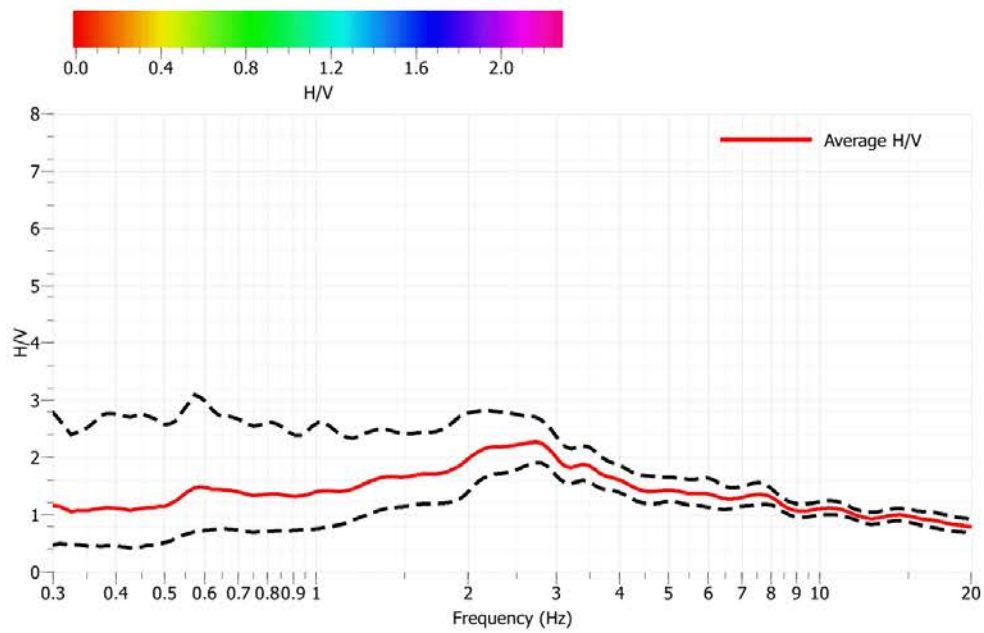
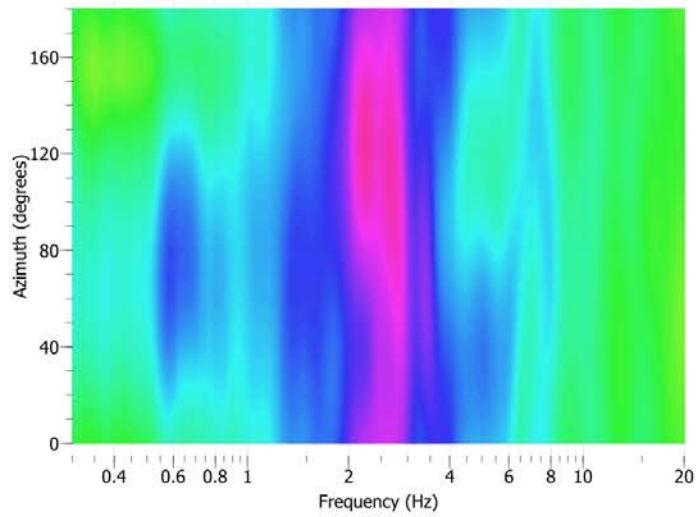
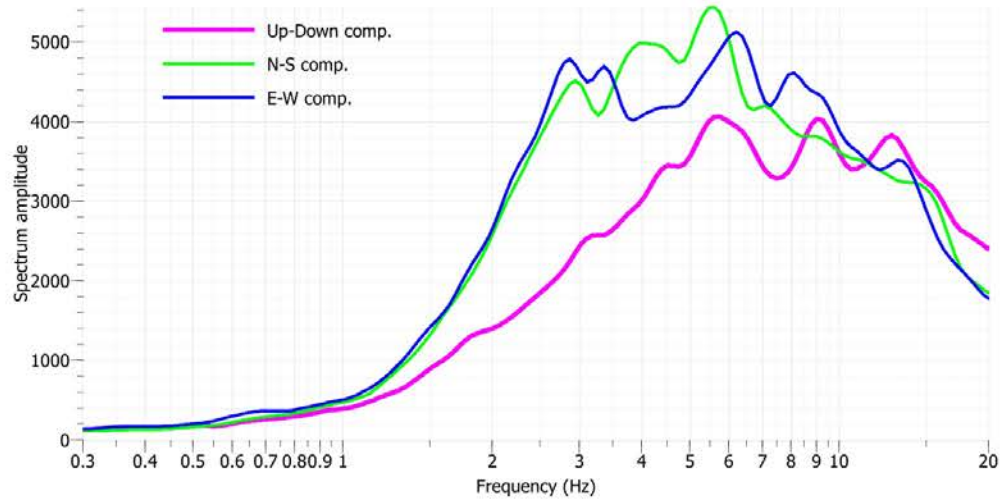


9. Allegati

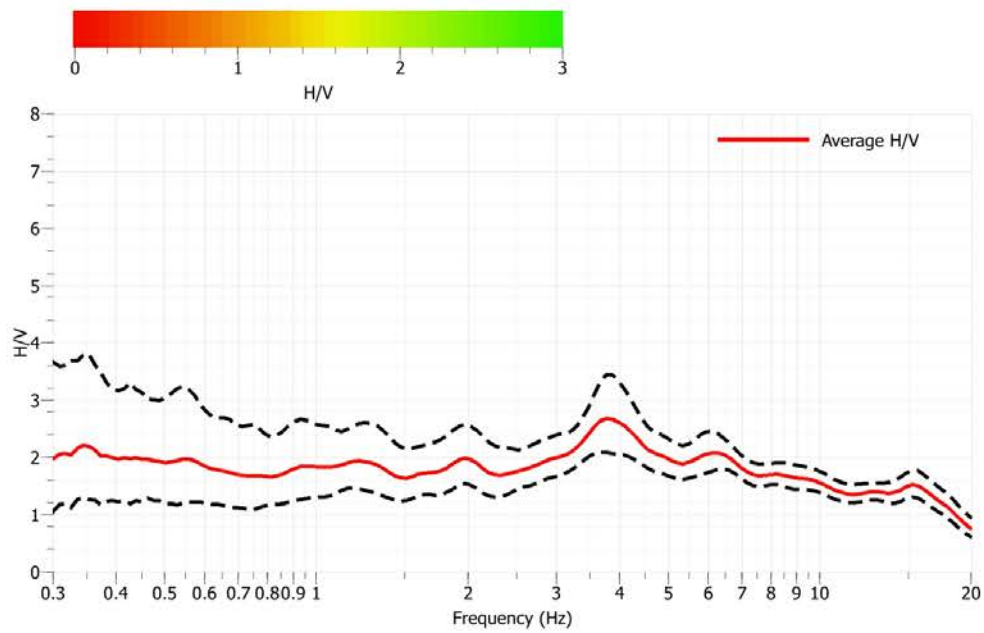
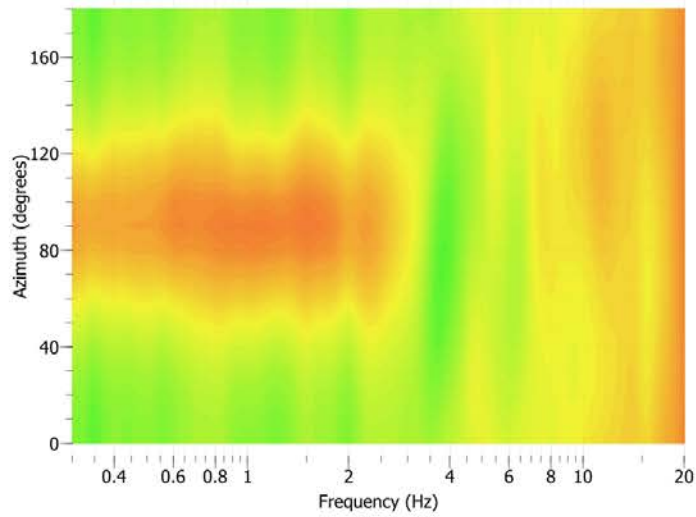
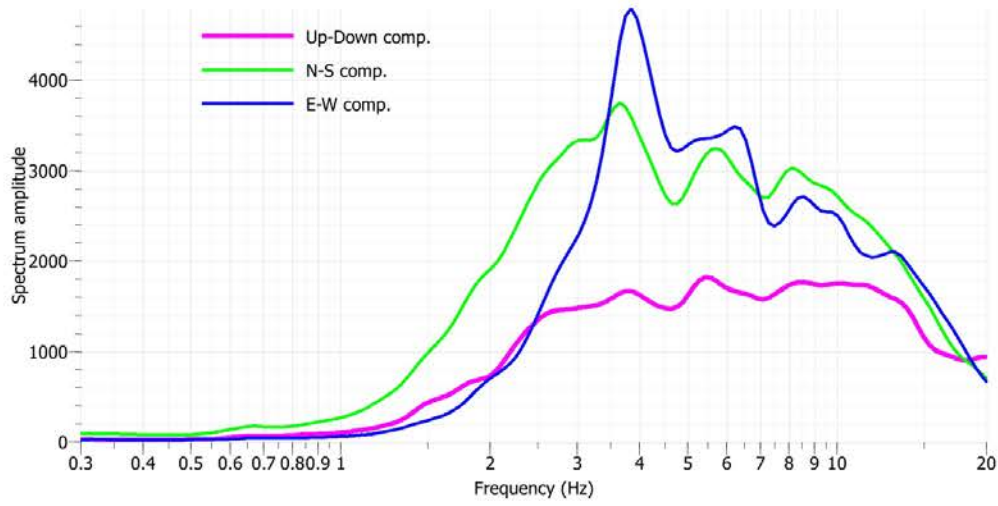
Sono state allegate:

- le elaborazioni delle misure di rumore ambientale a stazione singola (HVSR) effettuate nel corso della campagna del mese di aprile 2018;
- le forme d'onda in accelerazione e in velocità spettri di Fourier dei 27 segnali sismici utilizzati per l'analisi quantitativa dei parametri di scuotimento:

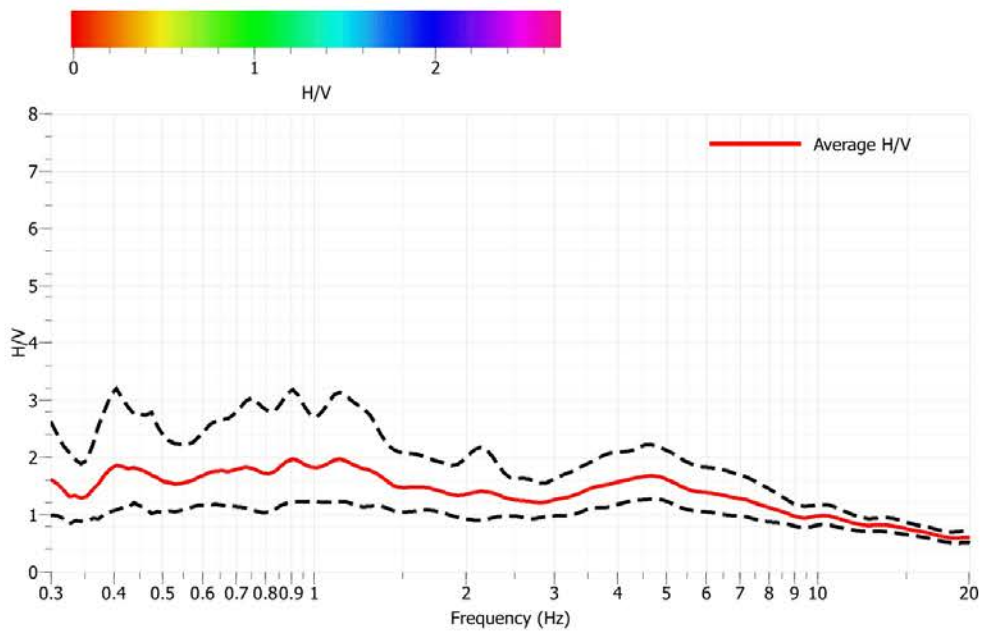
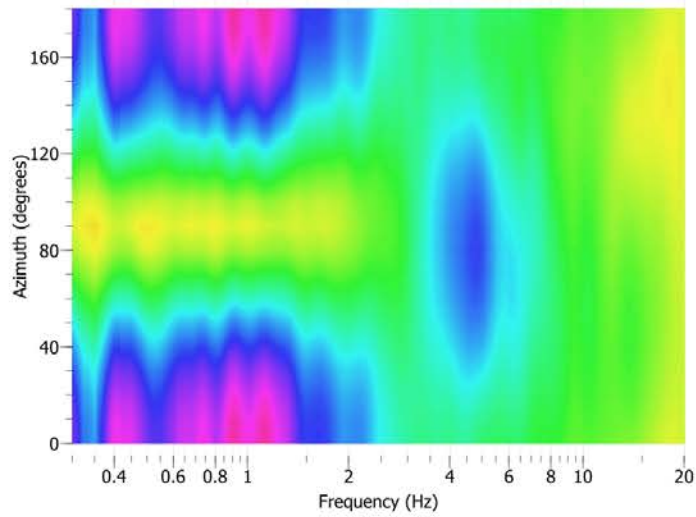
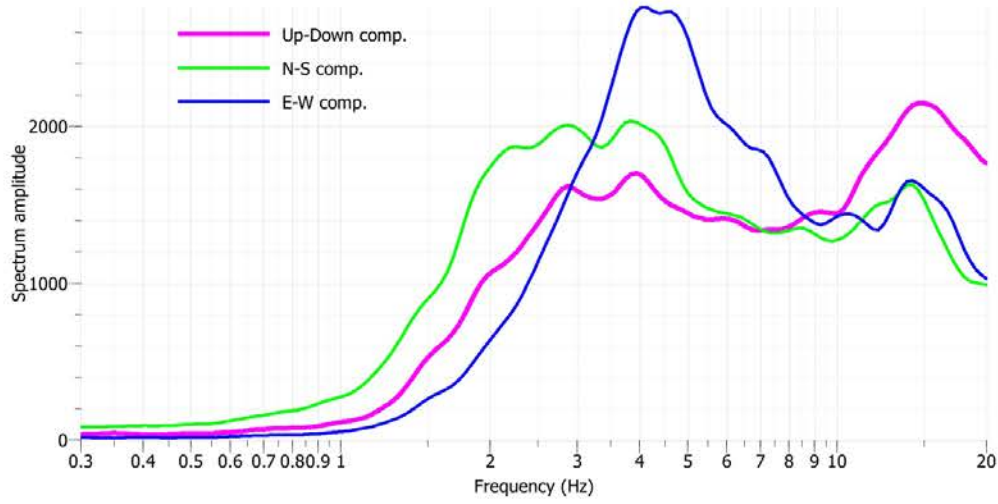
FRO01



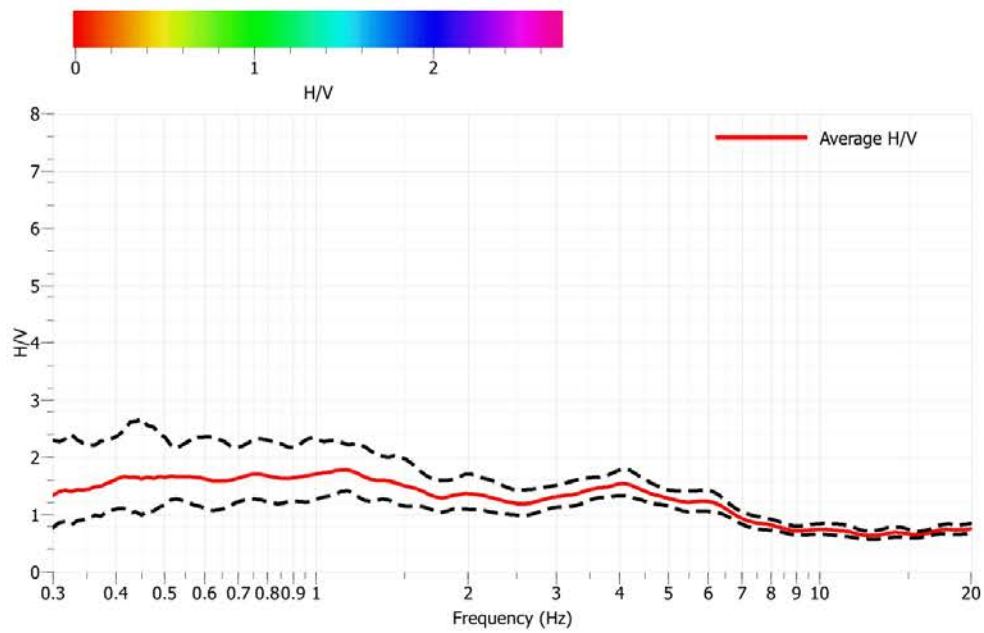
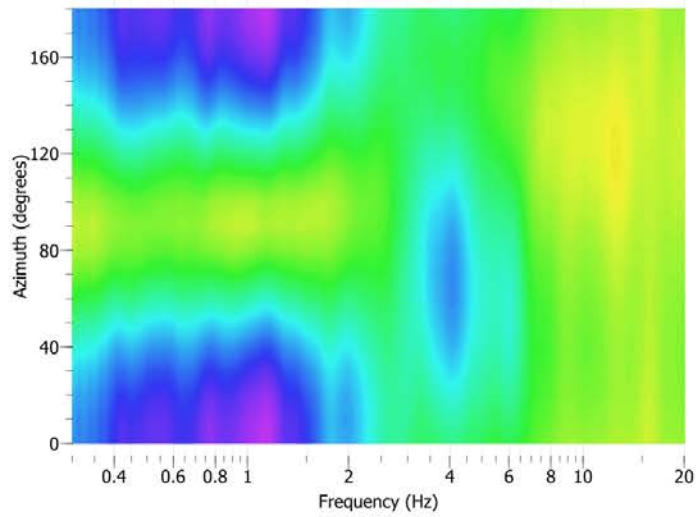
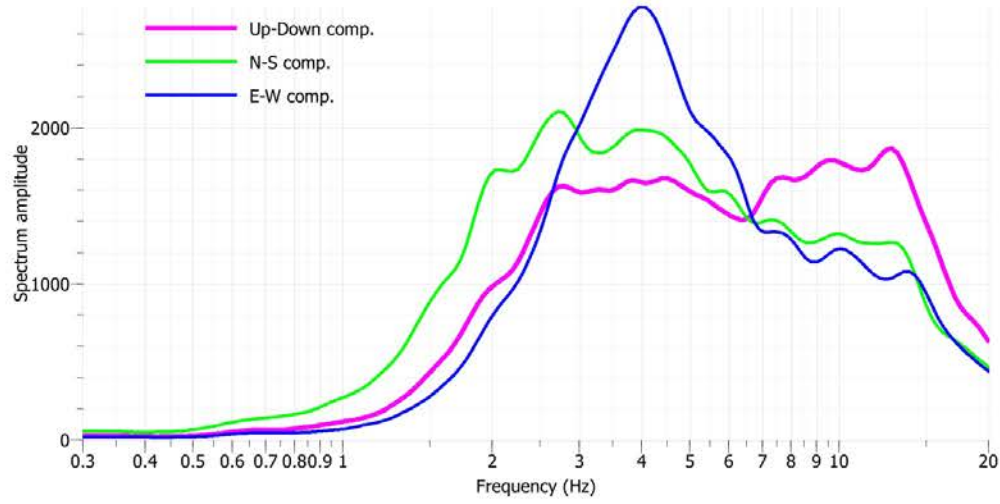
FRO02



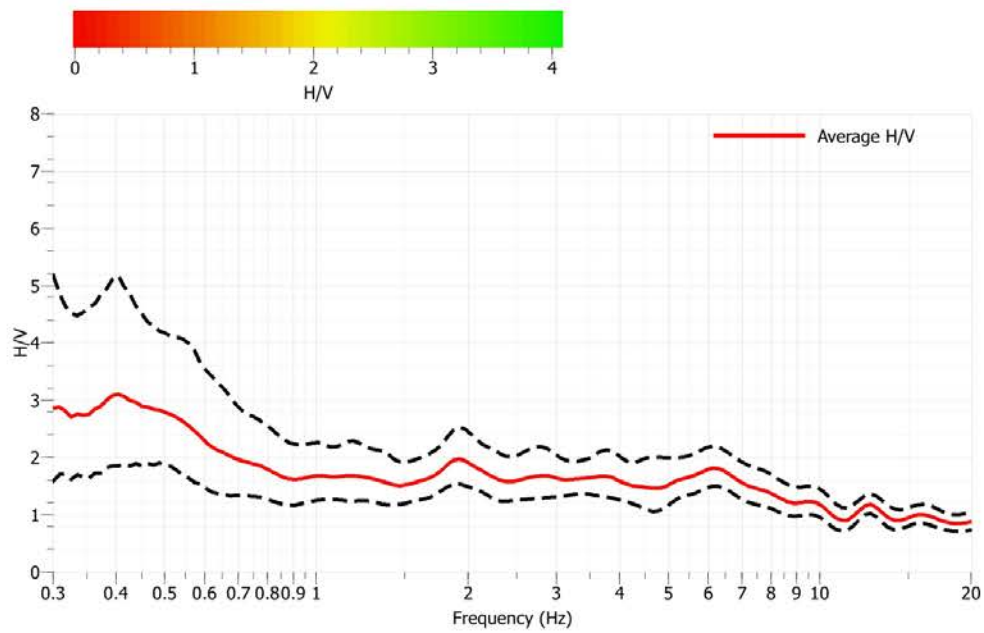
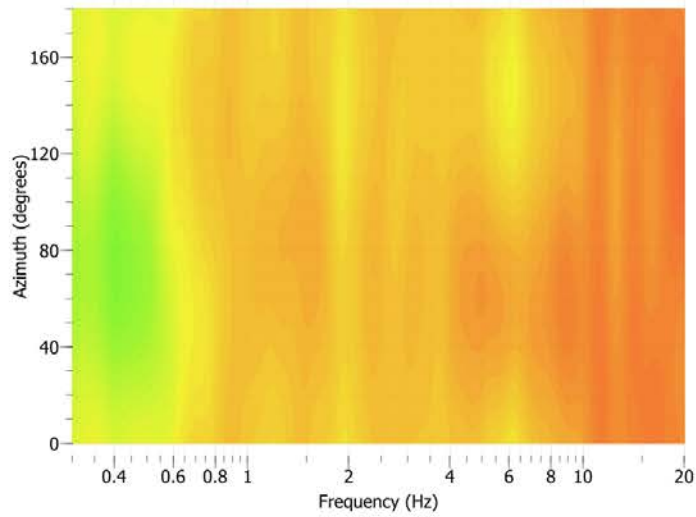
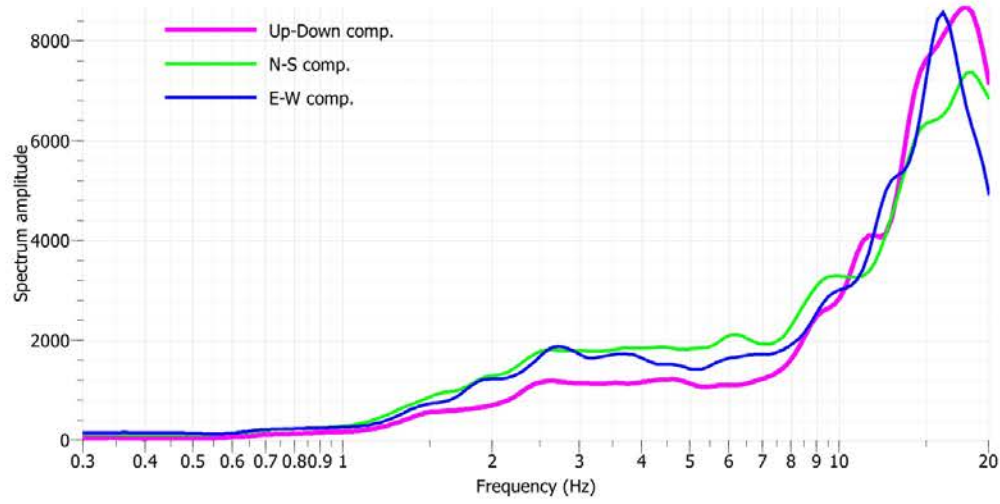
FRO03



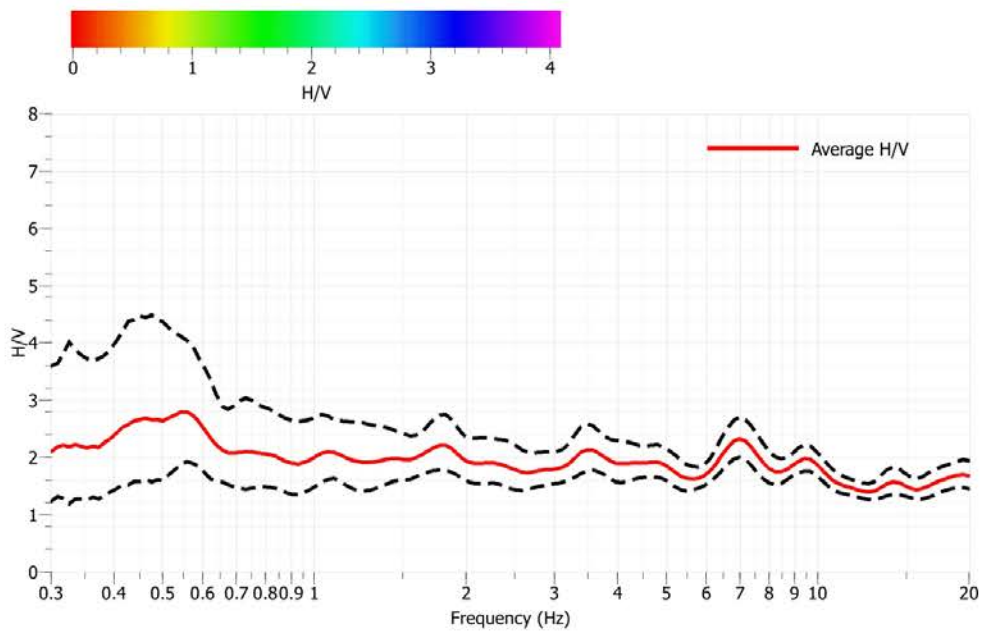
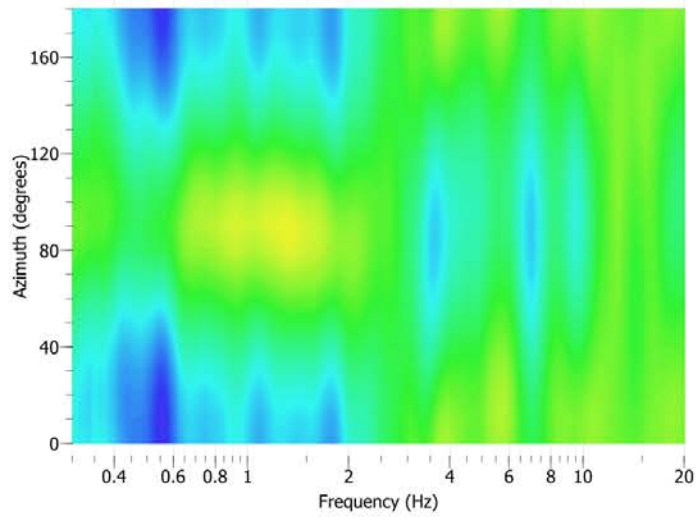
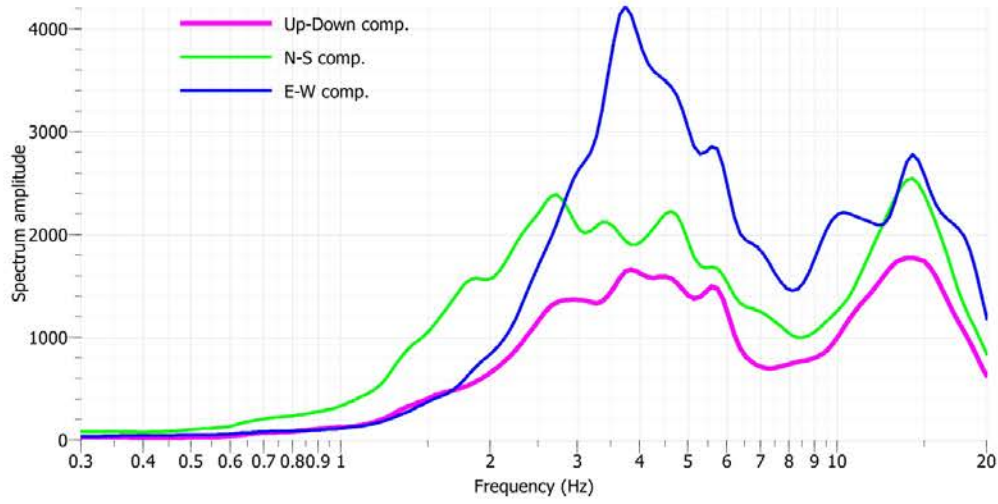
FRO04B



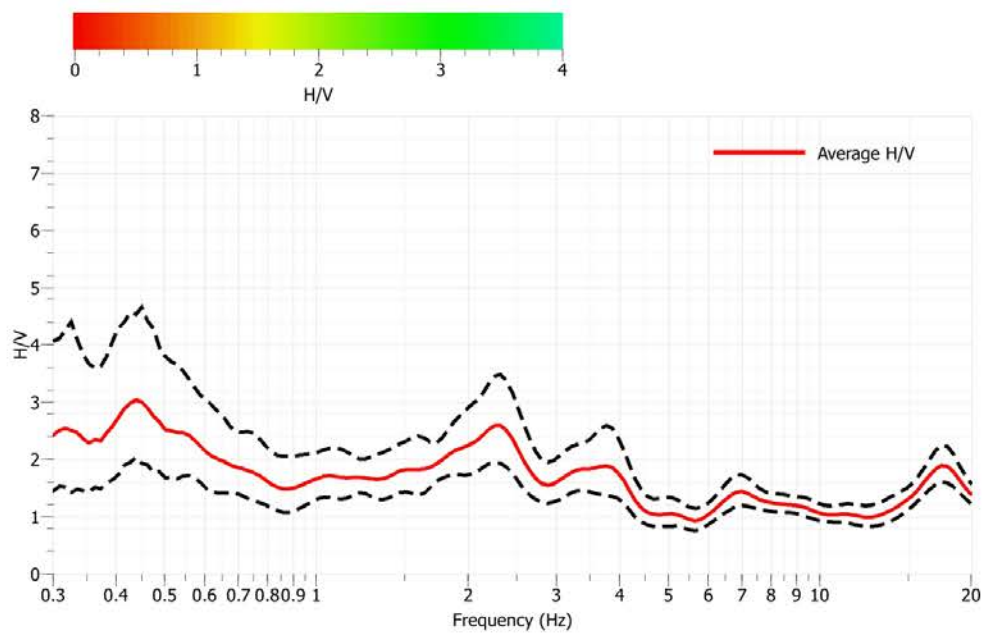
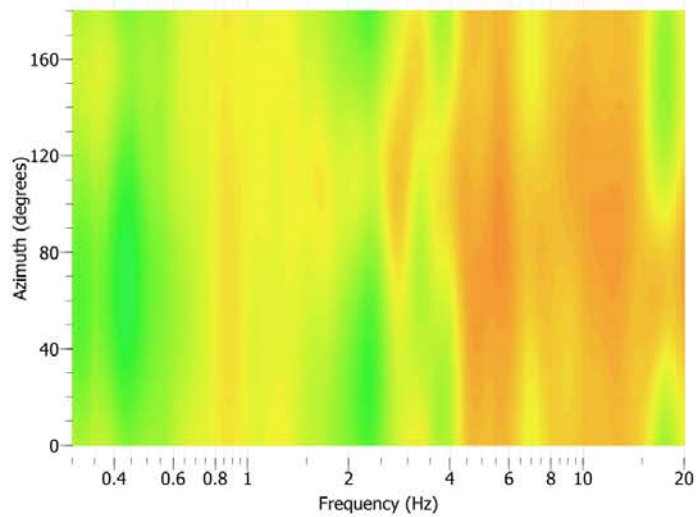
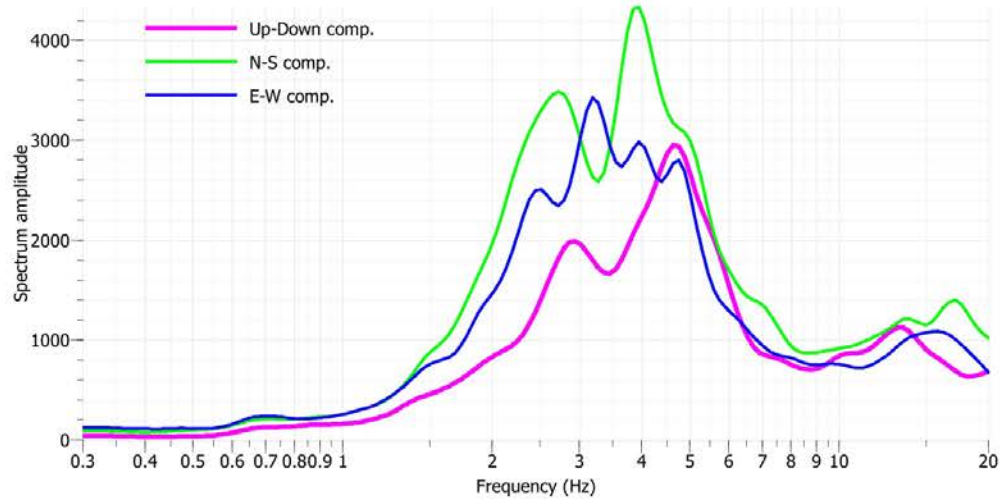
FRO05



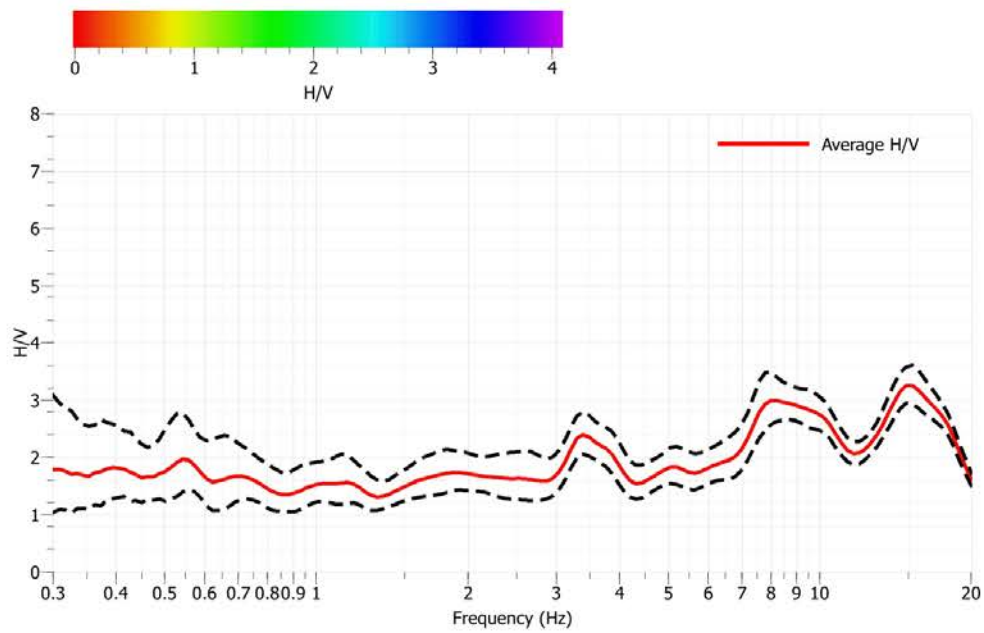
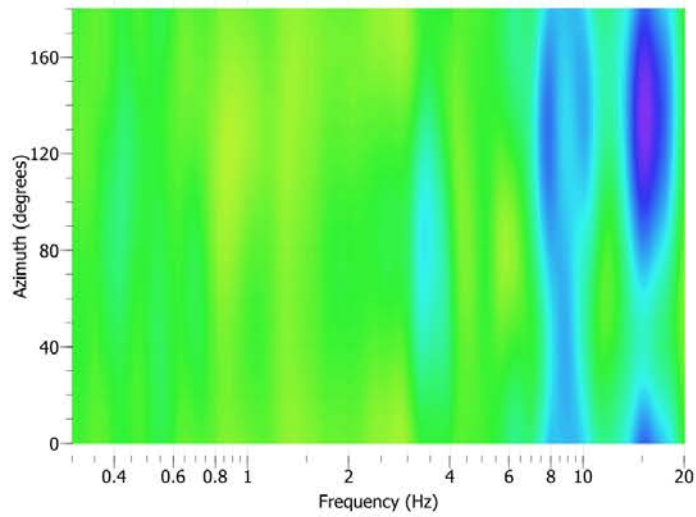
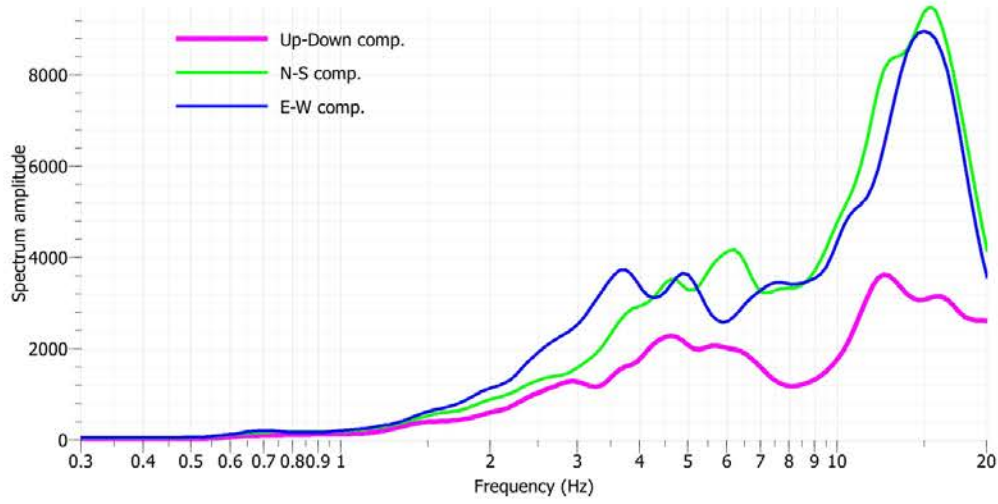
FRO06



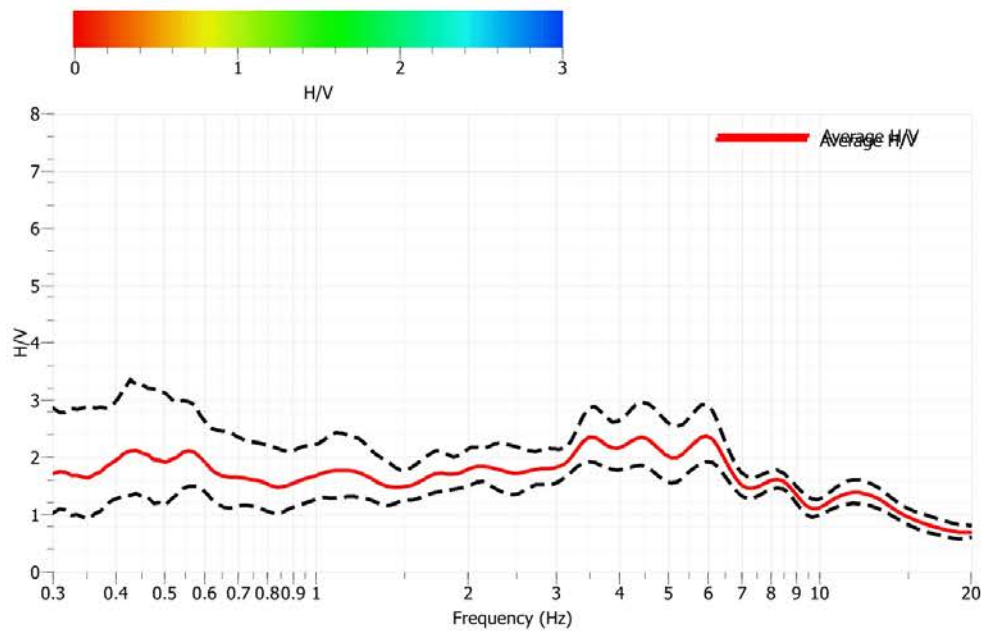
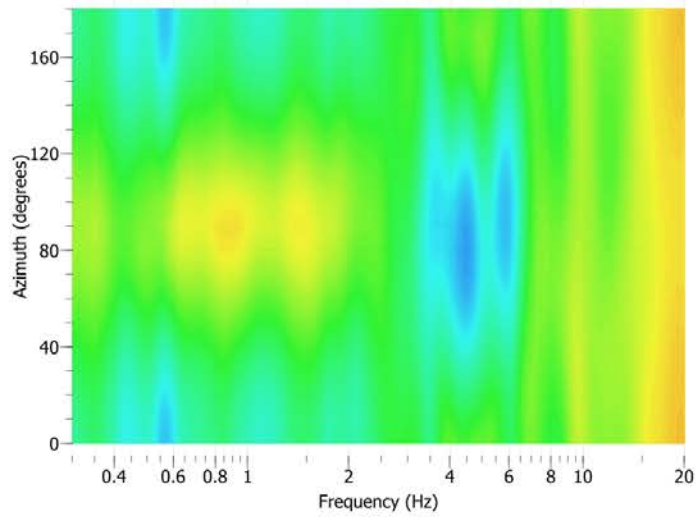
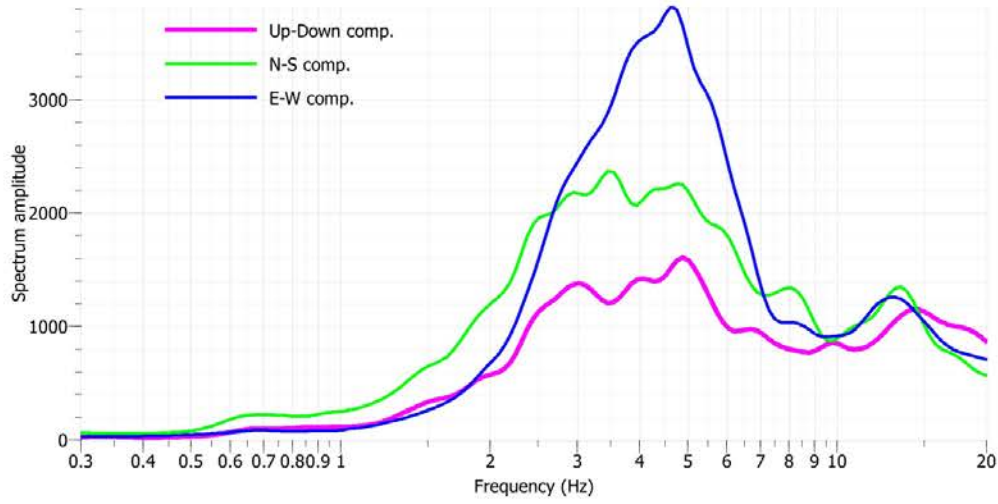
FRO07



