SIBYL

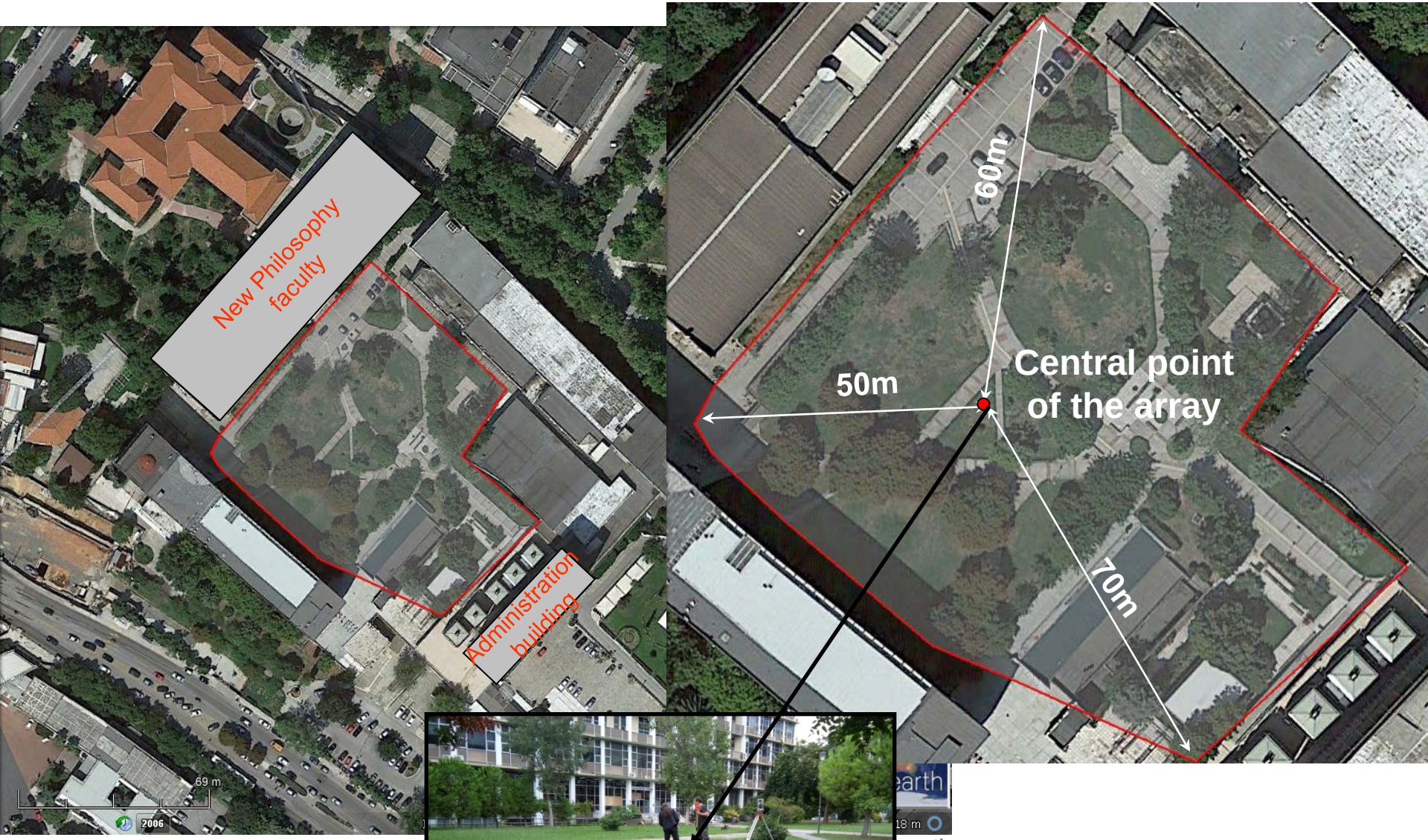
*S*e*l*smic monitoring and vu*l*nera*B*ilit*Y* framework for civi*L* protection

Preliminary results for the Thessaloniki applications (Site characterization of the foundation soil)

