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Article

Near-Source Simulation of Strong Ground Motion in Amatrice Downtown Including Site Effects

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Supplementary Materials:

The following are available online at www.mdpi.com/xxx/s1, Figure S1: title, Table S1: title, Video S1: title.

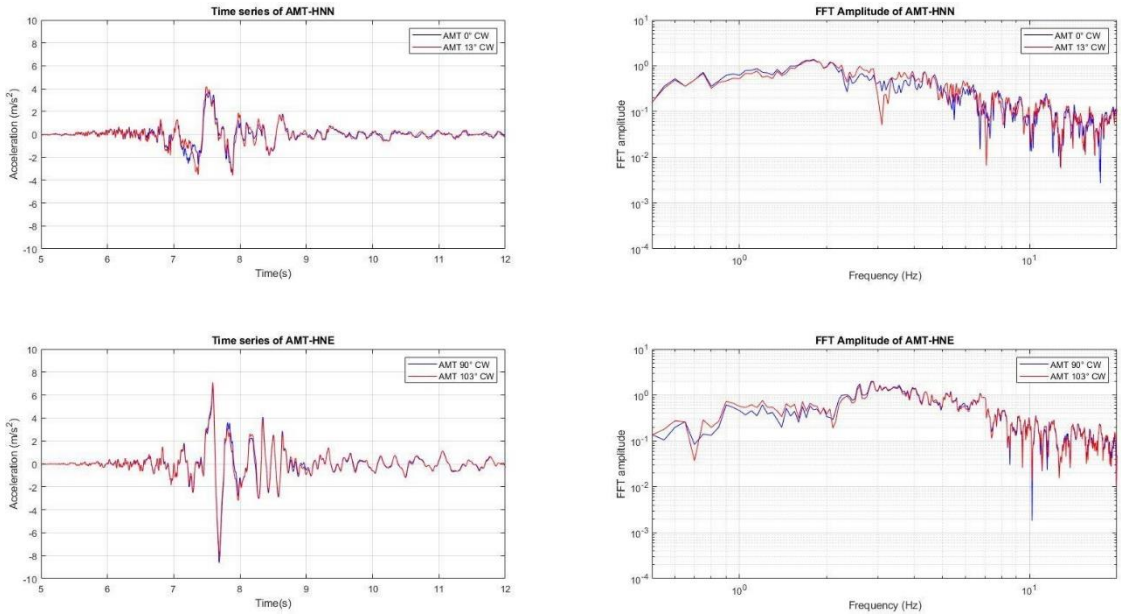


Figure S1. Recordings of the October 30th, 2016 earthquake at AMT, NS-EW vs. 13° clockwise (CW) components (left pannels) and the associated FFT Amplitude spectra (right panel). Upper pannels: NS component; Lower pannels: EW component.

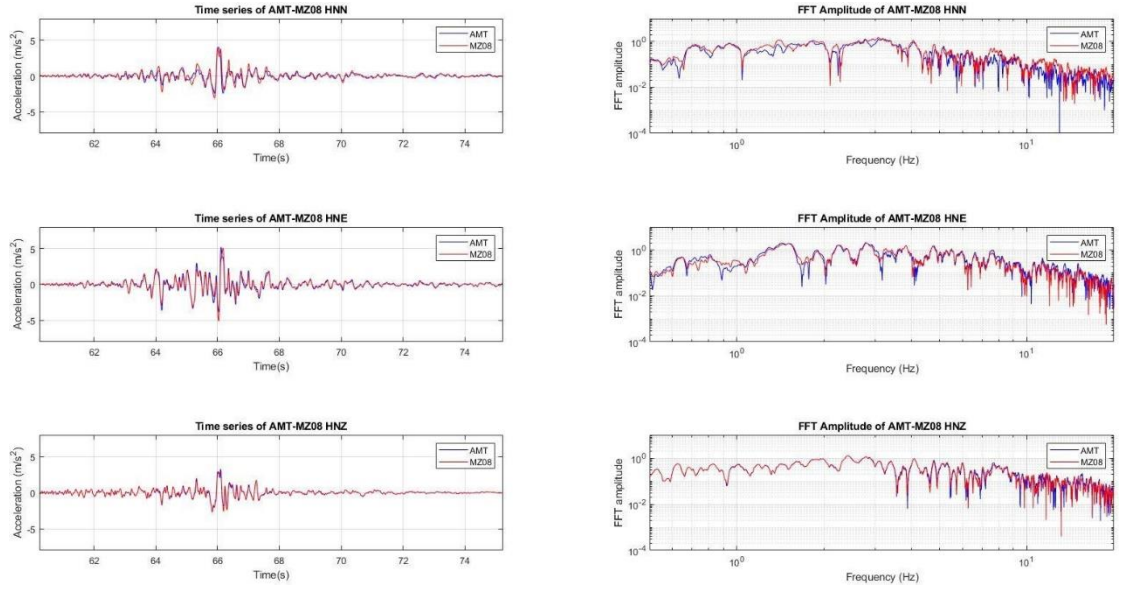


Figure S2. Comparison of the N-S (top panel), E-W (mid panel) and vertical (bottom panel) components for the 16 October 30th, 2016, Mw 6.5 earthquake recorded at AMT (blue lines) and MZ08 (red lines). On the left panels are 17 reported the time series and on the right panels are the associated FFT amplitude spectra.

