

RISULTATI INDAGINE MASW

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dispersion curve: number of frequency-velocity points=8
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): 380 2 320 1 320 2 320 2 460 15 650
Adopted search space (maximum Vs & thickness): 540 5 500 3 480 6 540 6 750 25 1000
Adopted Poisson values: 0.35 0.35 0.35 0.35 0.35 0.35

Rayleigh wave analysis

Optimizing Vs & Thickness - generation: 1; average & best misfits: -23.4987	-11.3362
Optimizing Vs & Thickness - generation: 2; average & best misfits: -20.5278	-10.904
Optimizing Vs & Thickness - generation: 3; average & best misfits: -20.8217	-9.97053
Optimizing Vs & Thickness - generation: 4; average & best misfits: -18.1945	-8.16211
Optimizing Vs & Thickness - generation: 5; average & best misfits: -16.1512	-8.16211
Optimizing Vs & Thickness - generation: 6; average & best misfits: -16.5818	-8.16211
Optimizing Vs & Thickness - generation: 7; average & best misfits: -16.0564	-7.87407
Optimizing Vs & Thickness - generation: 8; average & best misfits: -15.9811	-7.87407
Optimizing Vs & Thickness - generation: 9; average & best misfits: -16.1786	-7.75967
Optimizing Vs & Thickness - generation: 10; average & best misfits: -17.6386	-7.73159
Optimizing Vs & Thickness - generation: 11; average & best misfits: -16.08	-7.5321
Optimizing Vs & Thickness - generation: 12; average & best misfits: -15.3128	-6.12209
Optimizing Vs & Thickness - generation: 13; average & best misfits: -13.7559	-6.12209
Optimizing Vs & Thickness - generation: 14; average & best misfits: -17.0283	-6.12209
Optimizing Vs & Thickness - generation: 15; average & best misfits: -15.6448	-6.12209
Optimizing Vs & Thickness - generation: 16; average & best misfits: -16.8035	-6.12209
Optimizing Vs & Thickness - generation: 17; average & best misfits: -16.4648	-6.12209
Optimizing Vs & Thickness - generation: 18; average & best misfits: -16.6254	-6.12209
Optimizing Vs & Thickness - generation: 19; average & best misfits: -16.8737	-6.12209
Optimizing Vs & Thickness - generation: 20; average & best misfits: -15.3386	-5.8984
Optimizing Vs & Thickness - generation: 21; average & best misfits: -20.0049	-5.8984
Optimizing Vs & Thickness - generation: 22; average & best misfits: -18.0652	-5.8984
Optimizing Vs & Thickness - generation: 23; average & best misfits: -16.1235	-5.8984
Optimizing Vs & Thickness - generation: 24; average & best misfits: -18.1243	-5.8984
Optimizing Vs & Thickness - generation: 25; average & best misfits: -17.4434	-5.8984
Optimizing Vs & Thickness - generation: 26; average & best misfits: -19.7205	-5.8984
Optimizing Vs & Thickness - generation: 27; average & best misfits: -17.5126	-5.8984
Optimizing Vs & Thickness - generation: 28; average & best misfits: -18.7011	-5.8984
Optimizing Vs & Thickness - generation: 29; average & best misfits: -14.7204	-5.8984
Optimizing Vs & Thickness - generation: 30; average & best misfits: -15.9049	-5.8984
Optimizing Vs & Thickness - generation: 31; average & best misfits: -15.1137	-5.8984
Optimizing Vs & Thickness - generation: 32; average & best misfits: -17.2457	-5.8984
Optimizing Vs & Thickness - generation: 33; average & best misfits: -15.5983	-4.96126
Optimizing Vs & Thickness - generation: 34; average & best misfits: -15.4833	-4.96126
Optimizing Vs & Thickness - generation: 35; average & best misfits: -15.8966	-4.78603
Optimizing Vs & Thickness - generation: 36; average & best misfits: -14.5025	-4.78603
Optimizing Vs & Thickness - generation: 37; average & best misfits: -15.1743	-4.78603
Optimizing Vs & Thickness - generation: 38; average & best misfits: -13.2953	-4.78603
Optimizing Vs & Thickness - generation: 39; average & best misfits: -16.1132	-4.78603
Optimizing Vs & Thickness - generation: 40; average & best misfits: -14.4952	-4.78603
Optimizing Vs & Thickness - generation: 41; average & best misfits: -15.4621	-4.78603

