

## RISULTATI INDAGINE MASW

**Realizzazione di una piscina nella resede del Podere Bruciano  
nel Comune di Pomarance, Sig.ra Martina Bagnoli**

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): 280 2 280 1 300 2 310 3 450 5 550  
Adopted search space (maximum Vs & thickness): 350 4 360 3 380 4 500 6 650 9 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:	-53.3355	-21.379
Optimizing Vs & Thickness - generation: 2; average & best misfits:	-43.8226	-14.6952
Optimizing Vs & Thickness - generation: 3; average & best misfits:	-37.3369	-14.1039
Optimizing Vs & Thickness - generation: 4; average & best misfits:	-28.3224	-10.054
Optimizing Vs & Thickness - generation: 5; average & best misfits:	-23.0734	-10.054
Optimizing Vs & Thickness - generation: 6; average & best misfits:	-23.247	-9.34174
Optimizing Vs & Thickness - generation: 7; average & best misfits:	-20.4031	-9.34174
Optimizing Vs & Thickness - generation: 8; average & best misfits:	-22.7189	-9.34174
Optimizing Vs & Thickness - generation: 9; average & best misfits:	-20.3805	-9.34174
Optimizing Vs & Thickness - generation: 10; average & best misfits:	-21.3044	-9.34174
Optimizing Vs & Thickness - generation: 11; average & best misfits:	-24.7022	-9.34174
Optimizing Vs & Thickness - generation: 12; average & best misfits:	-23.1928	-9.16079
Optimizing Vs & Thickness - generation: 13; average & best misfits:	-20.0061	-8.46942
Optimizing Vs & Thickness - generation: 14; average & best misfits:	-23.3024	-8.27404
Optimizing Vs & Thickness - generation: 15; average & best misfits:	-22.0756	-8.27404
Optimizing Vs & Thickness - generation: 16; average & best misfits:	-24.3667	-6.34333
Optimizing Vs & Thickness - generation: 17; average & best misfits:	-20.6554	-6.02294
Optimizing Vs & Thickness - generation: 18; average & best misfits:	-19.533	-5.89512
Optimizing Vs & Thickness - generation: 19; average & best misfits:	-16.8479	-5.89512
Optimizing Vs & Thickness - generation: 20; average & best misfits:	-18.4883	-5.89512
Optimizing Vs & Thickness - generation: 21; average & best misfits:	-17.746	-5.89512
Optimizing Vs & Thickness - generation: 22; average & best misfits:	-18.2378	-5.89512
Optimizing Vs & Thickness - generation: 23; average & best misfits:	-18.3681	-5.89512
Optimizing Vs & Thickness - generation: 24; average & best misfits:	-21.5722	-5.89512
Optimizing Vs & Thickness - generation: 25; average & best misfits:	-18.6818	-5.89512
Optimizing Vs & Thickness - generation: 26; average & best misfits:	-22.877	-5.89512
Optimizing Vs & Thickness - generation: 27; average & best misfits:	-21.2691	-5.89512
Optimizing Vs & Thickness - generation: 28; average & best misfits:	-19.287	-5.89512
Optimizing Vs & Thickness - generation: 29; average & best misfits:	-18.6325	-5.89512
Optimizing Vs & Thickness - generation: 30; average & best misfits:	-17.8342	-5.89512
Optimizing Vs & Thickness - generation: 31; average & best misfits:	-19.9831	-5.89512
Optimizing Vs & Thickness - generation: 32; average & best misfits:	-21.632	-5.89512
Optimizing Vs & Thickness - generation: 33; average & best misfits:	-21.2272	-5.89512
Optimizing Vs & Thickness - generation: 34; average & best misfits:	-20.2161	-5.89512
Optimizing Vs & Thickness - generation: 35; average & best misfits:	-20.1464	-5.89512
Optimizing Vs & Thickness - generation: 36; average & best misfits:	-20.5133	-5.8388
Optimizing Vs & Thickness - generation: 37; average & best misfits:	-19.7478	-5.8388
Optimizing Vs & Thickness - generation: 38; average & best misfits:	-22.4623	-5.8388
Optimizing Vs & Thickness - generation: 39; average & best misfits:	-25.9365	-5.8388
Optimizing Vs & Thickness - generation: 40; average & best misfits:	-24.0679	-5.8388
Optimizing Vs & Thickness - generation: 41; average & best misfits:	-24.1907	-5.8388

