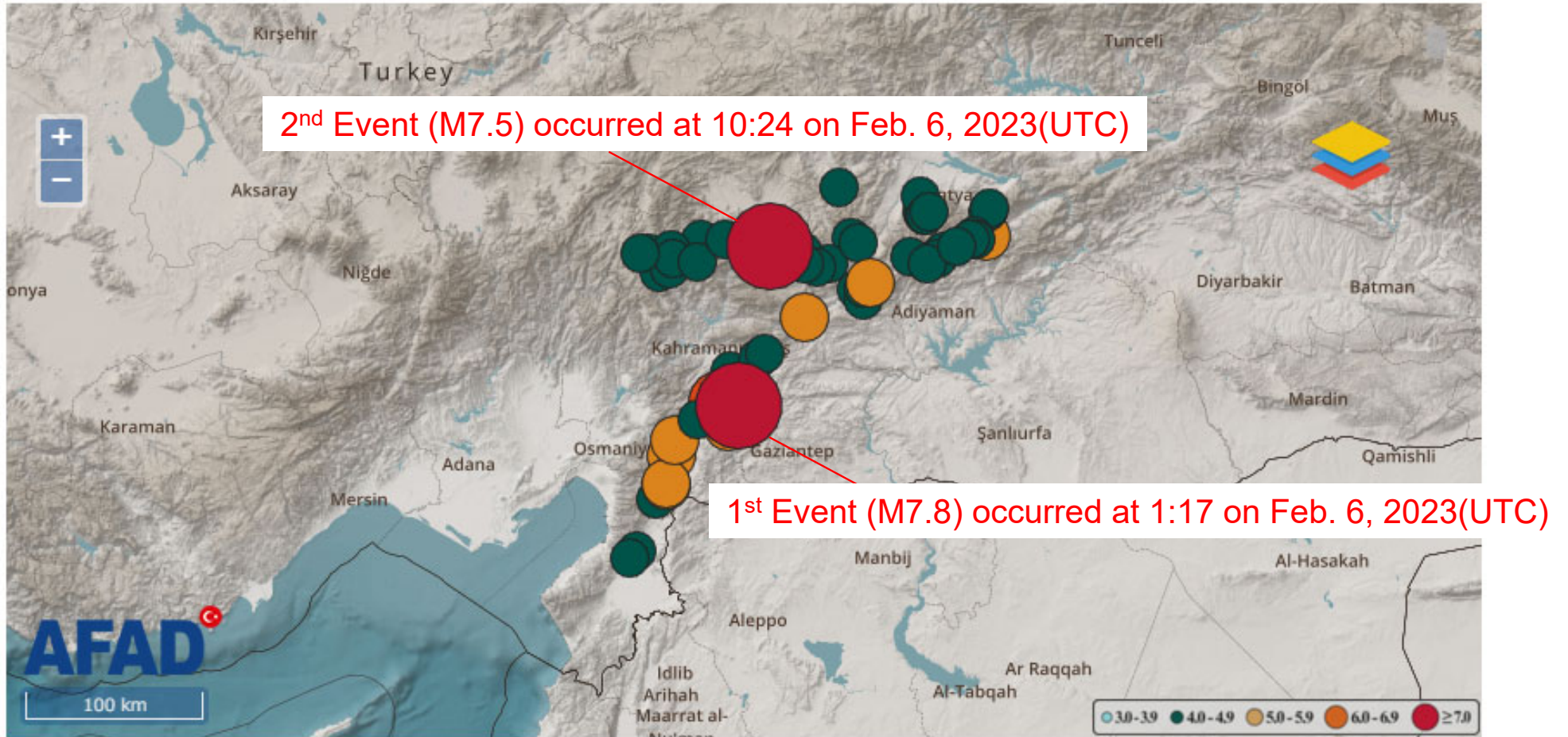


Strong Ground Motions of the 2023 Turkey Earthquakes

IISEE, Building Research Institute

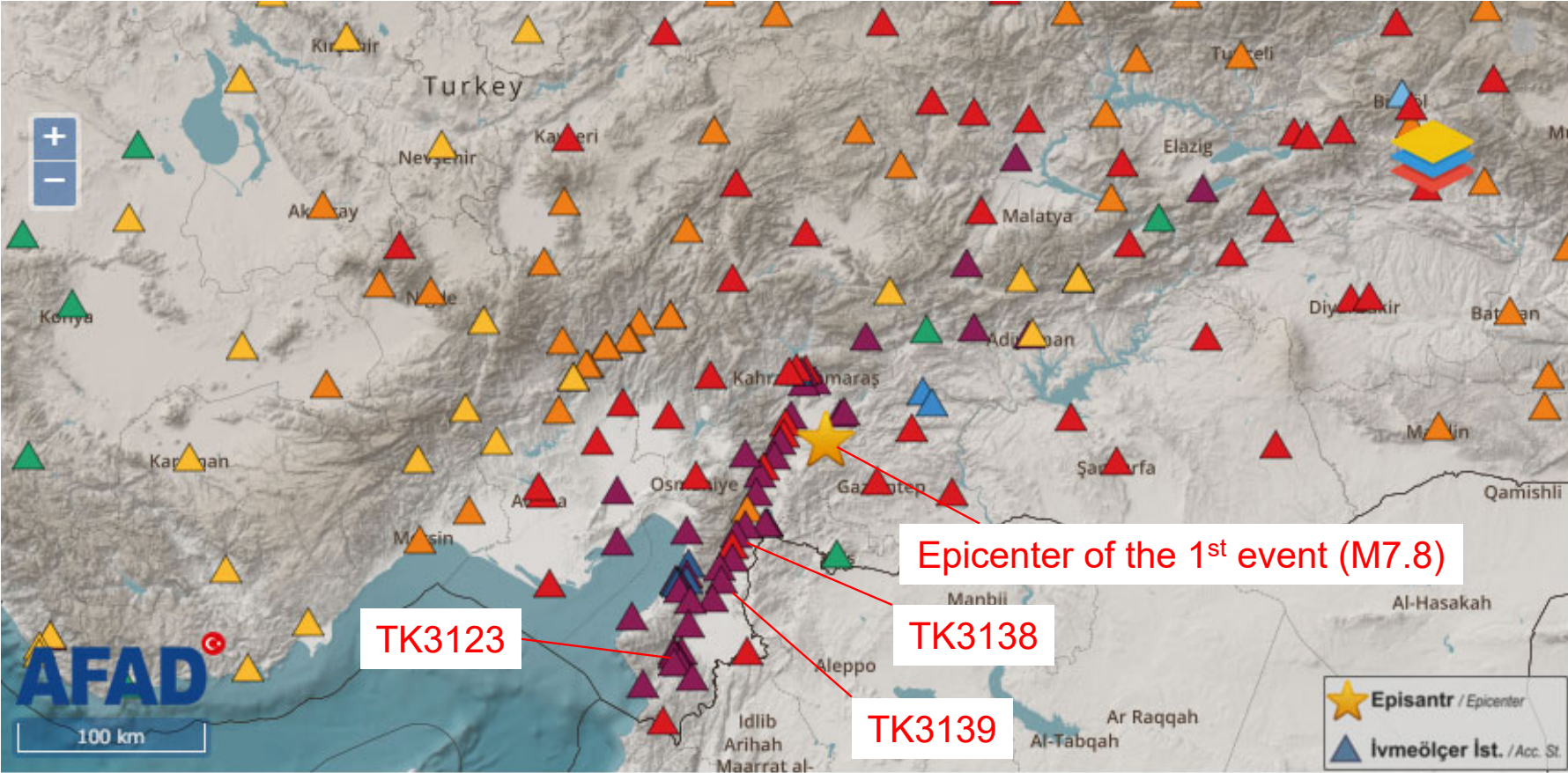
Feb. 13, 2023

Distribution of epicenters (from 1:17 on Feb. 6, 2023 until 1:17 on Feb. 8, 2023)



<https://tadas.afad.gov.tr/>

