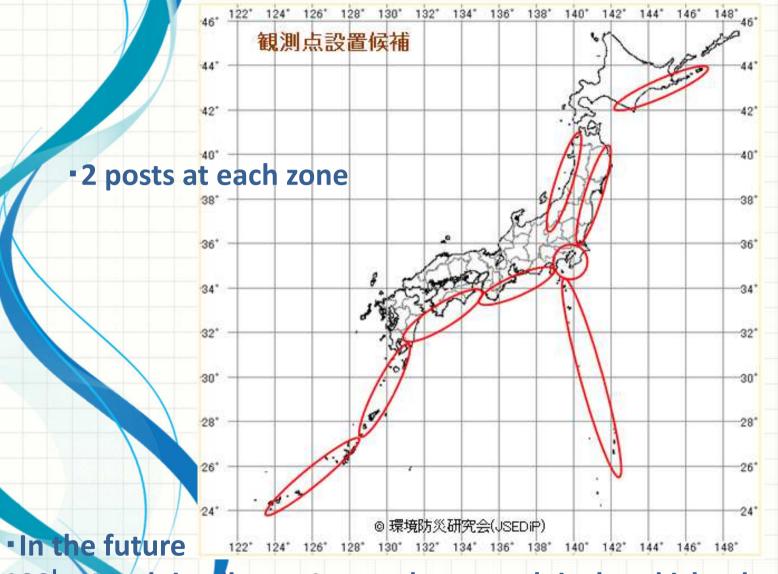
Overview

In order to predict EQ occurrence with high probability, it is important to combine data obtained from several methods. We are trying to observe EM signal at several frequency band with adjacent dual frequency from VLF to UHF, Aero ion concentration, Animals anomalous accorded level deviation as well.

Frequency band of EM signal from EQ focus is known to be emitted from DC to SHF. We wait at various frequencies at VLF, LF, MF, VHF and UHF at adjacent dual frequency, if a signal received at only one frequency, it may not be seismic, it may be some signal which has some meaning, if two signals received at both frequencies simultaneously, and it may be seismic signal.

Tidal level deviation is measured at 187 points along cost line by Japan Meteorological Agency (JMA) and other public organization. It is able to know deviation in sigma by software processing.

Plan to facilitate Observation Posts

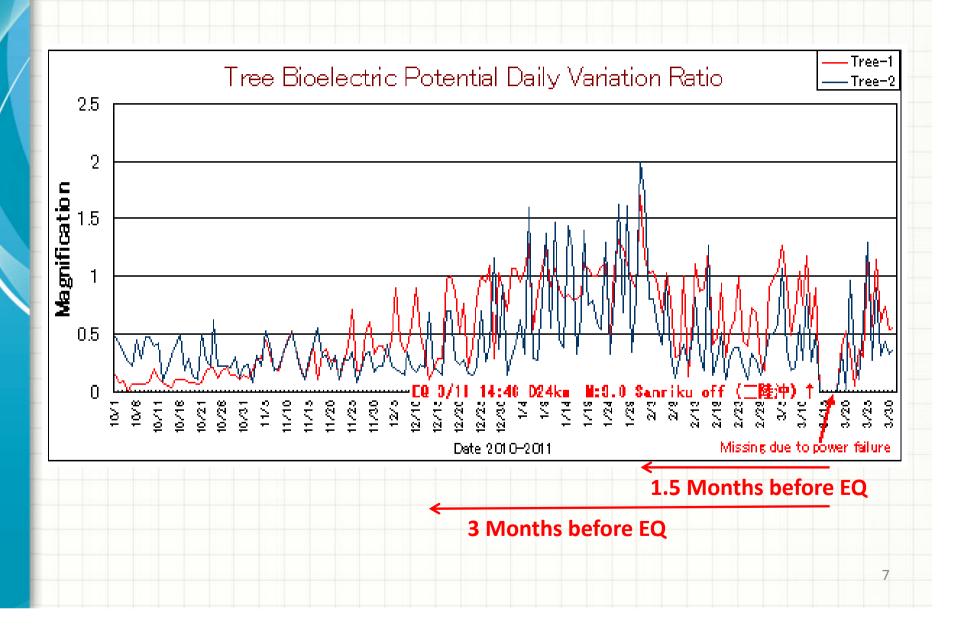


100km Mesh in all over Japan also at each isolated islands

Policy for Prediction dissemination

- Predict more than M=5 class
- Our policy is "nice swing is OK, no swing and miss is NOK" aiming as practical disaster information
- We publish the abnormal data
- If EQ doesn't come, "Think it was happy" (similar to typhoon forecast)
- Let you to use our prediction information at your own risk

