

*Incontro su Geoscienze e Rischi Naturali
Potenza 4-5 Marzo 2009*

Marco Mucciarelli

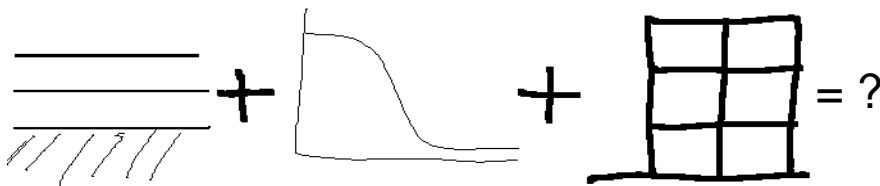
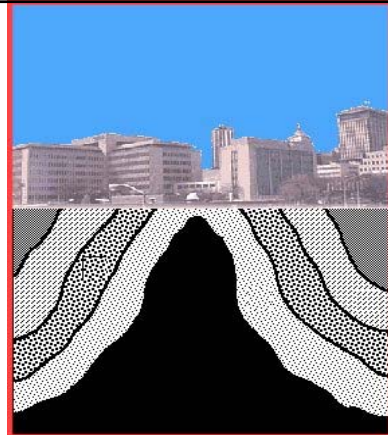
Geofisica per l'ingegneria
e l'archeologia

ANNALS OF GEOPHYSICS, VOL. 51, N. 2/3, April/June 2008

**Codes, models and reality: reductionism
vs. holism in a review of microzonation
studies in the Umbria-Marche region**

Marco Mucciarelli

Dipartimento di Strutture, Geotecnica e Geologia Applicata, Università della Basilicata, Potenza, Italy.



La domanda alla quale non sappiamo rispondere (anche dopo S. Giuliano) è quanto siano comuni oppure rari i forti effetti di amplificazione di sito- Gli studi di microzonazione sono guidati dai danni, ovvero il campione non è uniforme.



13th World Conference on Earthquake Engineering
Vancouver, B.C., Canada
August 1-6, 2004
Paper No. 45

THE HVSR TECHNIQUE FROM MICROTREMOR TO STRONG MOTION: EMPIRICAL AND STATISTICAL CONSIDERATIONS

Marco MUCCIARELLI, Maria Rosaria GALLIPOLI¹

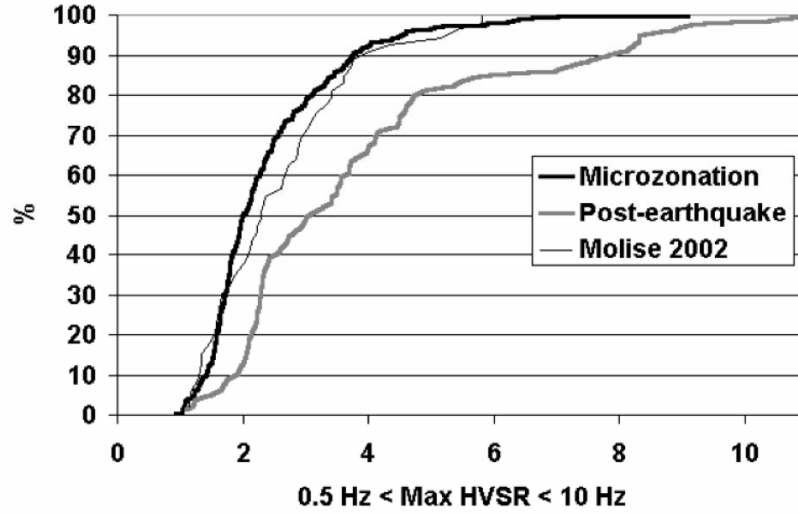


Fig. 6. Comparison between the CDFs of different sets of HVSR, as a function of the largest value observed in the frequency range 0.5-10 Hz.

Comparison of Site Classification from V_{S30} , V_{S10} , and HVSR in Italy

by Maria Rosaria Gallipoli and Marco Mucciarelli

Table 1

Comparison of Soil Classification and V_{S30} Range between the NEHRP Provision and the Italian Code

Code	Soil Class and V_{S30} (m/sec)				
	A	B	C	D	E
NEHRP	> 1500	760-1500	360-760	180-360	< 180
Italian Code (OPCM 3274)	> 800	360-800	180-360	< 180	< 800 $H < 25$ m

