

MASW Studio

Example 2D MASW line (synthetic)

Surface-wave analysis & interpretation

Survey information	
Client	
Site	Synthetic demonstration line
Operator	
Survey date	
Location	
Software	MASW Studio 1.2.0 · QuakeLogic Inc.
Project / revision	1ff9193e16a84308b1a909a1bef3c05d / 2

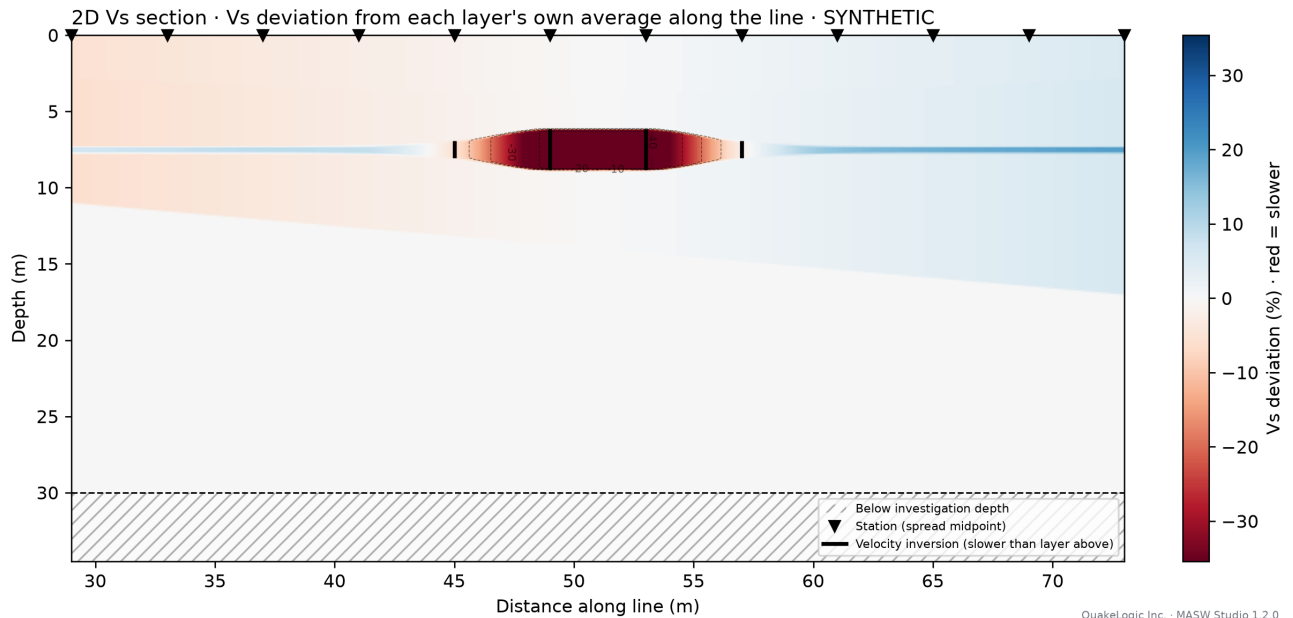
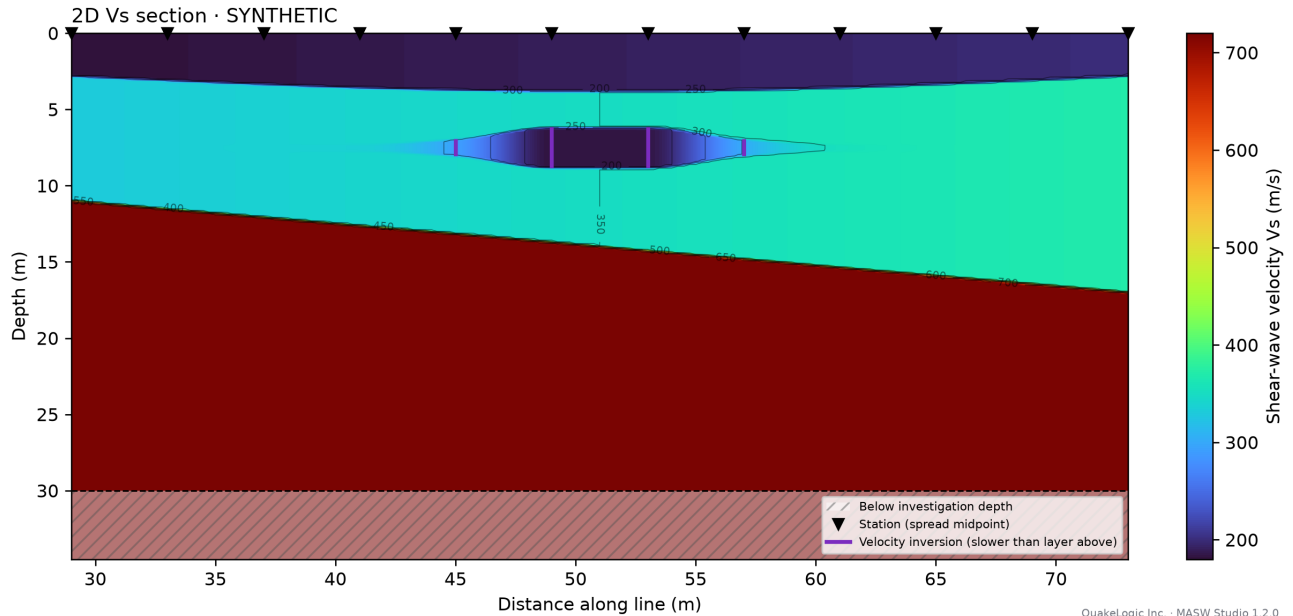
Interpretation basis

Geophysical interpretation requires qualified professional judgment. Evaluate these results with survey conditions, acquisition quality and other available site information. Layered-earth models are non-unique candidates; agreement with dispersion picks does not establish geological truth or depth resolution. QC boundaries identify sampling limitations and do not certify an interpretation.

Project notes

Synthetic demonstration only. Twelve roll-along shots (4 m steps) generated from laterally varying layered models (soft cover, a buried low-velocity pocket near 51 m and dipping bedrock). Each shot keeps its generating model so the 2D Vs section can be explored immediately; re-pick and invert any shot to compare.

2D Vs section



Each shot's 1D layered model is placed at the midpoint of its active receivers. When all stations have the same number of layers, interface depths and layer velocities are interpolated between stations with a shape-preserving (PCHIP) curve, which never exceeds the neighbouring station values; otherwise velocities are interpolated the same way depth by depth. Hatched areas lie below each station's declared interpretation depth, or below half the longest picked wavelength when none is declared. This is a pseudo-2D presentation of 1D results, not a 2D inversion: lateral resolution is about one spread length, and nothing is extrapolated beyond the outermost stations.

Deviation view: each point is compared with each layer's own average along the line. Red areas are slower: candidates for soft ground, loose fill or voids. They require confirmation by qualified interpretation and independent investigation.

Station	Distance (m)	Investigation depth (m)	Velocity inversions
Line shot 01 · station 29 m	29	30.0 (declared)	—

Station	Distance (m)	Investigation depth (m)	Velocity inversions
Line shot 02 · station 33 m	33	30.0 (declared)	—
Line shot 03 · station 37 m	37	30.0 (declared)	—
Line shot 04 · station 41 m	41	30.0 (declared)	—
Line shot 05 · station 45 m	45	30.0 (declared)	6.94–8.05 m: Vs 292.4 (-15%)
Line shot 06 · station 49 m	49	30.0 (declared)	6.17–8.82 m: Vs 182.3 (-48%)
Line shot 07 · station 53 m	53	30.0 (declared)	6.17–8.82 m: Vs 184.2 (-48%)
Line shot 08 · station 57 m	57	30.0 (declared)	6.94–8.05 m: Vs 301.7 (-15%)
Line shot 09 · station 61 m	61	30.0 (declared)	—
Line shot 10 · station 65 m	65	30.0 (declared)	—
Line shot 11 · station 69 m	69	30.0 (declared)	—
Line shot 12 · station 73 m	73	30.0 (declared)	—

Line shot 01 · station 29 m

Synthetic 2D line · vertical component

SYNTHETIC VALIDATION DATA — not a field investigation.

Acquisition	Value
Channels / active	24 / 24
Samples / interval	2048 / 0.001 s
Time range	0 to 2.047 s
Source coordinate	0.0 m
Receiver coordinates (m)	6.0, 8.0, 10.0, 12.0, 14.0, 16.0, 18.0, 20.0, 22.0, 24.0, 26.0, 28.0, 30.0, 32.0, 34.0, 36.0, 38.0, 40.0, 42.0, 44.0, 46.0, 48.0, 50.0, 52.0
Original geometry units	METERS
Raw amplitudes	counts
Source checksum	Synthetic / derived: provenance retained in project

Reproducible processing

No signal preprocessing applied.

Time shifts (s): [0.0, 0.0]

Disabled/deleted channel indices: []

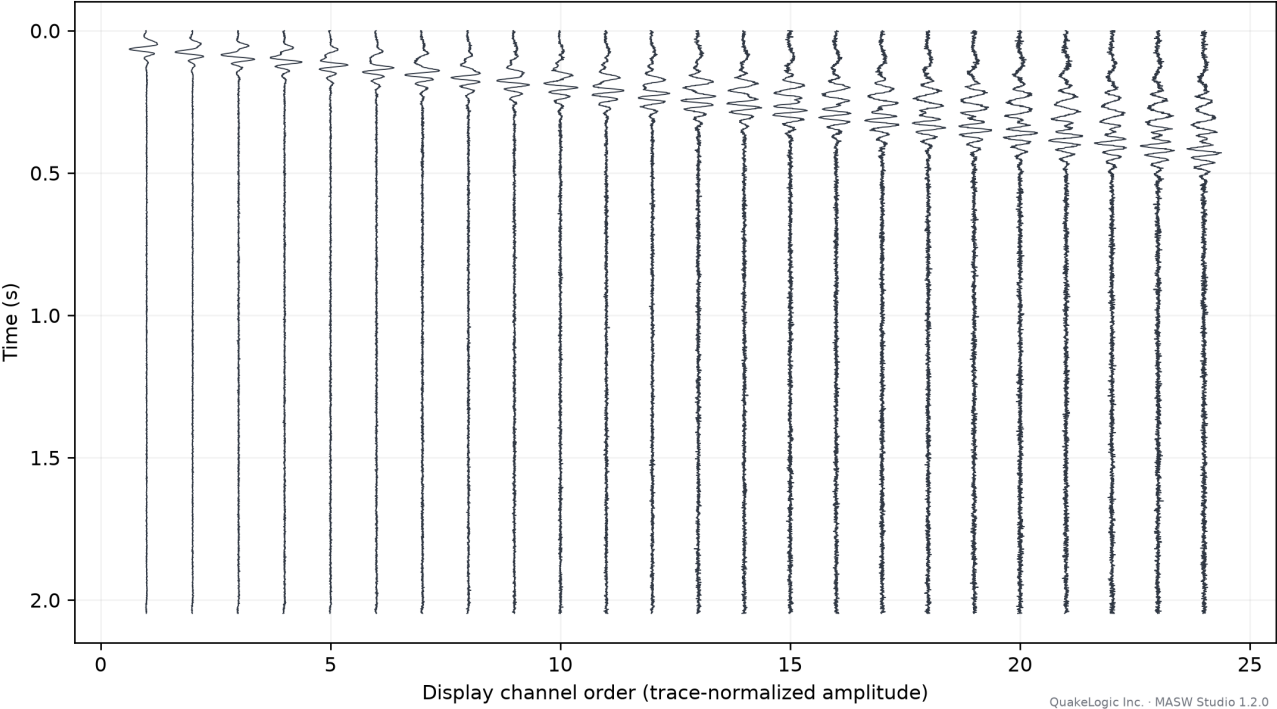
Spectrum and acquisition QC

{'f_min': 5, 'f_max': 80, 'df': 1, 'v_min': 80, 'v_max': 1000, 'dv': 5, 'k_count': 241, 'normalization': 'coherence'}

$\lambda < 2 \times$ largest receiver gap: spatial sampling caution. $\lambda >$ aperture: long-wavelength resolution caution. The region between is not a guarantee of reliable interpretation. Irregular spacing uses a conservative gap heuristic, not a strict Nyquist theorem.

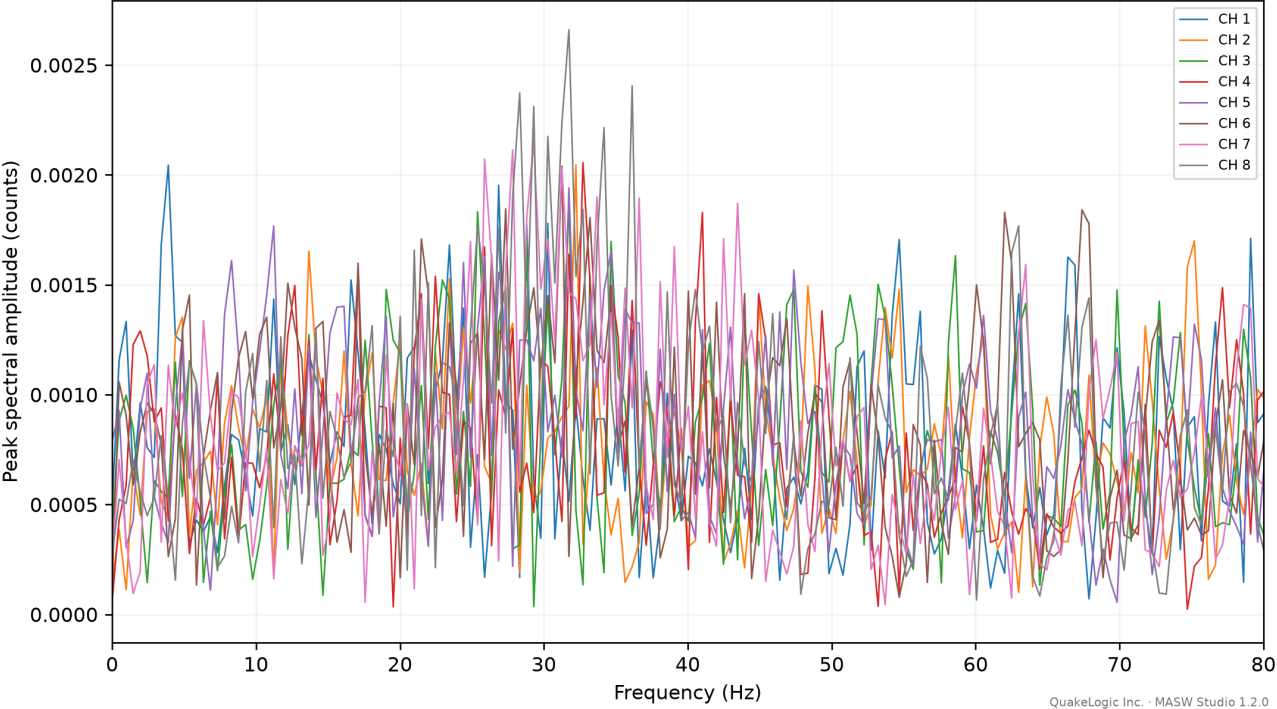
Aperture 46 m; largest active gap 2 m. Native Fourier resolution 0.4883 Hz.

Line shot 01 · station 29 m · Seismogram

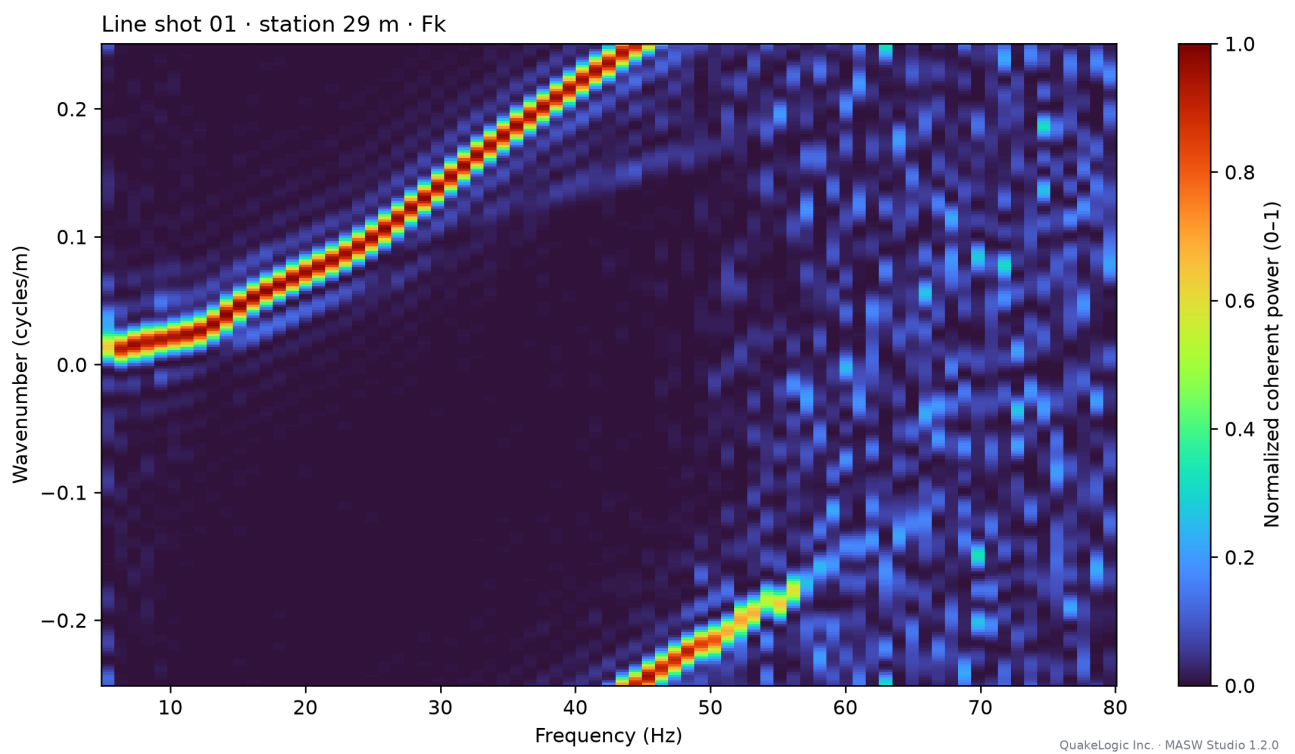
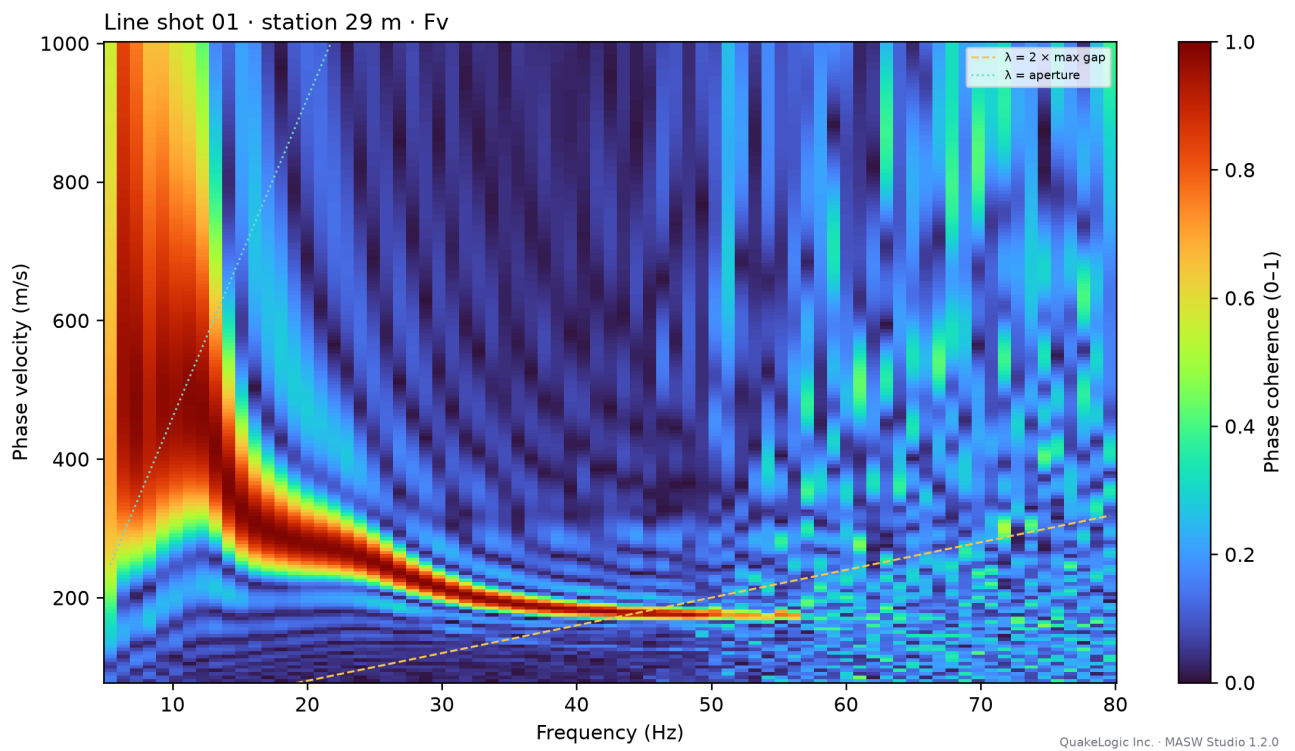


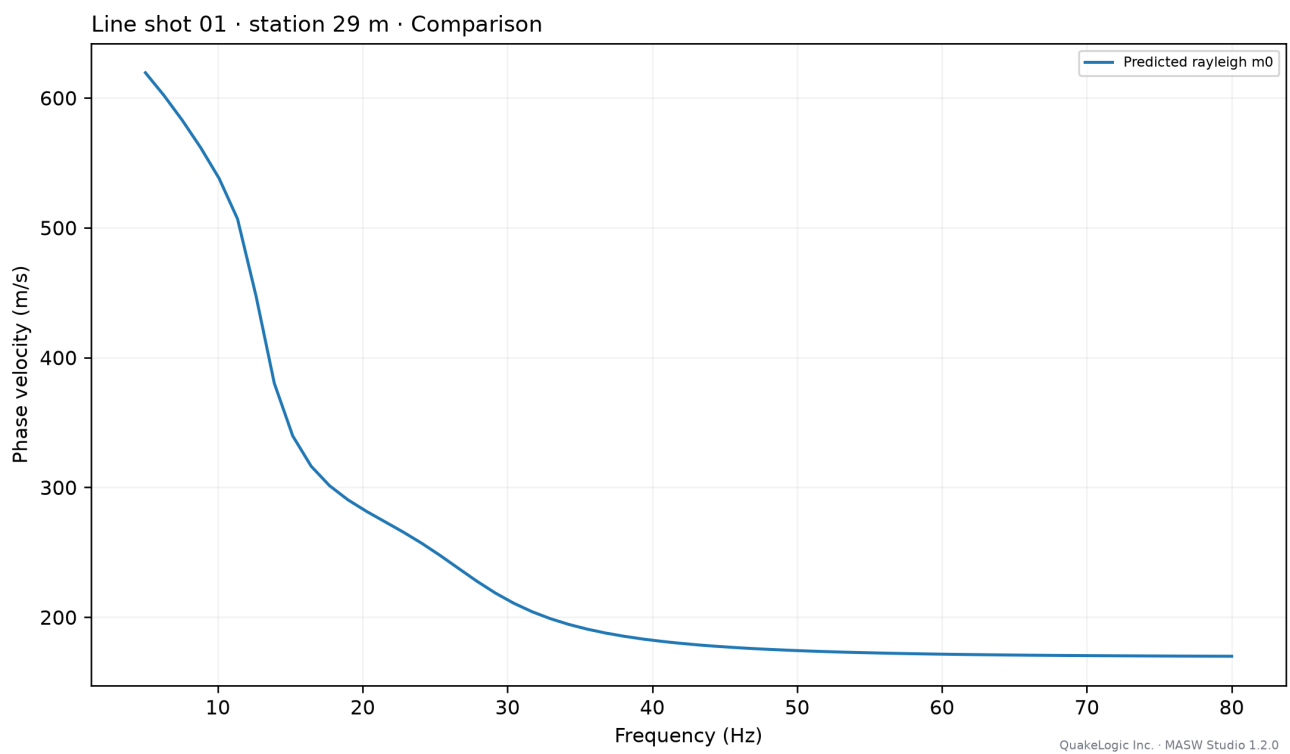
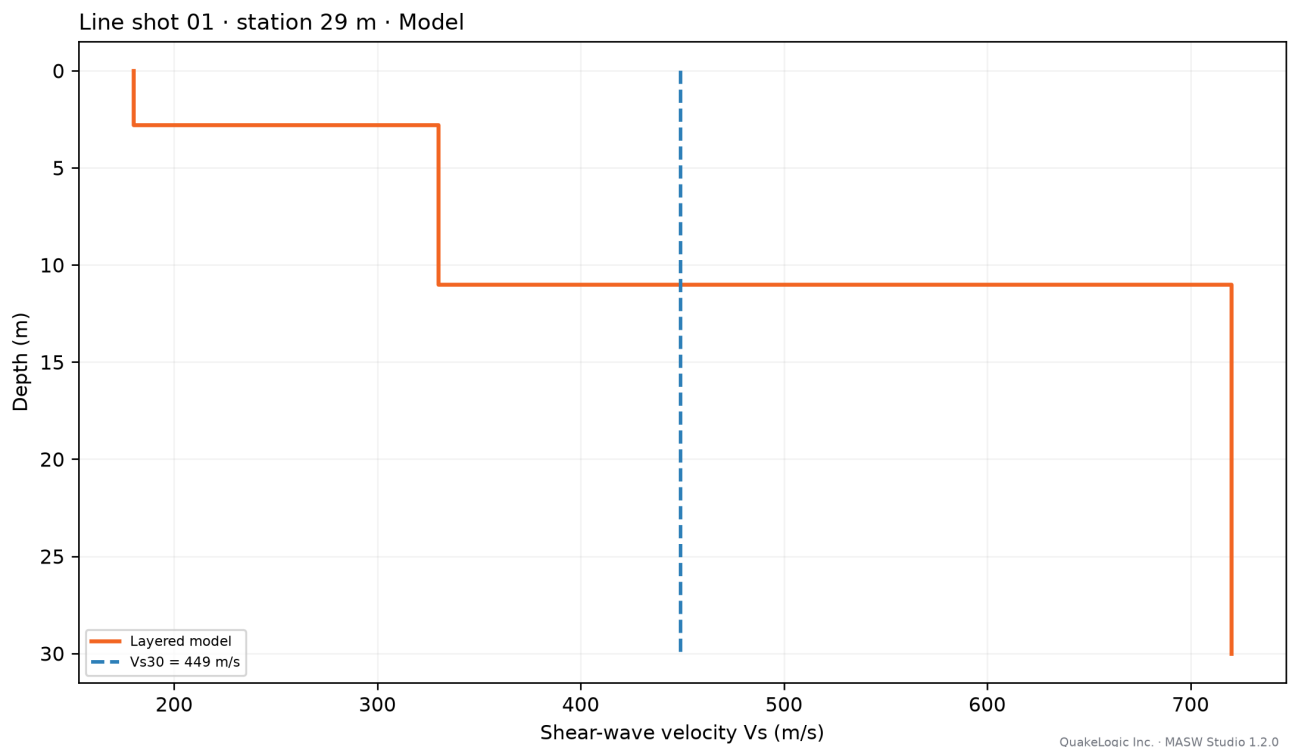
QuakeLogic Inc. · MASW Studio 1.2.0

Line shot 01 · station 29 m · Fft



QuakeLogic Inc. · MASW Studio 1.2.0





Layer	h (m)	V_s (m/s)	V_p (m/s)	ρ (kg/m ³)
1	2.8	180.0	432.0	1800.0
2	4.5	330.0	693.0	1950.0
3	0.4	330.0	726.0	1700.0
4	3.3	330.0	693.0	1950.0

Layer	h (m)	Vs (m/s)	Vp (m/s)	ρ (kg/m ³)
5	Half-space	720.0	1500.0	2200.0

Velocity metric and coverage

Vs30: 449.1 m/s

Declared coverage: 30 m. Travel-time harmonic average within user-declared interpretation depth. Half-space contribution, if present, is a model assumption, not measured depth resolution.

Line shot 02 · station 33 m

Synthetic 2D line · vertical component

SYNTHETIC VALIDATION DATA — not a field investigation.

Acquisition	Value
Channels / active	24 / 24
Samples / interval	2048 / 0.001 s
Time range	0 to 2.047 s
Source coordinate	4.0 m
Receiver coordinates (m)	10.0, 12.0, 14.0, 16.0, 18.0, 20.0, 22.0, 24.0, 26.0, 28.0, 30.0, 32.0, 34.0, 36.0, 38.0, 40.0, 42.0, 44.0, 46.0, 48.0, 50.0, 52.0, 54.0, 56.0
Original geometry units	METERS
Raw amplitudes	counts
Source checksum	Synthetic / derived: provenance retained in project

Reproducible processing

No signal preprocessing applied.

Time shifts (s): [0.0, 0.0]

Disabled/deleted channel indices: []

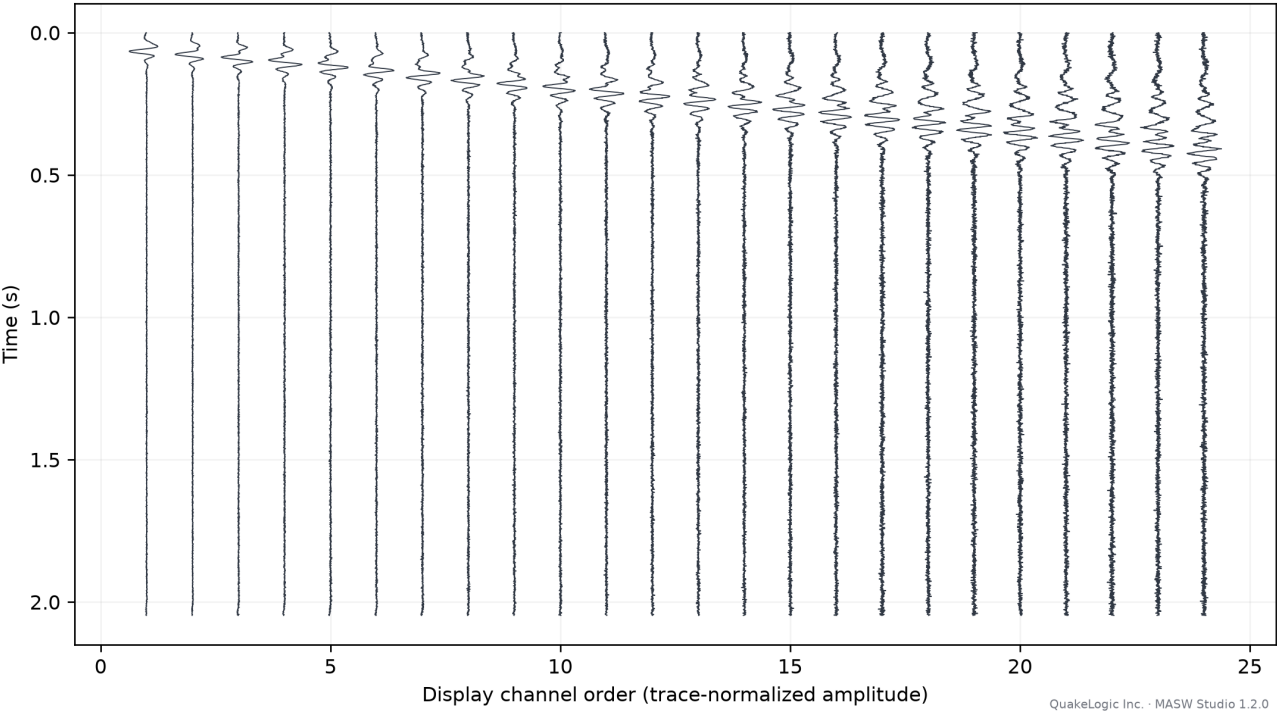
Spectrum and acquisition QC

{'f_min': 5, 'f_max': 80, 'df': 1, 'v_min': 80, 'v_max': 1000, 'dv': 5, 'k_count': 241, 'normalization': 'coherence'}

$\lambda < 2 \times$ largest receiver gap: spatial sampling caution. $\lambda >$ aperture: long-wavelength resolution caution. The region between is not a guarantee of reliable interpretation. Irregular spacing uses a conservative gap heuristic, not a strict Nyquist theorem.

