

**The Kalochori Accelerometric Network:
Configuration, available recordings and features of the dataset**

Institute of Engineering Seismology and Earthquake Engineering (EPPO-ITSAK)

Core members of ITSAK team:

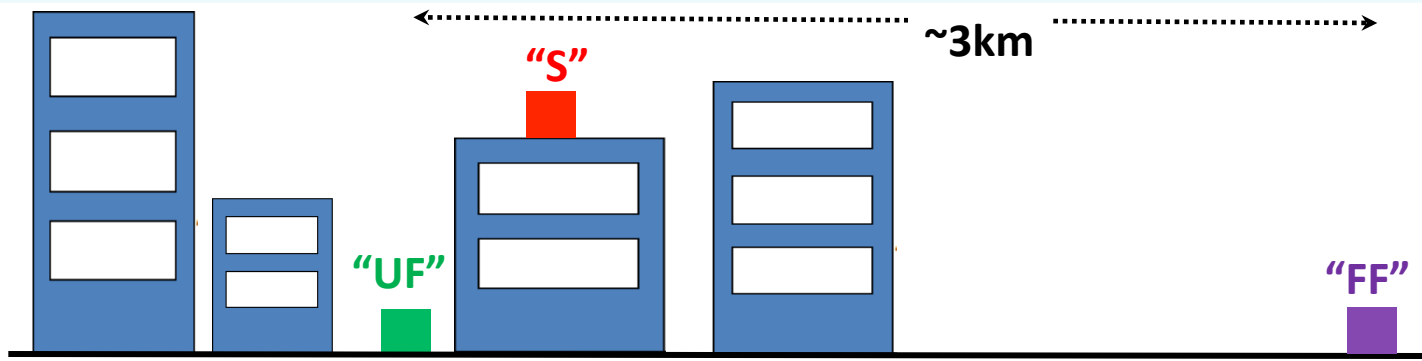
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Kalochori Accelerometric Network: design concept and implementation

Design concept:

3 "types" of stations



Implementation:

A pair of "S" - "UF" stations within each urban zone

A free-field "FF" station away from the built environment



Seven (7) REFTEK SMA-130 stations

200sps, continuous recording mode, real-time data transfer

KLH1-KLH3-KLH5: "S" stations

KLH2-KLH4-KLH6: "UF" stations


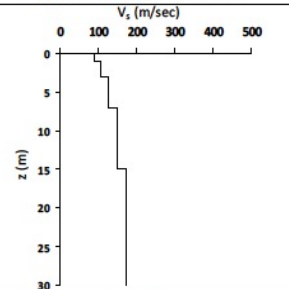



KLH7: "FF" station

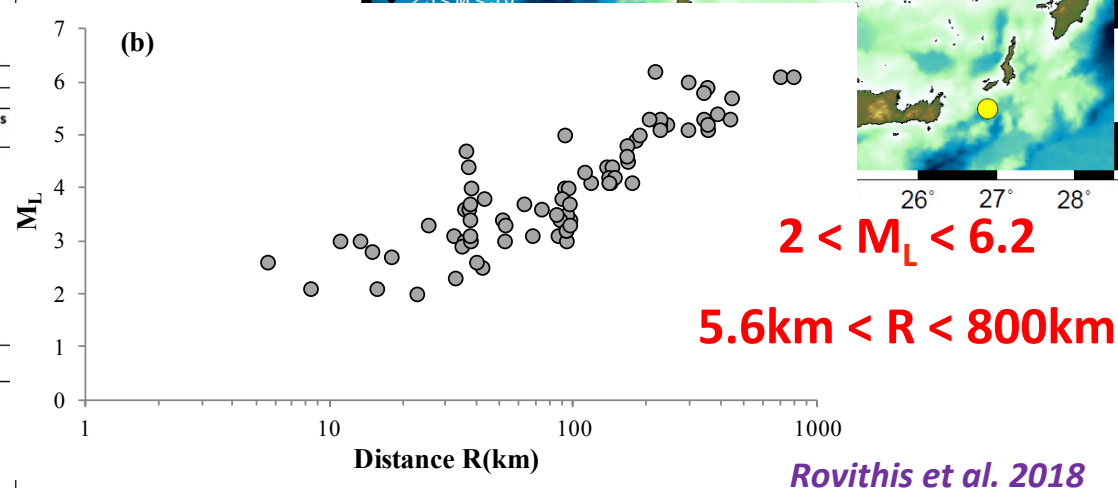
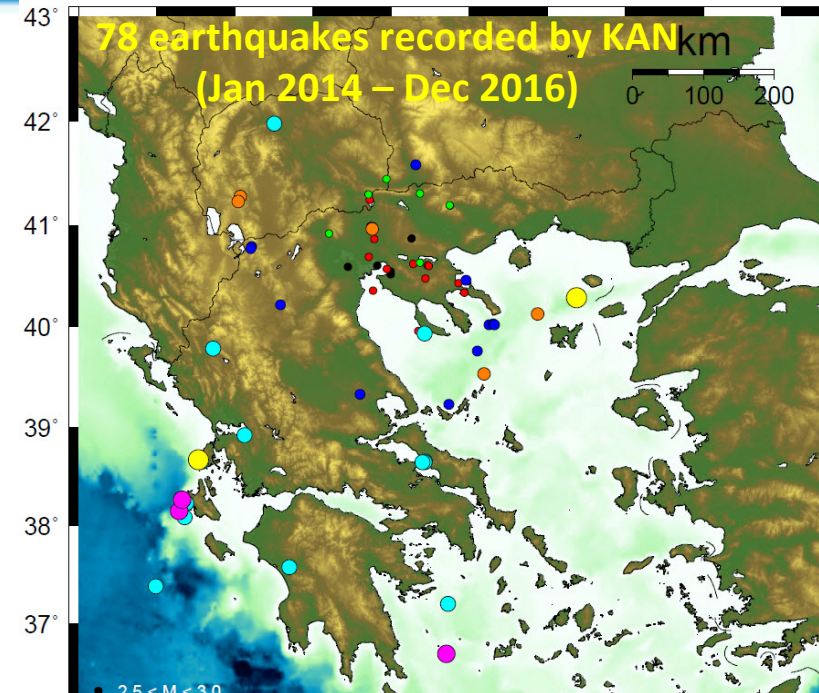
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Kalochori Accelerometric Network: stations documentation and recorded earthquakes