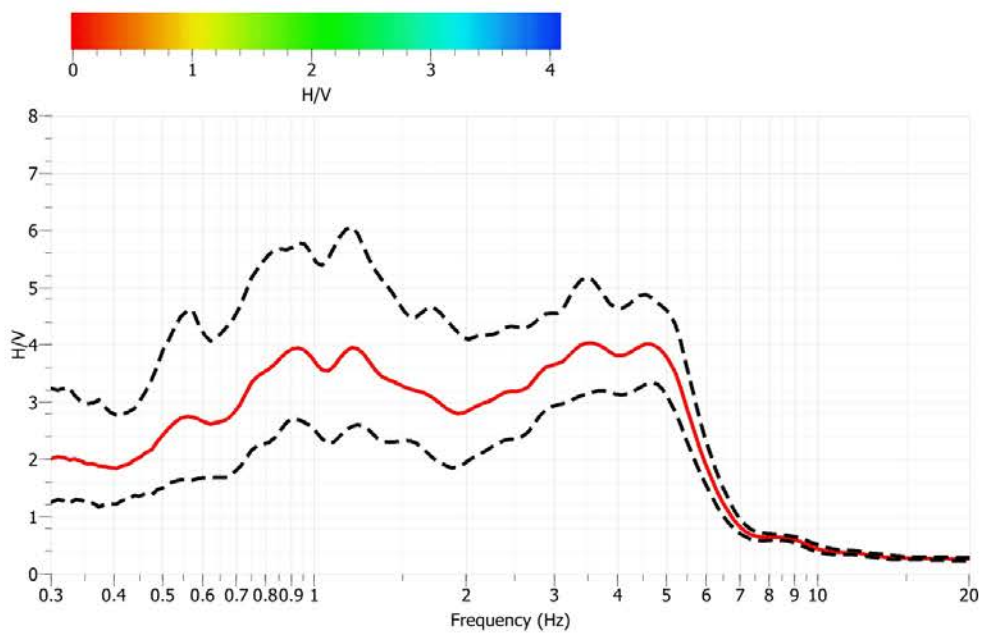
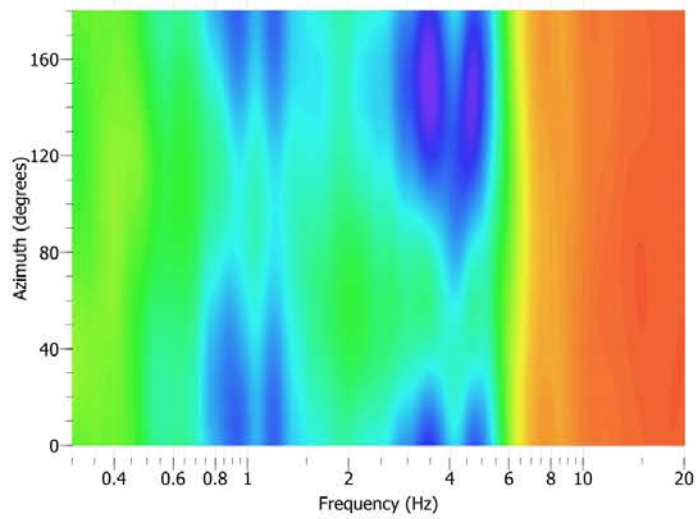
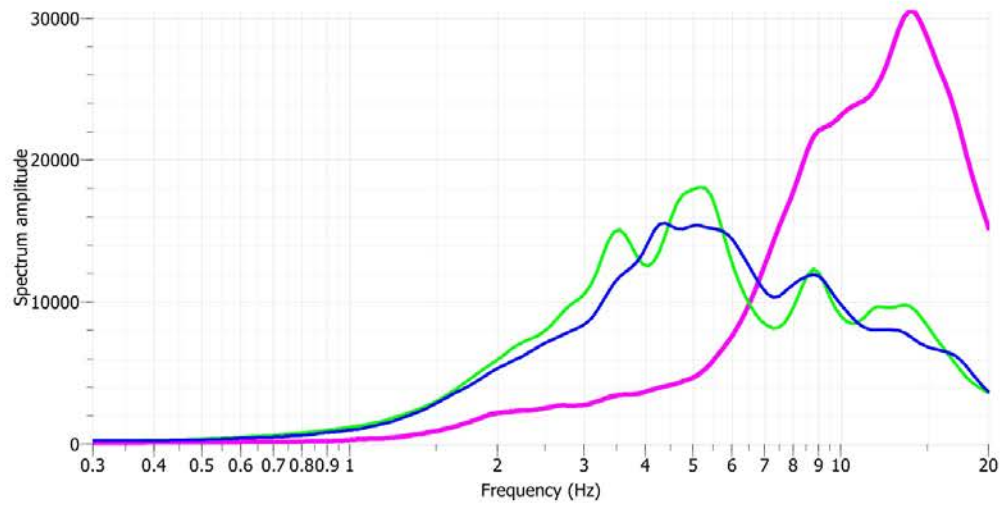
FRO08

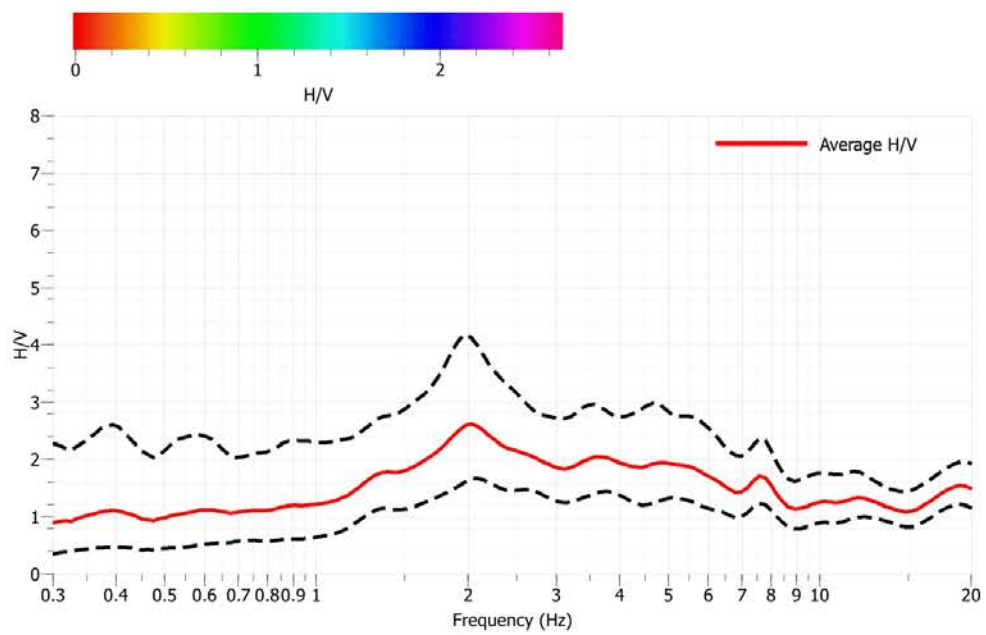
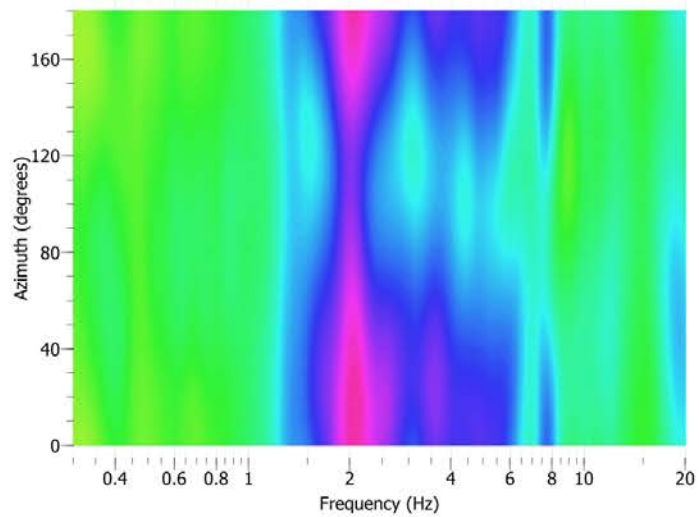
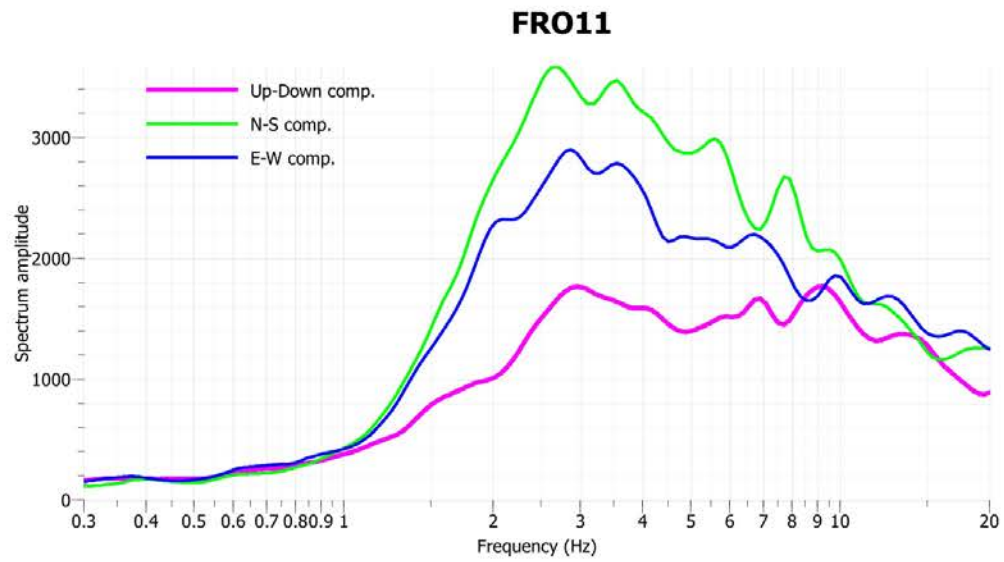


FRO09

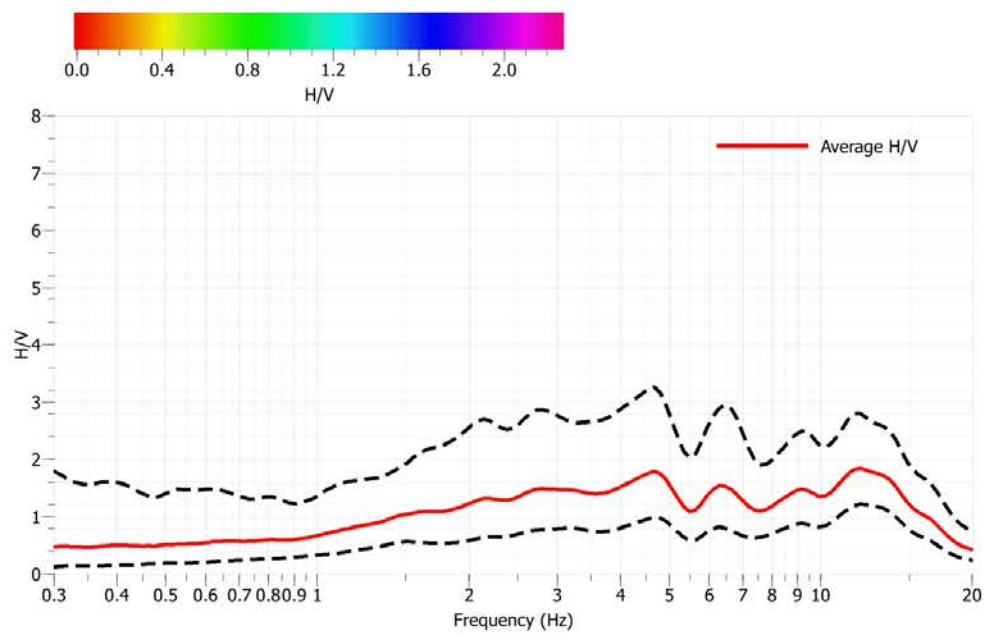
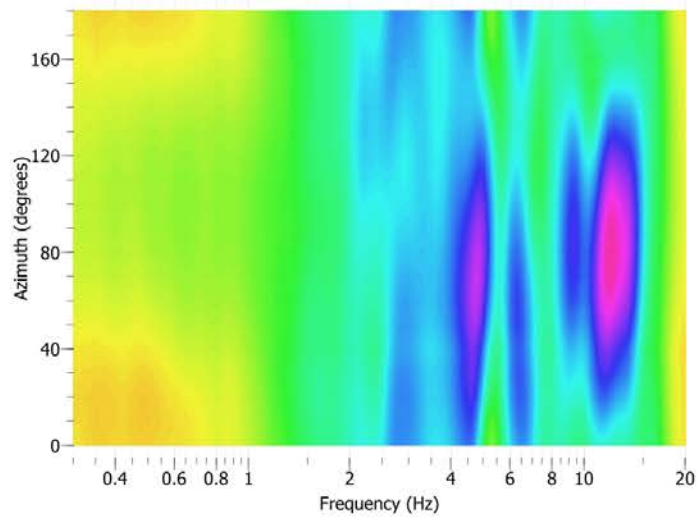
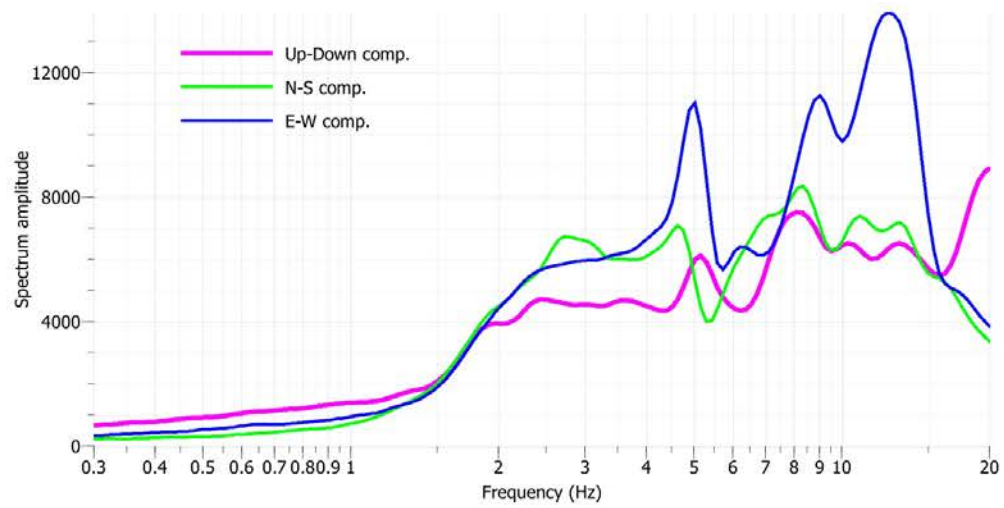


FRO10

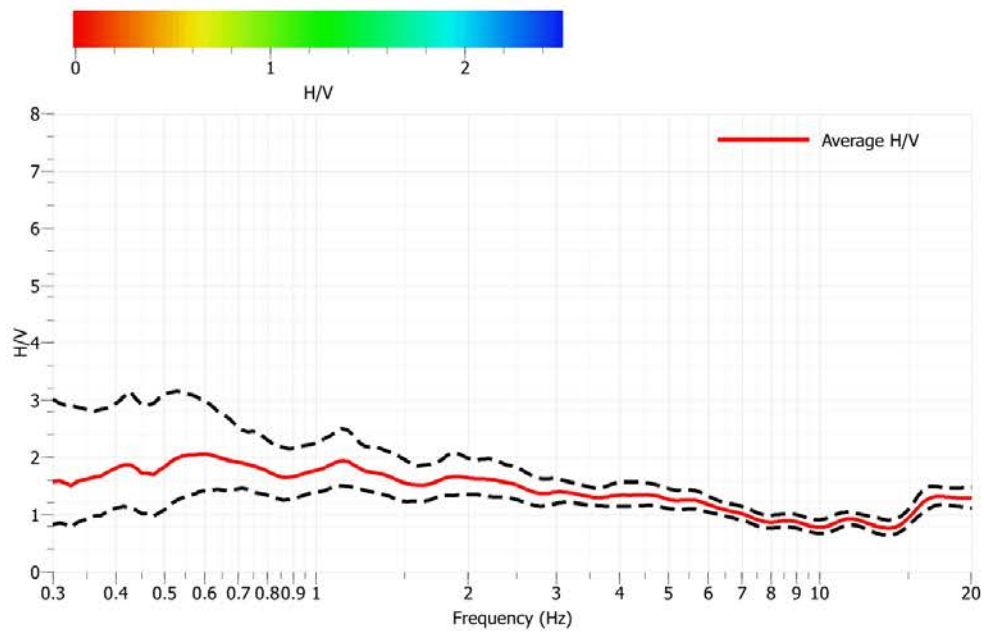
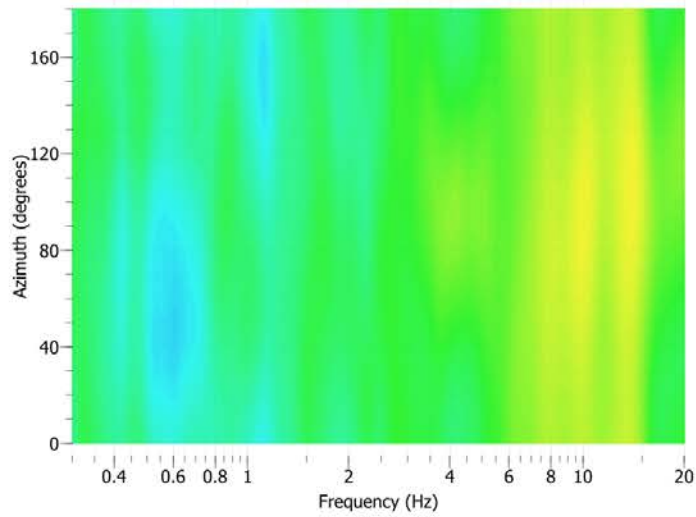
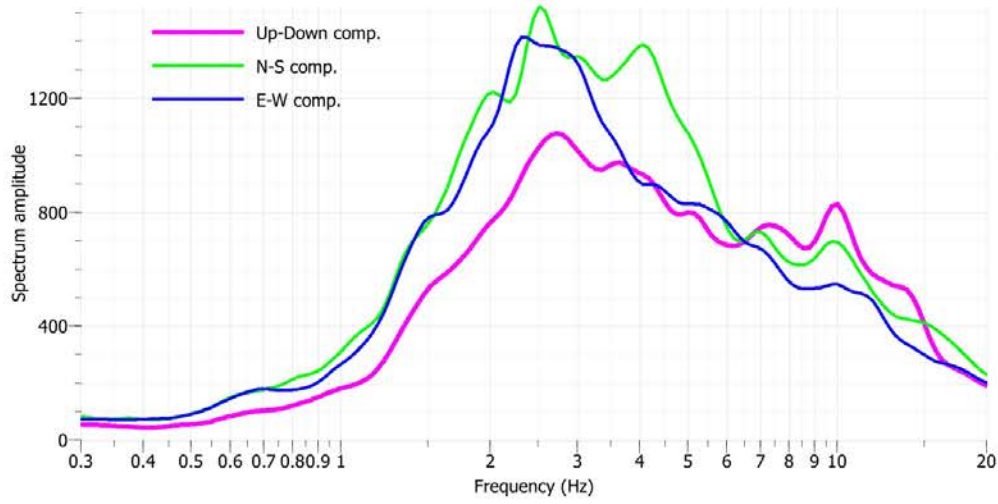




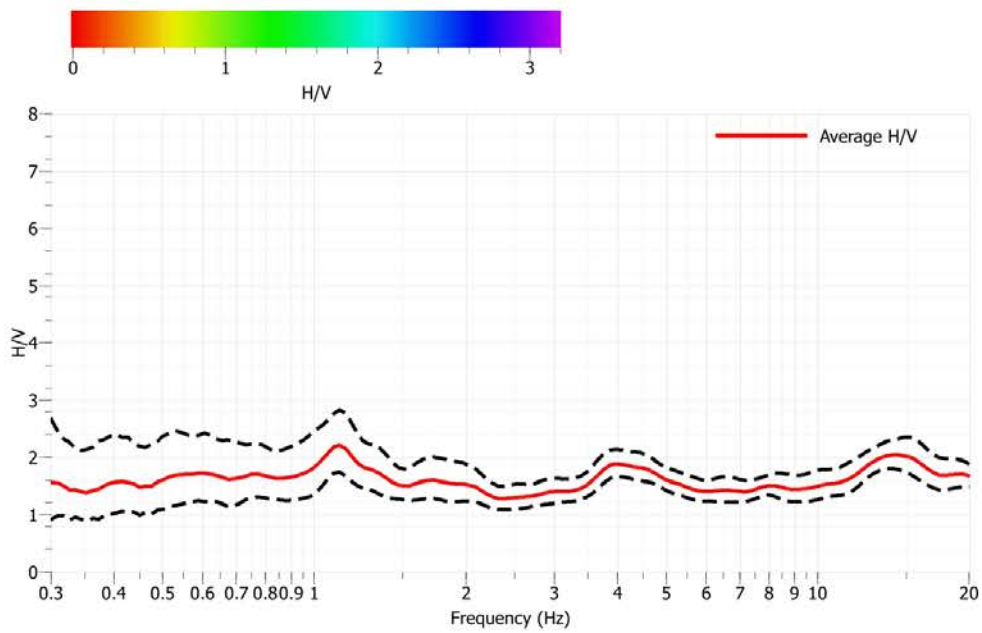
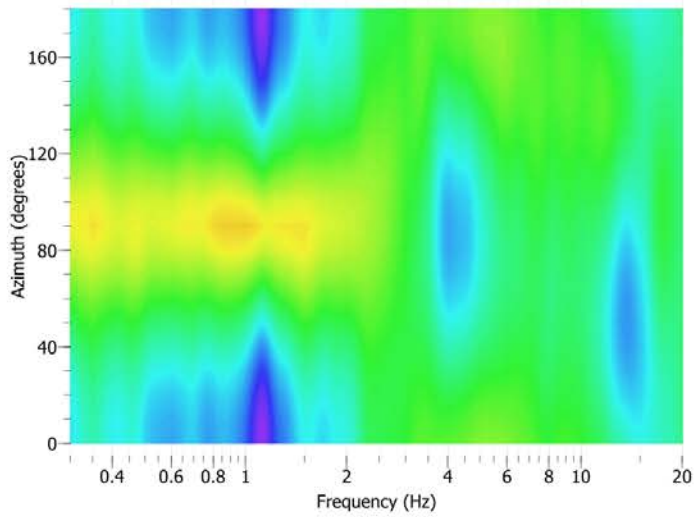
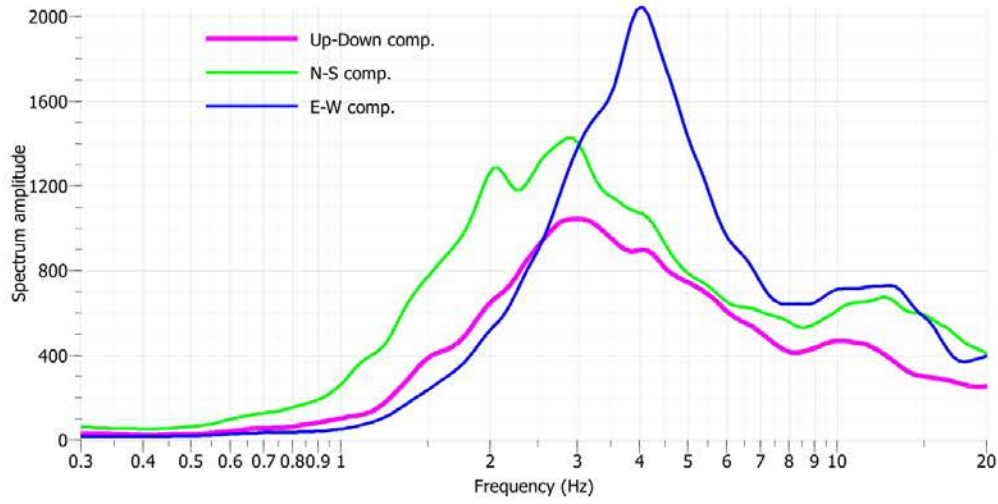
FRO12



FRO13



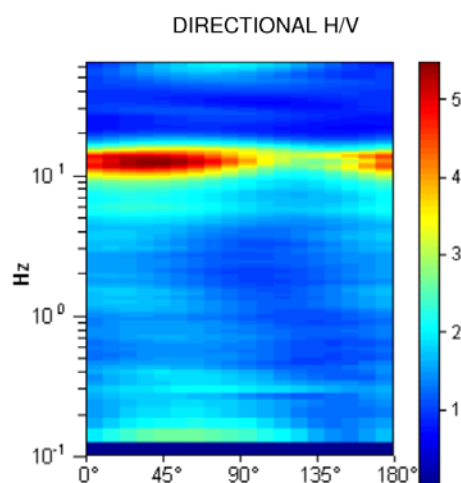
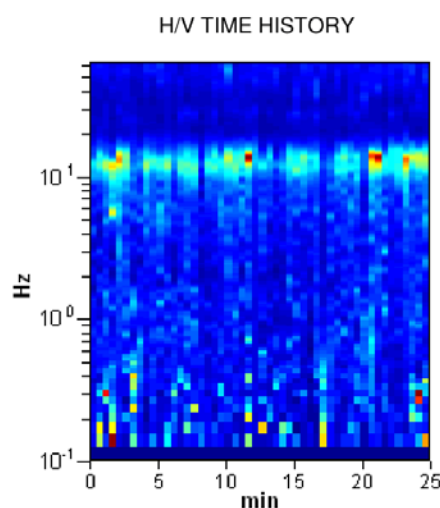
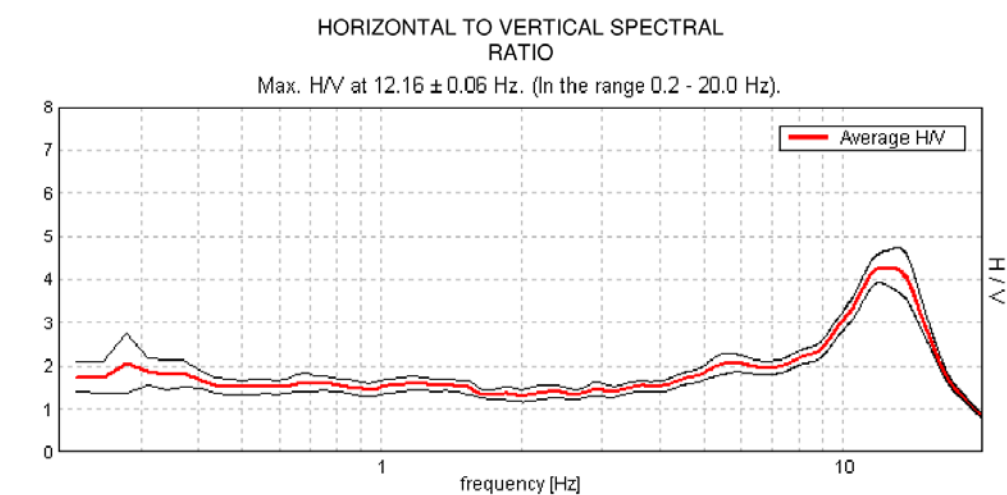
FRO14



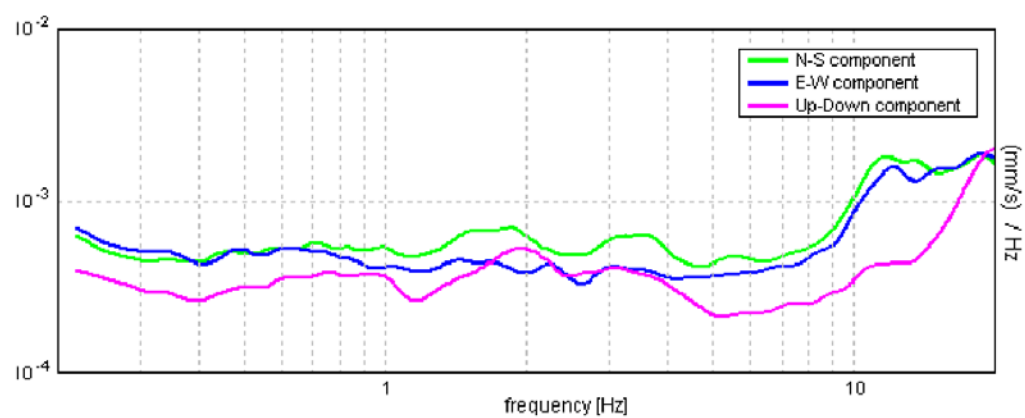
FROSINONE, FRO15T TR 32

Start recording: 24/04/18 12:13:06 End recording: 24/04/18 12:38:11
GPS data not available

Trace length: 0h25'00". Analysis performed on the entire trace.
Sampling frequency: 128 Hz
Window size: 30 s
Smoothing window: Konno & Omachi window
b-value: 40



SINGLE COMPONENT SPECTRA



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

Max. HVSR at 12.16 ± 0.06 Hz. (in the range 0.2 - 20.0 Hz).

Criteria for a reliable HVSR curve

[All 3 should be fulfilled]

$f_0 > 10 / L_w$	12.16 > 0.33	OK	
$n_c(f_0) > 200$	18234.4 > 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 584 times	OK	

Criteria for a clear HVSR peak

[At least 5 out of 6 should be fulfilled]

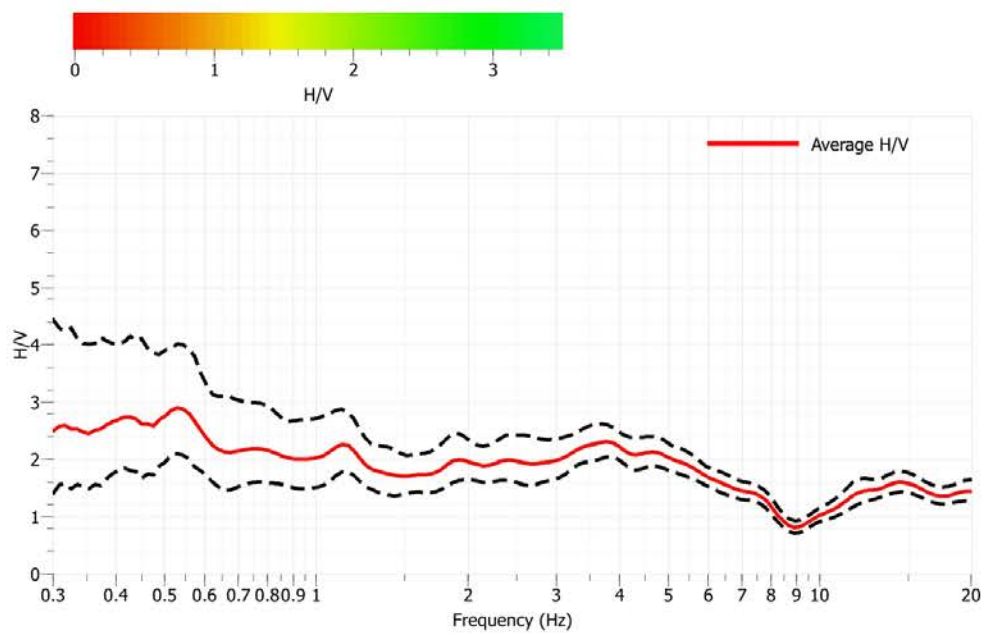
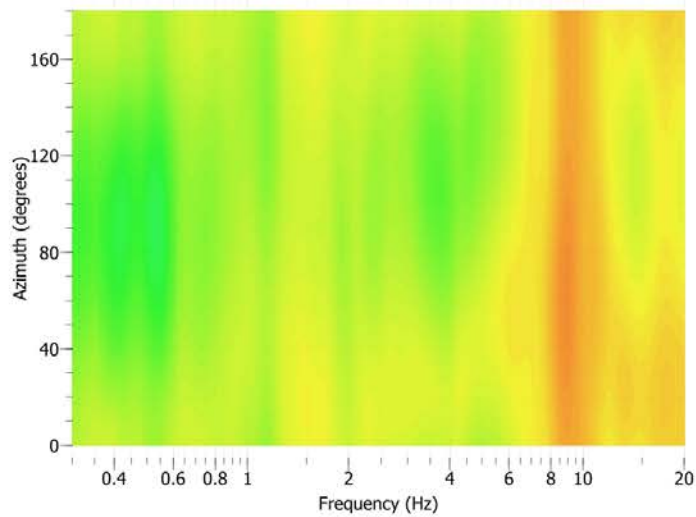
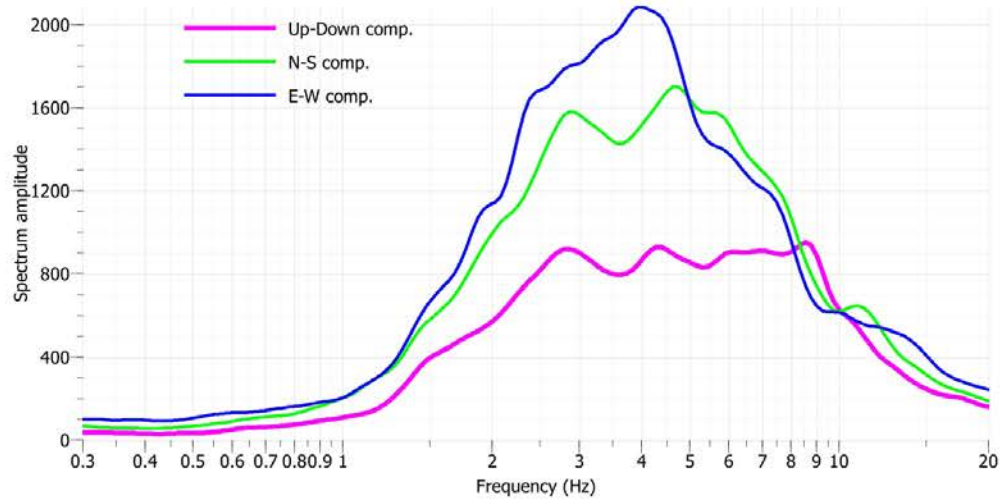
Exists f^- in $[f_0/4, f_0]$ $A_{H/V}(f^-) < A_0 / 2$	7.813 Hz	OK	
Exists f^+ in $[f_0, 4f_0]$ $A_{H/V}(f^+) < A_0 / 2$	16.125 Hz	OK	
$A_0 > 2$	4.27 > 2	OK	
$f_{\text{peak}}[A_{H/V}(f) \pm \sigma_A(f)] = f_0 \pm 5\%$	$ 0.00228 < 0.05$	OK	
$\sigma_f < \varepsilon(f_0)$	$0.02767 < 0.60781$	OK	
$\sigma_A(f_0) < \theta(f_0)$	$0.1797 < 1.58$	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
σ_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 σ_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

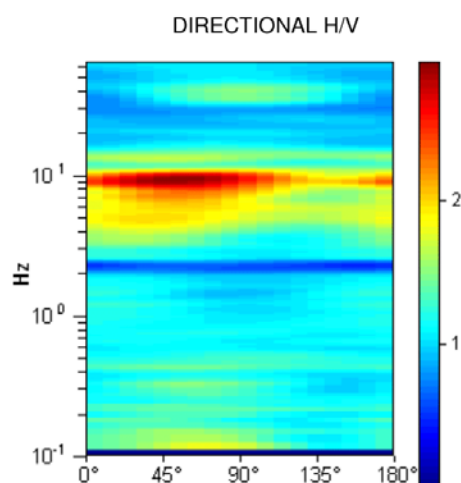
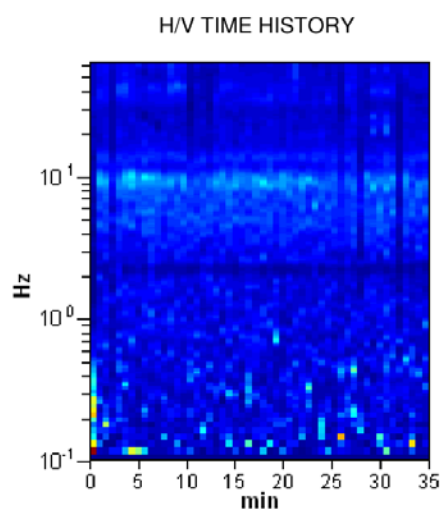
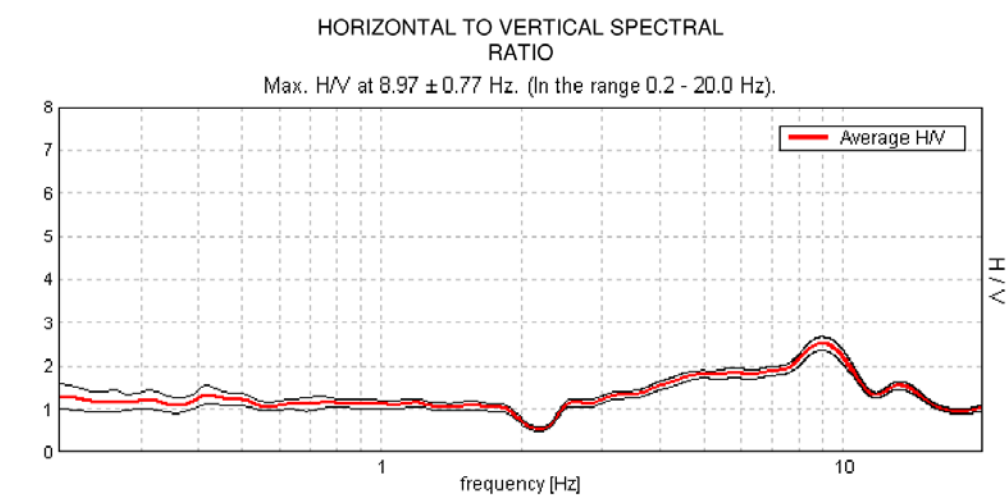
FRO16



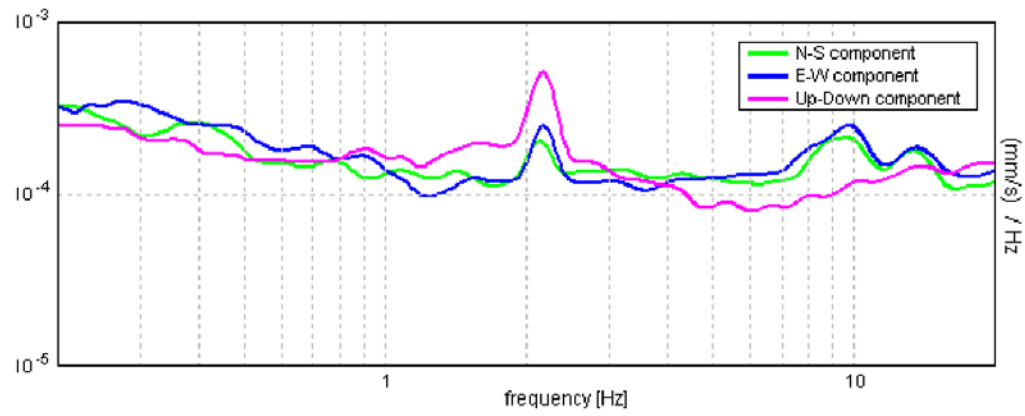
FROSINONE, FRO17 TR 33

Start recording: 24/04/18 12:42:10 End recording: 24/04/18 13:17:26
GPS data not available

Trace length: 0h35'12". Analysis performed on the entire trace.
Sampling frequency: 128 Hz
Window size: 40 s
Smoothing window: Konno & Omachi window
b-value: 40



SINGLE COMPONENT SPECTRA



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

Max. HVSR at 8.97 ± 0.77 Hz. (in the range 0.2 - 20.0 Hz).