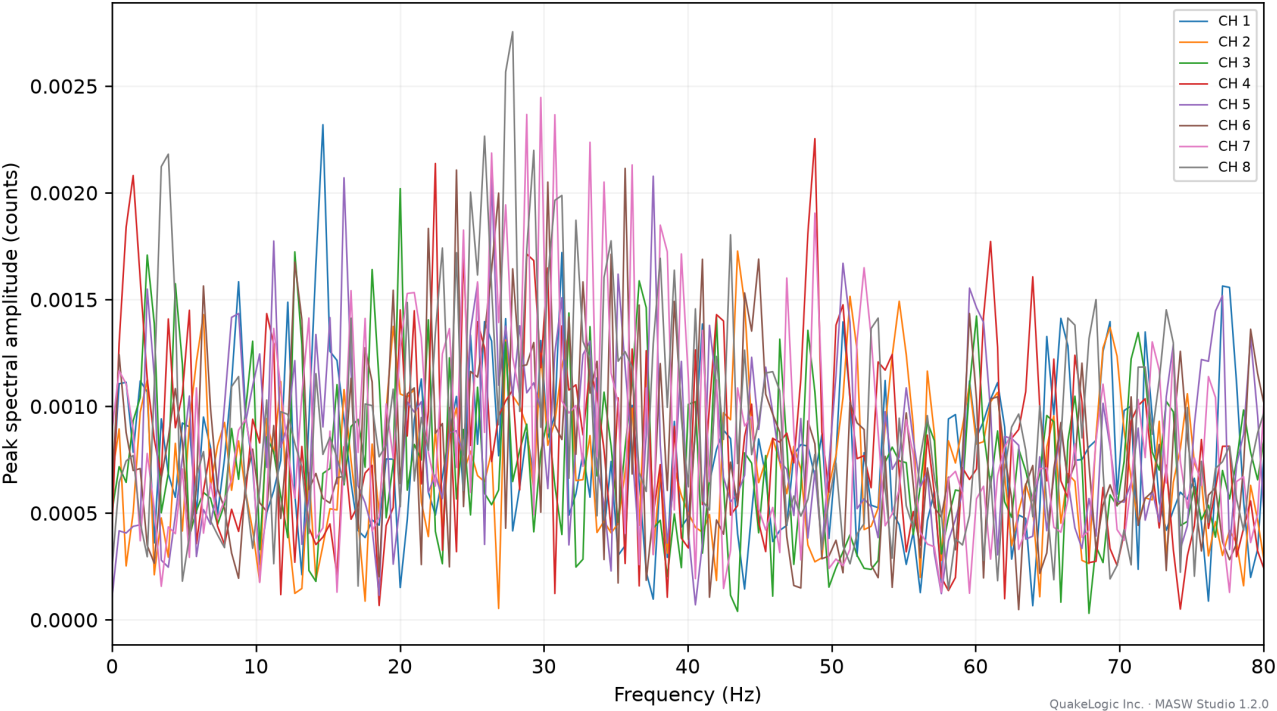
Aperture 46 m; largest active gap 2 m. Native Fourier resolution 0.4883 Hz.

Line shot 02 · station 33 m · Seismogram

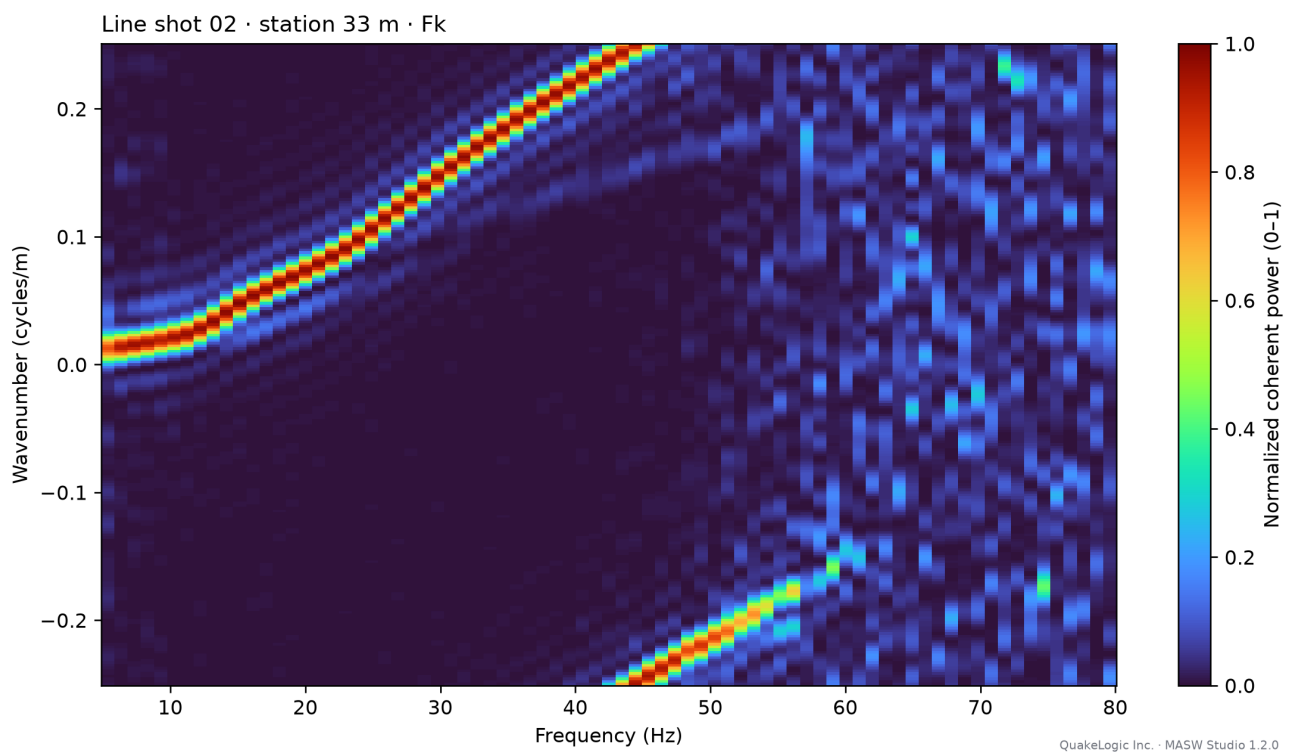
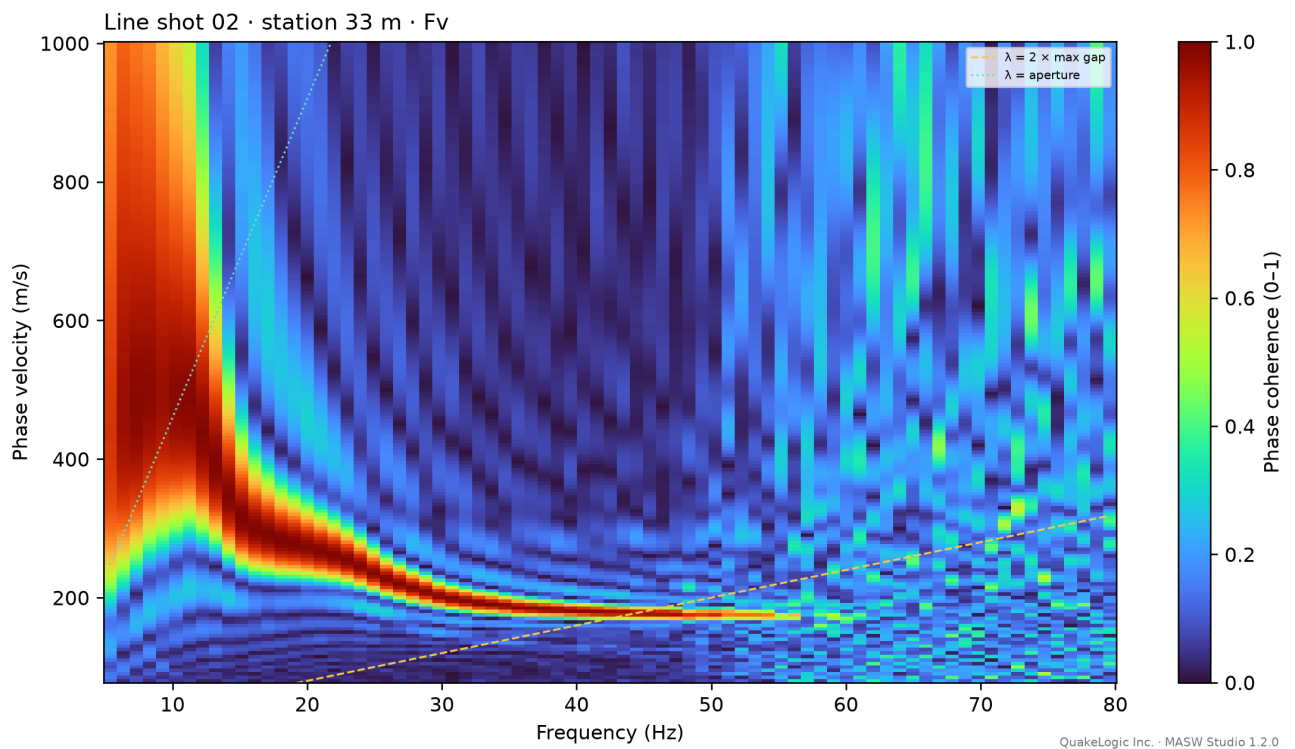


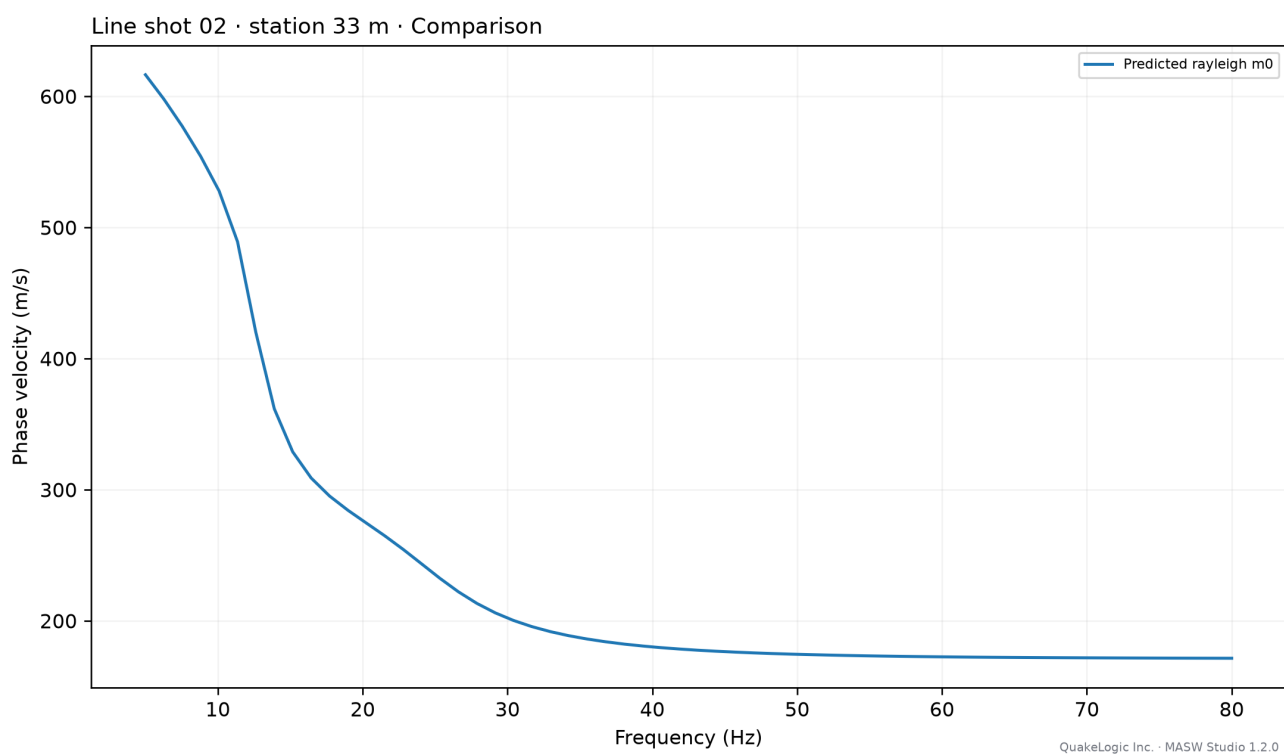
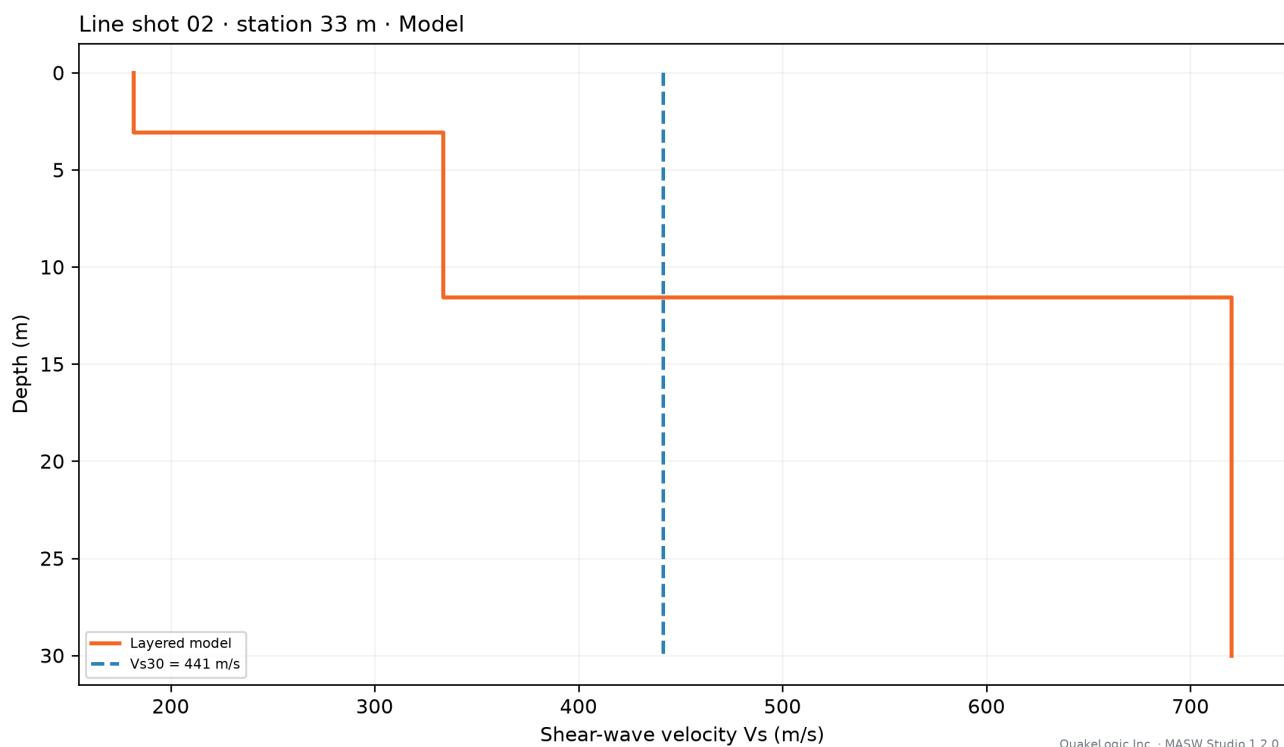
QuakeLogic Inc. · MASW Studio 1.2.0

Line shot 02 · station 33 m · Fft



QuakeLogic Inc. · MASW Studio 1.2.0





Layer	h (m)	V_s (m/s)	V_p (m/s)	ρ (kg/m ³)
1	3.08	181.8	436.3	1800.0
2	4.22	333.6	700.6	1950.0
3	0.4	333.6	733.9	1700.0
4	3.85	333.6	700.6	1950.0

Layer	h (m)	Vs (m/s)	Vp (m/s)	ρ (kg/m ³)
5	Half-space	720.0	1500.0	2200.0

Velocity metric and coverage

Vs30: 441.5 m/s

Declared coverage: 30 m. Travel-time harmonic average within user-declared interpretation depth. Half-space contribution, if present, is a model assumption, not measured depth resolution.

Line shot 03 · station 37 m

Synthetic 2D line · vertical component

SYNTHETIC VALIDATION DATA — not a field investigation.

Acquisition	Value
Channels / active	24 / 24
Samples / interval	2048 / 0.001 s
Time range	0 to 2.047 s
Source coordinate	8.0 m
Receiver coordinates (m)	14.0, 16.0, 18.0, 20.0, 22.0, 24.0, 26.0, 28.0, 30.0, 32.0, 34.0, 36.0, 38.0, 40.0, 42.0, 44.0, 46.0, 48.0, 50.0, 52.0, 54.0, 56.0, 58.0, 60.0
Original geometry units	METERS
Raw amplitudes	counts
Source checksum	Synthetic / derived: provenance retained in project

Reproducible processing

No signal preprocessing applied.

Time shifts (s): [0.0, 0.0]

Disabled/deleted channel indices: []

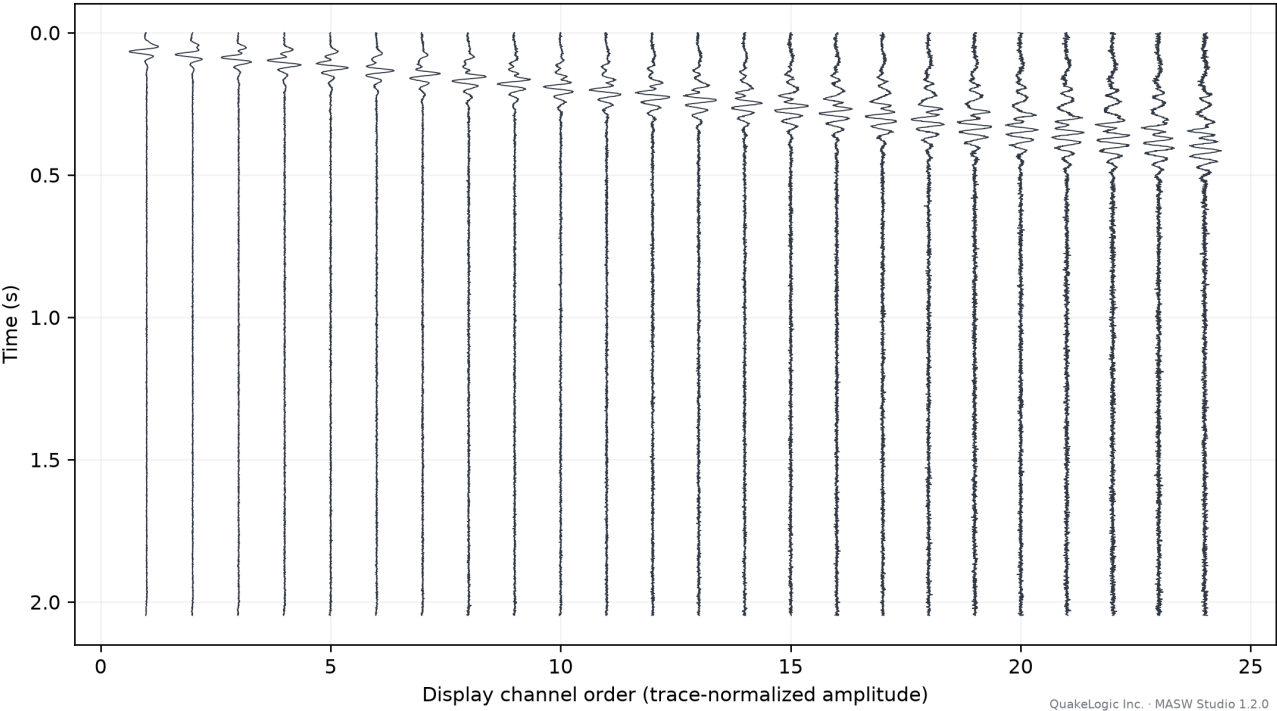
Spectrum and acquisition QC

{'f_min': 5, 'f_max': 80, 'df': 1, 'v_min': 80, 'v_max': 1000, 'dv': 5, 'k_count': 241, 'normalization': 'coherence'}

$\lambda < 2 \times$ largest receiver gap: spatial sampling caution. $\lambda >$ aperture: long-wavelength resolution caution. The region between is not a guarantee of reliable interpretation. Irregular spacing uses a conservative gap heuristic, not a strict Nyquist theorem.

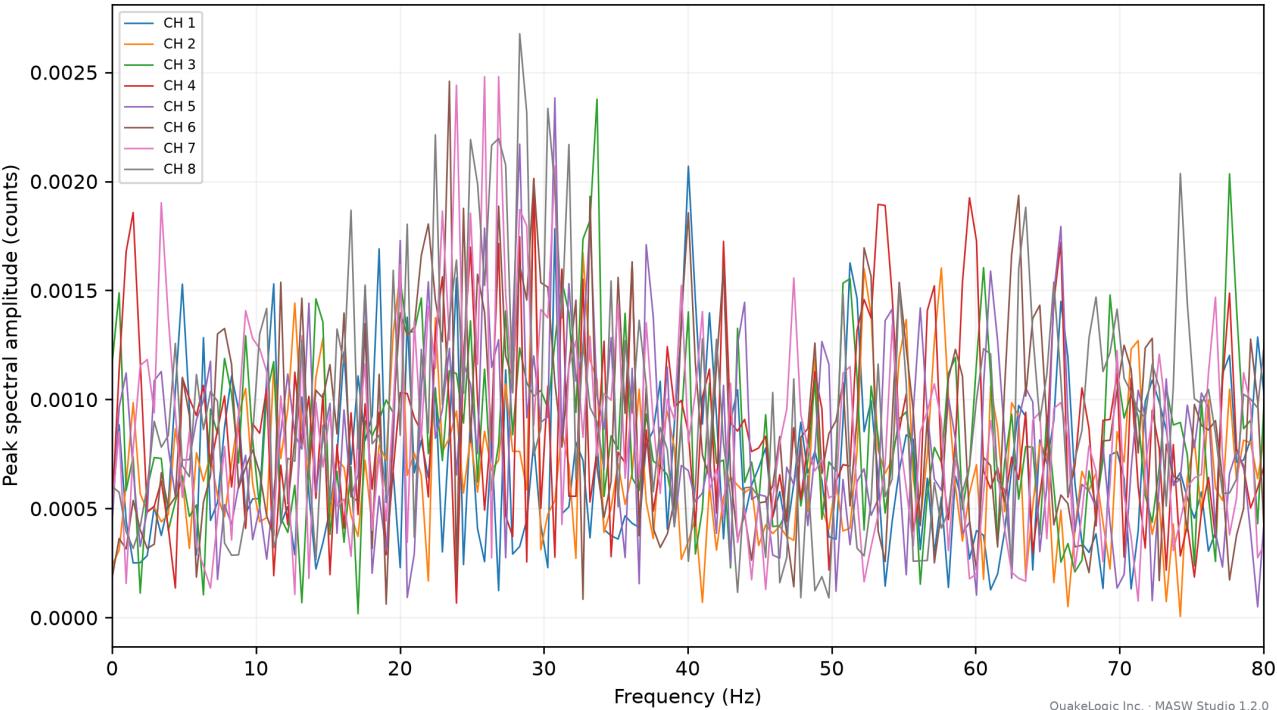
Aperture 46 m; largest active gap 2 m. Native Fourier resolution 0.4883 Hz.

Line shot 03 · station 37 m · Seismogram

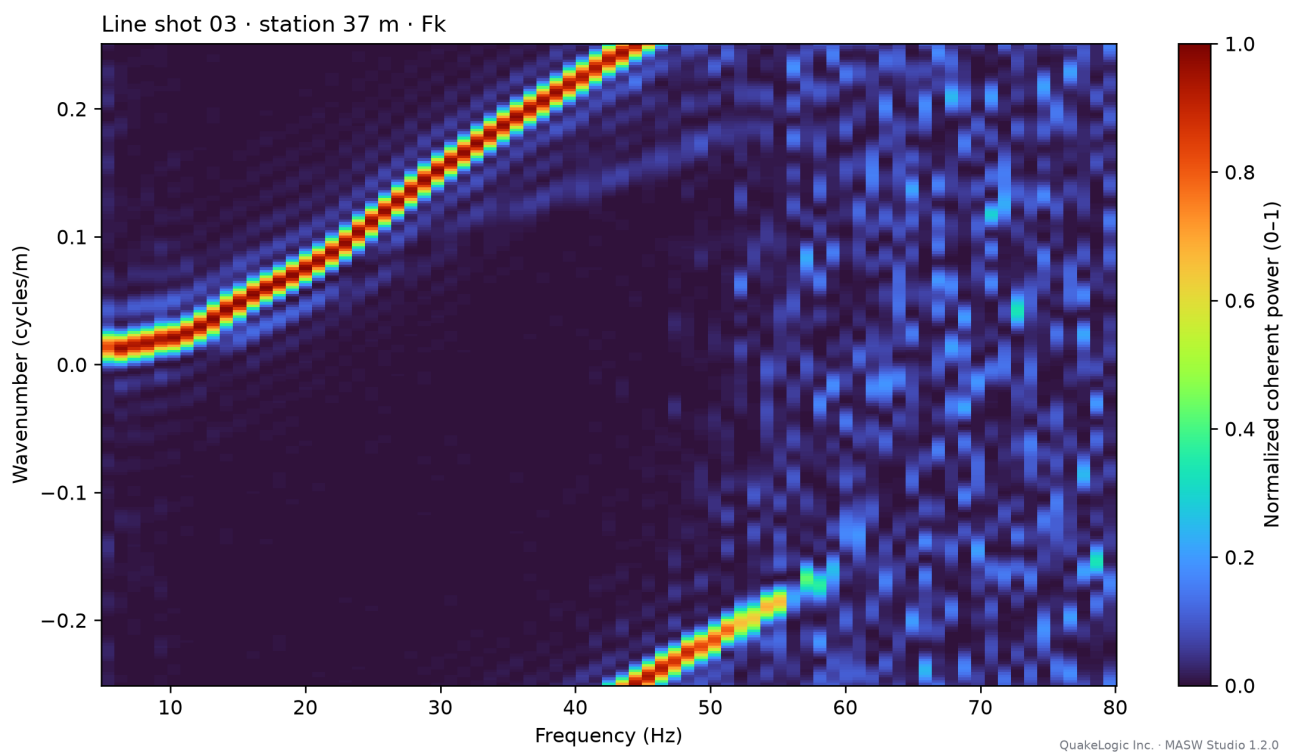
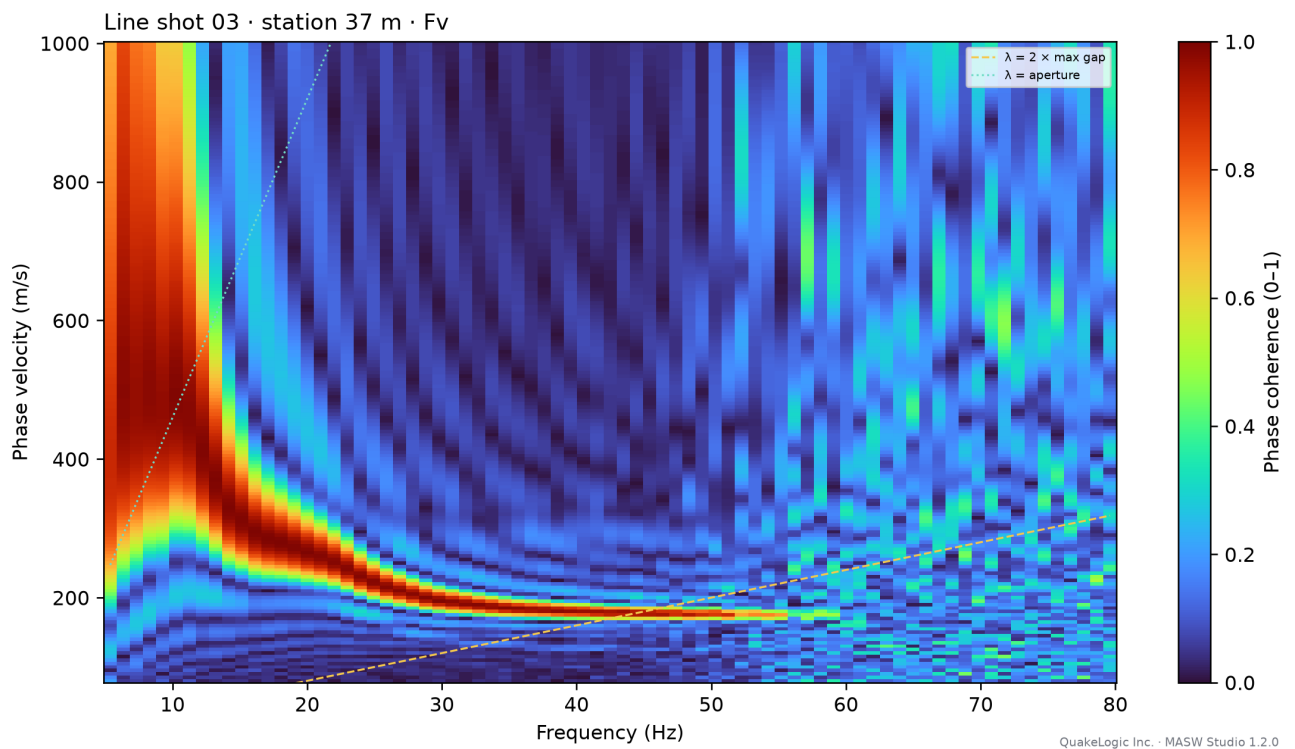


