



Ejemplo 1 - ASCE 7 (EE. UU.), SS = 1.5 g, S1 = 0.6 g, sitio D

Response-spectrum compatible accelerogram · earthquake_2025

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Input data

Parameter	Value
Simulation title (TITLE)	Ejemplo 1 - ASCE 7 (EE. UU.), SS = 1.5 g, S1 = 0.6 g, sitio D
Distance unit (DIST_UNIT_RAW)	[m]
Minimum spectrum period (T_SPEC_MIN) [s]	0.02
Maximum spectrum period (T_SPEC_MAX) [s]	4
Minimum content period (T_CONT_MIN) [s] — 0 = T_SPEC_MIN	0
Maximum content period (T_CONT_MAX) [s] — 0 = T_SPEC_MAX	0
Relative frequency increment (RFreqInc) [-] — 0 = default	0.002
Envelope type (ENV_TYPE)	2 — Trapezoidal
Rise time (T_RISE_ENV) [s]	2
Plateau duration (T_PLATEAU_ENV) [s]	10
Total signal duration (DURATION_SIGNAL) [s]	20
Rise exponent n (PARAM_POW_CMPD) [-] — compound envelope	0
Amplitude factor a0 (PARAM_A0_EXP) [-] — exponential envelope	0
Exponent α (PARAM_ALPHA_EXP) [-] — exponential rise, compound decay	0
Decay exponent β (PARAM_BETA_EXP) [-] — exponential, $\alpha > \beta > 0$	0
Time step (DELTA_T_SIGNAL) [s] — 0 = default	0.005
Target PGA (PGA_TARGET) [m/s ²] — 0 = no scaling	3.924
Gravitational acceleration (G_ACCEL) [m/s ²] — for the Arias intensity	9.81
Random seed (SEED_RANDOM)	4321
Number of damping ratios (N_DAMP_VALS) — counted from the block 7 list	1
Maximum Phase 1 iterations (N_ITERATIONS)	80
Number of motions to generate (N_MOTIONS_GEN)	2
Number of spectrum periods (N_PERIODS_SPECT) — > 10	200
Target spectrum points (N_PTS_TARGET_SV) — counted from the block 9 table, ≥ 3	26
Damping ratios (DAMP_RATIOS) [-] — 1st is primary, max. 5	0.05
Refinement level (MAX_STATE_TO_RUN) — 0 = skip Phase 2 ... 5 = maximum	5
Phase 2 stagnation threshold (IMPROVE_THRS) [%]	0.05
Target spectrum type (ICODE_TARGET_TYPE)	0 — SA (PSA)