Distribution of PGVs (the 1st event (M7.8))



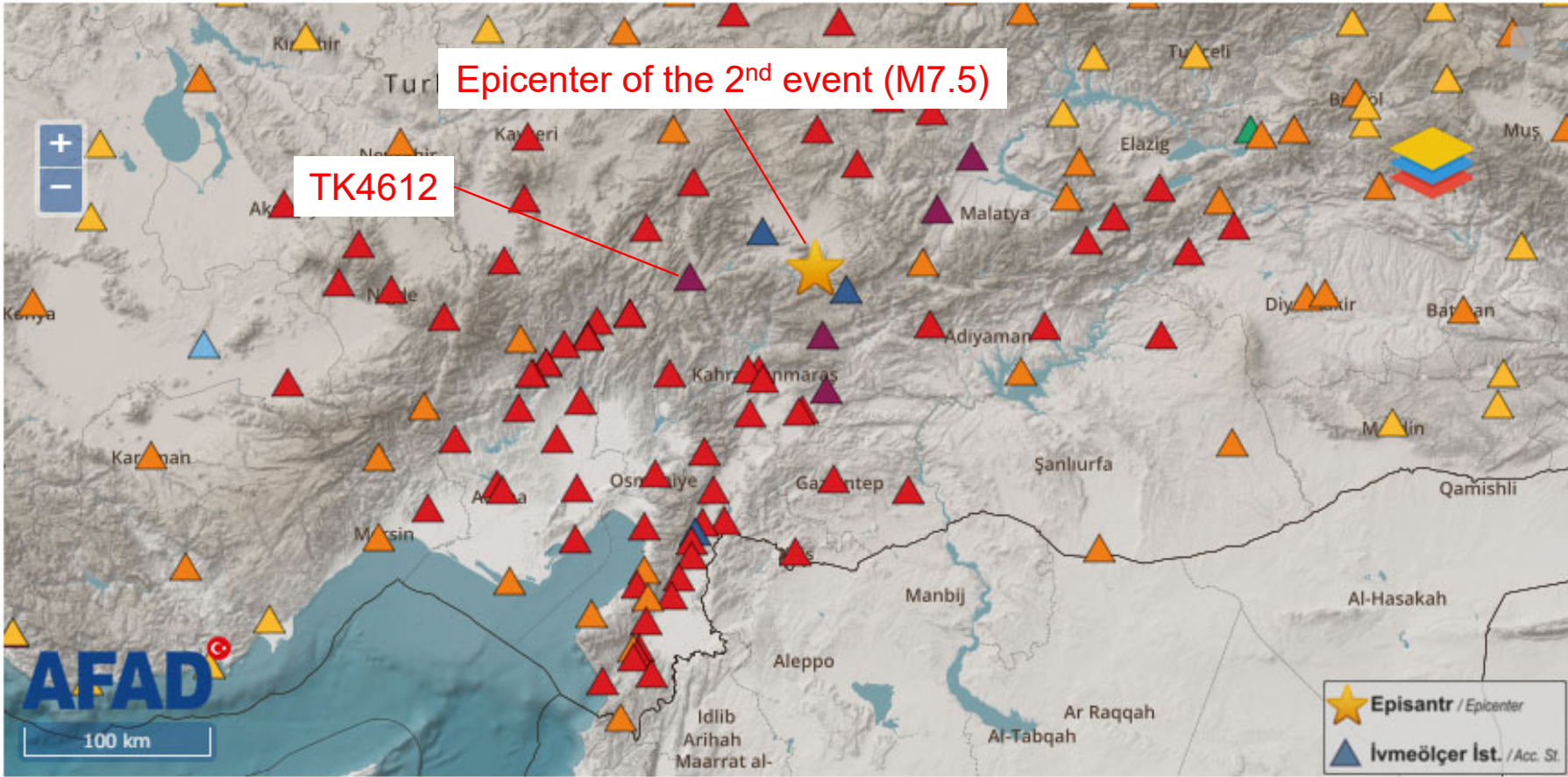
Distribution by: ○ PGA (cm/s²) ○ PGV (cm/s) ○ PGD (cm)

<https://tadas.afad.gov.tr/>

Legend

- ▲ <0.1
- ▲ 0.1-0.5
- ▲ 0.5-1
- ▲ 1-2
- ▲ 2-5
- ▲ 5-10
- ▲ 10-30
- ▲ >30

Distribution of PGVs (the 2nd event (M7.5))