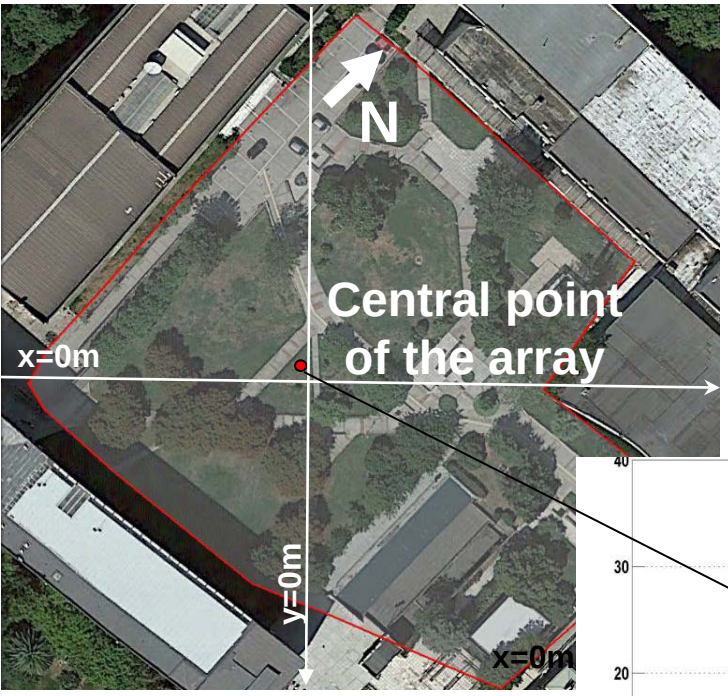
Aristotle University of Thessaloniki

Ambient noise measurements on foundation soil

Scope: shear-wave Vs velocity
resonant frequency of the foundation soil

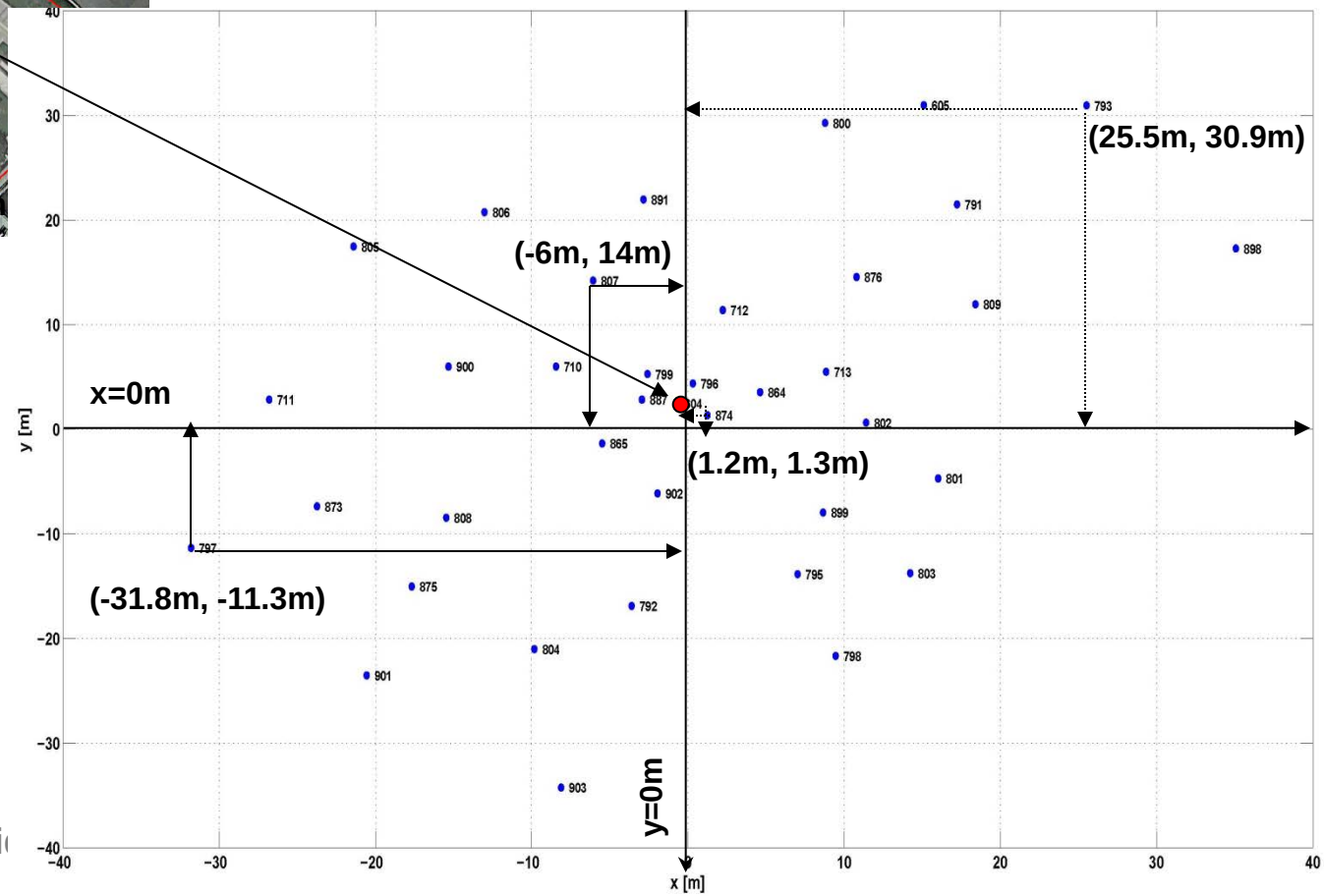


Ambient noise measurements on foundation soil



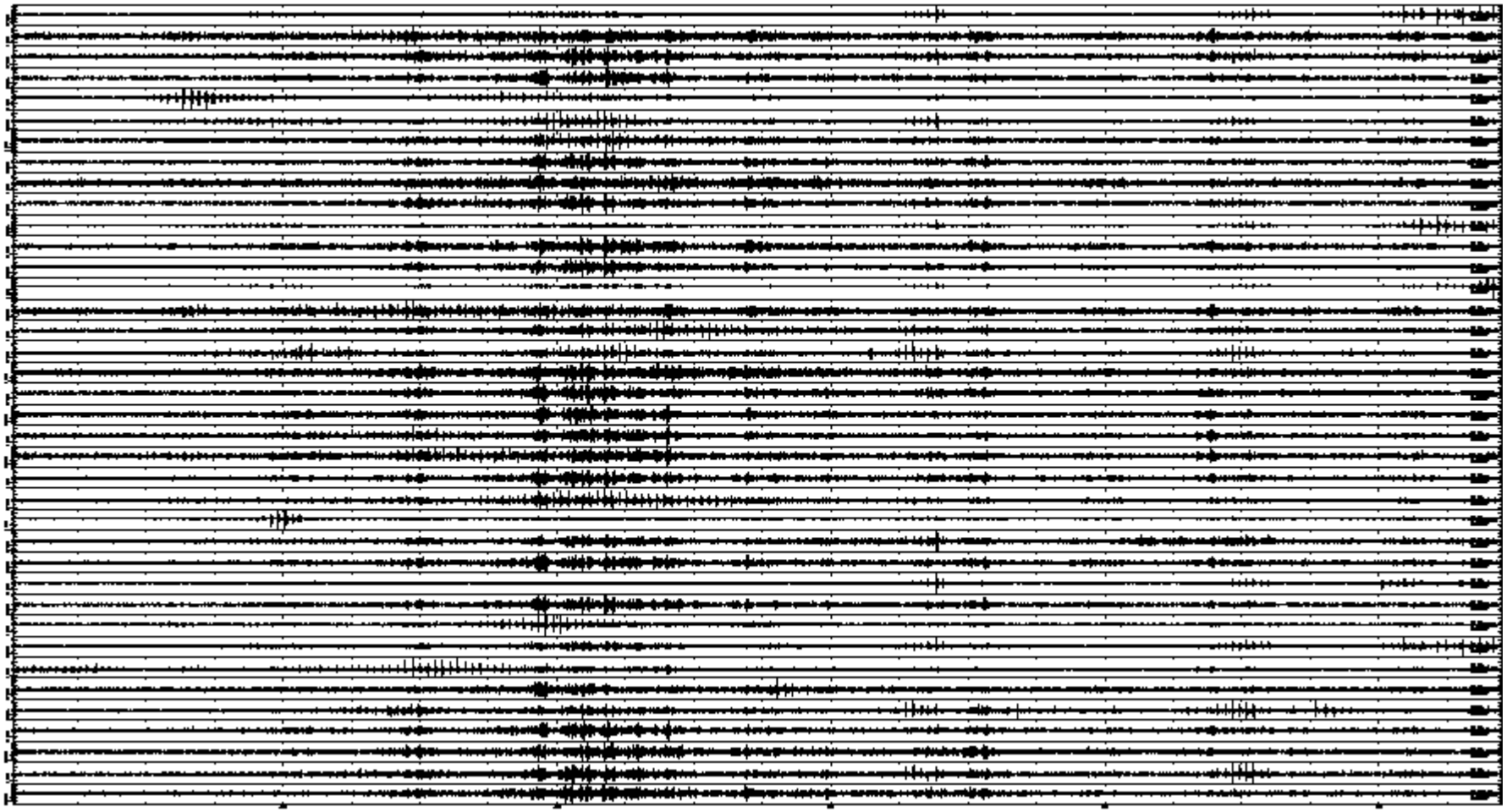
Used: 38 CUBE digitizers
with 4.5Hz geophones

Orientation: towards the North
Sampling rate: 400sps