### Rayleigh wave analysis

Optimizing Vs & Thickness - generation: 1; average & best misfits:	-14.7327	-5.8388
Optimizing Vs & Thickness - generation: 2; average & best misfits:	-16.8998	-5.8388
Optimizing Vs & Thickness - generation: 3; average & best misfits:	-18.484	-5.8388
Optimizing Vs & Thickness - generation: 4; average & best misfits:	-17.1855	-5.8388
Optimizing Vs & Thickness - generation: 5; average & best misfits:	-22.5268	-5.8388
Optimizing Vs & Thickness - generation: 6; average & best misfits:	-22.5874	-5.8388
Optimizing Vs & Thickness - generation: 7; average & best misfits:	-19.9346	-5.8388
Optimizing Vs & Thickness - generation: 8; average & best misfits:	-19.9418	-5.8388
Optimizing Vs & Thickness - generation: 9; average & best misfits:	-19.3482	-5.8388
Optimizing Vs & Thickness - generation: 10; average & best misfits:	-20.9898	-5.8388
Optimizing Vs & Thickness - generation: 11; average & best misfits:	-19.9749	-5.8388

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

Vs (m/s): 327 339 357 500 566 923

Poisson: 0.35 0.35 0.35 0.35 0.35 0.35

Thickness (m): 3.1 1.8 2.9 3.2 9

Number of models considered to calculate the average model: 27

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RESULTS winMASW Pro

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## MEAN MODEL

VS (m/s): 328 336 361 488 556 912

Standard deviations (m/s): 5 8 14 18 24 17

Thickness (m): 3.1 1.6 2.7 3.5 8.3

Standard deviations (m): 0.4 0.3 0.3 0.5 0.9

Approximate values for Vp, density & elastic moduli

Vp (m/s): 683 699 751 1016 1157 1898

Density (gr/cm3): 1.96 1.97 1.98 2.06 2.09 2.21

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): 570 600 698 1323 1744 4962

Shear modulus (MPa): 211 222 259 490 646 1838

Lamé (MPa): 493 517 602 1144 1505 4285

Bulk modulus (MPa): 634 665 774 1471 1936 5510

Fundamental mode - Mean model

f(Hz) VR(m/s)

7.17188 736.3373

9.05974 696.5805

12.9807 536.4508

19.08 397.0875

28.2289 336.4347

40.8631 316.4942

55.0947 310.4632

## BEST MODEL

Vs (m/s): 326.6871 338.5683 357.1846 499.8293 566.3736 922.7166

thickness (m): 3.0702 1.7577 2.851 3.2139 9

Approximate values for Vp, density & elastic moduli

Vp (m/s): 680 705 744 1040 1179 1921

Density (gr/cm3): 1.96 1.97 1.98 2.06 2.09 2.21

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): 566 611 682 1393 1811 5089

Shear modulus (MPa): 210 226 253 516 671 1885

Lamé (MPa): 487 526 592 1200 1569 4395

Bulk modulus (MPa): 627 677 760 1544 2016 5652

Fundamental mode - Best model

F(Hz) VR(m/s)

7.17188 741.1628

9.05974 698.0061

12.9807 531.4318

19.08 391.4249

28.2289 333.0772

40.8631 315.2249

55.0947 309.6021

Maximum penetration depth according to the "Steady State Rayleigh Method": 42 m

Inversion quality: very good

VS5 (mean model): 332 m/s

VS5 (best model): 332 m/s

VSeq (mean model): 438 m/s

VSeq (best model): 443 m/s

Possible Soil Type: B (based on the mean model)