Distribution by: ○ PGA (cm/s²) ● PGV (cm/s) ○ PGD (cm)

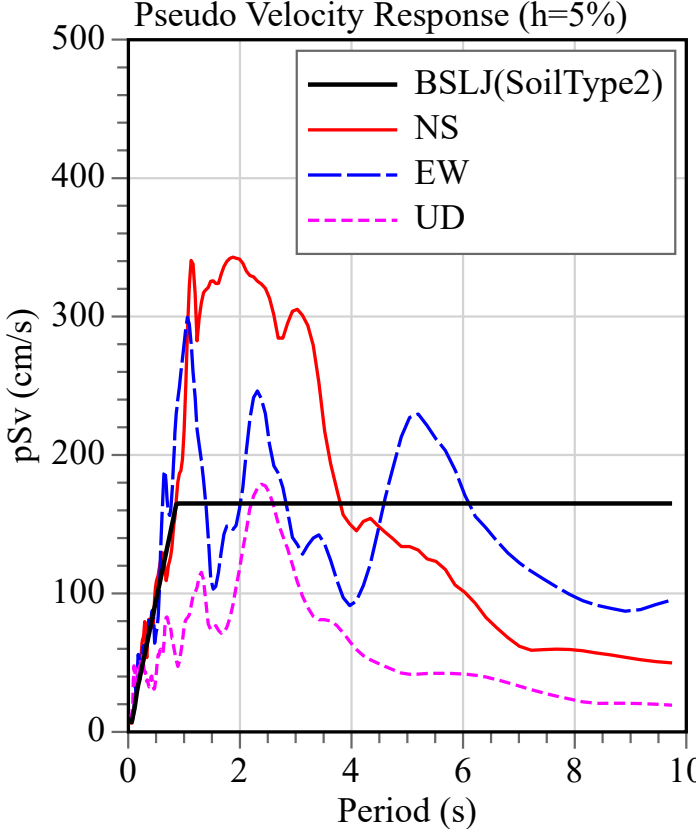
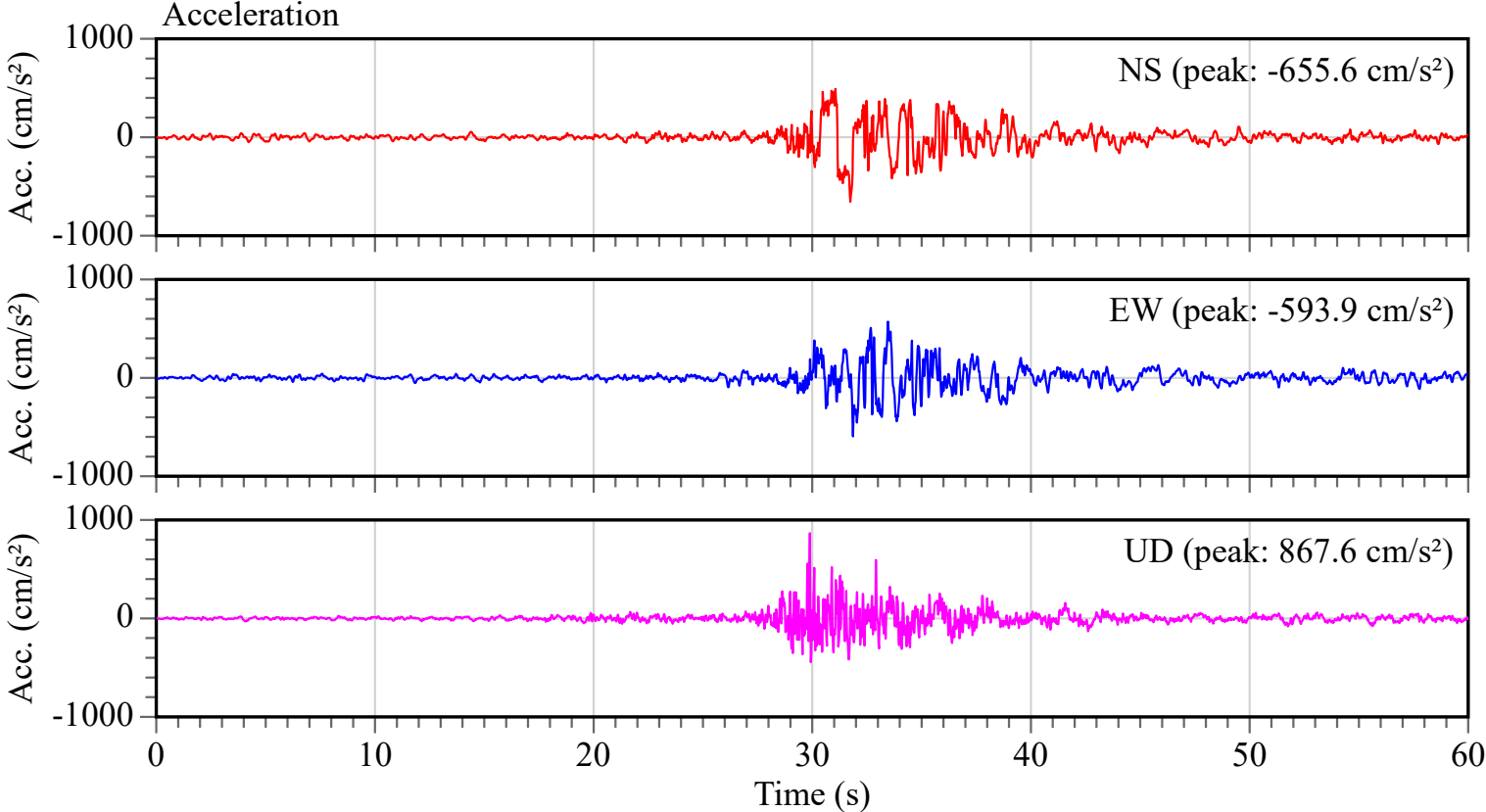
Legend

- ▲ <math>< 0.1</math>
- ▲ 0.1-0.5
- ▲ 0.5-1
- ▲ 1-2
- ▲ 2-5
- ▲ 5-10
- ▲ 10-30
- ▲ >30

