Hydrogeology Journal – Electronic Supplementary Material (ESM1)

Use of electrical resistivity tomography to reveal the shallow freshwater-saline interface in The Fens coastal groundwater, eastern England (UK)

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Contents

Introduction

This ESM document provides

1. the interpreted stratigraphic code records (Section A) to accompany section '*Stratigraphy*' in the main article;
2. the interpreted water level, freshwater-saline boundary and freshwater lens from the raw ERT data (Sections B1 & B2) to accompany section '*Electro resistivity tomography*' in the main article.
3. The geostatistical code used to produce Figure 4 of the main article (Section C);
4. All winter ERT survey scans.
5. All summer ERT survey scans.
6. The variograms from which Figure 4 of the main article was calculated (Section F);
7. The accompanying variance maps for the main article's Figures 5 a,b,d and e.

Other files attached to this article as further supplementary information include the raw ERT data files as csv files. See ESM2.

Section A: Stratigraphic Core Records Interpreted from British Geological Survey Data

Borehole	Lon	Lat	Water (m bgl)	Clay Base (m)	Silt Base (m)	Sand Base (m)
TF43SW1	541310	332030		59.74	0	18.9
TF42NE1	546650	329390		43.5	20.13	0
TF42NW10	542400	328100		39	14.5	20.05
TF42SW4	542980	323260		33.22	14.02	17.07
TF42SE23	548065	320820		30.1	9.4	22.1
TF32NW18	533910	327190	2.4	0	4.5	13.7
TF41NW29	541500	319800		60	0	15
TF42SW7	542320	321200		59.43	0	16.76
TF42SW35	541360	324450	5	30	8.5	23.1
TF32SE43	538980	324890	2.3	0	10.6	14.95
TF32SE42	538970	324870		0	10.7	14.8
TF32SE46	538940	324880	2	0	8.4	14
TF32SE45	538940	324900	2.1	0	10.4	14.8
TF32SE44	538960	324900	2.3	0	10.6	14.95
TF42SW11	541218	324171	2.9	0	8.8	15
TF42SW15	543638	321782	2.3	0	0	12
TF42SE11	545220	322030	1.86	22	0	16
TF42SE15	546852	321109	2.8	0	0	12
TF42SE20	547259	321000	3.35	0	0	10.5
TF42SE21	548000	320830		0	5	18.7
TF42SE22	548090	320916		28.05	0	24.8
TF42SE25	548130	320950		27.55	0	22.7
TF42SE4	547990	321050	4.5	16	0	15
TF42SE1	548030	321110		20	4.6	14.6
TF41NE2	545080	317760		25.91	5.49	22.51
TF41NE1	545100	317700		0	7.62	21.34
TF41NE5	546450	317250	3	0	4.27	15.39
TF41NE18	546600	319230		22	4.5	20
TF32SE17	536370	324720	2.75	9	0	0
TF32SE16	535900	324400		9.14	0	3.35
TF41NE6	546070	317210		0	0	18.29
TF41NE7	545810	317220	3.05	0	5.64	12.19
TF41NE8	545420	317240	1.22	0	0	12.19
TF41NE9	545080	317260	3.05	0	0	12.19
TF41NW1	544650	317280	4.57	0	11.89	12.19
TF41NW2	544370	317290	0.91	5.49	12.19	0
TF41NW3	544070	317310	3.05	6.1	11.89	13.14
TF41NW4	543710	317520	1.71	0	12.19	6.71
TF41NW5	543370	317730	3.66	5.79	15.24	8.23
TF41NW6	543200	317900	2.13	6.1	0	10.67
TF41NW7	542960	318150	1.52	6.71	0	13.41
TF41NW8	542680	318430	1.68	6.71	0	13.41
TF41NW9	542460	318650	0.91	5.79	9.22	12.19
TF41NW10	542220	318900	3.05	1.68	13.72	0
TF41NW11	541900	319220		5.18	11.13	12.95
TF41NW12	541730	319390	1.68	1.75	12.8	13.41
TF41NW13	541450	319680		5.18	0	13.41