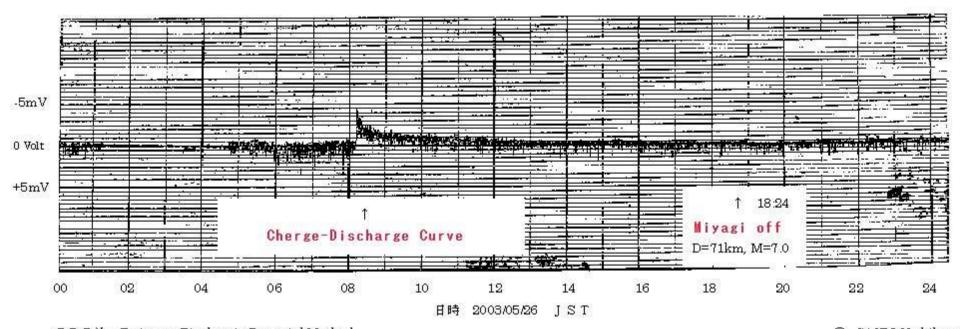
Example of anomaly of each observation method Tree Bio-electric Potential (TBP)



Example of anomaly of each observation method

Tree Bio-electric Potential (TBP)





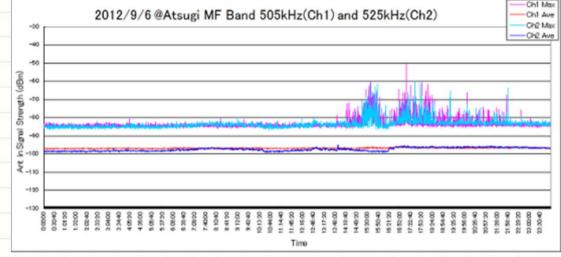
TBP法: Toriyama Bioelectric Potential Method

🕝 SAITO Yoshiharu

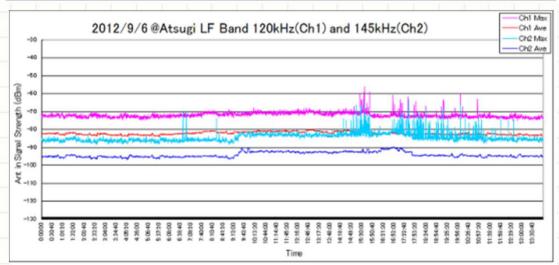
Dual Freq. Simultaneous EM Observation Method

