

Supplement Material of

Structural and climatic control on Holocene sedimentation in minor mountain lacustrine basins: the Lake Moo case study (Northern Apennines, Italy)

Stefano Segadelli et al

Chapter 1: Geoelectric survey details

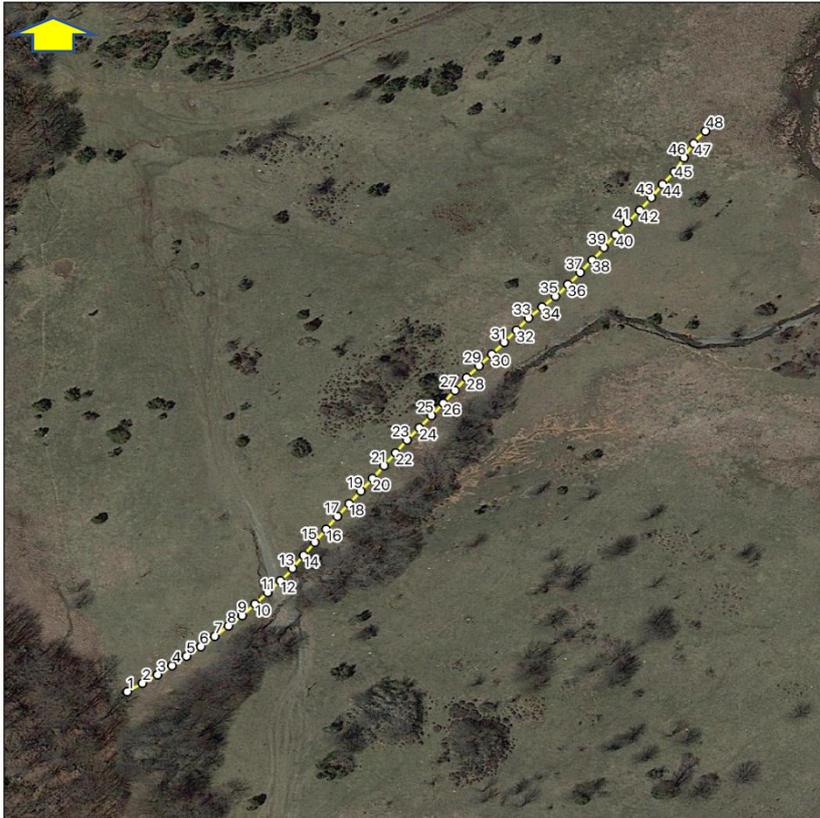


Figure S1. Tomographic profile location "ERT L1"



Figure S2. Georesistivity meter "Polares 2.0" of PASI Srl, employed for the geoelectric survey.



**ELECTRICAL IMAGING SYSTEM IN ALTERNATE CURRENT
POLARES 2.0**

www.pasigeophysics.com

TECHNICAL SPECIFICATIONS:

CPU	Arm 9 32 bit
Operating system	Linux
Display	QVGA 5.7" with LED background lighting
Touch Screen	4 wire resistive
Data storage	Solid state flash memory
External data ports	USB host 1.1
Connectivity	USB key
Optional connectivity	Ethernet, Wi-Fi, Bluetooth, RS232, RS485, USB client, GPS, etc
GPS	Integrated receiver for georeference of measures
DSP	Freescala (Motorola) 120 MIPs
Converters	A/D 16 bit SAR and D/A to 19 bit
Voltage measurement range	300V, 30V, 3V
Current measurement range	3A, 300mA, 30mA
Frequencies that can be generated	114Hz, 28.8Hz, 7.15Hz, 1.79Hz, 0.45Hz, 0.11Hz
Measurement soundness check	DC component, distortion, background noise, phase excess, module sigma, phase sigma
Maximum number of spikes	Unlimited
Maximum number of scans per measurement	> 40,000
Results that can be stored to memory (scan)	> 200,000
Peak voltage that can be generated	700 V _{pp}
Peak current that can be generated	2000 mA
Peak power output that can be generated	200 W
Thermal protections	Heatsink and inside case alarms and system shut-down
Power supply	8.5V= / 15V= lead or lithium batteries, 30 A Internal fuse, protection against polarity inversions
Operating temperature	-20°C / 80 °C outside
Dimensions and weight	410x390x170mm; 6kg

For additional technical/commercial informations : sales@pasisrl.it

Figure S3. Technical specifications of the "POLARES 2.0" used for the geoelectric survey.

Figures d to n are the technical details and calculations related to each acquisition.

The main graphs refer to, respectively:

- Terrain resistivity model obtained through the inversion process;
- Terrain chargeability obtained through the inversion process;
- Comparison between the resistivity and chargeability models;

The topographic correction of the model was carried out to have the electro stratigraphic section adhering to the local morphology.



Figure S4. Documentation of fieldwork activities.



Figure S5. Documentation of fieldwork activities

Table S1. Data Summary

SUMMARY DATA - ERT L1		
Fields Operator	Dr. Geol. Gambini Stefano; Dr. Geol. Gabriele Oppo;	
Length	235 m	
Number of electrodes	48	
Electrode spacing	5	
Electrode configuration	Wenner - <u>Schlumberger</u>	
Number of readings	61	
Number of iterations	1314/1433	
Model blocks	5	
Model layers	368	
Length	12	
RESISTIVITY		
Resistivity range	Ω m (Ohm x meter) Min: Max:	15,77 609,58
Error	2,11%	
CHARGEABILITY		
Chargeability range	msec Min: Max	0,00 1,54
Error	0,08%	