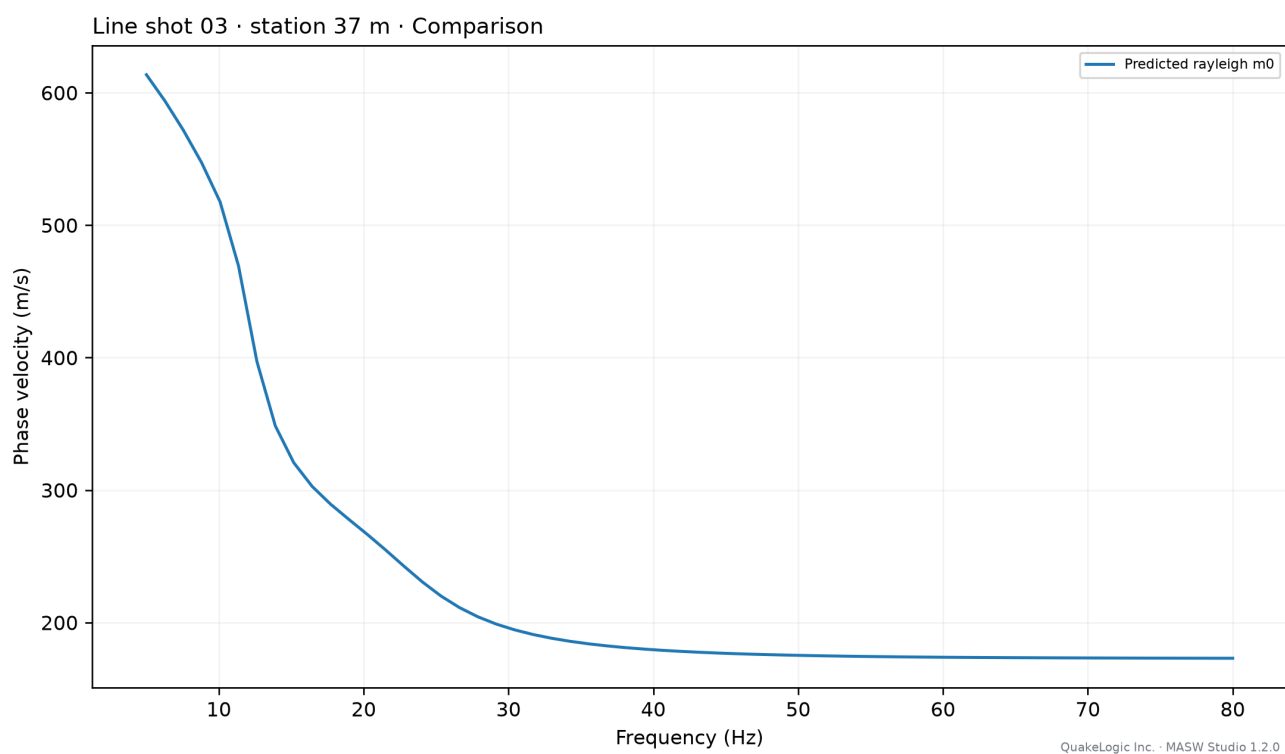
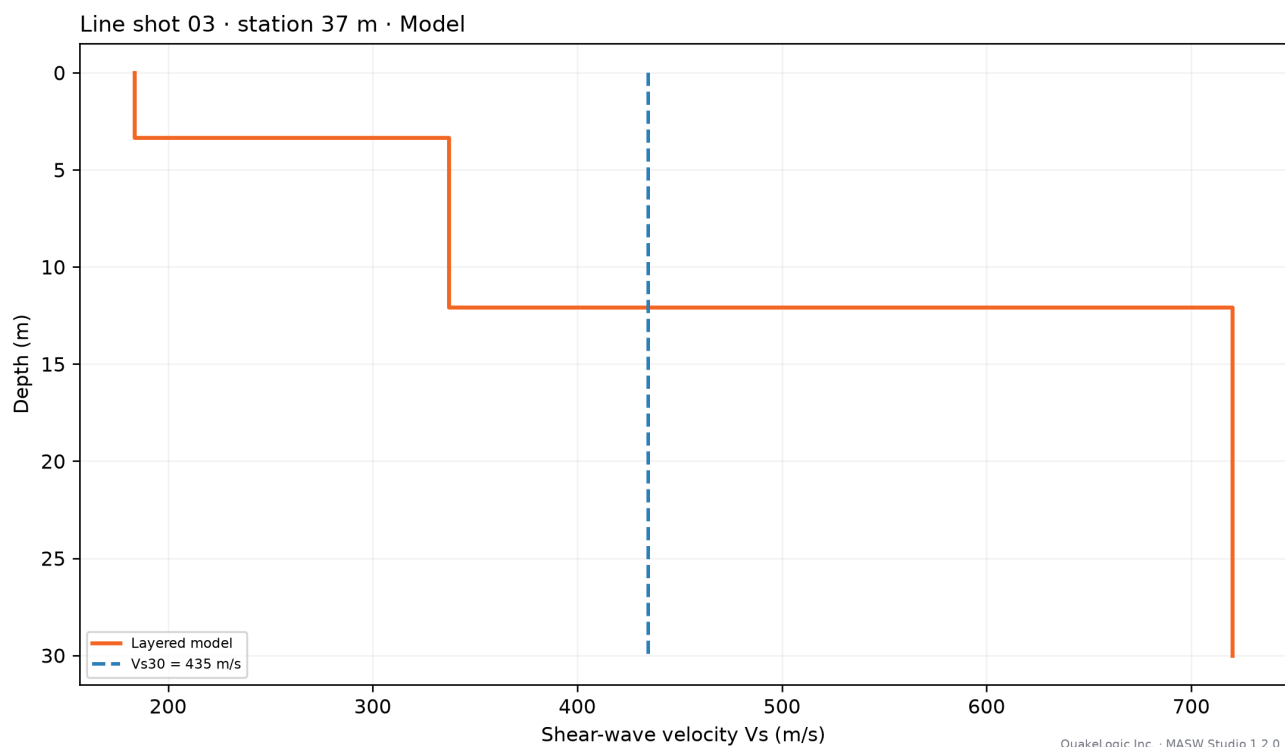
QuakeLogic Inc. · MASW Studio 1.2.0

Line shot 03 · station 37 m · Fft



QuakeLogic Inc. · MASW Studio 1.2.0





Layer	h (m)	V_s (m/s)	V_p (m/s)	ρ (kg/m ³)
1	3.34	183.6	440.6	1800.0
2	3.96	337.3	708.3	1950.0
3	0.4	337.1	741.6	1700.0
4	4.39	337.3	708.3	1950.0

Layer	h (m)	Vs (m/s)	Vp (m/s)	ρ (kg/m ³)
5	Half-space	720.0	1500.0	2200.0

Velocity metric and coverage

Vs30: 434.7 m/s

Declared coverage: 30 m. Travel-time harmonic average within user-declared interpretation depth. Half-space contribution, if present, is a model assumption, not measured depth resolution.

Line shot 04 · station 41 m

Synthetic 2D line · vertical component

SYNTHETIC VALIDATION DATA — not a field investigation.

Acquisition	Value
Channels / active	24 / 24
Samples / interval	2048 / 0.001 s
Time range	0 to 2.047 s
Source coordinate	12.0 m
Receiver coordinates (m)	18.0, 20.0, 22.0, 24.0, 26.0, 28.0, 30.0, 32.0, 34.0, 36.0, 38.0, 40.0, 42.0, 44.0, 46.0, 48.0, 50.0, 52.0, 54.0, 56.0, 58.0, 60.0, 62.0, 64.0
Original geometry units	METERS
Raw amplitudes	counts
Source checksum	Synthetic / derived: provenance retained in project

Reproducible processing

No signal preprocessing applied.

Time shifts (s): [0.0, 0.0]

Disabled/deleted channel indices: []

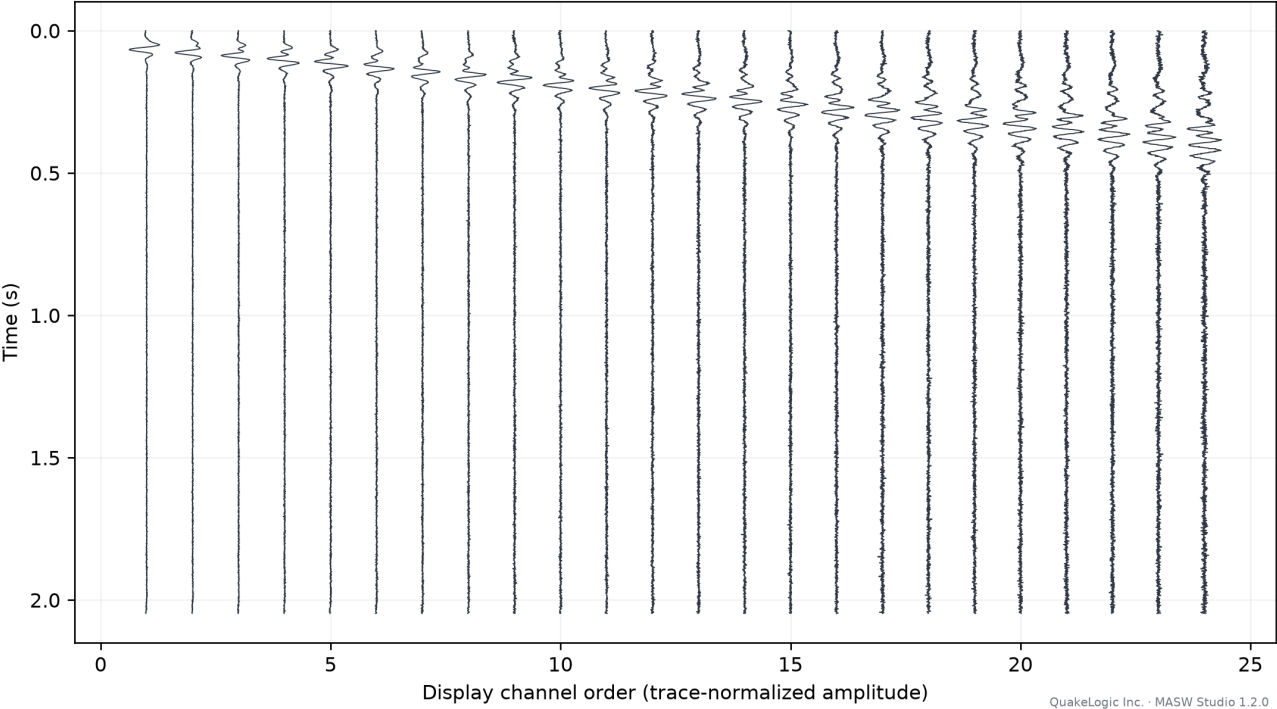
Spectrum and acquisition QC

{'f_min': 5, 'f_max': 80, 'df': 1, 'v_min': 80, 'v_max': 1000, 'dv': 5, 'k_count': 241, 'normalization': 'coherence'}

$\lambda < 2 \times$ largest receiver gap: spatial sampling caution. $\lambda >$ aperture: long-wavelength resolution caution. The region between is not a guarantee of reliable interpretation. Irregular spacing uses a conservative gap heuristic, not a strict Nyquist theorem.

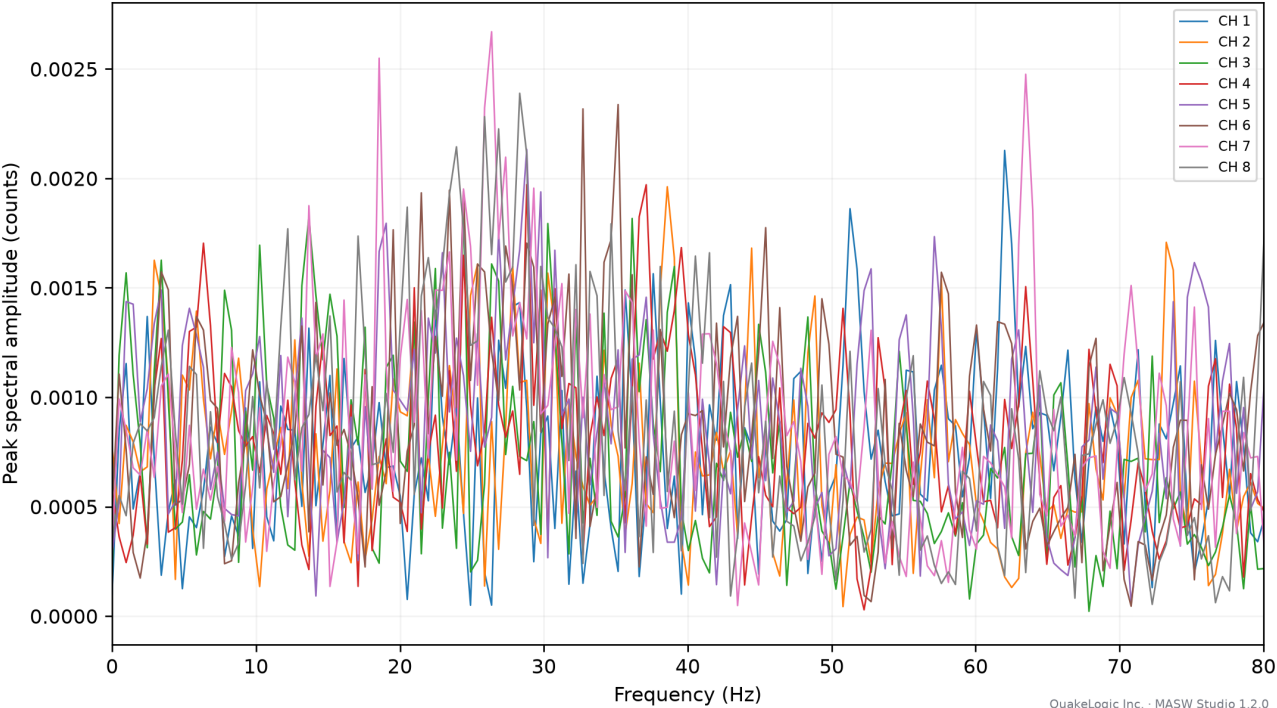
Aperture 46 m; largest active gap 2 m. Native Fourier resolution 0.4883 Hz.

Line shot 04 · station 41 m · Seismogram

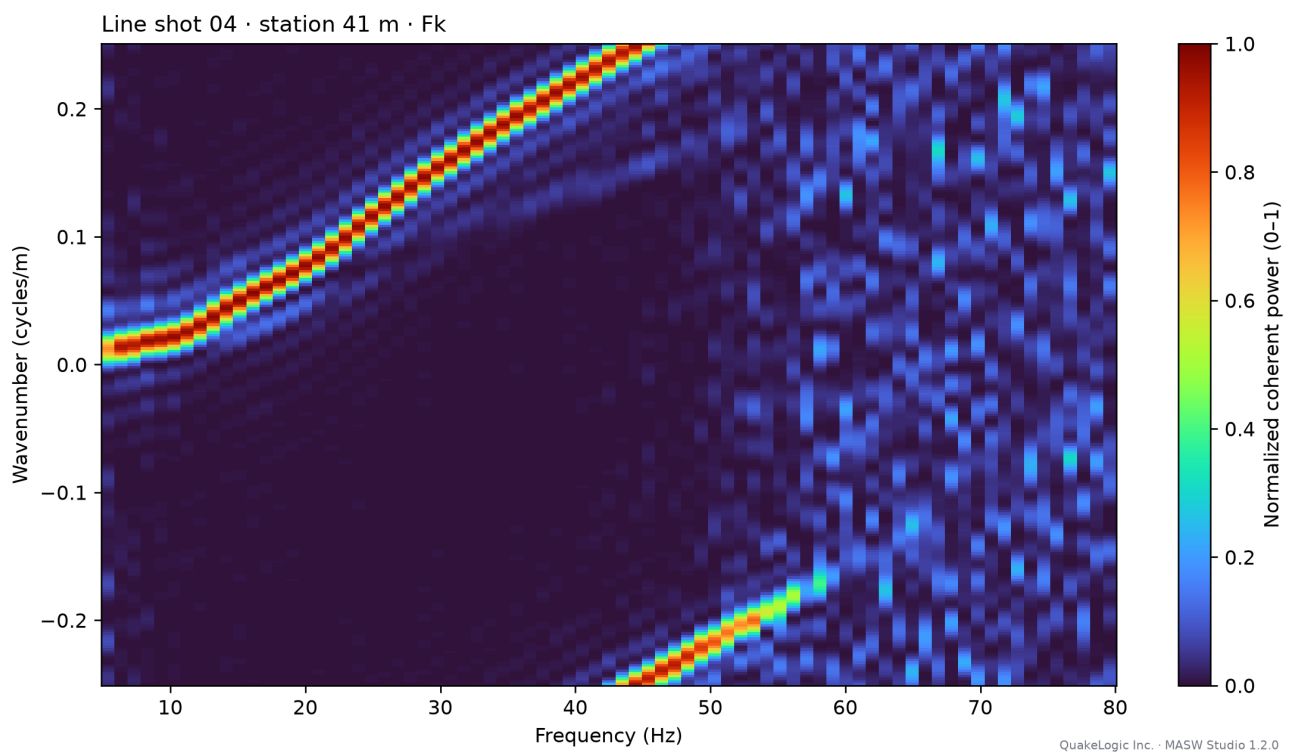
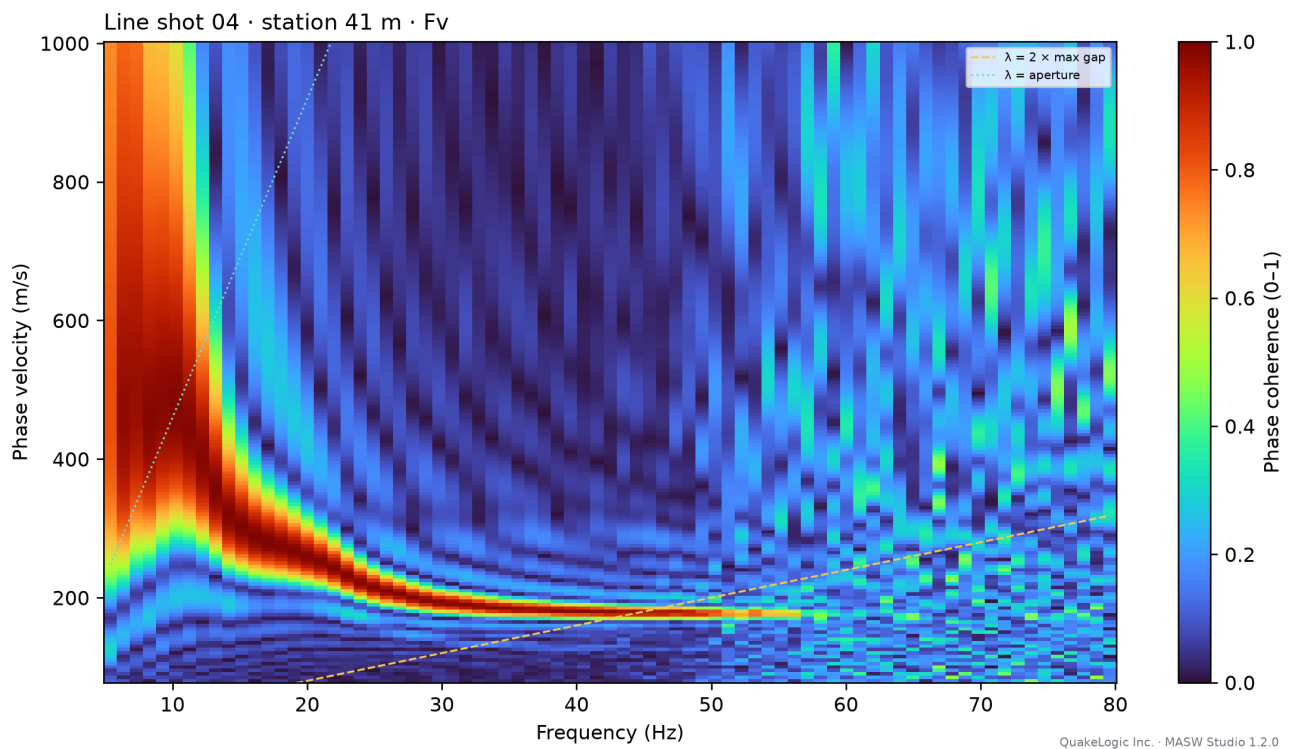


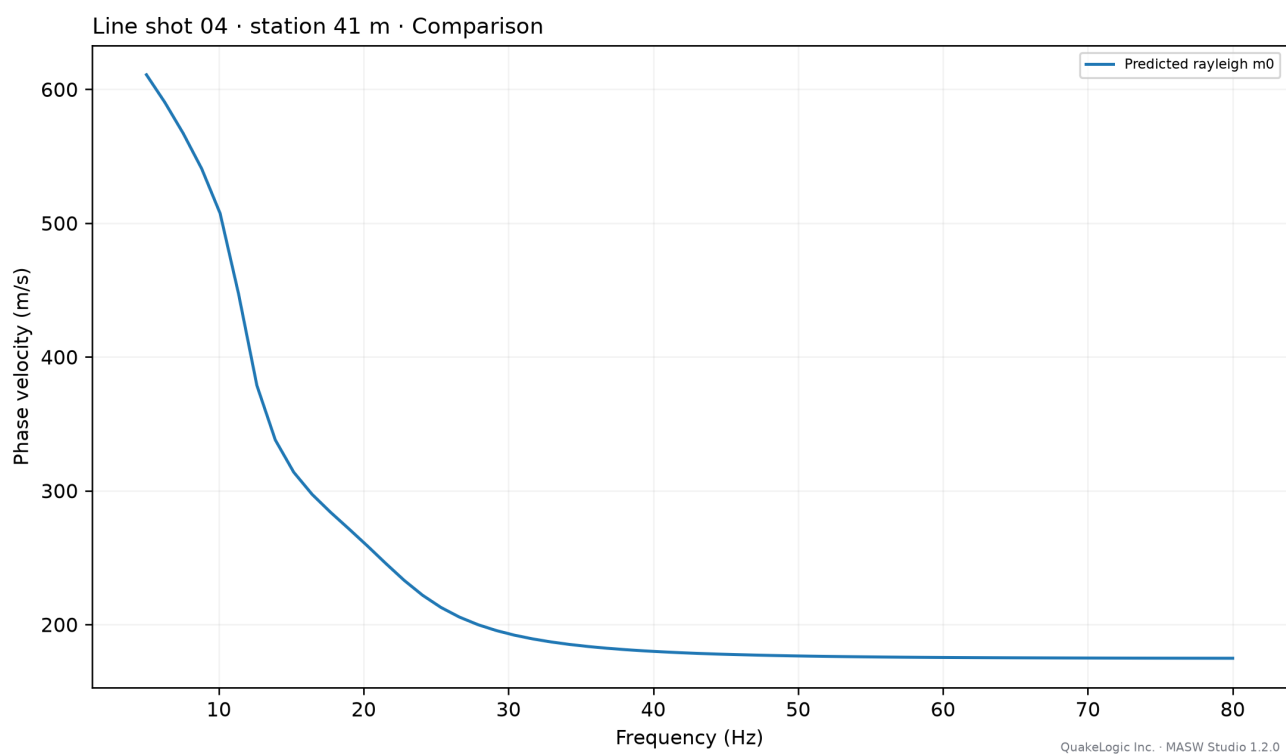
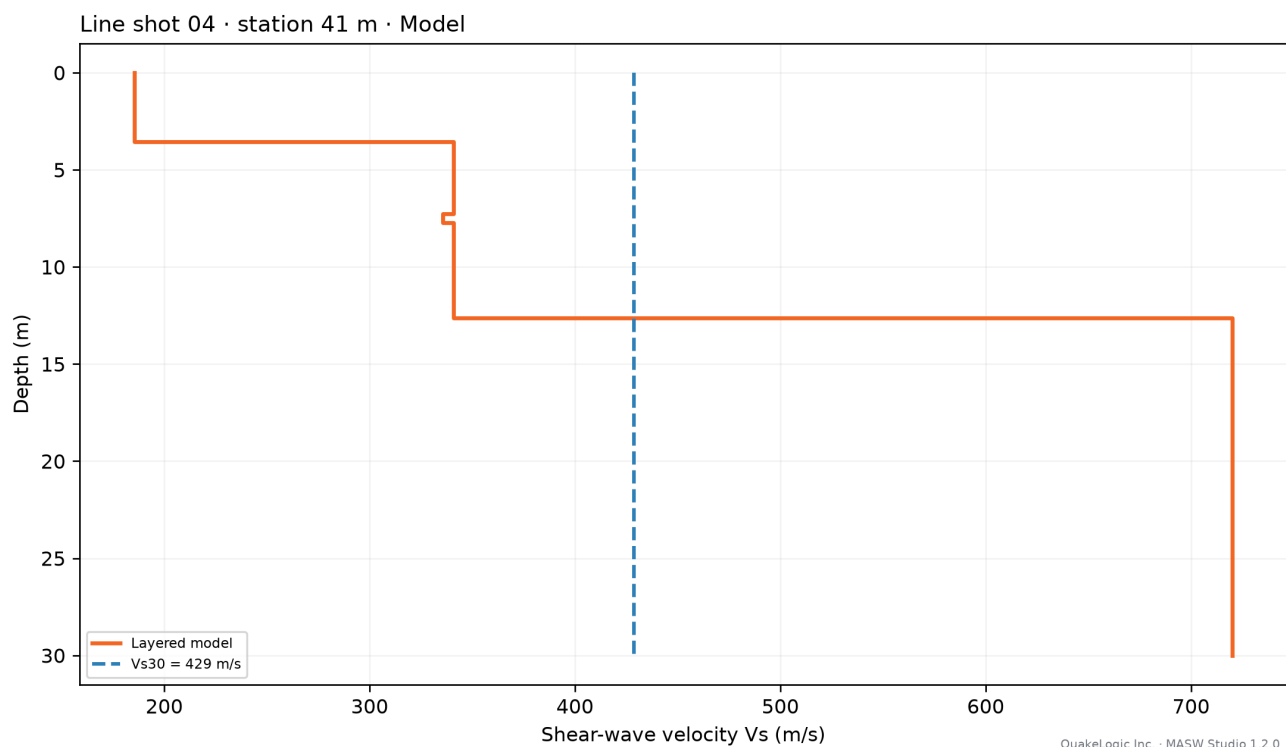
QuakeLogic Inc. · MASW Studio 1.2.0

Line shot 04 · station 41 m · Fft



QuakeLogic Inc. · MASW Studio 1.2.0





Layer	h (m)	V_s (m/s)	V_p (m/s)	ρ (kg/m ³)
1	3.56	185.5	445.2	1800.0
2	3.71	340.9	715.9	1950.0
3	0.47	335.7	738.5	1700.0
4	4.9	340.9	715.9	1950.0

Layer	h (m)	Vs (m/s)	Vp (m/s)	ρ (kg/m ³)
5	Half-space	720.0	1500.0	2200.0

Velocity metric and coverage

Vs30: 428.8 m/s

Declared coverage: 30 m. Travel-time harmonic average within user-declared interpretation depth. Half-space contribution, if present, is a model assumption, not measured depth resolution.

Line shot 05 · station 45 m

Synthetic 2D line · vertical component

SYNTHETIC VALIDATION DATA — not a field investigation.

Acquisition	Value
Channels / active	24 / 24
Samples / interval	2048 / 0.001 s
Time range	0 to 2.047 s
Source coordinate	16.0 m
Receiver coordinates (m)	22.0, 24.0, 26.0, 28.0, 30.0, 32.0, 34.0, 36.0, 38.0, 40.0, 42.0, 44.0, 46.0, 48.0, 50.0, 52.0, 54.0, 56.0, 58.0, 60.0, 62.0, 64.0, 66.0, 68.0
Original geometry units	METERS
Raw amplitudes	counts
Source checksum	Synthetic / derived: provenance retained in project

Reproducible processing

No signal preprocessing applied.

Time shifts (s): [0.0, 0.0]

Disabled/deleted channel indices: []

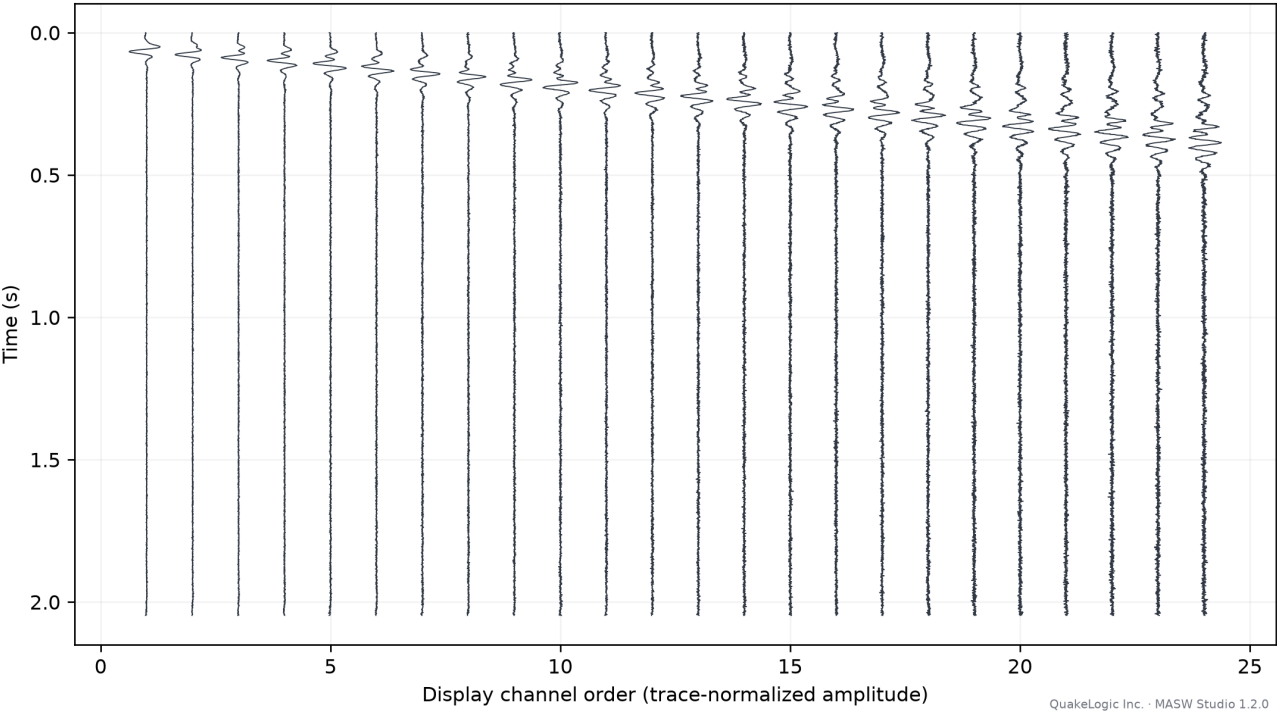
Spectrum and acquisition QC

{'f_min': 5, 'f_max': 80, 'df': 1, 'v_min': 80, 'v_max': 1000, 'dv': 5, 'k_count': 241, 'normalization': 'coherence'}

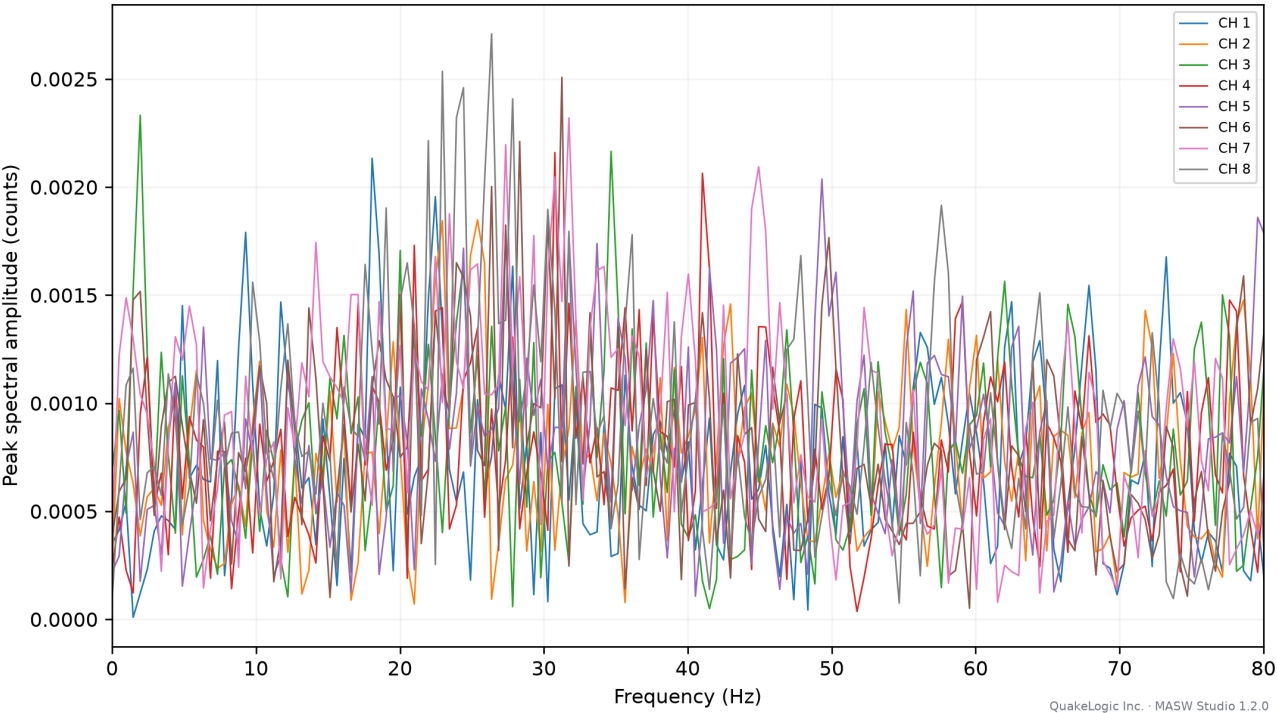
$\lambda < 2 \times$ largest receiver gap: spatial sampling caution. $\lambda >$ aperture: long-wavelength resolution caution. The region between is not a guarantee of reliable interpretation. Irregular spacing uses a conservative gap heuristic, not a strict Nyquist theorem.

