Observed vs Simulated — Goodness of Fit

intensitylab.com · ground motion validation report

WITHIN BAND · mean |bias| 0.240 · factor 1.27x

RESULT — BBP ROTD50 RESIDUALS (AUTHORITATIVE)

mean |bias|	0.240 (a factor of 1.27x)
mean sigma	0.55748 (station-to-station scatter)
stations compared	30
spectral periods	63
pass band	mean |bias| <= 0.69 (a factor of 1.99x), declared before the run
bias at 0.1s	-0.217 simulation over-predicts by 24%
bias at 0.3s	-0.295 simulation over-predicts by 34%
bias at 1s	-0.700 simulation over-predicts by 101%
bias at 3s	-0.175 simulation over-predicts by 19%

CROSS-CHECK — THIS REPORT'S OWN SPECTRA

mean |bias|	0.311 (a factor of 1.36x)
mean sigma	0.696
basis	geometric-mean horizontal, computed from the downloaded waveforms rather than BBP's residual tables. It will not match exactly; a large divergence indicates a pipeline fault, not physics.

EVENT

USGS id	ci38457511
magnitude	M7.1 (mw)
origin time	2019-07-06 03:19:53 UTC
epicentre	35.7695, -117.5993
depth	8.0 km
region	Ridgecrest Earthquake Sequence

Provenance

ci38457511 · generated 2026-08-04 08:27 UTC

SIMULATION

produced by	BBP simulated
BBP job id	job_d80b0a978295492fac0a
BBP version	22.4.0
method	GP
realizations	1 of 1 succeeded — a single stochastic rupture, not an ensemble; the bias below is one draw
realization used	r0001
sites in job spec	—
job submitted	2026-08-04T08:01:54Z
per-site Vs30 from	submit-time record (/app/plots/gof_work/ci38457511/compare/station_specs.json)

SOURCE PARAMETERS

magnitude used	—
hypocentre	—
depth	—
strike / dip / rake	—
mechanism source	USGS moment tensor, nodal plane 1 — the conjugate plane is equally consistent with the tensor and gives different amplitudes

VELOCITY MODEL

region used	Mojave500
native for this location	Mojave500 — not installed, so the run is approximate. LABasin500 carries a deep sedimentary basin that Ridgecrest does not have, which would amplify 0.3-1 s motion.
calibration	M7.1 against GP's ~M5.5 floor
platform	arm64 under emulation — amplitudes are not SCEC-reference-accurate; this number measures BBP plus Rosetta and cannot separate them

Observed data and processing

fetched 2026-08-04T08:00:03Z

STATION SELECTION

search radius	100.0 km
policy	all usable within radius
stations on event	943
without FDSN code	0 — cannot be queried at all
candidates	30
usable records	30 (0 returned no usable 3-component set)
in this report	30 with both observed and simulated
distance range	15.6 – 95.6 km

INSTRUMENTATION

channel priority	HN?, EN?, HH?, BH?, EH?
channels used	HH, HN
data centres	EARTHSCOPE, NCEDC, SCEDC
mixed instrument types	yes — strong-motion and broadband are both present, which puts a second variable into the residual
Vs30 source	ShakeMap stationlist (per-station)

SIGNAL PROCESSING

window	origin −60.0 s to +300.0 s (requested)
records not starting as requested	2 of 30 — triggered instruments whose data begins later. Each trace's true start is measured and used; assuming the requested lead would misplace them.
response removal	to acceleration and velocity separately, pre-filter (0.05, 0.1, 20.0, 25.0) Hz
resampled to	100.0 Hz
time origin	t = 0 is the rupture origin for both observed and simulated traces on every overlay

How to read this report

the metric, the sign convention, and the limits

THE METRIC

definition	ln(observed / simulated) RotD50 spectral acceleration, averaged across stations at each period.
sign	POSITIVE means the simulation under-predicts — real shaking was larger. NEGATIVE means it over-predicts.
scale	It is a log ratio: ±0.10 is about ±10%, ±0.69 is a factor of 2, ±1.10 is a factor of 3.
sigma	The station-to-station spread around that average. A large sigma with a small bias means the model is right on average and wrong site by site.

READING THE PATTERN

short-period poor, long-period good	Points at high-frequency attenuation or near-surface site response rather than the source.
long-period poor, short-period good	Points at the source — corner frequency, stress drop — or at basin response in the velocity model.
one station far off	Usually 3D site or directivity effects that a 1D layered velocity model cannot reproduce by construction. Check whether it is driving the sigma before treating it as model error.

WHAT THIS DOES NOT TELL YOU

A pass means the simulation is consistent with recordings at these stations, for this event, under this velocity model, on this hardware. It is not a general statement about BBP, and it is not a prediction of accuracy at an unrecorded site.

Station summary — three independent sources (1/2)

ShakeMap = amplitudes the seismic network reported in stationlist.json. obspy = the same recordings fetched from FDSN and processed here. BBP = simulated. The first two should agree closely; where they do not, the ShakeMap quality flags usually explain why.
PGD is the [illegible] number on bo[illegible] PGA [illegible] PGV columns, and [illegible] displace[illegible] at [illegible] end.

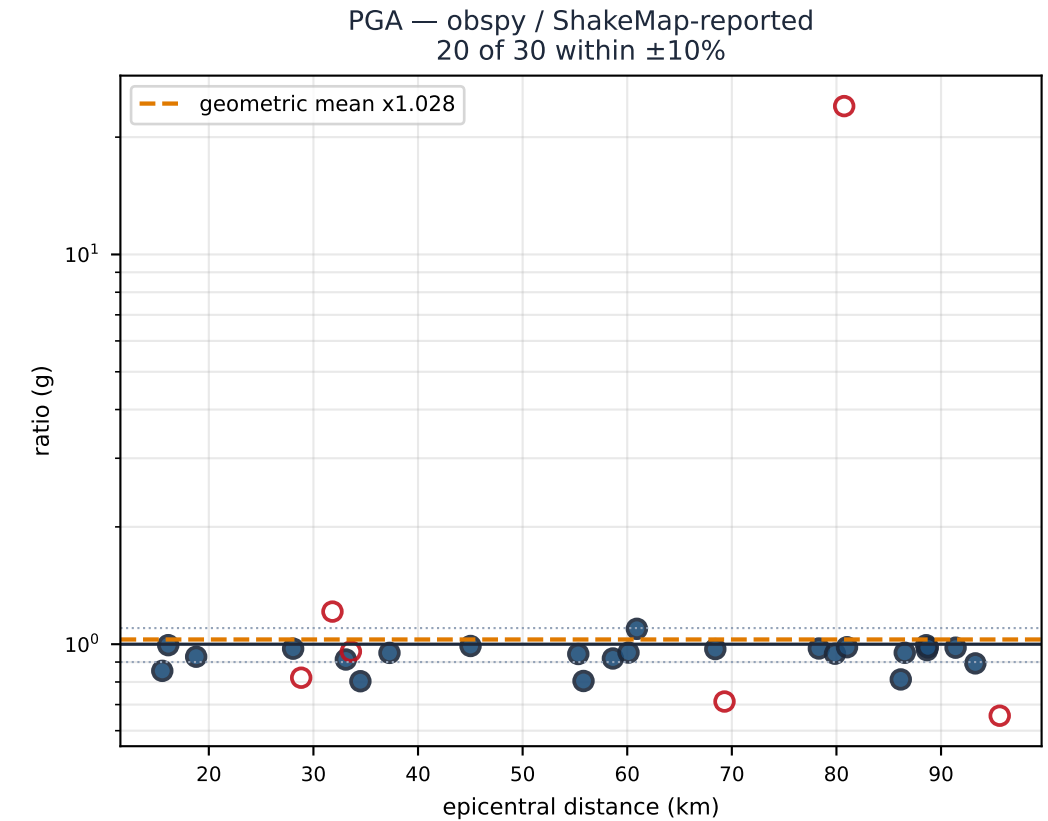
Station	Dist (km)	Vs30 BBP	Vs30 ShakeMap	Chan	PGA (g) ShakeMap	PGA (g) obspy	PGA (g) BBP	PGV (cm/s) ShakeMap	PGV (cm/s) obspy	PGV (cm/s) BBP	PGD (cm) obspy	PGD (cm) BBP	PGD obs/sim	ln(obs/sim)	Flags
CI.TOW2	15.6	326	326	HNE	0.4287	0.3663	0.3275	54.1	52.4	38.2	25.71	27.79	0.93x	+0.112	—
CI.SRT	16.1	265	265	HNE	0.3112	0.3095	0.3957	41.9	42.2	73.6	20.75	75.74	0.27x	-0.246	—
CI.Q0072	18.8	260	260	HNE	0.3219	0.2990	0.2741	32.6	29.3	40.8	8.07	28.31	0.28x	+0.087	—
CI.WVP2	28.1	658	658	HNE	0.1831	0.1783	0.1152	18.3	16.4	11.8	8.03	11.68	0.69x	+0.437	—
CI.WNM	28.8	293	293	HNE	0.2249	0.1845	0.2478	8.6	7.3	29.8	4.43	14.18	0.31x	-0.295	Outl
CI.WBM	31.8	366	366	HNE	0.1865	0.2261	0.3085	15.3	25.1	39.4	5.67	26.26	0.22x	-0.311	Inco,Outl
CI.LRL	33.1	618	618	HNE	0.1950	0.1781	0.1315	12.7	12.3	12.0	4.76	11.91	0.40x	+0.304	—
CI.MPM	33.6	545	545	HNE	0.0905	0.0867	0.2889	9.9	12.0	30.0	7.31	24.53	0.30x	-1.204	Inco,Outl
CI.CCC	34.5	474	474	HNE	0.5691	0.4573	0.1168	74.8	77.5	11.7	20.34	7.93	2.57x	+1.365	—
CI.WRV2	37.3	352	352	HNE	0.0996	0.0946	0.1454	14.9	13.9	13.7	5.92	10.53	0.56x	-0.429	—
CI.WMF	45.0	534	534	HNE	0.0594	0.0588	0.1173	9.1	7.6	11.8	5.28	7.87	0.67x	-0.691	—
CI.WBS	55.3	729	729	HNE	0.1646	0.1554	0.0775	9.5	9.4	12.8	2.40	11.68	0.21x	+0.696	—
CI.DAW	55.8	334	334	HNE	0.0576	0.0463	0.1310	3.0	3.0	14.7	1.00	11.53	0.09x	-1.040	—
CI.WOR	58.6	746	746	HNE	0.0923	0.0848	0.0657	5.3	4.2	5.7	1.92	7.89	0.24x	+0.256	—
CI.DTP	60.1	711	711	HNE	0.0342	0.0326	0.0641	5.6	6.0	5.3	3.08	5.62	0.55x	-0.676	—
CE.43158	60.9	283	283	HNE	0.0582	0.0638	0.1168	6.3	11.9	15.5	7.60	8.13	0.93x	-0.605	—
CI.WHF	68.4	435	435	HNE	0.1036	0.1007	0.0721	5.4	5.5	9.5	1.78	7.02	0.25x	+0.333	—
NN.QSM	69.3	379	379	HHE	0.1144	0.0816	0.1078	3.4	3.4	18.4	3.39	12.97	0.26x	-0.279	Glit,Outl
CI.CCA	78.3	342	342	HNE	0.0430	0.0419	0.0639	4.6	4.4	10.4	2.81	10.54	0.27x	-0.422	—
CI.ISA	79.9	438	438	HNE	0.0317	0.0299	0.0581	2.3	2.2	5.7	1.25	6.05	0.21x	-0.663	—
CI.Q0068	80.7	343	343	HNE	0.0021	0.0495	0.0649	0.6	4.3	8.8	2.43	7.66	0.32x	-0.270	Outl
CI.APL	81.0	599	599	HNE	0.0610	0.0599	0.0508	5.7	4.7	4.7	2.10	5.04	0.42x	+0.164	—
CI.CWC	86.2	663	663	HNE	0.0203	0.0165	0.0443	2.7	2.4	5.1	1.90	5.42	0.35x	-0.991	—
CI.WAS2	86.5	784	784	HNE	0.0510	0.0485	0.0308	2.6	2.3	3.6	1.06	4.07	0.26x	+0.454	—

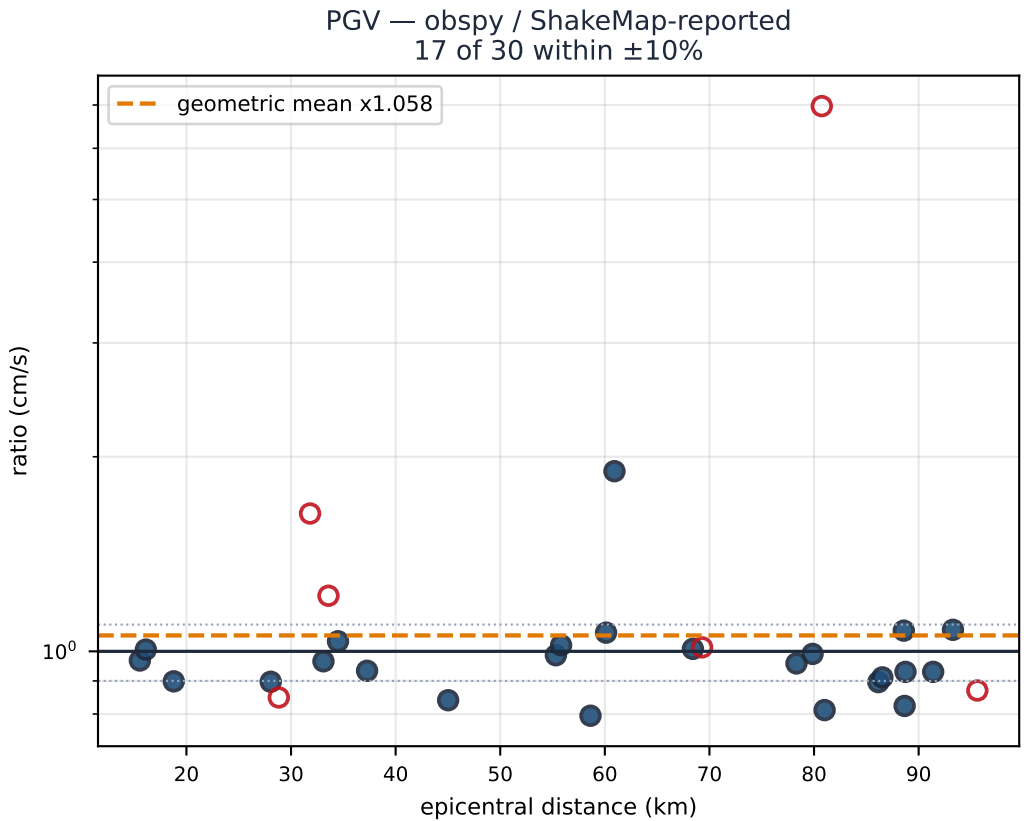
Station summary — three independent sources (2/2)

ShakeMap = amplitudes the seismic network reported in stationlist.json. obspy = the same recordings fetched from FDSN and processed here. BBP = simulated. The first two should agree closely; where they do not, the ShakeMap quality flags usually explain why.
PGD is the animation pipeline's own number on both sides, read from the displacement each side hands to Blender — a different processing chain from the PGA and PGV columns, and from each other. See the displacement pages at the end.

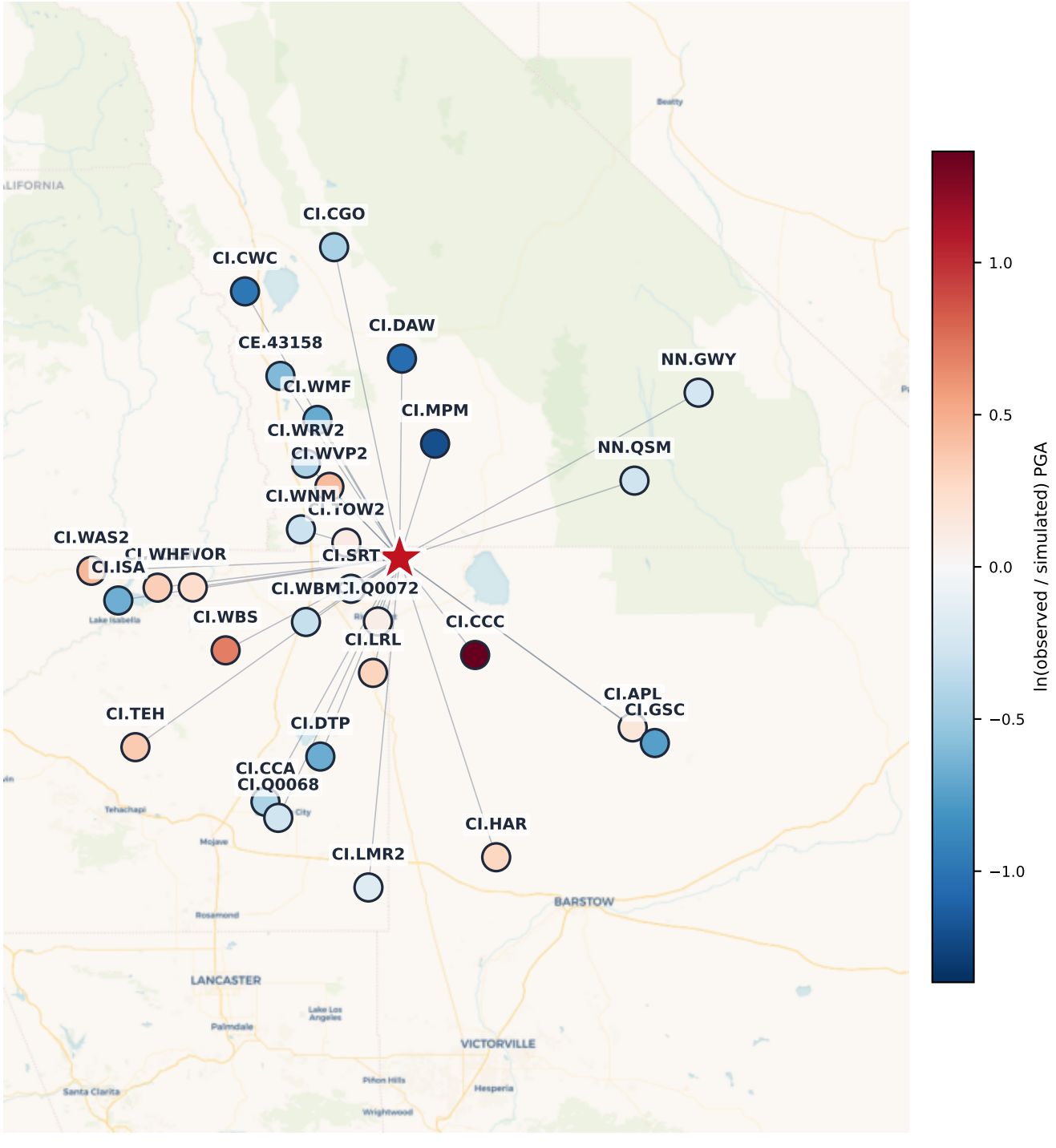
Station	Dist (km)	Vs30 BBP	Vs30 ShakeMap	Chan	PGA (g) ShakeMap	PGA (g) obspy	PGA (g) BBP	PGV (cm/s) ShakeMap	PGV (cm/s) obspy	PGV (cm/s) BBP	PGD (cm) obspy	PGD (cm) BBP	PGD obs/sim	ln(obs/sim)	Flags
CI.HAR	88.6	344	344	HNE	0.0866	0.0861	0.0642	11.5	12.4	8.9	3.01	5.89	0.51x	+0.293	—
CI.GSC	88.7	371	371	HNE	0.0411	0.0397	0.0841	6.4	5.2	7.1	2.91	6.06	0.48x	-0.750	—
CI.CGO	88.7	713	713	HNE	0.0303	0.0297	0.0462	3.9	3.7	5.4	1.39	6.22	0.22x	-0.441	—
CI.TEH	91.4	780	780	HNE	0.0416	0.0408	0.0284	3.7	3.4	5.9	1.30	8.00	0.16x	+0.361	—
CI.LMR2	93.3	735	735	HNE	0.0313	0.0279	0.0332	2.7	2.9	2.5	1.22	2.56	0.47x	-0.172	—
NN.GWY	95.6	684	684	HHE	0.0528	0.0346	0.0446	3.4	3.0	10.4	4.52	10.47	0.43x	-0.254	Glit,Outl

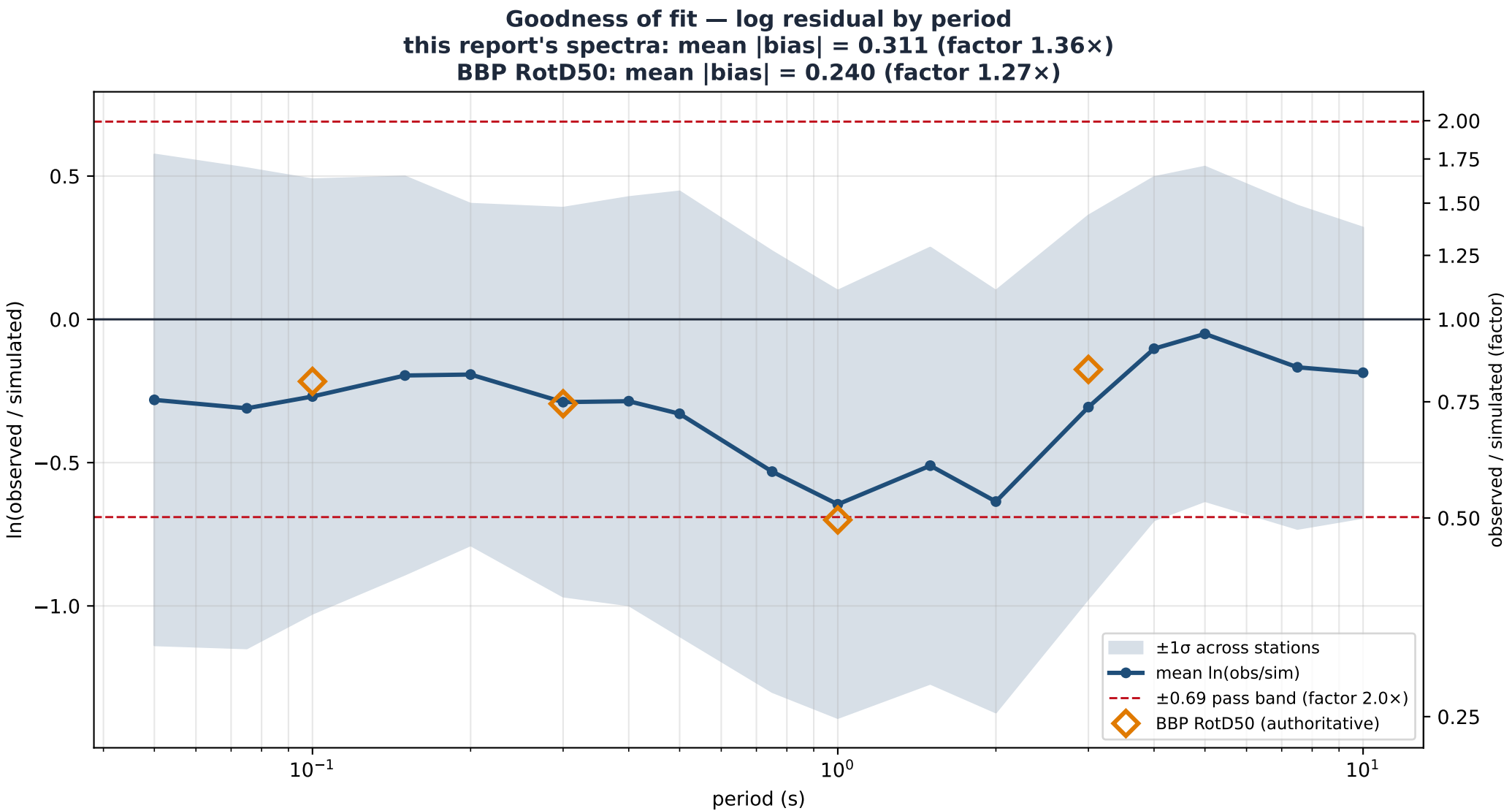
Cross-check — two processings of the same recordings





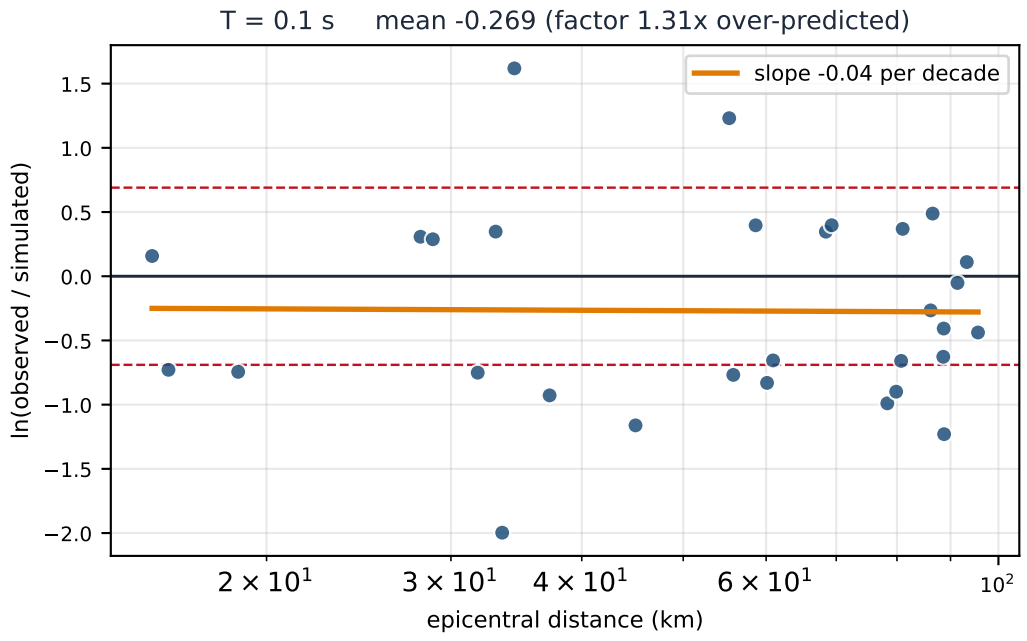
ow red markers are stations ShakeMap flagged (IncompleteRecord, Outlier, …). Dotted lines are ±10%. A consistent offset would mean our processing differs systematically from the networ

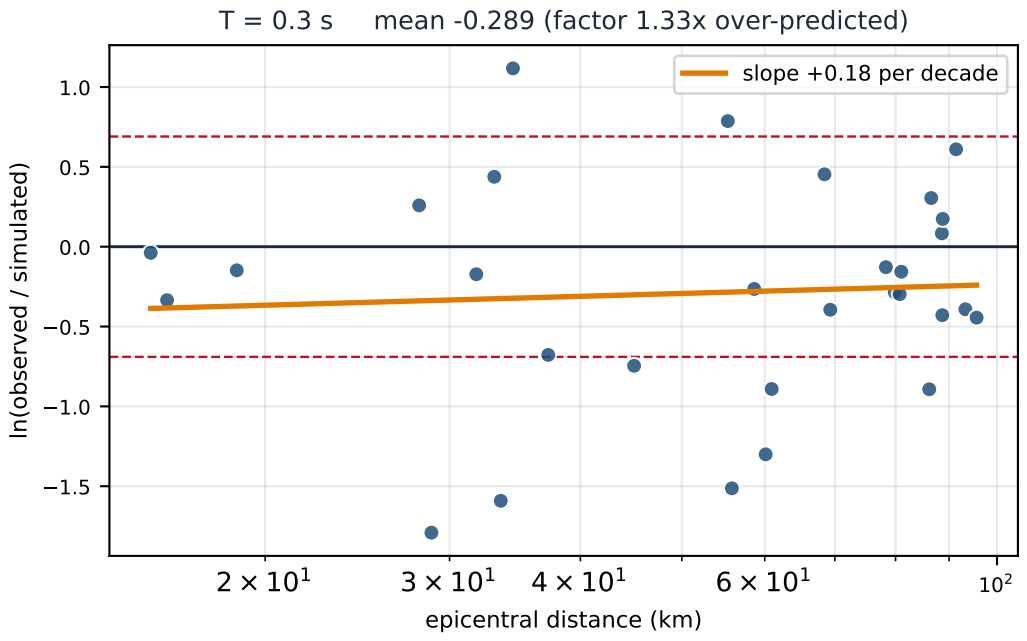

Station geometry — ci38457511 M7.1
star = epicentre; marker colour = ln(obs/sim) PGA residual (red = observed larger)
CI.CGO
CI.CWC
CI.DAW
CE.43158
CI.WMF
CI.MPM
NN.GWY
CI.WRV2
CI.WVP2
NN.QSM
CI.WNM
CI.TOW2
CI.WAS2
CI.WHFVOR
CI.SRT
CI.ISA
CI.WBM
CI.Q0072
CI.WBS
CI.CCC
CI.LRL
CI.APL
CI.GSC
CI.TEH
CI.DTP
CI.CCA
CI.Q0068
CI.HAR
CI.LMR2
BARSTOW
LANCASTER
VICTORVILLE
ln(observed / simulated) PGA
1.0
0.5
0.0
−0.5
−1.0

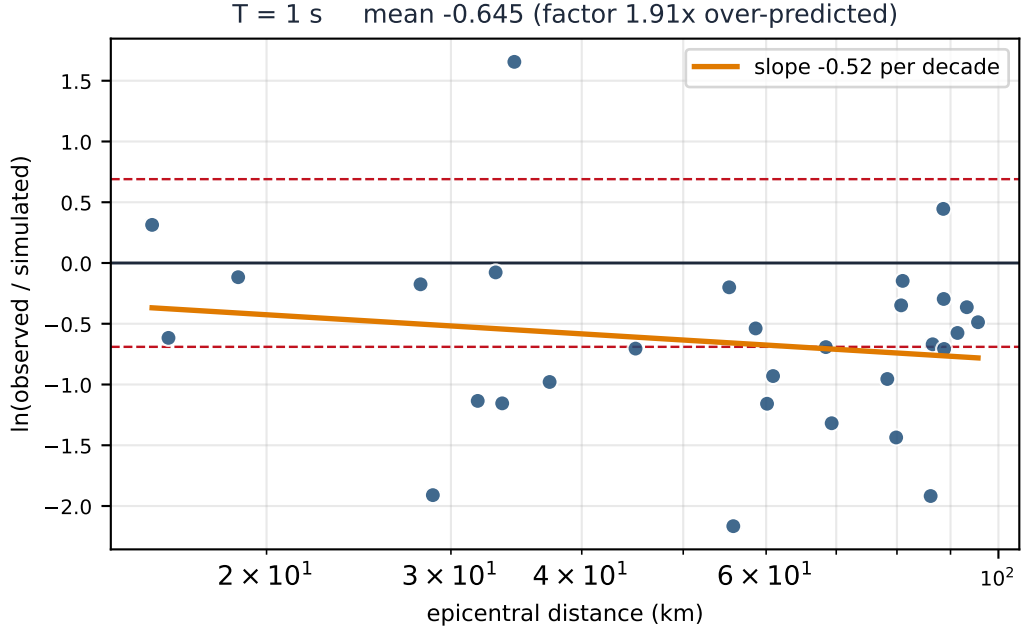


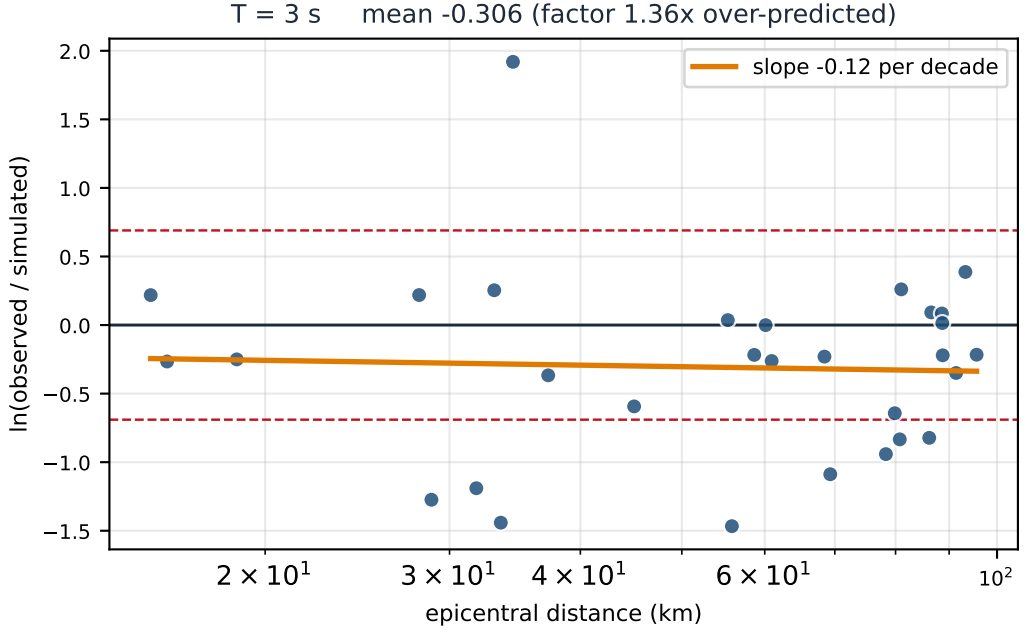
Positive = the simulation under-predicts (real shaking was larger). Negative = it over-predicts.

Residual versus distance — is the error constant, or does it grow?



