Supplementary Material File

Title: 2019 Ridgecrest Earthquake Reveals Areas of Los Angeles that Amplify Shaking of High-Rises

Authors: M. D. Kohler, F. Filippitzis, T. Heaton, R. Clayton, R. Guy, J. Bunn, K. M. Chandy

This Supplementary File contains seven figures cited in the manuscript's main text.

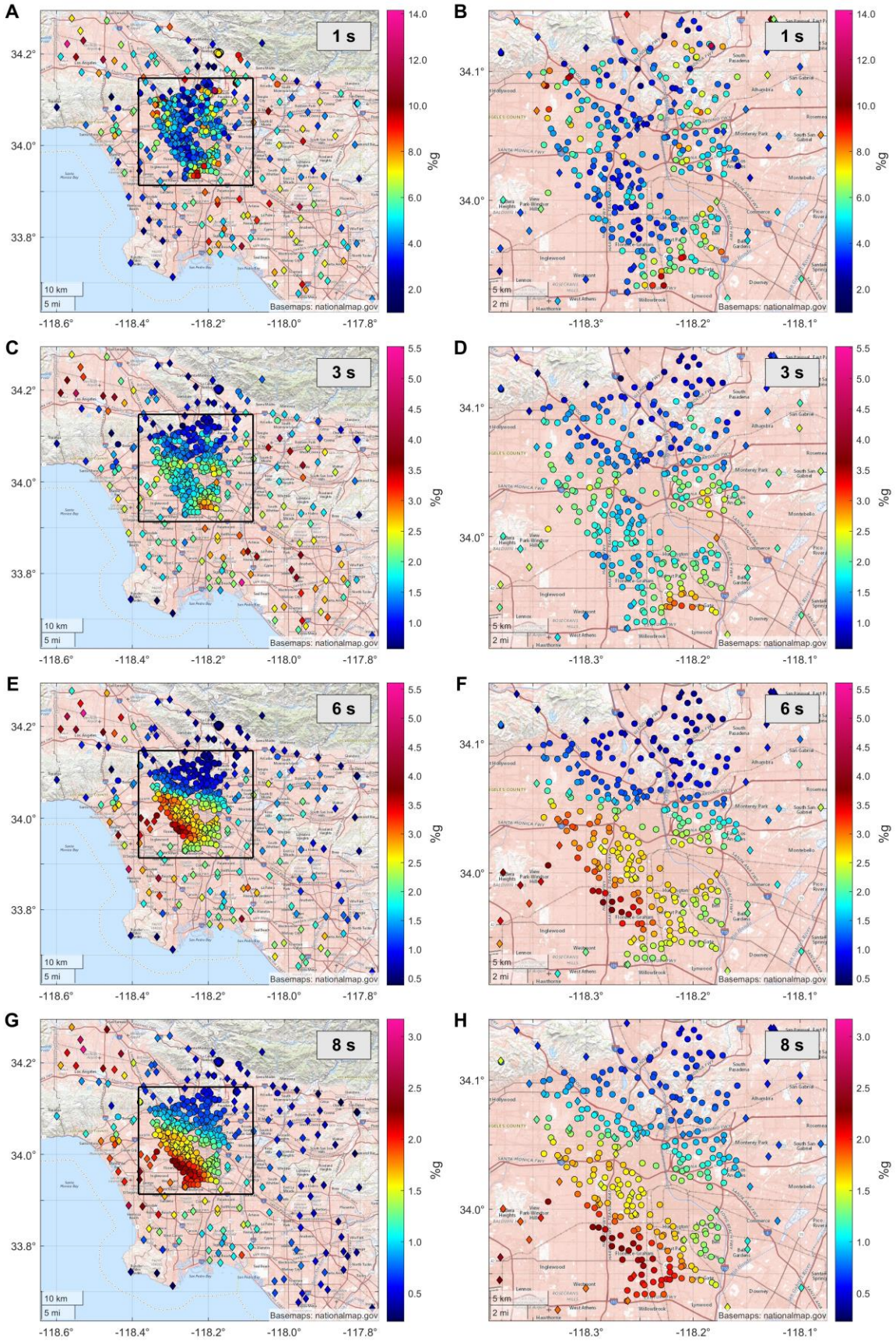
A
1 s
B
1 s
C
3 s
D
3 s
E
6 s
F
6 s
G
8 s
H
8 s
%g
Basemaps: nationalmap.gov
10 km
5 mi
5 km
2 mi
34.2°
34.0°
33.8°
34.1°
-118.6°
-118.4°
-118.2°
-118.0°
-117.8°
-118.3°
-118.1°

