



## DATA\_SISMA, FUGAZZOLO HVSR 4

Instrument: TEP-0059/01-10

Start recording: 11/07/12 11:20:32 End recording: 11/07/12 11:30:33

Channel labels: NORTH SOUTH; EAST WEST ; UP DOWN

GPS data not available

Trace length: 0h10'00". Analyzed 86% trace (manual window selection)

Sampling frequency: 128 Hz

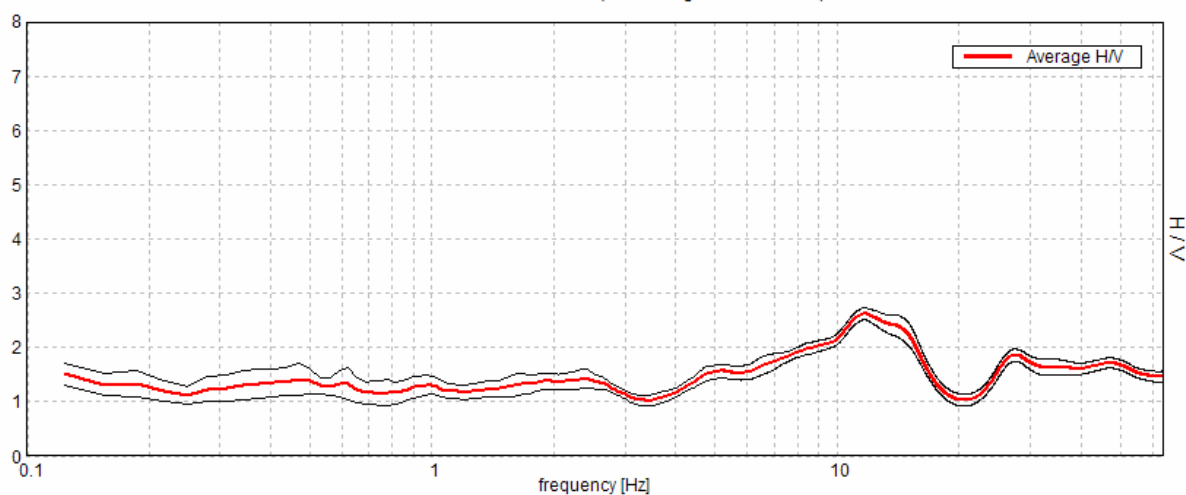
Window size: 20 s

Smoothing window: Triangular window

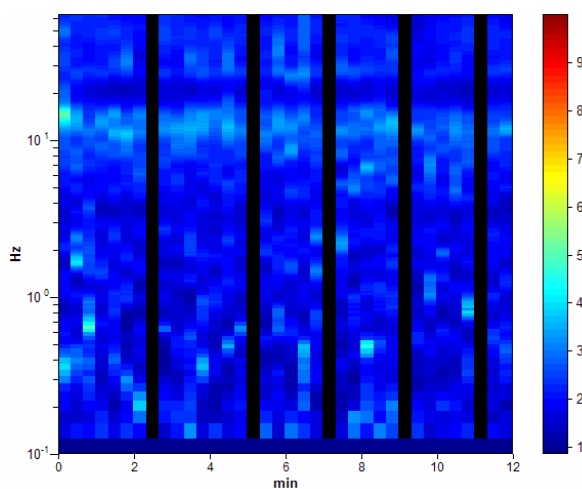
Smoothing: 20%

### HORIZONTAL TO VERTICAL SPECTRAL RATIO

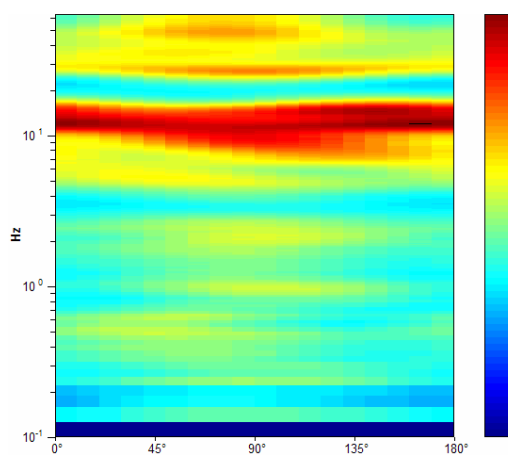
Max. H/V at  $11.66 \pm 0.5$  Hz (in the range 0.0 - 64.0 Hz).