Horizontal to Vertical Spectral Ratio

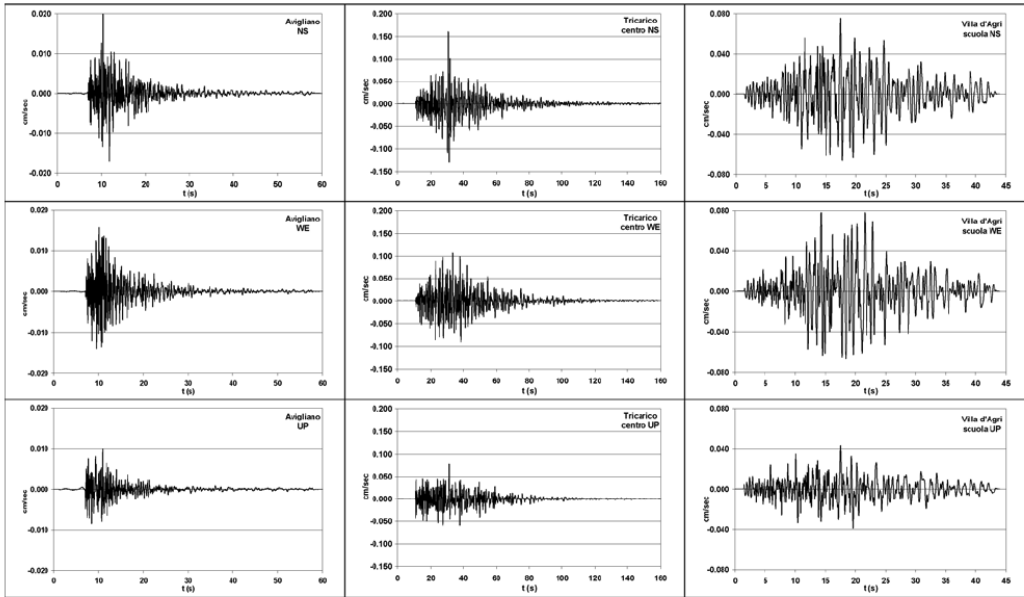


Figure 1. Time histories for the event that occurred on 3 September 2004 at 00:04:12 a.m., with epicenter at 40.701° N, 15.684° E, M_L 4.1. For each of the three stations, it is possible to note the differences between the horizontal and vertical components.