Station monograph:

- Code name, type of station, GPS coordinates, photos
- V_s profile based on MAM field measurements
- EC8-based type of soil ($V_{s,30}$)
- Surface geology

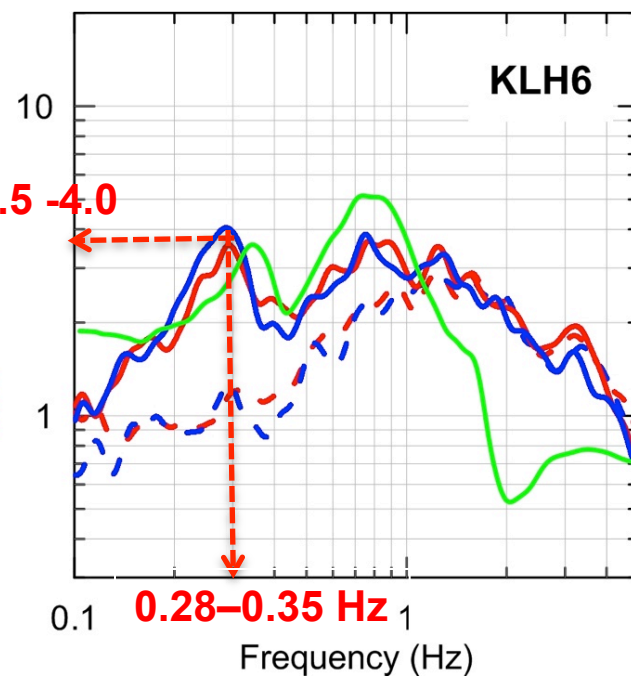
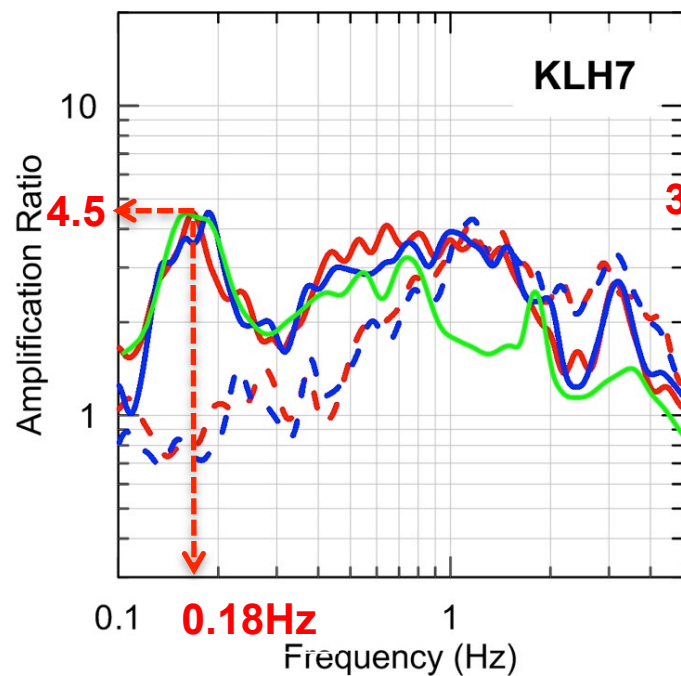
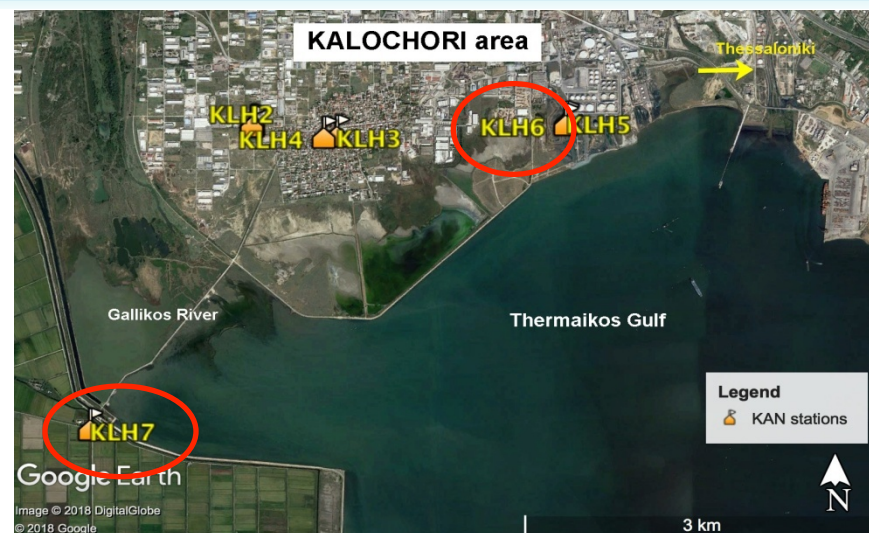
Accelerometric station code		KLH7	
Type of installation		"Free-field" station ("FF" type)	
Subzone of interest	Free-field zone	GPS coordinates	40.6178°N 22.8322°E
Collocated GNSS sensor	no	Real-time data transfer	yes
		V_s profile from MAMs method 	
		$V_{s,30}$ (m/sec) 148 Soil type according to EC8 (based solely on $V_{s,30}$) D	
Surface Geology		Holocene deposits undivided: Loose coastal deposits (silt, sand and gravel)	
Brief description of the installation			
Picture of KLH7 station		Picture of KLH7 GPS antenna	
			



DOI: [10.6084/m9.figshare.5044804](https://doi.org/10.6084/m9.figshare.5044804)

Site response parameters, f_0 and A_0

Comparison of mean Horizontal-to-Vertical (H/V) ratios from earthquake and microtremor data



- EW comp $M \geq 5$
- - - EW comp $M < 5$
- NS comp $M \geq 5$
- - - NS comp $M < 5$
- Noise

