

# Source Characteristics and Ground Motion Simulation of the 0206 Hualien Earthquake

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## Abstract

The earthquake, which occurred near Hualien city on February 6th, 2018, caused serious property damage and casualties to the city of Hualien. Up to now, researches of various aspects motivated to analyzing the causes of the earthquake are still in progress. In this study, we focused on source and ground motion characteristics of the 0206 Hualien earthquake by utilizing slip distribution inversion and ground motion simulation techniques. A wavelet-based method was applied for capturing rupture characteristics of this earthquake. The results show that the rupture exhibited two asperities, larger slips concentrated in the shallow-crust region, and the rupture was a bilateral type. We also performed ground motion simulation, using a 3-D finite-difference method, to model realistic synthetics. The synthetic PGV map shows a good agreement with the observation. By applying slip distribution inversion and ground motion simulation techniques, ground motion characteristics at a specific site can be sufficiently modeled, indicating that the techniques can contribute to earthquake engineering applications and seismic hazard assessments.

**Keywords:** 0206 Hualien earthquake, ground motion simulation, source characteristics