<https://tadas.afad.gov.tr/>

Ground motion at TK3123 (the 1st event (M7.8))

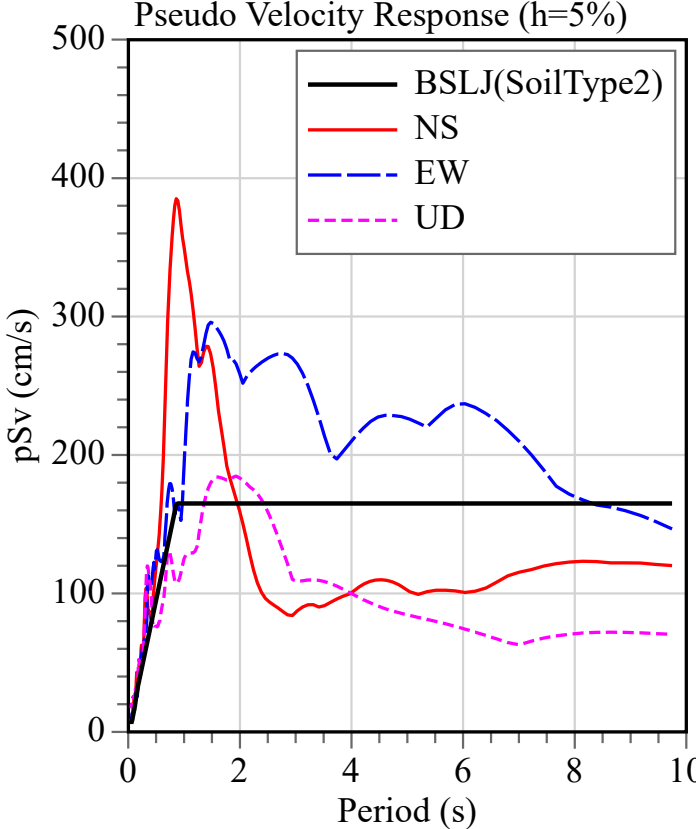
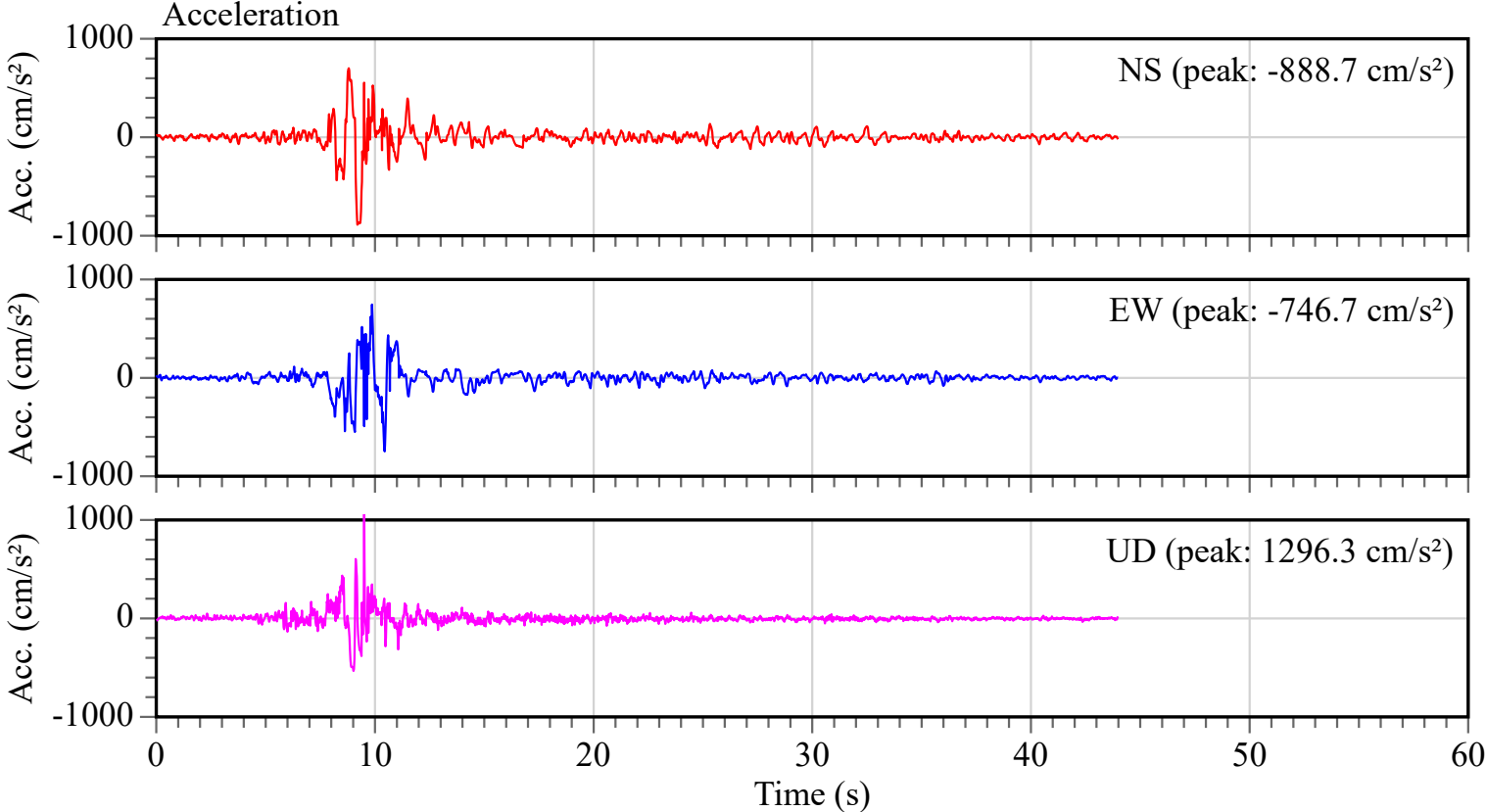
BRI Confidential



2023/02/06 01:18:20 at 3123: Kahramanmaras_Pazarck_Turkiye, Intensity: 6.3

Ground motion at TK3138 (the 1st event (M7.8))