### H/V TIME HISTORY

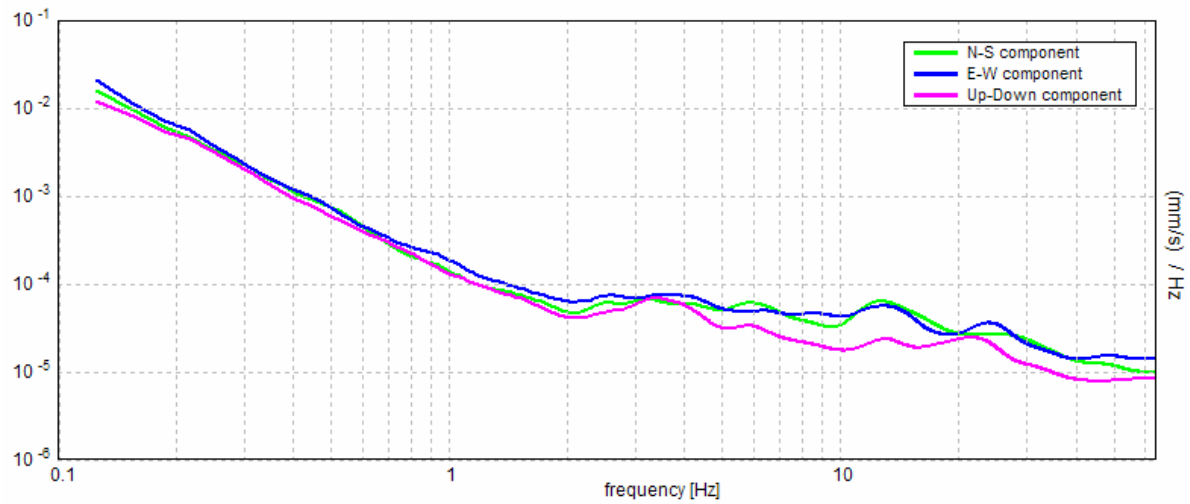


### DIRECTIONAL H/V

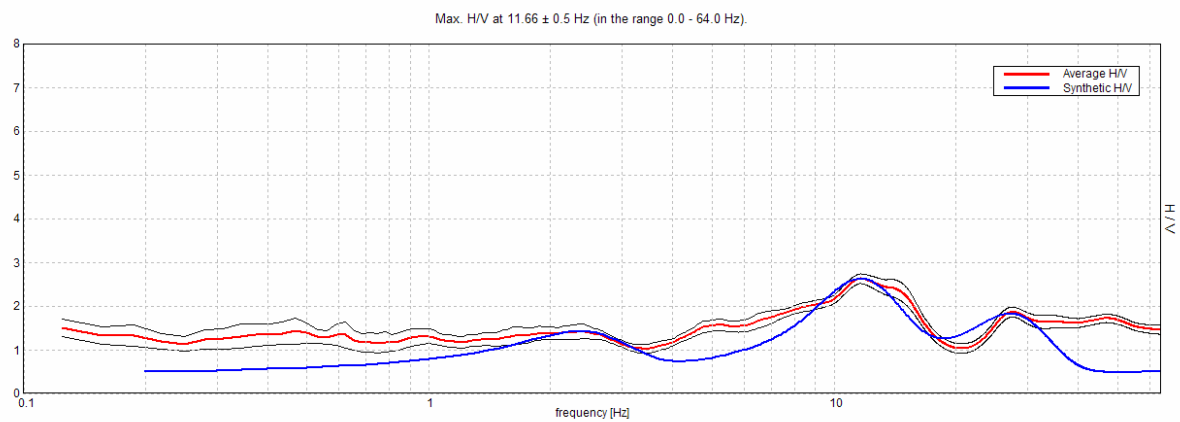




## SINGLE COMPONENT SPECTRA

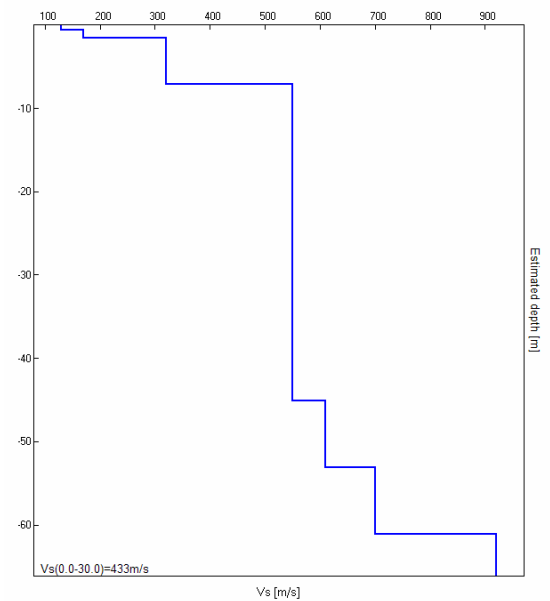


## EXPERIMENTAL VS. SYNTHETIC H/V



Depth at the bottom of the layer [m]	Thickness [m]	Vs [m/s]	Poisson ratio
0.60	0.60	130	0.35
1.60	1.00	170	0.35
7.10	5.50	320	0.35
45.10	38.00	550	0.35
53.10	8.00	610	0.35
61.10	8.00	700	0.35
inf.	inf.	920	0.35

**Vs(0.0-30.0)=433m/s**





[According to the Sesame, 2005 guidelines. **Please read carefully the *Grilla* manual before interpreting the following tables.**]

**Max. H/V at 11.66 ± 0.5 Hz (in the range 0.0 - 64.0 Hz).**

**Criteria for a reliable HVSR curve**

[All 3 should be fulfilled]

$f_0 > 10 / L_w$	11.66 > 0.50	OK	
$n_c(f_0) > 200$	7226.9 > 200	OK	
$\sigma_A(f) < 2$ for $0.5f_0 < f < 2f_0$ if $f_0 > 0.5\text{Hz}$ $\sigma_A(f) < 3$ for $0.5f_0 < f < 2f_0$ if $f_0 < 0.5\text{Hz}$	Exceeded 0 out of 560 times	OK	

**Criteria for a clear HVSR peak**

[At least 5 out of 6 should be fulfilled]

Exists $f^-$ in $[f_0/4, f_0] \mid A_{H/V}(f^-) < A_0 / 2$	4.281 Hz	OK	
Exists $f^+$ in $[f_0, 4f_0] \mid A_{H/V}(f^+) < A_0 / 2$	17.719 Hz	OK	
$A_0 > 2$	2.63 > 2	OK	
$f_{\text{peak}}[A_{H/V}(f) \pm \sigma_A(f)] = f_0 \pm 5\%$	$ 0.02067  < 0.05$	OK	
