

# Observed vs Simulated — Goodness of Fit

intensitylab.com · ground motion validation report

**WITHIN BAND · mean |bias| 0.336 · factor 1.40x**

## RESULT — BBP ROTD50 RESIDUALS (AUTHORITATIVE)

|                   |                                                                  |                                  |
|-------------------|------------------------------------------------------------------|----------------------------------|
| mean  bias        | 0.336                                                            | (a factor of 1.40x)              |
| mean sigma        | 0.44375                                                          | (station-to-station scatter)     |
| stations compared | 36                                                               |                                  |
| spectral periods  | 63                                                               |                                  |
| pass band         | mean  bias  <= 0.69 (a factor of 1.99x), declared before the run |                                  |
| bias at 0.1s      | -0.367                                                           | simulation over-predicts by 44%  |
| bias at 0.3s      | -0.514                                                           | simulation over-predicts by 67%  |
| bias at 1s        | -0.822                                                           | simulation over-predicts by 127% |
| bias at 3s        | -0.216                                                           | simulation over-predicts by 24%  |

## CROSS-CHECK — THIS REPORT'S OWN SPECTRA

|            |                                                                                                                                                                                             |                     |
|------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------|
| mean  bias | 0.427                                                                                                                                                                                       | (a factor of 1.53x) |
| mean sigma | 0.554                                                                                                                                                                                       |                     |
| 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     | ci38443183                     |
| magnitude   | M6.4 (mw)                      |
| origin time | 2019-07-04 17:33:49 UTC        |
| epicentre   | 35.7053, -117.5038             |
| depth       | 10.5 km                        |
| region      | Ridgecrest Earthquake Sequence |

# Provenance

ci38443183 · generated 2026-08-04 23:23 UTC

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## SIMULATION

|                    |                                                                                             |
|--------------------|---------------------------------------------------------------------------------------------|
| produced by        | BBP simulated                                                                               |
| BBP job id         | job_e897f47e965e415c8b60                                                                    |
| 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      | 2026-08-04T23:11:07Z                                                                        |
| per-site Vs30 from | submit-time record (/app/plots/gof_work/ci38443183/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              | M6.4 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

fetches 2026-08-04T23:09:14Z

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## STATION SELECTION

|                   |                                           |
|-------------------|-------------------------------------------|
| search radius     | 100.0 km                                  |
| policy            | all usable within radius                  |
| stations on event | 1018                                      |
| without FDSN code | 0 – cannot be queried at all              |
| candidates        | 39                                        |
| usable records    | 36 (3 returned no usable 3-component set) |
| in this report    | 36 with both observed and simulated       |
| distance range    | 14.9 – 97.7 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 | 5 of 36 – 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

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## THE METRIC

|            |                                                                                                                                                |
|------------|------------------------------------------------------------------------------------------------------------------------------------------------|
| definition | $\ln(\text{observed} / \text{simulated})$ 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: $\pm 0.10$ is about $\pm 10\%$ , $\pm 0.69$ is a factor of 2, $\pm 1.10$ 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,<br>long-period good | Points at high-frequency attenuation or near-surface site response rather than the source.                                                                                         |
| long-period poor,<br>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.

| 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 (cm) obs/sim | in(obs/sim) | Flags     |
|----------|-----------|----------|---------------|------|------------------|---------------|-------------|---------------------|------------------|----------------|----------------|--------------|------------------|-------------|-----------|
| CI.CLC   | 14.9      | 331      | 331           | HNE  | 0.2147           | 0.1927        | 0.2794      | 10.6                | 10.3             | 29.7           | 2.74           | 9.41         | 0.29x            | -0.371      | Inco,Outl |
| CI.Q0072 | 18.2      | 262      | 262           | HNE  | 0.2112           | 0.2327        | 0.2383      | 31.2                | 33.7             | 43.0           | 13.68          | 17.55        | 0.78x            | -0.024      | —         |
| CI.SRT   | 22.3      | 265      | 265           | HNE  | 0.1577           | 0.1542        | 0.2199      | 17.7                | 17.9             | 18.9           | 6.67           | 10.01        | 0.67x            | -0.355      | —         |
| CI.CCC   | 23.7      | 344      | 344           | HNE  | 0.3817           | 0.3673        | 0.1455      | 26.6                | 27.1             | 15.0           | 3.70           | 5.58         | 0.66x            | +0.926      | —         |
| CI.TOW2  | 26.2      | 266      | 266           | HNE  | 0.1786           | 0.1754        | 0.1780      | 15.6                | 16.4             | 15.5           | 4.27           | 8.16         | 0.52x            | -0.015      | —         |
| CI.SLA   | 28.7      | 599      | 599           | HNE  | 0.0193           | 0.0689        | 0.1729      | 0.7                 | 5.6              | 17.9           | 2.01           | 5.51         | 0.37x            | -0.920      | Inco,Outl |
| CI.LRL   | 29.8      | 618      | 618           | HNE  | 0.1971           | 0.1841        | 0.1290      | 14.0                | 15.6             | 14.0           | 4.28           | 4.64         | 0.92x            | +0.356      | —         |
| CI.WRC2  | 30.0      | 565      | 565           | HNE  | 0.1310           | 0.1276        | 0.1666      | 9.6                 | 9.8              | 9.6            | 1.57           | 5.27         | 0.30x            | -0.267      | Inco,Outl |
| CI.WBM   | 36.6      | 366      | 366           | HNE  | 0.0549           | 0.1058        | 0.1072      | 4.5                 | 9.2              | 9.6            | 1.83           | 4.90         | 0.37x            | -0.013      | Inco,Outl |
| CI.WVP2  | 39.2      | 658      | 658           | HNE  | 0.0983           | 0.0938        | 0.0888      | 4.7                 | 4.7              | 6.6            | 0.90           | 3.67         | 0.24x            | +0.054      | —         |
| CI.WNM   | 39.4      | 556      | 556           | HNE  | 0.0931           | 0.0768        | 0.0885      | 2.2                 | 2.1              | 7.7            | 1.33           | 3.71         | 0.36x            | -0.142      | —         |
| CI.WCS2  | 42.7      | 691      | 691           | HNE  | 0.0781           | 0.0731        | 0.0662      | 5.9                 | 5.9              | 5.5            | 0.81           | 3.98         | 0.20x            | +0.099      | Inco,Outl |
| CI.WRV2  | 48.4      | 353      | 353           | HNE  | 0.0485           | 0.0475        | 0.1105      | 3.9                 | 3.9              | 7.7            | 0.68           | 5.51         | 0.12x            | -0.844      | —         |
| CI.WMF   | 55.7      | 602      | 602           | HNE  | 0.0240           | 0.0235        | 0.0572      | 1.8                 | 1.8              | 5.3            | 0.80           | 3.53         | 0.23x            | -0.889      | —         |
| CI.DTP   | 57.7      | 710      | 710           | HNE  | 0.0234           | 0.0219        | 0.0445      | 2.6                 | 2.8              | 4.0            | 1.66           | 2.47         | 0.67x            | -0.709      | —         |
| CI.WBS   | 60.5      | 730      | 730           | HNE  | 0.0912           | 0.0876        | 0.0434      | 4.0                 | 4.3              | 3.6            | 0.65           | 1.74         | 0.37x            | +0.702      | —         |
| NP.1809  | 60.7      | 288      | 288           | HNE  | 0.0321           | 0.0428        | 0.0821      | 2.3                 | 2.7              | 9.4            | 0.93           | 5.55         | 0.17x            | -0.652      | —         |
| CI.DAW   | 63.5      | 599      | 599           | HNE  | 0.0139           | 0.0116        | 0.0385      | 0.7                 | 0.7              | 2.9            | 0.26           | 1.65         | 0.16x            | -1.196      | —         |
| NN.QSM   | 64.1      | 379      | 379           | HHE  | 0.0308           | 0.0282        | 0.0751      | 2.3                 | 2.2              | 5.5            | 0.42           | 3.72         | 0.11x            | -0.979      | Glit,Outl |
| CI.WOR   | 66.7      | 398      | 398           | HNE  | 0.0563           | 0.0517        | 0.0688      | 1.7                 | 1.5              | 3.9            | 0.50           | 1.54         | 0.32x            | -0.285      | —         |
| CI.APL   | 69.8      | 583      | 583           | HNE  | 0.0242           | 0.0222        | 0.0349      | 1.3                 | 1.4              | 3.6            | 0.37           | 2.85         | 0.13x            | -0.455      | —         |
| CE.43158 | 71.7      | 283      | 283           | HNE  | 0.0363           | 0.0353        | 0.0645      | 2.9                 | 4.6              | 6.4            | 1.30           | 4.37         | 0.30x            | -0.603      | —         |
| CI.WHF   | 76.6      | 371      | 371           | HNE  | 0.0548           | 0.0528        | 0.0469      | 2.7                 | 2.7              | 2.7            | 0.53           | 1.22         | 0.43x            | +0.118      | —         |
| CI.CCA   | 77.0      | 342      | 342           | HNE  | 0.0250           | 0.0245        | 0.0531      | 3.8                 | 3.8              | 5.3            | 1.55           | 3.89         | 0.40x            | -0.774      | —         |

## Station summary — three independent sources (2/2)

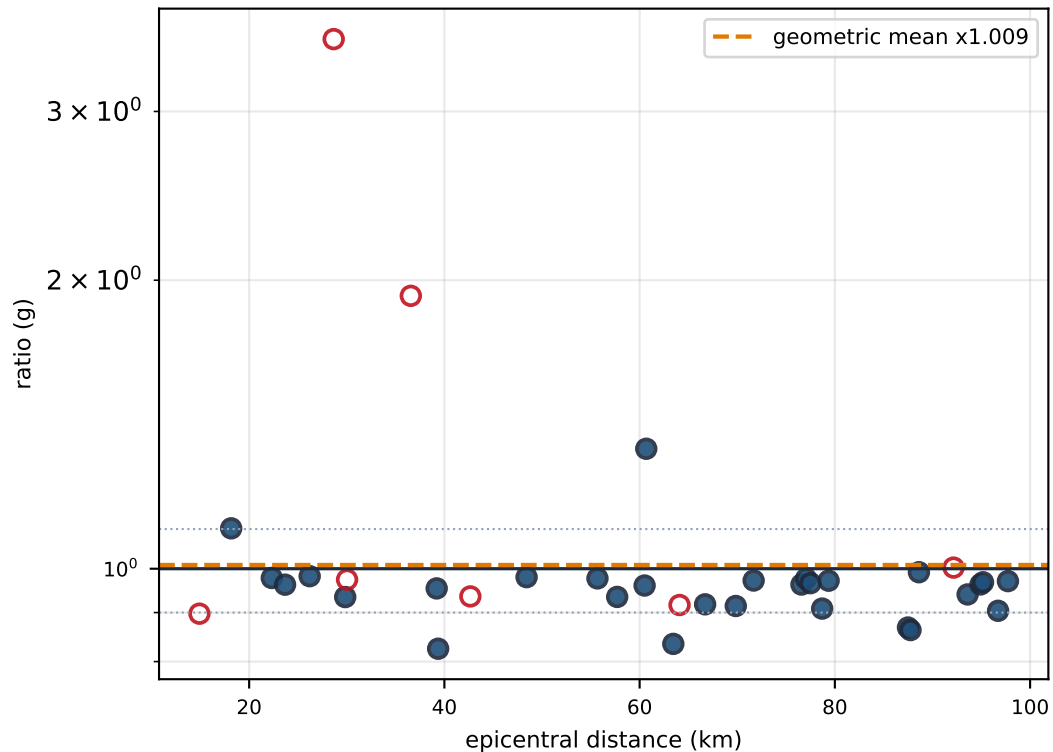
ShakeMap = amplitudes the seismic network reported in stationlist.json. obspy = the same recordings fetched from FDSN and processed here. BBP = simulated. The first two should agree closely; where they do not, the ShakeMap quality flags usually explain why.

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.

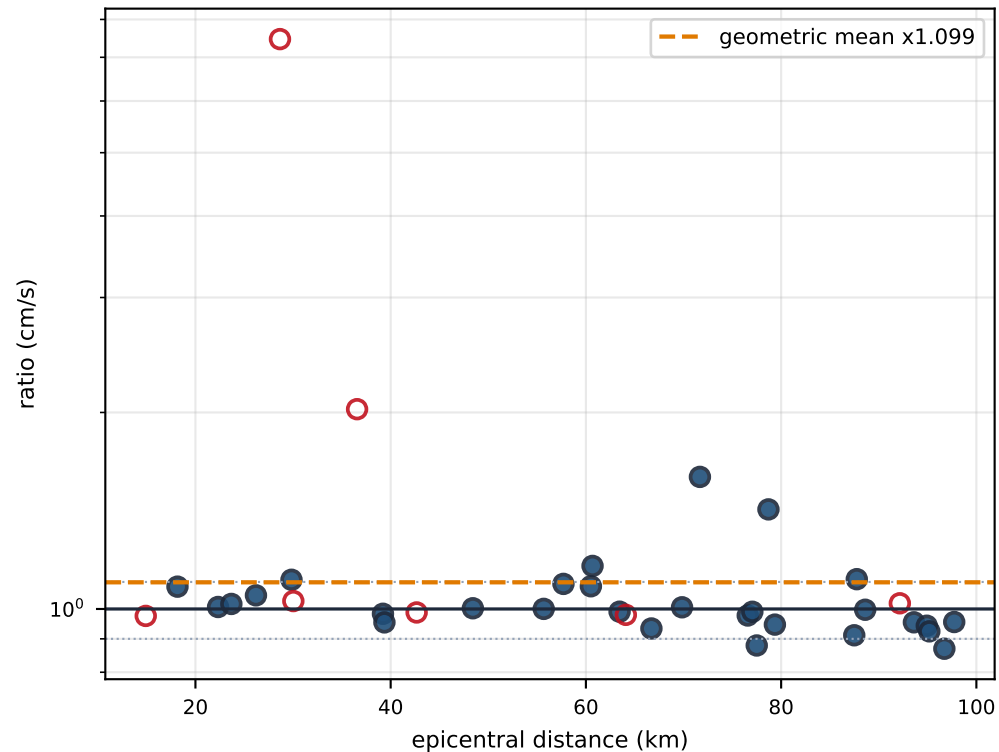
| Station  | Dist (km) | Vs30 BBP | Vs30 ShakeMap | Chan | PGA (g) ShakeMap | PGA (g) obspy | PGA (g) BBP | PGV (cm/s) ShakeMap | PGV (cm/s) obspy | PGV (cm/s) BBP | PGD (cm) obspy | PGD (cm) BBP | PGD obs/sim | ln(obs/sim) | Flags     |
|----------|-----------|----------|---------------|------|------------------|---------------|-------------|---------------------|------------------|----------------|----------------|--------------|-------------|-------------|-----------|
| CI.GSC   | 77.5      | 653      | 653           | HNE  | 0.0212           | 0.0205        | 0.0337      | 1.6                 | 1.4              | 2.5            | 0.41           | 2.64         | 0.16x       | -0.500      | —         |
| CI.Q0068 | 78.7      | 343      | 343           | HNE  | 0.0228           | 0.0207        | 0.0480      | 2.0                 | 2.8              | 6.7            | 1.42           | 3.94         | 0.36x       | -0.839      | —         |
| CI.HAR   | 79.4      | 344      | 344           | HNE  | 0.0321           | 0.0312        | 0.0453      | 2.9                 | 2.7              | 4.8            | 0.65           | 2.41         | 0.27x       | -0.371      | —         |
| CI.LMR2  | 87.5      | 735      | 735           | HNE  | 0.0210           | 0.0183        | 0.0277      | 1.8                 | 1.7              | 2.0            | 0.45           | 0.78         | 0.58x       | -0.417      | —         |
| CI.ISA   | 87.8      | 927      | 927           | HNE  | 0.0196           | 0.0169        | 0.0242      | 1.0                 | 1.1              | 1.3            | 0.31           | 0.74         | 0.41x       | -0.359      | —         |
| CE.34349 | 88.6      | 373      | 373           | HNE  | 0.0646           | 0.0641        | 0.0457      | 4.2                 | 4.2              | 3.5            | 0.53           | 1.24         | 0.43x       | +0.337      | —         |
| NN.GWY   | 92.2      | 684      | 684           | HHE  | 0.0127           | 0.0127        | 0.0305      | 1.4                 | 1.4              | 3.2            | 0.38           | 2.49         | 0.15x       | -0.876      | Glit,Outl |
| CI.HYS   | 93.6      | 349      | 349           | HNE  | 0.0249           | 0.0234        | 0.0395      | 1.1                 | 1.0              | 3.3            | 0.32           | 0.89         | 0.36x       | -0.524      | —         |
| CI.TEH   | 94.9      | 794      | 794           | HNE  | 0.0246           | 0.0237        | 0.0216      | 2.1                 | 2.0              | 2.1            | 0.86           | 1.73         | 0.50x       | +0.093      | —         |
| CI.WAS2  | 95.2      | 780      | 780           | HNE  | 0.0274           | 0.0265        | 0.0269      | 1.5                 | 1.4              | 1.7            | 0.33           | 0.69         | 0.48x       | -0.015      | —         |
| CI.CWC   | 96.7      | 658      | 658           | HNE  | 0.0126           | 0.0114        | 0.0224      | 0.8                 | 0.7              | 2.1            | 0.38           | 1.97         | 0.19x       | -0.679      | —         |
| CI.CGO   | 97.7      | 713      | 713           | HNE  | 0.0145           | 0.0141        | 0.0262      | 1.3                 | 1.2              | 1.9            | 0.36           | 1.38         | 0.26x       | -0.620      | —         |

## Cross-check — two processings of the same recordings

PGA — obspy / ShakeMap-reported  
27 of 36 within  $\pm 10\%$

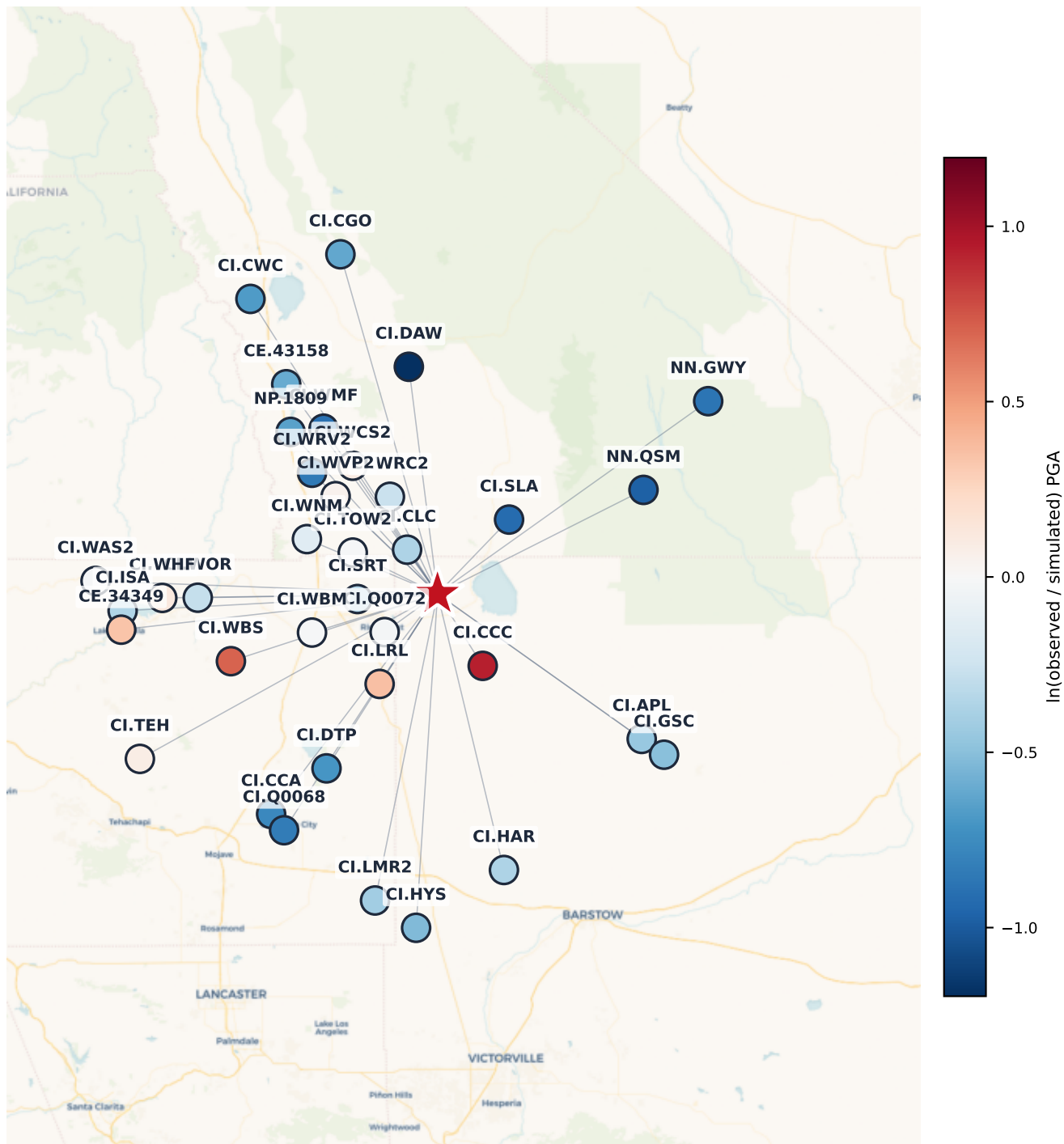


PGV — obspy / ShakeMap-reported  
27 of 36 within  $\pm 10\%$

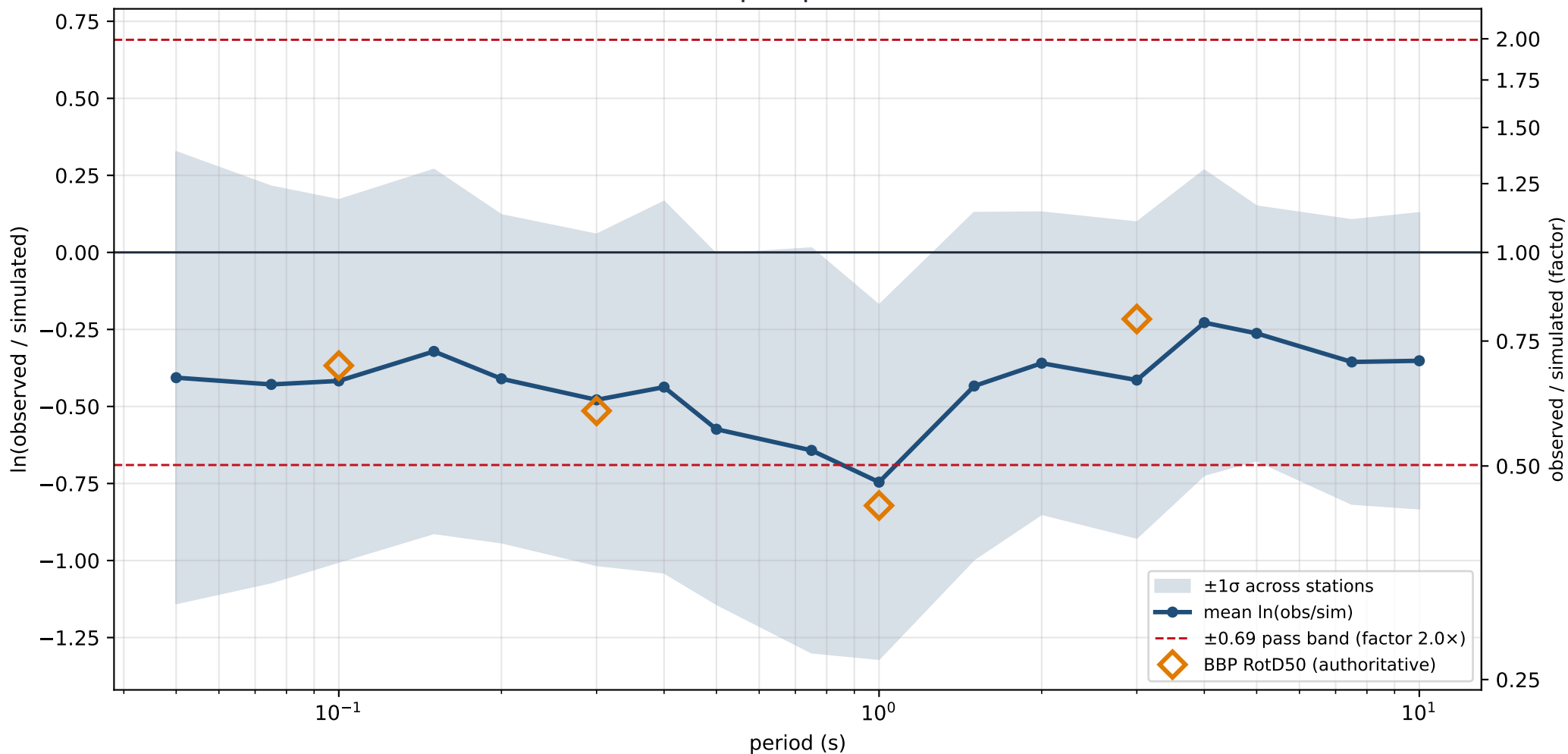


Low red markers are stations ShakeMap flagged (IncompleteRecord, Outlier, ...). Dotted lines are  $\pm 10\%$ . A consistent offset would mean our processing differs systematically from the network.

Station geometry — ci38443183 M6.4  
star = epicentre; marker colour =  $\ln(\text{obs}/\text{sim})$  PGA residual (red = observed larger)



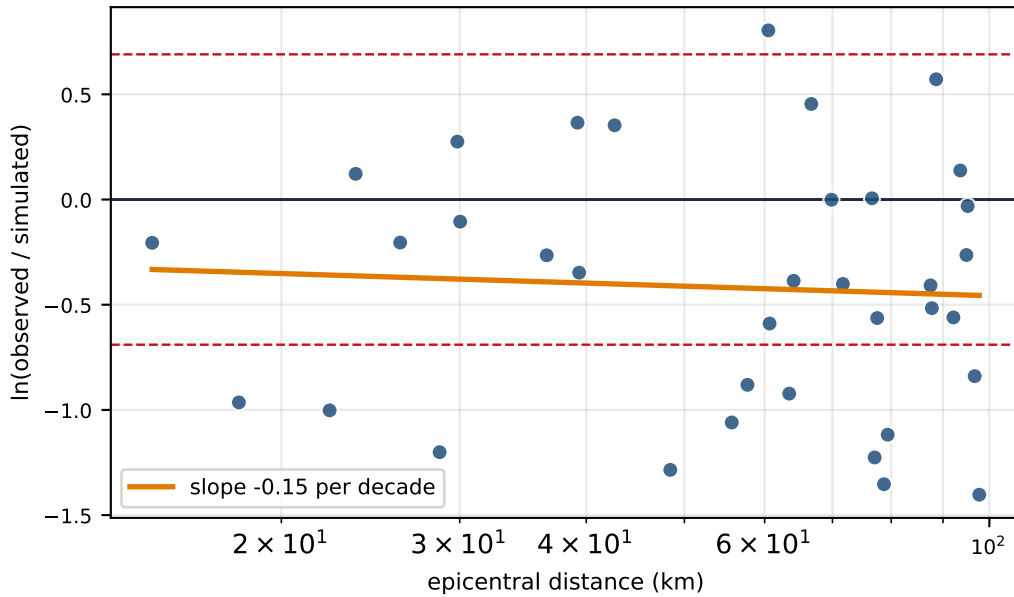
**Goodness of fit — log residual by period**  
**this report's spectra: mean |bias| = 0.427 (factor 1.53×)**  
**BBP RotD50: mean |bias| = 0.336 (factor 1.40×)**



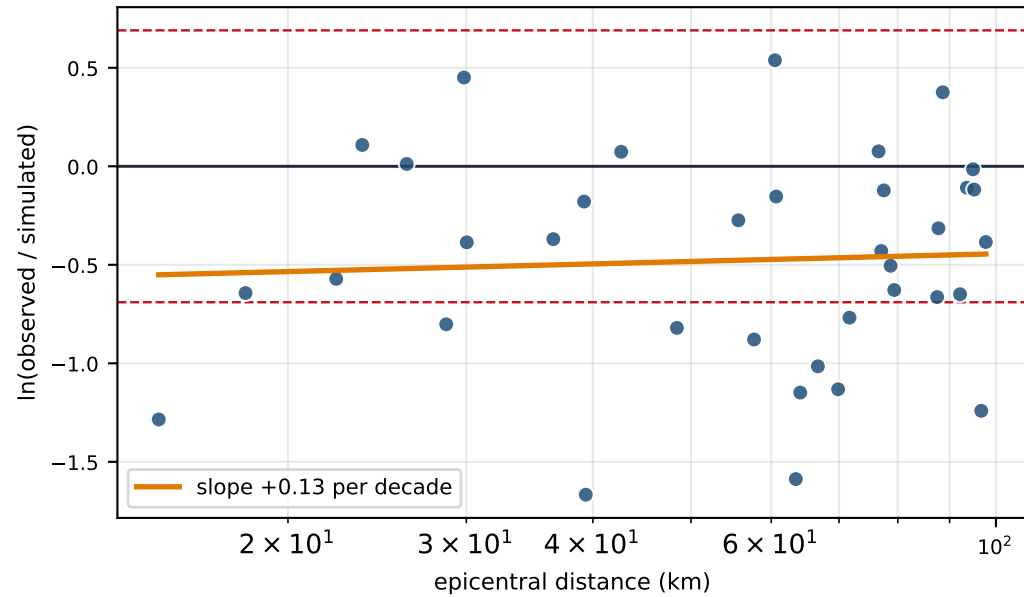
Positive = the simulation under-predicts (real shaking was larger). Negative = it over-predicts.

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

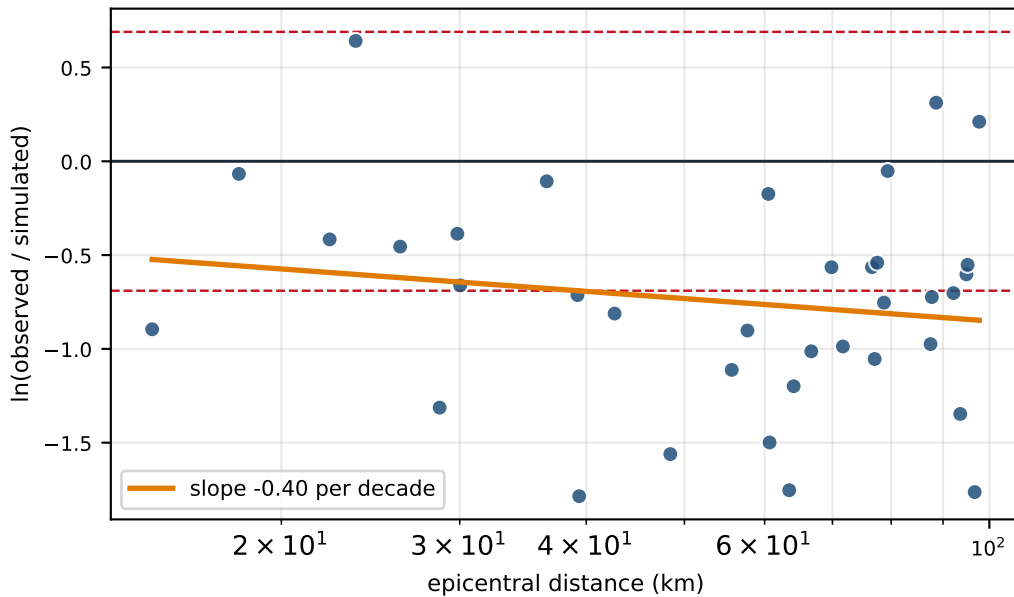
T = 0.1 s    mean -0.417 (factor 1.52x over-predicted)



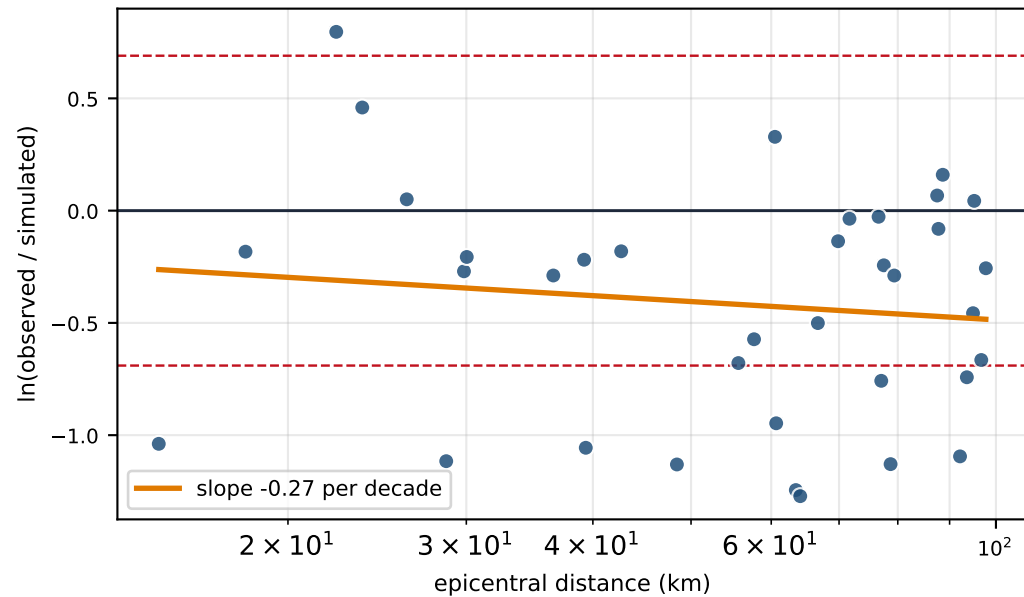
T = 0.3 s    mean -0.478 (factor 1.61x over-predicted)



T = 1 s    mean -0.746 (factor 2.11x over-predicted)

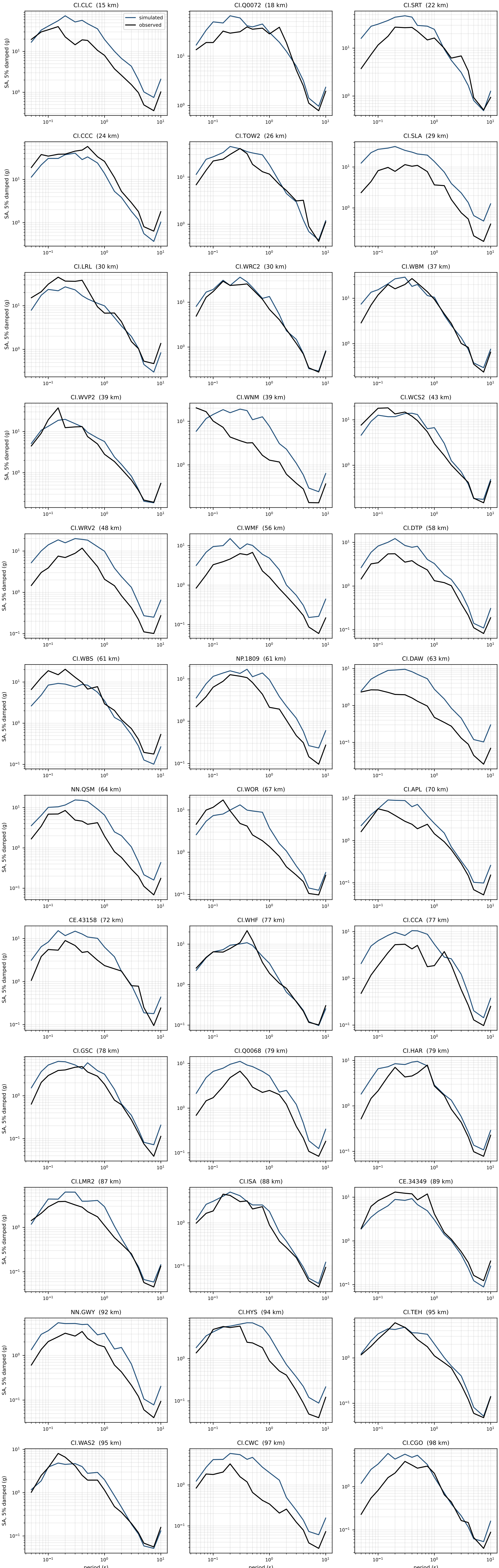


T = 3 s    mean -0.414 (factor 1.51x over-predicted)

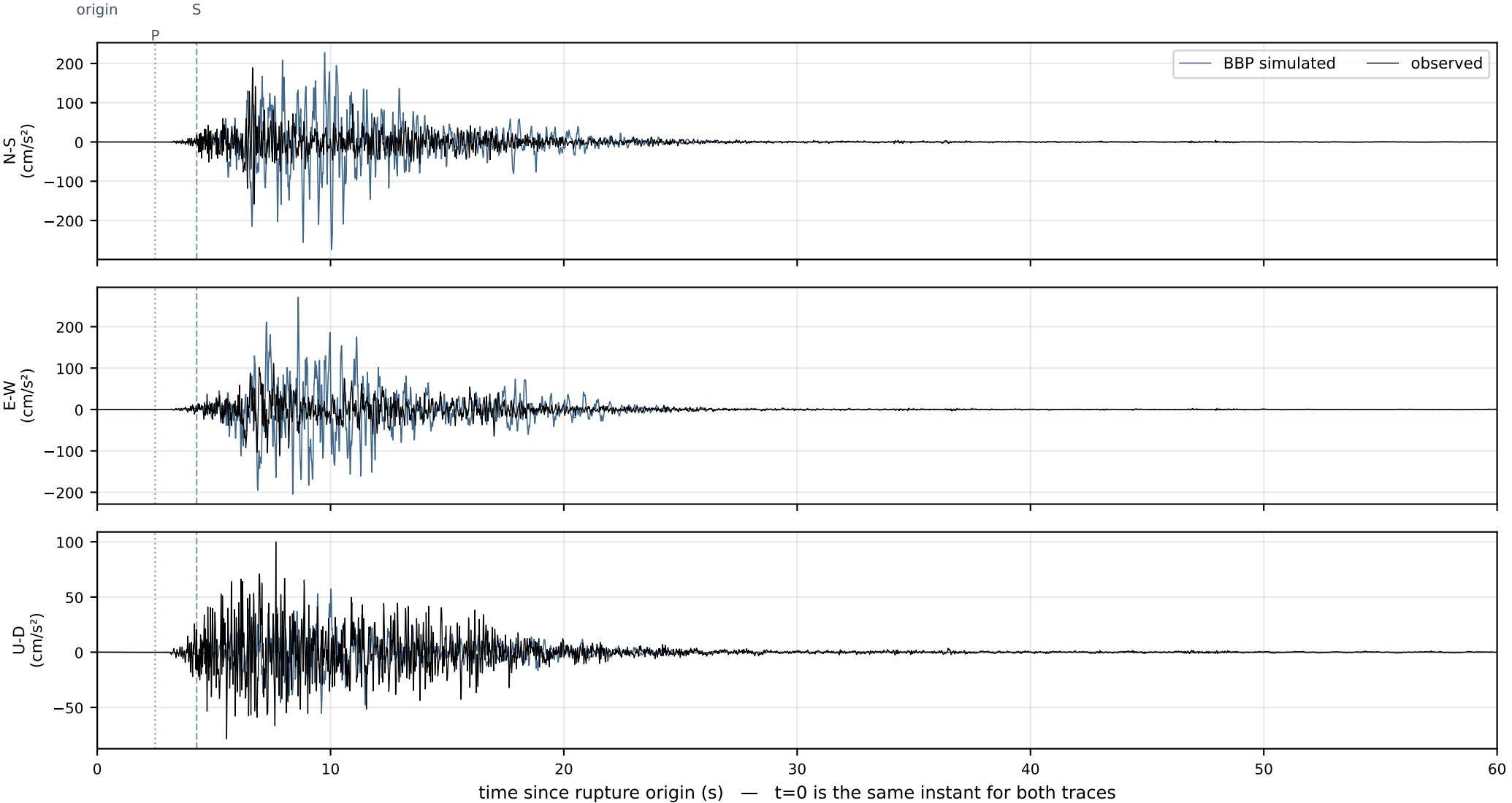


Flat offset = amplitude/site problem.    Sloping = attenuation problem.    Dashed lines are the  $\pm 0.69$  pass band.