Figure S1. Spectral accelerations for the 2019 **M**7.1 Ridgecrest earthquake in southern California. Periods shown are: (A,B) 1 s, (C,D) 3 s, (E,F) 6 s, and (G,H) 8 s. Left column: Greater urban Los Angeles region. Right column: Blow-up of the region inside the marked squares on the left, showing detail. CSN stations=circles. SCSN+CSMIP stations=diamonds. Note varying amplitude scales in colorbars.

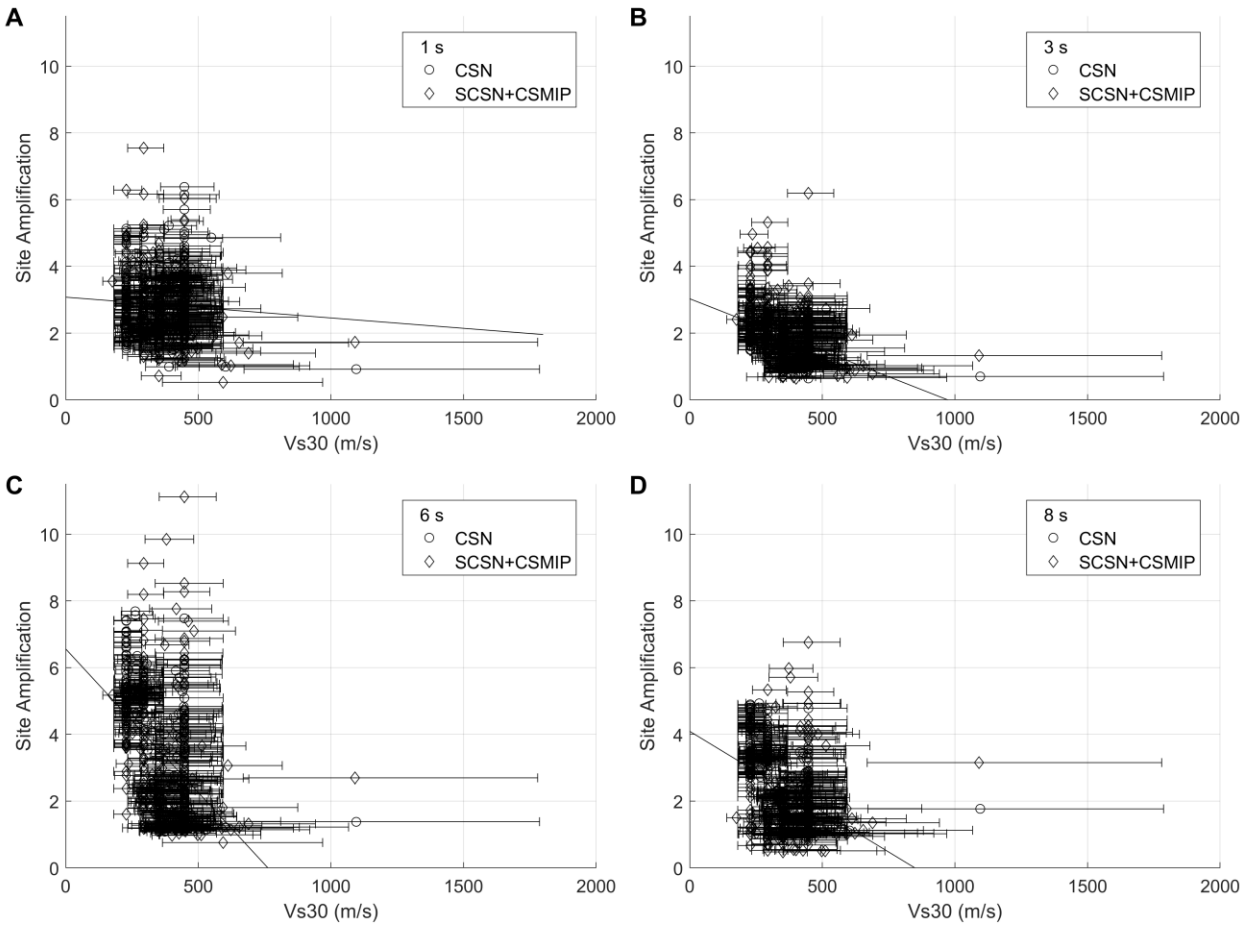

Figure S2. Relationship between site amplifications (discussed in main text) and Vs30 values from Thompson (2018) at each site, also showing standard deviations for each site. Periods shown: (A) 1 s; (B) 3 s; (C) 6 s; and (D) 8 s. CSN stations=open circles. SCSN+CSMIP stations=open diamonds. Lines show least-squares-fit regression. Vertical axis is unitless.