Criteria for a reliable HVSR curve

[All 3 should be fulfilled]

$f_0 > 10 / L_w$	$8.97 > 0.25$	OK	
$n_c(f_0) > 200$	$18655.0 > 200$	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 862 times	OK	

Criteria for a clear HVSR peak

[At least 5 out of 6 should be fulfilled]

Exists f^- in $[f_0/4, f_0]$ $A_{H/V}(f^-) < A_0 / 2$	3.063 Hz	OK	
Exists f^+ in $[f_0, 4f_0]$ $A_{H/V}(f^+) < A_0 / 2$	14.891 Hz	OK	
$A_0 > 2$	$2.51 > 2$	OK	
$f_{\text{peak}}[A_{H/V}(f) \pm \sigma_A(f)] = f_0 \pm 5\%$	$ 0.04208 < 0.05$	OK	
$\sigma_f < \varepsilon(f_0)$	$0.3774 < 0.44844$	OK	
$\sigma_A(f_0) < \theta(f_0)$	$0.0779 < 1.58$	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
σ_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 $\sigma_A(f) < \theta(f_0)$

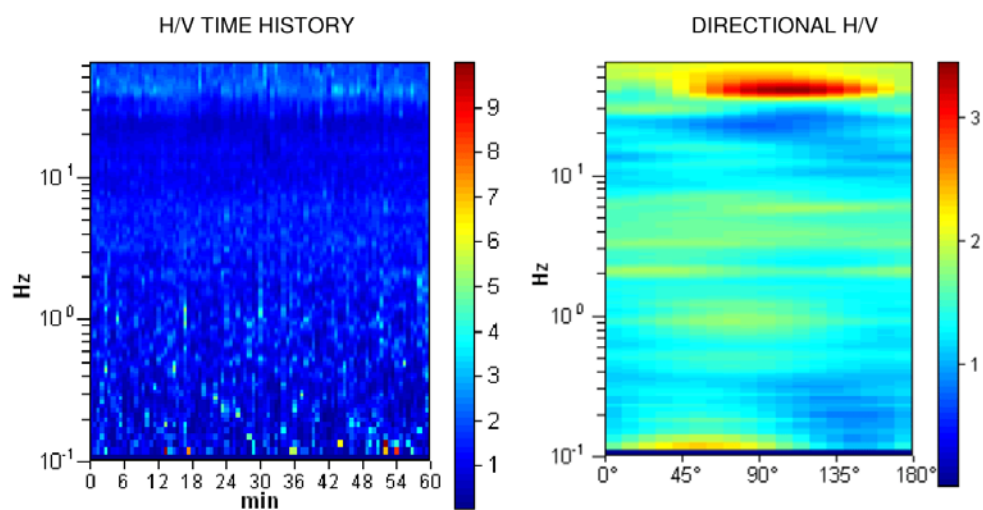
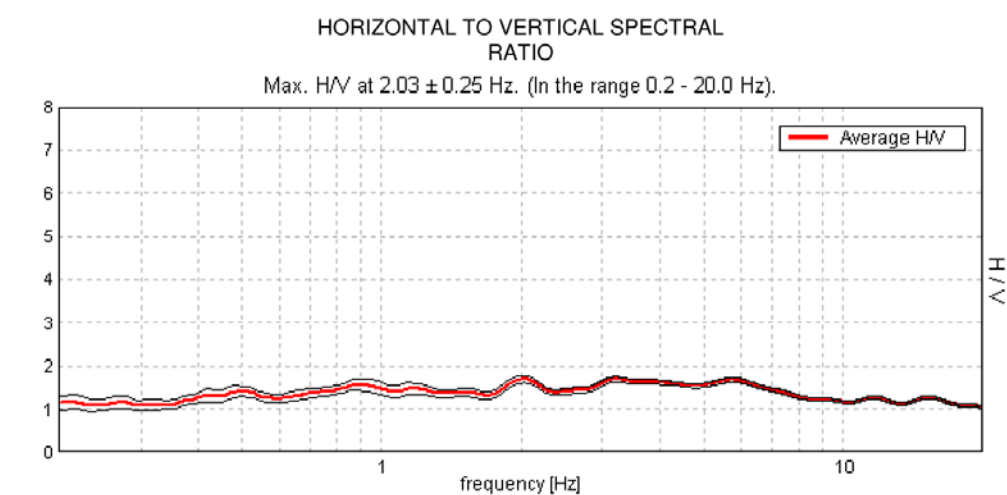
Threshold values for σ_f and $\sigma_A(f_0)$

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

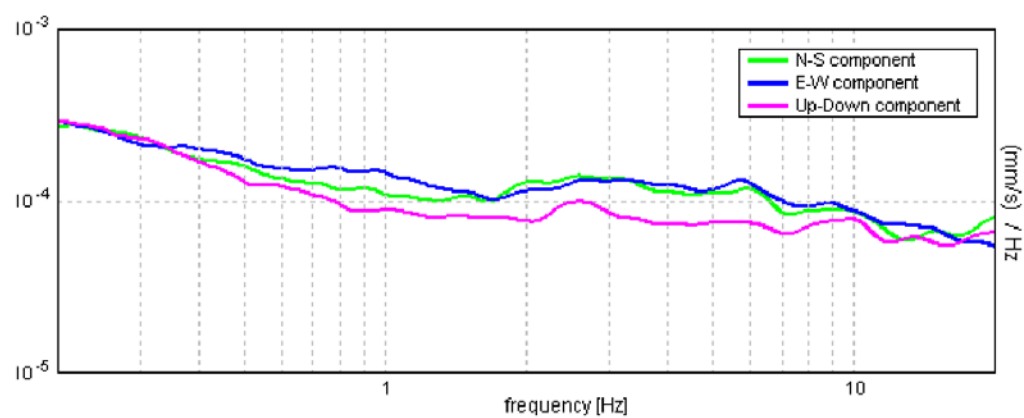
FROSINONE, FRO18 TR 34

Start recording: 24/04/18 13:21:00 End recording: 24/04/18 14:21:01
GPS data not available

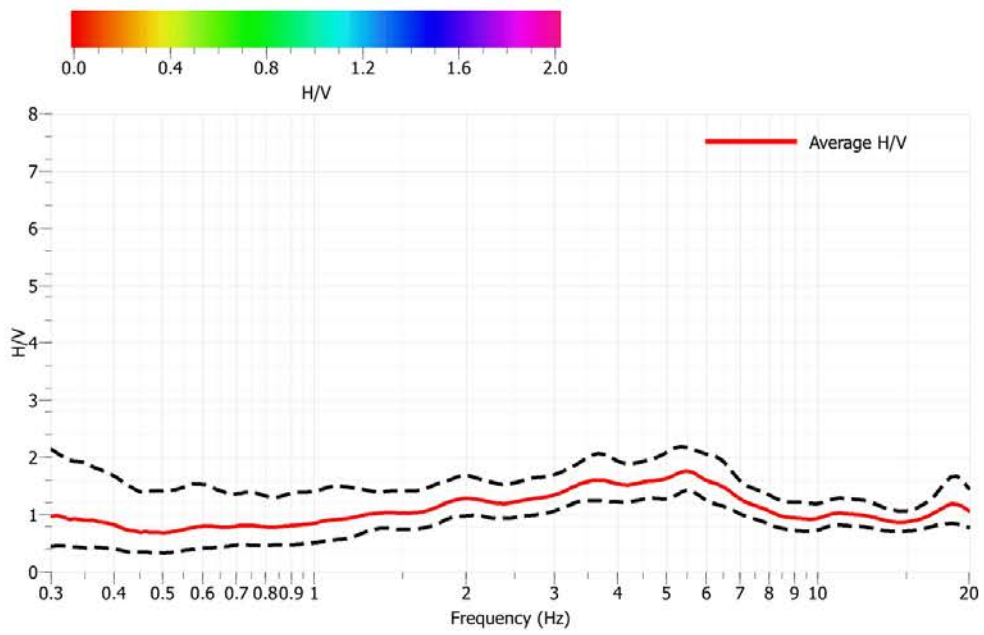
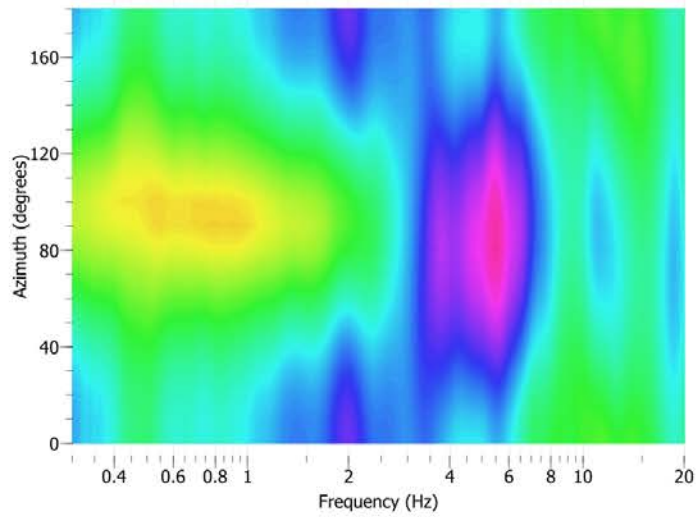
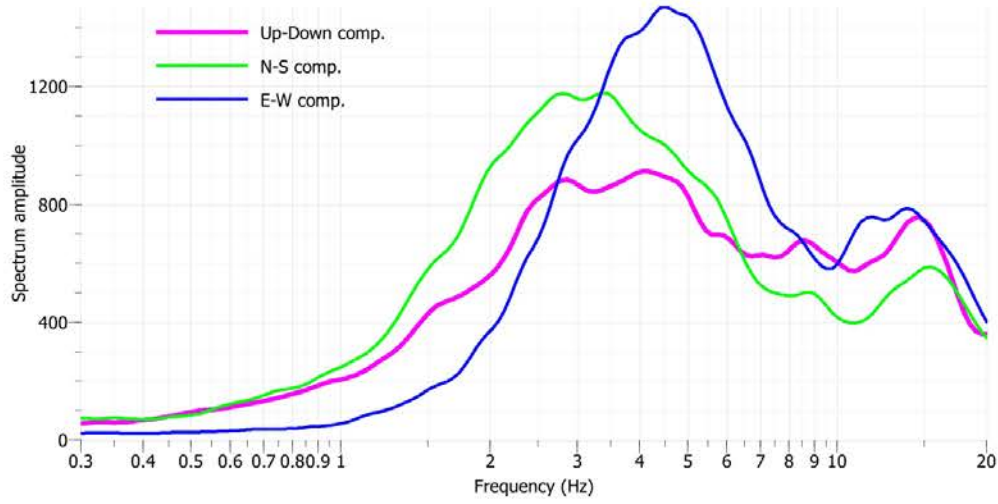
Trace length: 1h00'00". Analysis performed on the entire trace.
Sampling frequency: 128 Hz
Window size: 40 s
Smoothing window: Konno & Omachi window
b-value: 40



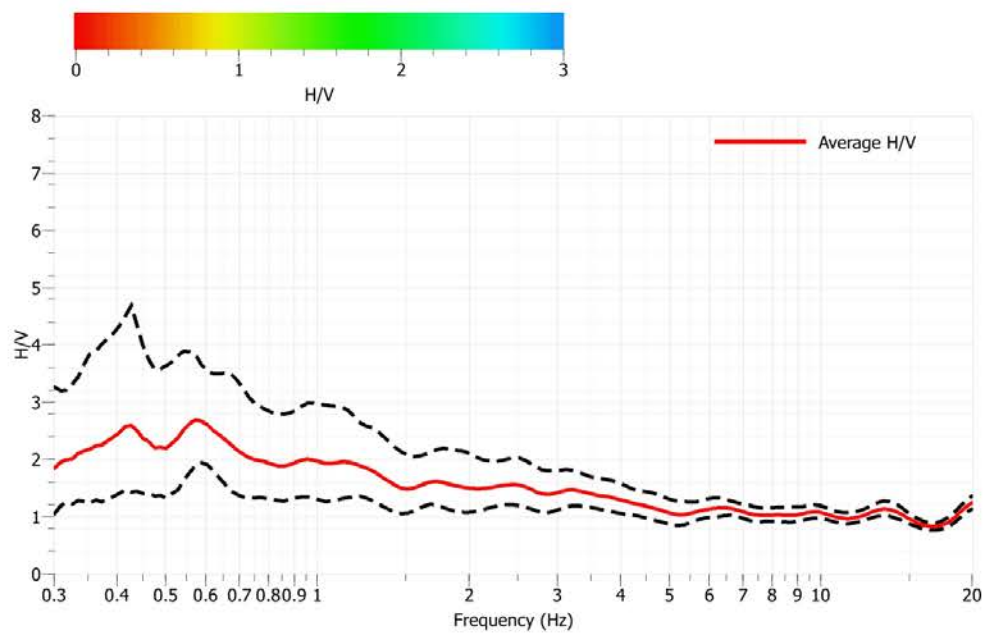
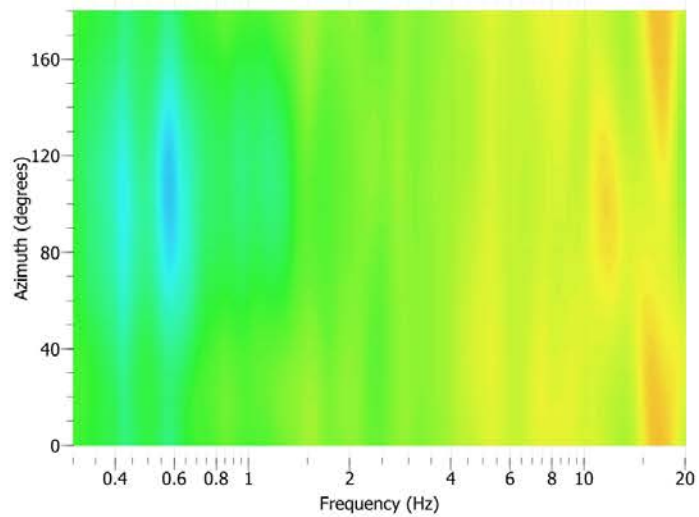
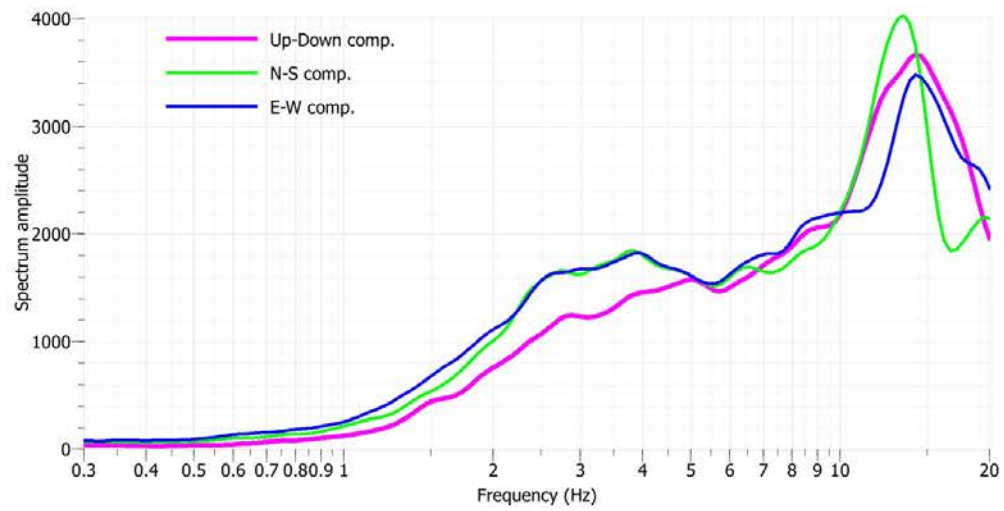
SINGLE COMPONENT SPECTRA



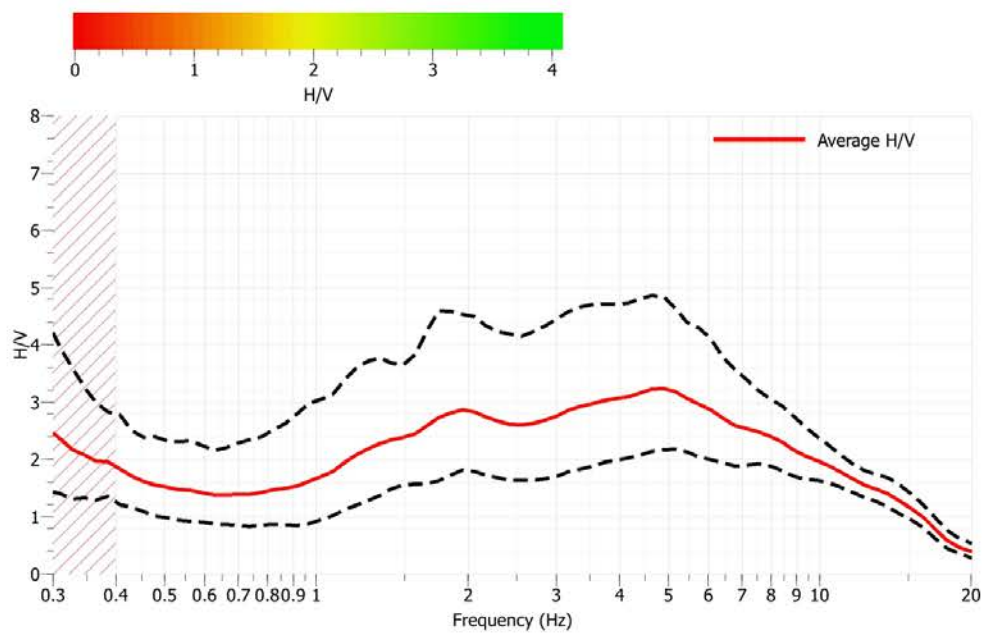
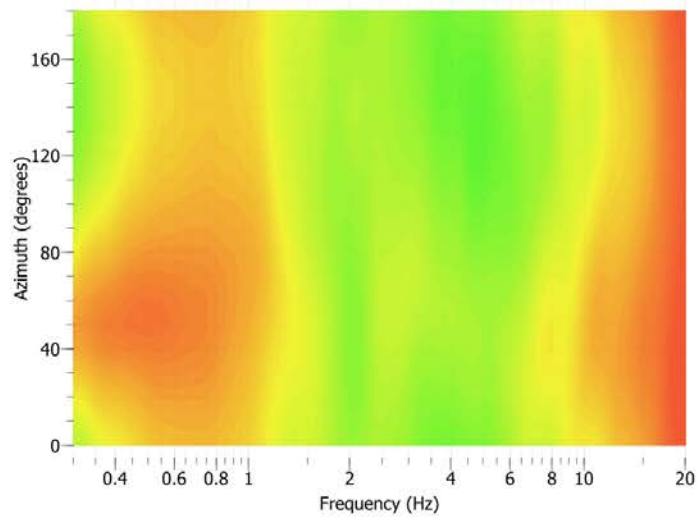
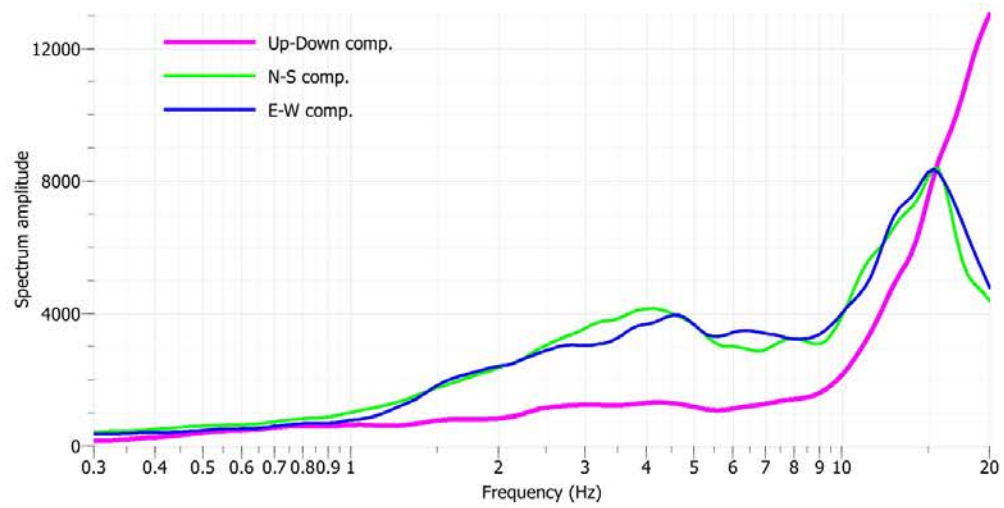
FRO19