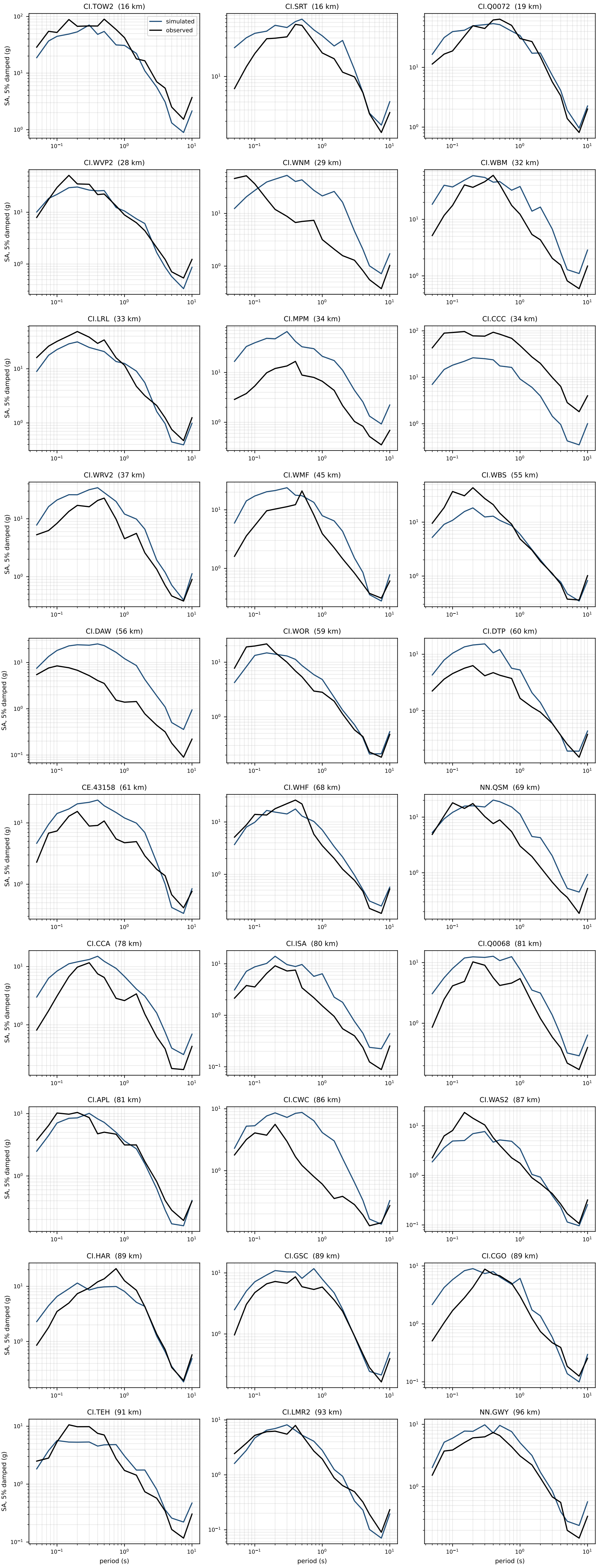


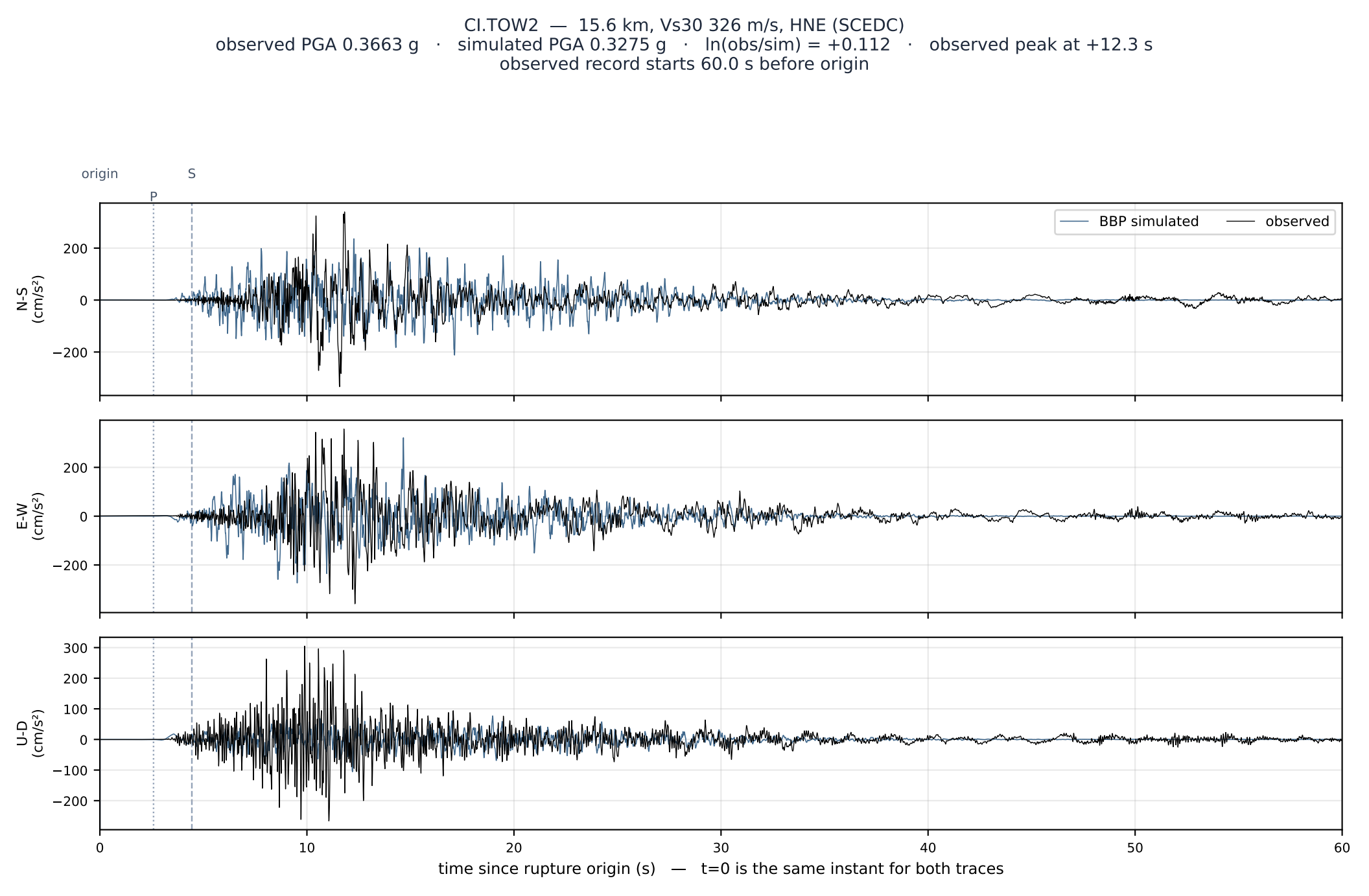


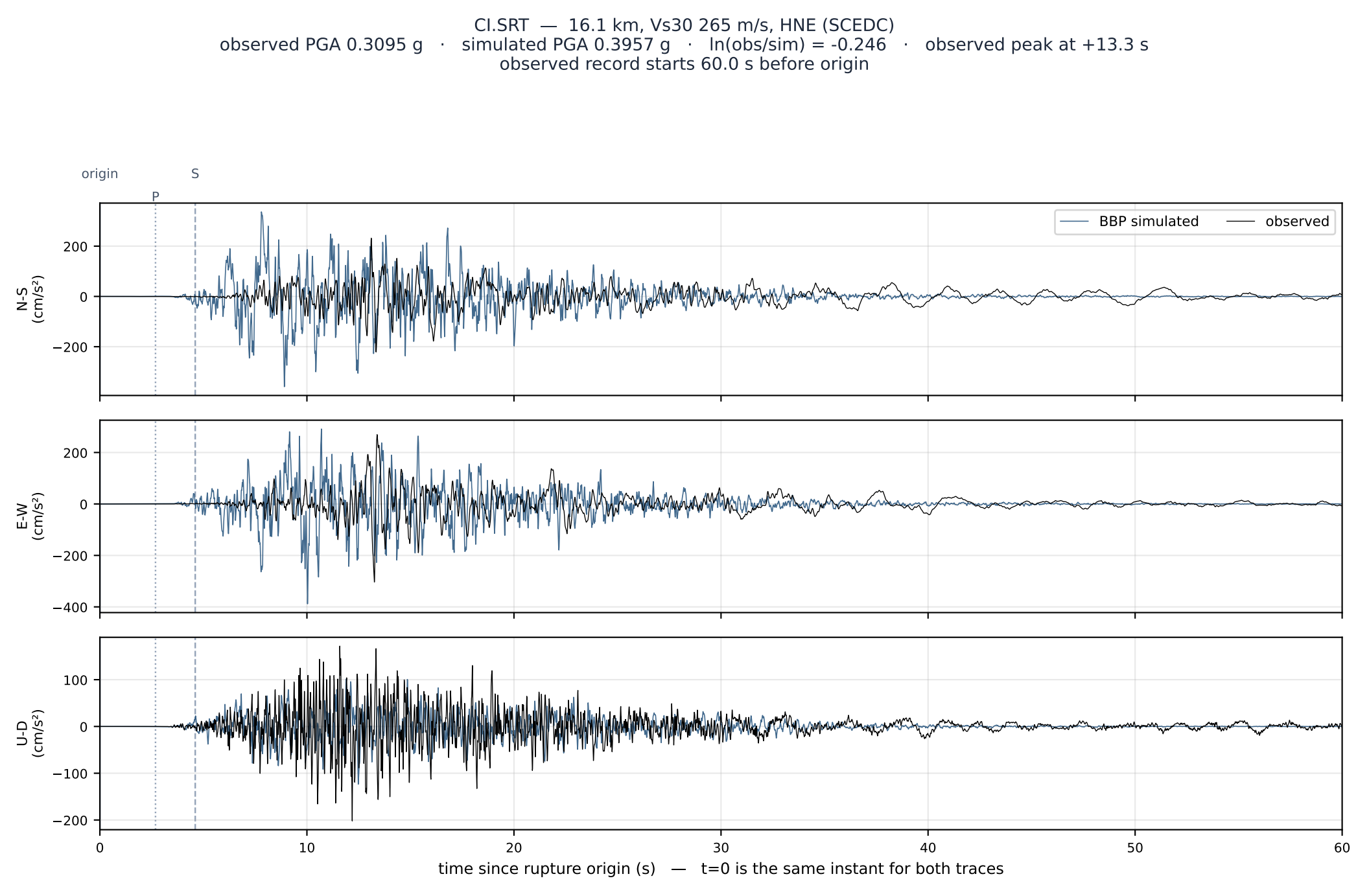


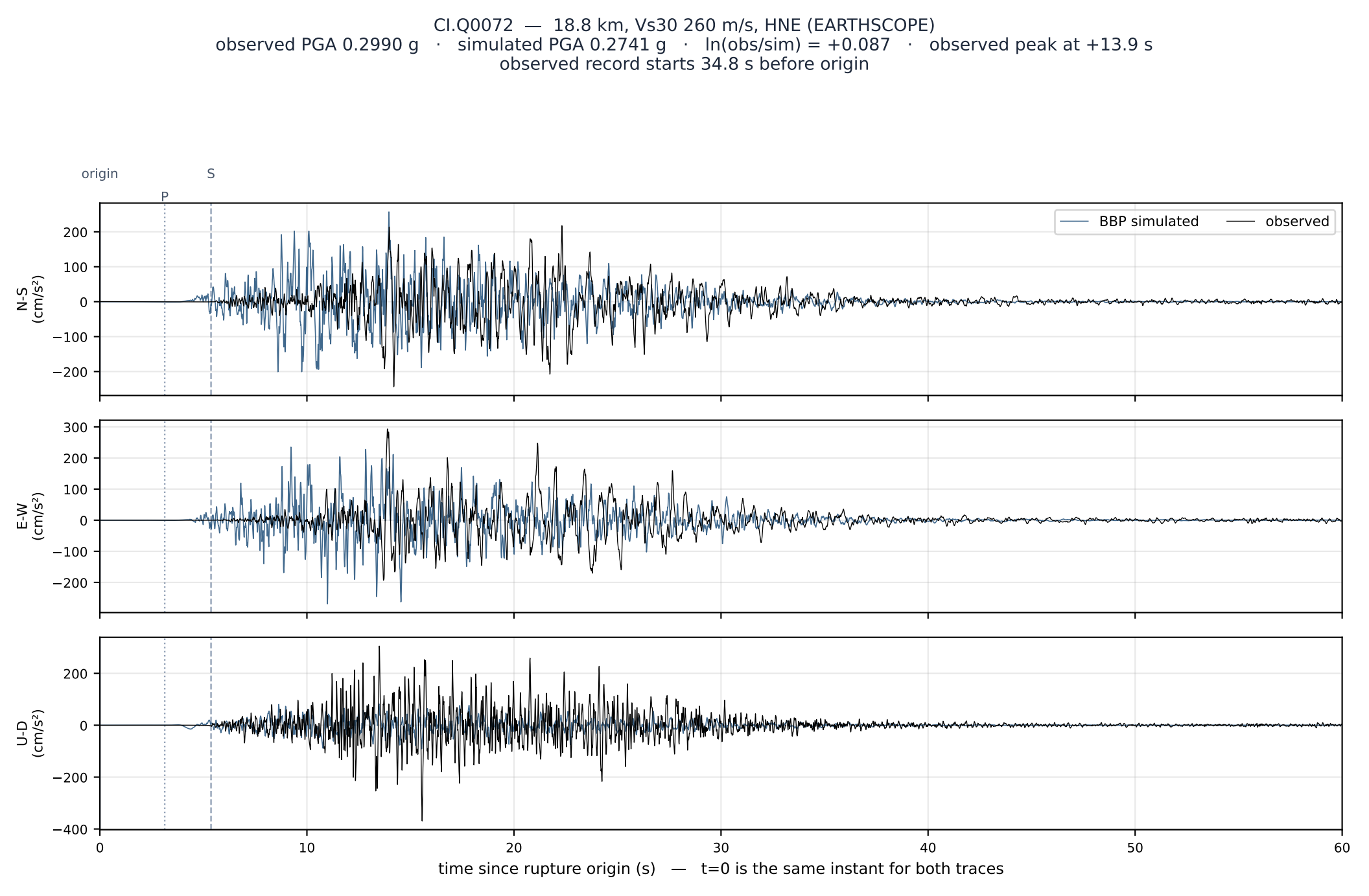
Flat offset = amplitude/site problem. Sloping = attenuation problem. Dashed lines are the ±0.69 pass band.

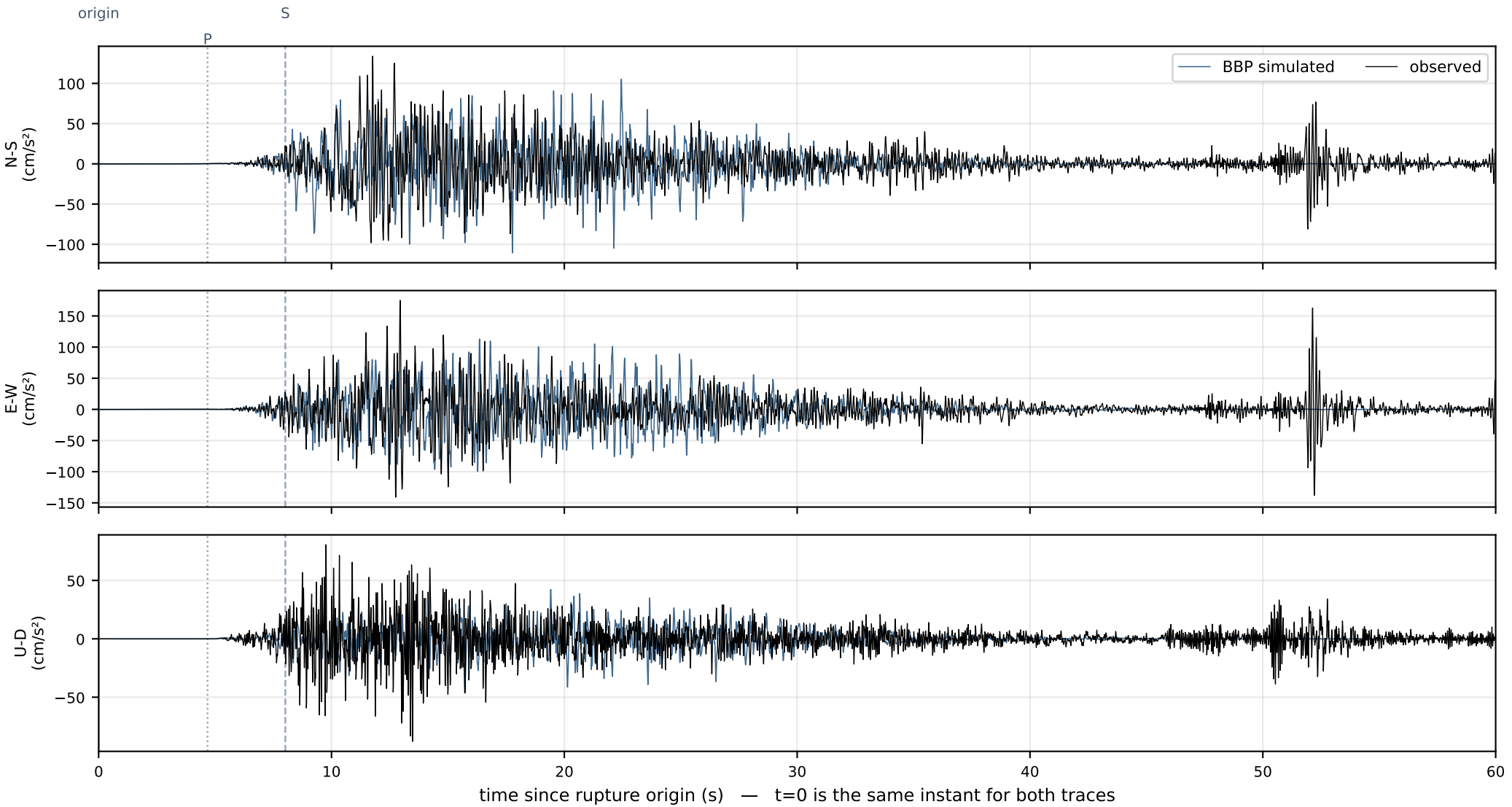
Response spectra — observed vs simulated (geometric-mean horizontal)

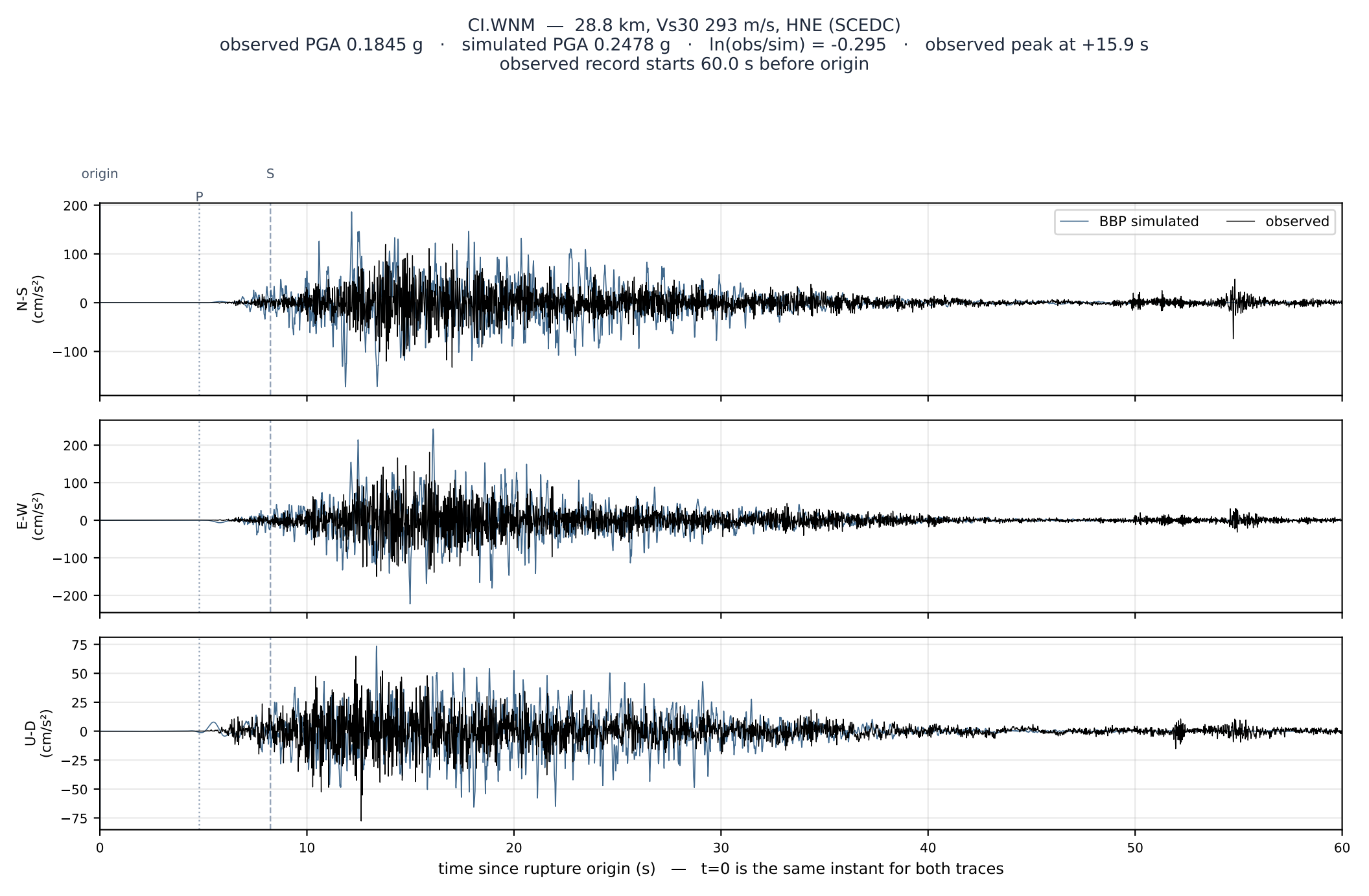


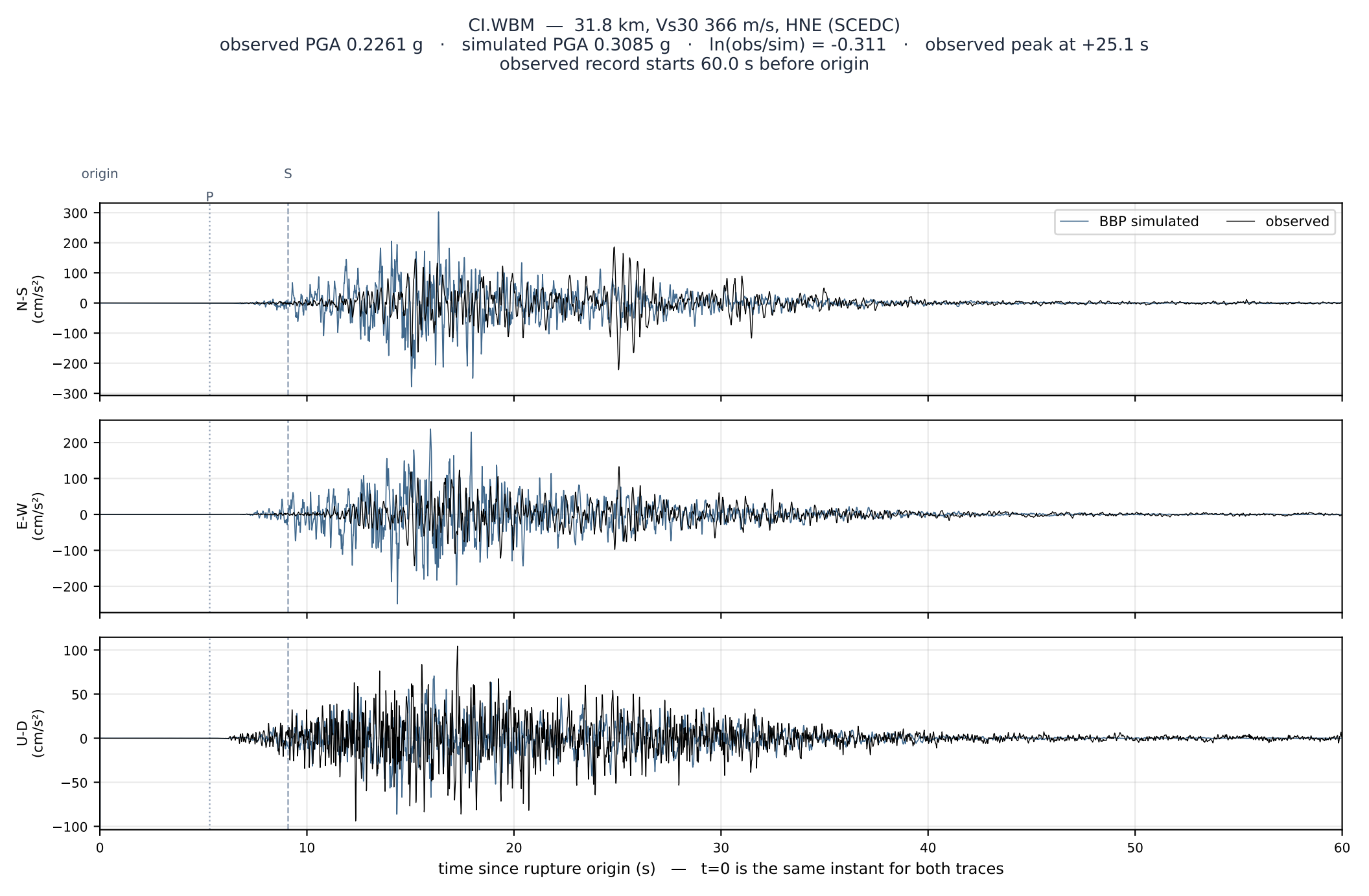

CI.TOW2 — 15.6 km, Vs30 326 m/s, HNE (SCEDC)
observed PGA 0.3663 g · simulated PGA 0.3275 g · ln(obs/sim) = +0.112 · observed peak at +12.3 s
observed record starts 60.0 s before origin
origin
S
P
BBP simulated
observed
N-S (cm/s²)
E-W (cm/s²)
U-D (cm/s²)
time since rupture origin (s) — t=0 is the same instant for both traces

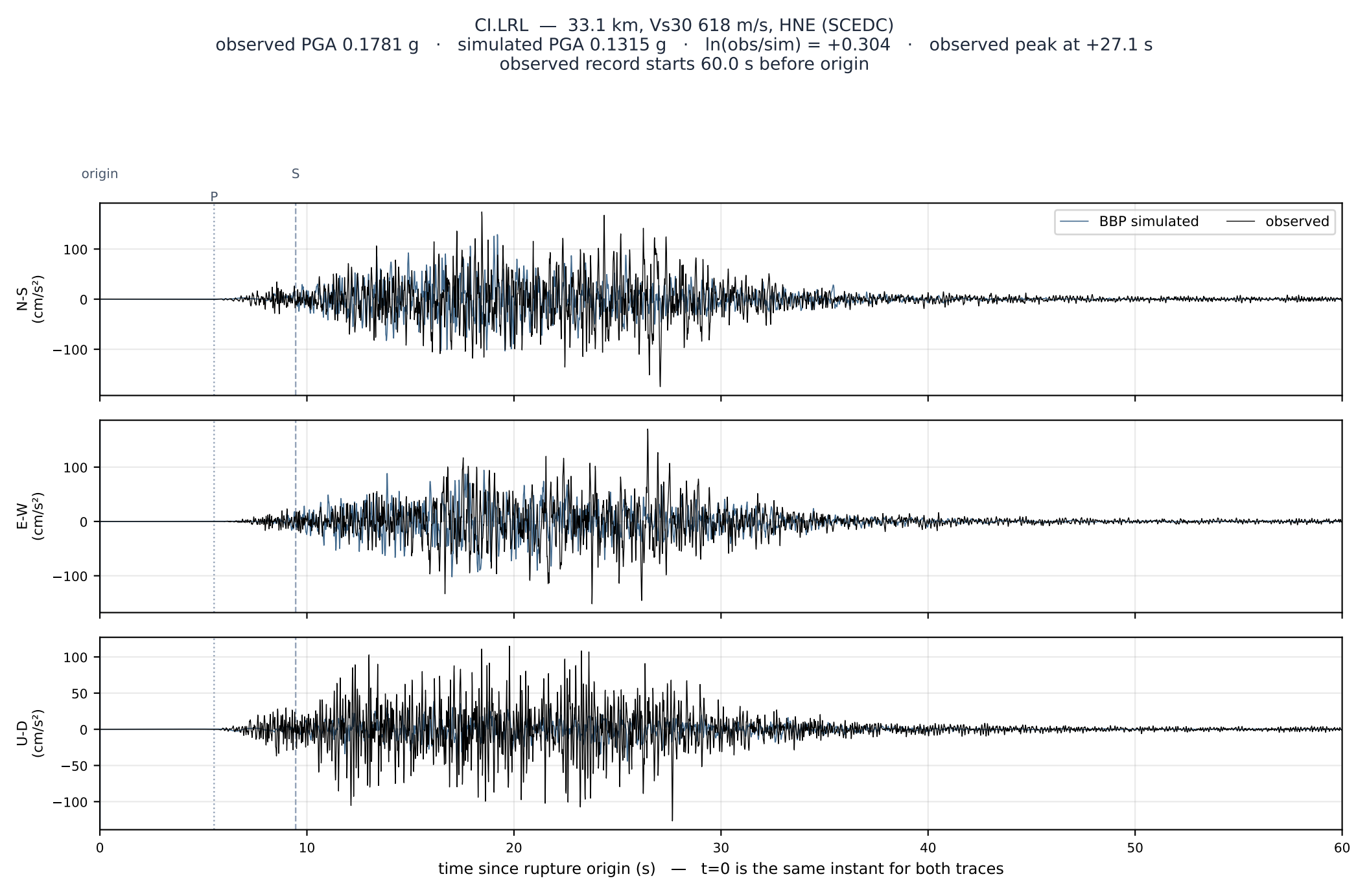

CI.SRT — 16.1 km, Vs30 265 m/s, HNE (SCEDC)
observed PGA 0.3095 g · simulated PGA 0.3957 g · ln(obs/sim) = -0.246 · observed peak at +13.3 s
observed record starts 60.0 s before origin
origin
S
P
BBP simulated
observed
N-S (cm/s²)
E-W (cm/s²)
U-D (cm/s²)
time since rupture origin (s) — t=0 is the same instant for both traces

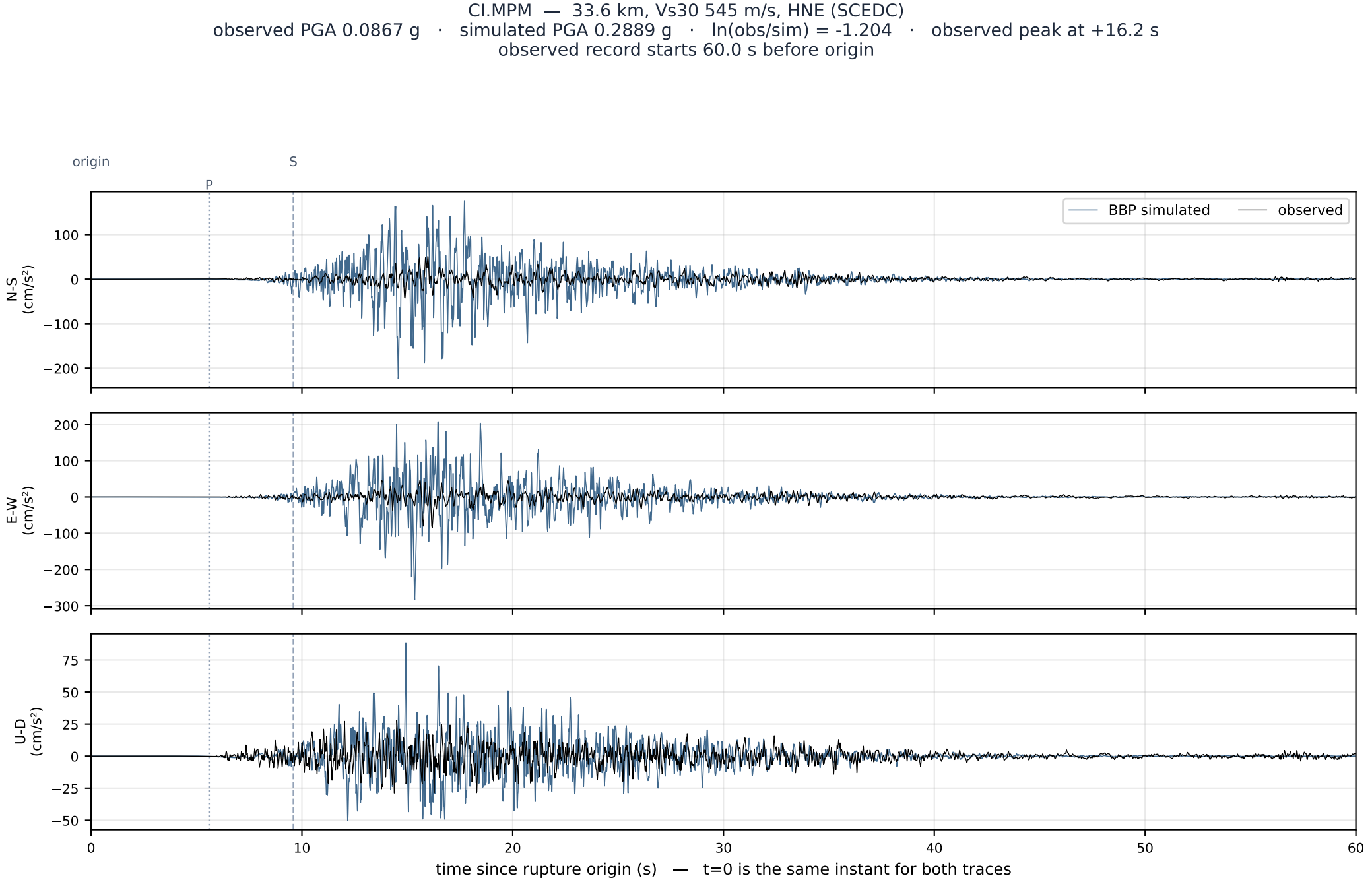

CI.Q0072 — 18.8 km, Vs30 260 m/s, HNE (EARTHSCOPE)
observed PGA 0.2990 g · simulated PGA 0.2741 g · ln(obs/sim) = +0.087 · observed peak at +13.9 s
observed record starts 34.8 s before origin
origin
S
P
BBP simulated
observed
N-S (cm/s²)
E-W (cm/s²)
U-D (cm/s²)
time since rupture origin (s) — t=0 is the same instant for both traces

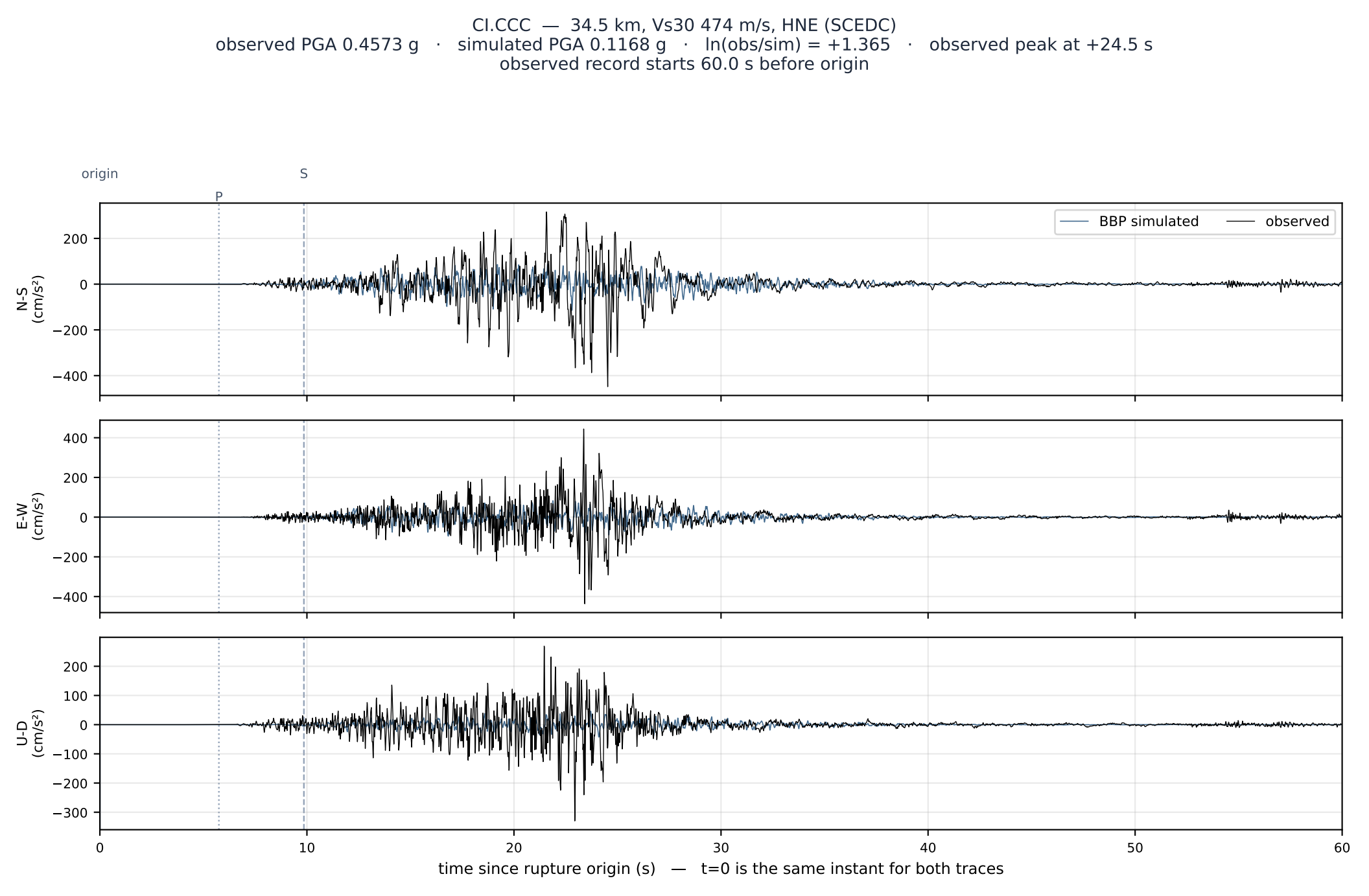

CI.WVP2 — 28.1 km, Vs30 658 m/s, HNE (SCEDC)
observed PGA 0.1783 g · simulated PGA 0.1152 g · ln(obs/sim) = +0.437 · observed peak at +13.0 s
observed record starts 60.0 s before origin
origin
S
P
BBP simulated
observed
N-S (cm/s²)
E-W (cm/s²)
U-D (cm/s²)
time since rupture origin (s) — t=0 is the same instant for both traces

