

RISULTATI INDAGINE MASW

Progetto per la realizzazione di una pista ciclopedonale laterale la strada comunale Montecerboli - Larderello Settore nord - Comune di Pomarance (Pi)

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): 130 2 130 6 360 10 550
 Adopted search space (maximum Vs & thickness): 220 4 450 10 610 16 800
 Adopted Poisson values: 0.35 0.35 0.35 0.35
 Output folder: C:\WINMAS~1\output

Rayleigh wave analysis

Optimizing Vs & Thickness - generation: 1; average & best misfits:	-68.3321	-41.7422
Optimizing Vs & Thickness - generation: 2; average & best misfits:	-55.6922	-25.7277
Optimizing Vs & Thickness - generation: 3; average & best misfits:	-45.1633	-25.7277
Optimizing Vs & Thickness - generation: 4; average & best misfits:	-42.2173	-20.6798
Optimizing Vs & Thickness - generation: 5; average & best misfits:	-42.3153	-15.201
Optimizing Vs & Thickness - generation: 6; average & best misfits:	-37.02	-15.201
Optimizing Vs & Thickness - generation: 7; average & best misfits:	-37.718	-15.201
Optimizing Vs & Thickness - generation: 8; average & best misfits:	-38.7647	-10.9817
Optimizing Vs & Thickness - generation: 9; average & best misfits:	-36.8773	-10.9817
Optimizing Vs & Thickness - generation: 10; average & best misfits:	-29.0411	-10.2113
Optimizing Vs & Thickness - generation: 11; average & best misfits:	-29.5457	-10.2113
Optimizing Vs & Thickness - generation: 12; average & best misfits:	-33.0085	-10.2113
Optimizing Vs & Thickness - generation: 13; average & best misfits:	-29.036	-10.2113
Optimizing Vs & Thickness - generation: 14; average & best misfits:	-26.6422	-9.27088
Optimizing Vs & Thickness - generation: 15; average & best misfits:	-27.2248	-9.27088
Optimizing Vs & Thickness - generation: 16; average & best misfits:	-24.6088	-6.96104
Optimizing Vs & Thickness - generation: 17; average & best misfits:	-29.7455	-6.96104
Optimizing Vs & Thickness - generation: 18; average & best misfits:	-27.5912	-6.96104
Optimizing Vs & Thickness - generation: 19; average & best misfits:	-23.1192	-6.96104
Optimizing Vs & Thickness - generation: 20; average & best misfits:	-26.1611	-6.96104
Optimizing Vs & Thickness - generation: 21; average & best misfits:	-23.1834	-6.96104
Optimizing Vs & Thickness - generation: 22; average & best misfits:	-24.5272	-6.96104
Optimizing Vs & Thickness - generation: 23; average & best misfits:	-24.7128	-6.96104
Optimizing Vs & Thickness - generation: 24; average & best misfits:	-28.289	-6.96104
Optimizing Vs & Thickness - generation: 25; average & best misfits:	-31.9403	-6.96104
Optimizing Vs & Thickness - generation: 26; average & best misfits:	-27.4702	-6.93739
Optimizing Vs & Thickness - generation: 27; average & best misfits:	-27.2463	-6.93739
Optimizing Vs & Thickness - generation: 28; average & best misfits:	-22.2307	-6.93739
Optimizing Vs & Thickness - generation: 29; average & best misfits:	-27.6091	-6.93739
Optimizing Vs & Thickness - generation: 30; average & best misfits:	-27.6665	-6.93739
Optimizing Vs & Thickness - generation: 31; average & best misfits:	-28.0556	-6.93739
Optimizing Vs & Thickness - generation: 32; average & best misfits:	-25.0717	-5.54006
Optimizing Vs & Thickness - generation: 33; average & best misfits:	-21.9573	-5.54006
Optimizing Vs & Thickness - generation: 34; average & best misfits:	-28.0808	-5.54006
Optimizing Vs & Thickness - generation: 35; average & best misfits:	-25.5173	-5.54006
Optimizing Vs & Thickness - generation: 36; average & best misfits:	-24.8714	-5.46919
Optimizing Vs & Thickness - generation: 37; average & best misfits:	-23.4846	-5.46919
Optimizing Vs & Thickness - generation: 38; average & best misfits:	-26.3548	-5.46919
Optimizing Vs & Thickness - generation: 39; average & best misfits:	-24.0011	-5.46919
Optimizing Vs & Thickness - generation: 40; average & best misfits:	-21.2461	-5.46919
Optimizing Vs & Thickness - generation: 41; average & best misfits:	-26.7195	-5.46919