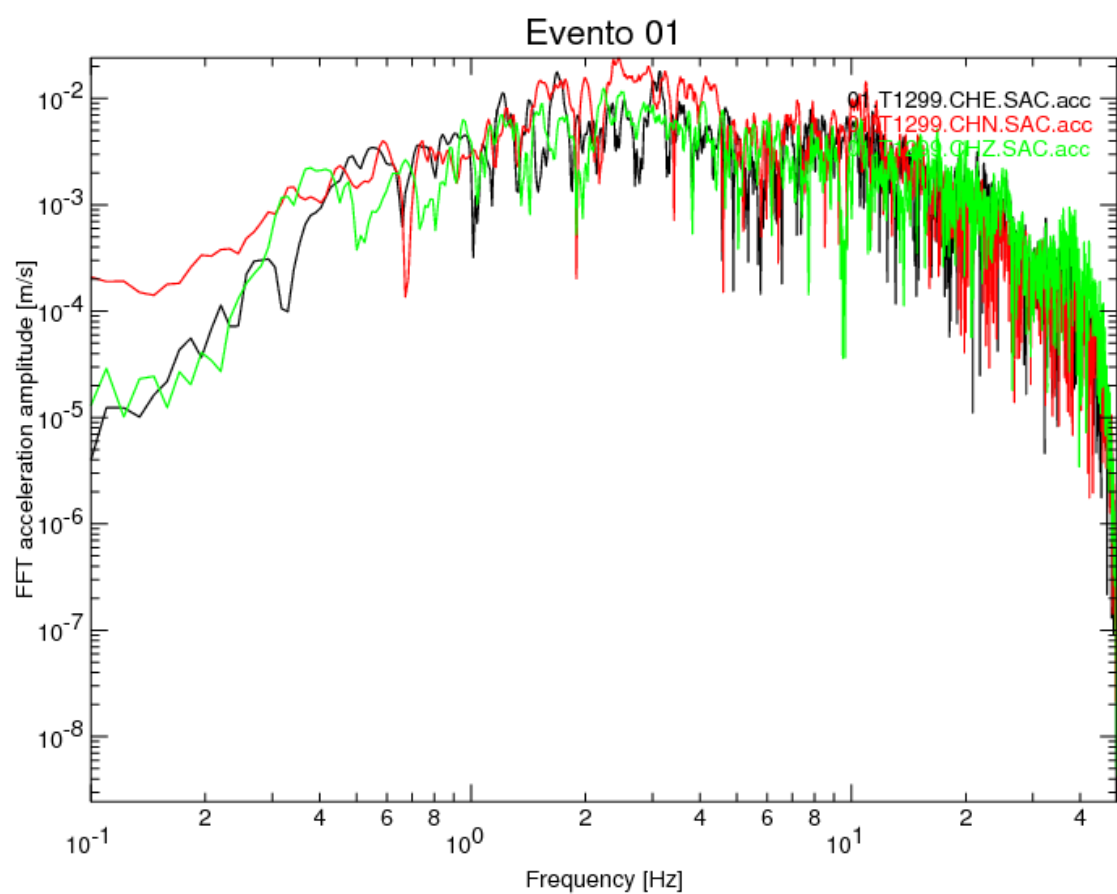


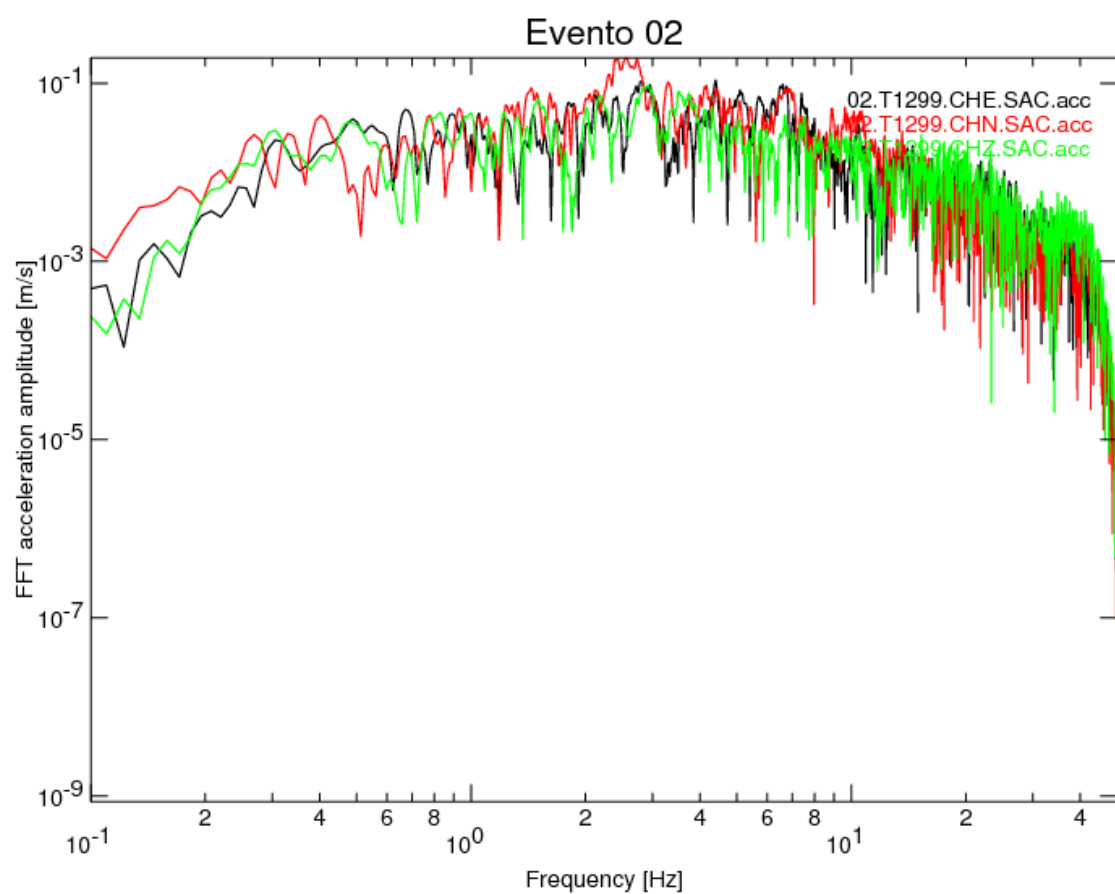
FRO20

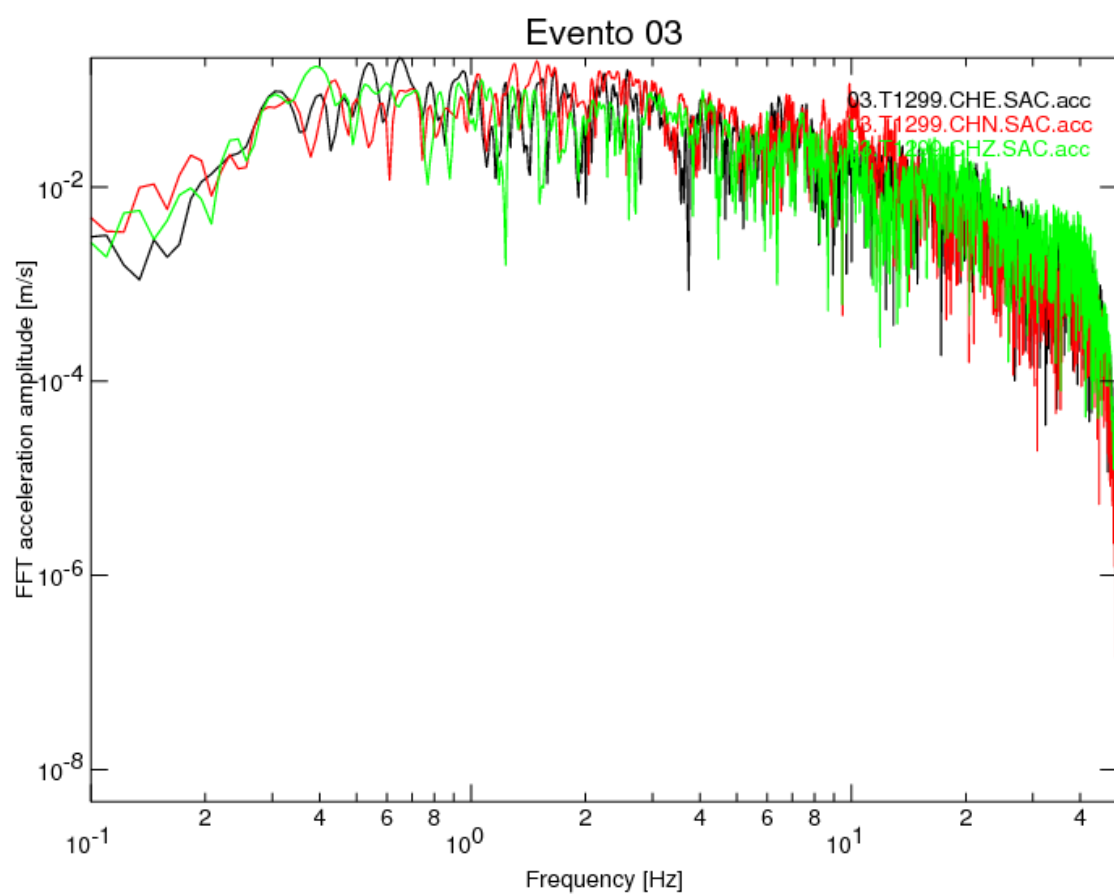


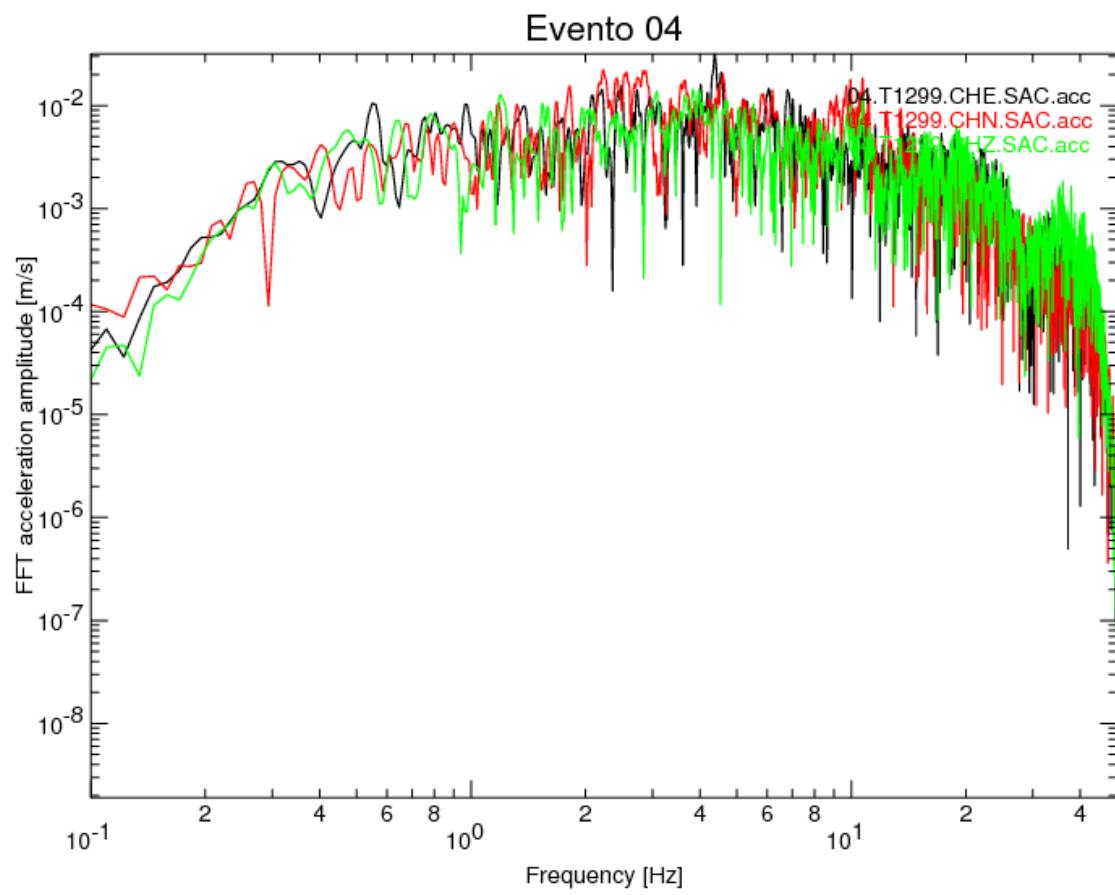
FRO21

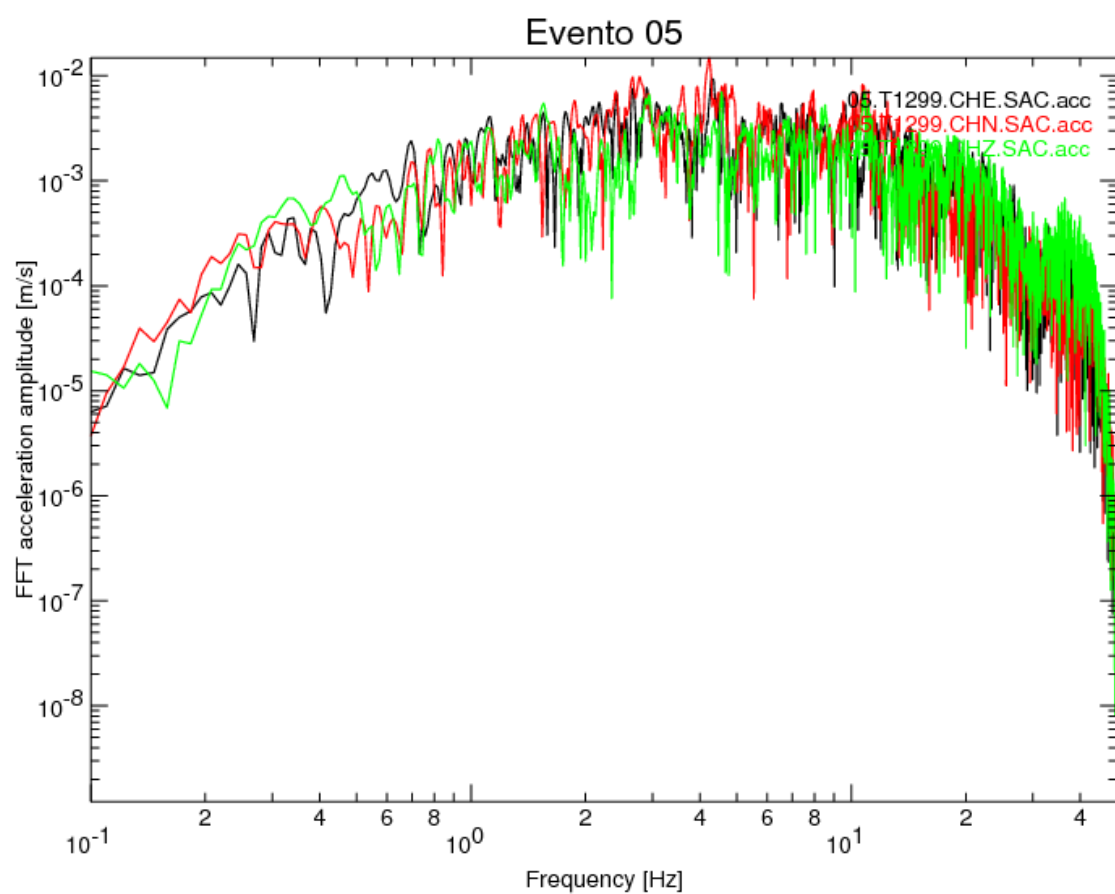


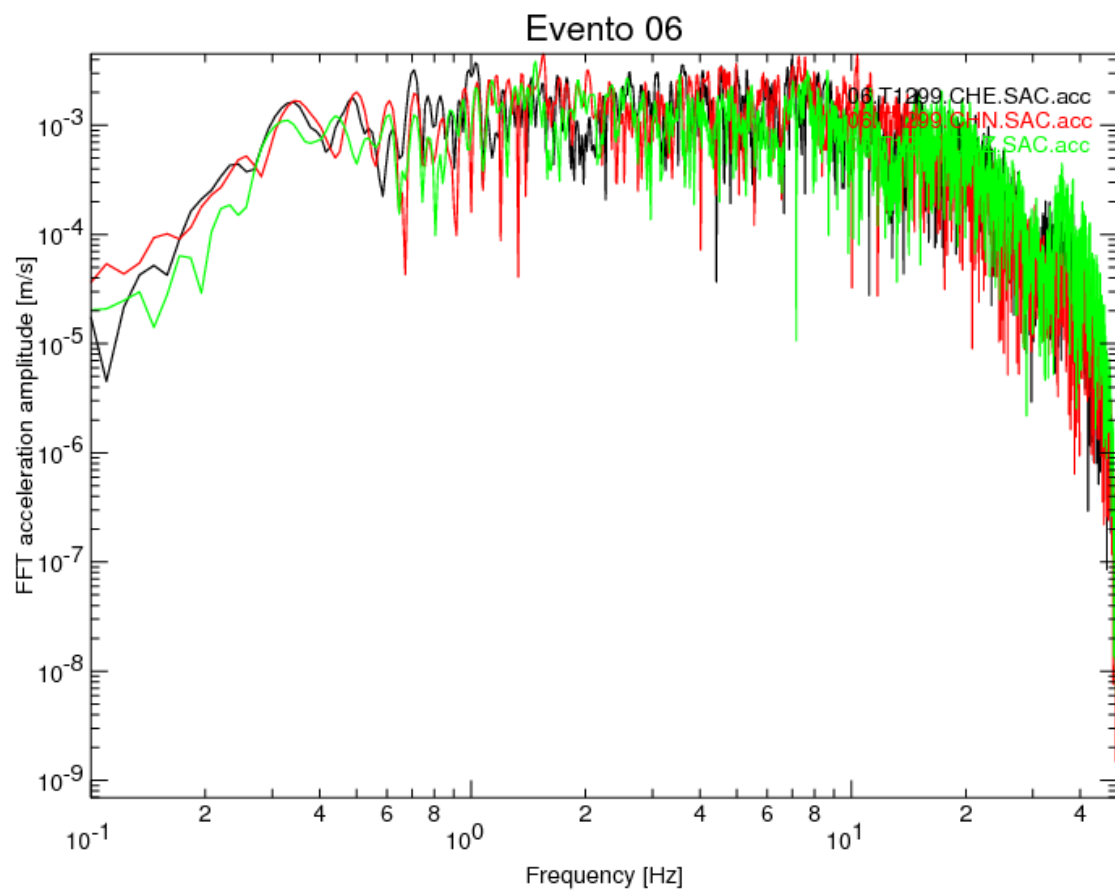


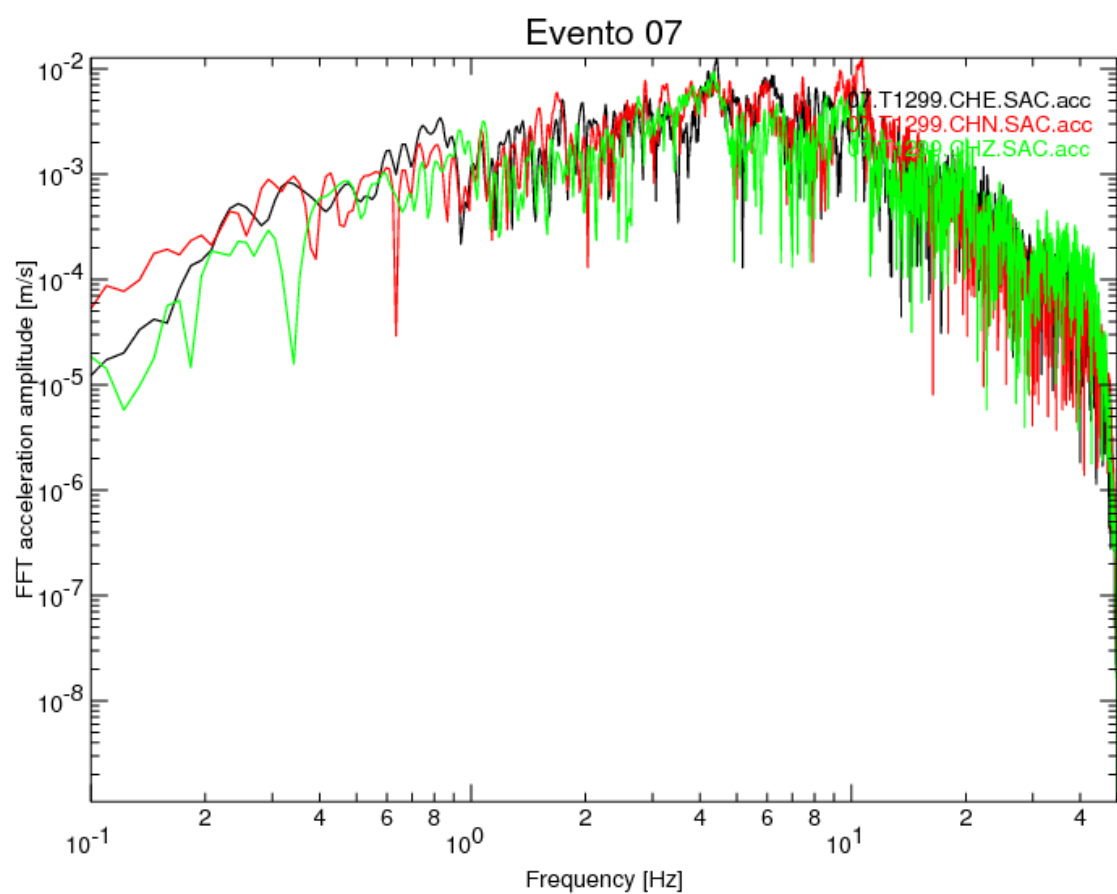


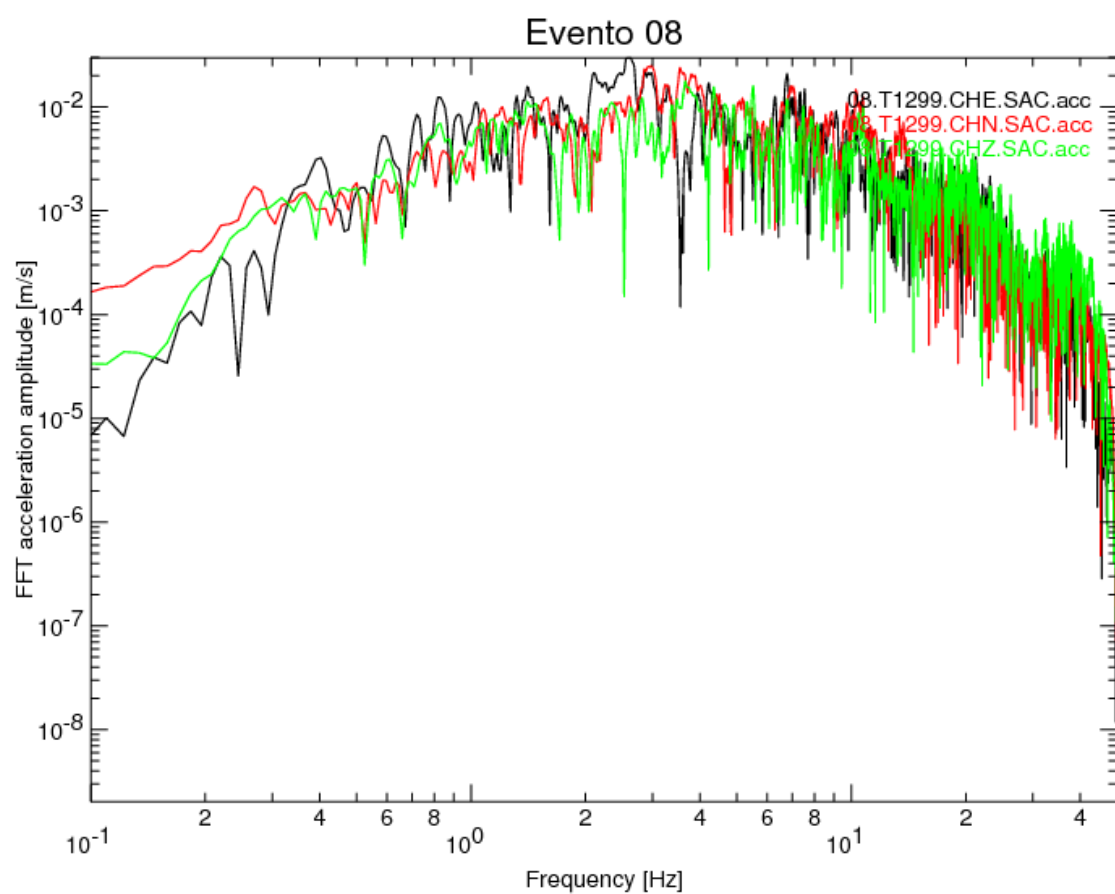


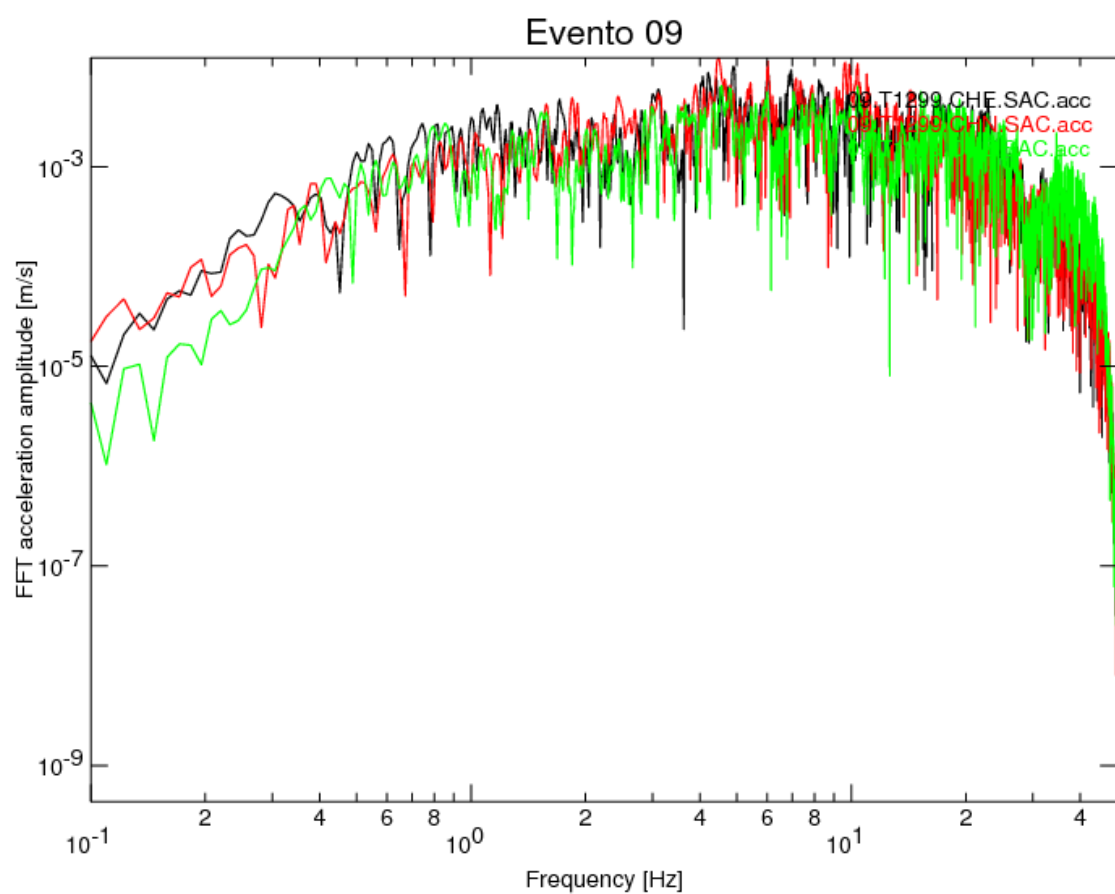


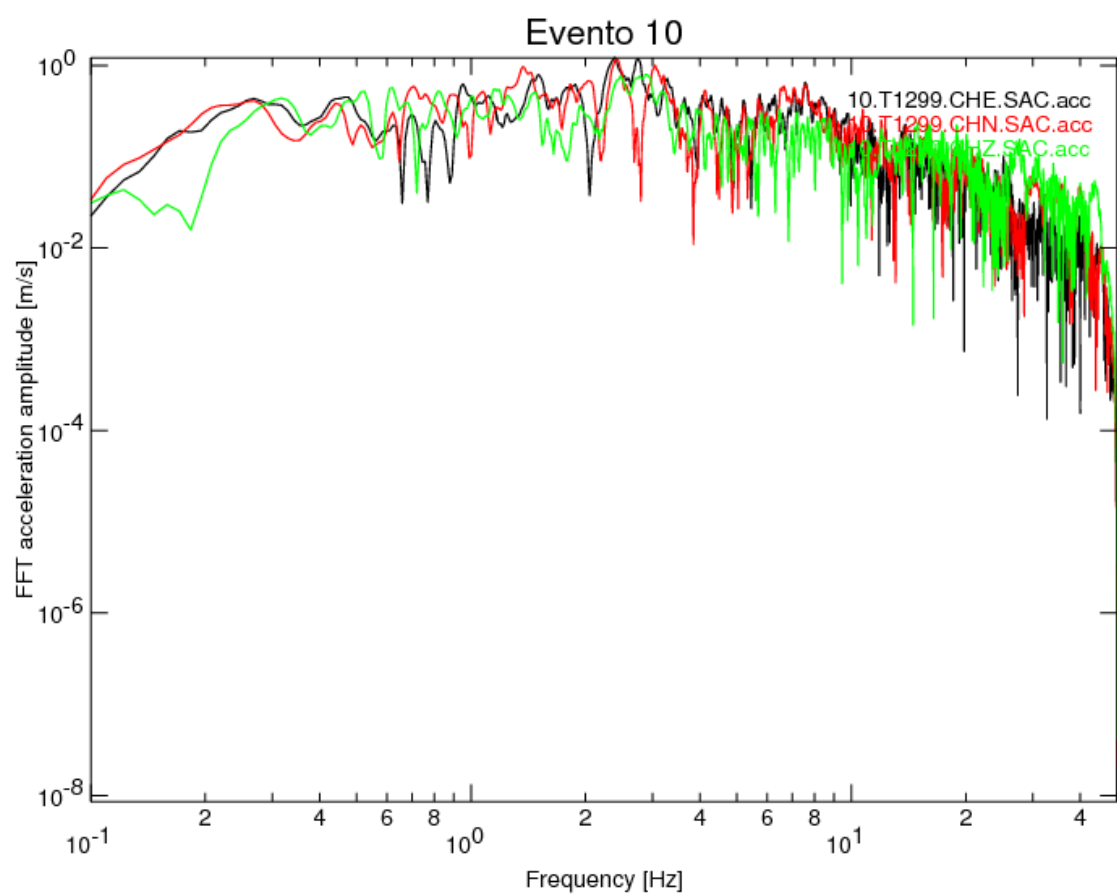


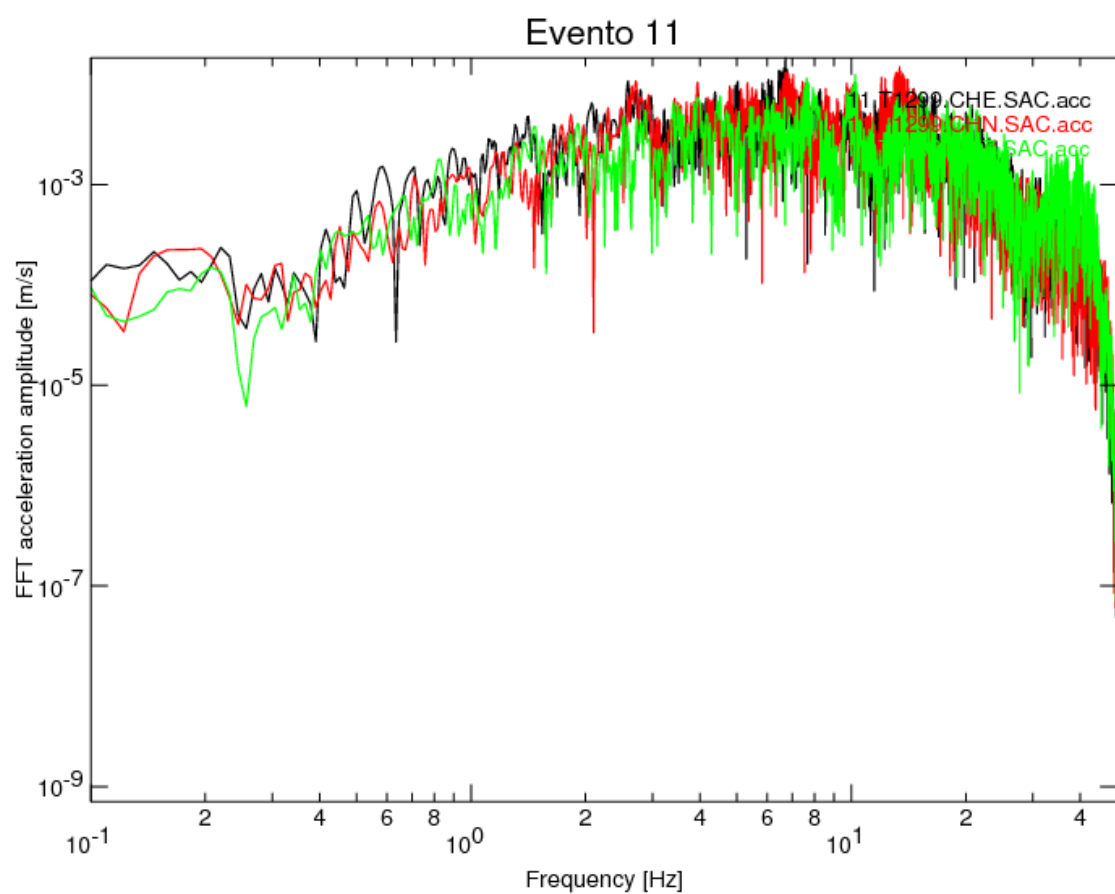


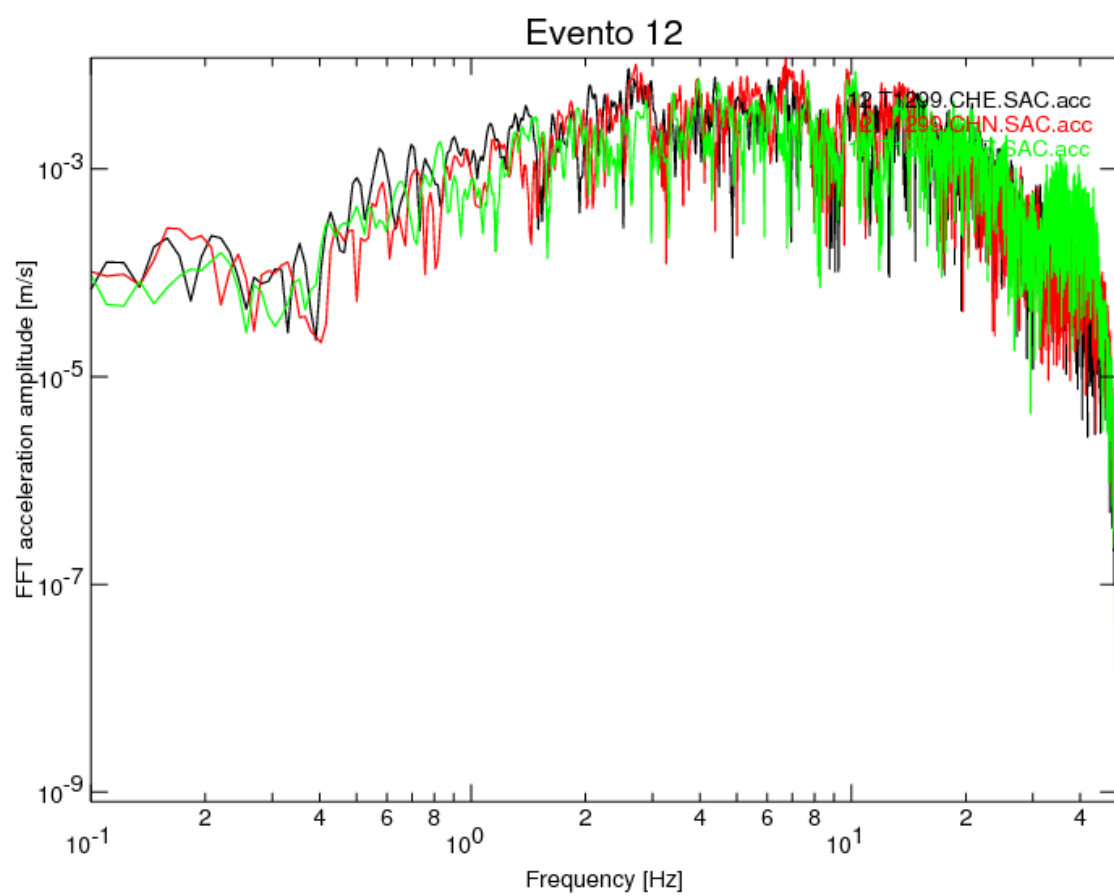


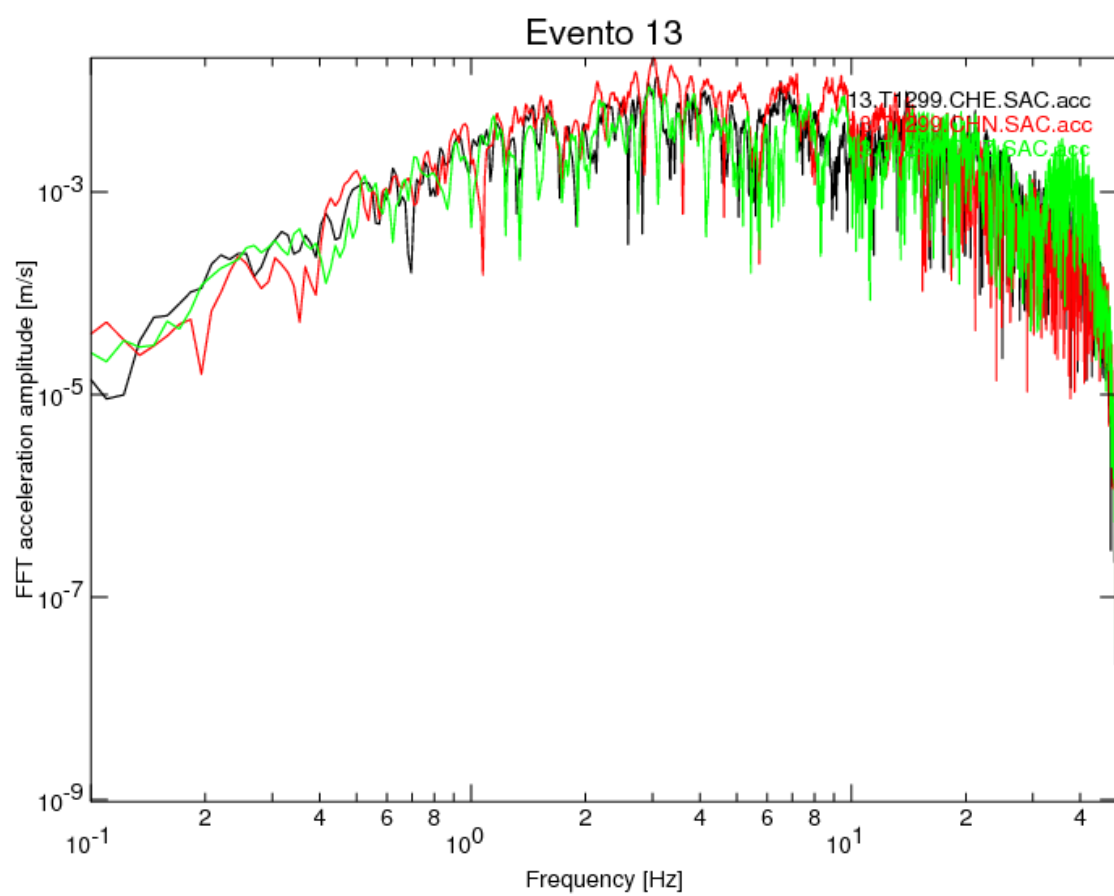


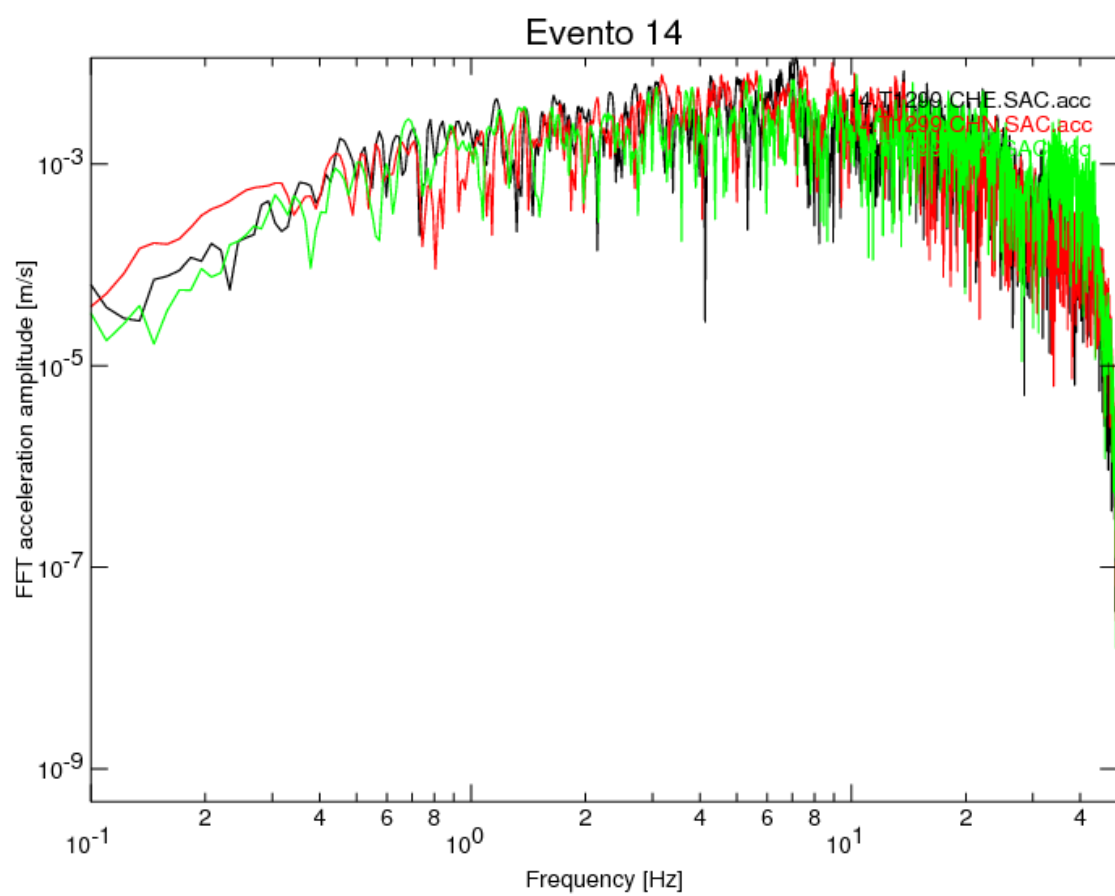


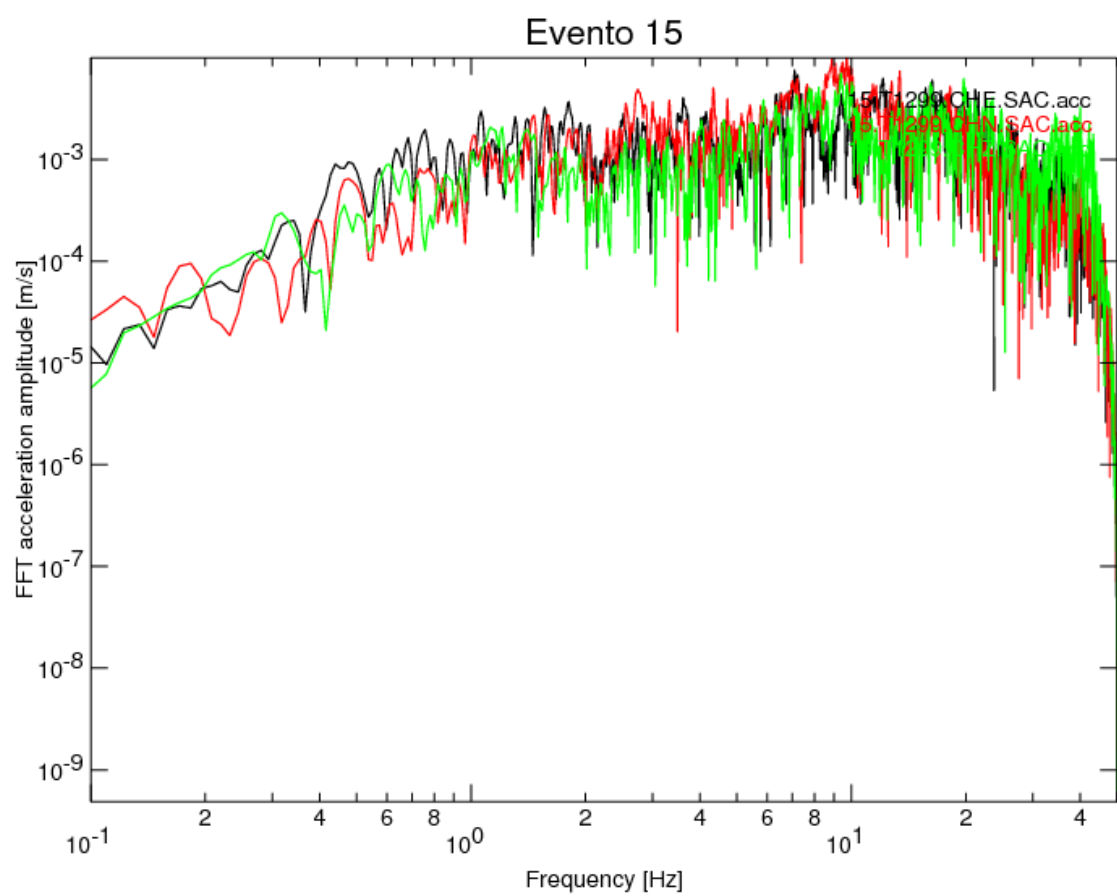


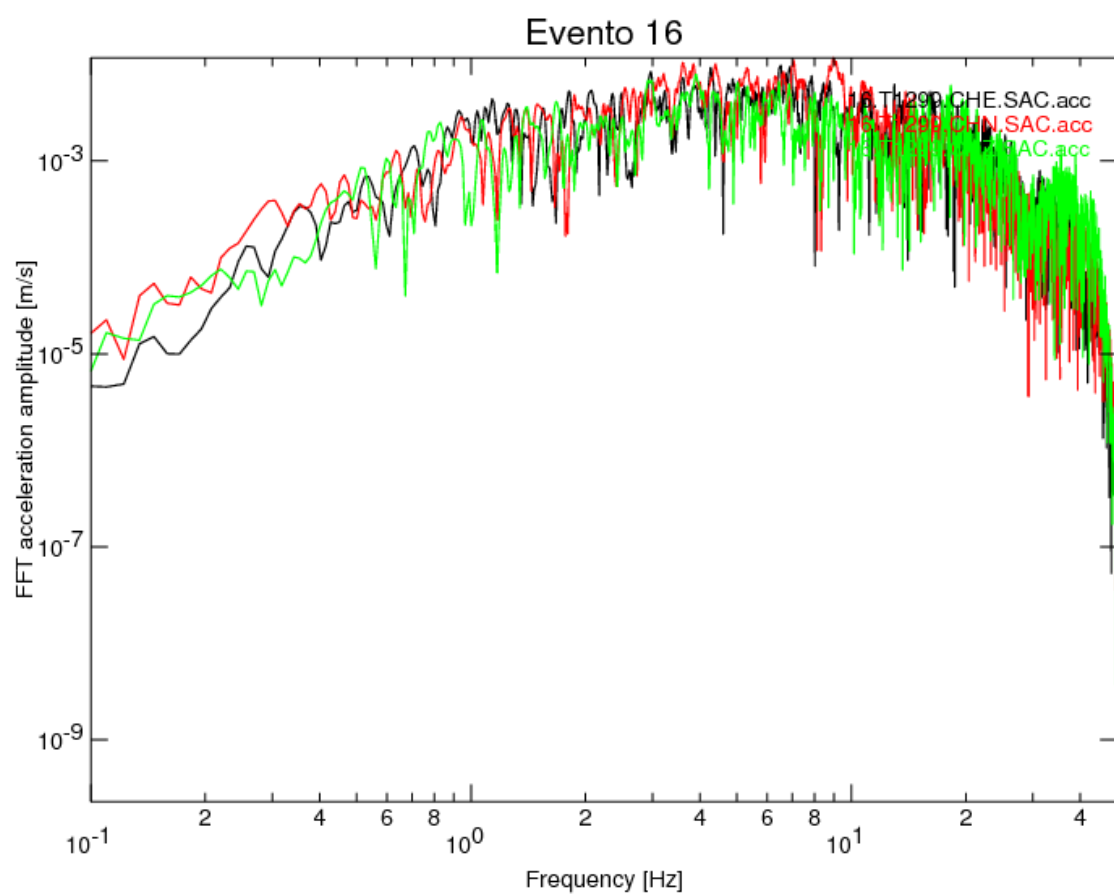