Recording time: ~ 2hours
Min & max distance between stations: ~2m – 70m



Site characterization (Vs velocity) >> SPatial Autocorrelation Method (SPAC method)

- used only the vertical component
- Correlation Coefficients of spatially distributed station pairs
- phase velocity dispersion curve of Rayleigh waves
- representative Vs profile



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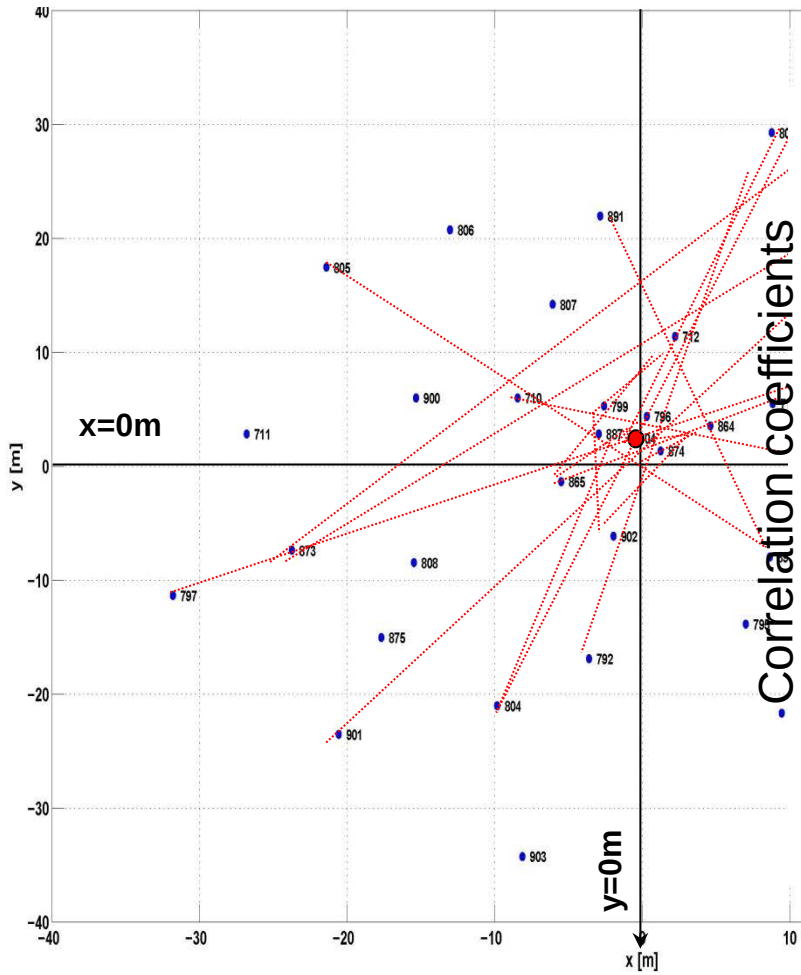