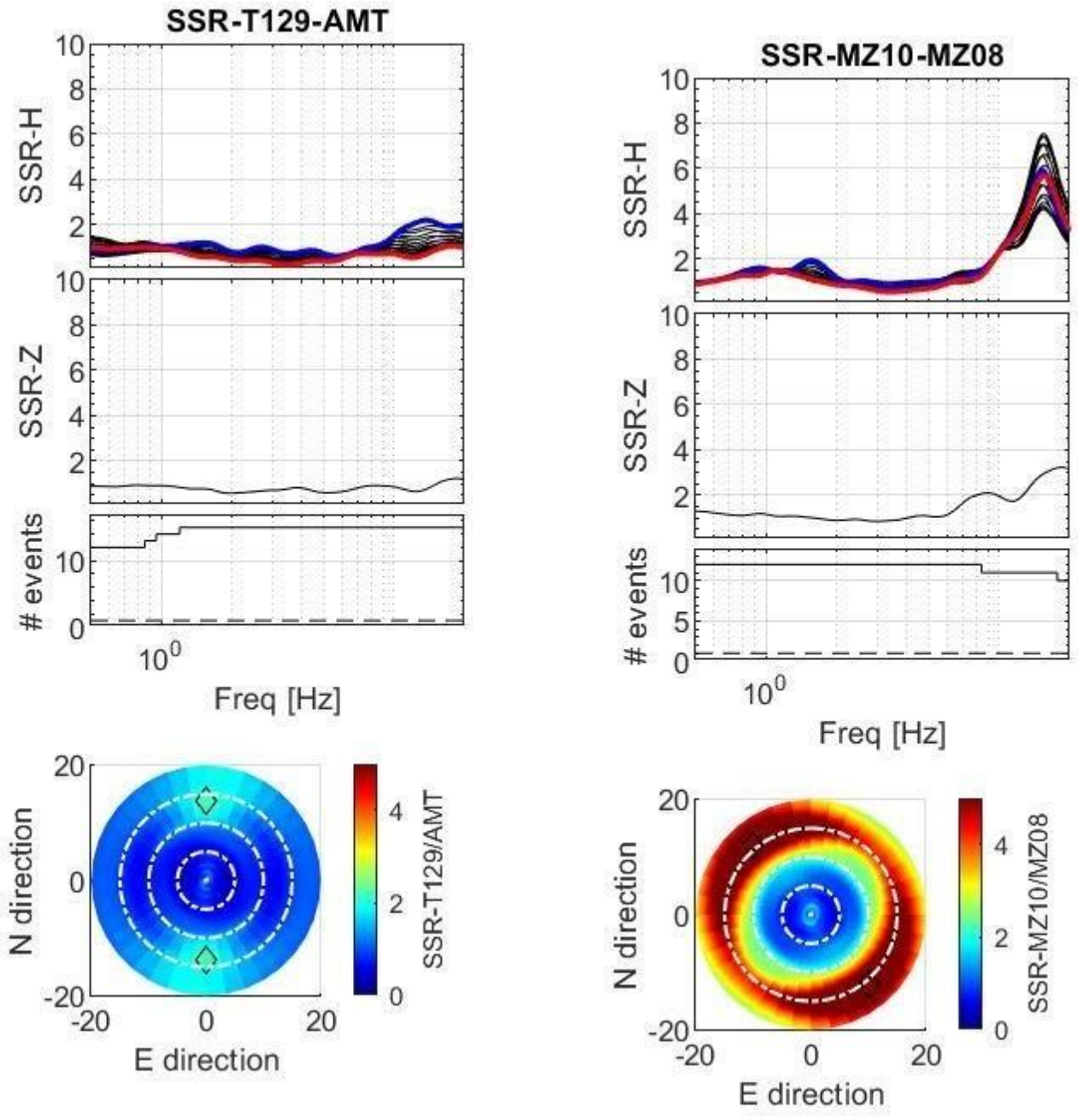
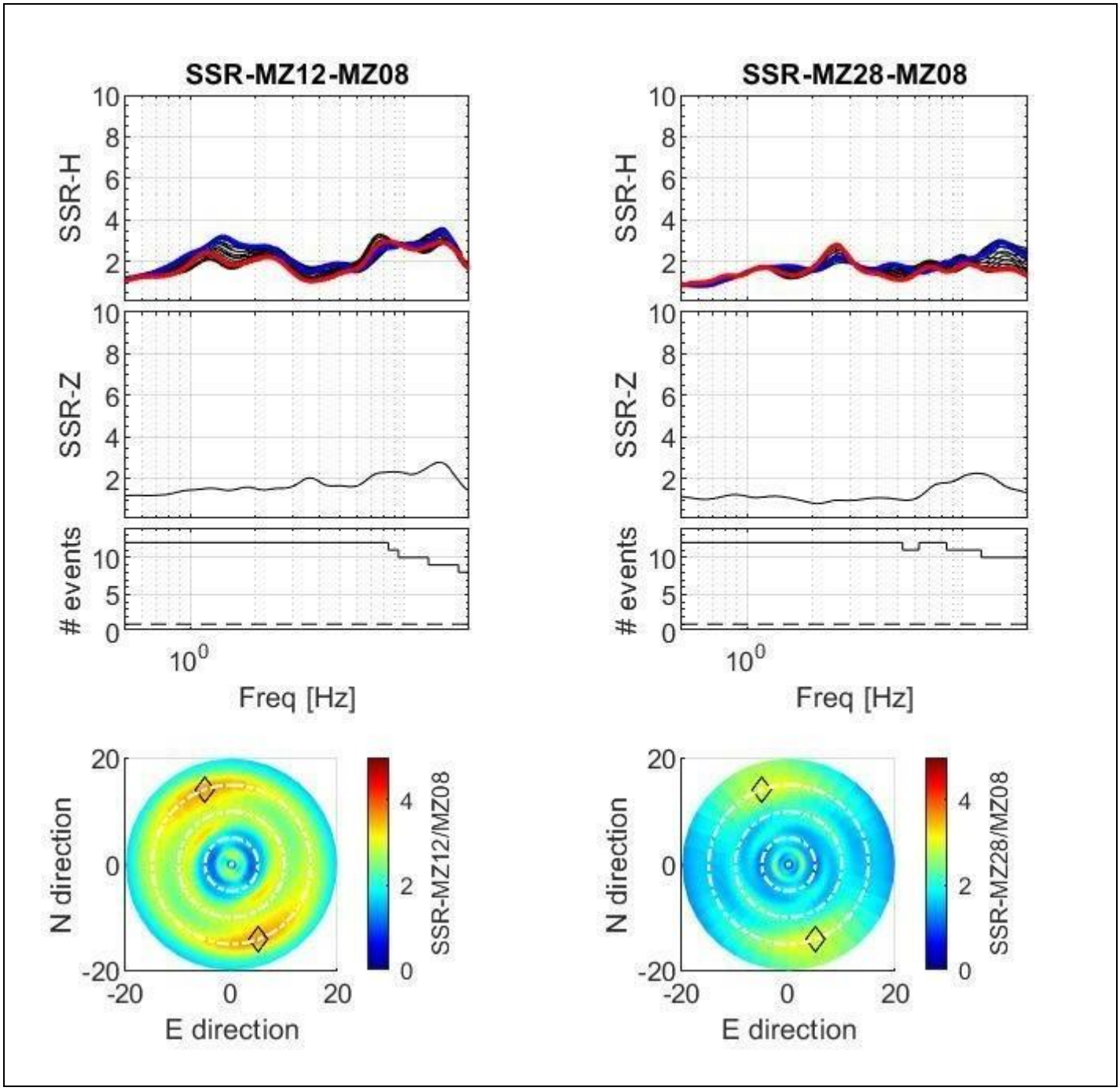