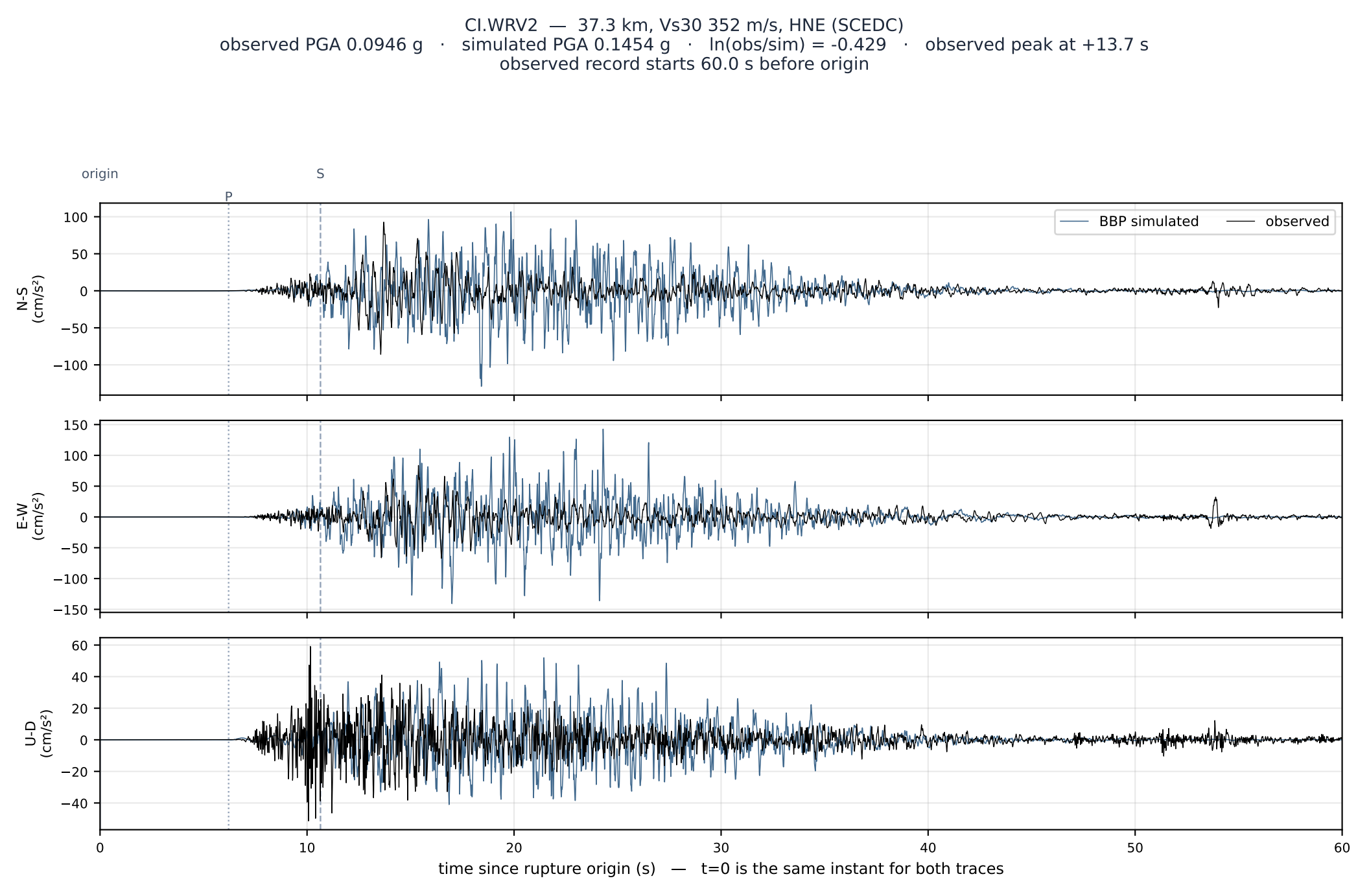

CI.WNM — 28.8 km, Vs30 293 m/s, HNE (SCEDC)
observed PGA 0.1845 g · simulated PGA 0.2478 g · ln(obs/sim) = -0.295 · observed peak at +15.9 s
observed record starts 60.0 s before origin
origin
S
P
BBP simulated
observed
N-S (cm/s²)
E-W (cm/s²)
U-D (cm/s²)
time since rupture origin (s) — t=0 is the same instant for both traces

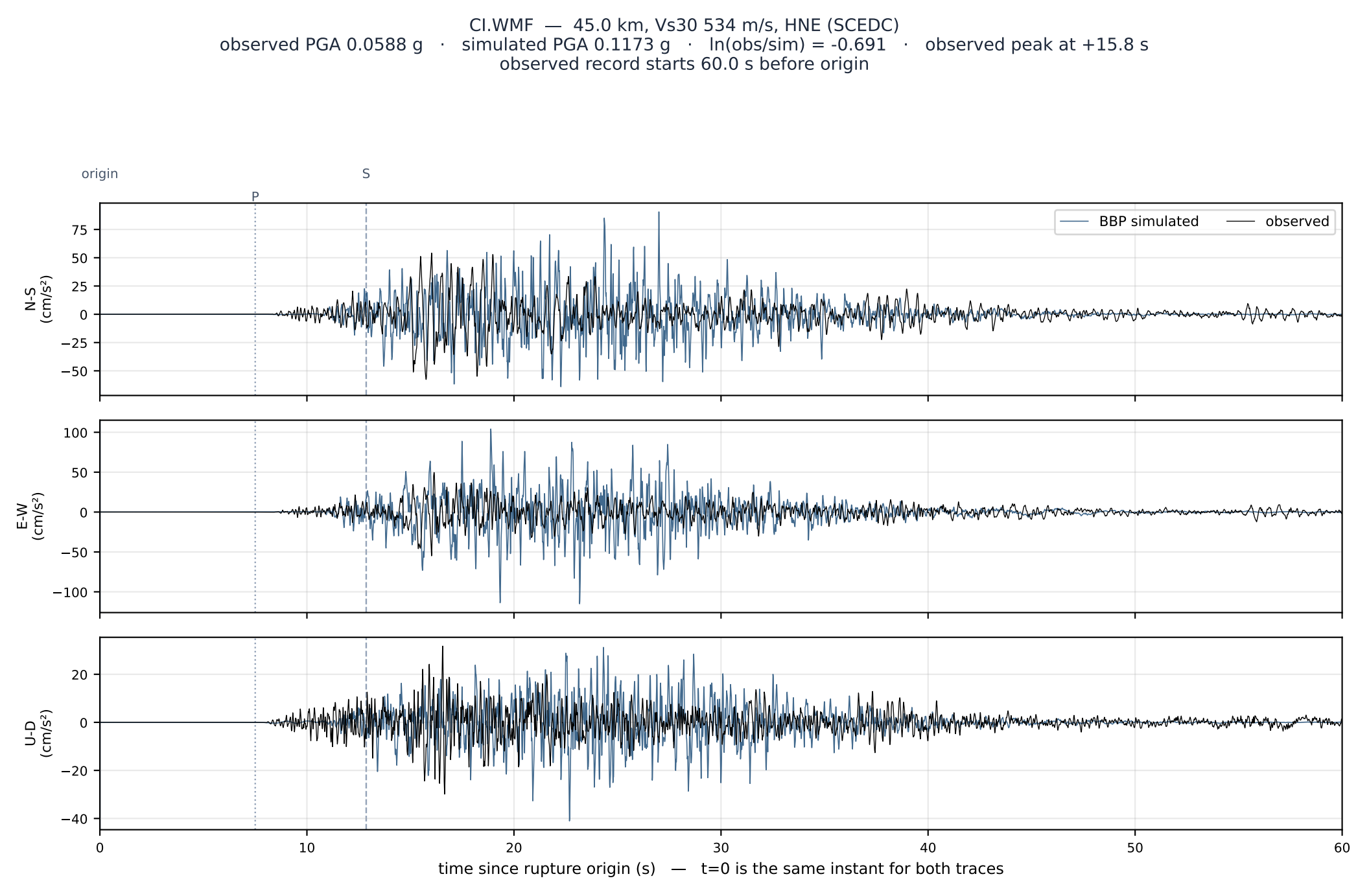

CI.WBM — 31.8 km, Vs30 366 m/s, HNE (SCEDC)
observed PGA 0.2261 g · simulated PGA 0.3085 g · ln(obs/sim) = -0.311 · observed peak at +25.1 s
observed record starts 60.0 s before origin
origin
S
P
BBP simulated
observed
N-S (cm/s²)
E-W (cm/s²)
U-D (cm/s²)
time since rupture origin (s) — t=0 is the same instant for both traces

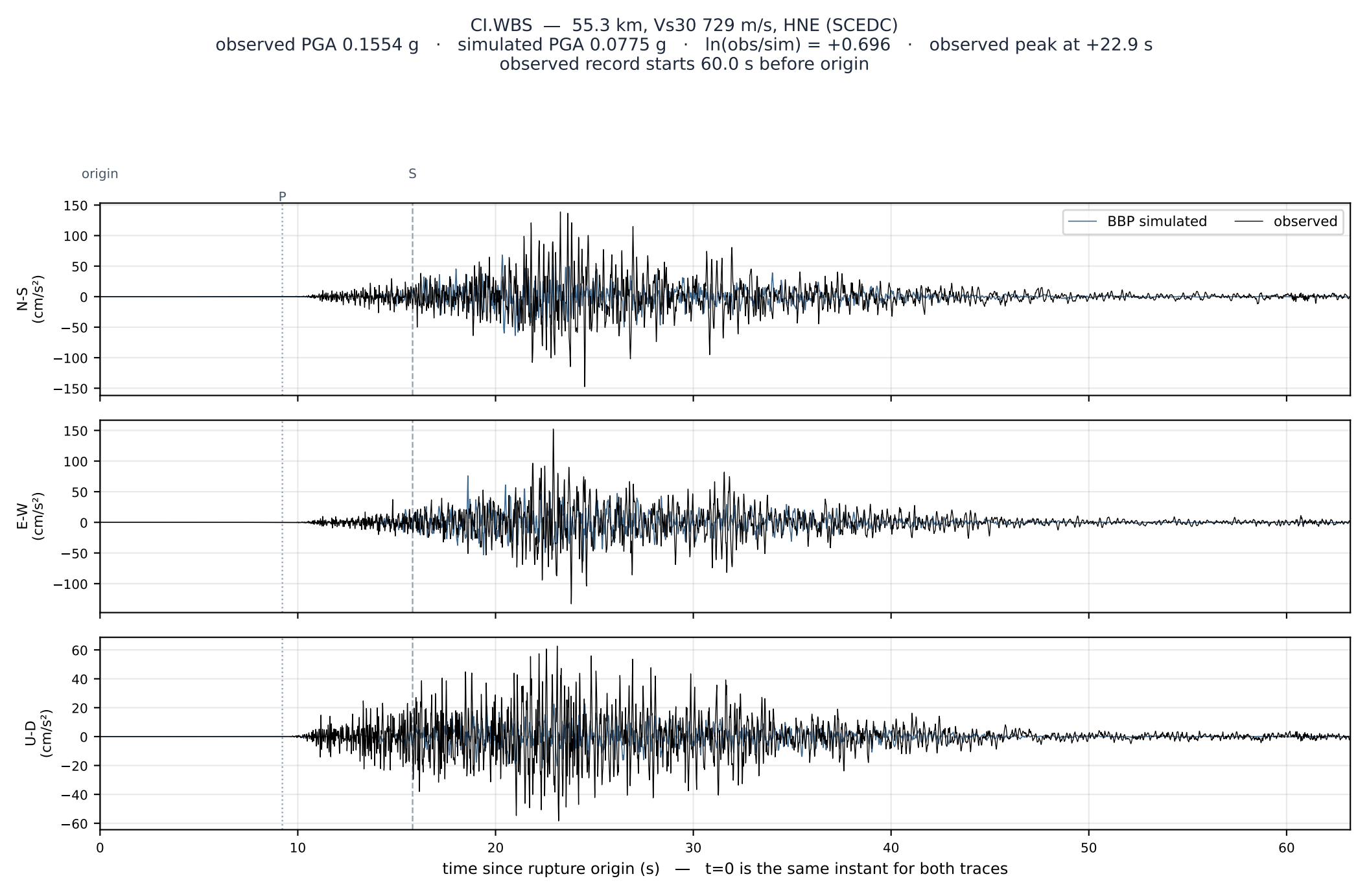

CI.LRL — 33.1 km, Vs30 618 m/s, HNE (SCEDC)
observed PGA 0.1781 g · simulated PGA 0.1315 g · ln(obs/sim) = +0.304 · observed peak at +27.1 s
observed record starts 60.0 s before origin
origin
S
P
BBP simulated
observed
N-S (cm/s²)
E-W (cm/s²)
U-D (cm/s²)
time since rupture origin (s) — t=0 is the same instant for both traces

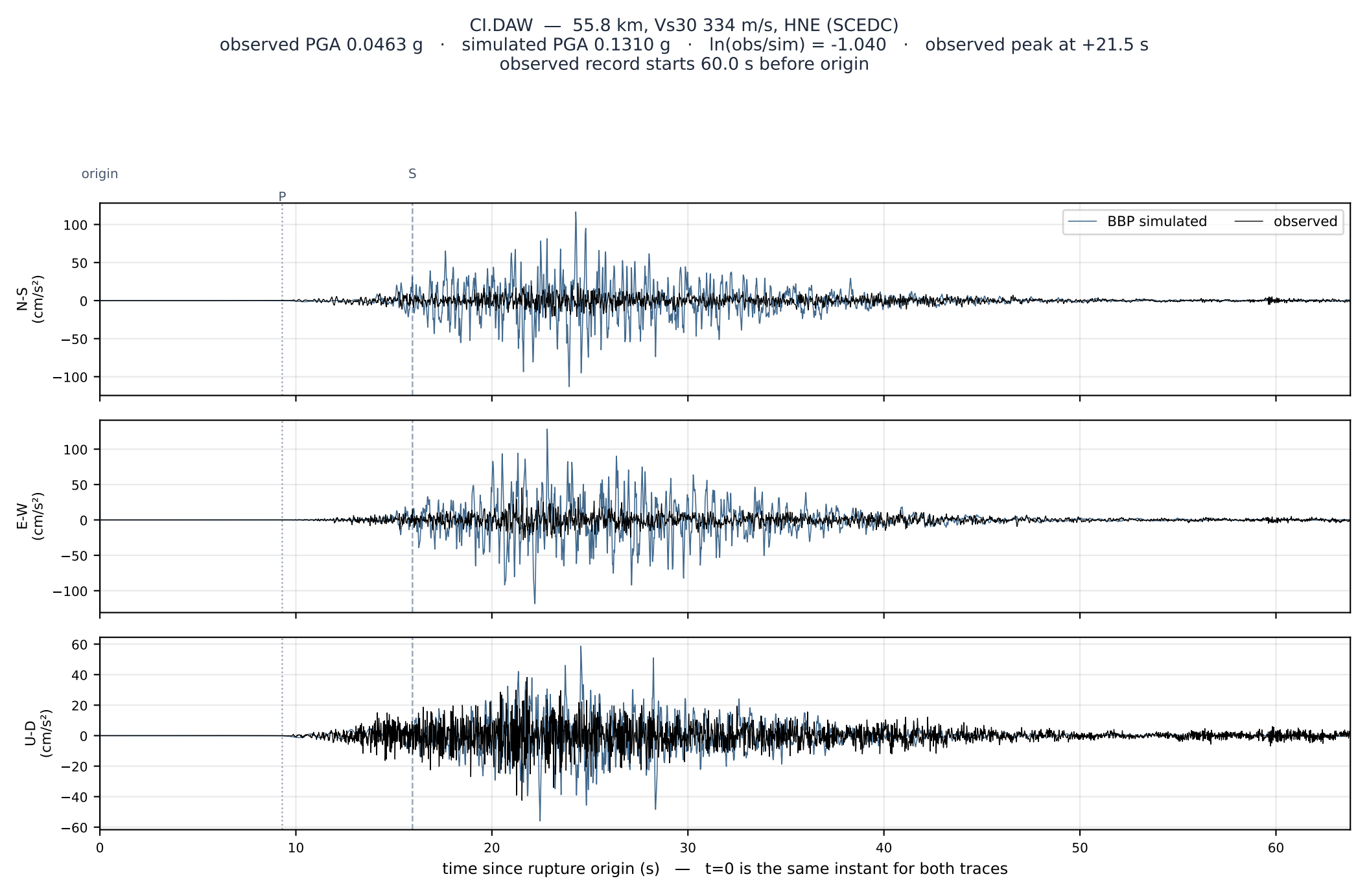

CI.MPM — 33.6 km, Vs30 545 m/s, HNE (SCEDC)
observed PGA 0.0867 g · simulated PGA 0.2889 g · ln(obs/sim) = -1.204 · observed peak at +16.2 s
observed record starts 60.0 s before origin
origin
S
P
BBP simulated
observed
N-S (cm/s²)
E-W (cm/s²)
U-D (cm/s²)
time since rupture origin (s) — t=0 is the same instant for both traces

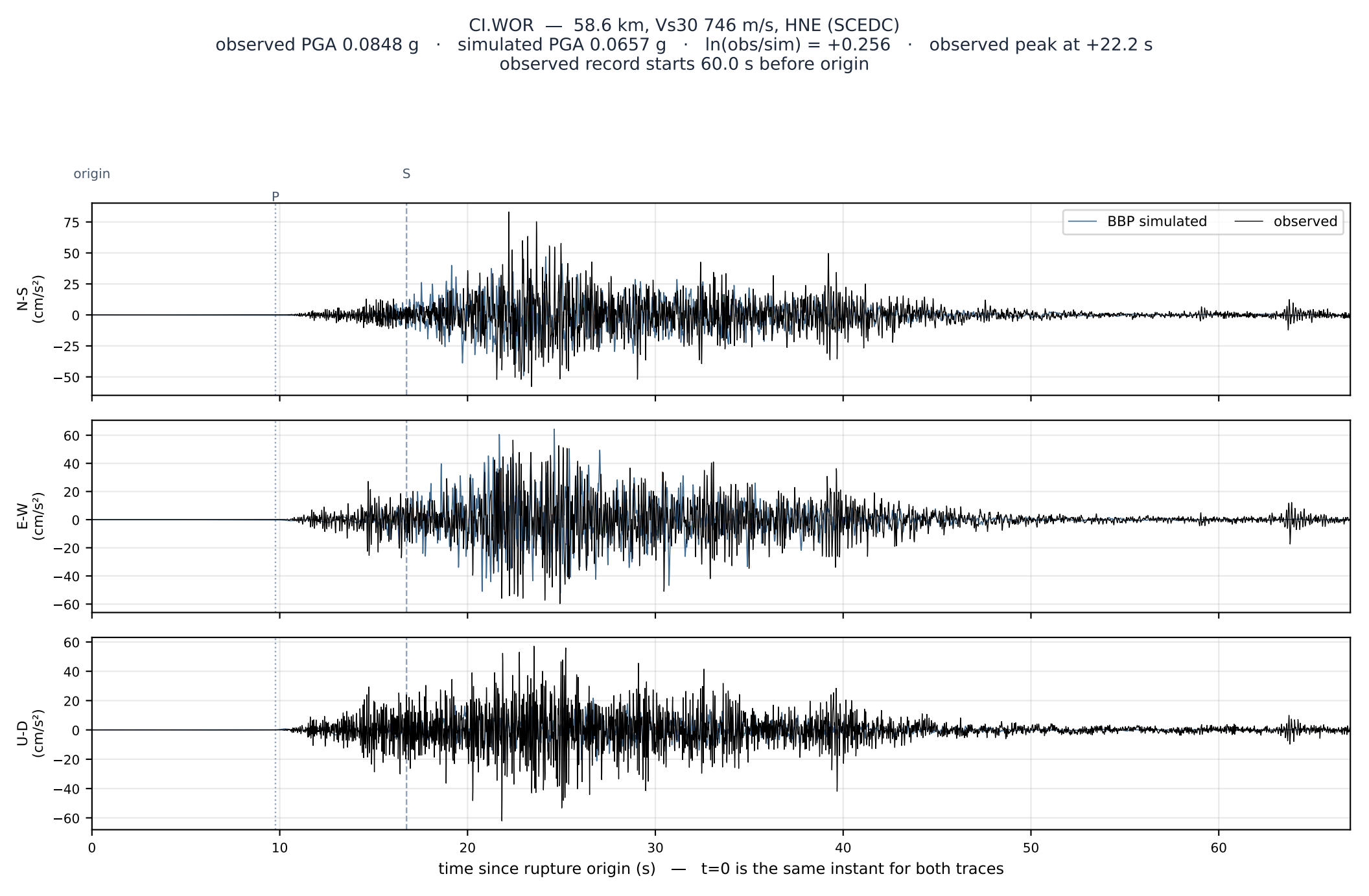

CI.CCC — 34.5 km, Vs30 474 m/s, HNE (SCEDC)
observed PGA 0.4573 g · simulated PGA 0.1168 g · ln(obs/sim) = +1.365 · observed peak at +24.5 s
observed record starts 60.0 s before origin
origin
S
P
BBP simulated
observed
N-S (cm/s²)
E-W (cm/s²)
U-D (cm/s²)
time since rupture origin (s) — t=0 is the same instant for both traces

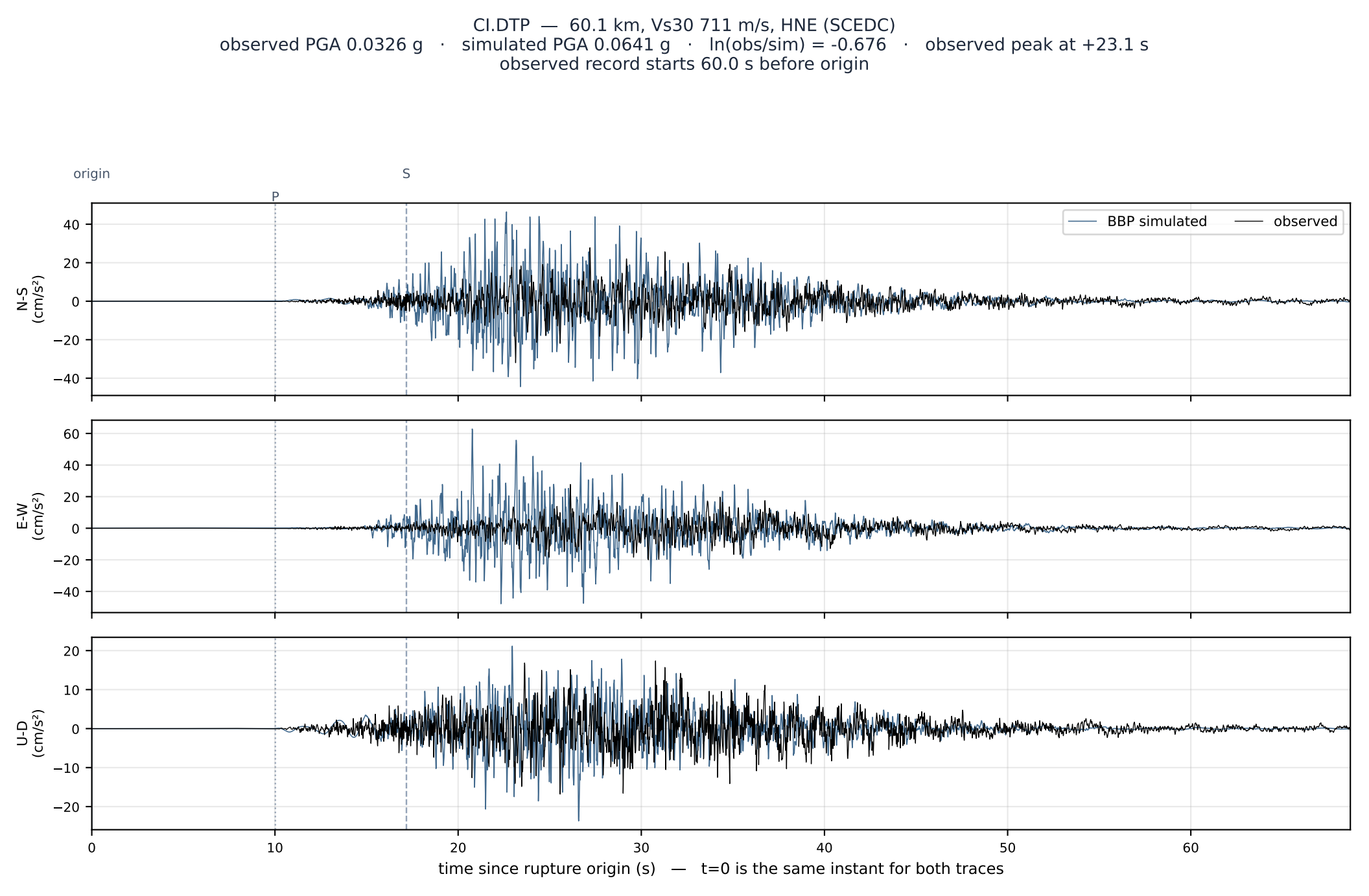

CI.WRV2 — 37.3 km, Vs30 352 m/s, HNE (SCEDC)
observed PGA 0.0946 g · simulated PGA 0.1454 g · ln(obs/sim) = -0.429 · observed peak at +13.7 s
observed record starts 60.0 s before origin
origin
S
P
BBP simulated
observed
N-S (cm/s²)
E-W (cm/s²)
U-D (cm/s²)
time since rupture origin (s) — t=0 is the same instant for both traces

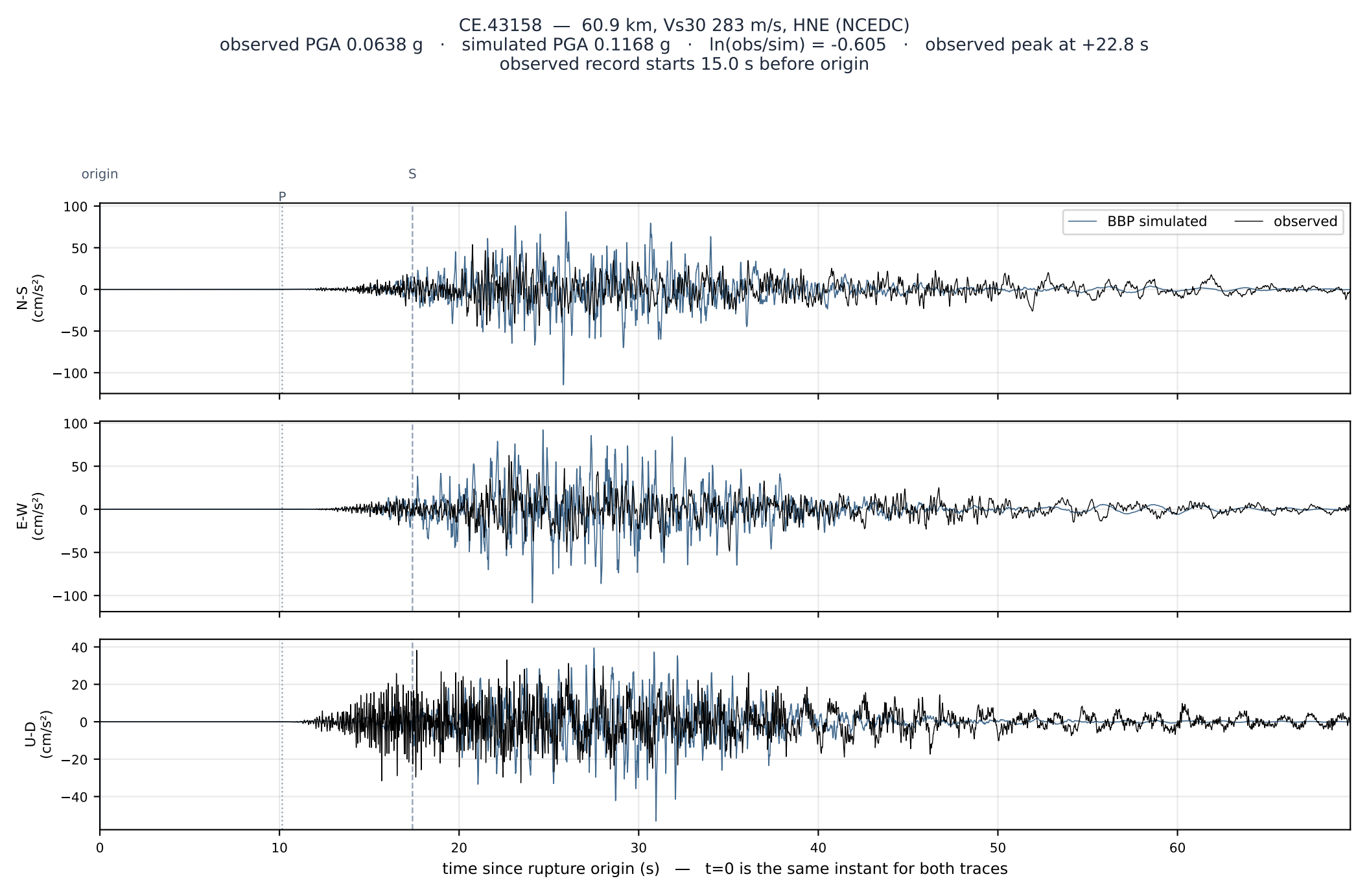

CI.WMF — 45.0 km, Vs30 534 m/s, HNE (SCEDC)
observed PGA 0.0588 g · simulated PGA 0.1173 g · ln(obs/sim) = -0.691 · observed peak at +15.8 s
observed record starts 60.0 s before origin
origin
S
P
BBP simulated
observed
N-S (cm/s²)
E-W (cm/s²)
U-D (cm/s²)
time since rupture origin (s) — t=0 is the same instant for both traces

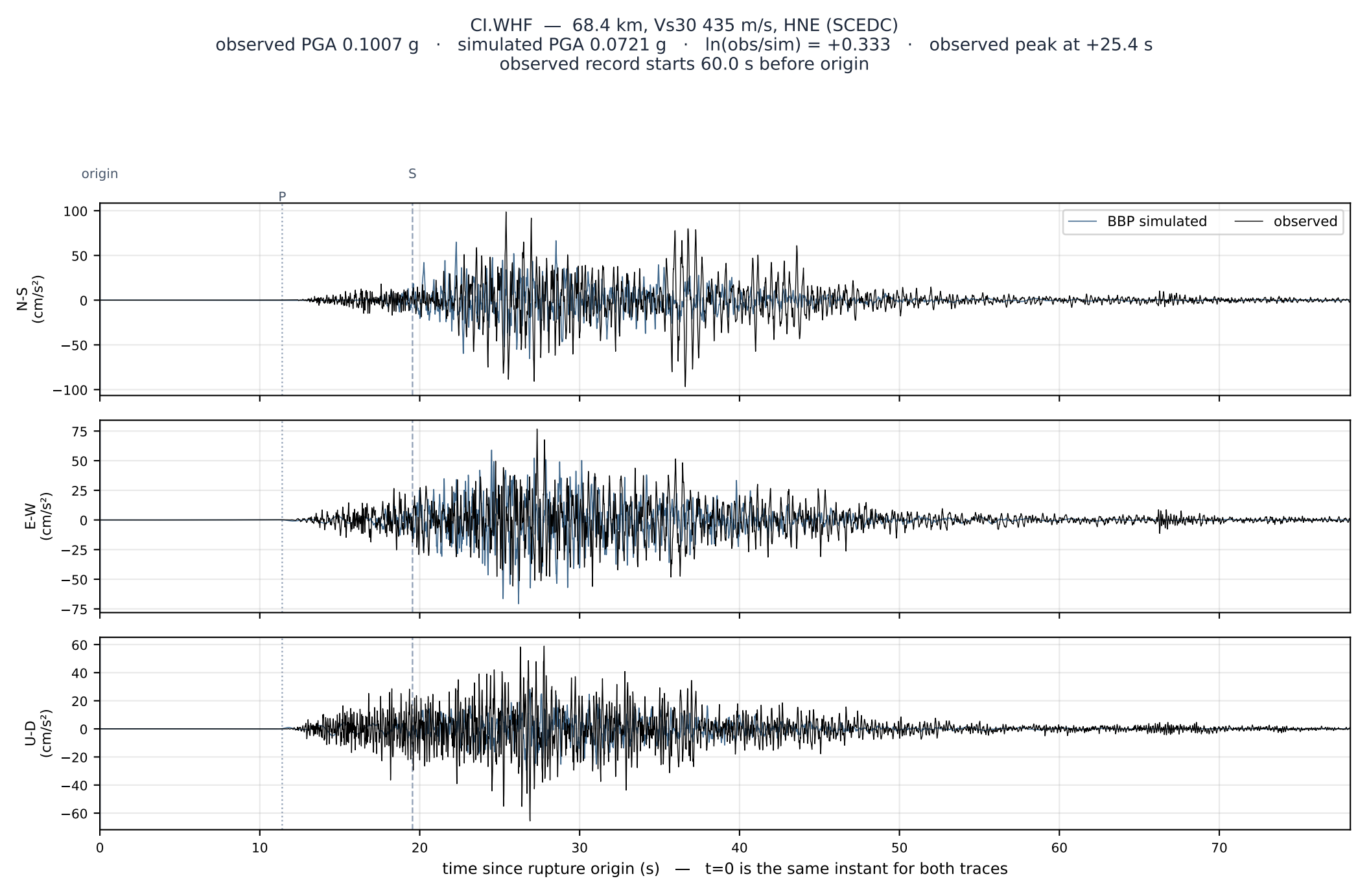

CI.WBS — 55.3 km, Vs30 729 m/s, HNE (SCEDC)
observed PGA 0.1554 g · simulated PGA 0.0775 g · ln(obs/sim) = +0.696 · observed peak at +22.9 s
observed record starts 60.0 s before origin
origin
P
S
BBP simulated
observed
N-S (cm/s²)
E-W (cm/s²)
U-D (cm/s²)
time since rupture origin (s) — t=0 is the same instant for both traces

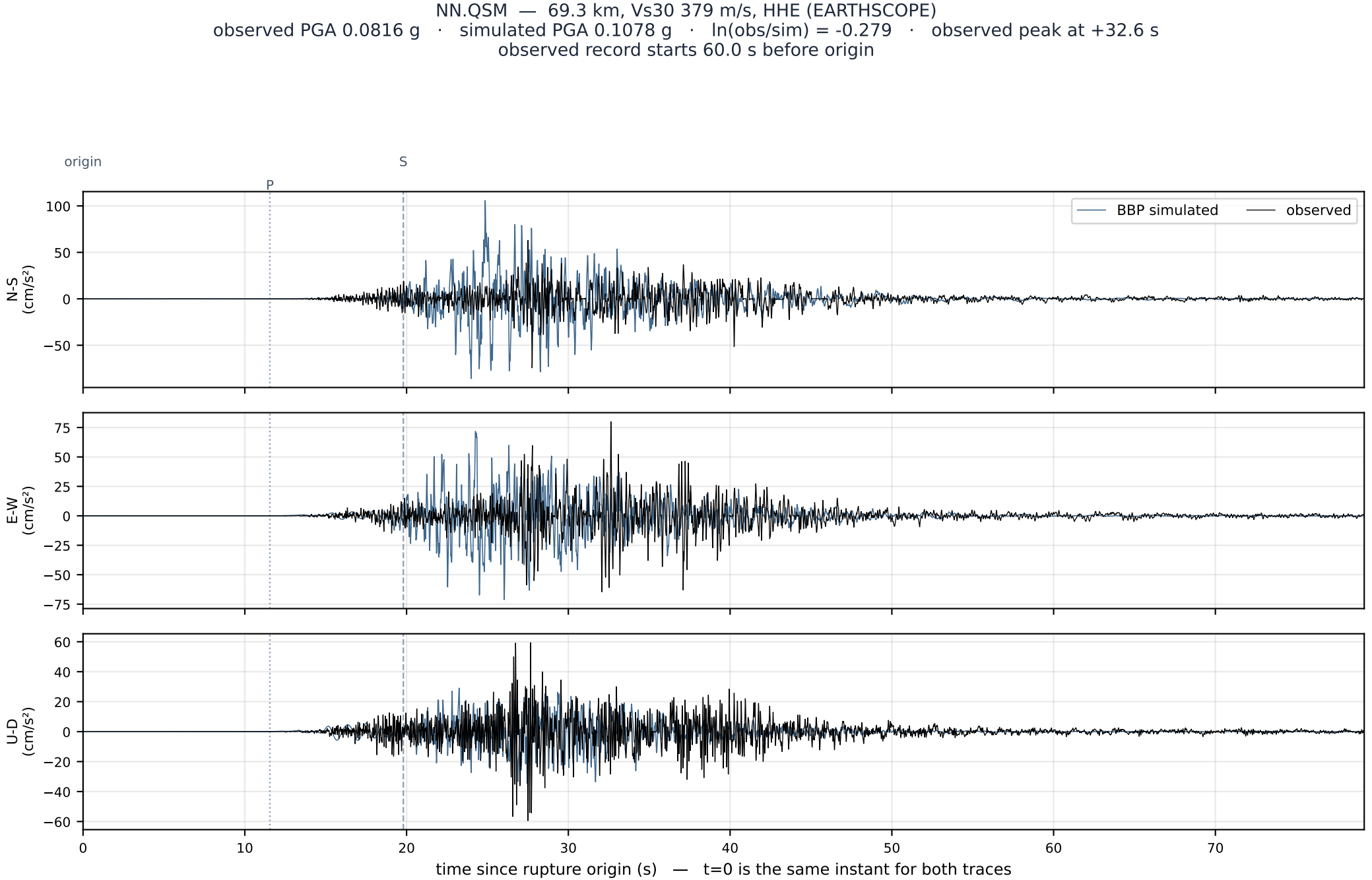

CI.DAW — 55.8 km, Vs30 334 m/s, HNE (SCEDC)
observed PGA 0.0463 g · simulated PGA 0.1310 g · ln(obs/sim) = -1.040 · observed peak at +21.5 s
observed record starts 60.0 s before origin
origin
P
S
BBP simulated
observed
N-S (cm/s²)
E-W (cm/s²)
U-D (cm/s²)
time since rupture origin (s) — t=0 is the same instant for both traces

