



PROTEZIONE CIVILE
Presidenza del Consiglio dei Ministri
Dipartimento della Protezione Civile



CONFERENZA DELLE REGIONI E
DELLE PROVINCE AUTONOME

Attuazione dell'articolo 11 della legge 24 giugno 2009, n.77

MICROZONAZIONE SISMICA

Livello 3

Regione Emilia-Romagna

Comune di Mirandola



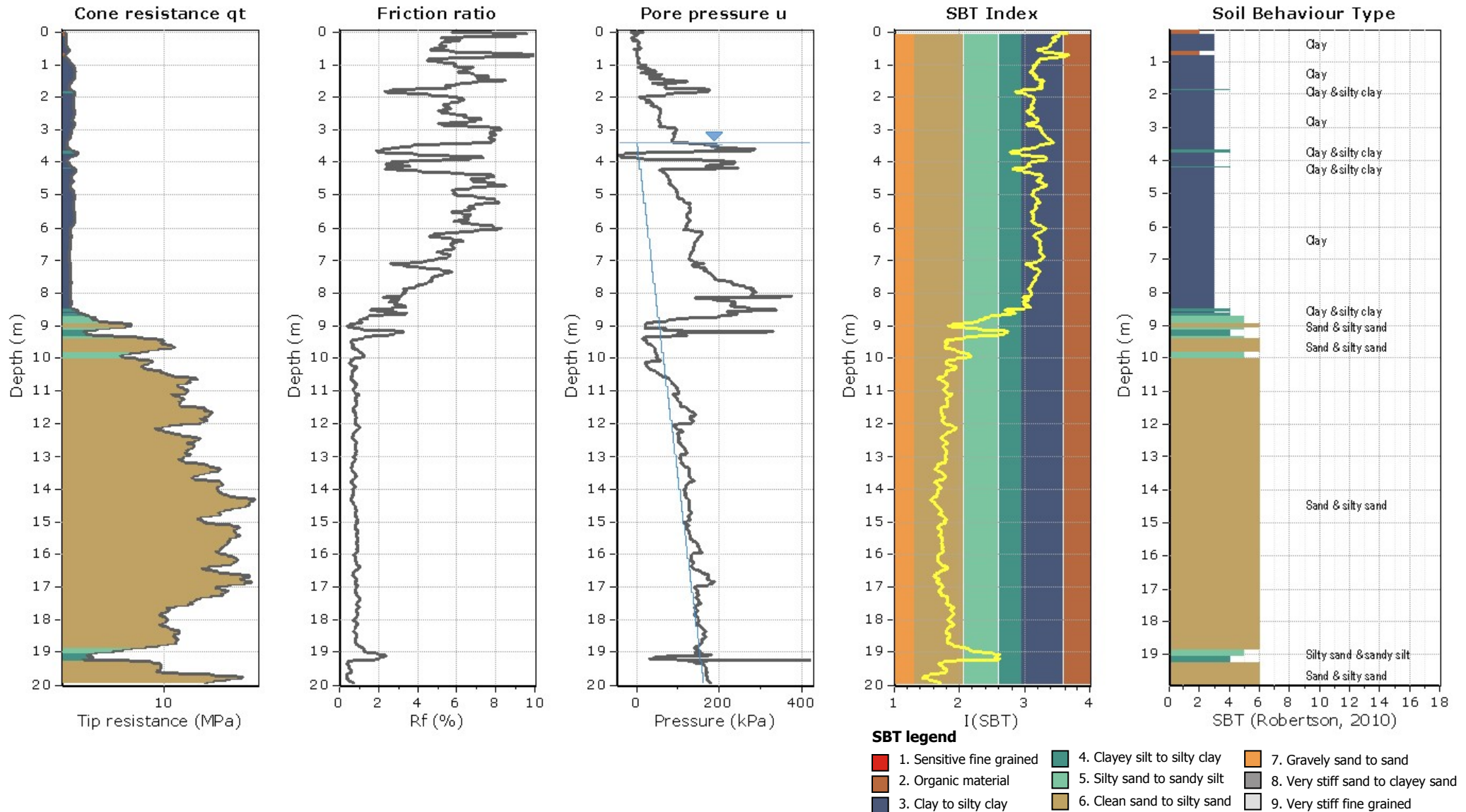
Relazione Illustrativa – Allegato 2