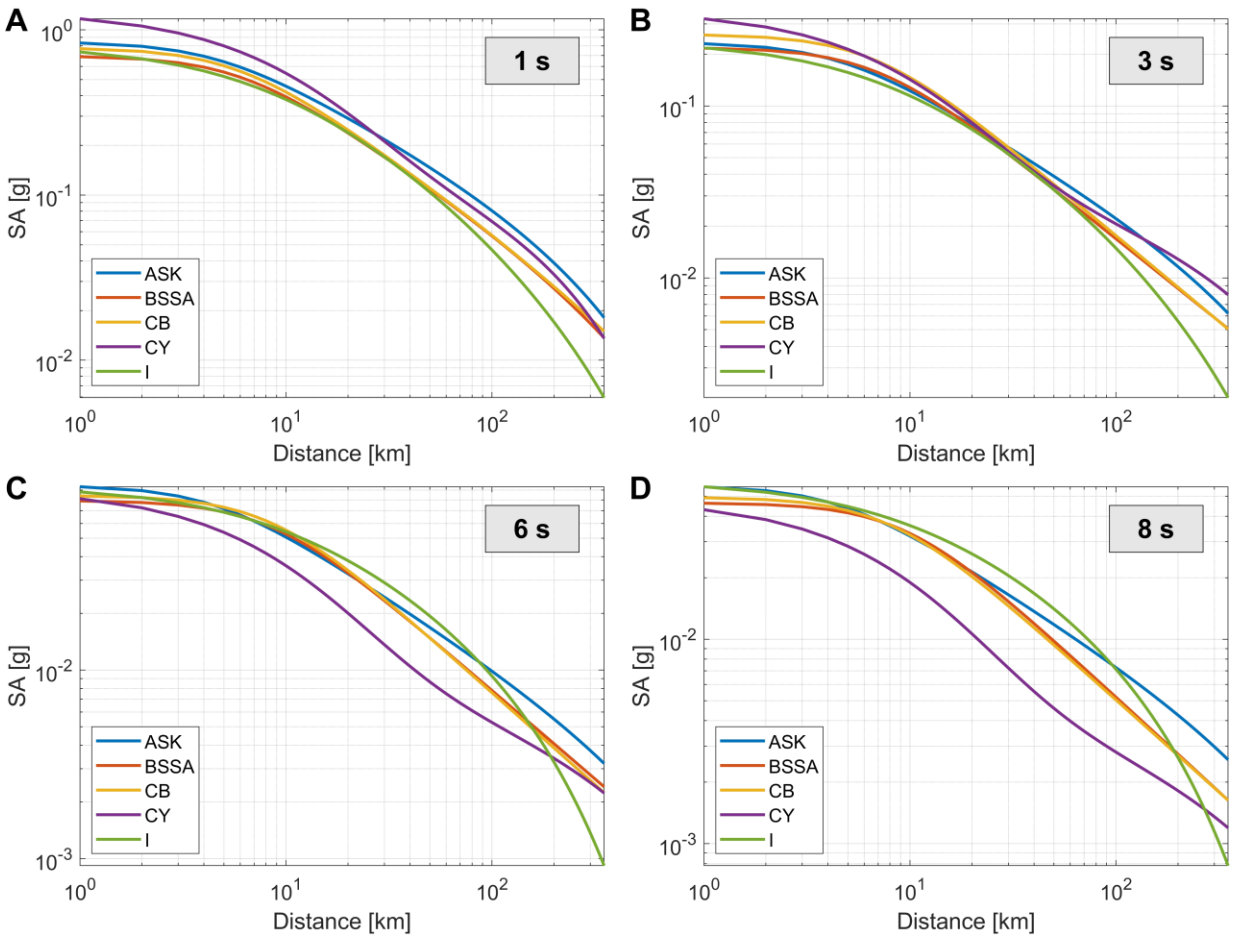

Figure S3. Predicted spectral amplitudes ('SA') as a function of distance for a scenario **M**7.1 earthquake for a soft soil site using five Ground Motion Prediction Equations (Abrahamson *et al*., 2014; Boore *et al*., 2014; Campbell and Bozorgnia, 2014; Chiou and Youngs, 2014; Idriss, 2014). Periods shown: (A) 1 s; (B) 3 s; (C) 6 s; and (D) 8 s. ASK=Abrahamson *et al*. (2014). BSSA=Boore *et al*. (2014). CB=Campbell and Bozorgnia (2014). CY=Chiou and Youngs (2014). I=Idriss (2014).

