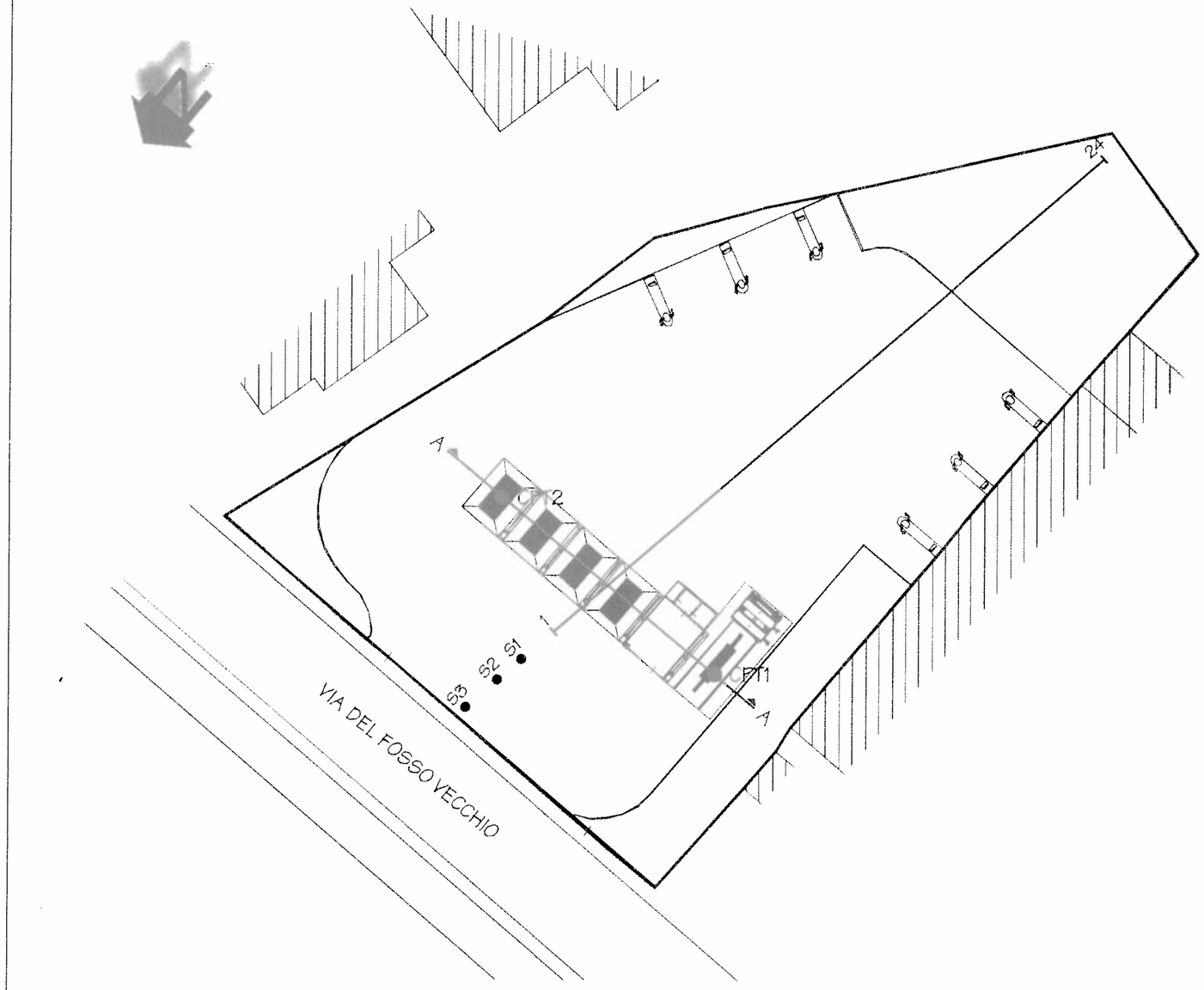
COMUNE DI CASCINA
(PROVINCIA DI PISA)

SCHEDE DEI DATI DI BASE

Numero:	565-567+M565
Località:	Via del Fosso Vecchio
Tipo e numero:	n. 3 prove penetrometriche statiche CPT n. 1 indagine sismica MASW
Fonte:	Comune di Cascina