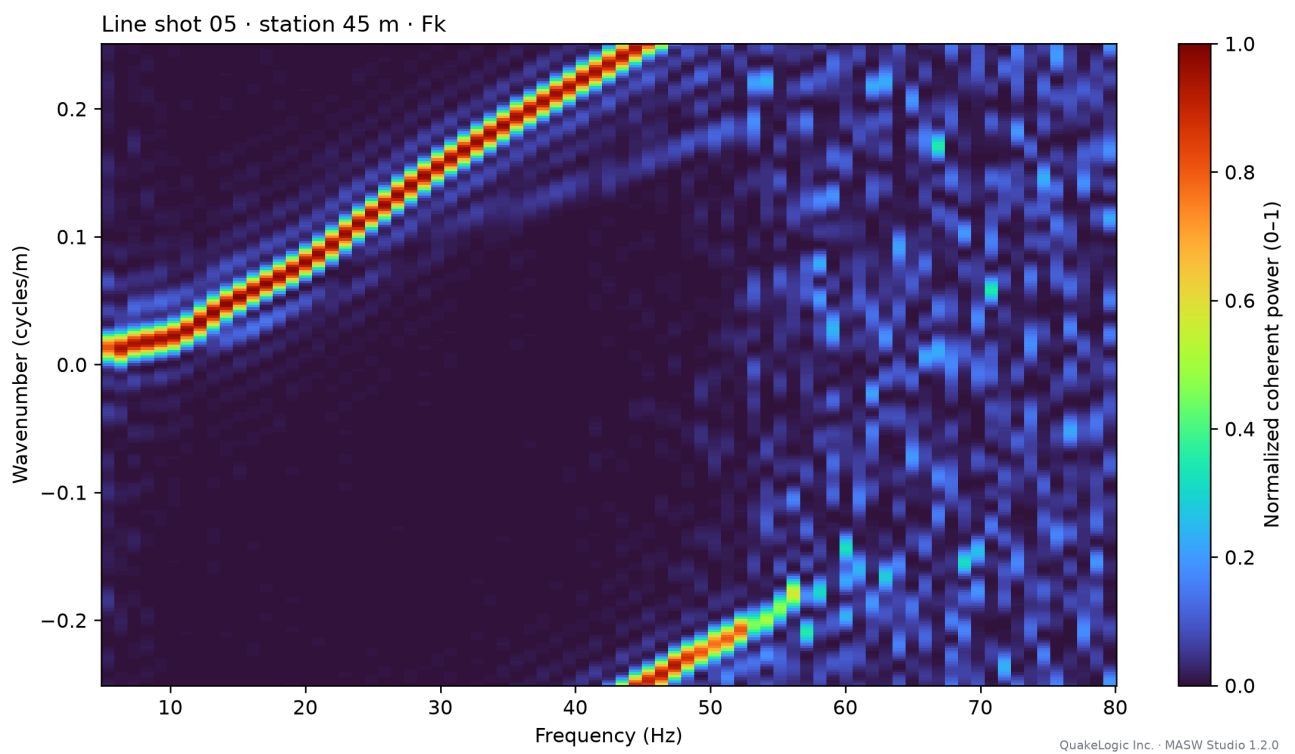
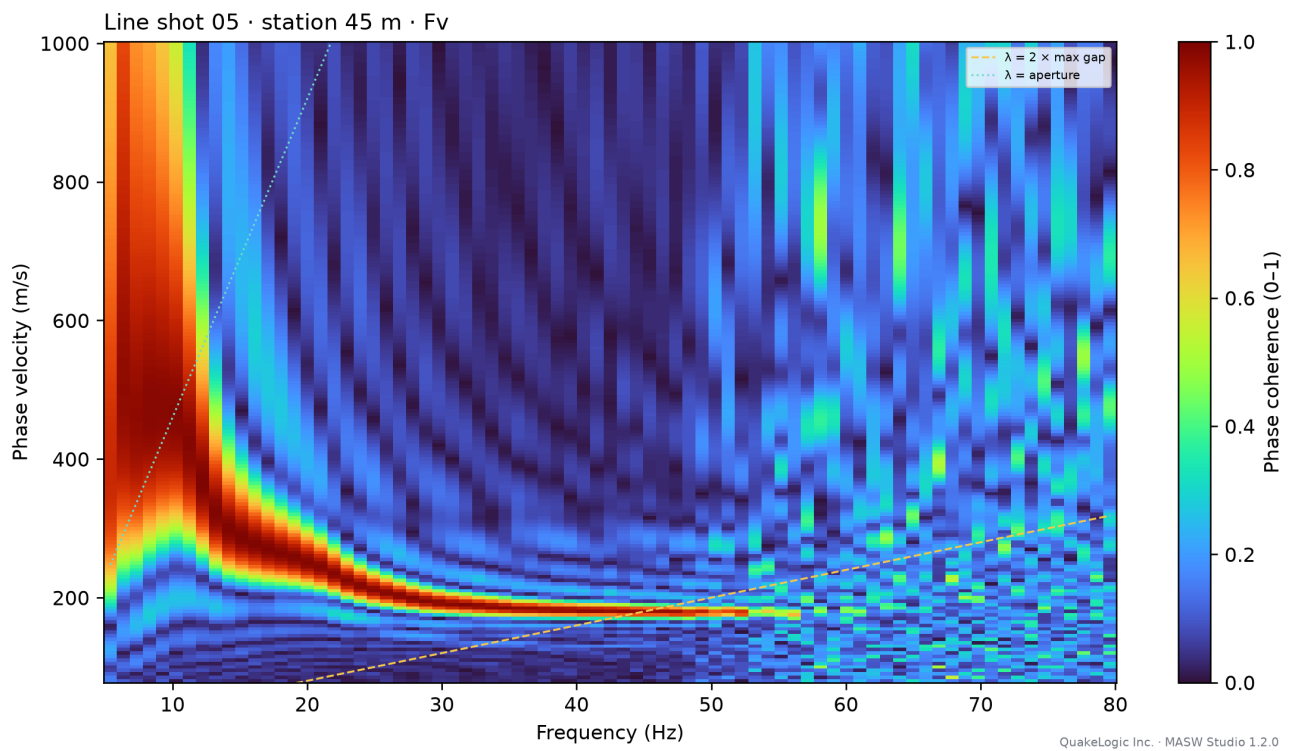
Aperture 46 m; largest active gap 2 m. Native Fourier resolution 0.4883 Hz.

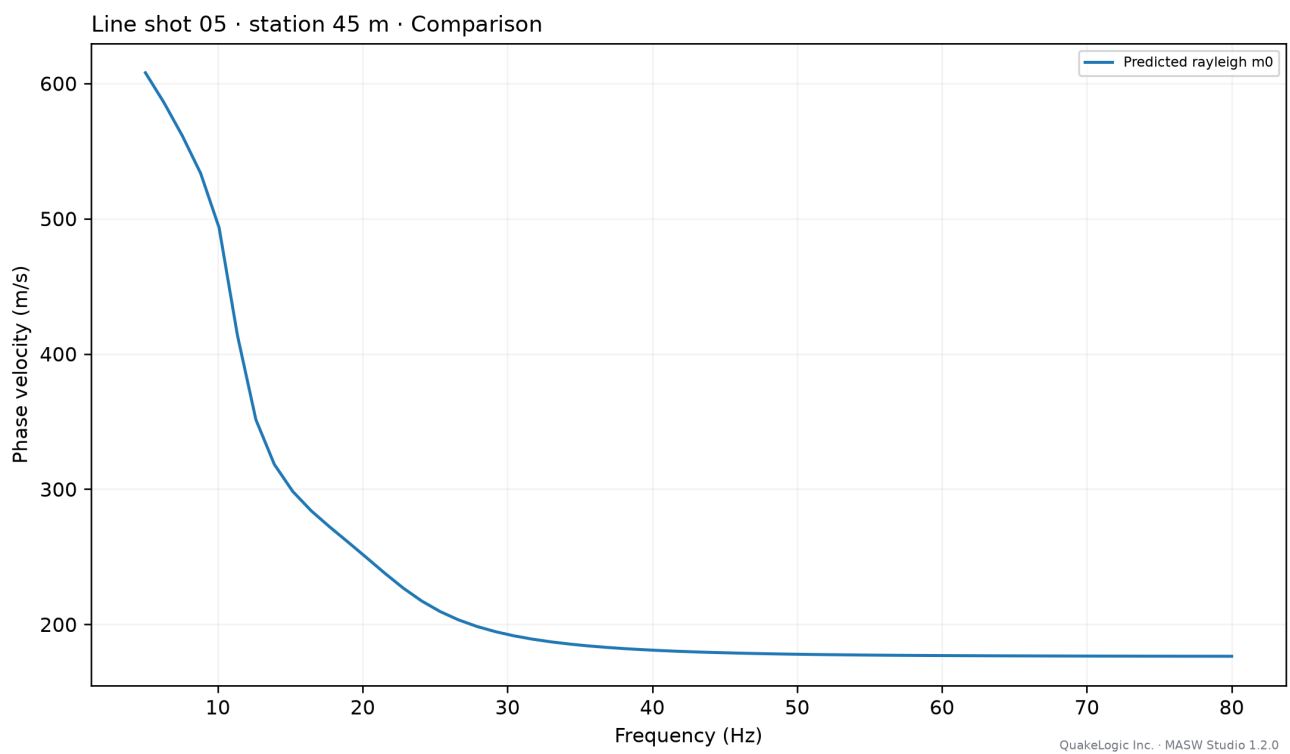
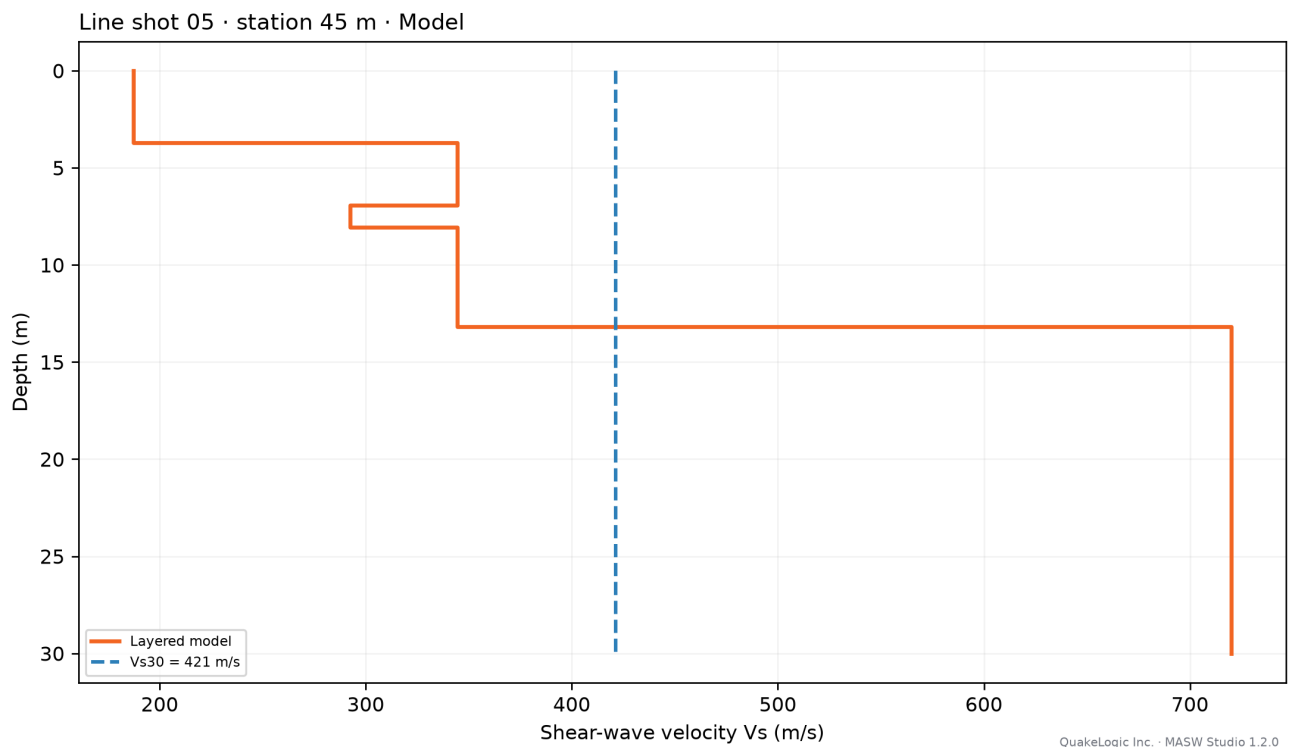
Line shot 05 · station 45 m · Seismogram



Line shot 05 · station 45 m · Fft







Layer	h (m)	V_s (m/s)	V_p (m/s)	ρ (kg/m ³)
1	3.71	187.3	449.5	1800.0
2	3.23	344.5	723.5	1950.0
3	1.11	292.4	643.3	1700.0
4	5.12	344.5	723.5	1950.0

Layer	h (m)	Vs (m/s)	Vp (m/s)	ρ (kg/m ³)
5	Half-space	720.0	1500.0	2200.0

Velocity metric and coverage

Vs30: 421.2 m/s

Declared coverage: 30 m. Travel-time harmonic average within user-declared interpretation depth. Half-space contribution, if present, is a model assumption, not measured depth resolution.

Line shot 06 · station 49 m

Synthetic 2D line · vertical component

SYNTHETIC VALIDATION DATA — not a field investigation.

Acquisition	Value
Channels / active	24 / 24
Samples / interval	2048 / 0.001 s
Time range	0 to 2.047 s
Source coordinate	20.0 m
Receiver coordinates (m)	26.0, 28.0, 30.0, 32.0, 34.0, 36.0, 38.0, 40.0, 42.0, 44.0, 46.0, 48.0, 50.0, 52.0, 54.0, 56.0, 58.0, 60.0, 62.0, 64.0, 66.0, 68.0, 70.0, 72.0
Original geometry units	METERS
Raw amplitudes	counts
Source checksum	Synthetic / derived: provenance retained in project

Reproducible processing

No signal preprocessing applied.

Time shifts (s): [0.0, 0.0]

Disabled/deleted channel indices: []

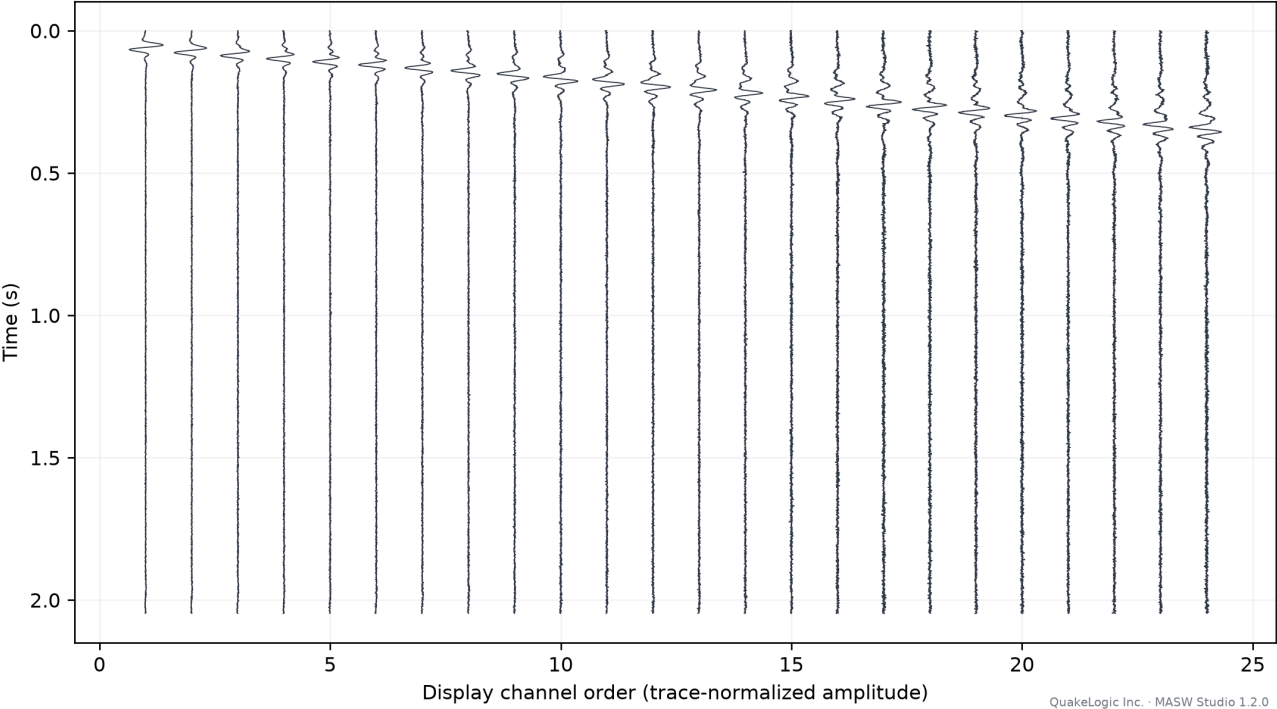
Spectrum and acquisition QC

{'f_min': 5, 'f_max': 80, 'df': 1, 'v_min': 80, 'v_max': 1000, 'dv': 5, 'k_count': 241, 'normalization': 'coherence'}

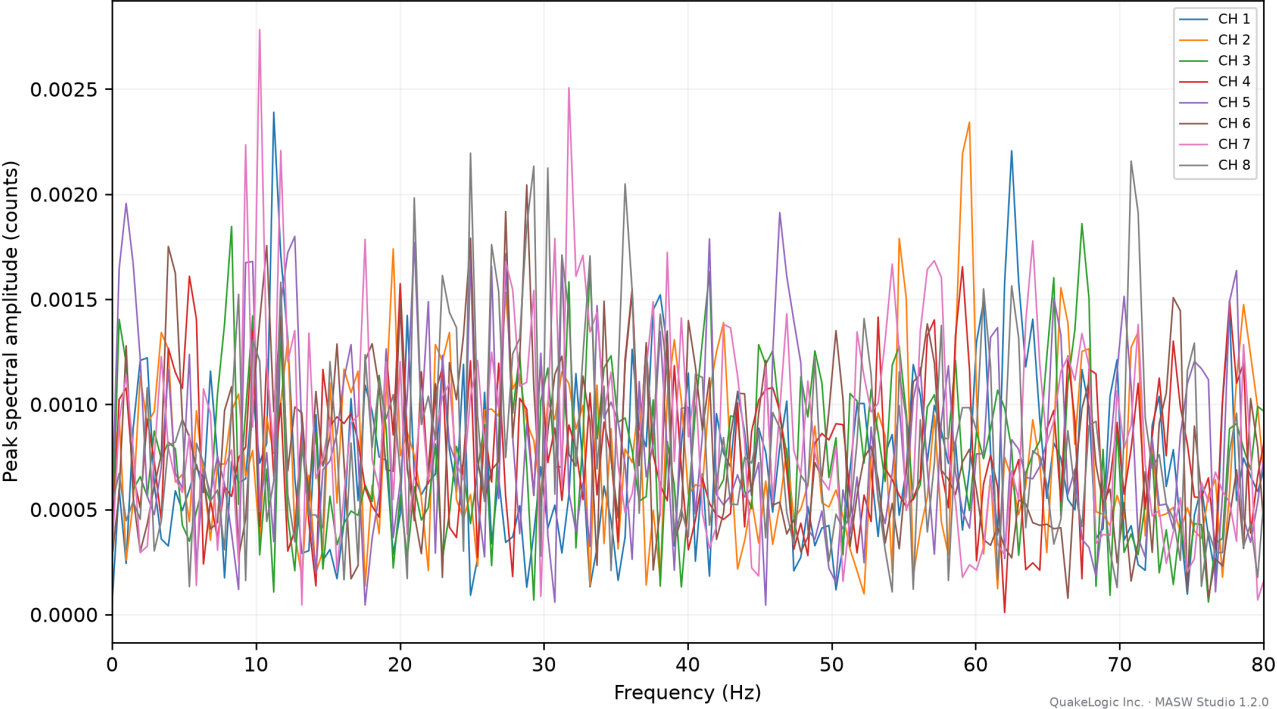
$\lambda < 2 \times$ largest receiver gap: spatial sampling caution. $\lambda >$ aperture: long-wavelength resolution caution. The region between is not a guarantee of reliable interpretation. Irregular spacing uses a conservative gap heuristic, not a strict Nyquist theorem.

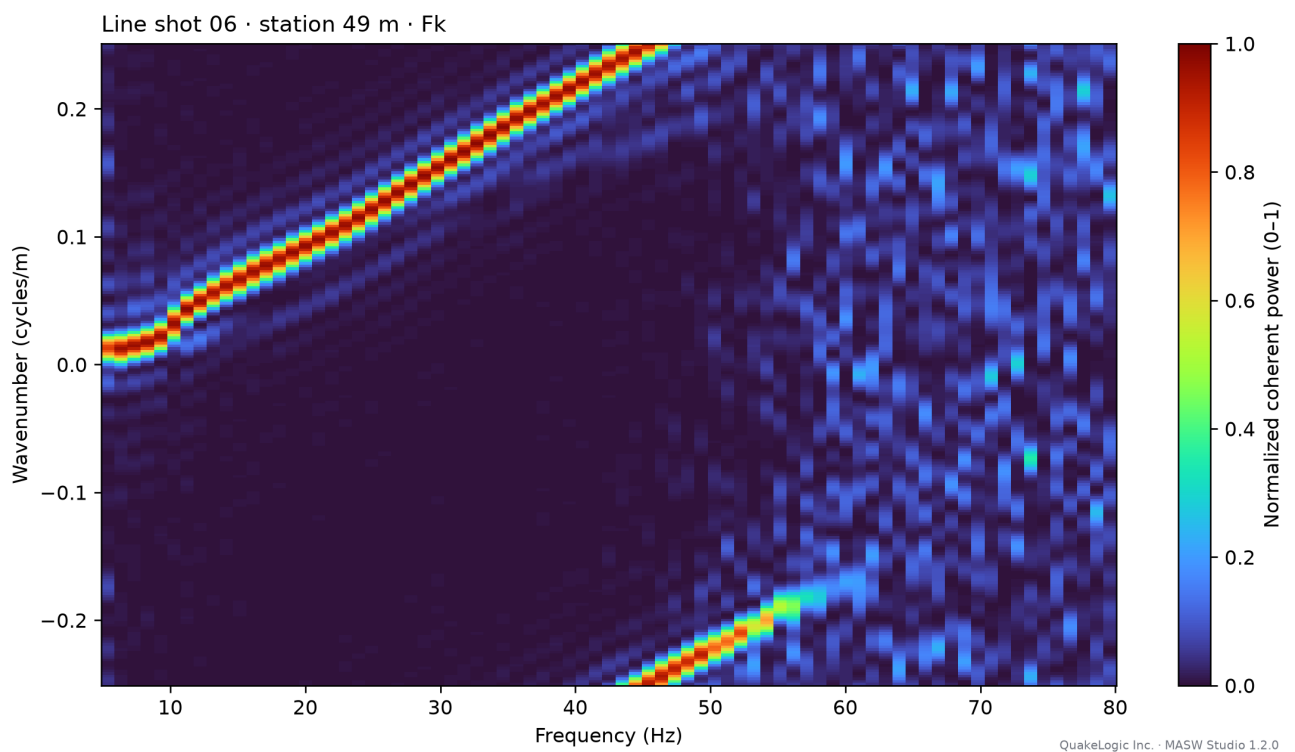
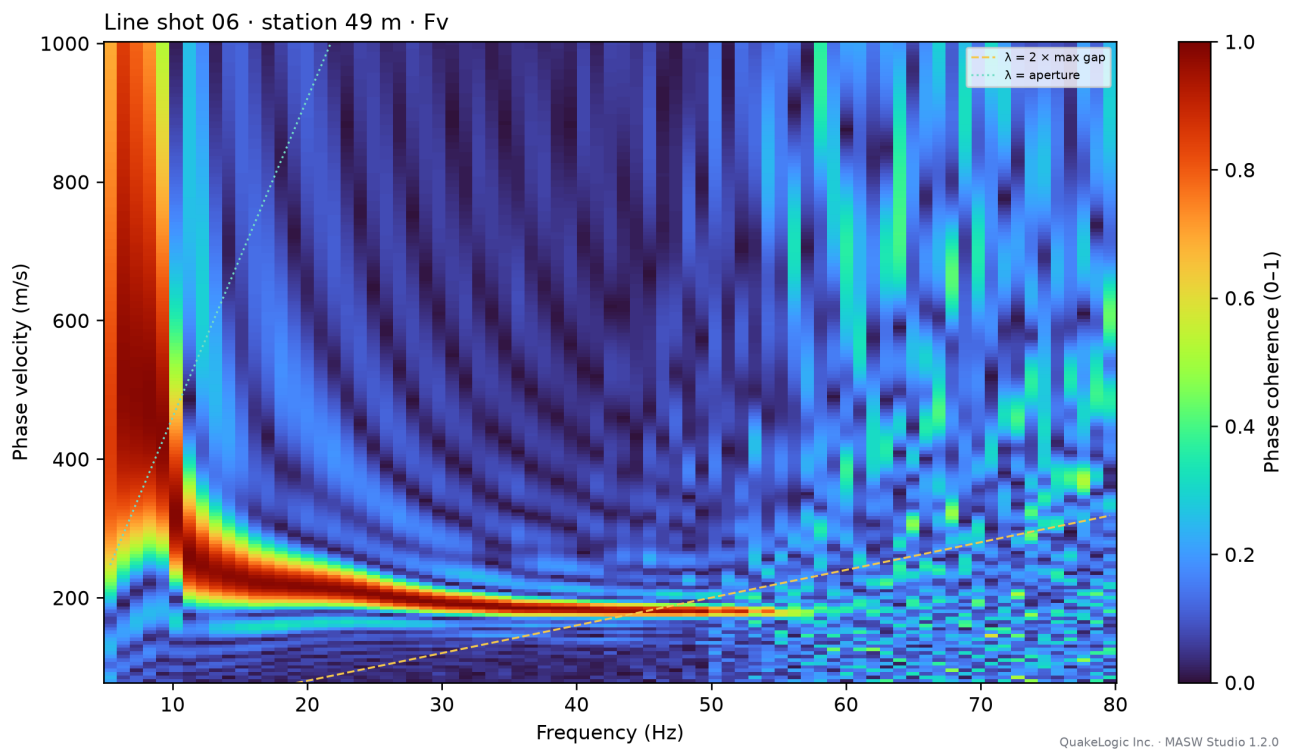
Aperture 46 m; largest active gap 2 m. Native Fourier resolution 0.4883 Hz.