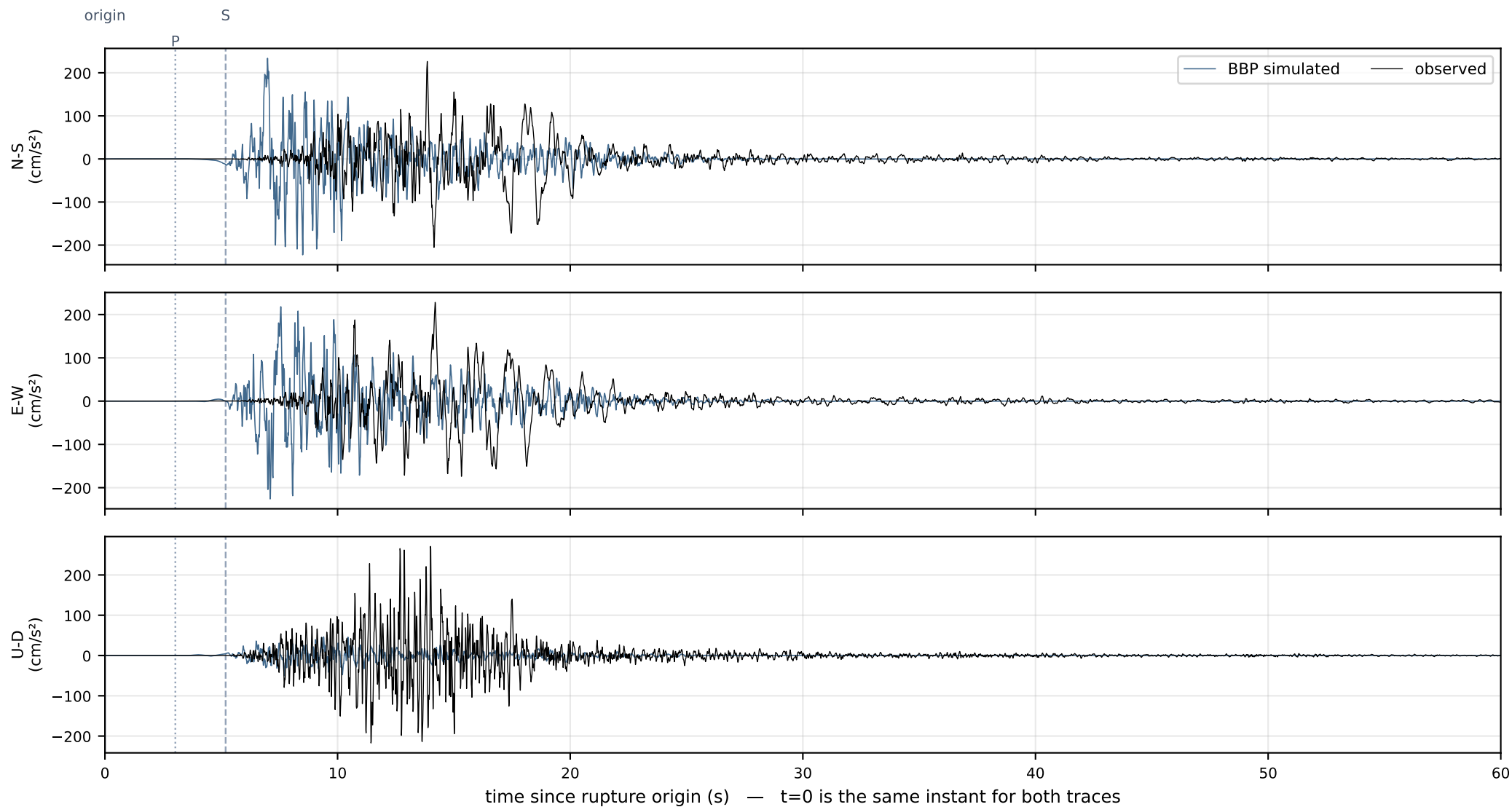
Response spectra — observed vs simulated (geometric-mean horizontal)



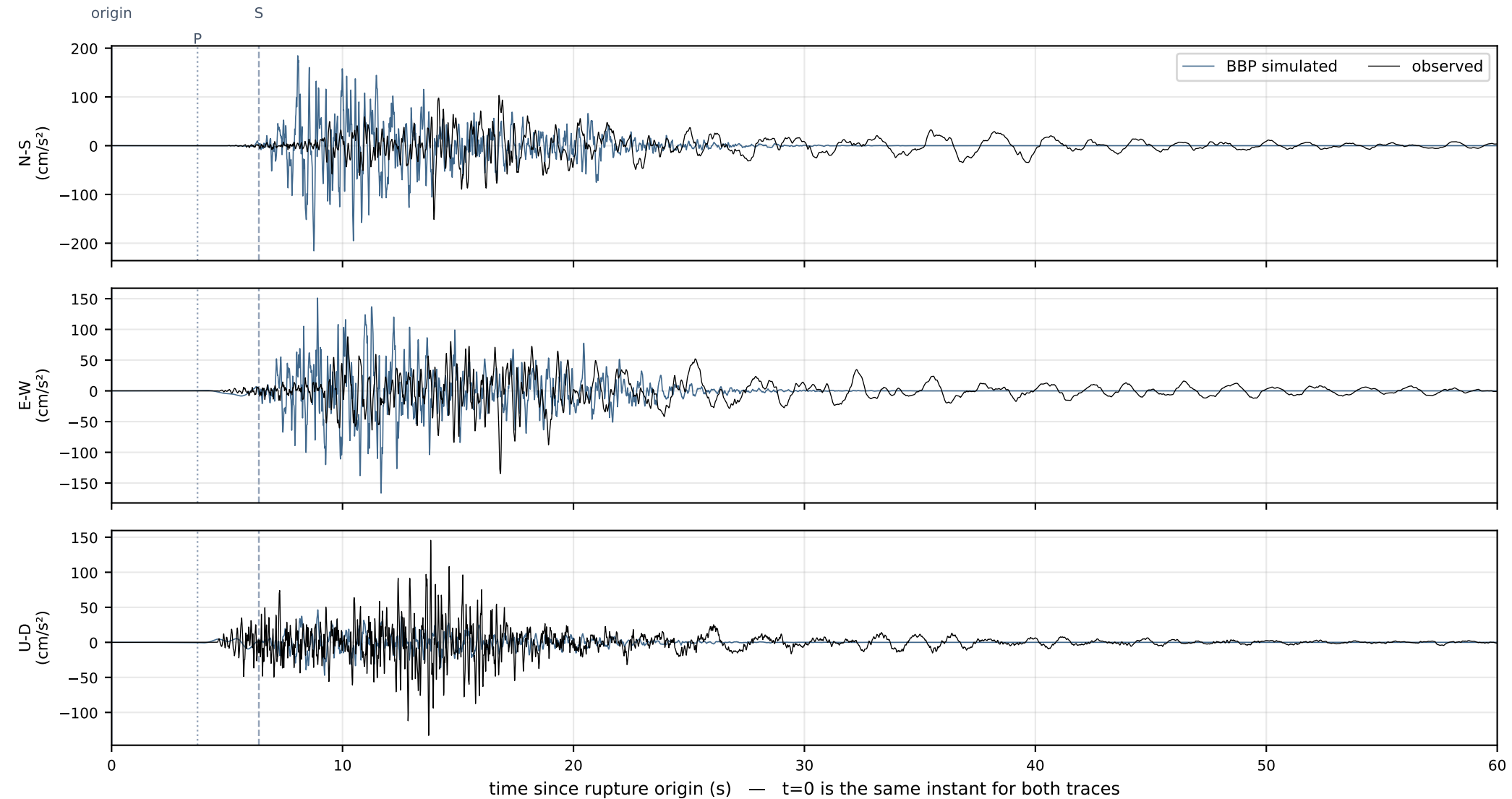
CI.CLC — 14.9 km, Vs30 331 m/s, HNE (SCEDC)  
observed PGA 0.1927 g · simulated PGA 0.2794 g ·  $\ln(\text{obs}/\text{sim}) = -0.371$  · observed peak at +6.7 s  
observed record starts 60.0 s before origin



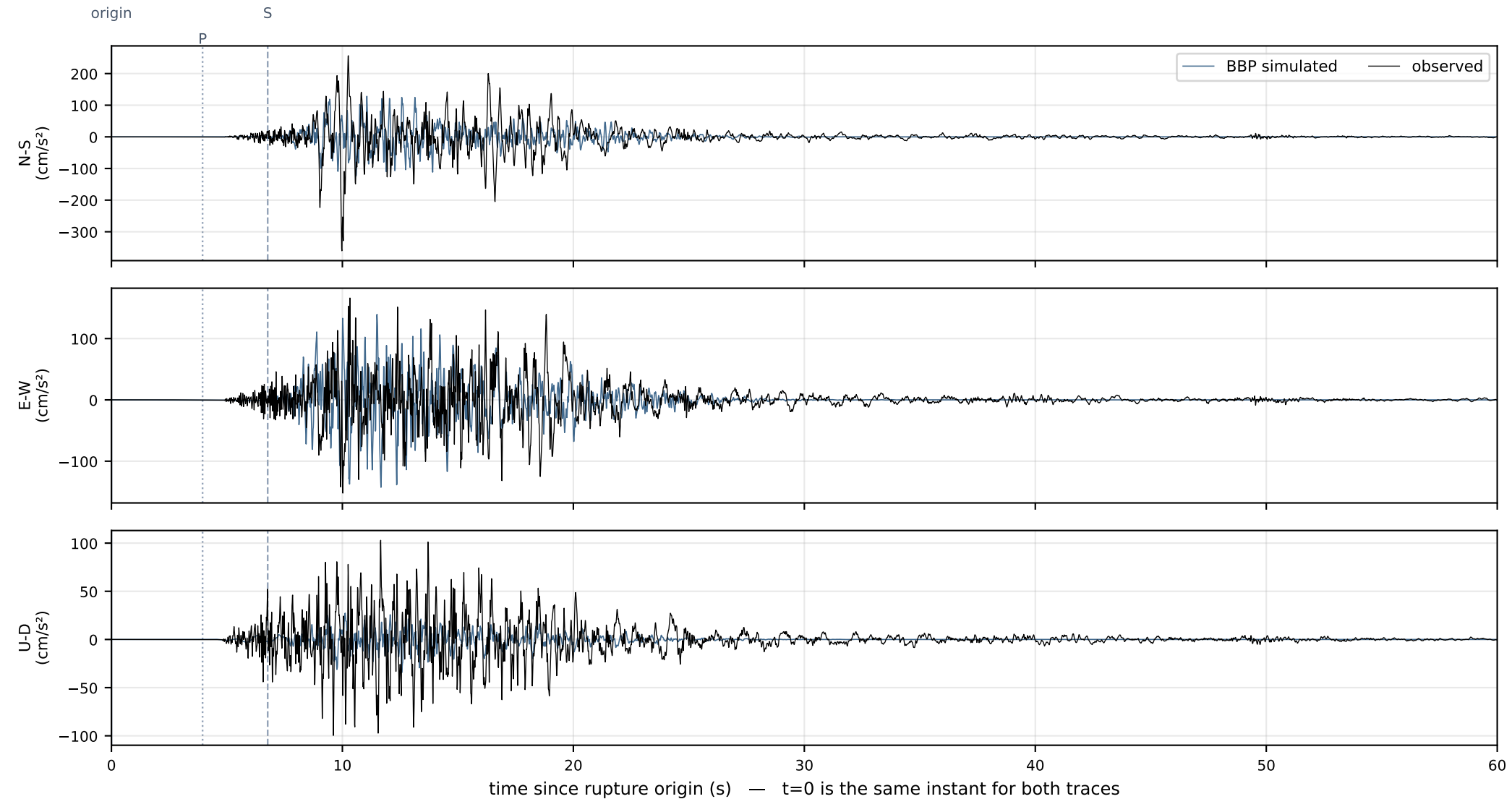
CI.Q0072 — 18.2 km, Vs30 262 m/s, HNE (EARTHSCOPE)  
observed PGA 0.2327 g · simulated PGA 0.2383 g ·  $\ln(\text{obs}/\text{sim}) = -0.024$  · observed peak at +14.2 s  
observed record starts 34.2 s before origin



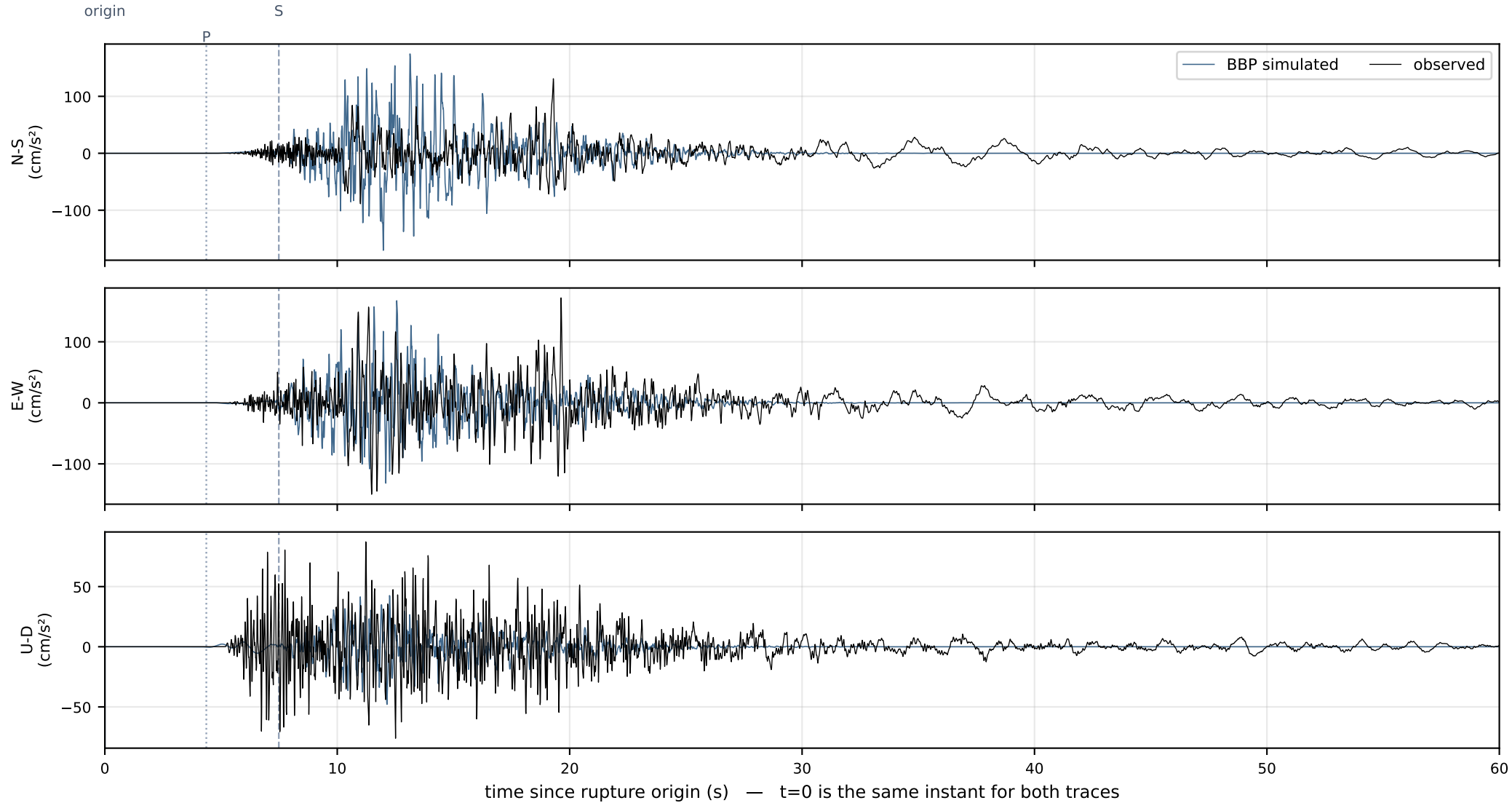
CI.SRT — 22.3 km, Vs30 265 m/s, HNE (SCEDC)  
observed PGA 0.1542 g · simulated PGA 0.2199 g ·  $\ln(\text{obs}/\text{sim}) = -0.355$  · observed peak at +14.0 s  
observed record starts 60.0 s before origin



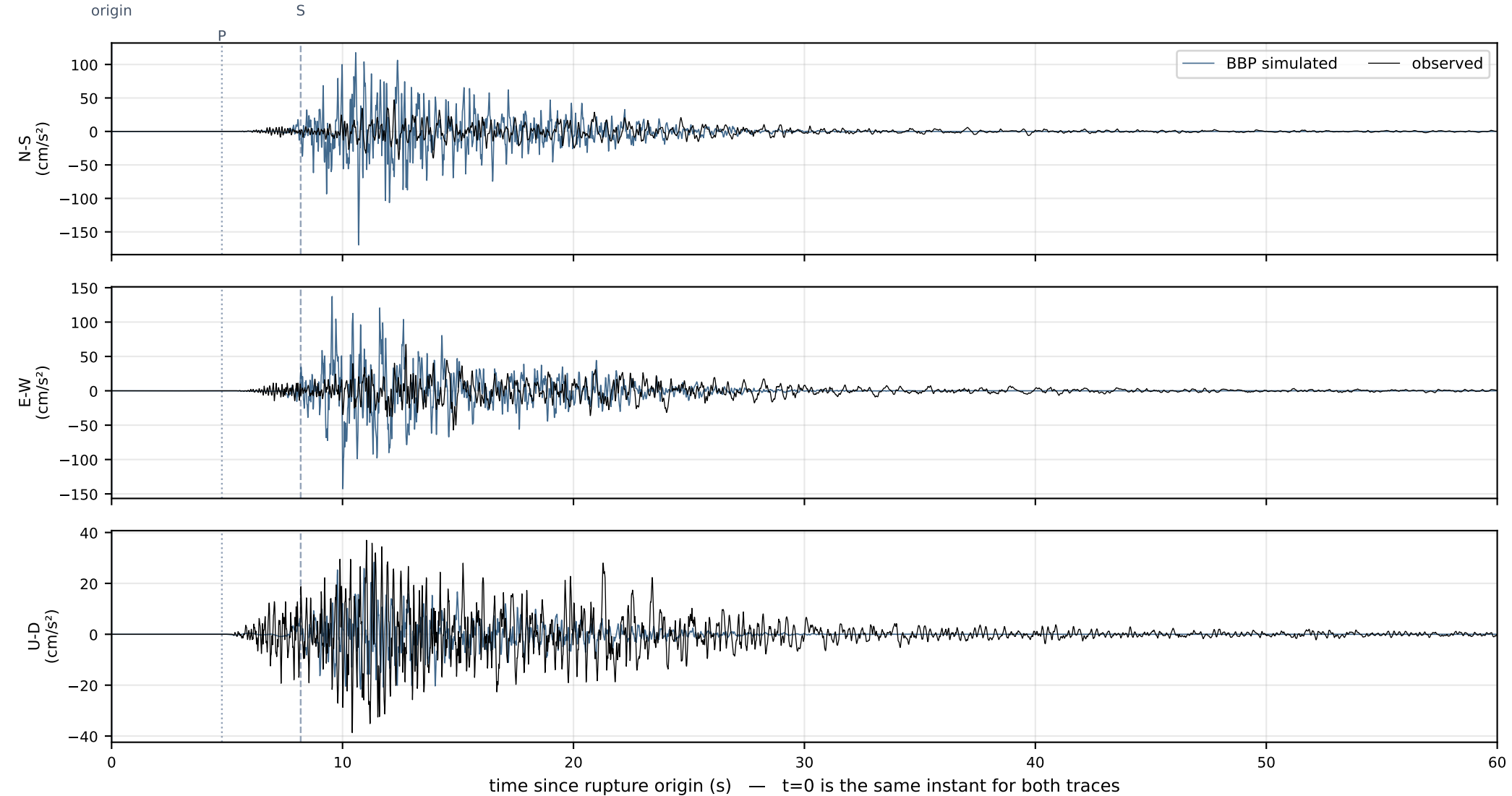
CI.CCC — 23.7 km, Vs30 344 m/s, HNE (SCEDC)  
observed PGA 0.3673 g · simulated PGA 0.1455 g ·  $\ln(\text{obs}/\text{sim}) = +0.926$  · observed peak at +10.0 s  
observed record starts 60.0 s before origin



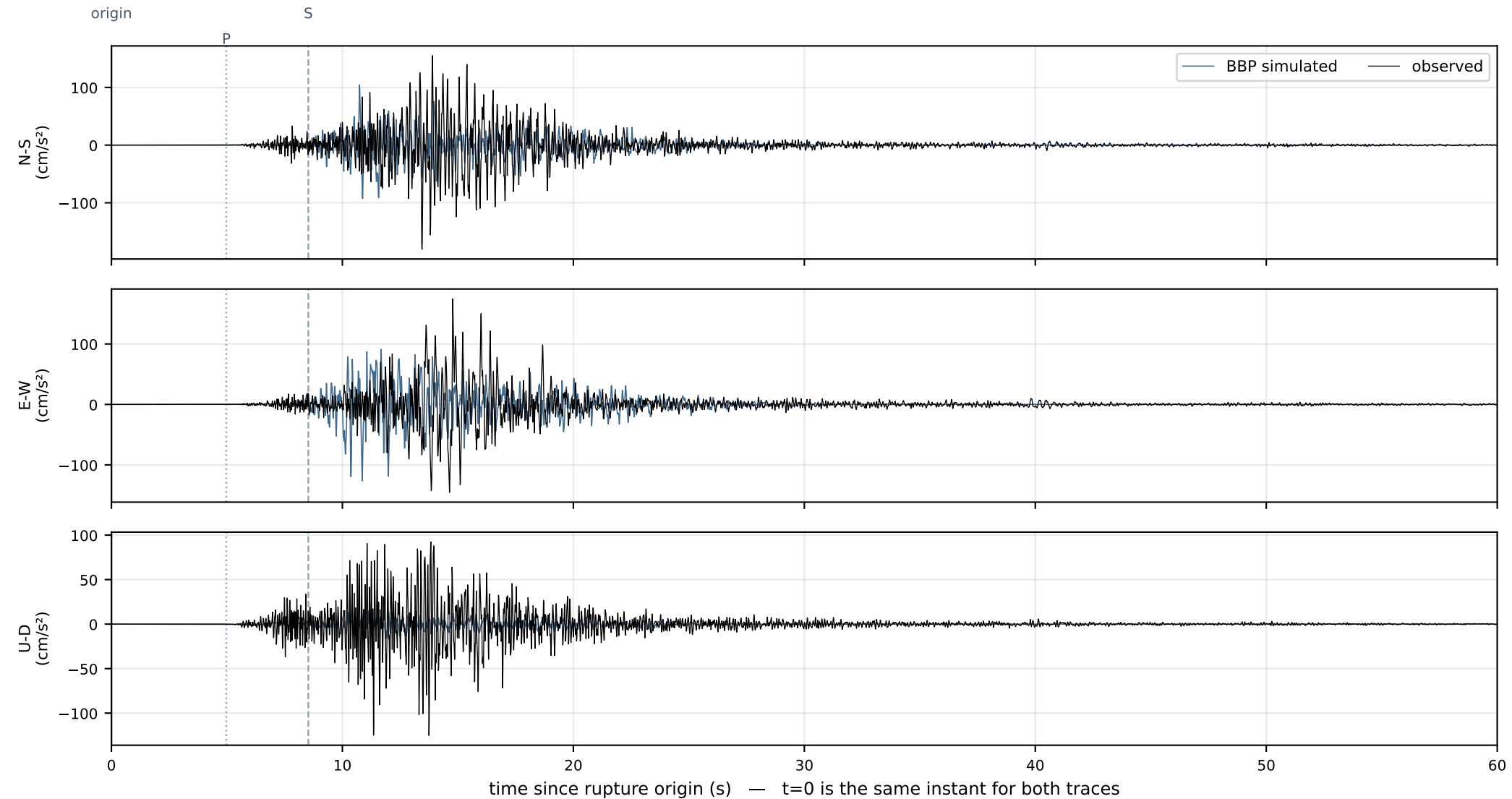
CI.TOW2 — 26.2 km, Vs30 266 m/s, HNE (SCEDC)  
observed PGA 0.1754 g · simulated PGA 0.1780 g ·  $\ln(\text{obs}/\text{sim}) = -0.015$  · observed peak at +19.6 s  
observed record starts 60.0 s before origin



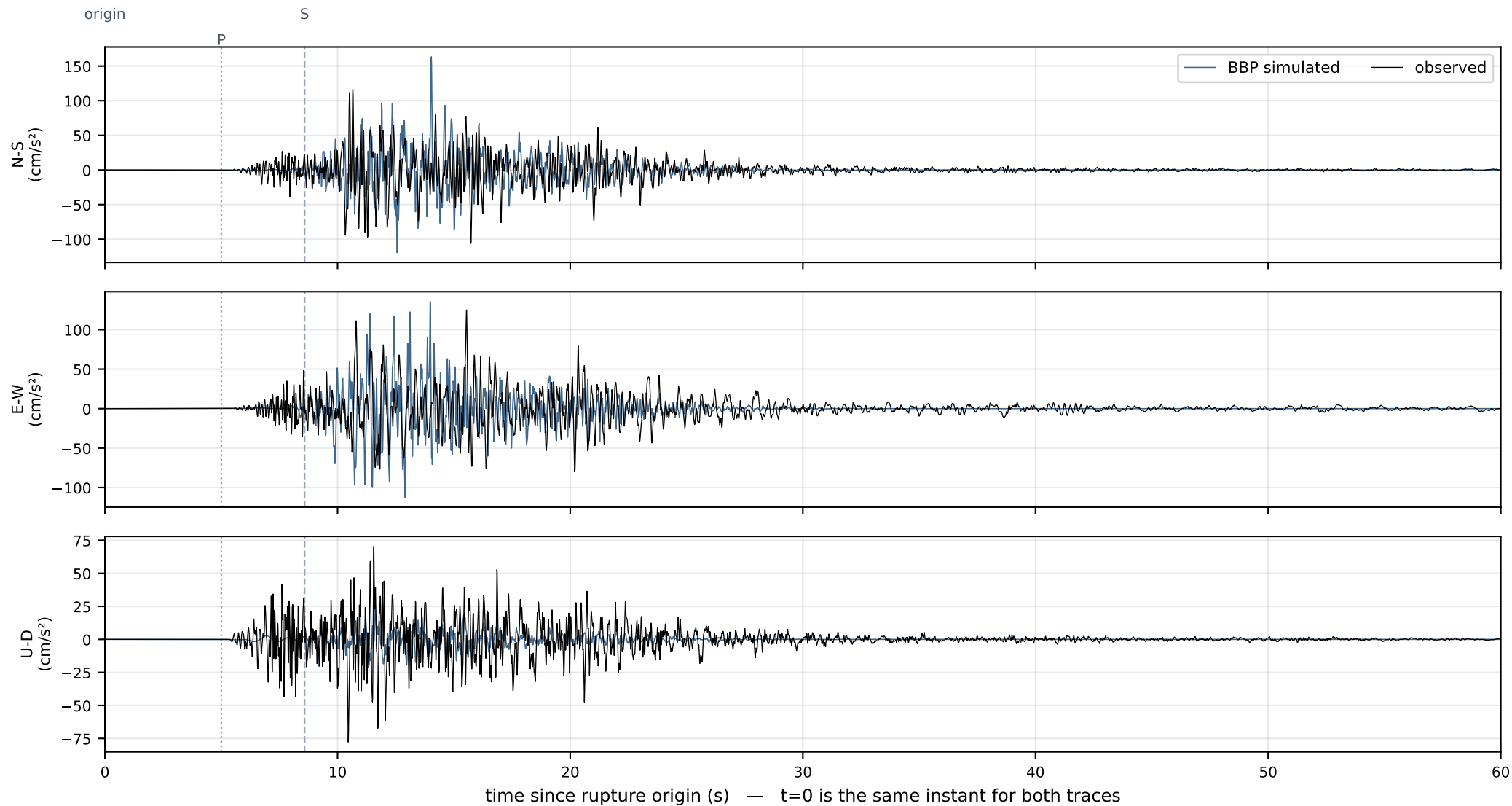
CI.SLA — 28.7 km, Vs30 599 m/s, HNE (SCEDC)  
observed PGA 0.0689 g · simulated PGA 0.1729 g ·  $\ln(\text{obs}/\text{sim}) = -0.920$  · observed peak at +12.7 s  
observed record starts 60.0 s before origin



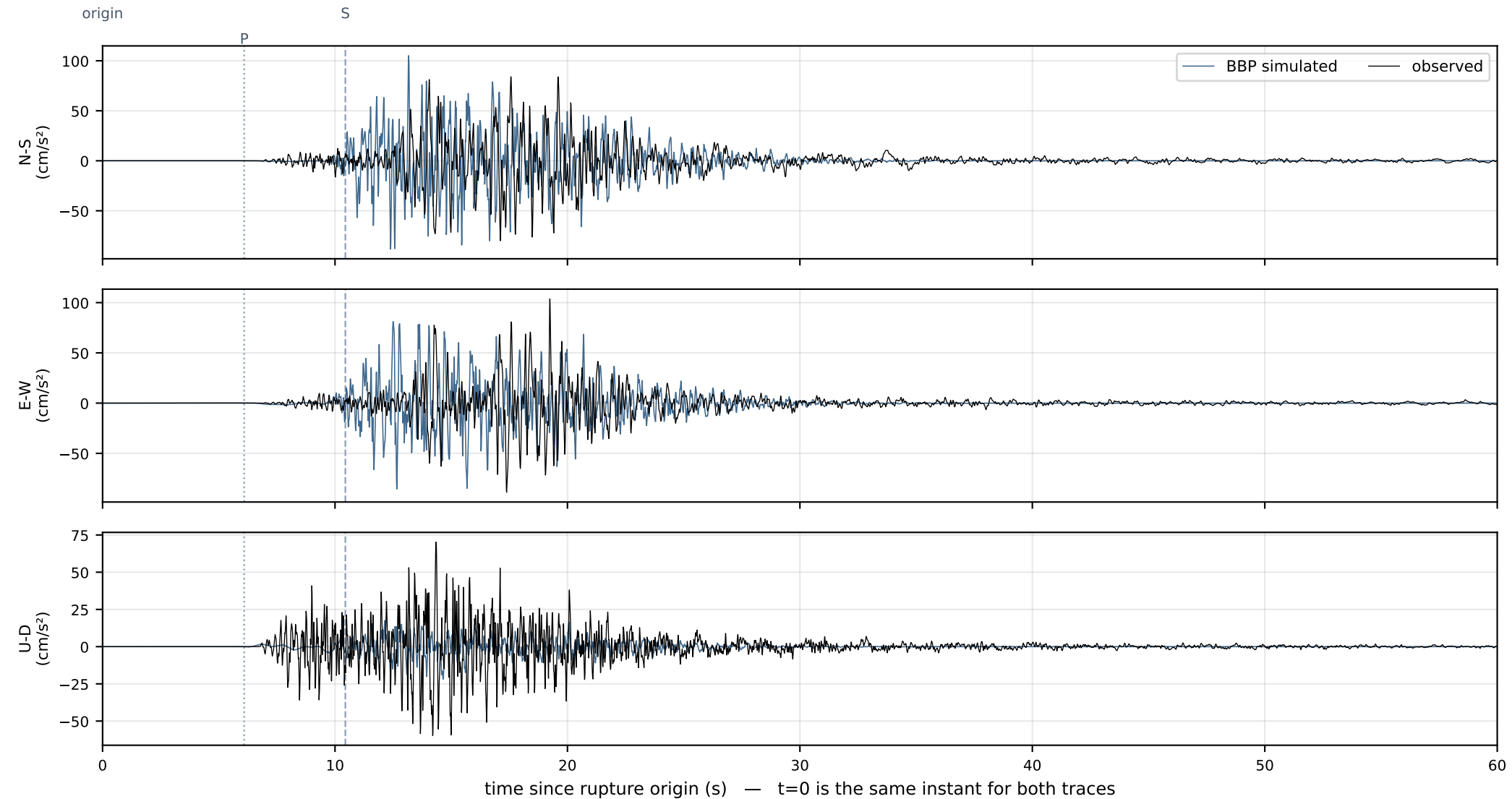
CI.LRL — 29.8 km, Vs30 618 m/s, HNE (SCEDC)  
observed PGA 0.1841 g · simulated PGA 0.1290 g ·  $\ln(\text{obs}/\text{sim}) = +0.356$  · observed peak at +13.4 s  
observed record starts 60.0 s before origin



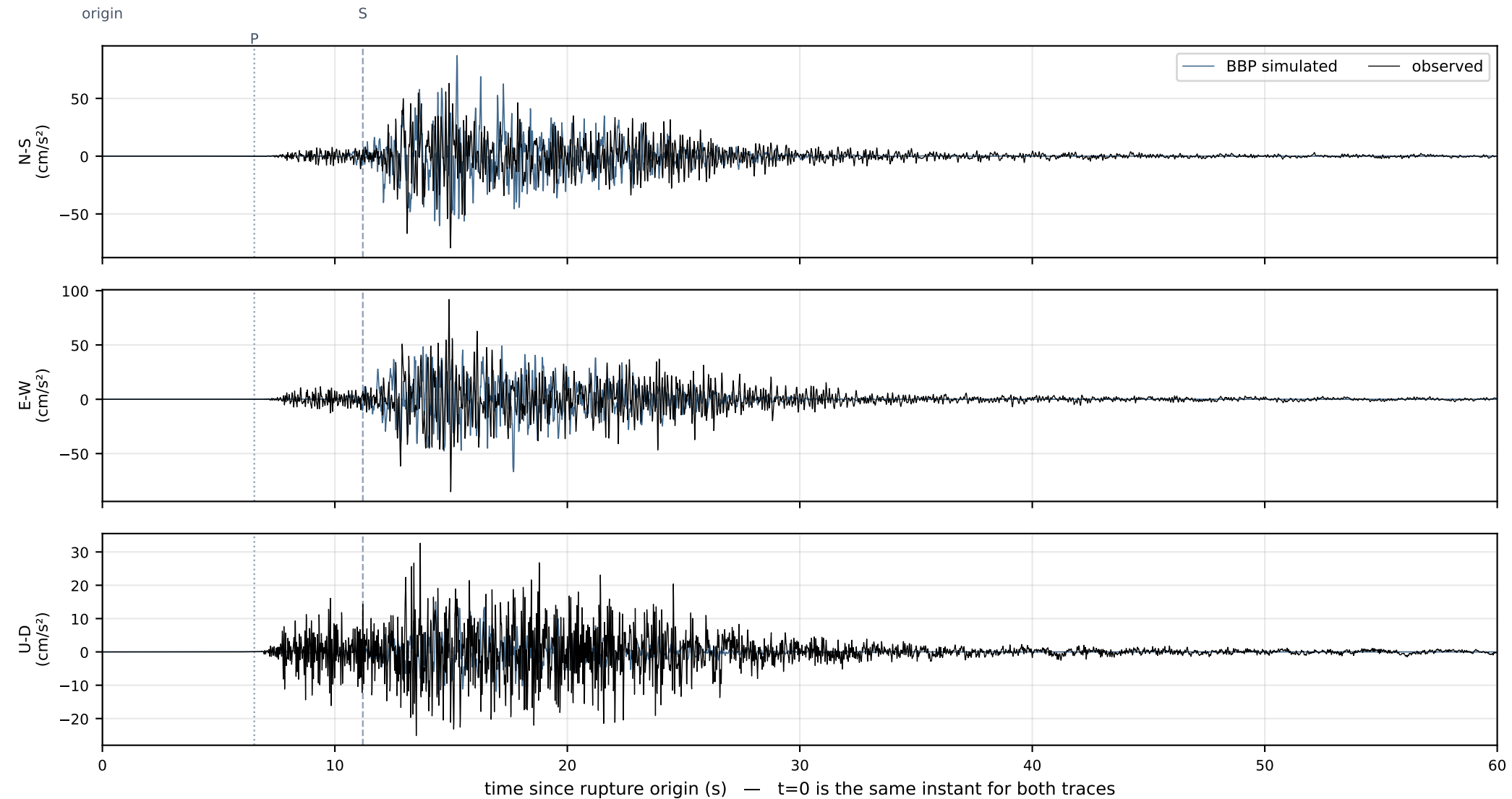
CI.WRC2 — 30.0 km, Vs30 565 m/s, HNE (SCEDC)  
observed PGA 0.1276 g · simulated PGA 0.1666 g ·  $\ln(\text{obs}/\text{sim}) = -0.267$  · observed peak at +15.5 s  
observed record starts 60.0 s before origin



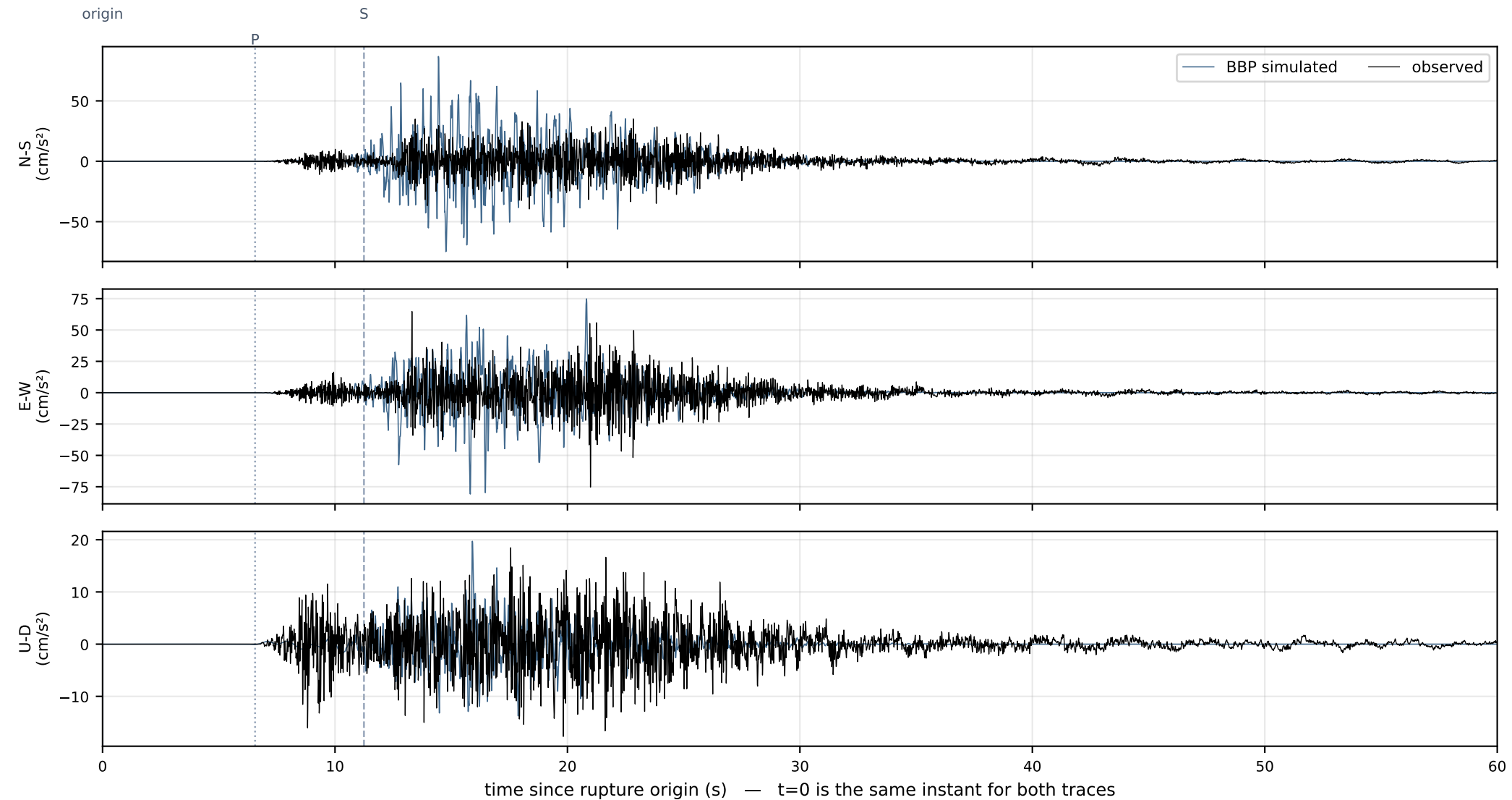
CI.WBM — 36.6 km, Vs30 366 m/s, HNE (SCEDC)  
observed PGA 0.1058 g · simulated PGA 0.1072 g ·  $\ln(\text{obs}/\text{sim}) = -0.013$  · observed peak at +19.2 s  
observed record starts 60.0 s before origin



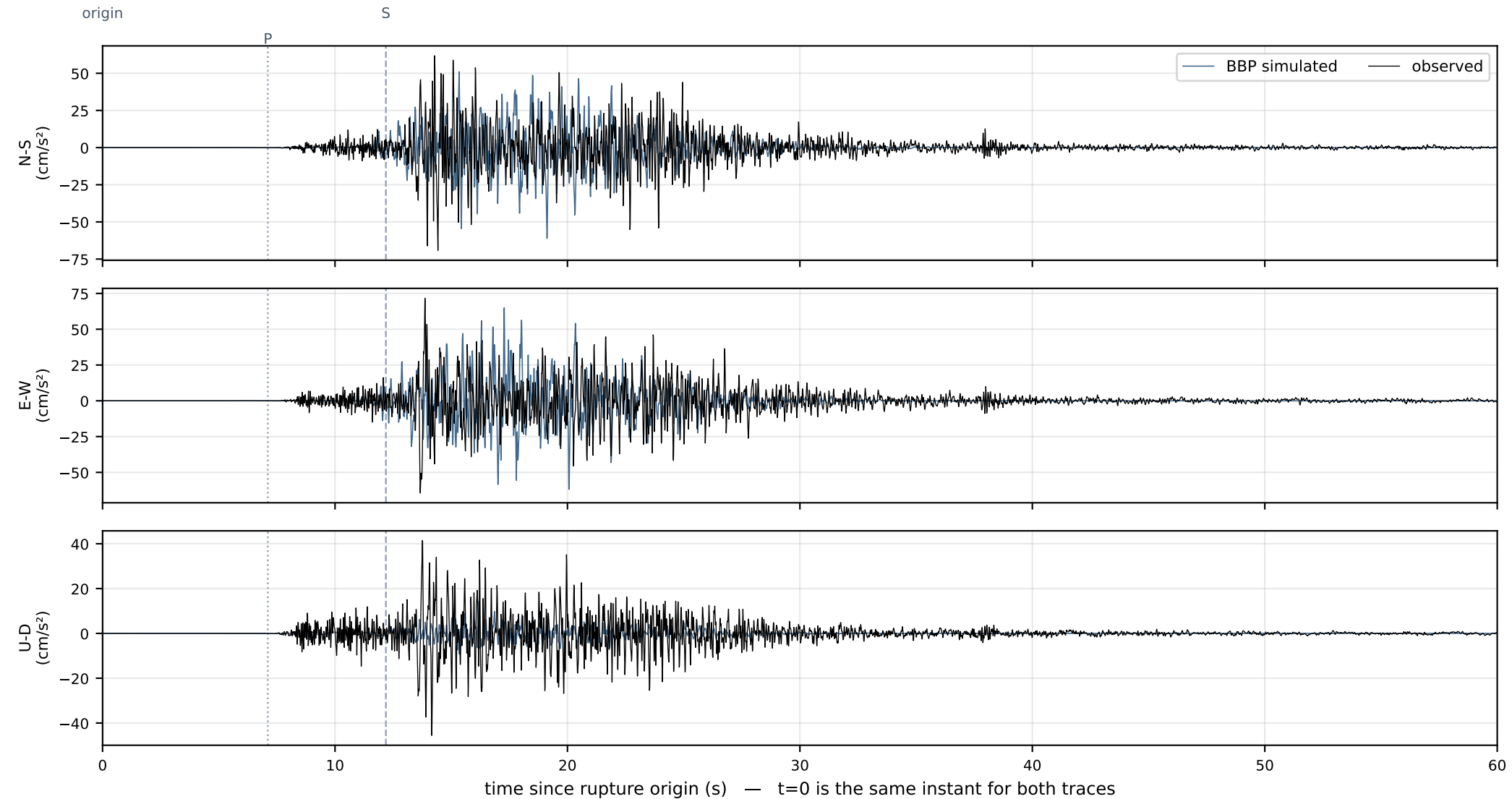
CI.WVP2 — 39.2 km, Vs30 658 m/s, HNE (SCEDC)  
observed PGA 0.0938 g · simulated PGA 0.0888 g ·  $\ln(\text{obs}/\text{sim}) = +0.054$  · observed peak at +14.9 s  
observed record starts 60.0 s before origin