PLANIMETRIA STATO DI PROGETTO

SCALA 1:500



LEGENDA

- Area in oggetto
- CPT1 Ubicazione prove penetrometriche
- 1 — 24 Traccia stendimento MASW
- S1 Posizione shot MASW
- A — A Traccia di sezione

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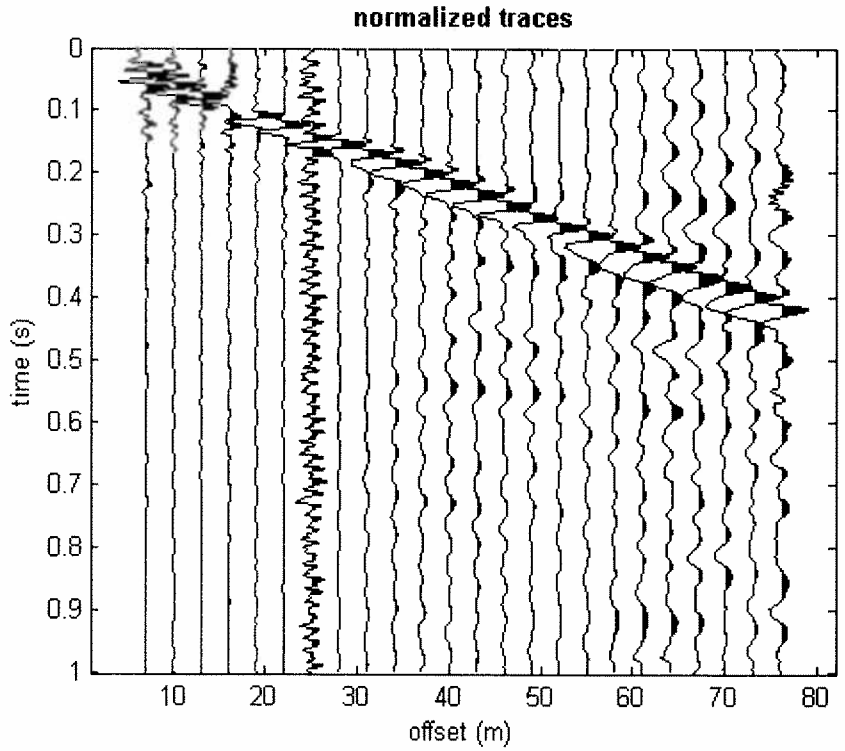
#1: uploading & processing (MASW analyses)

dataset: cascina 7 m bis.sgy
minimum offset: 7 m
geophone spacing: 3 m
sampling: 0.131 ms



utilities: flip traces, spectrum, movie, ?

