

RISULTATI INDAGINE MASW

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

dataset: 2 metri.sgy
 minimum offset (m): 2
 geophone spacing (m): 2
 sampling (ms): 0.131
 dispersion curve: picking 2 metri.cdp
 number of individuals: 30
 number of generations: 41

Adopted search space (minimum Vs & thickness): 230 2 230 2 280 5 310 6 440
 Adopted search space (maximum Vs & thickness): 320 4 360 4 400 9 520 12 800
 Adopted Poisson values: 0.35 0.35 0.35 0.35 0.35

Rayleigh wave analysis

Optimizing Vs & Thickness - generation: 1; average & best misfits: -36.0424	-20.4117
Optimizing Vs & Thickness - generation: 2; average & best misfits: -30.7241	-14.4204
Optimizing Vs & Thickness - generation: 3; average & best misfits: -26.7613	-10.5462
Optimizing Vs & Thickness - generation: 4; average & best misfits: -21.7294	-8.44811
Optimizing Vs & Thickness - generation: 5; average & best misfits: -22.8263	-8.44811
Optimizing Vs & Thickness - generation: 6; average & best misfits: -20.7124	-7.68607
Optimizing Vs & Thickness - generation: 7; average & best misfits: -19.3555	-7.68607
Optimizing Vs & Thickness - generation: 8; average & best misfits: -18.7632	-5.5832
Optimizing Vs & Thickness - generation: 9; average & best misfits: -20.3824	-5.5832
Optimizing Vs & Thickness - generation: 10; average & best misfits: -17.8401	-5.5832
Optimizing Vs & Thickness - generation: 11; average & best misfits: -17.5811	-5.5832
Optimizing Vs & Thickness - generation: 12; average & best misfits: -19.4412	-5.5832
Optimizing Vs & Thickness - generation: 13; average & best misfits: -19.3204	-5.5832
Optimizing Vs & Thickness - generation: 14; average & best misfits: -19.5102	-5.5832
Optimizing Vs & Thickness - generation: 15; average & best misfits: -18.0581	-5.5832
Optimizing Vs & Thickness - generation: 16; average & best misfits: -19.7148	-5.5832
Optimizing Vs & Thickness - generation: 17; average & best misfits: -19.4979	-5.5832
Optimizing Vs & Thickness - generation: 18; average & best misfits: -18.5046	-5.5832
Optimizing Vs & Thickness - generation: 19; average & best misfits: -20.3709	-5.5832
Optimizing Vs & Thickness - generation: 20; average & best misfits: -18.5631	-5.5832
Optimizing Vs & Thickness - generation: 21; average & best misfits: -18.2368	-5.5832
Optimizing Vs & Thickness - generation: 22; average & best misfits: -18.1704	-5.5832
Optimizing Vs & Thickness - generation: 23; average & best misfits: -18.159	-5.5832
Optimizing Vs & Thickness - generation: 24; average & best misfits: -17.3787	-5.5832
Optimizing Vs & Thickness - generation: 25; average & best misfits: -17.862	-5.5832
Optimizing Vs & Thickness - generation: 26; average & best misfits: -19.2421	-5.5832
Optimizing Vs & Thickness - generation: 27; average & best misfits: -20.0971	-5.5832
Optimizing Vs & Thickness - generation: 28; average & best misfits: -17.6683	-5.5832
Optimizing Vs & Thickness - generation: 29; average & best misfits: -18.0736	-5.5832
Optimizing Vs & Thickness - generation: 30; average & best misfits: -16.9558	-5.5832
Optimizing Vs & Thickness - generation: 31; average & best misfits: -17.8554	-5.5832
Optimizing Vs & Thickness - generation: 32; average & best misfits: -20.1155	-5.5832
Optimizing Vs & Thickness - generation: 33; average & best misfits: -18.6689	-5.5832
Optimizing Vs & Thickness - generation: 34; average & best misfits: -14.6193	-5.5832
Optimizing Vs & Thickness - generation: 35; average & best misfits: -18.9868	-5.5832
Optimizing Vs & Thickness - generation: 36; average & best misfits: -19.3642	-5.5832
Optimizing Vs & Thickness - generation: 37; average & best misfits: -18.9253	-5.5832
Optimizing Vs & Thickness - generation: 38; average & best misfits: -17.5551	-5.5832
Optimizing Vs & Thickness - generation: 39; average & best misfits: -19.737	-5.5832
Optimizing Vs & Thickness - generation: 40; average & best misfits: -19.0699	-5.5832
Optimizing Vs & Thickness - generation: 41; average & best misfits: -18.6568	-5.5832