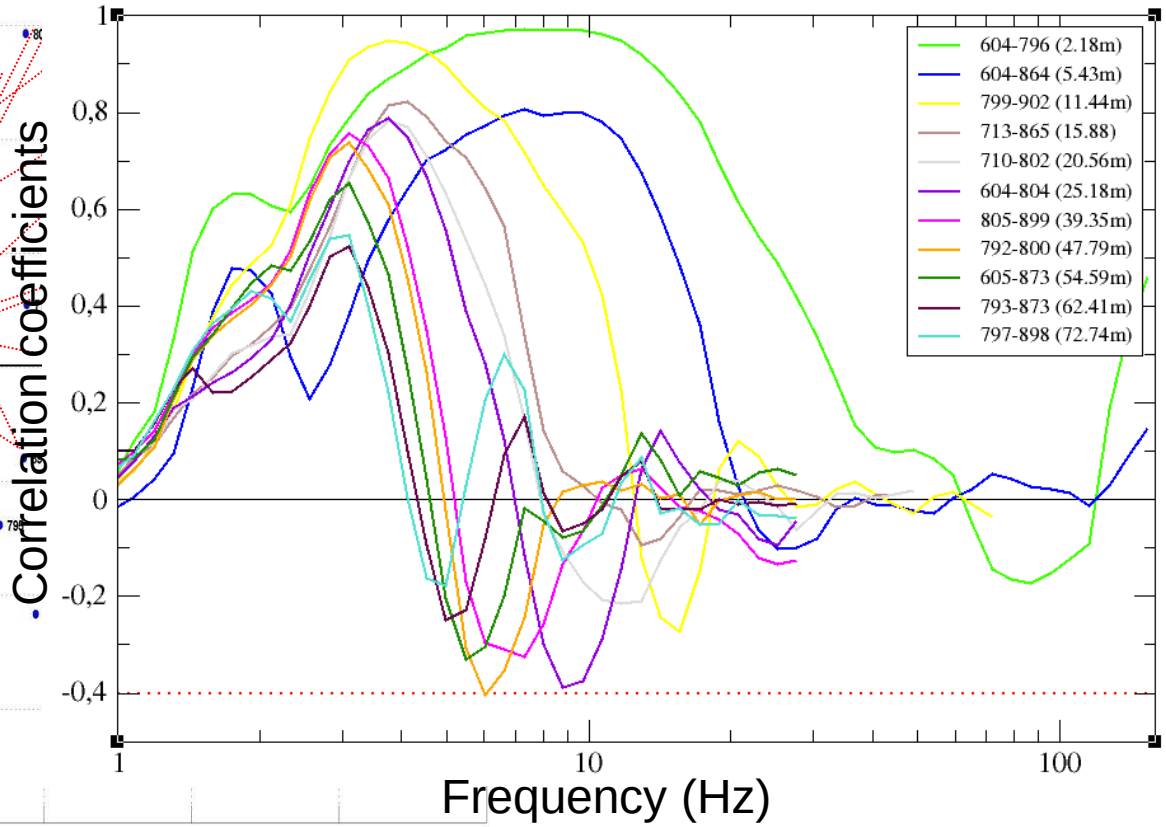

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