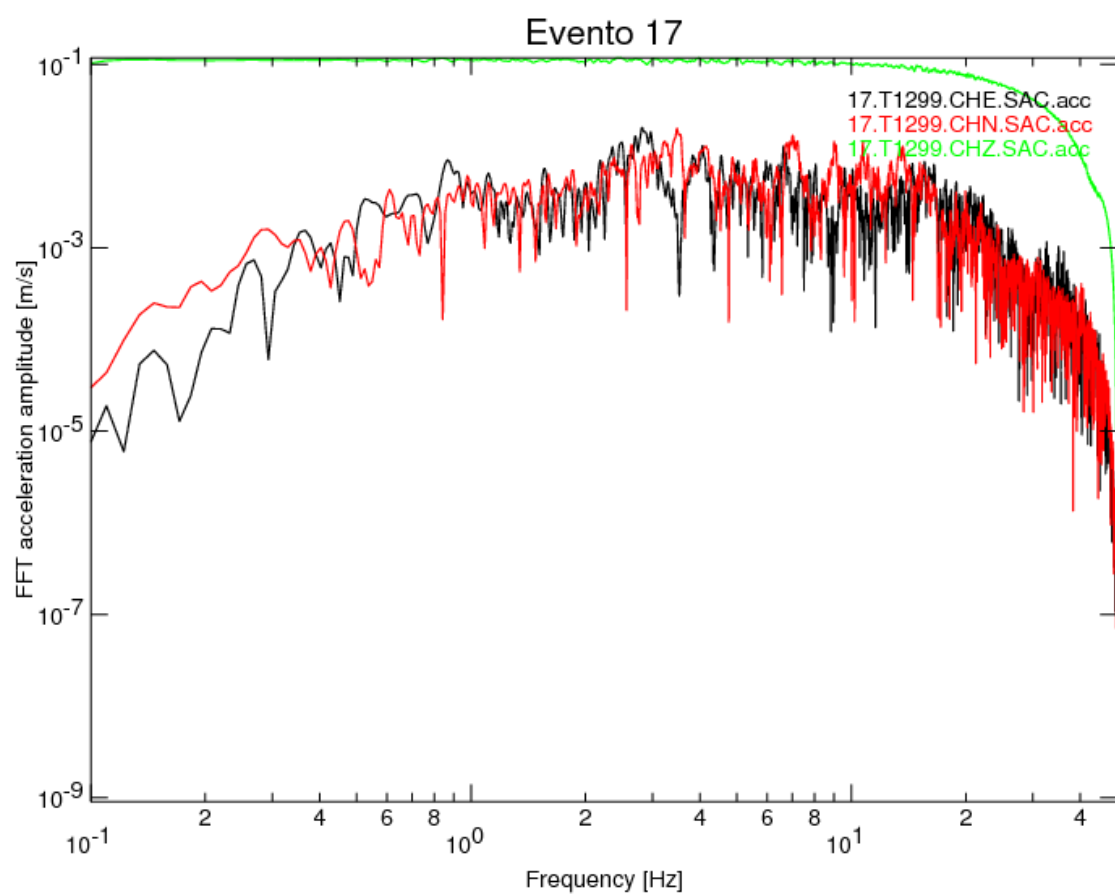


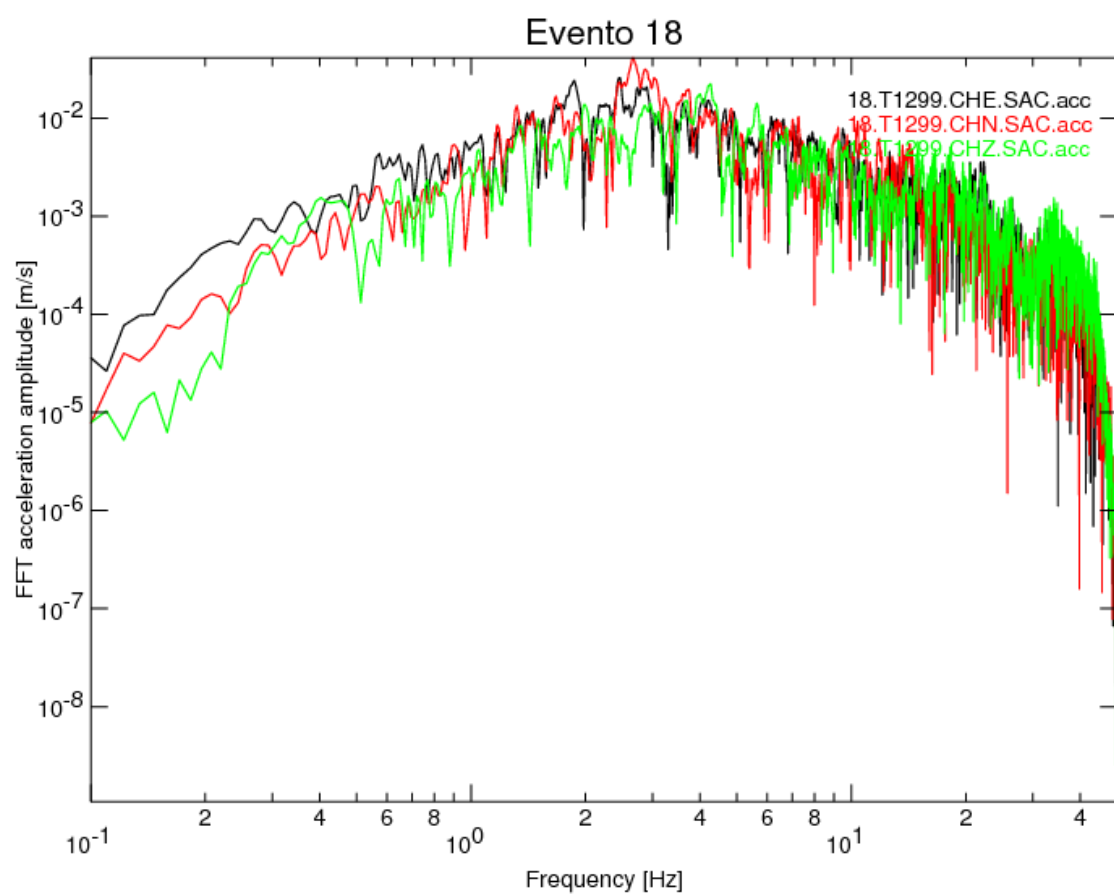


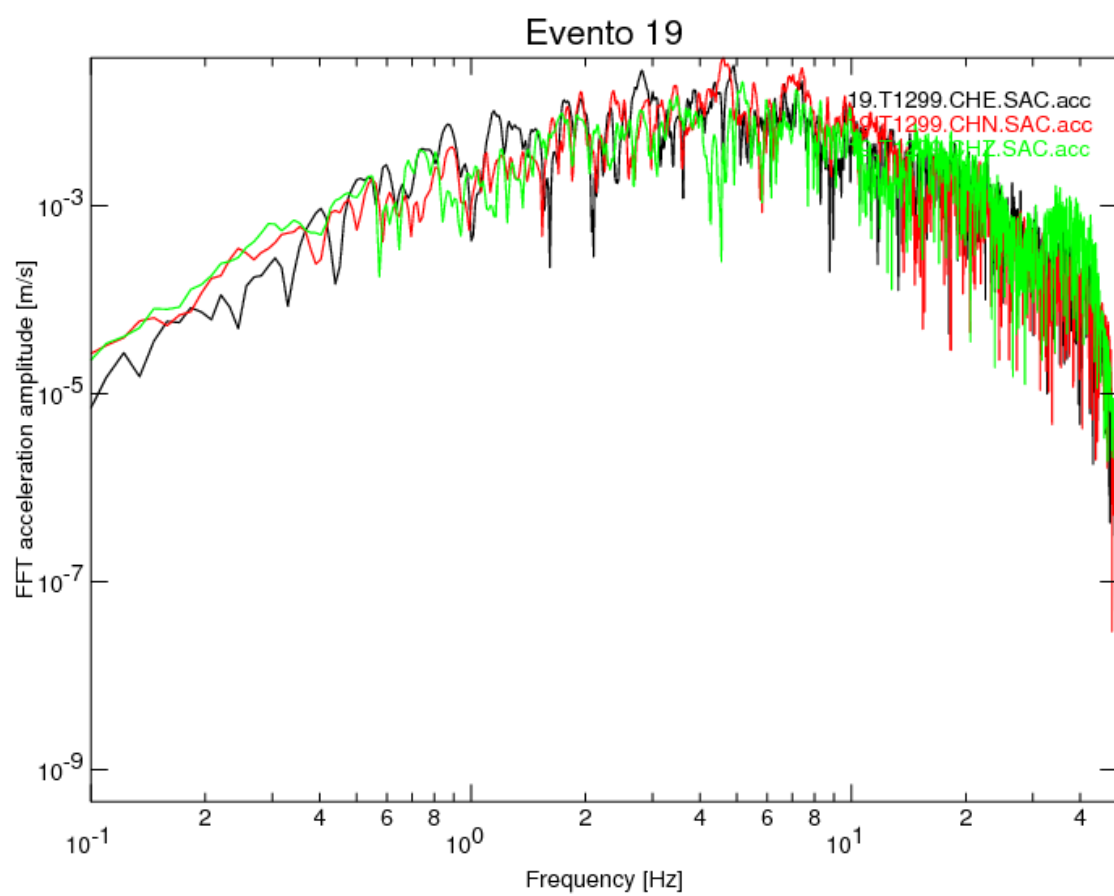


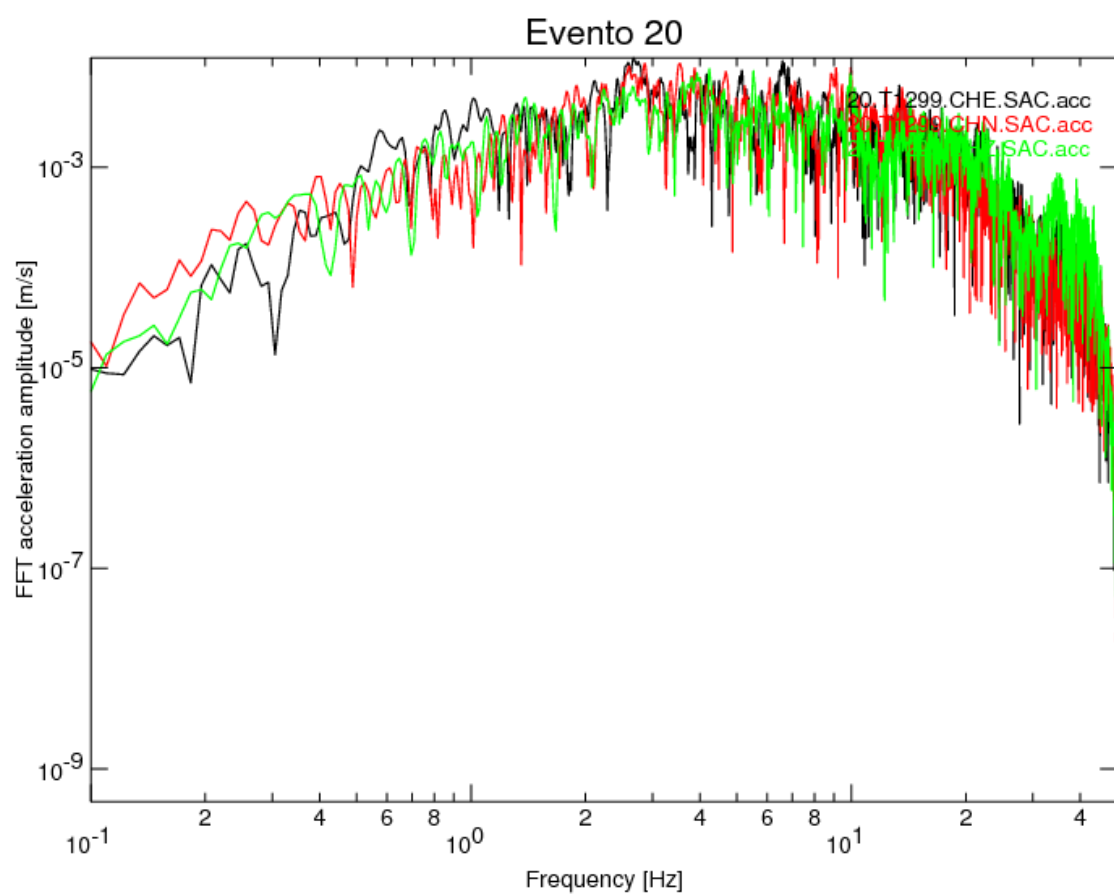


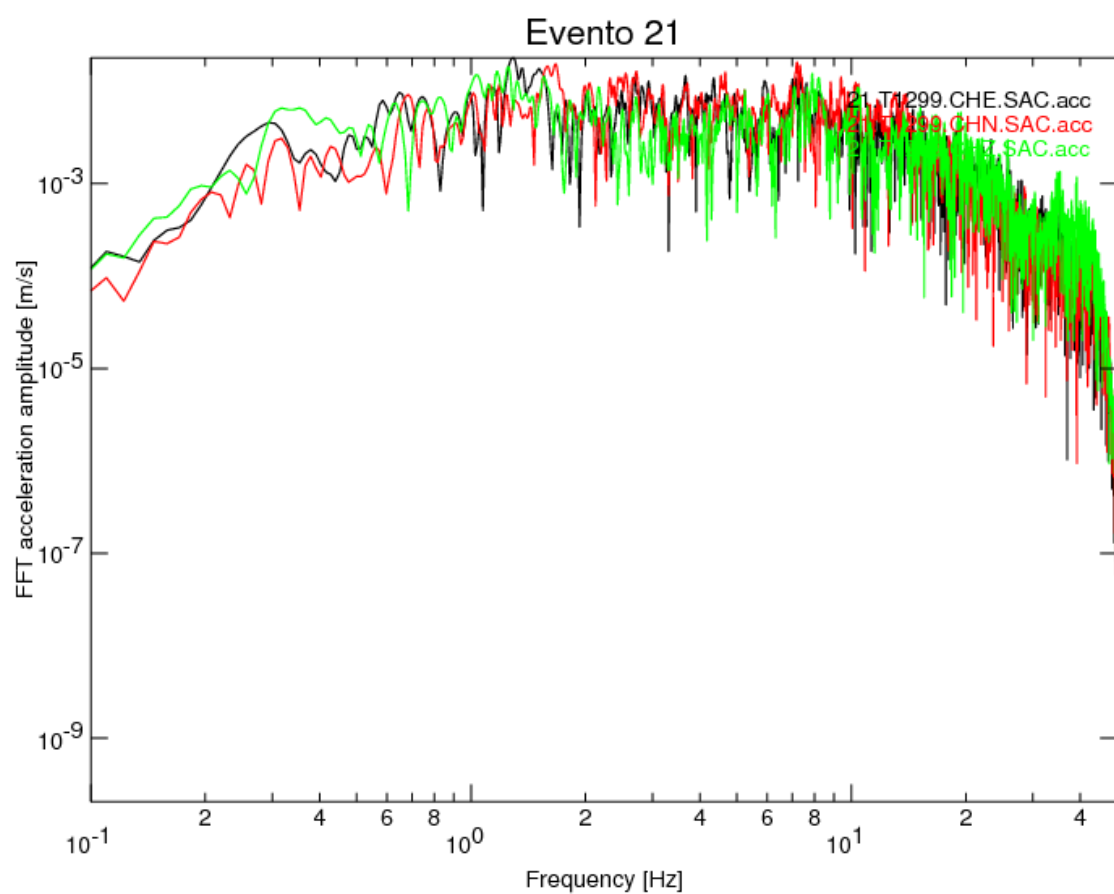


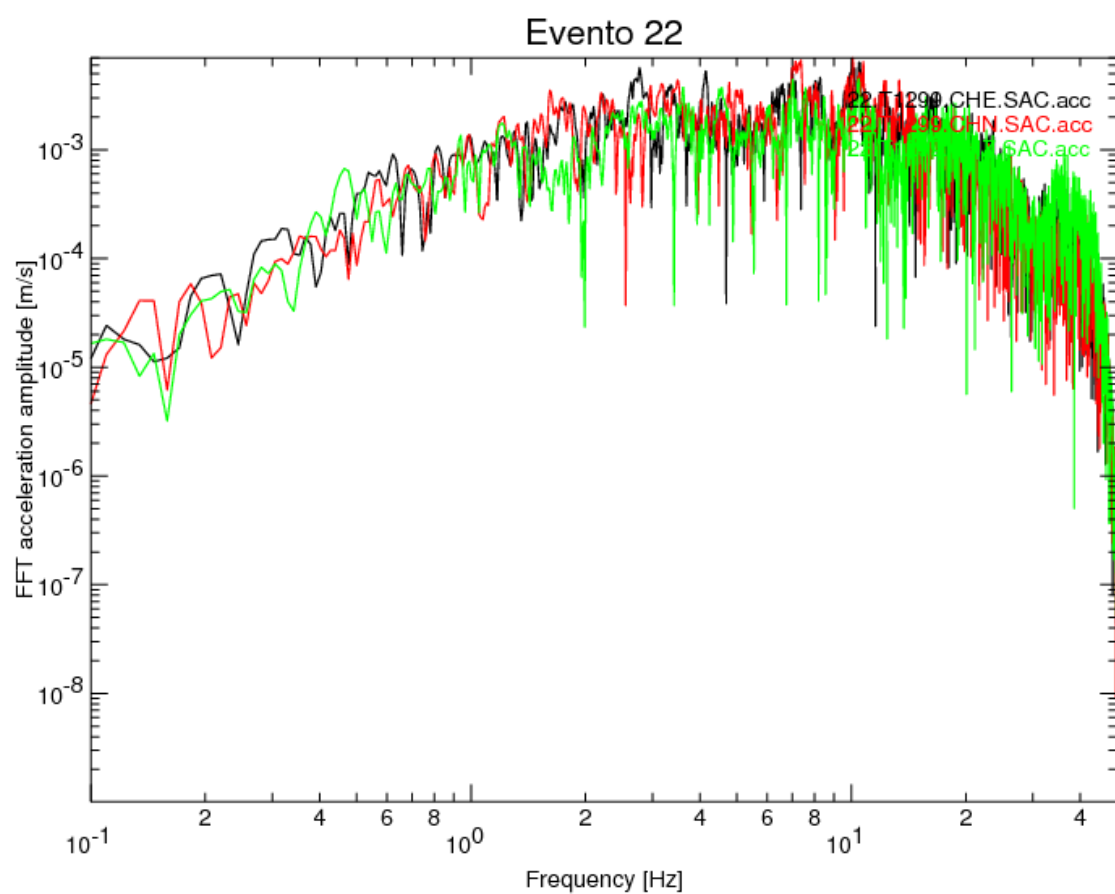


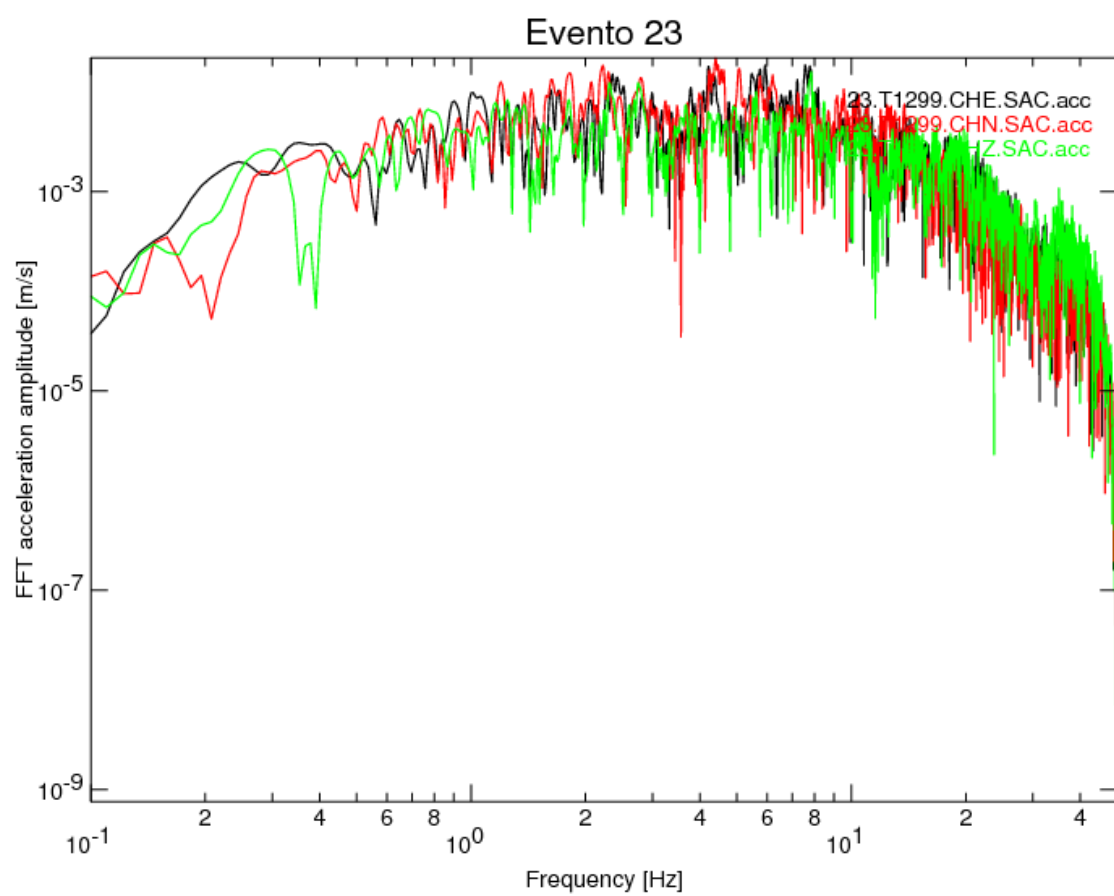


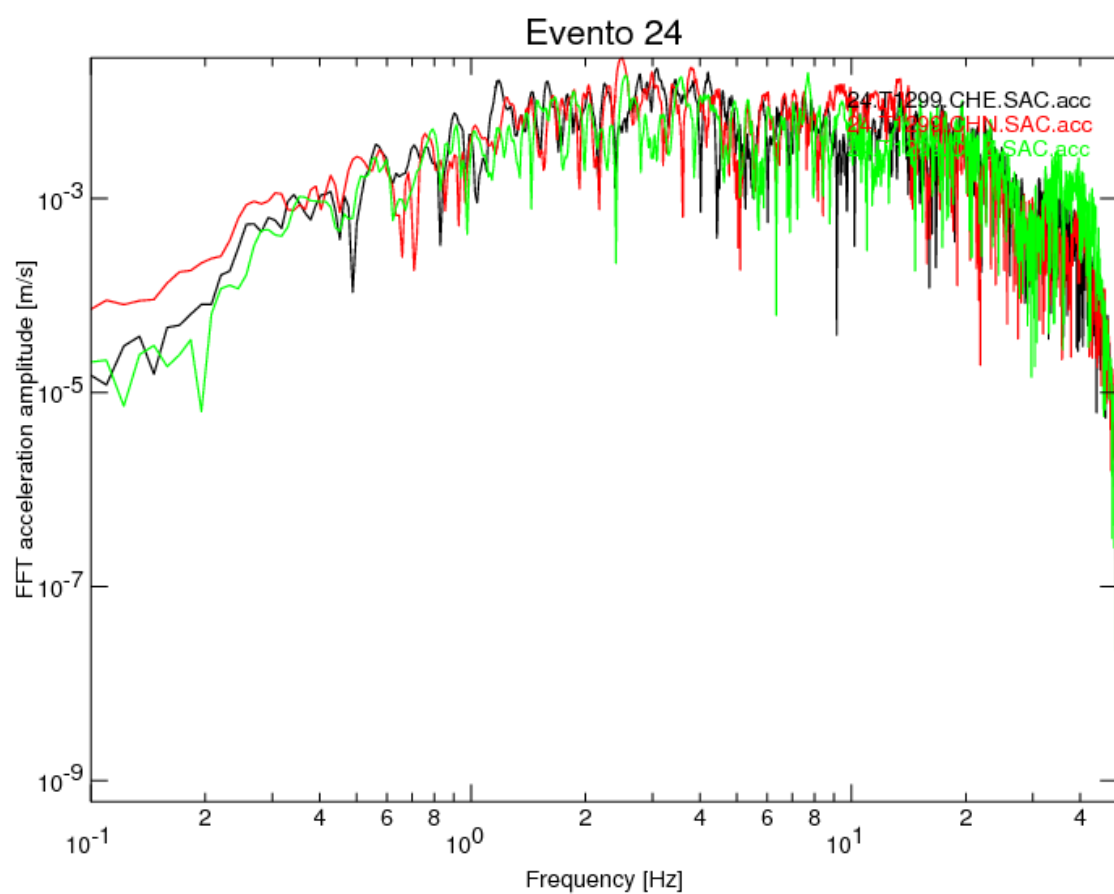


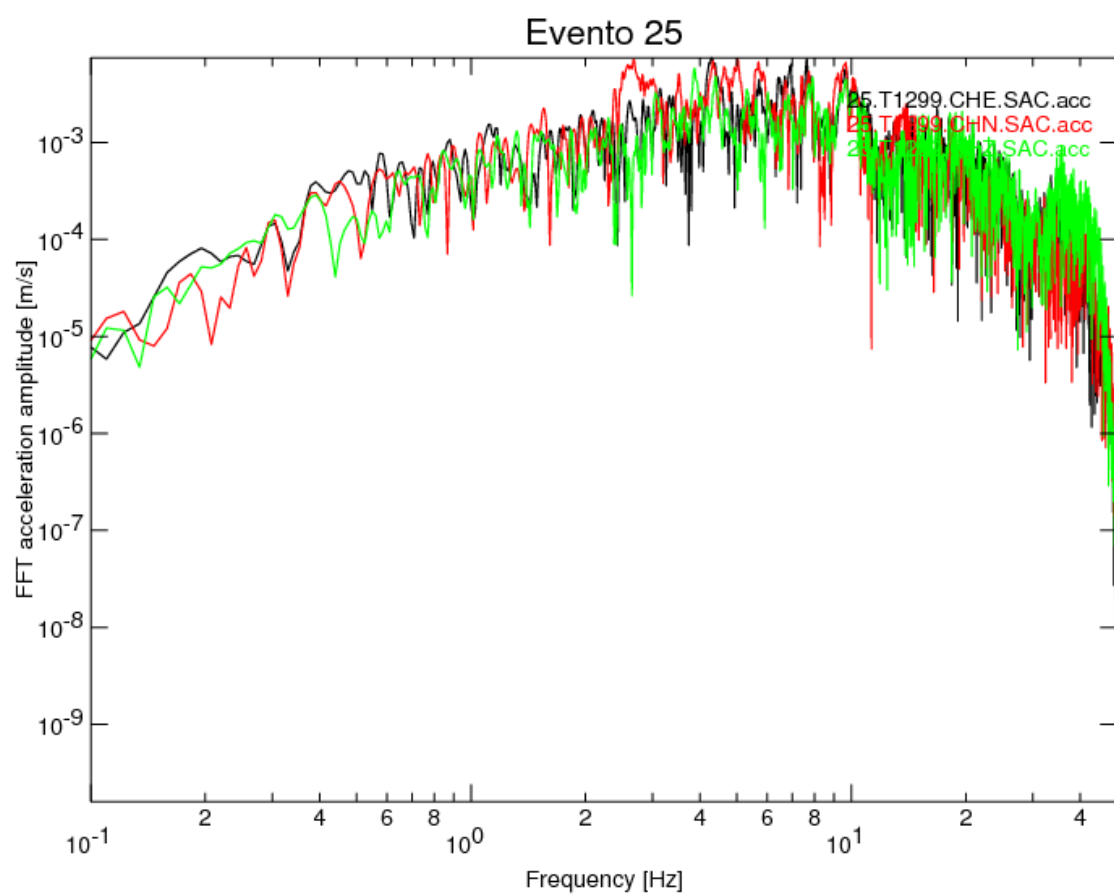


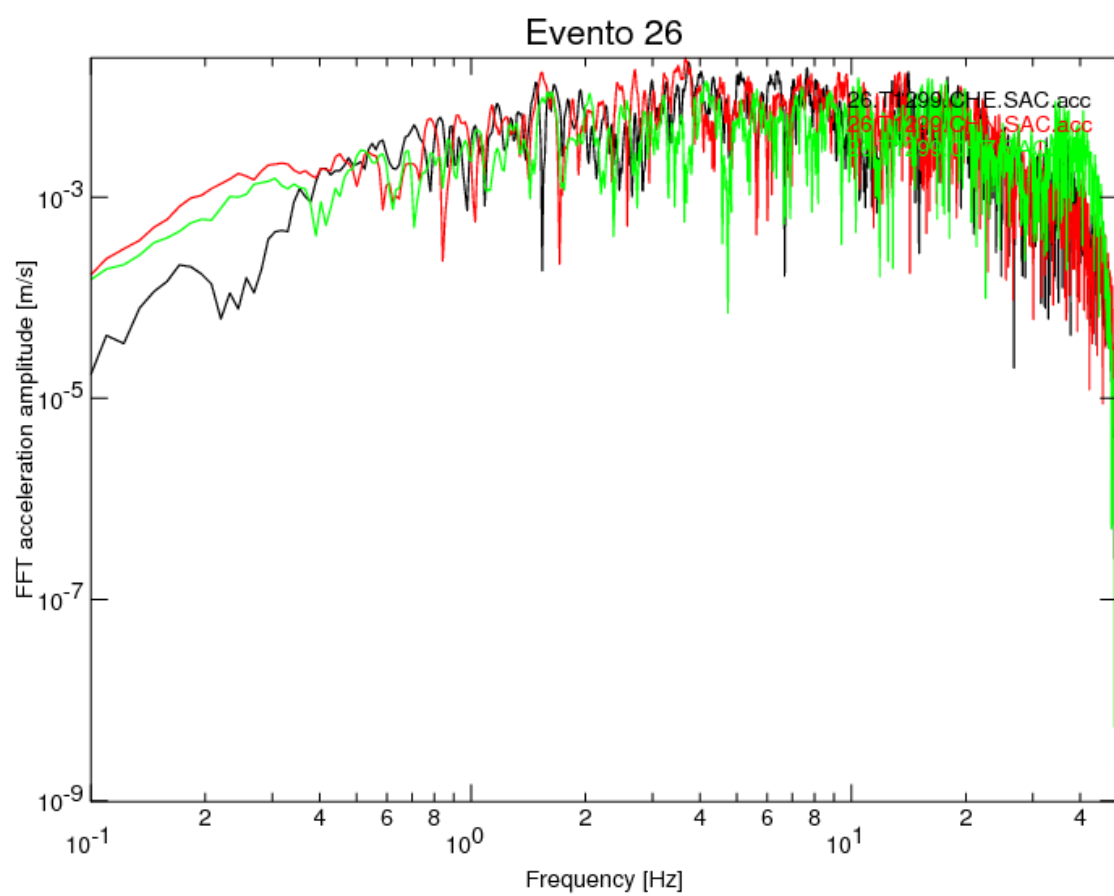


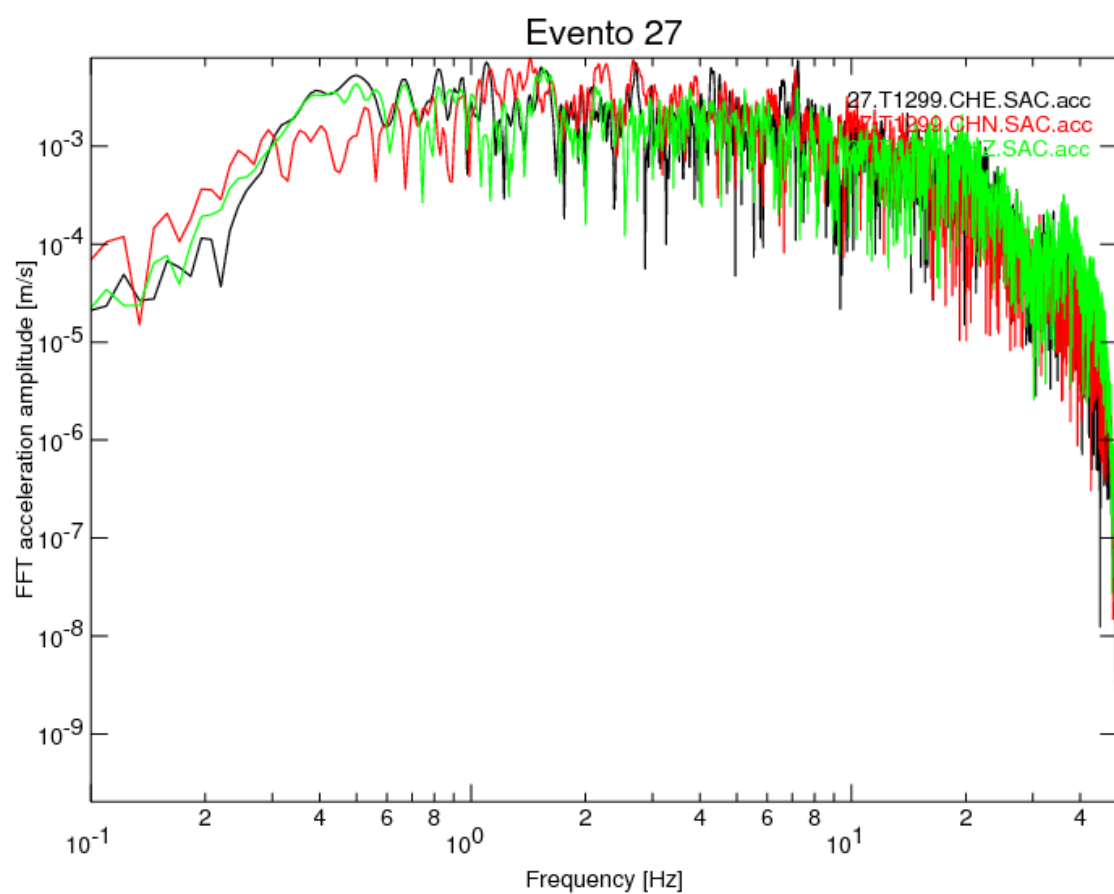


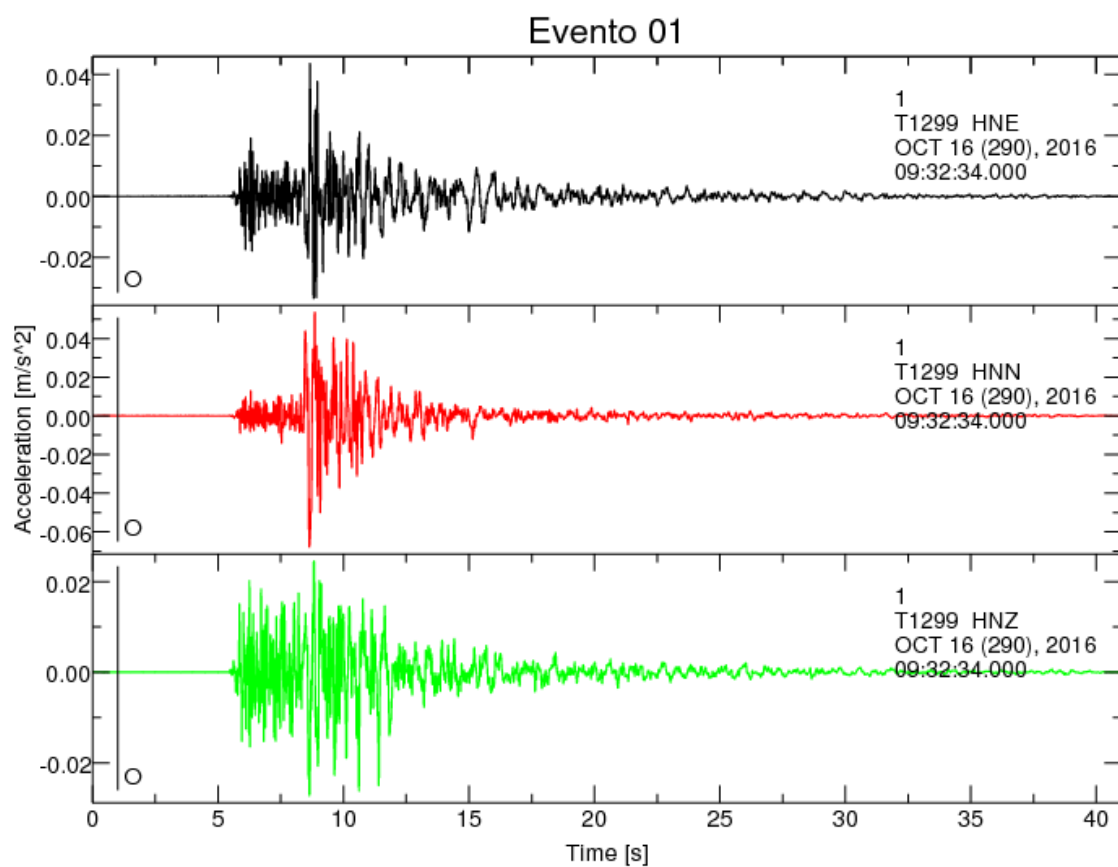


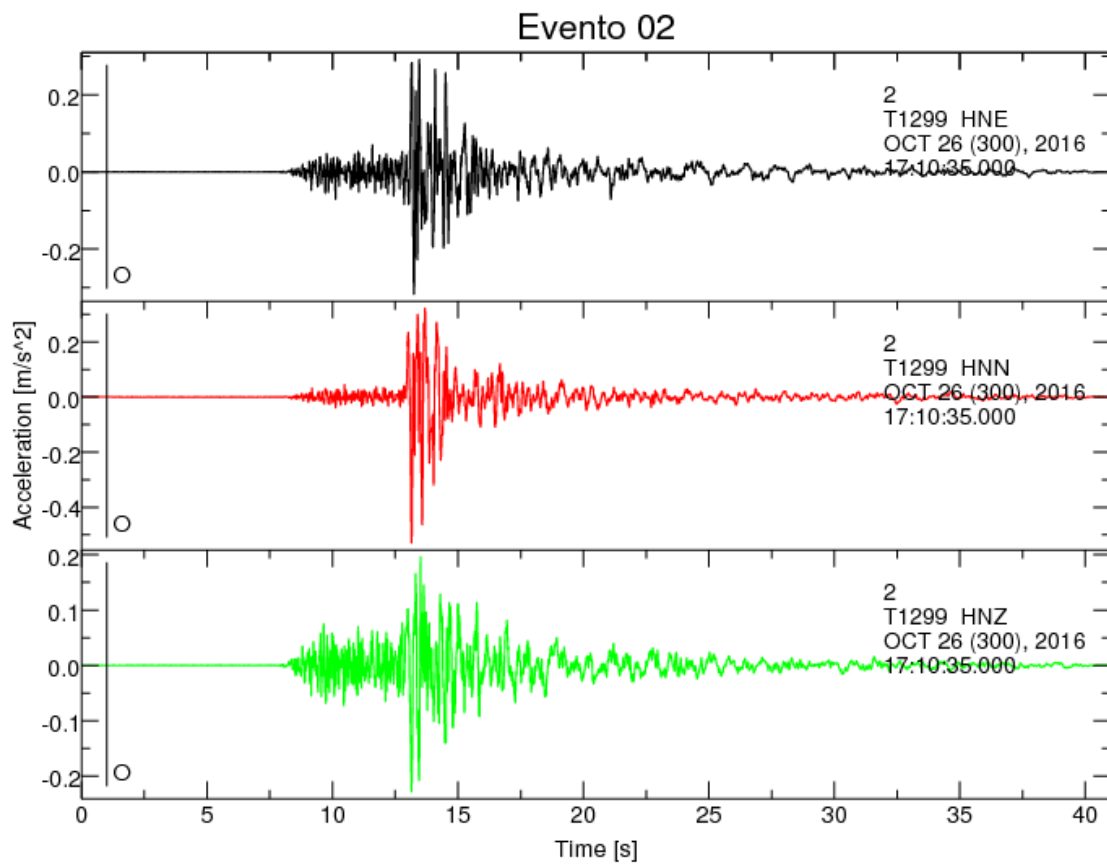


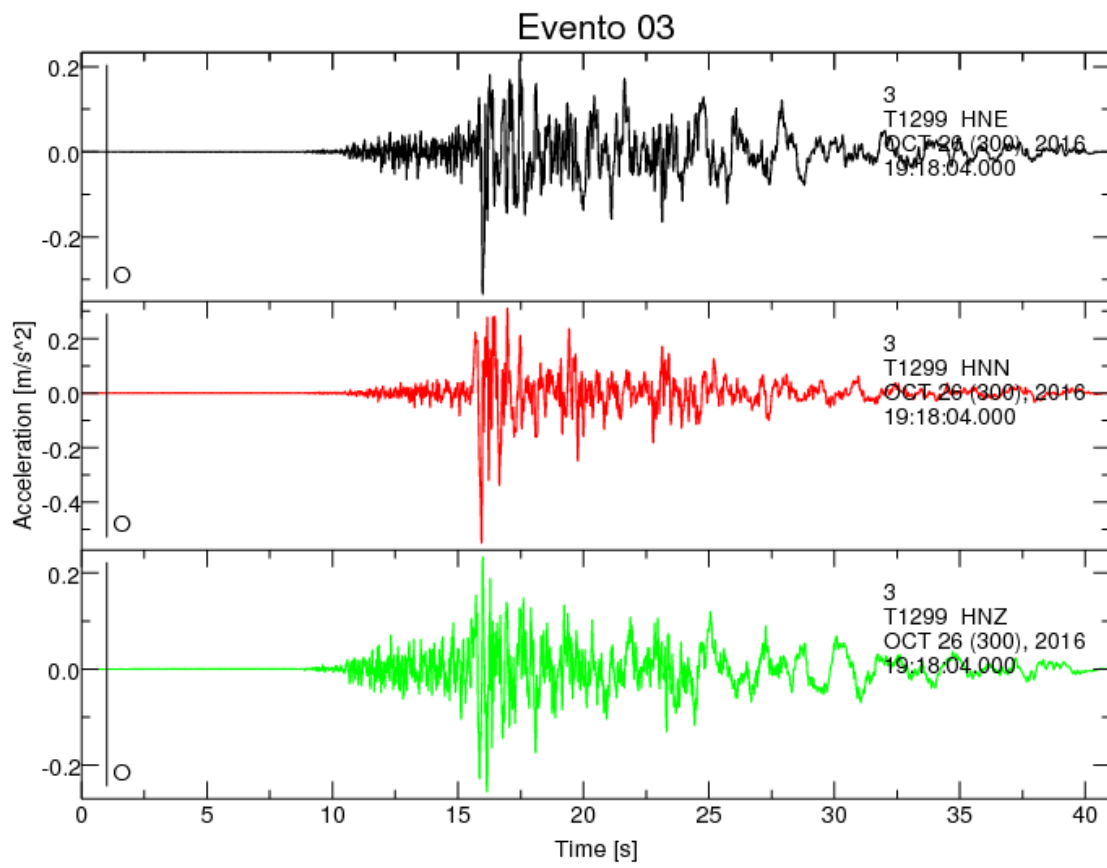


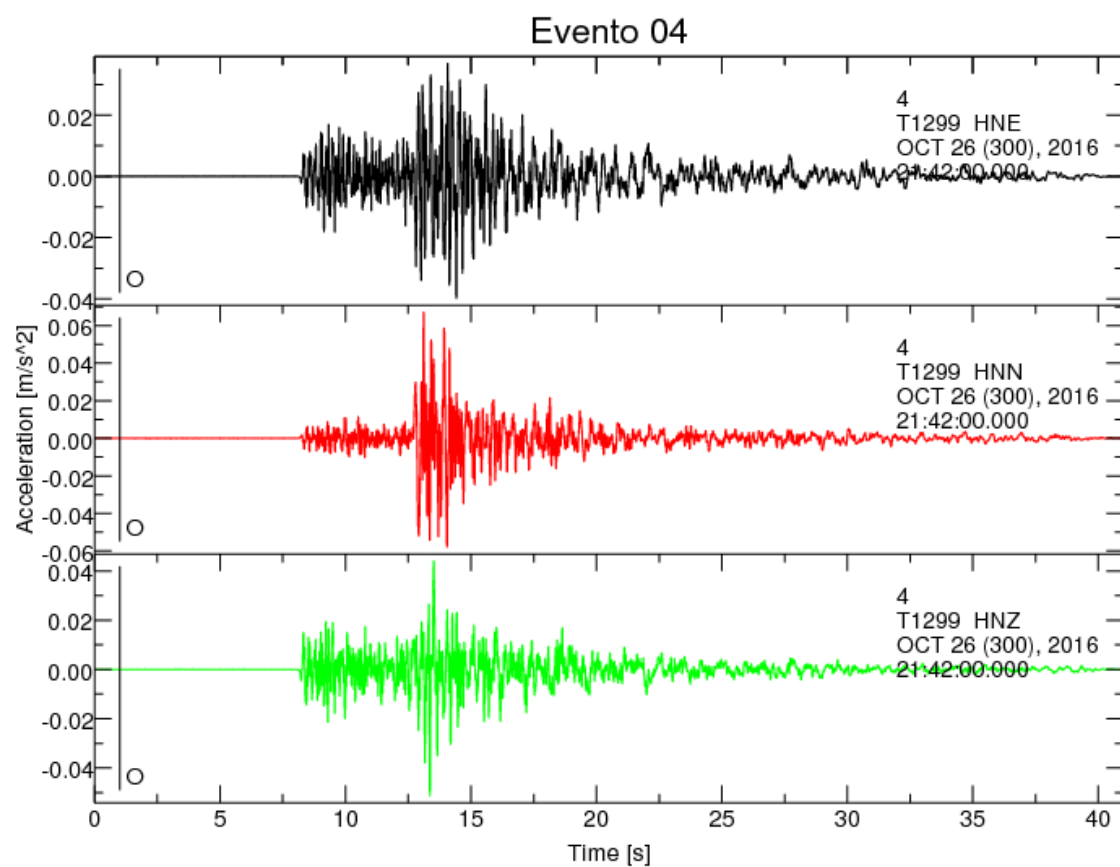


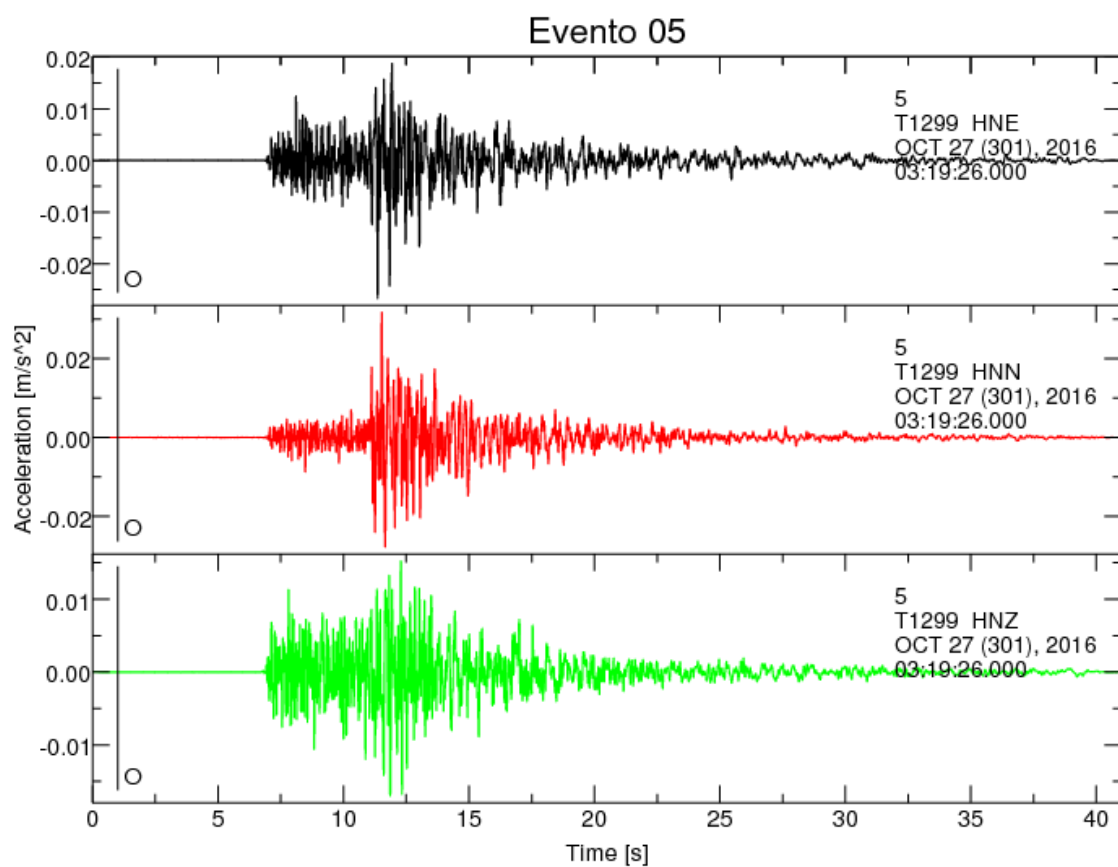