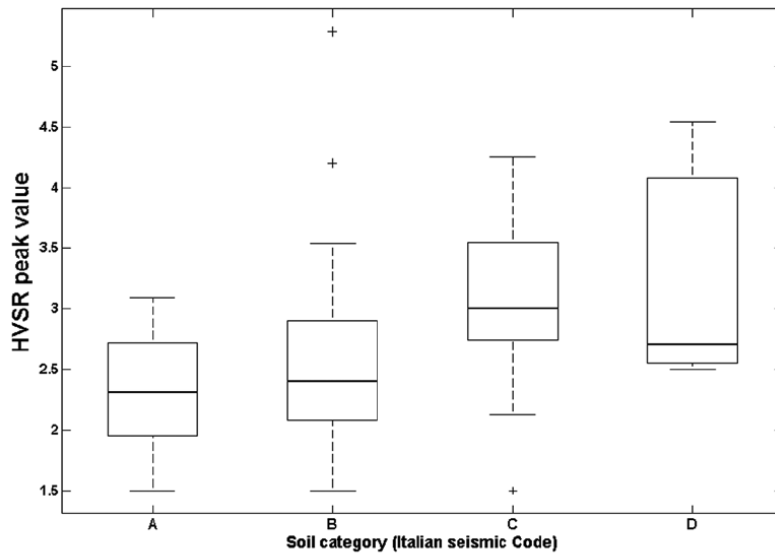
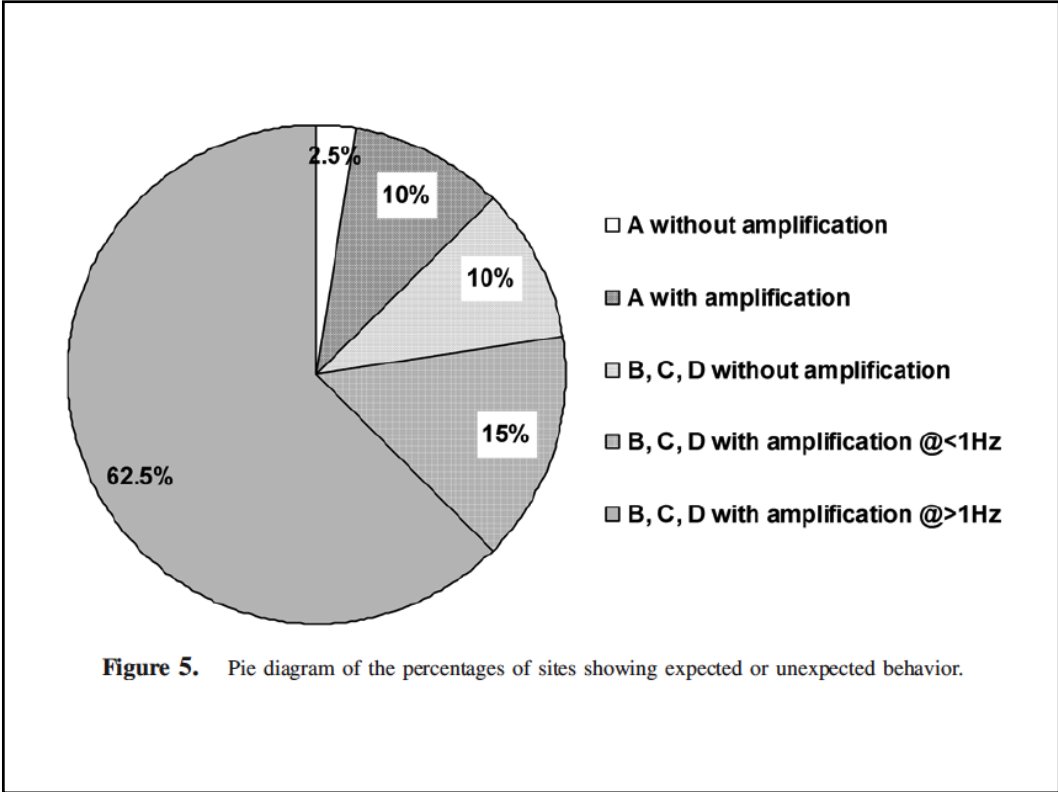
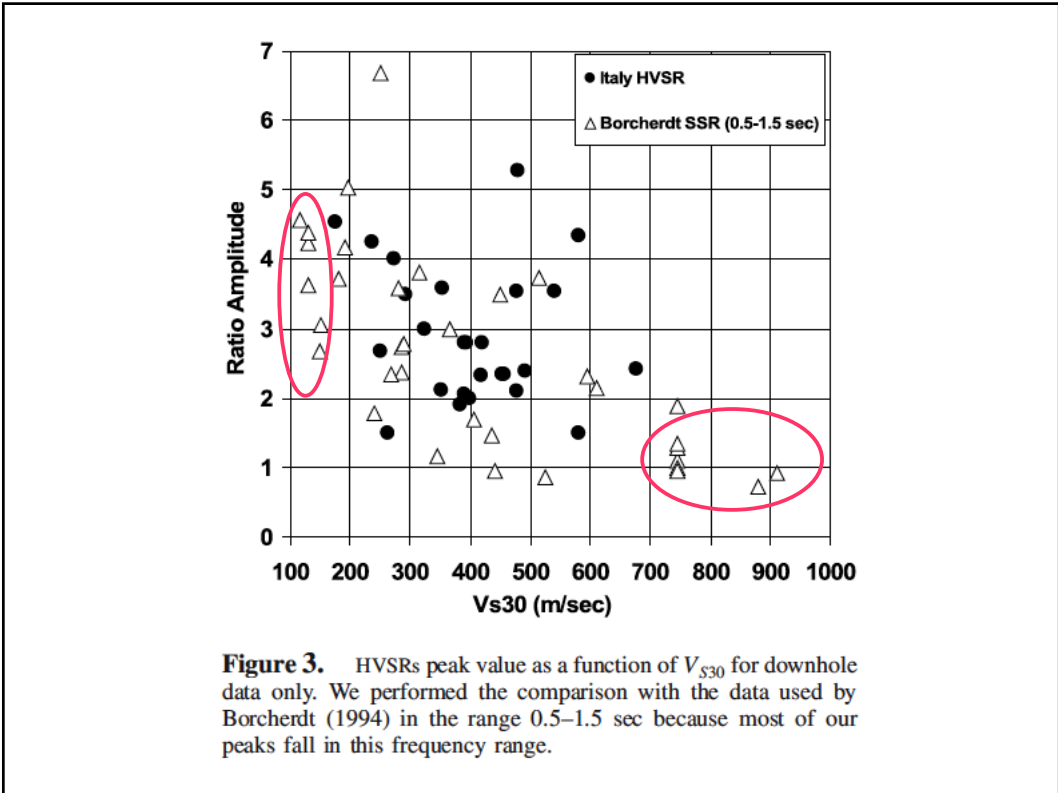


Figure 2. Box-and-whisker plot of HVSr peak values grouped by the soil classes of the Italian seismic code. The box has lines at the lower quartile, median, and upper quartile values. The whiskers are lines extending from each end of the box to two interquartile ranges. Crosses mark the outliers, that is, data with values beyond the ends of the whiskers.