Target spectrum — points



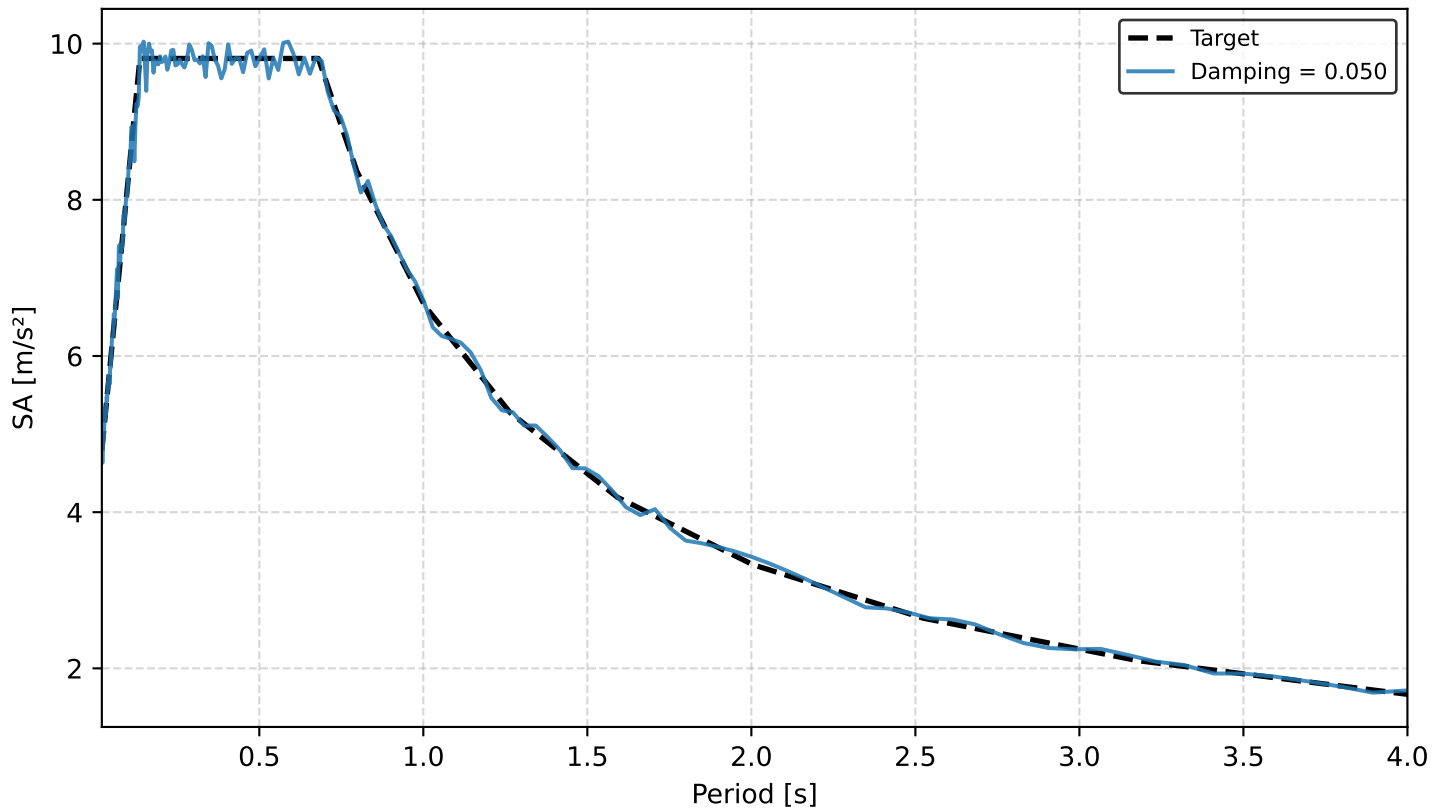
T [s]	SA [m/s ²]	T [s]	SA [m/s ²]
0.0200	4.7896	0.3174	9.8100
0.0252	5.0146	0.3996	9.8100
0.0317	5.2960	0.5031	9.8100
0.0399	5.6508	0.6334	9.8100
0.0503	6.1010	0.6800	9.8100
0.0633	6.6636	0.7975	8.3646
0.0797	7.3734	1.0041	6.6436
0.1003	8.2649	1.2643	5.2763
0.1263	9.3902	1.5918	4.1907
0.1360	9.8100	2.0041	3.3286
0.1590	9.8100	2.5233	2.6437
0.2002	9.8100	3.1770	2.0997
0.2521	9.8100	4.0000	1.6677