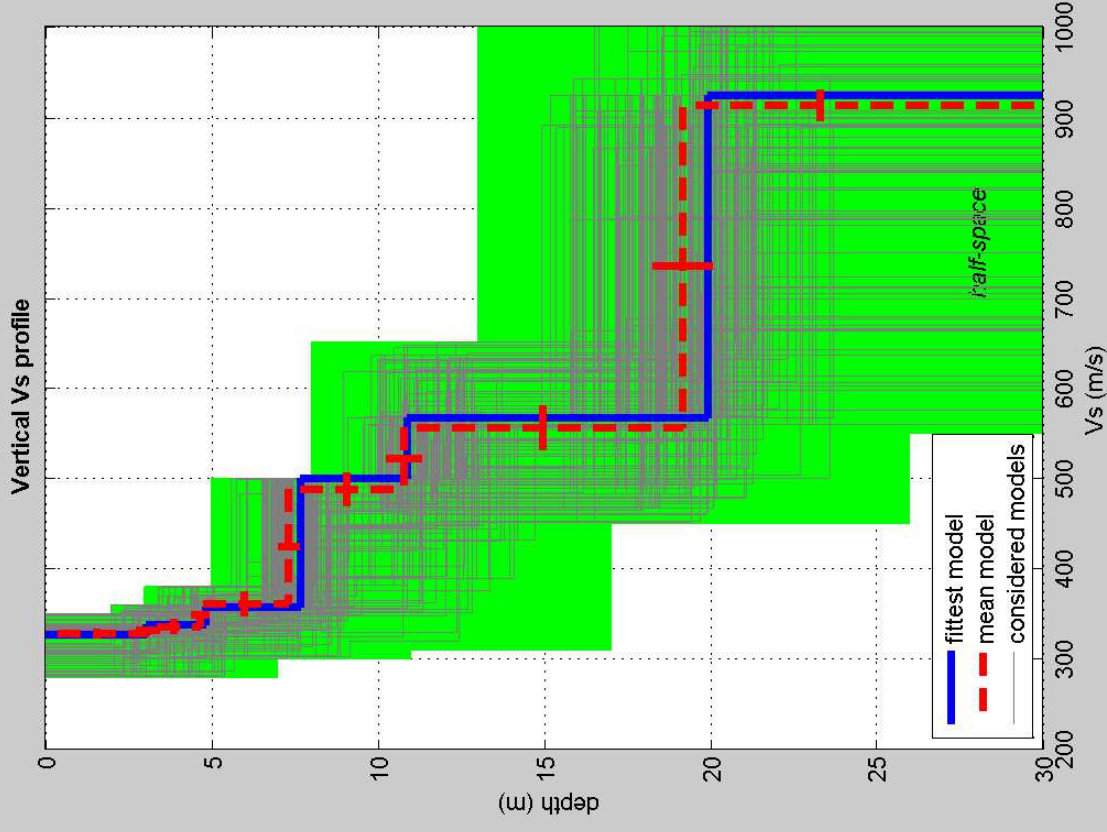
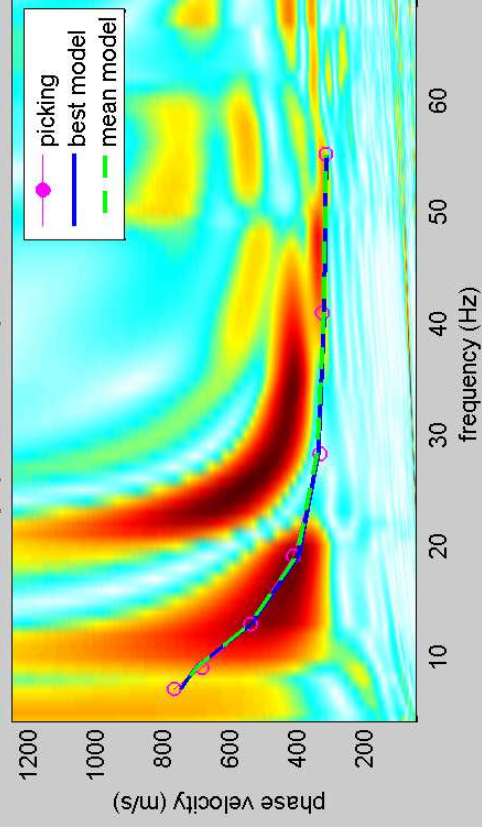
winMASW 4.2 Pro

Surface Wave Analysis

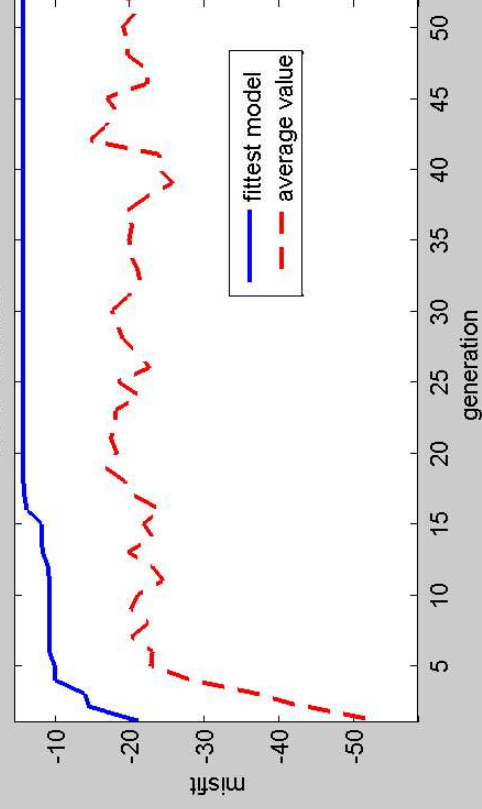
via MASW - Multichannel Analysis of Surface Waves

www.eliosoft.it

velocity spectrum & dispersion curve



misfit evolution



dataset: 2 metri.sgy

dispersion curve: picking 2 metri.cdp

VS30 (best model): 537 m/s

VS30 (mean model): 540 m/s