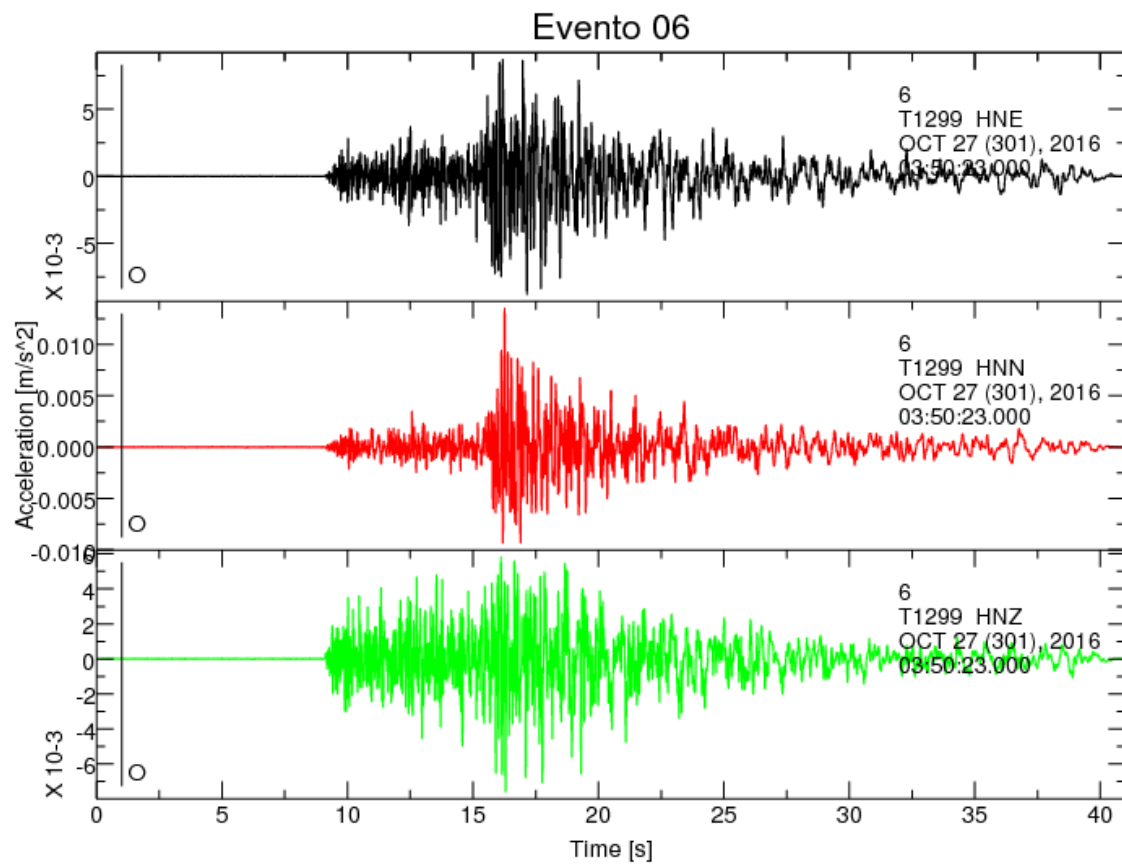


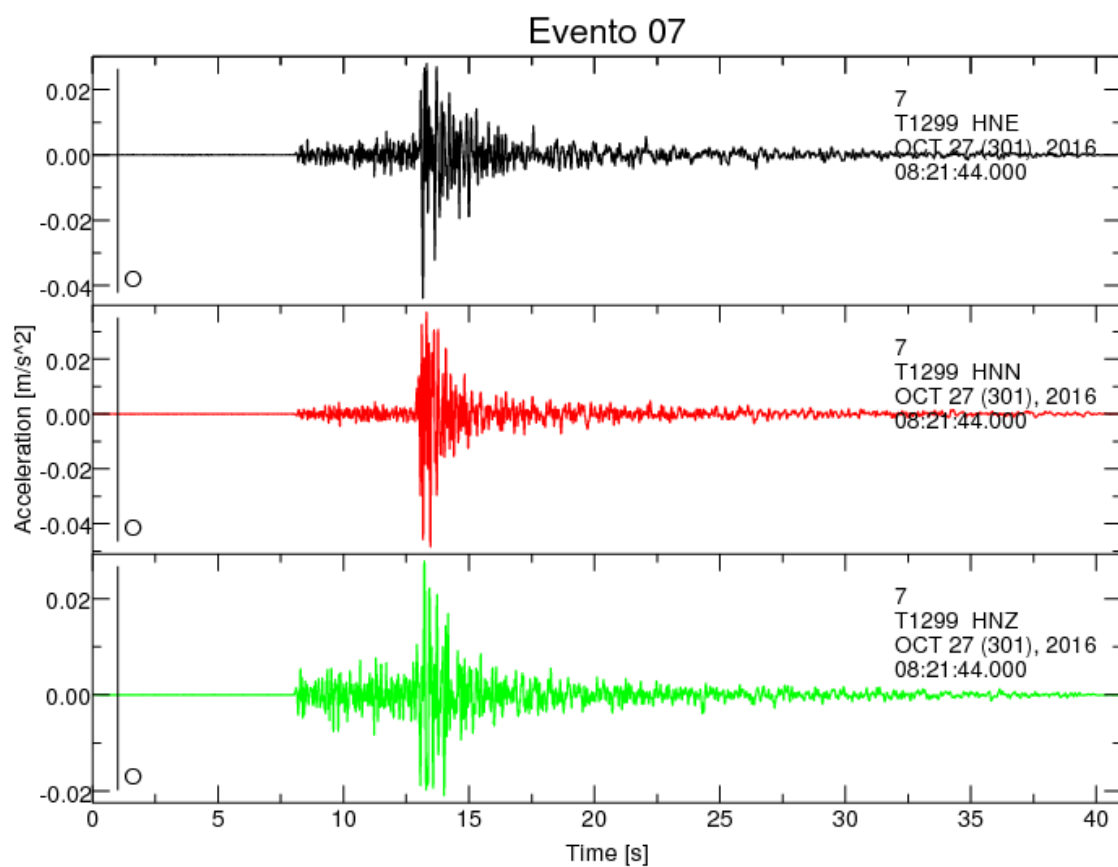


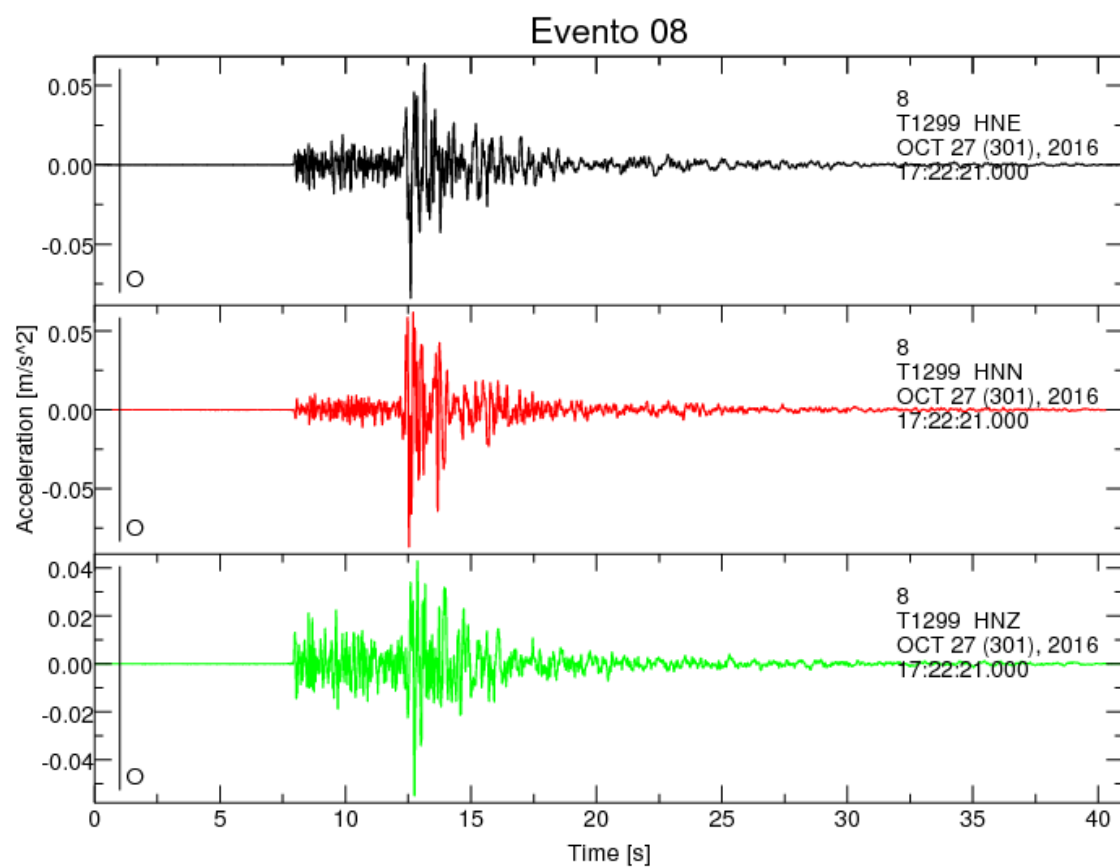


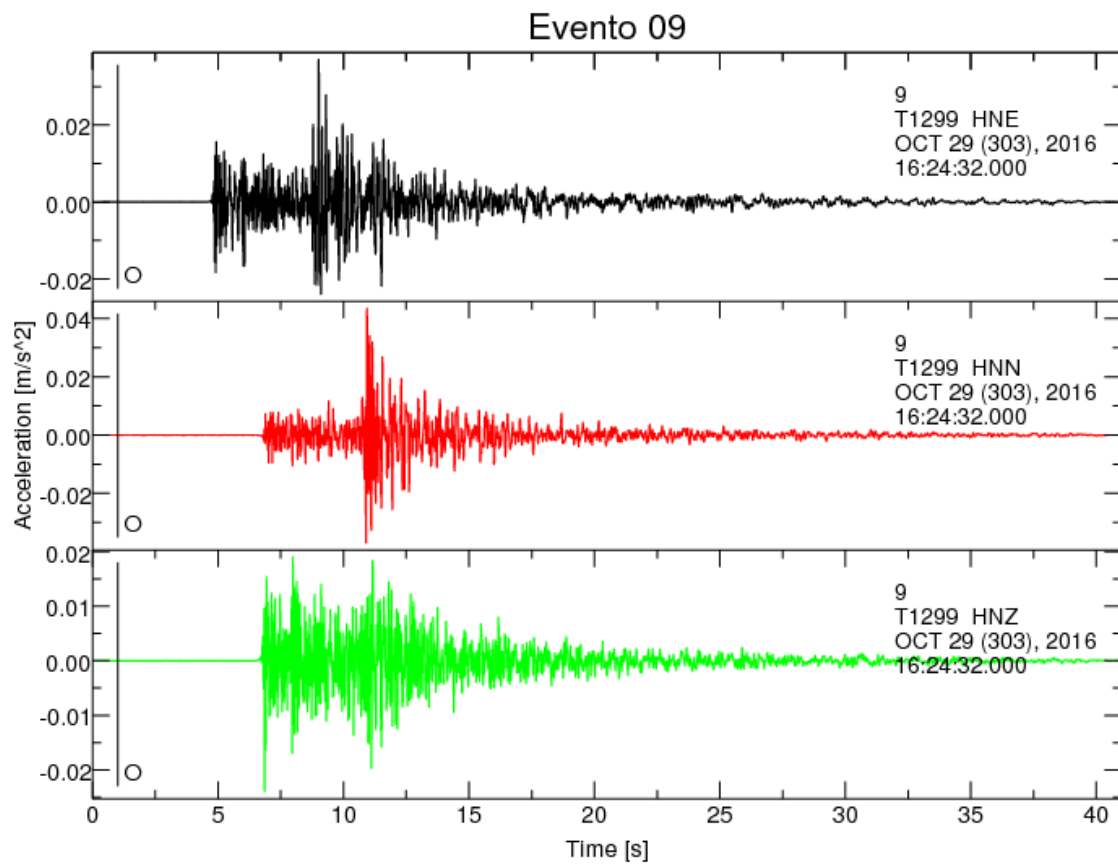


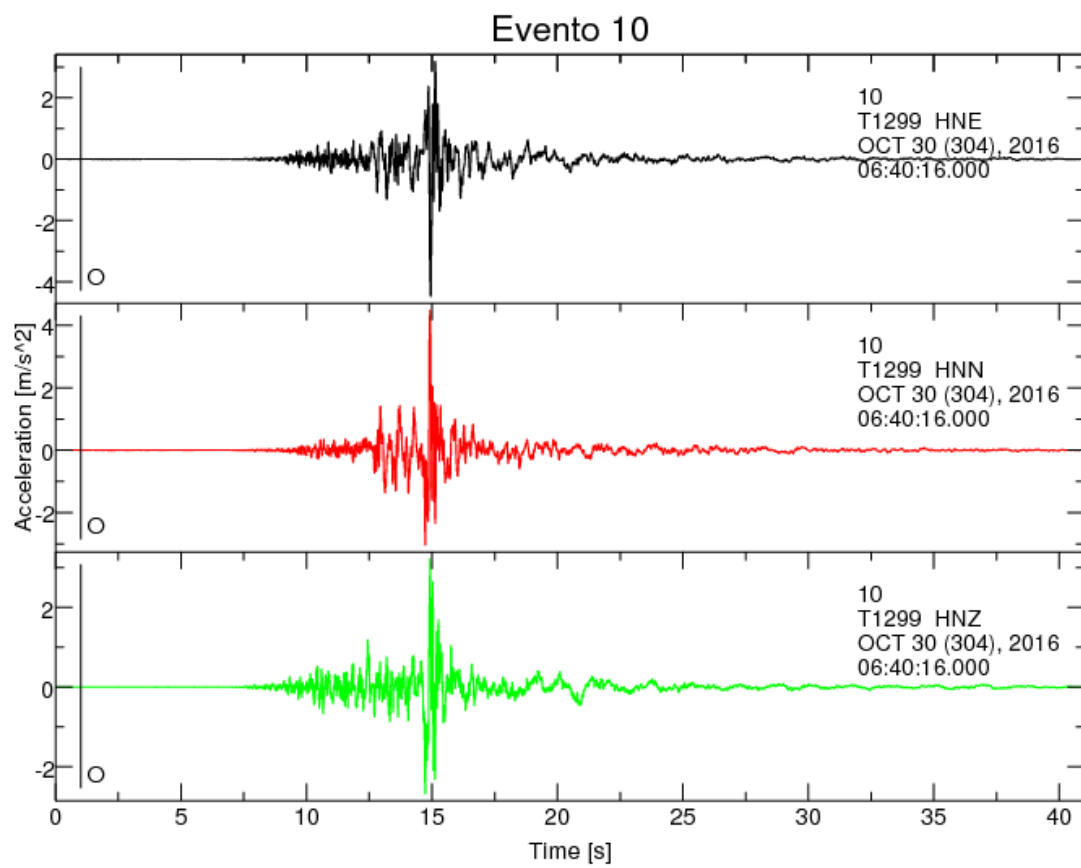


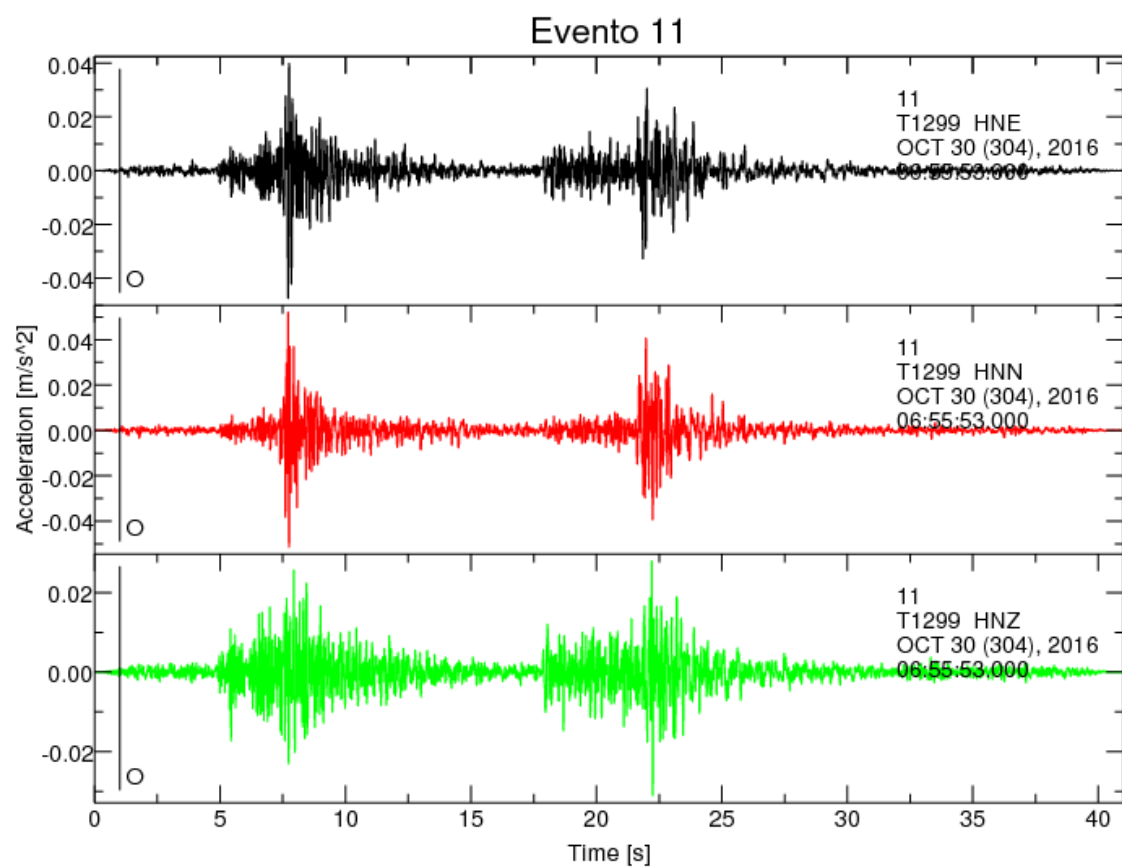


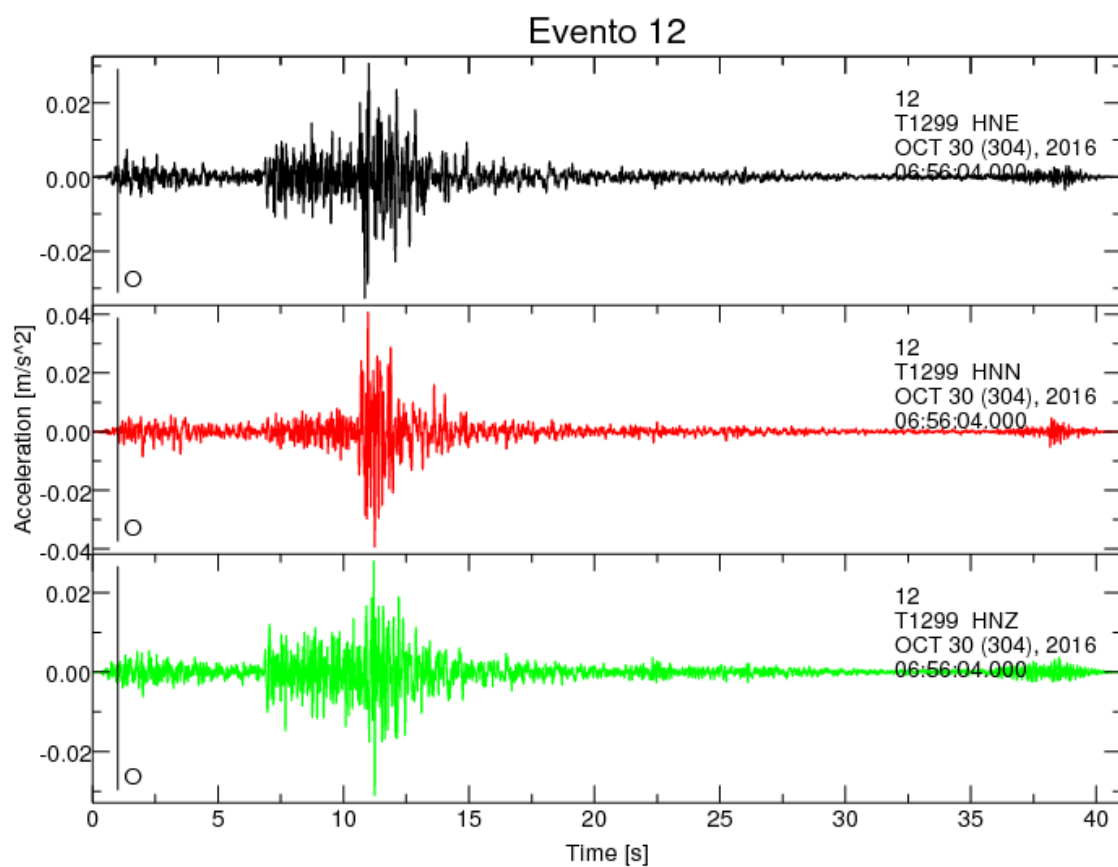


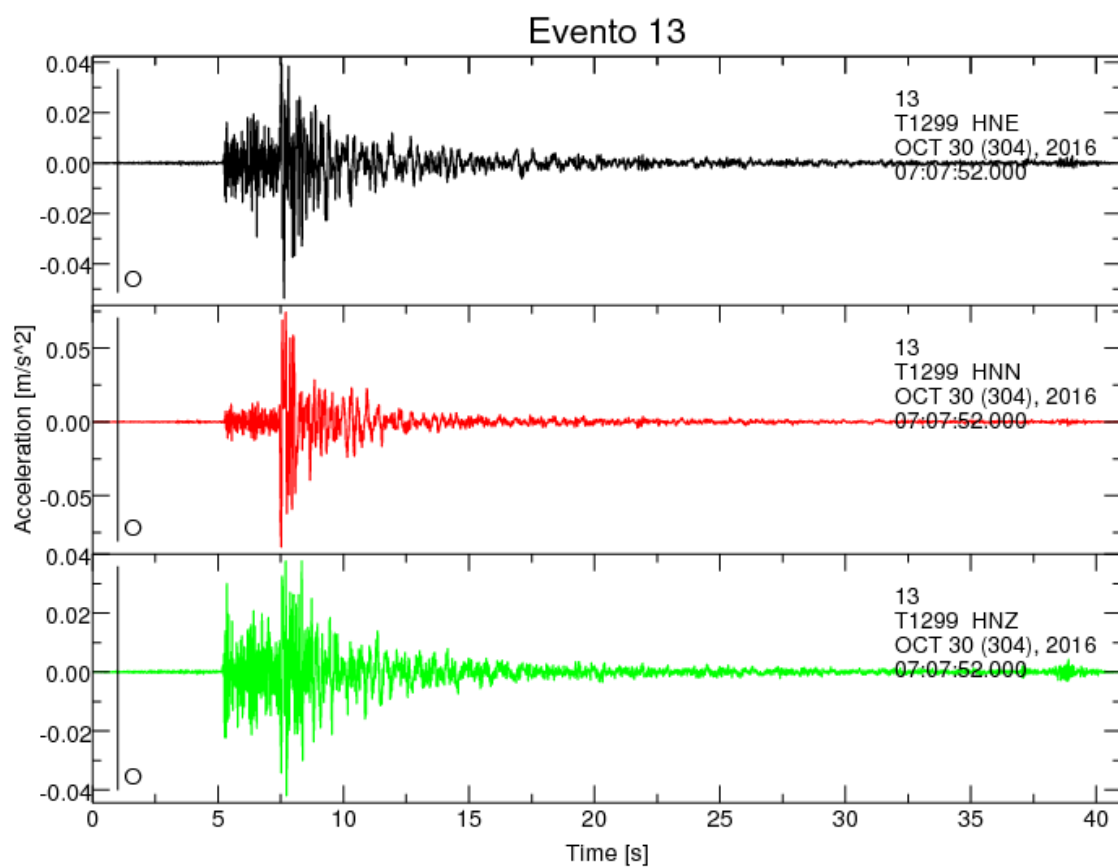


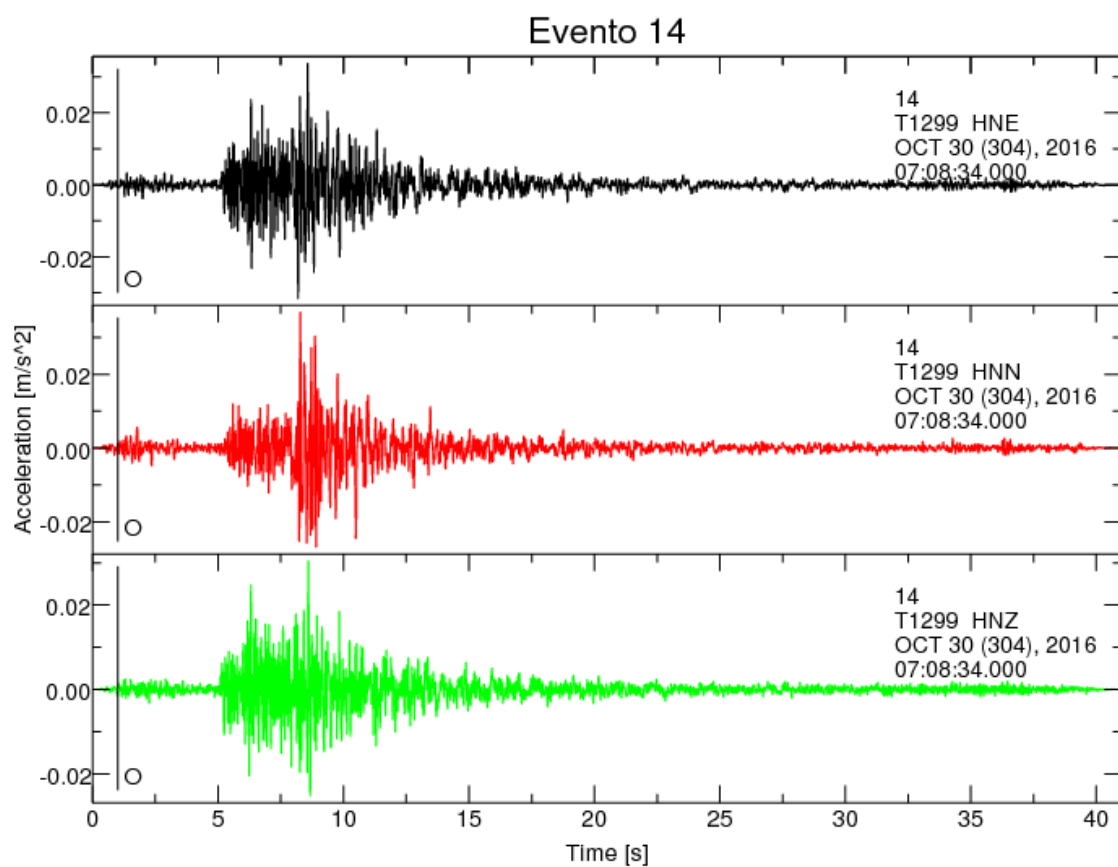


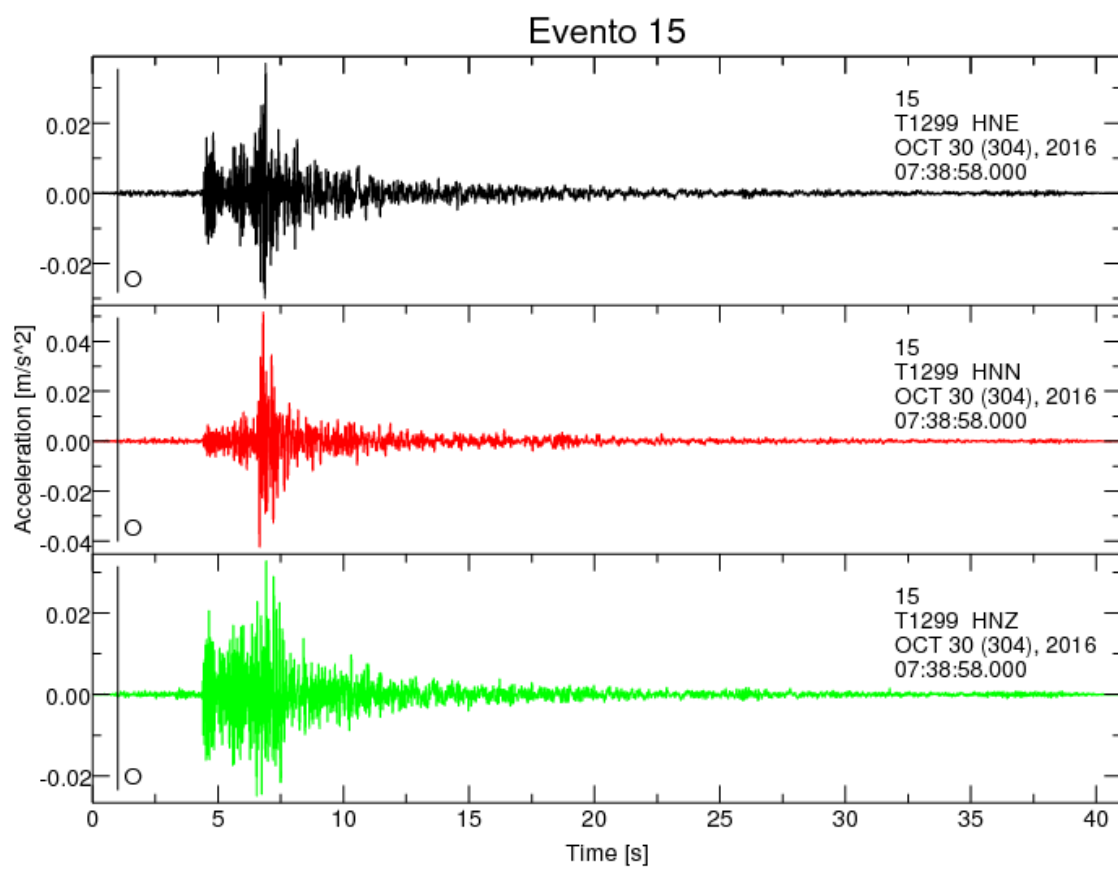


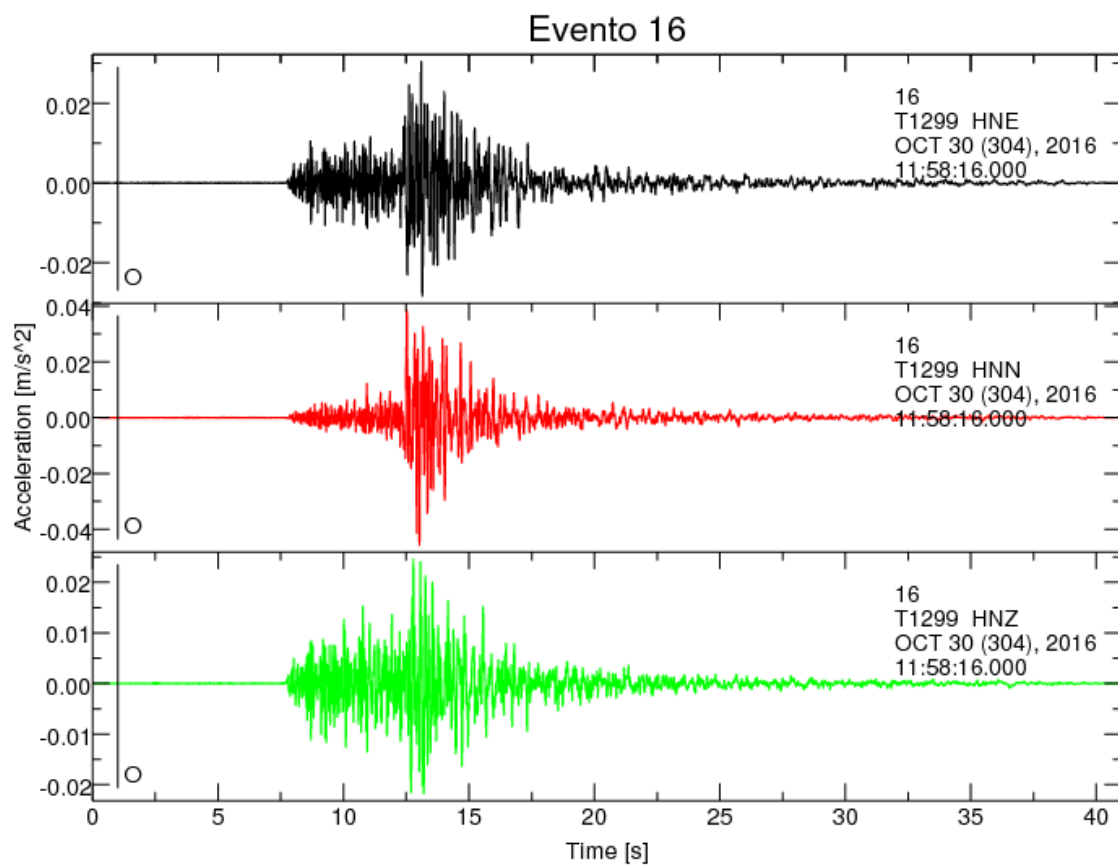


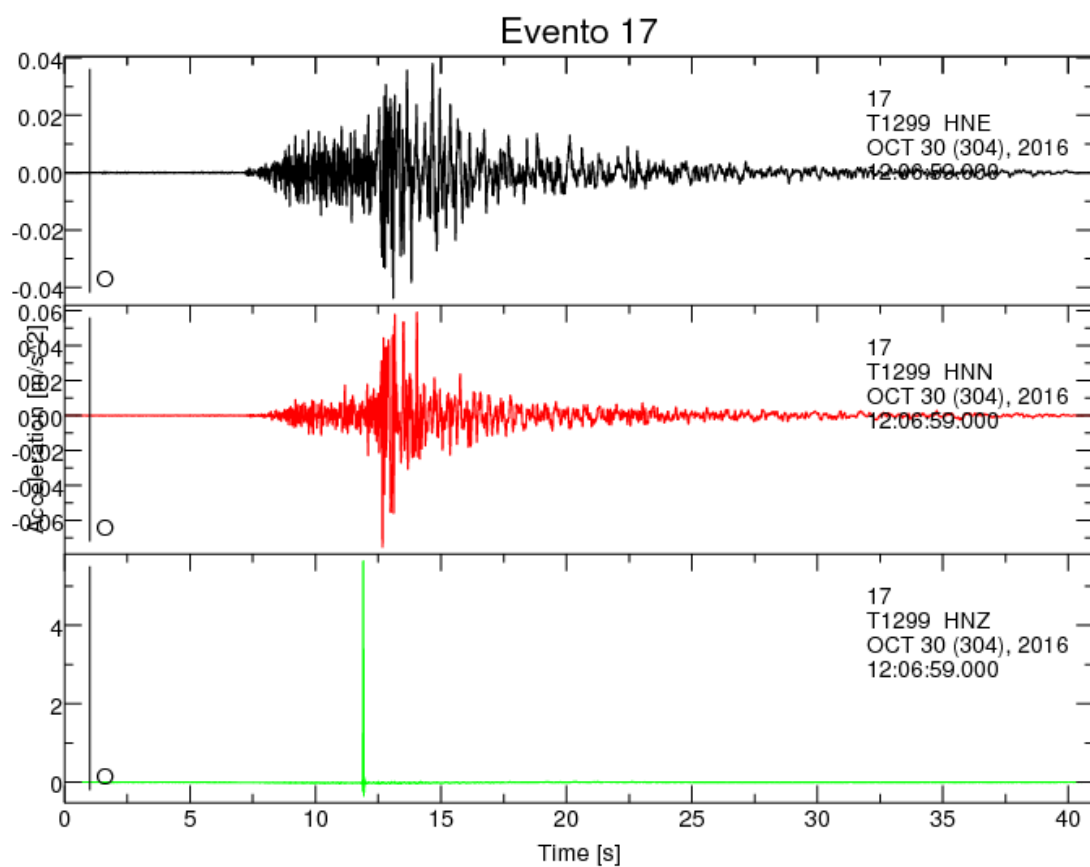


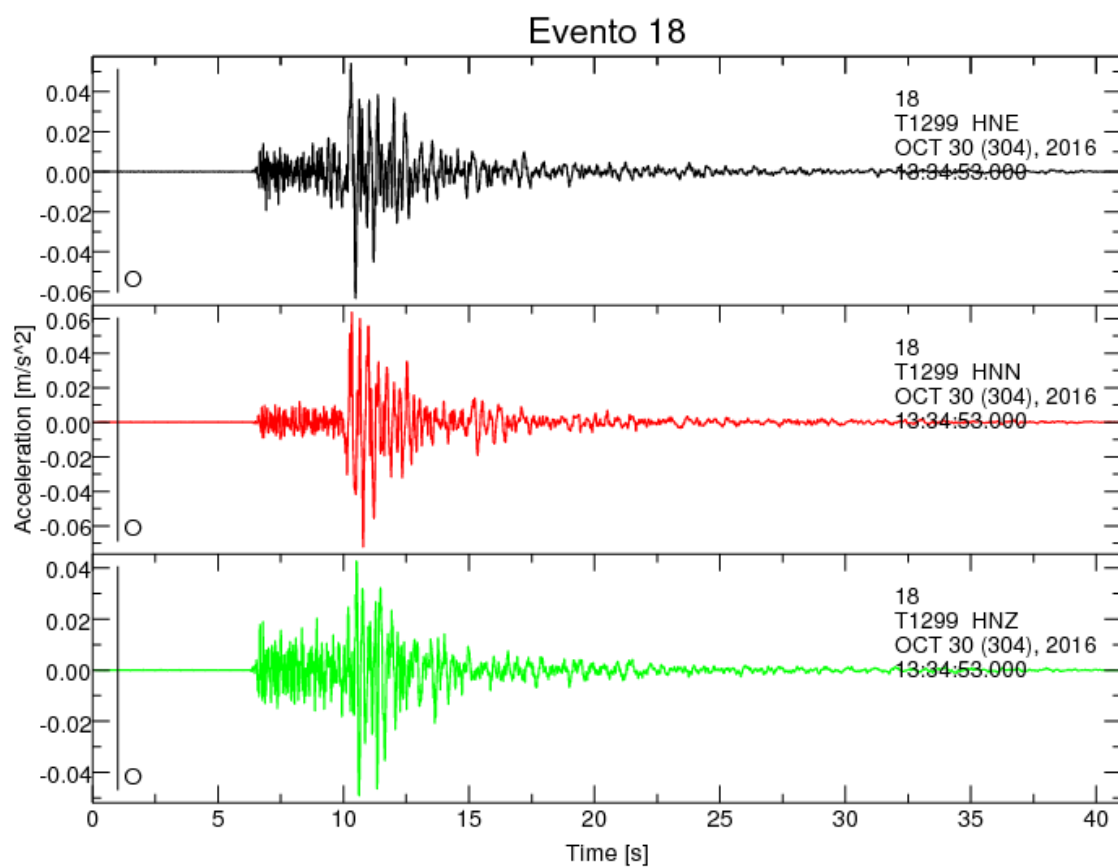


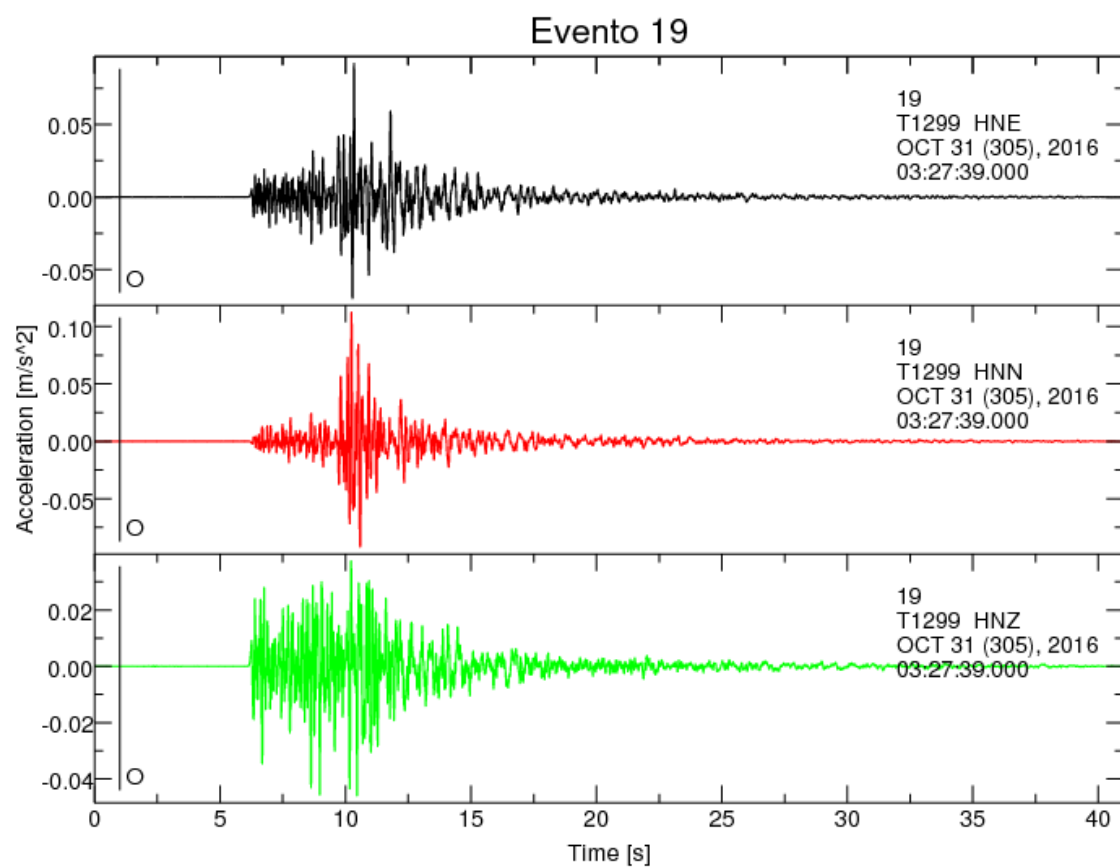


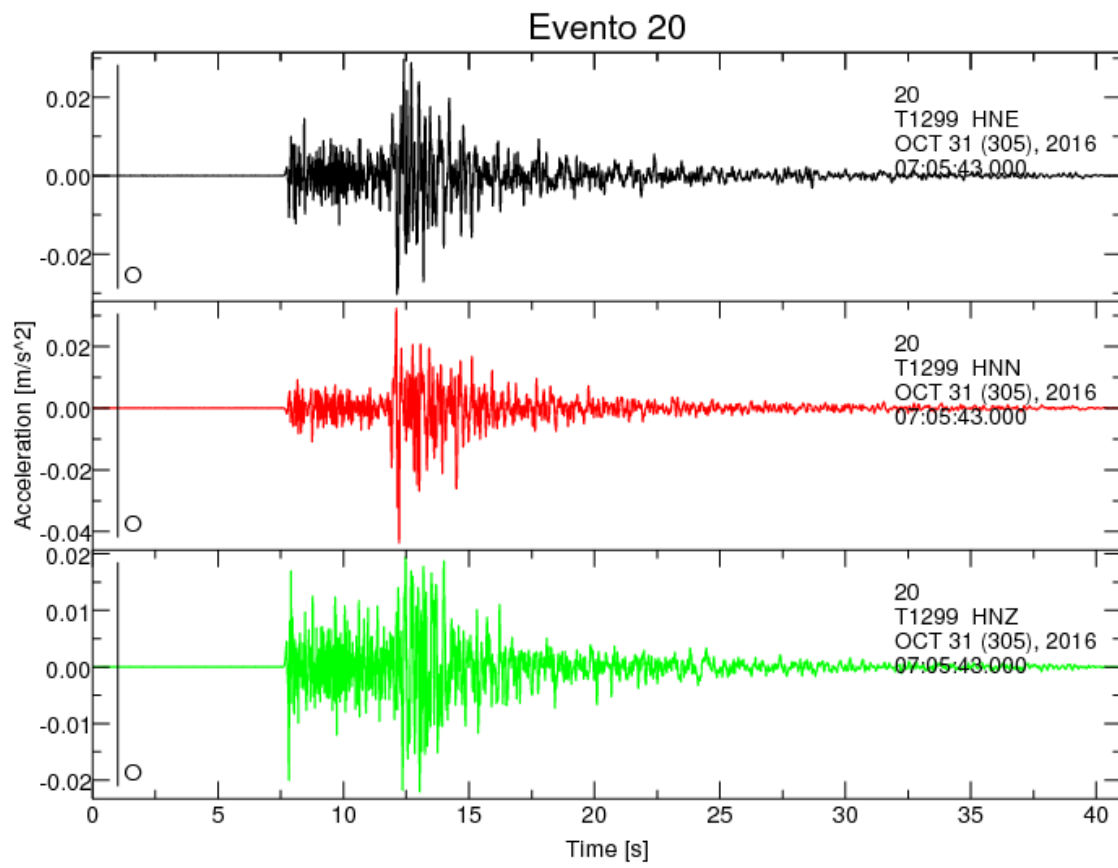


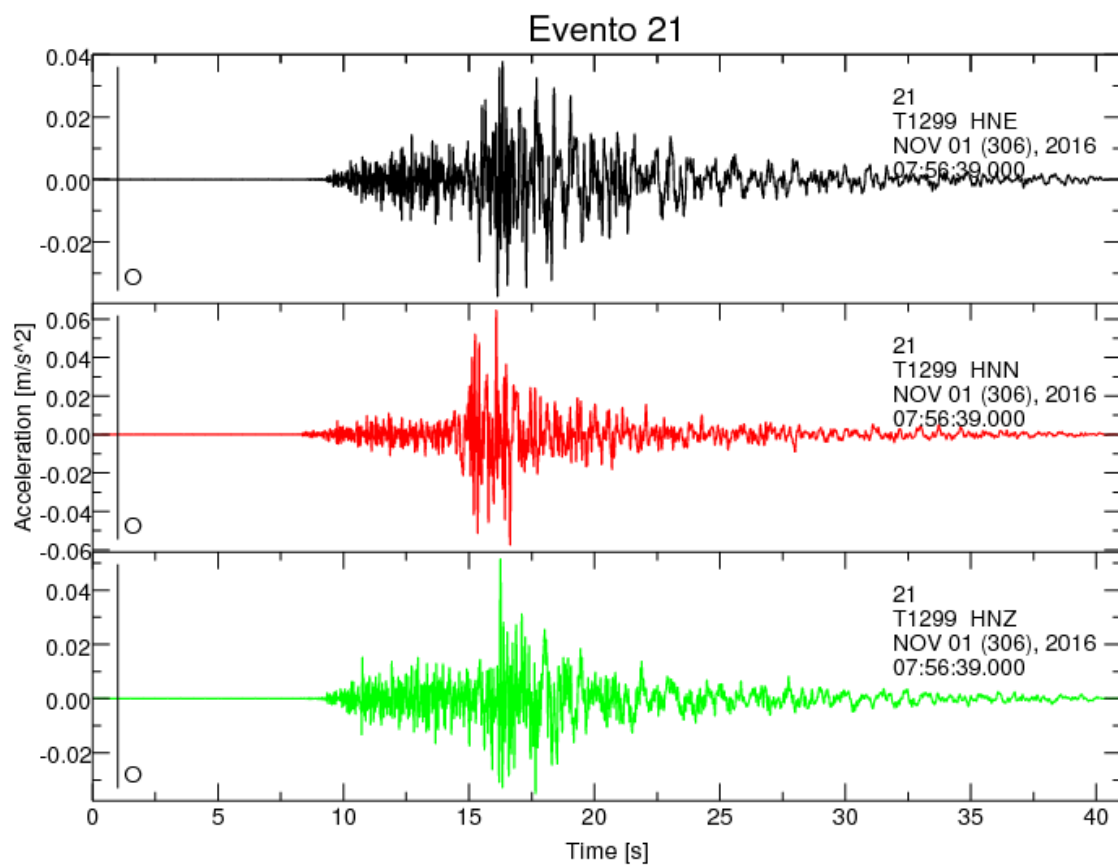