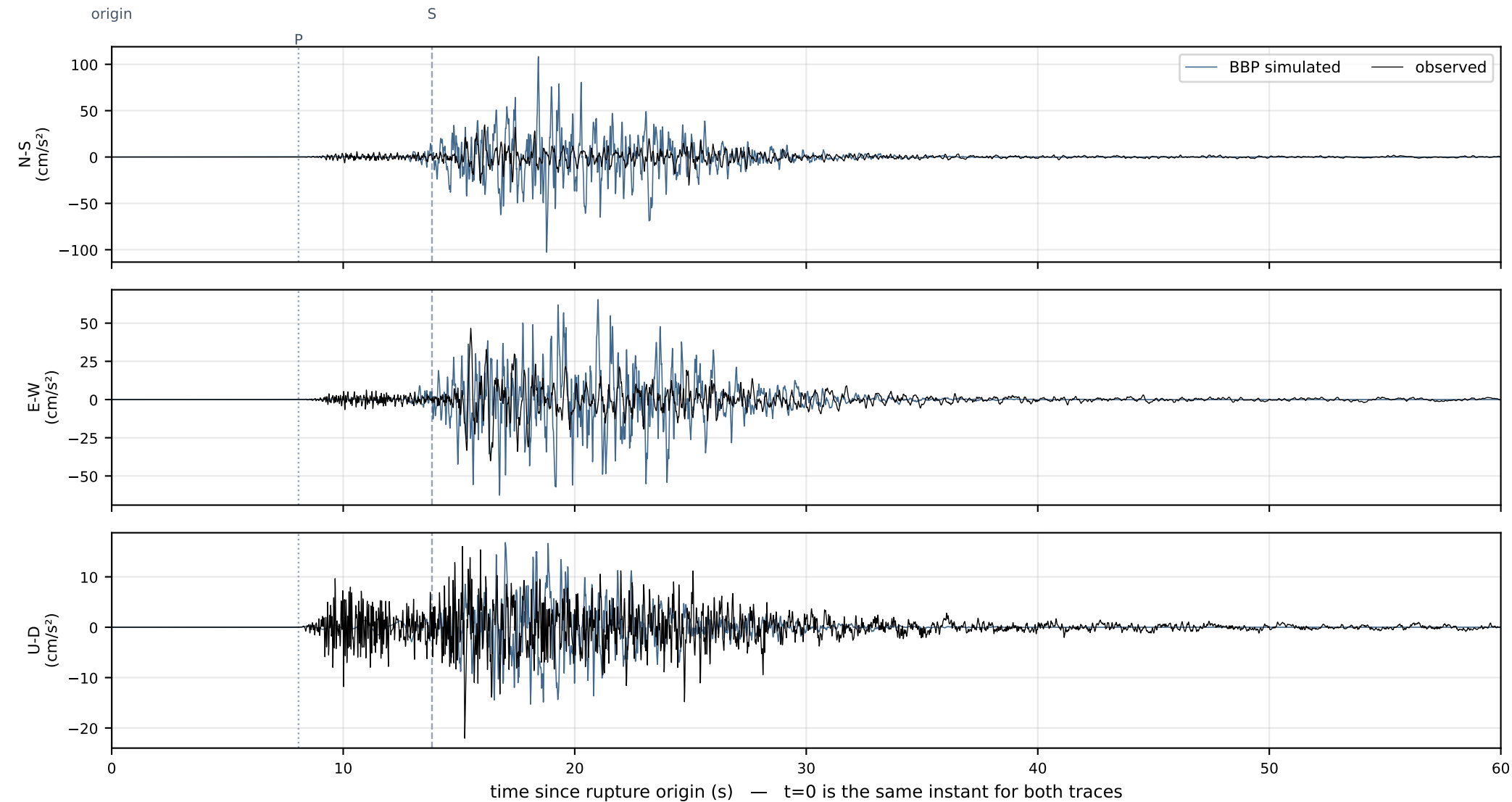
CI.WNM — 39.4 km, Vs30 556 m/s, HNE (SCEDC)  
observed PGA 0.0768 g · simulated PGA 0.0885 g ·  $\ln(\text{obs}/\text{sim}) = -0.142$  · observed peak at +21.0 s  
observed record starts 60.0 s before origin



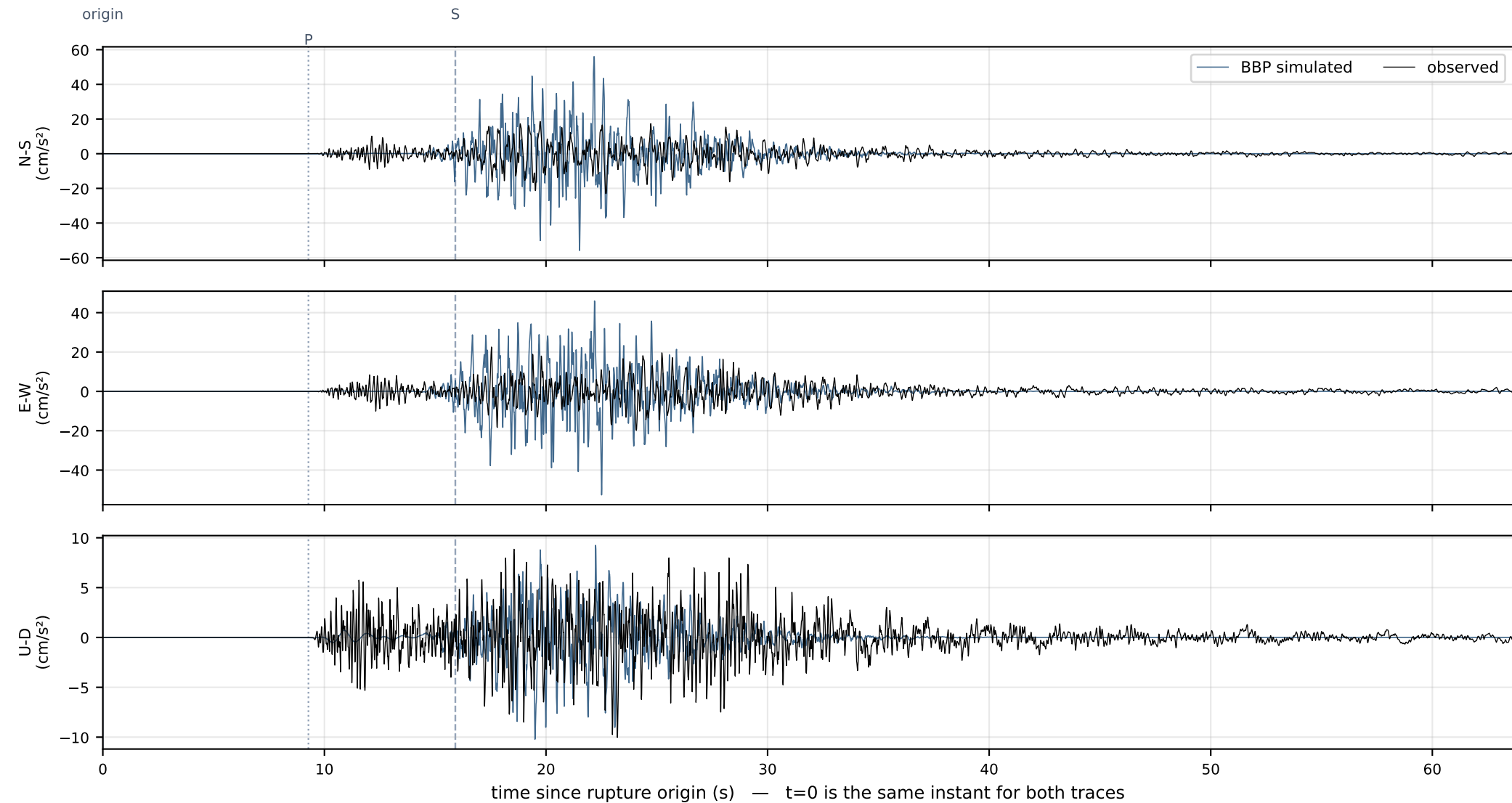
CI.WCS2 — 42.7 km, Vs30 691 m/s, HNE (SCEDC)  
observed PGA 0.0731 g · simulated PGA 0.0662 g ·  $\ln(\text{obs}/\text{sim}) = +0.099$  · observed peak at +13.9 s  
observed record starts 60.0 s before origin



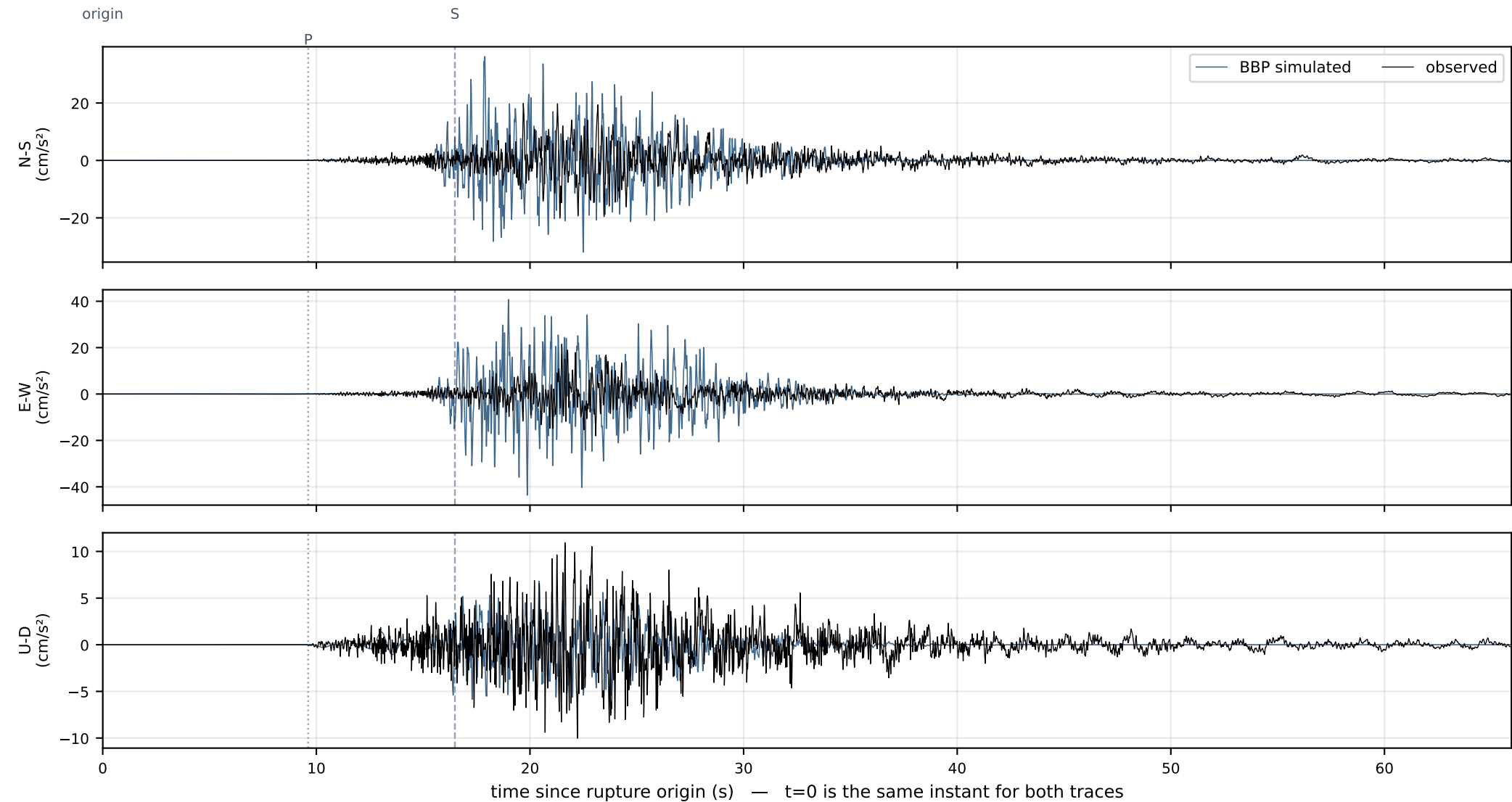
CI.WRV2 — 48.4 km, Vs30 353 m/s, HNE (SCEDC)  
observed PGA 0.0475 g · simulated PGA 0.1105 g ·  $\ln(\text{obs}/\text{sim}) = -0.844$  · observed peak at +15.5 s  
observed record starts 60.0 s before origin



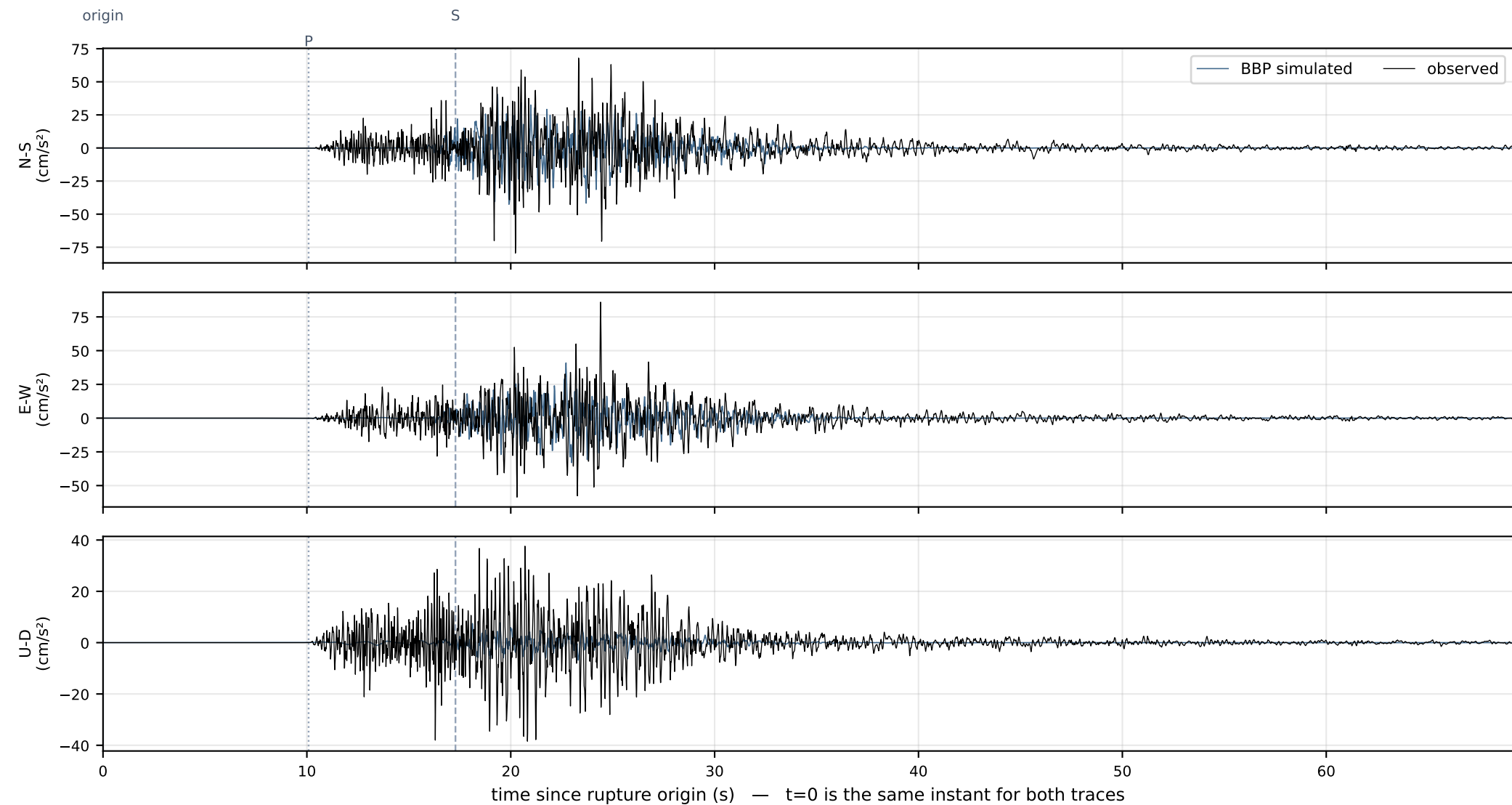
CI.WMF — 55.7 km, Vs30 602 m/s, HNE (SCEDC)  
observed PGA 0.0235 g · simulated PGA 0.0572 g ·  $\ln(\text{obs}/\text{sim}) = -0.889$  · observed peak at +22.7 s  
observed record starts 60.0 s before origin



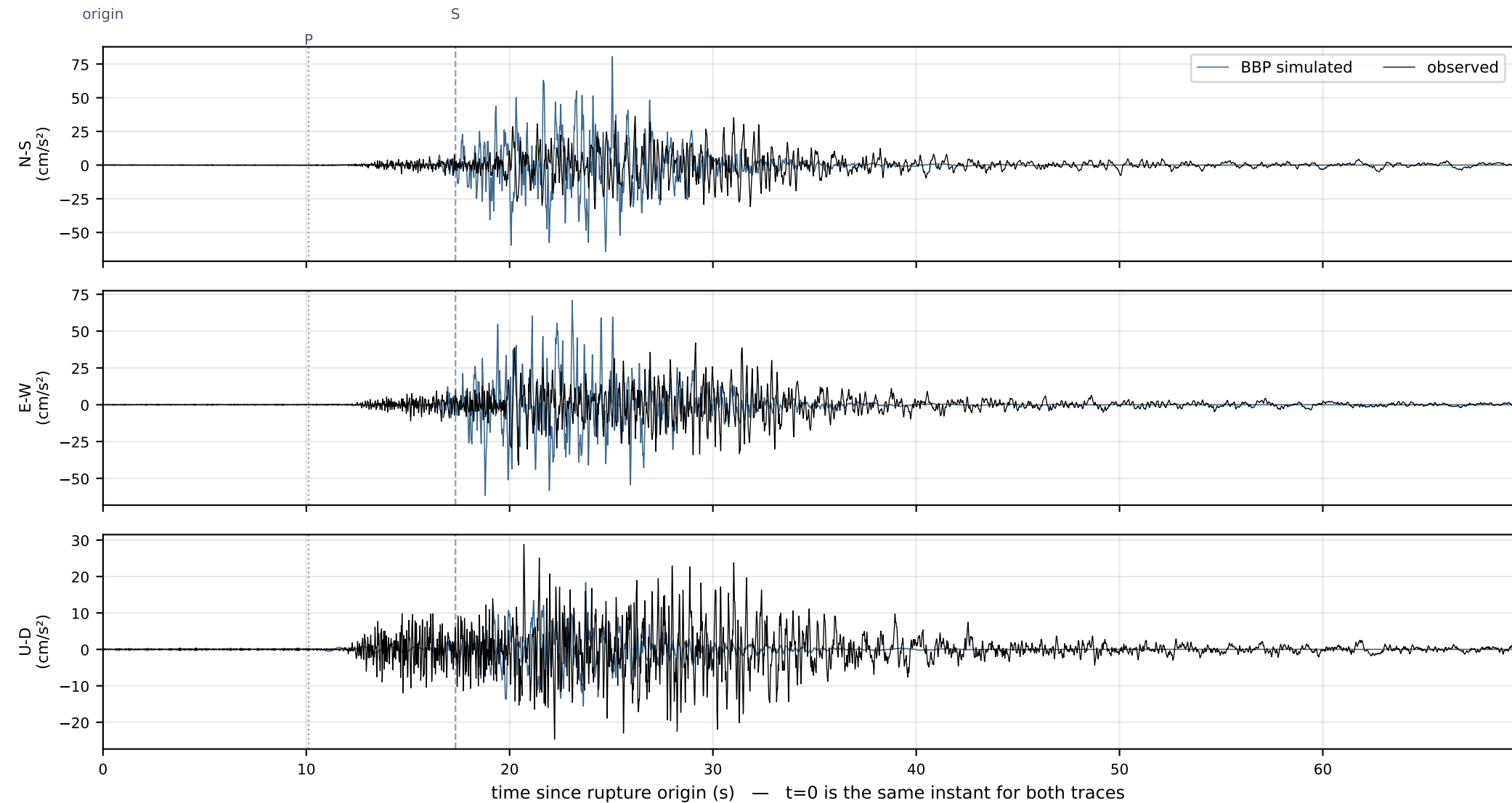
CI.DTP — 57.7 km, Vs30 710 m/s, HNE (SCEDC)  
observed PGA 0.0219 g · simulated PGA 0.0445 g ·  $\ln(\text{obs}/\text{sim}) = -0.709$  · observed peak at +21.5 s  
observed record starts 60.0 s before origin



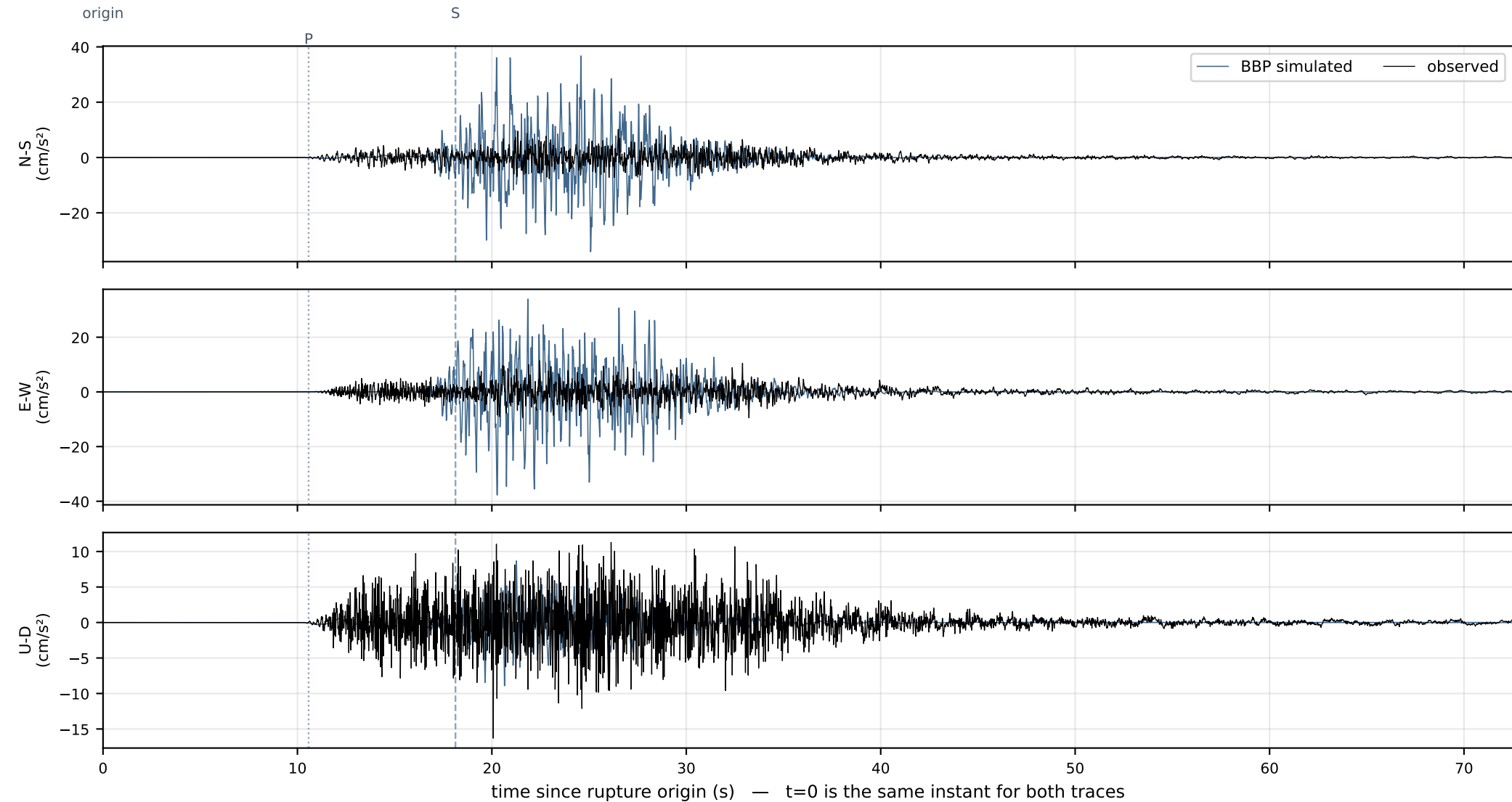
CI.WBS — 60.5 km, Vs30 730 m/s, HNE (SCEDC)  
observed PGA 0.0876 g · simulated PGA 0.0434 g ·  $\ln(\text{obs}/\text{sim}) = +0.702$  · observed peak at +24.4 s  
observed record starts 60.0 s before origin



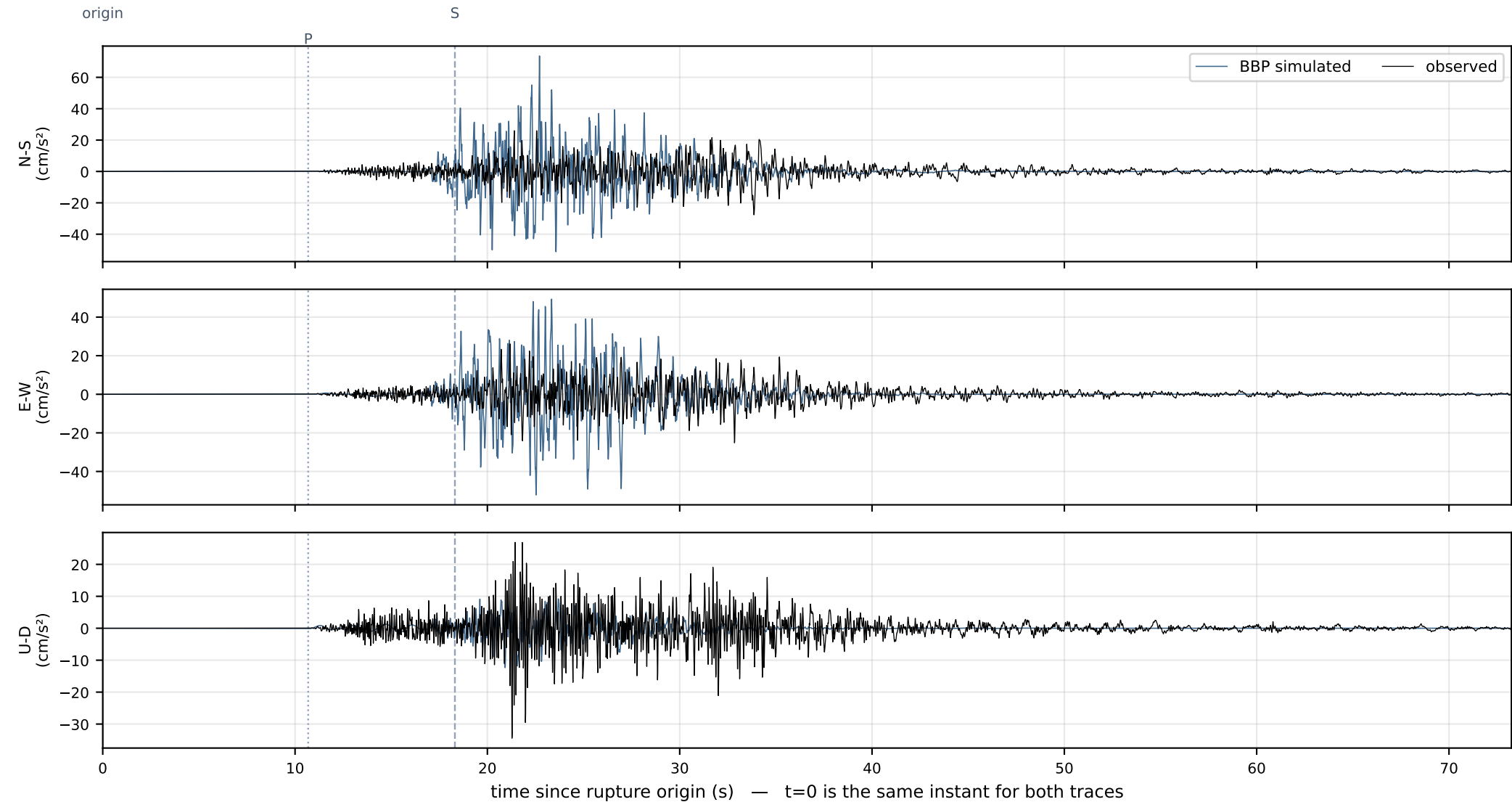
NP.1809 — 60.7 km, Vs30 288 m/s, HNE (NCEDC)  
observed PGA 0.0428 g · simulated PGA 0.0821 g ·  $\ln(\text{obs}/\text{sim}) = -0.652$  · observed peak at +29.2 s  
observed record starts 29.7 s before origin



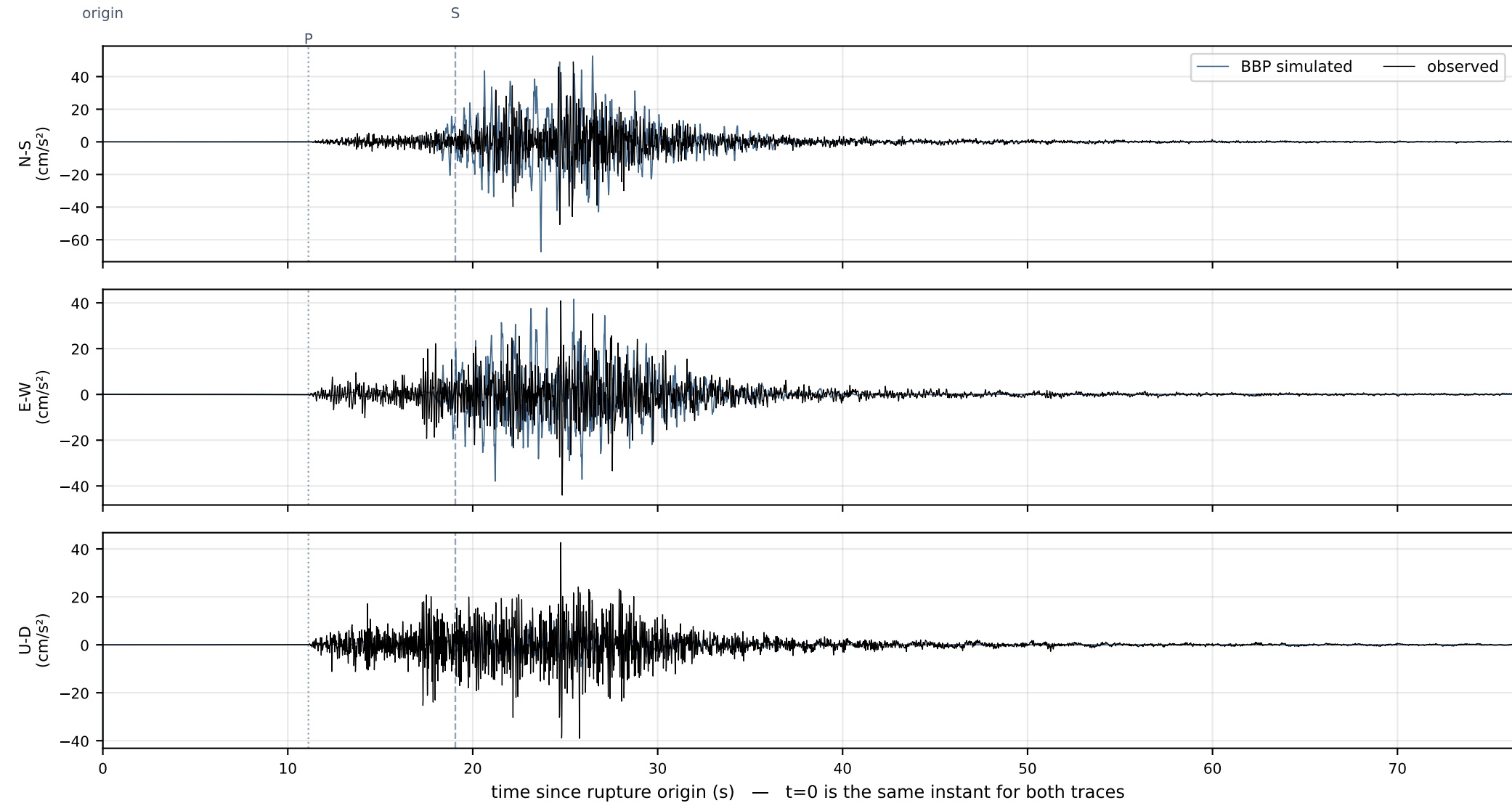
CI.DAW — 63.5 km, Vs30 599 m/s, HNE (SCEDC)  
observed PGA 0.0116 g · simulated PGA 0.0385 g ·  $\ln(\text{obs}/\text{sim}) = -1.196$  · observed peak at +22.5 s  
observed record starts 60.0 s before origin



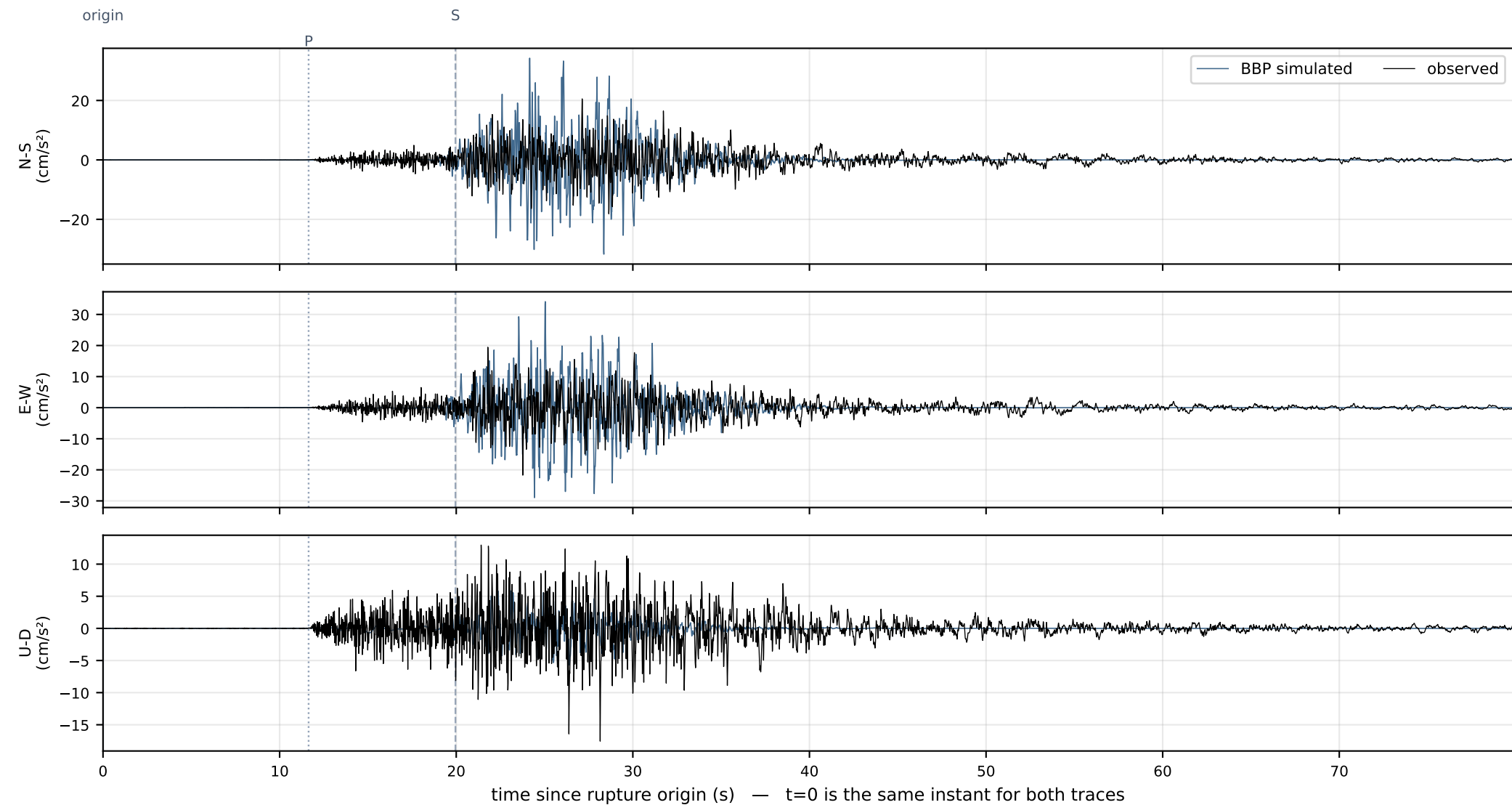
NN.QSM — 64.1 km, Vs30 379 m/s, HHE (EARTHSCOPE)  
observed PGA 0.0282 g · simulated PGA 0.0751 g ·  $\ln(\text{obs}/\text{sim}) = -0.979$  · observed peak at +33.9 s  
observed record starts 60.0 s before origin



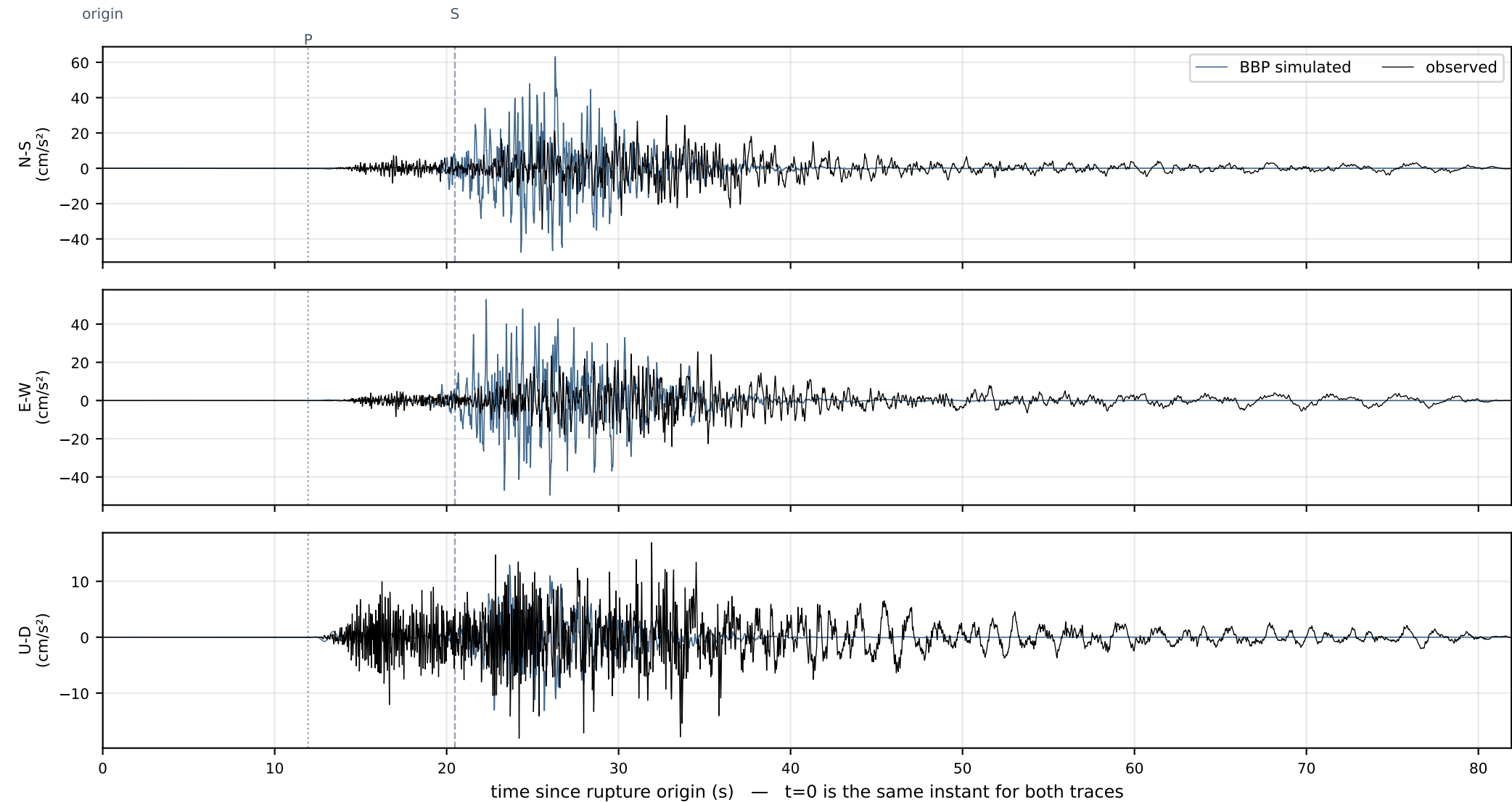
CI.WOR — 66.7 km, Vs30 398 m/s, HNE (SCEDC)  
observed PGA 0.0517 g · simulated PGA 0.0688 g ·  $\ln(\text{obs}/\text{sim}) = -0.285$  · observed peak at +24.7 s  
observed record starts 60.0 s before origin