data selection: activate, select, 20, cancel, save

refraction: quick refraction, upload, save, clear refraction

winMASW www.eliosoft.it ver. 4.1 Pro

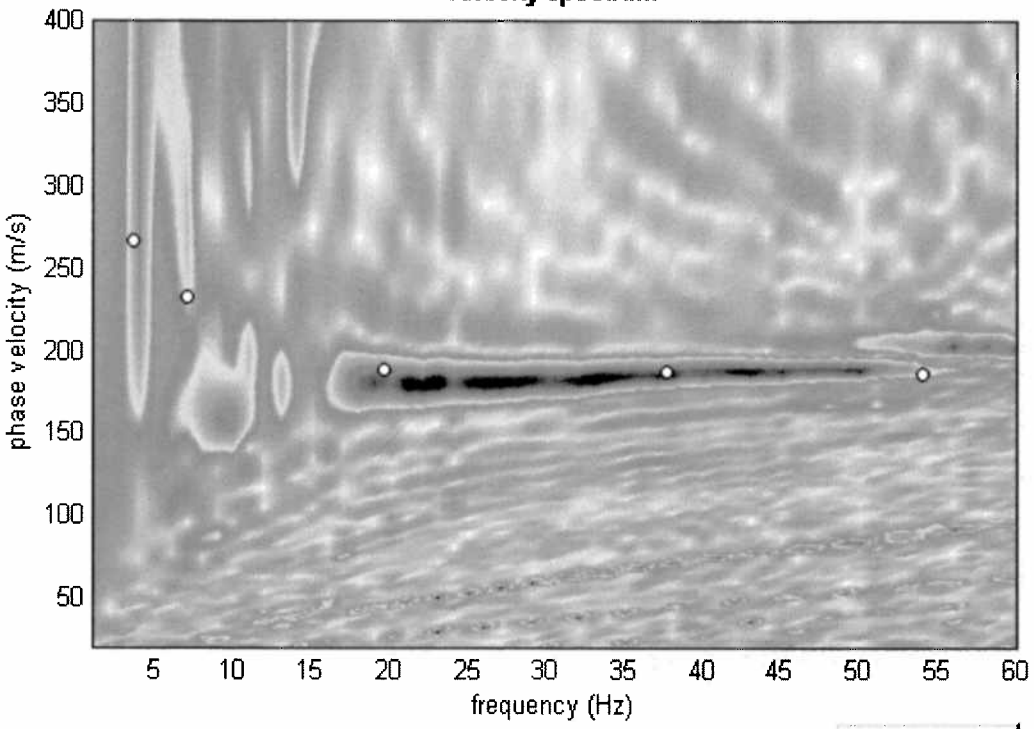
Attenuation analysis

#2: velocity spectrum, modelling & picking (MASW & ReMi analyses)

MASW: calculate spectrum, Tau - v

ReMi: upload ReMi spectrum

visualize curves: input curve, ?



explore spectrum

Cascina_Miracle_7m_ick.cdp

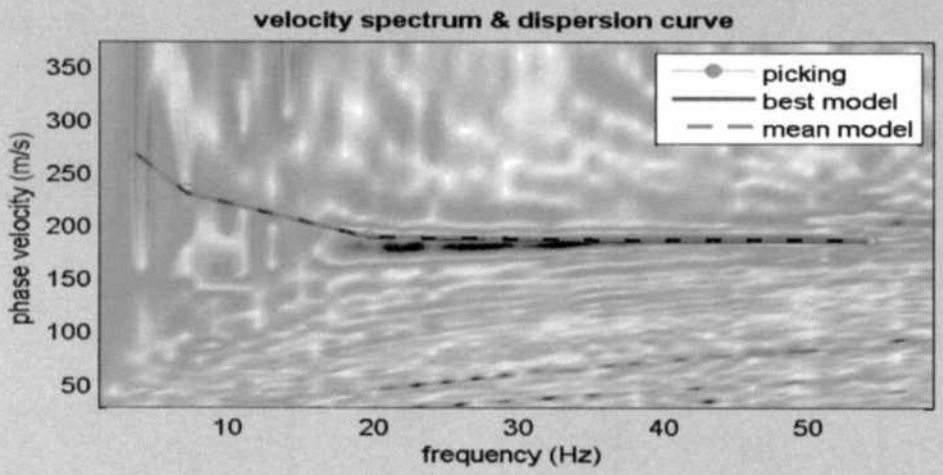
modelling: parameters, save model, upload model, 3, Rayleigh, eigen period, refresh, ?

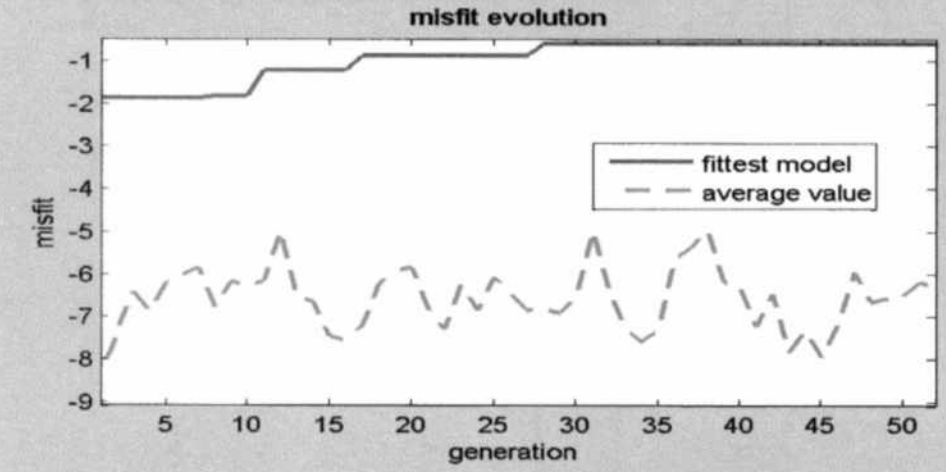
picking: fundamental, ?, use the right button to select the last point of the considered mode, save picking, ?, cancel picking