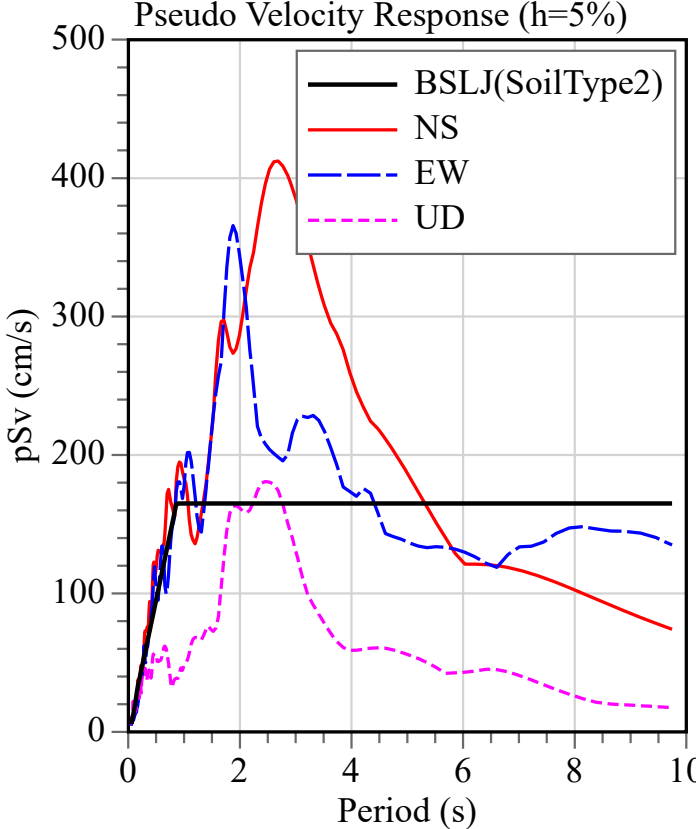
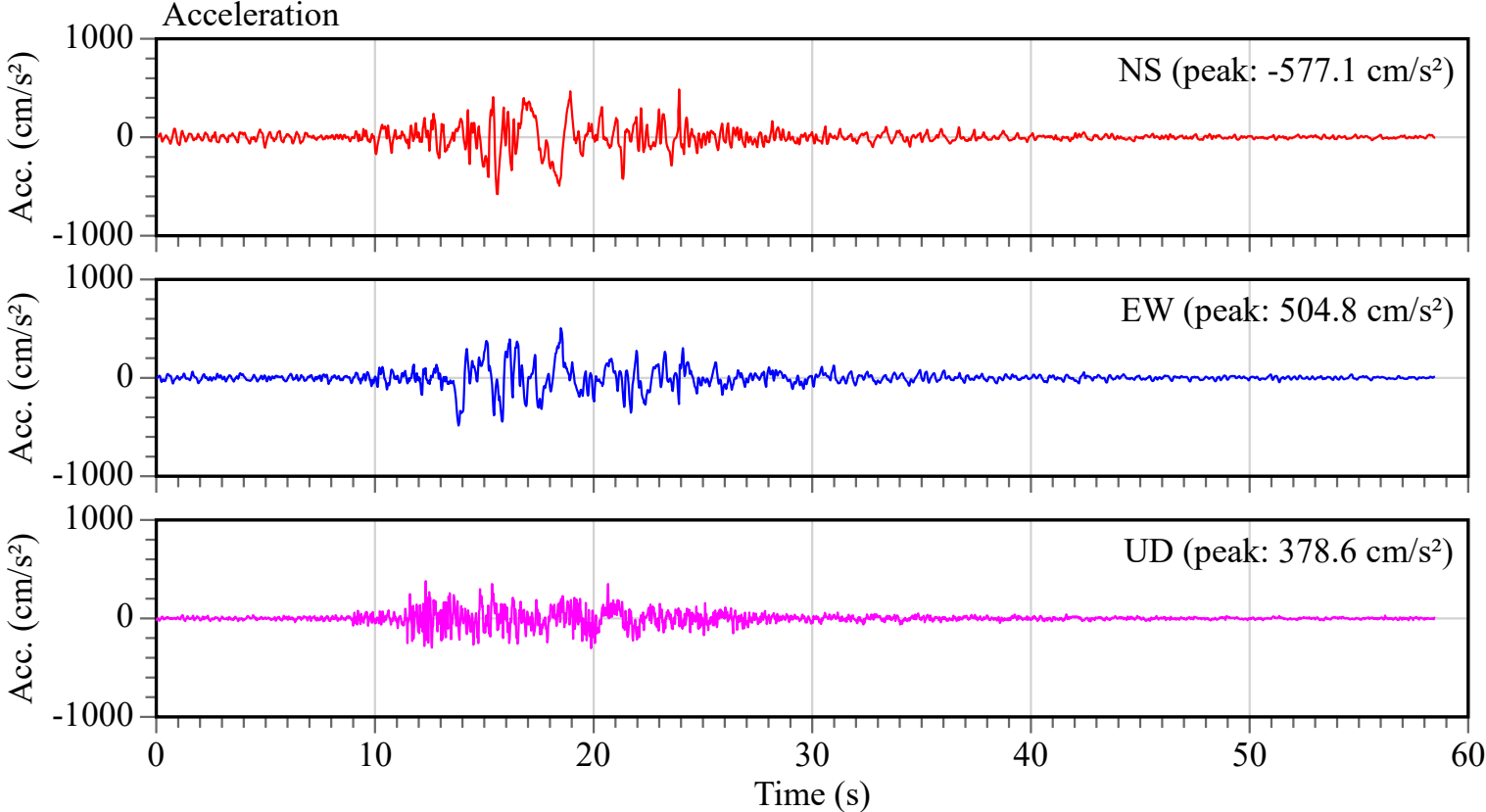
BRI Confidential



2023/02/06 01:18:20 at 3138: Kahramanmaras_Pazarck_Turkiye, Intensity: 6.7

Ground motion at TK3139 (the 1st event (M7.8))