Main results

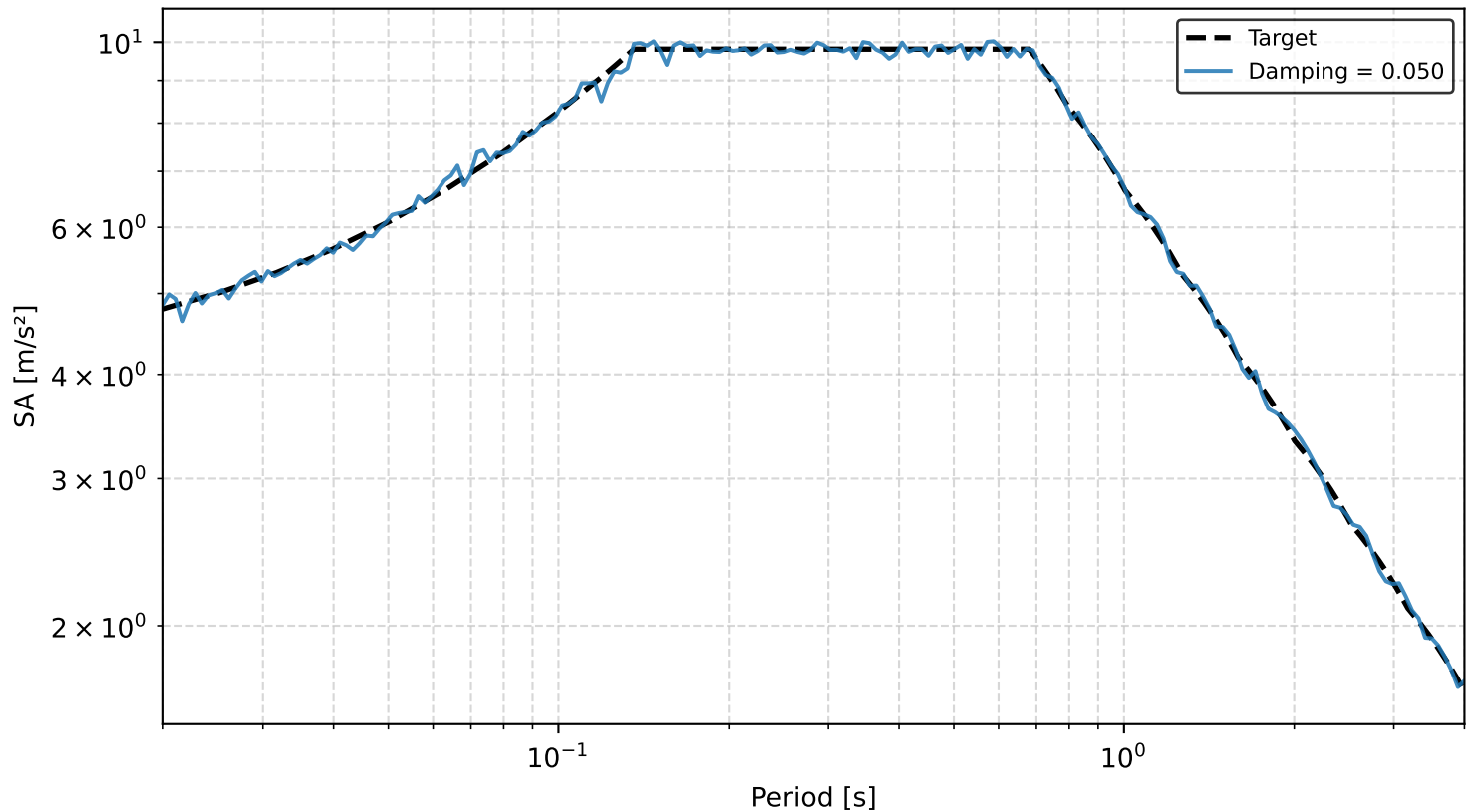
Parameter	Value
PGA — peak ground acceleration	3.9240 [m/s ²]
PGV — peak ground velocity	0.8374 [m/s]
PGD — peak ground displacement	0.6087 [m]
PFA — maximum peak floor acceleration	10.0811 [m/s ²]
Arias intensity (IA)	5.1069 [m/s]
Cumulative absolute velocity (CAV)	19.5301 [m/s]
Housner intensity (HI)	2.3014 [m]
Significant duration (D5-95)	14.3100 [s]
Equivalent difference (best of Phase 1)	2.6624 [%]
Equivalent difference (best of Phase 2)	1.2113 [%]



Pseudo-Acceleration Spectrum (linear-linear)