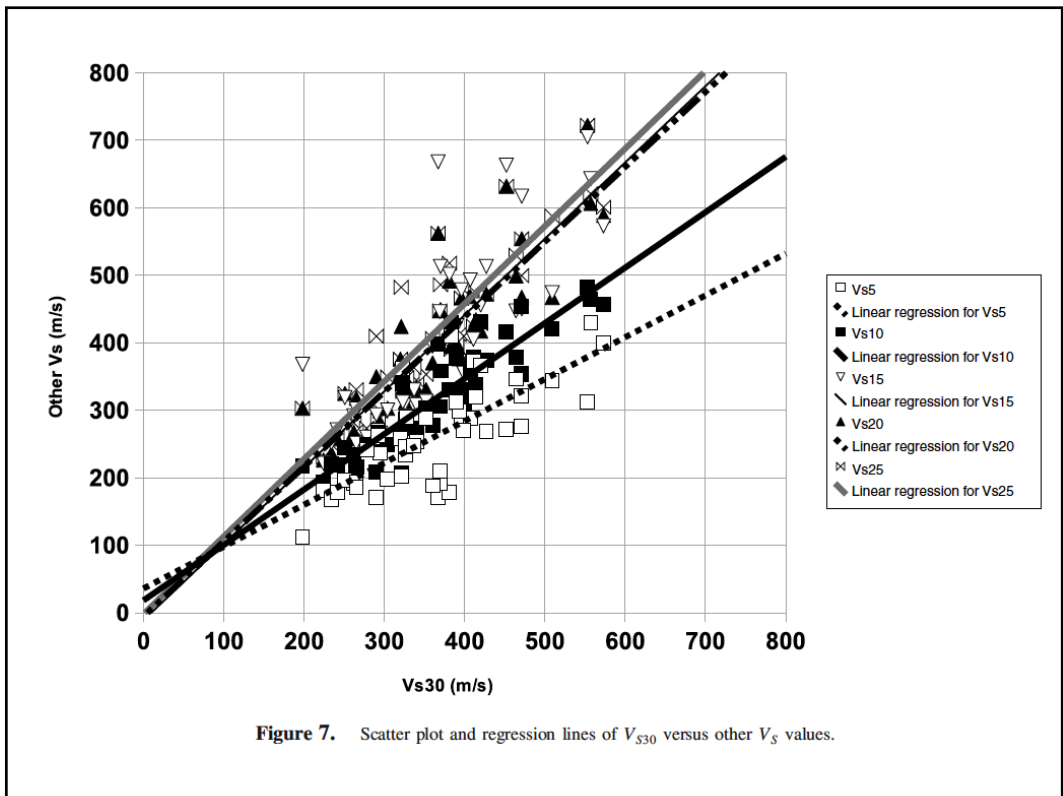
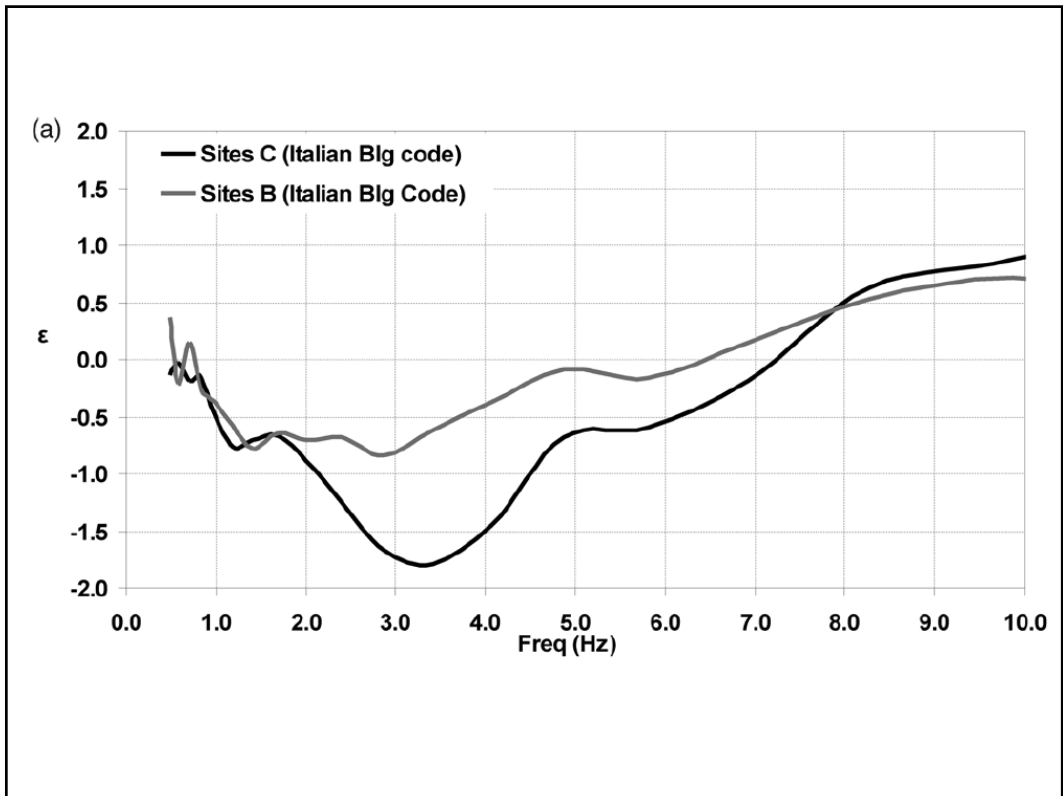