TF41NW14	541230	319900		1.52	12.19	0
TF42SW1	541010	320110	2.44	2.29	4.27	12.19
TF42SW2	540660	320240	1.52	0	10.36	12.19
TF42SW3	540270	320380	1.52	0	7.92	12.19
TF32SE1	539940	320500		1.22	0	12.19
TF32SE2	539540	320630	1.68	0	6.1	12.95
TF32SE3	539230	320740	2.13	0	12.19	0
TF32SE4	538880	320860	2.13	2.44	0	14.17
TF32SE5	538680	320970	1.45	6.25	8.84	12.42
TF32SE6	538240	321090	1.83	0	12.19	0
TF32SE12	537870	321220		12.19	10.36	0
TF32SE7	537590	321310	2.13	12.19	4.57	10.06
TF32SE8	537290	321420	1.83	3.89	7.92	12.19
TF32SE9	537020	321510	1.83	1.37	4.88	12.19
TF32SE10	536750	321750		2.13	8.84	12.19
TF32SE11	536430	322020	1.83	0	12.19	0
TF32SE13	535850	322520	1.52	1.98	4.27	12.19
TF32SE14	535550	322780		1.83	7.16	12.8
TF32SE15	535240	323050	1.83	2.51	12.19	0
TF32SW7	534980	323270	1.22	0	12.19	0
TF32SW2	534660	323560		7.16	0	12.5
TF32SW3	534460	323740	1.83	6.25	12.95	0
TF32SW4	534310	324070	2.13	0	12.19	0
TF32SW5	534190	324340		0	12.19	0
TF32SW6	534070	324640	0.91	0	2.74	12.19
TF32NW1	533810	325230	1.83	0	12.19	0
TF32NW2	533470	325350	1.83	0	3.05	12.19
TF32NW3	533190	325440	1.83	3.05	12.19	0
TF32NW4	532880	325550		0	12.19	0
TF32NW5	532580	325650		3.05	0	12.19
TF32NW7	531950	325880	1.22	0	1.98	12.19
TF32NW8	531710	326190		0	2.13	12.19
TF32NW9	531470	326510	1.52	0	1.07	11.13
TF32NW10	531230	326810	1.52	0	0	12.19
TF32NW11	531010	327090		0	0	12.19
TF32NW6	530790	327410	2.13	1.22	0	11.89
TF32NW14	530570	327700	1.83	0	0	12.5
TF32NW12	530350	327970	1.52	0	2.13	12.27
TF32NW13	530130	328250	2.13	0	0	12.19
TF22NE9	529940	328500	1.52	0	5.41	12.14
TF22NE10	529710	328800		0	1.83	12.19
TF22NE13	529050	329660		1.22	0	12.19
TF22NE12	528970	329990	0.91	0	3.05	12.19
TF23SE10	528660	330190	1.52	0	0	12.19
TF22NE72	529400	325244	0.91	14.5	0	17
TF22NE71	528992	325255	1.52	13	0	0
TF22SE62	528387	324781	2	13.7	0	16.5
TF22SE61	528079	324481	2.3	12	0	15.8
TF22SE4	526490	323240	9	18	0	0
TF22SE56	526440	323600	11.8	2.5	0	10

TF22SE27	526270	323780		3.96	0	15.54
TF22SE28	526200	323830	3.5	3.96	0	15.85
TF22SE26	526120	322840	3.04	10.97	0	14.33
TF32SW1	530520	324650	4.15	22.25	0	14.33
TF22SE8	528420	321800	5.47	0	0	7
TF32SE36	538590	320550	2.13	3.05	0	15.72
TF31NE8	538550	319220		16.5	0	13.3
TF31NE7	538600	319130		0	0	9
TF31NE5	539550	319530		7	0	18.9
TF31NE6	539570	319540		7.1	0	15
TF41NW16	543620	316560		9.14	0	19.51
TF41SE4	545670	313770		0	0	10.59
TF41NE60	546272	316191		23.8	0	21.05
TF41NE51	546057	316256		0	0	10.65
TF41NE55	546186	316083	3.2	0	0	10.65
TF41NE62	546333	316247	3.05	0	0	10.65
TF41NE54	546193	316283	3.05	0	0	18
TF41NE56	546192	316159	3.2	0	0	11.9
TF33SW1	531740	332260	3.05	12.5	0	15.24
TF41NW15/A	542570	315530	3.65	9.14	0	21.44
TF42NE15	549300	325600		44.5	0	28.6
TF42NE5	549520	326320	3.66	2.29	0	6.25
TF42NE2	549980	327120	3.15	24.2	0	16.75
TF42SW2	543930	331800		0	0	21.4
TF42NW2	541900	326510		0	1.94	18.4

Section B1: Inferred Water Level, Freshwater-Saline Boundary and Freshwater Lens in the Winter Season