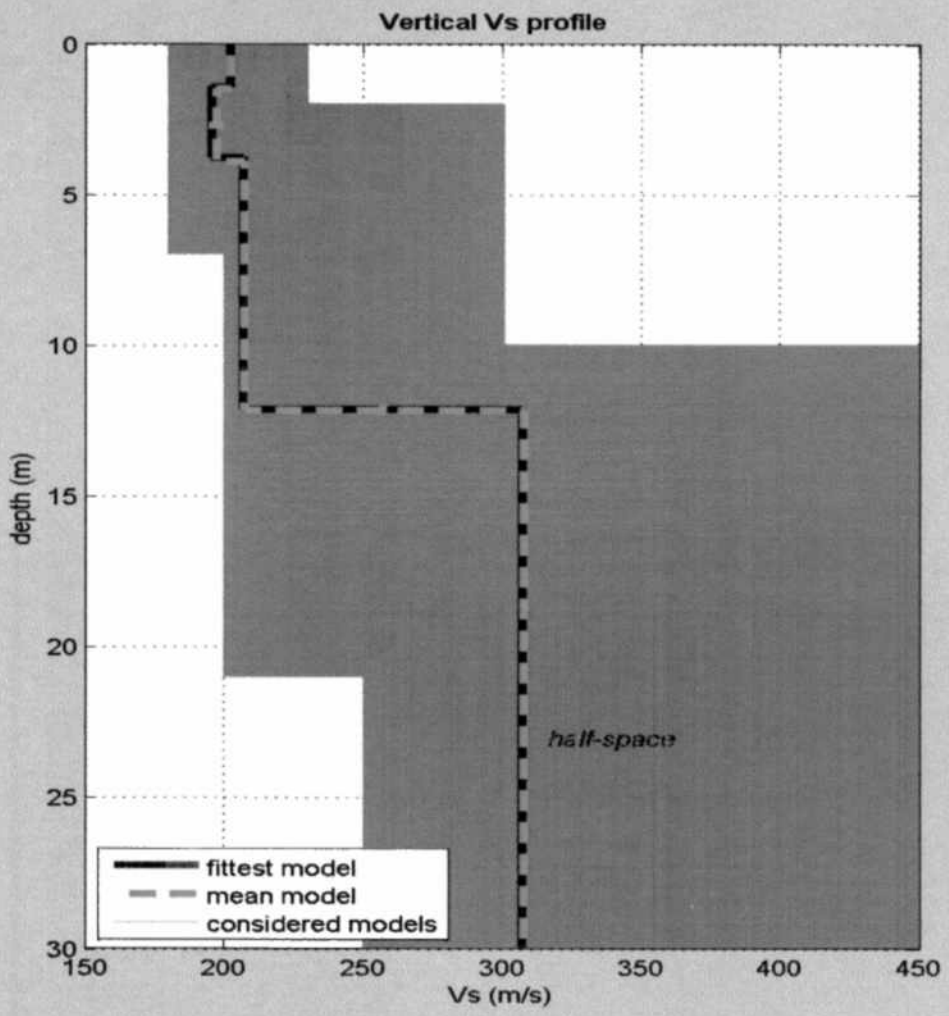
inversion

exit

MW27_M565



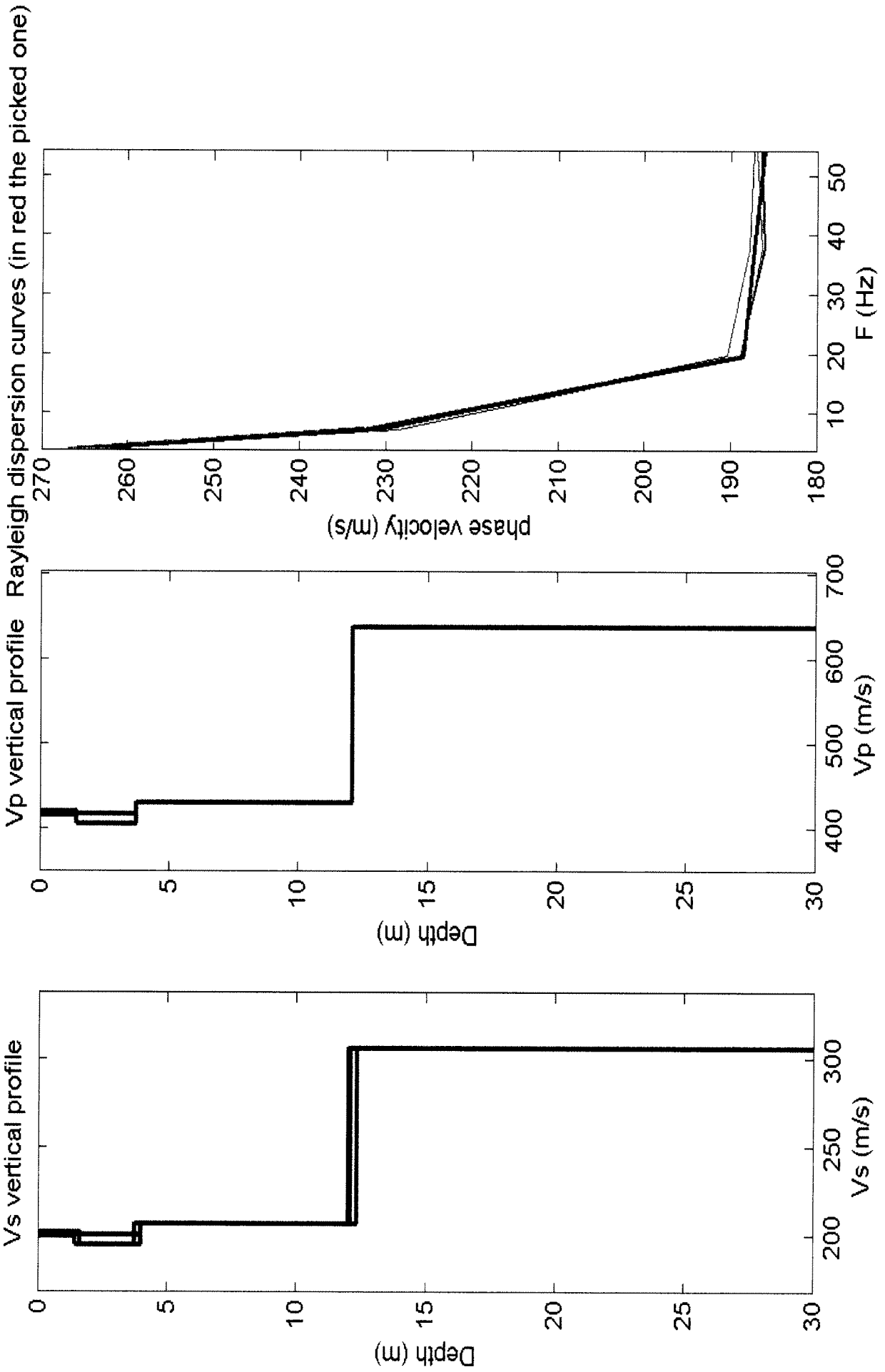




www.eliosoft.it
winMASW

dataset: cascina 7 m bis.sgy
dispersion curve: Cascina _Miracle _7m_pick.cdp
VS30 (best model): 255 m/s
VS30 (mean model): 255 m/s

MW27_M565


Vs vertical profile
Depth (m)
Vs (m/s)
Vp vertical profile
Depth (m)
Vp (m/s)
Rayleigh dispersion curves (in red the picked one)
phase velocity (m/s)
F (Hz)

ELABORAZIONE MASW

SECTION 1

dataset:	cascina 7 m bis.sgy
minimum offset (m):	7
geophone spacing (m):	3
sampling (ms):	0.131
Dispersion curve:	Cascina_Miracle_7m_pick.cdp
Number of individuals:	30
Number of generations:	41