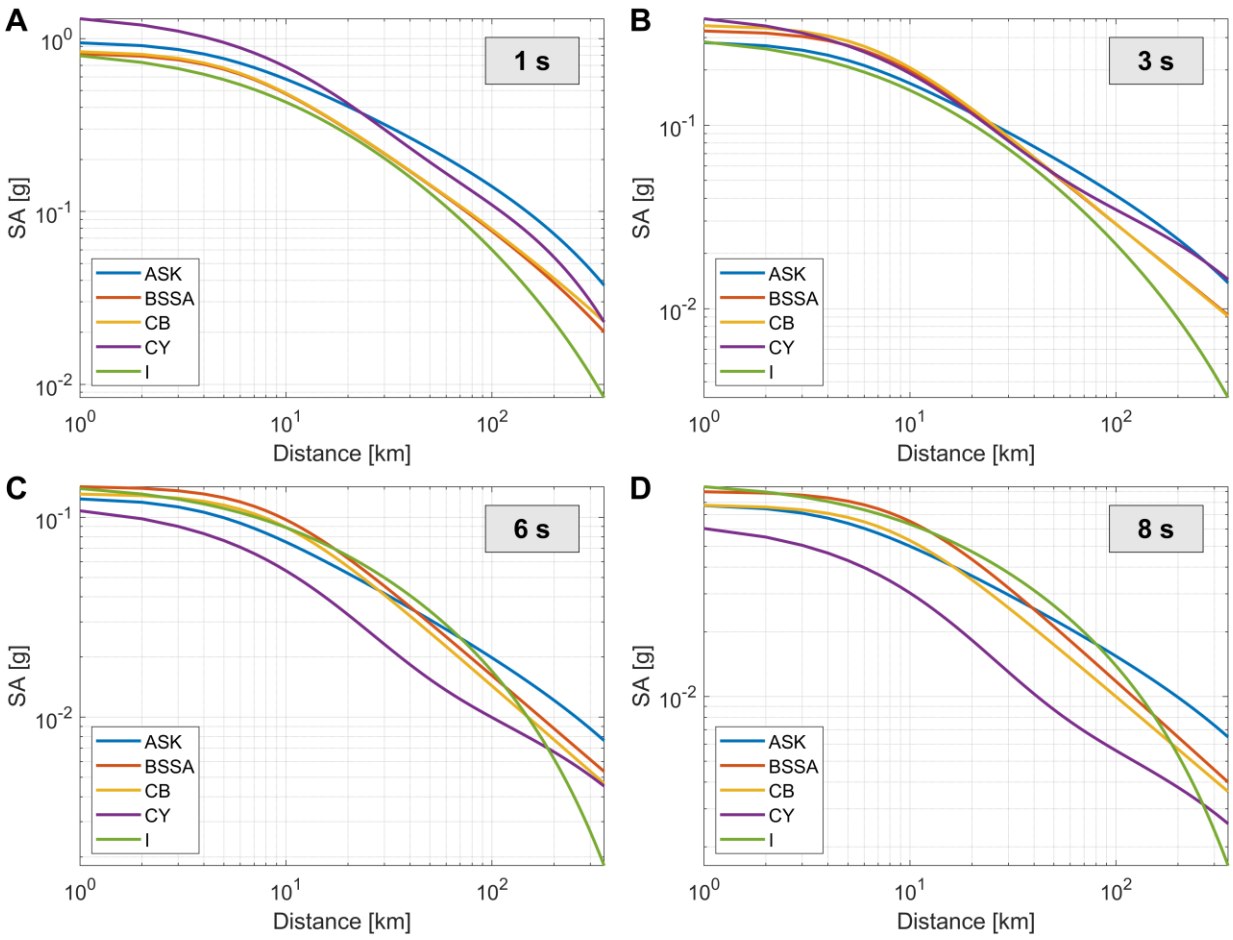

Figure S4. Predicted spectral amplitudes ('SA') as a function of distance for a scenario **M**7.6 earthquake for a soft soil site using five Ground Motion Prediction Equations (Abrahamson *et al*., 2014; Boore *et al*., 2014; Campbell and Bozorgnia, 2014; Chiou and Youngs, 2014; Idriss, 2014). Periods shown: (A) 1 s; (B) 3 s; (C) 6 s; and (D) 8 s. ASK=Abrahamson *et al*. (2014). BSSA=Boore *et al*. (2014). CB=Campbell and Bozorgnia (2014). CY=Chiou and Youngs (2014). I=Idriss (2014).