Rapporti di Prova

Regione	Soggetto realizzatore	Data
Emilia-Romagna	Geotema S.r.l.	02/05/2018

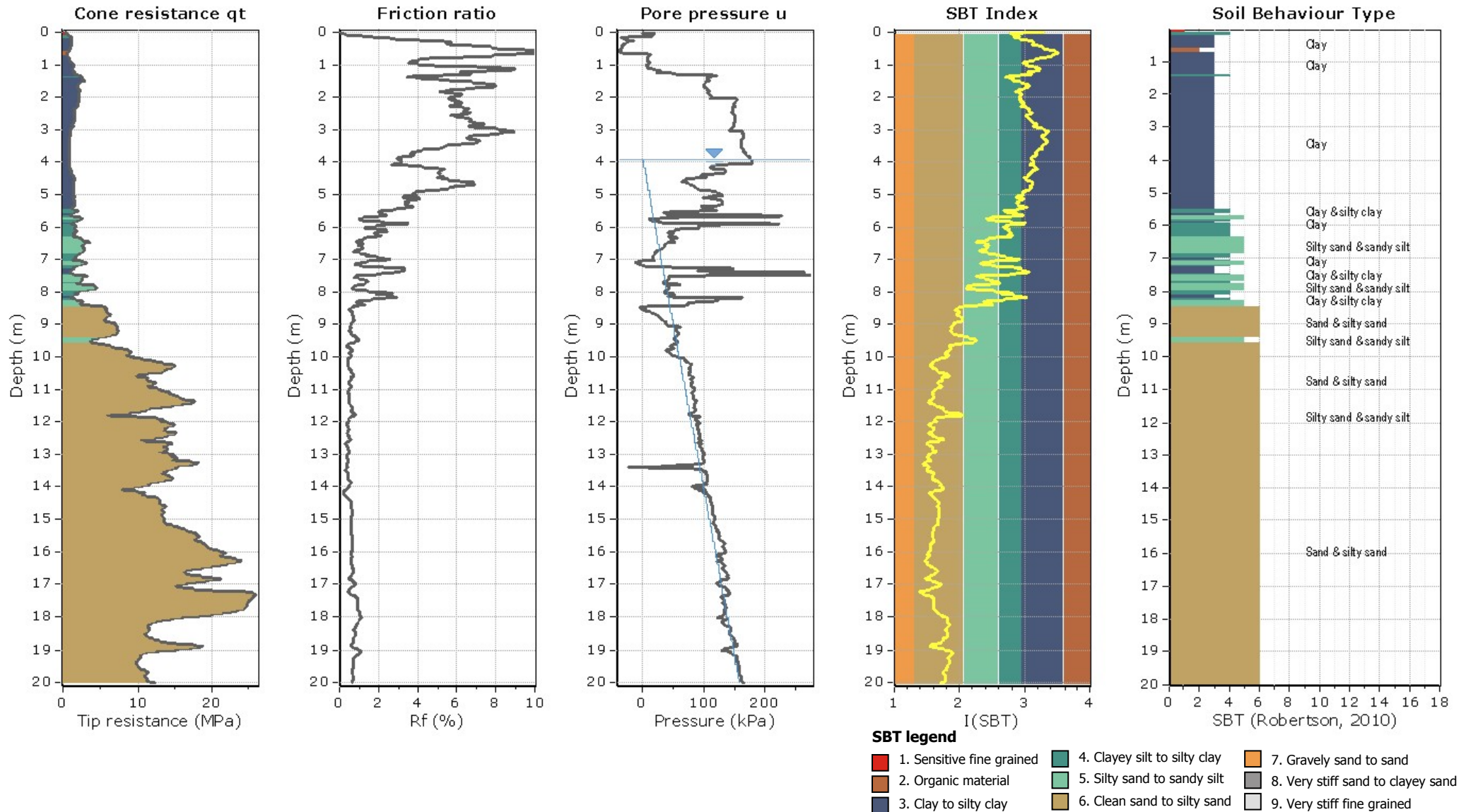
Project: Microzonazione Mirandola 2018

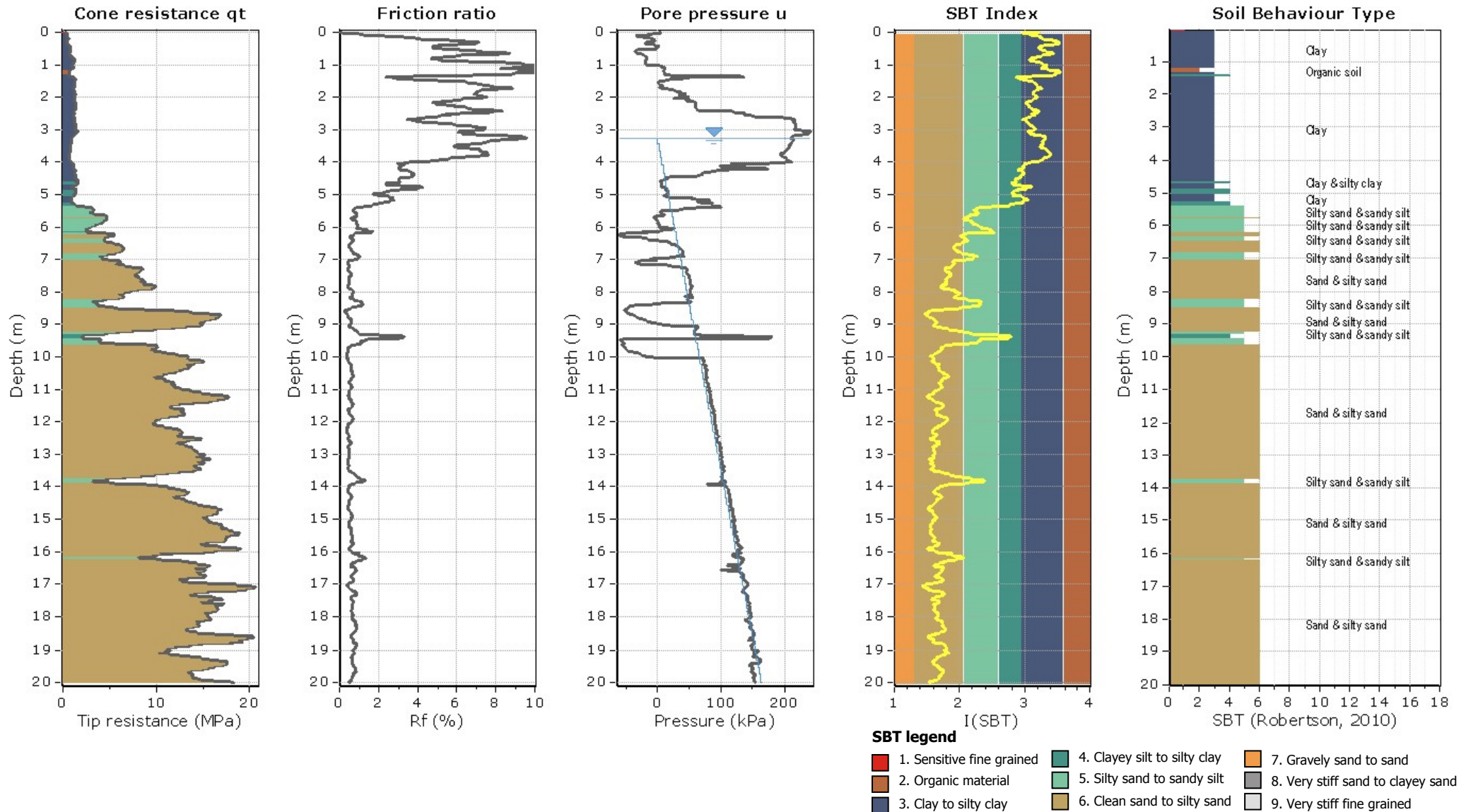
Location: Comune di Mirandola



Project: Microzonazione Mirandola 2018

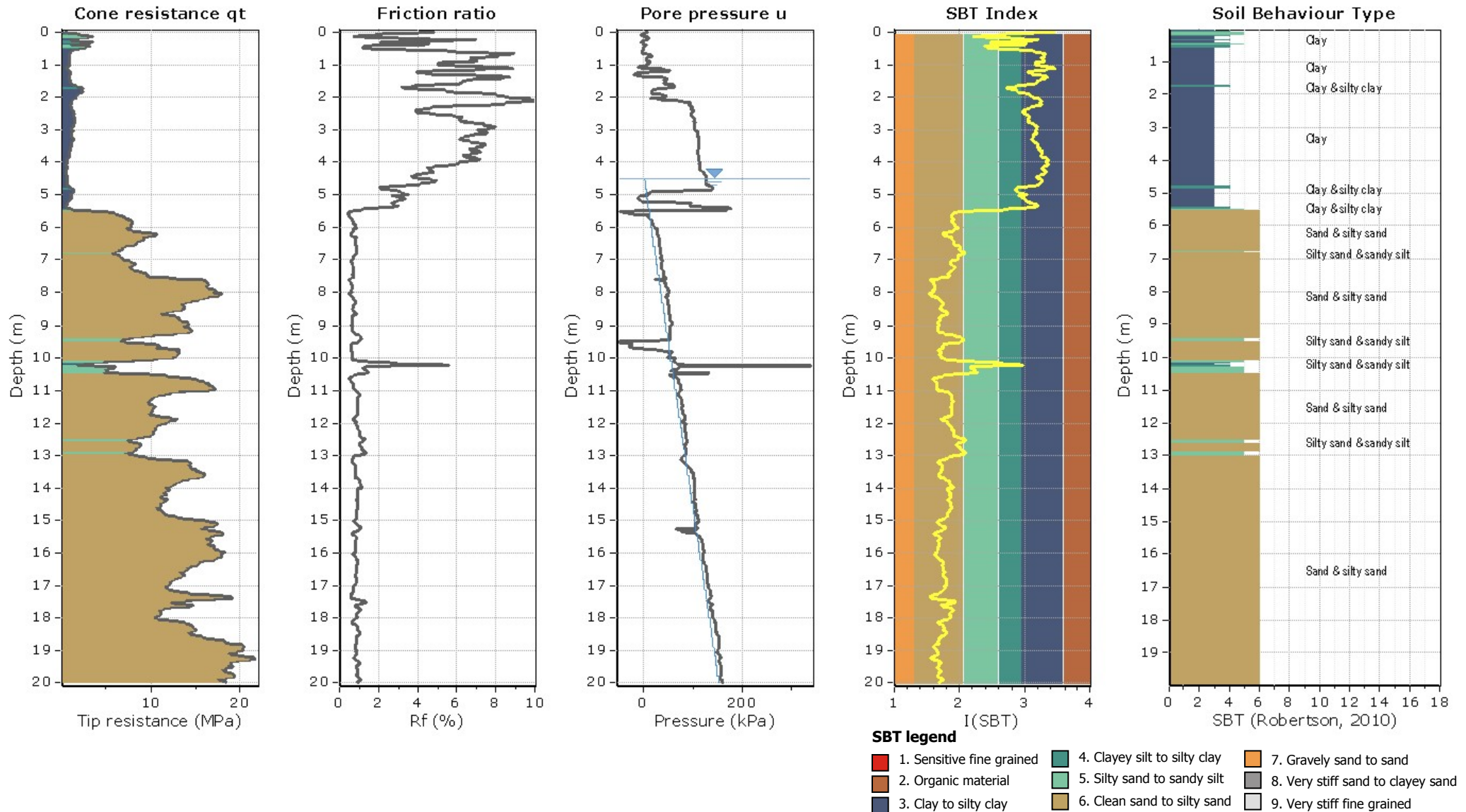