SW

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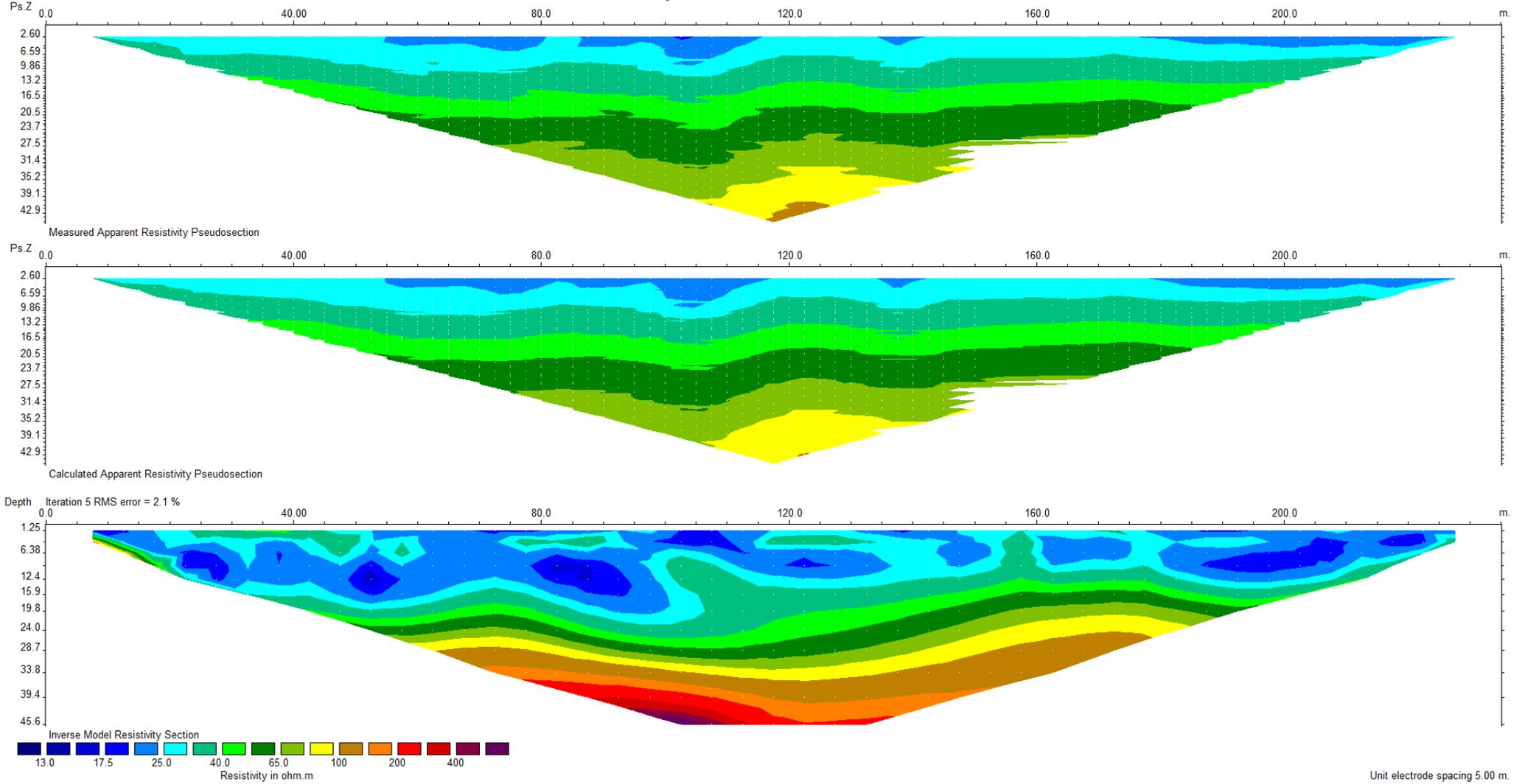