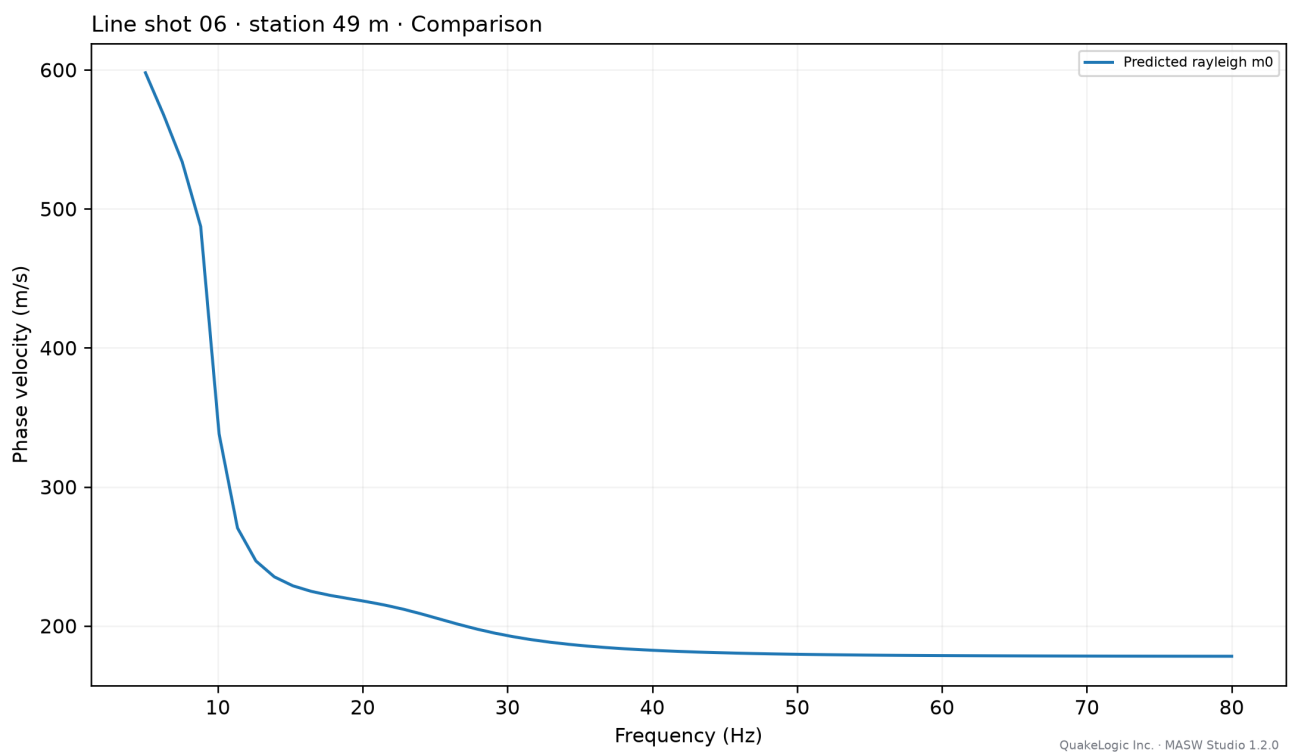
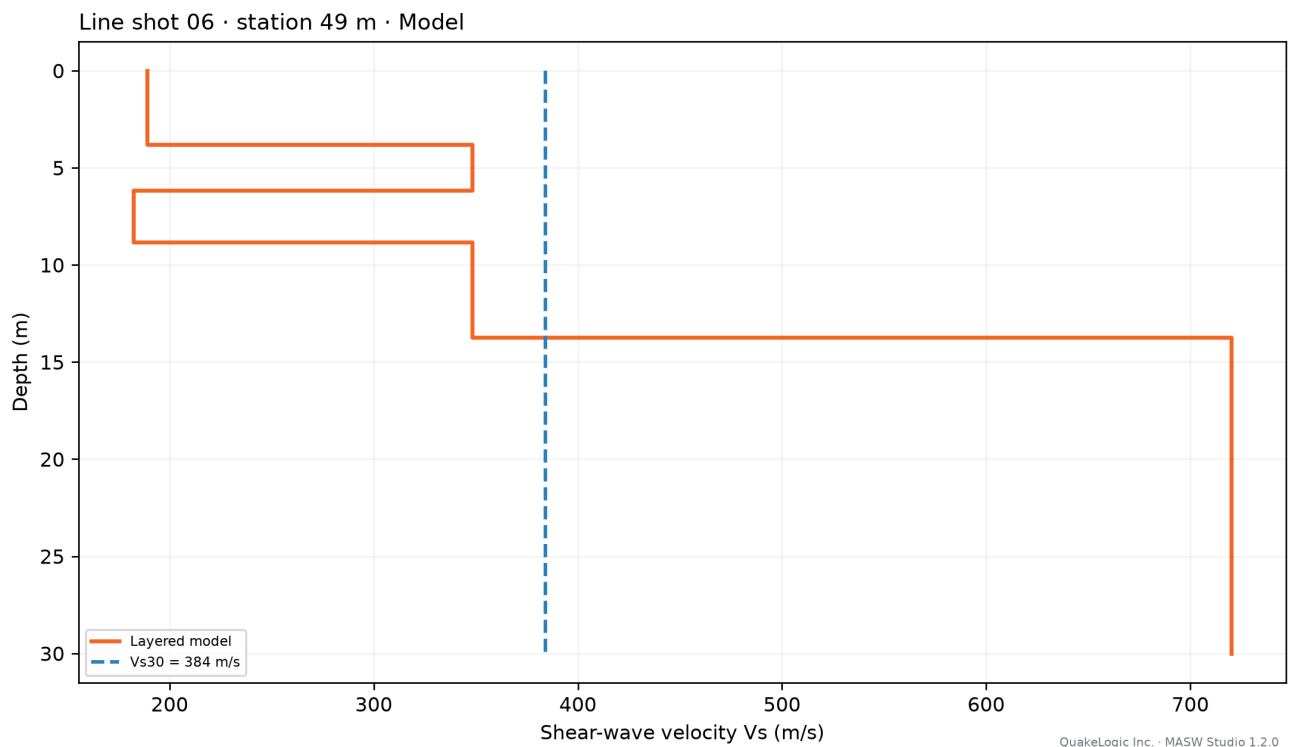
Line shot 06 · station 49 m · Seismogram



Line shot 06 · station 49 m · Fft







Layer	h (m)	V_s (m/s)	V_p (m/s)	ρ (kg/m ³)
1	3.79	189.1	453.8	1800.0
2	2.38	348.2	731.2	1950.0
3	2.65	182.3	557.1	1700.0
4	4.9	348.2	731.2	1950.0

Layer	h (m)	Vs (m/s)	Vp (m/s)	ρ (kg/m ³)
5	Half-space	720.0	1500.0	2200.0

Velocity metric and coverage

Vs30: 384.1 m/s

Declared coverage: 30 m. Travel-time harmonic average within user-declared interpretation depth. Half-space contribution, if present, is a model assumption, not measured depth resolution.

Line shot 07 · station 53 m

Synthetic 2D line · vertical component

SYNTHETIC VALIDATION DATA — not a field investigation.

Acquisition	Value
Channels / active	24 / 24
Samples / interval	2048 / 0.001 s
Time range	0 to 2.047 s
Source coordinate	24.0 m
Receiver coordinates (m)	30.0, 32.0, 34.0, 36.0, 38.0, 40.0, 42.0, 44.0, 46.0, 48.0, 50.0, 52.0, 54.0, 56.0, 58.0, 60.0, 62.0, 64.0, 66.0, 68.0, 70.0, 72.0, 74.0, 76.0
Original geometry units	METERS
Raw amplitudes	counts
Source checksum	Synthetic / derived: provenance retained in project

Reproducible processing

No signal preprocessing applied.

Time shifts (s): [0.0, 0.0]

Disabled/deleted channel indices: []

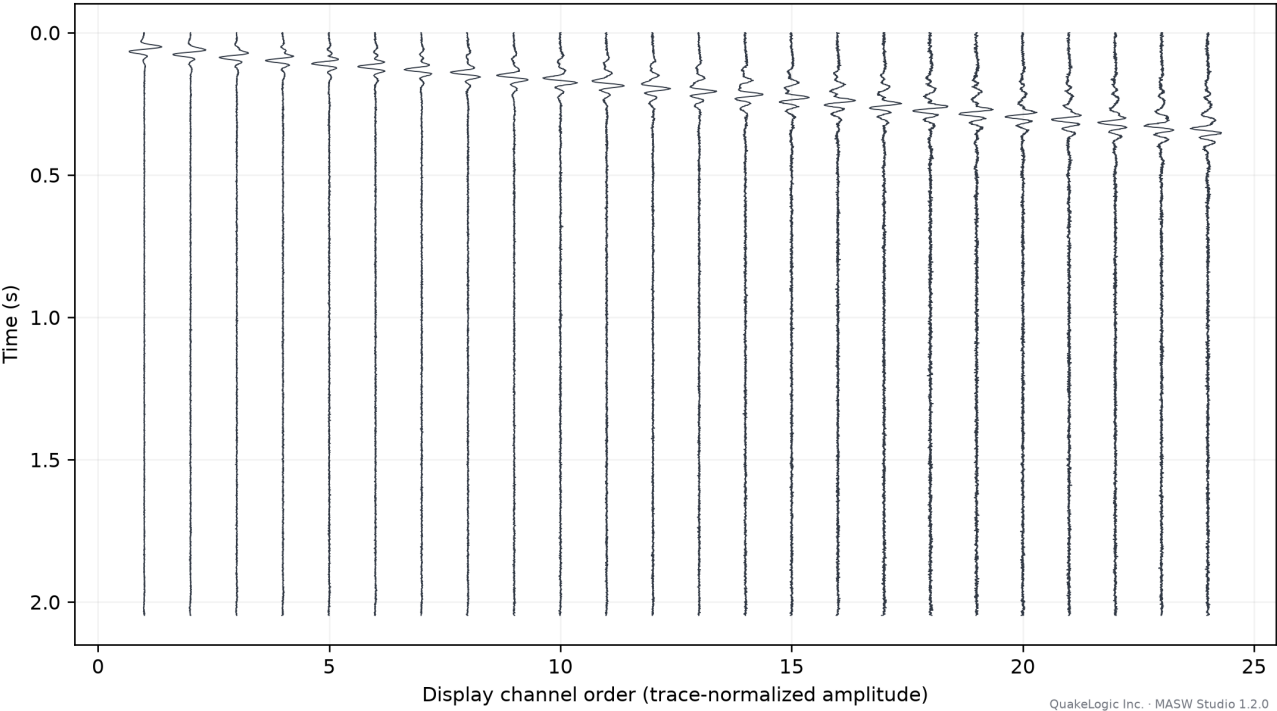
Spectrum and acquisition QC

{'f_min': 5, 'f_max': 80, 'df': 1, 'v_min': 80, 'v_max': 1000, 'dv': 5, 'k_count': 241, 'normalization': 'coherence'}

$\lambda < 2 \times$ largest receiver gap: spatial sampling caution. $\lambda >$ aperture: long-wavelength resolution caution. The region between is not a guarantee of reliable interpretation. Irregular spacing uses a conservative gap heuristic, not a strict Nyquist theorem.

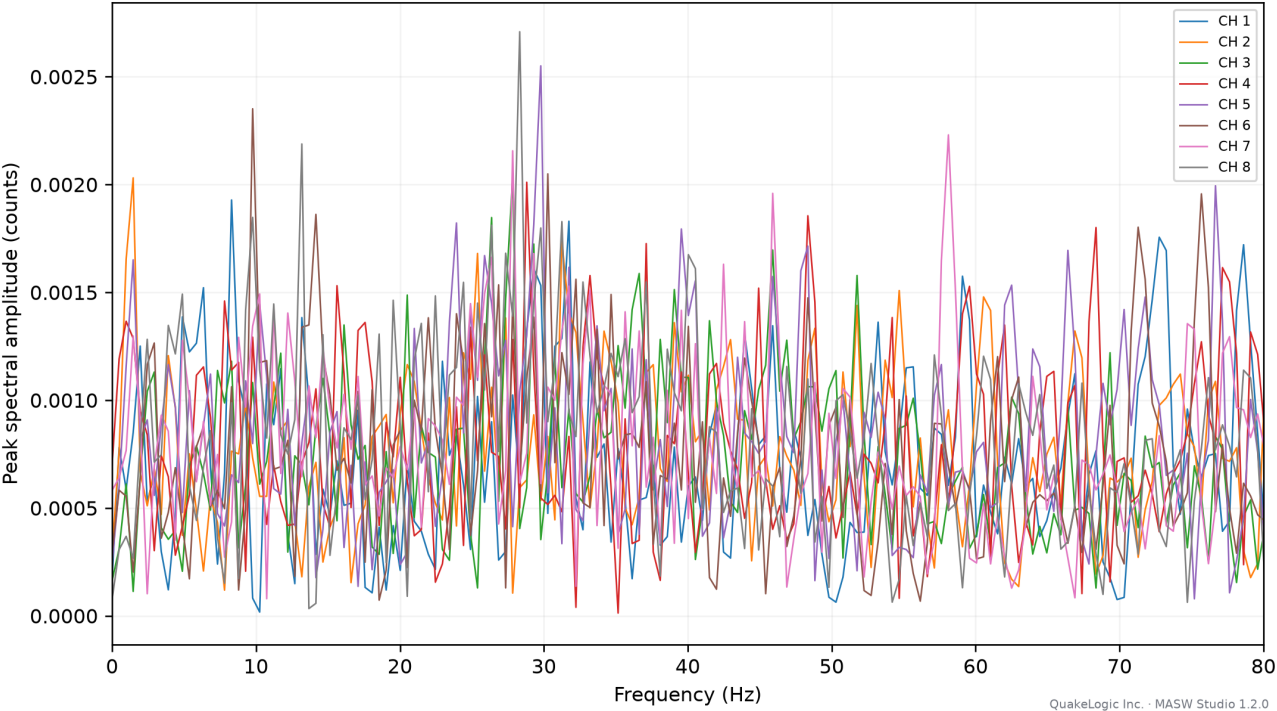
Aperture 46 m; largest active gap 2 m. Native Fourier resolution 0.4883 Hz.

Line shot 07 · station 53 m · Seismogram

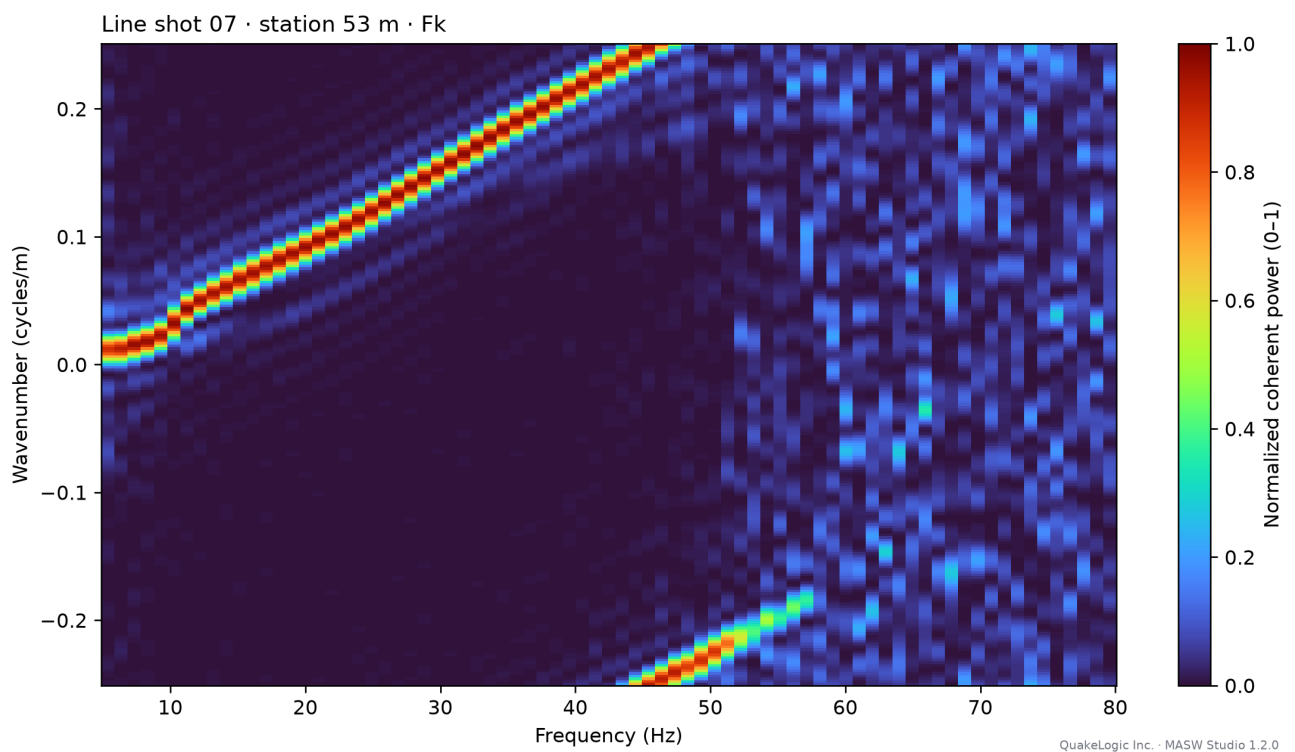
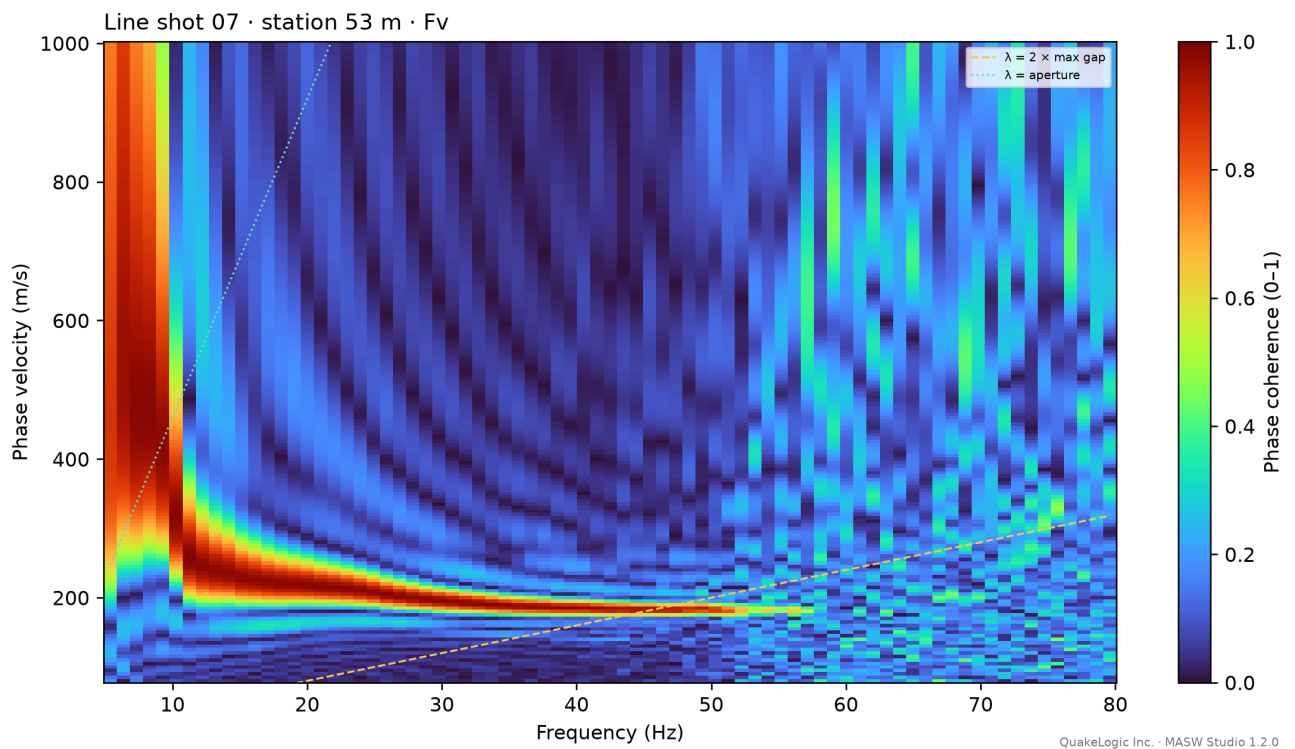


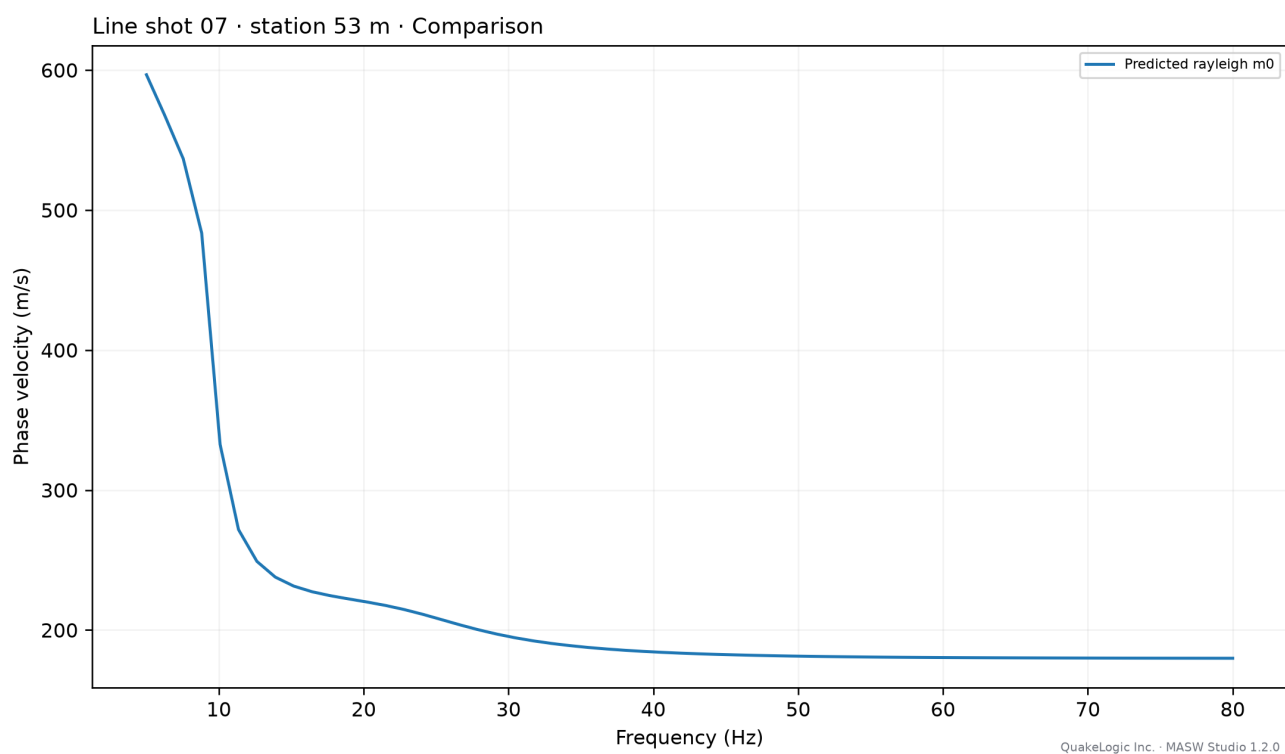
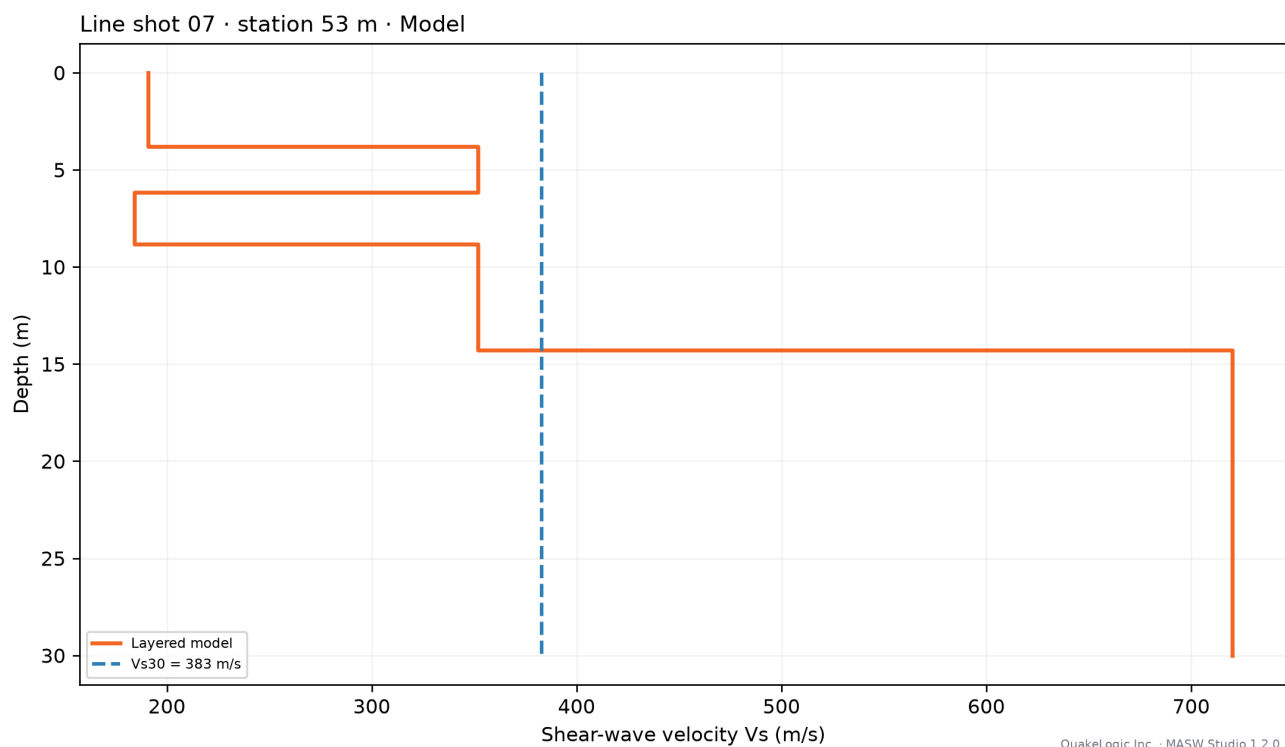
QuakeLogic Inc. · MASW Studio 1.2.0

Line shot 07 · station 53 m · Fft



QuakeLogic Inc. · MASW Studio 1.2.0





Layer	h (m)	V_s (m/s)	V_p (m/s)	ρ (kg/m ³)
1	3.79	190.9	458.2	1800.0
2	2.38	351.8	738.8	1950.0
3	2.65	184.2	562.9	1700.0
4	5.45	351.8	738.8	1950.0

Layer	h (m)	Vs (m/s)	Vp (m/s)	ρ (kg/m ³)
5	Half-space	720.0	1500.0	2200.0

Velocity metric and coverage

Vs30: 382.9 m/s

Declared coverage: 30 m. Travel-time harmonic average within user-declared interpretation depth. Half-space contribution, if present, is a model assumption, not measured depth resolution.

Line shot 08 · station 57 m

Synthetic 2D line · vertical component

SYNTHETIC VALIDATION DATA — not a field investigation.

Acquisition	Value
Channels / active	24 / 24
Samples / interval	2048 / 0.001 s
Time range	0 to 2.047 s
Source coordinate	28.0 m
Receiver coordinates (m)	34.0, 36.0, 38.0, 40.0, 42.0, 44.0, 46.0, 48.0, 50.0, 52.0, 54.0, 56.0, 58.0, 60.0, 62.0, 64.0, 66.0, 68.0, 70.0, 72.0, 74.0, 76.0, 78.0, 80.0
Original geometry units	METERS
Raw amplitudes	counts
Source checksum	Synthetic / derived: provenance retained in project

Reproducible processing

No signal preprocessing applied.

Time shifts (s): [0.0, 0.0]

Disabled/deleted channel indices: []

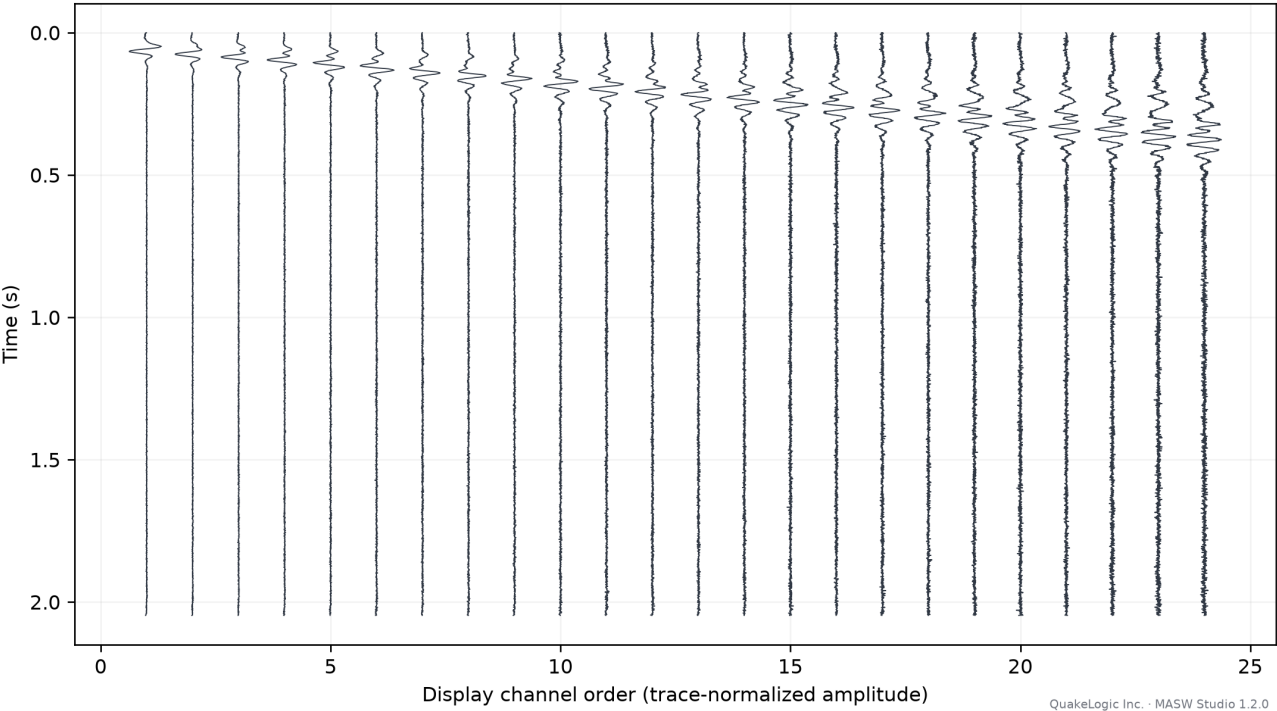
Spectrum and acquisition QC

{'f_min': 5, 'f_max': 80, 'df': 1, 'v_min': 80, 'v_max': 1000, 'dv': 5, 'k_count': 241, 'normalization': 'coherence'}

$\lambda < 2 \times$ largest receiver gap: spatial sampling caution. $\lambda >$ aperture: long-wavelength resolution caution. The region between is not a guarantee of reliable interpretation. Irregular spacing uses a conservative gap heuristic, not a strict Nyquist theorem.

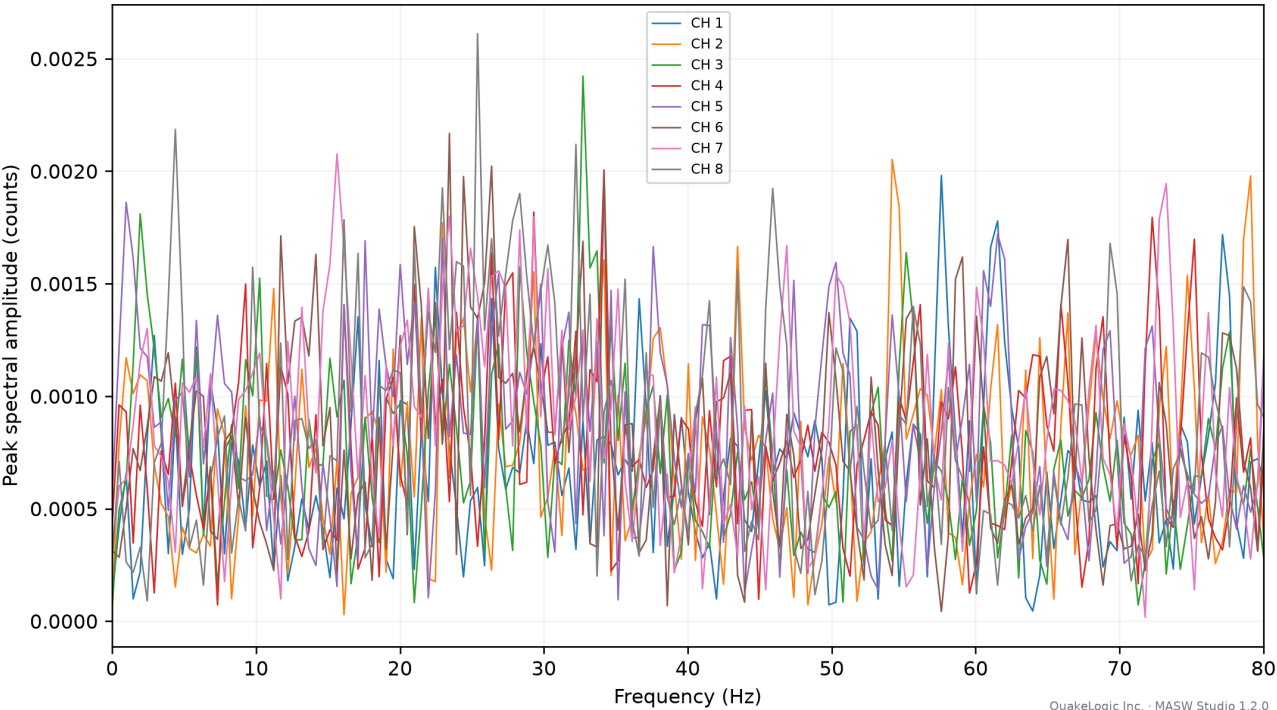
Aperture 46 m; largest active gap 2 m. Native Fourier resolution 0.4883 Hz.