$\sigma_f < \varepsilon(f_0)$	$0.24097 < 0.58281$	OK	
$\sigma_A(f_0) < \theta(f_0)$	$0.0529 < 1.58$	OK	

$L_w$	window length
$n_w$	number of windows used in the analysis
$n_c = L_w n_w f_0$	number of significant cycles
$f$	current frequency
$f_0$	H/V peak frequency
$\sigma_f$	standard deviation of H/V peak frequency
$\varepsilon(f_0)$	threshold value for the stability condition $\sigma_f < \varepsilon(f_0)$
$A_0$	H/V peak amplitude at frequency $f_0$
$A_{H/V}(f)$	H/V curve amplitude at frequency $f$
$f^-$	frequency between $f_0/4$ and $f_0$ for which $A_{H/V}(f^-) < A_0/2$
$f^+$	frequency between $f_0$ and $4f_0$ for which $A_{H/V}(f^+) < A_0/2$
$\sigma_A(f)$	standard deviation of $A_{H/V}(f)$ , $\sigma_A(f)$ is the factor by which the mean $A_{H/V}(f)$ curve should be multiplied or divided
$\sigma_{\log H/V}(f)$	standard deviation of $\log A_{H/V}(f)$ curve
$\theta(f_0)$	threshold value for the stability condition $\sigma_A(f) < \theta(f_0)$

**Threshold values for  $\sigma_f$  and  $\sigma_A(f_0)$**

Freq.range [Hz]	< 0.2	0.2 – 0.5	0.5 – 1.0	1.0 – 2.0	> 2.0
$\varepsilon(f_0)$ [Hz]	$0.25 f_0$	$0.2 f_0$	$0.15 f_0$	$0.10 f_0$	$0.05 f_0$
$\theta(f_0)$ for $\sigma_A(f_0)$	3.0	2.5	2.0	1.78	1.58
Log $\theta(f_0)$ for $\sigma_{\log H/V}(f_0)$	0.48	0.40	0.30	0.25	0.20