Figure S6. ERT L1 Resistivity

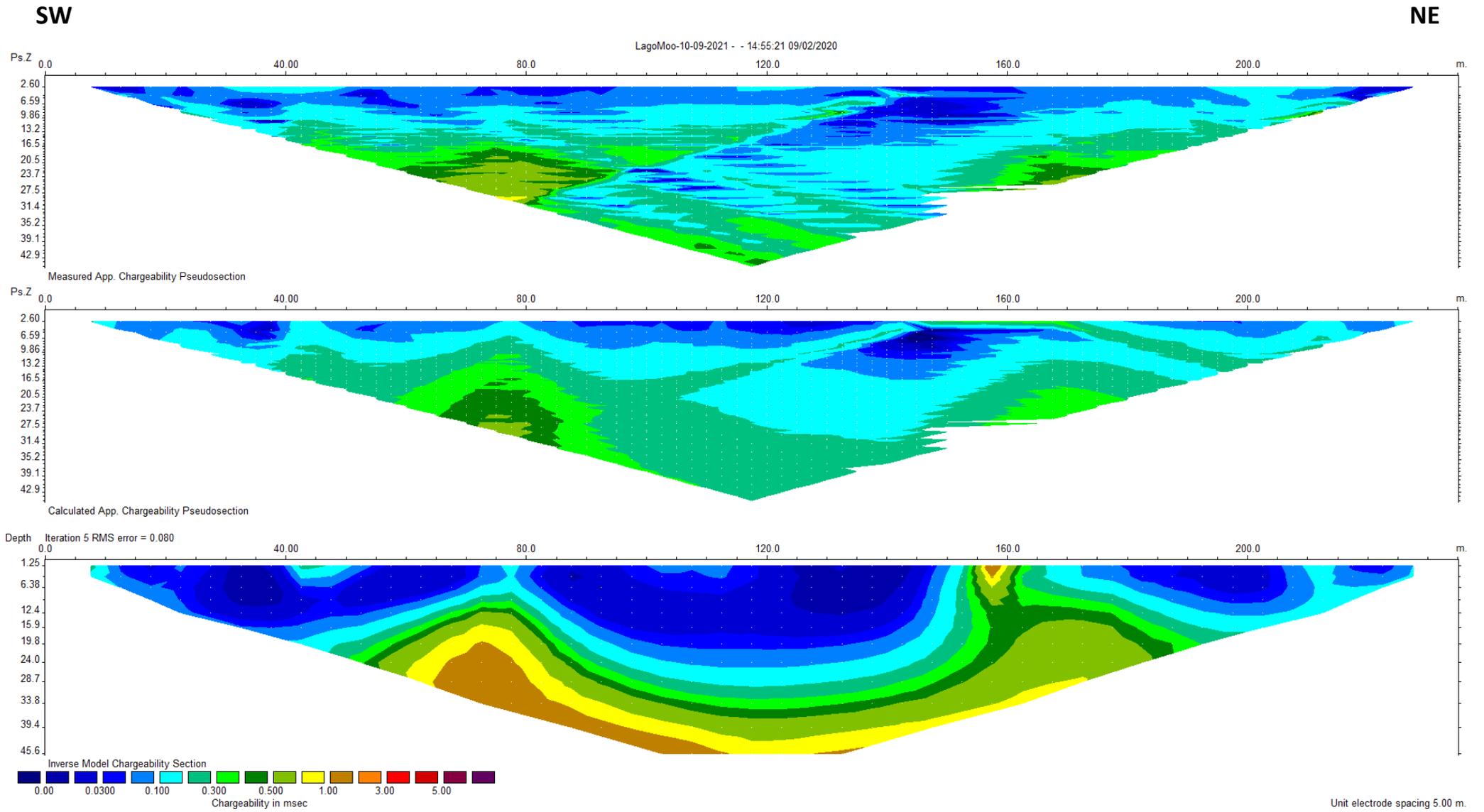


Figure S7. ERT L1 Chargeability

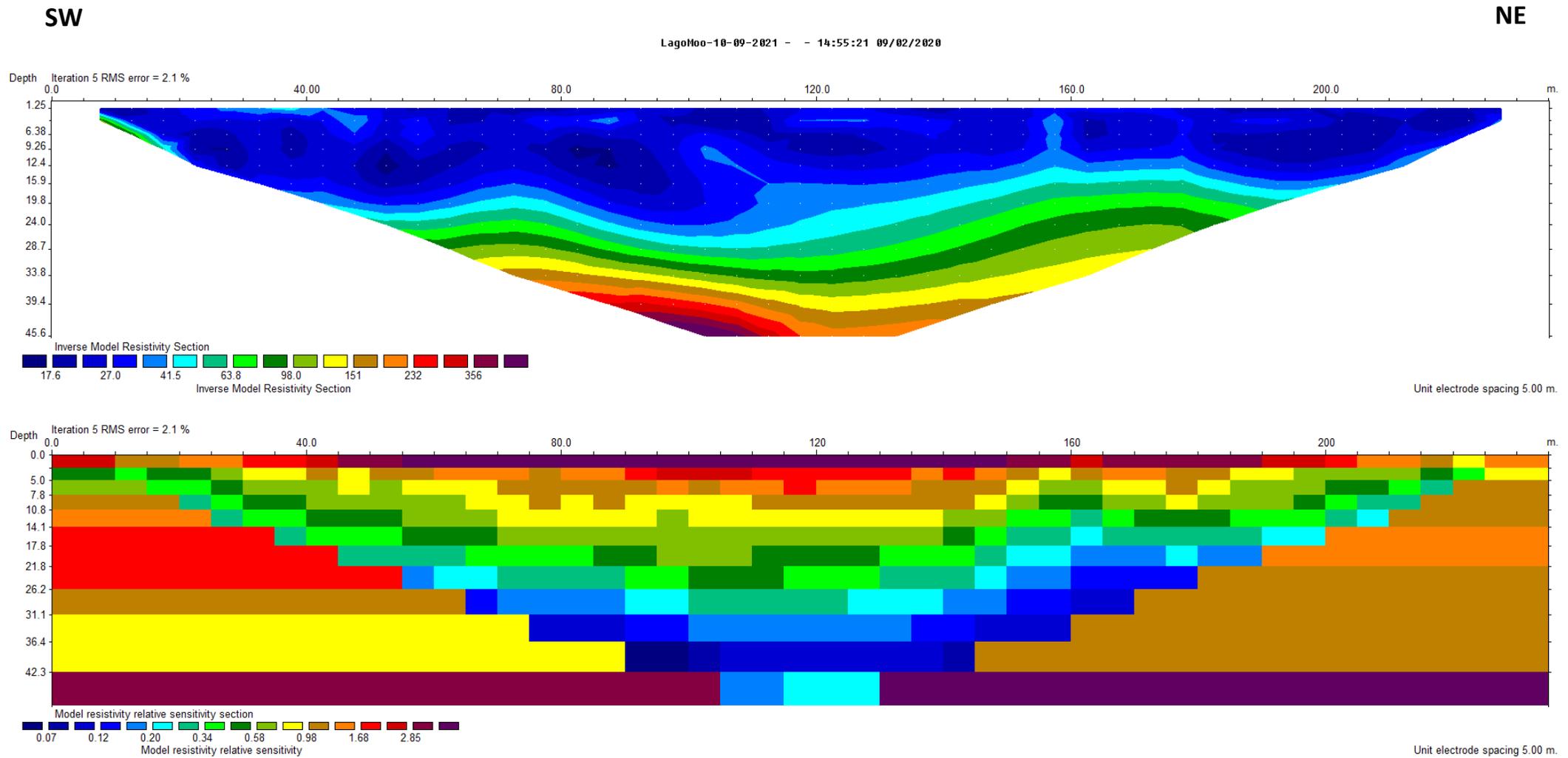


Figure S8. ERT L1 Comparison between resistivity (top) and block sensitivity (bottom)