Line shot 08 · station 57 m · Seismogram

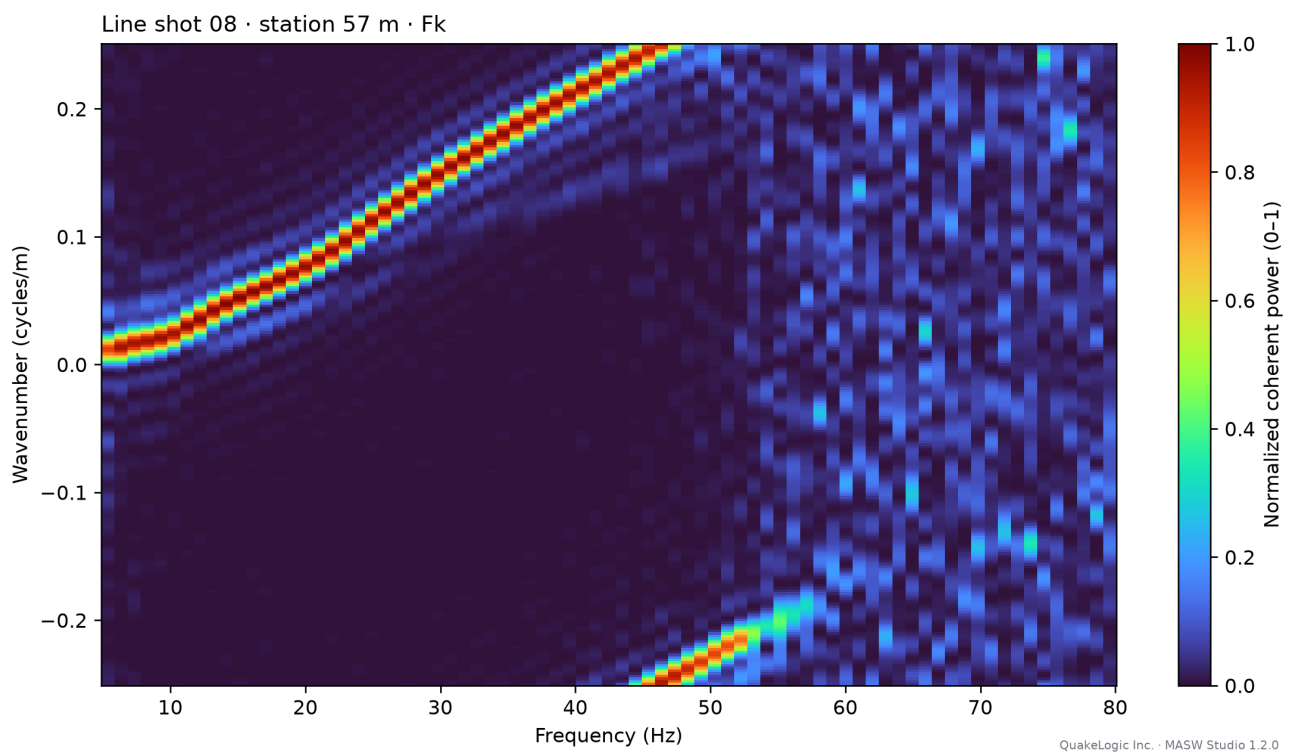
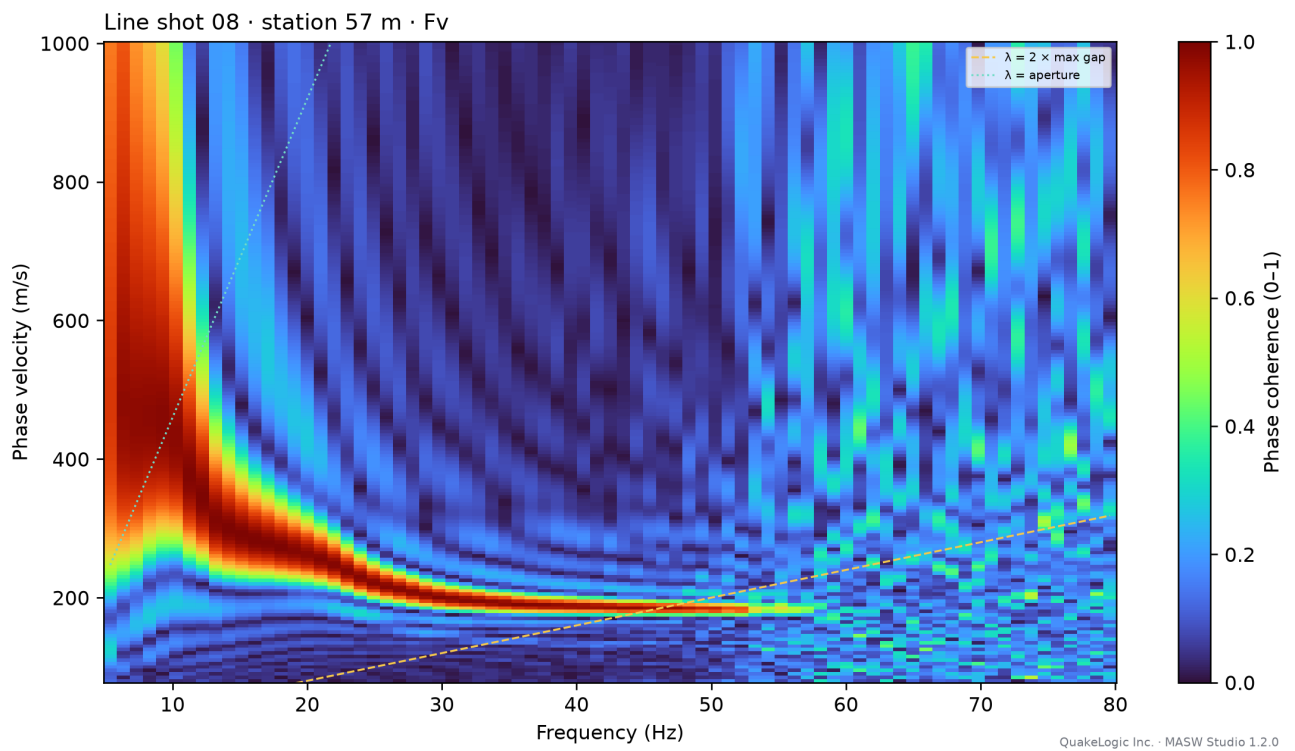


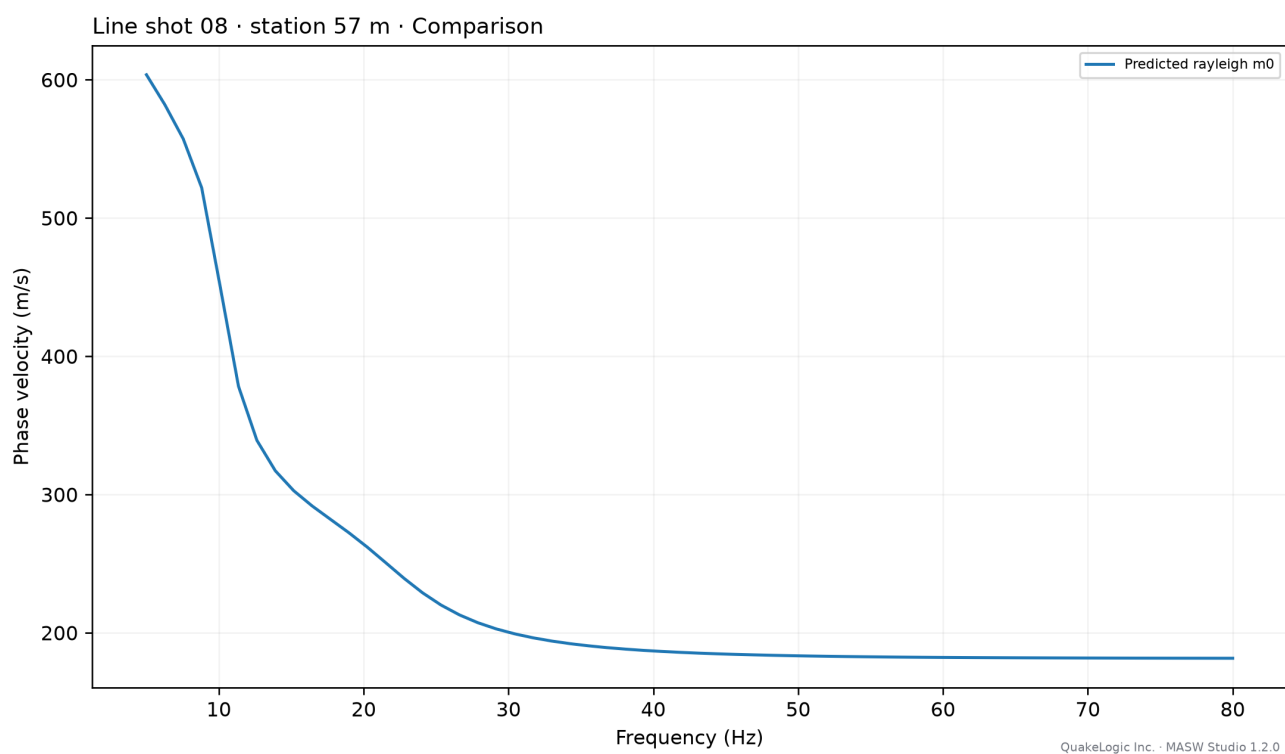
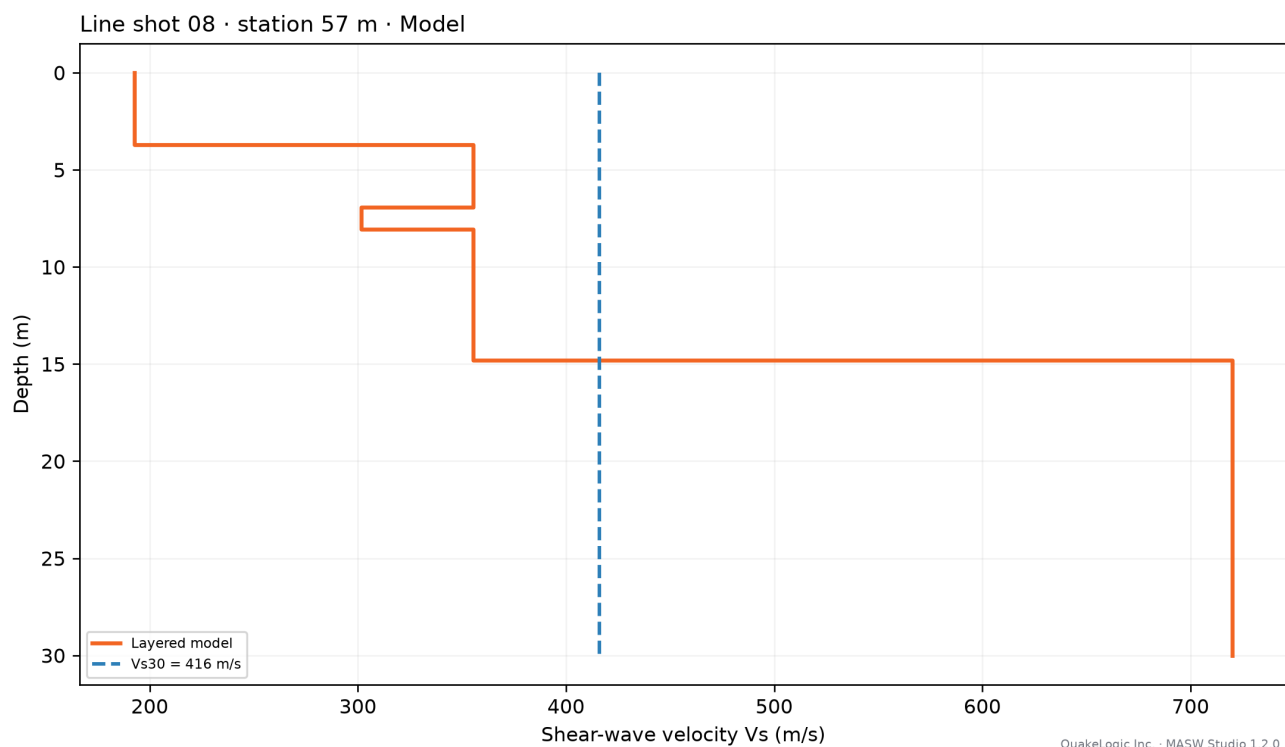
QuakeLogic Inc. · MASW Studio 1.2.0

Line shot 08 · station 57 m · Fft



QuakeLogic Inc. · MASW Studio 1.2.0





Layer	h (m)	V_s (m/s)	V_p (m/s)	ρ (kg/m ³)
1	3.71	192.7	462.5	1800.0
2	3.23	355.5	746.6	1950.0
3	1.11	301.7	663.7	1700.0
4	6.76	355.5	746.6	1950.0

Layer	h (m)	Vs (m/s)	Vp (m/s)	ρ (kg/m ³)
5	Half-space	720.0	1500.0	2200.0

Velocity metric and coverage

Vs30: 415.9 m/s

Declared coverage: 30 m. Travel-time harmonic average within user-declared interpretation depth. Half-space contribution, if present, is a model assumption, not measured depth resolution.

Line shot 09 · station 61 m

Synthetic 2D line · vertical component

SYNTHETIC VALIDATION DATA — not a field investigation.

Acquisition	Value
Channels / active	24 / 24
Samples / interval	2048 / 0.001 s
Time range	0 to 2.047 s
Source coordinate	32.0 m
Receiver coordinates (m)	38.0, 40.0, 42.0, 44.0, 46.0, 48.0, 50.0, 52.0, 54.0, 56.0, 58.0, 60.0, 62.0, 64.0, 66.0, 68.0, 70.0, 72.0, 74.0, 76.0, 78.0, 80.0, 82.0, 84.0
Original geometry units	METERS
Raw amplitudes	counts
Source checksum	Synthetic / derived: provenance retained in project

Reproducible processing

No signal preprocessing applied.

Time shifts (s): [0.0, 0.0]

Disabled/deleted channel indices: []

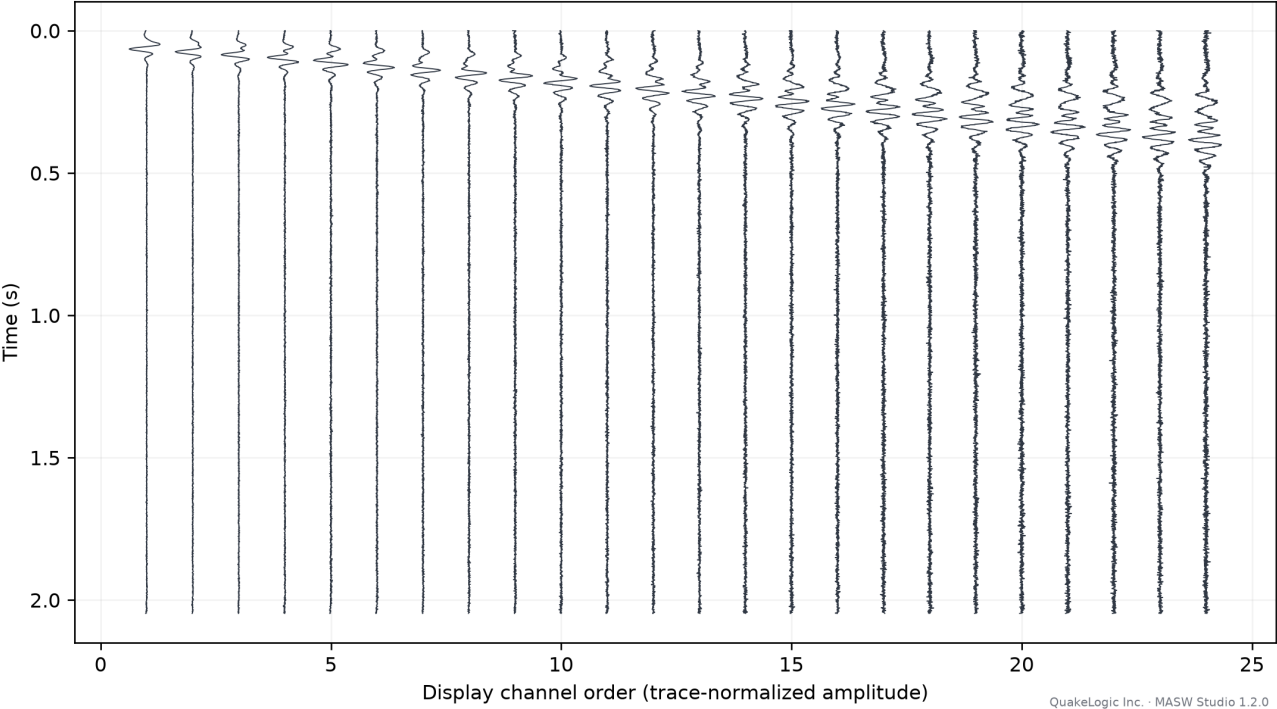
Spectrum and acquisition QC

{'f_min': 5, 'f_max': 80, 'df': 1, 'v_min': 80, 'v_max': 1000, 'dv': 5, 'k_count': 241, 'normalization': 'coherence'}

$\lambda < 2 \times$ largest receiver gap: spatial sampling caution. $\lambda >$ aperture: long-wavelength resolution caution. The region between is not a guarantee of reliable interpretation. Irregular spacing uses a conservative gap heuristic, not a strict Nyquist theorem.

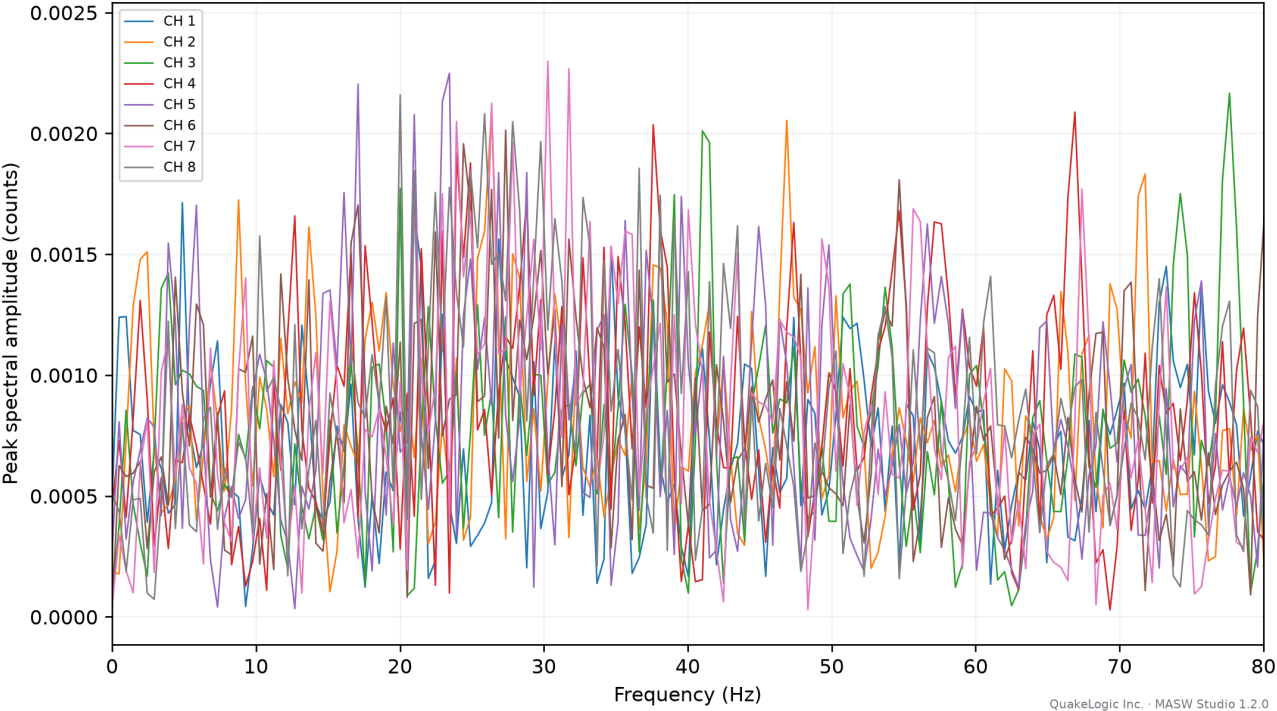
Aperture 46 m; largest active gap 2 m. Native Fourier resolution 0.4883 Hz.

Line shot 09 · station 61 m · Seismogram

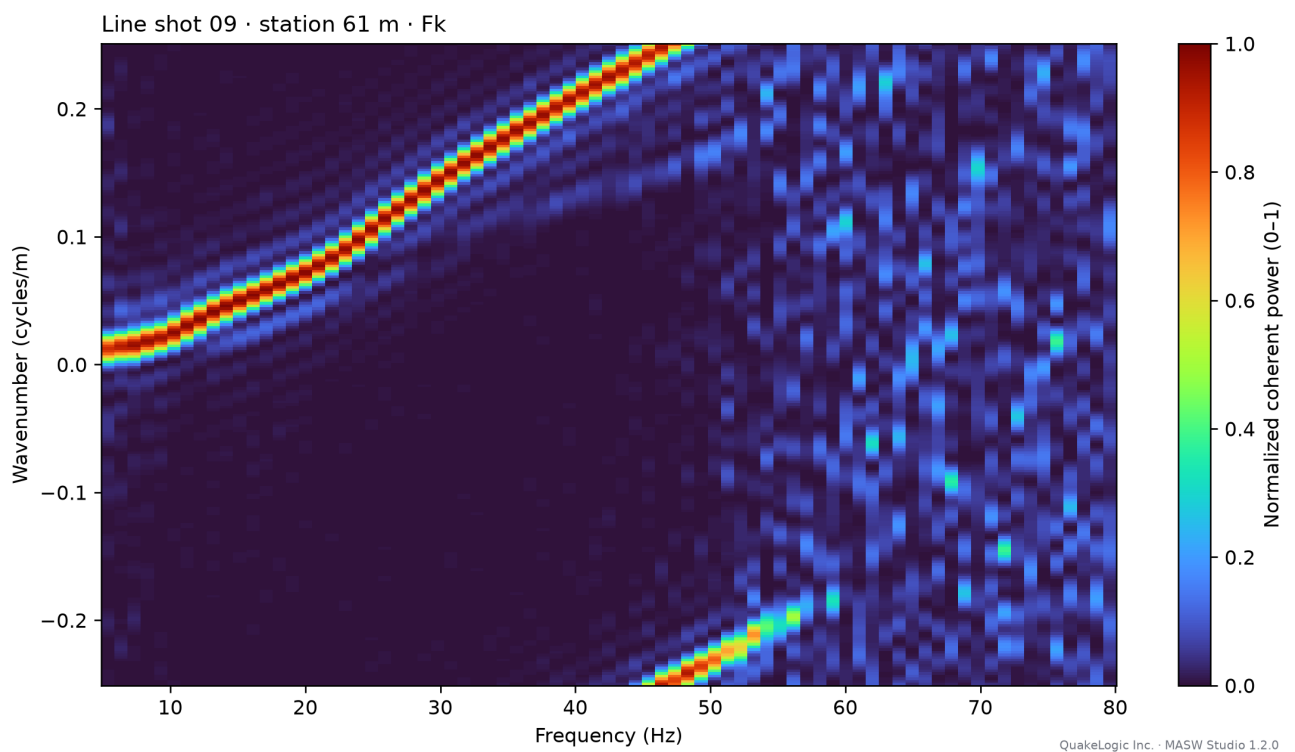
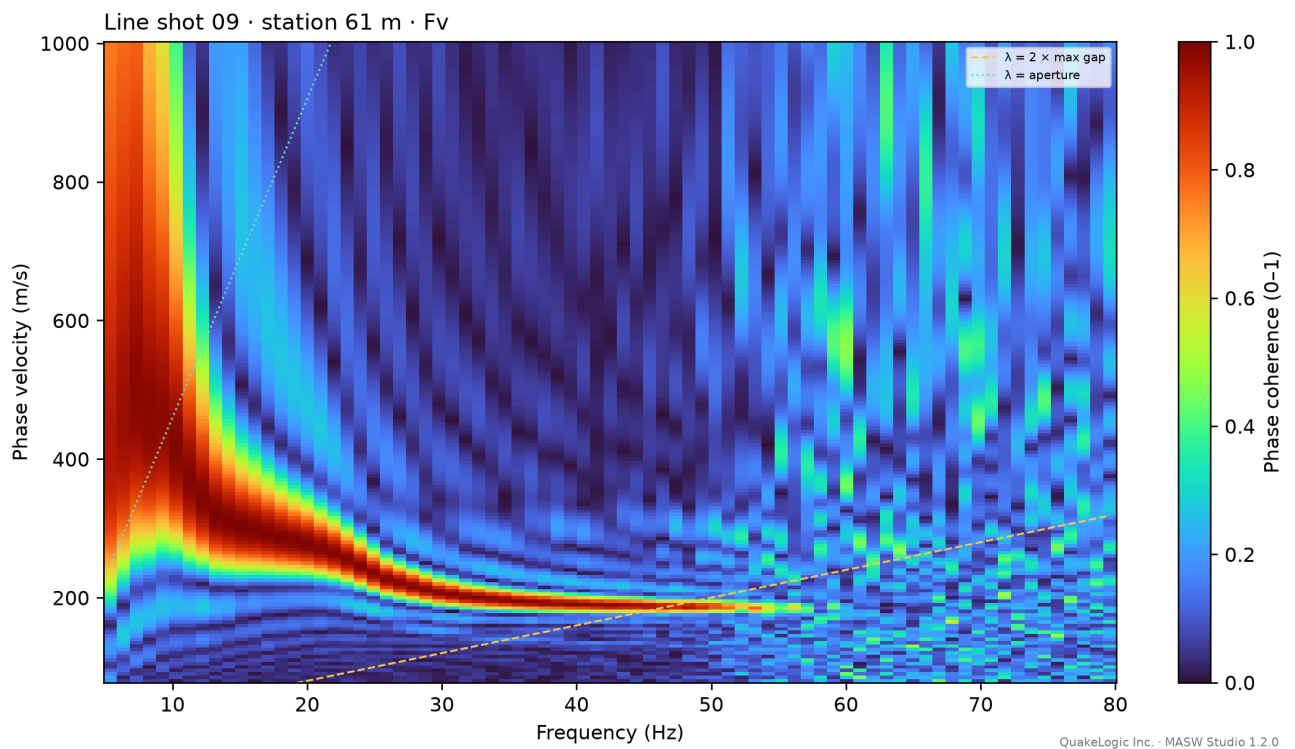


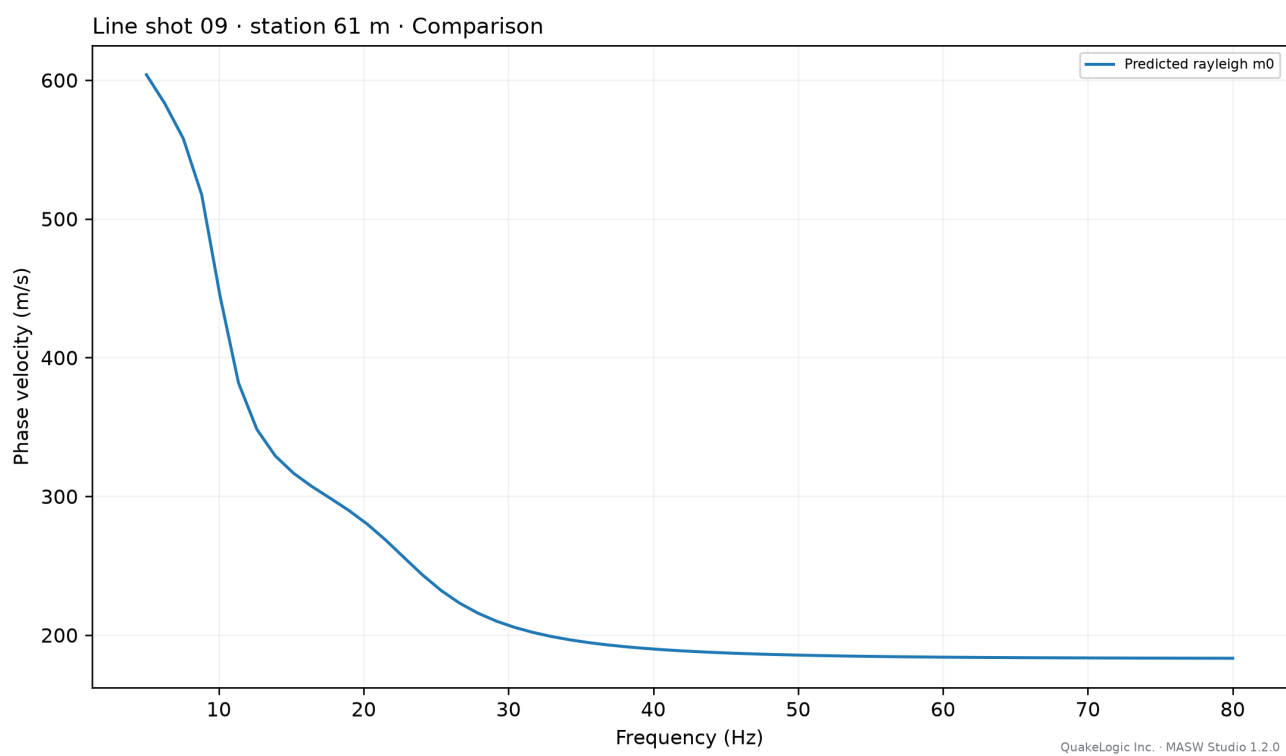
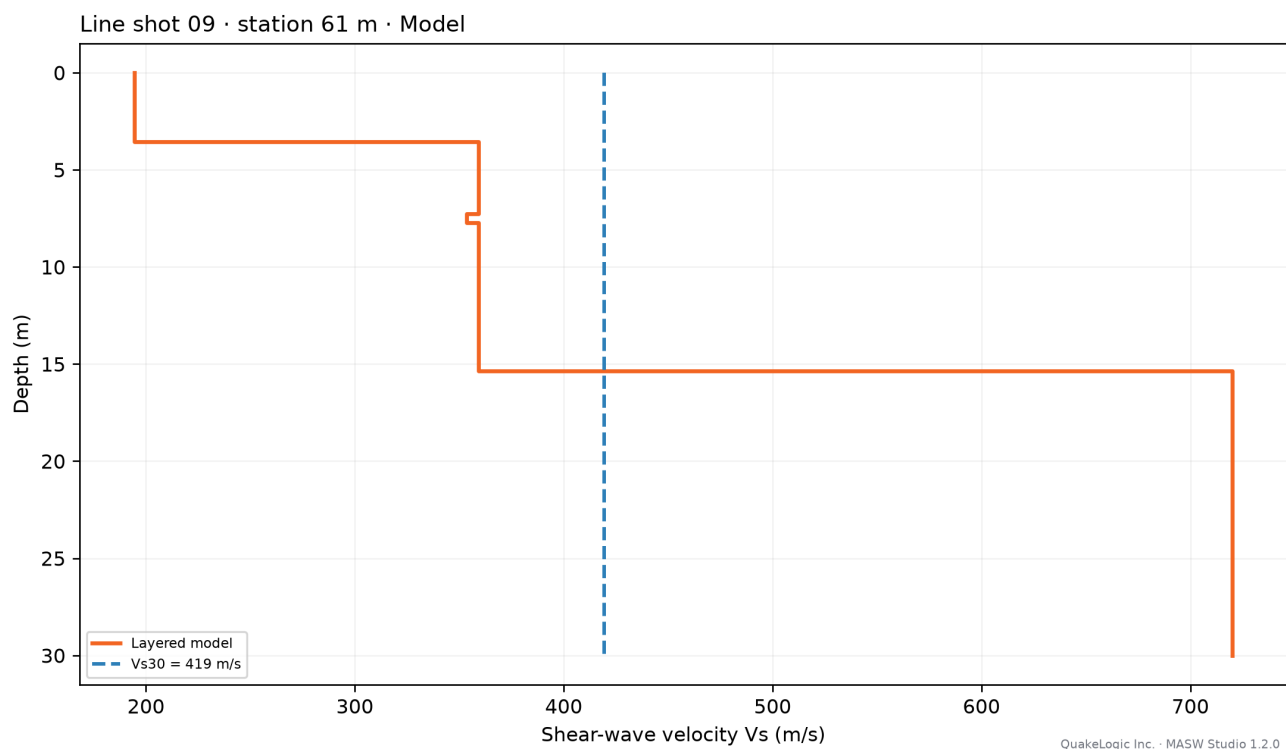
QuakeLogic Inc. · MASW Studio 1.2.0

Line shot 09 · station 61 m · Fft



QuakeLogic Inc. · MASW Studio 1.2.0





Layer	h (m)	V_s (m/s)	V_p (m/s)	ρ (kg/m ³)
1	3.56	194.5	466.8	1800.0
2	3.71	359.1	754.1	1950.0
3	0.47	353.6	777.9	1700.0
4	7.63	359.1	754.1	1950.0

Layer	h (m)	Vs (m/s)	Vp (m/s)	ρ (kg/m ³)
5	Half-space	720.0	1500.0	2200.0

Velocity metric and coverage

Vs30: 419.4 m/s

Declared coverage: 30 m. Travel-time harmonic average within user-declared interpretation depth. Half-space contribution, if present, is a model assumption, not measured depth resolution.