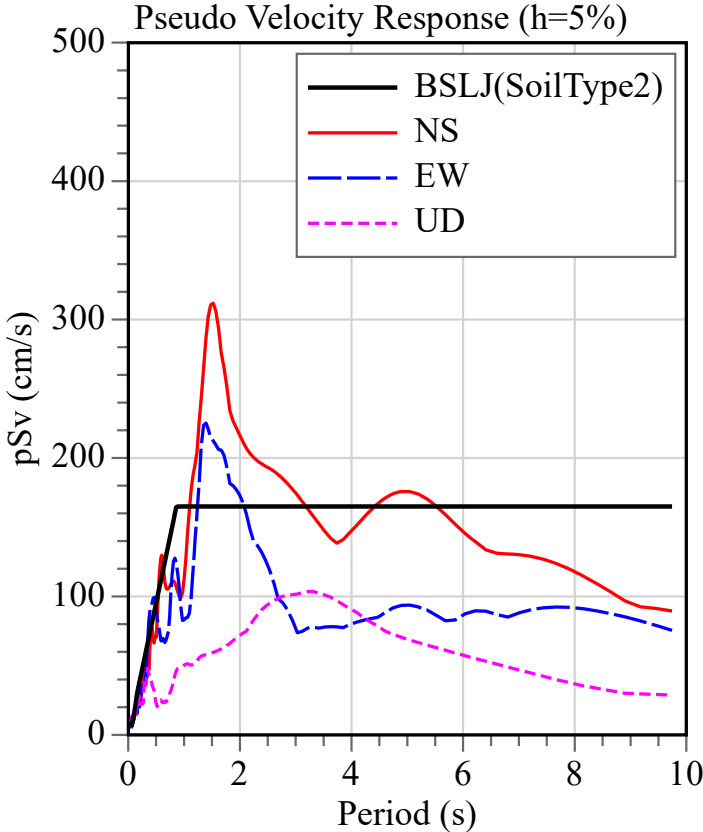
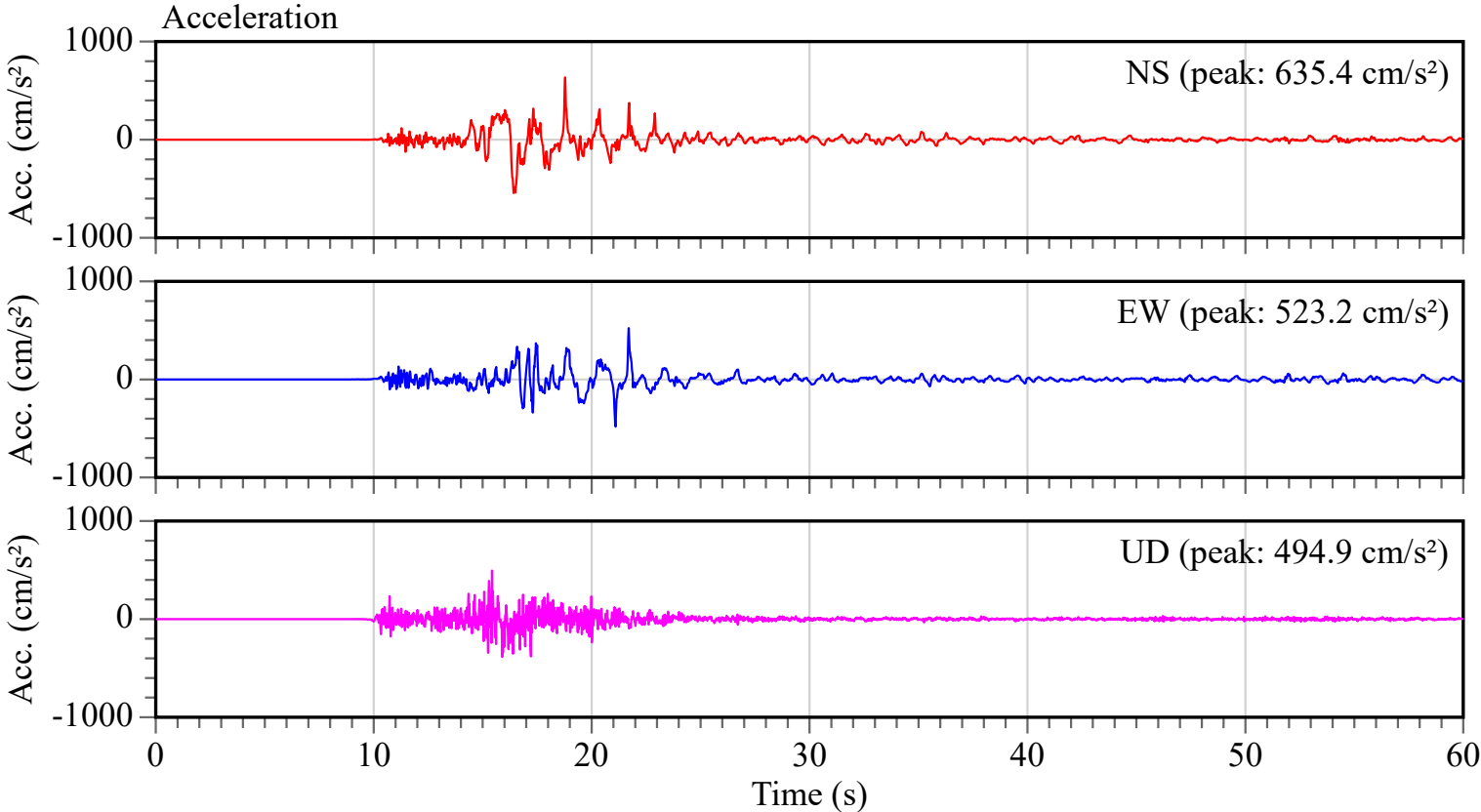
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2023/02/06 01:18:20 at 3139: Kahramanmaras_Pazarck_Turkiye, Intensity: 6.2