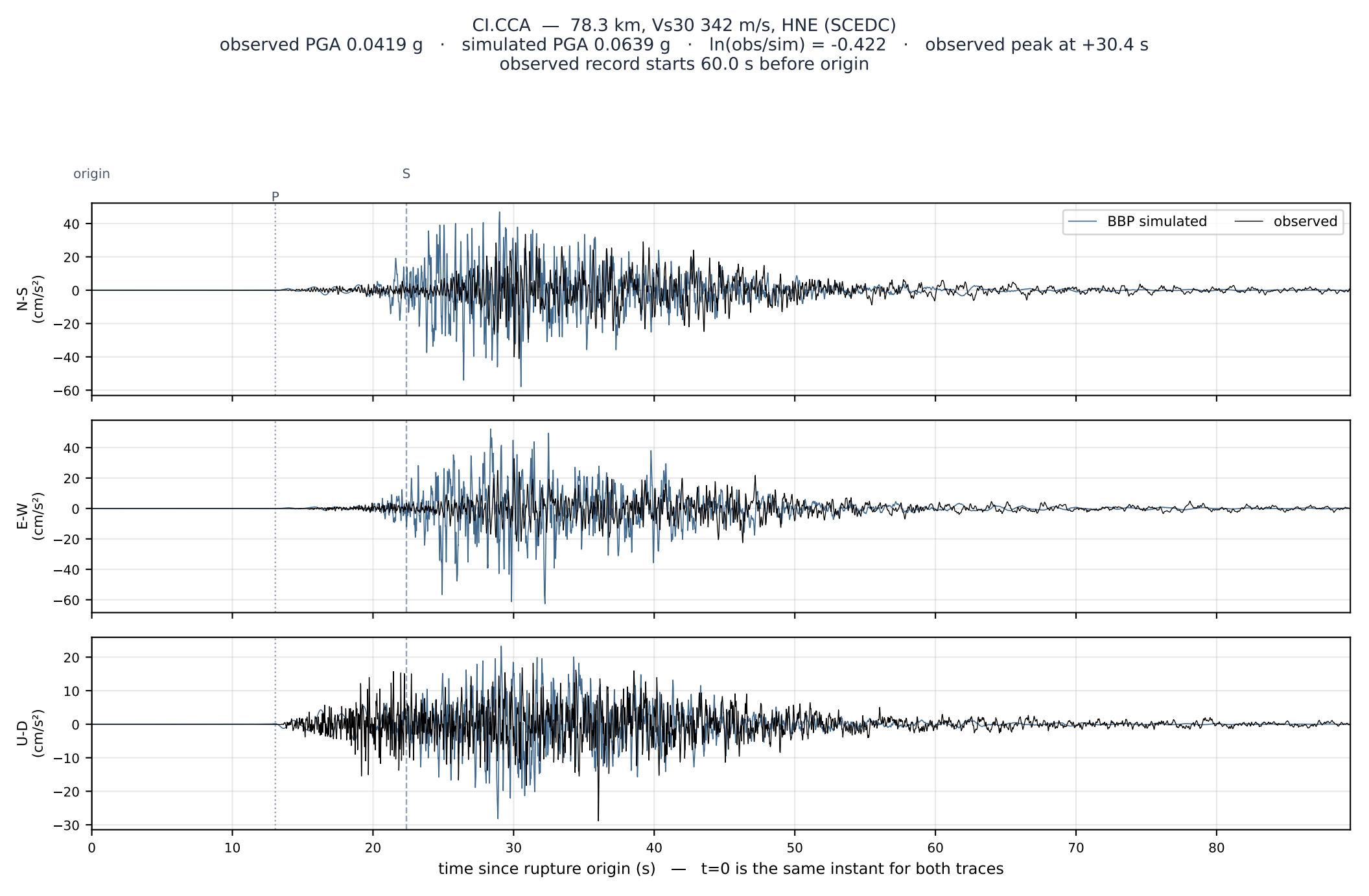

CI.WOR — 58.6 km, Vs30 746 m/s, HNE (SCEDC)
observed PGA 0.0848 g · simulated PGA 0.0657 g · ln(obs/sim) = +0.256 · observed peak at +22.2 s
observed record starts 60.0 s before origin
origin
P
S
BBP simulated
observed
N-S (cm/s²)
E-W (cm/s²)
U-D (cm/s²)
time since rupture origin (s) — t=0 is the same instant for both traces

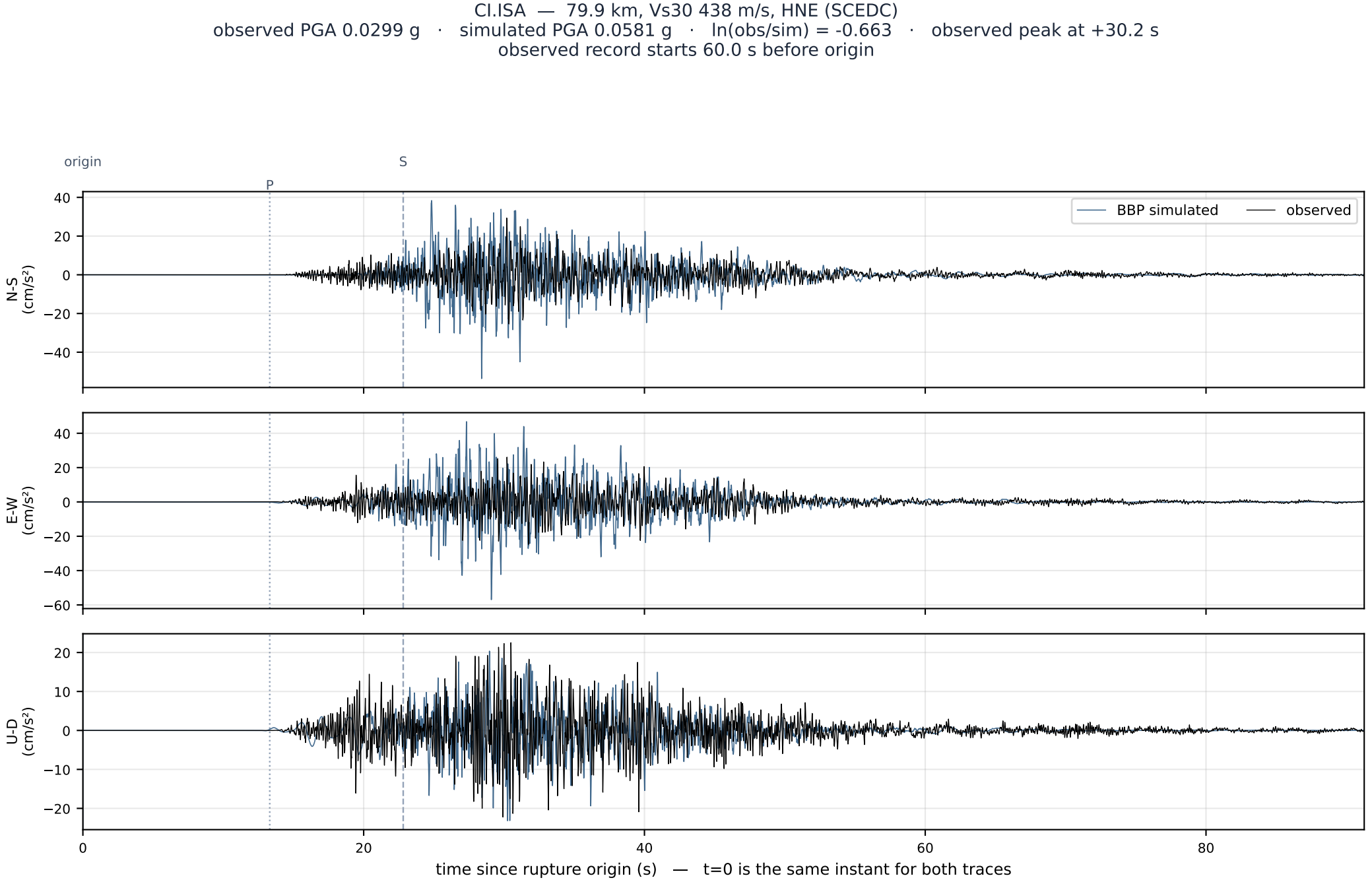

CI.DTP — 60.1 km, Vs30 711 m/s, HNE (SCEDC)
observed PGA 0.0326 g · simulated PGA 0.0641 g · ln(obs/sim) = -0.676 · observed peak at +23.1 s
observed record starts 60.0 s before origin
origin
P
S
BBP simulated
observed
N-S (cm/s²)
E-W (cm/s²)
U-D (cm/s²)
time since rupture origin (s) — t=0 is the same instant for both traces

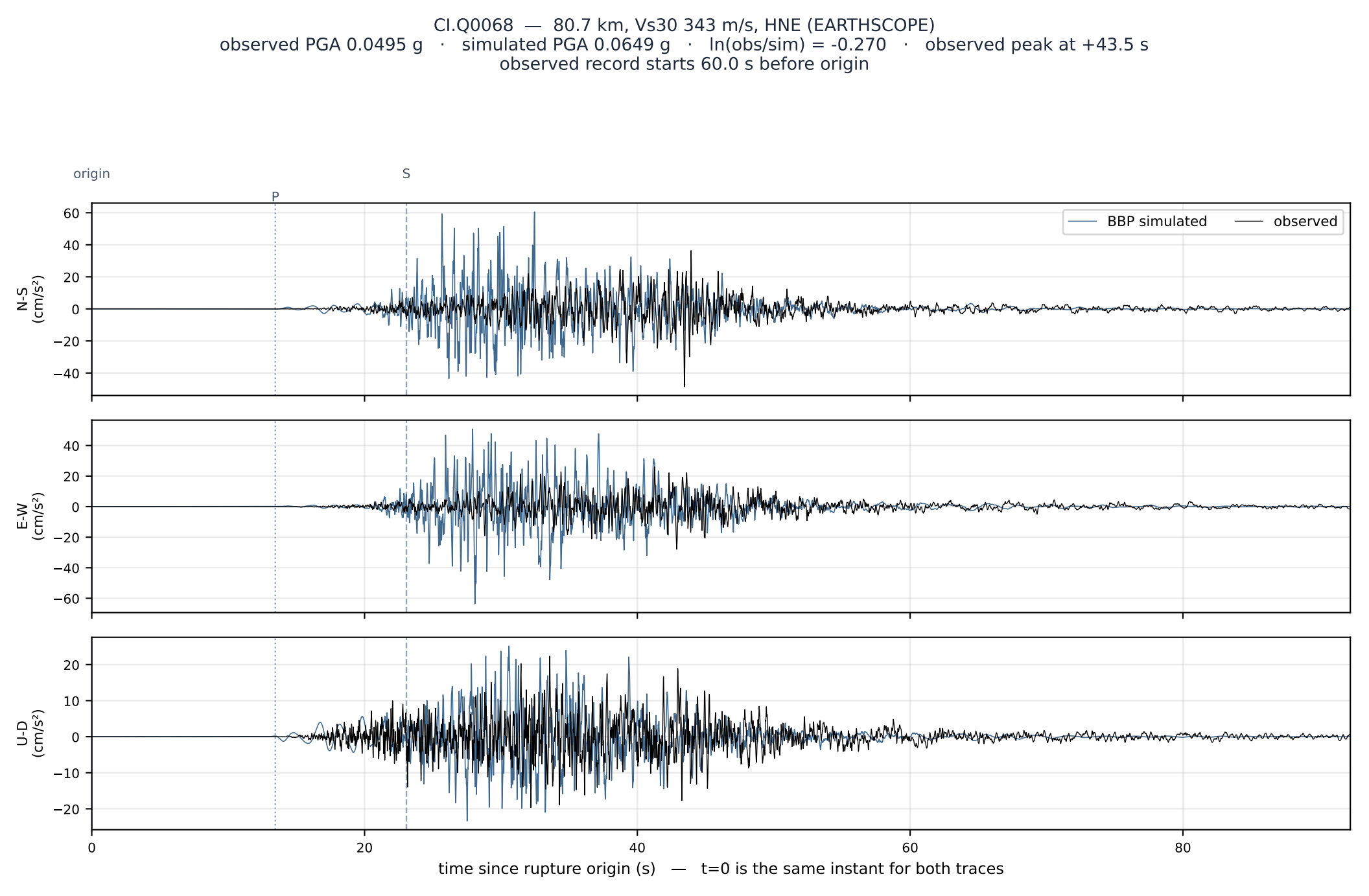

CE.43158 — 60.9 km, Vs30 283 m/s, HNE (NCEDC)
observed PGA 0.0638 g · simulated PGA 0.1168 g · ln(obs/sim) = -0.605 · observed peak at +22.8 s
observed record starts 15.0 s before origin
origin
P
S
BBP simulated
observed
N-S (cm/s²)
E-W (cm/s²)
U-D (cm/s²)
time since rupture origin (s) — t=0 is the same instant for both traces

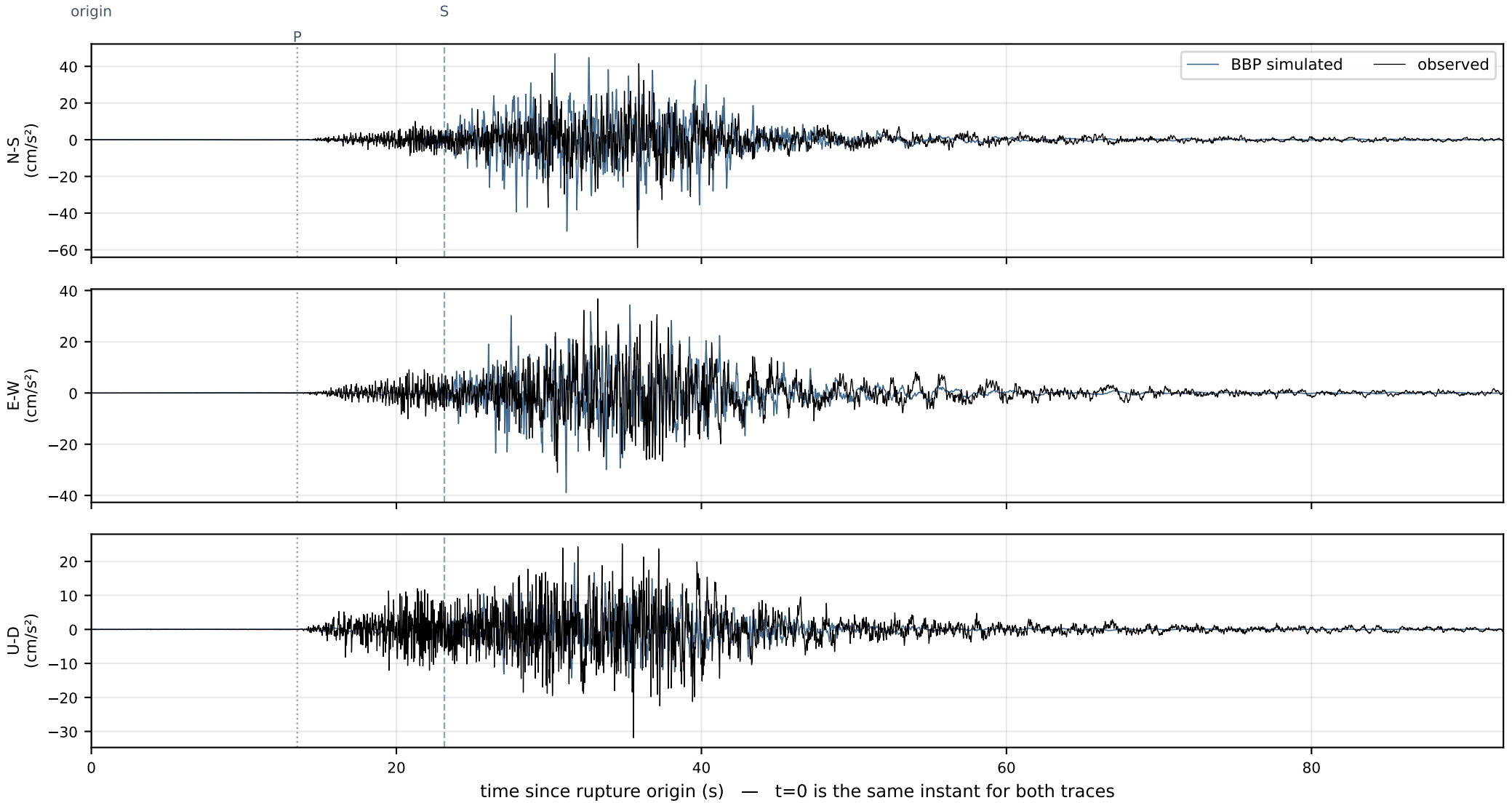

CI.WHF — 68.4 km, Vs30 435 m/s, HNE (SCEDC)
observed PGA 0.1007 g · simulated PGA 0.0721 g · ln(obs/sim) = +0.333 · observed peak at +25.4 s
observed record starts 60.0 s before origin
origin
P
S
BBP simulated
observed
N-S (cm/s²)
E-W (cm/s²)
U-D (cm/s²)
time since rupture origin (s) — t=0 is the same instant for both traces

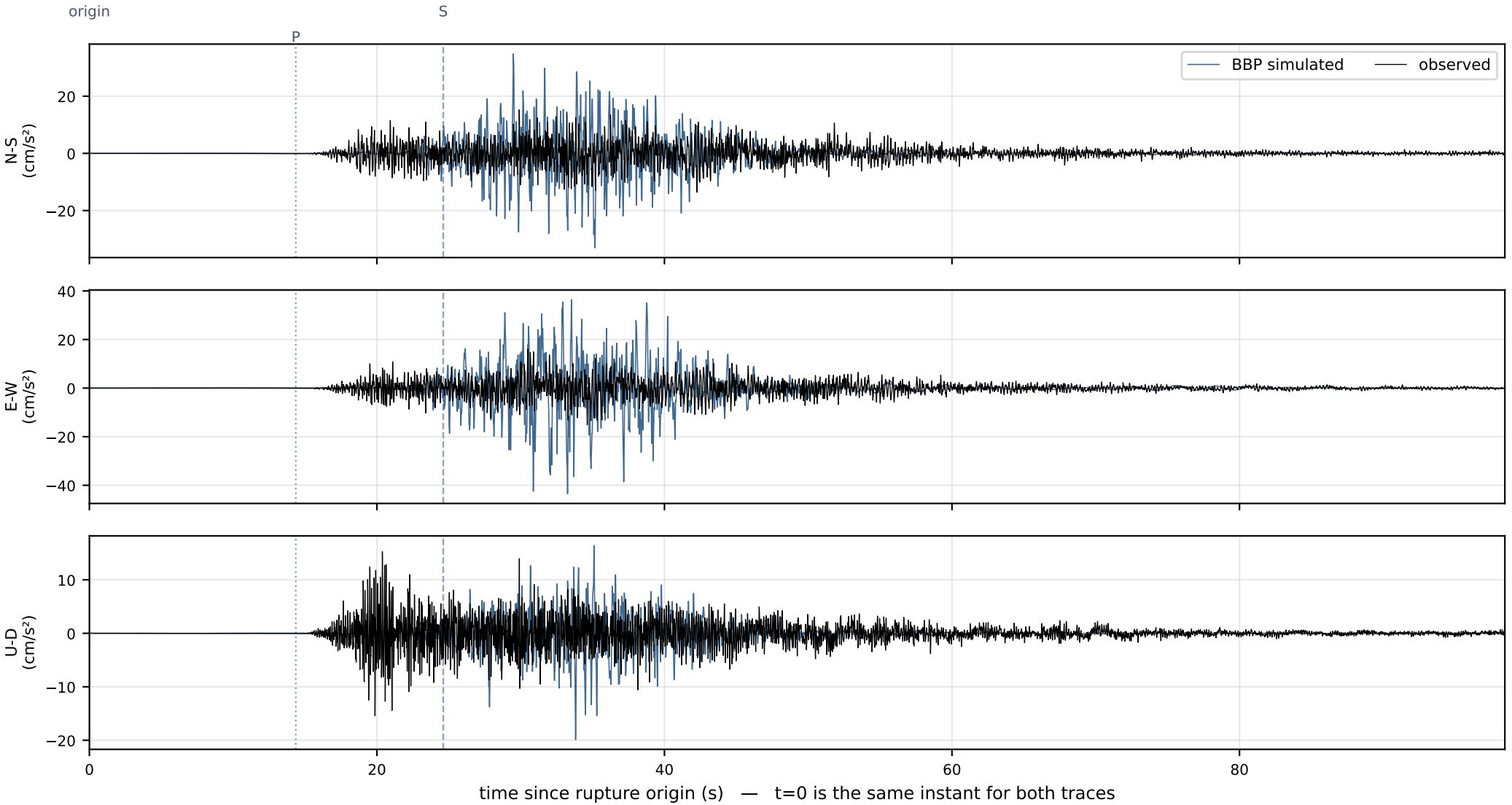

NN.QSM — 69.3 km, Vs30 379 m/s, HHE (EARTHSCOPE)
observed PGA 0.0816 g · simulated PGA 0.1078 g · ln(obs/sim) = -0.279 · observed peak at +32.6 s
observed record starts 60.0 s before origin
origin
S
P
BBP simulated
observed
N-S (cm/s²)
E-W (cm/s²)
U-D (cm/s²)
time since rupture origin (s) — t=0 is the same instant for both traces

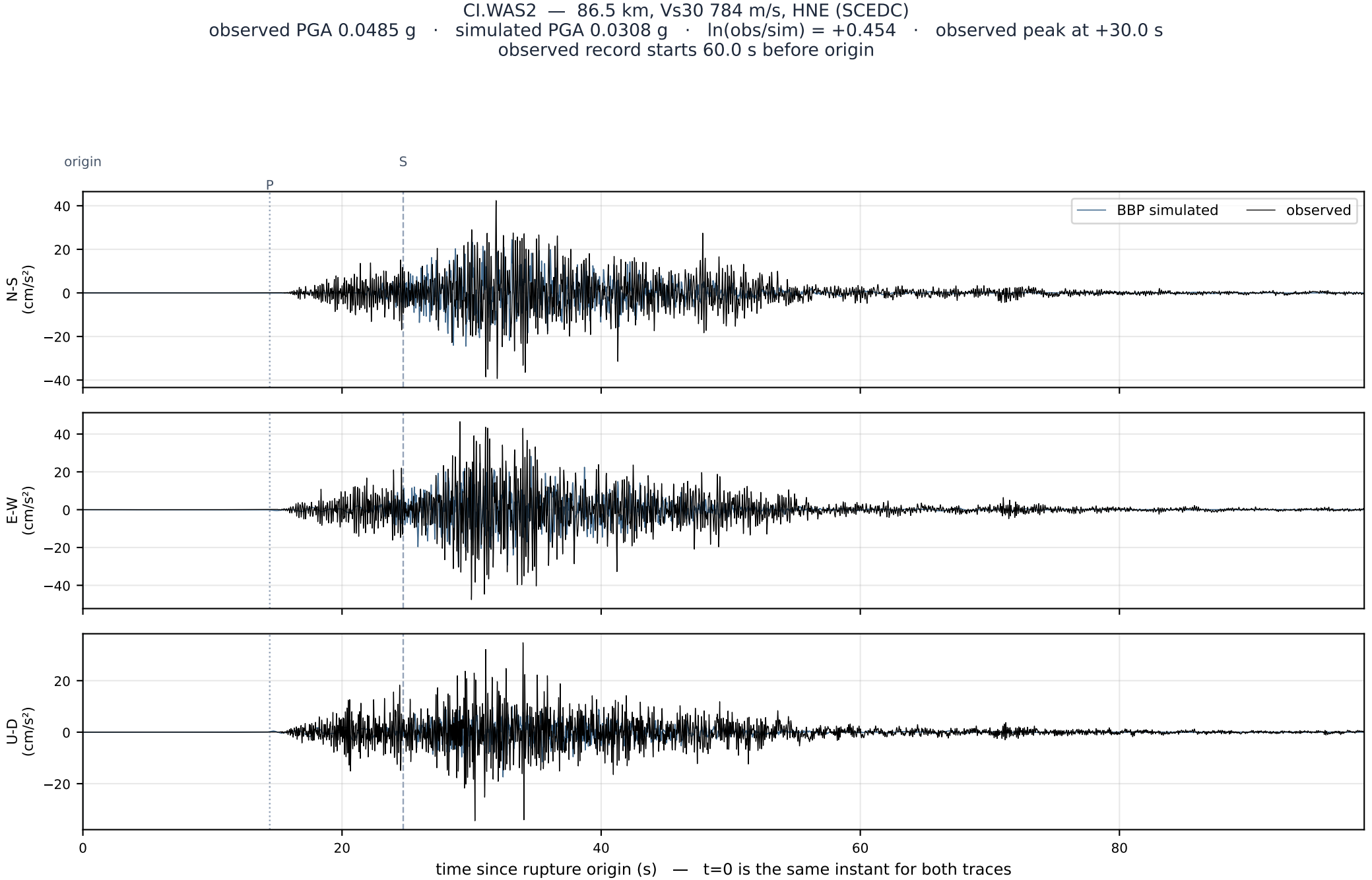

CI.CCA — 78.3 km, Vs30 342 m/s, HNE (SCEDC)
observed PGA 0.0419 g · simulated PGA 0.0639 g · ln(obs/sim) = -0.422 · observed peak at +30.4 s
observed record starts 60.0 s before origin
origin
S
P
BBP simulated
observed
N-S (cm/s²)
E-W (cm/s²)
U-D (cm/s²)
time since rupture origin (s) — t=0 is the same instant for both traces

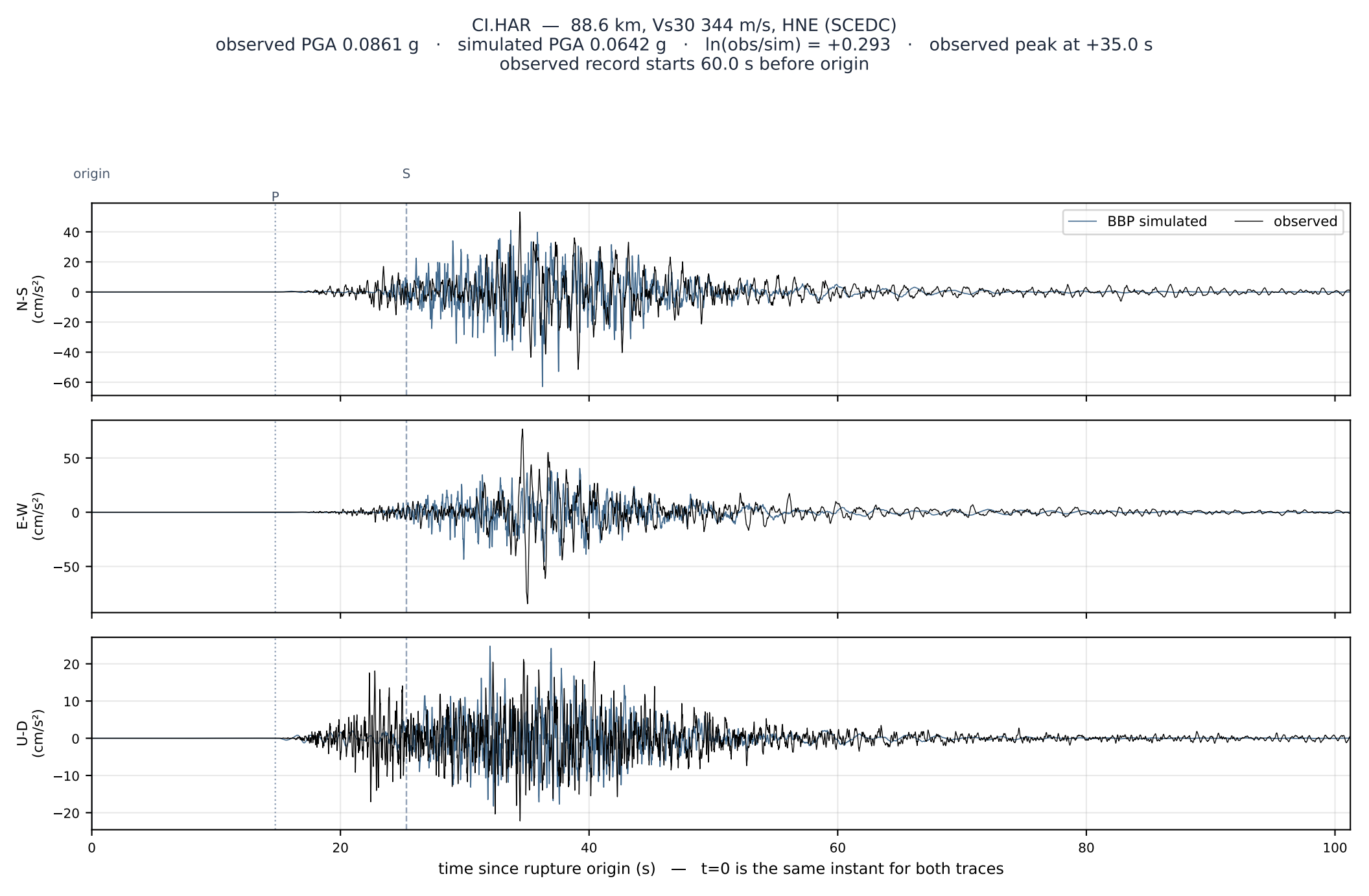

CI.ISA — 79.9 km, Vs30 438 m/s, HNE (SCEDC)
observed PGA 0.0299 g · simulated PGA 0.0581 g · ln(obs/sim) = -0.663 · observed peak at +30.2 s
observed record starts 60.0 s before origin
origin
S
P
BBP simulated
observed
N-S (cm/s²)
E-W (cm/s²)
U-D (cm/s²)
time since rupture origin (s) — t=0 is the same instant for both traces

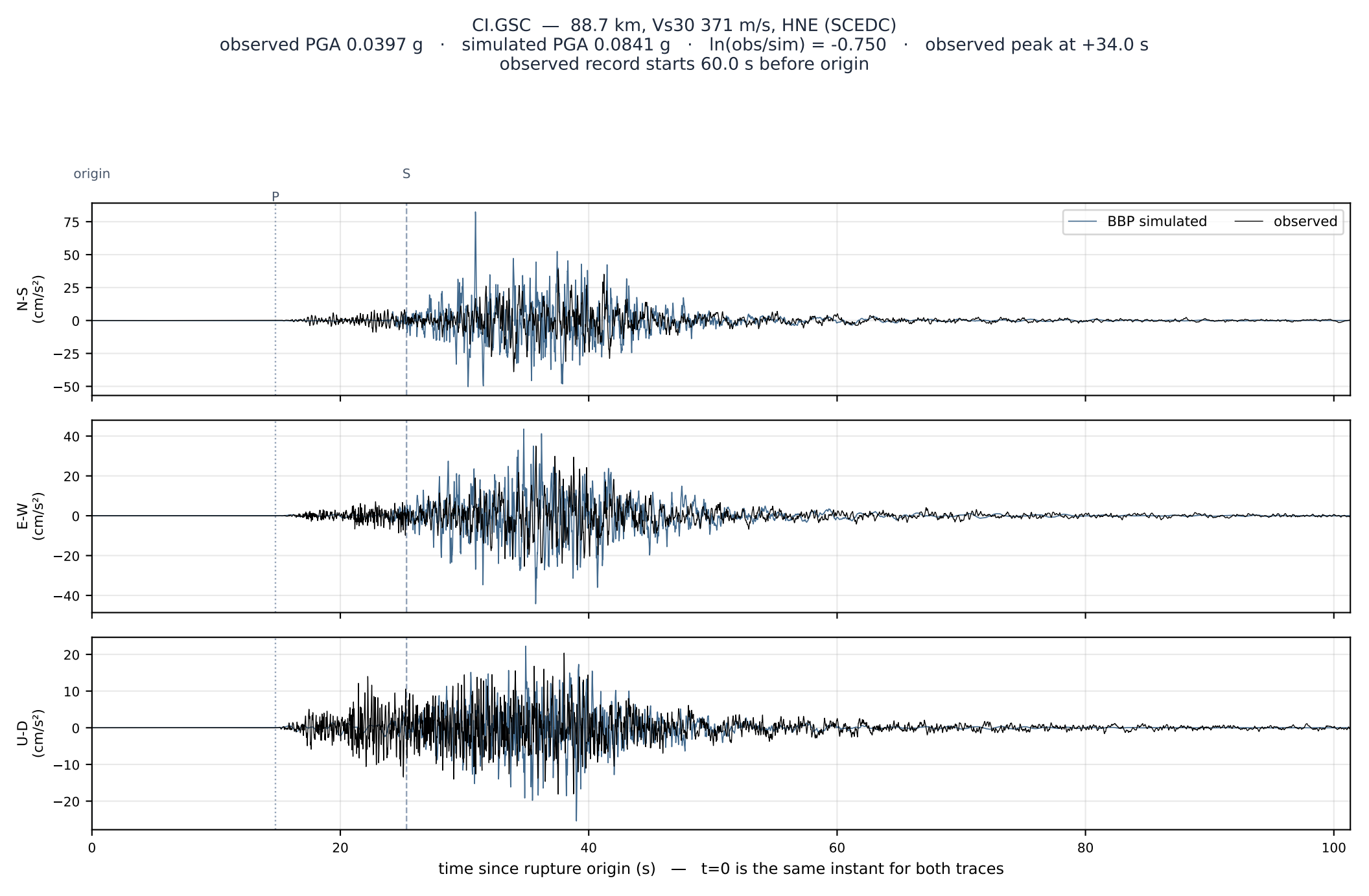

CI.Q0068 — 80.7 km, Vs30 343 m/s, HNE (EARTHSCOPE)
observed PGA 0.0495 g · simulated PGA 0.0649 g · ln(obs/sim) = -0.270 · observed peak at +43.5 s
observed record starts 60.0 s before origin
origin
S
P
BBP simulated
observed
N-S (cm/s²)
E-W (cm/s²)
U-D (cm/s²)
time since rupture origin (s) — t=0 is the same instant for both traces

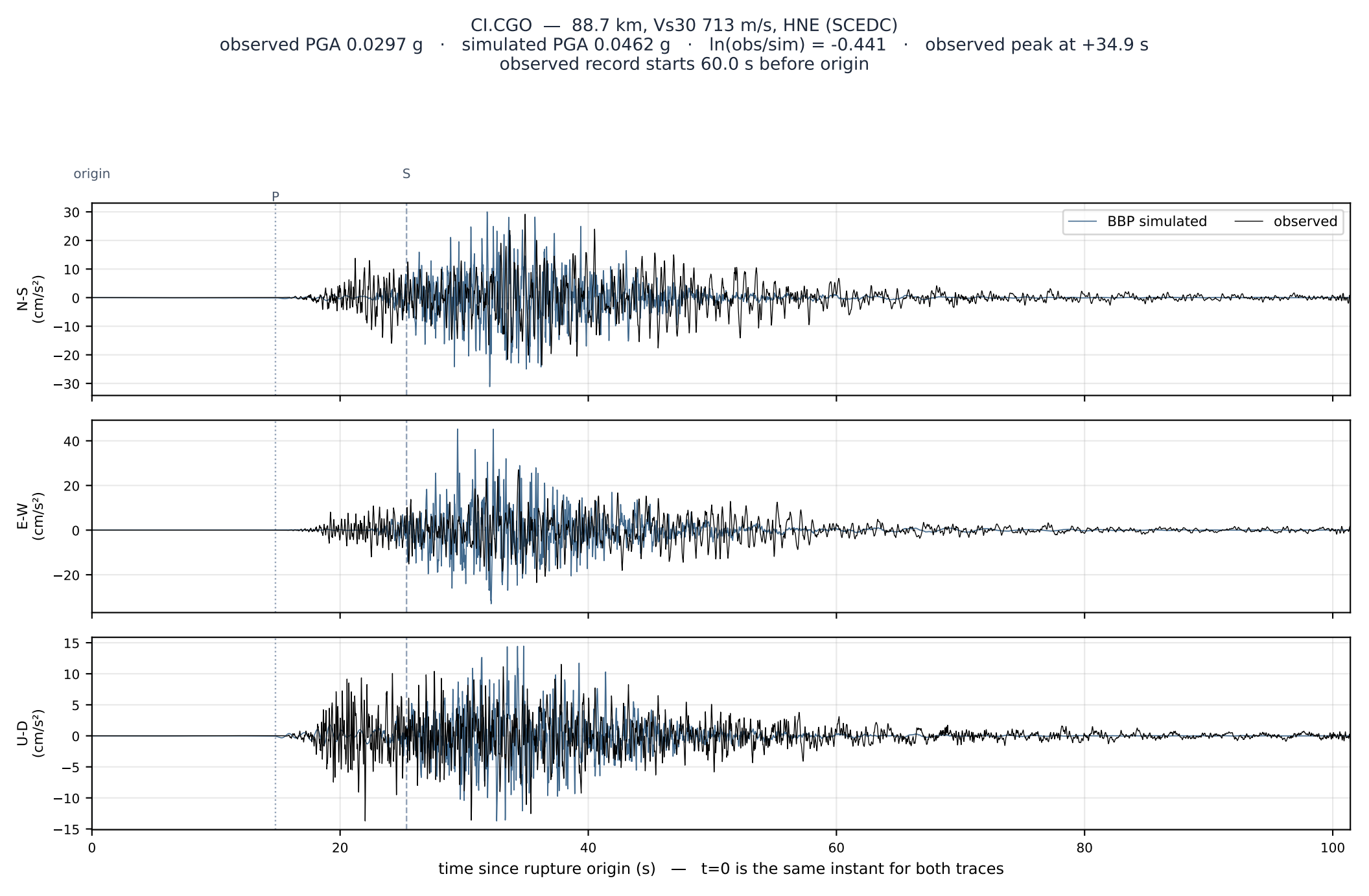

CI.APL — 81.0 km, Vs30 599 m/s, HNE (SCEDC)
observed PGA 0.0599 g · simulated PGA 0.0508 g · ln(obs/sim) = +0.164 · observed peak at +35.8 s
observed record starts 60.0 s before origin
origin
P
S
BBP simulated
observed
N-S (cm/s²)
E-W (cm/s²)
U-D (cm/s²)
time since rupture origin (s) — t=0 is the same instant for both traces