Adopted search space (minimum Vs & thickness):	180	1	180	1	200	8	250
Adopted search space (maximum Vs & thickness):	230	3	230	4	300	14	450
Adopted Poisson values:	0.35		0.35		0.35		0.35

SECTION 2

Rayleigh wave analysis

Optimizing Vs & Thickness - generation: 1; average & best misfits:	-8.2564	-1.90220
Optimizing Vs & Thickness - generation: 2; average & best misfits:	-7.3210	-1.90220
Optimizing Vs & Thickness - generation: 3; average & best misfits:	-6.4355	-1.90220
Optimizing Vs & Thickness - generation: 4; average & best misfits:	-6.8951	-1.90220
Optimizing Vs & Thickness - generation: 5; average & best misfits:	-6.2145	-1.90220
Optimizing Vs & Thickness - generation: 6; average & best misfits:	-6.0371	-1.90220
Optimizing Vs & Thickness - generation: 7; average & best misfits:	-5.8689	-1.90220
Optimizing Vs & Thickness - generation: 8; average & best misfits:	-6.7850	-1.85630
Optimizing Vs & Thickness - generation: 9; average & best misfits:	-6.1853	-1.85630
Optimizing Vs & Thickness - generation: 10; average & best misfits:	-6.3126	-1.84120
Optimizing Vs & Thickness - generation: 11; average & best misfits:	-6.1771	-1.24450
Optimizing Vs & Thickness - generation: 12; average & best misfits:	-5.0133	-1.24450
Optimizing Vs & Thickness - generation: 13; average & best misfits:	-6.5473	-1.24450
Optimizing Vs & Thickness - generation: 14; average & best misfits:	-6.6621	-1.24450
Optimizing Vs & Thickness - generation: 15; average & best misfits:	-7.4719	-1.24450
Optimizing Vs & Thickness - generation: 16; average & best misfits:	-7.5612	-1.24450
Optimizing Vs & Thickness - generation: 17; average & best misfits:	-7.2048	-0.90256
Optimizing Vs & Thickness - generation: 18; average & best misfits:	-6.2558	-0.90256
Optimizing Vs & Thickness - generation: 19; average & best misfits:	-5.9310	-0.90256
Optimizing Vs & Thickness - generation: 20; average & best misfits:	-5.8574	-0.90256
Optimizing Vs & Thickness - generation: 21; average & best misfits:	-6.8164	-0.90256

Optimizing Vs & Thickness - generation: 22; average & best misfits: -7.3147 -0.90256
Optimizing Vs & Thickness - generation: 23; average & best misfits: -6.2549 -0.90256
Optimizing Vs & Thickness - generation: 24; average & best misfits: -6.8560 -0.90256
Optimizing Vs & Thickness - generation: 25; average & best misfits: -6.0844 -0.90256
Optimizing Vs & Thickness - generation: 26; average & best misfits: -6.4649 -0.90256
Optimizing Vs & Thickness - generation: 27; average & best misfits: -6.8574 -0.90256
Optimizing Vs & Thickness - generation: 28; average & best misfits: -6.8376 -0.62812
Optimizing Vs & Thickness - generation: 29; average & best misfits: -6.9175 -0.62812
Optimizing Vs & Thickness - generation: 30; average & best misfits: -6.5169 -0.62812
Optimizing Vs & Thickness - generation: 31; average & best misfits: -4.9984 -0.62812
Optimizing Vs & Thickness - generation: 32; average & best misfits: -6.4268 -0.62812
Optimizing Vs & Thickness - generation: 33; average & best misfits: -7.2912 -0.62812
Optimizing Vs & Thickness - generation: 34; average & best misfits: -7.5881 -0.62812
Optimizing Vs & Thickness - generation: 35; average & best misfits: -7.3034 -0.62812
Optimizing Vs & Thickness - generation: 36; average & best misfits: -5.6435 -0.62812
Optimizing Vs & Thickness - generation: 37; average & best misfits: -5.3850 -0.62812
Optimizing Vs & Thickness - generation: 38; average & best misfits: -4.9688 -0.62812
Optimizing Vs & Thickness - generation: 39; average & best misfits: -6.1912 -0.62812
Optimizing Vs & Thickness - generation: 40; average & best misfits: -6.3185 -0.62812
Optimizing Vs & Thickness - generation: 41; average & best misfits: -7.2499 -0.62812

