

## Wavelet-based Ground Motion Prediction Using Front-site Waveform Data

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### Abstract.

Ground motion prediction using front-site waveform data has been proposed as forward conception for real-time usage. In case of engineering application, the ground motion characteristics in precise properties are required. Taking account the point, characterizing ground motion in time-frequency domain, and its possible prediction methodology is high demand interest. Therefore the proposed methodology is developed using wavelet based transfer function.

During the 2011 Tohoku Earthquake (M9.0), the ground motion amplification characteristics in Sendai area have studied. Site specific ground motion spectral amplification is remarkable depending on site geology. In other hand, past earthquakes occurred from same seismic source area, namely Miyagi-ken Oki area, have investigated at the specific sites. Based on observed strong motion database, its non-stationary characteristics, the authors have confirmed the applicability of the method to forward usage.

In EEW purpose, the predicted ground motion together with available time is applicable within limited range depending on the applications. The result is produced time history ground motion as output at the target sites using front site data as input, and it gives to match the ground motion characteristics as prediction.