Location: Comune di Mirandola

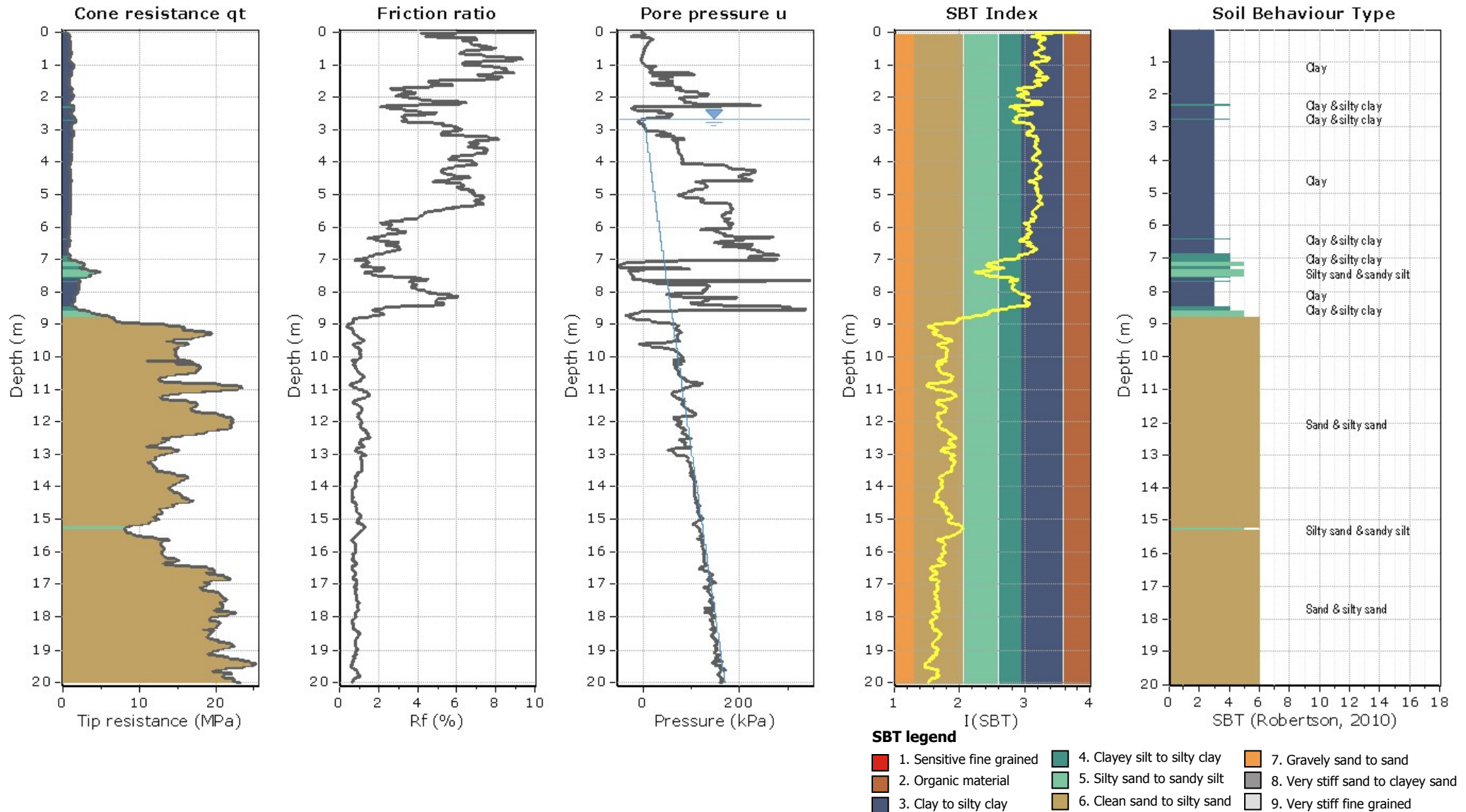


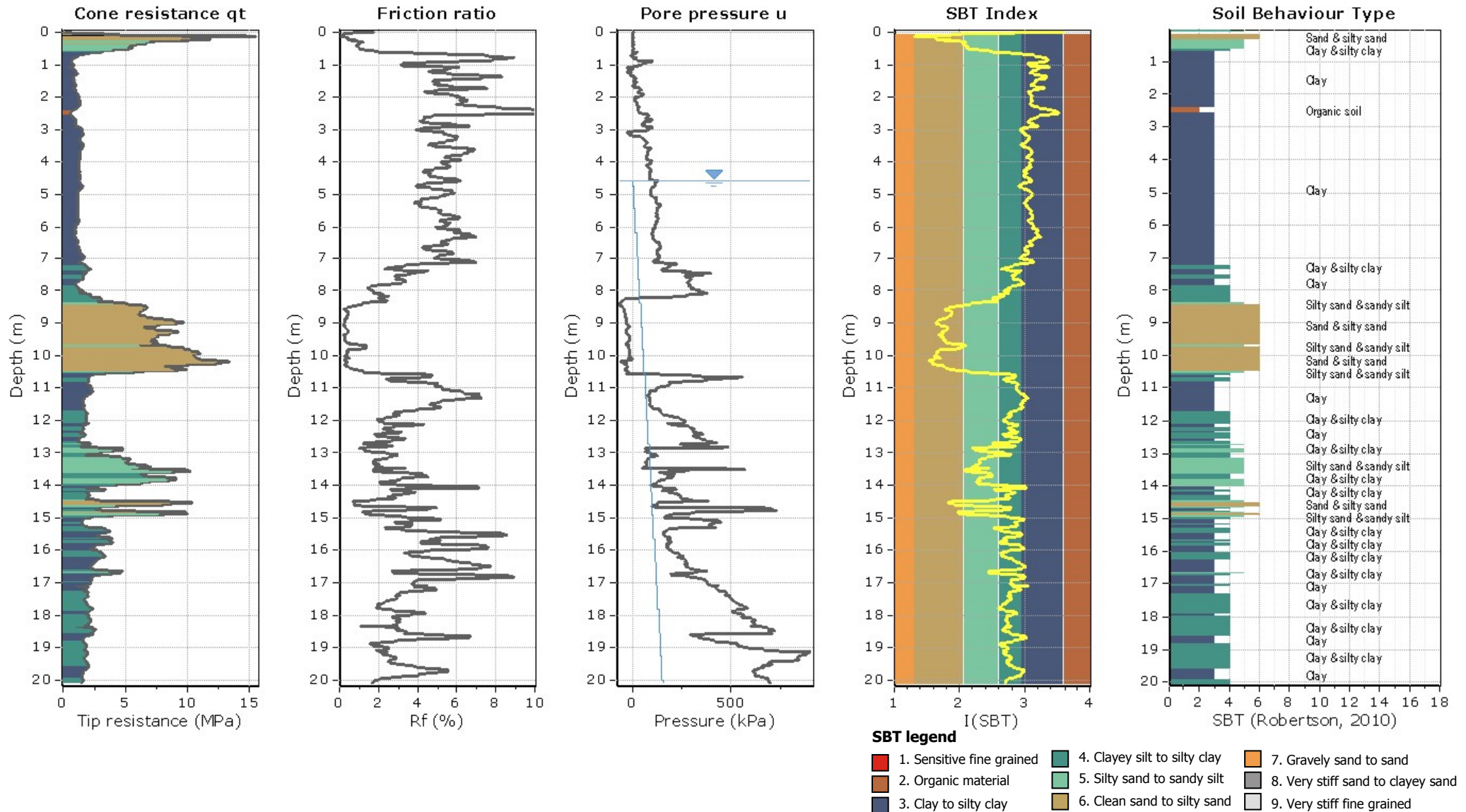


Project: Microzonazione Mirandola 2018

Location: Comune di Mirandola

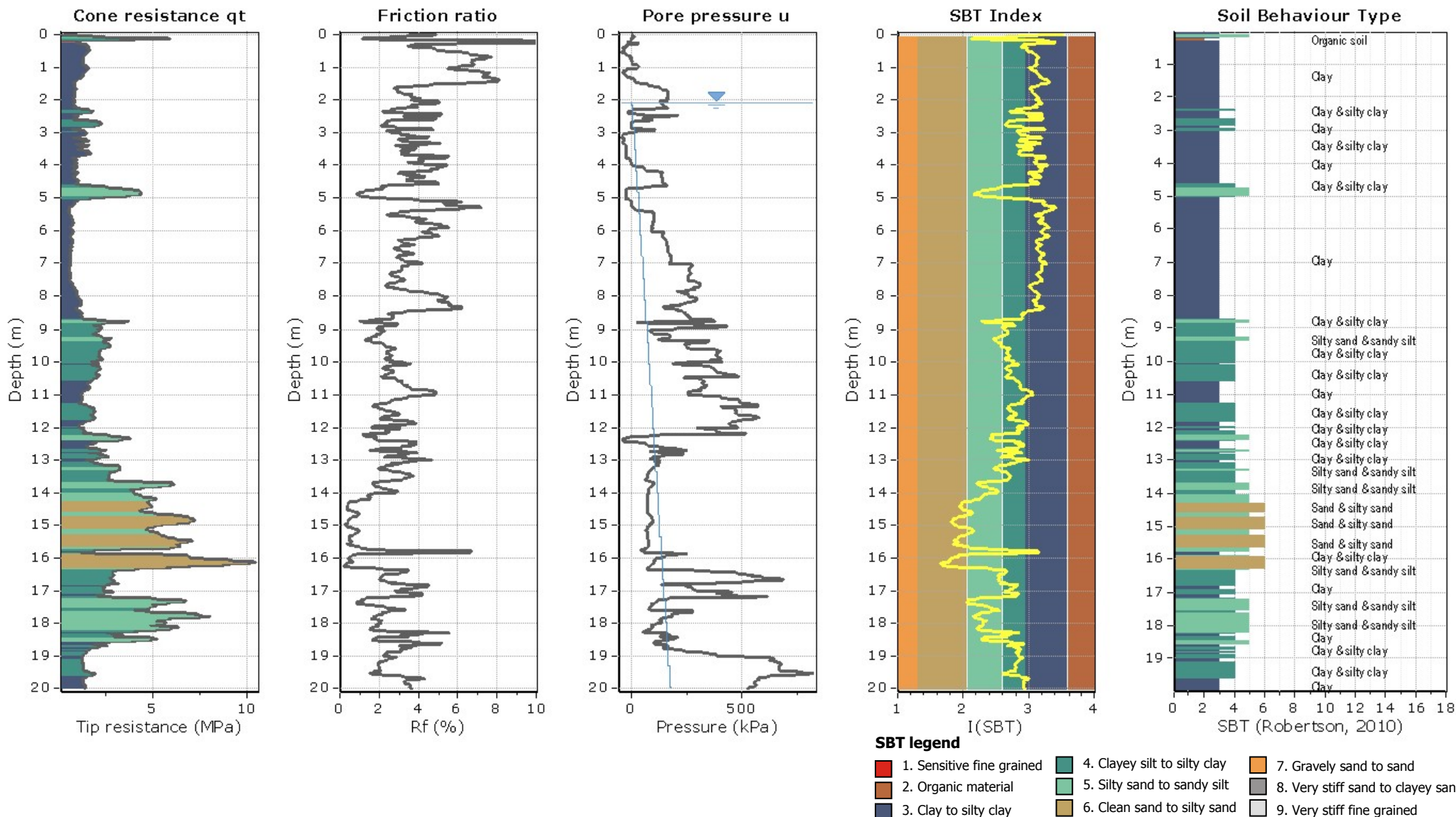


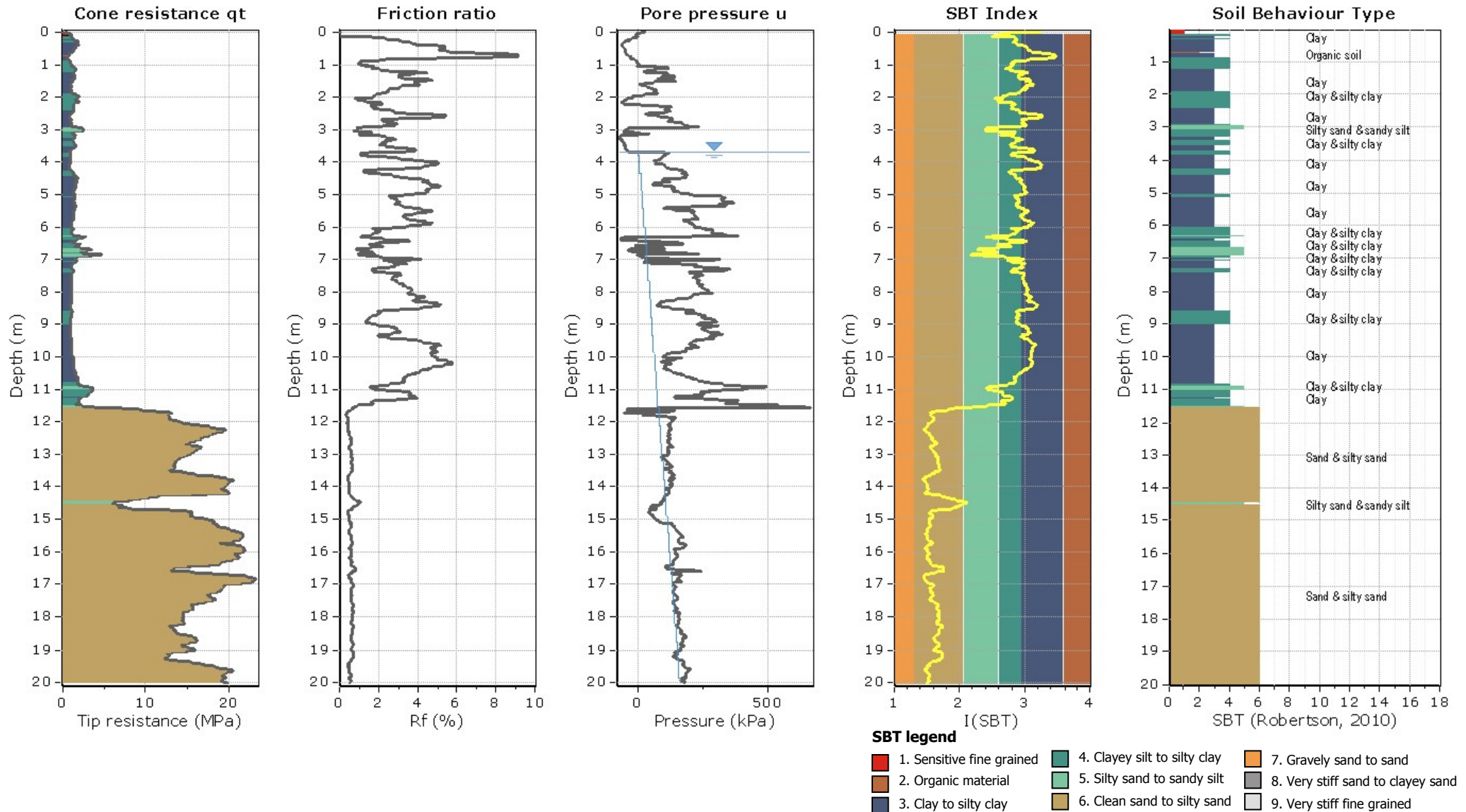


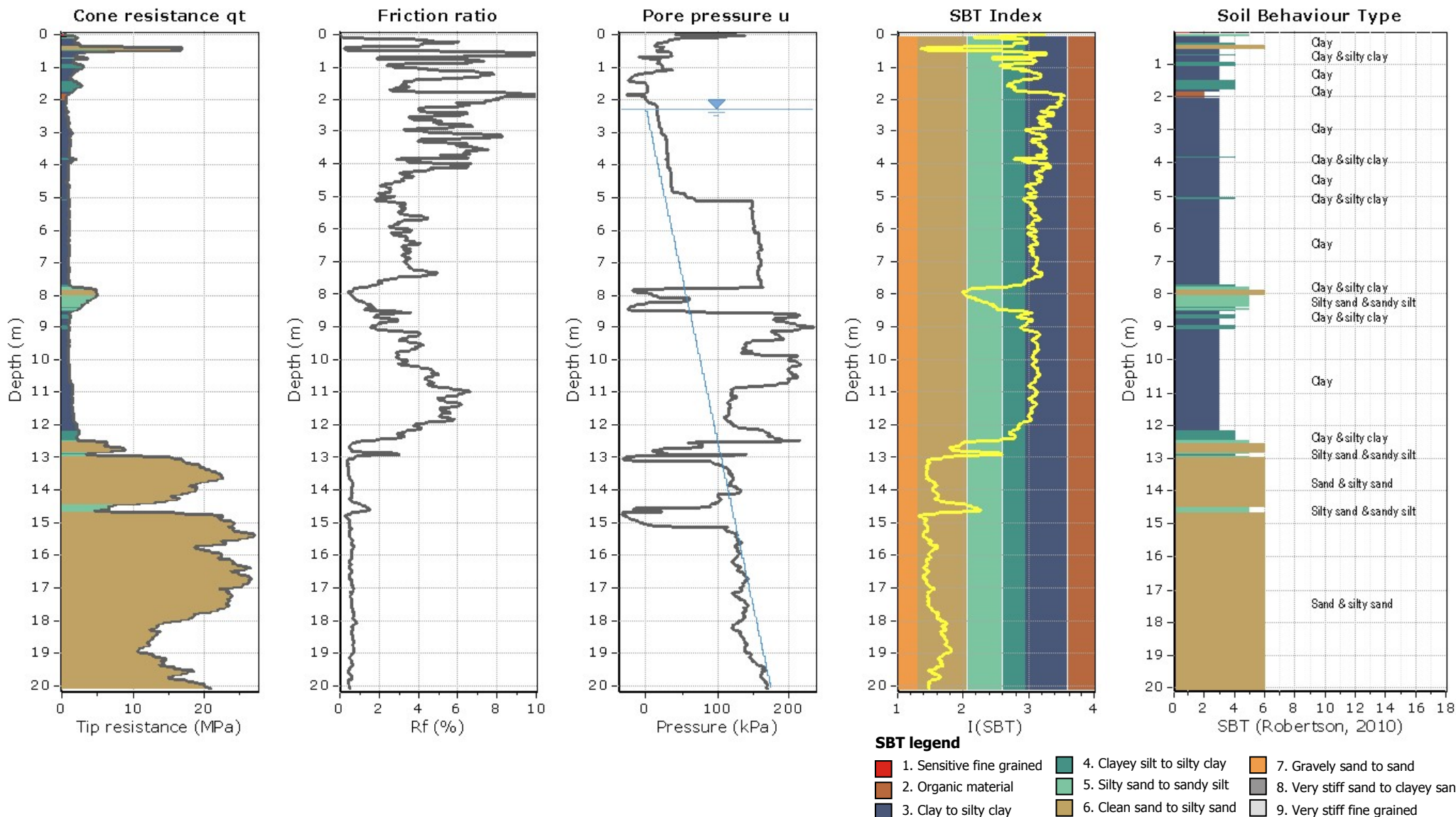


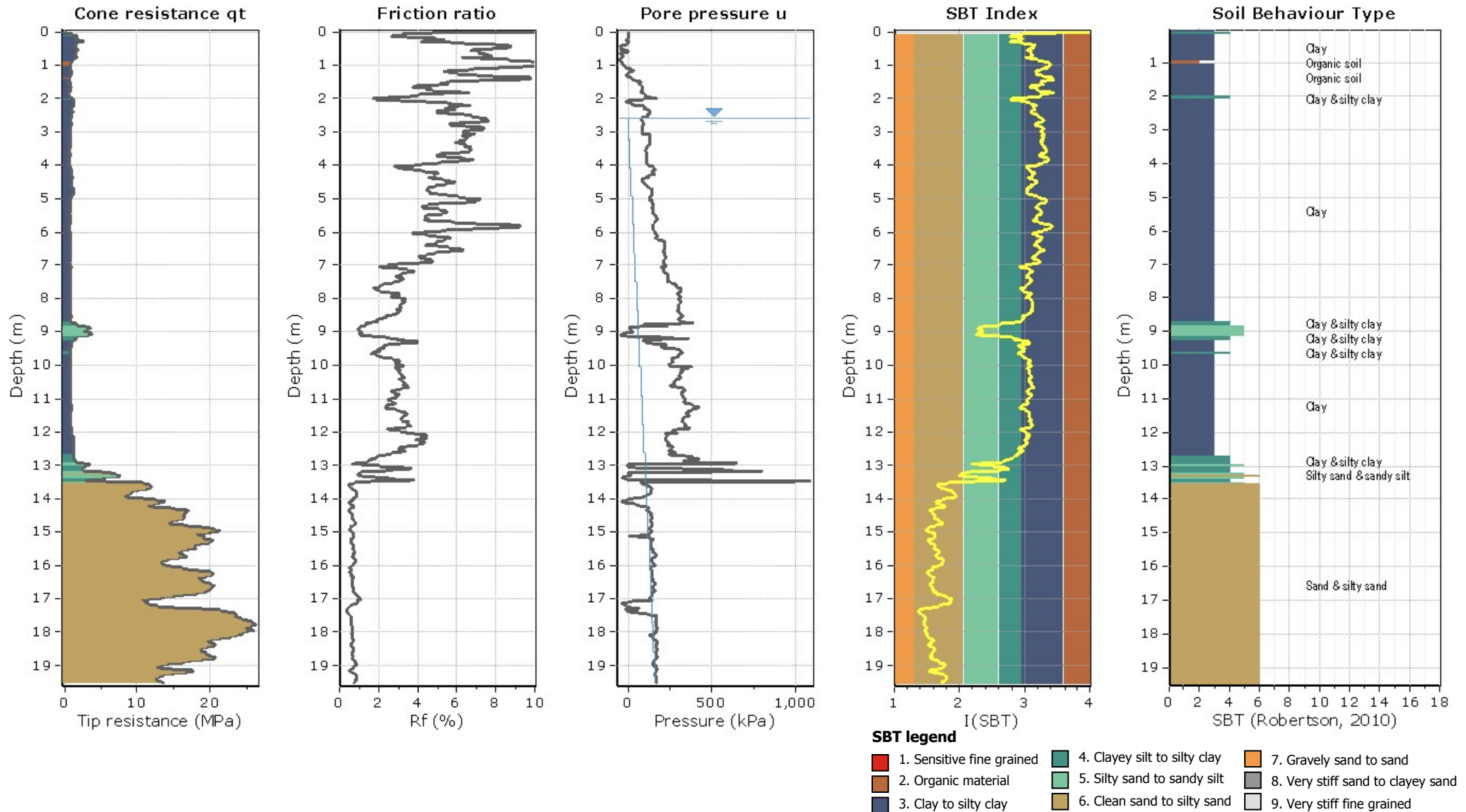