Rayleigh wave analysis

Optimizing Vs & Thickness - generation: 1; average & best misfits: -14.8123	-4.78603
Optimizing Vs & Thickness - generation: 2; average & best misfits: -14.6878	-4.78603
Optimizing Vs & Thickness - generation: 3; average & best misfits: -15.3571	-4.78603
Optimizing Vs & Thickness - generation: 4; average & best misfits: -14.9445	-4.78603
Optimizing Vs & Thickness - generation: 5; average & best misfits: -15.4905	-4.78603
Optimizing Vs & Thickness - generation: 6; average & best misfits: -16.321	-4.78603
Optimizing Vs & Thickness - generation: 7; average & best misfits: -13.9714	-4.78603
Optimizing Vs & Thickness - generation: 8; average & best misfits: -15.1519	-4.78603
Optimizing Vs & Thickness - generation: 9; average & best misfits: -15.8103	-4.78603
Optimizing Vs & Thickness - generation: 10; average & best misfits: -16.659	-4.78603
Optimizing Vs & Thickness - generation: 11; average & best misfits: -16.2704	-4.78603

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

Vs (m/s): 487 353 436 517 639 879

Poisson: 0.35 0.35 0.35 0.35 0.35 0.35

Thickness (m): 3.8 2.3 4.8 2.7 24

Number of models considered to calculate the average model: 22

RESULTS winMASW Pro
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MEAN MODEL

VS (m/s): 489 353 437 496 628 877
Standard deviations (m/s): 5 9 10 32 17 7
Thickness (m): 3.7 2.2 4.3 3.1 23.0
Standard deviations (m): 0.3 0.3 0.7 0.8 1.2
Approximate values for Vp, density & elastic moduli
Vp (m/s): 1018 735 910 1033 1307 1826
Density (gr/cm3): 2.06 1.98 2.03 2.06 2.12 2.20
Vp/Vs ratio: 2.08 2.08 2.08 2.08 2.08 2.08
Poisson: 0.35 0.35 0.35 0.35 0.35 0.35
Young modulus (MPa): 1329 666 1047 1370 2256 4569
Shear modulus (MPa): 492 247 388 507 836 1692
Lamé (MPa): 1149 576 906 1186 1948 3952
Bulk modulus (MPa): 1477 740 1165 1524 2505 5080

Fundamental mode - Mean model

f(Hz)	VR(m/s)
4.26746	739.2243
4.26746	739.2243
7.75276	622.5688
15.7399	465.6386
24.8888	411.7693
39.9917	409.2455
52.9164	416.6822
64.8244	422.4345

BEST MODEL

Vs (m/s): 487.4656 352.5334 436.4981 516.5307 638.7114 879.3349
thickness (m): 3.79084 2.27986 4.81284 2.71053 23.5244
Approximate values for Vp, density & elastic moduli
Vp (m/s): 1015 734 909 1075 1330 1830
Density (gr/cm3): 2.06 1.98 2.03 2.07 2.12 2.20
Vp/Vs ratio: 2.08 2.08 2.08 2.08 2.08 2.08
Poisson: 0.35 0.35 0.35 0.35 0.35 0.35
Young modulus (MPa): 1318 666 1043 1494 2341 4592
Shear modulus (MPa): 488 247 386 554 867 1701
Lamé (MPa): 1144 573 906 1287 2022 3970
Bulk modulus (MPa): 1469 737 1163 1656 2600 5103

Fundamental mode - Best model

F(Hz)	VR(m/s)
4.26746	740.9158
4.26746	740.9158
7.75276	625.9566
15.7399	464.2995
24.8888	409.869
39.9917	408.5369
52.9164	416.1359
64.8244	421.7095