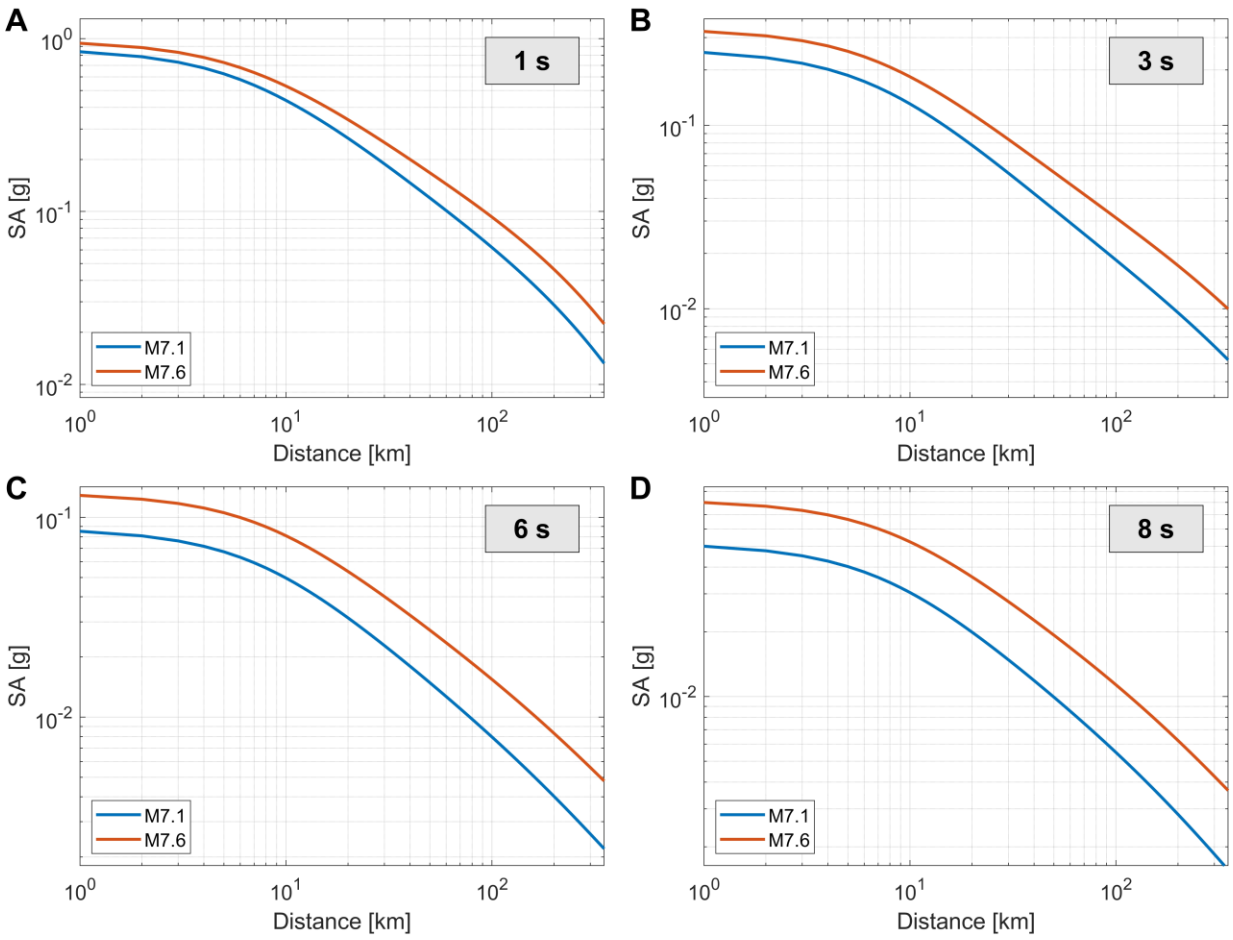

Figure S5. Mean spectral amplitudes ('SA') as a function of distance for a scenario **M**7.6 earthquake (red curve) and an **M**7.1 earthquake (blue curve) for a soft soil site. Periods shown: (A) 1 s; (B) 3 s; (C) 6 s; and (D) 8 s. Means are from the five Ground Motion Prediction Equation curves (Abrahamson *et al.*, 2014; Boore *et al.*, 2014; Campbell and Bozorgnia, 2014; Chiou and Youngs, 2014; Idriss, 2014) shown in Figs. S3 and S4.