Site	Corresponding BGS core	Lon	Lat	Elevation (MSL)	Water Level (m bgl)	Saline Level (m bgl)	Water Level (MSL)	Saline Level (MSL)	Freshwater Thickness (m)
MM01	TF42NE1	546835	329533	3.6	2.25	2.875	1.35	0.725	0.625
MM02	TF43SW2	543869	331928	3.2	2	2.875	1.2	0.325	0.875
MM03	TF43SW1	541298	332091	3.9	2	3.25	1.9	0.65	1.25
MM04	N/A	538907	333788	2.4	2.25	3.25	0.15	-0.85	1
MM05	TF42NE5	549465	326007	3.1	2.625	4.25	0.475	-1.15	1.625
MM06	TF42NE15	549385	325460	3.3	3	4.75	0.3	-1.45	1.75
MM07	N/A	544708	324856	3.4	2.75	5	0.65	-1.6	2.25
MM08	TF42NW10	543157	327331	3.6	2.875	4.75	0.725	-1.15	1.875
MM09	N/A	538456	329496	3.1	3.25	5.25	-0.15	-2.15	2
MM10	TF33SW11	533738	331501	3.8	3.125	5.5	0.675	-1.7	2.375
MM11	TF33SW1	532391	331995	3.5	2.875	5.375	0.625	-1.875	2.5
MM13	TF42SE21	547819	320649	4.1	2	3.75	2.1	0.35	1.75
MM14	TF42SE11	544849	321845	3.4	1.75	3.75	1.65	-0.35	2
MM15	TF42SW4	542407	323446	2.8	3.25	5.625	-0.45	-2.825	2.375
MM16	TF32NW18	533435	328227	4	2.625	4.75	1.375	-0.75	2.125
MM17	TF42SW35	541210	324146	3	4.25	5.5	-1.25	-2.5	1.25
MM18	TF32SE42	539327	324683	2.9	3.25	5.25	-0.35	-2.35	2
MM19a	TF41SE4	544237	313368	4.5	3.5	6.75	1	-2.25	3.25
MM19b	TF41SE4	544629	313785	4.2	3.625	6.75	0.575	-2.55	3.125
MM20	TF41NW15/A	544206	316687	2.4	3.625	5.25	-1.225	-2.85	1.625
MM23	TF31NW7	533911	319582	3.1	4.75	6.75	-1.65	-3.65	2
MM25	TF22SE26	525951	321761	1.6	5.25		-3.65	-4.65	
MM27	TF41NE5	545571	317371	3.9	3.25	4.75	0.65	-0.85	1.5
MM28	TF41NW4	544245	317468	3	2.625	3.75	0.375	-0.75	1.125
MM29	TF42SW1	540836	320187	2.6	1.75	4.75	0.85	-2.15	3
MM30	TF32SE7	539648	321467	2.6	1.875	4.25	0.725	-1.65	2.375
MM31	TF32SW3	534415	323631	2.3	1.625	4.25	0.675	-1.95	2.625
MM32	TF32NW8	532706	326699	3	2	4.5	1	-1.5	2.5

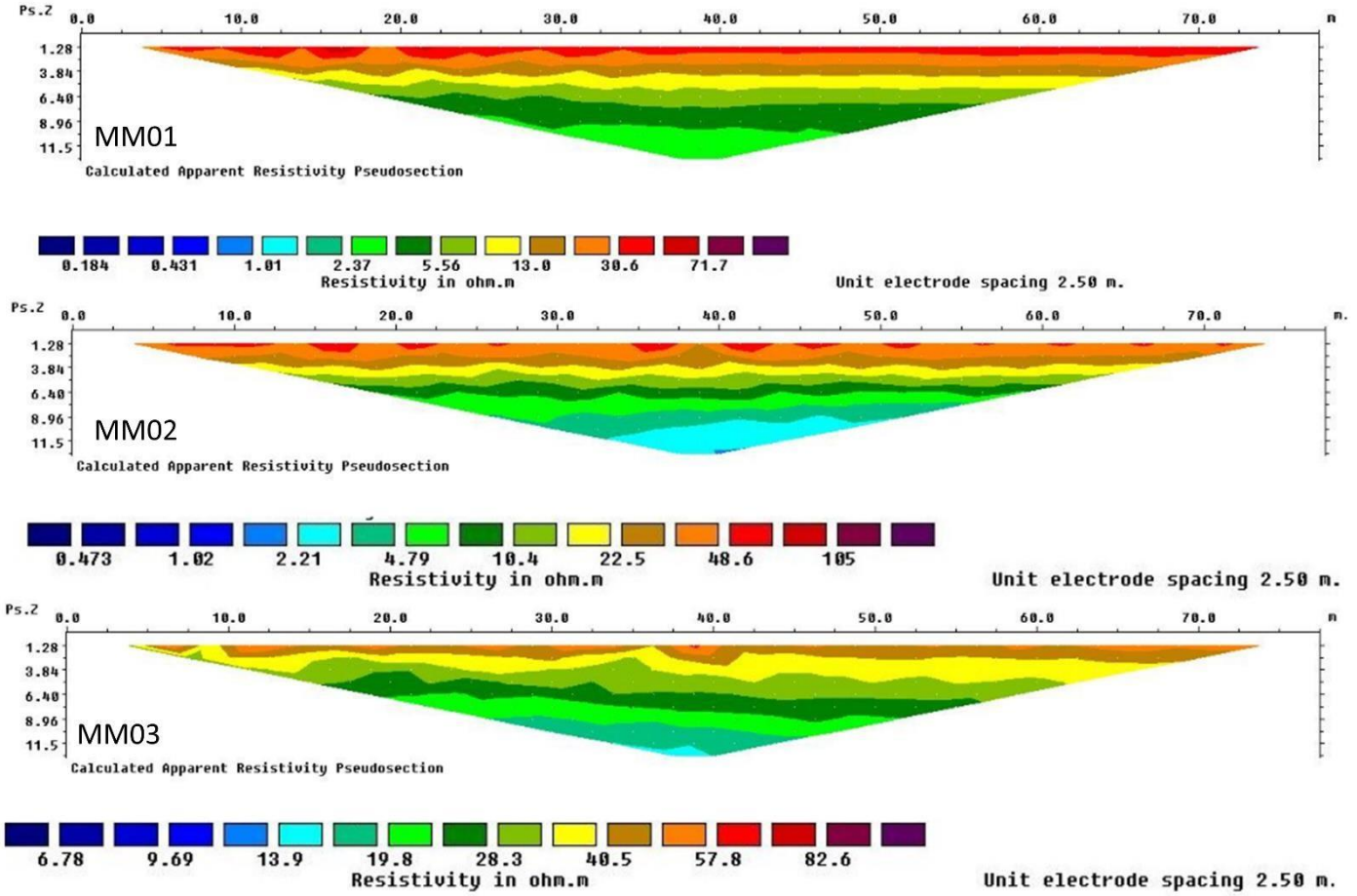
Section B2: Inferred Water Level, Freshwater-Saline Boundary and Freshwater Lens in the Summer Season