Synchronization is seen in multiple frequency bands at various observation point

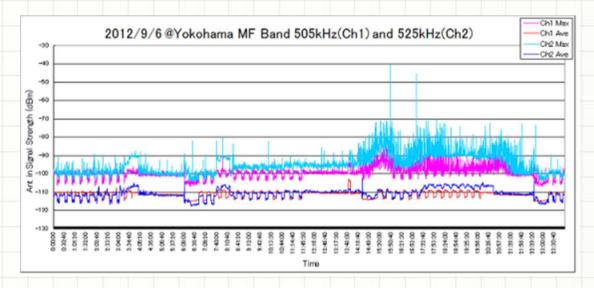
1 week before at Atsugi MF Band



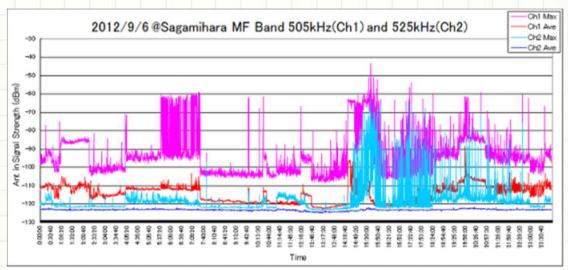
1 week before atAtsugi LF Band



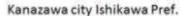
1 week before at Yokohama MF Band

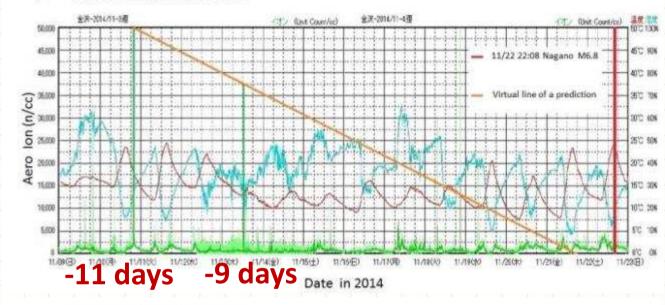


1 week before at Sagamihara MF Band

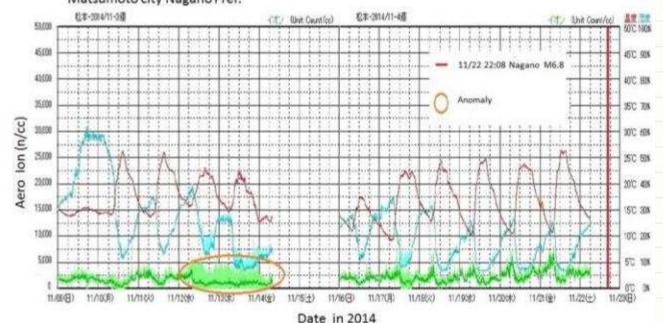


Air Ion density Observation





Matsumoto city Nagano Pref.



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Tidal deviation Observation Method

Before 2011/03/11 M9 Tohoku EQ

1 year before the EQ

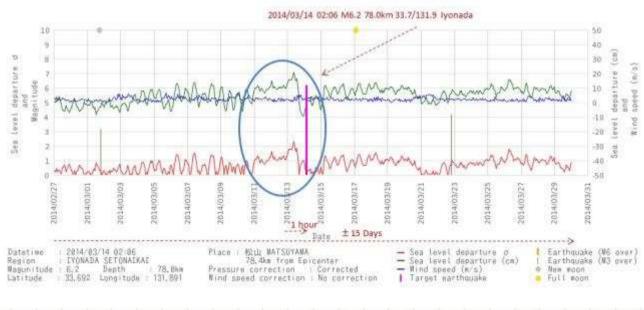


1 day on the day of EQ



2014/03/14 M6.2 78.0km lyo-Nada





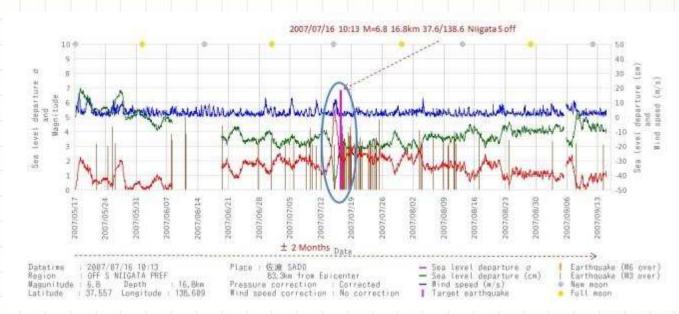
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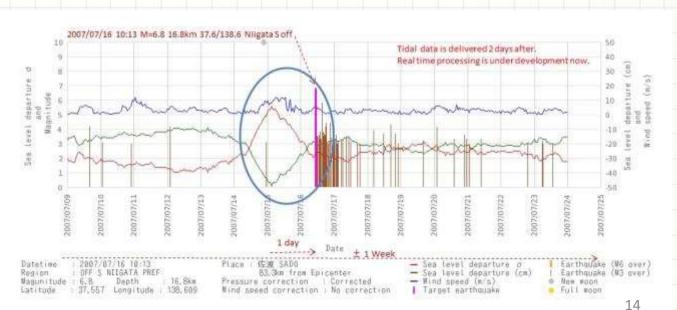
2007/07/16 M=6.8

Off Niigata

±2 Months

1 day on the day of EQ





JEPCOC Standard Data Processor

- 1) Components: Our data processor is composed from A/D converter by dSPIC, LINUX one board microcomputer, key board, mouse and LED display with DVI-D or HDMI interface.
- 2) Input: DC 0V~+3.7V, 10 Channel, with Buffer Amplifiers
- 3) Sampling Time: 1 kHz
- 4) Output Data: Once in 1 minute, Maximum, Minimum, Average value
- 5) EM value is shown in [dBm] CSV Format 1441 Lines/day
- 6) Auto Reboot: Once in 1 day
- 7) Solar panel, Wi-Fi is available
- 8) Automatic data transfer to maximum 2 web sites once in 1 hour
- 9) Price: ¥110,000

Topics

- Presentation on TBP and dual freq. EM observation at NASA IGRS on 2014/12/10
- Document, Voice, Photos are on our Web Site





- cooperate with us to facilitate observation posts
- let us know when you observe any anomaly of great EQ precursor
- E-Mail: saito@jepcoc.jp
- Web Site: http://www.jepcoc.jp/