Checking the new search space (for the finer search)

Now a finer search around the most promising search space area

Rayleigh wave analysis

Optimizing Vs & Thickness - generation: 1; average & best misfits: -6.4663 -0.62812
Optimizing Vs & Thickness - generation: 2; average & best misfits: -7.8330 -0.62812
Optimizing Vs & Thickness - generation: 3; average & best misfits: -7.3210 -0.62812
Optimizing Vs & Thickness - generation: 4; average & best misfits: -7.9643 -0.62812
Optimizing Vs & Thickness - generation: 5; average & best misfits: -7.1798 -0.62812
Optimizing Vs & Thickness - generation: 6; average & best misfits: -5.9742 -0.62812
Optimizing Vs & Thickness - generation: 7; average & best misfits: -6.6709 -0.62812
Optimizing Vs & Thickness - generation: 8; average & best misfits: -6.5785 -0.62812
Optimizing Vs & Thickness - generation: 9; average & best misfits: -6.5112 -0.62812
Optimizing Vs & Thickness - generation: 10; average & best misfits: -6.2002 -0.62812
Optimizing Vs & Thickness - generation: 11; average & best misfits: -6.3406 -0.62812

Model after the Vs & Thickness optimization (fixed Poisson values):

Vs (m/s):	202	195	207	307
Poisson:	0.35	0.35	0.35	0.35
Thickness (m):	1.4	2.4	8.3	

Number of models considered to calculate the average model: 3

RESULTS winMASW 4.1 Pro

Dataset: cascina 7 m bis.sgy

Analyzed curve: Cascina_Miracle_7m_pick.cdp

SECTION 3

MEAN MODEL

VS (m/s):	202	197	207	307
Standard deviations (m/s):	1	2	0	0
Thickness (m):	1.5	2.4	8.2	
Standard deviations (m):	0.1	0.1	0.2	

Approximate values for Vp, density & elastic moduli

Vp (m/s):	420	410	431	639
Density (g/cm^3):	1.84	1.84	1.85	1.95
Vp/Vs ratio:	2.08	2.08	2.08	2.08
Poisson:	0.35	0.35	0.35	0.35
Young modulus (MPa):	203	193	214	495
Sjear modulus (MPa):	75	71	79	183
Lamé (MPa):	175	166	185	428
Bulk modulus (MPa):	225	214	238	550

Fundamental mode

Mean model

f(Hz)	VR(m/s)
3.64271	267.124
7.08437	230.2368
19.6219	189.5008
37.6906	186.8947
54.0385	187.1045

SECTION 4

BEST MODEL

Vs (m/s):	202.2058	195.1641	206.8507	306.6888
thickness (m):	1.4358	2.3565	8.3376	

Approximate values for Vp, density & elastic moduli

Vp (m/s):	421	406	431	638
Density (g/cm^3):	1.84	1.84	1.85	1.95
Vp/Vs ratio:	2.08	2.08	2.08	2.08
Poisson:	0.35	0.35	0.35	0.35
Young modulus (MPa):	203	189	214	95
Shear modulus (MPa):	75	70	79	183
Lamé (MPa):	176	163	185	425
Bulk modulus (MPa):	227	210	238	547

dispersion curve (frequency - Rayleigh phase velocity)

Fundamental mode)

Best model

f(Hz)	VR(m/s)
3.64271	266.8494
7.08437	230.1688
19.6219	188.9338
37.6906	186.0334
54.0385	186.3933

SECTION 5

Maximum penetration depth according to the "Steady State Rayleigh Method": 29 m

Inversion quality: very good

VS5 (mean model): 201 m/s
VS5 (best model): 200 m/s

VS20 (mean model): 235 m/s
VS20 (best model): 235 m/s

VS30 (mean model): 255 m/s
VS30 (best model): 255 m/s

winMASW 4.1 Pro
Surface Wave Analysis
via MASW - Multichannel Analysis of Surface Waves