

RISULTATI INDAGINE MASW

Recupero di un fabbricato ad uso magazzino, oggi ridotto a rudere, per fini agrituristici, posto in Loc. Piano All'Olmo, Serrazzano, Comune di Pomarance
Sig.ri Lupi e Bisogni

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): 160 1 160 1 210 20 420

Adopted search space (maximum Vs & thickness): 230 4 280 4 500 30 750

Adopted Poisson values: 0.35 0.35 0.35 0.35

Rayleigh wave analysis

Optimizing Vs & Thickness - generation: 1; average & best misfits: -22.7561	-11.5335
Optimizing Vs & Thickness - generation: 2; average & best misfits: -22.2337	-11.5335
Optimizing Vs & Thickness - generation: 3; average & best misfits: -24.3563	-11.5335
Optimizing Vs & Thickness - generation: 4; average & best misfits: -22.4896	-10.7197
Optimizing Vs & Thickness - generation: 5; average & best misfits: -21.6421	-10.3879
Optimizing Vs & Thickness - generation: 6; average & best misfits: -19.4262	-10.3879
Optimizing Vs & Thickness - generation: 7; average & best misfits: -18.8749	-10.3879
Optimizing Vs & Thickness - generation: 8; average & best misfits: -16.6192	-10.3336
Optimizing Vs & Thickness - generation: 9; average & best misfits: -18.9773	-10.3336
Optimizing Vs & Thickness - generation: 10; average & best misfits: -16.8515	-9.76652
Optimizing Vs & Thickness - generation: 11; average & best misfits: -18.1922	-9.45551
Optimizing Vs & Thickness - generation: 12; average & best misfits: -18.0434	-9.45551
Optimizing Vs & Thickness - generation: 13; average & best misfits: -20.6548	-9.45269
Optimizing Vs & Thickness - generation: 14; average & best misfits: -20.4909	-9.45269
Optimizing Vs & Thickness - generation: 15; average & best misfits: -21.7352	-9.45269
Optimizing Vs & Thickness - generation: 16; average & best misfits: -20.5787	-9.45269
Optimizing Vs & Thickness - generation: 17; average & best misfits: -19.0051	-9.45269
Optimizing Vs & Thickness - generation: 18; average & best misfits: -19.422	-9.30281
Optimizing Vs & Thickness - generation: 19; average & best misfits: -19.6507	-9.29017
Optimizing Vs & Thickness - generation: 20; average & best misfits: -18.6434	-8.87016
Optimizing Vs & Thickness - generation: 21; average & best misfits: -16.0042	-8.87016
Optimizing Vs & Thickness - generation: 22; average & best misfits: -16.2829	-8.87016
Optimizing Vs & Thickness - generation: 23; average & best misfits: -16.6774	-8.87016
Optimizing Vs & Thickness - generation: 24; average & best misfits: -20.7764	-8.29803
Optimizing Vs & Thickness - generation: 25; average & best misfits: -21.2738	-8.29803
Optimizing Vs & Thickness - generation: 26; average & best misfits: -21.422	-8.29803
Optimizing Vs & Thickness - generation: 27; average & best misfits: -21.603	-8.29803
Optimizing Vs & Thickness - generation: 28; average & best misfits: -21.8598	-8.29803
Optimizing Vs & Thickness - generation: 29; average & best misfits: -20.7659	-8.29803
Optimizing Vs & Thickness - generation: 30; average & best misfits: -20.3004	-8.29803
Optimizing Vs & Thickness - generation: 31; average & best misfits: -22.6738	-8.29803
Optimizing Vs & Thickness - generation: 32; average & best misfits: -19.7644	-8.29803
Optimizing Vs & Thickness - generation: 33; average & best misfits: -17.2273	-8.29803
Optimizing Vs & Thickness - generation: 34; average & best misfits: -17.8991	-8.29803
Optimizing Vs & Thickness - generation: 35; average & best misfits: -16.6338	-8.29803
Optimizing Vs & Thickness - generation: 36; average & best misfits: -19.8489	-8.29803
Optimizing Vs & Thickness - generation: 37; average & best misfits: -17.6772	-8.29803
Optimizing Vs & Thickness - generation: 38; average & best misfits: -20.1989	-8.29803
Optimizing Vs & Thickness - generation: 39; average & best misfits: -18.9125	-8.29803
Optimizing Vs & Thickness - generation: 40; average & best misfits: -20.4296	-8.29803
Optimizing Vs & Thickness - generation: 41; average & best misfits: -19.515	-8.29803