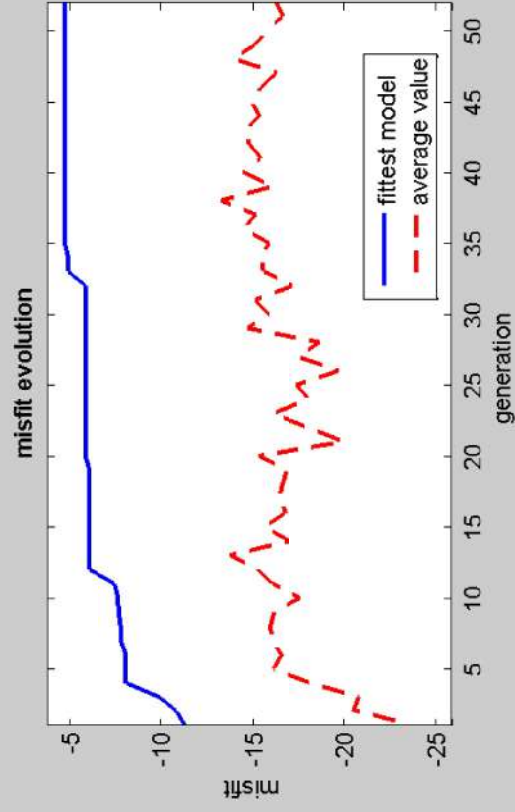
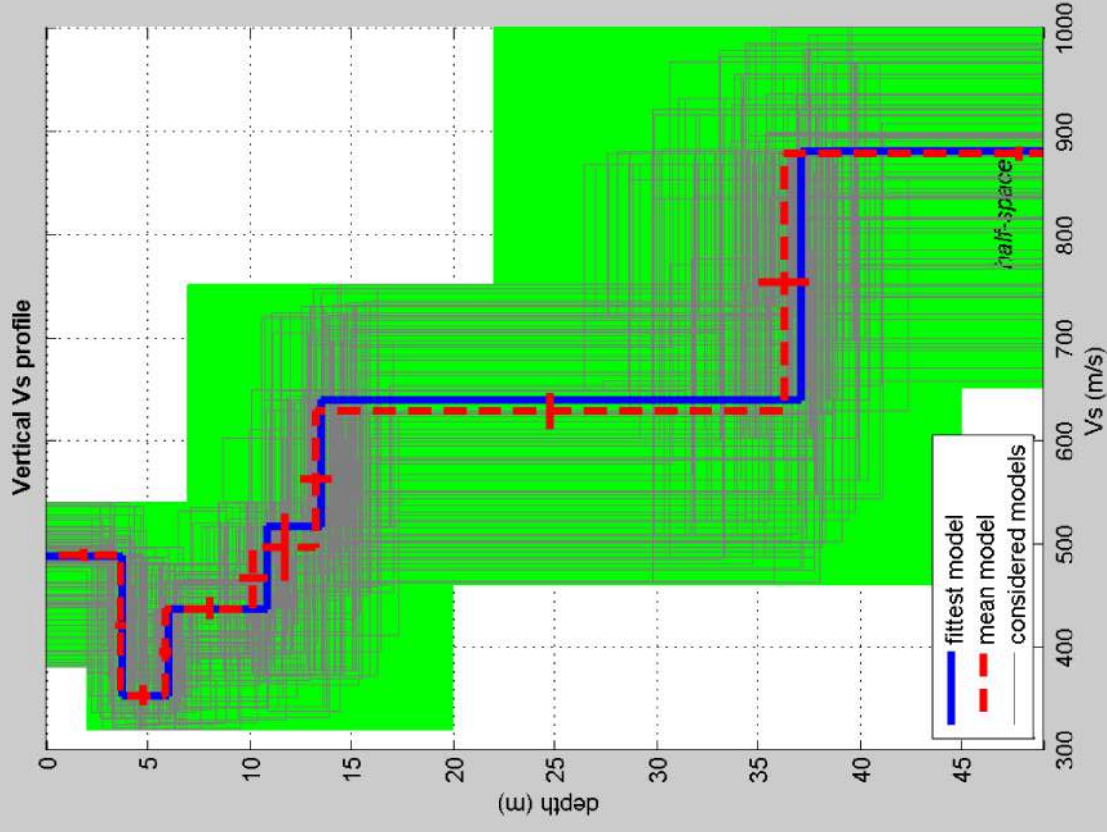
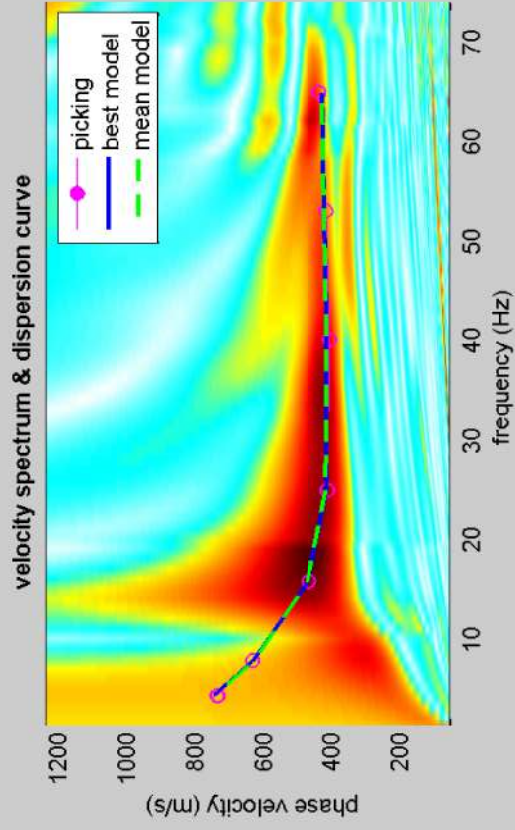
Maximum penetration depth according to the "Steady State Rayleigh Method": 68 m

Inversion quality: very good

VS5 (mean model): 445 m/s	VS5 (best model): 446 m/s
VS20 (mean model): 493 m/s	VS20 (best model): 493 m/s
VS30 (mean model): 531 m/s	VS30 (best model): 534 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



dataset: 2 metri.sgy

dispersion curve: picking 2 metri.cdp

VS30 (best model): 534 m/s

VS30 (mean model): 531 m/s