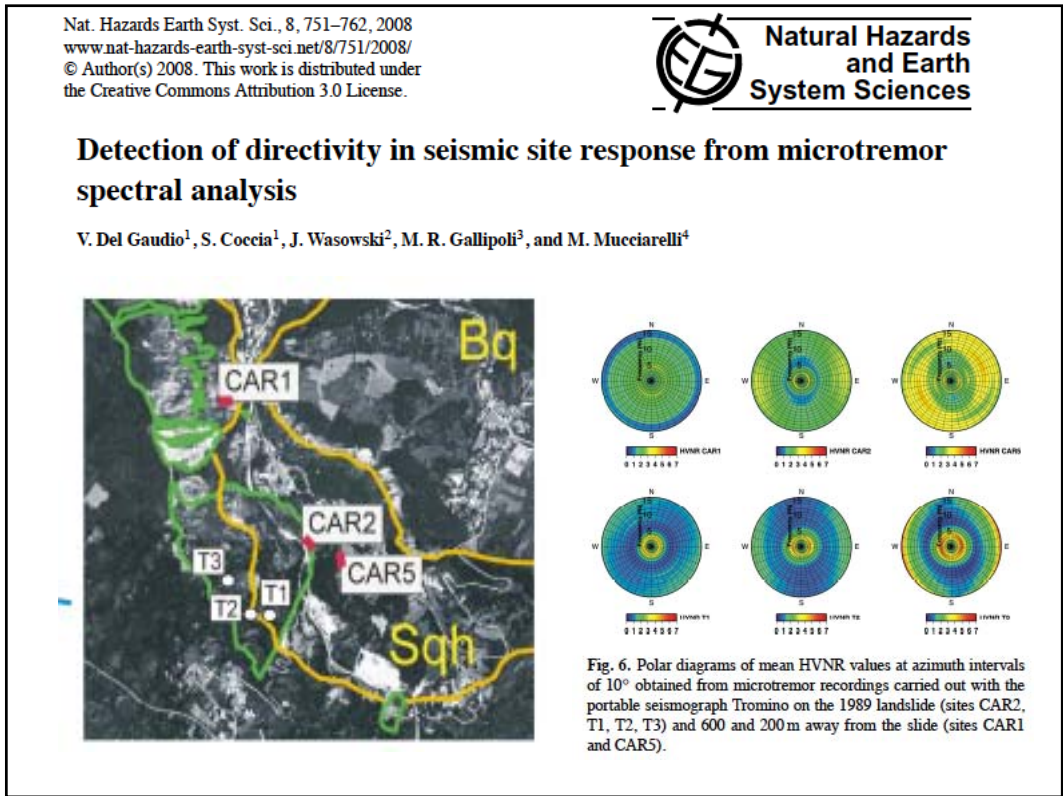
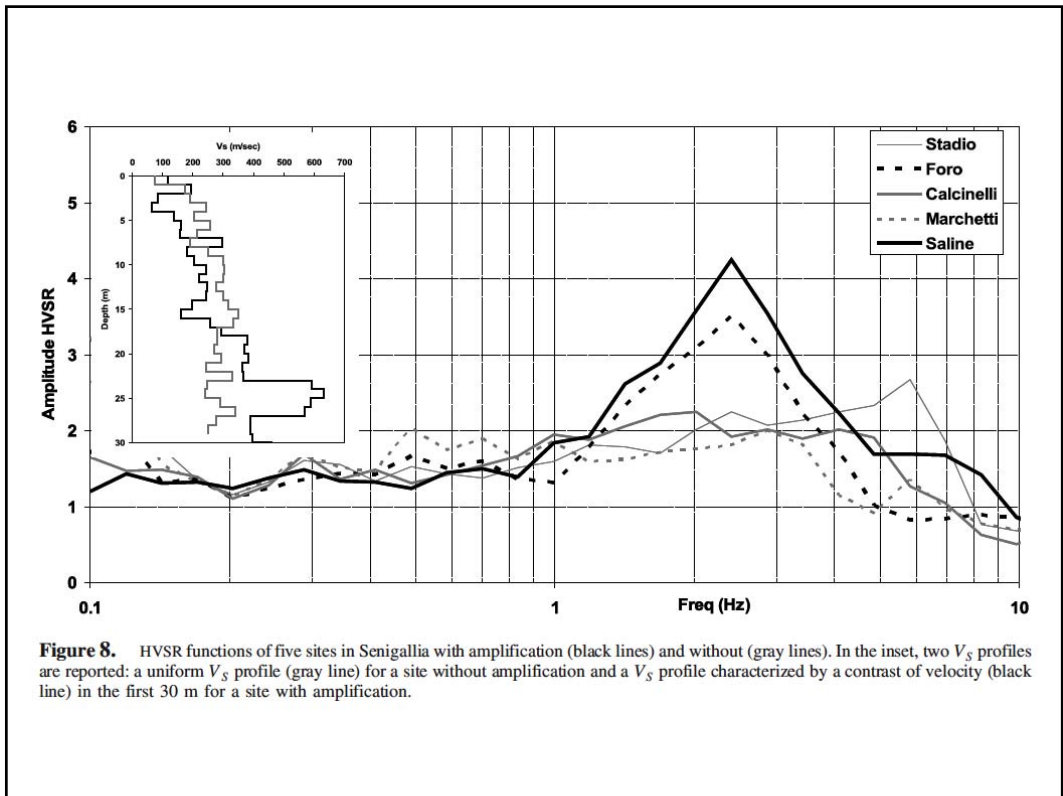


