

RISULTATI INDAGINE MASW
Ristrutturazione del Podere Il Pozzo, Montegemoli, Comune di Pomarance (Pi)
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dispersion curve: number of frequency-velocity points=7

dataset: 5 metri.sgy

minimum offset (m): 5

geophone spacing (m): 2

sampling (ms): 0.131

Dispersion curve: picking 5 metri.cdp

Number of individuals: 30

Number of generations: 41

Adopted search space (minimum Vs & thickness): 200 1 200 2 210 3 340 6 500

Adopted search space (maximum Vs & thickness): 270 3 280 4 420 7 600 10 900

Adopted Poisson values: 0.35 0.35 0.25 0.25 0.25

Rayleigh wave analysis

Optimizing Vs & Thickness - generation: 1; average & best misfits: -72.3352	-37.8098
Optimizing Vs & Thickness - generation: 2; average & best misfits: -61.2135	-27.4755
Optimizing Vs & Thickness - generation: 3; average & best misfits: -47.7352	-12.2354
Optimizing Vs & Thickness - generation: 4; average & best misfits: -35.5086	-11.228
Optimizing Vs & Thickness - generation: 5; average & best misfits: -32.9267	-9.00248
Optimizing Vs & Thickness - generation: 6; average & best misfits: -27.8644	-9.00248
Optimizing Vs & Thickness - generation: 7; average & best misfits: -25.471	-6.35279
Optimizing Vs & Thickness - generation: 8; average & best misfits: -24.9829	-5.94592
Optimizing Vs & Thickness - generation: 9; average & best misfits: -23.8798	-5.94592
Optimizing Vs & Thickness - generation: 10; average & best misfits: -18.0122	-3.57869
Optimizing Vs & Thickness - generation: 11; average & best misfits: -19.995	-3.57869
Optimizing Vs & Thickness - generation: 12; average & best misfits: -26.0542	-3.11201
Optimizing Vs & Thickness - generation: 13; average & best misfits: -22.4841	-3.11201
Optimizing Vs & Thickness - generation: 14; average & best misfits: -22.4085	-3.11201
Optimizing Vs & Thickness - generation: 15; average & best misfits: -23.0184	-3.11201
Optimizing Vs & Thickness - generation: 16; average & best misfits: -23.0205	-3.11201
Optimizing Vs & Thickness - generation: 17; average & best misfits: -22.0659	-3.11201
Optimizing Vs & Thickness - generation: 18; average & best misfits: -18.1169	-3.11201
Optimizing Vs & Thickness - generation: 19; average & best misfits: -22.4236	-3.11201
Optimizing Vs & Thickness - generation: 20; average & best misfits: -21.983	-3.11201
Optimizing Vs & Thickness - generation: 21; average & best misfits: -22.6896	-2.44036
Optimizing Vs & Thickness - generation: 22; average & best misfits: -20.5874	-2.44036
Optimizing Vs & Thickness - generation: 23; average & best misfits: -23.4161	-2.44036
Optimizing Vs & Thickness - generation: 24; average & best misfits: -21.7723	-2.44036
Optimizing Vs & Thickness - generation: 25; average & best misfits: -26.2477	-2.44036
Optimizing Vs & Thickness - generation: 26; average & best misfits: -27.9352	-2.44036
Optimizing Vs & Thickness - generation: 27; average & best misfits: -25.3932	-2.44036
Optimizing Vs & Thickness - generation: 28; average & best misfits: -20.2405	-2.44036
Optimizing Vs & Thickness - generation: 29; average & best misfits: -24.1051	-2.44036
Optimizing Vs & Thickness - generation: 30; average & best misfits: -17.6143	-2.44036
Optimizing Vs & Thickness - generation: 31; average & best misfits: -16.6428	-2.44036
Optimizing Vs & Thickness - generation: 32; average & best misfits: -21.8972	-2.44036
Optimizing Vs & Thickness - generation: 33; average & best misfits: -22.5622	-2.44036
Optimizing Vs & Thickness - generation: 34; average & best misfits: -22.8446	-2.44036
Optimizing Vs & Thickness - generation: 35; average & best misfits: -27.5227	-2.44036
Optimizing Vs & Thickness - generation: 36; average & best misfits: -23.0716	-2.44036
Optimizing Vs & Thickness - generation: 37; average & best misfits: -22.4277	-2.44036
Optimizing Vs & Thickness - generation: 38; average & best misfits: -24.4529	-2.44036
Optimizing Vs & Thickness - generation: 39; average & best misfits: -28.2141	-2.44036
Optimizing Vs & Thickness - generation: 40; average & best misfits: -18.4342	-2.44036
Optimizing Vs & Thickness - generation: 41; average & best misfits: -18.5805	-2.44036