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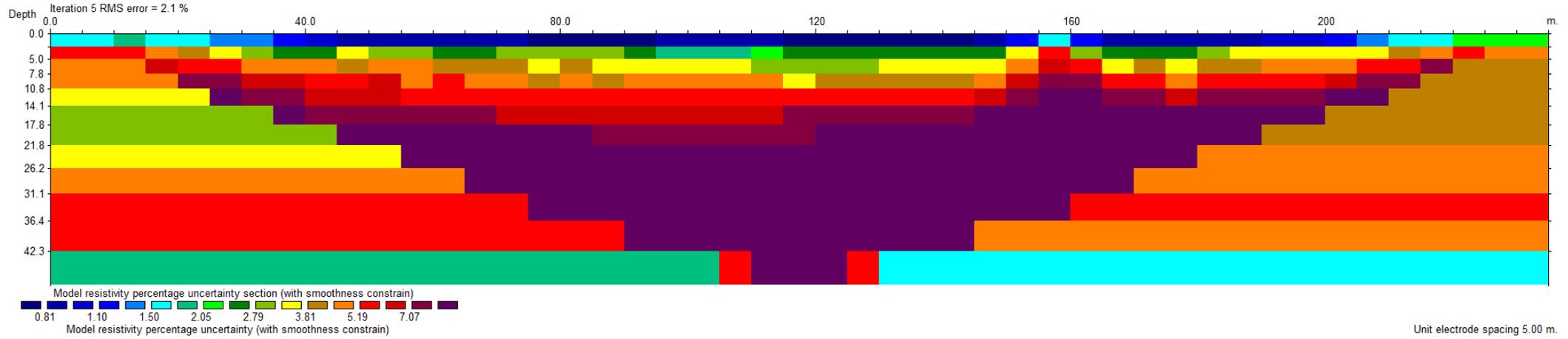
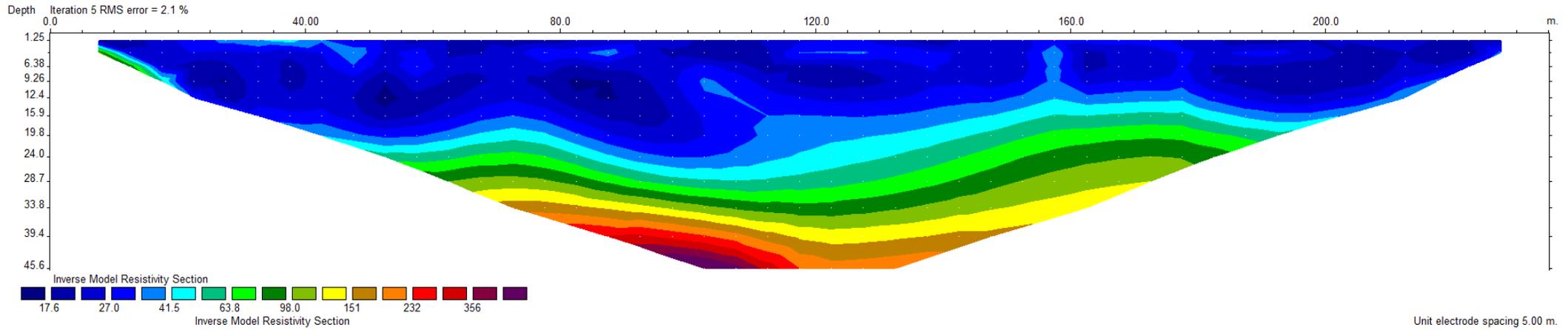


Figure S9. ERT L1 Comparison between resistivity (top) and block uncertainty (bottom)

