

Nonlinear broadband simulation of the M_w 6.0 May 29, 2012 Emilia earthquake in Northern Italy

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Abstract

We present the results of the numerical simulation of the May 29, 2012 Emilia Romagna earthquake in Northern Italy using an approach that computes synthetic seismograms associated to earthquake scenarios by combining broadband synthetic seismograms (0–10 Hz) obtained using the UCSB broadband code with nonlinear ground response analyses carried out using the program NOAH. The comparison with the recorded waveforms allowed validating the predictive capability of the adopted method in the proximity of the epicenter. The main limitation of the study is the inappropriateness of 1D modeling in a region characterized by a steep variation of the roof of the buried bedrock.