Rayleigh wave analysis

Optimizing Vs & Thickness - generation: 1; average & best misfits: -18.7566	-5.5832
Optimizing Vs & Thickness - generation: 2; average & best misfits: -18.5507	-5.5832
Optimizing Vs & Thickness - generation: 3; average & best misfits: -17.6057	-5.5832
Optimizing Vs & Thickness - generation: 4; average & best misfits: -18.2553	-5.5832
Optimizing Vs & Thickness - generation: 5; average & best misfits: -18.5752	-5.5832
Optimizing Vs & Thickness - generation: 6; average & best misfits: -19.0975	-5.5832
Optimizing Vs & Thickness - generation: 7; average & best misfits: -17.9989	-5.5832
Optimizing Vs & Thickness - generation: 8; average & best misfits: -14.7193	-5.5832
Optimizing Vs & Thickness - generation: 9; average & best misfits: -15.9423	-5.5832
Optimizing Vs & Thickness - generation: 10; average & best misfits: -15.6736	-5.5832
Optimizing Vs & Thickness - generation: 11; average & best misfits: -15.4347	-5.5832

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

Vs (m/s): 264 351 338 340 690

Poisson: 0.35 0.35 0.35 0.35 0.35

Thickness (m): 3.4 2.2 5.7 6

Number of models considered to calculate the average model: 22

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RESULTS winMASW Pro

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MEAN MODEL

VS (m/s): 263 346 339 358 693

Standard deviations (m/s): 3 8 8 34 10

Thickness (m): 3.3 2.3 6.2 6.3

Standard deviations (m): 0.2 0.2 0.7 0.7

Approximate values for Vp, density & elastic moduli

Vp (m/s): 547 720 706 745 1443

Density (gr/cm3): 1.91 1.97 1.97 1.98 2.14

Vp/Vs ratio: 2.08 2.08 2.08 2.08 2.08

Poisson: 0.35 0.35 0.35 0.35 0.35

Young modulus (MPa): 356 638 611 686 2779

Shear modulus (MPa): 132 236 226 254 1029

Lamé (MPa): 307 551 529 592 2404

Bulk modulus (MPa): 395 708 680 762 3090

Fundamental mode - Mean model

f(Hz)	VR(m/s)
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6.30055	543.3371
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8.18842	449.435
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12.2546	328.7511
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21.5487	297.6381
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31.8594	277.8471
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47.6884	256.2633
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BEST MODEL

Vs (m/s): 264.1616 351.271 337.5 339.8286 689.9662

thickness (m): 3.3724 2.2404 5.7309 6

Approximate values for Vp, density & elastic moduli

Vp (m/s): 550 731 703 707 1436

Density (gr/cm3): 1.91 1.98 1.97 1.97 2.14

Vp/Vs ratio: 2.08 2.08 2.08 2.08 2.08

Poisson: 0.35 0.35 0.35 0.35 0.35

Young modulus (MPa): 359 658 607 615 2753

Shear modulus (MPa): 133 244 225 228 1020

Lamé (MPa): 311 570 523 529 2377

Bulk modulus (MPa): 400 732 673 681 3057

Fundamental mode - Best model

F(Hz)	VR(m/s)
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6.30055	542.8661
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8.18842	448.2704
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12.2546	325.7828
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21.5487	297.8275
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31.8594	279.4661
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47.6884	257.564
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Maximum penetration depth according to the "Steady State Rayleigh Method": 36 m

Inversion quality: very good

VS5 (mean model): 286 m/s

VS5 (best model): 287 m/s

VS20 (mean model): 346 m/s

VS20 (best model): 347 m/s

VS30 (mean model): 415 m/s

VS30 (best model): 416 m/s

Possible Soil Type: B

(based on the mean model)