Line shot 10 · station 65 m

Synthetic 2D line · vertical component

SYNTHETIC VALIDATION DATA — not a field investigation.

Acquisition	Value
Channels / active	24 / 24
Samples / interval	2048 / 0.001 s
Time range	0 to 2.047 s
Source coordinate	36.0 m
Receiver coordinates (m)	42.0, 44.0, 46.0, 48.0, 50.0, 52.0, 54.0, 56.0, 58.0, 60.0, 62.0, 64.0, 66.0, 68.0, 70.0, 72.0, 74.0, 76.0, 78.0, 80.0, 82.0, 84.0, 86.0, 88.0
Original geometry units	METERS
Raw amplitudes	counts
Source checksum	Synthetic / derived: provenance retained in project

Reproducible processing

No signal preprocessing applied.

Time shifts (s): [0.0, 0.0]

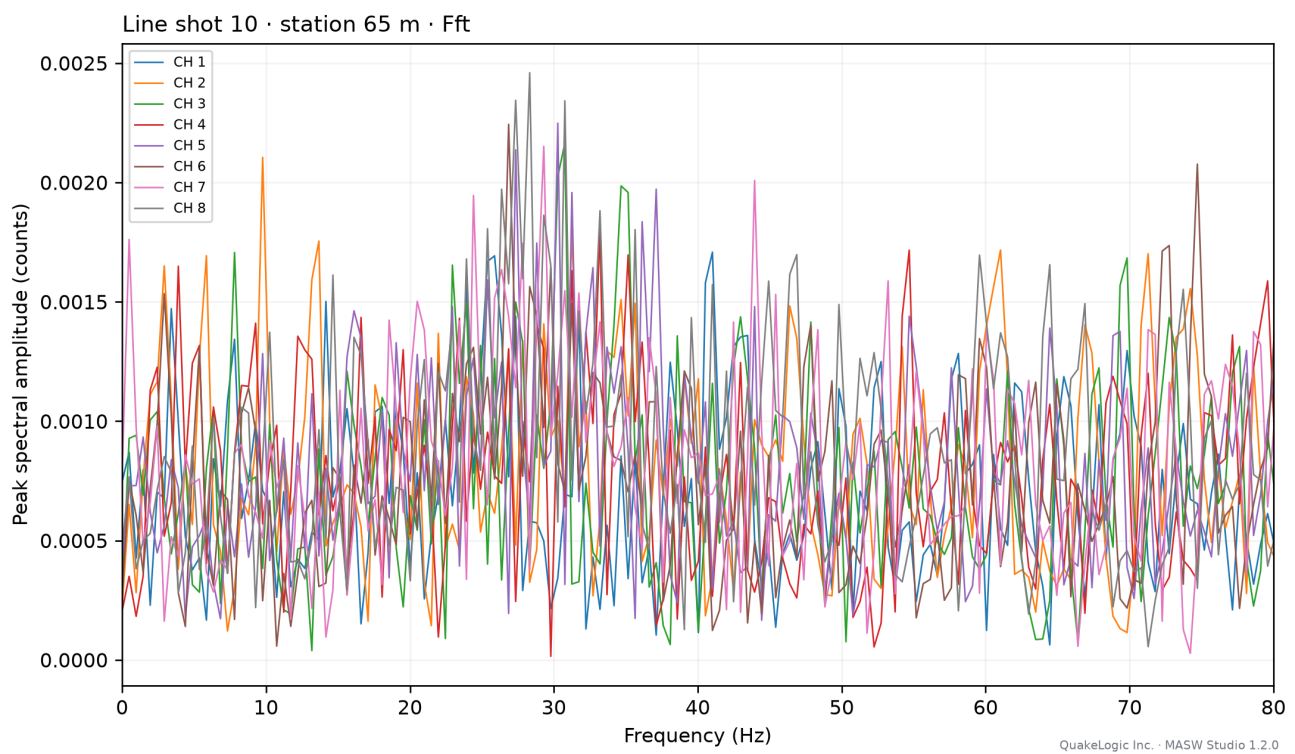
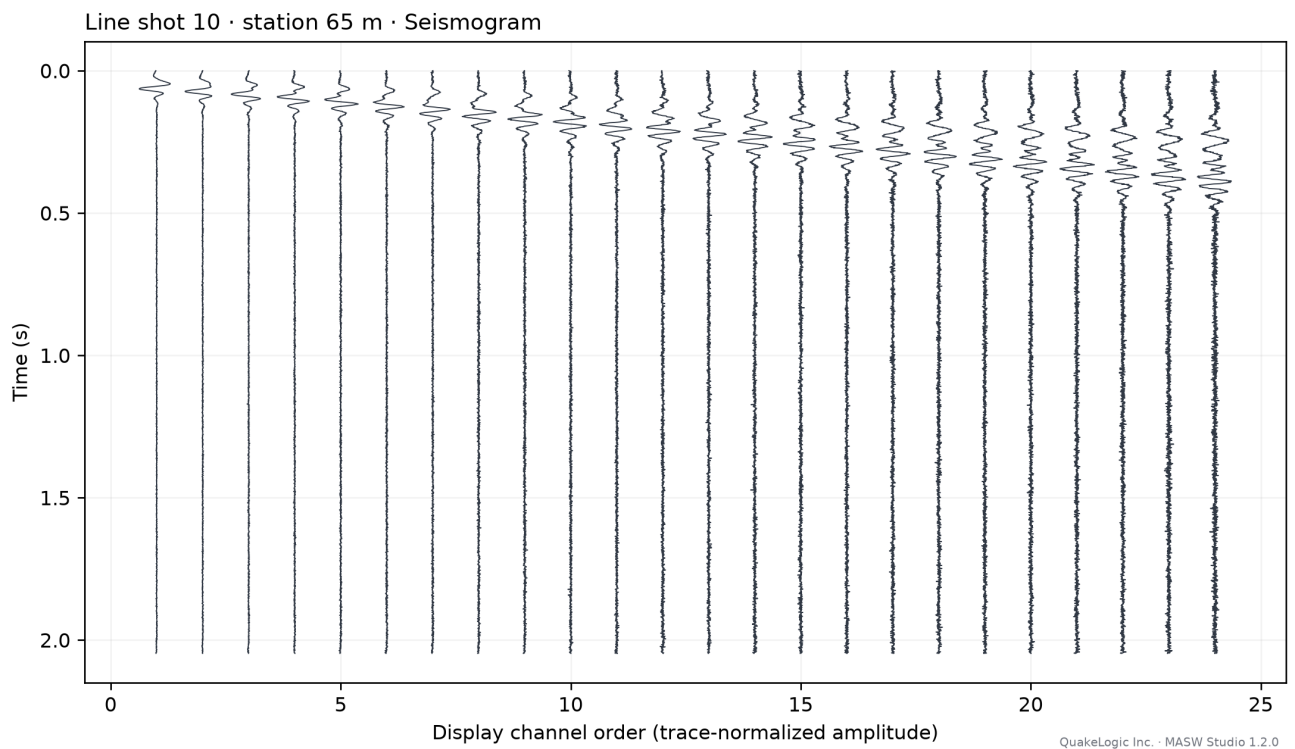
Disabled/deleted channel indices: []

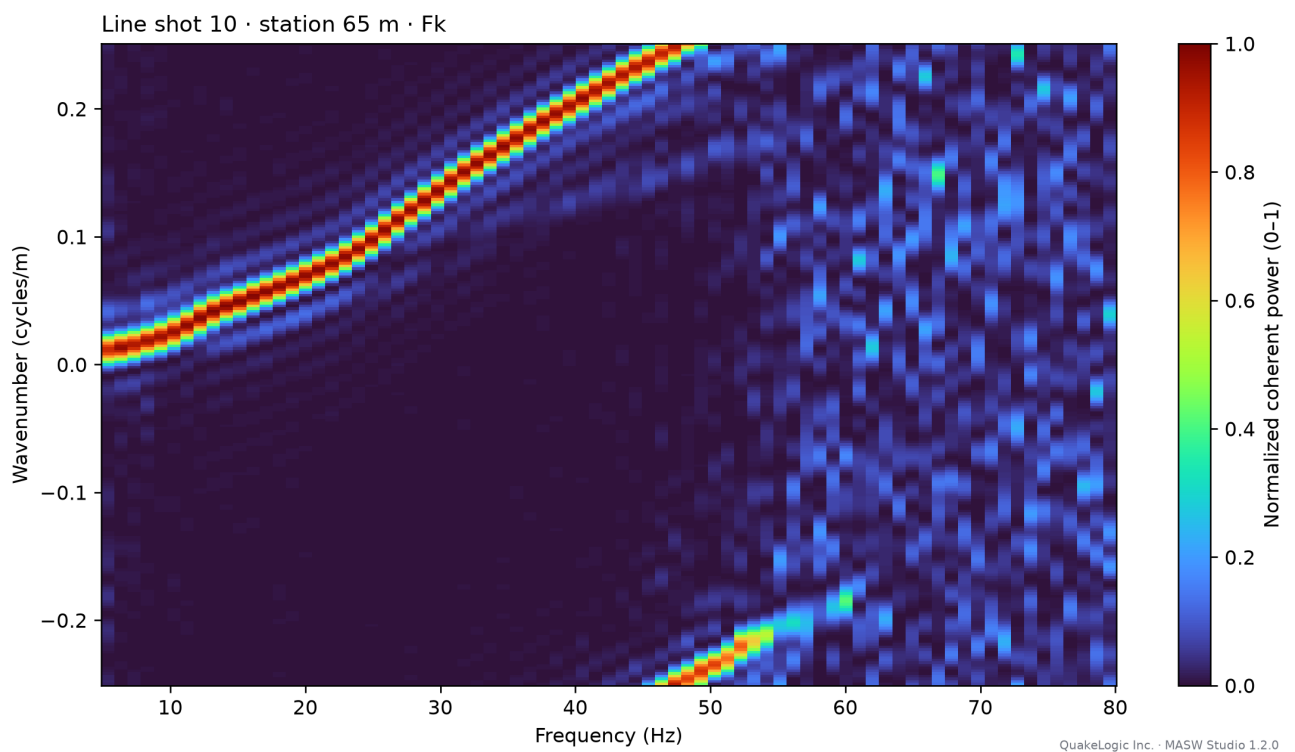
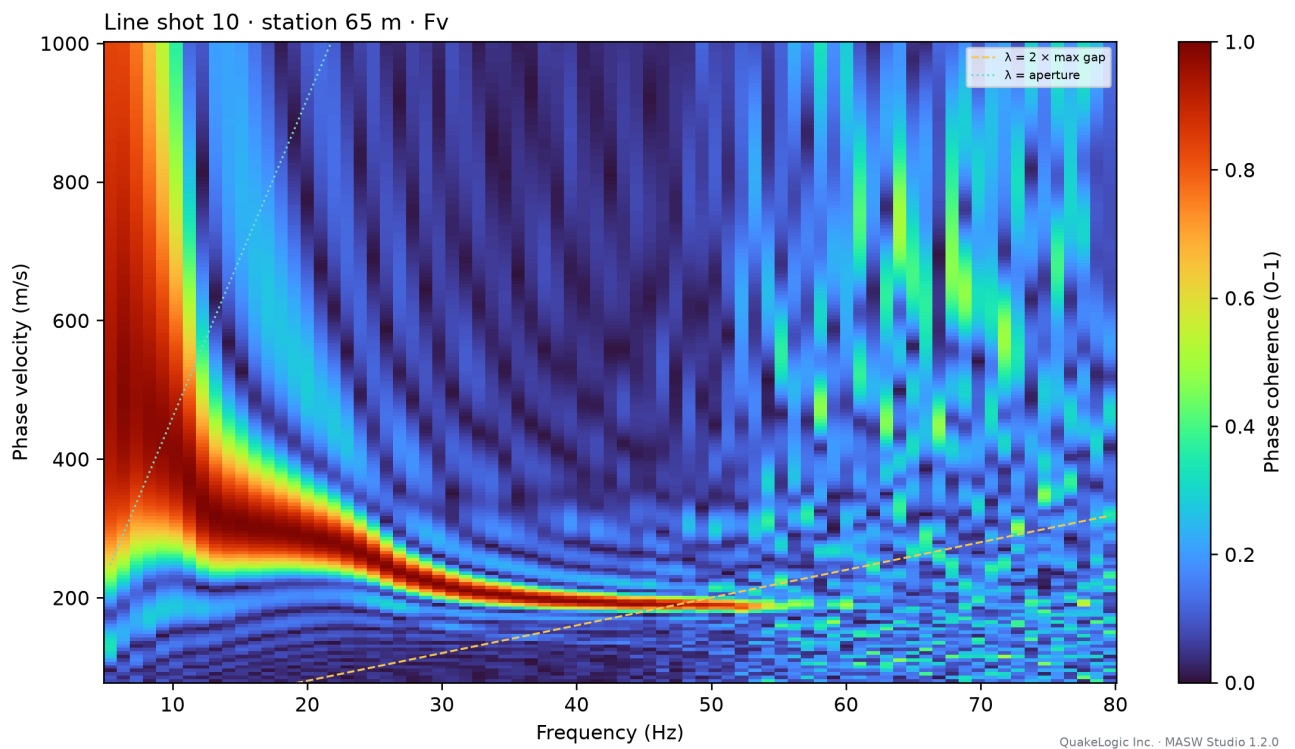
Spectrum and acquisition QC

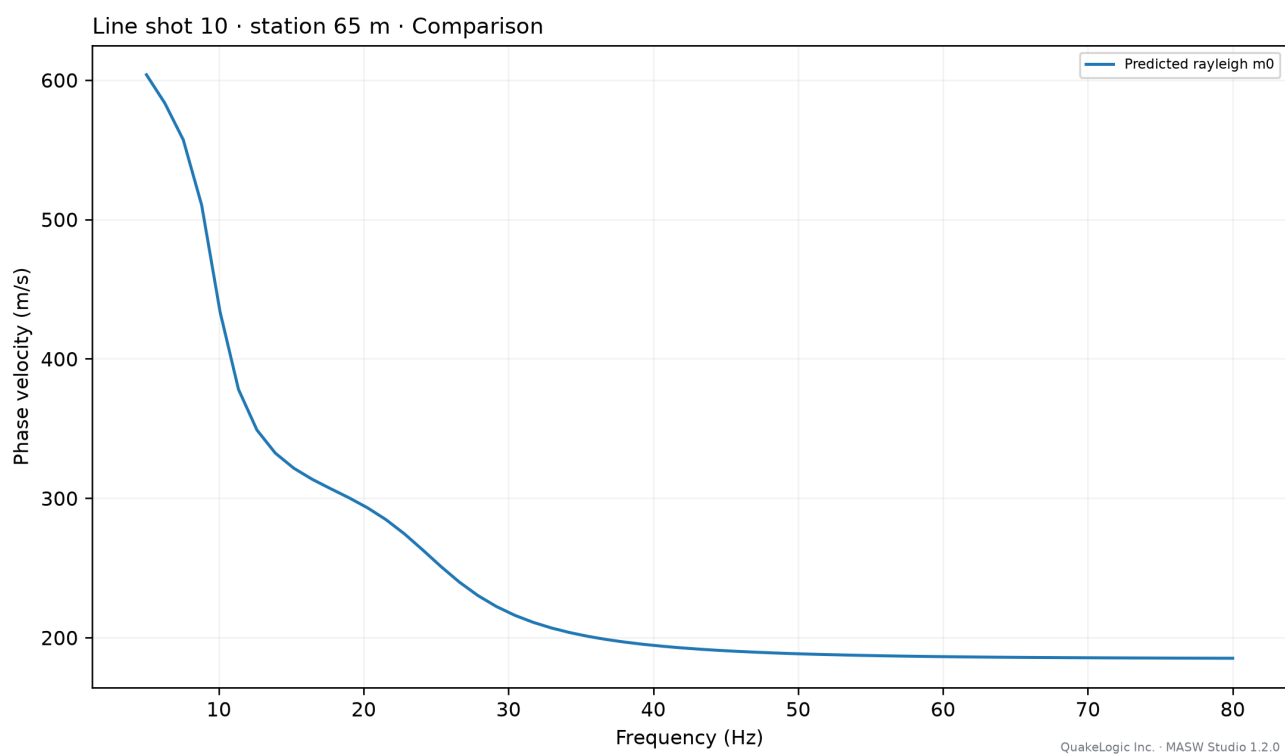
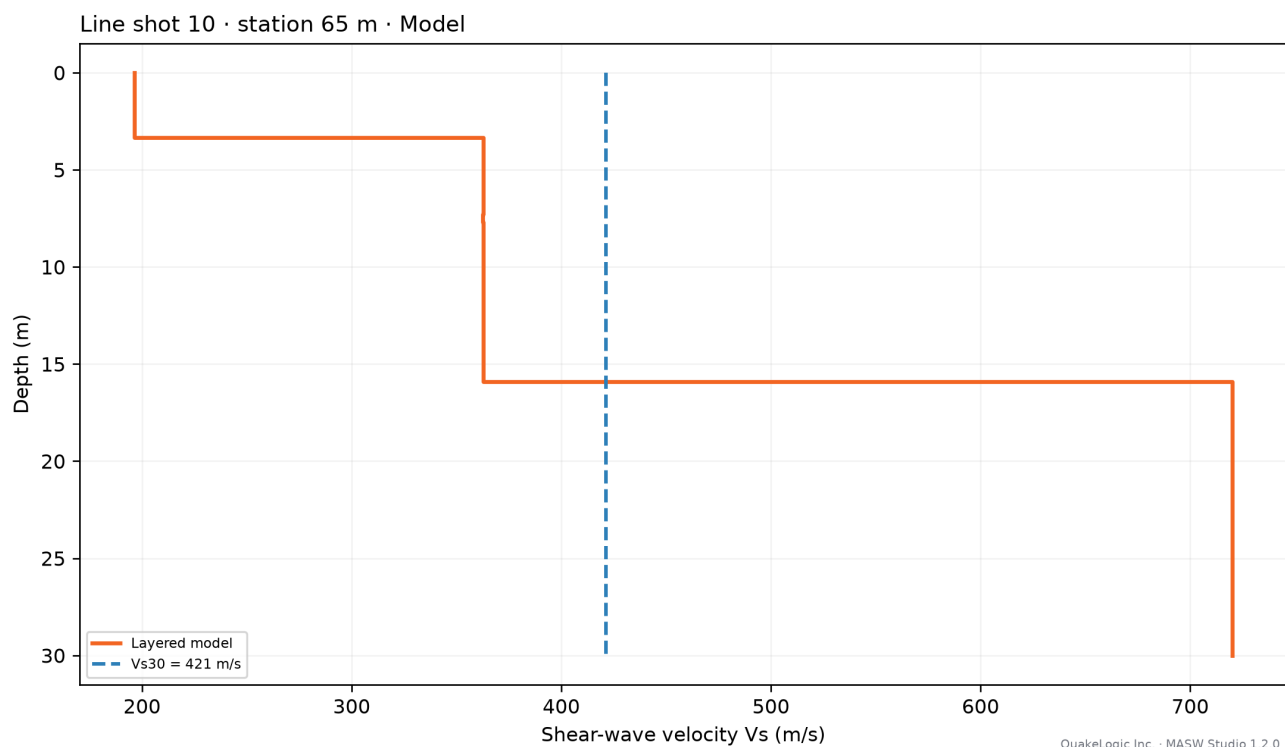
{'f_min': 5, 'f_max': 80, 'df': 1, 'v_min': 80, 'v_max': 1000, 'dv': 5, 'k_count': 241, 'normalization': 'coherence'}

$\lambda < 2 \times$ largest receiver gap: spatial sampling caution. $\lambda >$ aperture: long-wavelength resolution caution. The region between is not a guarantee of reliable interpretation. Irregular spacing uses a conservative gap heuristic, not a strict Nyquist theorem.

Aperture 46 m; largest active gap 2 m. Native Fourier resolution 0.4883 Hz.







Layer	h (m)	V_s (m/s)	V_p (m/s)	ρ (kg/m ³)
1	3.34	196.4	471.4	1800.0
2	3.96	362.7	761.7	1950.0
3	0.4	362.5	797.5	1700.0
4	8.21	362.7	761.7	1950.0

Layer	h (m)	Vs (m/s)	Vp (m/s)	ρ (kg/m ³)
5	Half-space	720.0	1500.0	2200.0

Velocity metric and coverage

Vs30: 421.2 m/s

Declared coverage: 30 m. Travel-time harmonic average within user-declared interpretation depth. Half-space contribution, if present, is a model assumption, not measured depth resolution.

Line shot 11 · station 69 m

Synthetic 2D line · vertical component

SYNTHETIC VALIDATION DATA — not a field investigation.

Acquisition	Value
Channels / active	24 / 24
Samples / interval	2048 / 0.001 s
Time range	0 to 2.047 s
Source coordinate	40.0 m
Receiver coordinates (m)	46.0, 48.0, 50.0, 52.0, 54.0, 56.0, 58.0, 60.0, 62.0, 64.0, 66.0, 68.0, 70.0, 72.0, 74.0, 76.0, 78.0, 80.0, 82.0, 84.0, 86.0, 88.0, 90.0, 92.0
Original geometry units	METERS
Raw amplitudes	counts
Source checksum	Synthetic / derived: provenance retained in project

Reproducible processing

No signal preprocessing applied.

Time shifts (s): [0.0, 0.0]

Disabled/deleted channel indices: []

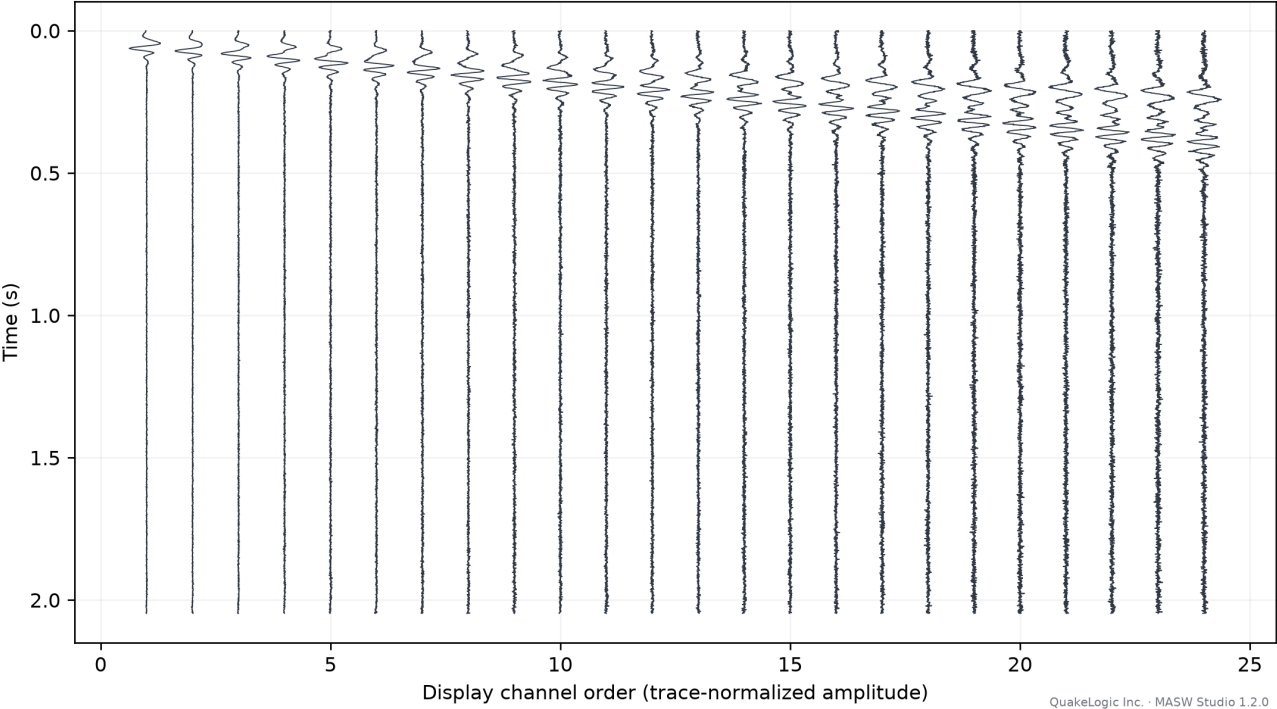
Spectrum and acquisition QC

{'f_min': 5, 'f_max': 80, 'df': 1, 'v_min': 80, 'v_max': 1000, 'dv': 5, 'k_count': 241, 'normalization': 'coherence'}

$\lambda < 2 \times$ largest receiver gap: spatial sampling caution. $\lambda >$ aperture: long-wavelength resolution caution. The region between is not a guarantee of reliable interpretation. Irregular spacing uses a conservative gap heuristic, not a strict Nyquist theorem.

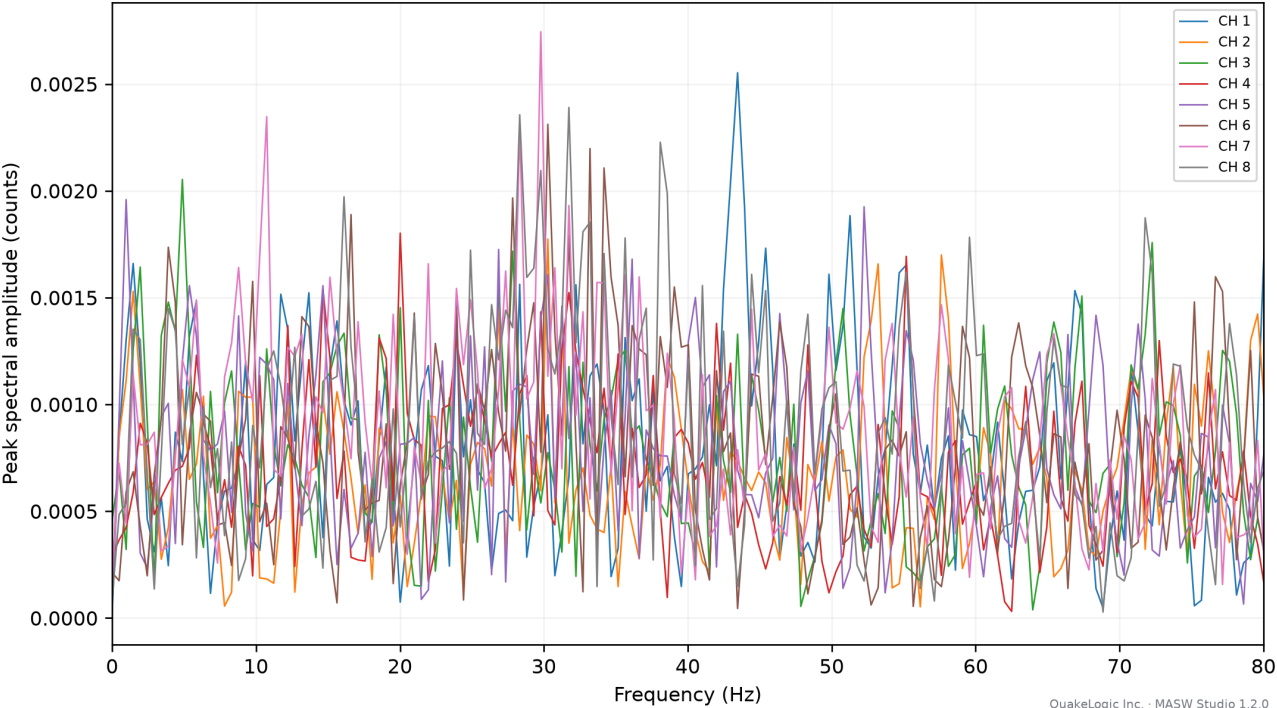
Aperture 46 m; largest active gap 2 m. Native Fourier resolution 0.4883 Hz.