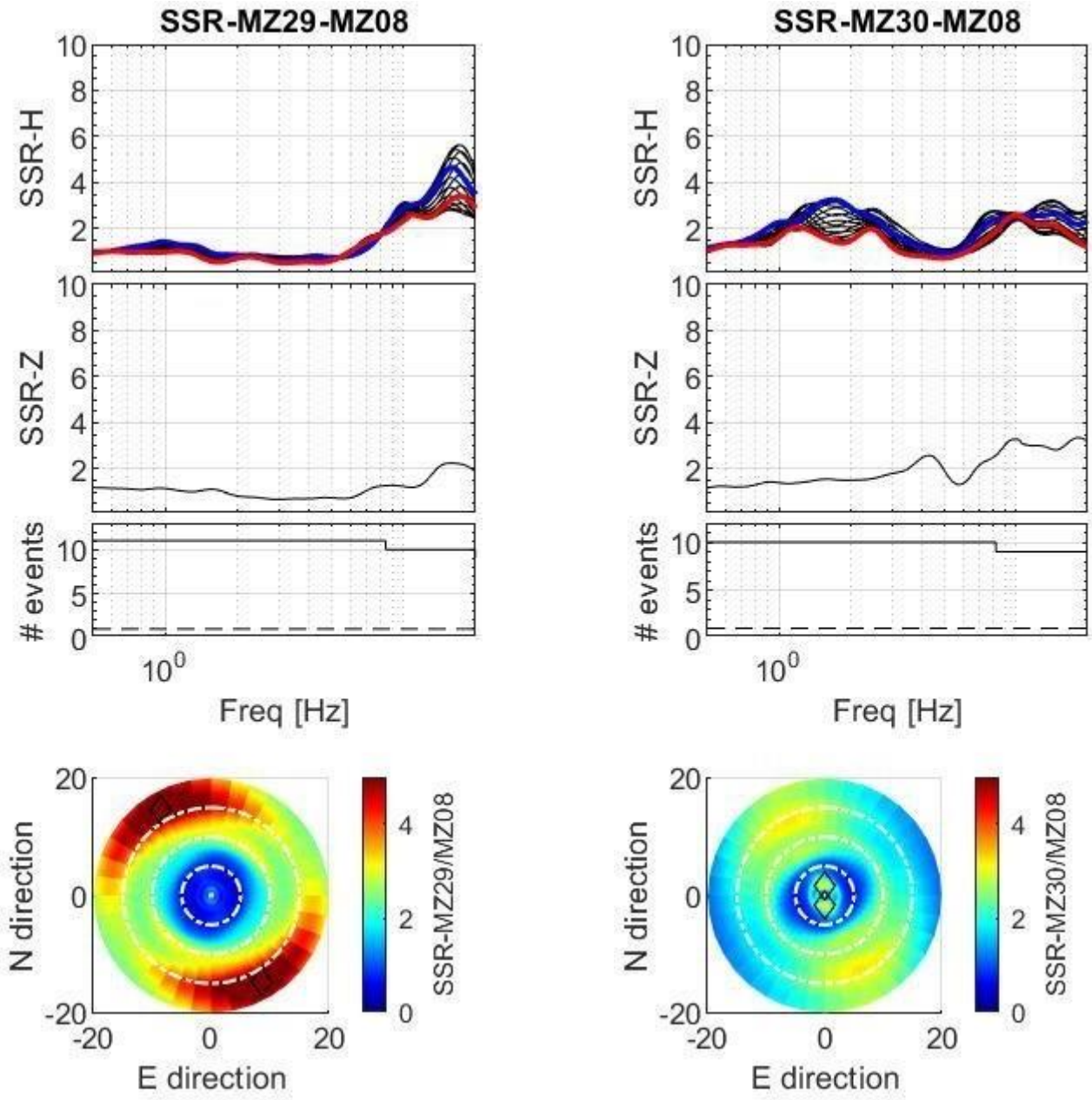