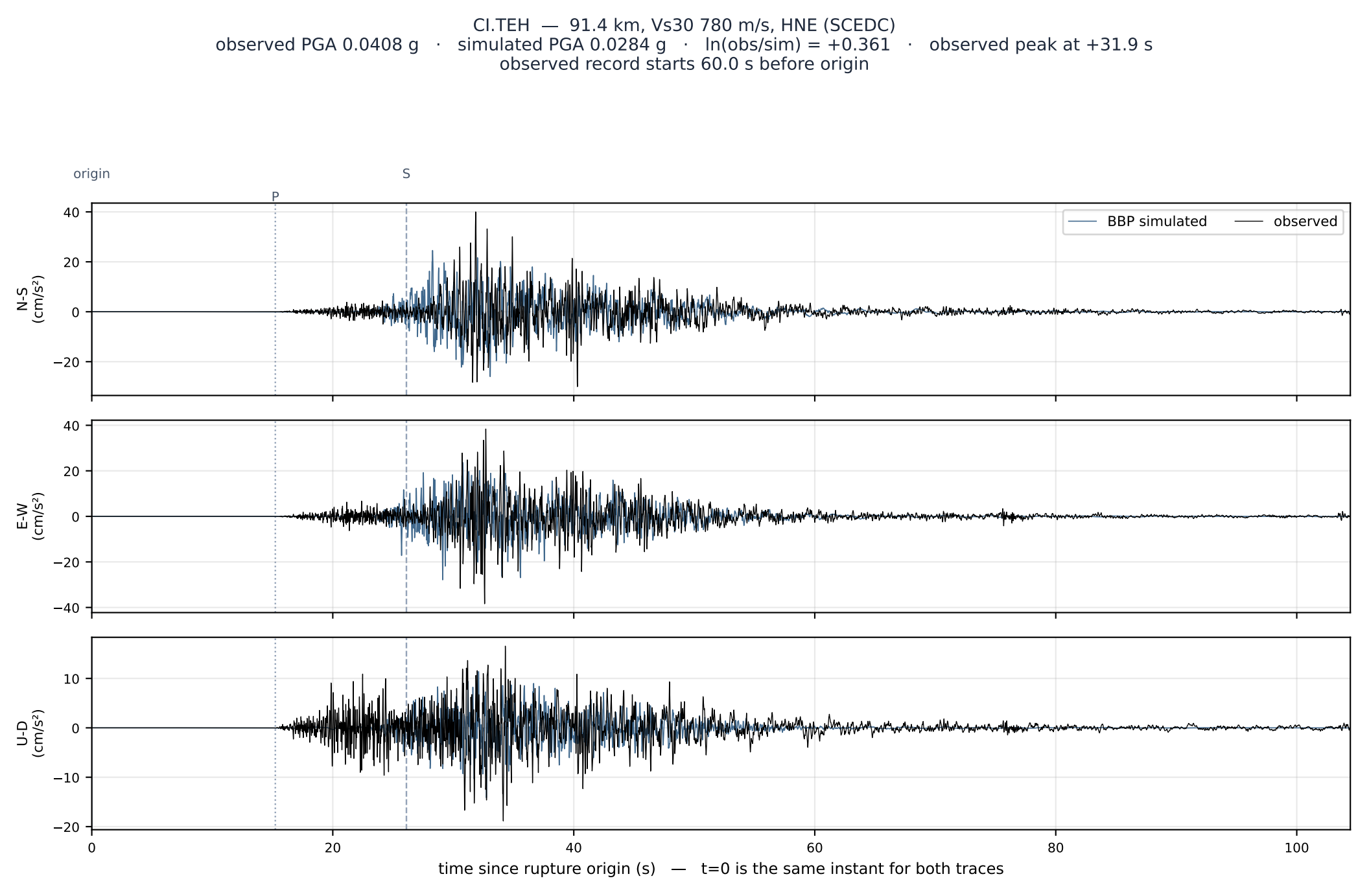

CI.CWC — 86.2 km, Vs30 663 m/s, HNE (SCEDC)
observed PGA 0.0165 g · simulated PGA 0.0443 g · ln(obs/sim) = -0.991 · observed peak at +30.5 s
observed record starts 60.0 s before origin
origin
P
S
BBP simulated
observed
N-S (cm/s²)
E-W (cm/s²)
U-D (cm/s²)
time since rupture origin (s) — t=0 is the same instant for both traces

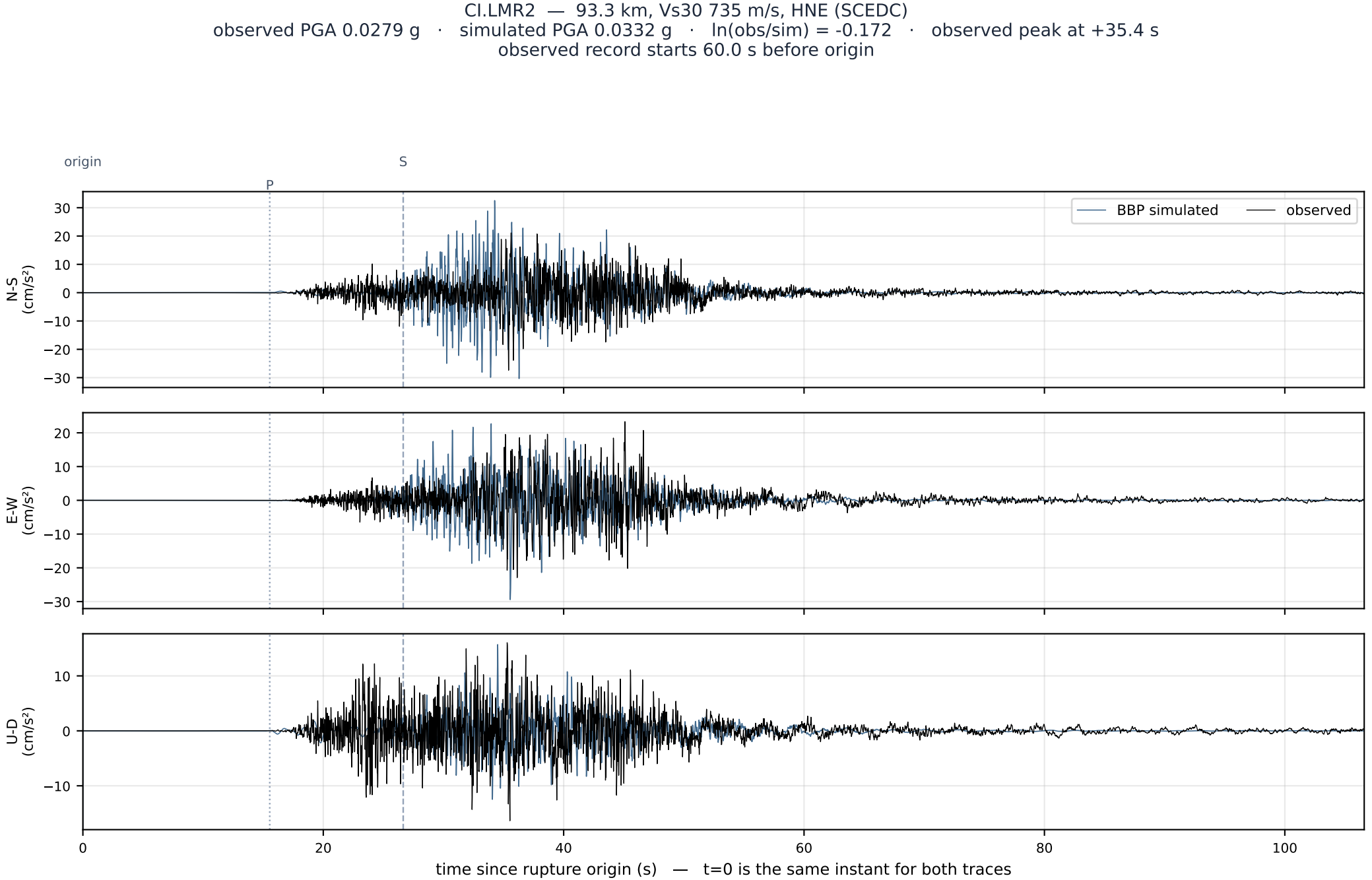

CI.WAS2 — 86.5 km, Vs30 784 m/s, HNE (SCEDC)
observed PGA 0.0485 g · simulated PGA 0.0308 g · ln(obs/sim) = +0.454 · observed peak at +30.0 s
observed record starts 60.0 s before origin
origin
S
P
BBP simulated
observed
N-S (cm/s²)
E-W (cm/s²)
U-D (cm/s²)
time since rupture origin (s) — t=0 is the same instant for both traces

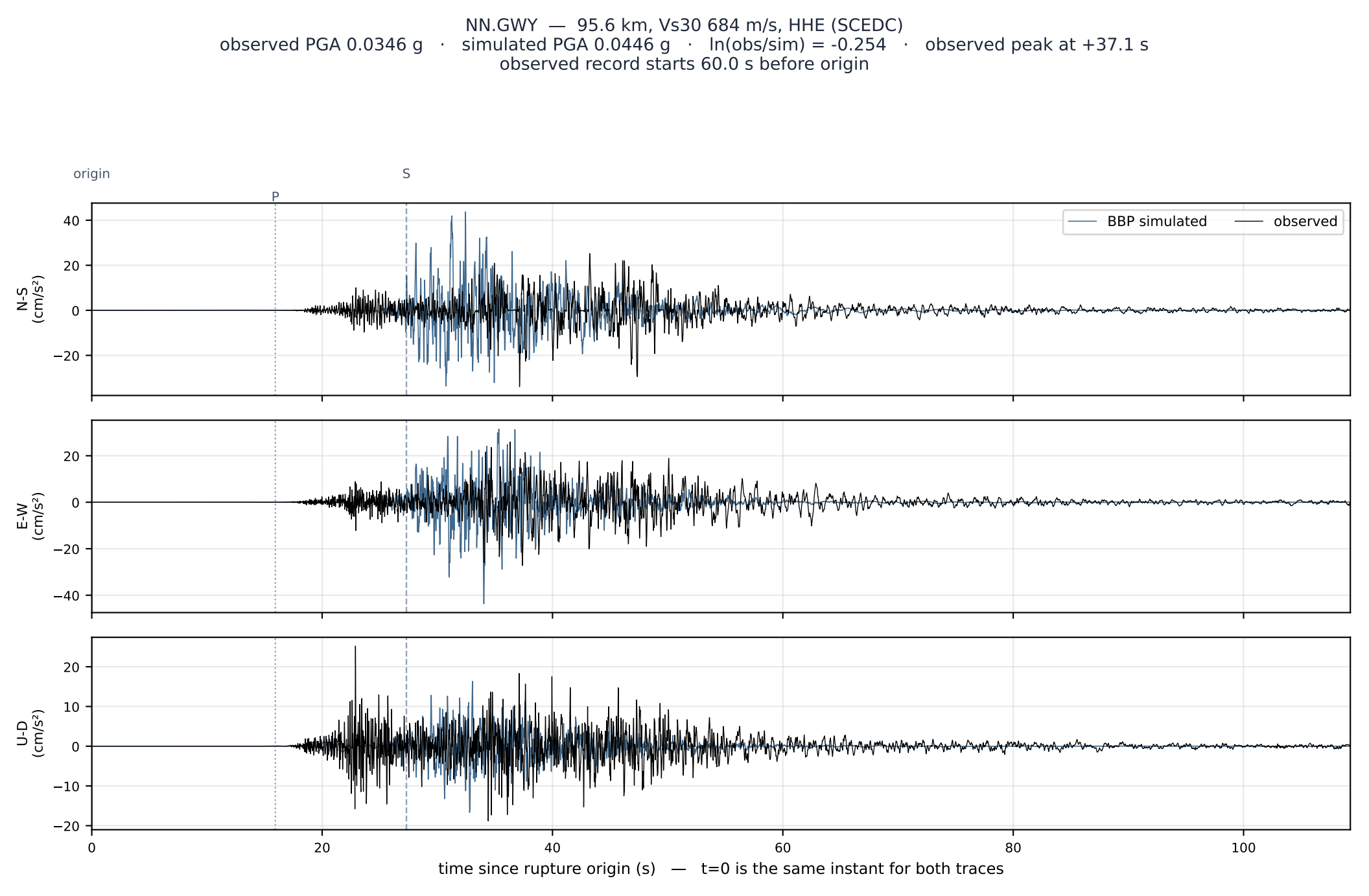

CI.HAR — 88.6 km, Vs30 344 m/s, HNE (SCEDC)
observed PGA 0.0861 g · simulated PGA 0.0642 g · ln(obs/sim) = +0.293 · observed peak at +35.0 s
observed record starts 60.0 s before origin
origin
P
S
BBP simulated
observed
N-S (cm/s²)
E-W (cm/s²)
U-D (cm/s²)
time since rupture origin (s) — t=0 is the same instant for both traces


CI.GSC — 88.7 km, Vs30 371 m/s, HNE (SCEDC)
observed PGA 0.0397 g · simulated PGA 0.0841 g · ln(obs/sim) = -0.750 · observed peak at +34.0 s
observed record starts 60.0 s before origin
origin
P
S
BBP simulated
observed
N-S (cm/s²)
E-W (cm/s²)
U-D (cm/s²)
time since rupture origin (s) — t=0 is the same instant for both traces


CI.CGO — 88.7 km, Vs30 713 m/s, HNE (SCEDC)
observed PGA 0.0297 g · simulated PGA 0.0462 g · ln(obs/sim) = -0.441 · observed peak at +34.9 s
observed record starts 60.0 s before origin
origin
S
P
BBP simulated
observed
N-S (cm/s²)
E-W (cm/s²)
U-D (cm/s²)
time since rupture origin (s) — t=0 is the same instant for both traces


CI.TEH — 91.4 km, Vs30 780 m/s, HNE (SCEDC)
observed PGA 0.0408 g · simulated PGA 0.0284 g · ln(obs/sim) = +0.361 · observed peak at +31.9 s
observed record starts 60.0 s before origin
origin
P
S
BBP simulated
observed
N-S (cm/s²)
E-W (cm/s²)
U-D (cm/s²)
time since rupture origin (s) — t=0 is the same instant for both traces


CI.LMR2 — 93.3 km, Vs30 735 m/s, HNE (SCEDC)
observed PGA 0.0279 g · simulated PGA 0.0332 g · ln(obs/sim) = -0.172 · observed peak at +35.4 s
observed record starts 60.0 s before origin
origin
S
P
BBP simulated
observed
N-S (cm/s²)
E-W (cm/s²)
U-D (cm/s²)
time since rupture origin (s) — t=0 is the same instant for both traces


NN.GWY — 95.6 km, Vs30 684 m/s, HHE (SCEDC)
observed PGA 0.0346 g · simulated PGA 0.0446 g · ln(obs/sim) = -0.254 · observed peak at +37.1 s
observed record starts 60.0 s before origin
origin
P
S
BBP simulated
observed
N-S (cm/s²)
E-W (cm/s²)
U-D (cm/s²)
time since rupture origin (s) — t=0 is the same instant for both traces

Animation input — displacement

the time series the Blender scenes render, per station

WHAT THESE PAGES SHOW

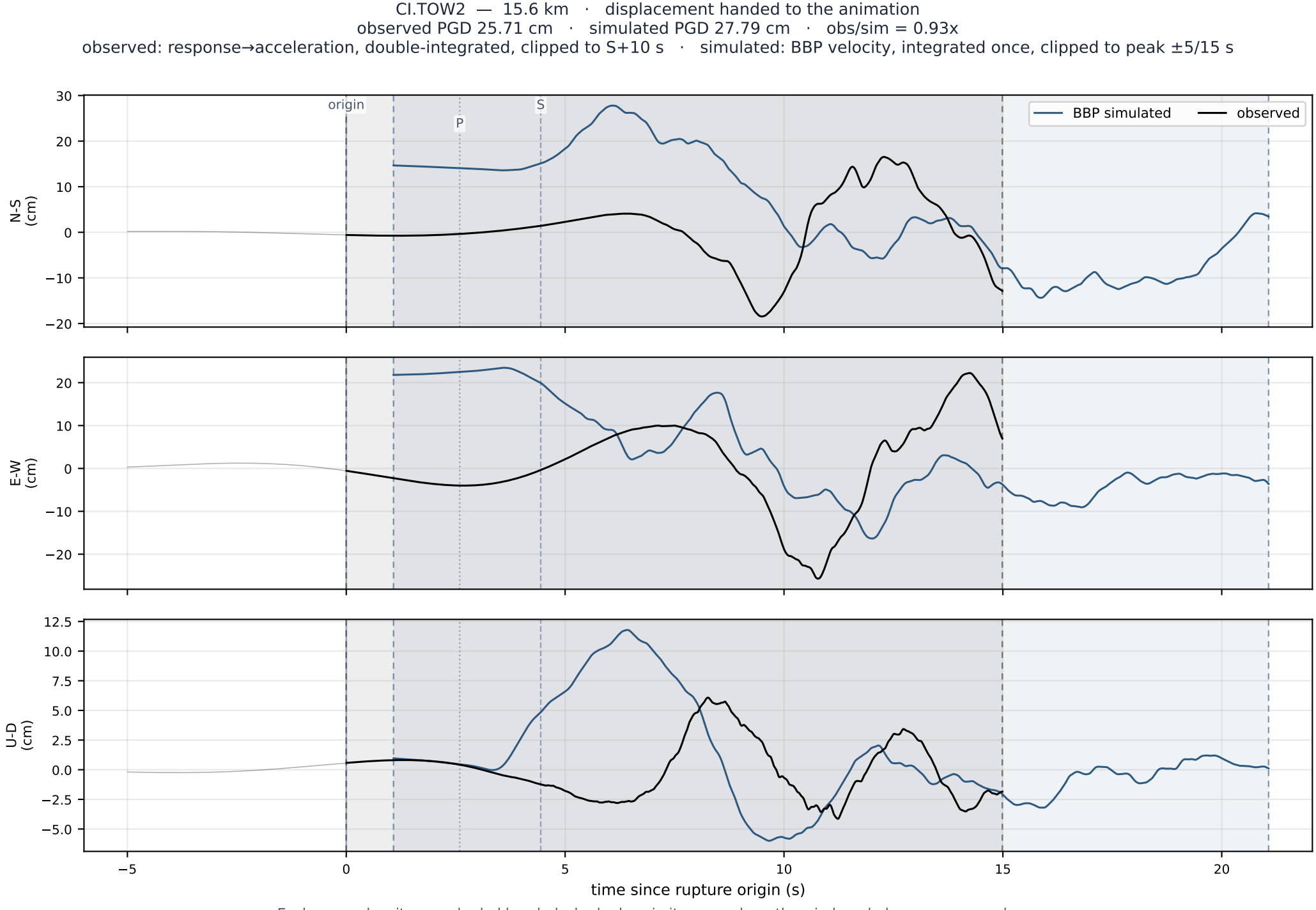
	The displacement time series handed to the Blender scene for each station: the array in the .npy file passed as --displacement-file. Everything earlier in this report concerns acceleration and response spectra, which is what goodness of fit is defined on. This is the quantity that becomes movement on screen.
observed	worker/observed_seismogram.py — response removed to acceleration, double-integrated with a detrend after each step, bandpassed, clipped from origin −5 s to the S-wave arrival + 10 s.
simulated	worker/bbp_seismogram.py — BBP's velocity output integrated once with a demean and a linear detrend, clipped to the peak −5 s / +15 s.
then, both	animations/ground_motion.clip_for_scene — a further clip to [first motion − 2 s, peak + 15 s] with the DC offset removed. That is the shaded band on each page, and it is what the table actually follows.

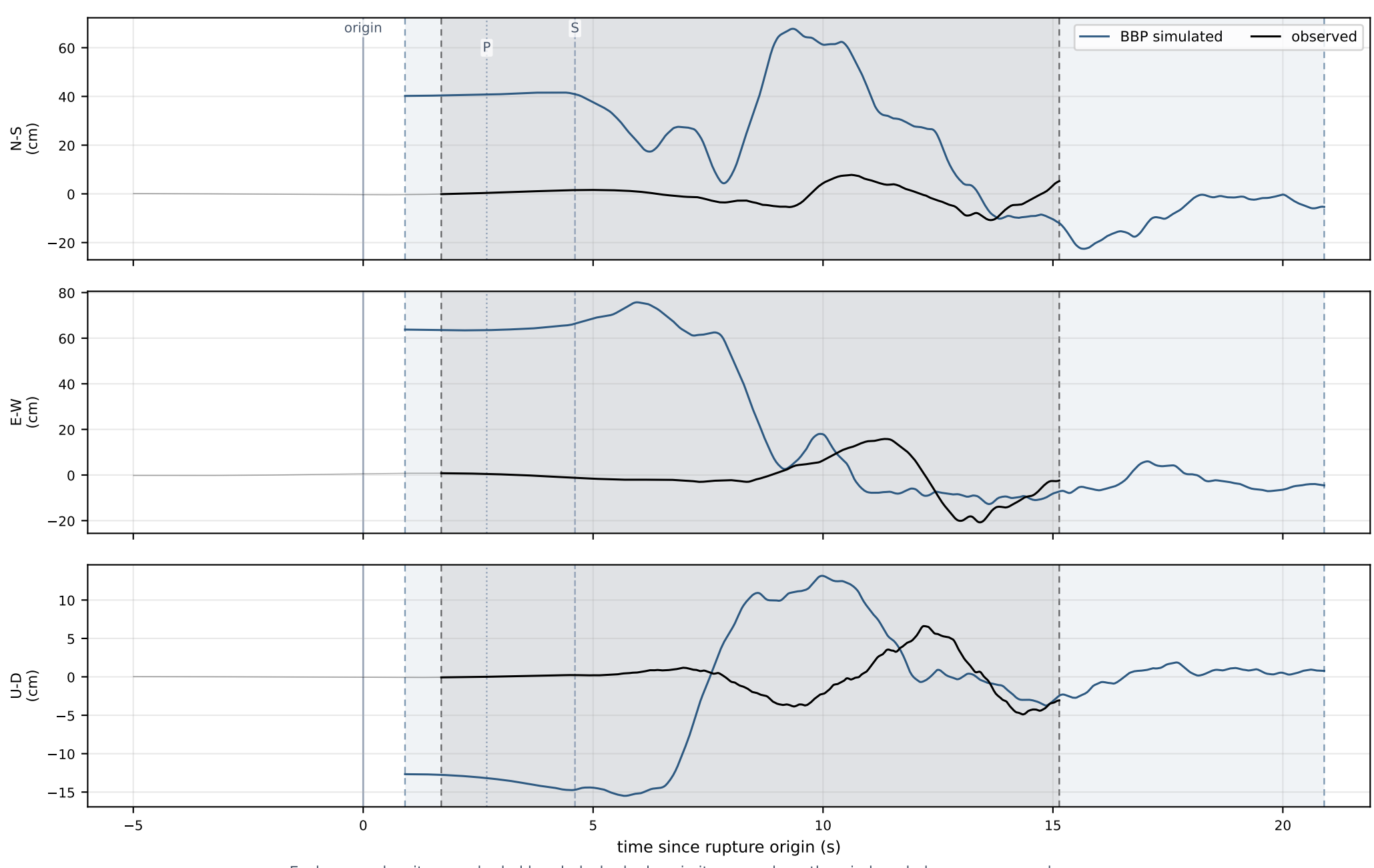
HOW TO READ A DISAGREEMENT

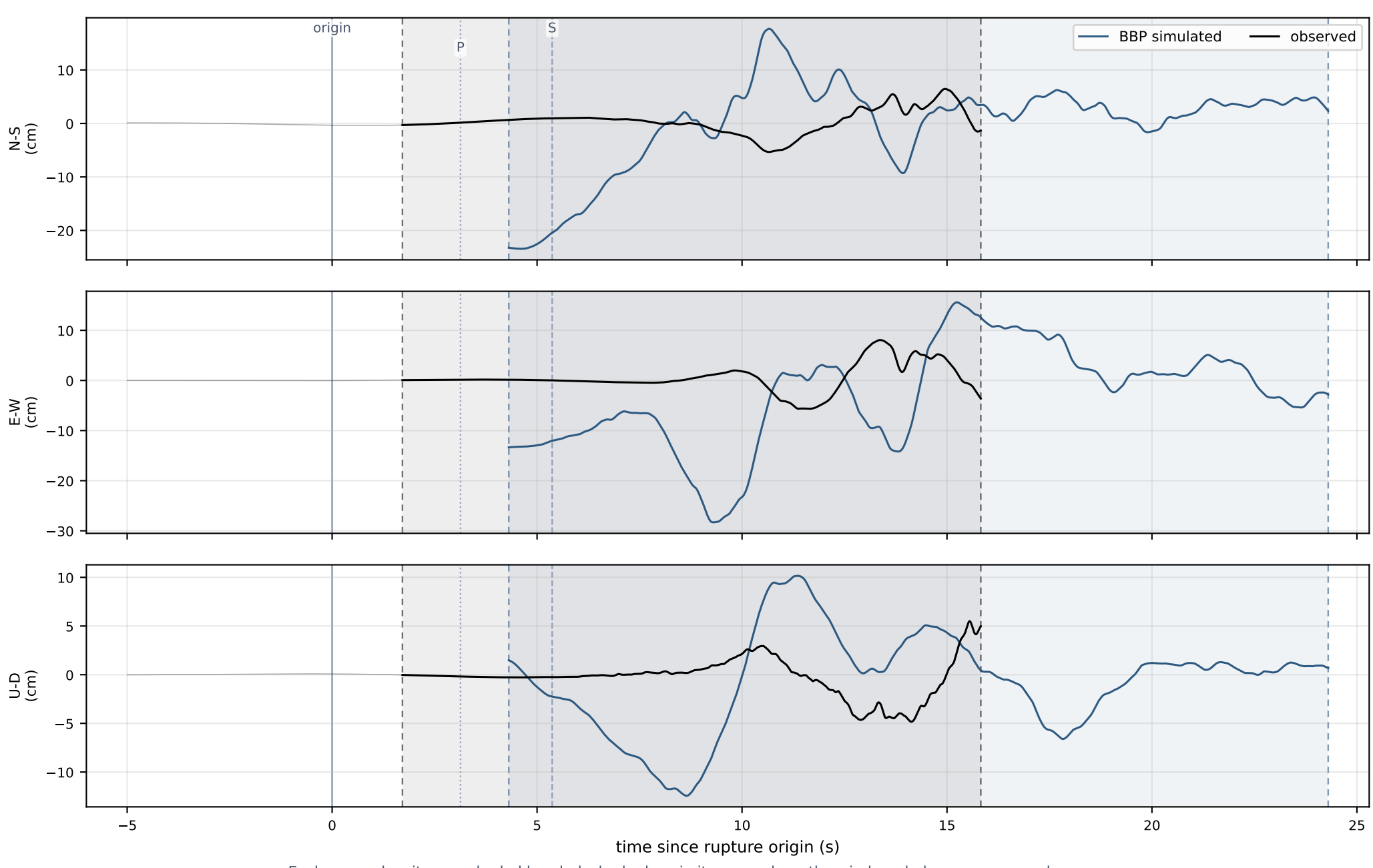
not a residual	The two traces come from different code over different windows, so a difference here is part processing and part physics and this page cannot separate them. The acceleration overlays and the spectra are where the model is judged.
what it does show	Whether the animation was driven by a physically sensible record — right arrival, right duration, right order of magnitude — and whether the simulated and recorded motion would look like the same earthquake.
amplitude is the point	Peak displacement sets how far the table travels. A factor of two in PGD is a visibly different animation, where the same factor in PGA is not.

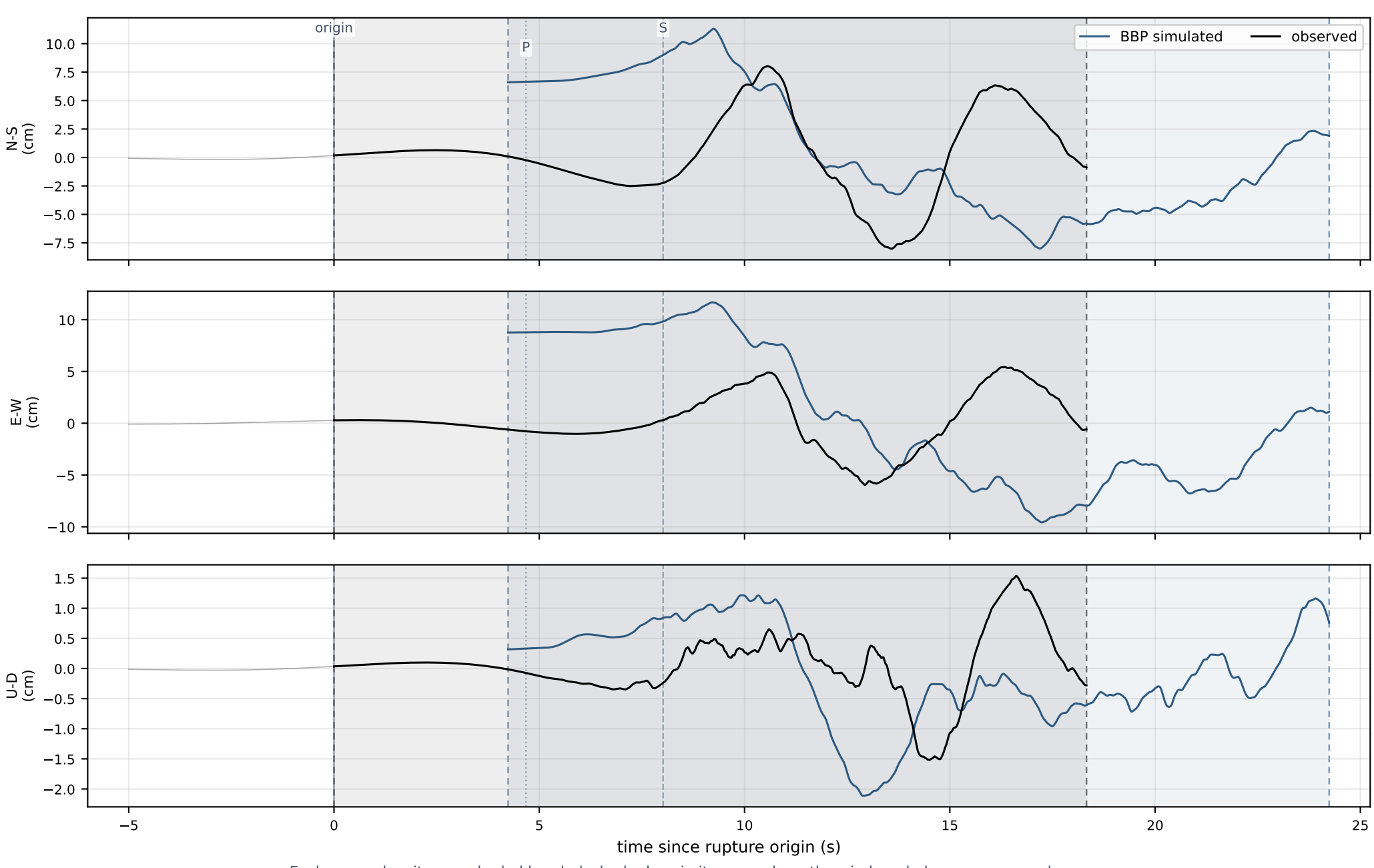
COVERAGE

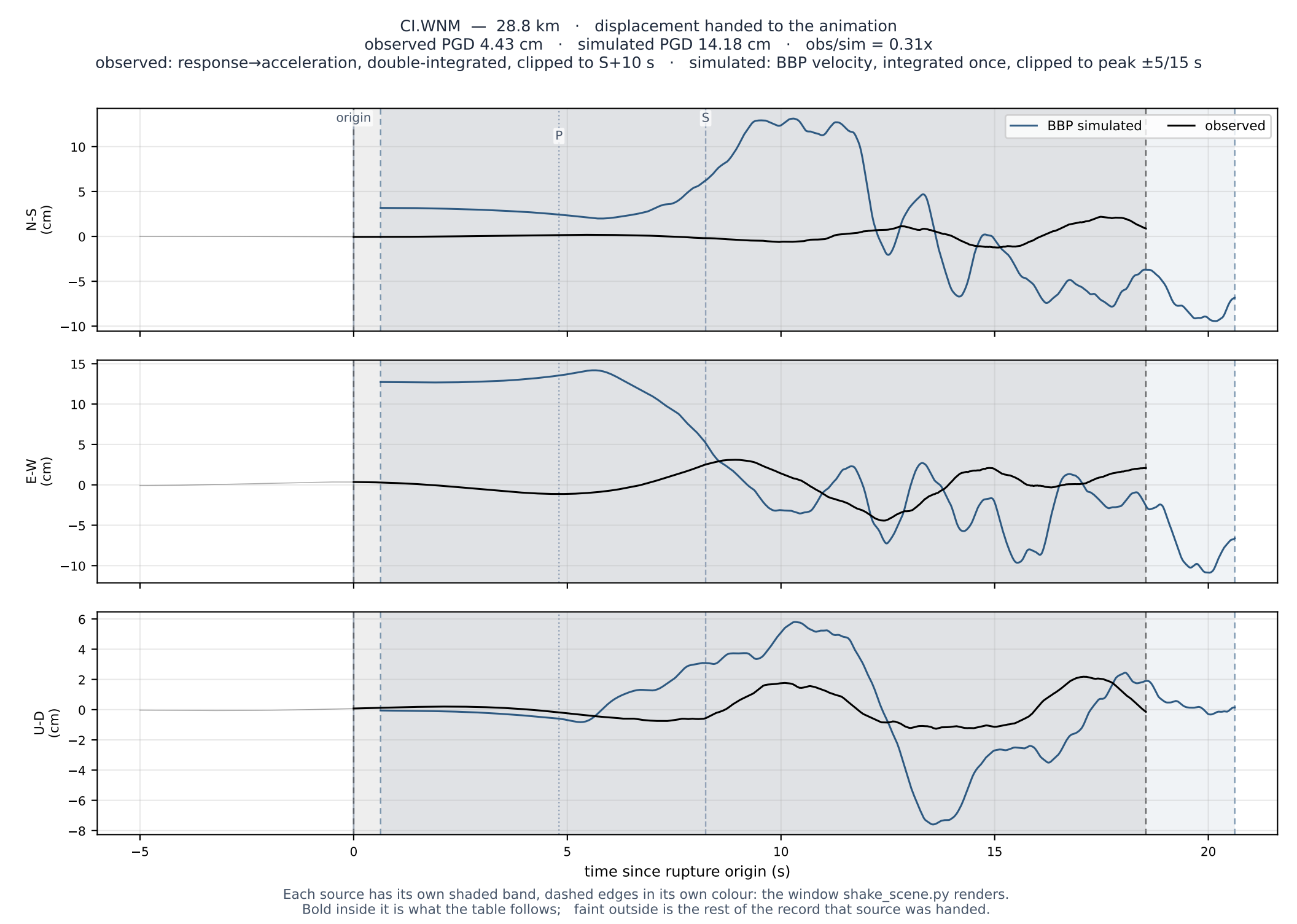
both records	30 station(s)
observed only	0 station(s)
simulated only	0 station(s)
PGD ratio	geometric mean observed/simulated = 0.36x
simulated source	BBP simulated

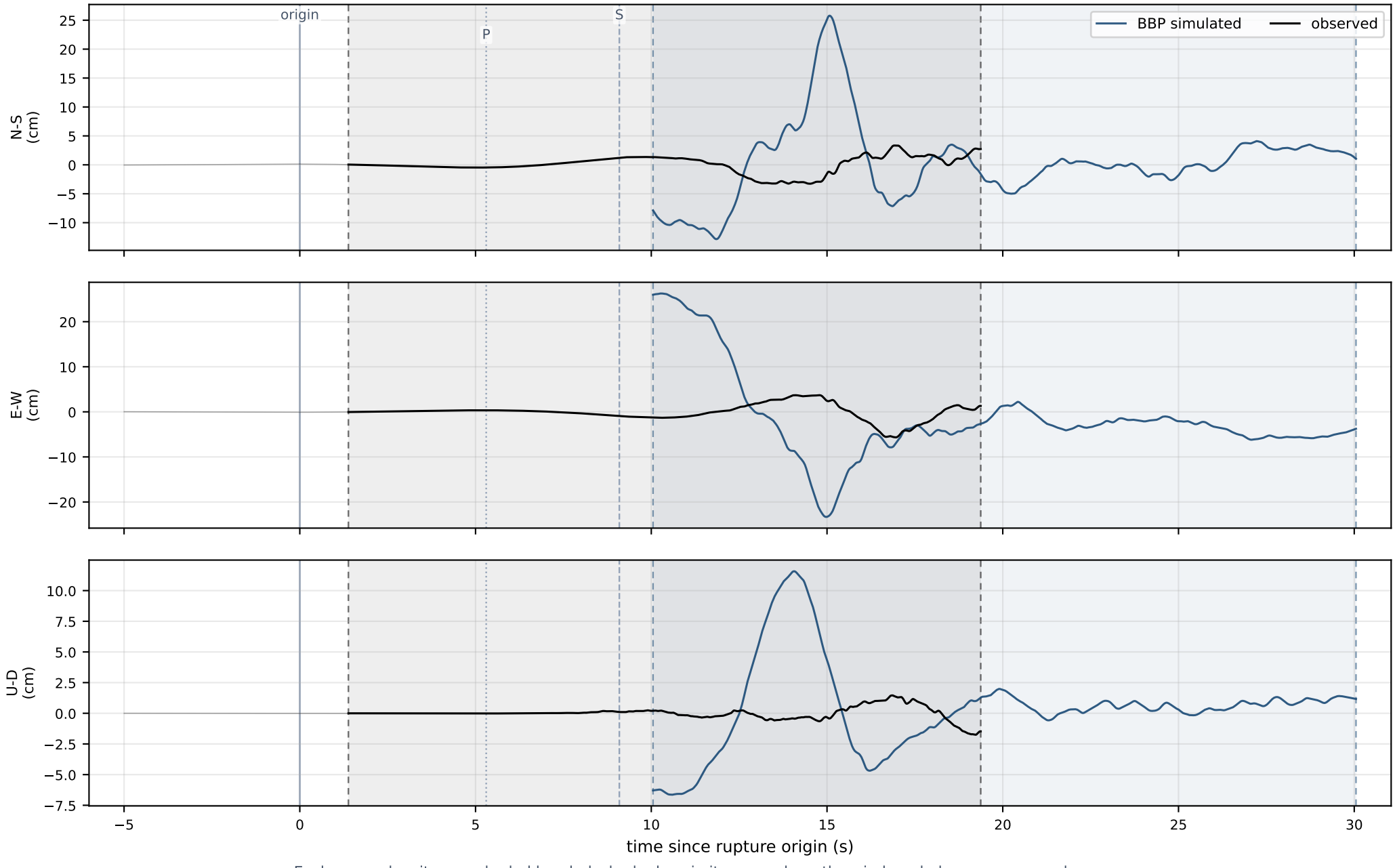

CI.TOW2 — 15.6 km · displacement handed to the animation
observed PGD 25.71 cm · simulated PGD 27.79 cm · obs/sim = 0.93x
observed: response→acceleration, double-integrated, clipped to S+10 s · simulated: BBP velocity, integrated once, clipped to peak ±5/15 s
origin
P
S
BBP simulated
observed
N-S (cm)
E-W (cm)
U-D (cm)
time since rupture origin (s)
Each source has its own shaded band, dashed edges in its own colour: the window shake_scene.py renders.
Bold inside it is what the table follows; faint outside is the rest of the record that source was handed.