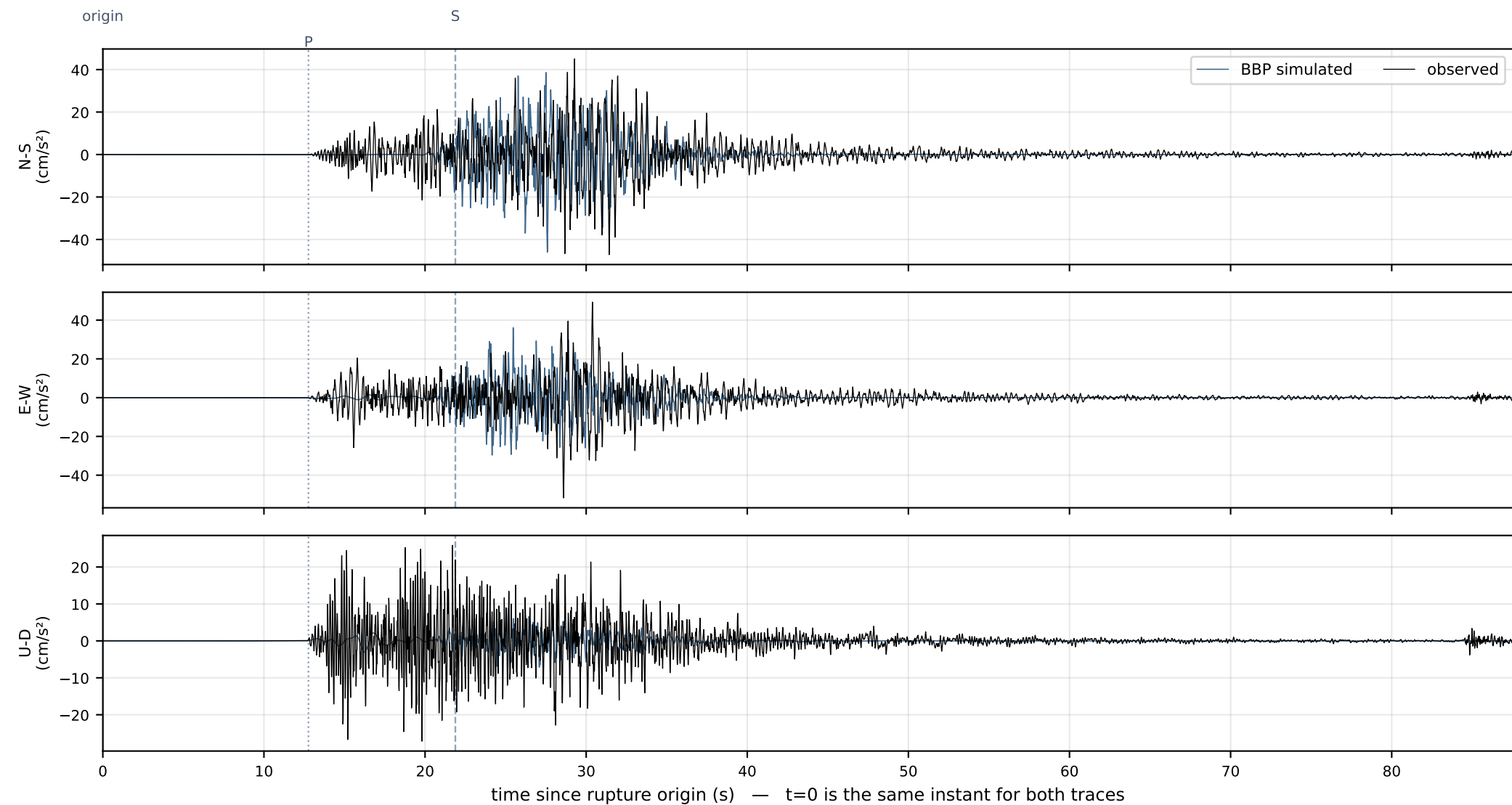
CI.APL — 69.8 km, Vs30 583 m/s, HNE (SCEDC)  
observed PGA 0.0222 g · simulated PGA 0.0349 g ·  $\ln(\text{obs}/\text{sim}) = -0.455$  · observed peak at +23.8 s  
observed record starts 60.0 s before origin



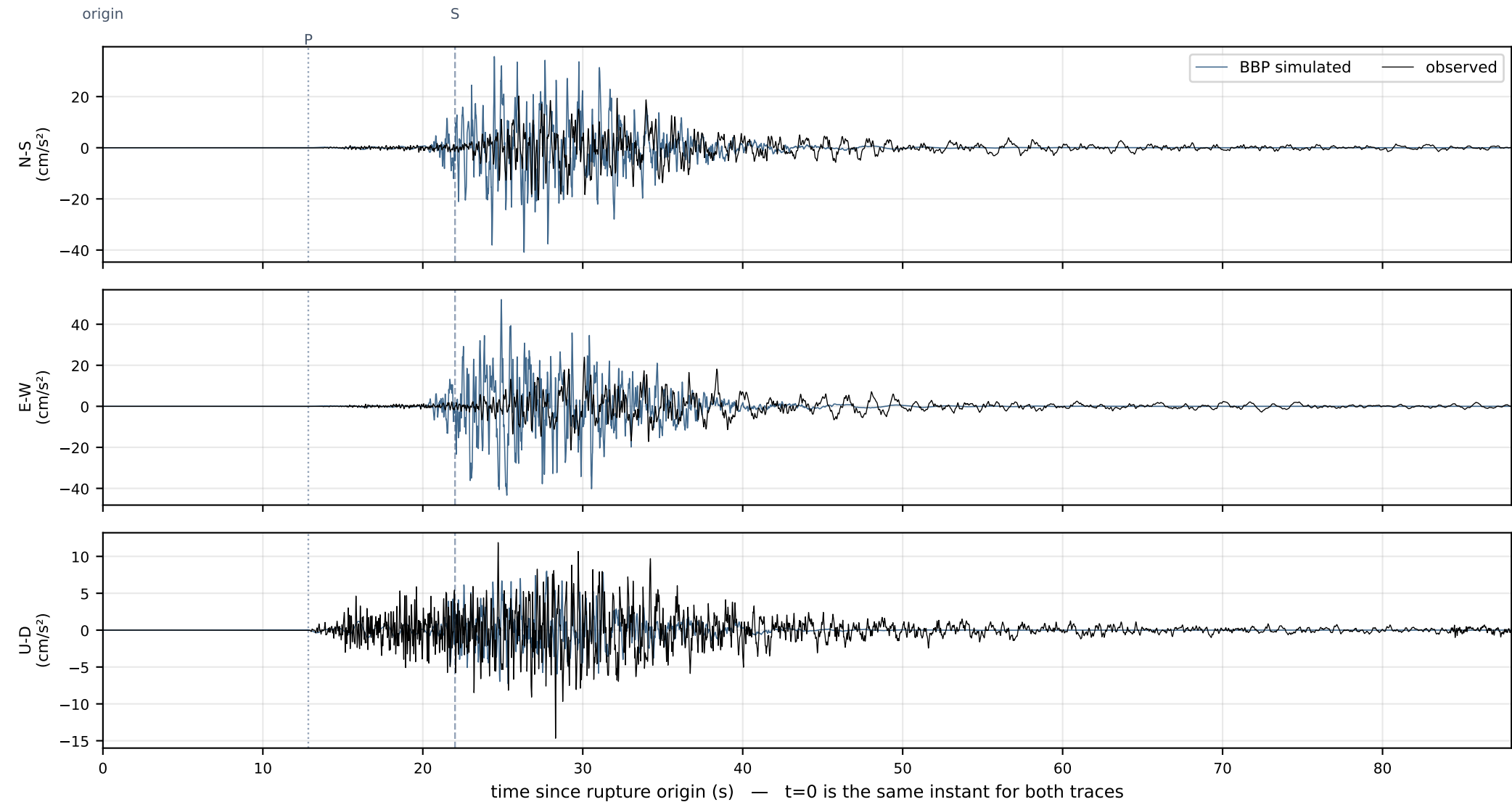
CE.43158 — 71.7 km, Vs30 283 m/s, HNE (NCEDC)  
observed PGA 0.0353 g · simulated PGA 0.0645 g ·  $\ln(\text{obs}/\text{sim}) = -0.603$  · observed peak at +25.6 s  
observed record starts 13.0 s before origin



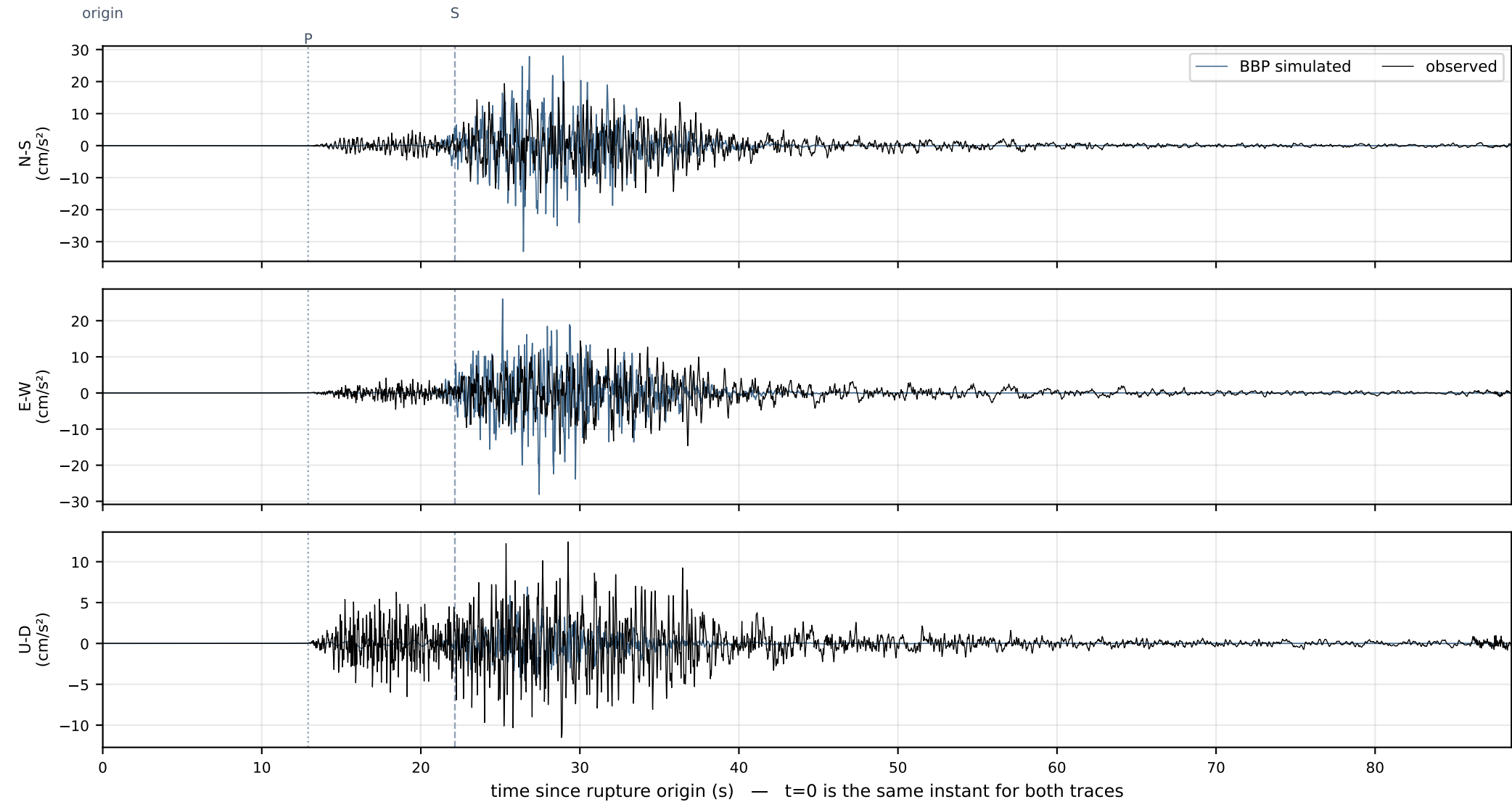
CI.WHF — 76.6 km, Vs30 371 m/s, HNE (SCEDC)  
observed PGA 0.0528 g · simulated PGA 0.0469 g ·  $\ln(\text{obs}/\text{sim}) = +0.118$  · observed peak at +28.6 s  
observed record starts 60.0 s before origin



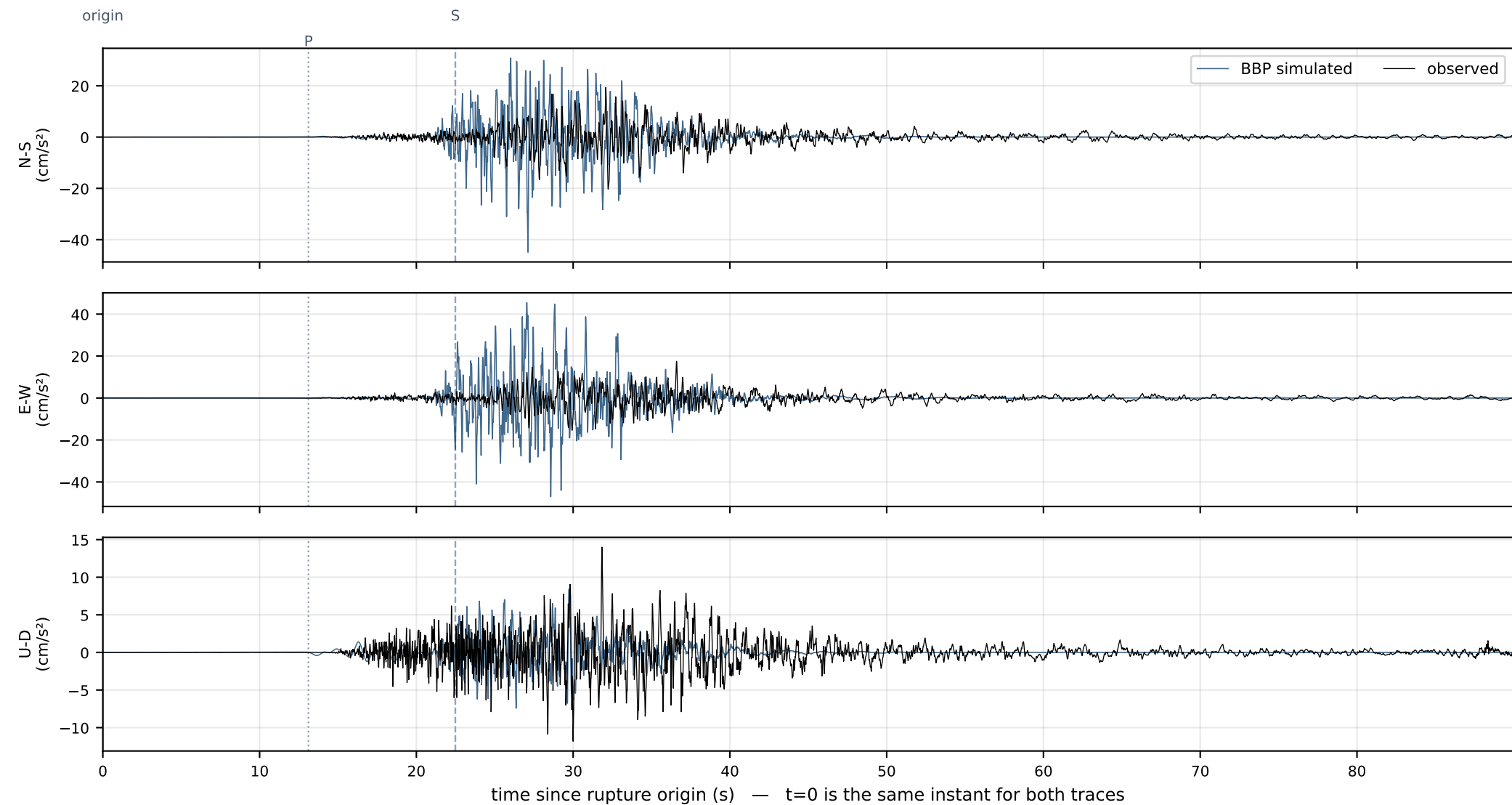
CI.CCA — 77.0 km, Vs30 342 m/s, HNE (SCEDC)  
observed PGA 0.0245 g · simulated PGA 0.0531 g ·  $\ln(\text{obs}/\text{sim}) = -0.774$  · observed peak at +30.1 s  
observed record starts 60.0 s before origin



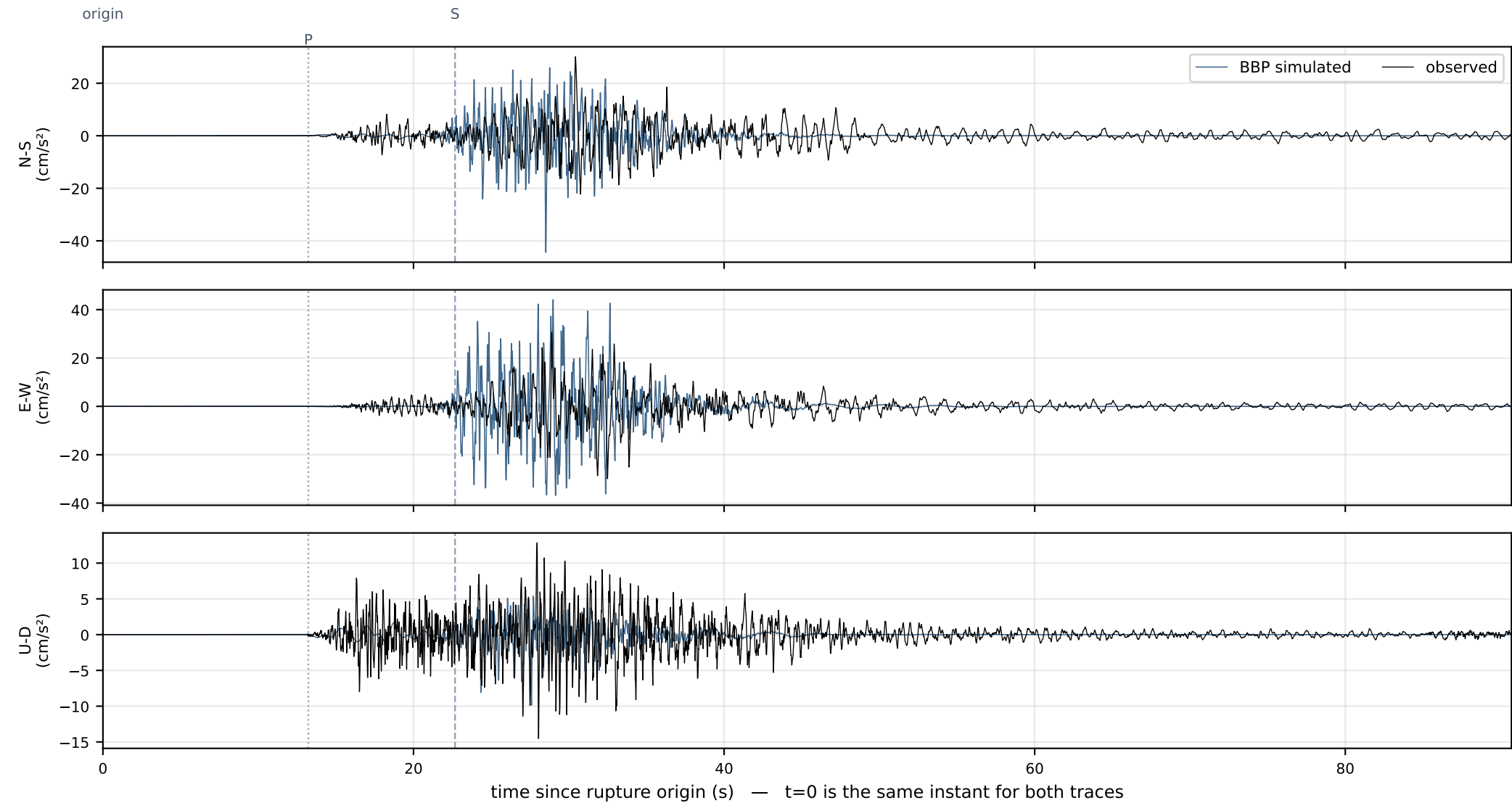
CI.GSC — 77.5 km, Vs30 653 m/s, HNE (SCEDC)  
observed PGA 0.0205 g · simulated PGA 0.0337 g ·  $\ln(\text{obs}/\text{sim}) = -0.500$  · observed peak at +29.0 s  
observed record starts 60.0 s before origin



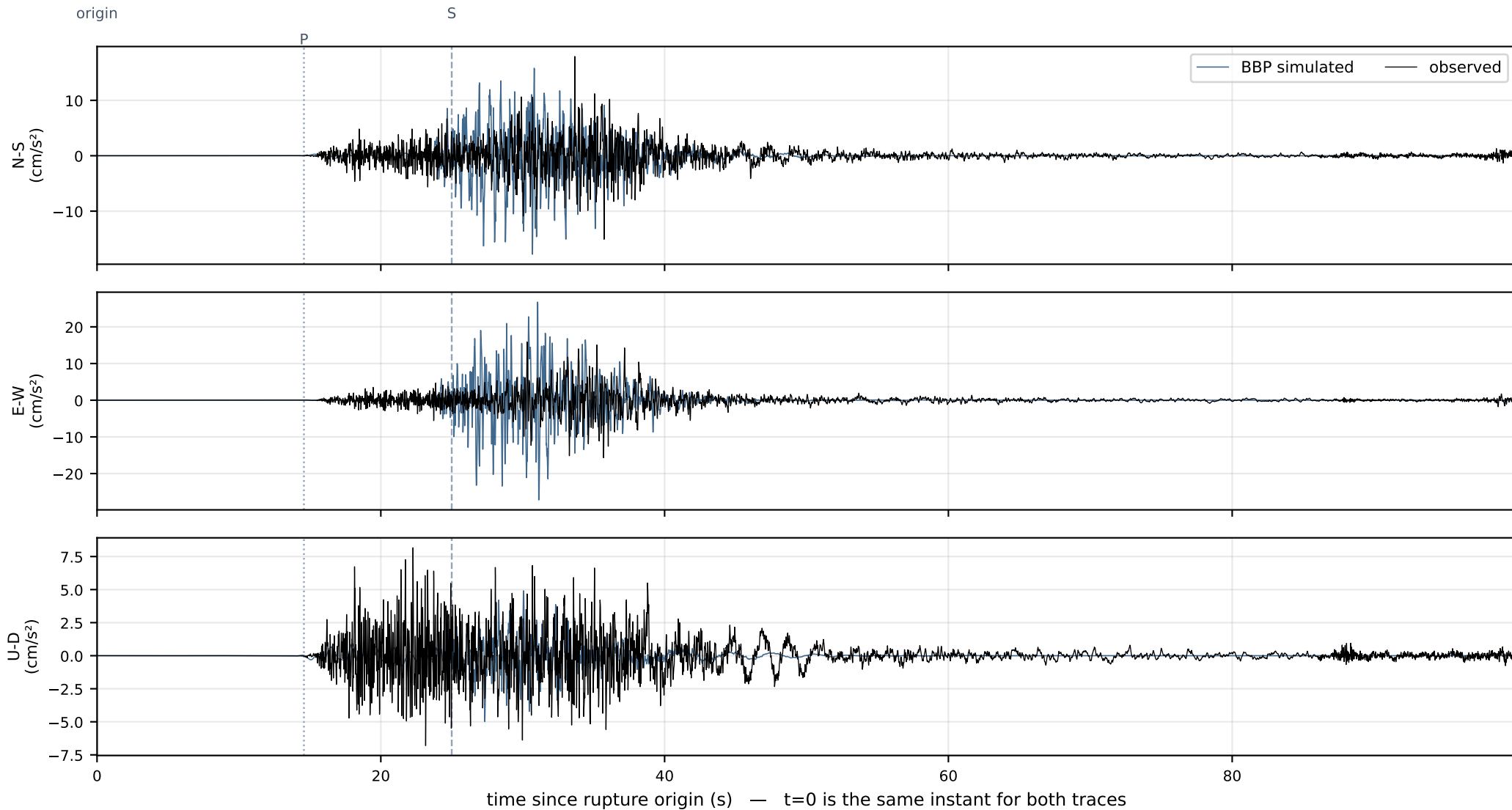
CI.Q0068 — 78.7 km, Vs30 343 m/s, HNE (EARTHSCOPE)  
observed PGA 0.0207 g · simulated PGA 0.0480 g ·  $\ln(\text{obs}/\text{sim}) = -0.839$  · observed peak at +32.2 s  
observed record starts 39.1 s before origin



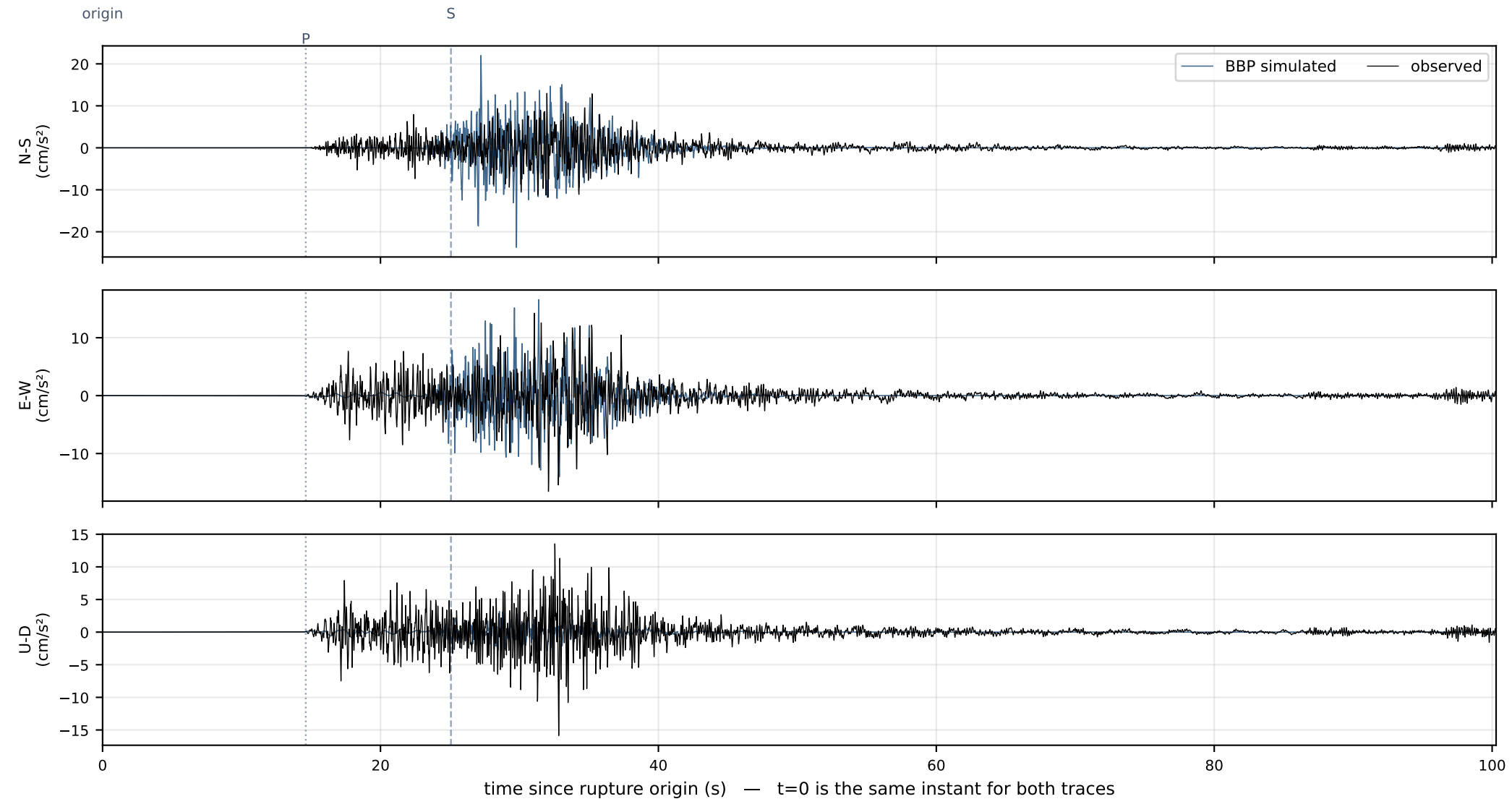
CI.HAR — 79.4 km, Vs30 344 m/s, HNE (SCEDC)  
observed PGA 0.0312 g · simulated PGA 0.0453 g ·  $\ln(\text{obs}/\text{sim}) = -0.371$  · observed peak at +28.9 s  
observed record starts 60.0 s before origin



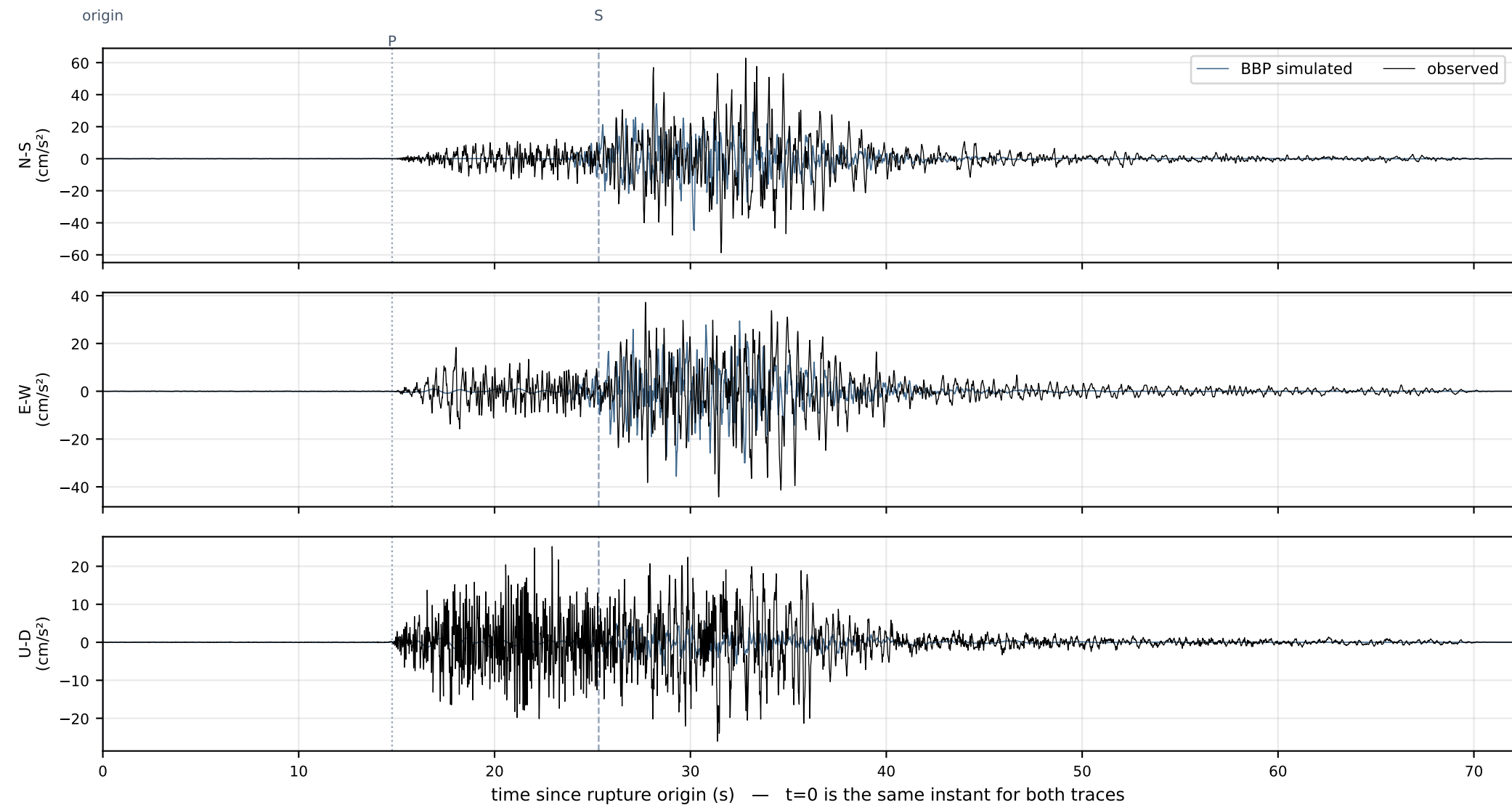
CI.LMR2 — 87.5 km, Vs30 735 m/s, HNE (SCEDC)  
observed PGA 0.0183 g · simulated PGA 0.0277 g ·  $\ln(\text{obs}/\text{sim}) = -0.417$  · observed peak at +33.7 s  
observed record starts 60.0 s before origin



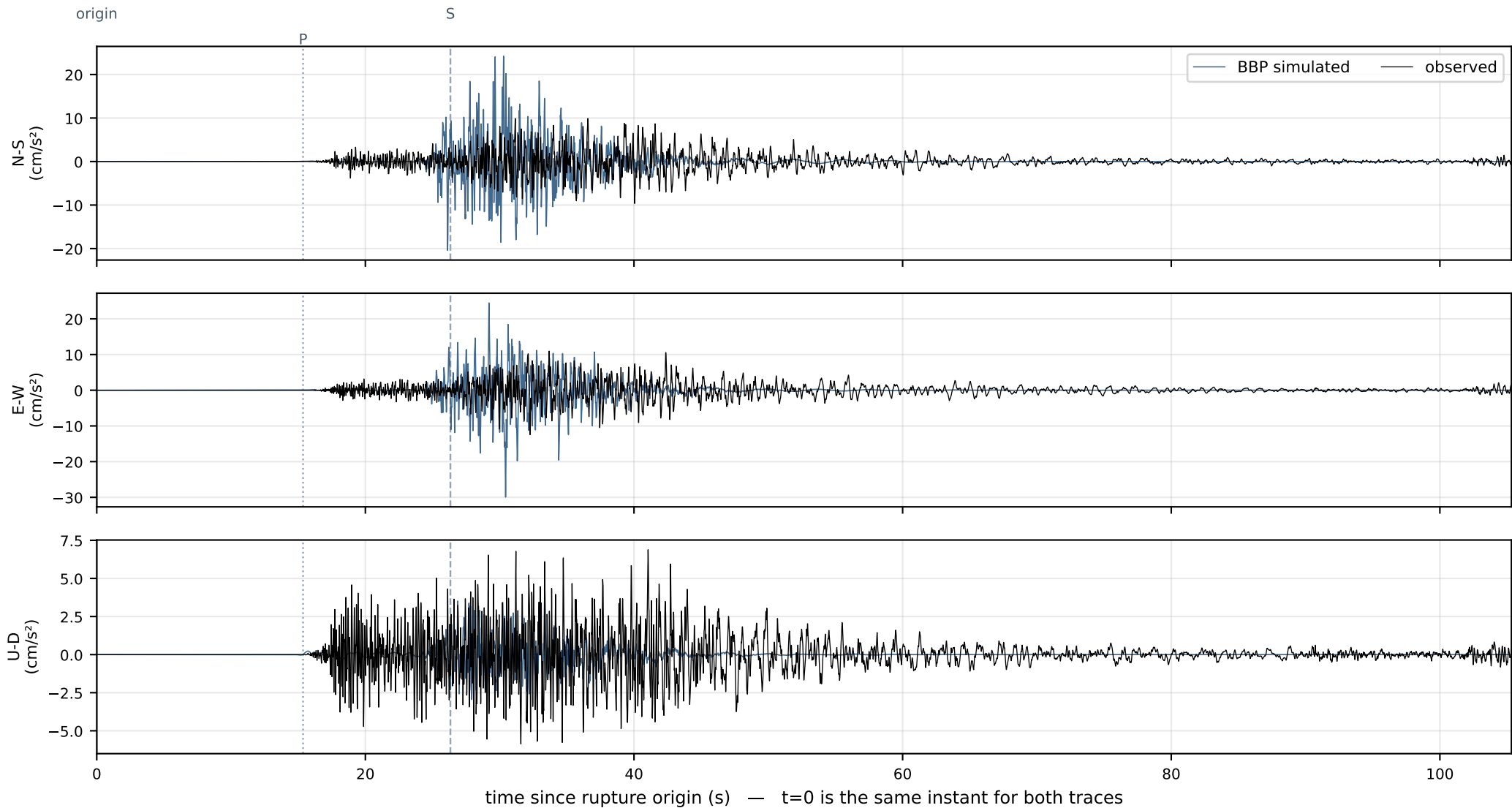
CI.ISA — 87.8 km, Vs30 927 m/s, HNE (SCEDC)  
observed PGA 0.0169 g · simulated PGA 0.0242 g ·  $\ln(\text{obs}/\text{sim}) = -0.359$  · observed peak at +32.1 s  
observed record starts 60.0 s before origin



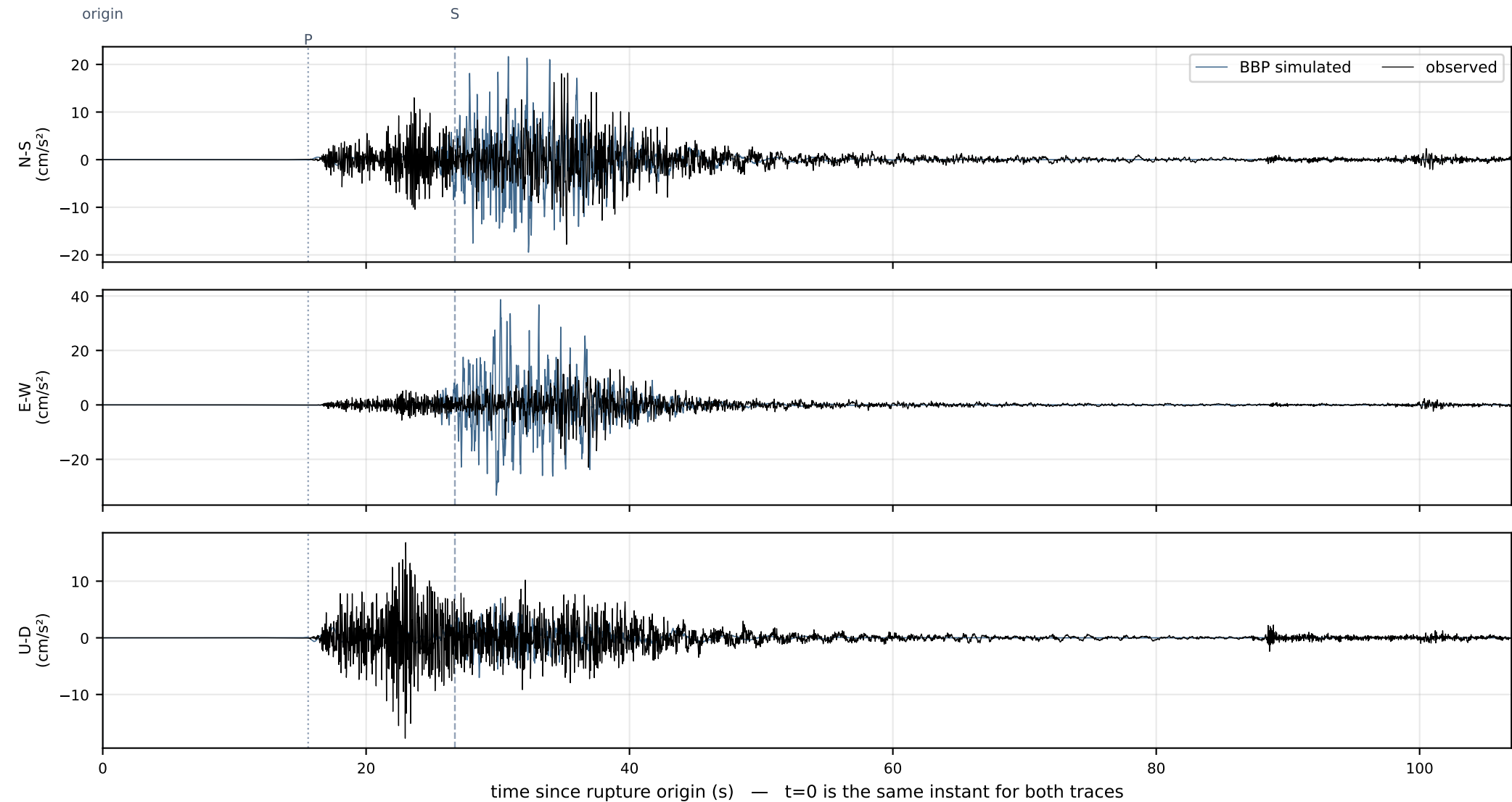
CE.34349 — 88.6 km, Vs30 373 m/s, HNE (NCEDC)  
observed PGA 0.0641 g · simulated PGA 0.0457 g ·  $\ln(\text{obs}/\text{sim}) = +0.337$  · observed peak at +32.8 s  
observed record starts 14.0 s before origin