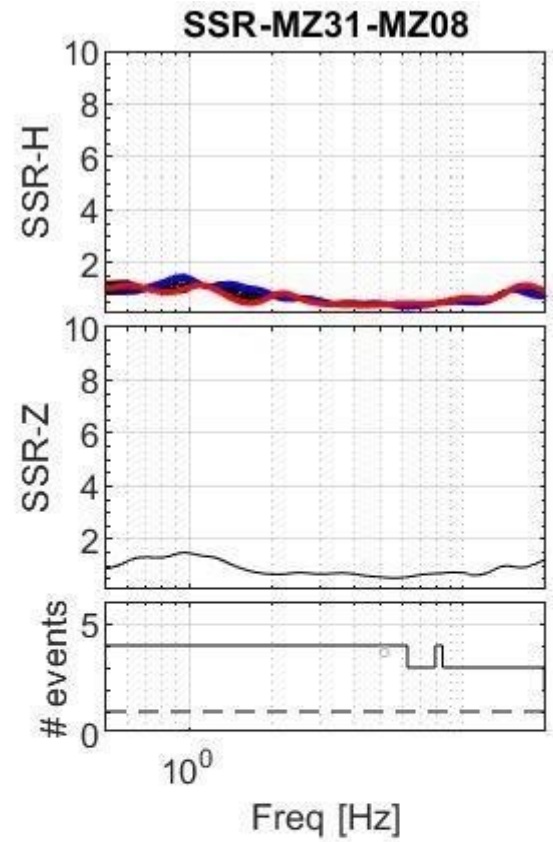
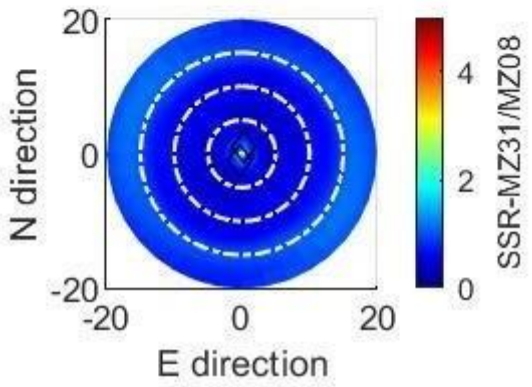