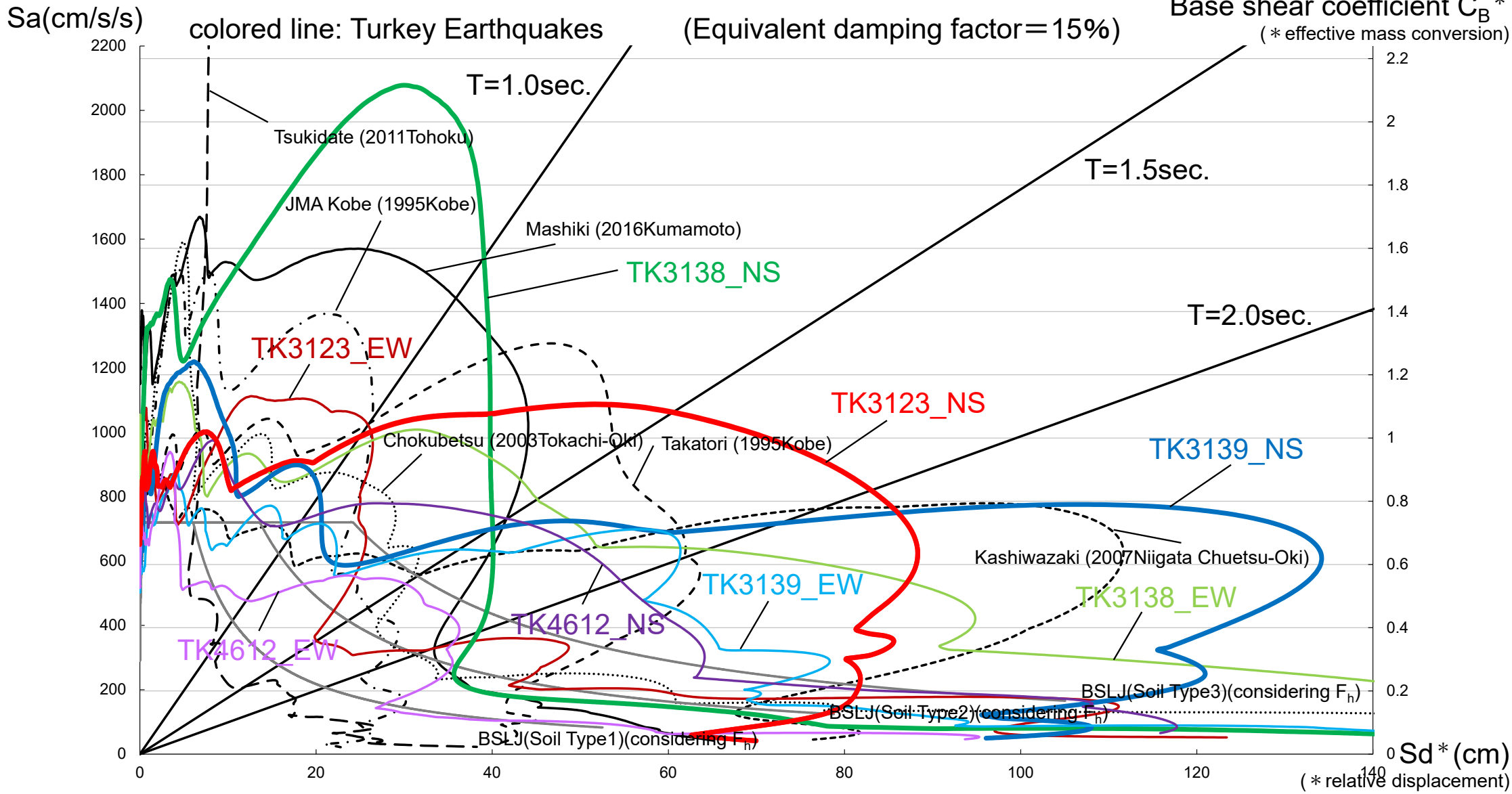
Ground motion at TK4612 (the 2nd event (M7.5))

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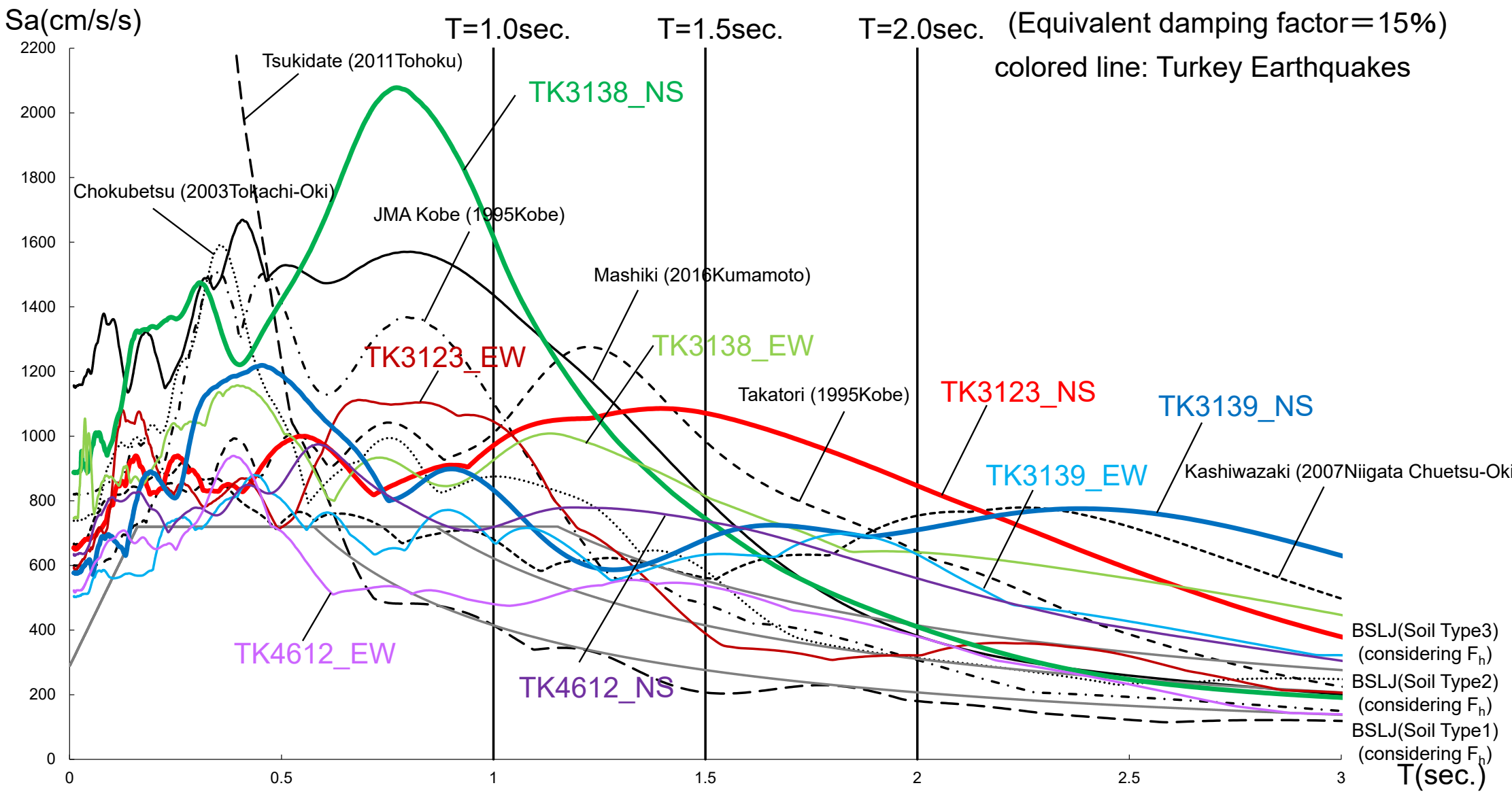
2023/02/06 10:24:50 at 4612: Kahramanmaras_Elbistan_Turkiye, Intensity: 6.2