Rayleigh wave analysis

Optimizing Vs & Thickness - generation: 1; average & best misfits: -14.1348	-2.44036
Optimizing Vs & Thickness - generation: 2; average & best misfits: -18.5647	-2.44036
Optimizing Vs & Thickness - generation: 3; average & best misfits: -23.2007	-2.44036
Optimizing Vs & Thickness - generation: 4; average & best misfits: -24.6835	-2.44036
Optimizing Vs & Thickness - generation: 5; average & best misfits: -21.8924	-2.44036
Optimizing Vs & Thickness - generation: 6; average & best misfits: -20.1989	-2.44036
Optimizing Vs & Thickness - generation: 7; average & best misfits: -22.6305	-2.44036
Optimizing Vs & Thickness - generation: 8; average & best misfits: -19.7292	-2.44036
Optimizing Vs & Thickness - generation: 9; average & best misfits: -19.3995	-2.44036
Optimizing Vs & Thickness - generation: 10; average & best misfits: -19.8032	-2.44036
Optimizing Vs & Thickness - generation: 11; average & best misfits: -21.8714	-2.44036

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

Vs (m/s): 217 253 405 549 900

Poisson: 0.35 0.35 0.25 0.25 0.25

Thickness (m): 1.7 3.9 4.7 9.2

Number of models considered to calculate the average model: 1

RESULTS winMASW Pro
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MEAN MODEL

VS (m/s): 217 253 405 549 900

Standard deviations (m/s): 0 0 0 0 0

Thickness (m): 1.7 3.9 4.7 9.2

Standard deviations (m): 0.0 0.0 0.0 0.0

Approximate values for Vp, density & elastic moduli

Vp (m/s): 452 527 701 951 1559

Density (gr/cm3): 1.86 1.90 1.97 2.04 2.16

Vp/Vs ratio: 2.08 2.08 1.73 1.73 1.73

Poisson: 0.35 0.35 0.25 0.25 0.25

Young modulus (MPa): 237 328 807 1539 4378

Shear modulus (MPa): 88 122 323 615 1751

Lamè (MPa): 205 284 321 616 1752

Bulk modulus (MPa): 263 365 537 1026 2919

Fundamental mode - Mean model

f(Hz)	VR(m/s)
6.73621	640.9697
8.47886	574.7686
10.9476	481.3749
16.466	333.6497
25.4697	248.3208
35.1994	229.1741
48.5597	219.224

BEST MODEL

Vs (m/s): 216.6987 253.3343 405.0514 549.4164 900

Thickness (m): 1.6739 3.8705 4.6592 9.1982

Approximate values for Vp, density & elastic moduli

Vp (m/s): 451 527 702 952 1559

Density (gr/cm3): 1.86 1.90 1.97 2.04 2.16

Vp/Vs ratio: 2.08 2.08 1.73 1.73 1.73

Poisson: 0.35 0.35 0.25 0.25 0.25

Young modulus (MPa): 237 328 807 1540 4378

Shear modulus (MPa): 88 122 323 615 1751

Lamè (MPa): 203 284 324 620 1752

Bulk modulus (MPa): 262 365 539 1030 2919

Fundamental mode - Best model

F(Hz)	VR(m/s)
6.73621	641.1947
8.47886	575.0746
10.9476	481.7347
16.466	334.0469
25.4697	248.5696
35.1994	229.2895
48.5597	219.1952