Rayleigh wave analysis

Optimizing Vs & Thickness - generation: 1; average & best misfits:	-26.9433	-4.71655
Optimizing Vs & Thickness - generation: 2; average & best misfits:	-22.5943	-4.71655
Optimizing Vs & Thickness - generation: 3; average & best misfits:	-23.8128	-4.71655
Optimizing Vs & Thickness - generation: 4; average & best misfits:	-21.4827	-4.71655
Optimizing Vs & Thickness - generation: 5; average & best misfits:	-24.6644	-4.71655
Optimizing Vs & Thickness - generation: 6; average & best misfits:	-26.5715	-4.71655
Optimizing Vs & Thickness - generation: 7; average & best misfits:	-26.1174	-4.71655
Optimizing Vs & Thickness - generation: 8; average & best misfits:	-24.1743	-4.71655
Optimizing Vs & Thickness - generation: 9; average & best misfits:	-24.7071	-4.71655
Optimizing Vs & Thickness - generation: 10; average & best misfits:	-18.7793	-4.71655
Optimizing Vs & Thickness - generation: 11; average & best misfits:	-22.5833	-4.65164

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

Vs (m/s): 186 384 610 719

Poisson: 0.35 0.35 0.35 0.35

Thickness (m): 4 8.5 14

Number of models considered to calculate the average model: 11

RESULTS winMASW Pro
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MEAN MODEL

VS (m/s): 185 382 603 720

Standard deviations (m/s): 3 6 15 13

Thickness (m): 3.9 8.4 13.7

Standard deviations (m): 0.1 0.2 1.3

Approximate values for Vp, density & elastic moduli

Vp (m/s): 385 795 1255 1499

Density (gr/cm3): 1.82 2.00 2.11 2.15

Vp/Vs ratio: 2.08 2.08 2.08 2.08

Poisson: 0.35 0.35 0.35 0.35

Young modulus (MPa): 168 787 2070 3013

Shear modulus (MPa): 62 292 767 1116

Lamé (MPa): 145 680 1788 2605

Bulk modulus (MPa): 187 874 2299 3348

Fundamental mode - Mean model

f(Hz)	VR(m/s)
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5.71967	585.7075
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8.62408	510.7389
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13.852	359.6395
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19.3704	258.0004
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31.5689	182.1761
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49.1406	174.0524
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BEST MODEL

Vs (m/s): 186.309 384.1831 610 719.1601

thickness (m): 4 8.5337 13.7829

Approximate values for Vp, density & elastic moduli

Vp (m/s): 388 800 1270 1497

Density (gr/cm3): 1.82 2.00 2.11 2.15

Vp/Vs ratio: 2.09 2.08 2.08 2.08

Poisson: 0.35 0.35 0.35 0.35

Young modulus (MPa): 171 796 2122 3004

Shear modulus (MPa): 63 295 786 1112

Lamé (MPa): 148 690 1835 2598

Bulk modulus (MPa): 191 887 2359 3339

Fundamental mode - Best model

F(Hz)	VR(m/s)
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5.71967	585.3016
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8.62408	511.2356
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13.852	358.9964
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19.3704	256.4485
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31.5689	183.083
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49.1406	175.2304
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Maximum penetration depth according to the "Steady State Rayleigh Method": 41 m

Inversion quality: very good

VS5 (mean model): 208 m/s

VS20 (mean model): 357 m/s

VS30 (mean model): 420 m/s

VS5 (best model): 207 m/s

VS20 (best model): 357 m/s

VS30 (best model): 420 m/s

Possible Soil Type: B

(based on the mean model)