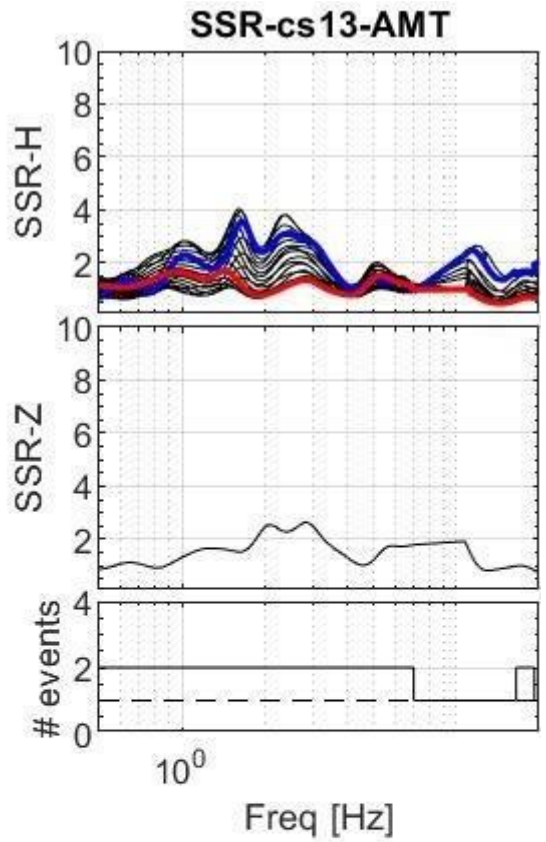
Figure S3. Standard Spectral Ratio (SSR) of the stations with respect to AMT. Each box is composed of 4 plots: upper box represents the average SSR calculated along 18 horizontal directions every 10°, where blue line is the N-S component, red line is the E-W component, green line is the vertical component; second box represent the vertical component; third plot represents the number of events having a signal-to-noise level greater than 3 (or 2 for CS stations) as a function of frequencies; bottom plot: polar plot showing the amplification along different azimuthal direction from 0 Hz (center of polar plot) to 20 Hz.