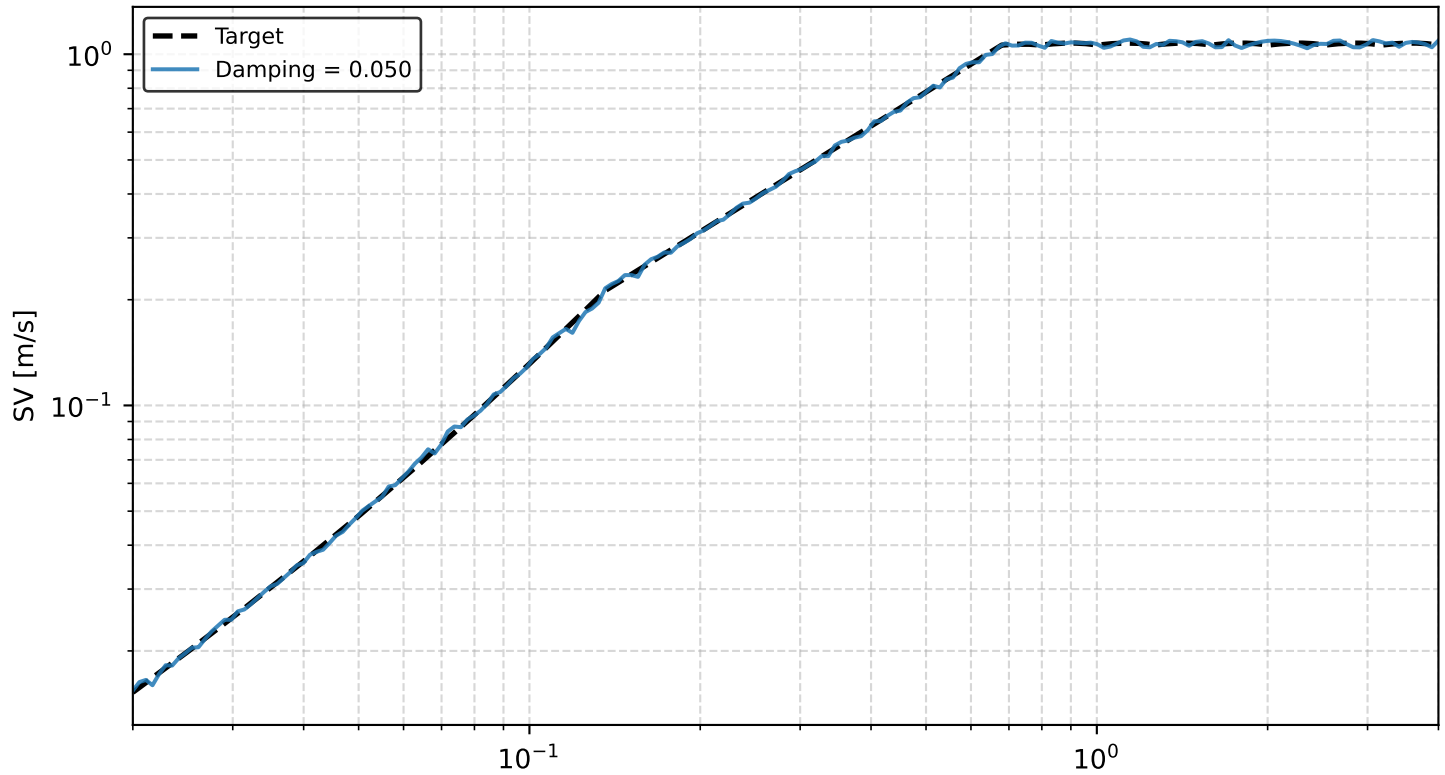


Pseudo-Acceleration Spectrum (log-log)