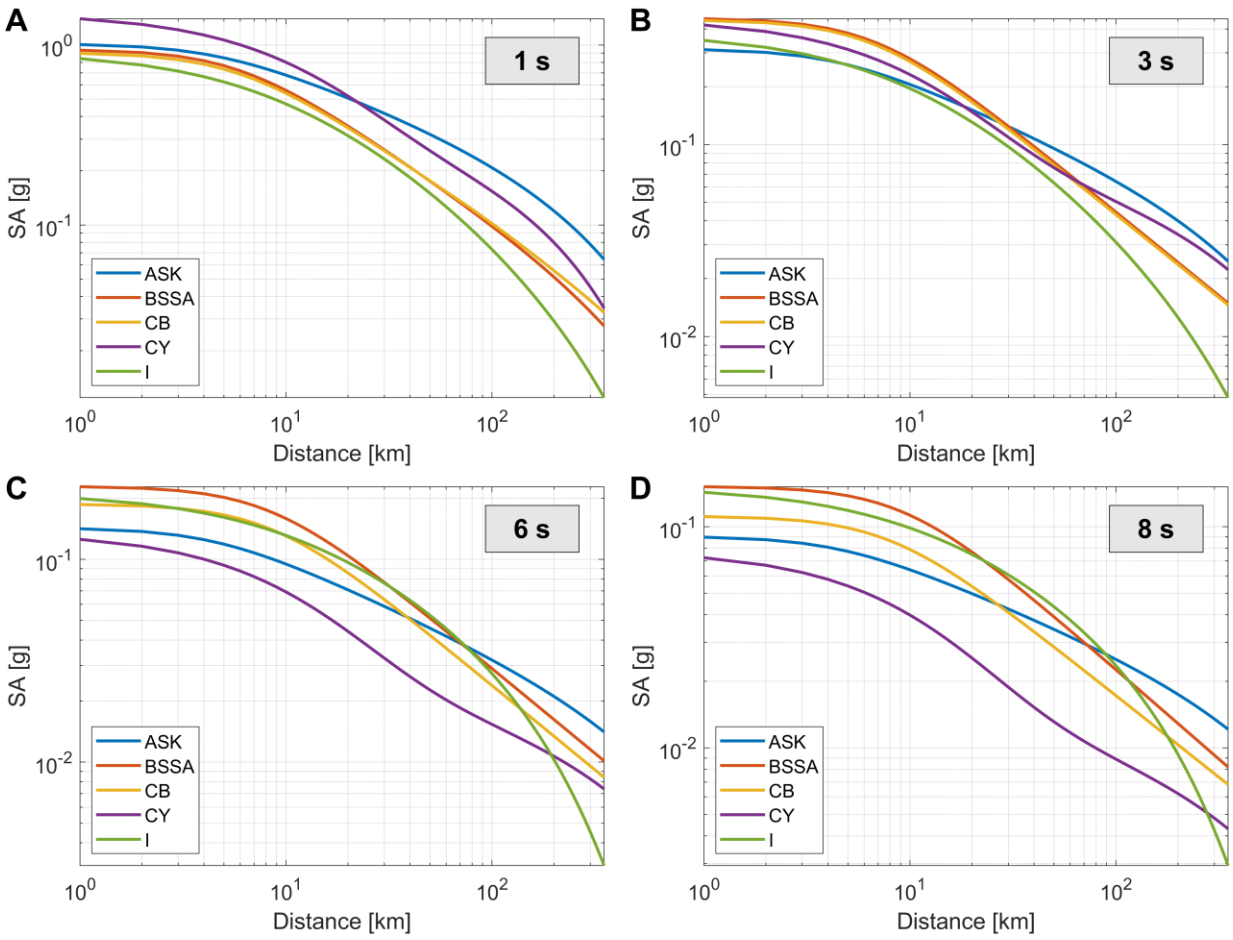

Figure S6. Predicted spectral amplitudes ('SA') as a function of distance for a scenario **M**8 earthquake for a soft soil site using five Ground Motion Prediction Equations (Abrahamson *et al*., 2014; Boore *et al*., 2014; Campbell and Bozorgnia, 2014; Chiou and Youngs, 2014; Idriss, 2014). Periods shown: (A) 1 s; (B) 3 s; (C) 6 s; and (D) 8 s. ASK=Abrahamson *et al*. (2014). BSSA=Boore *et al*. (2014). CB=Campbell and Bozorgnia (2014). CY=Chiou and Youngs (2014). I=Idriss (2014).