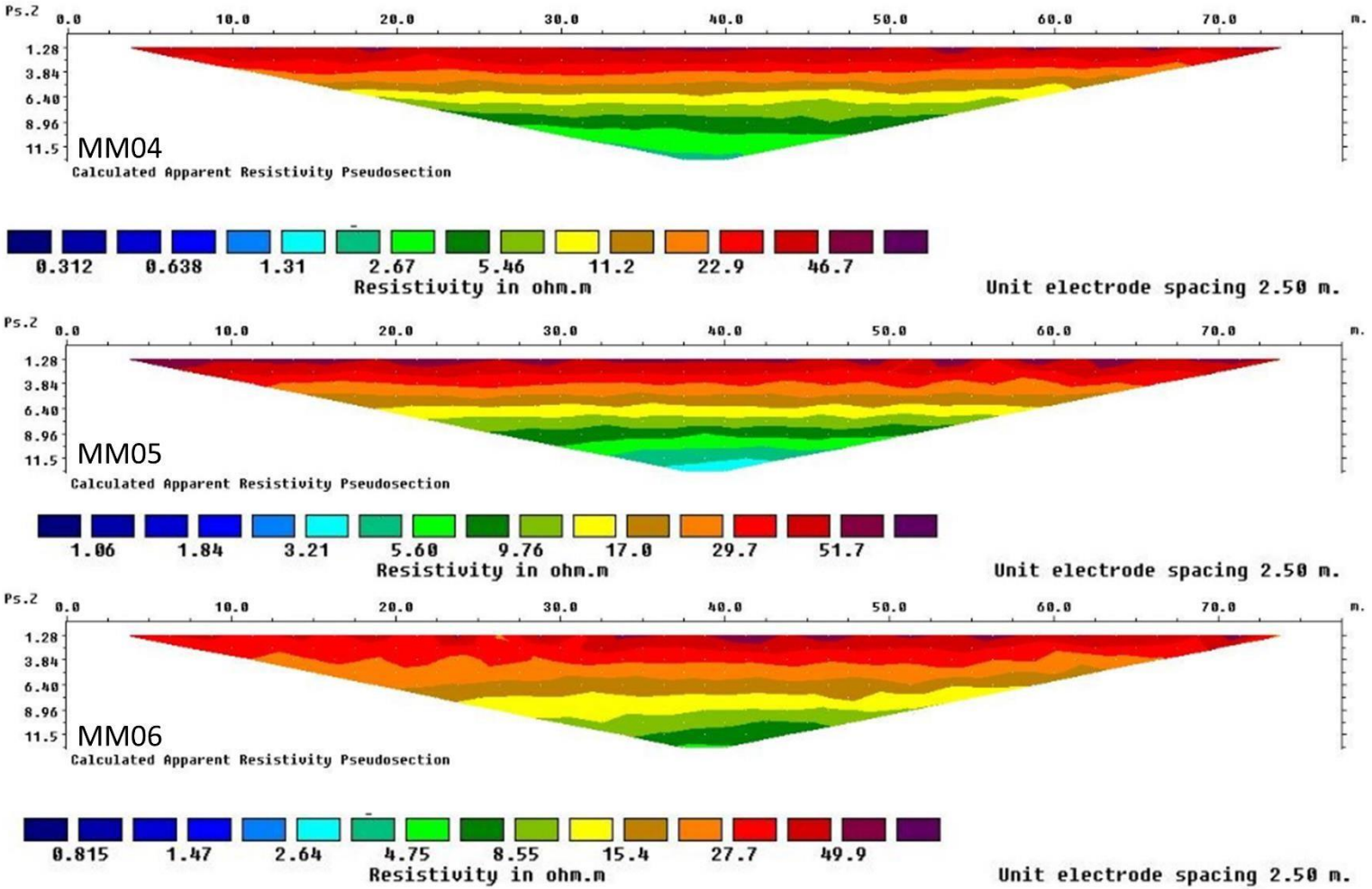
Site	Core	Lon	Lat	Elevation (MSL)	Water Level (m bgl)	Saline Level (m bgl)	Water Level (MSL)	Saline Level (MSL)	Freshwater Thickness (m)
MM01	TF42NE1	546835	329533	3.6	2	3.125	1.6	0.475	1.125
MM02	TF43SW2	543869	331928	3.2	2.125	3.05	1.075	0.15	0.925
MM03	TF43SW1	541298	332091	3.9	1.925	3.125	1.975	0.775	1.2
MM04	N/A	538907	333788	2.4	2.05	3.125	0.35	-0.725	1.075
MM05	TF42NE5	549465	326007	3.1	2.175	3.475	0.925	-0.375	1.3
MM06	TF42NE15	549385	325460	3.3	2.45	3.55	0.85	-0.25	1.1
MM07	N/A	544708	324856	3.4	2.85	4.45	0.55	-1.05	1.6
MM08	TF42NW10	543157	327331	3.6	3.125	4.75	0.475	-1.15	1.625
MM09	N/A	538456	329496	3.1	3.25	5.25	-0.15	-2.15	2
MM10	TF33SW11	533738	331501	3.8	2.875	5	0.925	-1.2	2.125
MM11	TF33SW1	532391	331995	3.5	3	4.75	0.5	-1.25	1.75
MM13	TF42SE21	547819	320649	4.1	3.375	5.25	0.725	-1.15	1.875
MM14	TF42SE11	544849	321845	3.4	3.375	5.75	0.025	-2.35	2.375
MM15	TF42SW4	542407	323446	2.8	3.075	5.375	-0.275	-2.575	2.3
MM16	TF32NW18	533435	328227	4	2.2	3.925	1.8	0.075	1.725
MM17	TF42SW35	541210	324146	3	1.875	4	1.125	-1	2.125
MM18	TF32SE42	539327	324683	2.9	3.25	5.625	-0.35	-2.725	2.375
MM19a	TF41SE4	544237	313368	4.5	2.75	4.75	1.75	-0.25	2
MM20	TF41NW15/A	544206	316687	2.4	3.425	5.25	-1.025	-2.85	1.825
MM23	TF31NW7	533911	319582	3.1	3.625	6.75	-0.525	-3.65	3.125
MM25	TF22SE26	525951	321761	1.6	3.6	6.25	-2	-4.65	2.65
MM27	TF41NE5	545571	317371	3.9	3.625	5.25	0.275	-1.35	1.625
MM28	TF41NW4	544245	317468	3	4.5	6.5	-1.5	-3.5	2
MM29	TF42SW1	540836	320187	2.6	5.25	6	-2.65	-3.4	0.75
MM30	TF32SE7	539648	321467	2.6	3.5	5	-0.9	-2.4	1.5
MM32	TF32NW8	532706	326699	3	2	4.75	1	-1.75	2.75

