



ABSTRACT

This poster aims to present a collection of ground penetrating radar (GPR) profiles, acquired over the Nantes Geophysical Test Site of IFSTTAR. The dataset is part of the Open Database of Radargrams of COST Action TU1208 and includes 67 radargrams. Such radargrams were recorded by using 3 GPR systems equipped with 14 antennas working on different frequency ranges (central frequency 200-900 MHz).

The idea of the Open Database of Radargrams is to make available for the scientific community a selection of reliable and interesting GPR responses. All data, along with descriptions of the investigated structures, are being uploaded on the Action website (www.GPRadar.eu). To the best of our knowledge, this is the 1st open database of GPR responses: similar initiatives were never undertaken in the past, in the GPR field. By employing inversion and imaging techniques, scientists can try and reconstruct the geometrical and physical properties of the inspected subsurface/structures, from the shared experimental data. Forwardscattering methods can be used to reproduce the data by modelling the scenarios at hand. Processing algorithms can be tested over the database radargrams. Overall, this initiative will foster and facilitate a reliable comparison of different approaches.

ACKNOWLEDGEMENT

The authors thank COST (European Cooperation in Science and Technology) for funding and supporting the Action TU1208.



COST is supported by the EU Framework Programme Horizon 2020.

The IFSTTAR Geophysical Test Site

The IFSTTAR Geophysical Test Site consists of a pit, 30 m long and 5 m wide, with sloping sides. The useful region of the pit has a variable depth, ranging from 3.30 m to 4.70 m. The pit is divided into 11 sections, filled with different materials and separated by vertical interfaces. There are 2 sections filled with silt, a multilayered section, 2 sections of calcareous sand, 2 sections filled with low-density gravel gneiss, and 4 sections filled with highdensity gravel gneiss. The filling materials are chosen to be representative of common scenarios in urban sites. Several targets are embedded in the test site. They are representative of objects that can be commonly found in trenchless works – such as pipes, cables, stones of various size, and masonry. The positions of the obstacles were accurately identified in a local reference system during the construction of the test site. Precautions were taken to prevent water inflows, including bottom and side drains and coverage by an armed single layer of geotextile.





Placement of the 3layer asphalt wearing

COST Action TU1208 "Civil Engineering Applications of Ground Penetrating Radar:" The GPR dataset of the IFSTTAR Geophysical Test Site

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Big b	locks
Hole	for cross/borehole
meas	urements
Pipes	set at
differ	ent depths



the polystyrene blocks in the silt section



the pipe series in the limestone section



Placement of one of Placement of the pipe series in gneiss section, and of the 500mm concrete pipe.





Gneiss 14/20

EGU GA 2018, Austria Center Vienna, Vienna, Austria, April 8 – 13

The GPR dataset

Find more information and all data in: Derobert & Pajewski, Remote Sens. 2018, 10(4), 530; doi:10.3390/rs10040530







File name	Number of traces (profile length [m])	Scan/m	Sampl. /Bits	Range (ns)	Gain (db)	LP (MHz)	HP (MHz)	Stack.	Raw data (Y/N)
00MHz_Silt_h2h1.dzt	1223 (24.44)	50	512/8	110	3/45/70	400	50	3	N
0MHz_Silt_1_rev.dzt	1321 (20.02)	66	512/16	70	-3/25/40/48/52	800	100	5	Ν
0MHz_Silt_1_rev.dzt	1324 (NA)	-	512/16	70	-5/28/45/55/60	1000	125	5	Ν
0MHz_Silt_1_rev.dzt	1750 (NA)	-	512/16	60	5/30/50/56/56	1800	225	5	Ν
0MHz_Silt_1_rev.rd3	657 (19.90)	33	413/16	80	-	-	-	1	Y
0MHz_Silt_1_rev.rd3	1313 (25.80)	50	499/16	89	-	-	-	1	Y
0MHz_Silt_1_rev.rd3	784 (24.20)	32	721/16	89	-	-	-	1	Y
0MHz_Silt_h1_rev.dt	486 (9.70)	50	1024/16	100	-	-	-	1	Y
0MHz_Silt_h1_rev.dt	477 (9.52)	50	1024/16	100	-	-	-	1	Y
0MHz_Silt_h1_rev.dt	475 (9.48)	50	1024/16	100		-		1	Y
00MHz_Silt_h2h1.dzt	1223 (24.44)	50	512/8	110	3/45/70	400	50	3	Ν
0MHz_Silt_2_rev.dzt	1316 (19.94)	66	512/16	70	-3/25/40/48/52	800	100	5	Ν
0MHz_Silt_2_rev.dzt	1533 (NA)	-	512/16	60	5/30/50/56/56	1800	225	5	Ν
0MHz_Silt_h2_rev.dt	497 (9.92)	50	1024/16	100	-	-	-	1	Y
0MHz_Silt_h2_rev.dt	474 (9.46)	50	1024/16	100	-	-	-	1	Y
0MHz_Silt_h2_rev.dt	487 (9.72)	50	1024/16	100	-	-	-	1	Y

2.0 1.25 1.25 2.0







 200
 400
 600
 800
 1000
 1200
 1400
 1600
 1800

Scan Axis (# Traces)