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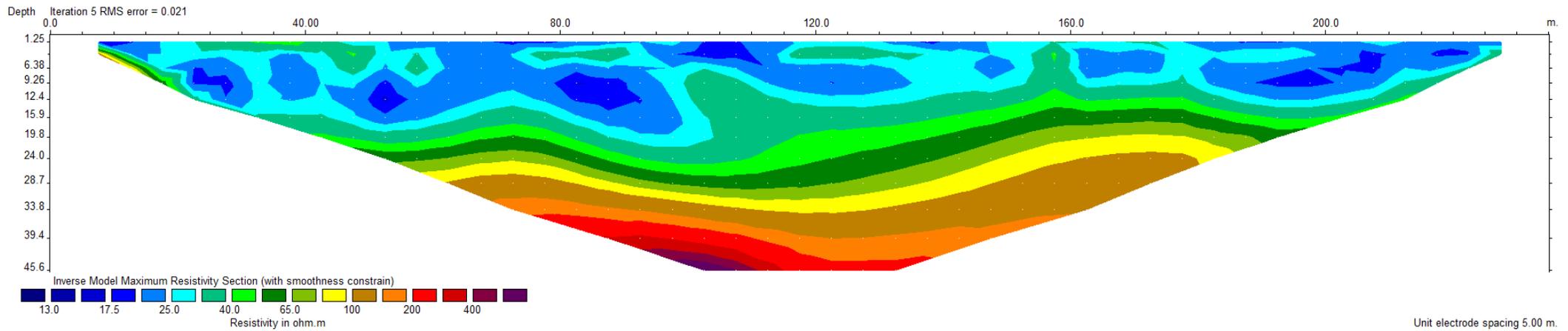
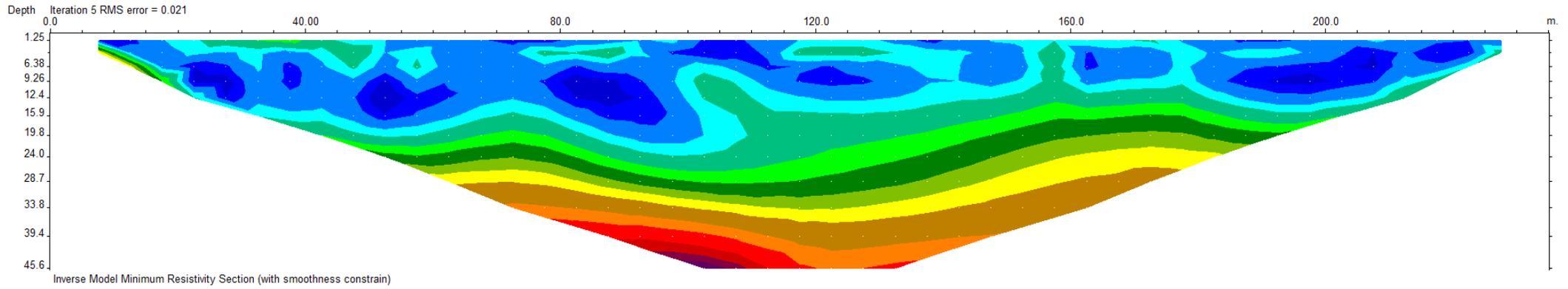
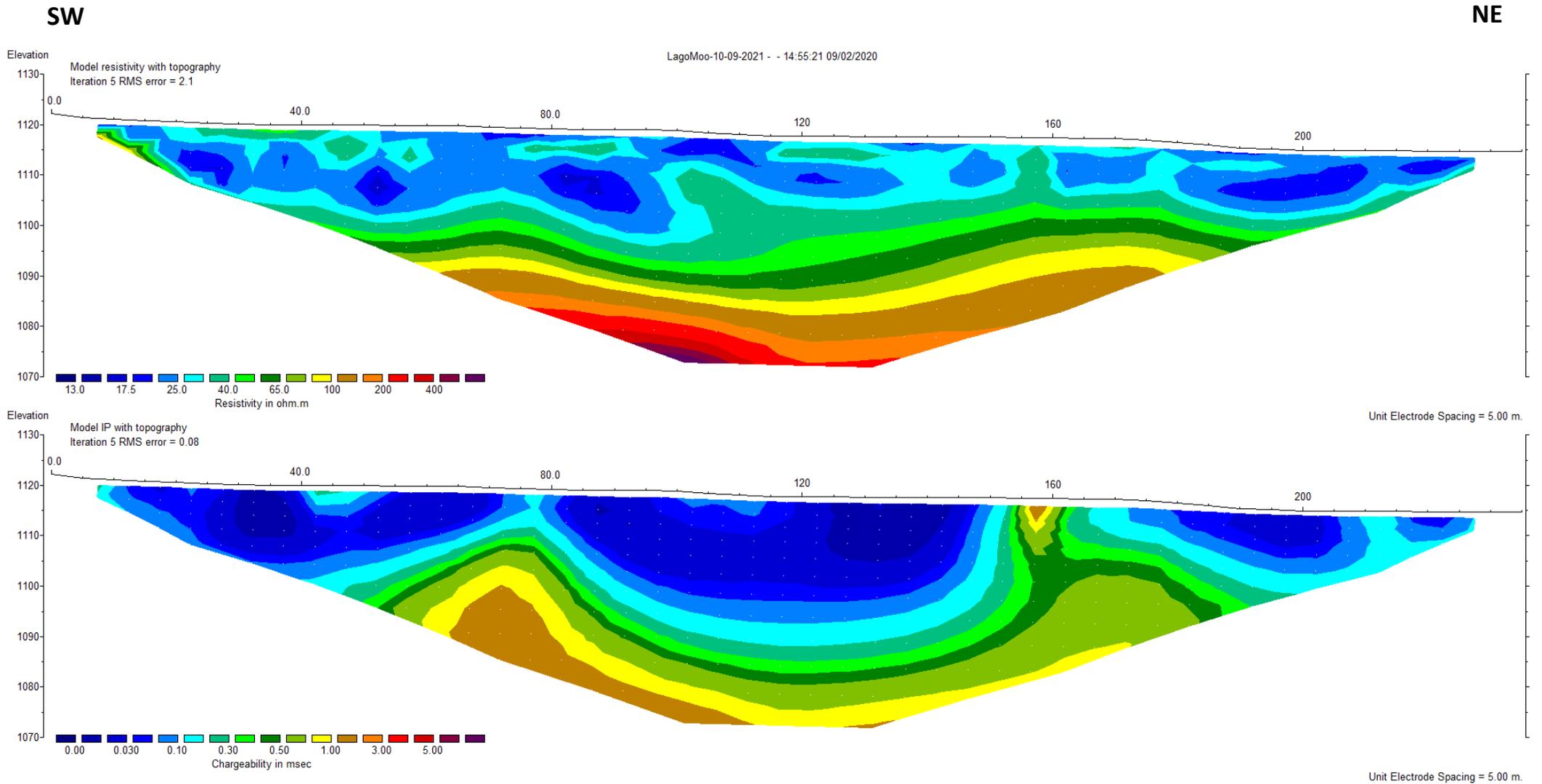