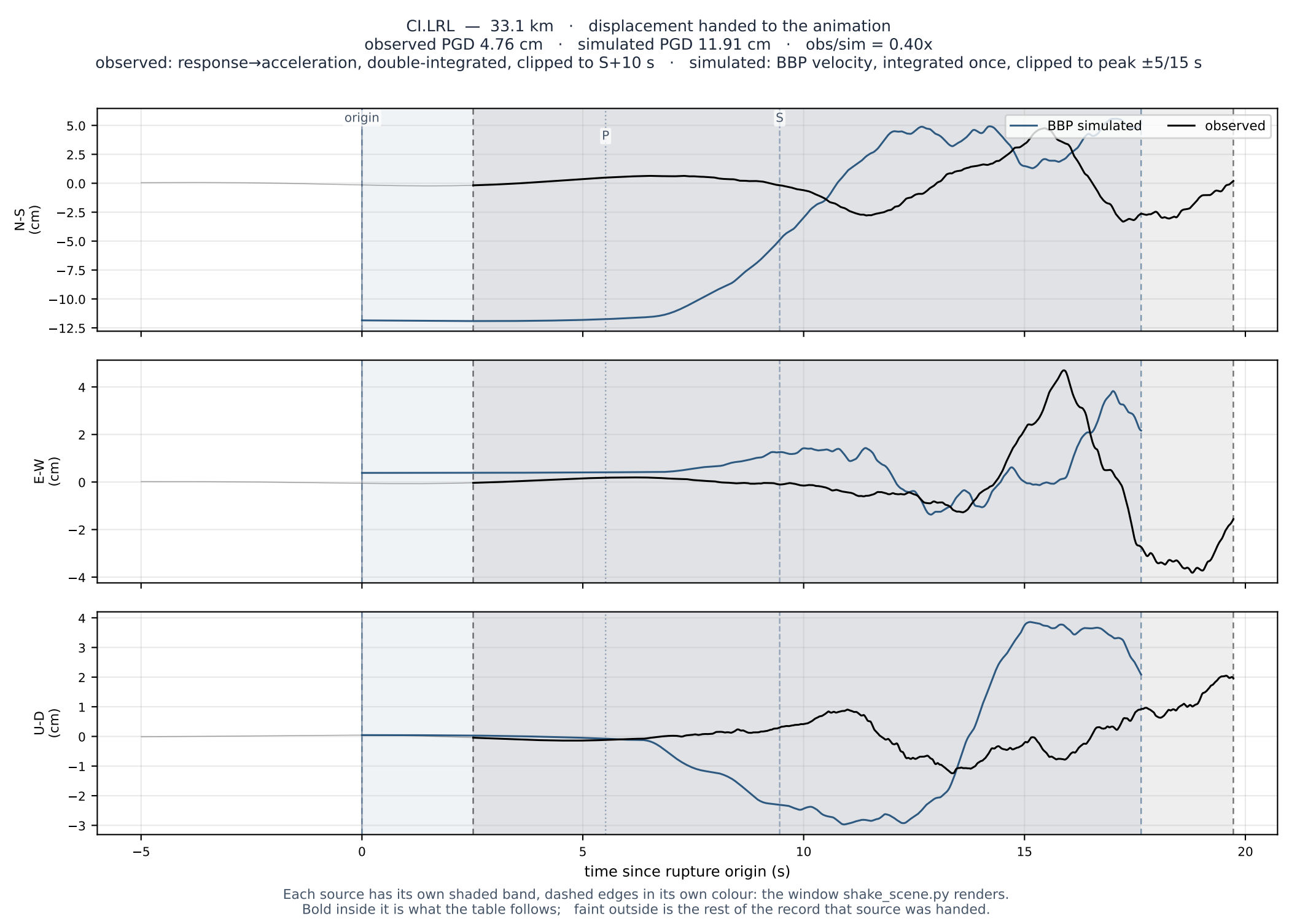

CI.SRT — 16.1 km · displacement handed to the animation
observed PGD 20.75 cm · simulated PGD 75.74 cm · obs/sim = 0.27x
observed: response→acceleration, double-integrated, clipped to S+10 s · simulated: BBP velocity, integrated once, clipped to peak ±5/15 s
origin
P
S
BBP simulated
observed
N-S (cm)
E-W (cm)
U-D (cm)
time since rupture origin (s)
Each source has its own shaded band, dashed edges in its own colour: the window shake_scene.py renders.
Bold inside it is what the table follows; faint outside is the rest of the record that source was handed.

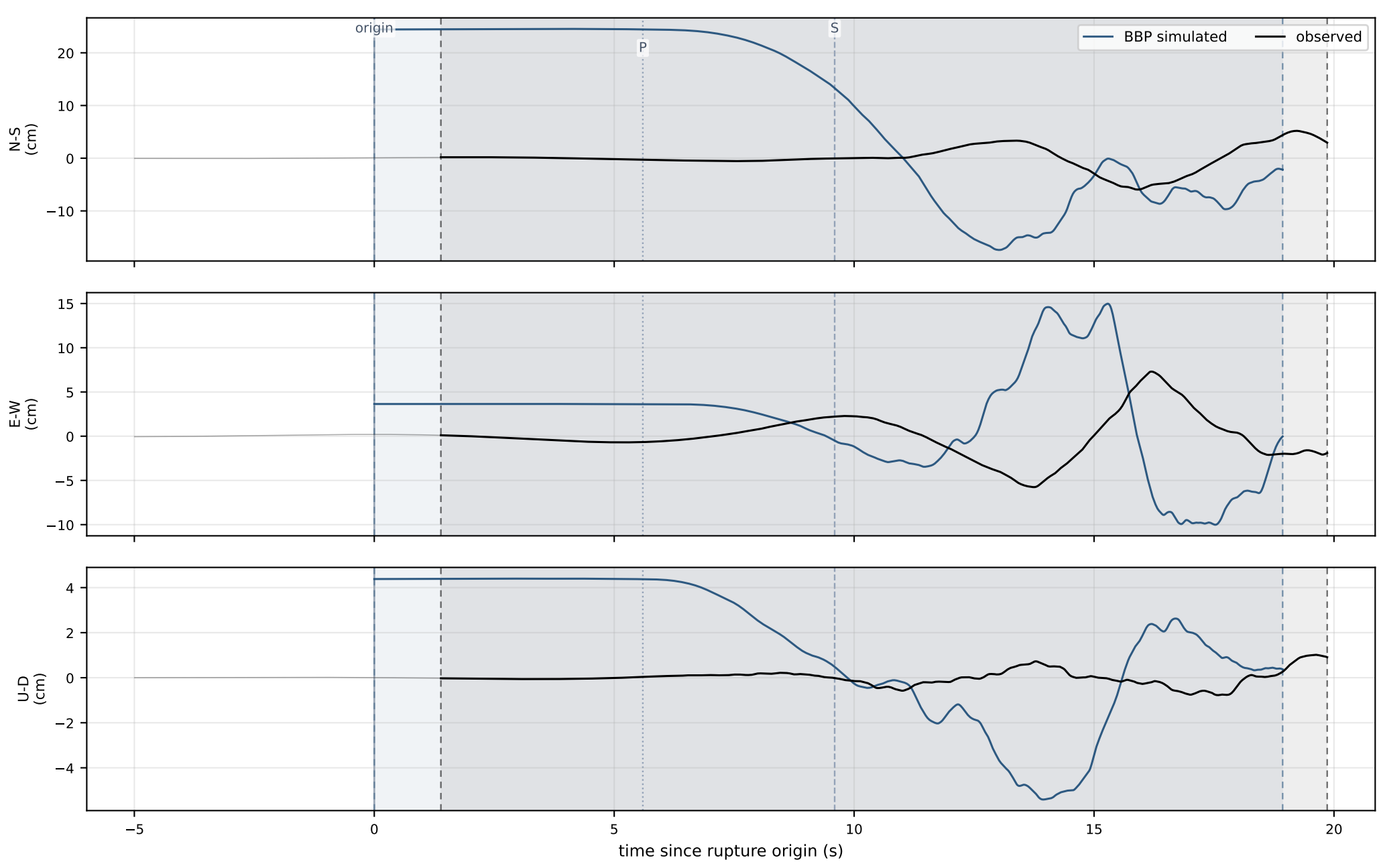

CI.Q0072 — 18.8 km · displacement handed to the animation
observed PGD 8.07 cm · simulated PGD 28.31 cm · obs/sim = 0.28x
observed: response→acceleration, double-integrated, clipped to S+10 s · simulated: BBP velocity, integrated once, clipped to peak ±5/15 s
origin
P
S
BBP simulated
observed
N-S (cm)
E-W (cm)
U-D (cm)
time since rupture origin (s)
Each source has its own shaded band, dashed edges in its own colour: the window shake_scene.py renders.
Bold inside it is what the table follows; faint outside is the rest of the record that source was handed.

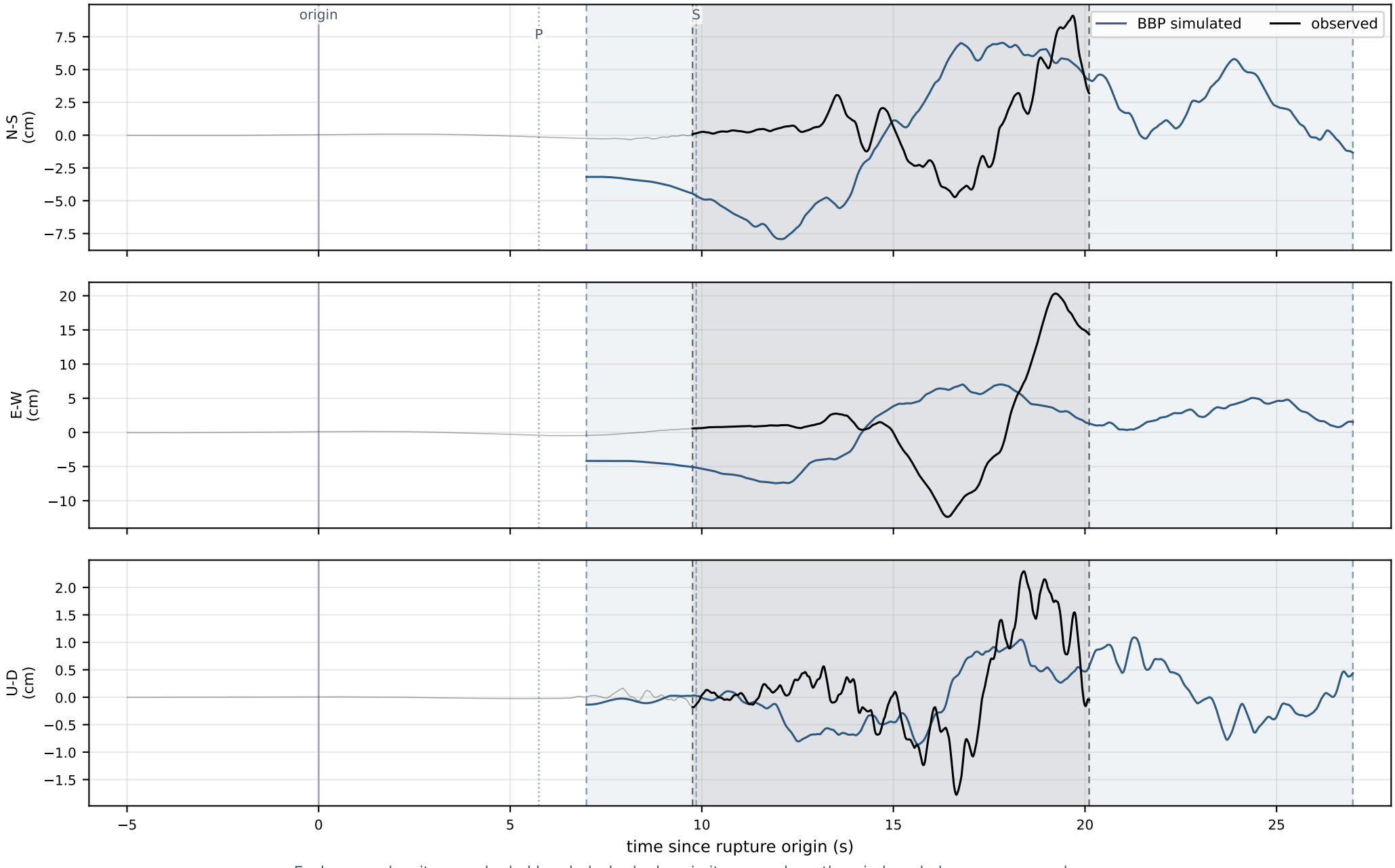

CI.WVP2 — 28.1 km · displacement handed to the animation
observed PGD 8.03 cm · simulated PGD 11.68 cm · obs/sim = 0.69x
observed: response→acceleration, double-integrated, clipped to S+10 s · simulated: BBP velocity, integrated once, clipped to peak ±5/15 s
origin
P
S
BBP simulated
observed
N-S (cm)
E-W (cm)
U-D (cm)
time since rupture origin (s)
Each source has its own shaded band, dashed edges in its own colour: the window shake_scene.py renders.
Bold inside it is what the table follows; faint outside is the rest of the record that source was handed.


CI.WNM — 28.8 km · displacement handed to the animation
observed PGD 4.43 cm · simulated PGD 14.18 cm · obs/sim = 0.31x
observed: response→acceleration, double-integrated, clipped to S+10 s · simulated: BBP velocity, integrated once, clipped to peak ±5/15 s
origin
P
S
BBP simulated
observed
N-S (cm)
E-W (cm)
U-D (cm)
time since rupture origin (s)
Each source has its own shaded band, dashed edges in its own colour: the window shake_scene.py renders.
Bold inside it is what the table follows; faint outside is the rest of the record that source was handed.

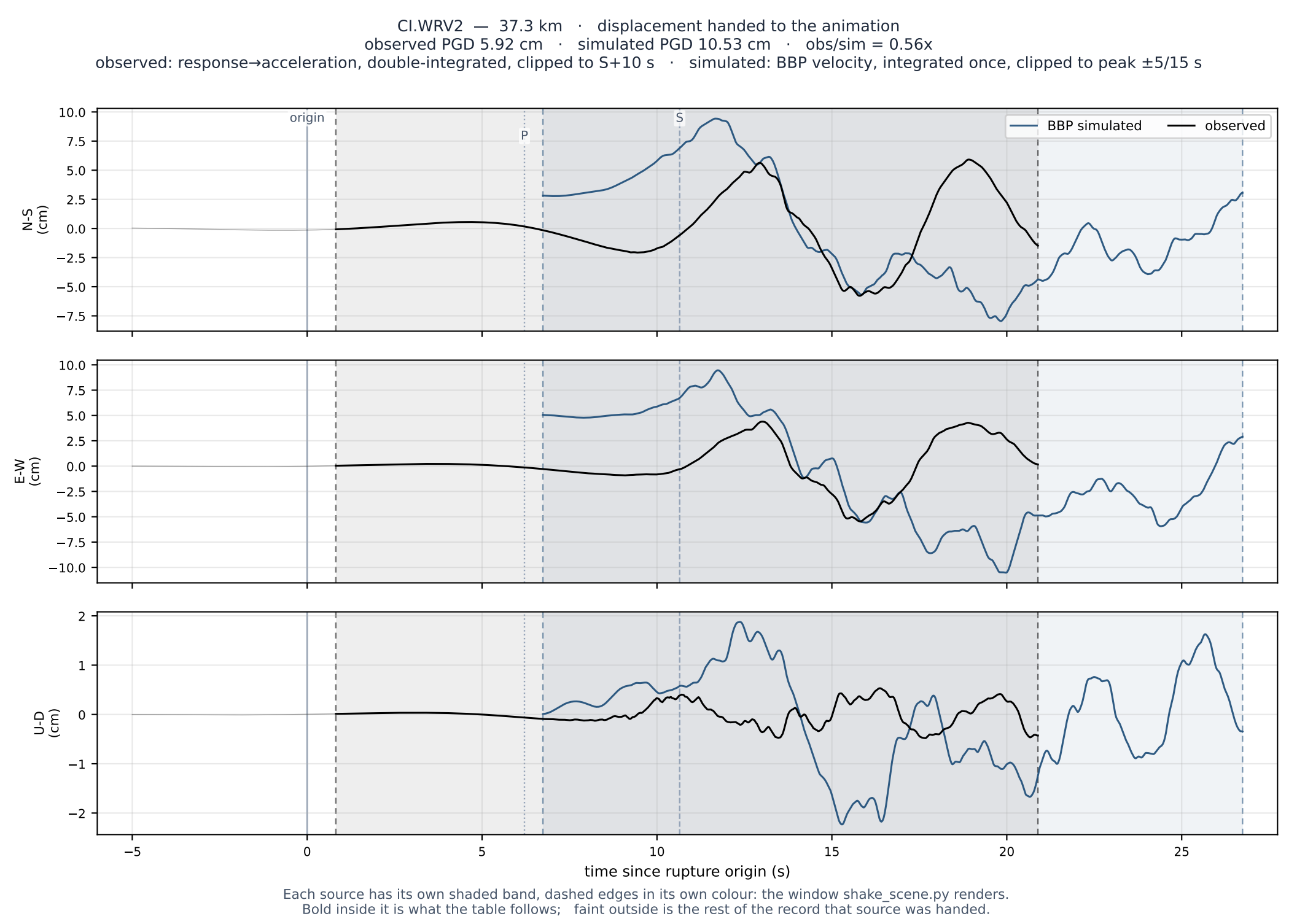

CI.WBM — 31.8 km · displacement handed to the animation
observed PGD 5.67 cm · simulated PGD 26.26 cm · obs/sim = 0.22x
observed: response→acceleration, double-integrated, clipped to S+10 s · simulated: BBP velocity, integrated once, clipped to peak ±5/15 s
origin
P
S
BBP simulated
observed
N-S (cm)
E-W (cm)
U-D (cm)
time since rupture origin (s)
Each source has its own shaded band, dashed edges in its own colour: the window shake_scene.py renders.
Bold inside it is what the table follows; faint outside is the rest of the record that source was handed.

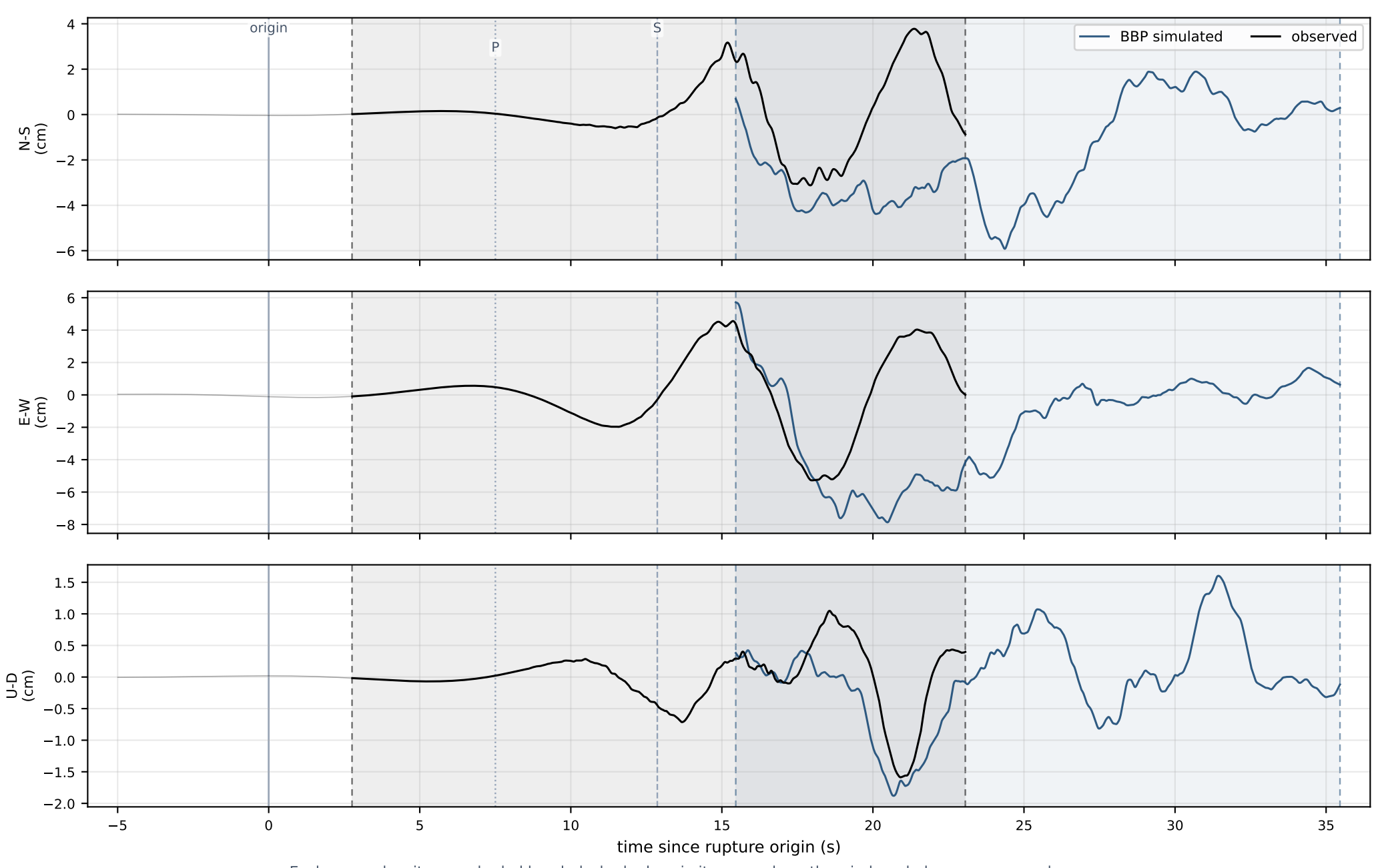

CI.LRL — 33.1 km · displacement handed to the animation
observed PGD 4.76 cm · simulated PGD 11.91 cm · obs/sim = 0.40x
observed: response→acceleration, double-integrated, clipped to S+10 s · simulated: BBP velocity, integrated once, clipped to peak ±5/15 s
origin
P
S
BBP simulated
observed
N-S (cm)
E-W (cm)
U-D (cm)
time since rupture origin (s)
Each source has its own shaded band, dashed edges in its own colour: the window shake_scene.py renders.
Bold inside it is what the table follows; faint outside is the rest of the record that source was handed.

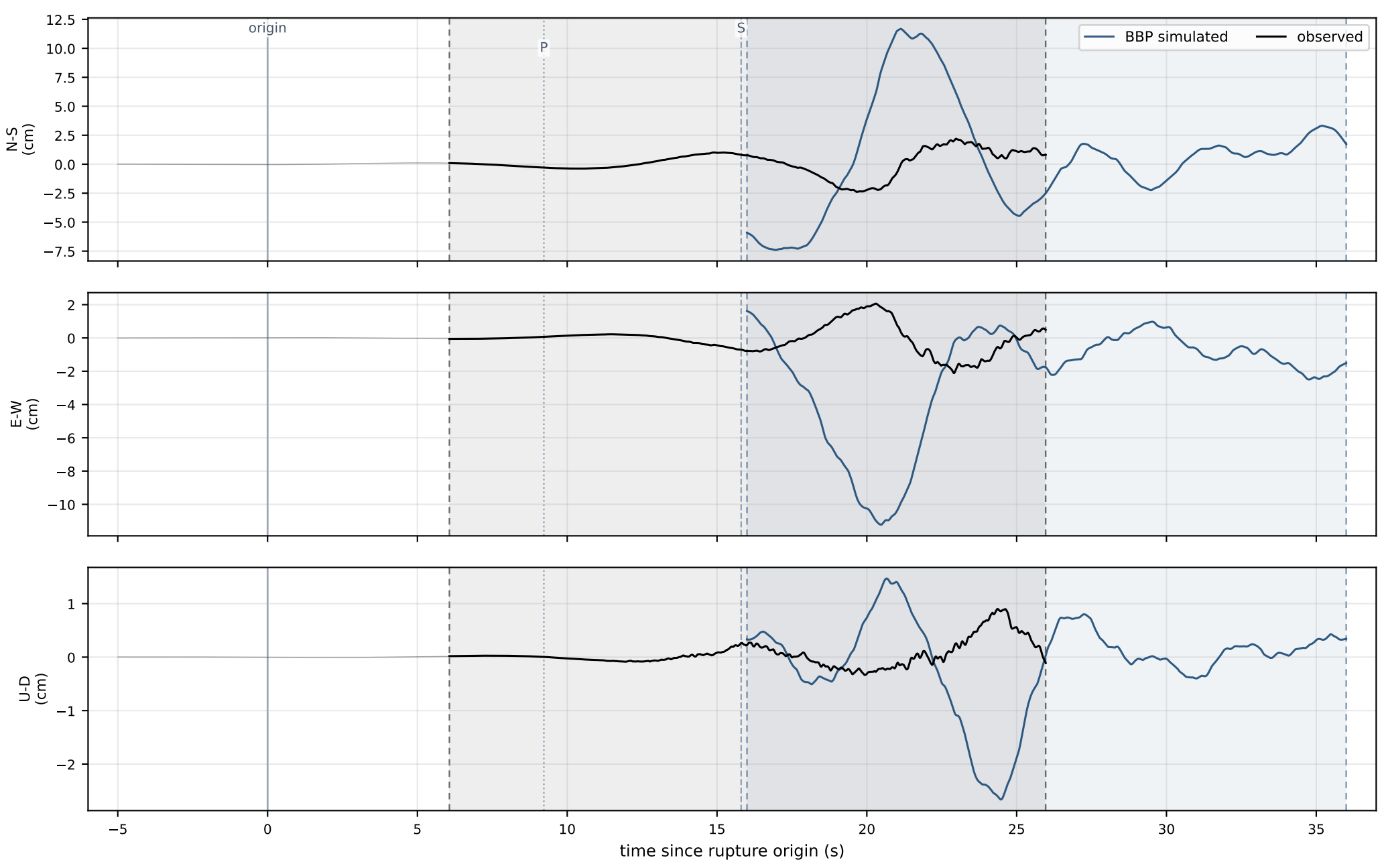

CI.MPM — 33.6 km · displacement handed to the animation
observed PGD 7.31 cm · simulated PGD 24.53 cm · obs/sim = 0.30x
observed: response→acceleration, double-integrated, clipped to S+10 s · simulated: BBP velocity, integrated once, clipped to peak ±5/15 s
origin
P
S
BBP simulated
observed
N-S (cm)
E-W (cm)
U-D (cm)
time since rupture origin (s)
Each source has its own shaded band, dashed edges in its own colour: the window shake_scene.py renders.
Bold inside it is what the table follows; faint outside is the rest of the record that source was handed.

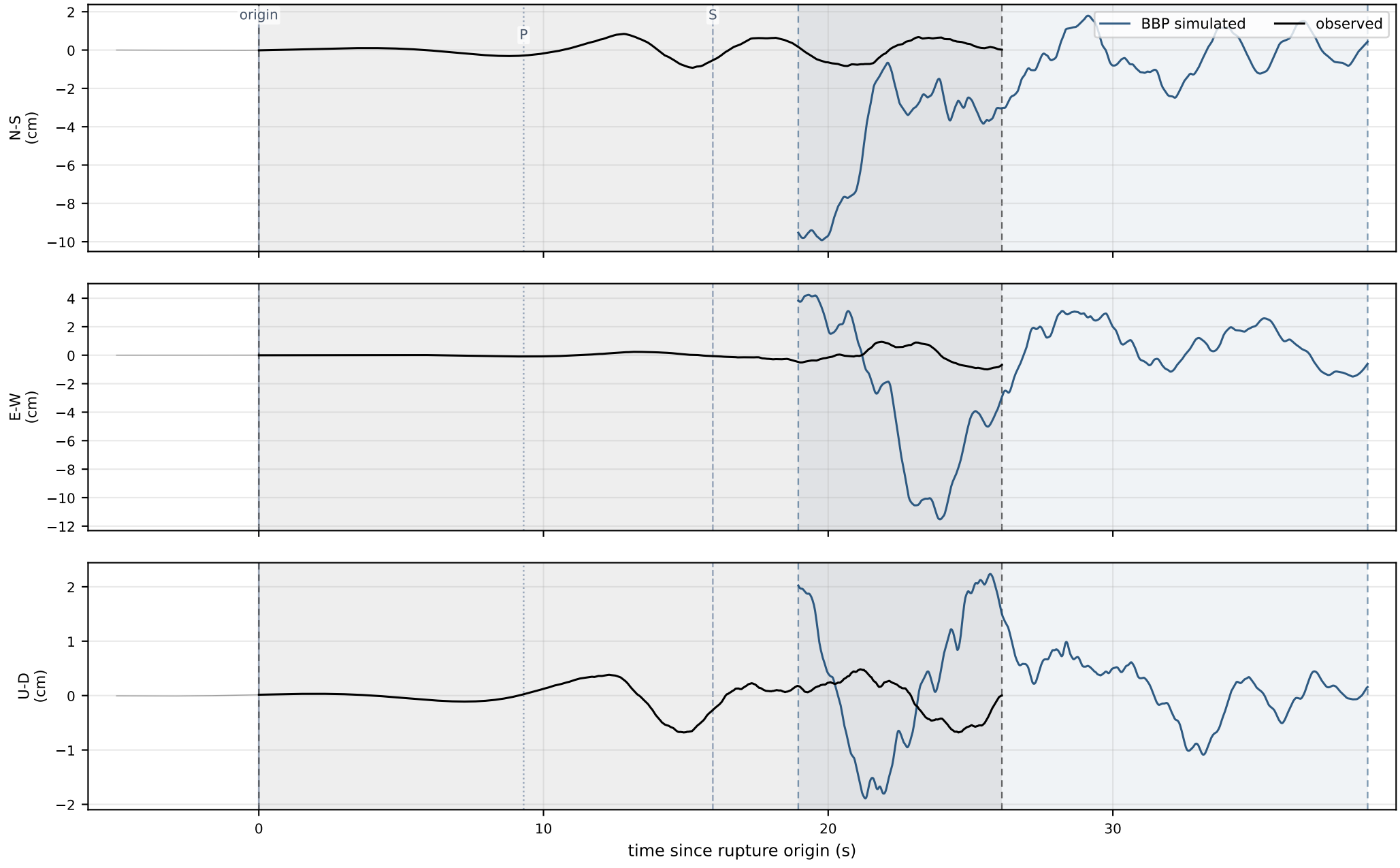


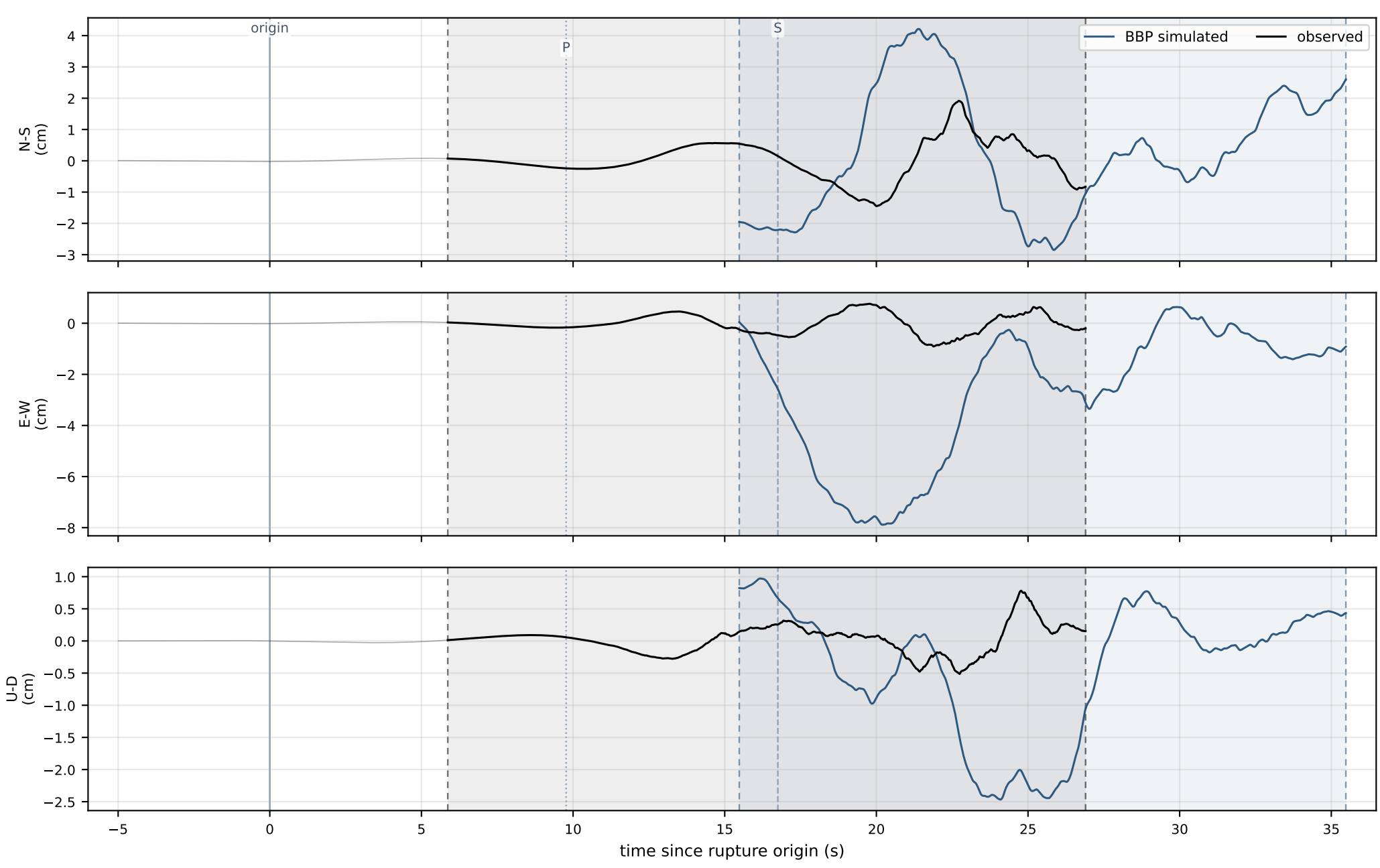
Each source has its own shaded band, dashed edges in its own colour: the window shake_scene.py renders.
Bold inside it is what the table follows; faint outside is the rest of the record that source was handed.