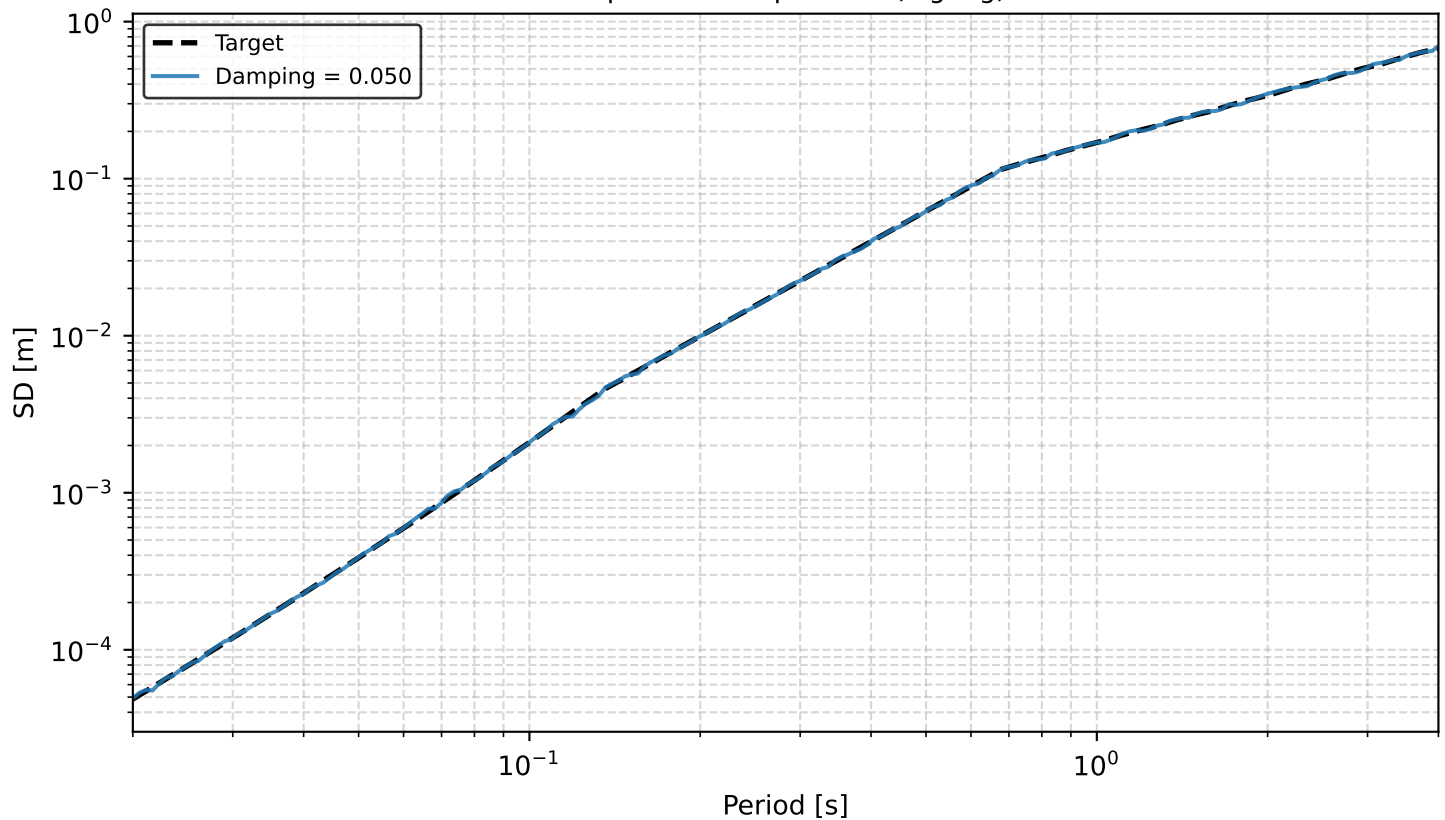


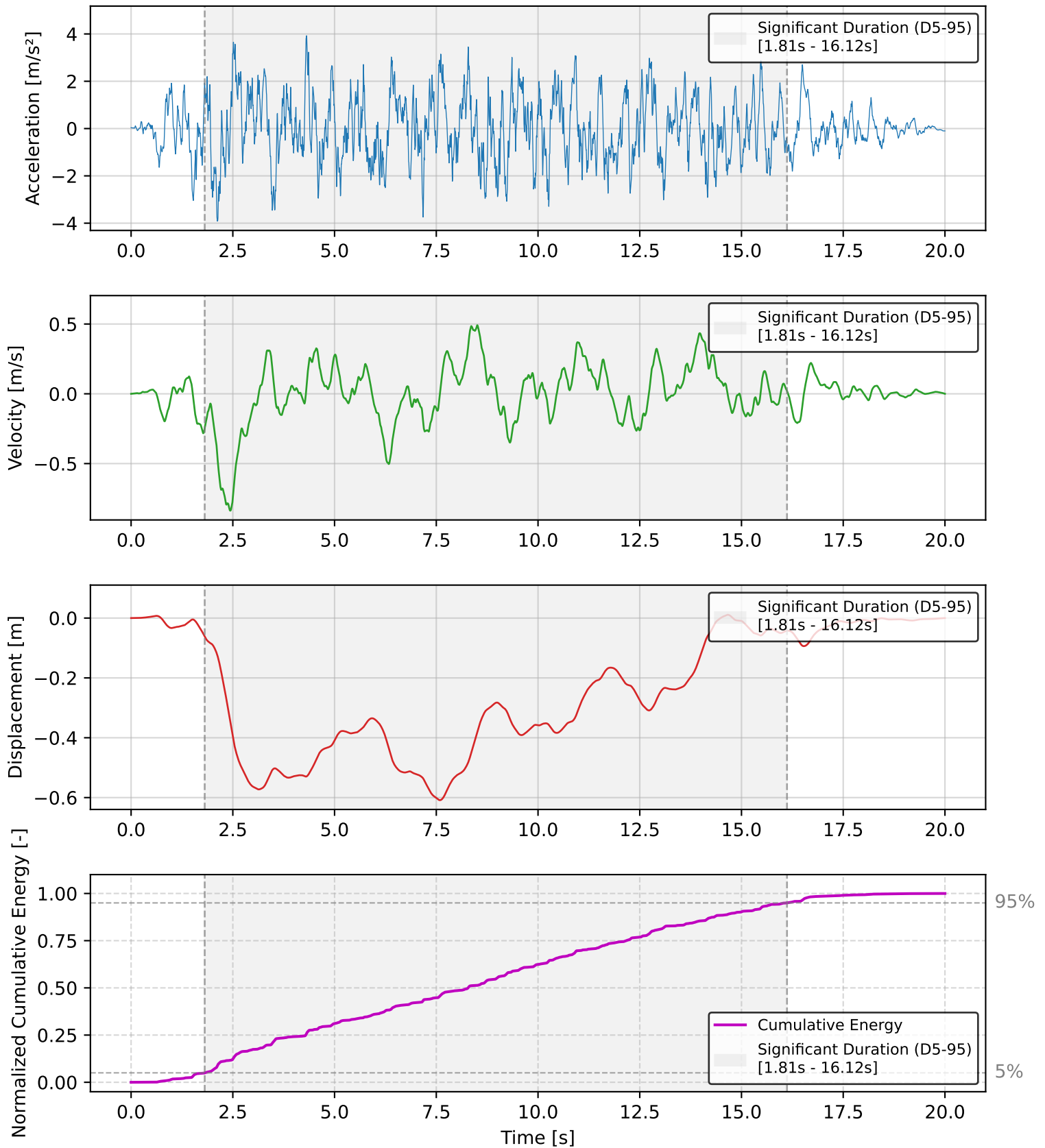


Pseudo-Velocity Spectrum (log-log)



Displacement Spectrum (log-log)







Notes

- Accelerogram generated with earthquake_2025 (Dr. Mario Galindo Queralto, MIT license): Phase 1 iterative PSDF matching in the frequency domain and Phase 2 time-domain refinement with corrective wavelets, with baseline correction (zero final velocity and displacement). Monograph, chapter 6.
- The equivalent difference combines the mean difference, its standard deviation and the top-5 % mean: $d_{eq} = 0.35 \cdot \bar{d} + 0.40 \cdot \sigma d + 0.25 \cdot dT5$ (Appendix A.2.1).
- The target spectrum is elastic (5 % damping unless stated): no R/q reduction factors are included (Appendix B).
- Arias intensity, CAV, Housner intensity and significant duration D5-95 are defined in section 3.3 of the monograph.
- Parameter names in parentheses as in Appendix A of the monograph.