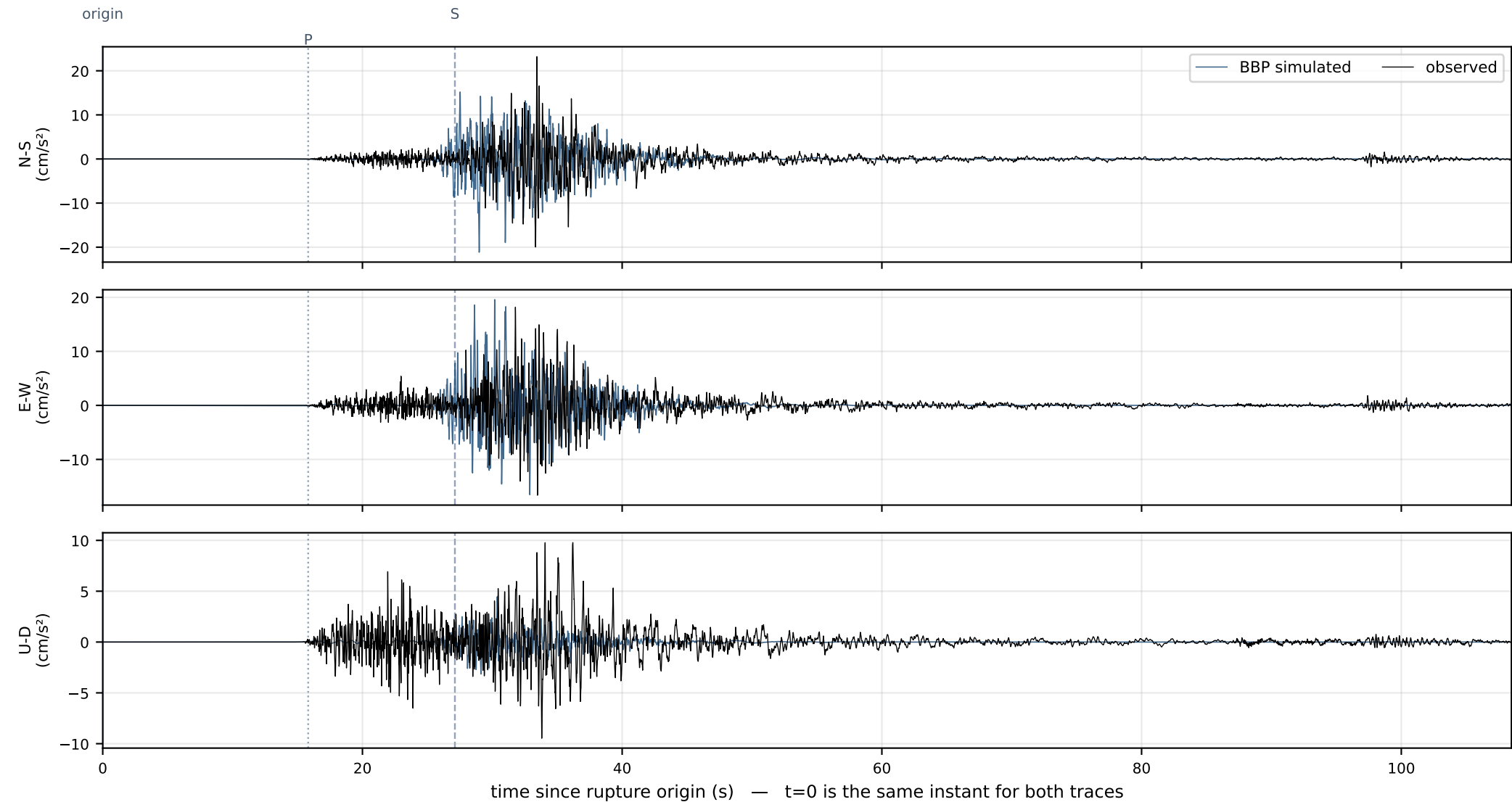
NN.GWY — 92.2 km, Vs30 684 m/s, HHE (SCEDC)  
observed PGA 0.0127 g · simulated PGA 0.0305 g ·  $\ln(\text{obs}/\text{sim}) = -0.876$  · observed peak at +32.3 s  
observed record starts 60.0 s before origin



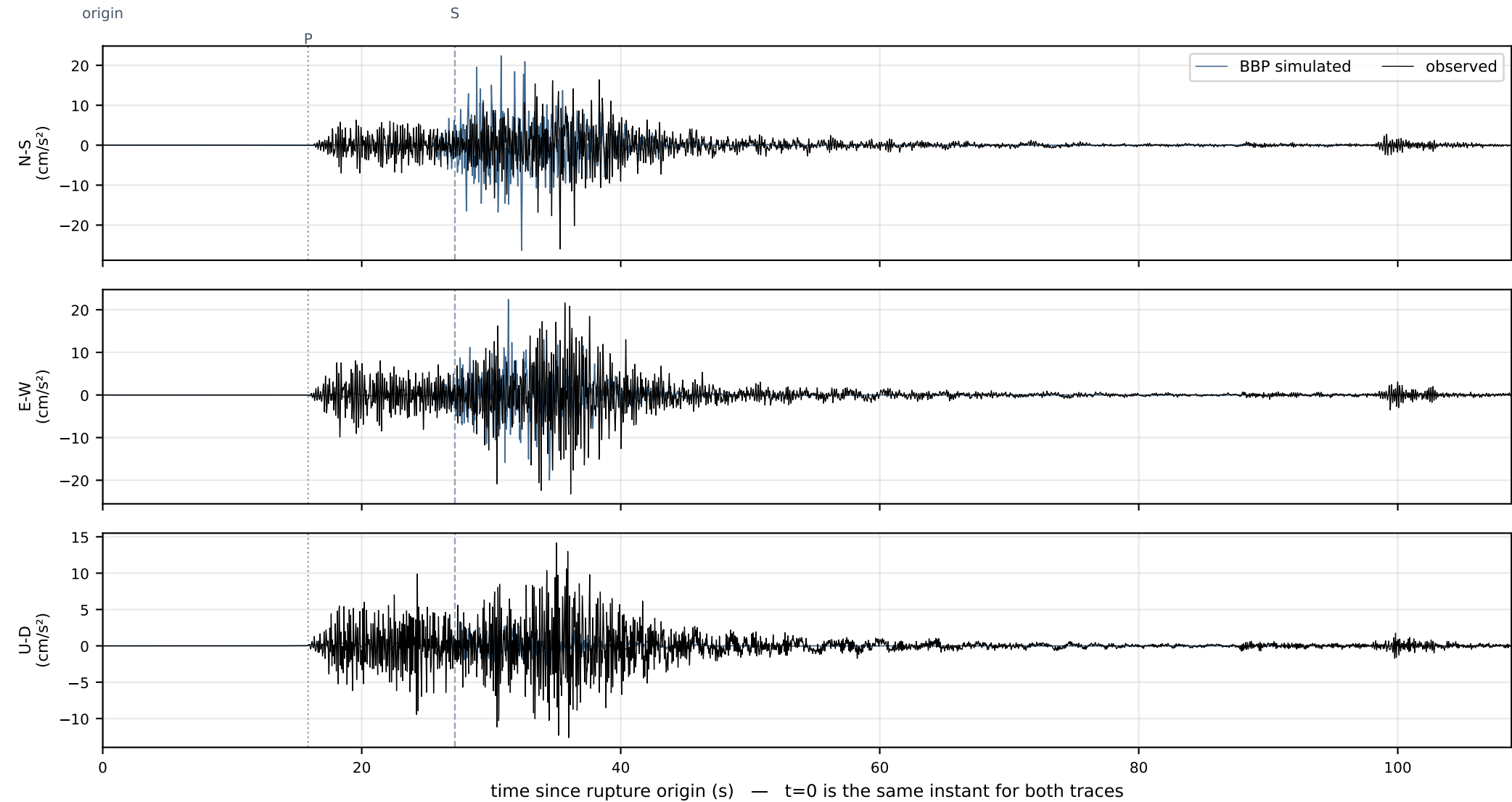
CI.HYS — 93.6 km, Vs30 349 m/s, HNE (SCEDC)  
observed PGA 0.0234 g · simulated PGA 0.0395 g ·  $\ln(\text{obs}/\text{sim}) = -0.524$  · observed peak at +36.9 s  
observed record starts 60.0 s before origin



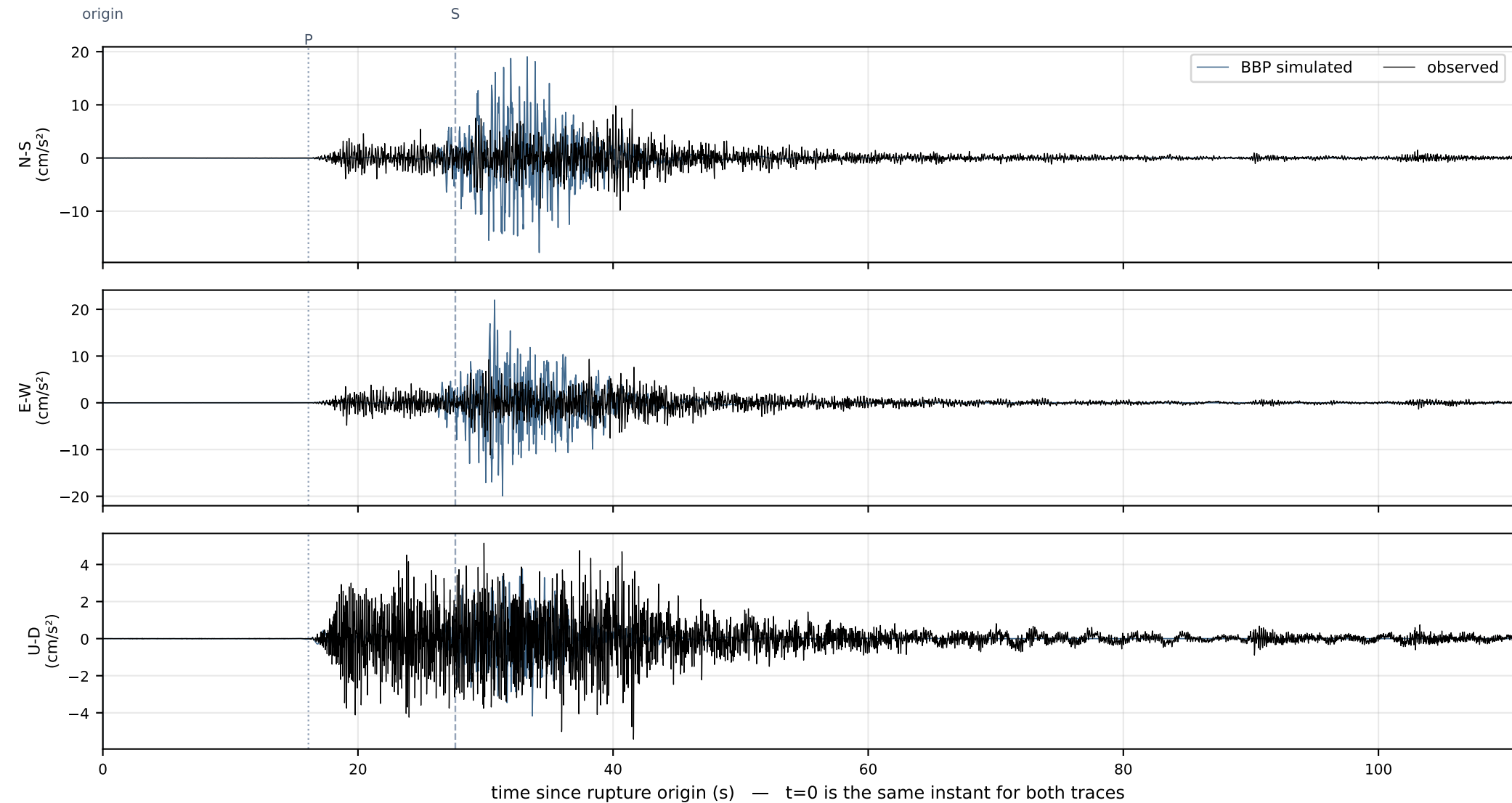
CI.TEH — 94.9 km, Vs30 794 m/s, HNE (SCEDC)  
observed PGA 0.0237 g · simulated PGA 0.0216 g ·  $\ln(\text{obs}/\text{sim}) = +0.093$  · observed peak at +33.4 s  
observed record starts 60.0 s before origin



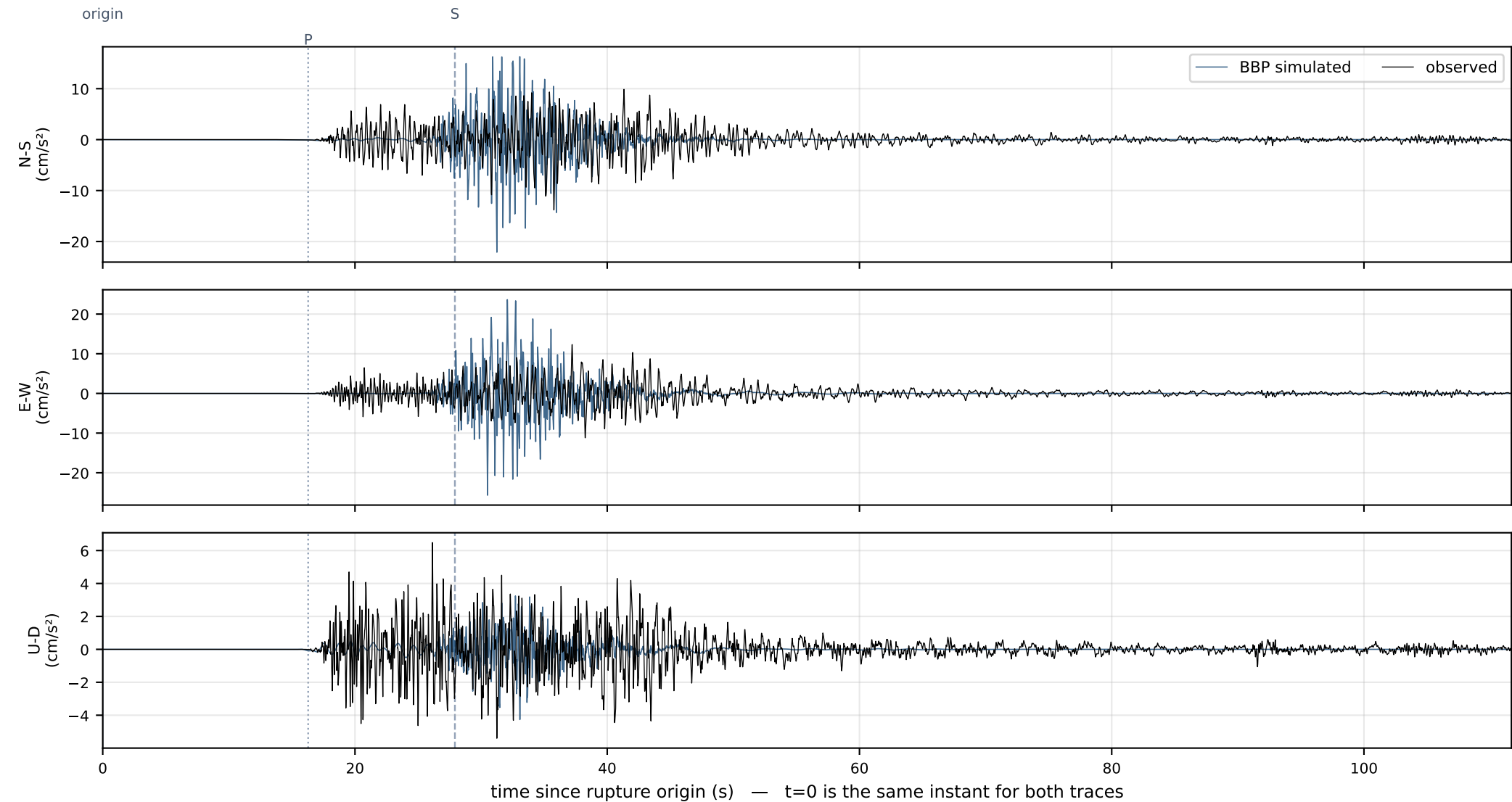
CI.WAS2 — 95.2 km, Vs30 780 m/s, HNE (SCEDC)  
observed PGA 0.0265 g · simulated PGA 0.0269 g ·  $\ln(\text{obs}/\text{sim}) = -0.015$  · observed peak at +35.3 s  
observed record starts 60.0 s before origin



CI.CWC — 96.7 km, Vs30 658 m/s, HNE (SCEDC)  
observed PGA 0.0114 g · simulated PGA 0.0224 g ·  $\ln(\text{obs}/\text{sim}) = -0.679$  · observed peak at +30.4 s  
observed record starts 60.0 s before origin



CI.CGO — 97.7 km, Vs30 713 m/s, HNE (SCEDC)  
observed PGA 0.0141 g · simulated PGA 0.0262 g ·  $\ln(\text{obs}/\text{sim}) = -0.620$  · observed peak at +35.8 s  
observed record starts 60.0 s before origin



# 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 .npz 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.                                                                                                            |

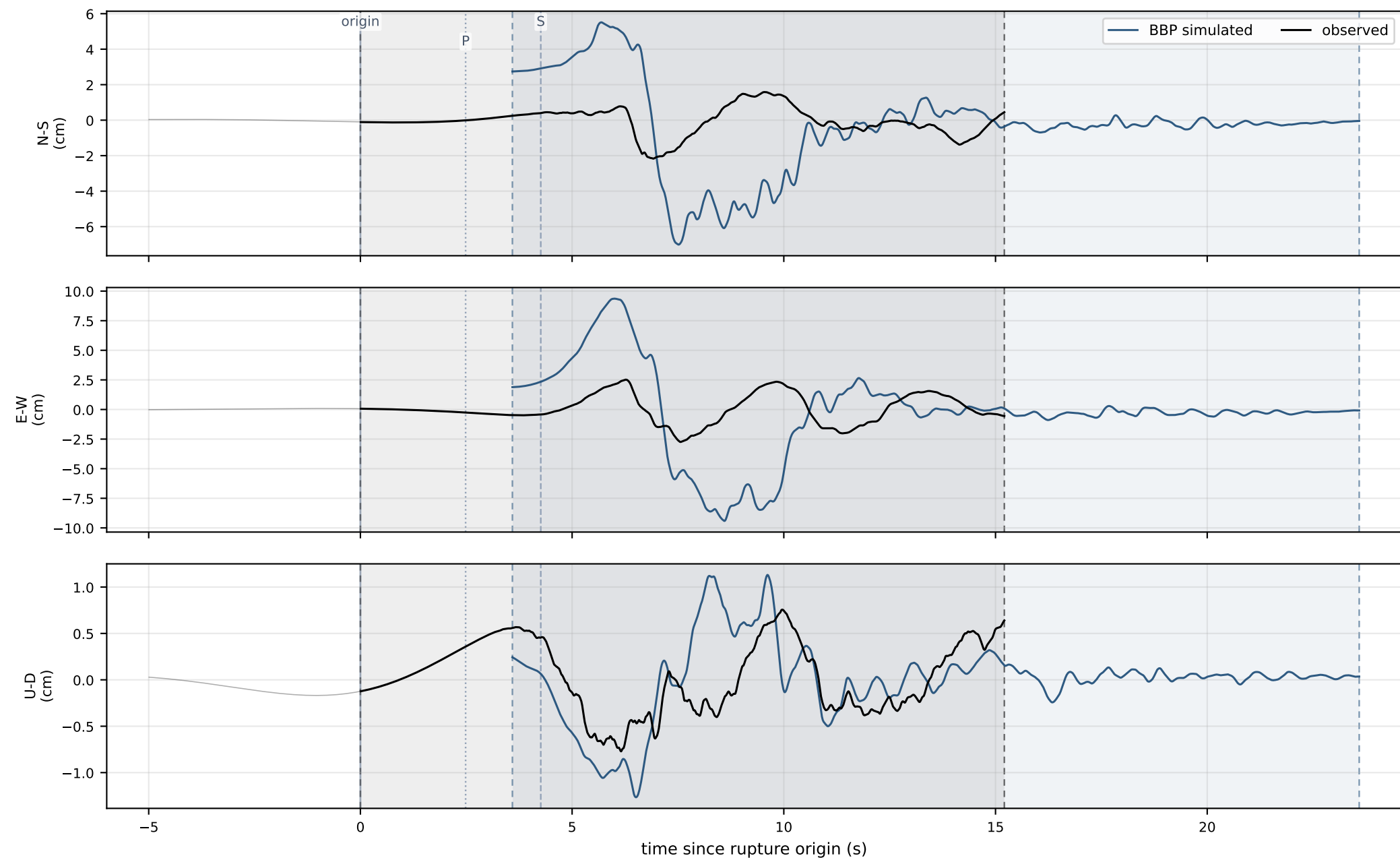
## HOW TO READ A DISAGREEMENT

|                        |                                                                                                                                                                                                                                       |
|------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 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     | 36 station(s)                             |
| observed only    | 0 station(s)                              |
| simulated only   | 0 station(s)                              |
| PGD ratio        | geometric mean observed/simulated = 0.32x |
| simulated source | BBP simulated                             |

CI.CLC — 14.9 km · displacement handed to the animation  
 observed PGD 2.74 cm · simulated PGD 9.41 cm · obs/sim = 0.29x  
 observed: response→acceleration, double-integrated, clipped to S+10 s · simulated: BBP velocity, integrated once, clipped to peak ±5/15 s

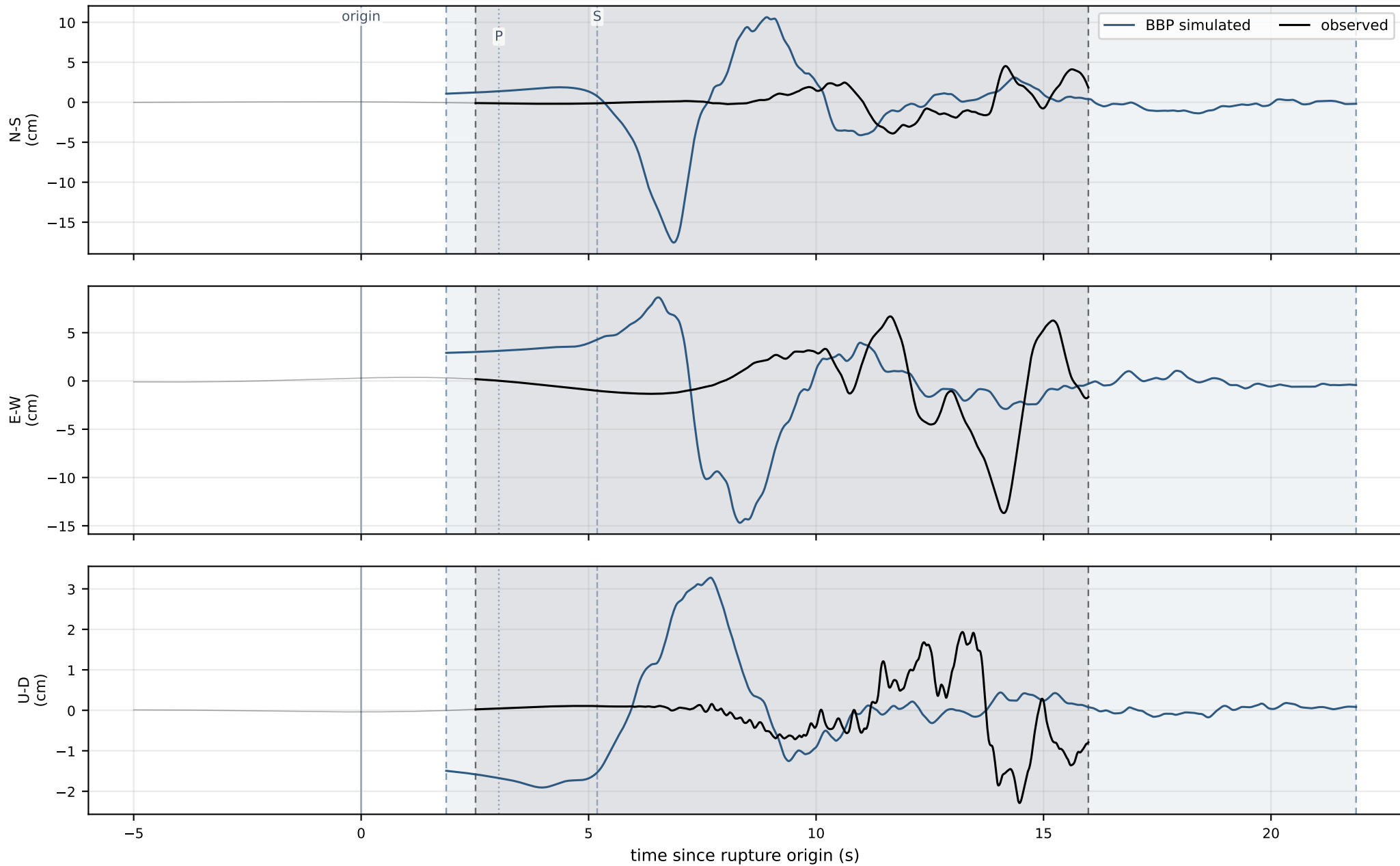


Each source has its own shaded band, dashed edges in its own colour: the window shake\_scene.py renders.  
 Bold inside it is what the table follows; faint outside is the rest of the record that source was handed.

CI.Q0072 — 18.2 km · displacement handed to the animation

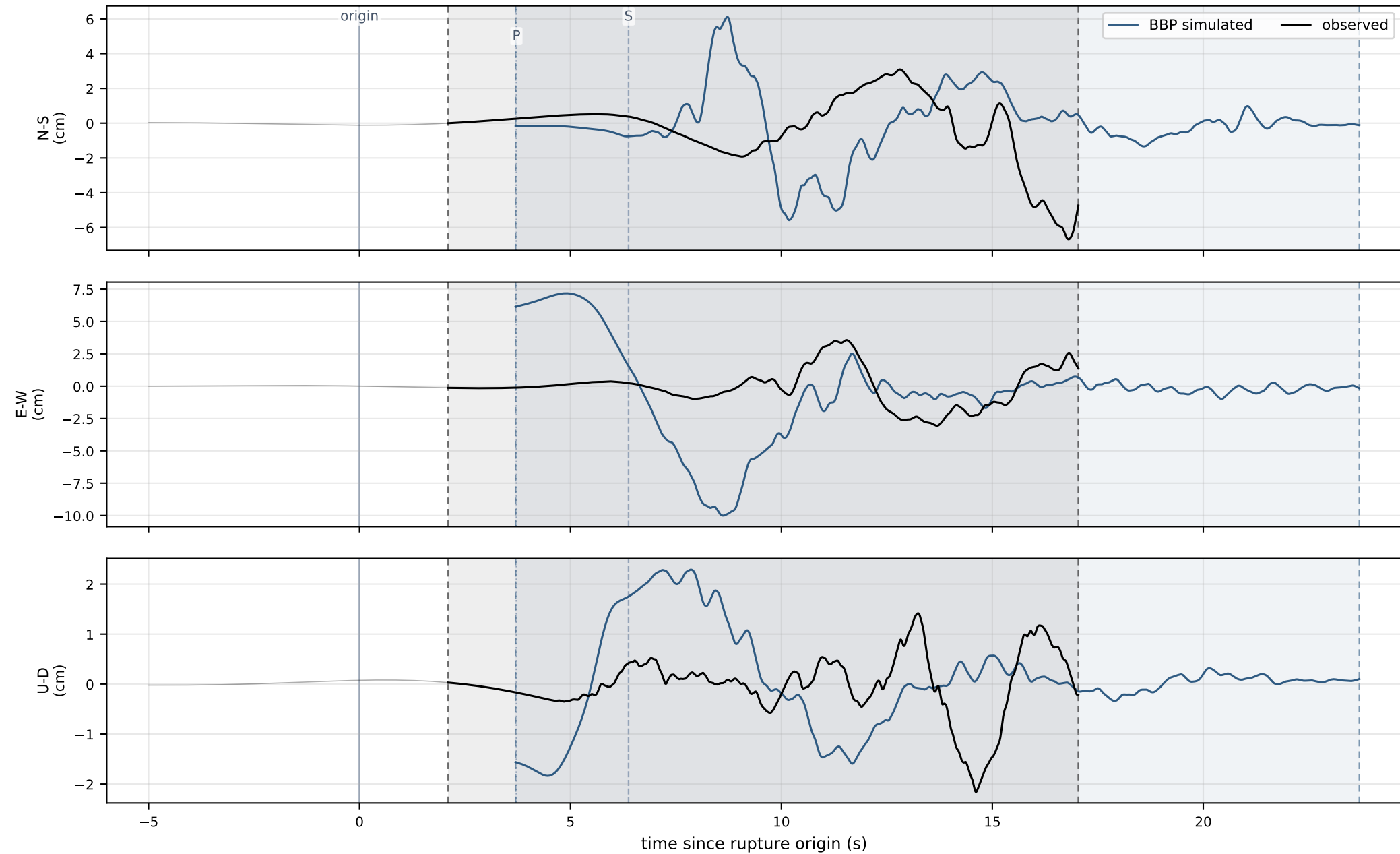
observed PGD 13.68 cm · simulated PGD 17.55 cm · obs/sim = 0.78x

observed: response→acceleration, double-integrated, clipped to S+10 s · simulated: BBP velocity, integrated once, clipped to peak  $\pm 5/15$  s



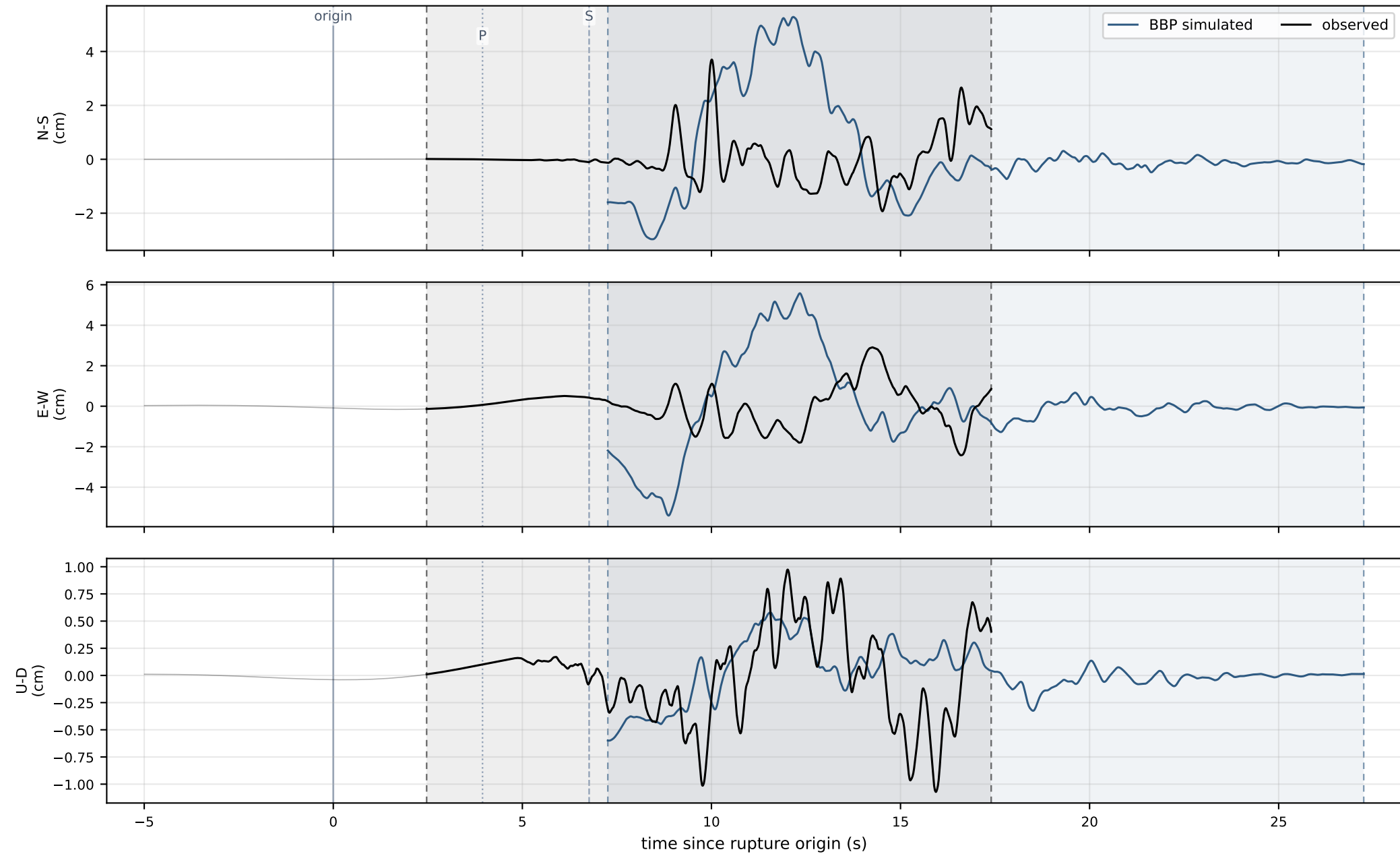
Each source has its own shaded band, dashed edges in its own colour: the window `shake_scene.py` renders.  
Bold inside it is what the table follows; faint outside is the rest of the record that source was handed.

CI.SRT — 22.3 km · displacement handed to the animation  
 observed PGD 6.67 cm · simulated PGD 10.01 cm · obs/sim = 0.67x  
 observed: response→acceleration, double-integrated, clipped to S+10 s · simulated: BBP velocity, integrated once, clipped to peak  $\pm 5/15$  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.CCC — 23.7 km · displacement handed to the animation  
 observed PGD 3.70 cm · simulated PGD 5.58 cm · obs/sim = 0.66x  
 observed: response→acceleration, double-integrated, clipped to S+10 s · simulated: BBP velocity, integrated once, clipped to peak ±5/15 s

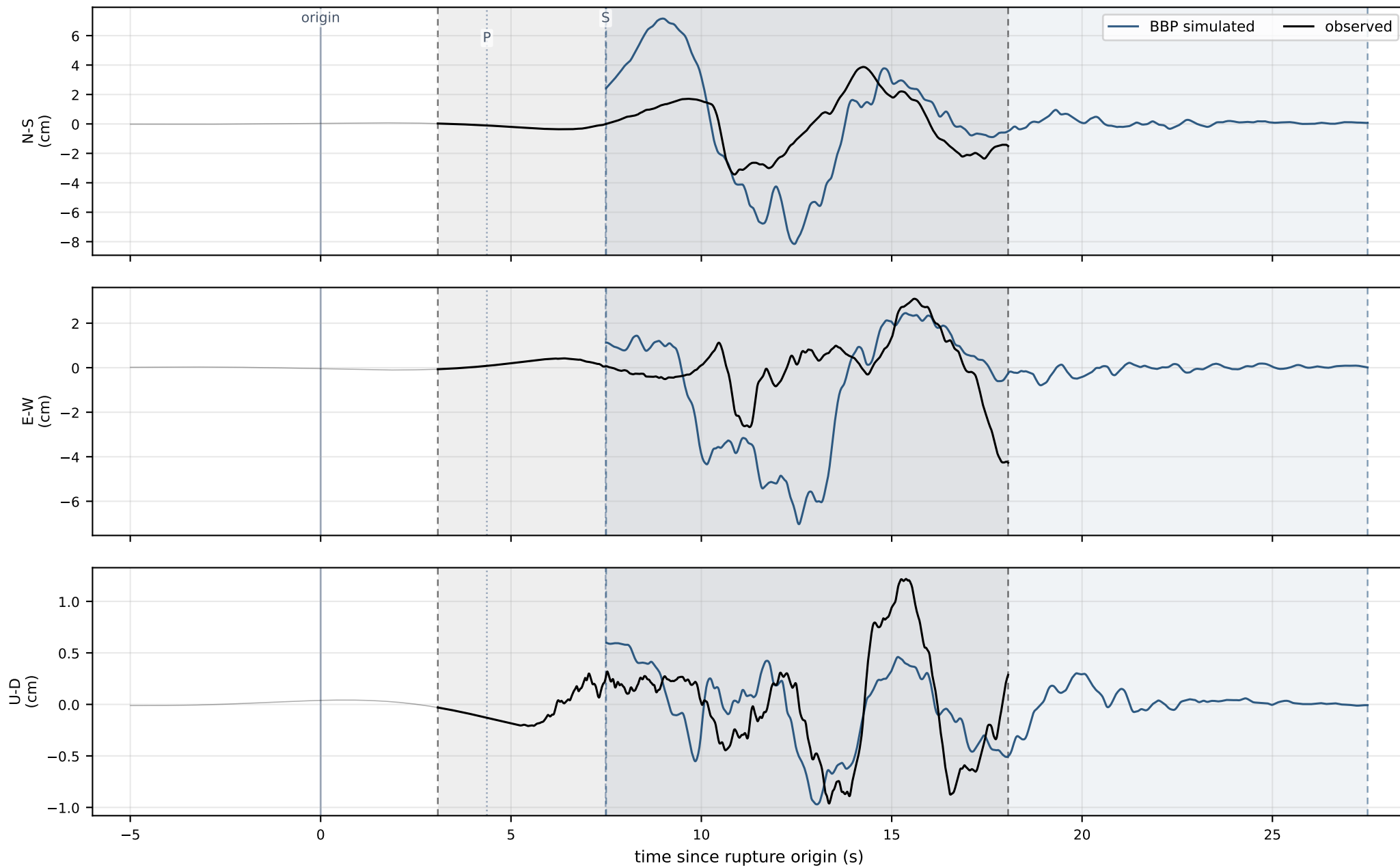


Each source has its own shaded band, dashed edges in its own colour: the window `shake_scene.py` renders.  
 Bold inside it is what the table follows; faint outside is the rest of the record that source was handed.

CI.TOW2 — 26.2 km · displacement handed to the animation

observed PGD 4.27 cm · simulated PGD 8.16 cm · obs/sim = 0.52x

observed: response→acceleration, double-integrated, clipped to S+10 s · simulated: BBP velocity, integrated once, clipped to peak  $\pm 5/15$  s

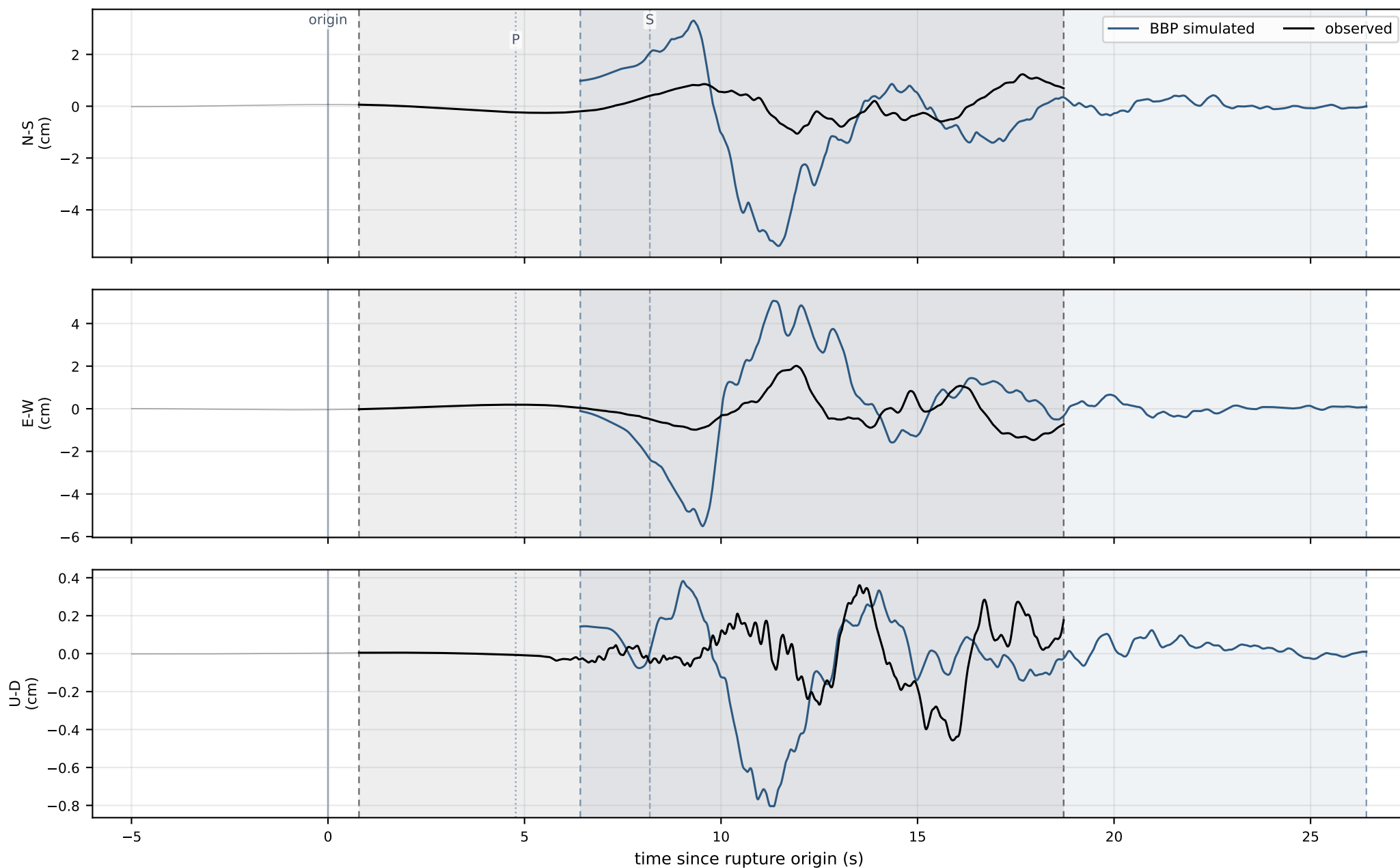


Each source has its own shaded band, dashed edges in its own colour: the window `shake_scene.py` renders.  
Bold inside it is what the table follows; faint outside is the rest of the record that source was handed.