Project: Microzonazione Mirandola 2018

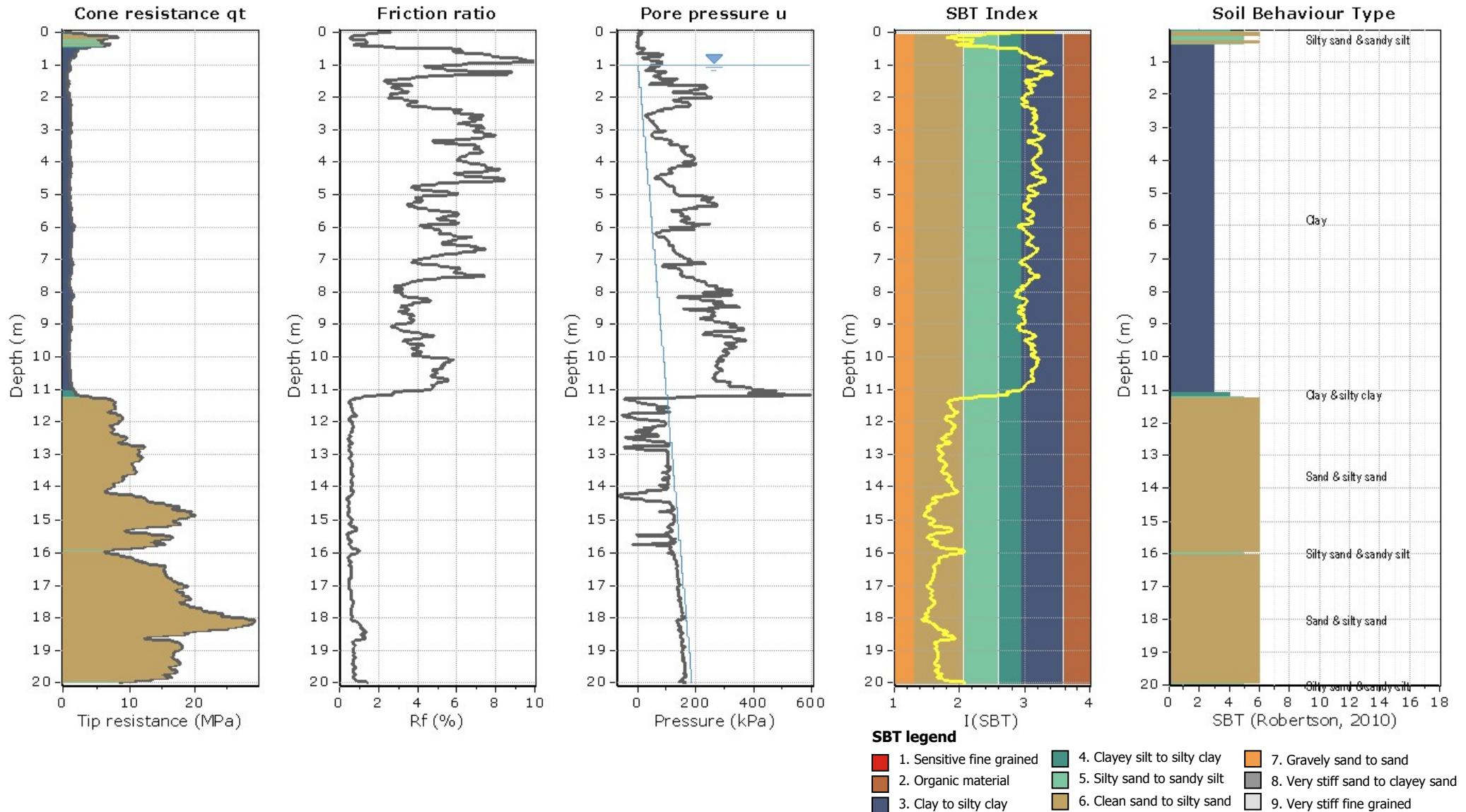
Location: Comune di Mirandola

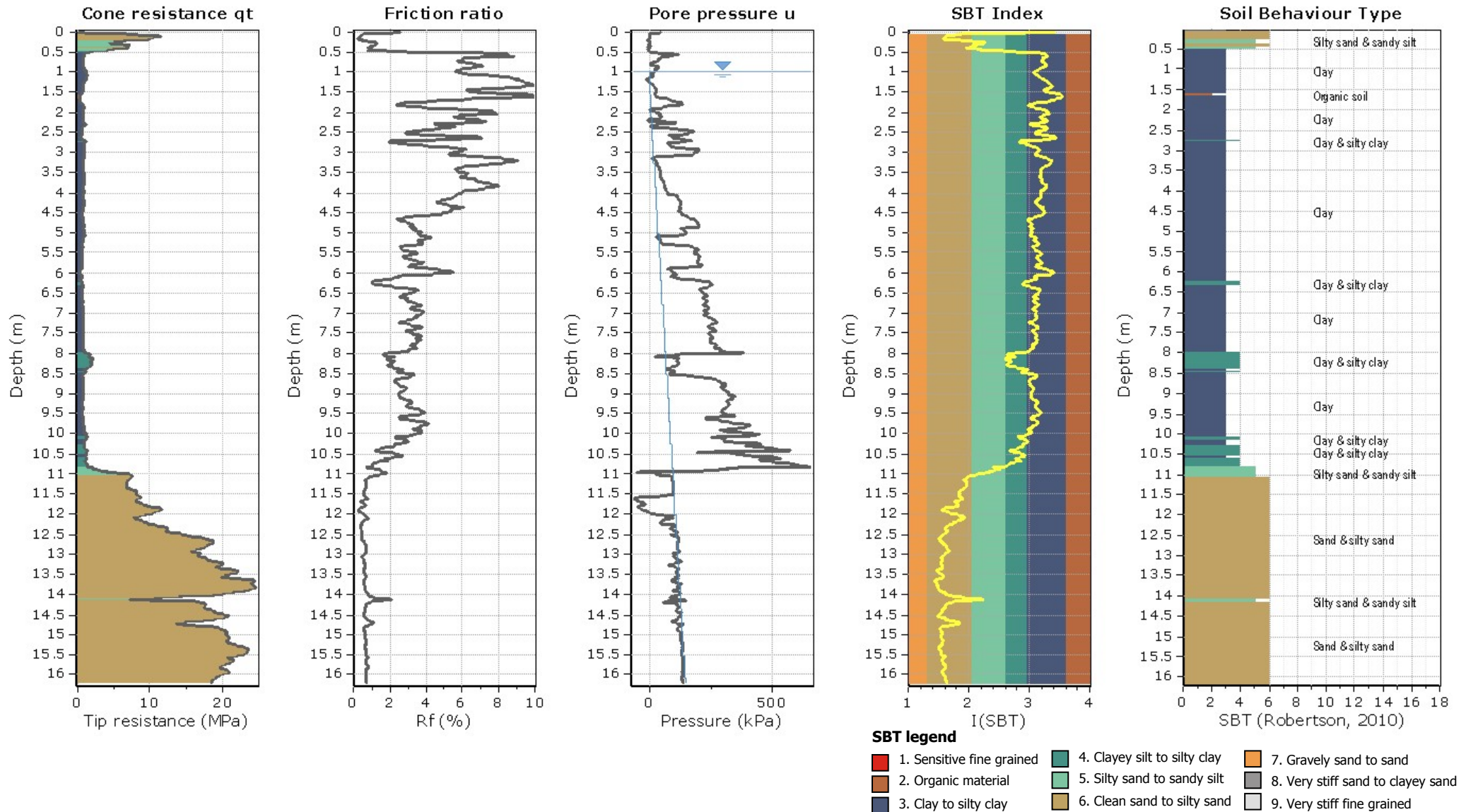












STATION INFORMATION

Station code: SSSSS

Model: SARA SL06

Sensor: SARA SS20PACK (integrated 2.0 Hz sensors)

Notes: -

PLACE INFORMATION

Place ID: HVSR4

Address: Via Cà Vecchia - Tre Gobbi