Figure 7. Scatter plot and regression lines of V_{s30} versus other V_s values.



Empirical estimate of fundamental frequencies and damping for Italian buildings

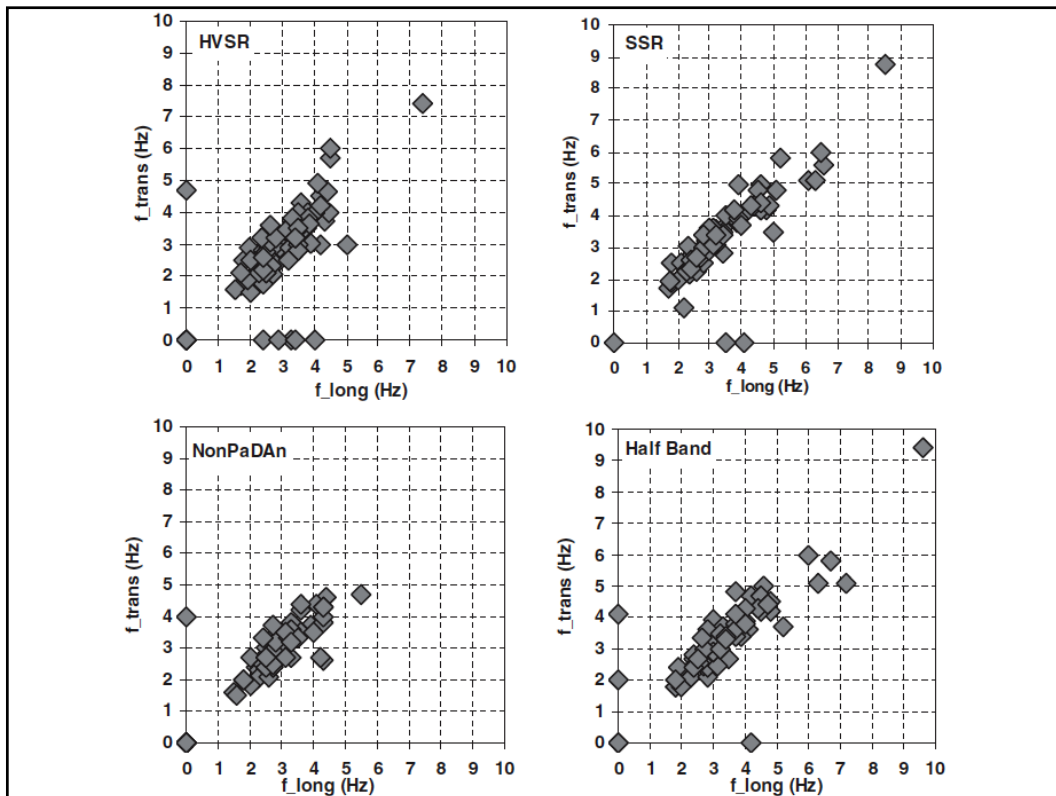
Maria Rosaria Gallipoli^{1,2,*}, Marco Mucciarelli¹ and Marco Vona¹

¹Department of Structures, Soil Dynamics and Engineering Geology, University of Basilicata, Italy

²Institute of Methodologies for Environmental Analysis, National Council of Researches, Italy

Table I. Comparison between the orthogonal fundamental frequencies obtained applying four different techniques to ambient noise and to the average of earthquake recordings for the test building.

Component	Method	Frequency determined from earthquakes (Hz)	Frequency determined from noise (Hz)	var %
Longitudinal	HVSR	3.4	3.7	-8.8
	SSR	3.9	4.1	-5.1
	NonPaDAn	3.7	3.9	-5.4
	HBW	3.8	4.0	-5.3
Transversal	HVSR	3.4	3.5	-2.9
	SSR	3.7	4.0	-8.1
	NonPaDAn	3.6	3.7	-2.8
	HBW	3.7	3.9	-5.4