CI.SLA — 28.7 km · displacement handed to the animation

observed PGD 2.01 cm · simulated PGD 5.51 cm · obs/sim = 0.37x

observed: response→acceleration, double-integrated, clipped to S+10 s · simulated: BBP velocity, integrated once, clipped to peak  $\pm 5/15$  s

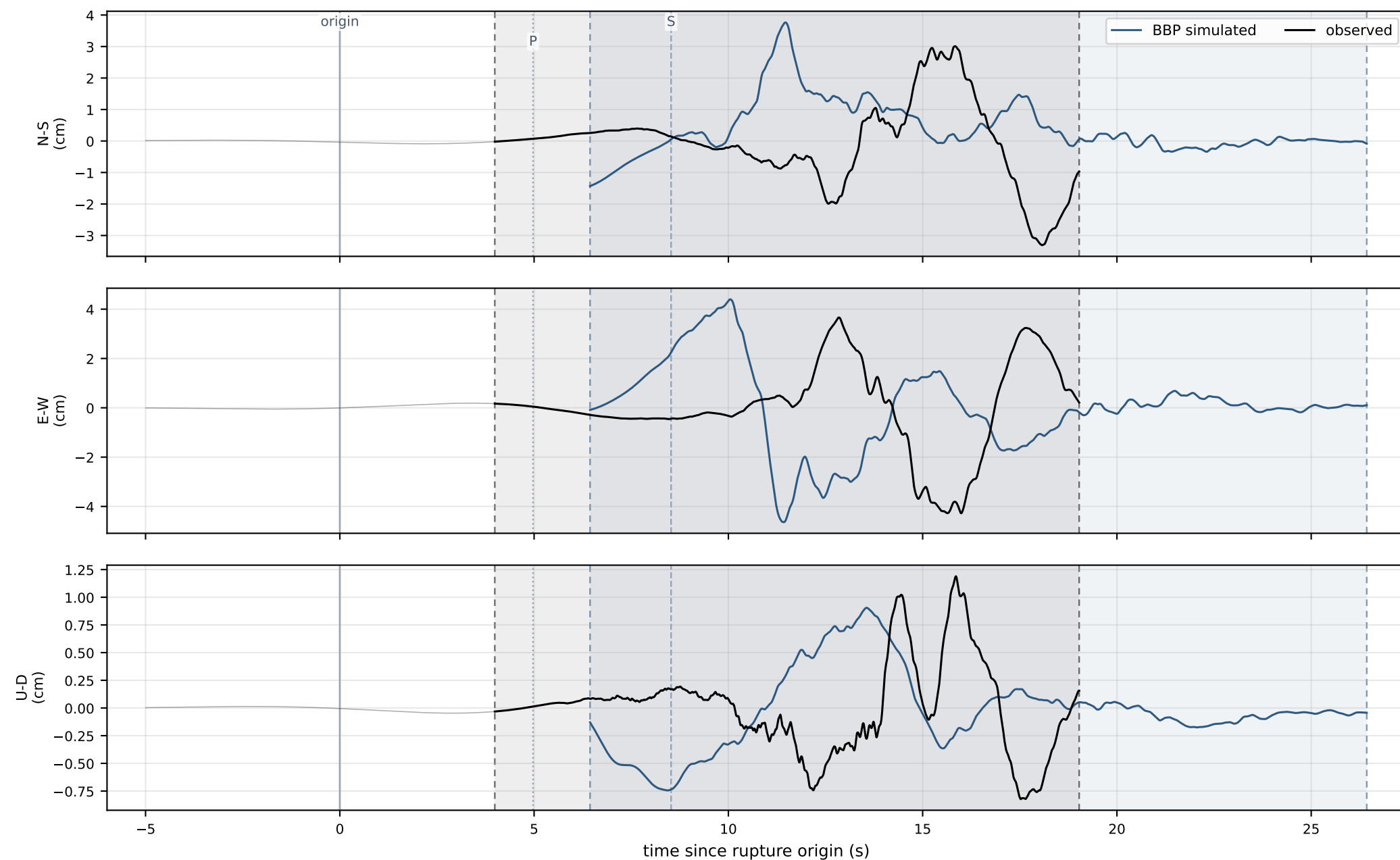


Each source has its own shaded band, dashed edges in its own colour: the window `shake_scene.py` renders.  
Bold inside it is what the table follows; faint outside is the rest of the record that source was handed.

CI.LRL — 29.8 km · displacement handed to the animation

observed PGD 4.28 cm · simulated PGD 4.64 cm · obs/sim = 0.92x

observed: response→acceleration, double-integrated, clipped to S+10 s · simulated: BBP velocity, integrated once, clipped to peak  $\pm 5/15$  s

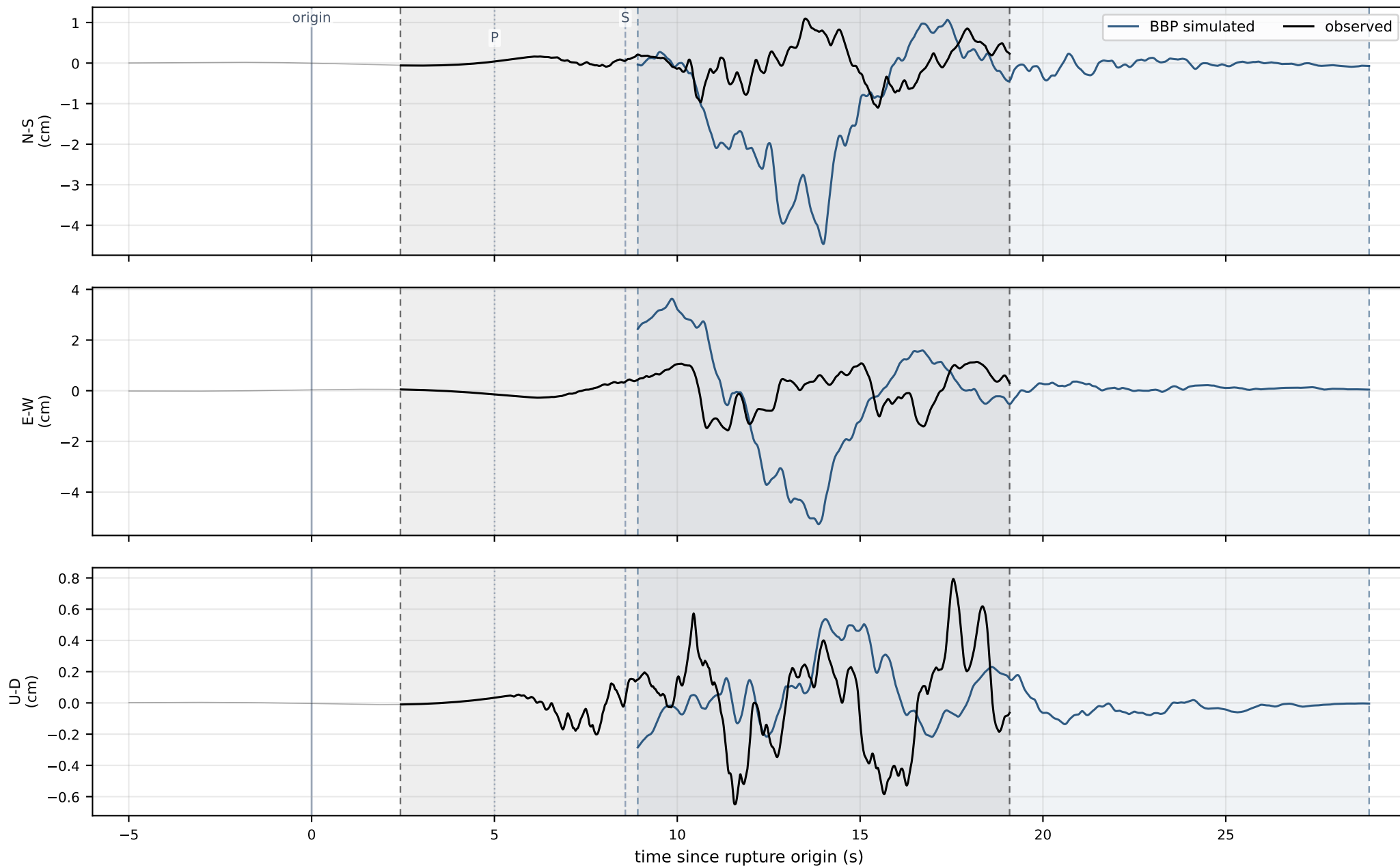


Each source has its own shaded band, dashed edges in its own colour: the window `shake_scene.py` renders.  
Bold inside it is what the table follows; faint outside is the rest of the record that source was handed.

CI.WRC2 — 30.0 km · displacement handed to the animation

observed PGD 1.57 cm · simulated PGD 5.27 cm · obs/sim = 0.30x

observed: response→acceleration, double-integrated, clipped to S+10 s · simulated: BBP velocity, integrated once, clipped to peak  $\pm 5/15$  s

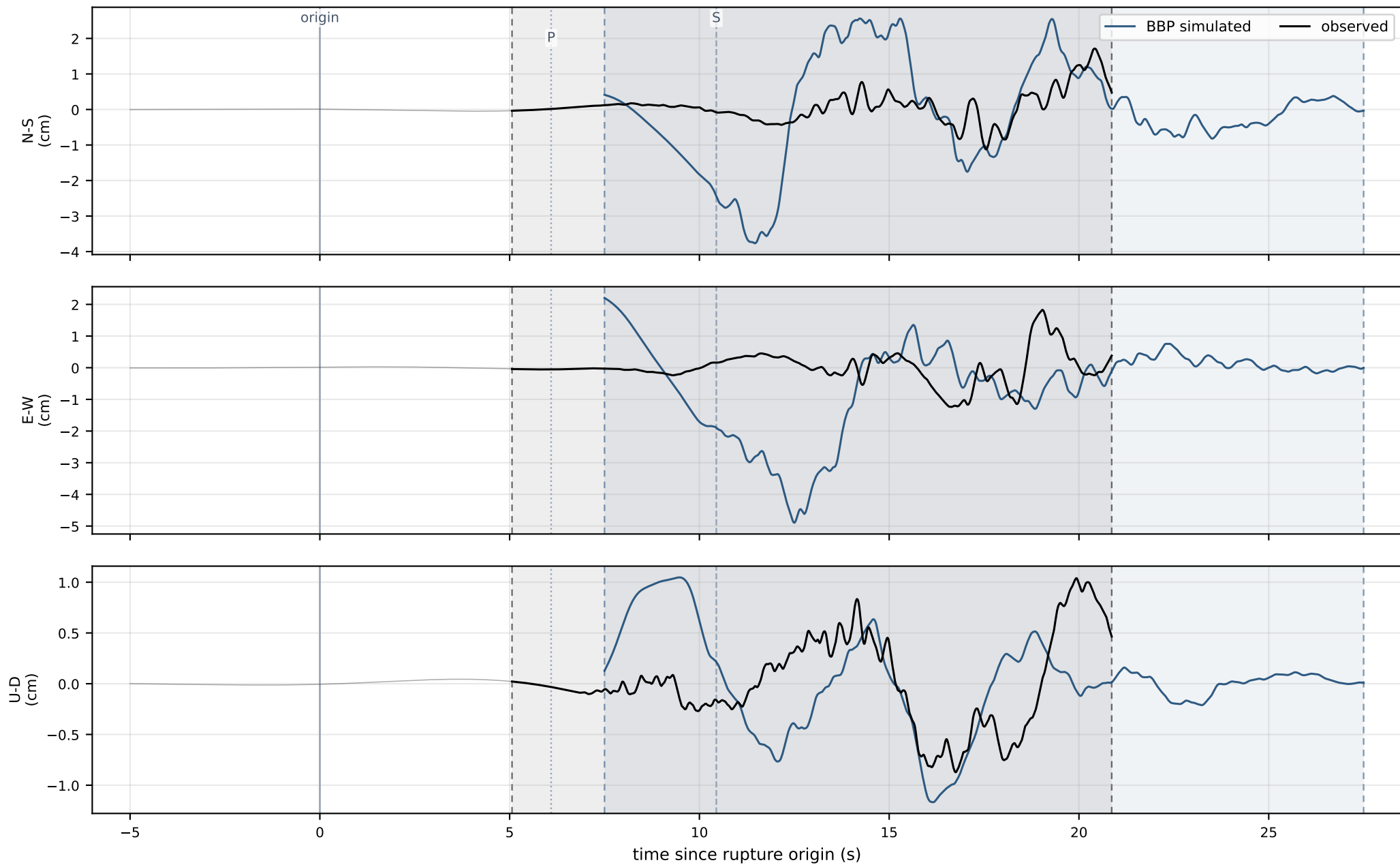


Each source has its own shaded band, dashed edges in its own colour: the window `shake_scene.py` renders.  
Bold inside it is what the table follows; faint outside is the rest of the record that source was handed.

CI.WBM — 36.6 km · displacement handed to the animation

observed PGD 1.83 cm · simulated PGD 4.90 cm · obs/sim = 0.37x

observed: response→acceleration, double-integrated, clipped to S+10 s · simulated: BBP velocity, integrated once, clipped to peak  $\pm 5/15$  s

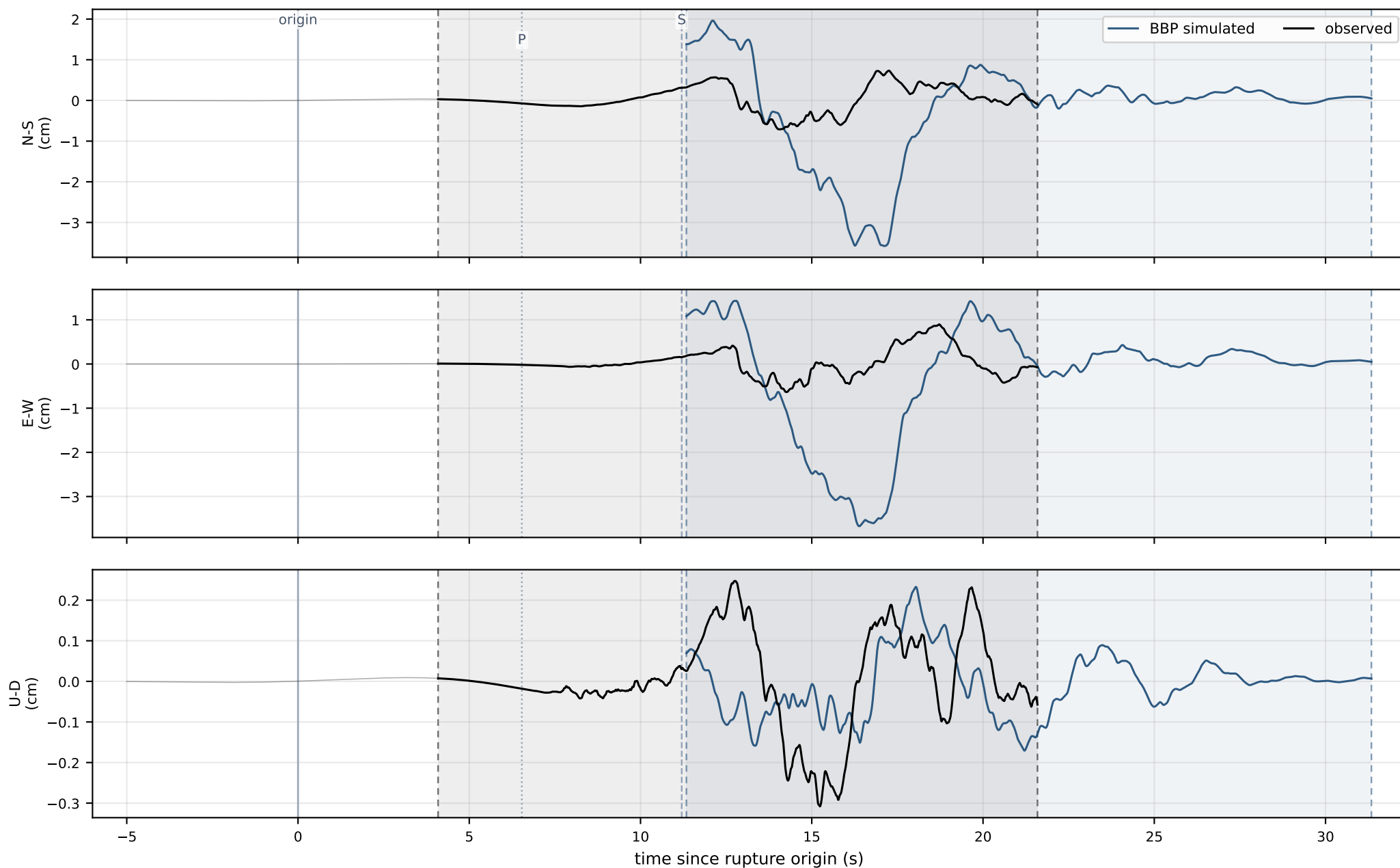


Each source has its own shaded band, dashed edges in its own colour: the window `shake_scene.py` renders.  
Bold inside it is what the table follows; faint outside is the rest of the record that source was handed.

CI.WVP2 — 39.2 km · displacement handed to the animation

observed PGD 0.90 cm · simulated PGD 3.67 cm · obs/sim = 0.24x

observed: response→acceleration, double-integrated, clipped to S+10 s · simulated: BBP velocity, integrated once, clipped to peak  $\pm 5/15$  s

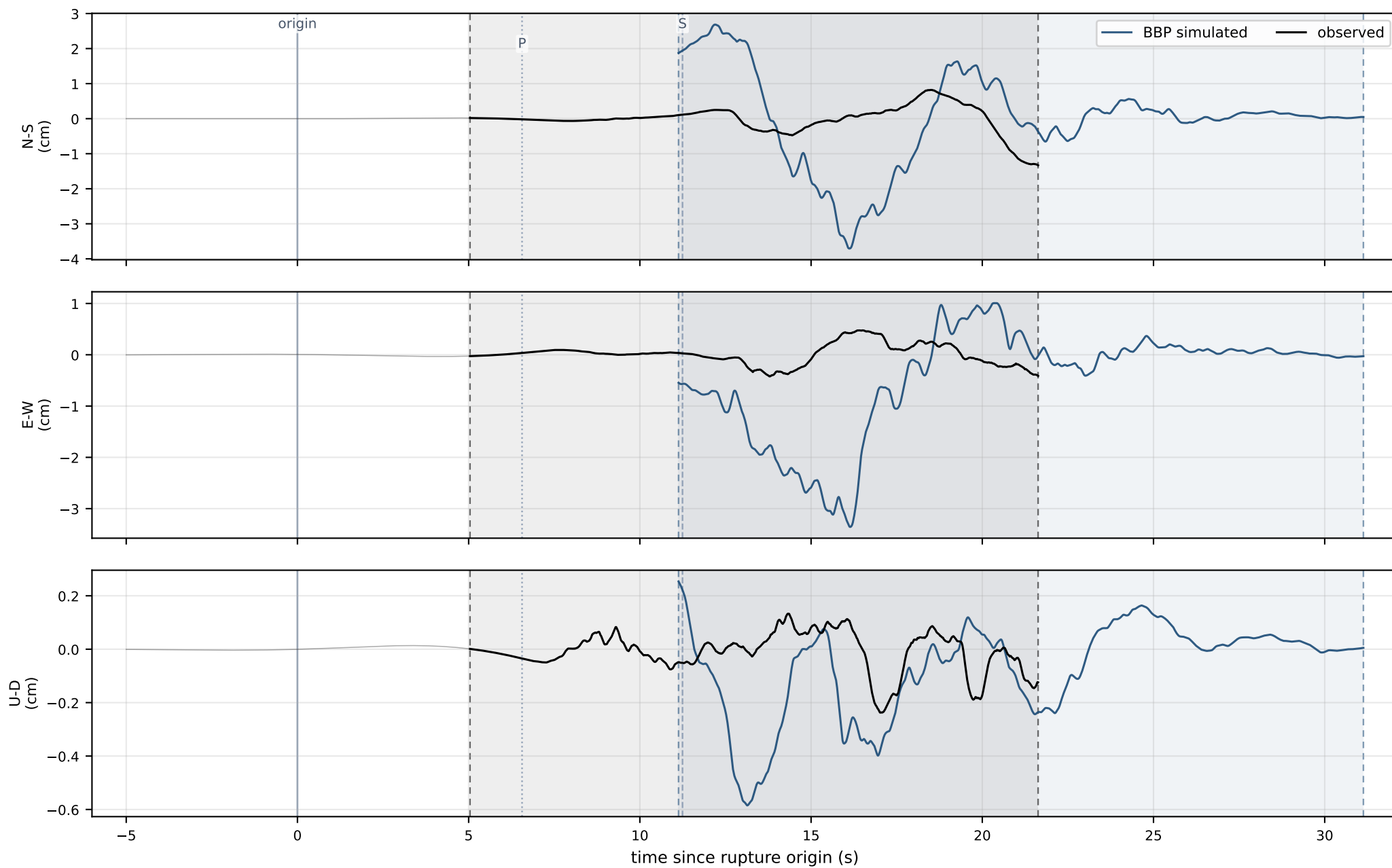


Each source has its own shaded band, dashed edges in its own colour: the window `shake_scene.py` renders.  
Bold inside it is what the table follows; faint outside is the rest of the record that source was handed.

CI.WNM — 39.4 km · displacement handed to the animation

observed PGD 1.33 cm · simulated PGD 3.71 cm · obs/sim = 0.36x

observed: response→acceleration, double-integrated, clipped to S+10 s · simulated: BBP velocity, integrated once, clipped to peak  $\pm 5/15$  s

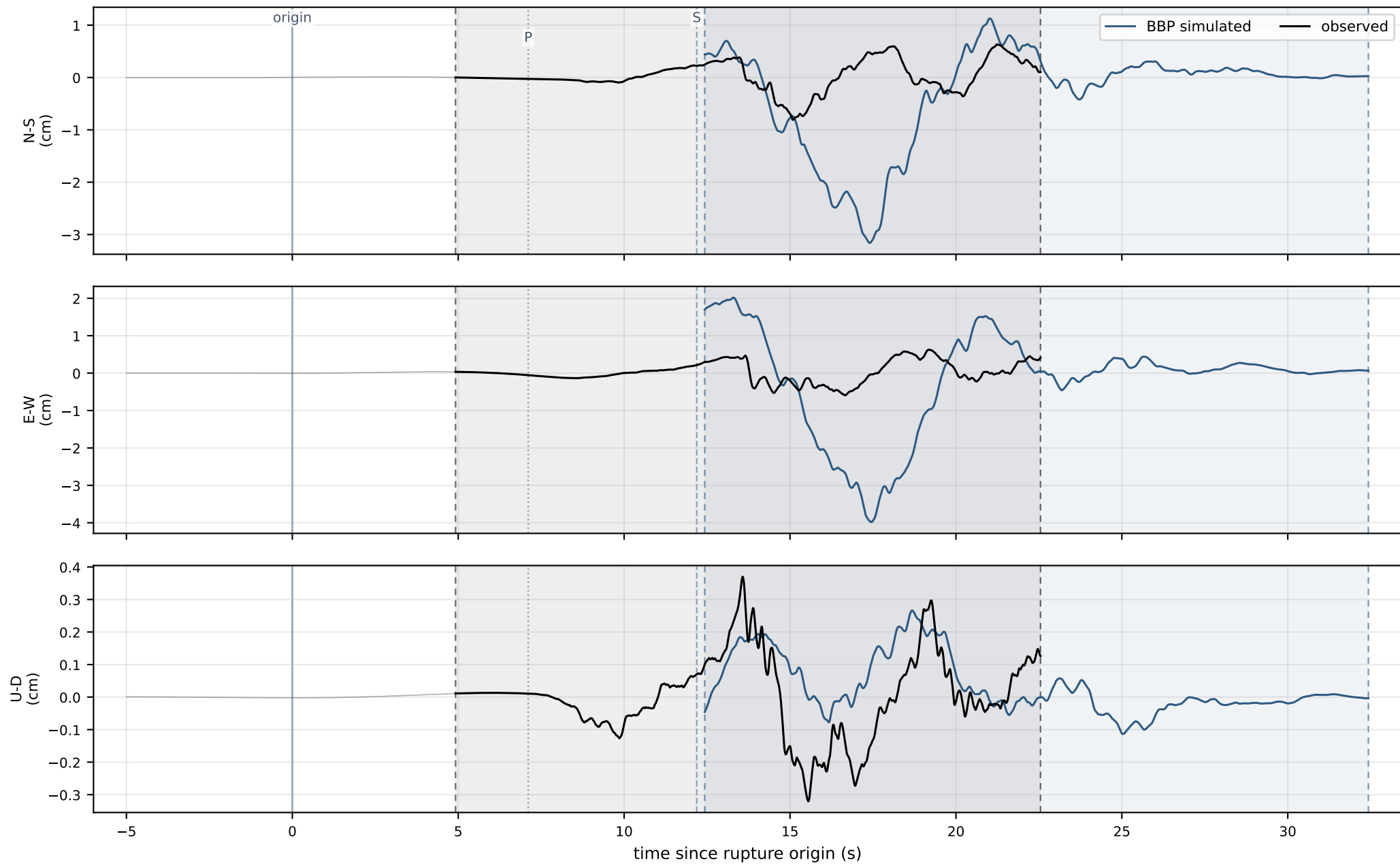


Each source has its own shaded band, dashed edges in its own colour: the window `shake_scene.py` renders.  
Bold inside it is what the table follows; faint outside is the rest of the record that source was handed.

CI.WCS2 — 42.7 km · displacement handed to the animation

observed PGD 0.81 cm · simulated PGD 3.98 cm · obs/sim = 0.20x

observed: response→acceleration, double-integrated, clipped to S+10 s · simulated: BBP velocity, integrated once, clipped to peak  $\pm 5/15$  s

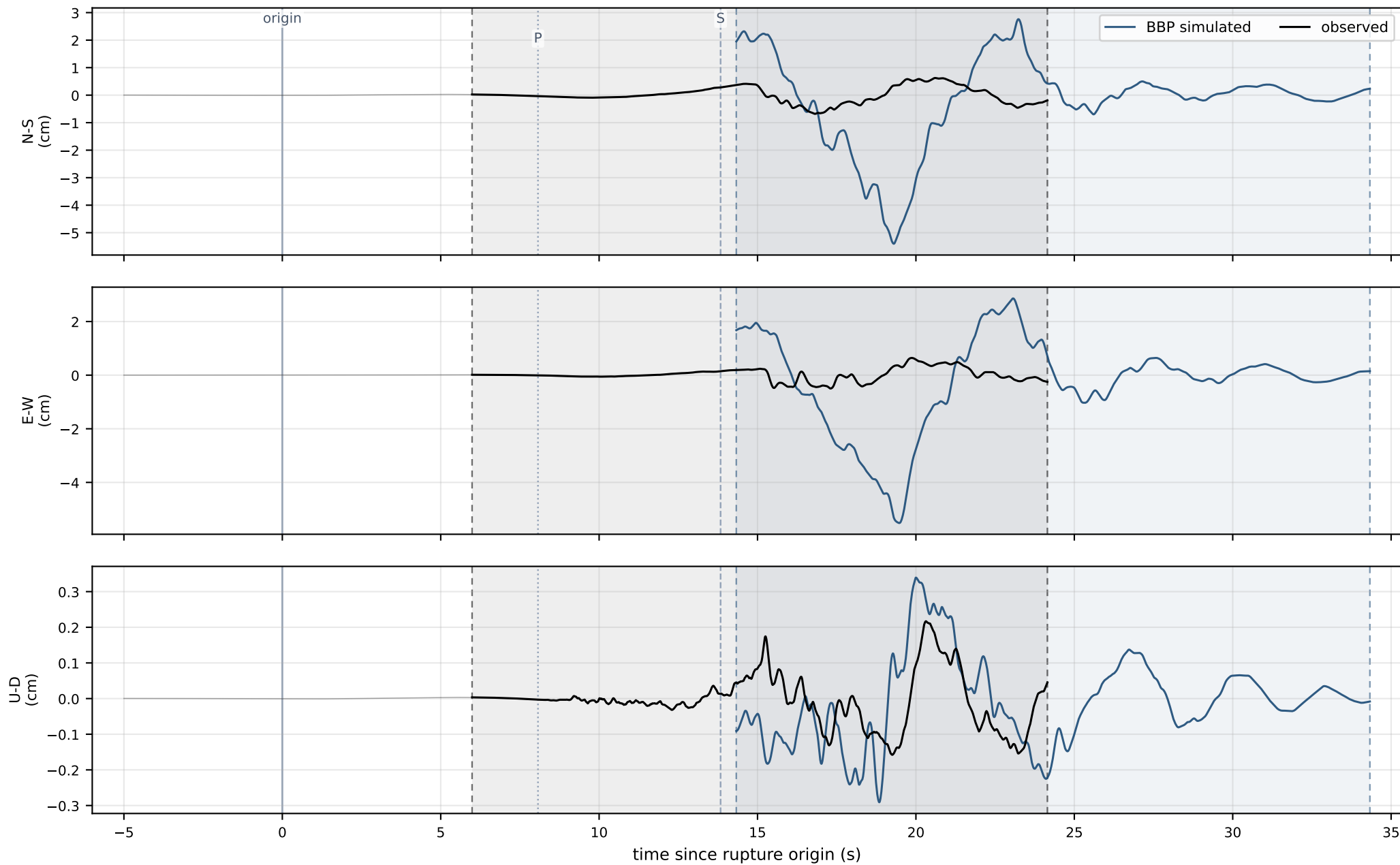


Each source has its own shaded band, dashed edges in its own colour: the window shake\_scene.py renders.  
Bold inside it is what the table follows; faint outside is the rest of the record that source was handed.

CI.WRV2 — 48.4 km · displacement handed to the animation

observed PGD 0.68 cm · simulated PGD 5.51 cm · obs/sim = 0.12x

observed: response→acceleration, double-integrated, clipped to S+10 s · simulated: BBP velocity, integrated once, clipped to peak  $\pm 5/15$  s

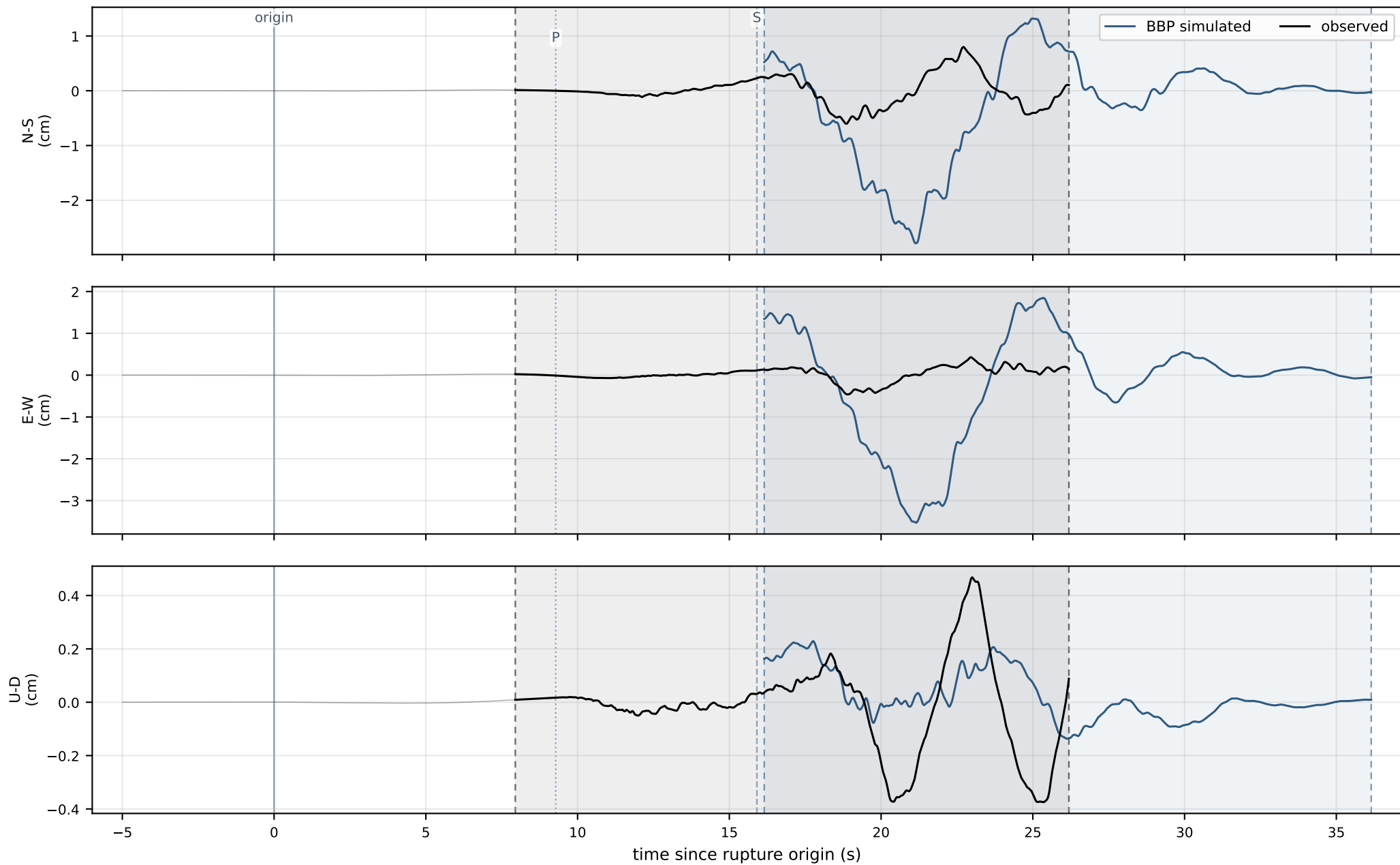


Each source has its own shaded band, dashed edges in its own colour: the window `shake_scene.py` renders.  
Bold inside it is what the table follows; faint outside is the rest of the record that source was handed.

CI.WMF — 55.7 km · displacement handed to the animation

observed PGD 0.80 cm · simulated PGD 3.53 cm · obs/sim = 0.23x

observed: response→acceleration, double-integrated, clipped to S+10 s · simulated: BBP velocity, integrated once, clipped to peak  $\pm 5/15$  s

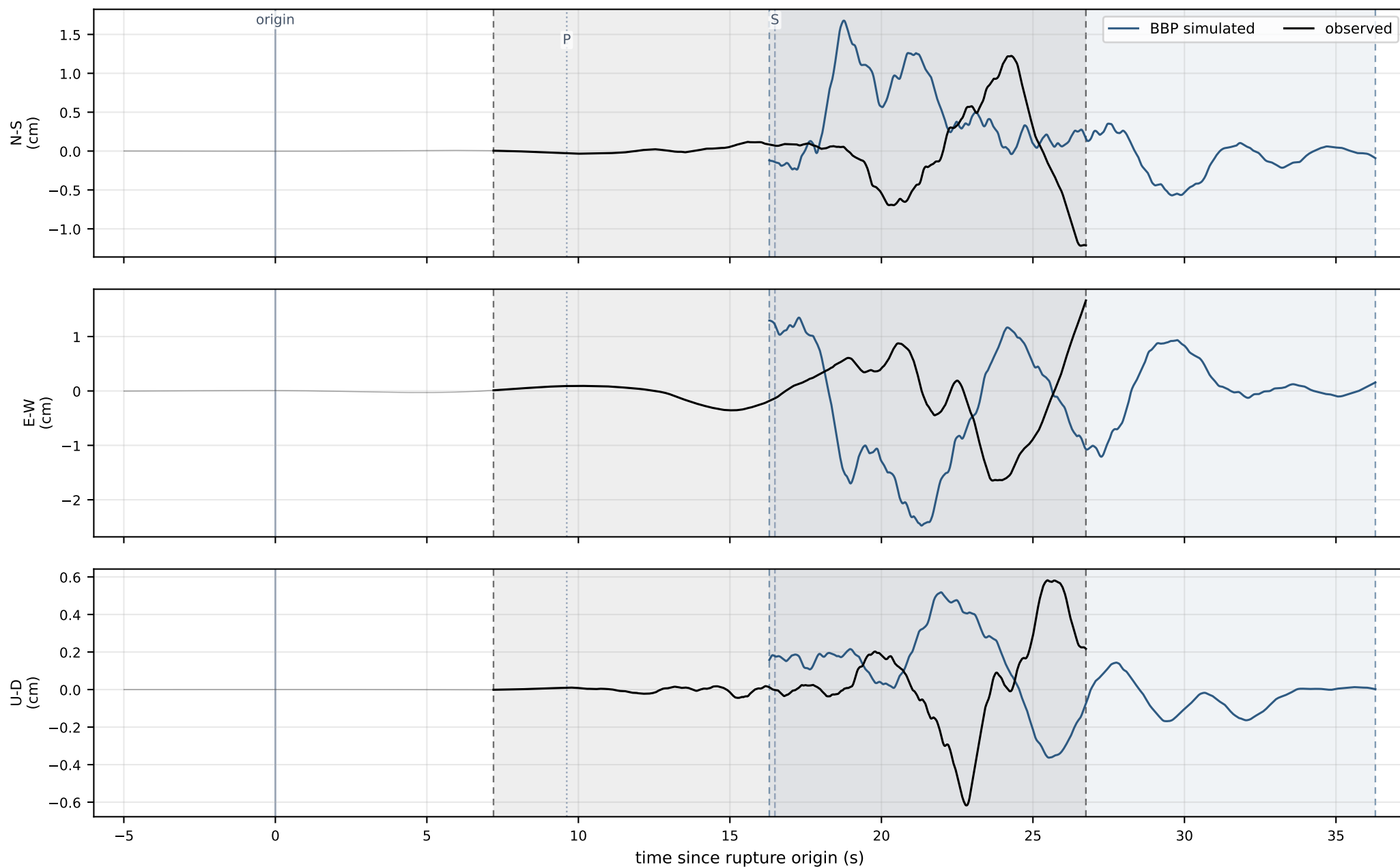


Each source has its own shaded band, dashed edges in its own colour: the window `shake_scene.py` renders.  
Bold inside it is what the table follows; faint outside is the rest of the record that source was handed.

CI.DTP — 57.7 km · displacement handed to the animation

observed PGD 1.66 cm · simulated PGD 2.47 cm · obs/sim = 0.67x

observed: response→acceleration, double-integrated, clipped to S+10 s · simulated: BBP velocity, integrated once, clipped to peak  $\pm 5/15$  s

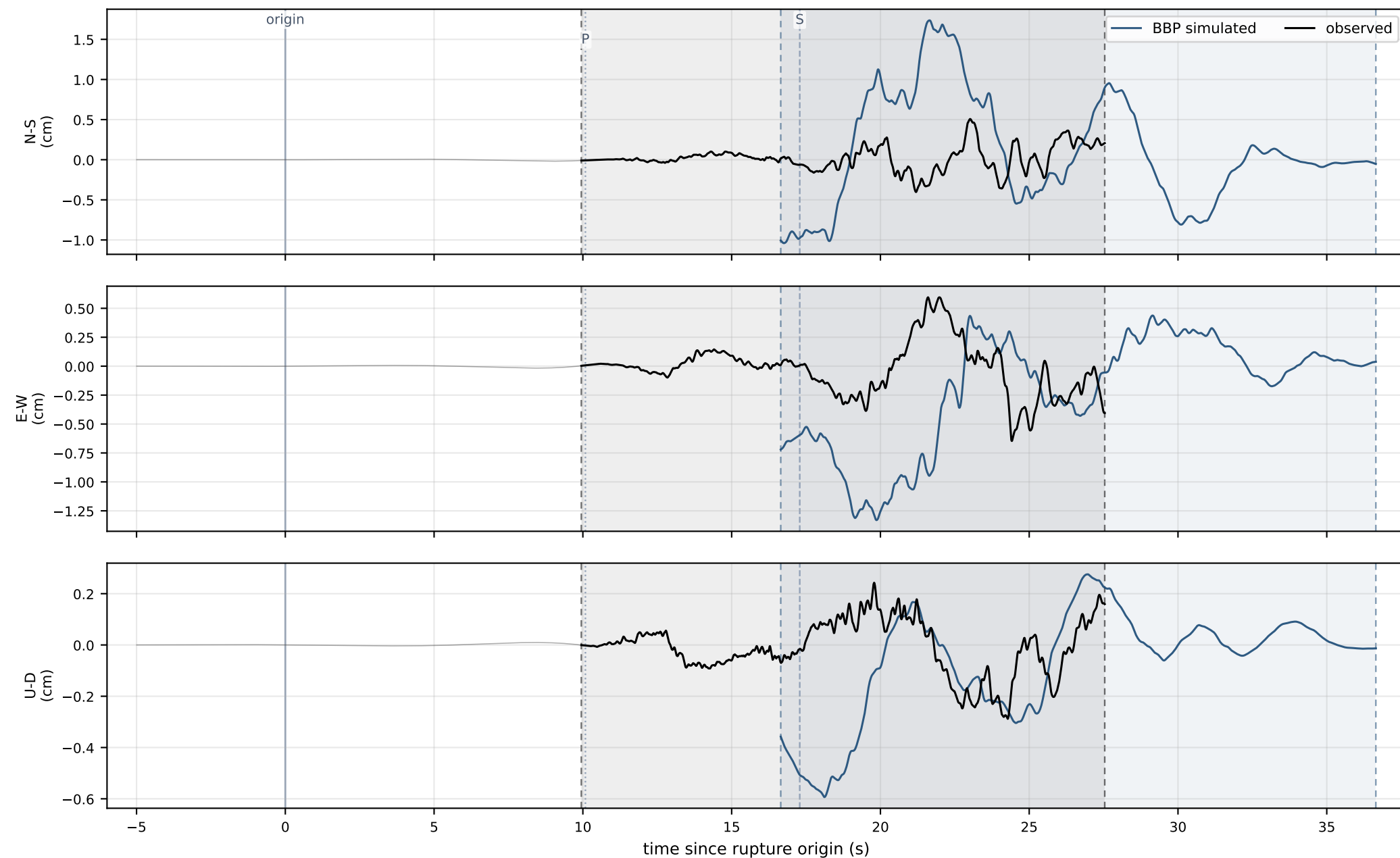


Each source has its own shaded band, dashed edges in its own colour: the window `shake_scene.py` renders.  
Bold inside it is what the table follows; faint outside is the rest of the record that source was handed.