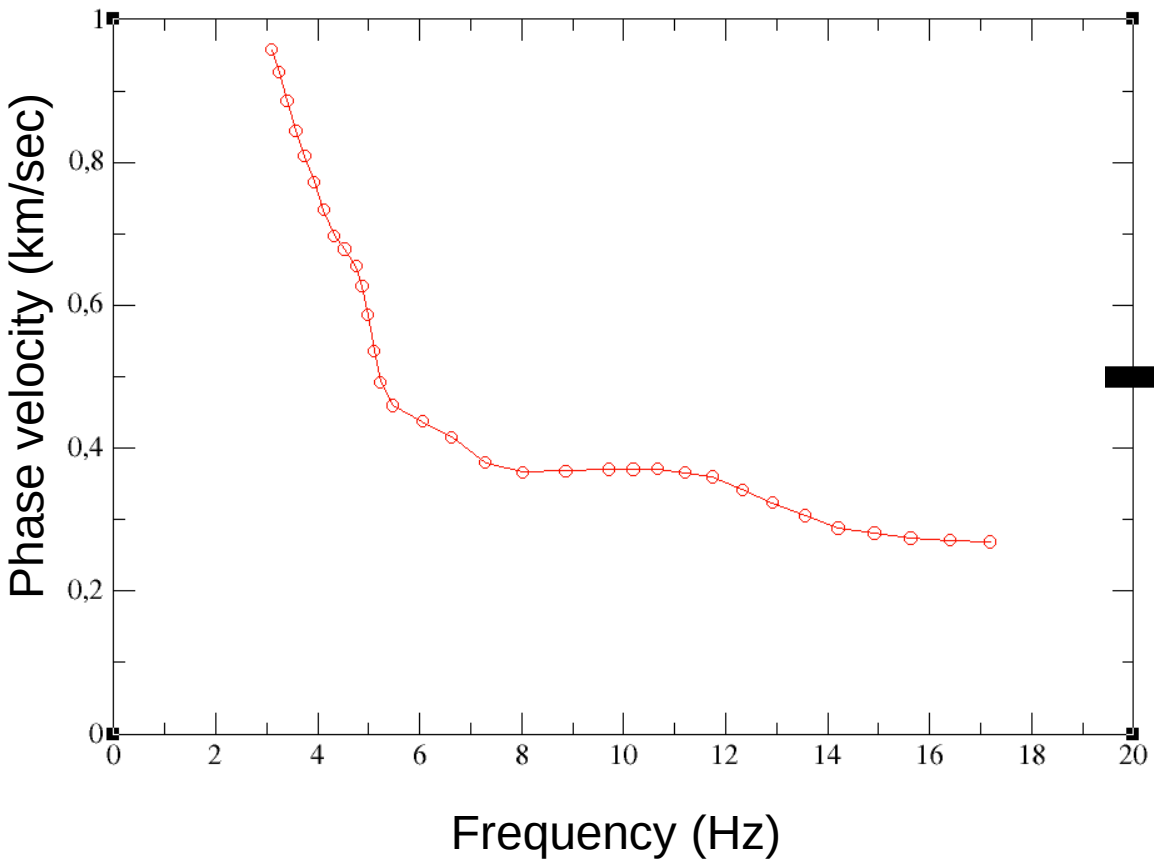
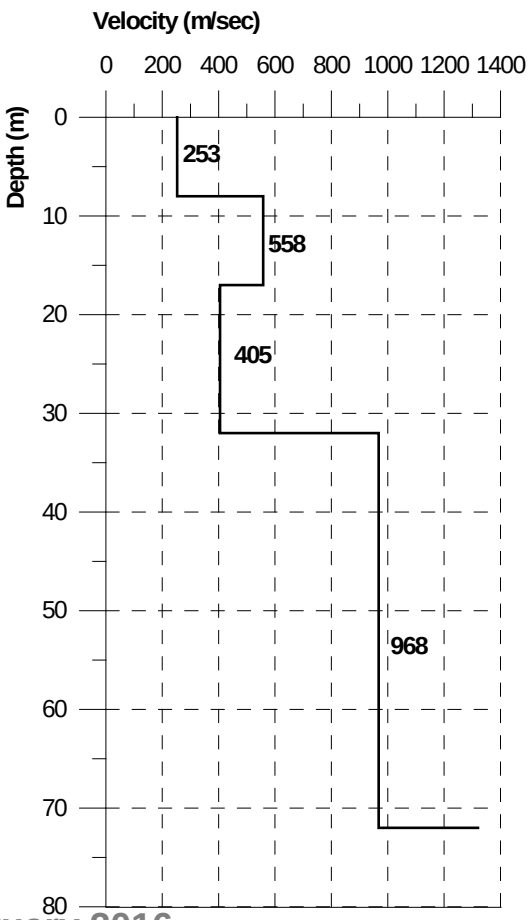