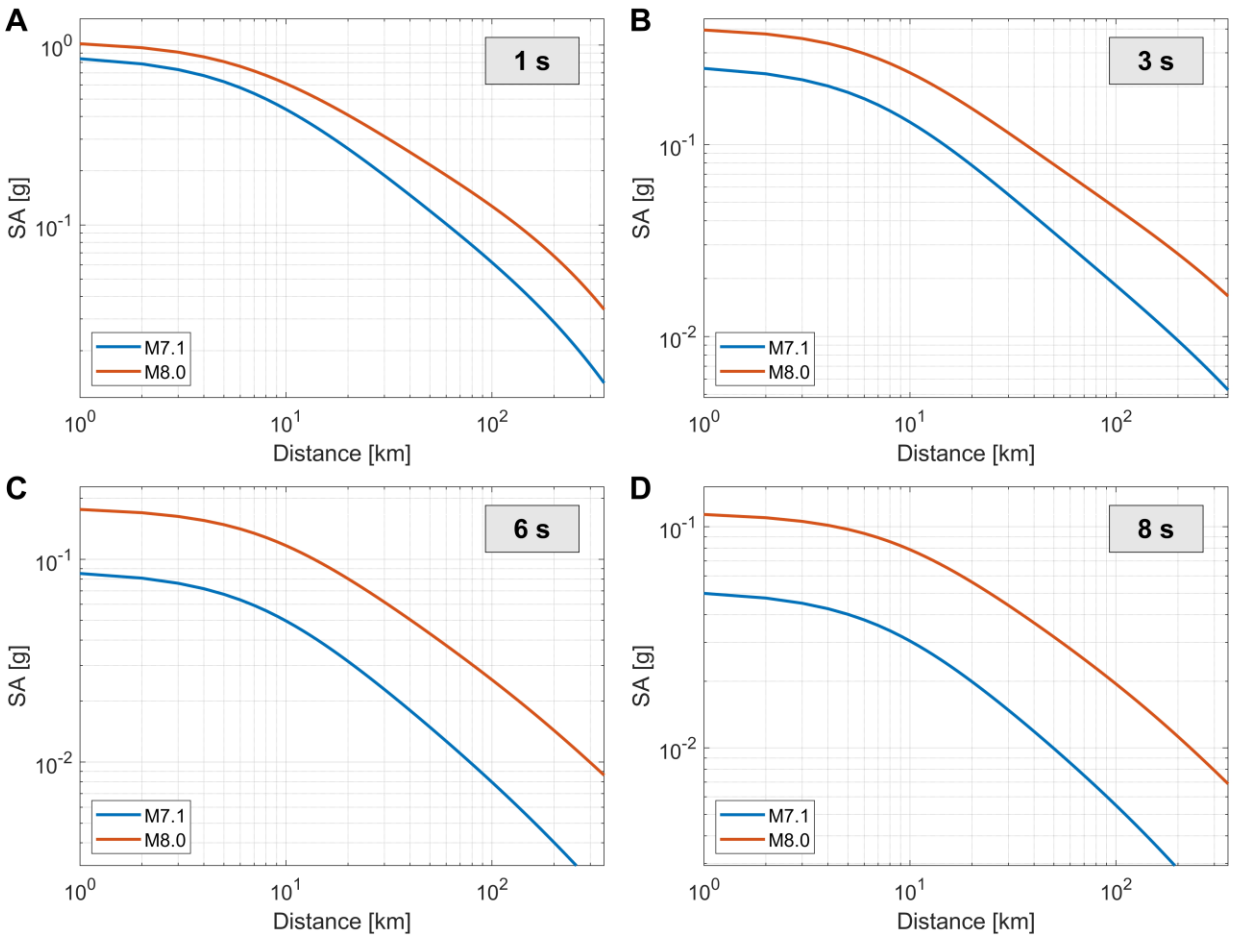

Figure S7. Mean spectral amplitudes ('SA') as a function of distance for a scenario **M**8 earthquake (red curve) and an **M**7.1 earthquake (blue curve) for a soft soil site. Periods shown: (A) 1 s; (B) 3 s; (C) 6 s; and (D) 8 s. Means are from the five Ground Motion Prediction Equation curves (Abrahamson *et al.*, 2014; Boore *et al.*, 2014; Campbell and Bozorgnia, 2014; Chiou and Youngs, 2014; Idriss, 2014) shown in Figs. S3 and S6.