Latitude: 44.931393N

Longitude: 11.202457E

Coordinate system: WGS84

Elevation: 0.007700 m s.l.m.

Weather: -

Notes: -

PHOTOGRAPHIC REFERENCES



SIGNAL AND WINDOWING

Sampling frequency: 300 Hz

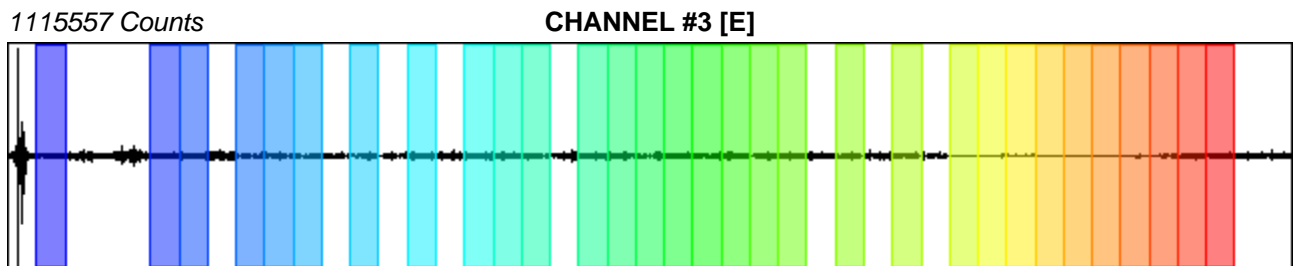
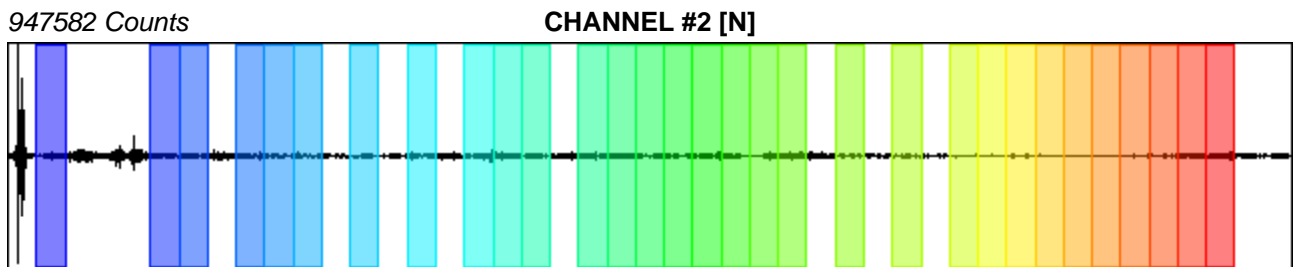
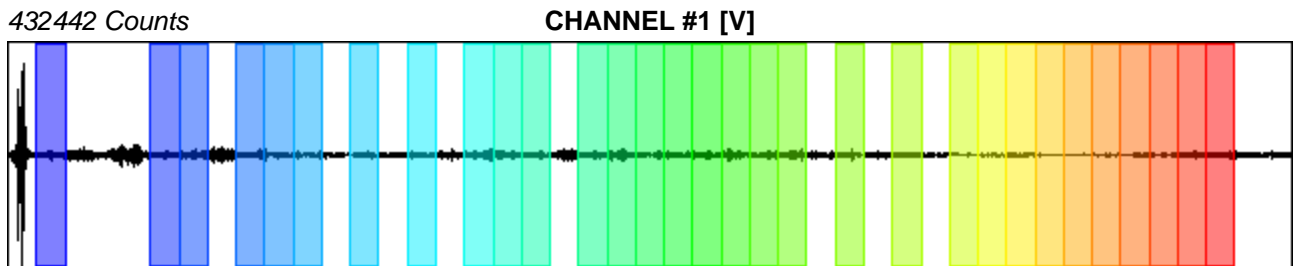
Recording start time: 2017/10/11 14:58:02