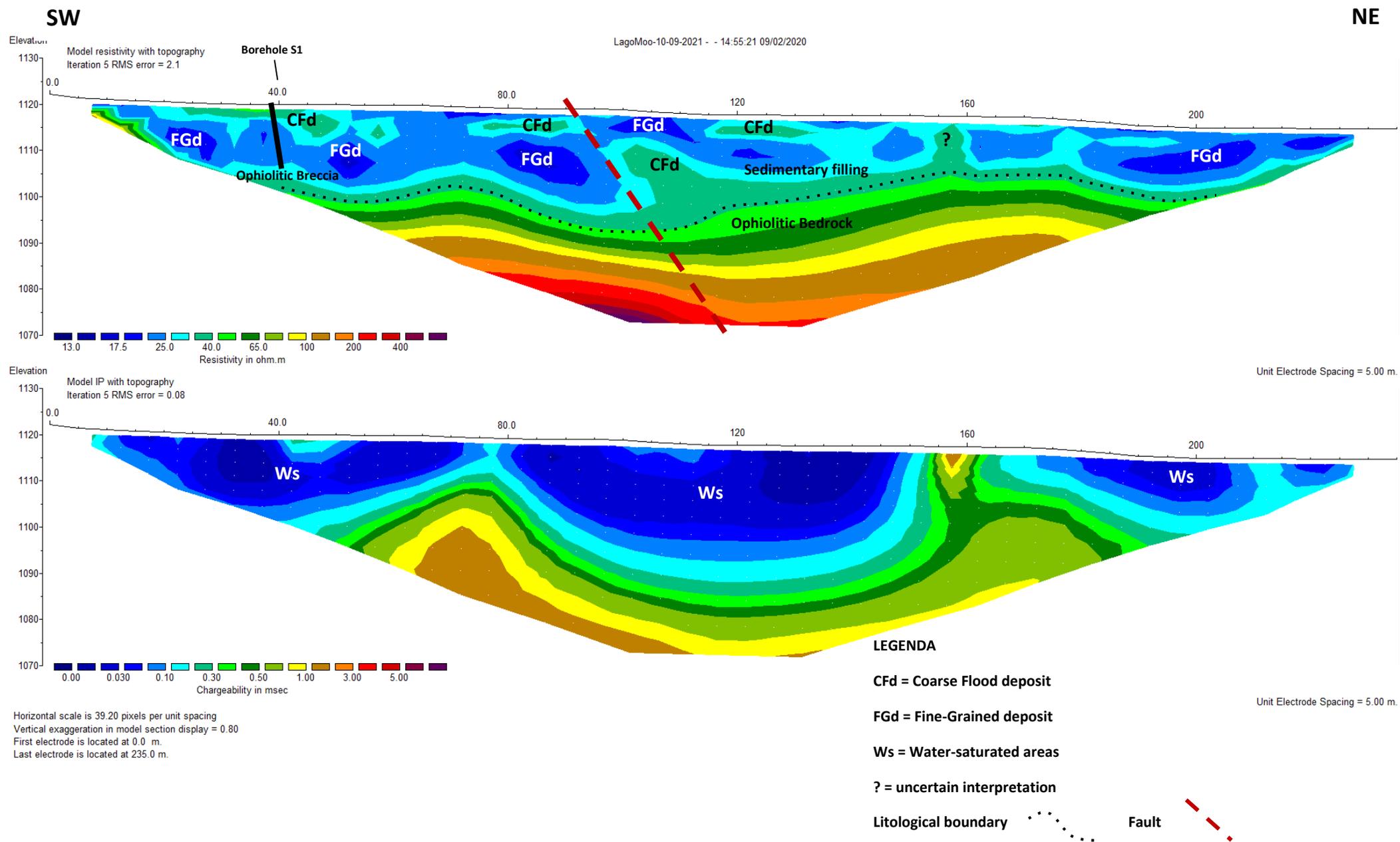
Figure S10. ERT L1 Comparison between min and max resistivity models



Horizontal scale is 39.20 pixels per unit spacing
 Vertical exaggeration in model section display = 0.80
 First electrode is located at 0.0 m.
 Last electrode is located at 235.0 m.

Figure S11. ERT L1 Comparison between resistivity and chargeability

Figure S12. ERT L1 Comparison between resistivity and chargeability and interpretation