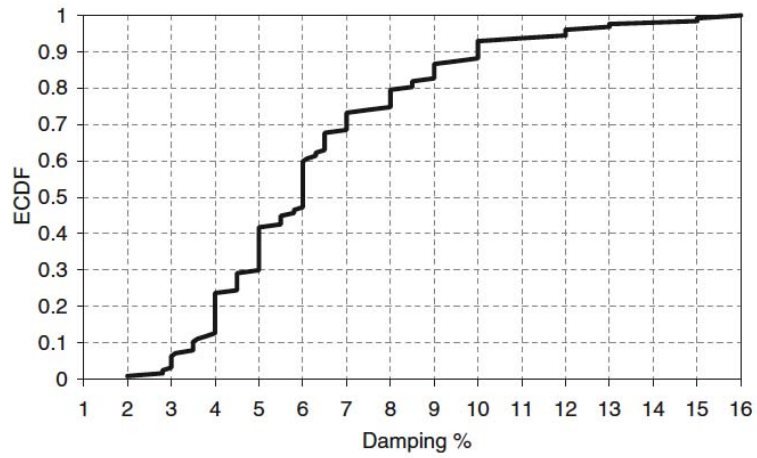


Figure 7. Empirical cumulative distribution function of dampings obtained applying the NonPaDAn technique to ambient noise recordings inside the 65 RC buildings listed in Table II.

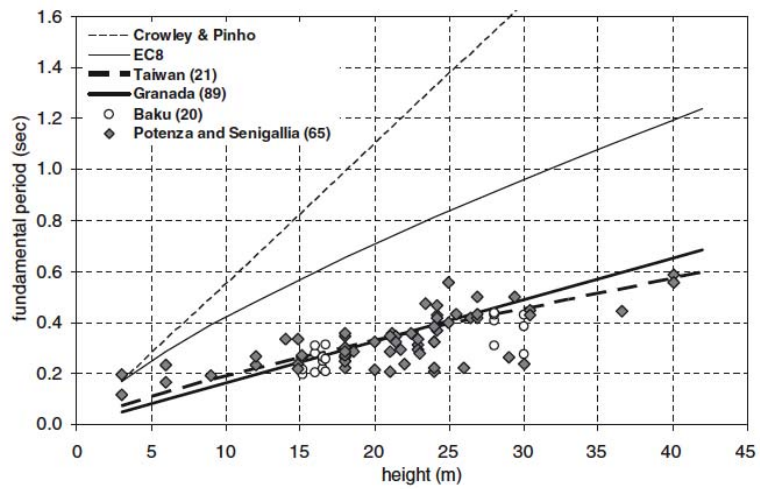


Figure 8. Comparison among period–height relationships. The empirical values are from Potenza and Senigallia (this work), and from Granada [1], Taiwan [21] and Baku [22]. Between parentheses is the number of RC buildings used in each study. The theoretical relationships are the provision from EuroCode 8 and the one proposed by Crowley and Pinho [20] for RC frames with cracked infills.

Chapter 4.5

Two Applications of the HVSr Technique to Cultural Heritage and Historical Masonry

Domenico Liberatore, Marco Mucciarelli, Maria Rosaria Gallipoli, and Nicola Masini

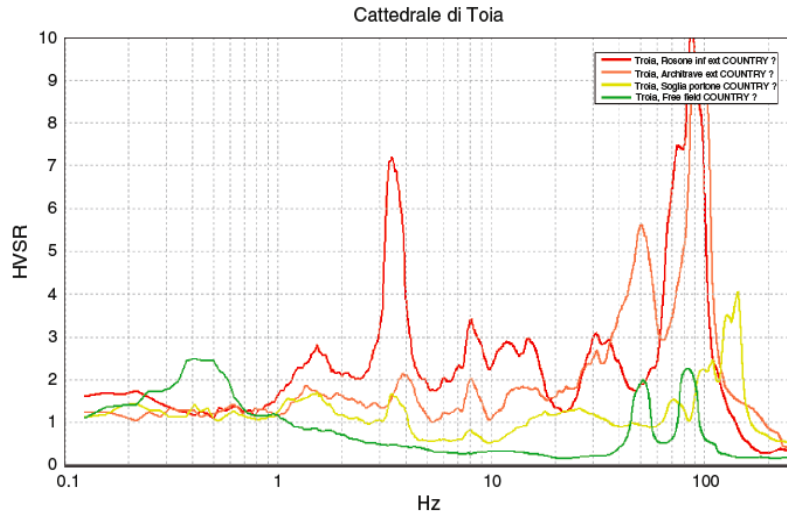


Fig. 4.5.4 HVSr of the façade at different heights

Multidisciplinary investigations on the Roman aqueduct of *Grumentum* (Basilicata, Southern Italy)

Massimo Bavusi (1), Domenico Chianese (2), Salvatore Ivo Gianno (3) and Marco Mucciarelli (4)