CI.WBS — 60.5 km · displacement handed to the animation

observed PGD 0.65 cm · simulated PGD 1.74 cm · obs/sim = 0.37x

observed: response→acceleration, double-integrated, clipped to S+10 s · simulated: BBP velocity, integrated once, clipped to peak  $\pm 5/15$  s

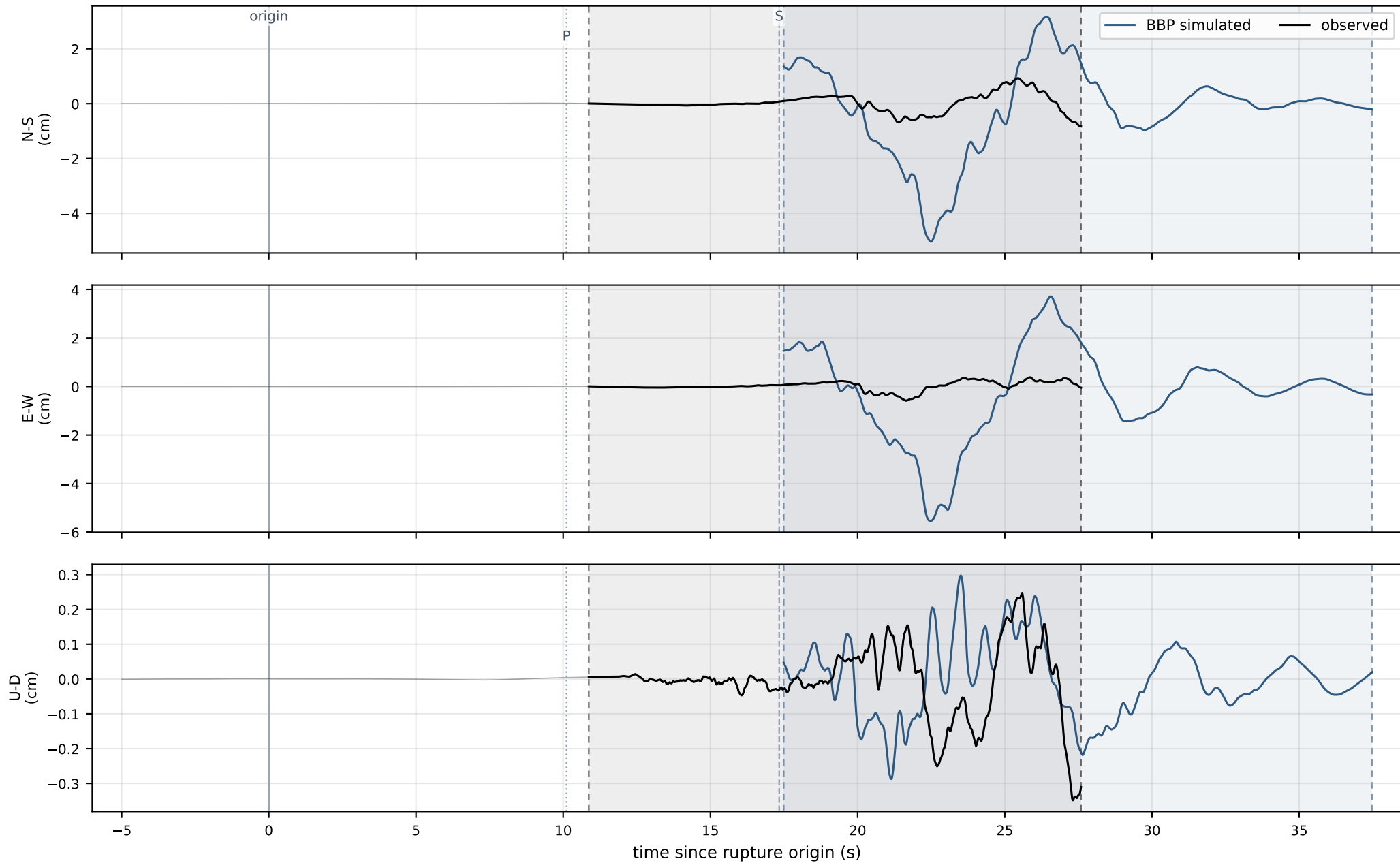


Each source has its own shaded band, dashed edges in its own colour: the window `shake_scene.py` renders.  
Bold inside it is what the table follows; faint outside is the rest of the record that source was handed.

NP.1809 — 60.7 km · displacement handed to the animation

observed PGD 0.93 cm · simulated PGD 5.55 cm · obs/sim = 0.17x

observed: response→acceleration, double-integrated, clipped to S+10 s · simulated: BBP velocity, integrated once, clipped to peak  $\pm 5/15$  s

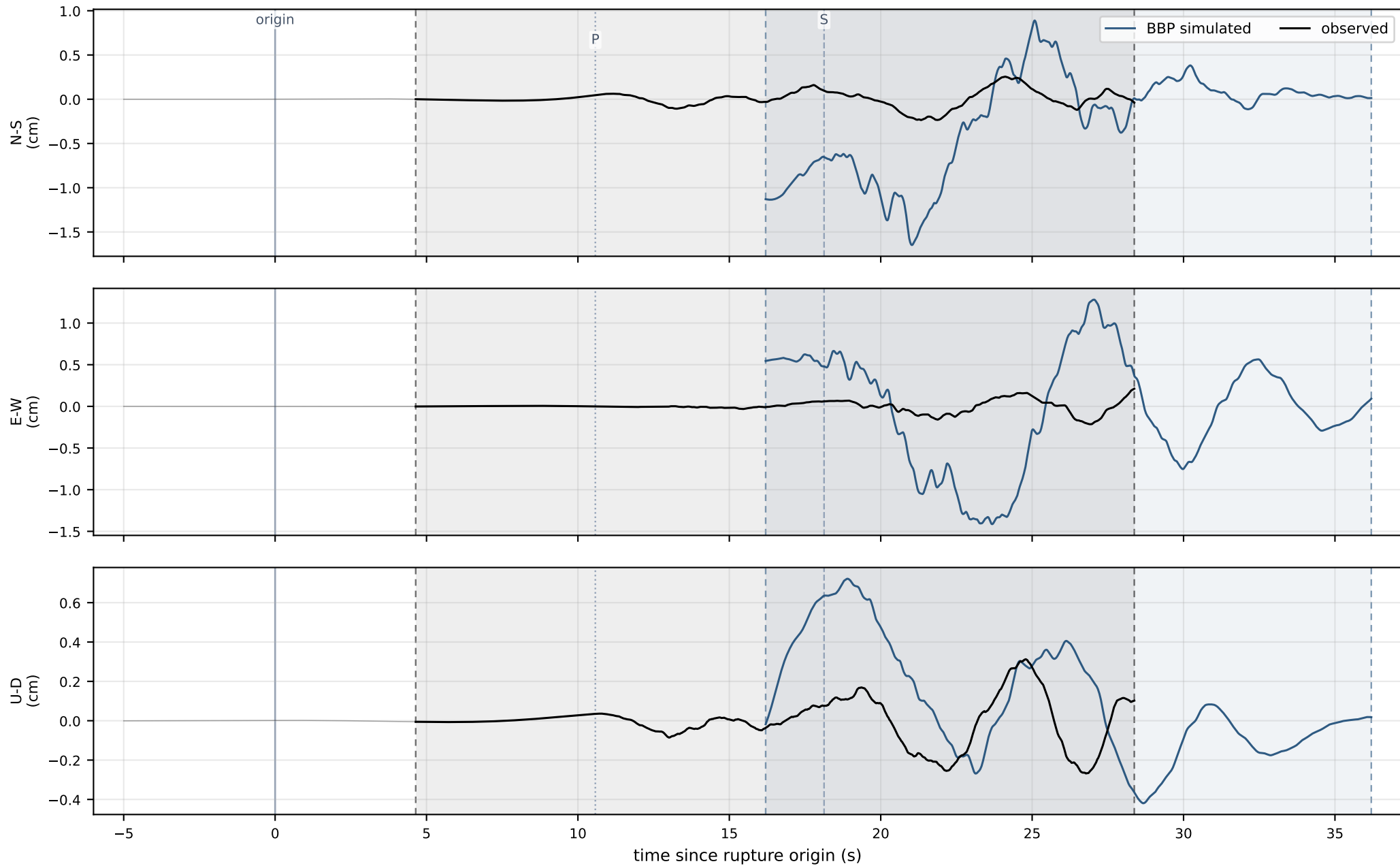


Each source has its own shaded band, dashed edges in its own colour: the window `shake_scene.py` renders.  
Bold inside it is what the table follows; faint outside is the rest of the record that source was handed.

CI.DAW — 63.5 km · displacement handed to the animation

observed PGD 0.26 cm · simulated PGD 1.65 cm · obs/sim = 0.16x

observed: response→acceleration, double-integrated, clipped to S+10 s · simulated: BBP velocity, integrated once, clipped to peak  $\pm 5/15$  s

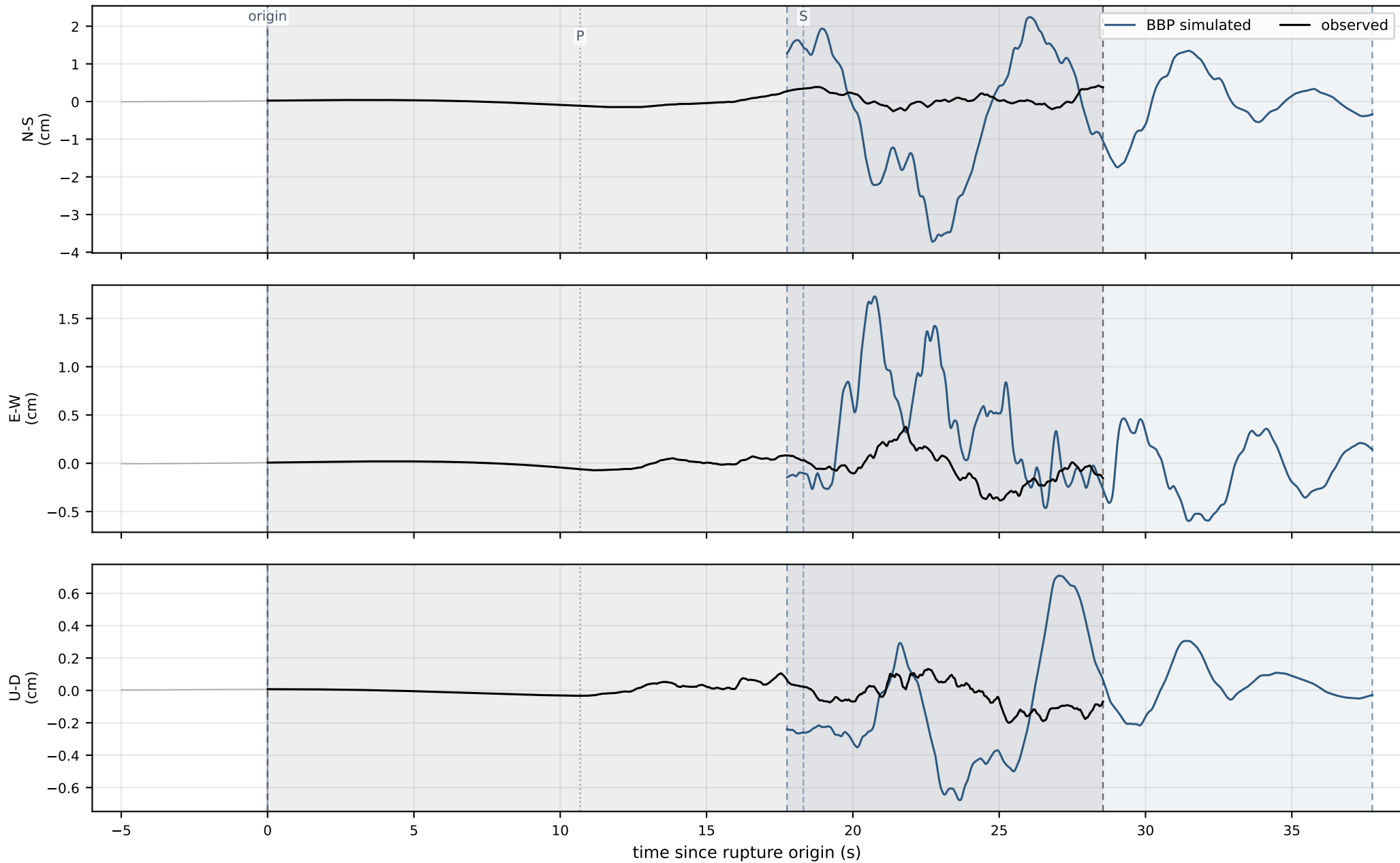


Each source has its own shaded band, dashed edges in its own colour: the window `shake_scene.py` renders.  
Bold inside it is what the table follows; faint outside is the rest of the record that source was handed.

NN.QSM — 64.1 km · displacement handed to the animation

observed PGD 0.42 cm · simulated PGD 3.72 cm · obs/sim = 0.11x

observed: response→acceleration, double-integrated, clipped to S+10 s · simulated: BBP velocity, integrated once, clipped to peak  $\pm 5/15$  s

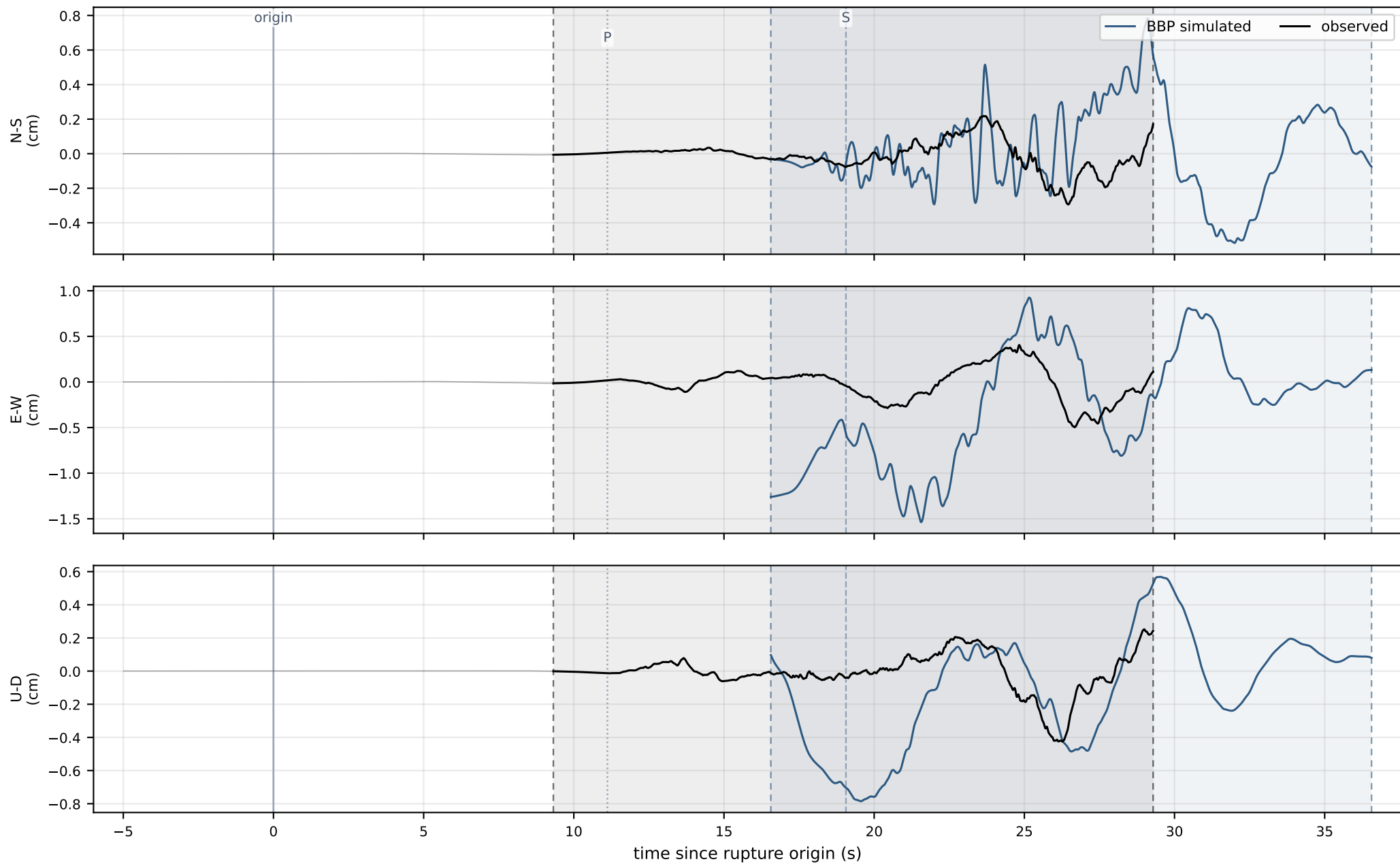


Each source has its own shaded band, dashed edges in its own colour: the window `shake_scene.py` renders.  
Bold inside it is what the table follows; faint outside is the rest of the record that source was handed.

CI.WOR — 66.7 km · displacement handed to the animation

observed PGD 0.50 cm · simulated PGD 1.54 cm · obs/sim = 0.32x

observed: response→acceleration, double-integrated, clipped to S+10 s · simulated: BBP velocity, integrated once, clipped to peak  $\pm 5/15$  s

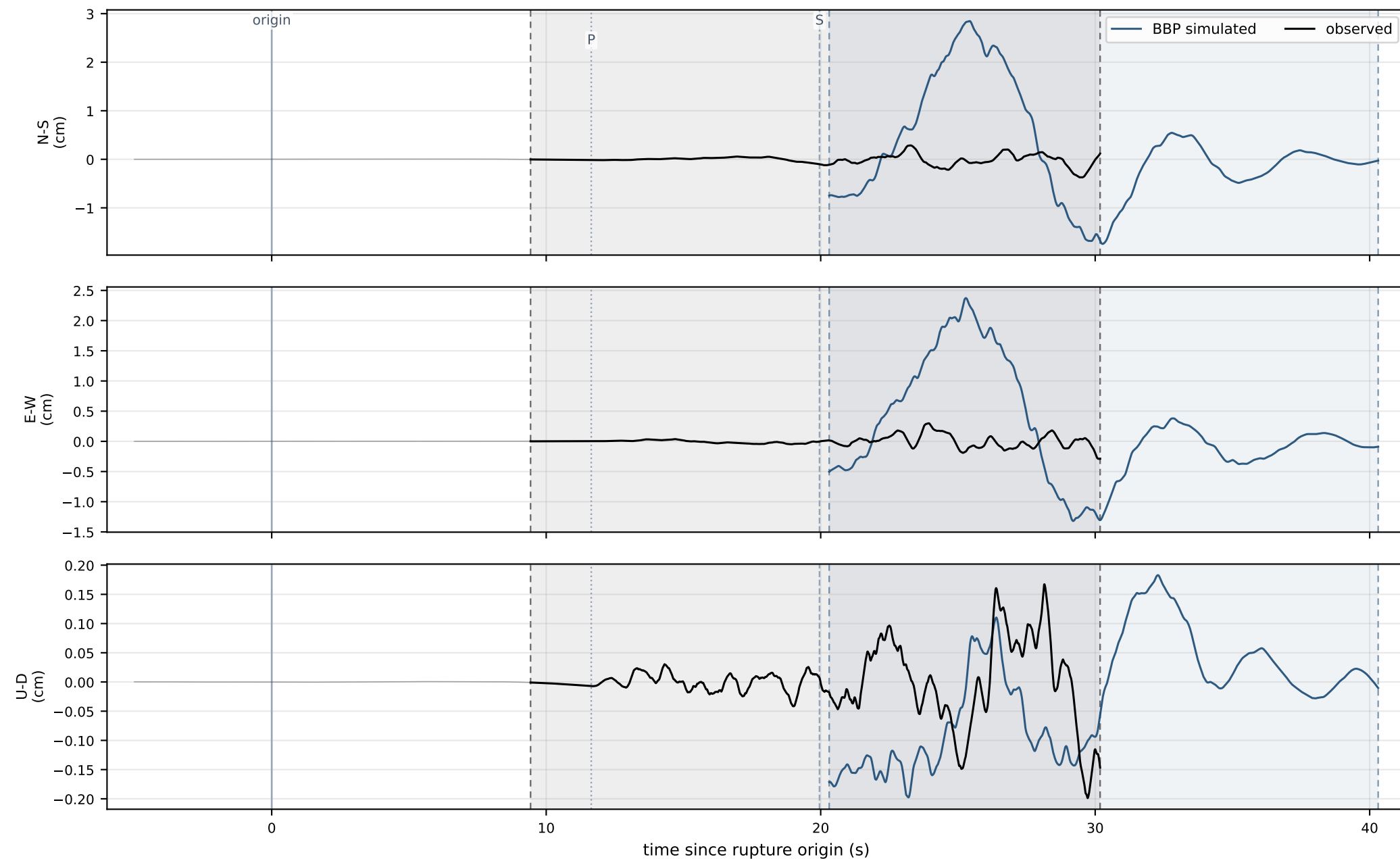


Each source has its own shaded band, dashed edges in its own colour: the window `shake_scene.py` renders.  
Bold inside it is what the table follows; faint outside is the rest of the record that source was handed.

CI.APL — 69.8 km · displacement handed to the animation

observed PGD 0.37 cm · simulated PGD 2.85 cm · obs/sim = 0.13x

observed: response→acceleration, double-integrated, clipped to S+10 s · simulated: BBP velocity, integrated once, clipped to peak  $\pm 5/15$  s

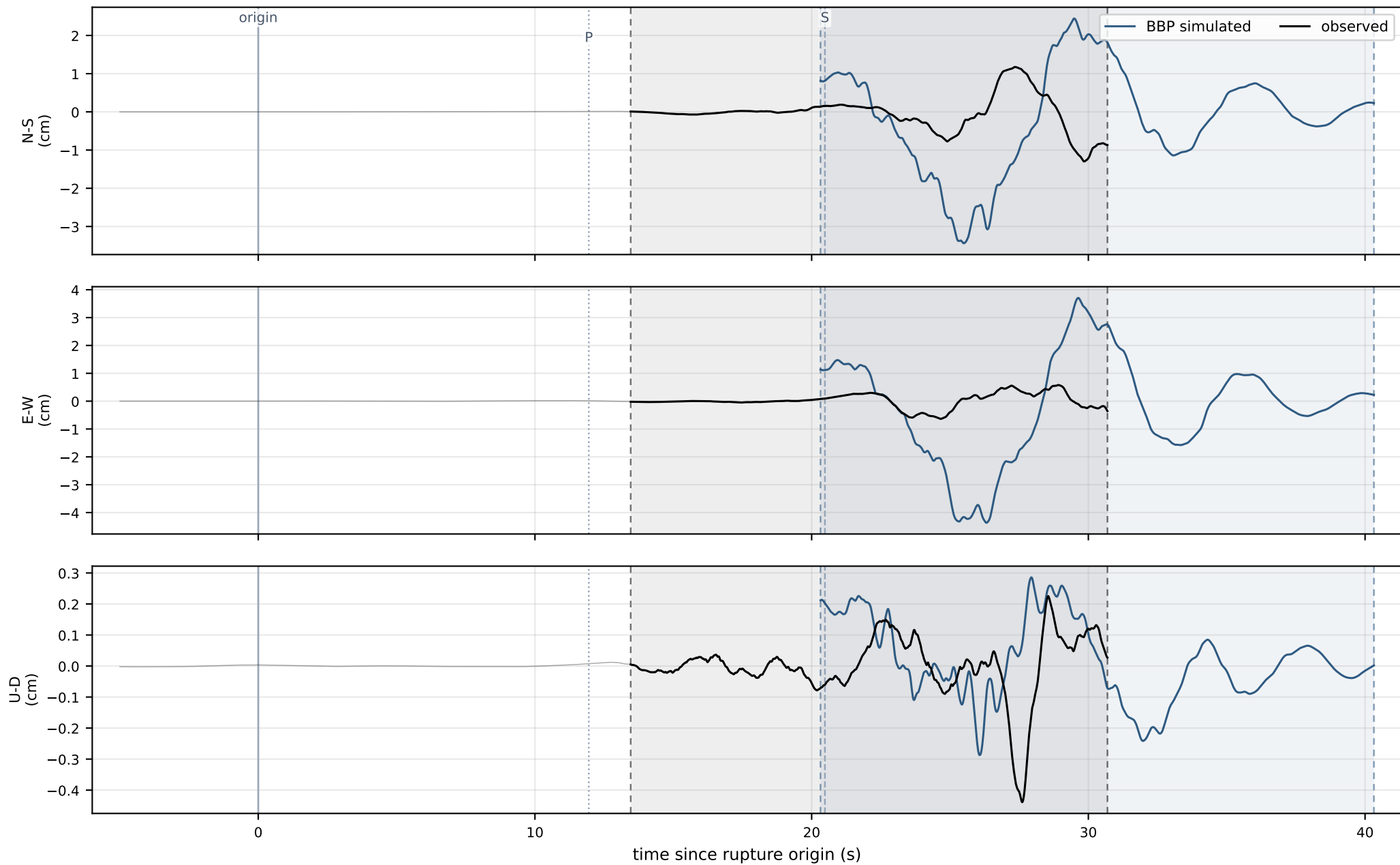


Each source has its own shaded band, dashed edges in its own colour: the window `shake_scene.py` renders.  
Bold inside it is what the table follows; faint outside is the rest of the record that source was handed.

CE.43158 — 71.7 km · displacement handed to the animation

observed PGD 1.30 cm · simulated PGD 4.37 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

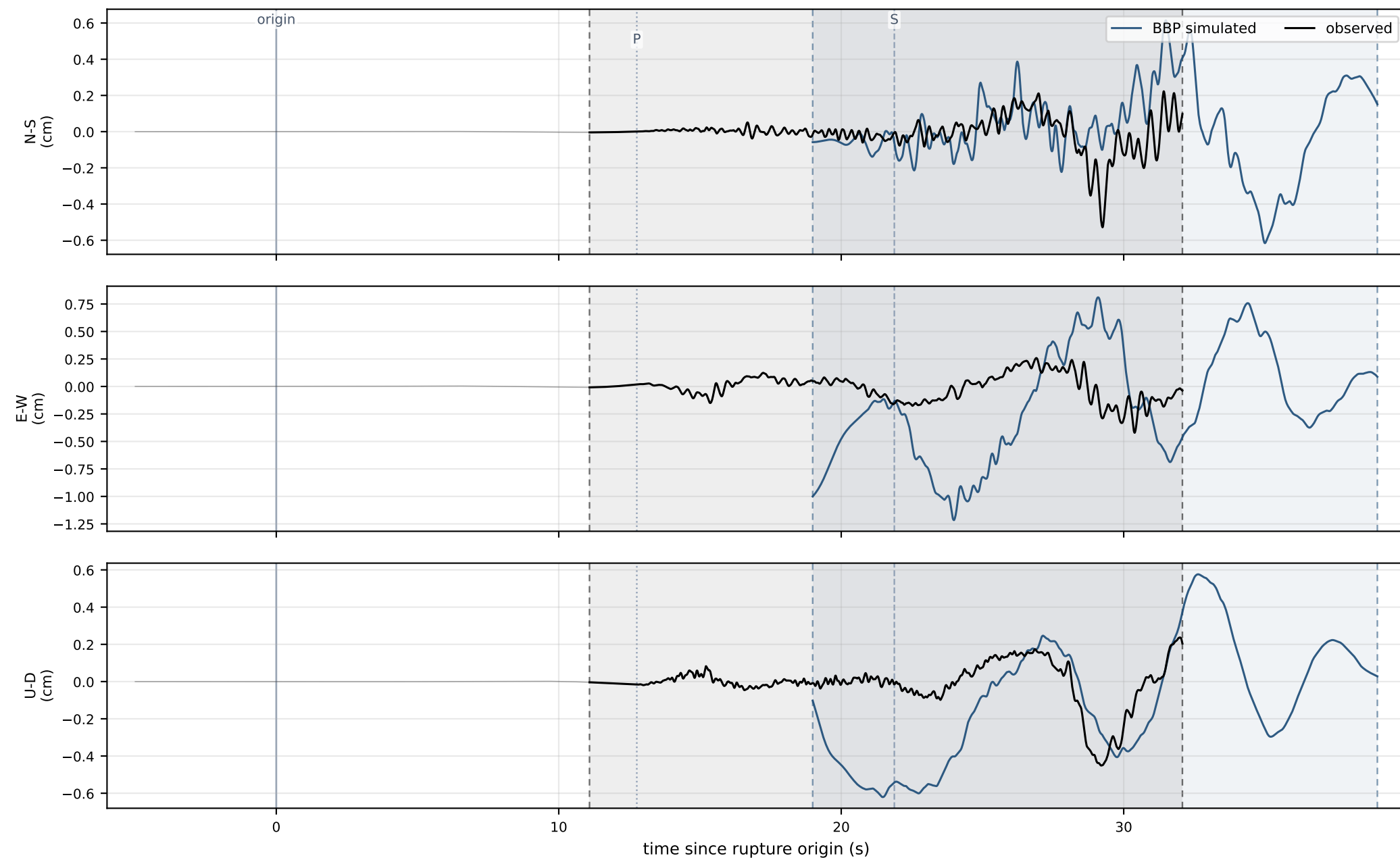


Each source has its own shaded band, dashed edges in its own colour: the window `shake_scene.py` renders.  
Bold inside it is what the table follows; faint outside is the rest of the record that source was handed.

CI.WHF — 76.6 km · displacement handed to the animation

observed PGD 0.53 cm · simulated PGD 1.22 cm · obs/sim = 0.43x

observed: response→acceleration, double-integrated, clipped to S+10 s · simulated: BBP velocity, integrated once, clipped to peak  $\pm 5/15$  s

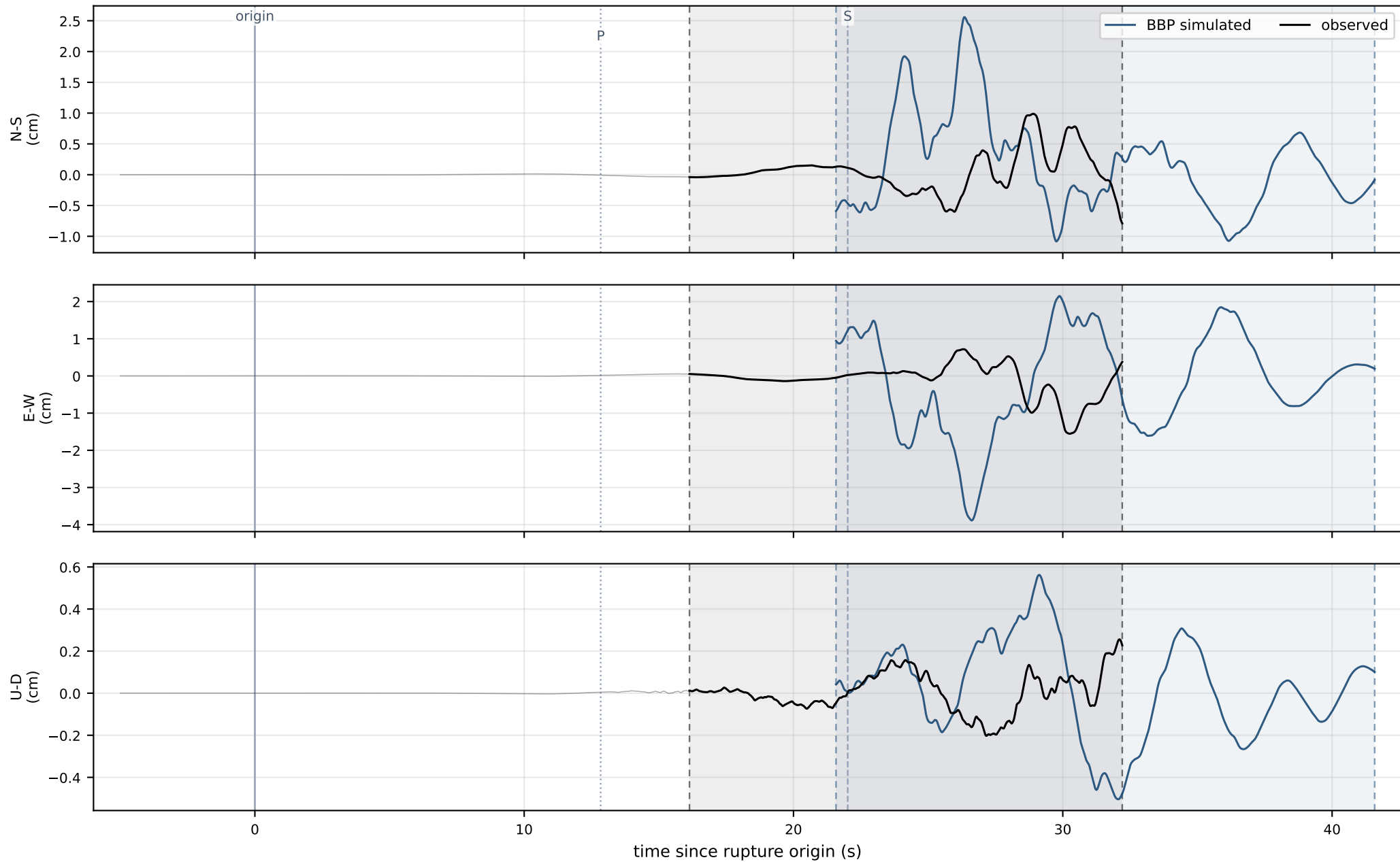


Each source has its own shaded band, dashed edges in its own colour: the window `shake_scene.py` renders.  
Bold inside it is what the table follows; faint outside is the rest of the record that source was handed.

CI.CCA — 77.0 km · displacement handed to the animation

observed PGD 1.55 cm · simulated PGD 3.89 cm · obs/sim = 0.40x

observed: response→acceleration, double-integrated, clipped to S+10 s · simulated: BBP velocity, integrated once, clipped to peak  $\pm 5/15$  s

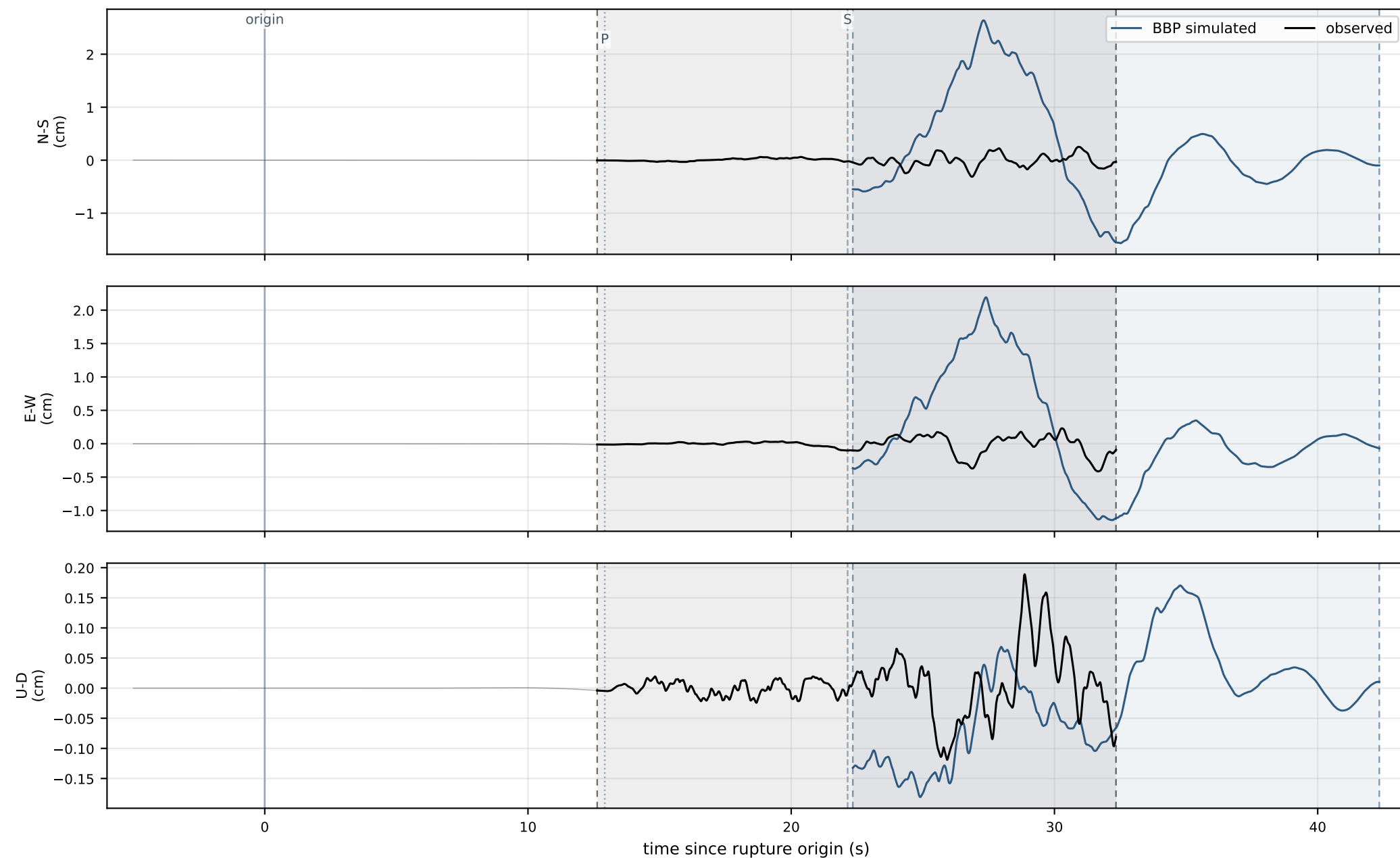


Each source has its own shaded band, dashed edges in its own colour: the window `shake_scene.py` renders.  
Bold inside it is what the table follows; faint outside is the rest of the record that source was handed.

CI.GSC — 77.5 km · displacement handed to the animation

observed PGD 0.41 cm · simulated PGD 2.64 cm · obs/sim = 0.16x

observed: response→acceleration, double-integrated, clipped to S+10 s · simulated: BBP velocity, integrated once, clipped to peak  $\pm 5/15$  s

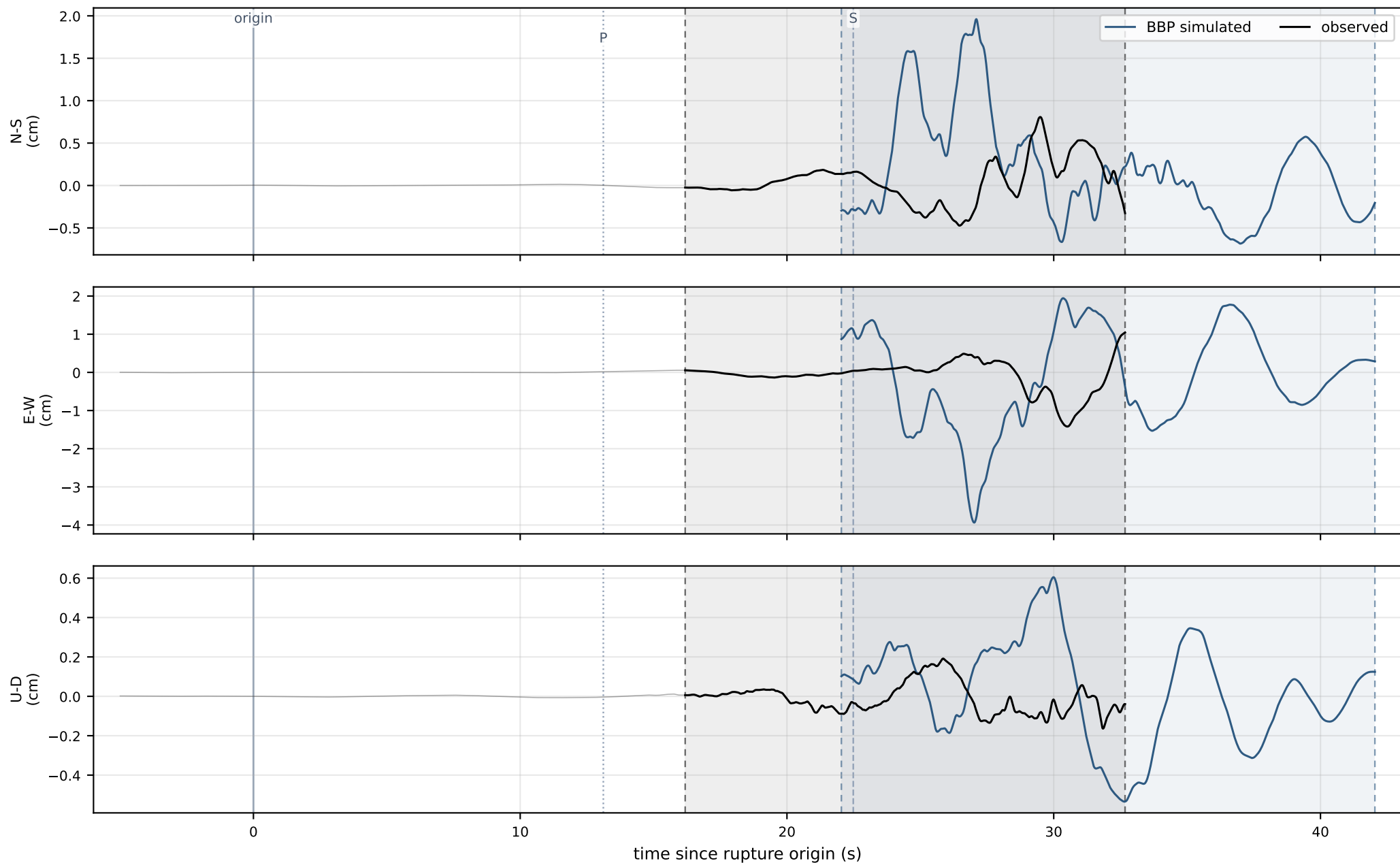


Each source has its own shaded band, dashed edges in its own colour: the window `shake_scene.py` renders.  
Bold inside it is what the table follows; faint outside is the rest of the record that source was handed.