Sa – Sd curve and response periods



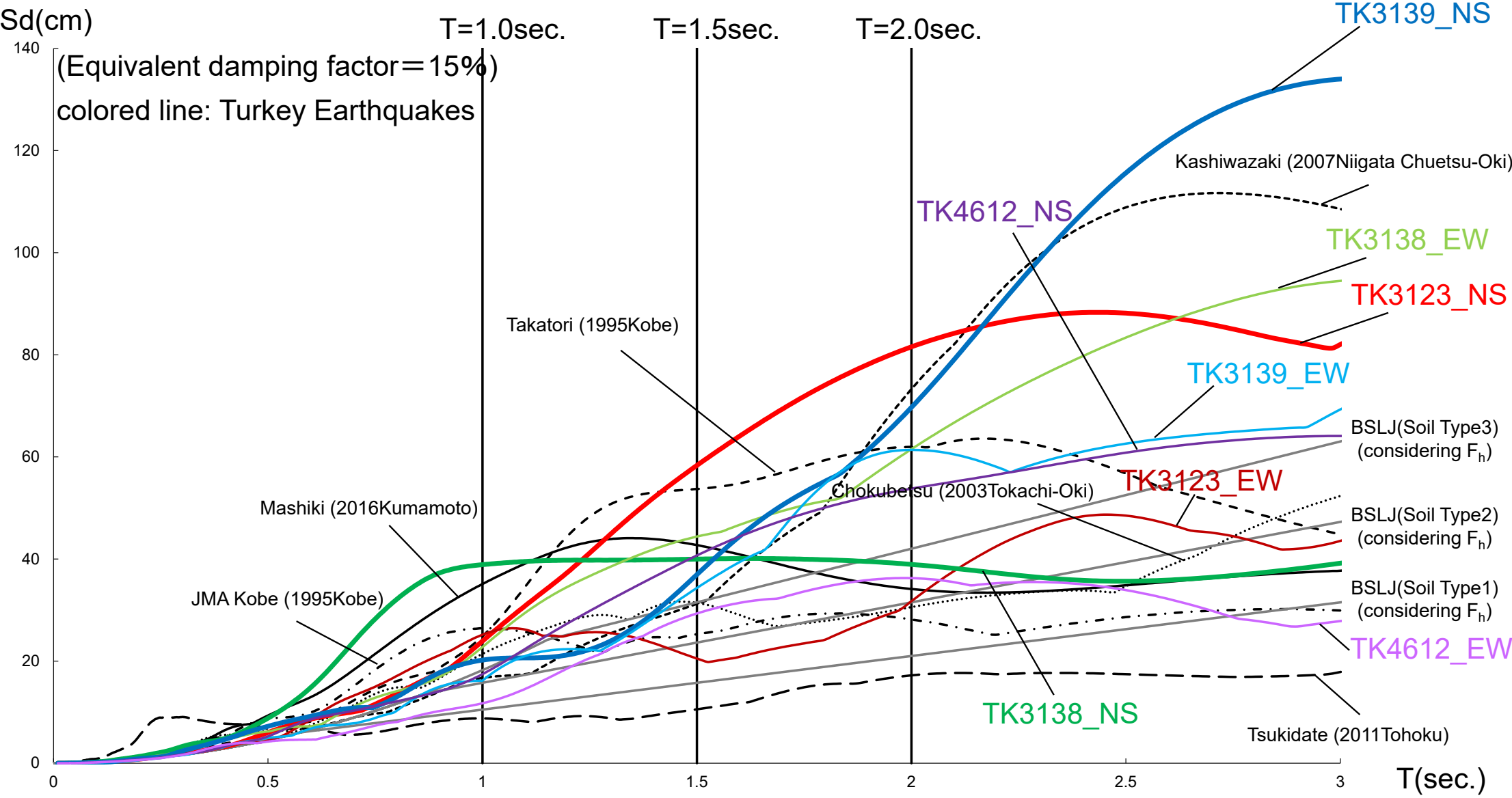
Response acceleration spectrum Sa and response periods

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Response displacement spectrum Sd and response periods

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Summary

- The North-South (NS) components of the strong ground motions observed at Hatay/Antakya (TK3123), Hatay/Hassa (TK3138), and Hatay/Kırıkhan (TK3139) have large amplitudes in the Sa-Sd when compared to strong ground motions observed in the recent earthquakes occurred in Japan.
- From the Sa-Sd curve assuming a 15% equivalent damping ratio, the relative displacement due to the strong ground motion observed at Hatay/Antakya (TK3123) reaches 80 cm even if the base shear coefficient for buildings (C_B) is 0.8.

Acknowledgement:

We used strong motion data provided by AFAD, NIED(K-NET, KiK-net), JMA, and, RTRI.