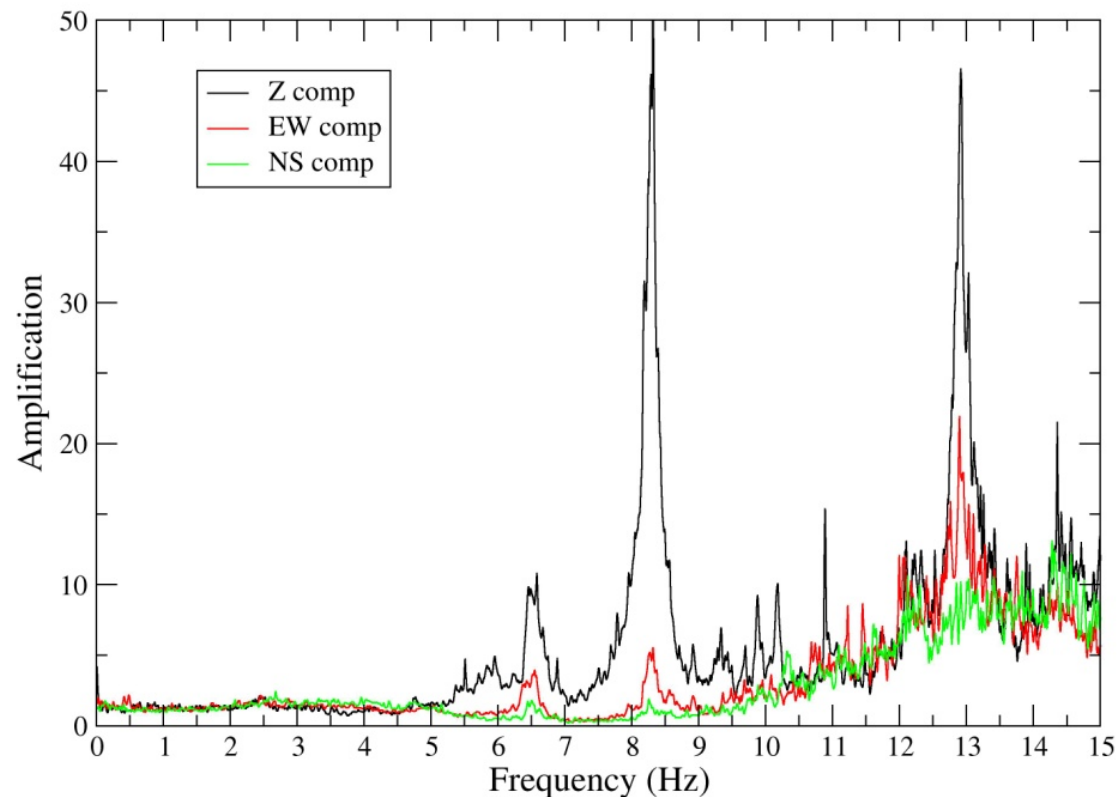
Identification of dynamic characteristics of the instrumented structures



KLH5
Acc Fourier Spectra

KLH6
Acc Fourier Spectra

Arithmetic mean of 22 structural top-to-ground surface Fourier amplitude ratios from recorded data of KLH5 and KLH6 stations (instrumented tank).