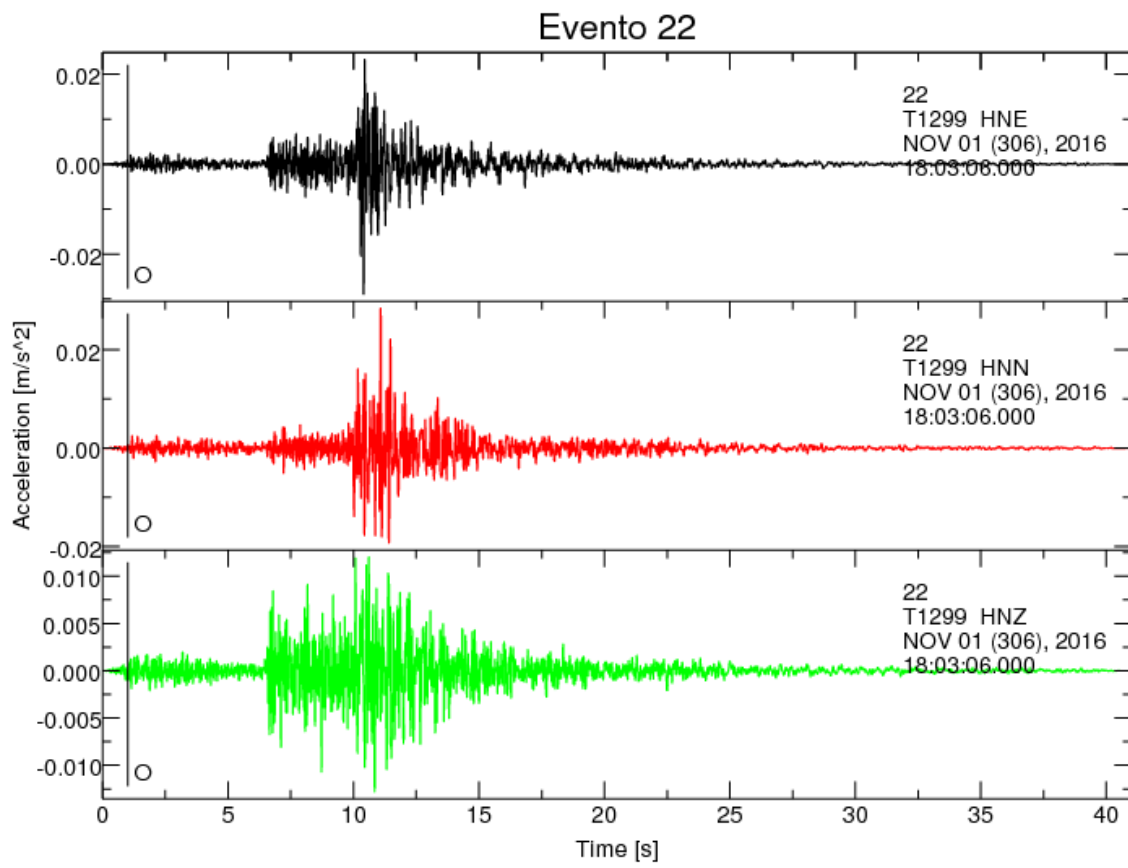


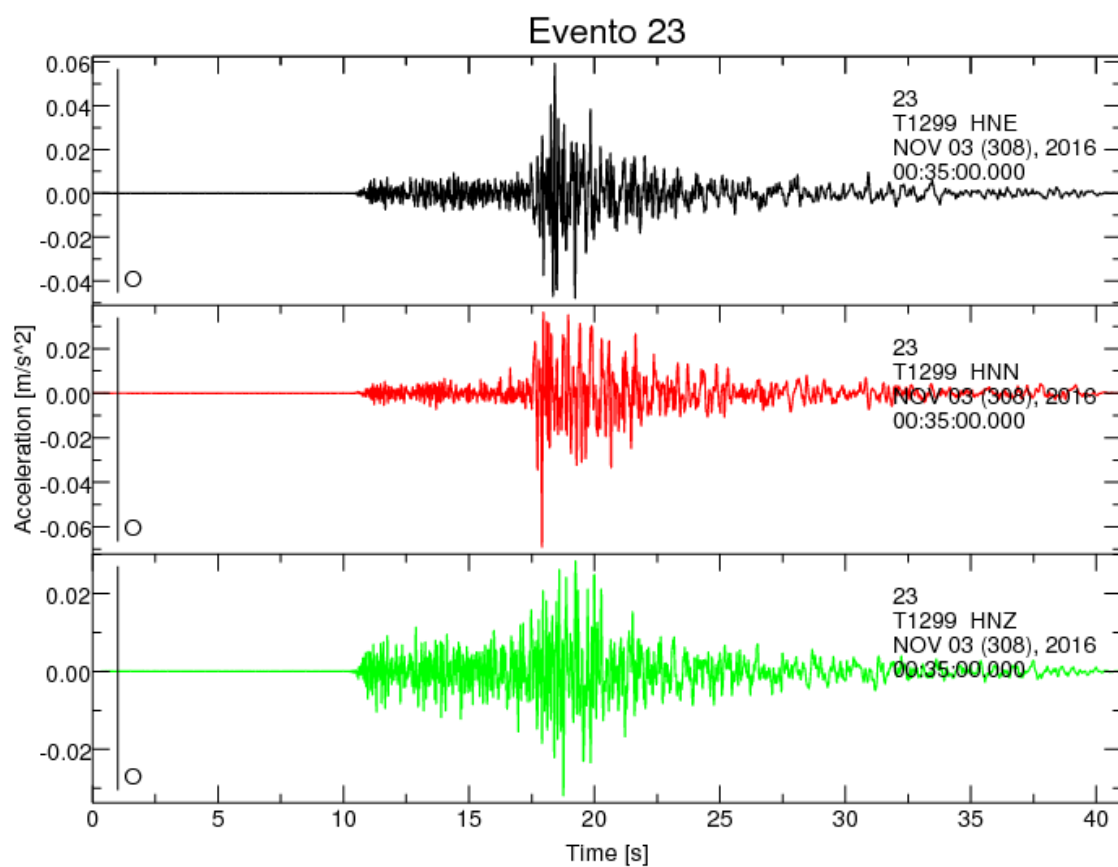


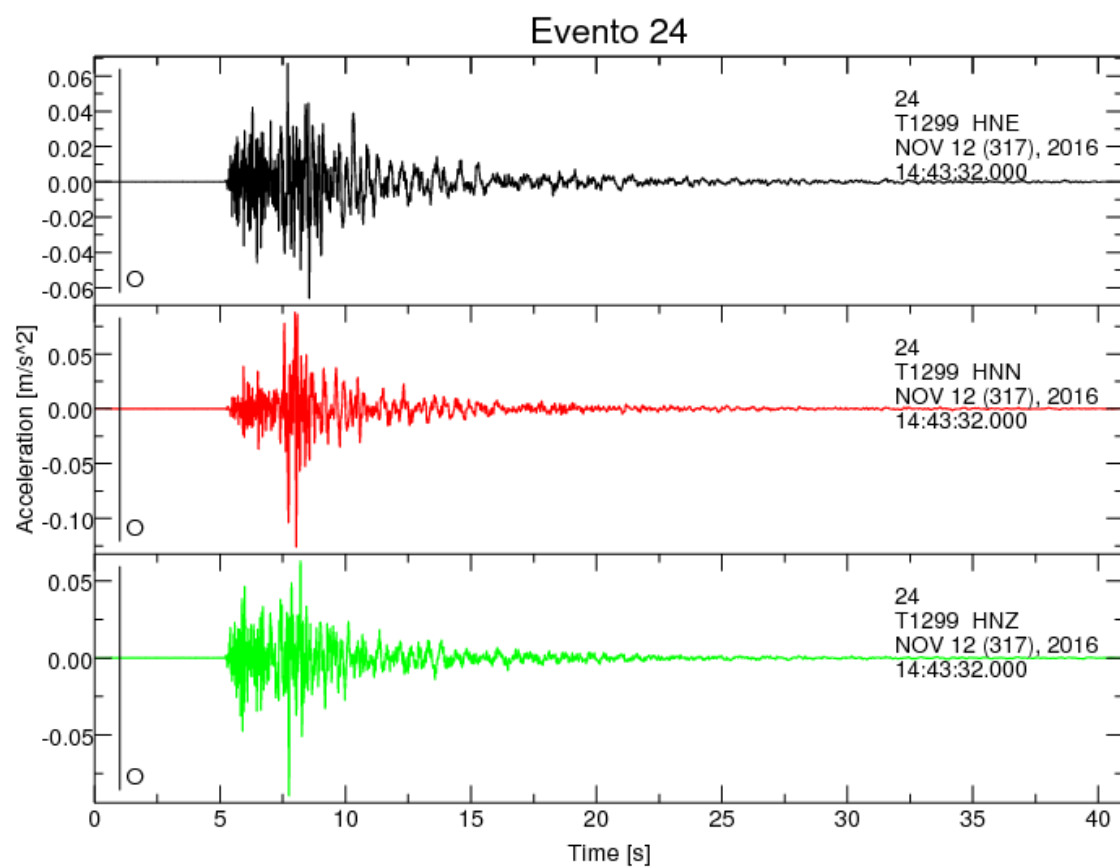


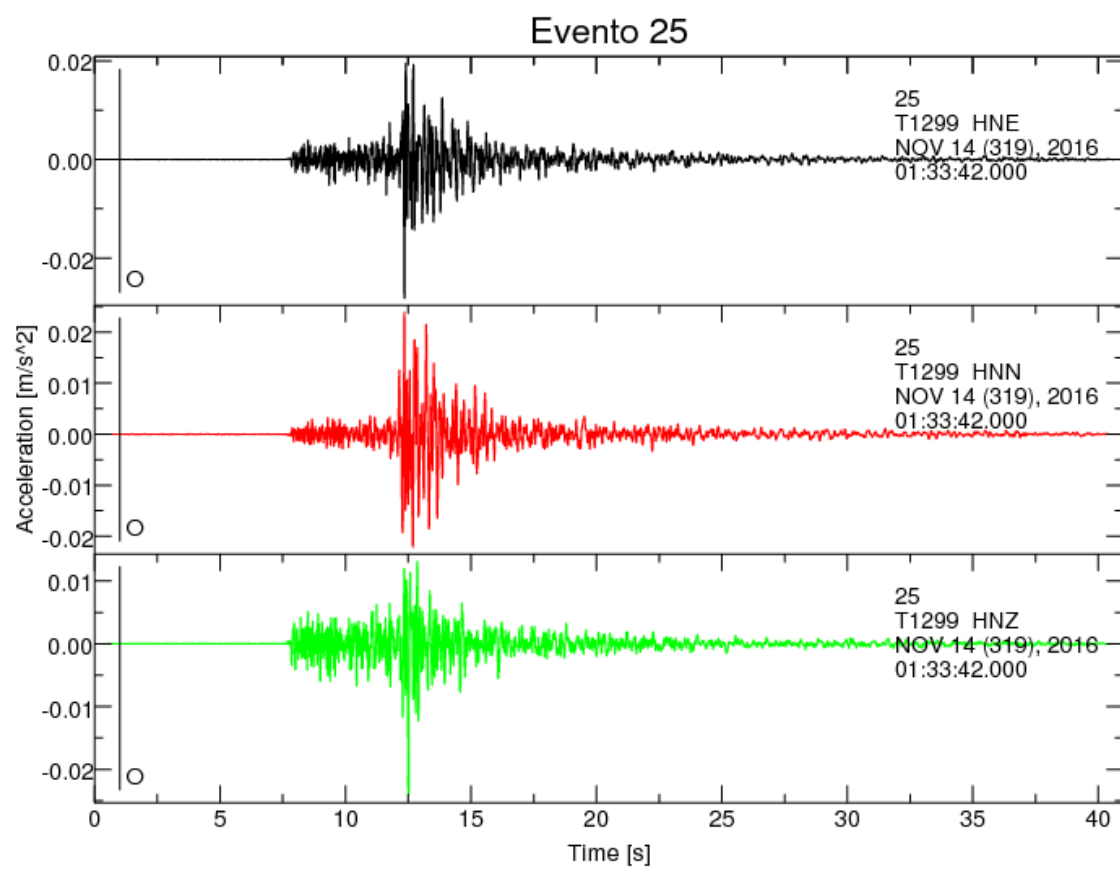


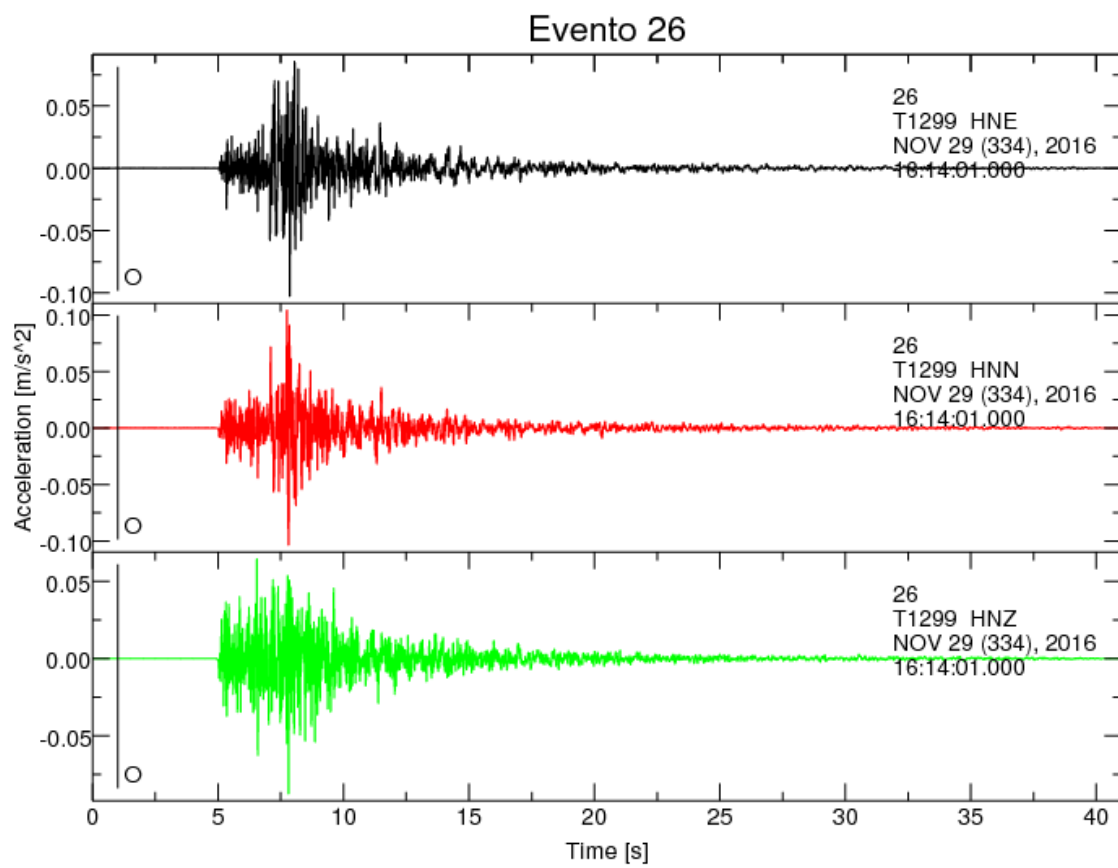


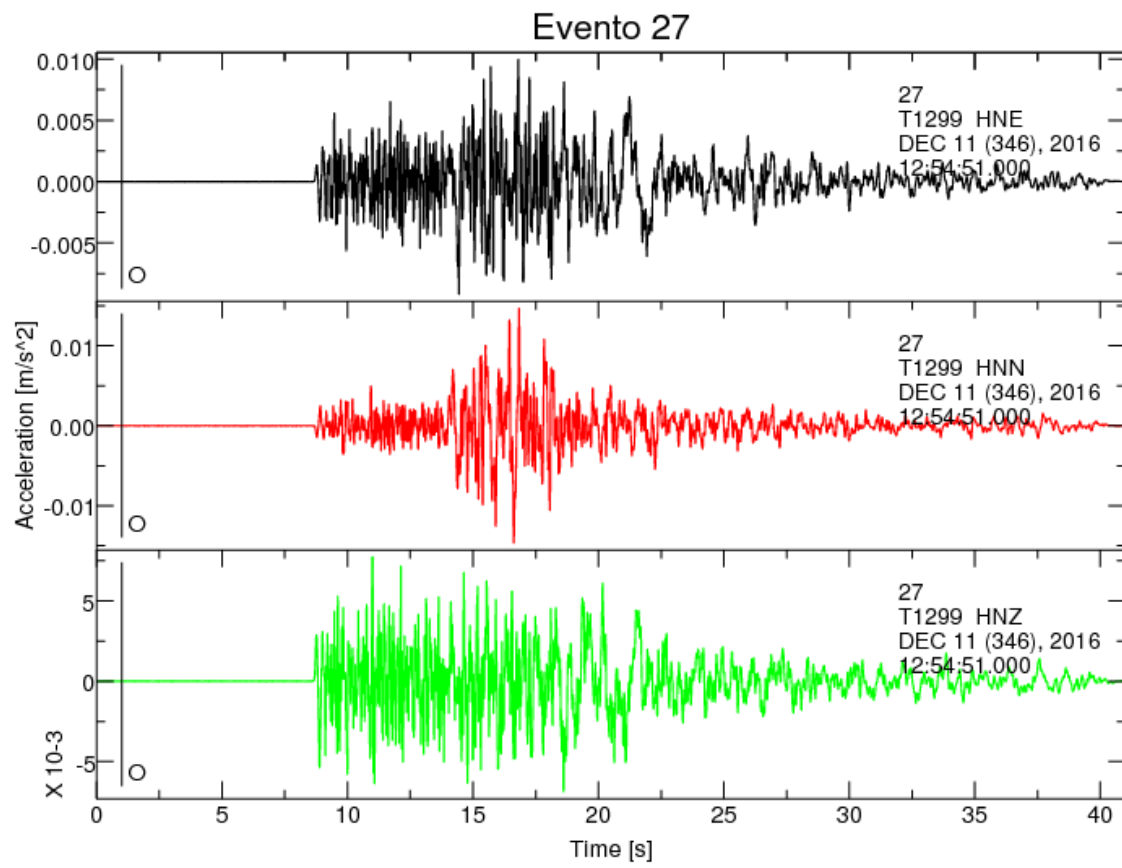


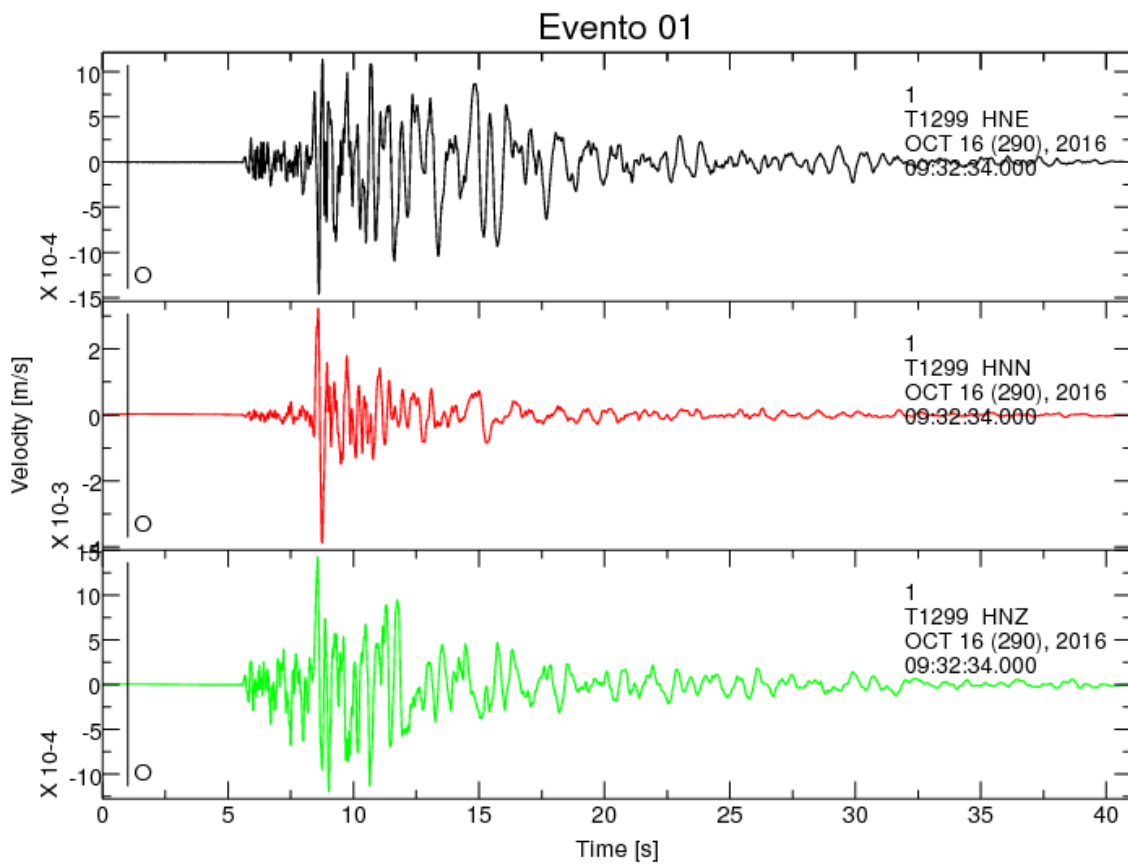


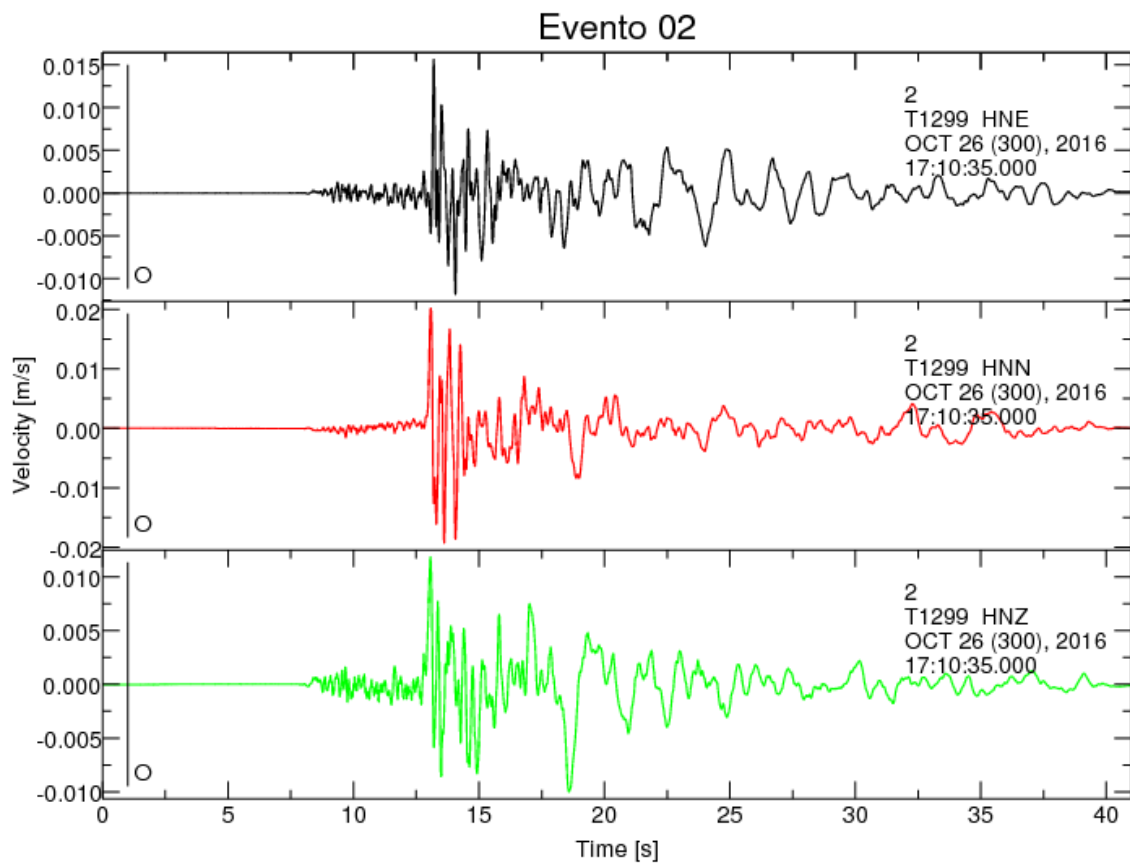


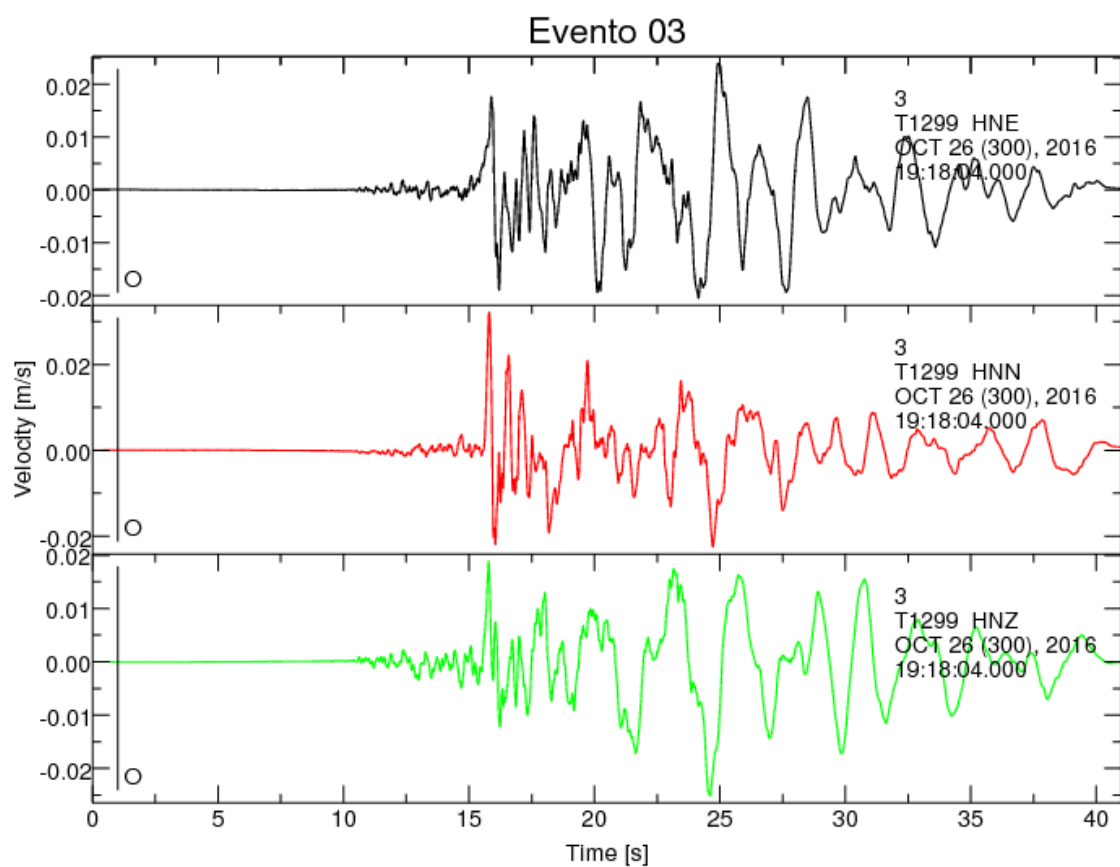




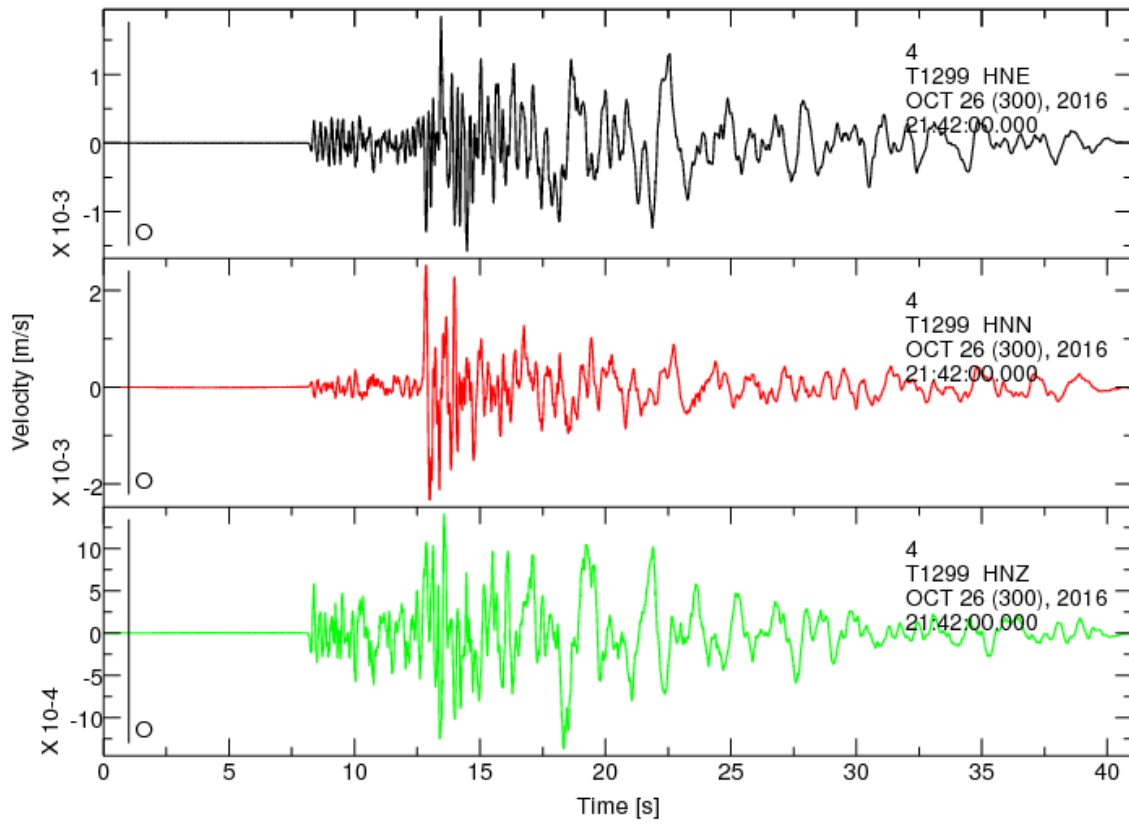


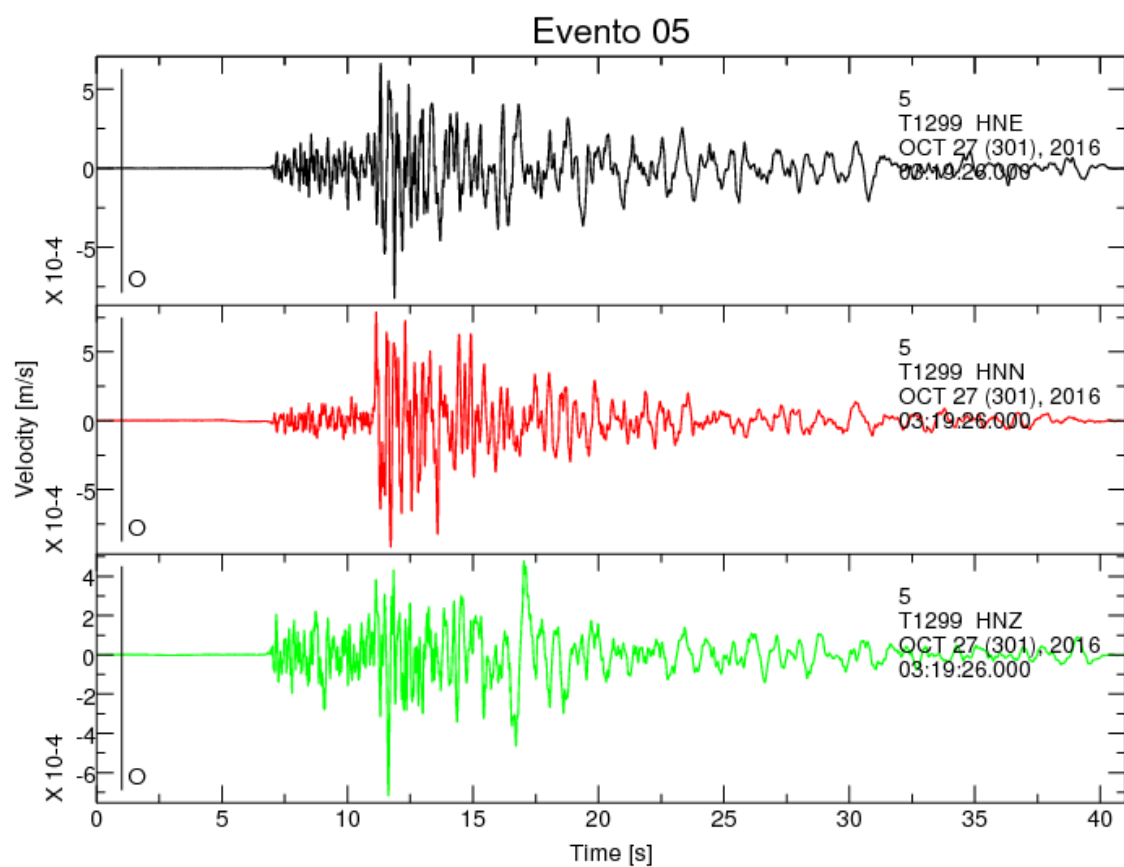


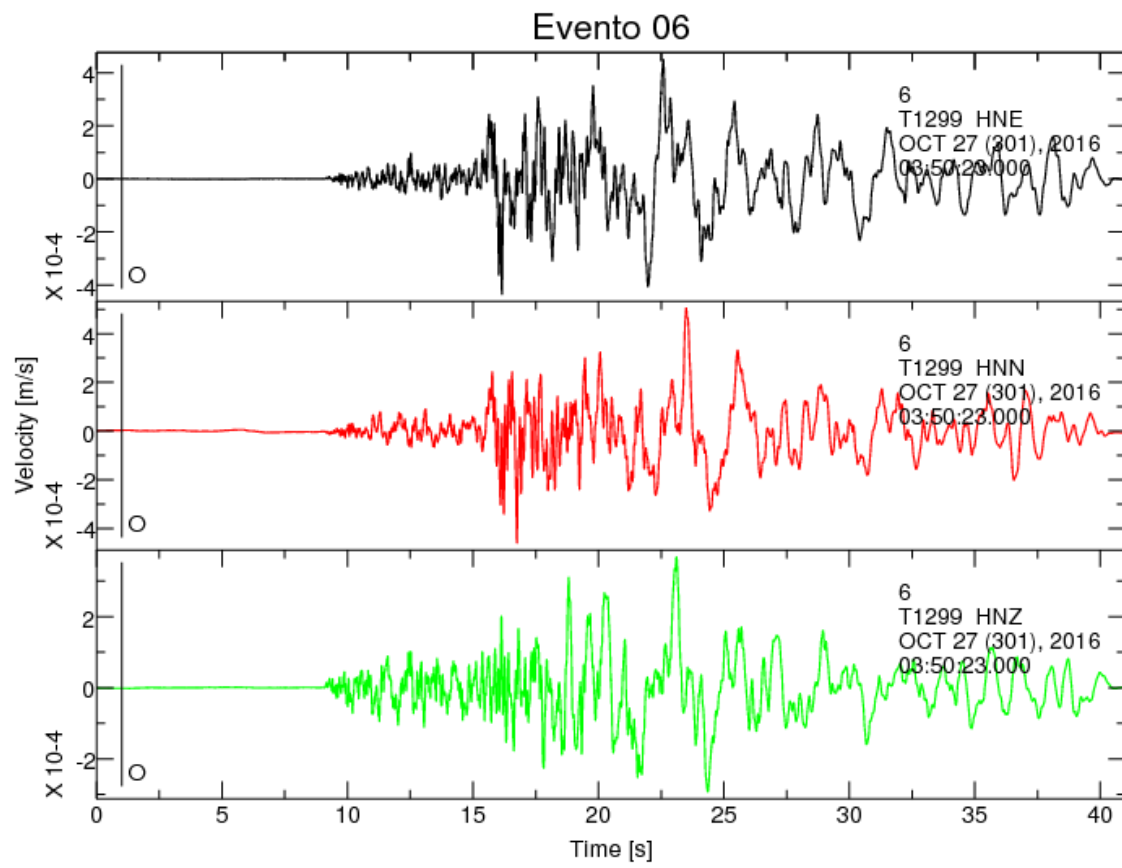


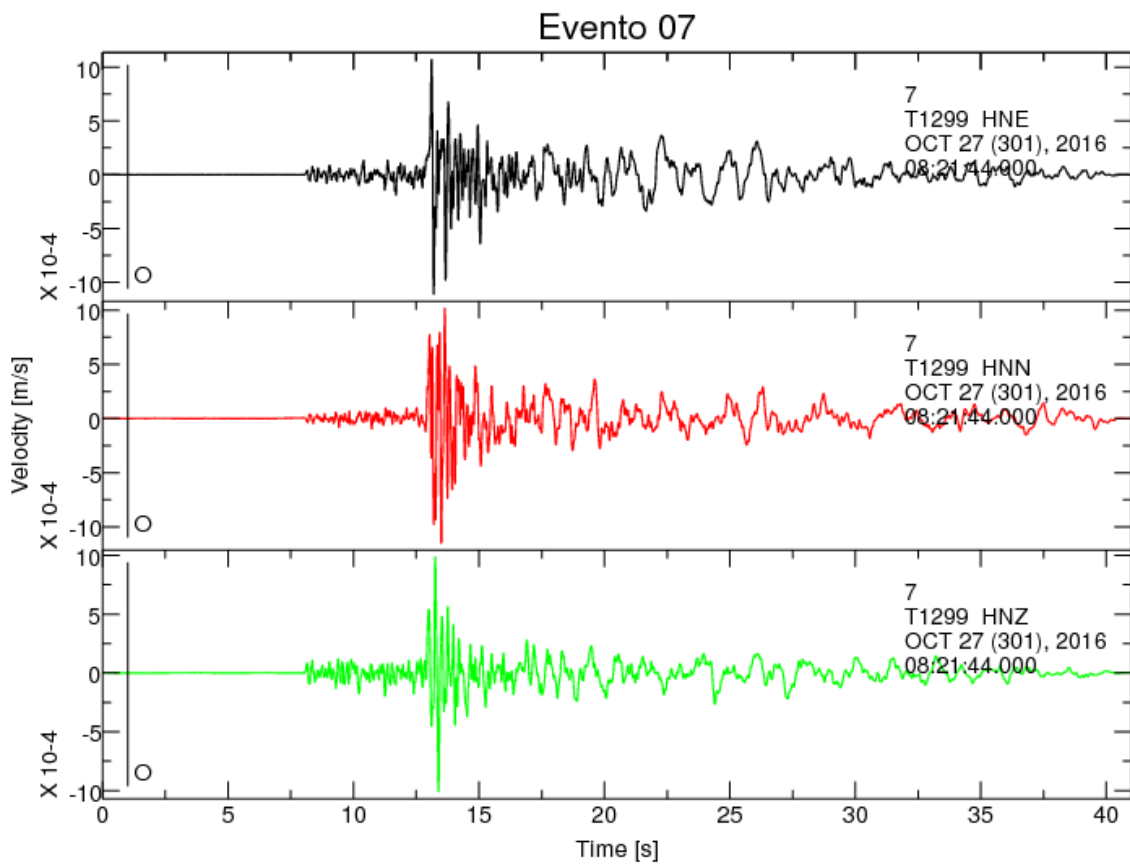


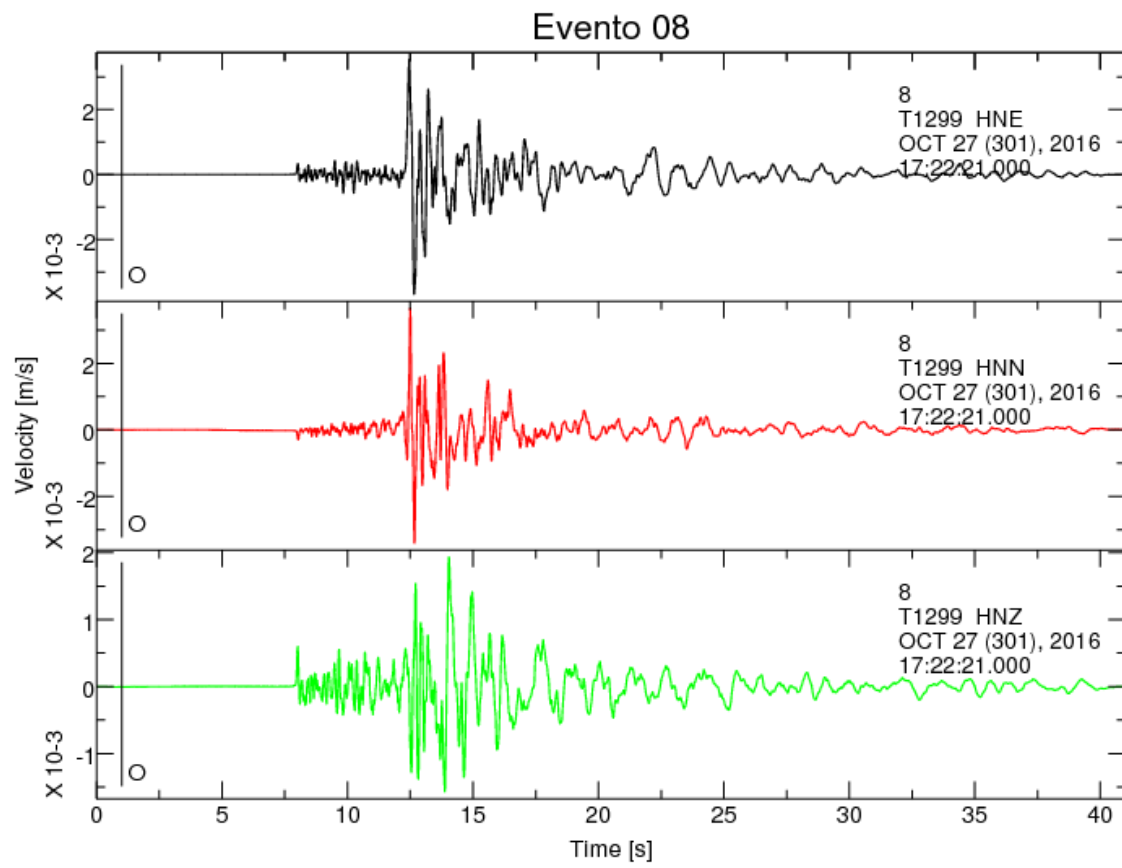
Evento 04

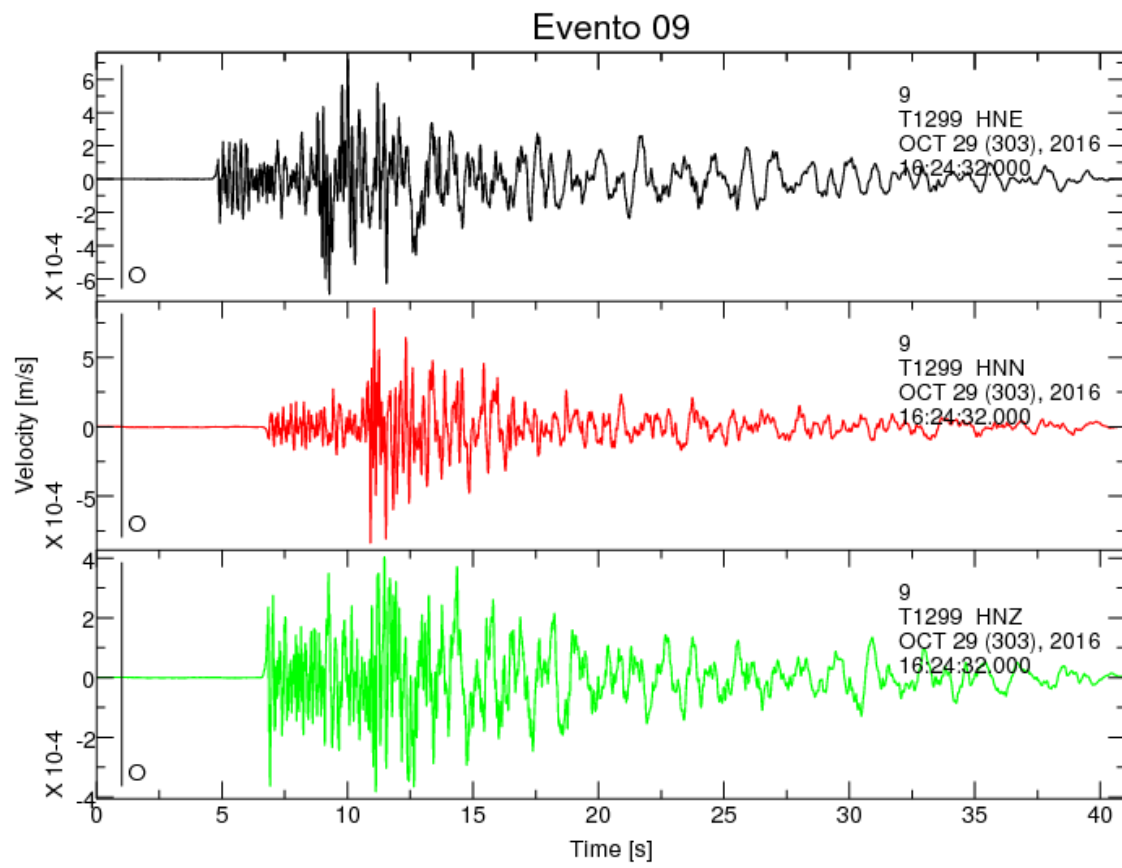