Recording length: 30 min

Windows count: 31

Average windows length: 40

Signal coverage: 68.89%



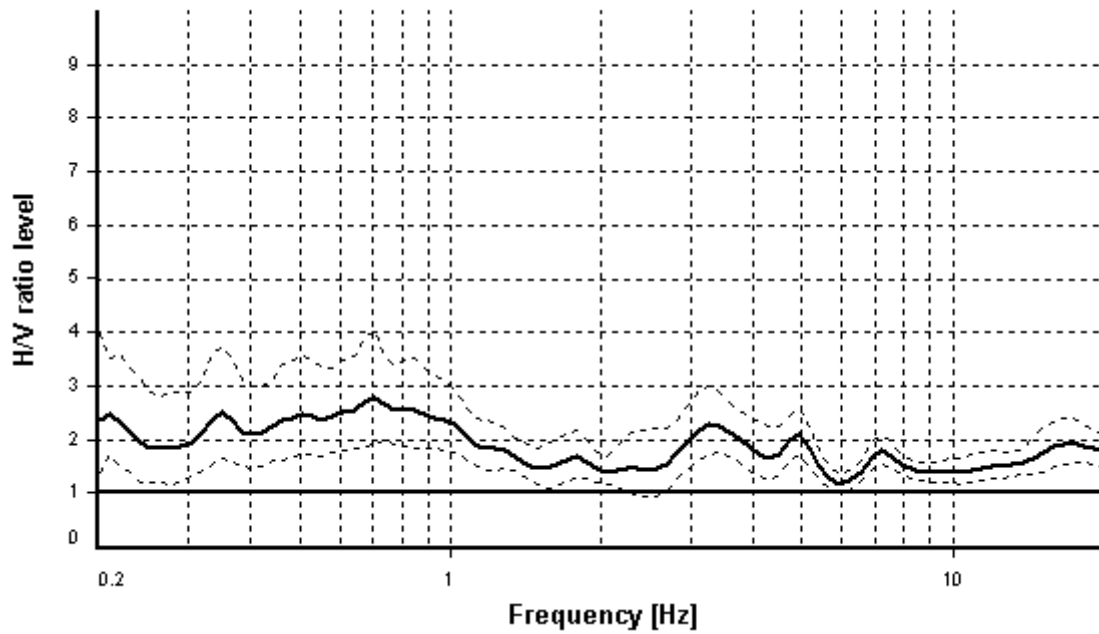
HVSR ANALYSIS

Tapering: Enabled (Bandwidth = 5%)

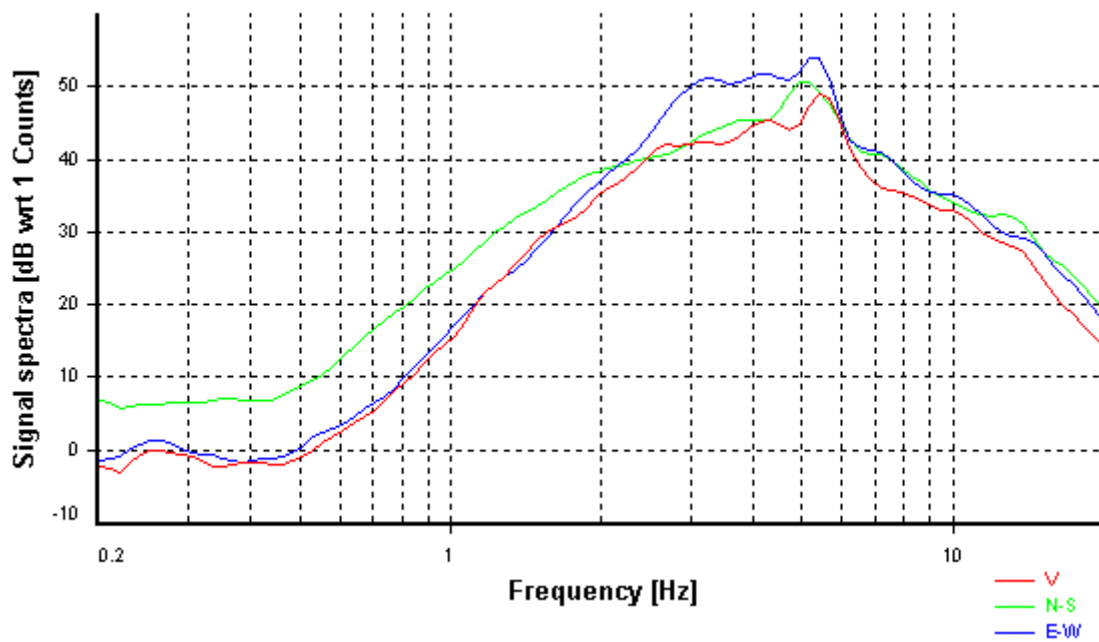
Smoothing: Konno-Ohmachi (Bandwidth coefficient = 40)

Instrumental correction: Disabled

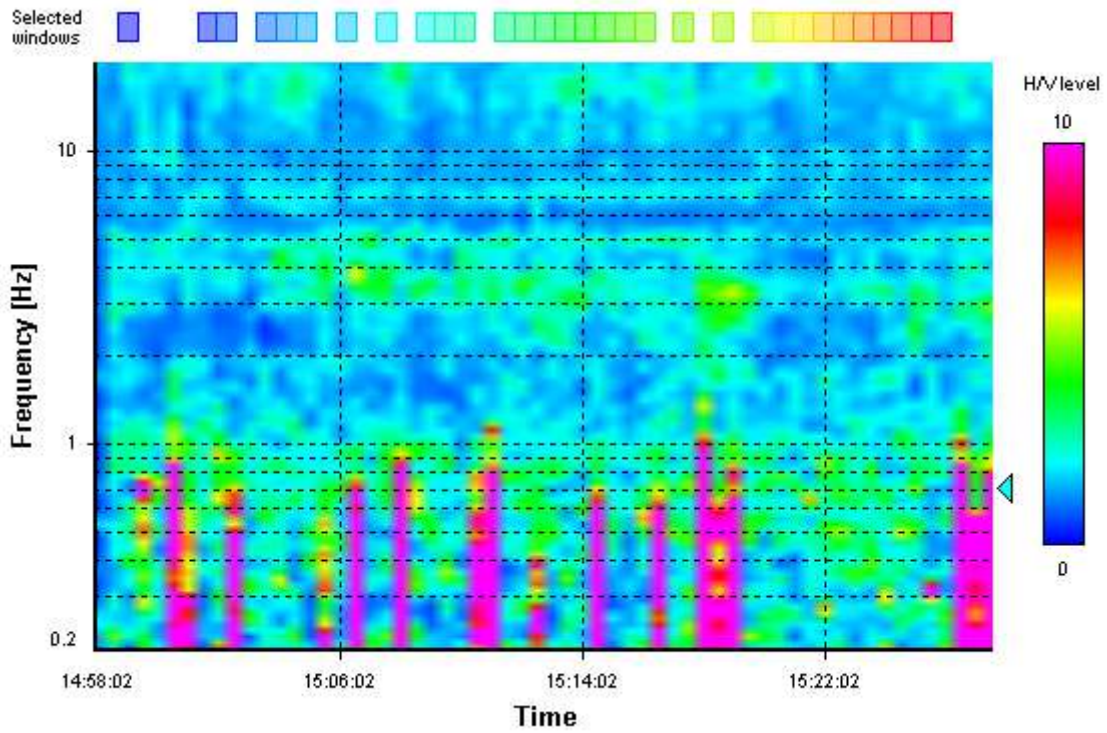
HVSR average



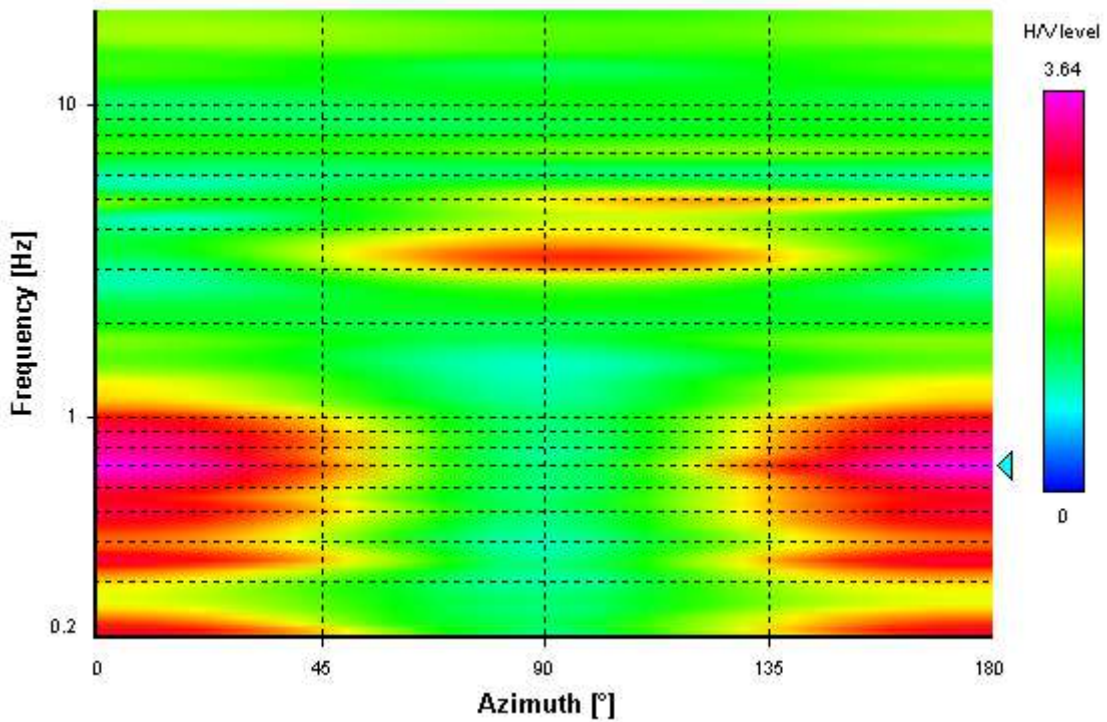
Signal spectra average



HVSR time-frequency analysis (30 seconds windows)