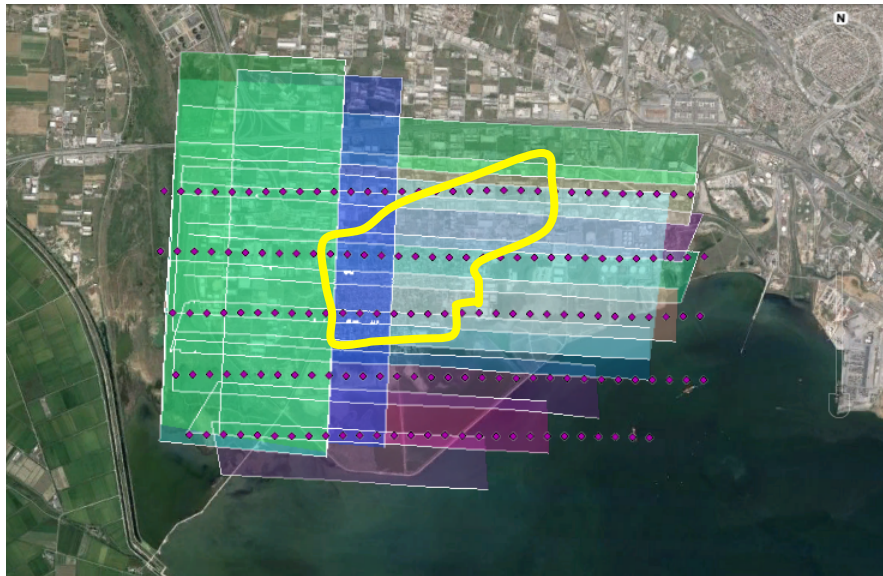
Rovithis et al. 2018

Kirtas et al. 2018

Kalochori Accelerometric Network: Selected features of the dataset

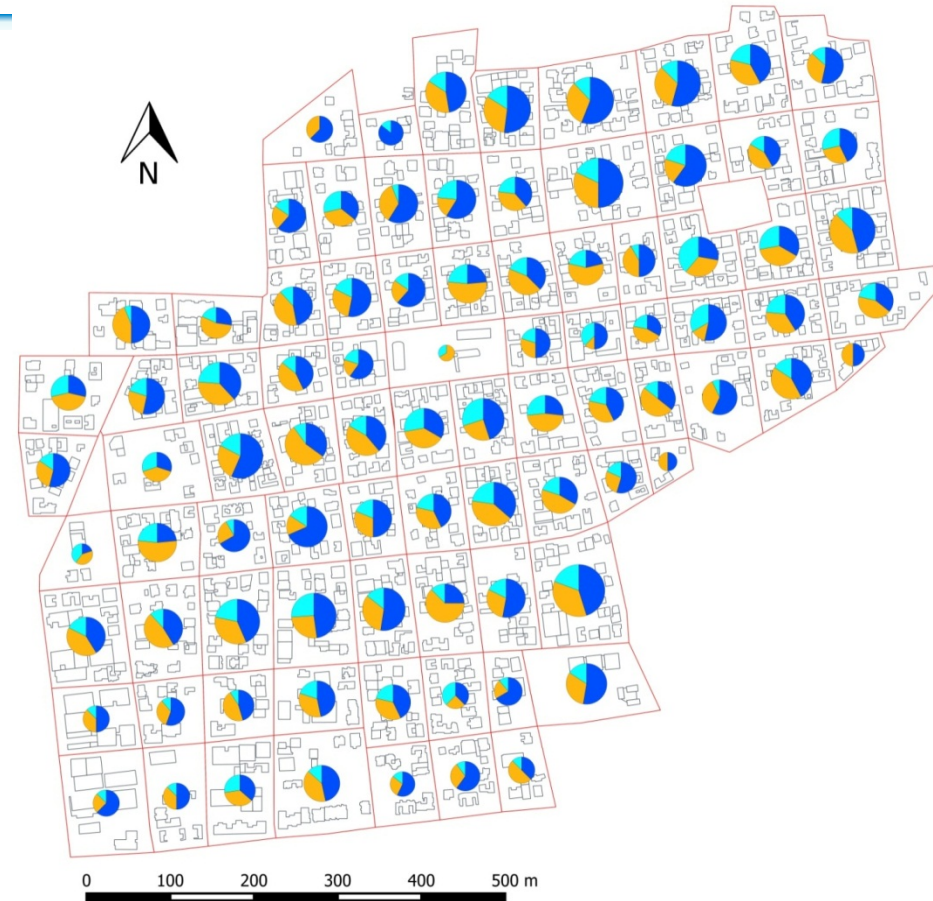
Lidar-aided investigation of soil-structure interaction (SSI) effects at urban scale

Airborne LiDAR mission over Kalochori area

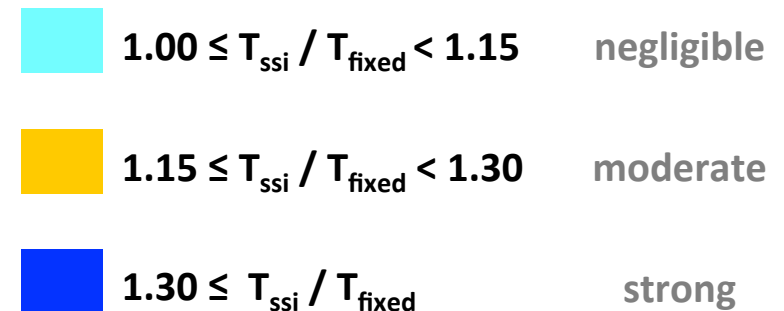


Ratios of fundamental period of structures between flexible (SSI) and fixed-base conditions for a seismic scenario with $T_m=475$ years, $PGA_{rock}=0.15g$

Rovithis et al. 2017



SSI effect:



Kalochori Accelerometric Network: References

Rovithis Emm., Makra K., Kirtas Emm., Manesis Ch., Bliziotis D., and Konstantinidou K. (2018) “Field monitoring of strong ground motion in urban areas: the Kalochori Accelerometric Network (KAN), database and Web-GIS portal”, *Earthquake Spectra*, 34(2): 471-501.

Makra K., Savvaidis A. and Rovithis Emm. (2018) “Site Response Characteristics Of A Deep Sedimentary Basin. The Case Of Kalochori, N. Greece”, *Proceedings of the 16th European Conference on Earthquake Engineering (16ECEE)*, 18-21 June, Thessaloniki, Greece, paper No. 11322.

Kirtas Emm., Rovithis Emm., Makra K., and Papaevangelou I. (2018) “Dynamic response characteristics of an instrumented steel water tank in Kalochori, N. Greece”, *Proceedings of the 16th European Conference on Earthquake Engineering (16ECEE)*, 18-21 June, Thessaloniki, Greece, paper No. 11167.

Rovithis Emm., Kirtas Emm., Bliziotis D., Maltezos E., Pitilakis D., Makra K., Savvaidis A., Karakostas Ch., Lekidis V. (2017) “A LiDAR-aided urban-scale assessment of soil-structure interaction effects: The case of Kalochori residential area (N. Greece)” *Bulletin of Earthquake Engineering*, 15(11): 4821-4850.