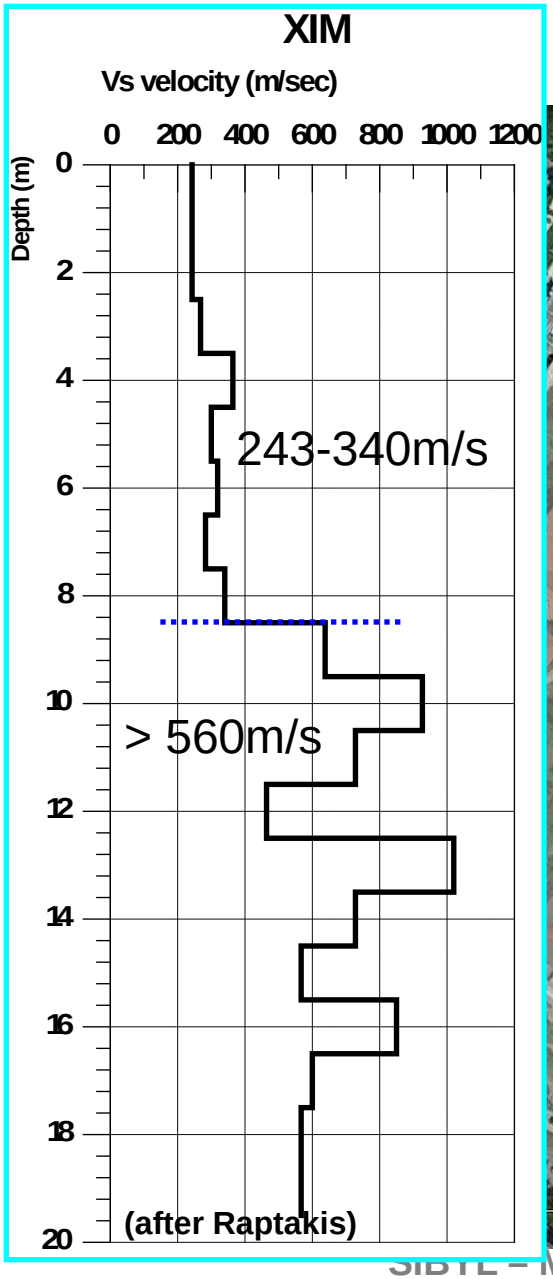
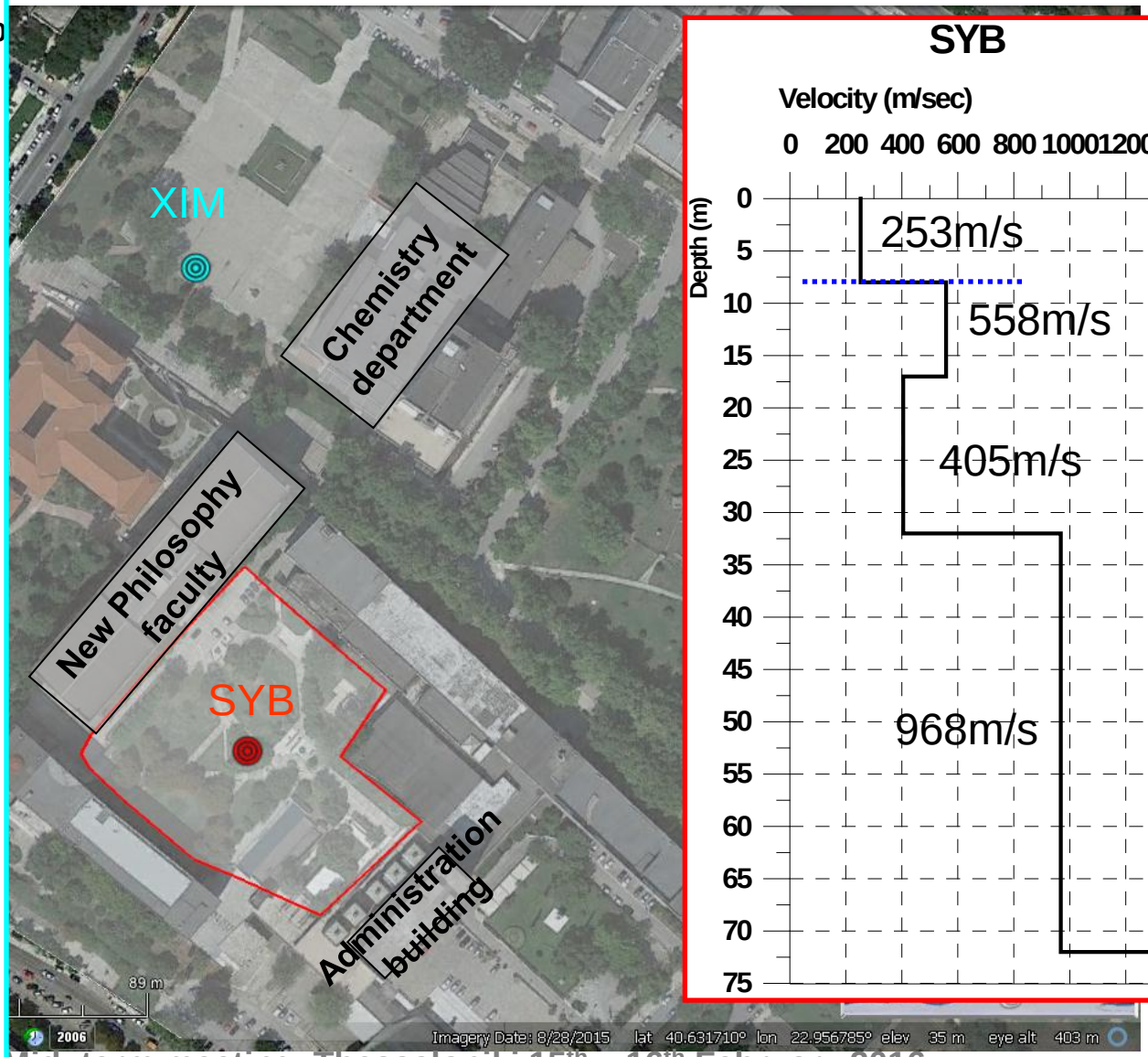