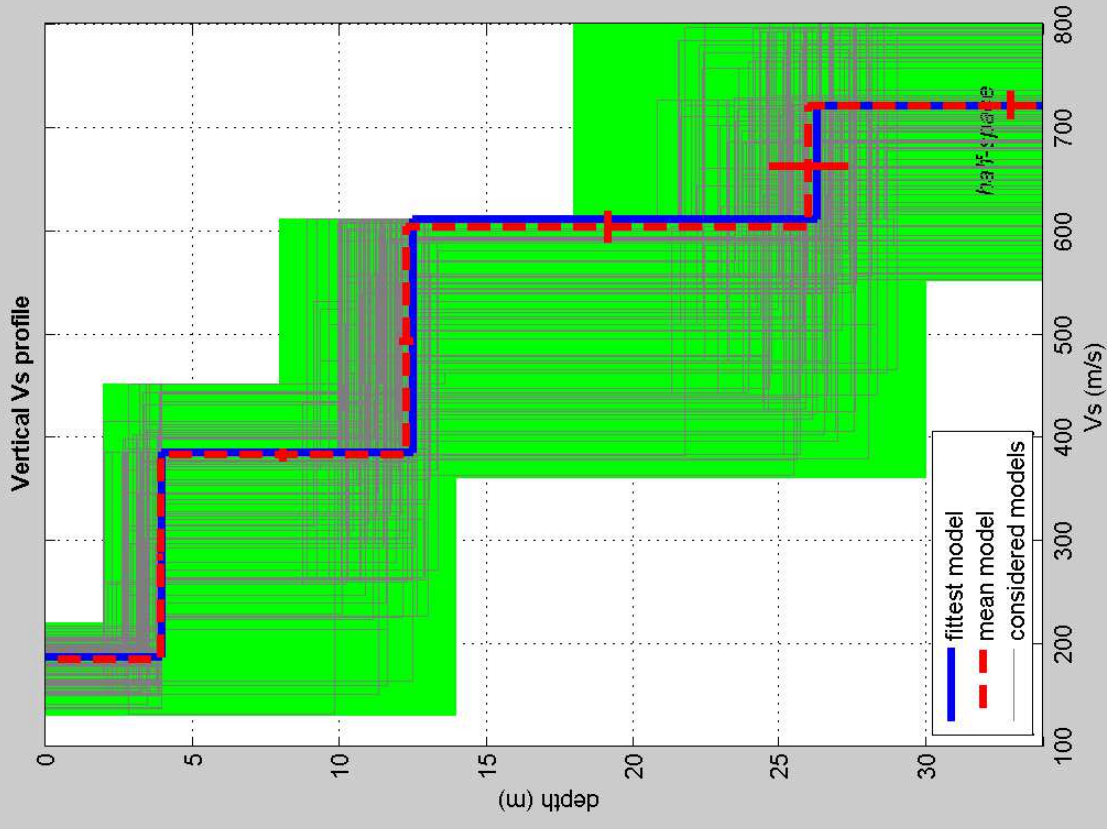
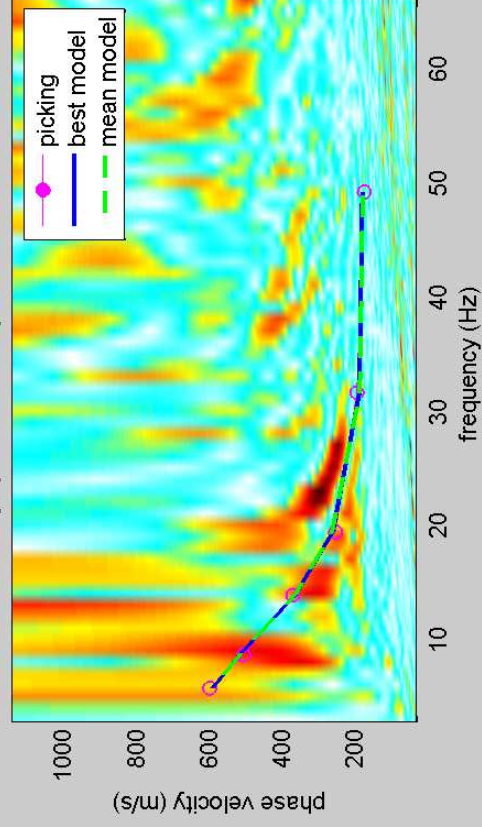
winMASW 4.2 Pro

Surface Wave Analysis

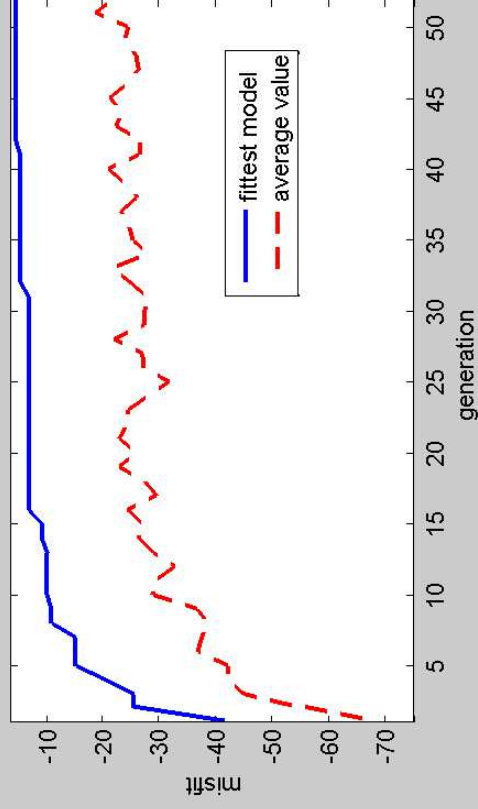
via MASW - Multichannel Analysis of Surface Waves

www.eliosoft.it

velocity spectrum & dispersion curve



misfit evolution



dataset: 5 metri.sgy

dispersion curve: picking 5 metri.cdp

VS30 (best model): 420 m/s

VS30 (mean model): 420 m/s