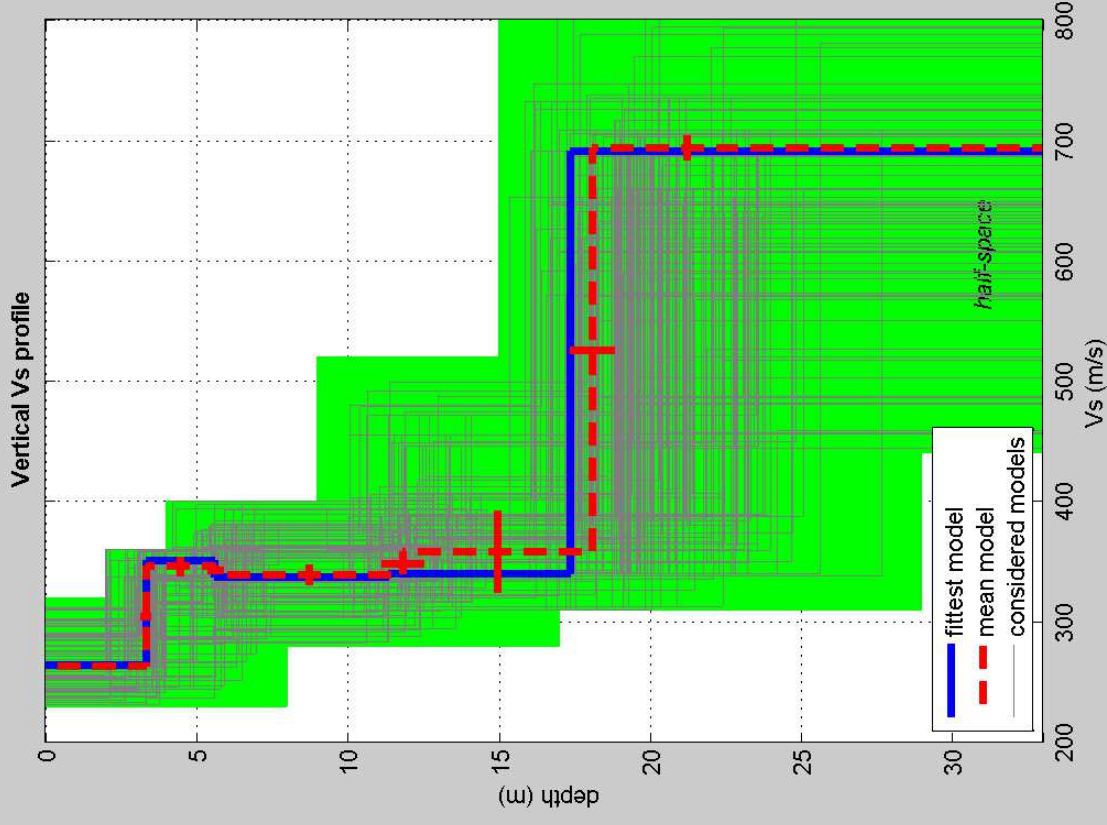
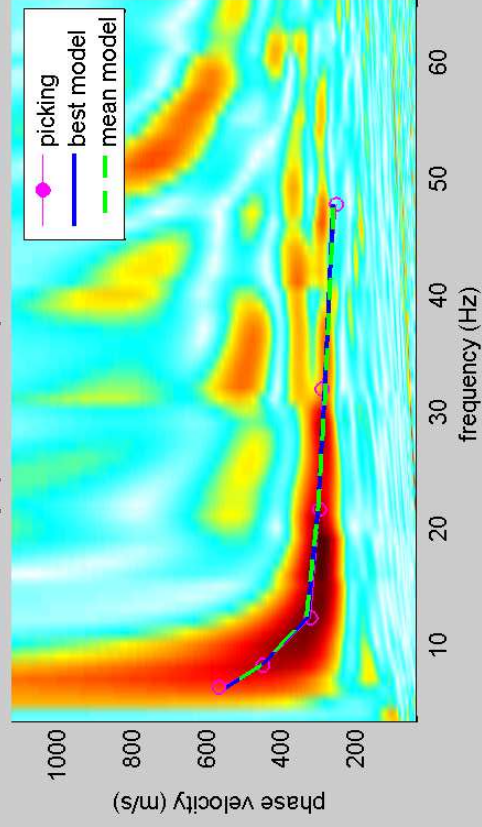
winMASW 4.2 Pro

Surface Wave Analysis

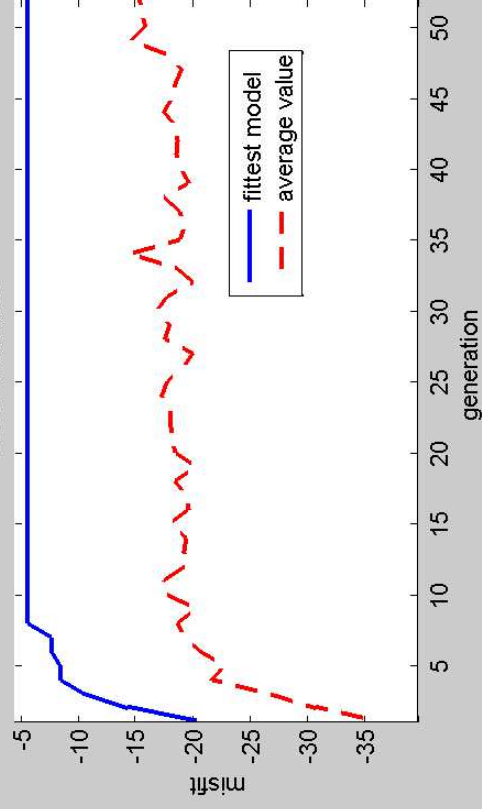
via MASW - Multichannel Analysis of Surface Waves

www.eliosoft.it

velocity spectrum & dispersion curve



misfit evolution



dataset: 2 metri.sgy

dispersion curve: picking 2 metri.cdp

VS30 (best model): 416 m/s

VS30 (mean model): 415 m/s