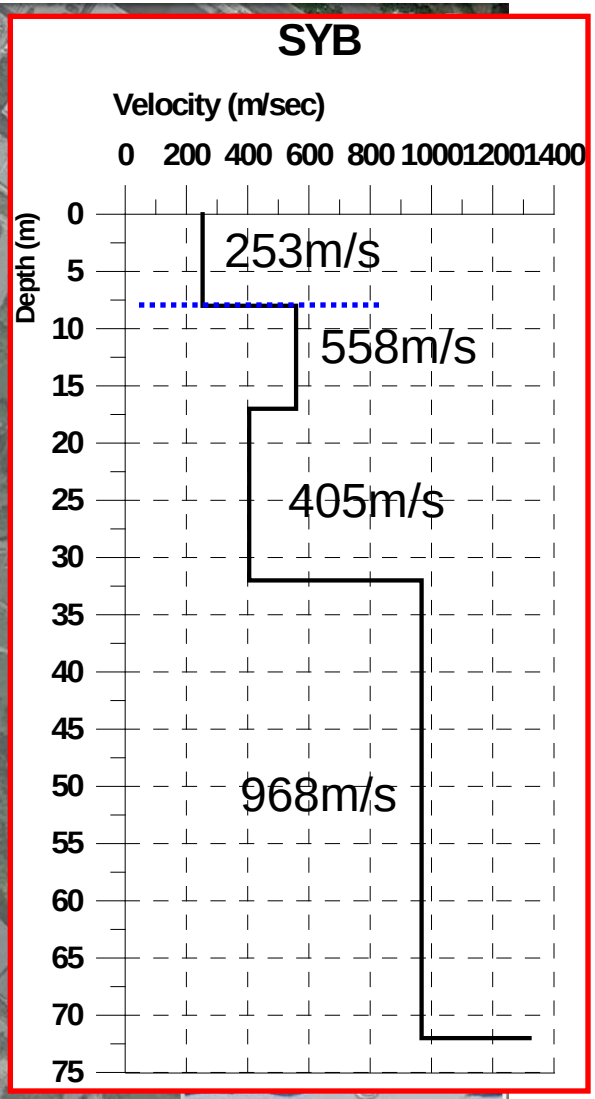
SYB Vs profile



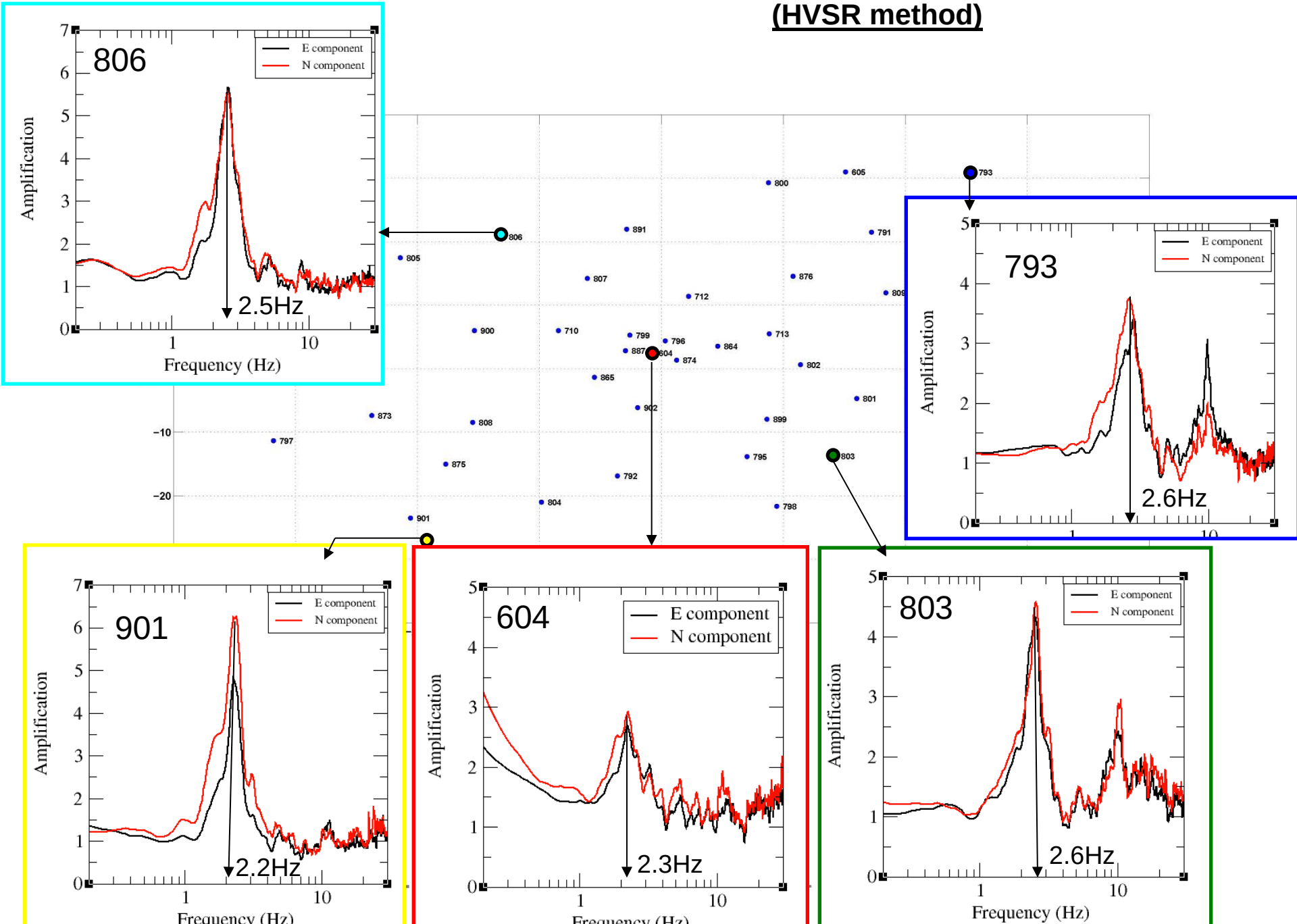
Site characterization (Vs velocity) >> SPatial Autocorrelation Method (SPAC method)