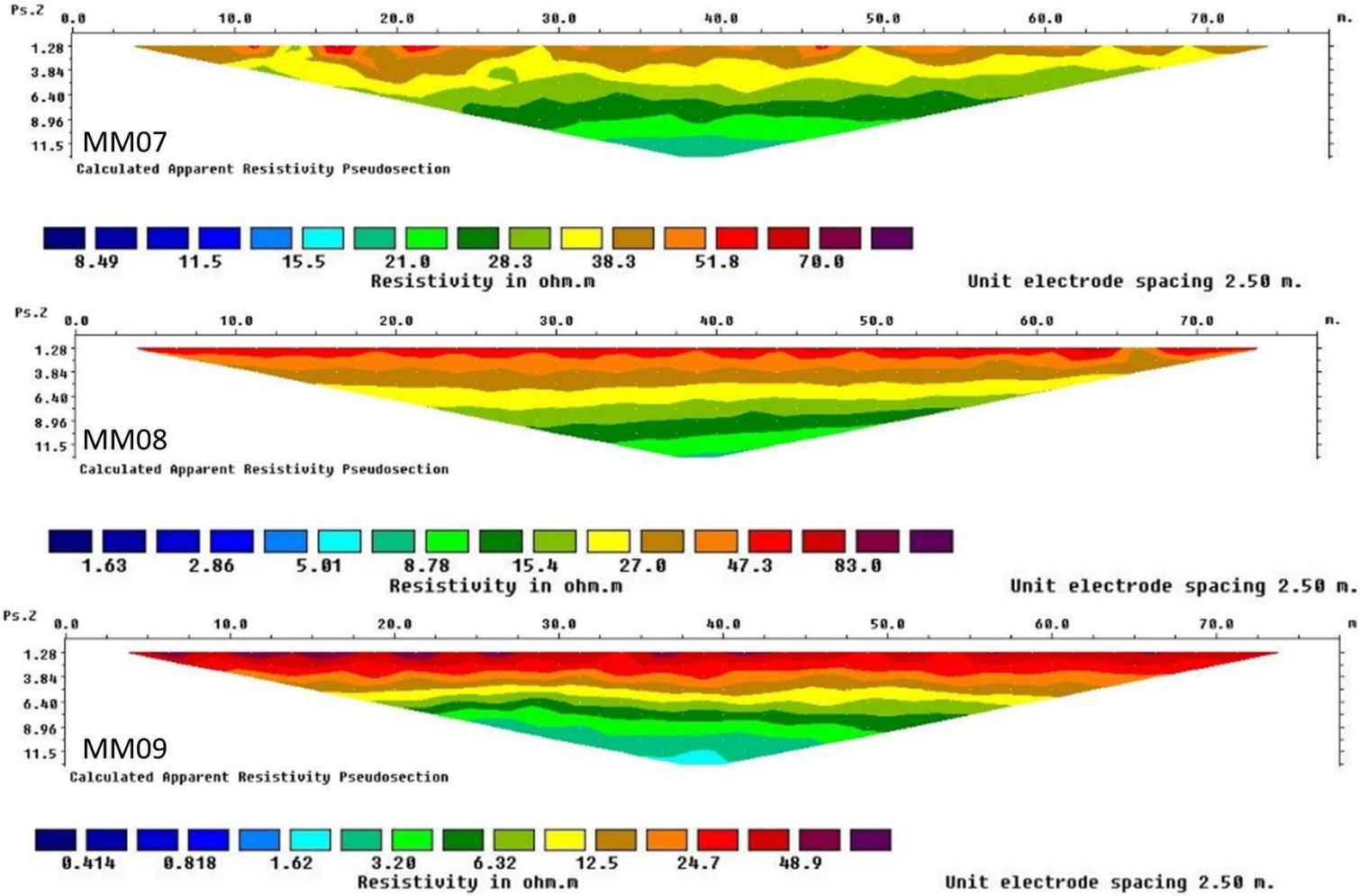
Section C: Geostatistical Analysis R Code