Line shot 11 · station 69 m · Seismogram

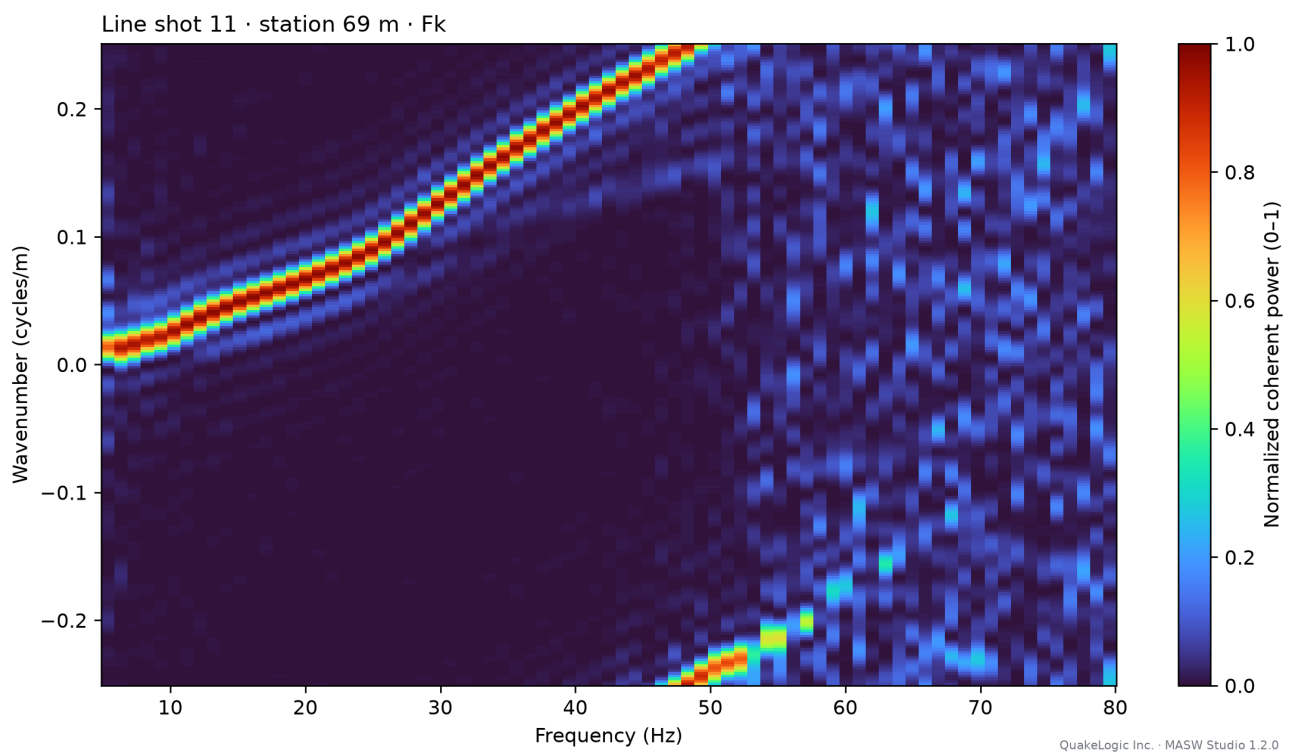
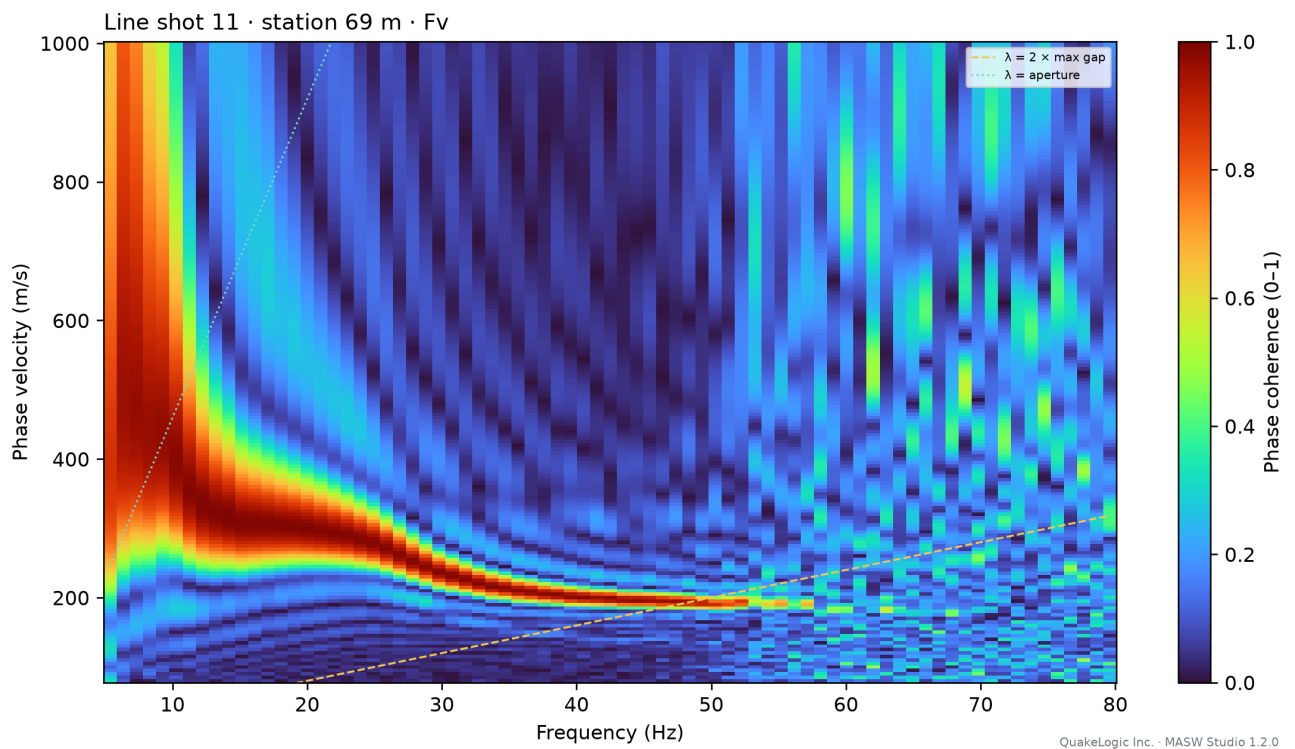


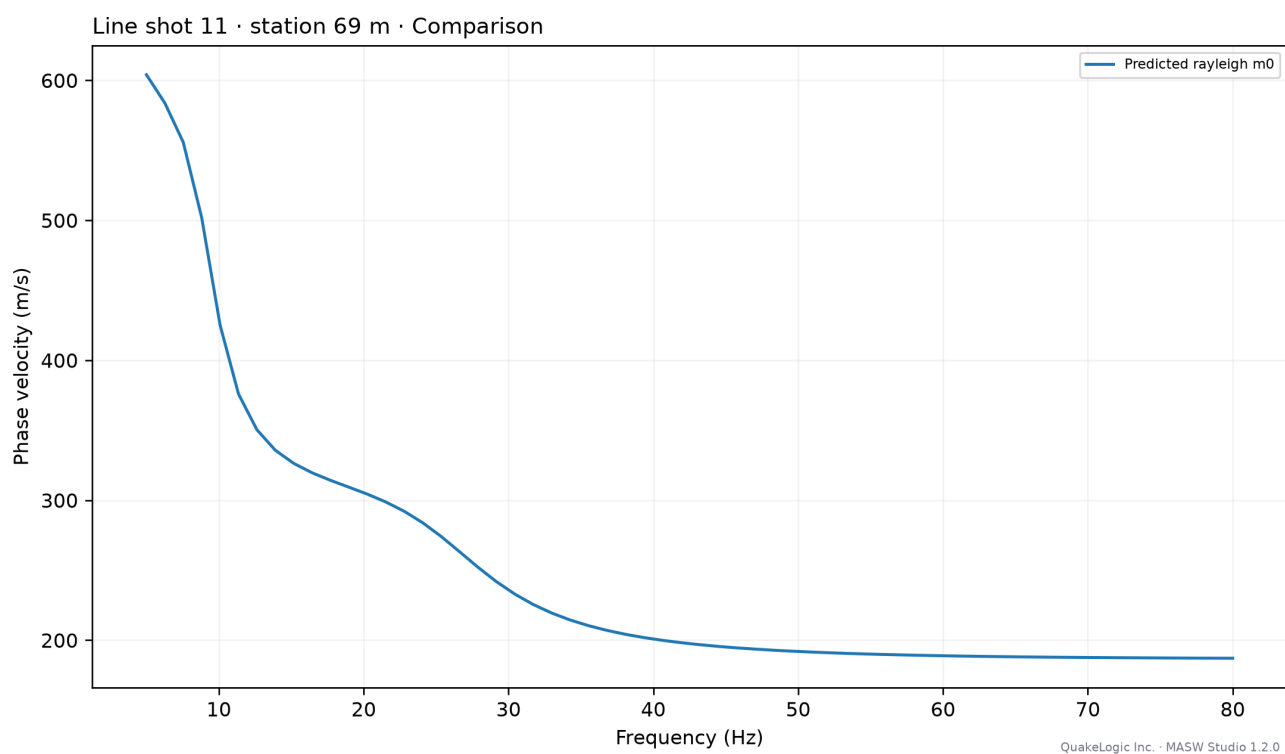
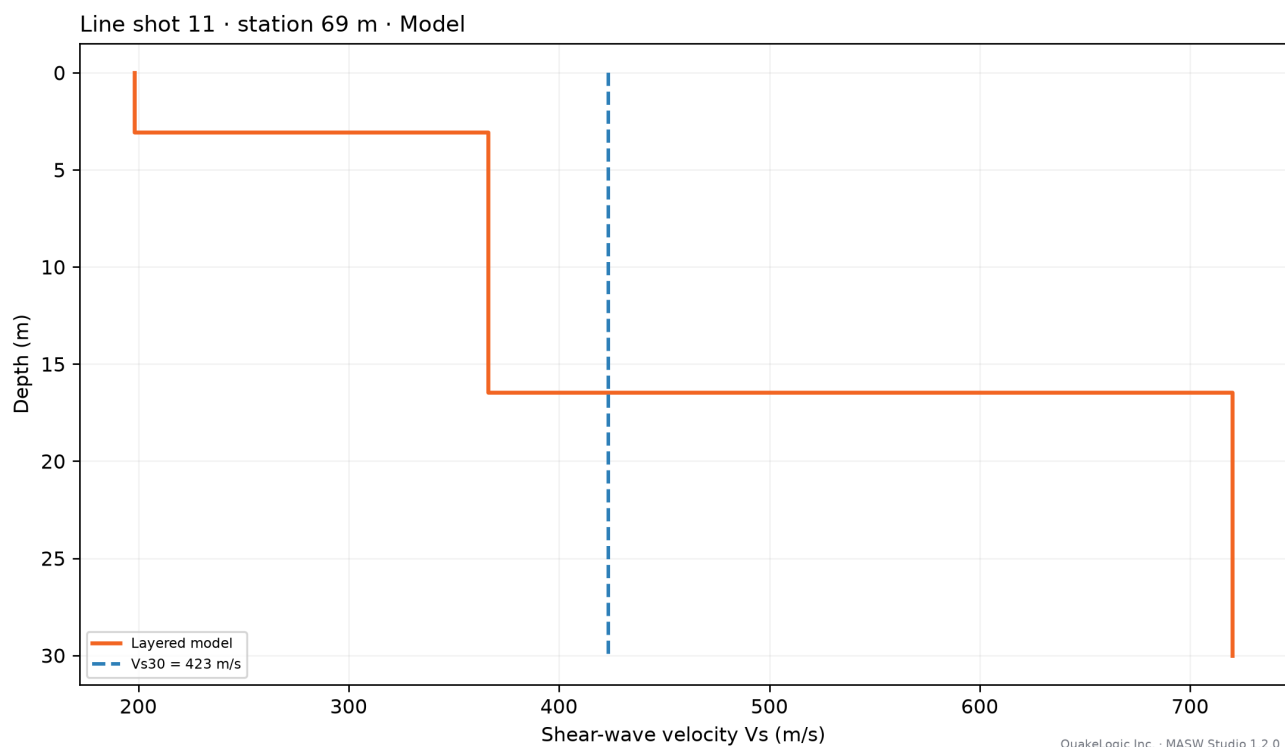
QuakeLogic Inc. · MASW Studio 1.2.0

Line shot 11 · station 69 m · Fft



QuakeLogic Inc. · MASW Studio 1.2.0





Layer	h (m)	V_s (m/s)	V_p (m/s)	ρ (kg/m ³)
1	3.08	198.2	475.7	1800.0
2	4.22	366.4	769.4	1950.0
3	0.4	366.4	806.1	1700.0
4	8.75	366.4	769.4	1950.0

Layer	h (m)	Vs (m/s)	Vp (m/s)	ρ (kg/m ³)
5	Half-space	720.0	1500.0	2200.0

Velocity metric and coverage

Vs30: 423.4 m/s

Declared coverage: 30 m. Travel-time harmonic average within user-declared interpretation depth. Half-space contribution, if present, is a model assumption, not measured depth resolution.

Line shot 12 · station 73 m

Synthetic 2D line · vertical component

SYNTHETIC VALIDATION DATA — not a field investigation.

Acquisition	Value
Channels / active	24 / 24
Samples / interval	2048 / 0.001 s
Time range	0 to 2.047 s
Source coordinate	44.0 m
Receiver coordinates (m)	50.0, 52.0, 54.0, 56.0, 58.0, 60.0, 62.0, 64.0, 66.0, 68.0, 70.0, 72.0, 74.0, 76.0, 78.0, 80.0, 82.0, 84.0, 86.0, 88.0, 90.0, 92.0, 94.0, 96.0
Original geometry units	METERS
Raw amplitudes	counts
Source checksum	Synthetic / derived: provenance retained in project

Reproducible processing

No signal preprocessing applied.

Time shifts (s): [0.0, 0.0]

Disabled/deleted channel indices: []

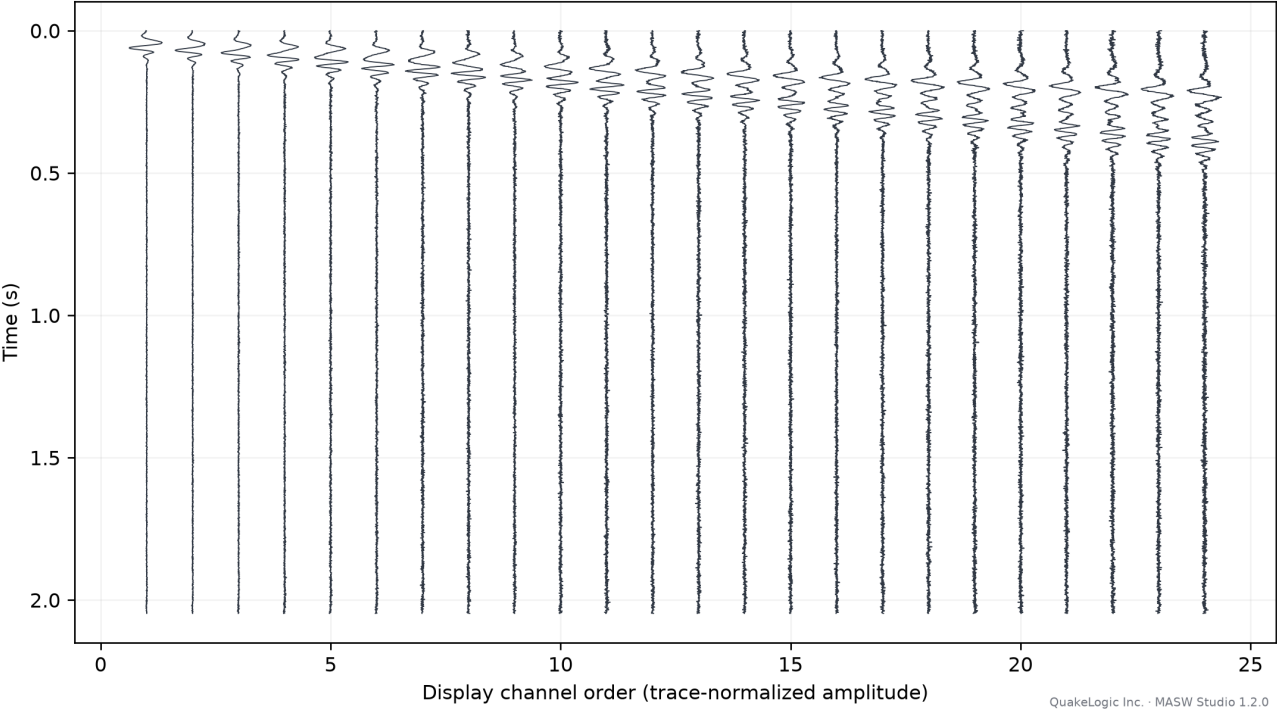
Spectrum and acquisition QC

{'f_min': 5, 'f_max': 80, 'df': 1, 'v_min': 80, 'v_max': 1000, 'dv': 5, 'k_count': 241, 'normalization': 'coherence'}

$\lambda < 2 \times$ largest receiver gap: spatial sampling caution. $\lambda >$ aperture: long-wavelength resolution caution. The region between is not a guarantee of reliable interpretation. Irregular spacing uses a conservative gap heuristic, not a strict Nyquist theorem.

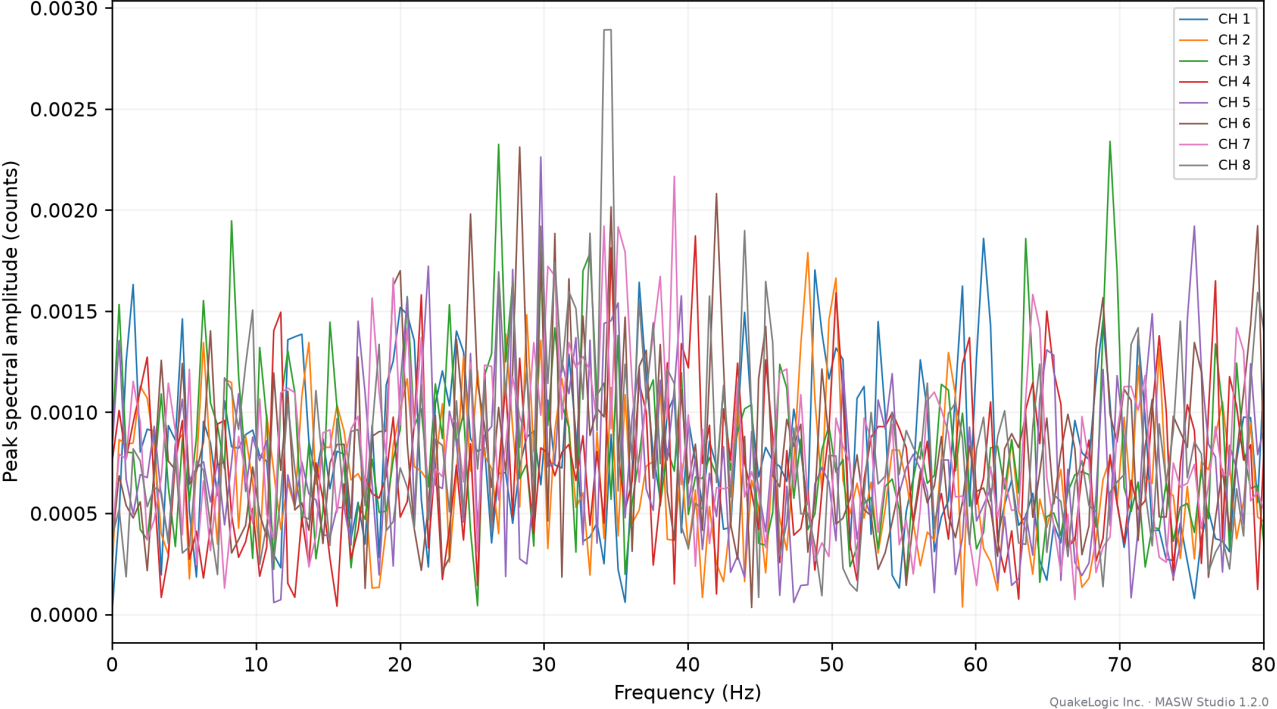
Aperture 46 m; largest active gap 2 m. Native Fourier resolution 0.4883 Hz.

Line shot 12 · station 73 m · Seismogram

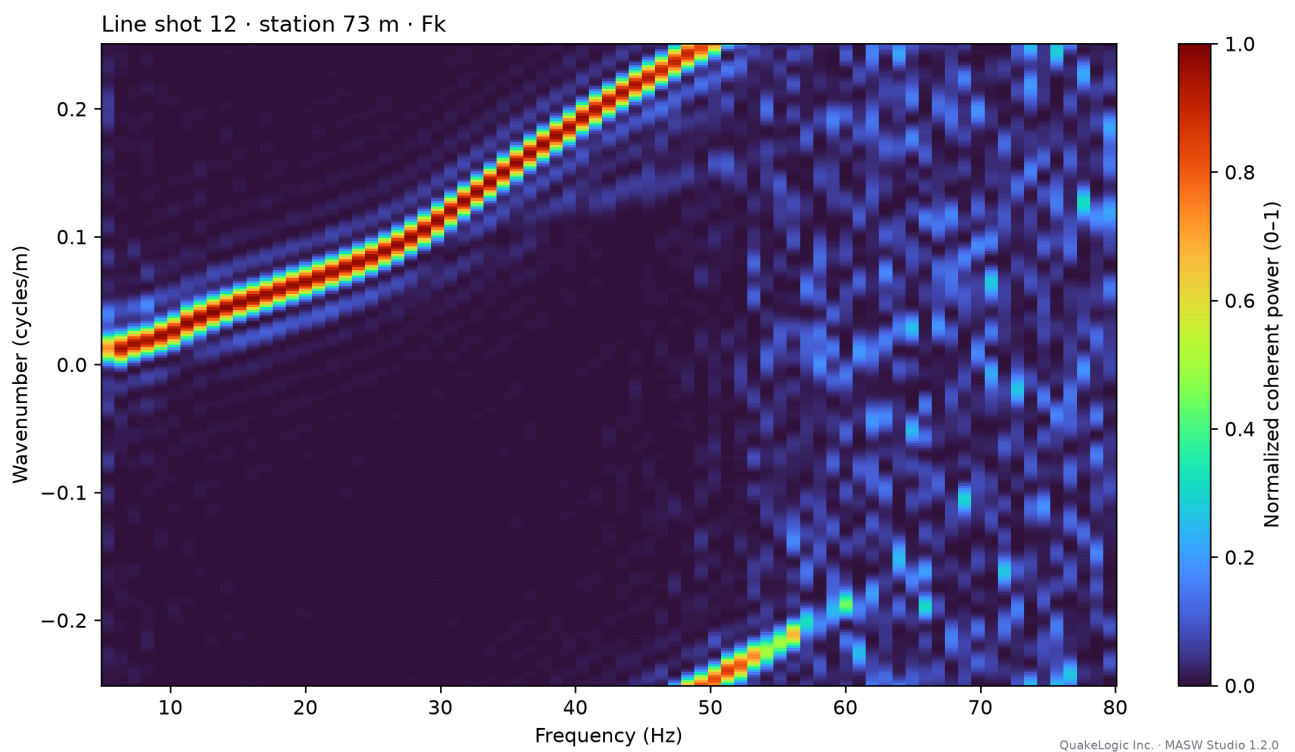
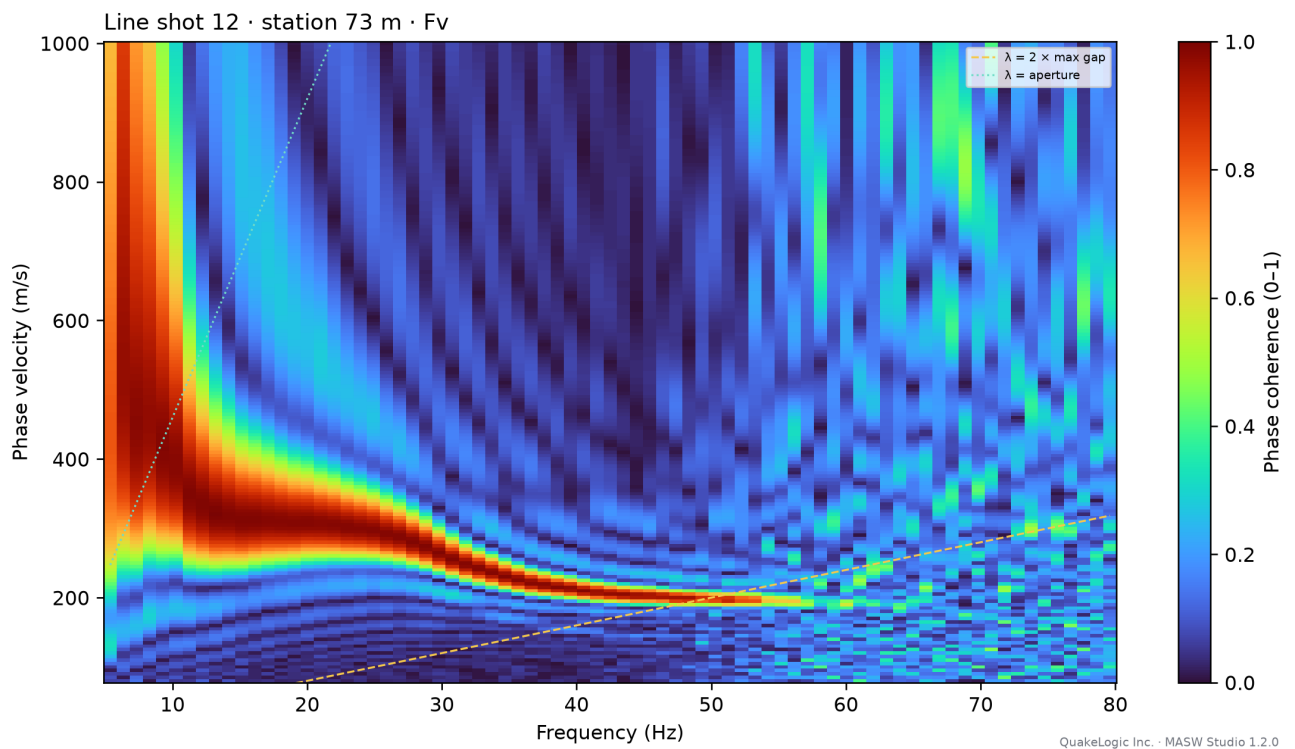


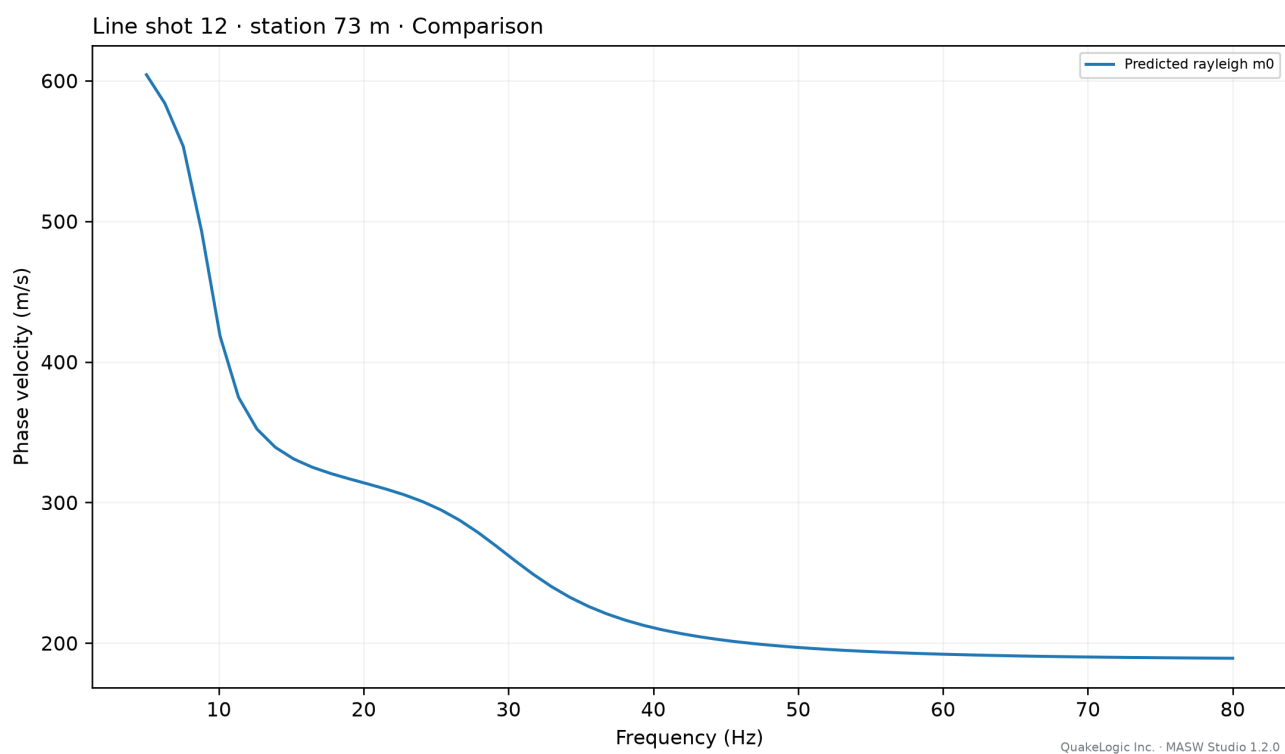
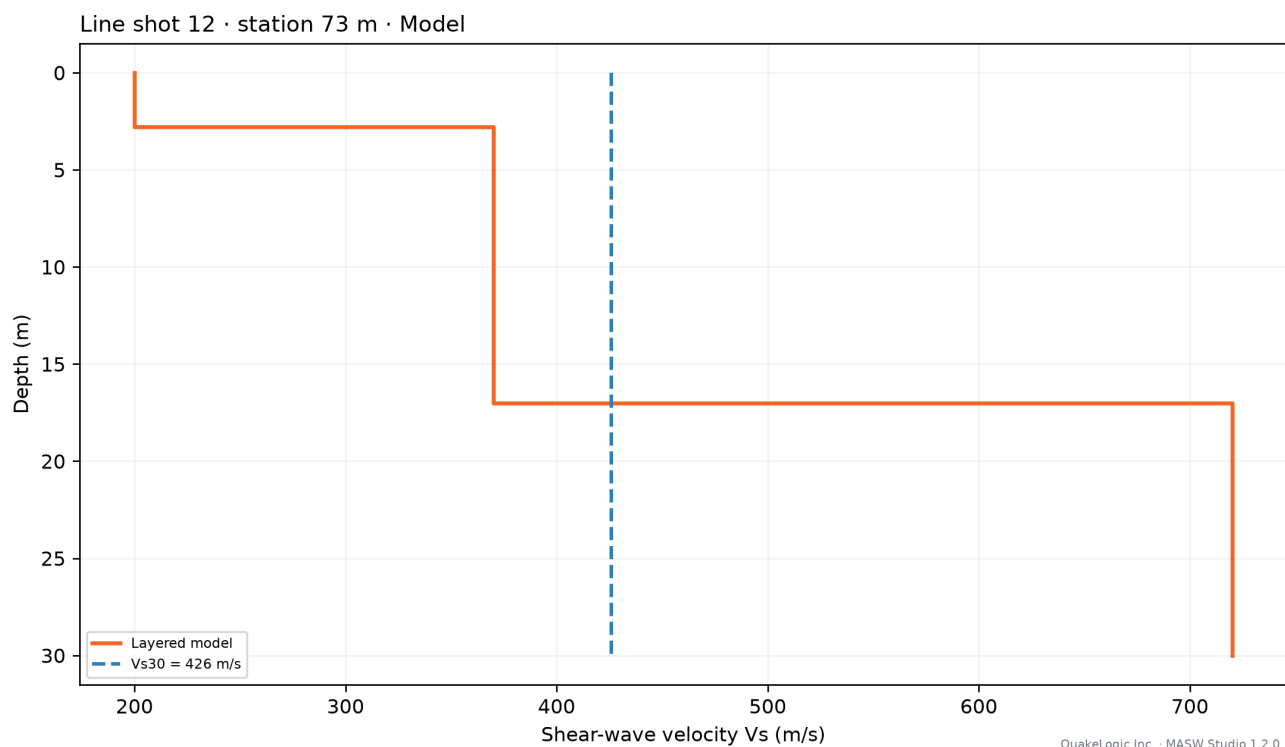
QuakeLogic Inc. · MASW Studio 1.2.0

Line shot 12 · station 73 m · Fft



QuakeLogic Inc. · MASW Studio 1.2.0





Layer	h (m)	V_s (m/s)	V_p (m/s)	ρ (kg/m ³)
1	2.8	200.0	480.0	1800.0
2	4.5	370.0	777.0	1950.0
3	0.4	370.0	814.0	1700.0
4	9.3	370.0	777.0	1950.0

Layer	h (m)	Vs (m/s)	Vp (m/s)	ρ (kg/m ³)
5	Half-space	720.0	1500.0	2200.0

Velocity metric and coverage

Vs30: 425.9 m/s

Declared coverage: 30 m. Travel-time harmonic average within user-declared interpretation depth. Half-space contribution, if present, is a model assumption, not measured depth resolution.

Scientific methods

F-V: phase-shift coherence; F-K: direct spatial Fourier power. Butterworth filters use second-order sections; zero-phase filtering is forward/backward. Forward modeling: disba 0.7.0, Dunkin matrix (Rayleigh), Thomson-Haskell SH (Love). Inversion: weighted bounded trust-region nonlinear least squares with fixed Vp and density.

References: Park, Miller & Xia (1999), Geophysics 64, 800-808, doi:10.1190/1.1444590. Xia, Miller & Park (1999), Geophysics 64, 691-700, doi:10.1190/1.1444578. Dunkin (1965), BSSA 55, 335-358. Haskell (1953), BSSA 43, 17-34. Pullan (1990), Geophysics 55, 1260-1271. See the shipped scientific-methods document for assumptions and limitations.