Proposal of Intensity Magnitude for the Earthquake Early Warning

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Our institute (NIED) and JMA are engaging in the research work developing reliable earthquake early warning system, which can be available for the practical service of early warning information conducted by JMA. Since the user of the early warning system needs reliable shakinginformation befor S wave arrival, we propose to determine new parameters to estimate shaking intensity.

We introduce shaking intensity magnitude, Mi, which can be calculated from observed shaking intensity at each station with taking into account geometrical spreading and attenuation by Q. We compared residuals between observed shaking intensity and that estimated from JMA magnitude and those between observed and estimated from Mi. We get a conclusion that the introduction of Mi makes possible to reduce estimation errors of shaking intensity to about half compared with the ordinary method using JMA magnitude.