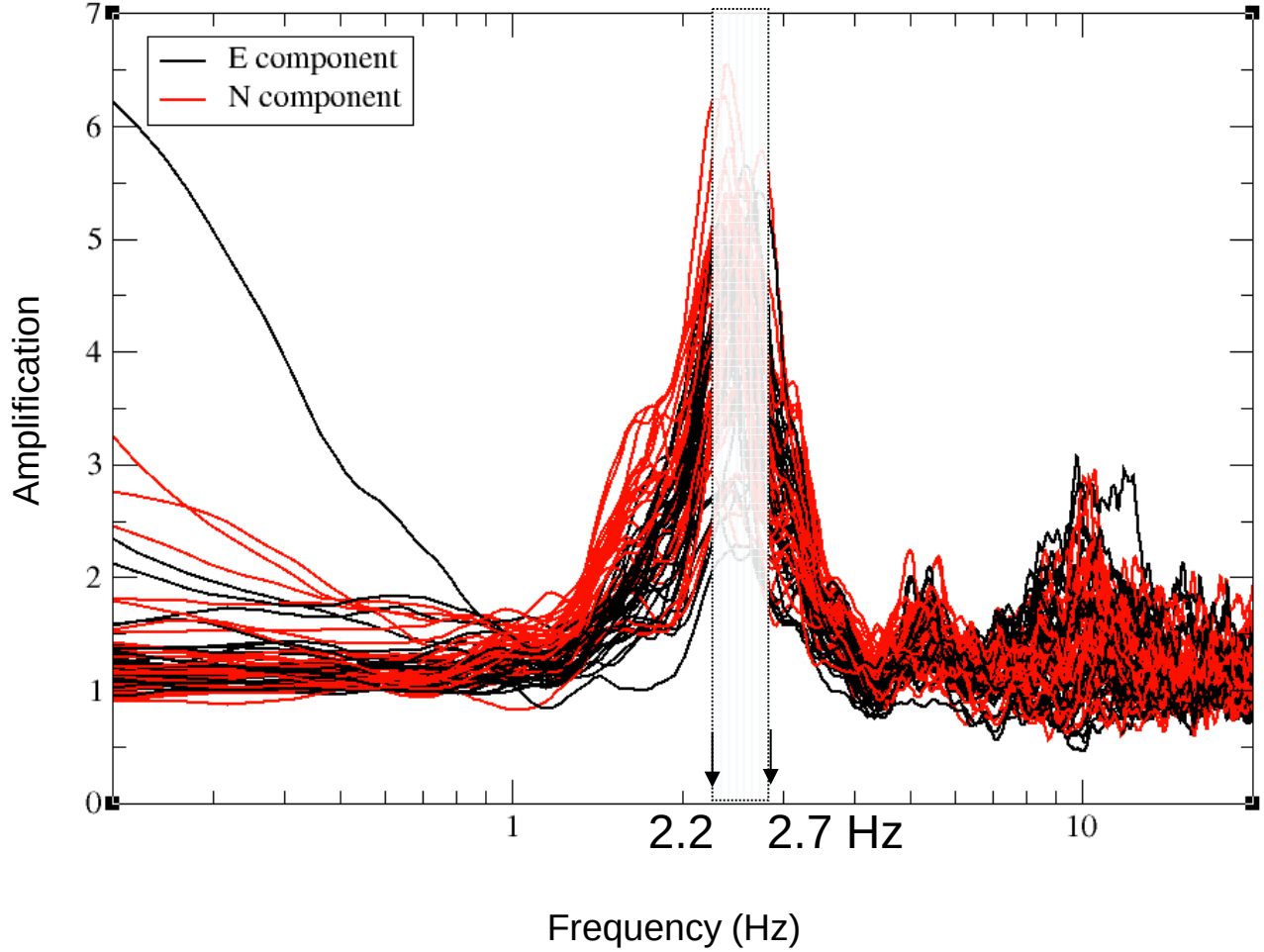


Site response characterization (resonant frequency) >> Horizontal to Vertical Spectral Ratio (HVSR method)



Site response characterization (resonant frequency) >> Horizontal to Vertical Spectral Ratio (HVSR method)

HVSR ratios of all the stations (38) used in the experiment



Site response characterization (resonant frequency) >> <u>Horizontal to Vertical Spectral Ratio (HVSR method)</u>

HVSR ratios of all the stations (38) used in the experiment
& 1D response of the Vs profile determined for the site