

Development of a new real-time seismograph for early warning

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http://www.rtri.or.jp/rd/openpublic/rd46/rd4640/erthq_index.html

We developed a new real-time seismograph using a new method of quick estimating epicentral distance and magnitude from a single seismic record. Tsukada et al.(2002) and Odaka et al.(2003) introduced a simple function with the form of $B \exp(-At)$ and, determined A and B by fitting this function to the initial part of the waveform envelope. They showed $\log B$ in inverse proportion to the logarithm of epicentral distance. By using this relation, we can estimate the epicentral distance in a few seconds after the P-wave arrival. Then we can estimate the magnitude from the maximum amplitude observed within a given short time interval after P-wave arrival, by using an empirical magnitude-amplitude relation that includes the epicentral distance as a parameter.

The seismograph has been installed in the railway technical research institute. We will report the results of this observation.

References

- Tsukada et al., 2002, RTRI REPORT, vol.16, No.8, 1-6.
- Odaka et al., 2003, B.S.S.A., in press.