Rayleigh wave analysis

Optimizing Vs & Thickness - generation: 1; average & best misfits: -22.6829	-8.29803
Optimizing Vs & Thickness - generation: 2; average & best misfits: -24.5415	-8.29803
Optimizing Vs & Thickness - generation: 3; average & best misfits: -23.1378	-8.29803
Optimizing Vs & Thickness - generation: 4; average & best misfits: -20.8275	-8.29803
Optimizing Vs & Thickness - generation: 5; average & best misfits: -15.6165	-8.20302
Optimizing Vs & Thickness - generation: 6; average & best misfits: -17.9691	-8.20302
Optimizing Vs & Thickness - generation: 7; average & best misfits: -20.1187	-8.20302
Optimizing Vs & Thickness - generation: 8; average & best misfits: -18.7424	-6.79427
Optimizing Vs & Thickness - generation: 9; average & best misfits: -17.0972	-6.79427
Optimizing Vs & Thickness - generation: 10; average & best misfits: -18.5274	-6.79427
Optimizing Vs & Thickness - generation: 11; average & best misfits: -15.5799	-6.79427

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

Vs (m/s): 194 249 360 599

Poisson: 0.35 0.35 0.35 0.35

Thickness (m): 2.8 4 21

Number of models considered to calculate the average model: 35

RESULTS winMASW Pro
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MEAN MODEL

VS (m/s): 196 254 371 600

Standard deviations (m/s): 3 8 13 5

Thickness (m): 3.2 3.9 20.9

Standard deviations (m): 0.4 0.2 0.8

Approximate values for Vp, density & elastic moduli

Vp (m/s): 408 529 772 1249

Density (gr/cm3): 1.84 1.90 1.99 2.11

Vp/Vs ratio: 2.08 2.08 2.08 2.08

Poisson: 0.35 0.35 0.35 0.35

Young modulus (MPa): 191 331 740 2049

Shear modulus (MPa): 71 123 274 759

Lamè (MPa): 165 286 639 1771

Bulk modulus (MPa): 212 368 821 2277

Fundamental mode - Mean model

f(Hz) VR(m/s)

2.23438 517.7608

3.54136 490.4663

5.86489 387.7427

9.93107 309.6058

17.6278 239.8957

25.1792 207.0342

34.3281 192.7444

BEST MODEL

Vs (m/s): 193.9196 249.0224 359.7967 599.4121

Thickness (m): 2.81102 3.98097 20.7013

Approximate values for Vp, density & elastic moduli

Vp (m/s): 404 518 749 1248

Density (gr/cm3): 1.83 1.89 1.98 2.11

Vp/Vs ratio: 2.08 2.08 2.08 2.08

Poisson: 0.35 0.35 0.35 0.35

Young modulus (MPa): 186 317 694 2042

Shear modulus (MPa): 69 117 257 756

Lamè (MPa): 161 273 599 1770

Bulk modulus (MPa): 207 352 770 2274

Fundamental mode - Best model

f(Hz) VR(m/s)