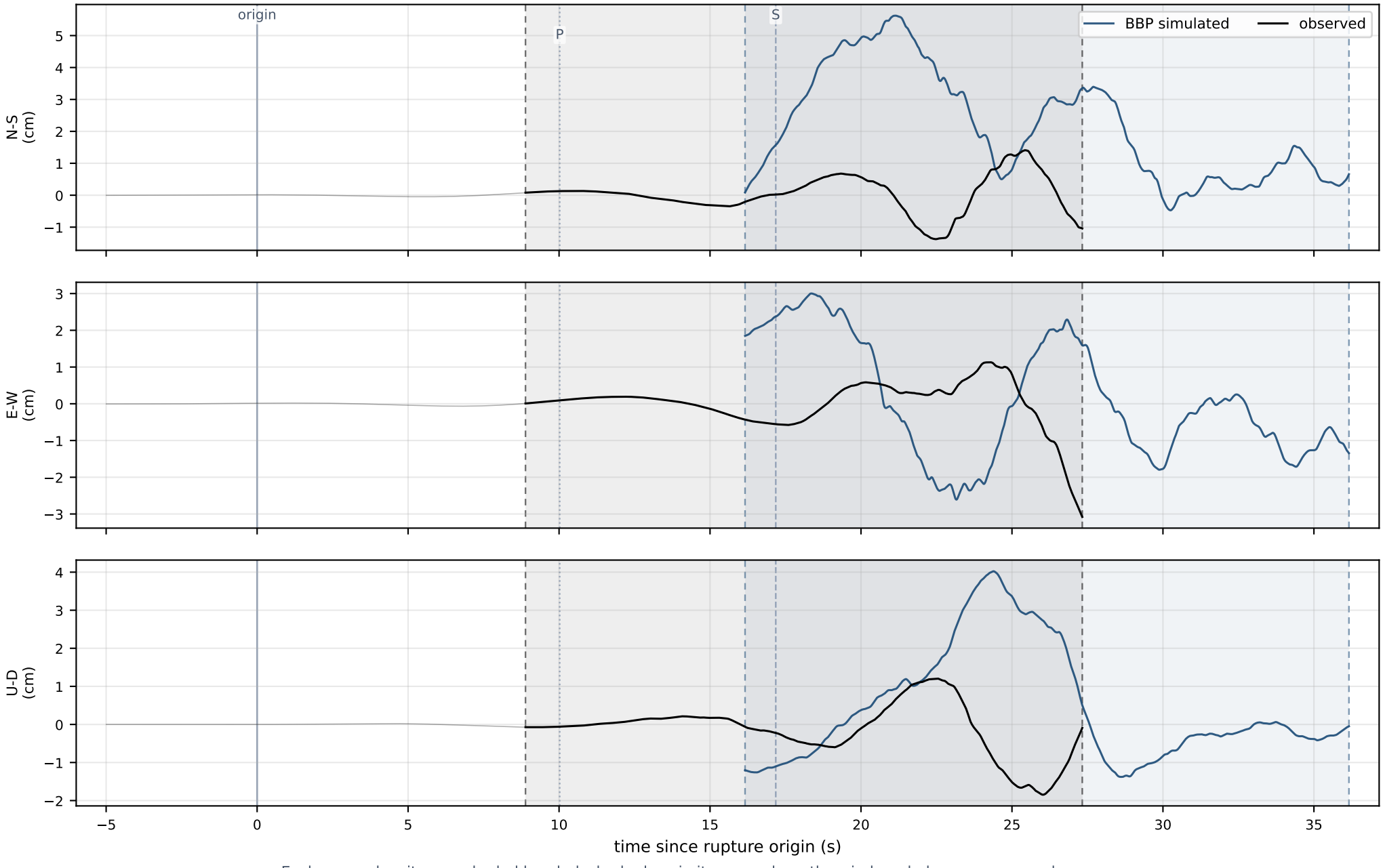

CI.WRV2 — 37.3 km · displacement handed to the animation
observed PGD 5.92 cm · simulated PGD 10.53 cm · obs/sim = 0.56x
observed: response→acceleration, double-integrated, clipped to S+10 s · simulated: BBP velocity, integrated once, clipped to peak ±5/15 s
origin
P
S
BBP simulated
observed
N-S (cm)
E-W (cm)
U-D (cm)
time since rupture origin (s)
Each source has its own shaded band, dashed edges in its own colour: the window shake_scene.py renders.
Bold inside it is what the table follows; faint outside is the rest of the record that source was handed.

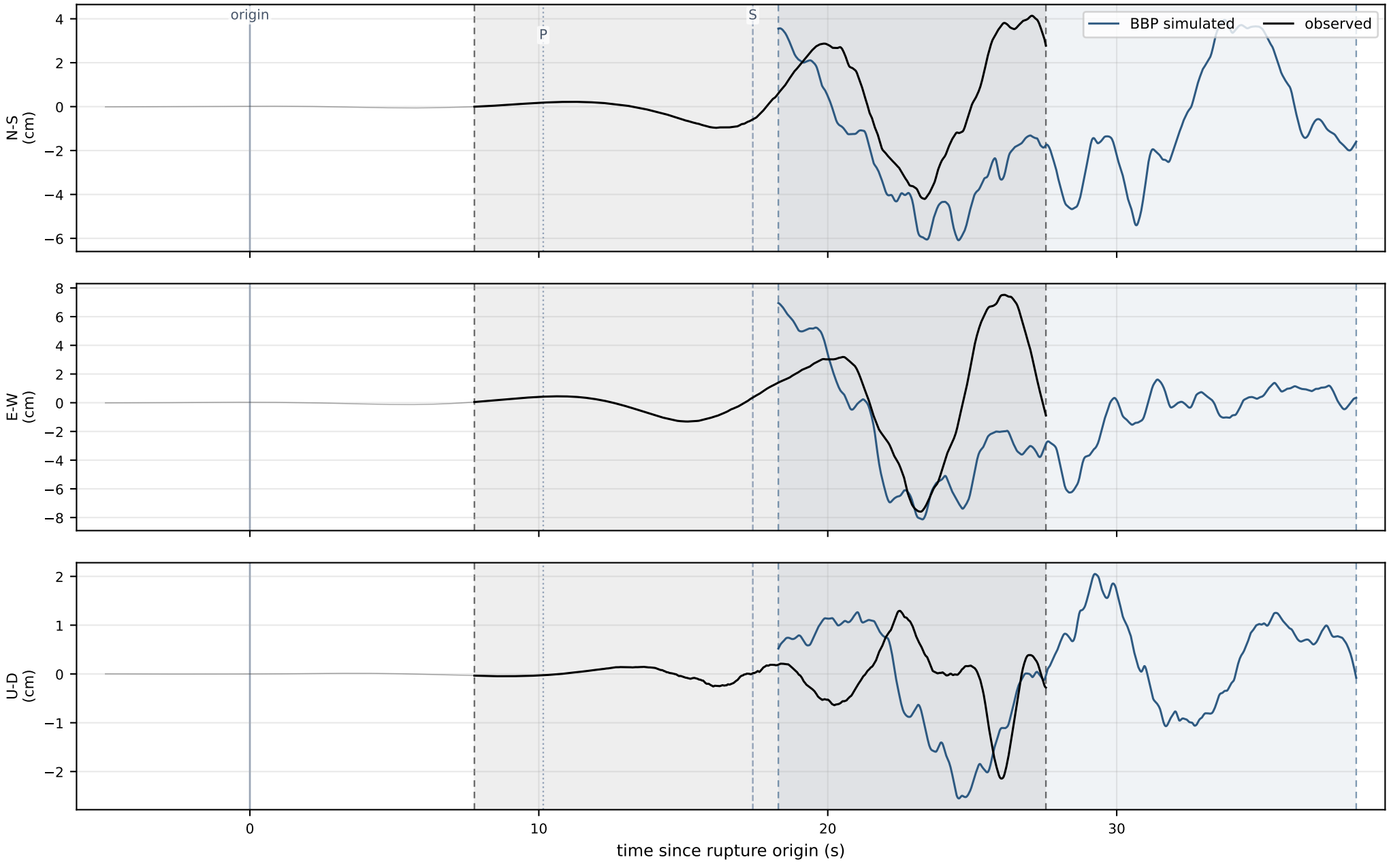

CI.WMF — 45.0 km · displacement handed to the animation
observed PGD 5.28 cm · simulated PGD 7.87 cm · obs/sim = 0.67x
observed: response→acceleration, double-integrated, clipped to S+10 s · simulated: BBP velocity, integrated once, clipped to peak ±5/15 s
origin
P
S
BBP simulated
observed
N-S (cm)
E-W (cm)
U-D (cm)
time since rupture origin (s)
Each source has its own shaded band, dashed edges in its own colour: the window shake_scene.py renders.
Bold inside it is what the table follows; faint outside is the rest of the record that source was handed.

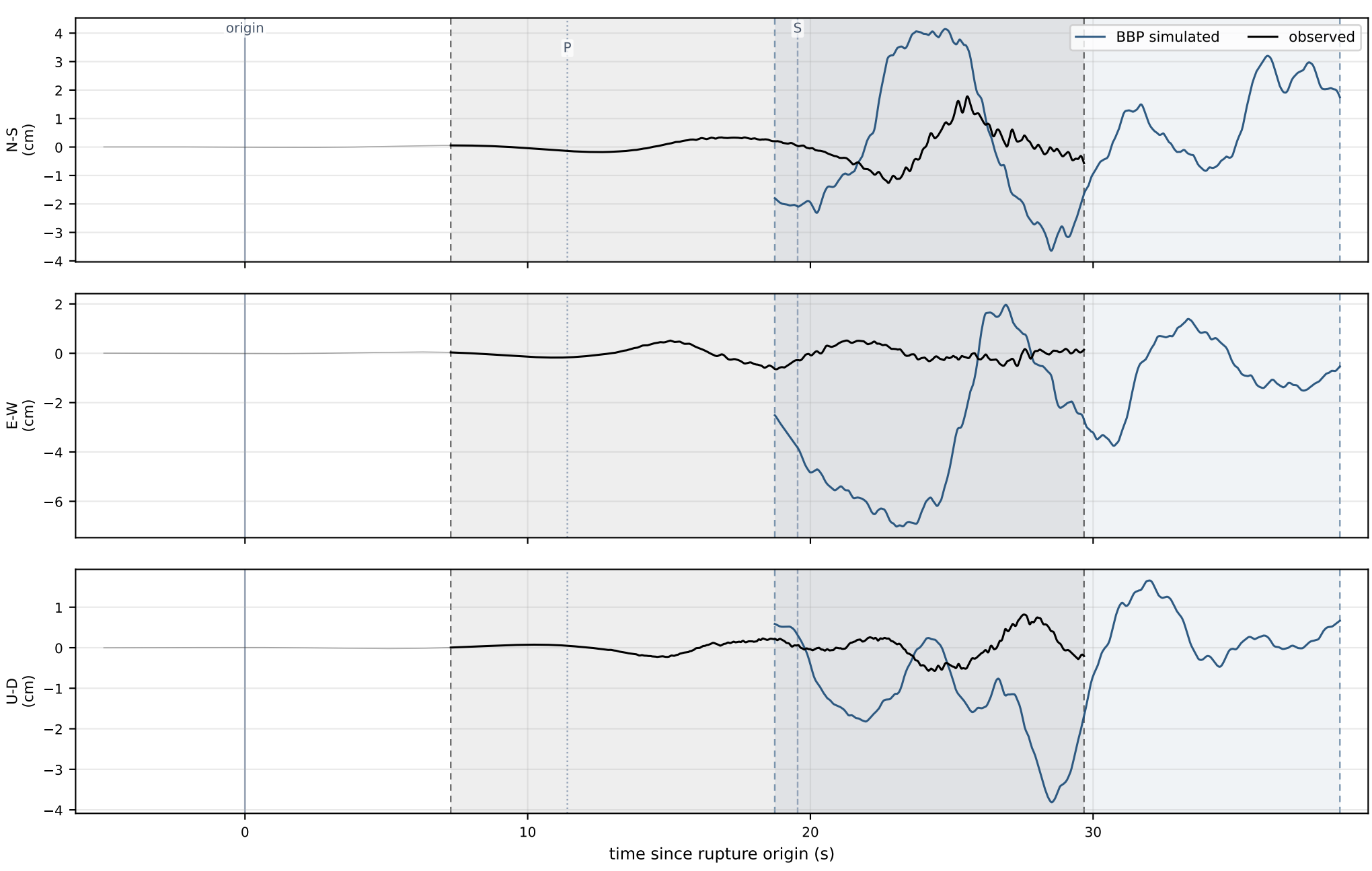

CI.WBS — 55.3 km · displacement handed to the animation
observed PGD 2.40 cm · simulated PGD 11.68 cm · obs/sim = 0.21x
observed: response→acceleration, double-integrated, clipped to S+10 s · simulated: BBP velocity, integrated once, clipped to peak ±5/15 s
origin
P
S
BBP simulated
observed
N-S (cm)
E-W (cm)
U-D (cm)
time since rupture origin (s)
Each source has its own shaded band, dashed edges in its own colour: the window shake_scene.py renders.
Bold inside it is what the table follows; faint outside is the rest of the record that source was handed.

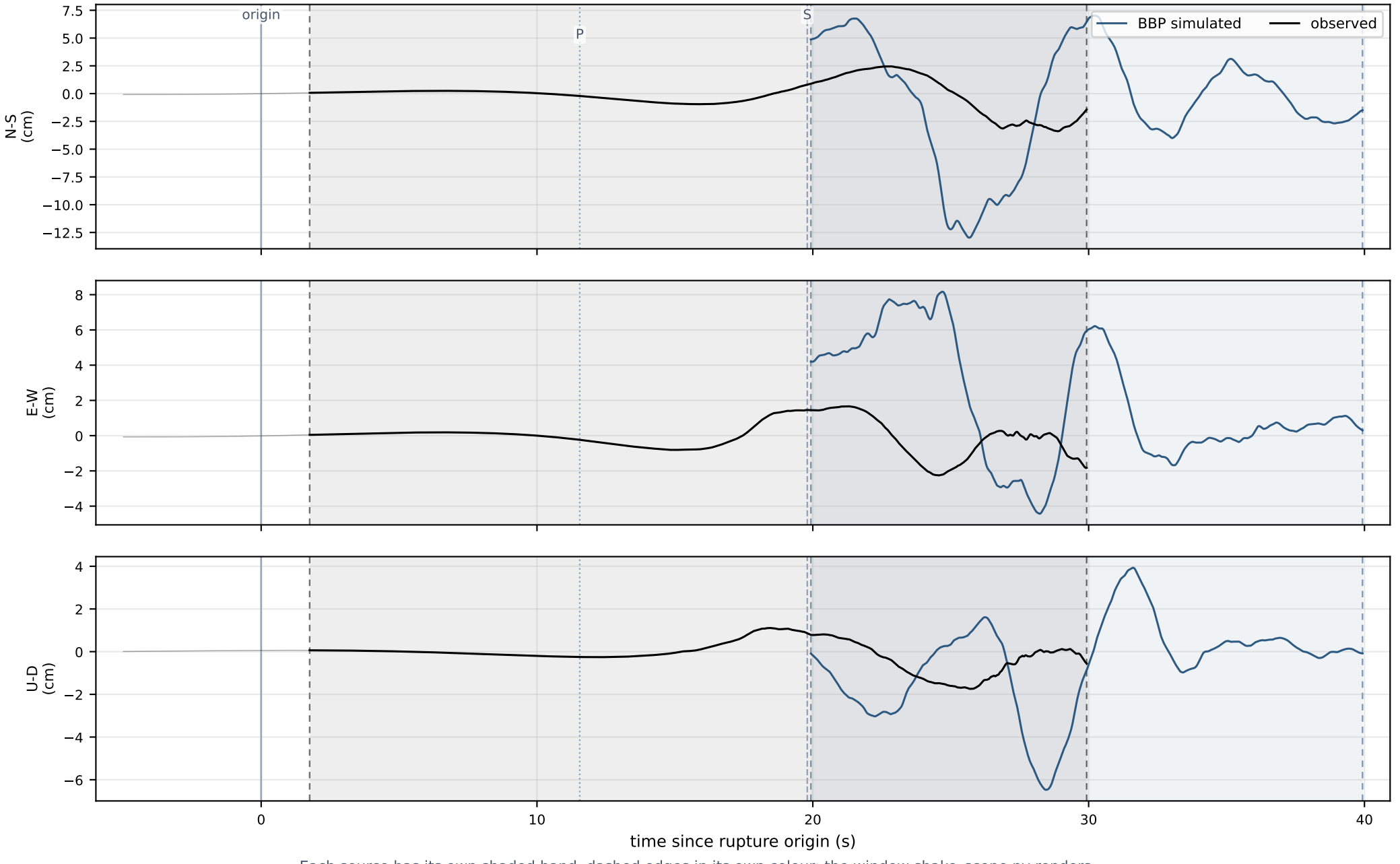

CI.DAW — 55.8 km · displacement handed to the animation
observed PGD 1.00 cm · simulated PGD 11.53 cm · obs/sim = 0.09x
observed: response→acceleration, double-integrated, clipped to S+10 s · simulated: BBP velocity, integrated once, clipped to peak ±5/15 s
origin
P
S
BBP simulated
observed
N-S (cm)
E-W (cm)
U-D (cm)
time since rupture origin (s)
Each source has its own shaded band, dashed edges in its own colour: the window shake_scene.py renders.
Bold inside it is what the table follows; faint outside is the rest of the record that source was handed.

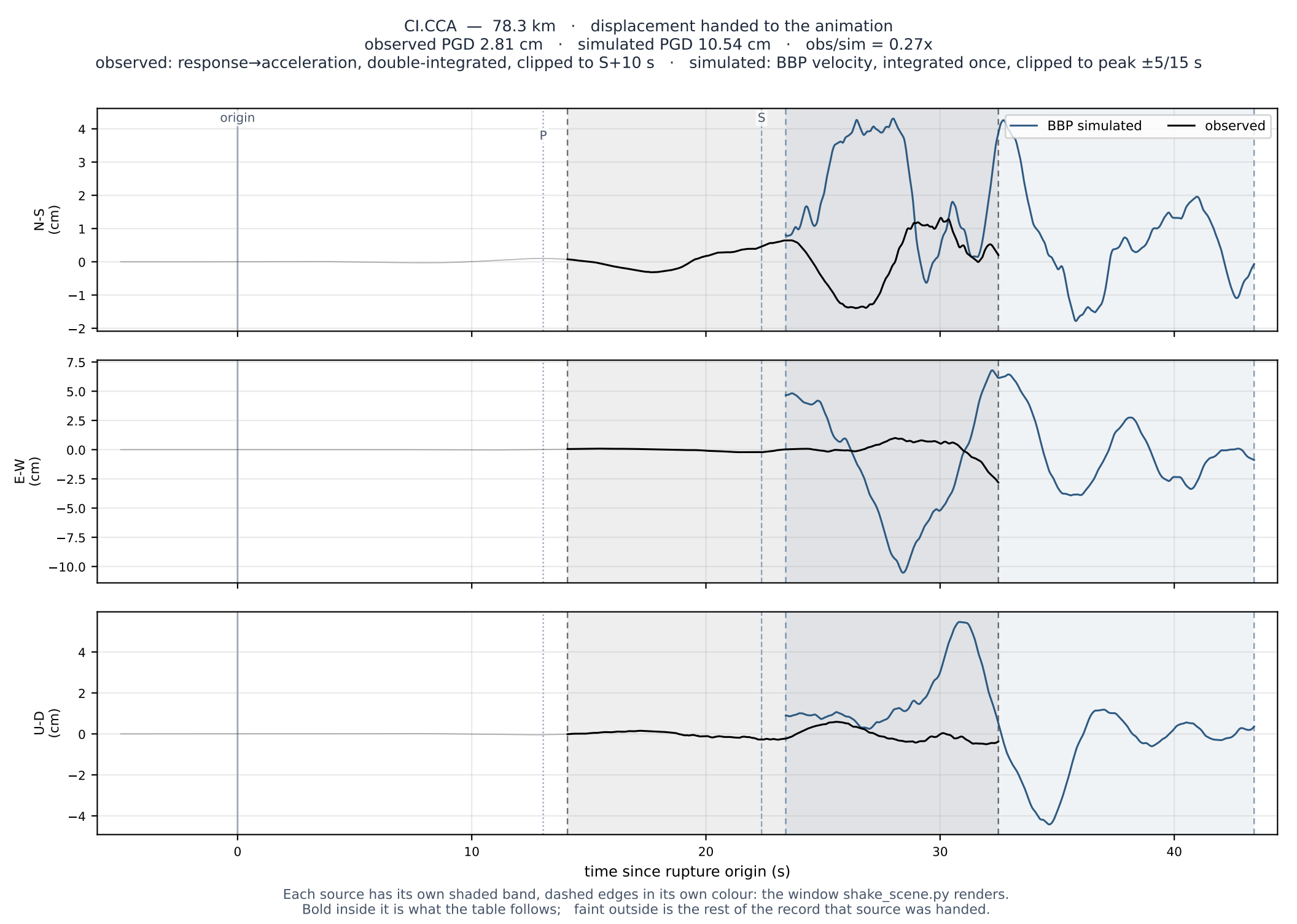

CI.WOR — 58.6 km · displacement handed to the animation
observed PGD 1.92 cm · simulated PGD 7.89 cm · obs/sim = 0.24x
observed: response→acceleration, double-integrated, clipped to S+10 s · simulated: BBP velocity, integrated once, clipped to peak ±5/15 s
origin
P
S
BBP simulated
observed
N-S (cm)
E-W (cm)
U-D (cm)
time since rupture origin (s)
Each source has its own shaded band, dashed edges in its own colour: the window shake_scene.py renders.
Bold inside it is what the table follows; faint outside is the rest of the record that source was handed.

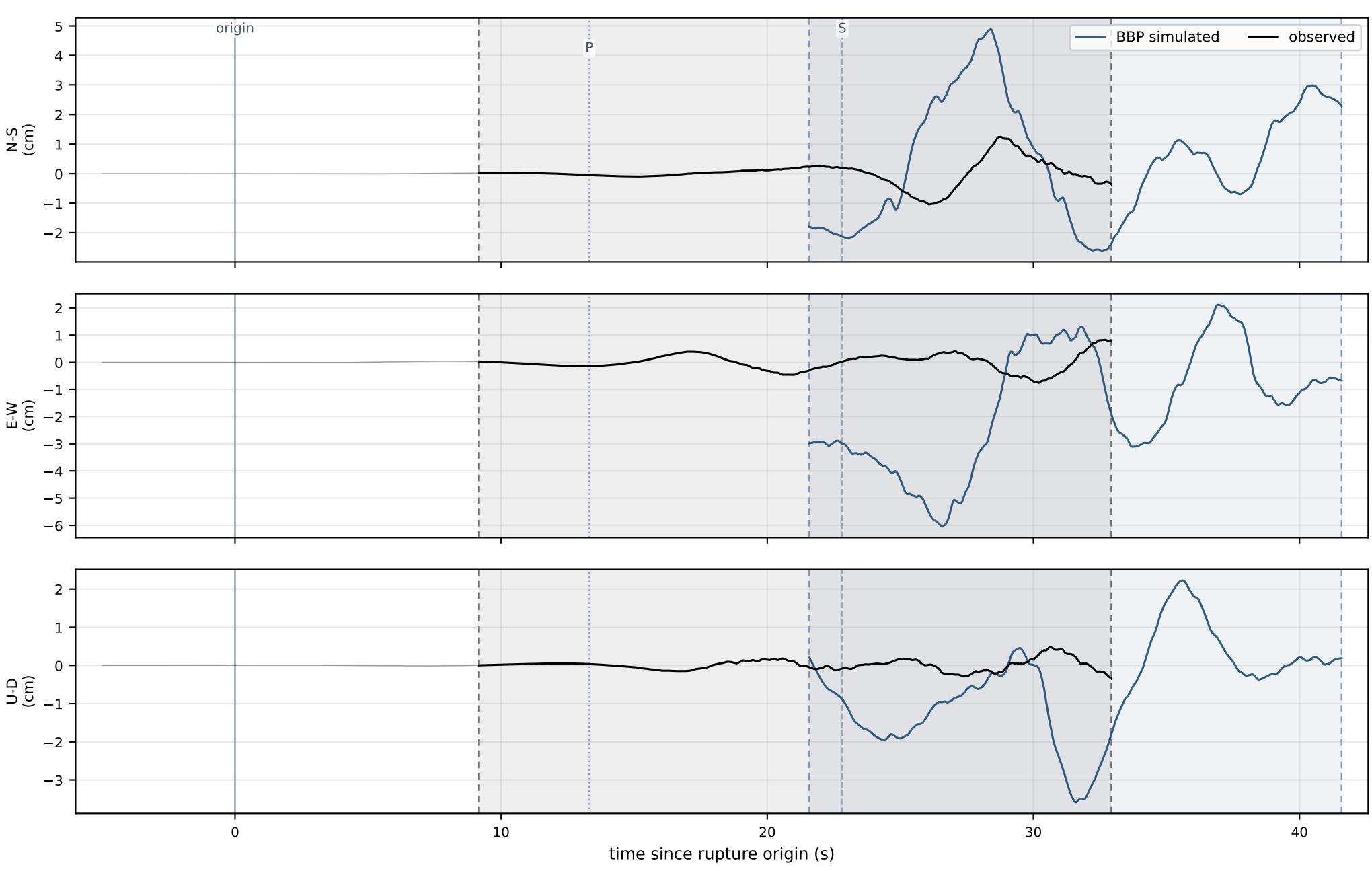

CI.DTP — 60.1 km · displacement handed to the animation
observed PGD 3.08 cm · simulated PGD 5.62 cm · obs/sim = 0.55x
observed: response→acceleration, double-integrated, clipped to S+10 s · simulated: BBP velocity, integrated once, clipped to peak ±5/15 s
origin
P
S
BBP simulated
observed
N-S (cm)
E-W (cm)
U-D (cm)
time since rupture origin (s)
Each source has its own shaded band, dashed edges in its own colour: the window shake_scene.py renders.
Bold inside it is what the table follows; faint outside is the rest of the record that source was handed.

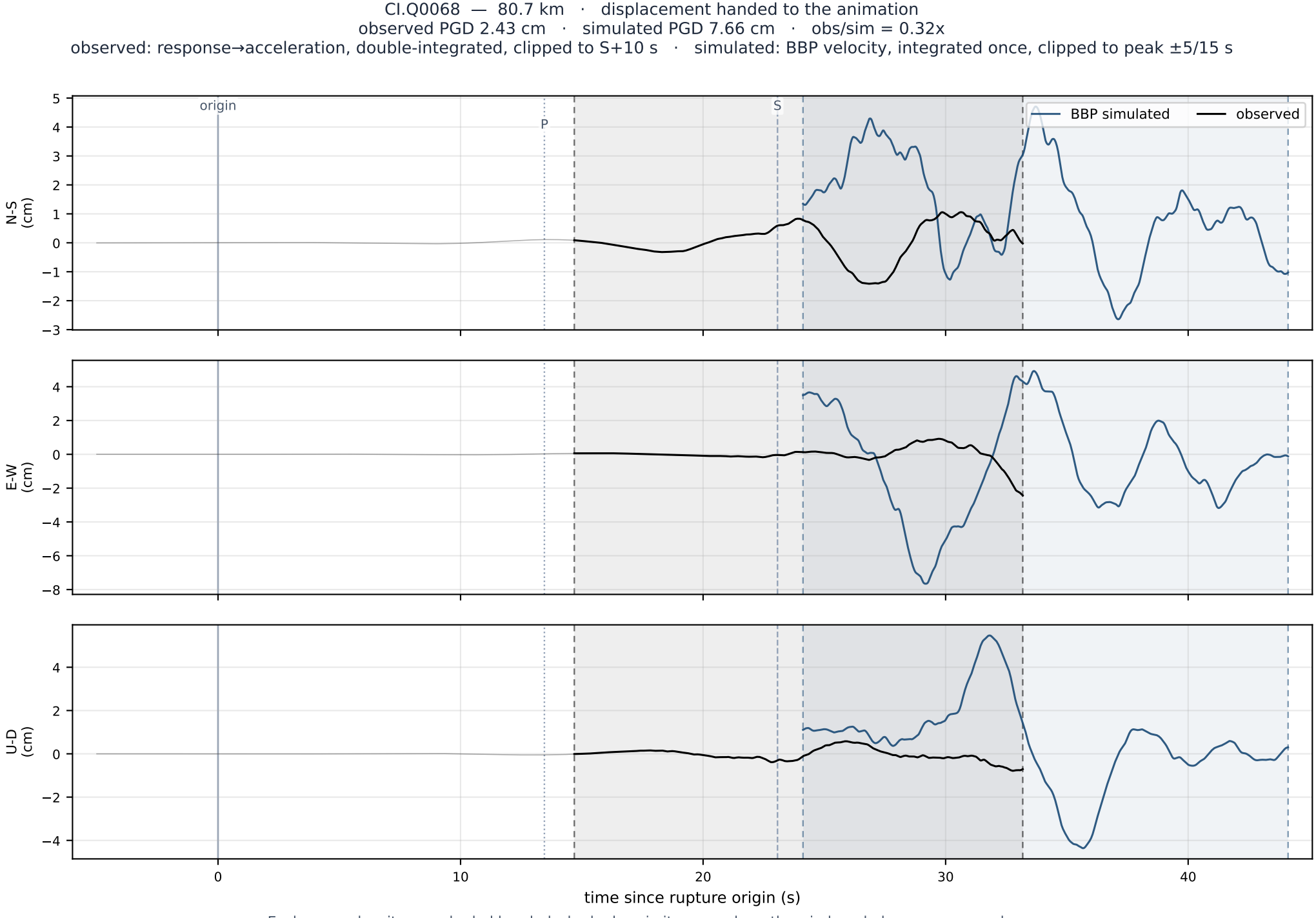

CE.43158 — 60.9 km · displacement handed to the animation
observed PGD 7.60 cm · simulated PGD 8.13 cm · obs/sim = 0.93x
observed: response→acceleration, double-integrated, clipped to S+10 s · simulated: BBP velocity, integrated once, clipped to peak ±5/15 s
origin
P
S
BBP simulated
observed
N-S (cm)
E-W (cm)
U-D (cm)
time since rupture origin (s)
Each source has its own shaded band, dashed edges in its own colour: the window shake_scene.py renders.
Bold inside it is what the table follows; faint outside is the rest of the record that source was handed.

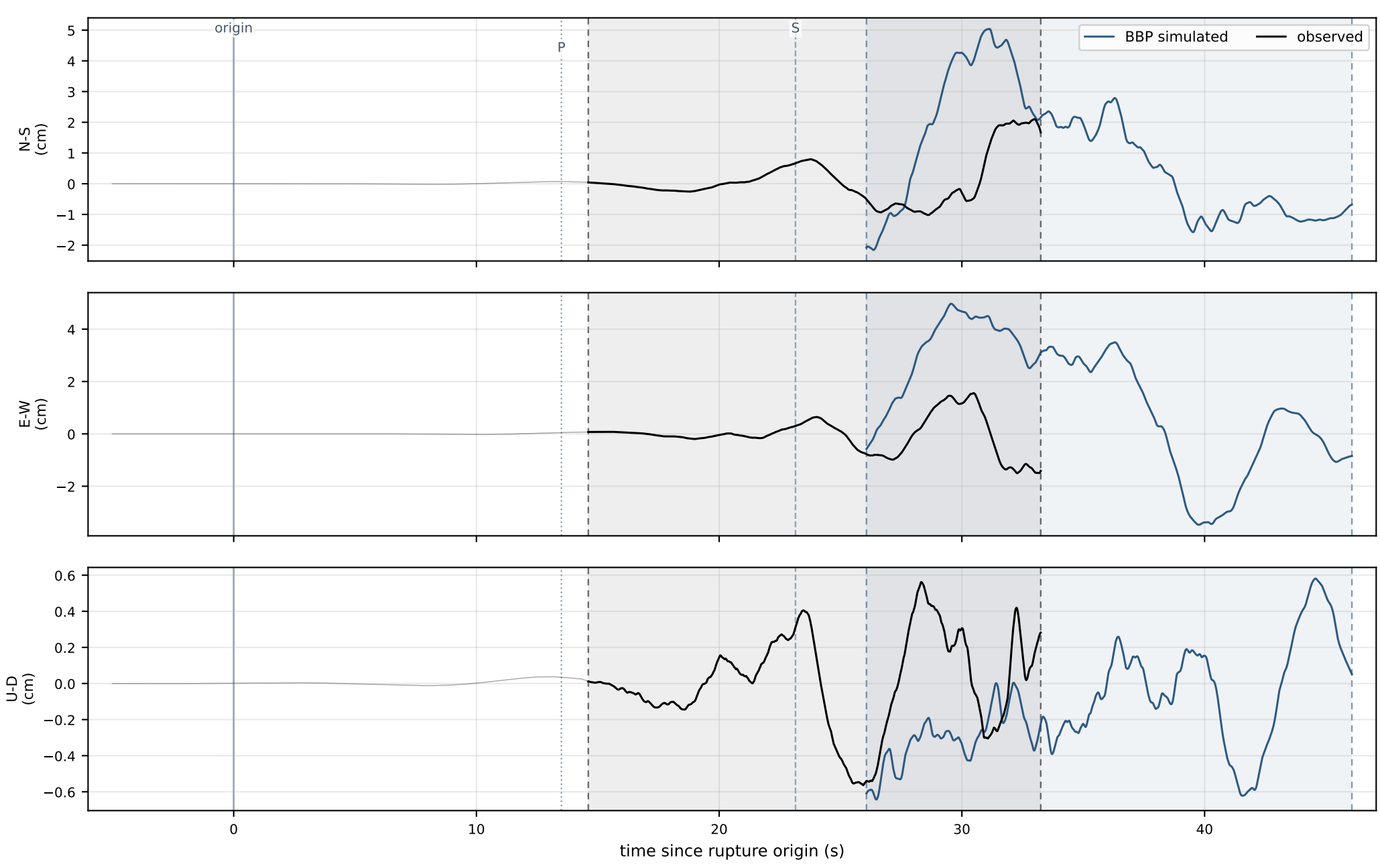

CI.WHF — 68.4 km · displacement handed to the animation
observed PGD 1.78 cm · simulated PGD 7.02 cm · obs/sim = 0.25x
observed: response→acceleration, double-integrated, clipped to S+10 s · simulated: BBP velocity, integrated once, clipped to peak ±5/15 s
origin
P
S
BBP simulated
observed
N-S (cm)
E-W (cm)
U-D (cm)
time since rupture origin (s)
Each source has its own shaded band, dashed edges in its own colour: the window shake_scene.py renders.
Bold inside it is what the table follows; faint outside is the rest of the record that source was handed.