Maximum penetration depth according to the "Steady State Rayleigh Method": 38 m

Inversion quality: very good

VS5 (mean model): 240 m/s

VSeq (mean model): 377.82057 m/s

VS5 (best model): 240 m/s

VSeq (best model): 378.59177 m/s

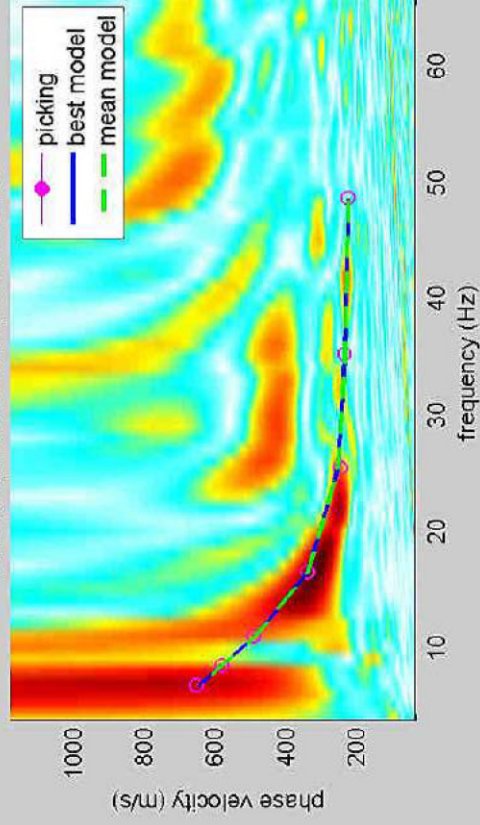
winMASW 4.2 Pro

Surface Wave Analysis

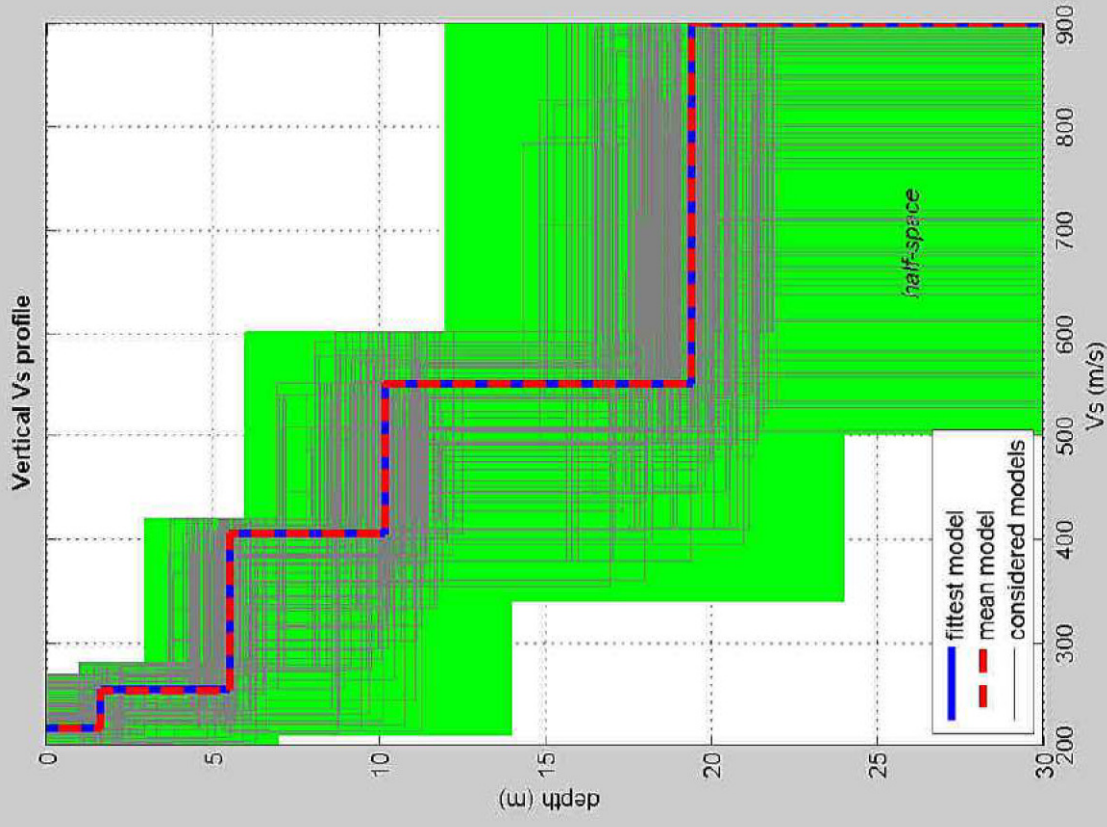
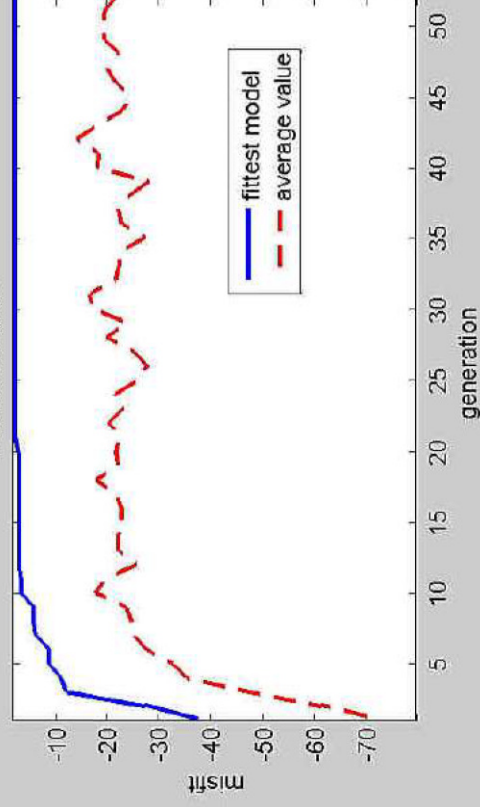
via MASW - Multichannel Analysis of Surface Waves

www.eliosoft.it

velocity spectrum & dispersion curve



misfit evolution



dataset: 5 metri.sgy

dispersion curve: picking 5 metri.cdp

VS30 (best model): 476 m/s

VS30 (mean model): 476 m/s

