
[JJ] Evening Poster | S (Solid Earth Sciences) | S-SS Seismology

[S-SS14]Strong Ground Motion and Earthquake Disaster

convener:Masayuki Kuriyama(Central Research Institute of Electric Power Industry)

Tue. May 22, 2018 5:15 PM - 6:30 PM Poster Hall (International Exhibition Hall7, Makuhari Messe)

Strong ground motion has social impacts as it induces earthquake disasters. We solicit contribution on any seismological topics related to strong ground motion that includes, but are not limited to, source processes, wave propagation, and site effects. We also welcome contribution on earthquake related disaster mitigation.

[SSS14-P35]Broadband ground motion waveform synthesis utilizing AI-based upsampling technique

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Keywords:broadband ground motion waveform synthesis, coupled learning method, artificial intelligence

A method of synthesizing broadband ground motion by adding short-period components to long-period ground motion based on the relationship between long-period and short-period ground motion waveforms extracted from observation records has been proposed (Iwaki and Fujiwara, 2013). In this study, based on the idea of synthesizing short-period components from long-period component, we applied the relationship between the long-period and broadband ground motion waveforms to the artificial intelligence (AI) by using many strong motion data recorded by strong motion networks such as K-NET and KiK-net.

The problem of predicting broadband ground motion from long-period ground motion can be regarded as a problem of upsampling; predicting missing short-period components and synthesizing high-sampling data from low-sampling data lacking short-period component. In this study, we apply the coupled learning method which is one of the machine-learning methods to this problem. We will report the result of the basic study to perform broadband ground motion waveform synthesis.

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