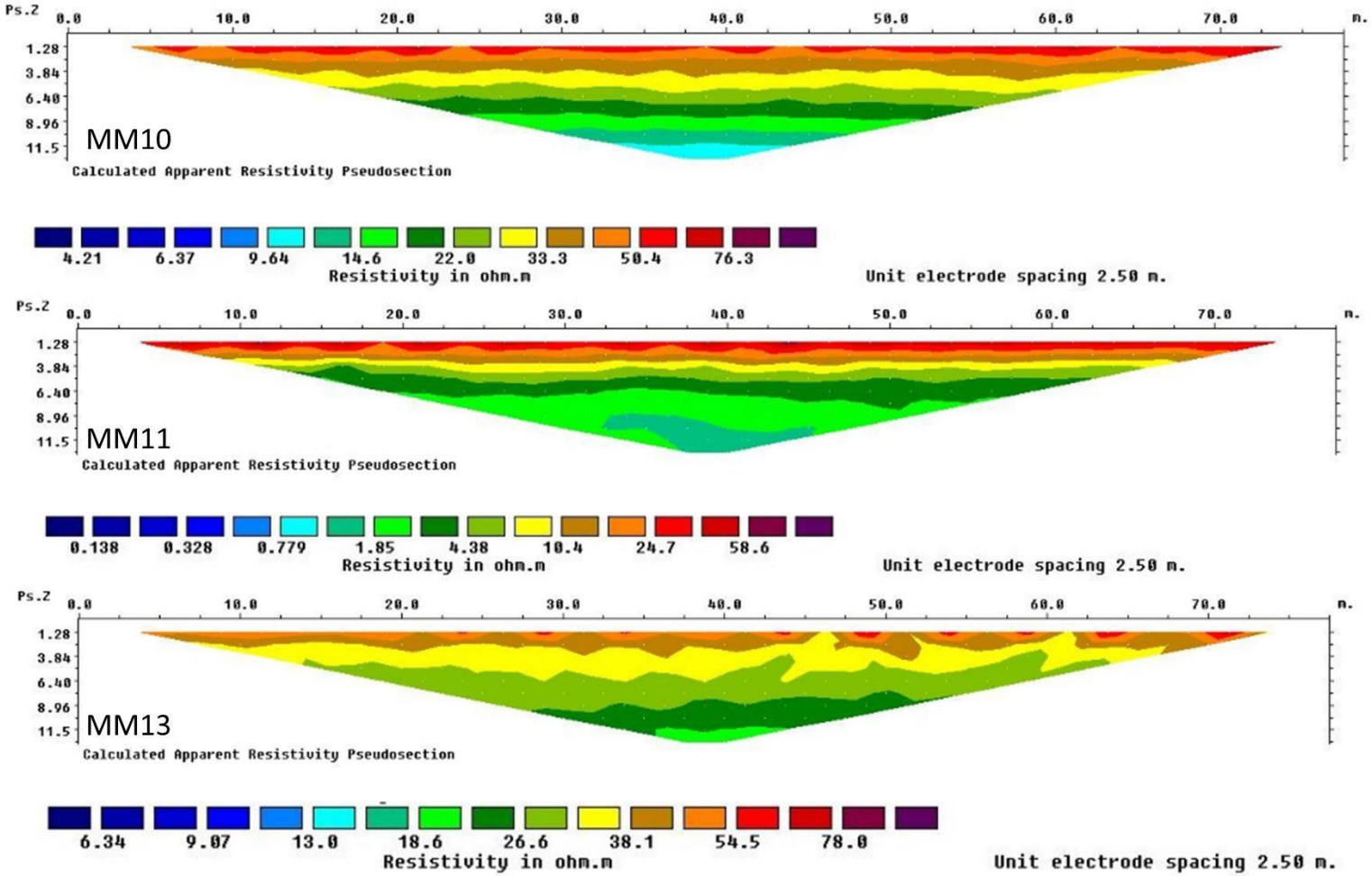
```
library(sp)
library(automap)
library(raster)

#Reads in the excel spreadsheet containing ERT raw results
Holbeach <- read.csv(file="Raw_ERT_Results", head=TRUE)  #converts x y data in the excel spreadsheet into
coordinates coordinates(Holbeach) = ~x+y

#Creates a grid within the coordinates displayed with a resolution of 50x50m
x.range <- as.integer(range(Holbeach@coords[,1]))
y.range <- as.integer(range(Holbeach@coords[,2]))
x.range <- as.integer(c(524749.9, 550670.1))
y.range <- as.integer(c(312453.9, 335566.1))
grd <- expand.grid(x=seq(from=x.range[1], to=x.range[2], by=50), y=seq(from=y.range[1], to=y.range[2],
by=50)) coordinates(grd) <- ~x+y gridded(grd) <- TRUE

#Kriges the ERT raw point data with one of the 3 models defined here
Water_Raster <- autoKrige(ERT_Raw_Depth_Data~1, Holbeach, grd, model = c("Sph","Exp","Gau"))
plot(Water_Raster) summary(Water_Raster)

str(Water_Raster)
data<-data.frame(Water_Raster$krige_output@coords,                Water_Raster$krige_output@data$var1.pred,
                 Water_Raster$krige_output@data$var1.var,
Water_Raster$krige_output@data$var1.stdev) names(data)<-c("x","y","pred","var","stdev") head(data)
coordinates(data) = ~x+y gridded(data)<-TRUE dat_rast<- raster(data)

writeRaster(dat_rast, filename = "Raster_File_Name",overwrite=TRUE)
```