Chapter 2: T1 and T2 undisturbed sediment cores

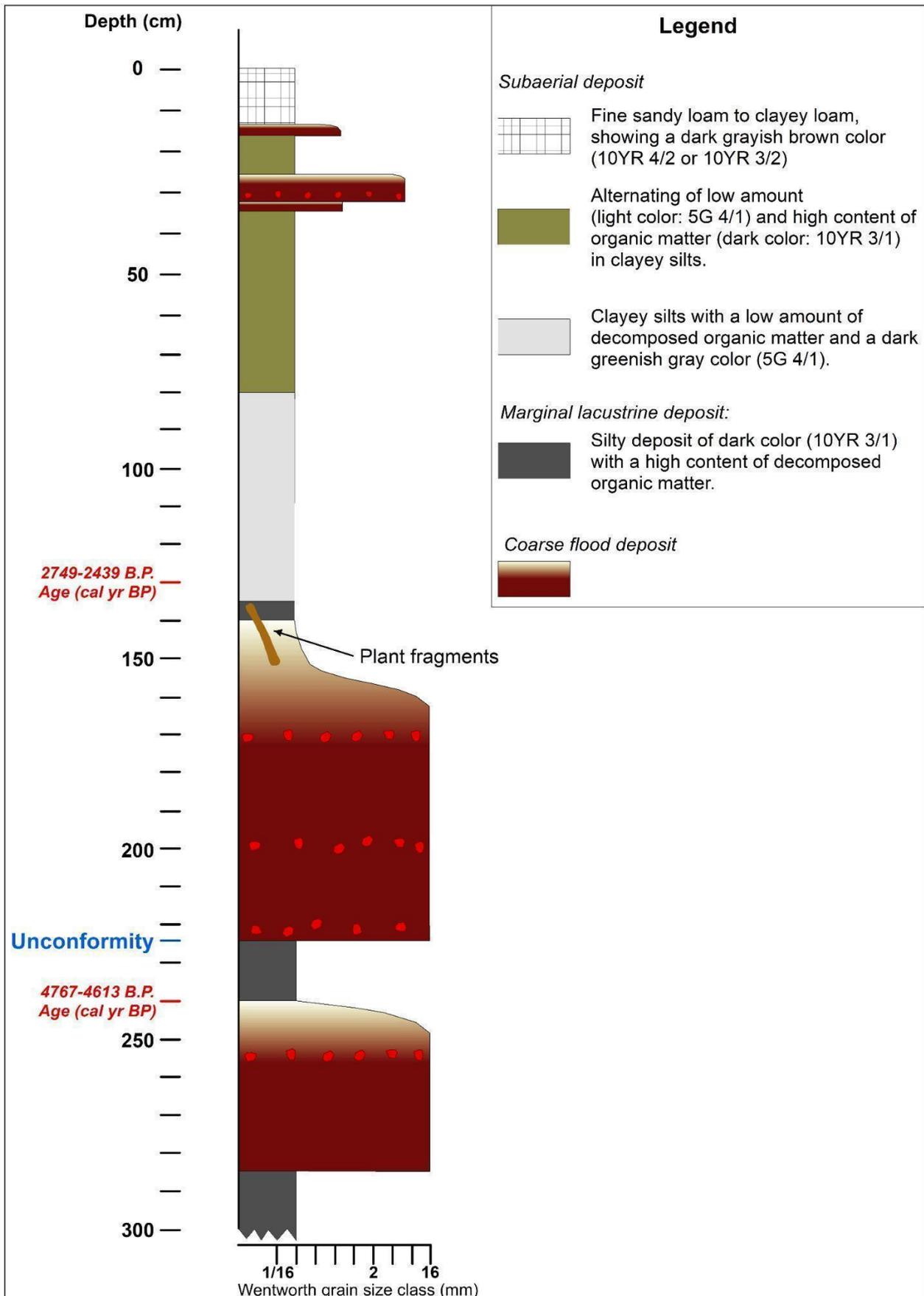


Figure S13. T1 core: main sedimentological features and lithofacies characterization.

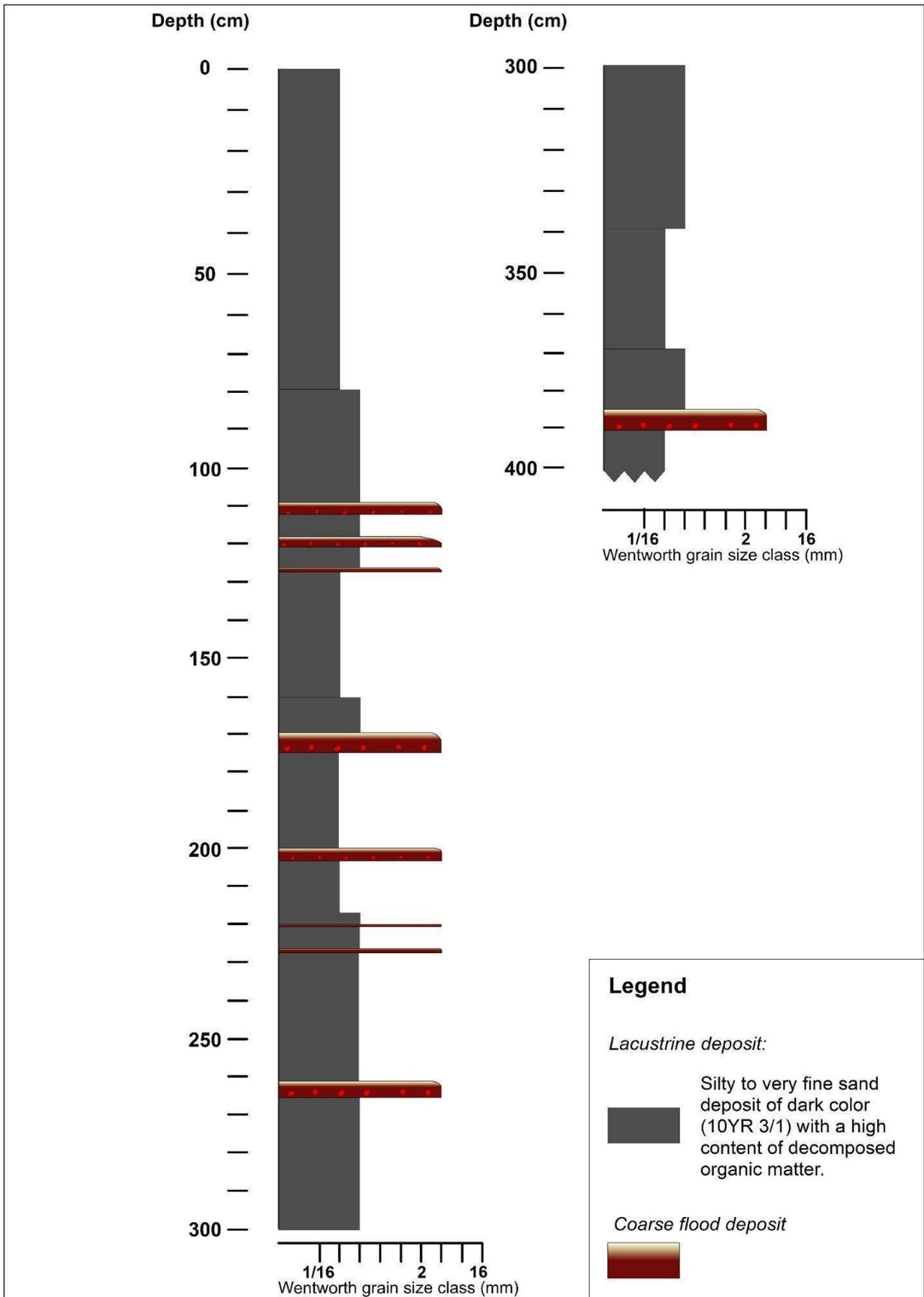


Figure S14. T2 core: main sedimentological features and lithofacies characterization.