2.23438 516.5831

3.54136 488.9594

5.86489 380.5705

9.93107 303.1764

17.6278 242.4214

25.1792 210.5411

34.3281 194.7216

Maximum penetration depth according to the "Steady State Rayleigh Method": 101 m

Inversion quality: very good

VS5 (mean model): 213 m/s

VS20 (mean model): 301 m/s

VS30 (mean model): 328 m/s

VS5 (best model): 215 m/s

VS20 (best model): 298 m/s

VS30 (best model): 325 m/s

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

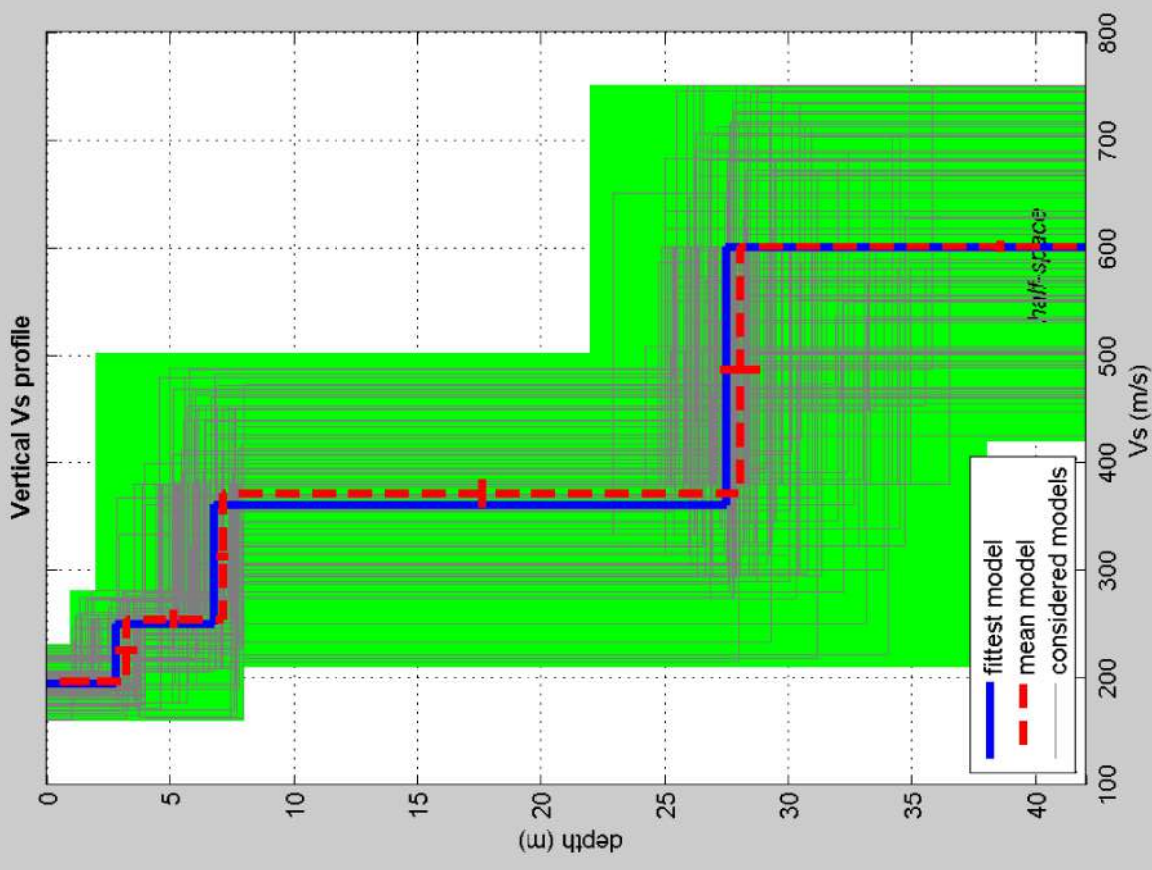
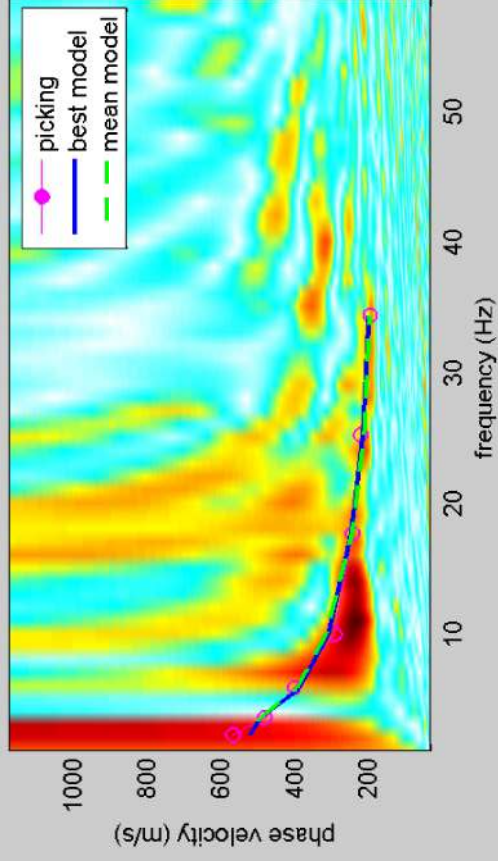
winMASW 4.2 Pro

Surface Wave Analysis

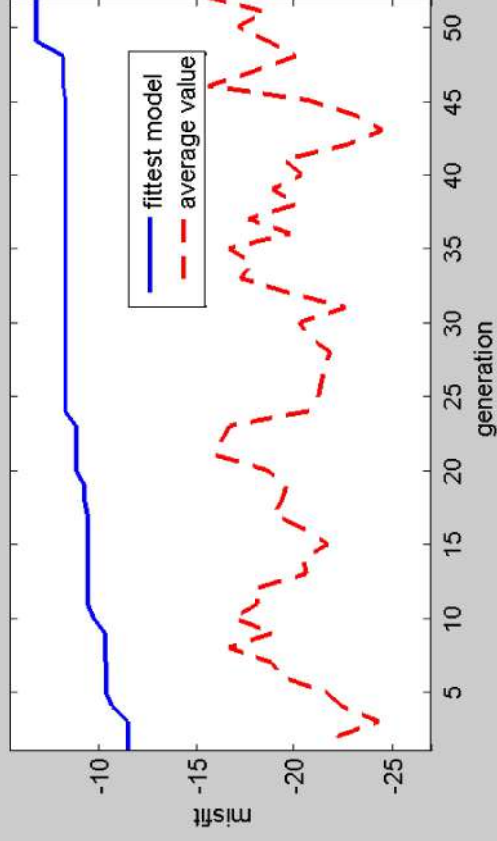
via MASW - Multichannel Analysis of Surface Waves

www.eliosoft.it

velocity spectrum & dispersion curve



misfit evolution



dataset: 5 metri.sgy

dispersion curve: picking 5 metri.cdp

VS30 (best model): 325 m/s

VS30 (mean model): 328 m/s