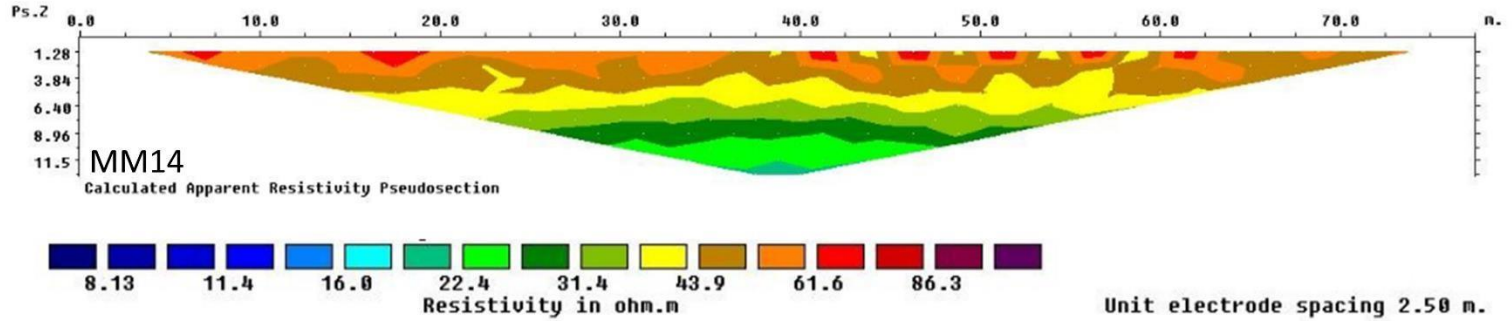
Section D: Winter ERT Survey Scans

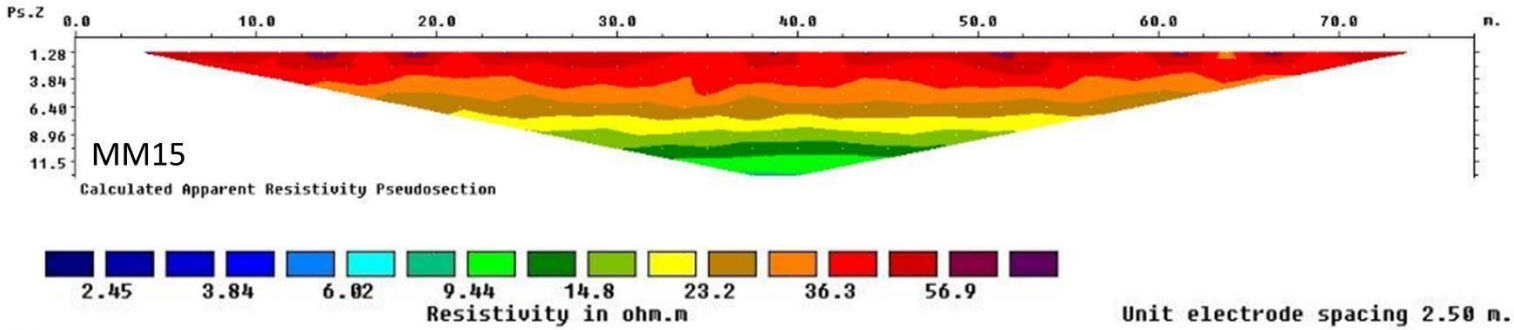



Ps.2
0.0
10.0
20.0
30.0
40.0
50.0
60.0
70.0
m.
1.28
3.84
6.40
8.96
11.5
MM04
Calculated Apparent Resistivity Pseudosection
0.312
0.638
1.31
2.67
5.46
11.2
22.9
46.7
Resistivity in ohm.m
Unit electrode spacing 2.50 m.
Ps.2
0.0
10.0
20.0
30.0
40.0
50.0
60.0
70.0
m.
1.28
3.84
6.40
8.96
11.5
MM05
Calculated Apparent Resistivity Pseudosection
1.06
1.84
3.21
5.60
9.76
17.0
29.7
51.7
Resistivity in ohm.m
Unit electrode spacing 2.50 m.
Ps.2
0.0
10.0
20.0
30.0
40.0
50.0
60.0
70.0
m.
1.28
3.84
6.40
8.96
11.5
MM06
Calculated Apparent Resistivity Pseudosection
0.815
1.47
2.64
4.75
8.55
15.4
27.7
49.9
Resistivity in ohm.m
Unit electrode spacing 2.50 m.