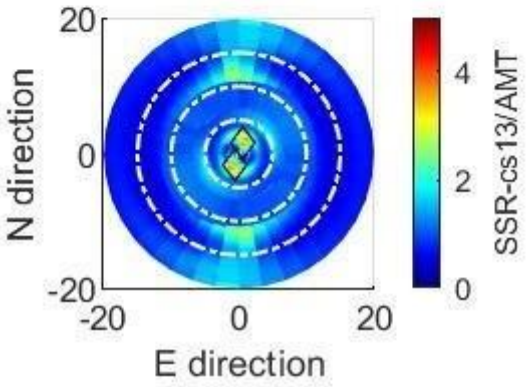

SSR-MZ12-MZ08
SSR-MZ28-MZ08
SSR-H
SSR-Z
events
Freq [Hz]
N direction
E direction
SSR-MZ12/MZ08
SSR-MZ28/MZ08

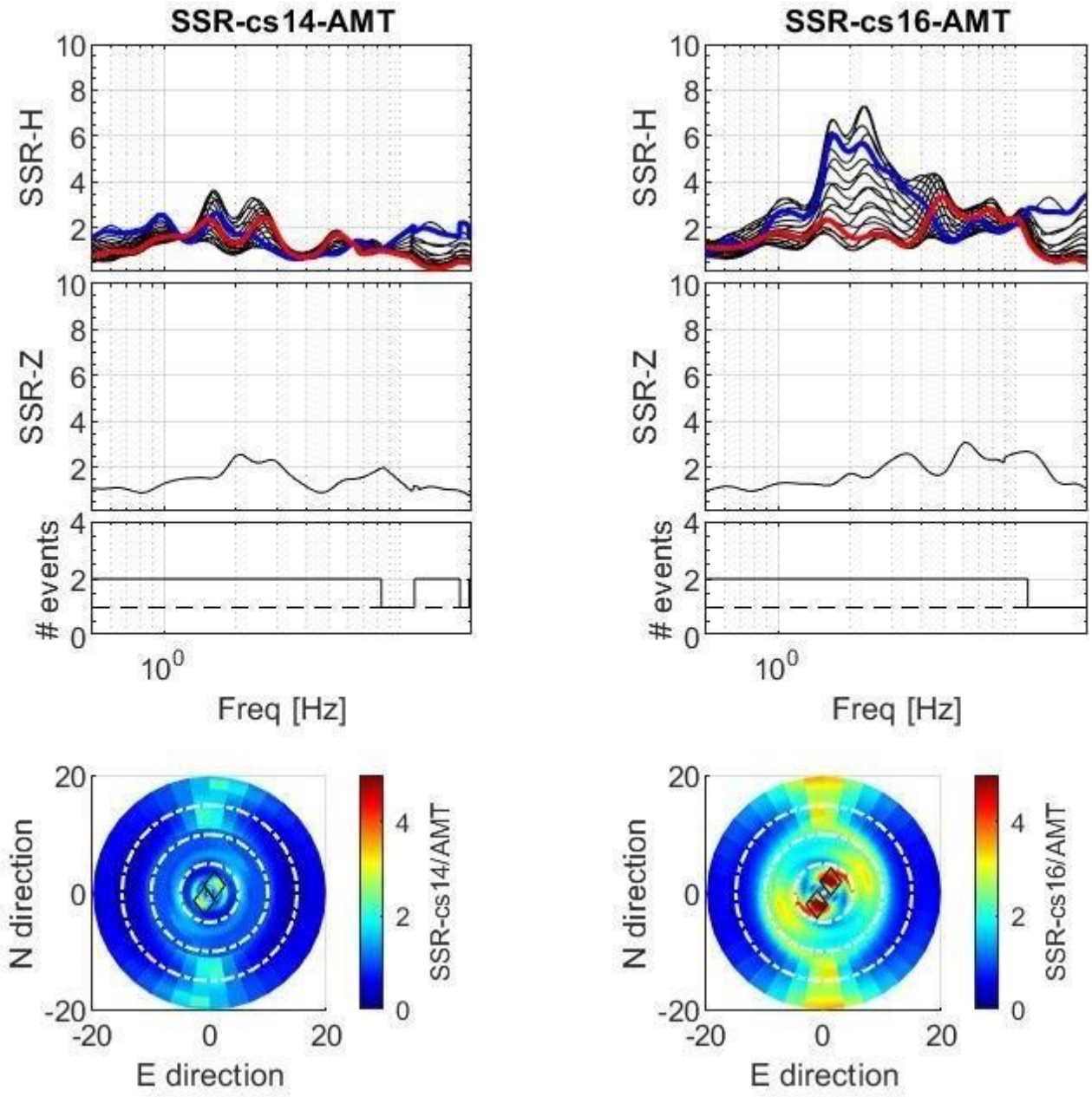

SSR-MZ29-MZ08
SSR-H
SSR-Z
events
Freq [Hz]
N direction
E direction
SSR-MZ29/MZ08
SSR-MZ30-MZ08
SSR-MZ30/MZ08

