Probability of unnecessary control brought from estimation errors of shaking intensity in the Earthquake Early Warning

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http://www.bosai.go.jp/index.html

We have developed an automatic system of seismic waves for the earthquake early warning in Japan. Our automatic system determines nearly correct hypocenters for 99% of events. We introduced a new parameter, which is defined from observed shaking intensities, for the accurate and rapid shaking intensity estimation. We call it shaking intensity magnitude. The introduction of the new parameter decrease estimation errors of shaking intensity drastically. Average estimation error is 1.0 when JMA magnitude is used and it decreases to 0.4 by the introduction of the new parameter. Considering that the early warning information will be used for the control of many kinds of machines at the time of earthquake occurrence, we calculated the probability of unnecessary controls when it is used in actual operation. It is concluded that estimation errors of shaking intensity of 1.0, and 0.4 bring unnecessary controls of 99% and 83%, respectively.