HVSR directional analysis



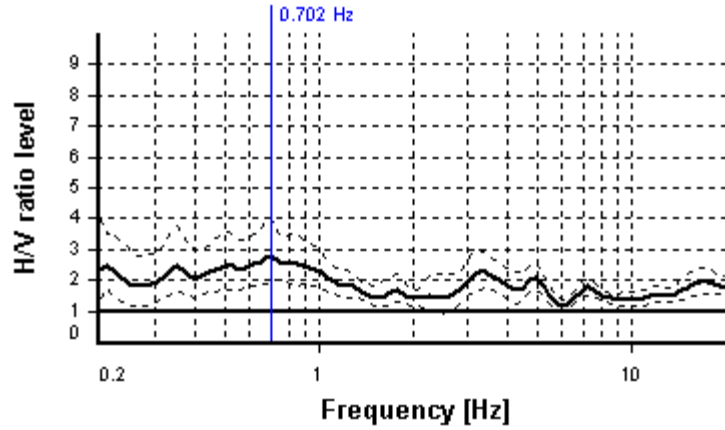
SESAME CRITERIA

Selected f_0 frequency

0.702 Hz

A_0 amplitude = 2.786

Average $f_0 = 0.694 \pm 0.127$



HVSR curve reliability criteria		
$f_0 > 10 / L_w$	31 valid windows (length > 14.24 s) out of 31	OK
$n_c(f_0) > 200$	870.78 > 200	OK
$\sigma_A(f) < 2$ for $0.5f_0 < f < 2f_0$	Exceeded 0 times in 29	OK
HVSR peak clarity criteria		
$\exists f$ in $[f_0/4, f_0] \mid A_{H/V}(f) < A_0/2$	0 Hz	NO
$\exists f^+$ in $[f_0, 4f_0] \mid A_{H/V}(f^+) < A_0/2$	0 Hz	NO
$A_0 > 2$	2.79 > 2	OK
$f_{\text{peak}}[A_{H/V}(f) \pm \sigma_A(f)] = f_0 \pm 5\%$	4.76% <= 5%	OK
$\sigma_f < \varepsilon(f_0)$	0.12686 >= 0.10534	NO
$\sigma_A(f_0) < \theta(f_0)$	1.45212 < 2	OK
Overall criteria fulfillment		NO

STATION INFORMATION

Station code: SSSSS

Model: SARA SL06

Sensor: SARA SS20PACK (integrated 2.0 Hz sensors)

Notes: -

PLACE INFORMATION

Place ID: HVSR3

Address: Via Martiri della Libertà - SP7

Latitude: 44.923575N

Longitude: 11.064152E

Coordinate system: WGS84

Elevation: 0.018700 m s.l.m.

Weather: -

Notes: -

PHOTOGRAPHIC REFERENCES



SIGNAL AND WINDOWING

Sampling frequency: 300 Hz

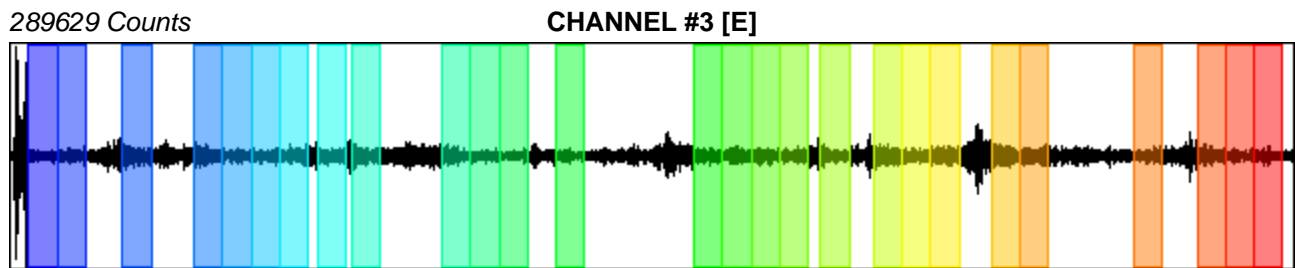
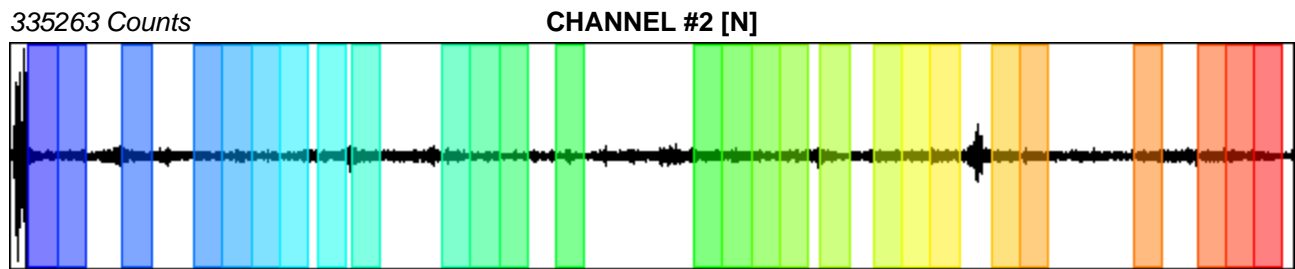
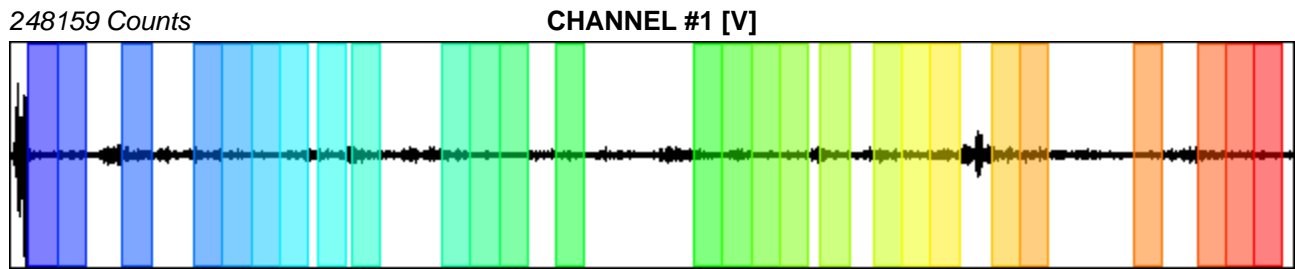
Recording start time: 2017/10/11 13:51:00

Recording length: 30 min

Windows count: 27

Average windows length: 40

Signal coverage: 60%



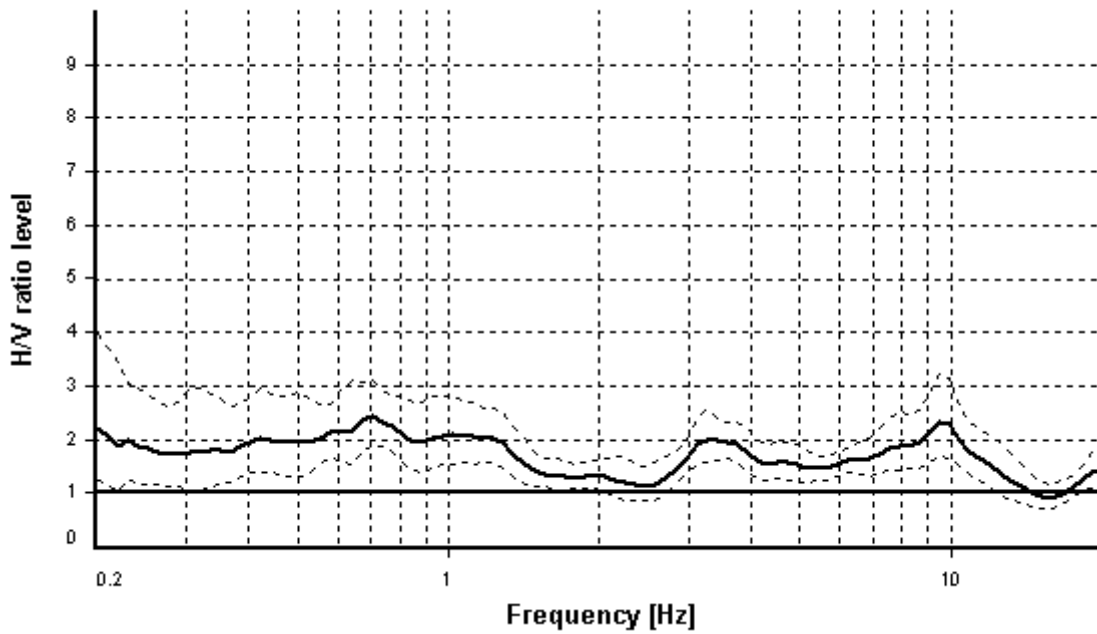
HVSR ANALYSIS

Tapering: Enabled (Bandwidth = 5%)