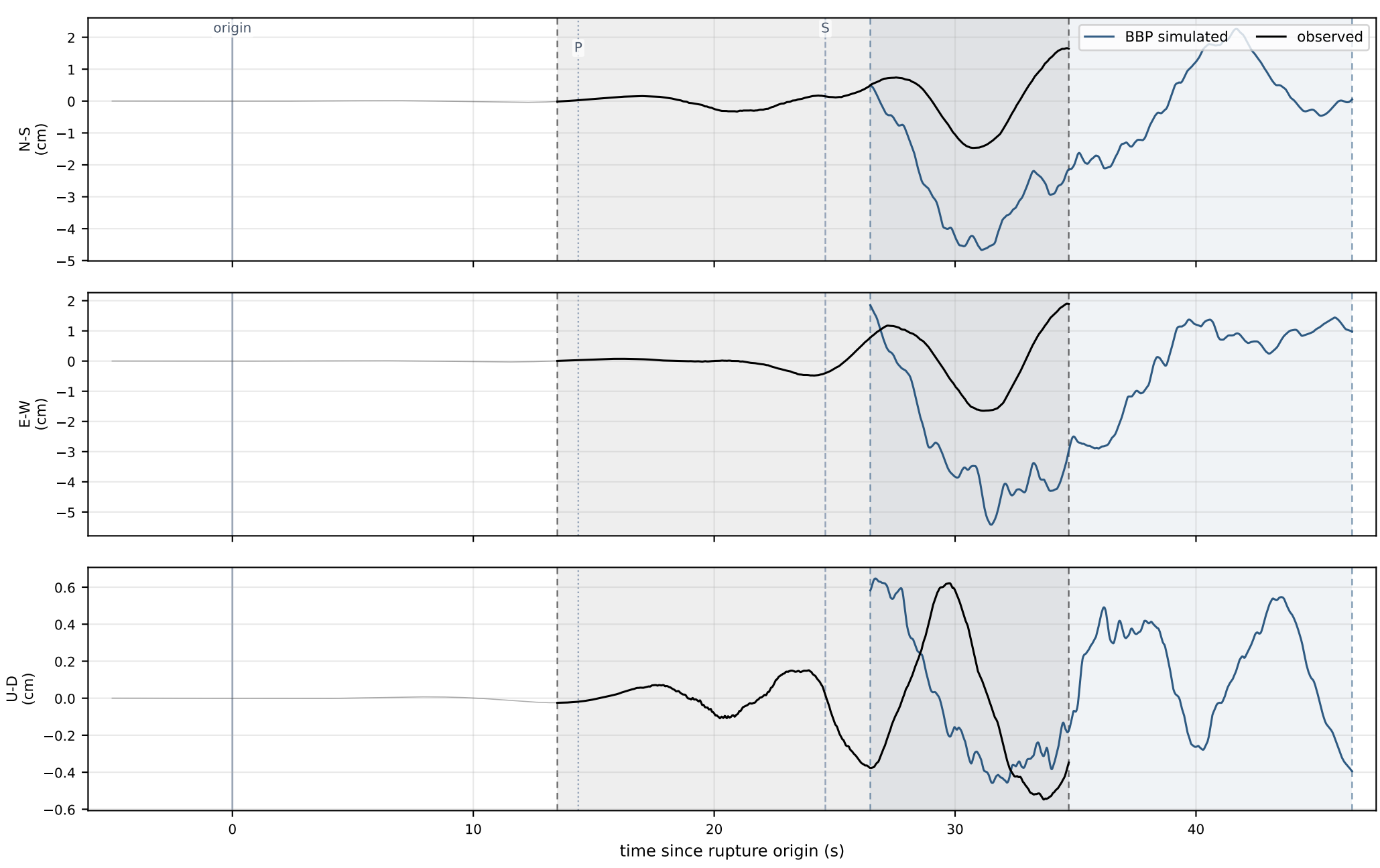

NN.QSM — 69.3 km · displacement handed to the animation
observed PGD 3.39 cm · simulated PGD 12.97 cm · obs/sim = 0.26x
observed: response→acceleration, double-integrated, clipped to S+10 s · simulated: BBP velocity, integrated once, clipped to peak ±5/15 s
origin
P
S
BBP simulated
observed
N-S (cm)
E-W (cm)
U-D (cm)
time since rupture origin (s)
Each source has its own shaded band, dashed edges in its own colour: the window shake_scene.py renders.
Bold inside it is what the table follows; faint outside is the rest of the record that source was handed.

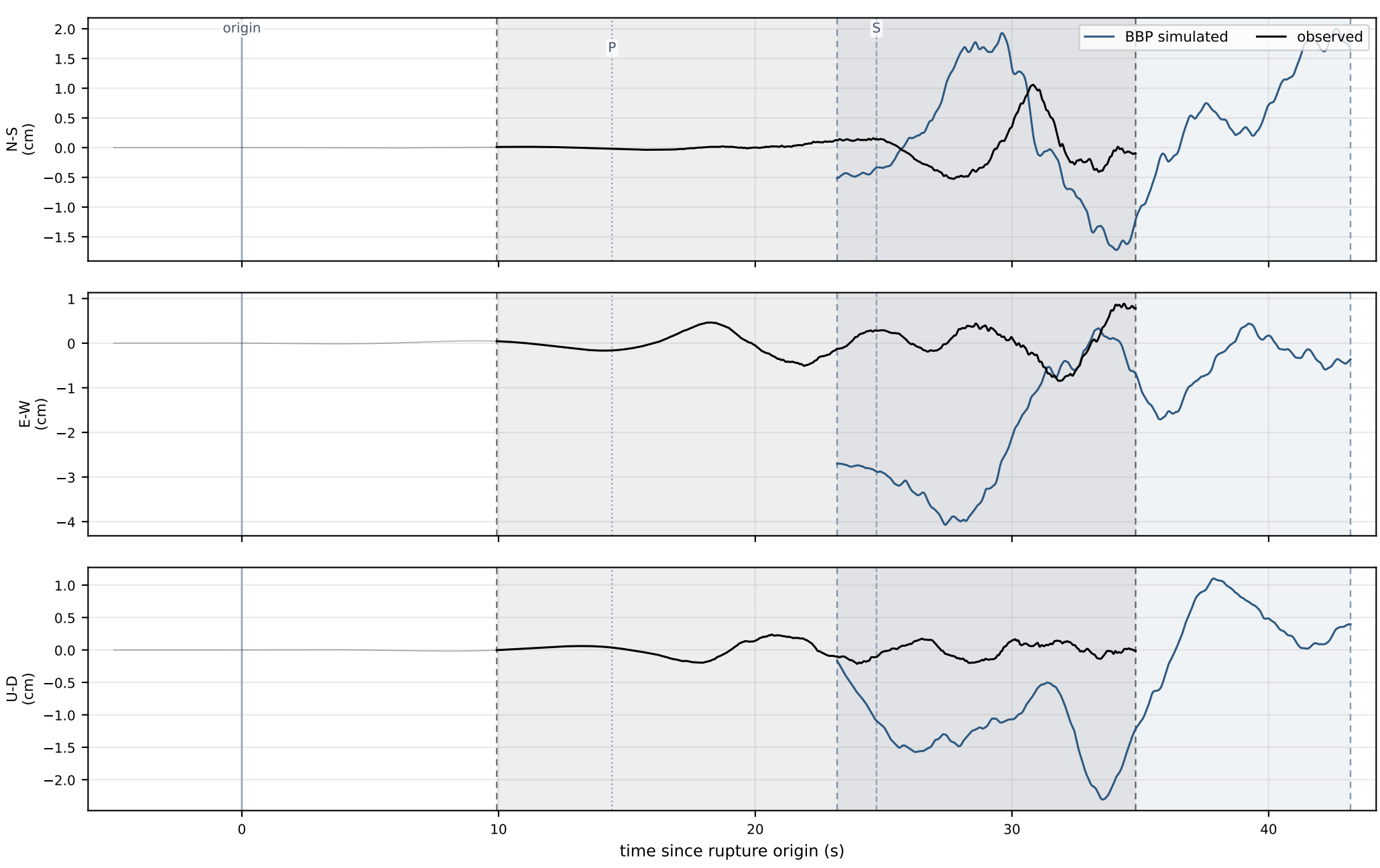

CI.CCA — 78.3 km · displacement handed to the animation
observed PGD 2.81 cm · simulated PGD 10.54 cm · obs/sim = 0.27x
observed: response→acceleration, double-integrated, clipped to S+10 s · simulated: BBP velocity, integrated once, clipped to peak ±5/15 s
origin
P
S
BBP simulated
observed
N-S (cm)
E-W (cm)
U-D (cm)
time since rupture origin (s)
Each source has its own shaded band, dashed edges in its own colour: the window shake_scene.py renders.
Bold inside it is what the table follows; faint outside is the rest of the record that source was handed.

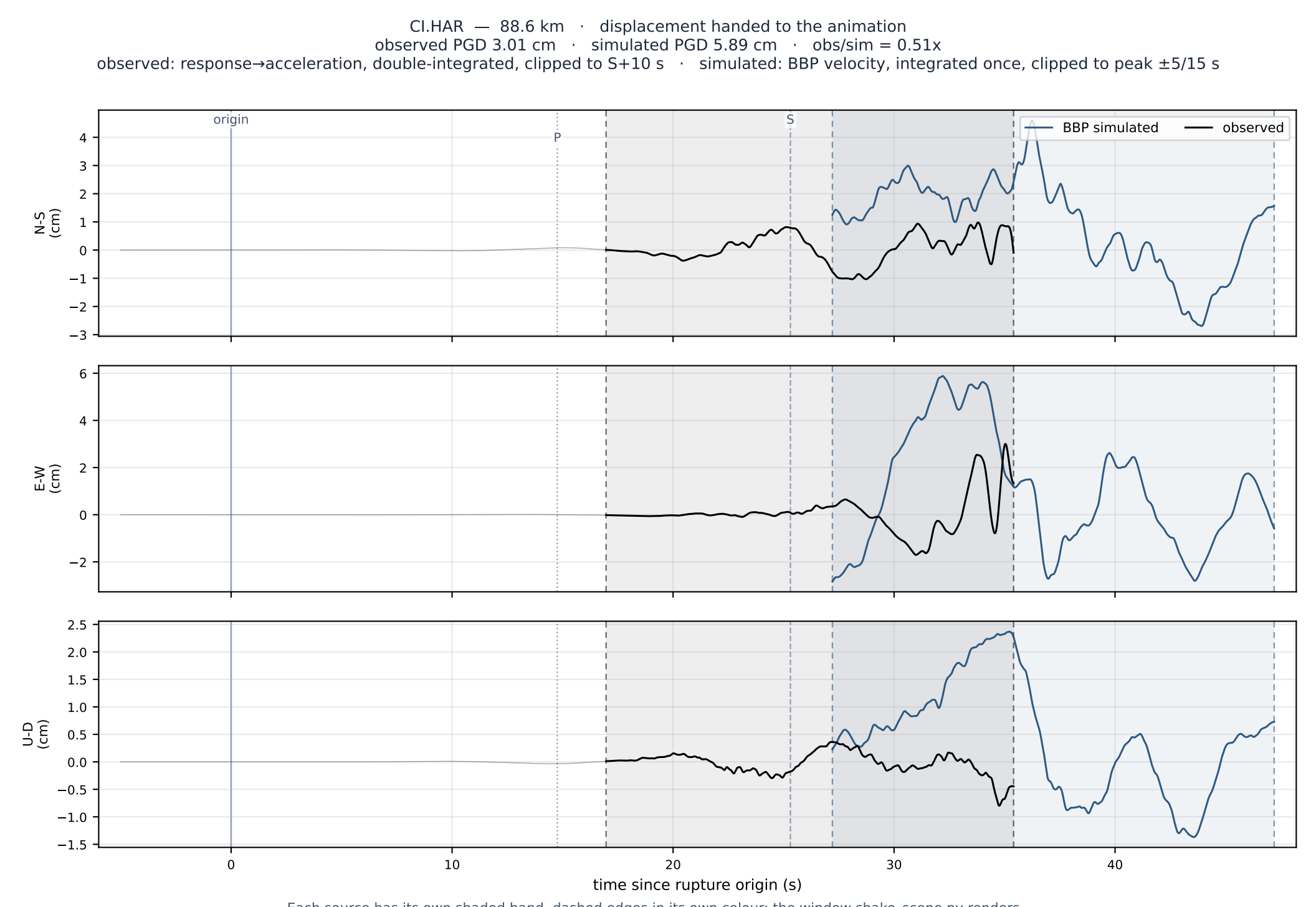

CI.ISA — 79.9 km · displacement handed to the animation
observed PGD 1.25 cm · simulated PGD 6.05 cm · obs/sim = 0.21x
observed: response→acceleration, double-integrated, clipped to S+10 s · simulated: BBP velocity, integrated once, clipped to peak ±5/15 s
origin
P
S
BBP simulated
observed
N-S (cm)
E-W (cm)
U-D (cm)
time since rupture origin (s)
Each source has its own shaded band, dashed edges in its own colour: the window shake_scene.py renders.
Bold inside it is what the table follows; faint outside is the rest of the record that source was handed.

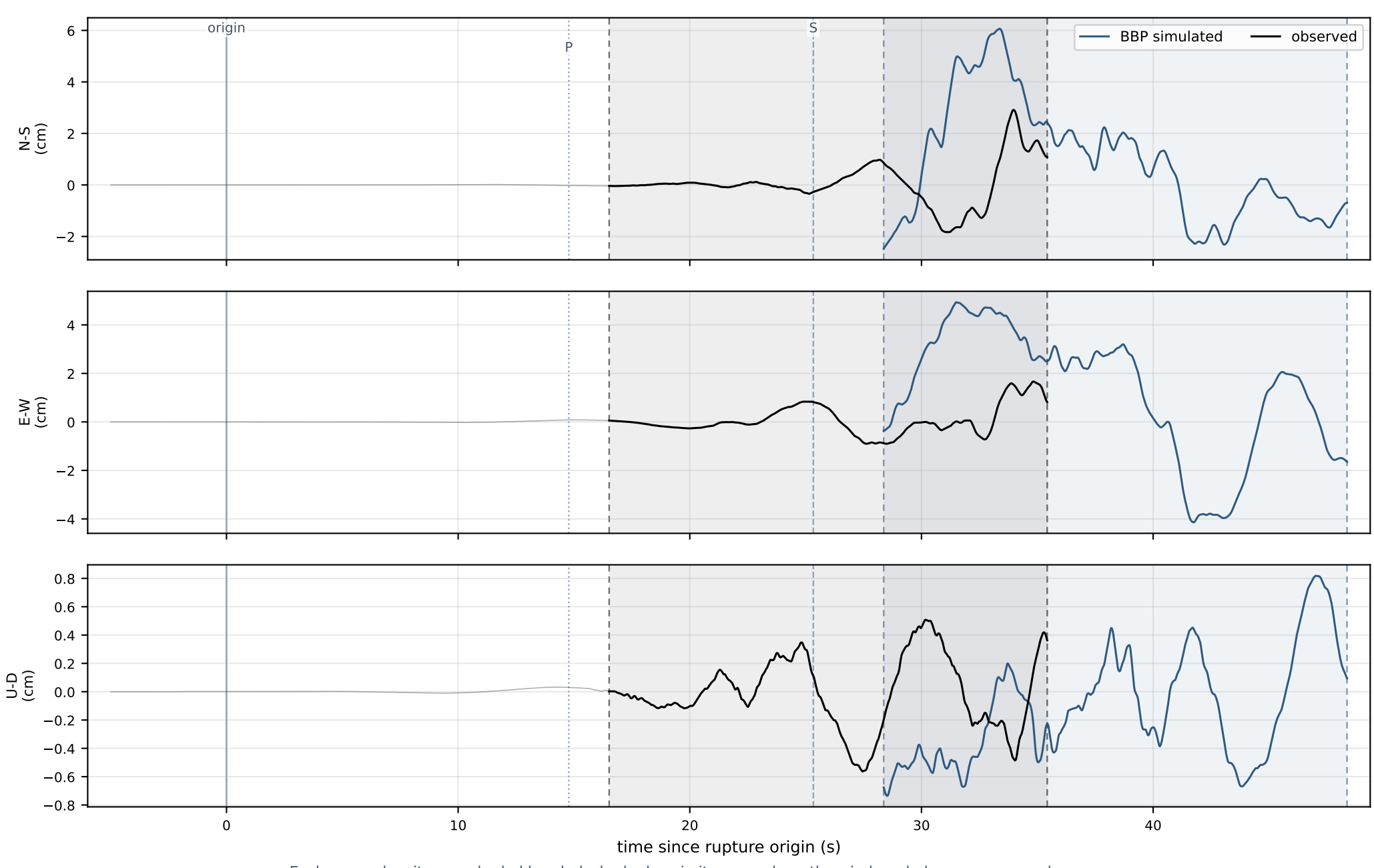

CI.Q0068 — 80.7 km · displacement handed to the animation
observed PGD 2.43 cm · simulated PGD 7.66 cm · obs/sim = 0.32x
observed: response→acceleration, double-integrated, clipped to S+10 s · simulated: BBP velocity, integrated once, clipped to peak ±5/15 s
origin
P
S
BBP simulated
observed
N-S (cm)
E-W (cm)
U-D (cm)
time since rupture origin (s)
Each source has its own shaded band, dashed edges in its own colour: the window shake_scene.py renders.
Bold inside it is what the table follows; faint outside is the rest of the record that source was handed.

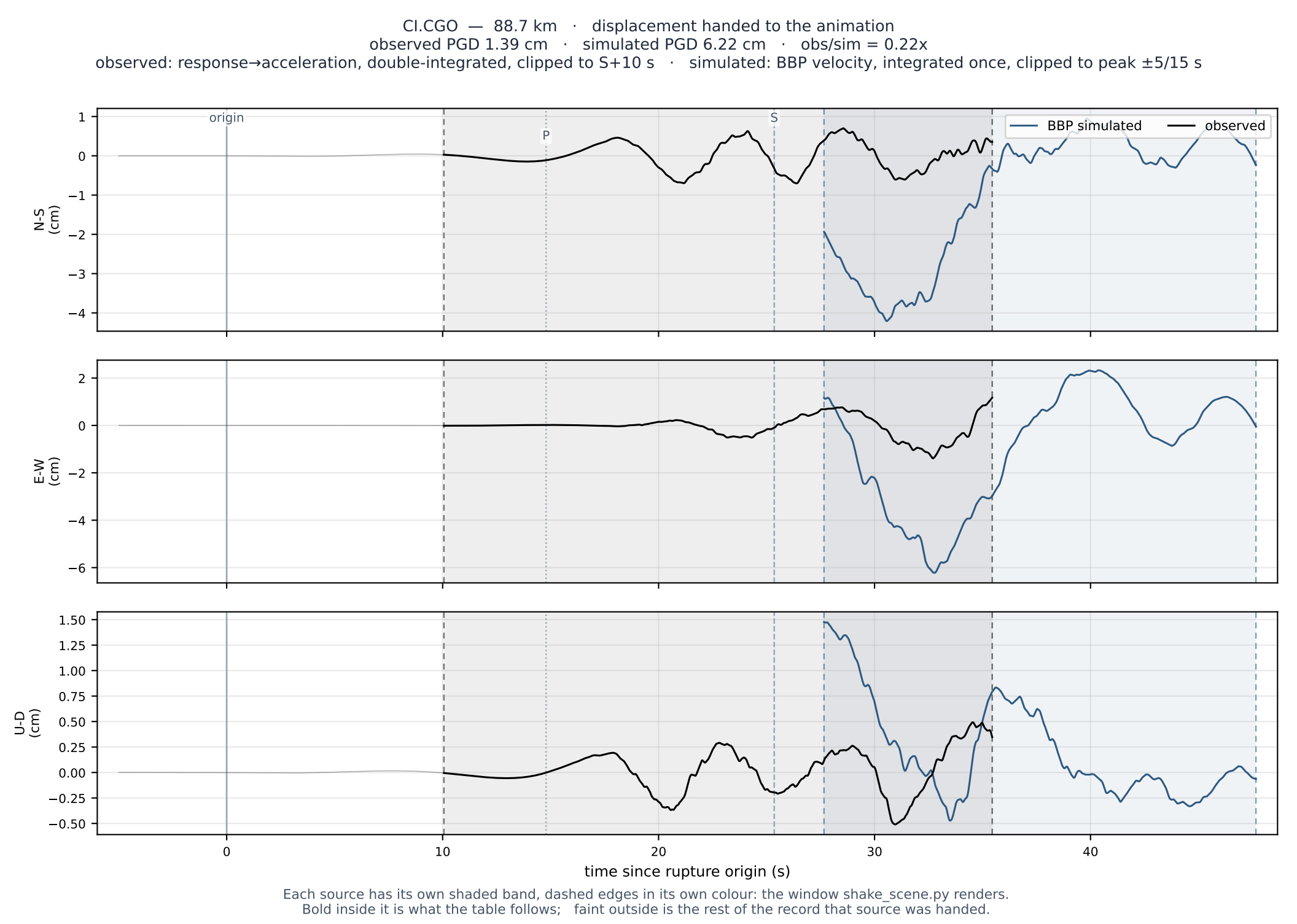

CI.APL — 81.0 km · displacement handed to the animation
observed PGD 2.10 cm · simulated PGD 5.04 cm · obs/sim = 0.42x
observed: response→acceleration, double-integrated, clipped to S+10 s · simulated: BBP velocity, integrated once, clipped to peak ±5/15 s
origin
P
S
BBP simulated
observed
N-S (cm)
E-W (cm)
U-D (cm)
time since rupture origin (s)
Each source has its own shaded band, dashed edges in its own colour: the window shake_scene.py renders.
Bold inside it is what the table follows; faint outside is the rest of the record that source was handed.

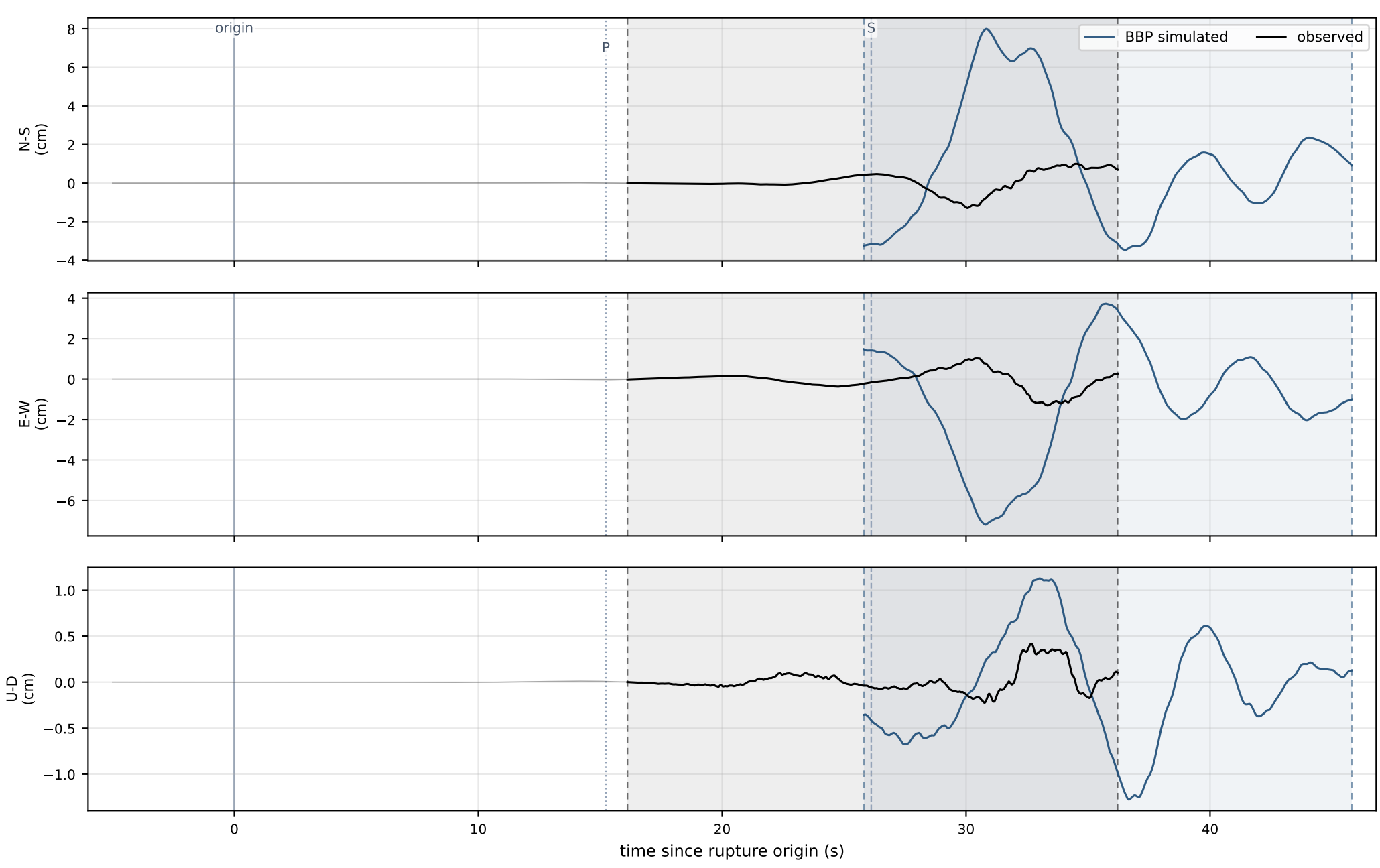

CI.CWC — 86.2 km · displacement handed to the animation
observed PGD 1.90 cm · simulated PGD 5.42 cm · obs/sim = 0.35x
observed: response→acceleration, double-integrated, clipped to S+10 s · simulated: BBP velocity, integrated once, clipped to peak ±5/15 s
origin
P
S
BBP simulated
observed
N-S (cm)
E-W (cm)
U-D (cm)
time since rupture origin (s)
Each source has its own shaded band, dashed edges in its own colour: the window shake_scene.py renders.
Bold inside it is what the table follows; faint outside is the rest of the record that source was handed.

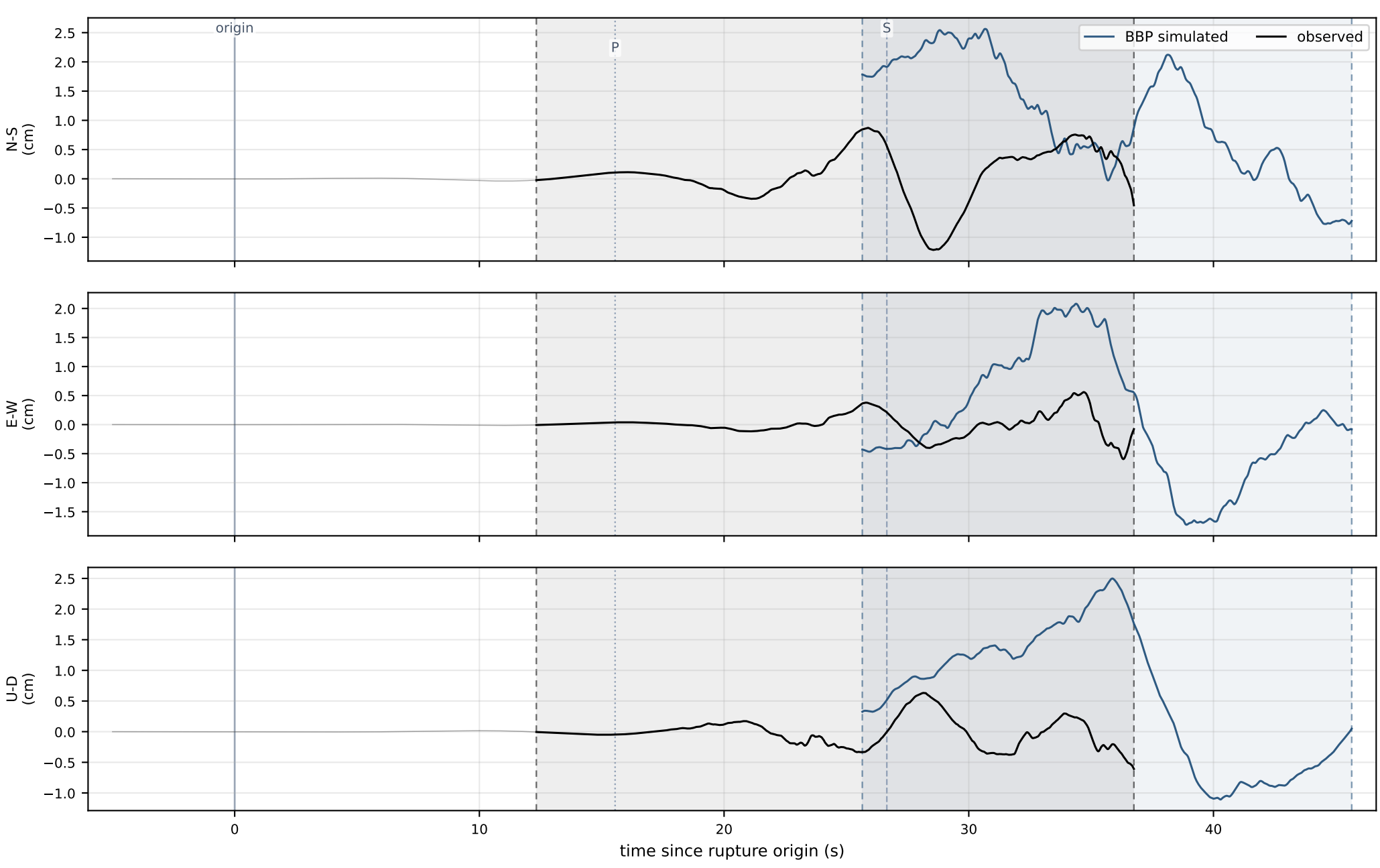

CI.WAS2 — 86.5 km · displacement handed to the animation
observed PGD 1.06 cm · simulated PGD 4.07 cm · obs/sim = 0.26x
observed: response→acceleration, double-integrated, clipped to S+10 s · simulated: BBP velocity, integrated once, clipped to peak ±5/15 s
origin
P
S
BBP simulated
observed
N-S (cm)
E-W (cm)
U-D (cm)
time since rupture origin (s)
Each source has its own shaded band, dashed edges in its own colour: the window shake_scene.py renders.
Bold inside it is what the table follows; faint outside is the rest of the record that source was handed.

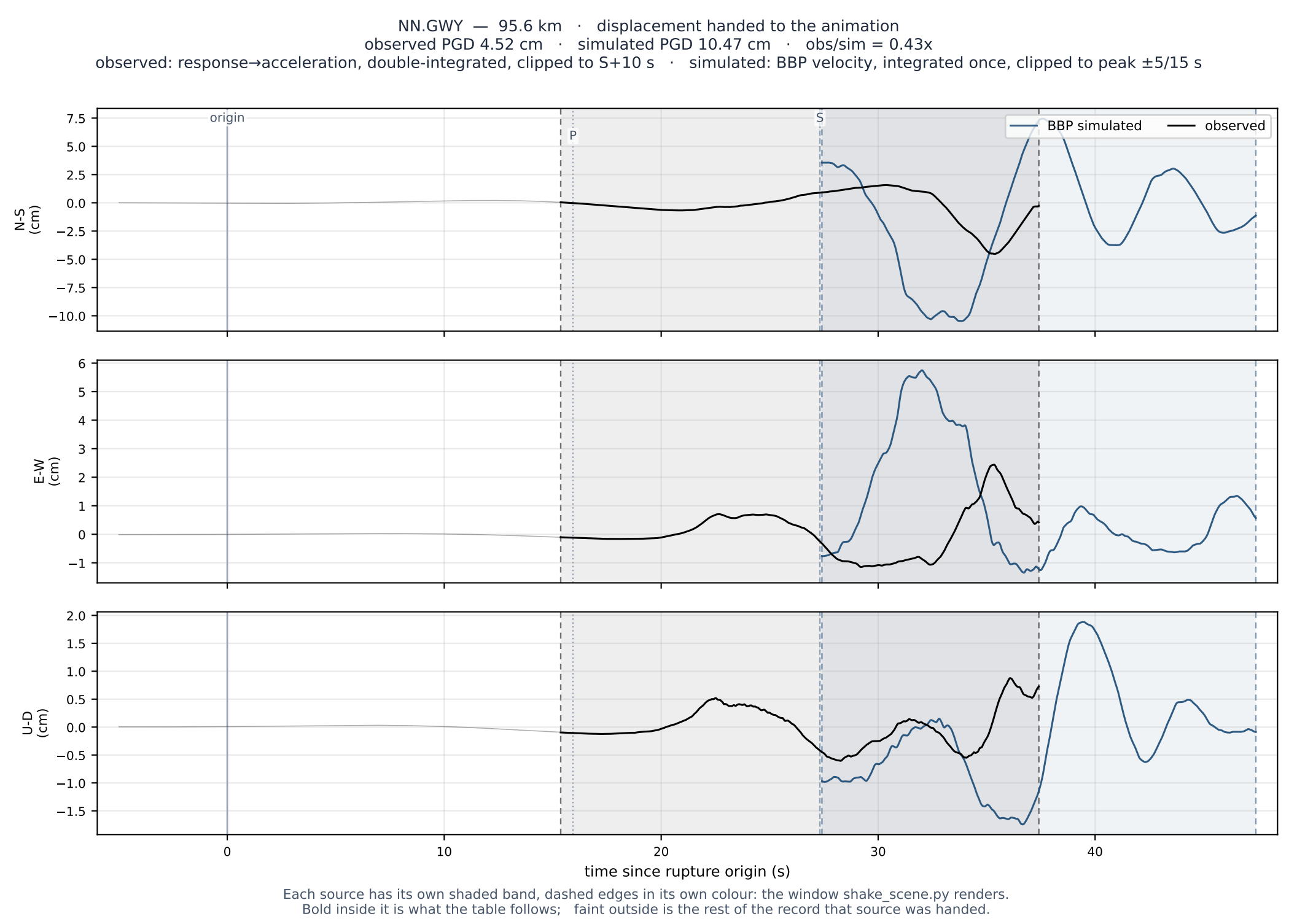

CI.HAR — 88.6 km · displacement handed to the animation
observed PGD 3.01 cm · simulated PGD 5.89 cm · obs/sim = 0.51x
observed: response→acceleration, double-integrated, clipped to S+10 s · simulated: BBP velocity, integrated once, clipped to peak ±5/15 s
origin
P
S
BBP simulated
observed
N-S (cm)
E-W (cm)
U-D (cm)
time since rupture origin (s)
Each source has its own shaded band, dashed edges in its own colour: the window shake_scene.py renders.
Bold inside it is what the table follows; faint outside is the rest of the record that source was handed.


CI.GSC — 88.7 km · displacement handed to the animation
observed PGD 2.91 cm · simulated PGD 6.06 cm · obs/sim = 0.48x
observed: response→acceleration, double-integrated, clipped to S+10 s · simulated: BBP velocity, integrated once, clipped to peak ±5/15 s
origin
P
S
BBP simulated
observed
N-S (cm)
E-W (cm)
U-D (cm)
time since rupture origin (s)
Each source has its own shaded band, dashed edges in its own colour: the window shake_scene.py renders.
Bold inside it is what the table follows; faint outside is the rest of the record that source was handed.


CI.CGO — 88.7 km · displacement handed to the animation
observed PGD 1.39 cm · simulated PGD 6.22 cm · obs/sim = 0.22x
observed: response→acceleration, double-integrated, clipped to S+10 s · simulated: BBP velocity, integrated once, clipped to peak ±5/15 s
origin
P
S
BBP simulated
observed
N-S (cm)
E-W (cm)
U-D (cm)
time since rupture origin (s)
Each source has its own shaded band, dashed edges in its own colour: the window shake_scene.py renders.
Bold inside it is what the table follows; faint outside is the rest of the record that source was handed.


CI.TEH — 91.4 km · displacement handed to the animation
observed PGD 1.30 cm · simulated PGD 8.00 cm · obs/sim = 0.16x
observed: response→acceleration, double-integrated, clipped to S+10 s · simulated: BBP velocity, integrated once, clipped to peak ±5/15 s
origin
P
S
BBP simulated
observed
N-S (cm)
E-W (cm)
U-D (cm)
time since rupture origin (s)
Each source has its own shaded band, dashed edges in its own colour: the window shake_scene.py renders.
Bold inside it is what the table follows; faint outside is the rest of the record that source was handed.


CI.LMR2 — 93.3 km · displacement handed to the animation
observed PGD 1.22 cm · simulated PGD 2.56 cm · obs/sim = 0.47x
observed: response→acceleration, double-integrated, clipped to S+10 s · simulated: BBP velocity, integrated once, clipped to peak ±5/15 s
origin
P
S
BBP simulated
observed
N-S (cm)
E-W (cm)
U-D (cm)
time since rupture origin (s)
Each source has its own shaded band, dashed edges in its own colour: the window shake_scene.py renders.
Bold inside it is what the table follows; faint outside is the rest of the record that source was handed.


NN.GWY — 95.6 km · displacement handed to the animation
observed PGD 4.52 cm · simulated PGD 10.47 cm · obs/sim = 0.43x
observed: response→acceleration, double-integrated, clipped to S+10 s · simulated: BBP velocity, integrated once, clipped to peak ±5/15 s
origin
P
S
BBP simulated
observed
N-S (cm)
E-W (cm)
U-D (cm)
time since rupture origin (s)
Each source has its own shaded band, dashed edges in its own colour: the window shake_scene.py renders.
Bold inside it is what the table follows; faint outside is the rest of the record that source was handed.