Chapter 3: Radiocarbon data analysis T1

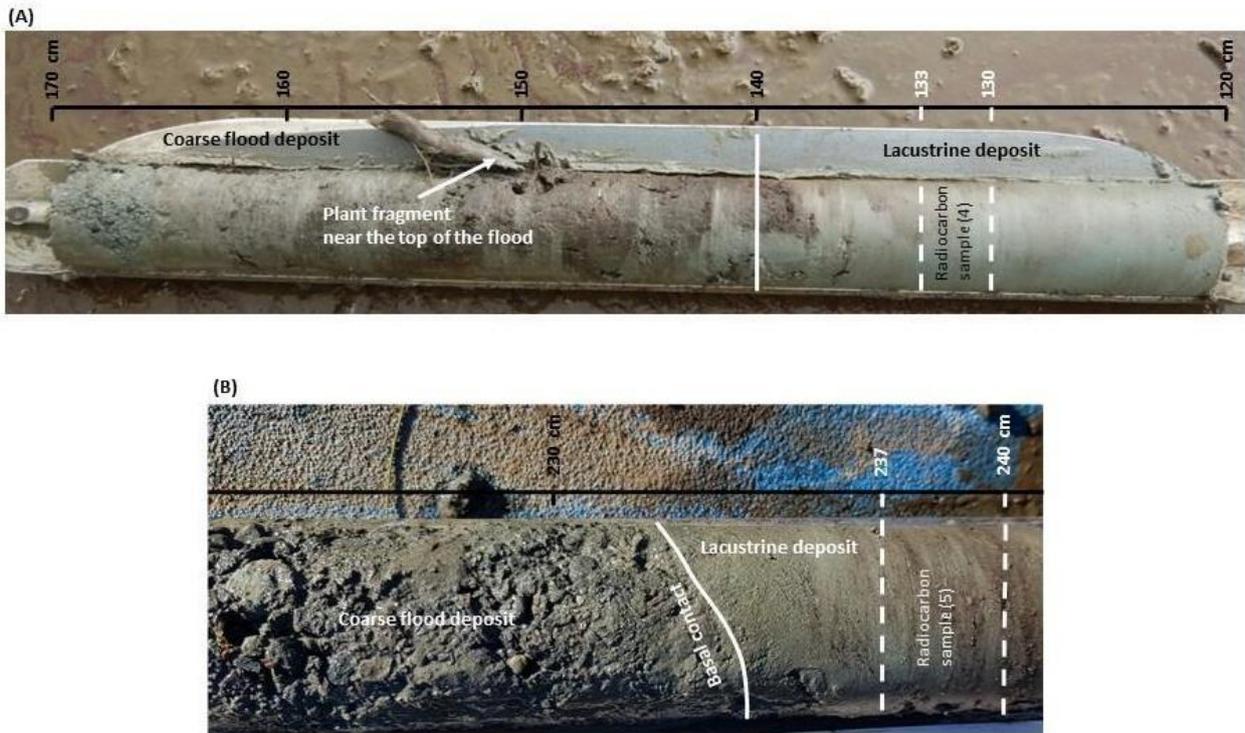
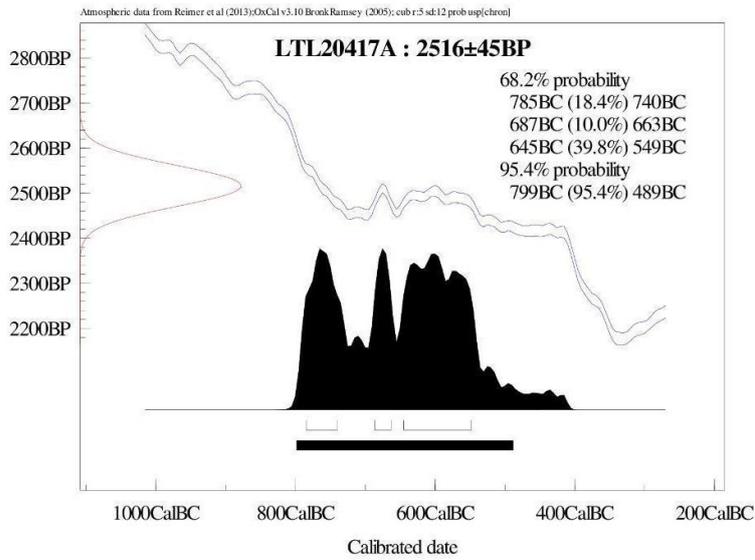


Figure S15. T1 core: position of the sampled at the depth between 130-133 cm for radiocarbon dating (A) and between 237-240 cm (B).

Label code	T1 core code	Core depth (cm)	Material	Conventional age (year B.P.)	Calibrated age B.P. ($\pm 2\sigma$)	Calibrated range BC/AD ($\pm 2\sigma$)
LTL20417A	4	130-133	Peaty deposit	2516 \pm 45	2749-2439	799BC (95.4%) 489BC
LTL20418A	5	237-240	Peaty deposit	4213 \pm 45	4767-4613	2907BC (32.4%) 2833 BC 2817BC (63.0%) 2663BC

Table S2. Full list of Radiocarbon sample age and description details.



Calibrazione della data convenzionale al radiocarbonio del campione LTL20417A, Pian Vallese, T1, camp. 5, 130-133 cm.

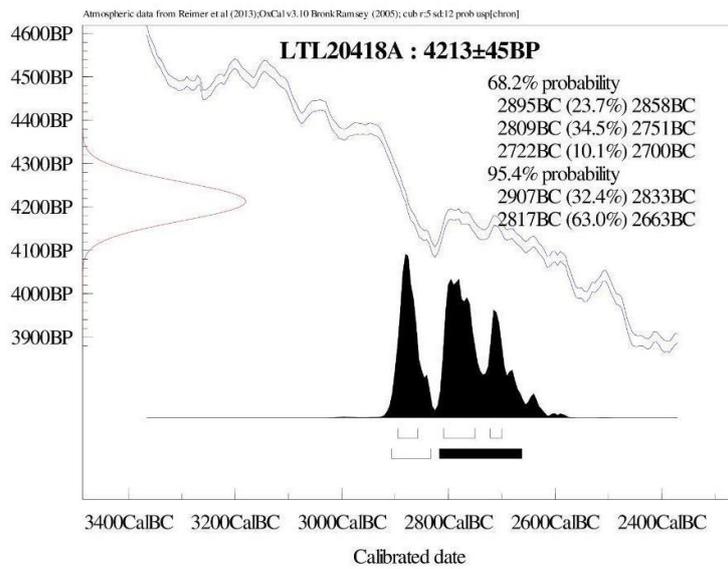


Figure S16. Calibration of the conventional radiocarbon date of samples LTL20417A and LTL20418A.