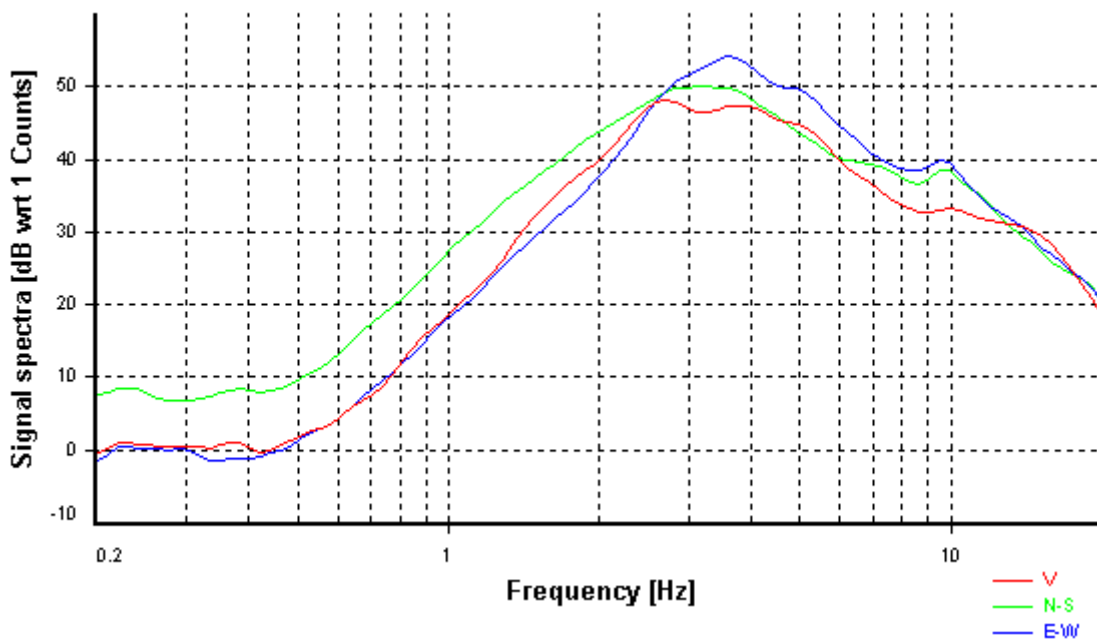
Smoothing: Konno-Ohmachi (Bandwidth coefficient = 40)

Instrumental correction: Disabled

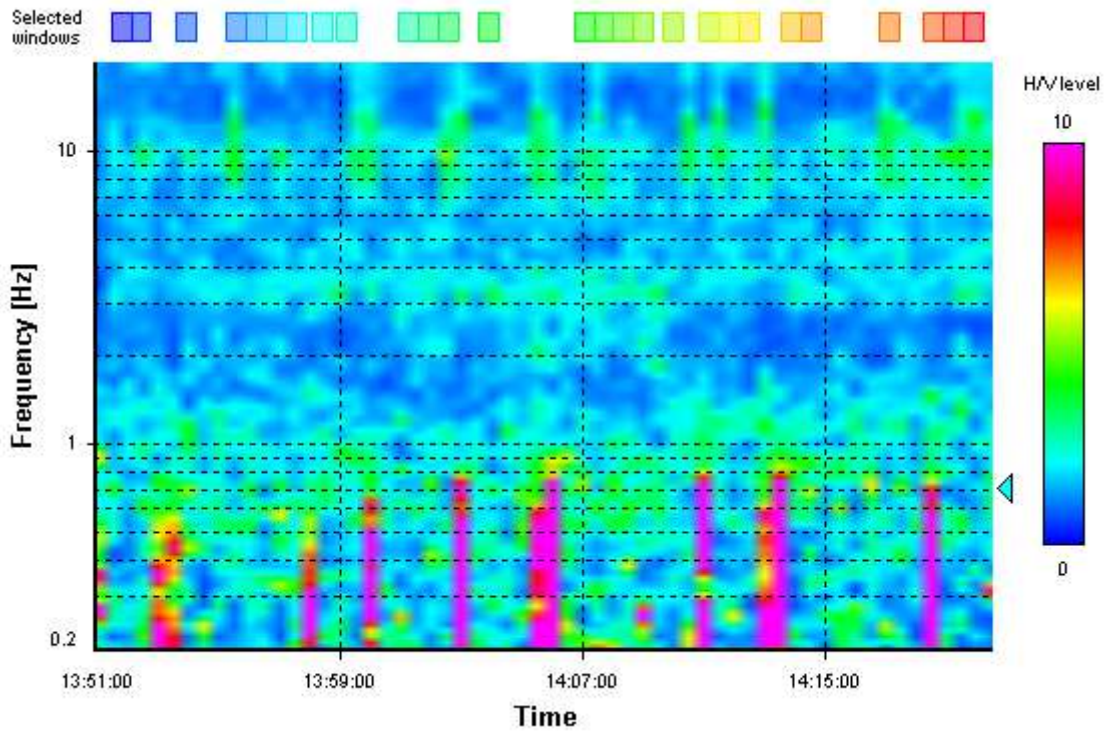
HVSR average



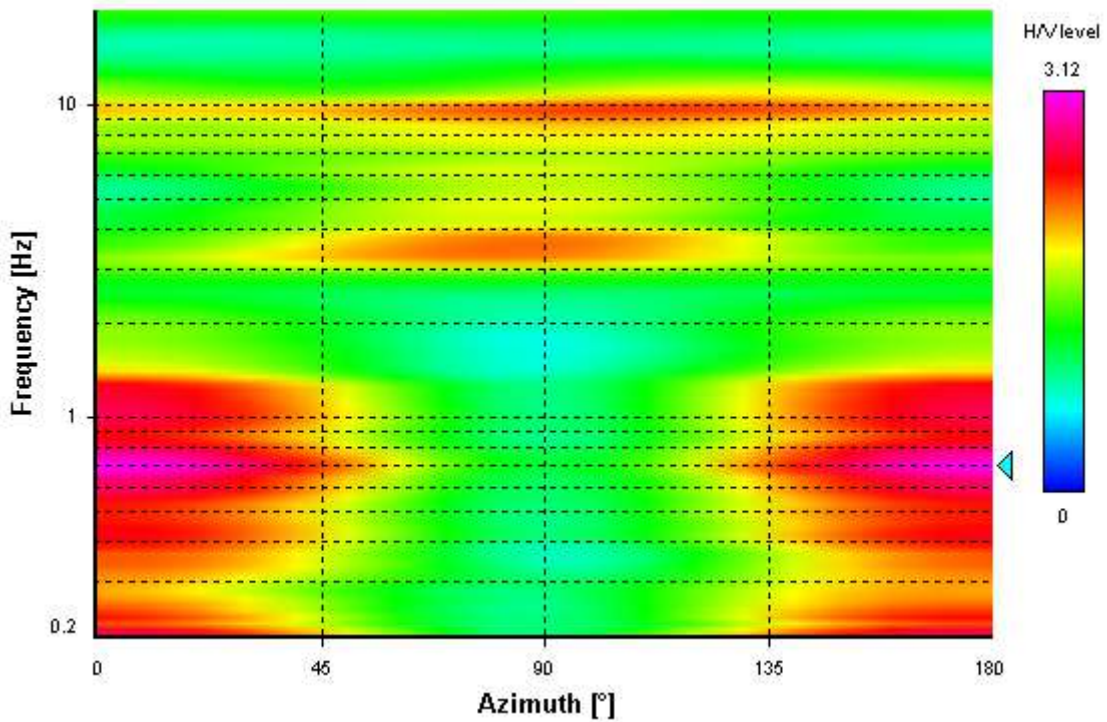
Signal spectra average



HVSR time-frequency analysis (30 seconds windows)



HVSR directional analysis



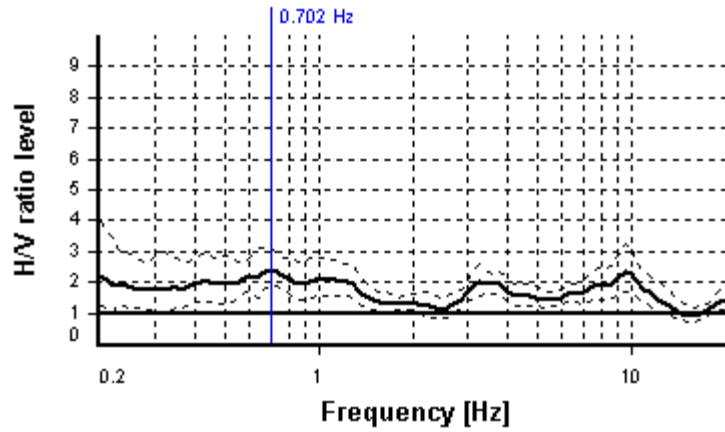
SESAME CRITERIA

Selected f_0 frequency

0.702 Hz

A_0 amplitude = 2.420

Average $f_0 = 0.724 \pm 0.167$



HVSR curve reliability criteria		
$f_0 > 10 / L_w$	27 valid windows (length > 14.24 s) out of 27	OK
$n_c(f_0) > 200$	758.42 > 200	OK
$\sigma_A(f) < 2$ for $0.5f_0 < f < 2f_0$	Exceeded 0 times in 29	OK
HVSR peak clarity criteria		
$\exists f$ in $[f_0/4, f_0] \mid A_{H/V}(f) < A_0/2$	0 Hz	NO
$\exists f^+$ in $[f_0, 4f_0] \mid A_{H/V}(f^+) < A_0/2$	2.24665 Hz	OK
$A_0 > 2$	2.42 > 2	OK
$f_{\text{peak}}[A_{H/V}(f) \pm \sigma_A(f)] = f_0 \pm 5\%$	0% <= 5%	OK
$\sigma_f < \varepsilon(f_0)$	0.16671 >= 0.10534	NO
$\sigma_A(f_0) < \theta(f_0)$	1.28663 < 2	OK
Overall criteria fulfillment		NO