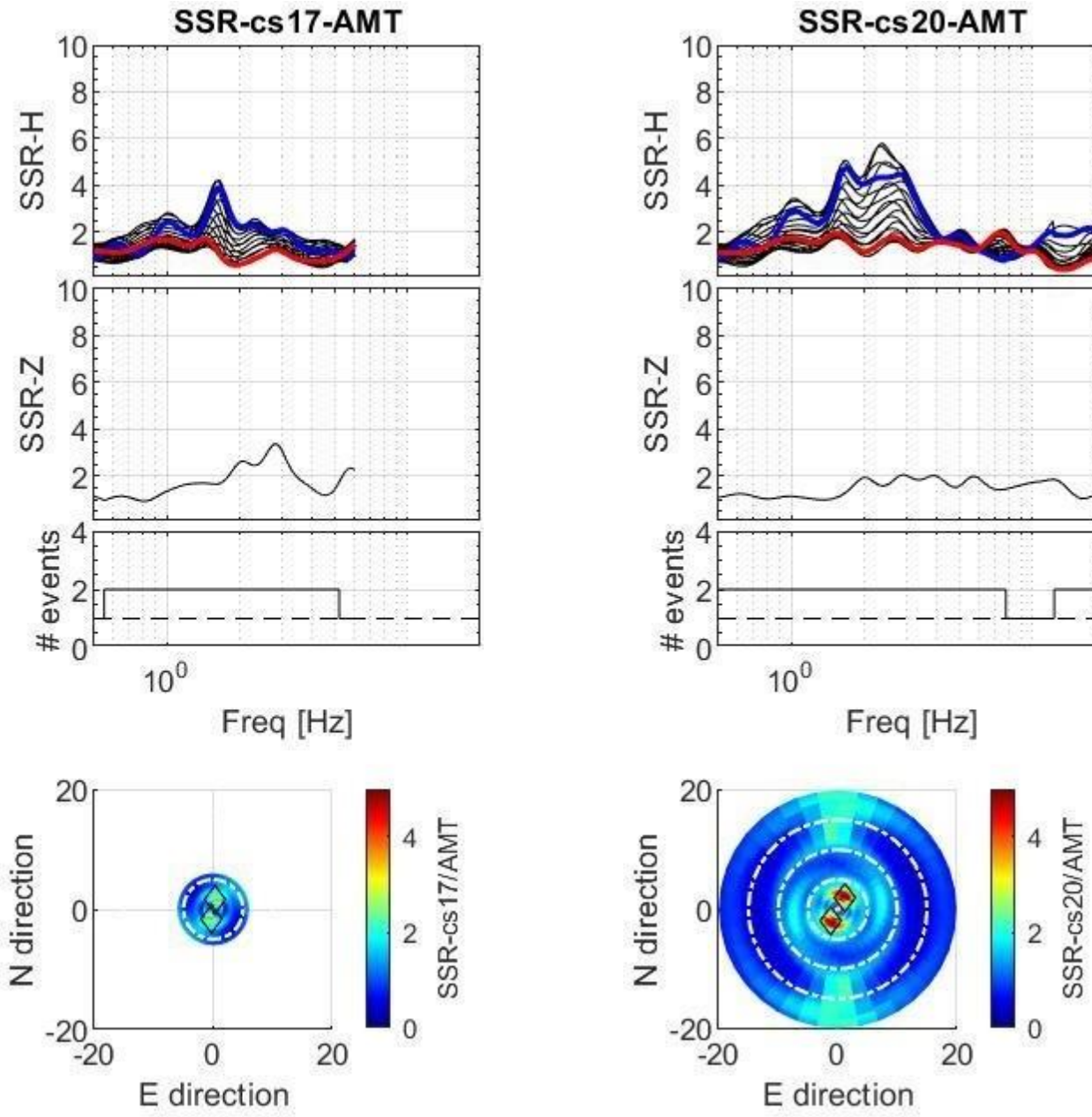

SSR-MZ31-MZ08
SSR-H
SSR-Z
events
Freq [Hz]


N direction
E direction
SSR-MZ31/MZ08


SSR-cs13-AMT
SSR-H
SSR-Z
events
Freq [Hz]


N direction
E direction
SSR-cs13/AMT


SSR-cs14-AMT
SSR-H
SSR-Z
events
Freq [Hz]
N direction
E direction
SSR-cs14/AMT
SSR-cs16-AMT
SSR-cs16/AMT


SSR-cs17-AMT
SSR-H
SSR-Z
events
Freq [Hz]
N direction
E direction
SSR-cs17/AMT
SSR-cs20-AMT
SSR-cs20/AMT