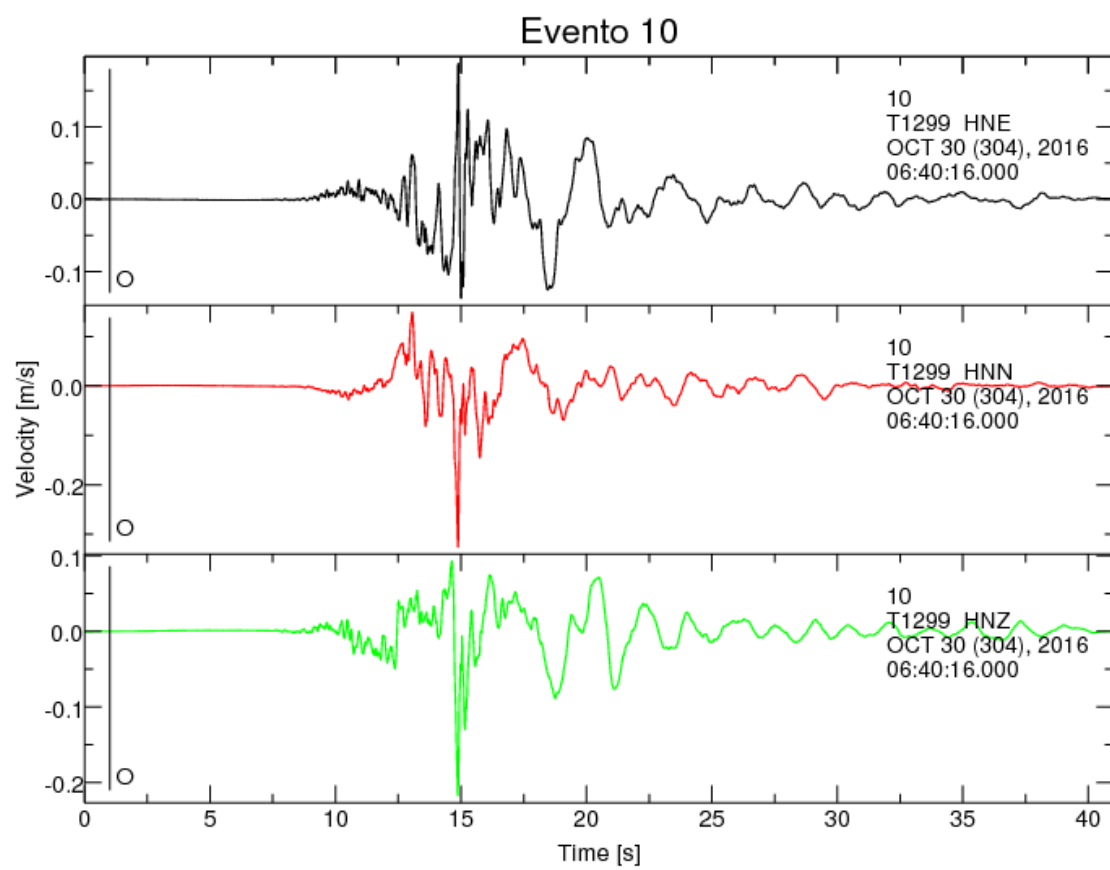


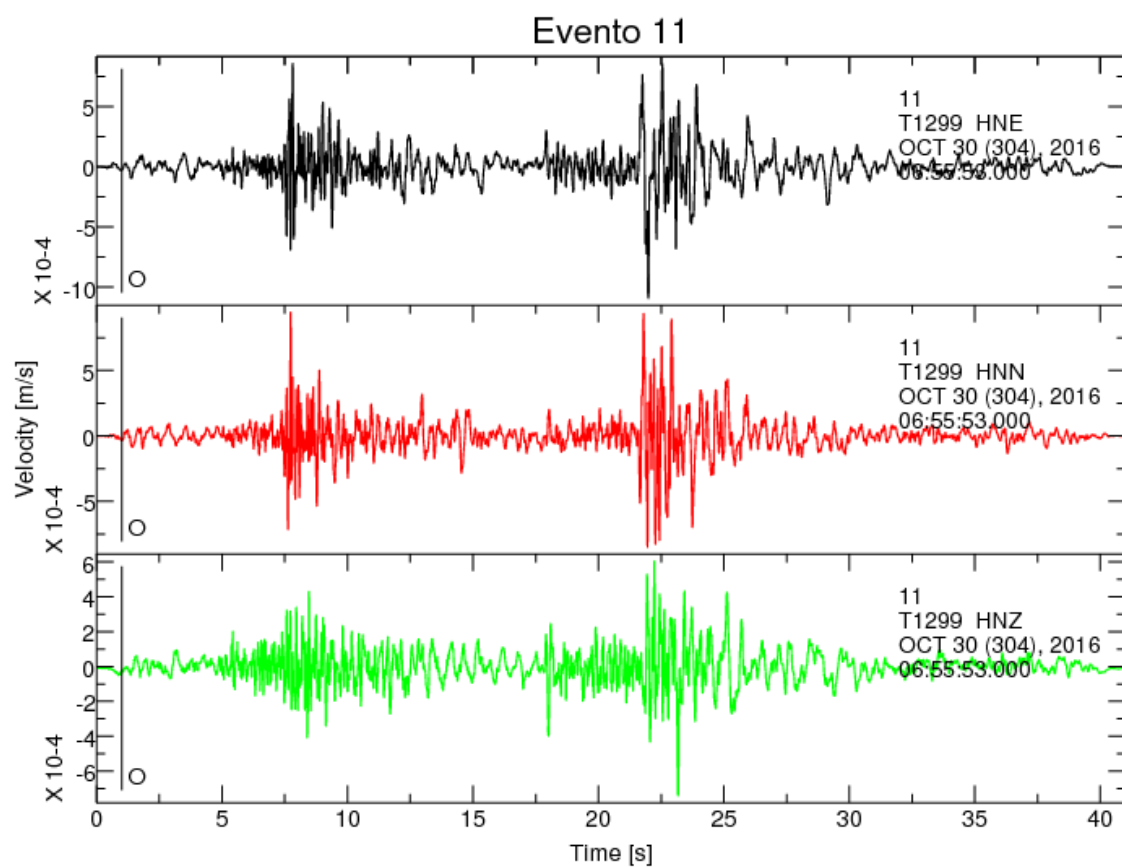


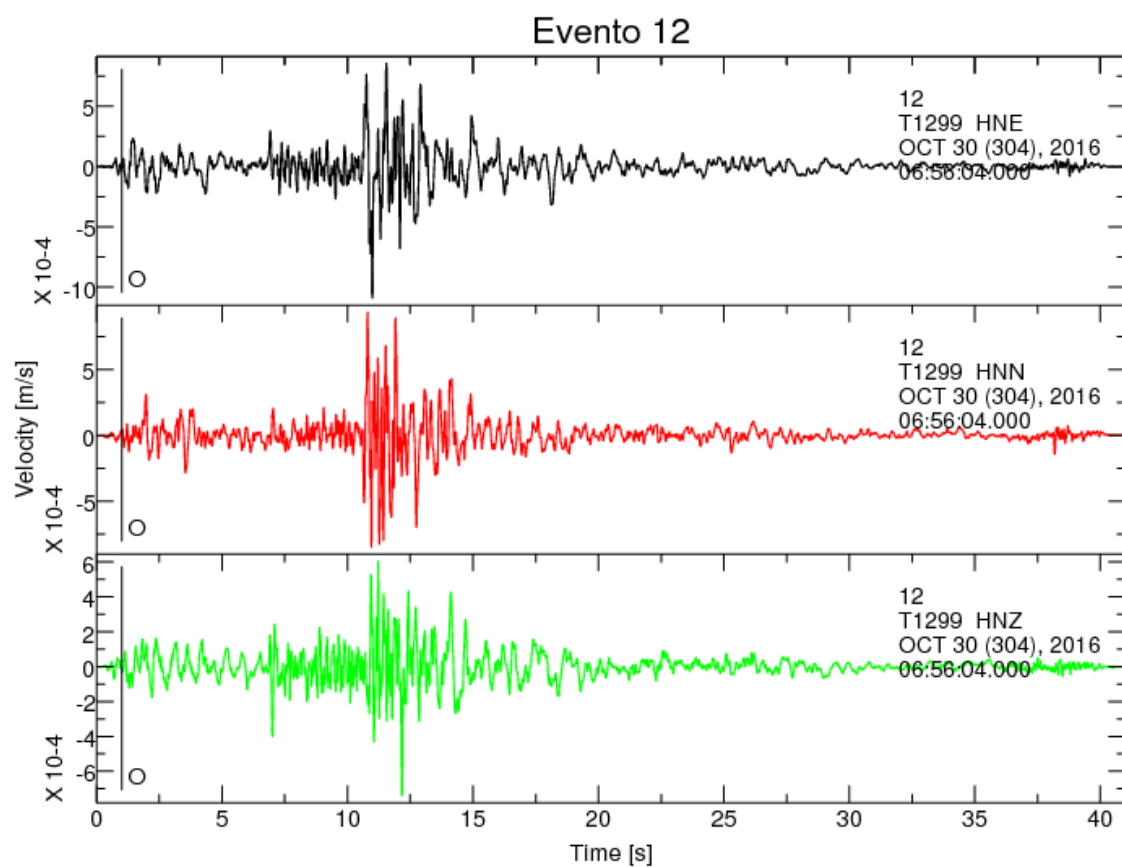


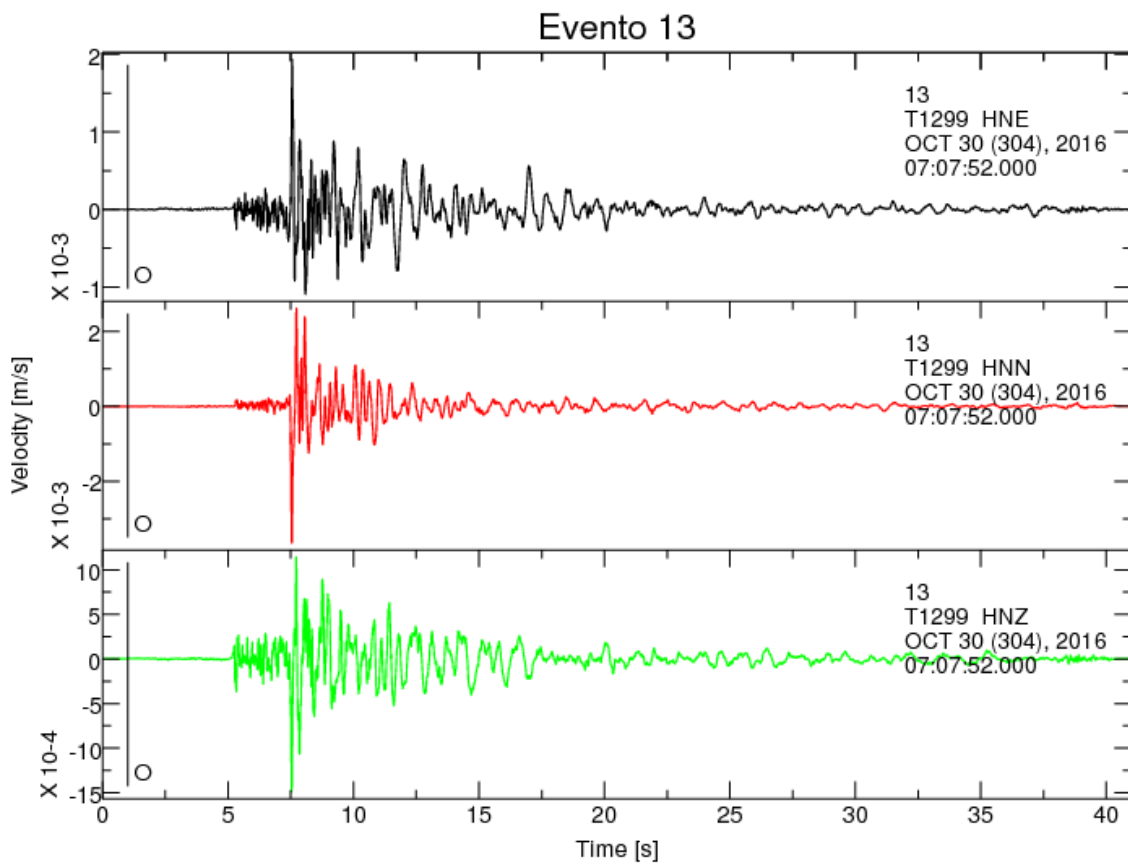


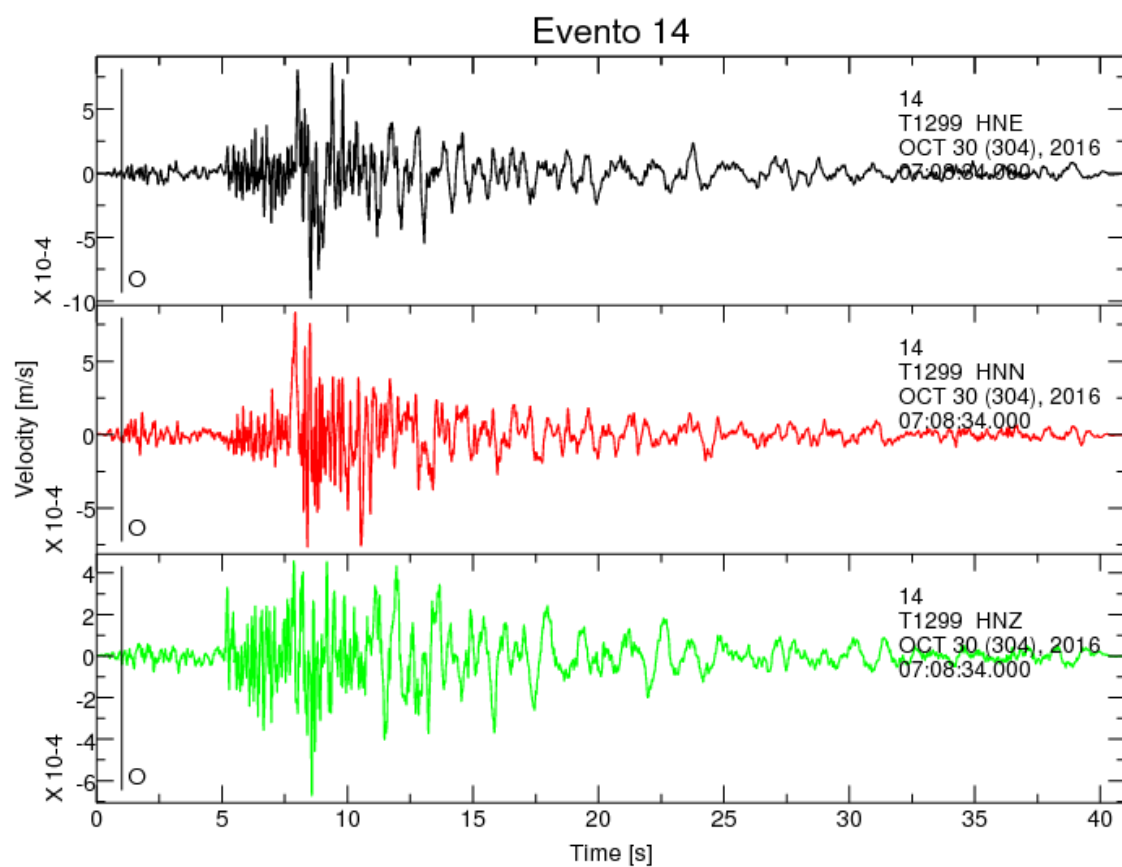


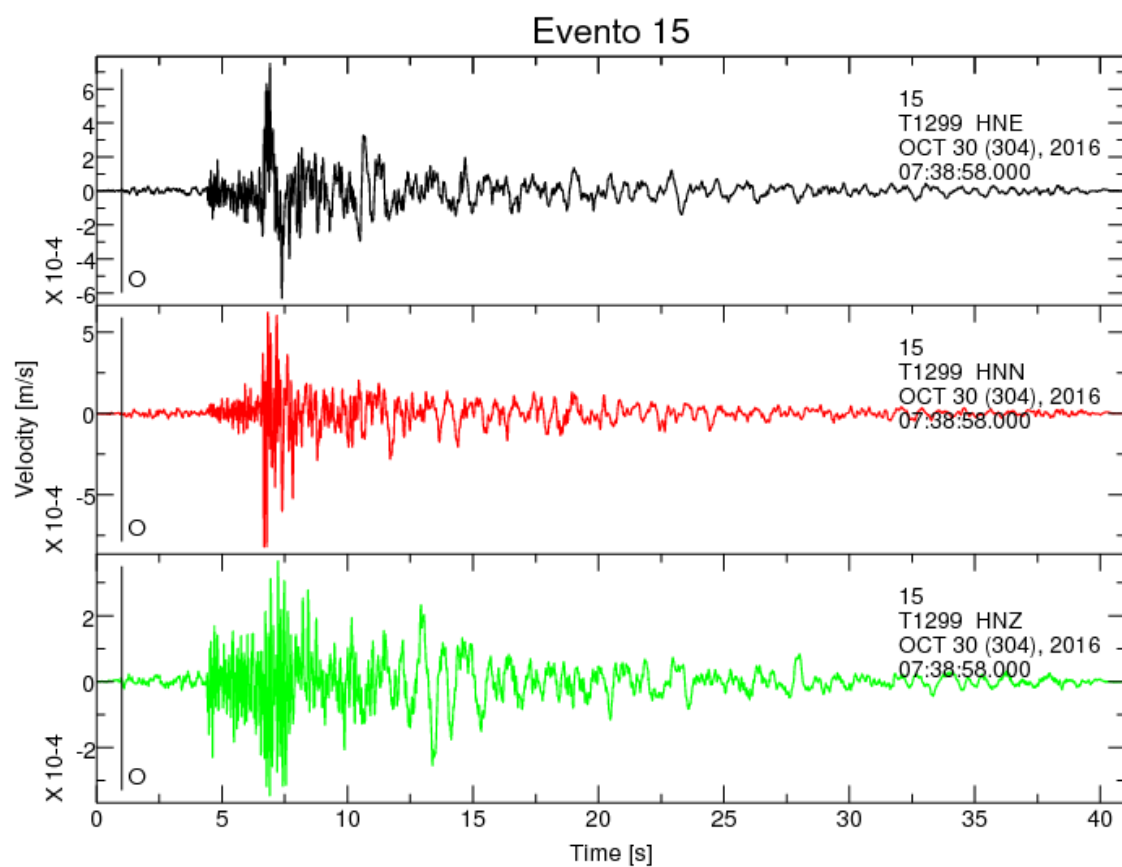


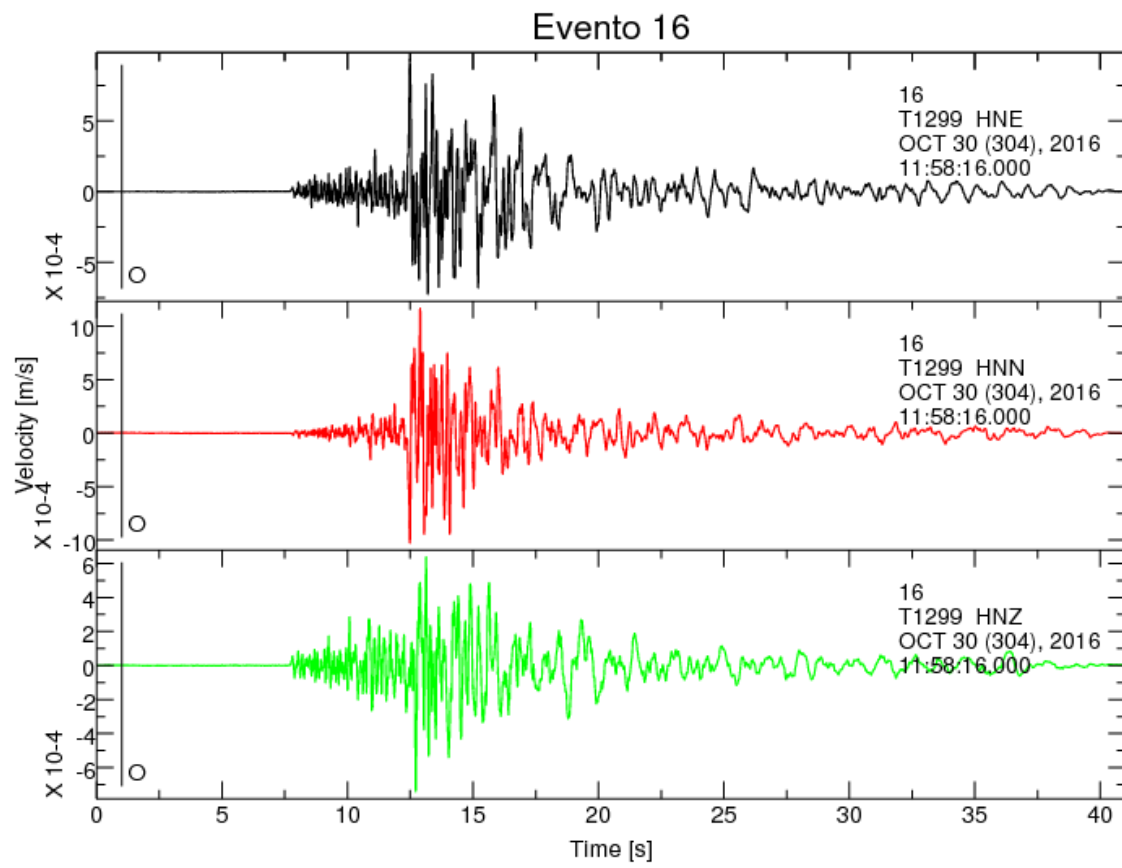


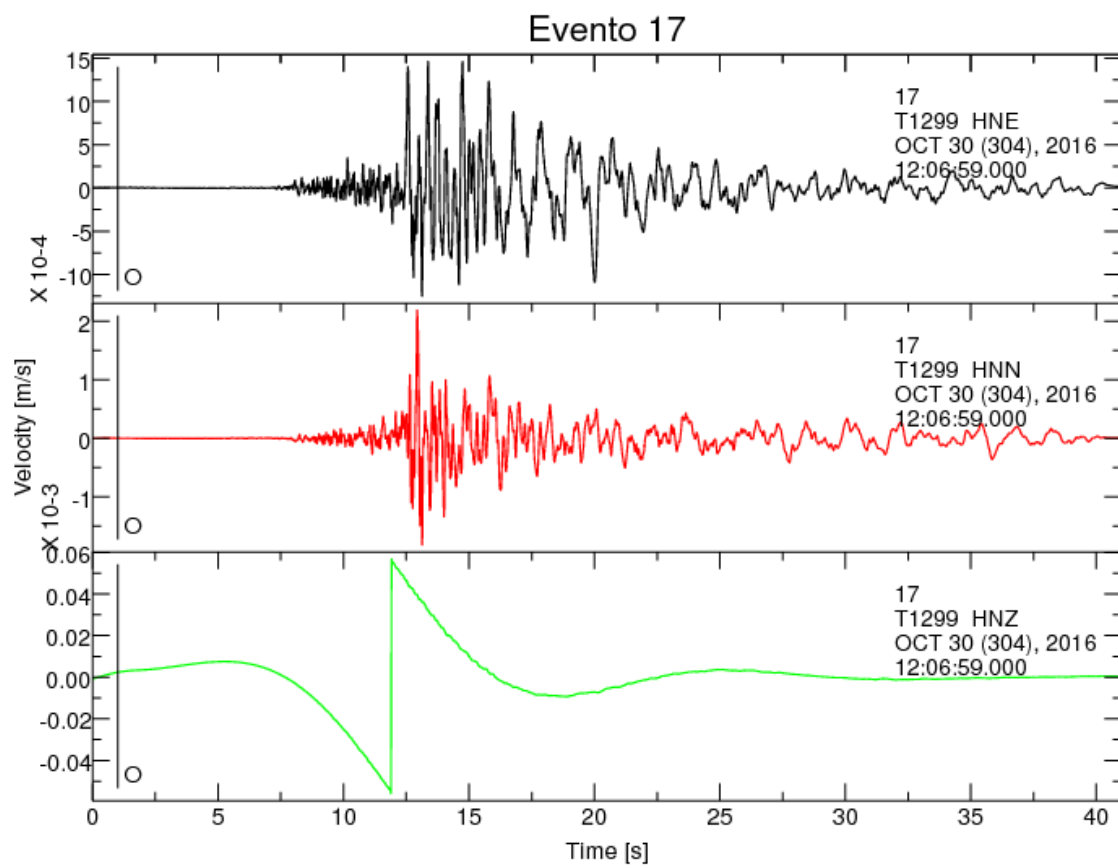


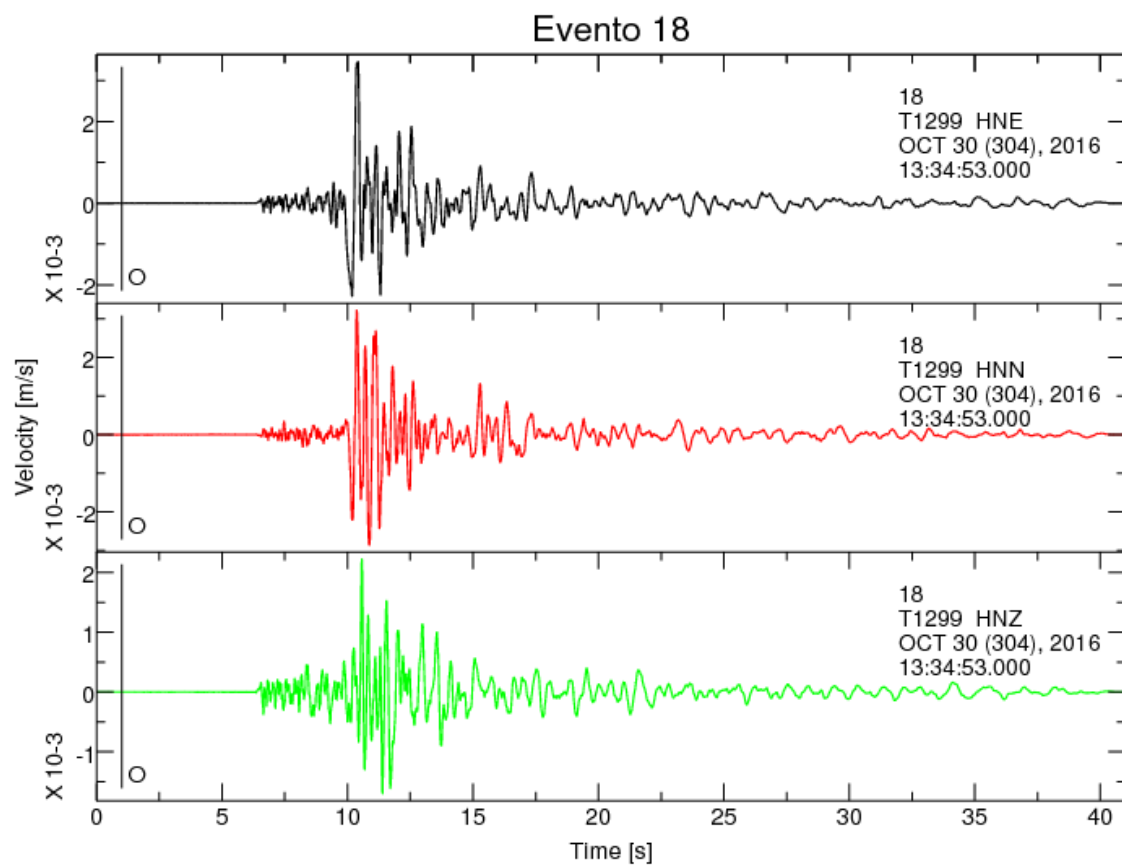


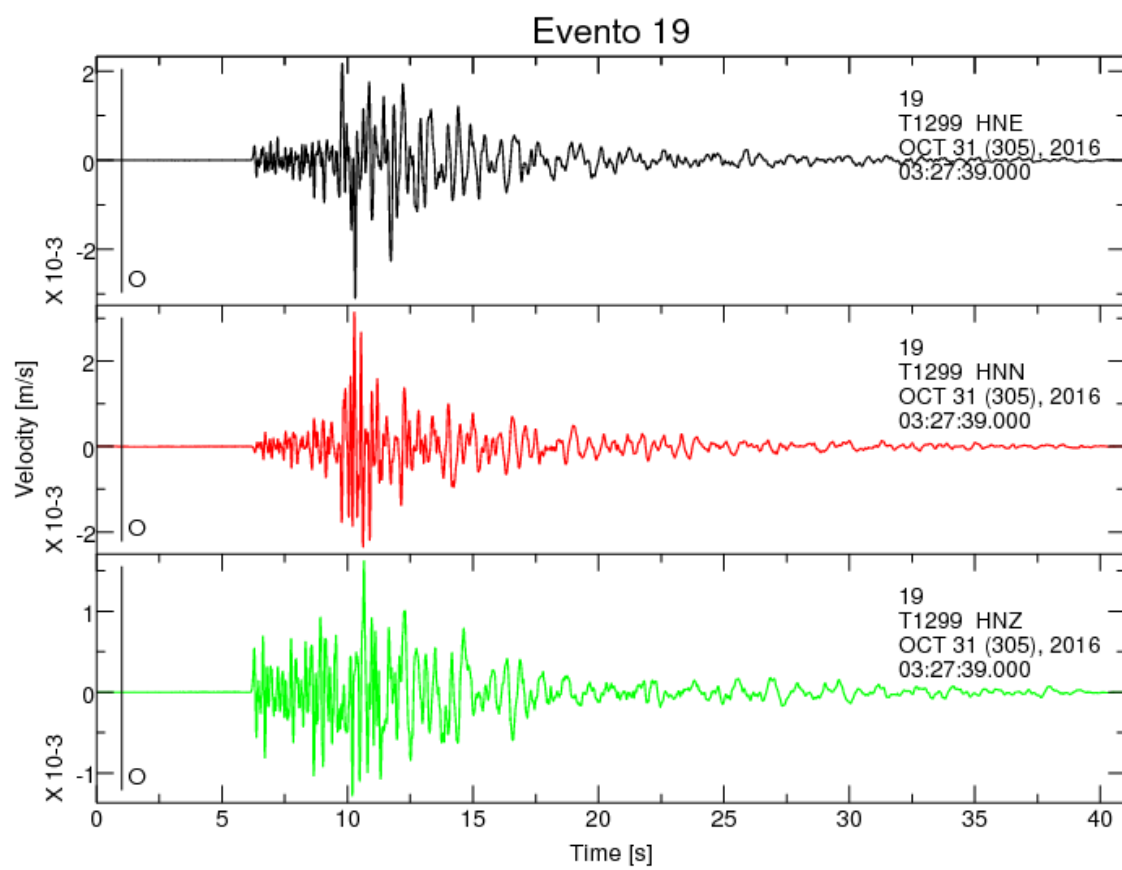


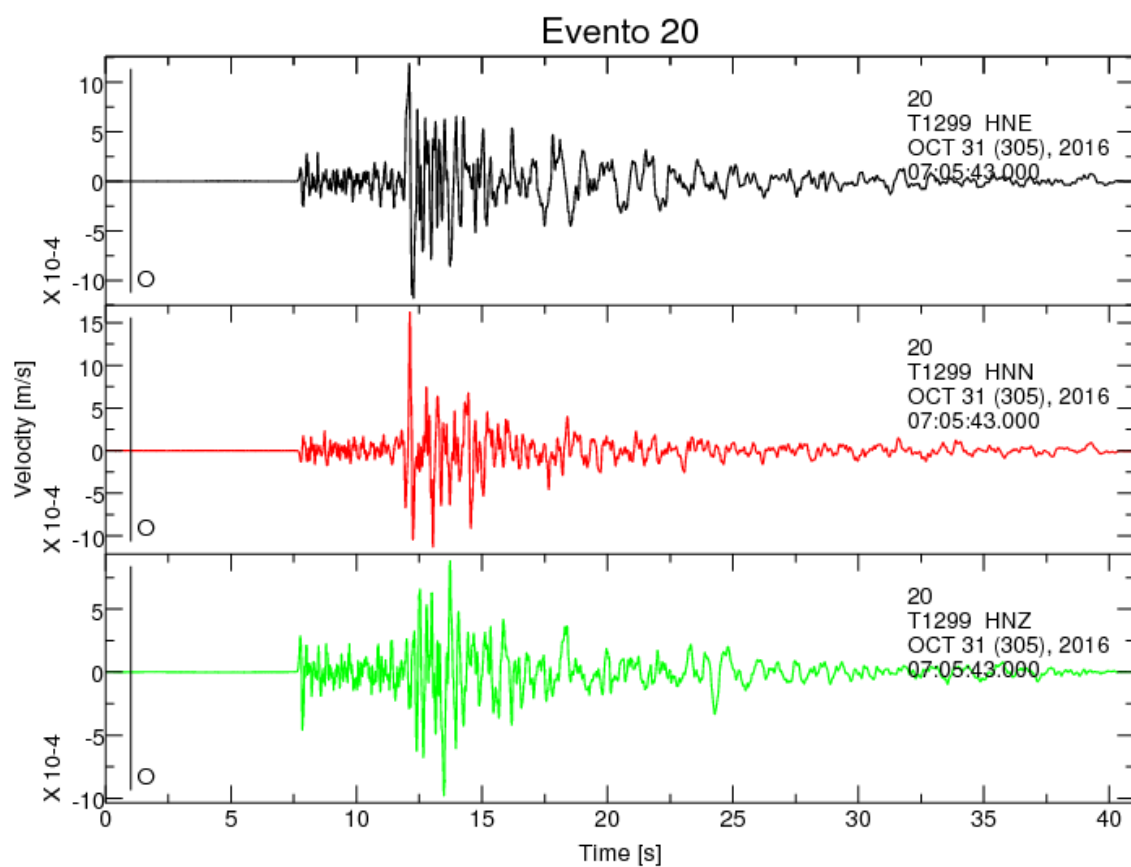


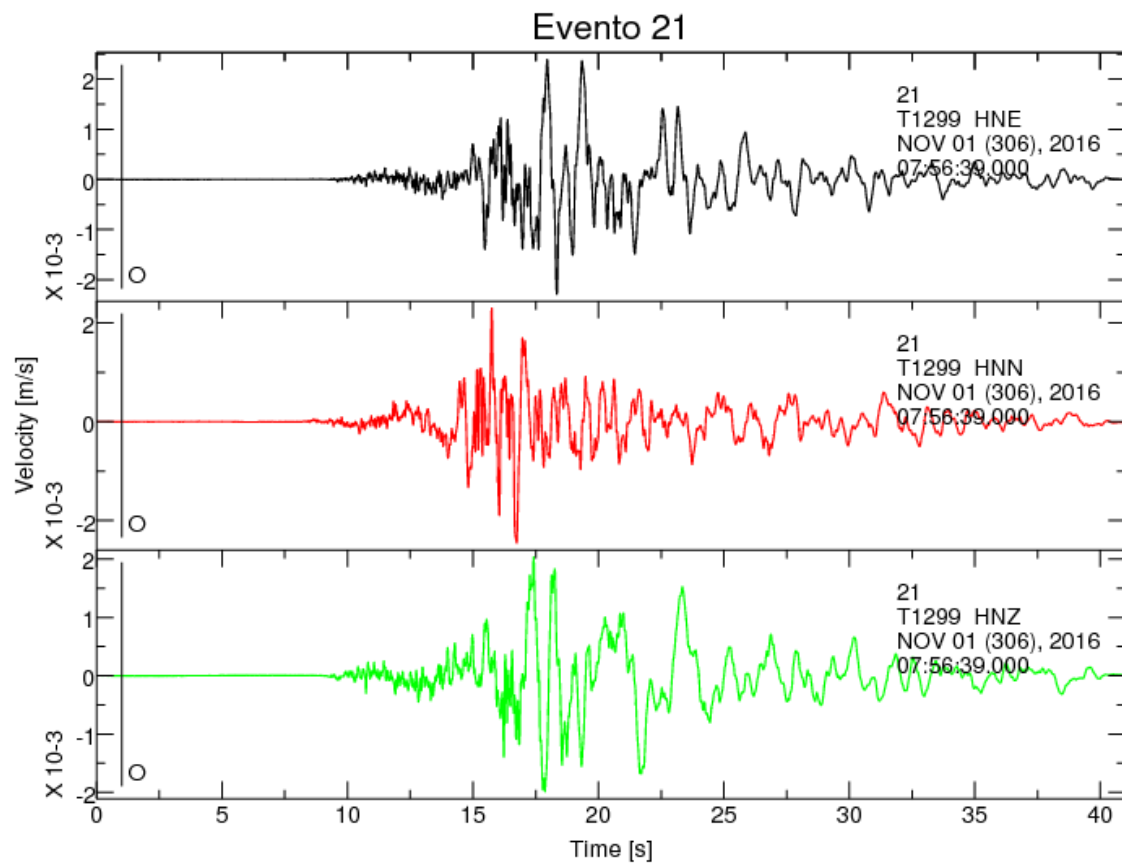


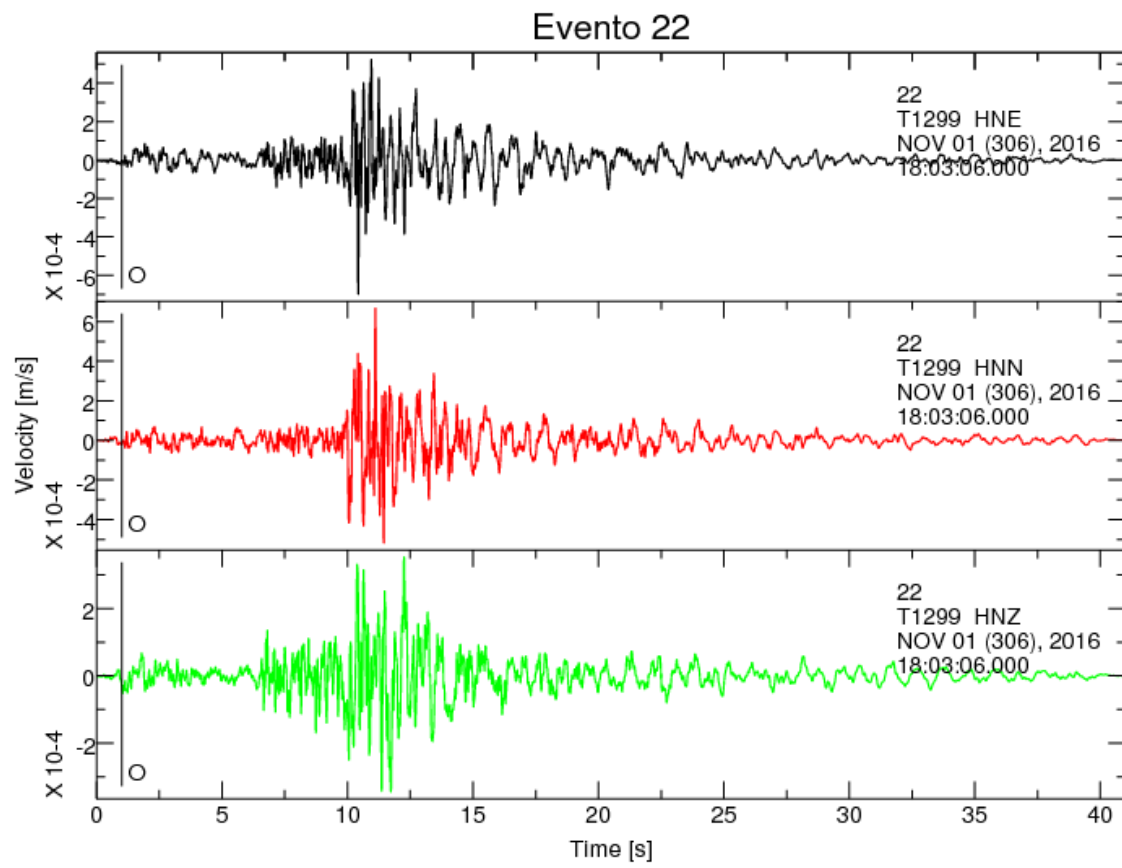


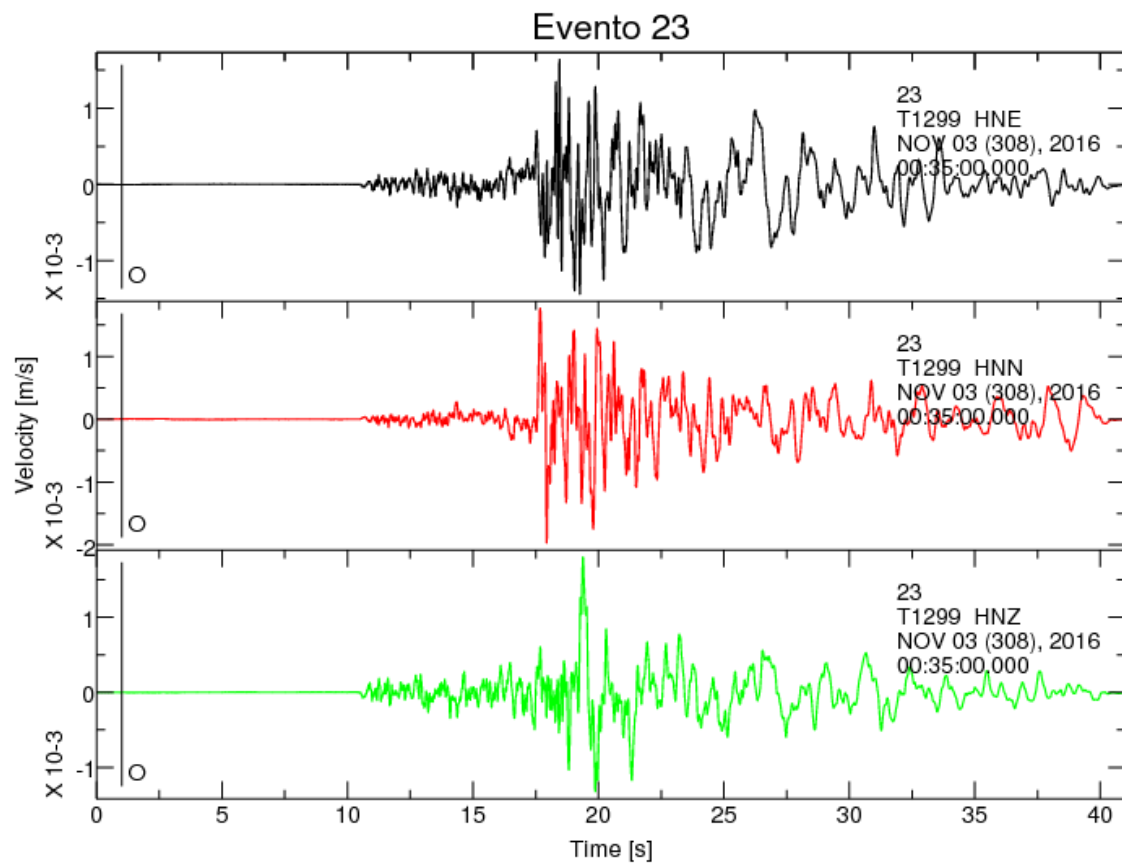


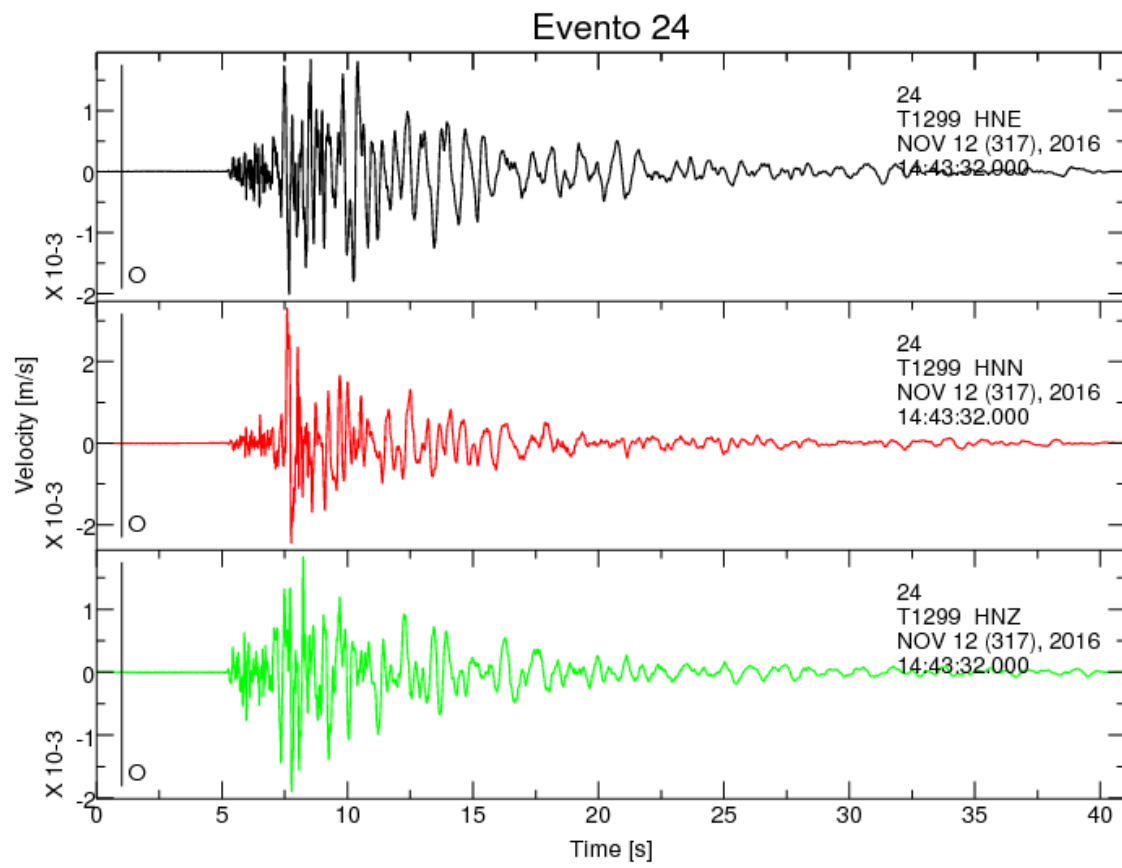


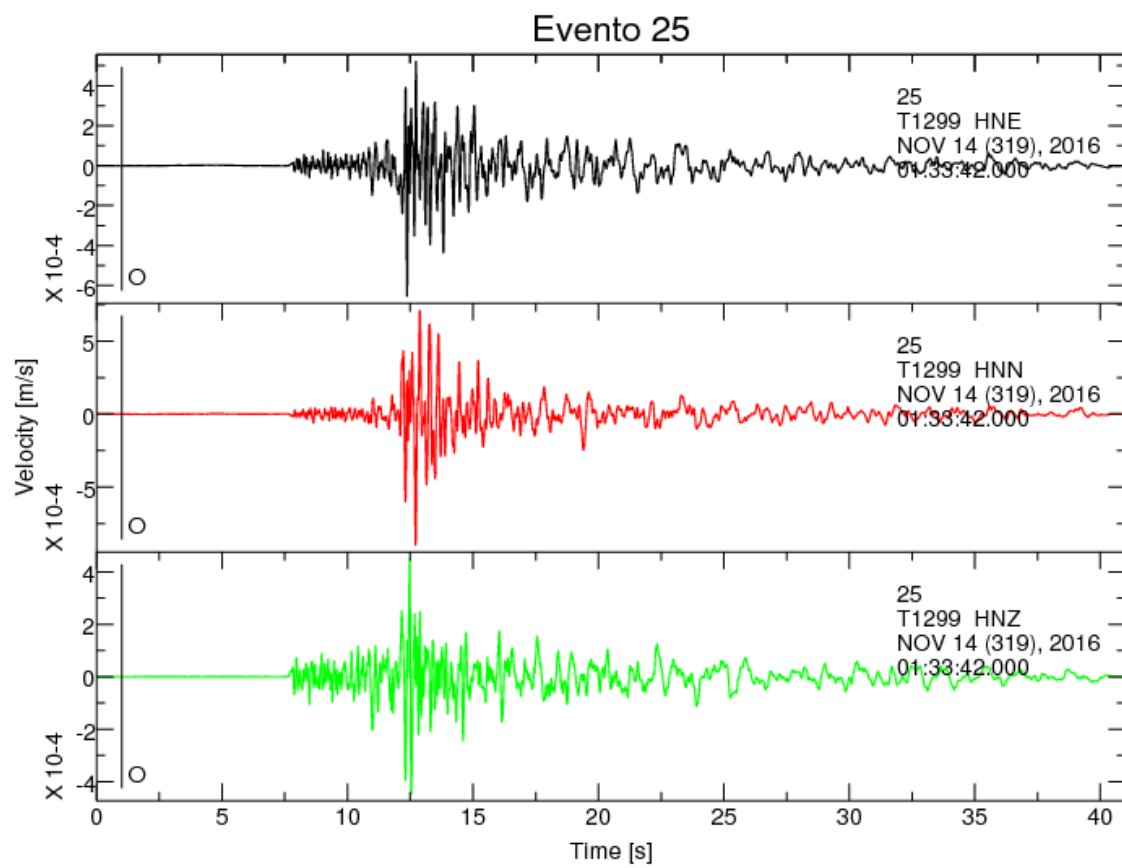












Evento 26