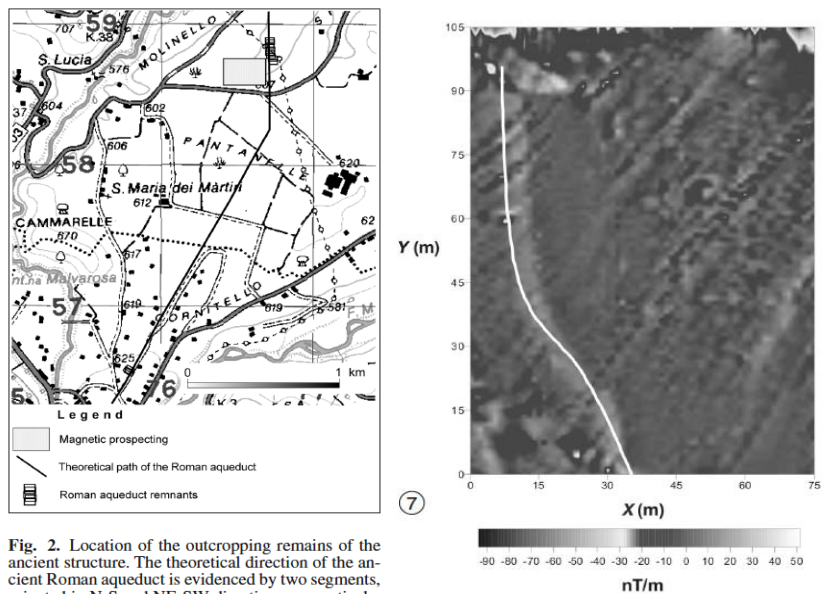


Fig. 2. Location of the outcropping remains of the ancient structure. The theoretical direction of the ancient Roman aqueduct is evidenced by two segments, oriented in N-S and NE-SW directions, respectively.

Dalla villa dei *Bruttii Praesentes* alla proprietà imperiale. Il complesso archeologico di Marsicovetere - Barricelle (PZ)

di *Alfonsina Russo, Maria Pina Gargano, Helga Di Giuseppe*

con appendice di *Marco Mucciarelli, Marcello Bianca, Domenico Liberatore, Michela Iaria**



Fig. 14. - Spanciamento del blocco modellato.

Il contributo delle geoscienze per l'individuazione dell'area portuale di Pompei: primi risultati

PAOLO BENEDEUCE¹ - MARIA ROSARIA GALLIPOLI² - PAOLO GUARINO³ - MARCO MUCCIARELLI¹ - SABATINO PISCITELLI² - ENZO RIZZO² - MARCELLO SCHIATTARELLA¹

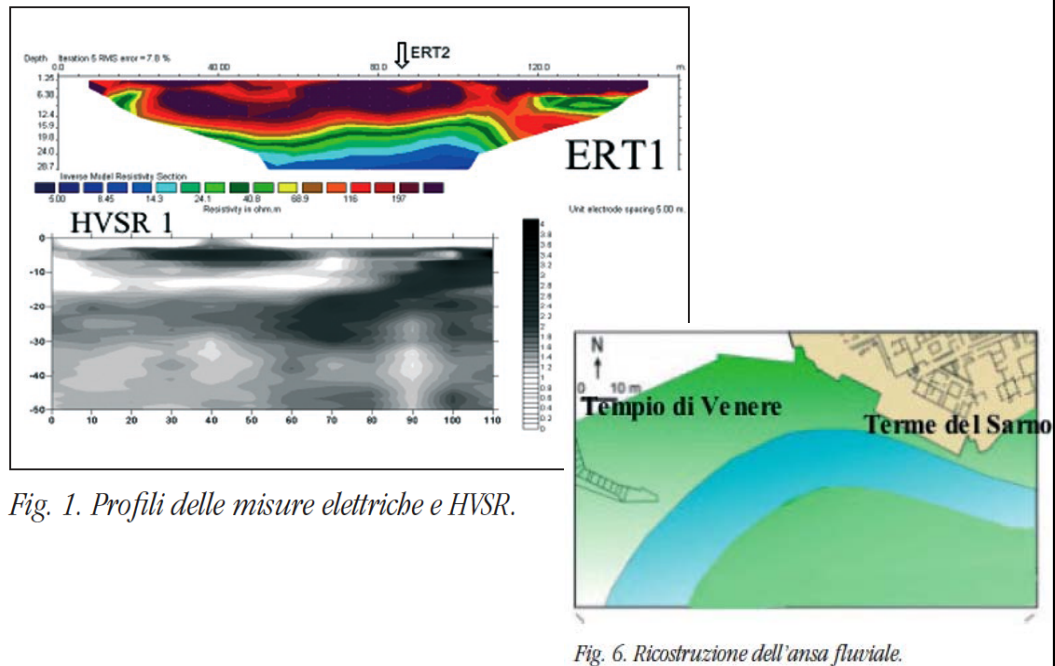


Fig. 1. Profili delle misure elettriche e HVSr.

Fig. 6. Ricostruzione dell'ansa fluviale.