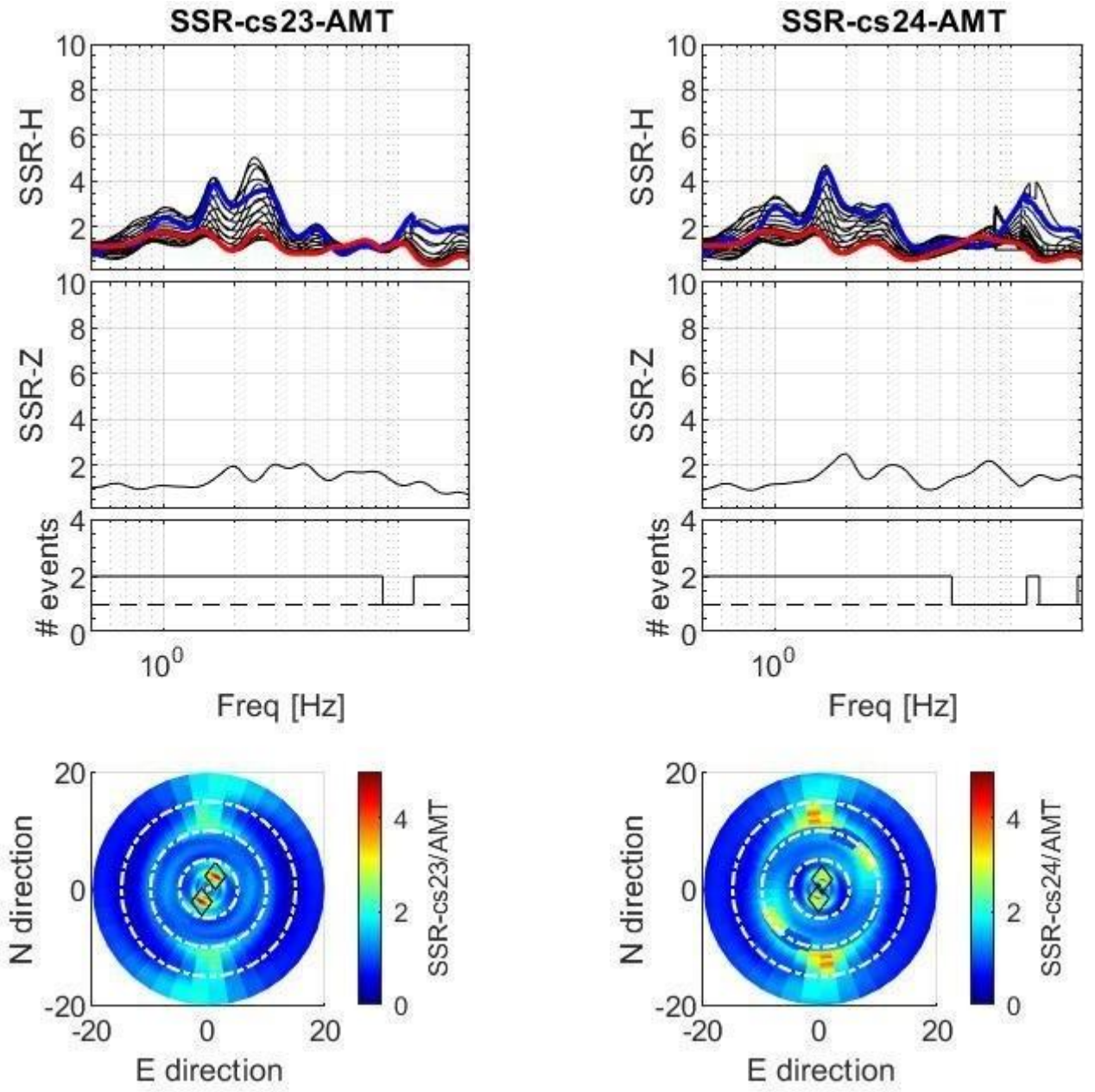


Figure S4. Comparison between the recorded and simulated intensity measures on the vertical component for Mw 6.0 (August 24th, 2016) at the stations in Amatrice. Red dots represent the recorded values; blue squares the simulated values; green lines the GMM values ±1 standard deviation (from [49]). Top left: PGV; top right: PGA; bottom left: Arias Intensity; bottom right: Significant Duration.

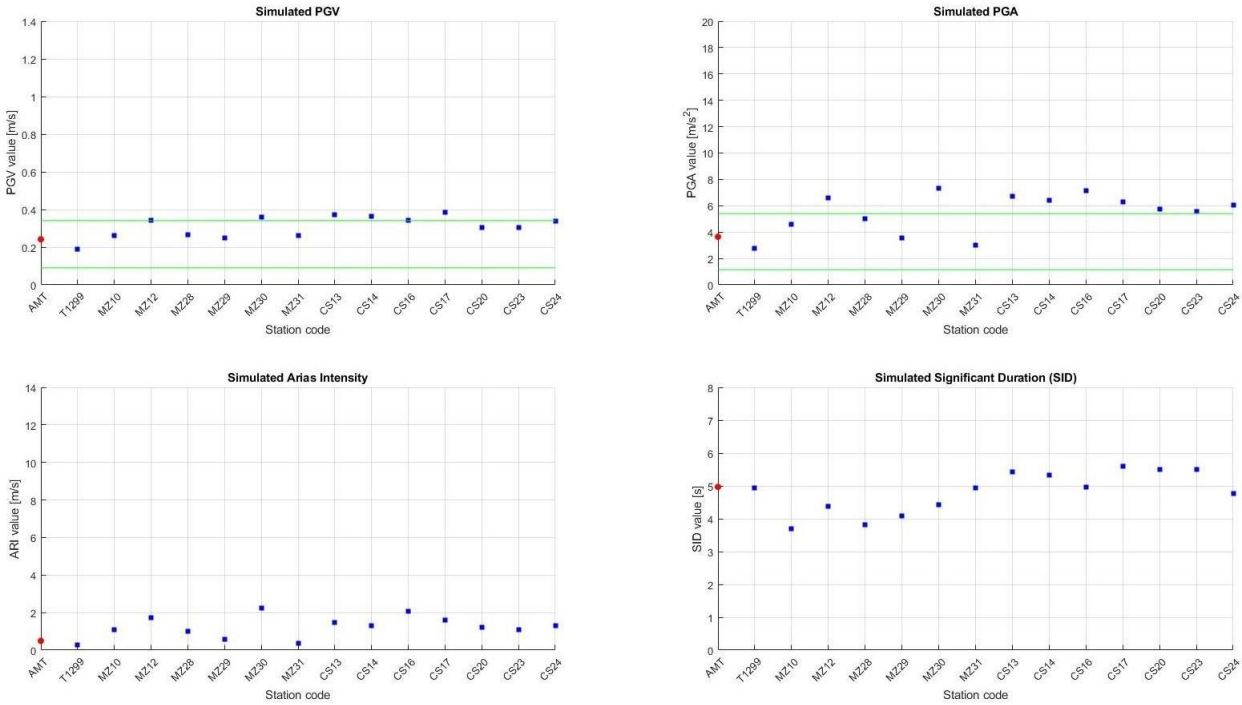


Figure S5. Comparison between the SSR of MZ10, MZ12 and MZ28 obtained by averaging 12 seismic events (black lines, calculated along 18 horizontal directions every 10°), Color dashed lines are the NS (blue), EW (red) and vertical (green) components of the SSR computed for only one seismic event: October 26th, 2016 Mw 5.9 (top panel) and October 30th, 2016 Mw 6.5 (bottom panel).