CI.Q0068 — 78.7 km · displacement handed to the animation

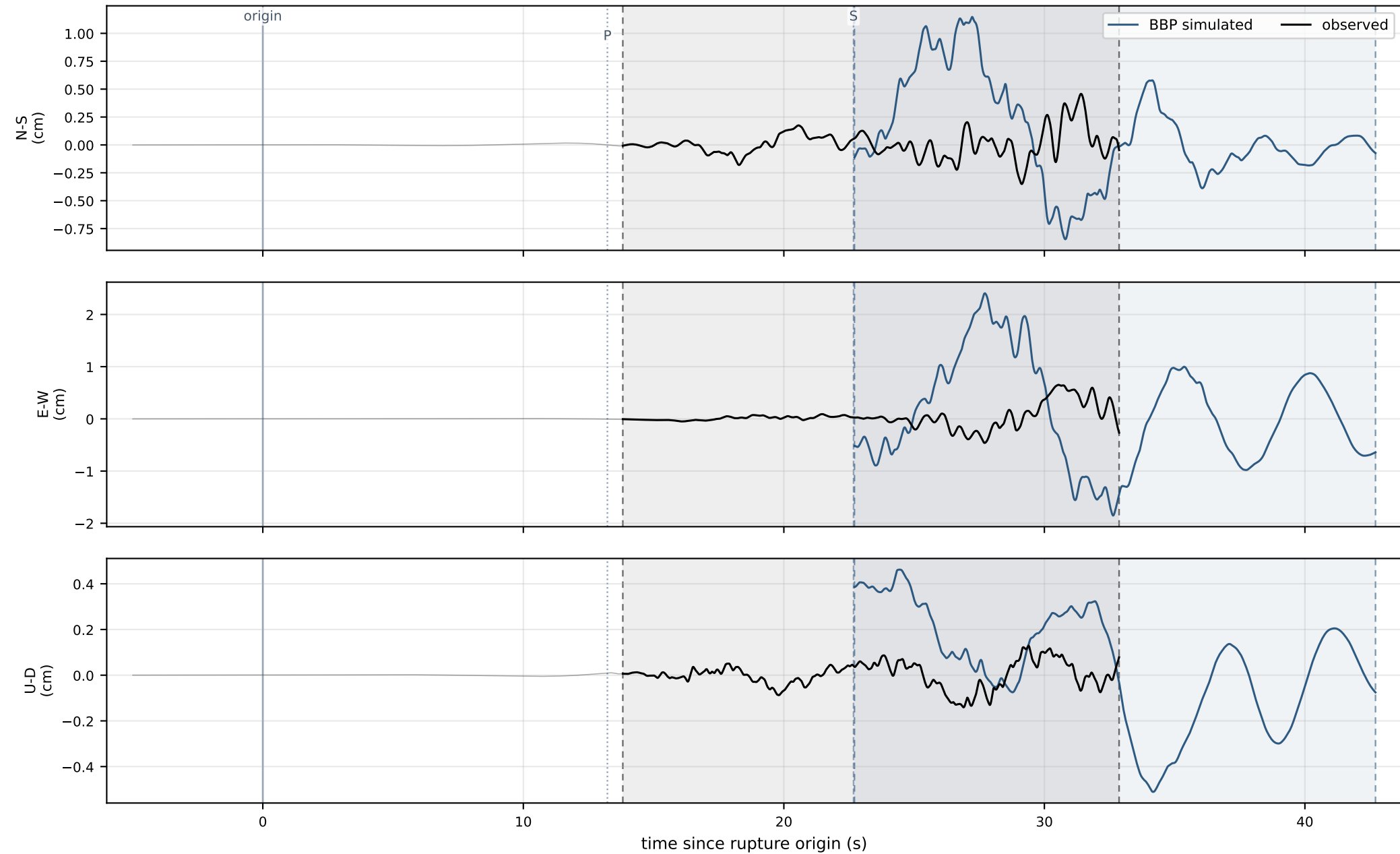
observed PGD 1.42 cm · simulated PGD 3.94 cm · obs/sim = 0.36x

observed: response→acceleration, double-integrated, clipped to S+10 s · simulated: BBP velocity, integrated once, clipped to peak  $\pm 5/15$  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 — 79.4 km · displacement handed to the animation  
 observed PGD 0.65 cm · simulated PGD 2.41 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

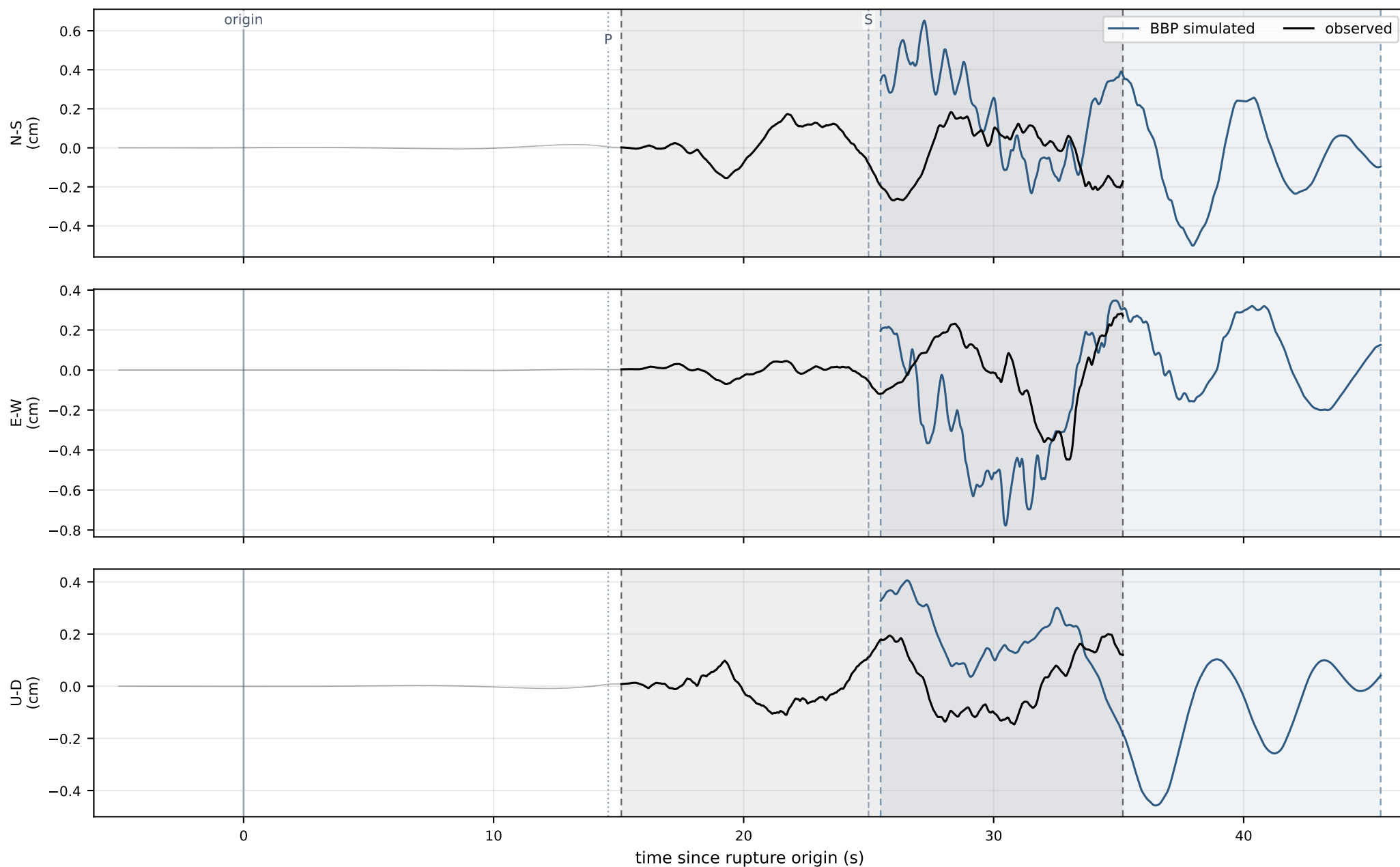


Each source has its own shaded band, dashed edges in its own colour: the window shake\_scene.py renders.  
 Bold inside it is what the table follows; faint outside is the rest of the record that source was handed.

CI.LMR2 — 87.5 km · displacement handed to the animation

observed PGD 0.45 cm · simulated PGD 0.78 cm · obs/sim = 0.58x

observed: response→acceleration, double-integrated, clipped to S+10 s · simulated: BBP velocity, integrated once, clipped to peak  $\pm 5/15$  s

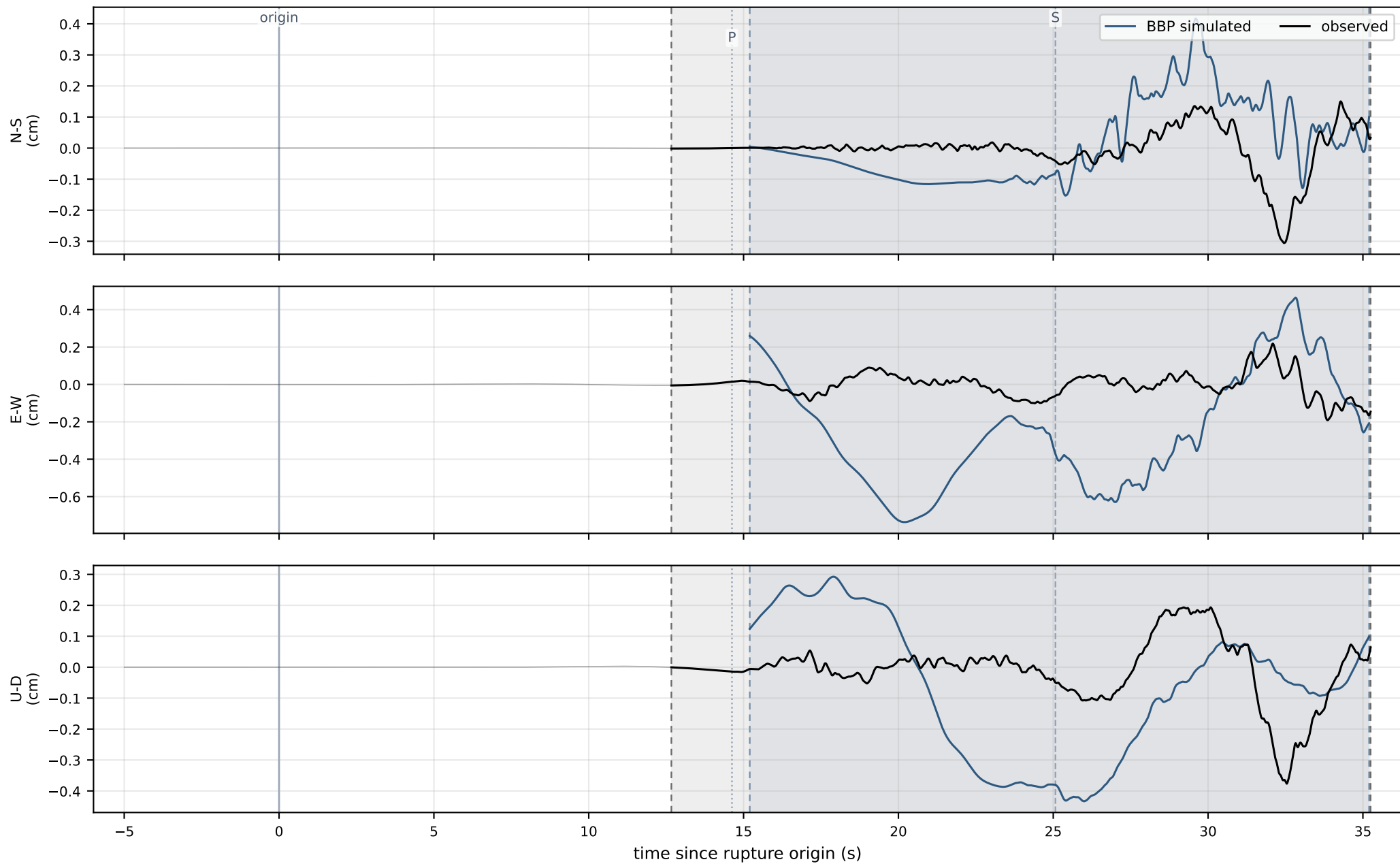


Each source has its own shaded band, dashed edges in its own colour: the window `shake_scene.py` renders.  
Bold inside it is what the table follows; faint outside is the rest of the record that source was handed.

CI.ISA — 87.8 km · displacement handed to the animation

observed PGD 0.31 cm · simulated PGD 0.74 cm · obs/sim = 0.41x

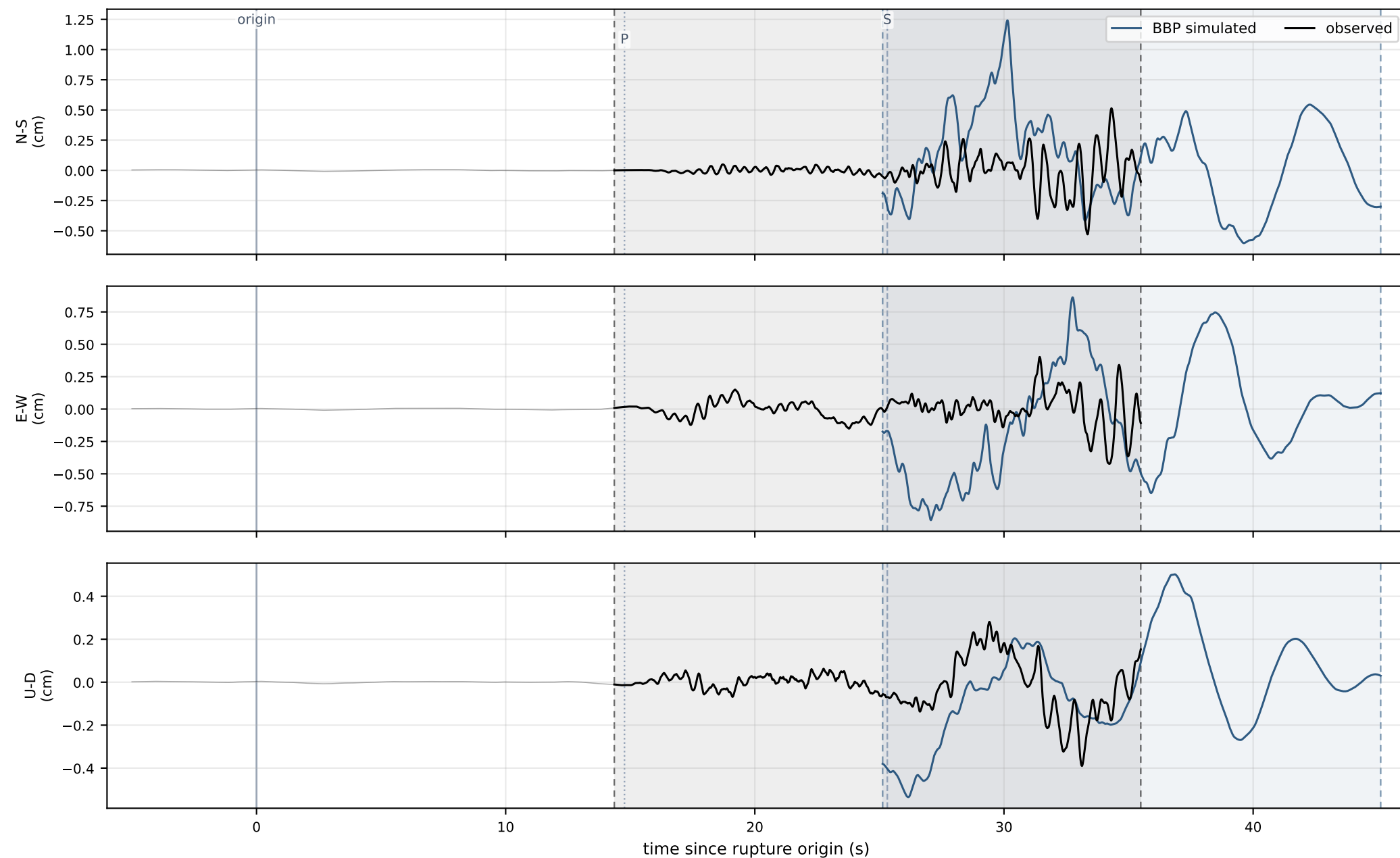
observed: response→acceleration, double-integrated, clipped to S+10 s · simulated: BBP velocity, integrated once, clipped to peak  $\pm 5/15$  s



CE.34349 — 88.6 km · displacement handed to the animation

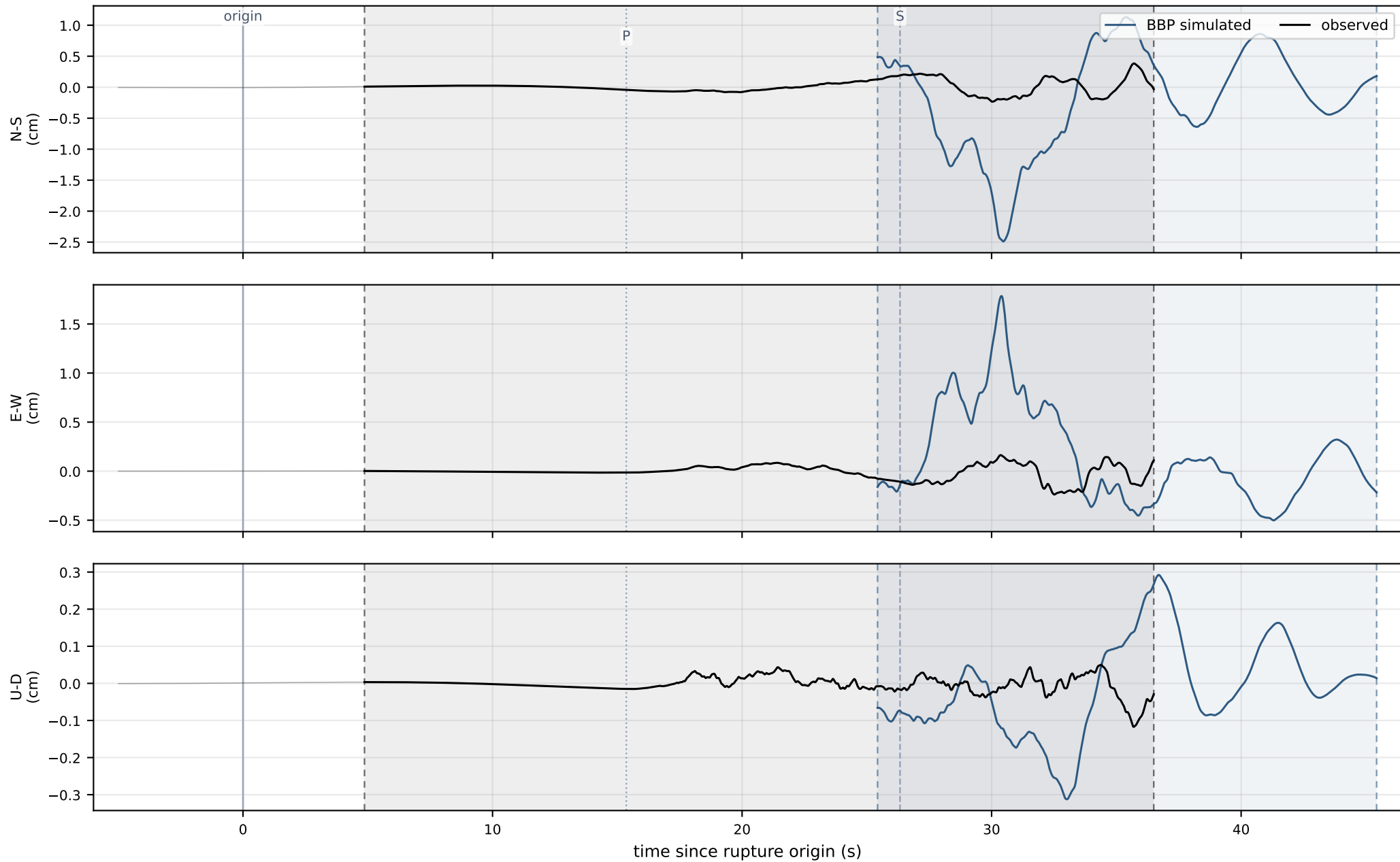
observed PGD 0.53 cm · simulated PGD 1.24 cm · obs/sim = 0.43x

observed: response→acceleration, double-integrated, clipped to S+10 s · simulated: BBP velocity, integrated once, clipped to peak  $\pm 5/15$  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 — 92.2 km · displacement handed to the animation  
 observed PGD 0.38 cm · simulated PGD 2.49 cm · obs/sim = 0.15x  
 observed: response→acceleration, double-integrated, clipped to S+10 s · simulated: BBP velocity, integrated once, clipped to peak  $\pm 5/15$  s

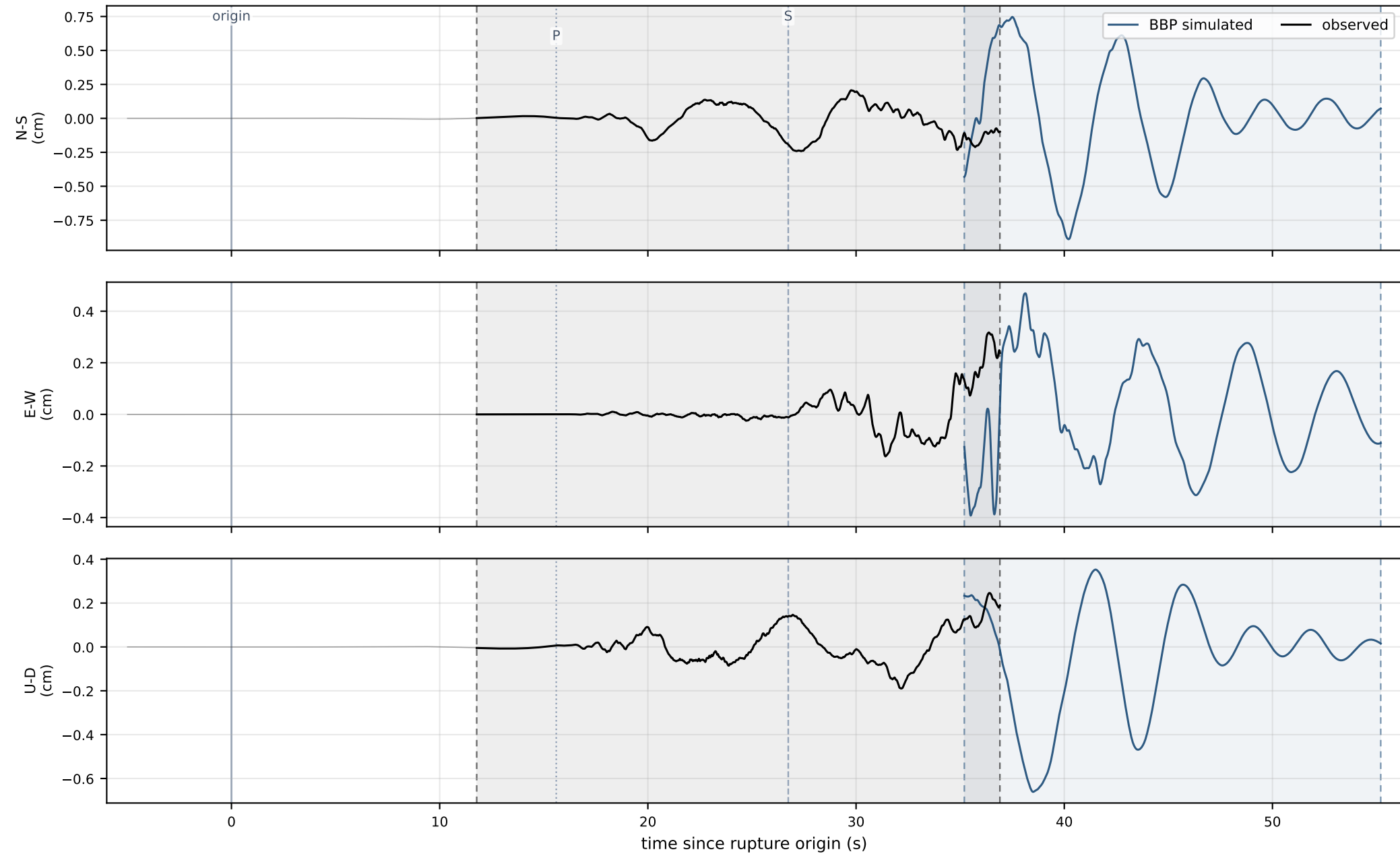


Each source has its own shaded band, dashed edges in its own colour: the window shake\_scene.py renders.  
 Bold inside it is what the table follows; faint outside is the rest of the record that source was handed.

CI.HYS — 93.6 km · displacement handed to the animation

observed PGD 0.32 cm · simulated PGD 0.89 cm · obs/sim = 0.36x

observed: response→acceleration, double-integrated, clipped to S+10 s · simulated: BBP velocity, integrated once, clipped to peak  $\pm 5/15$  s

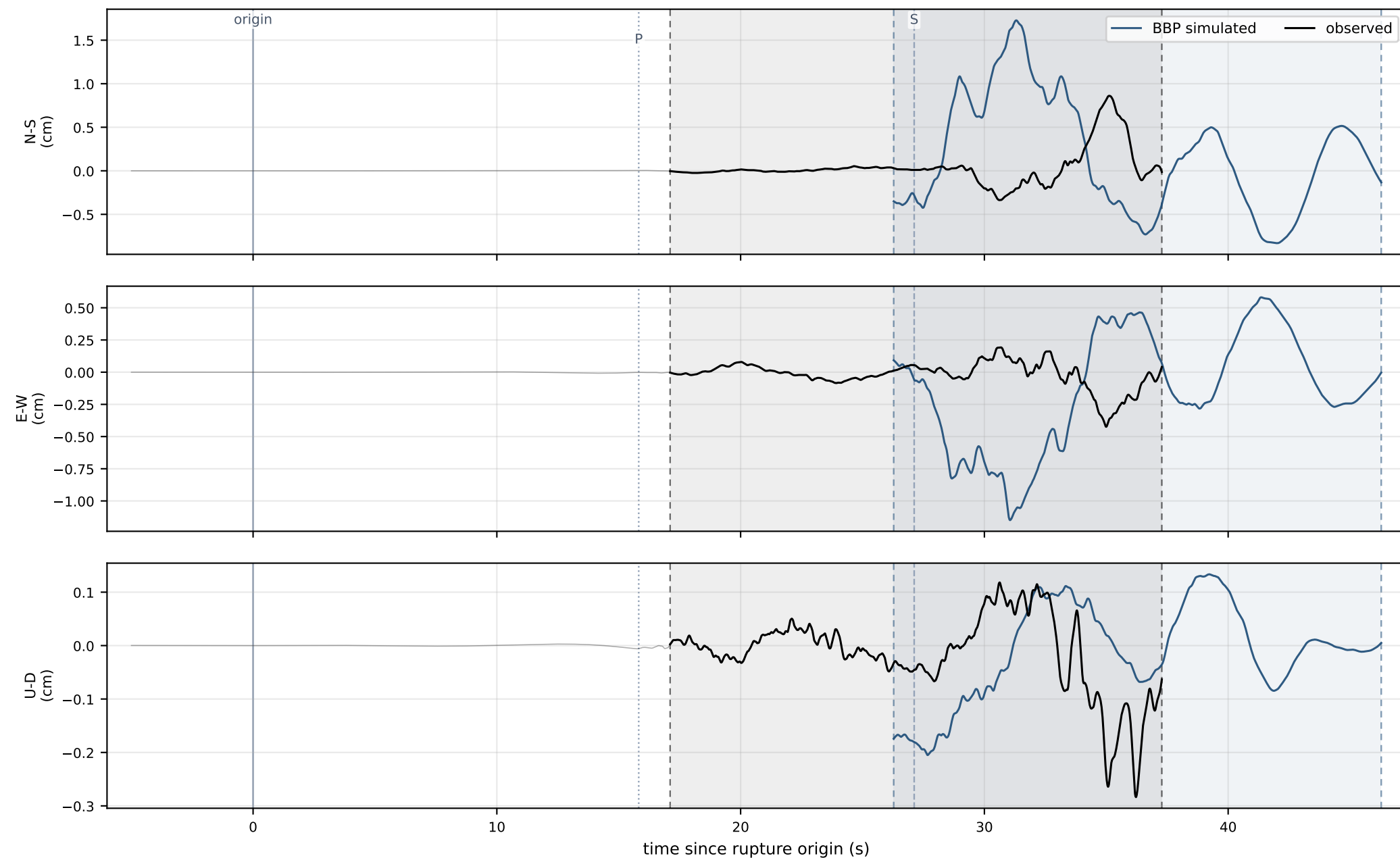


Each source has its own shaded band, dashed edges in its own colour: the window `shake_scene.py` renders.  
Bold inside it is what the table follows; faint outside is the rest of the record that source was handed.

CI.TEH — 94.9 km · displacement handed to the animation

observed PGD 0.86 cm · simulated PGD 1.73 cm · obs/sim = 0.50x

observed: response→acceleration, double-integrated, clipped to S+10 s · simulated: BBP velocity, integrated once, clipped to peak  $\pm 5/15$  s

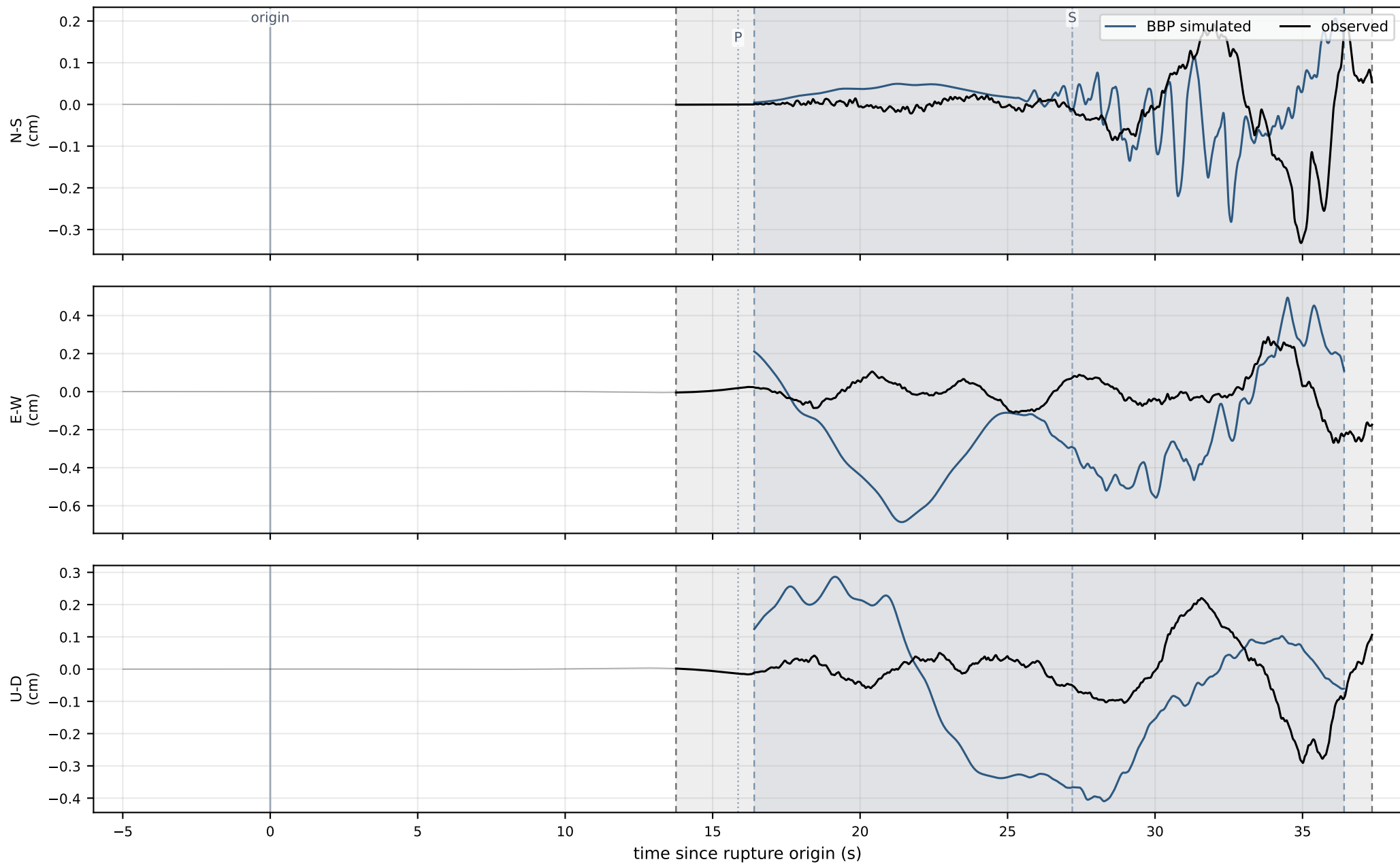


Each source has its own shaded band, dashed edges in its own colour: the window `shake_scene.py` renders.  
Bold inside it is what the table follows; faint outside is the rest of the record that source was handed.

CI.WAS2 — 95.2 km · displacement handed to the animation

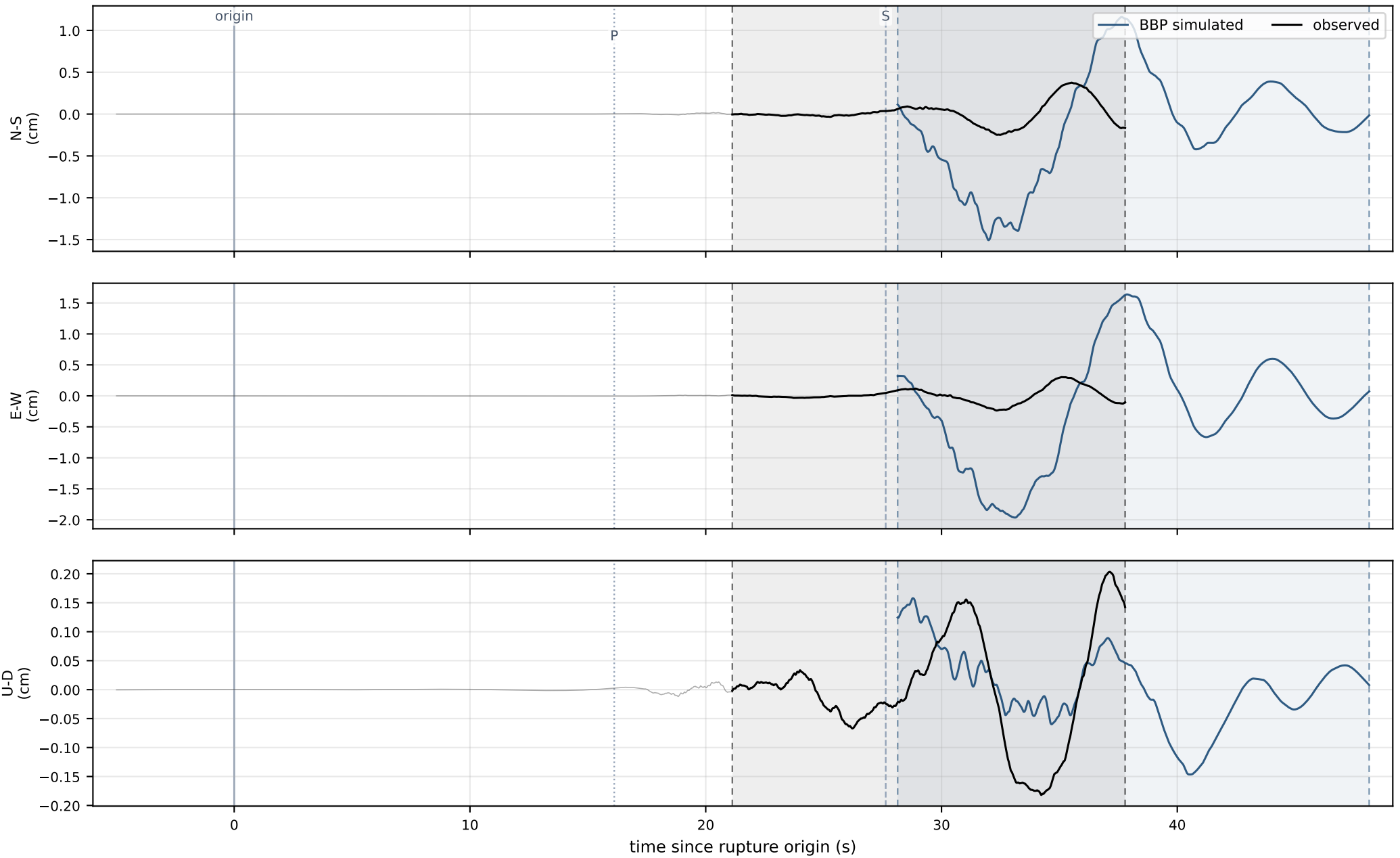
observed PGD 0.33 cm · simulated PGD 0.69 cm · obs/sim = 0.48x

observed: response→acceleration, double-integrated, clipped to S+10 s · simulated: BBP velocity, integrated once, clipped to peak  $\pm 5/15$  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 — 96.7 km · displacement handed to the animation  
observed PGD 0.38 cm · simulated PGD 1.97 cm · obs/sim = 0.19x  
observed: response→acceleration, double-integrated, clipped to S+10 s · simulated: BBP velocity, integrated once, clipped to peak ±5/15 s

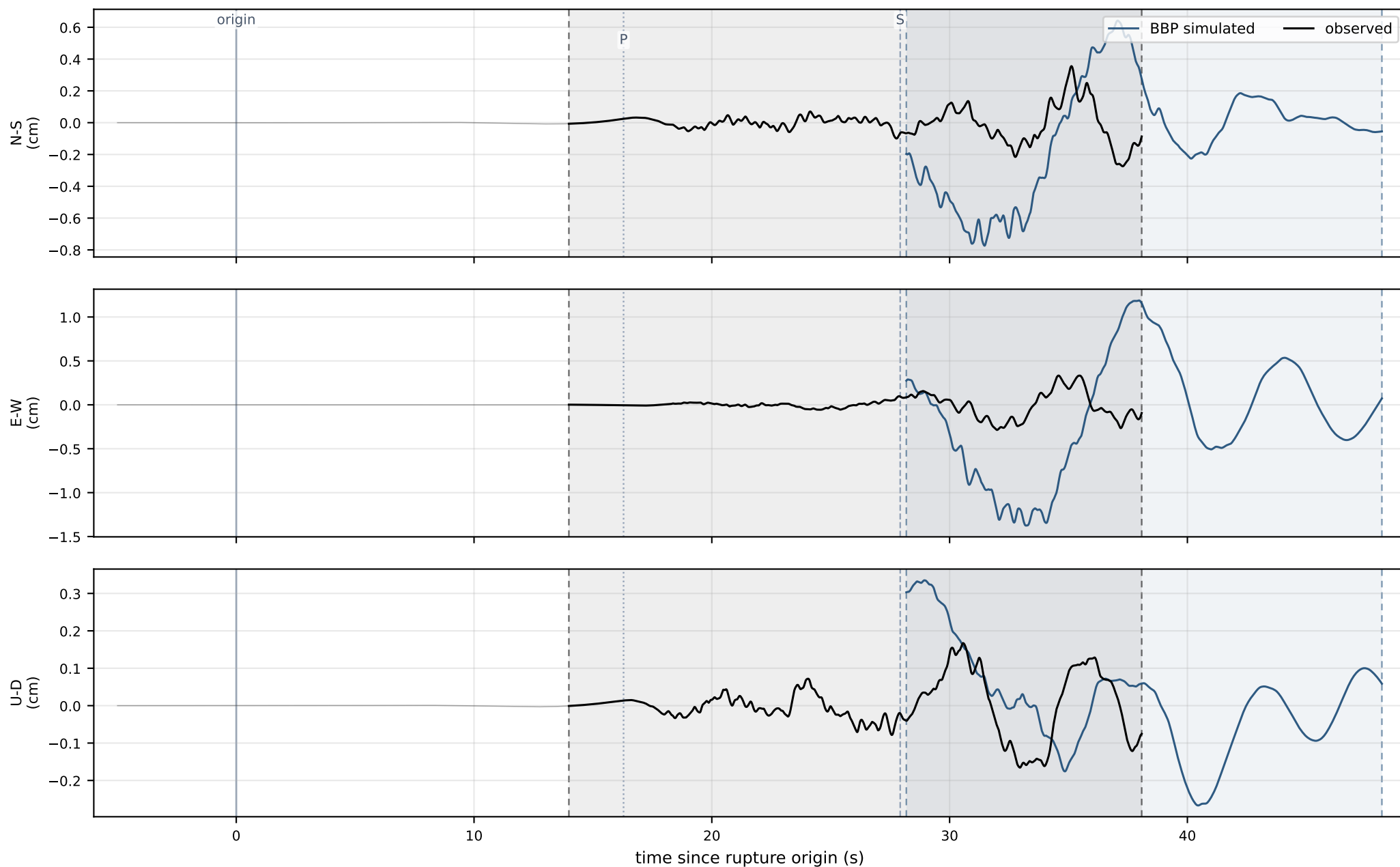


Each source has its own shaded band, dashed edges in its own colour: the window `shake_scene.py` renders.  
Bold inside it is what the table follows; faint outside is the rest of the record that source was handed.

CI.CGO — 97.7 km · displacement handed to the animation

observed PGD 0.36 cm · simulated PGD 1.38 cm · obs/sim = 0.26x

observed: response→acceleration, double-integrated, clipped to S+10 s · simulated: BBP velocity, integrated once, clipped to peak  $\pm 5/15$  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.