

## Discussion on the Integrated Earthquake Early Warning using Multiple On-site Indices: for the IT Strong Motion Seismometer

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The integrated earthquake early warning using the multiple on-site indices is information given when large principal shock is presumed by using two or more on-site indices only with the observation point near the user. The Earthquake Early Warning (EEW) of the Japan Meteorological Agency is given about 4 or 6 seconds after detecting the earthquake first at an observation point near the hypocenter. So there is a limit that EEW is not in time for the earthquake near the user's observation point. Even if EEW is in time when the hypocenter of a large earthquake is a little away, it tends to underestimation given first in the severe earthquake. Then, in this research, we pursue the possibility to product the information earlier than EEW for the earthquake near the user's observation point, or to presume large strong ground motion earlier than EEW when the hypocenter of a large earthquake is a little away.

We first investigate two or more indices that can be used in the on-site, and propose integrated usage that considers each features. We adopt PI(Nakamura,1998) and Pd(Wu and Kanamori,2005b) which can presume the strong ground motion of the large principal shock by in real time processing of the first primary wave, and tau\_c(Wu and Kanamori,2005a) and B\_delta(Odaka.et.al,2003) these need the first three seconds primary wave.

We discuss the technique for promptly giving some warning information by using these four indices integrated. We also discuss the use of the index obtained by the network like EEW for the improvement of accuracy.

Finally, we examine the application of the IT Strong motion seismometer which is the real-time strong motion observation system.