Ps.Z
0.0
10.0
20.0
30.0
40.0
50.0
60.0
70.0
m.
1.28
3.84
6.40
8.96
11.5
MM07
Calculated Apparent Resistivity Pseudosection
8.49
11.5
15.5
21.0
28.3
38.3
51.8
70.0
Resistivity in ohm.m
Unit electrode spacing 2.50 m.
Ps.Z
0.0
10.0
20.0
30.0
40.0
50.0
60.0
70.0
m.
1.28
3.84
6.40
8.96
11.5
MM08
Calculated Apparent Resistivity Pseudosection
1.63
2.86
5.01
8.78
15.4
27.0
47.3
83.0
Resistivity in ohm.m
Unit electrode spacing 2.50 m.
Ps.Z
0.0
10.0
20.0
30.0
40.0
50.0
60.0
70.0
m
1.28
3.84
6.40
8.96
11.5
MM09
Calculated Apparent Resistivity Pseudosection
0.414
0.818
1.62
3.20
6.32
12.5
24.7
48.9
Resistivity in ohm.m
Unit electrode spacing 2.50 m.


Ps.Z
0.0
10.0
20.0
30.0
40.0
50.0
60.0
70.0
m.
1.28
3.84
6.40
8.96
11.5
MM10
Calculated Apparent Resistivity Pseudosection
4.21
6.37
9.64
14.6
22.0
33.3
50.4
76.3
Resistivity in ohm.m
Unit electrode spacing 2.50 m.
Ps.Z
0.0
10.0
20.0
30.0
40.0
50.0
60.0
70.0
m.
1.28
3.84
6.40
8.96
11.5
MM11
Calculated Apparent Resistivity Pseudosection
0.138
0.328
0.779
1.85
4.38
10.4
24.7
58.6
Resistivity in ohm.m
Unit electrode spacing 2.50 m.
Ps.Z
0.0
10.0
20.0
30.0
40.0
50.0
60.0
70.0
m.
1.28
3.84
6.40
8.96
11.5
MM13
Calculated Apparent Resistivity Pseudosection
6.34
9.07
13.0
18.6
26.6
38.1
54.5
78.0
Resistivity in ohm.m
Unit electrode spacing 2.50 m.


Ps.Z
0.0
10.0
20.0
30.0
40.0
50.0
60.0
70.0
m.
1.28
3.84
6.40
8.96
11.5
MM14
Calculated Apparent Resistivity Pseudosection
8.13
11.4
16.0
22.4
31.4
43.9
61.6
86.3
Resistivity in ohm.m
Unit electrode spacing 2.50 m.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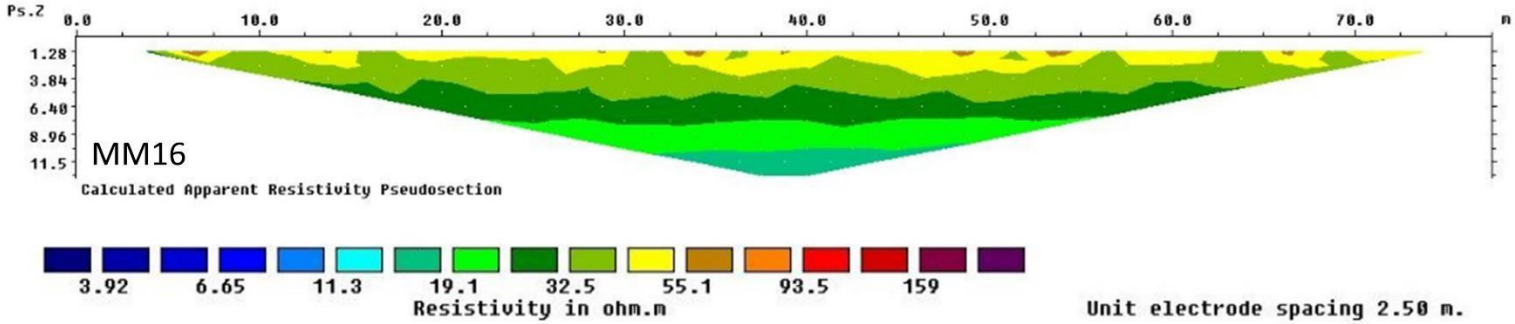
30.0
40.0
50.0
60.0
70.0
m.
1.28
3.84
6.40
8.96
11.5
MM15
Calculated Apparent Resistivity Pseudosection
2.45
3.84
6.02
9.44
14.8
23.2
36.3
56.9
Resistivity in ohm.m
Unit electrode spacing 2.50 m.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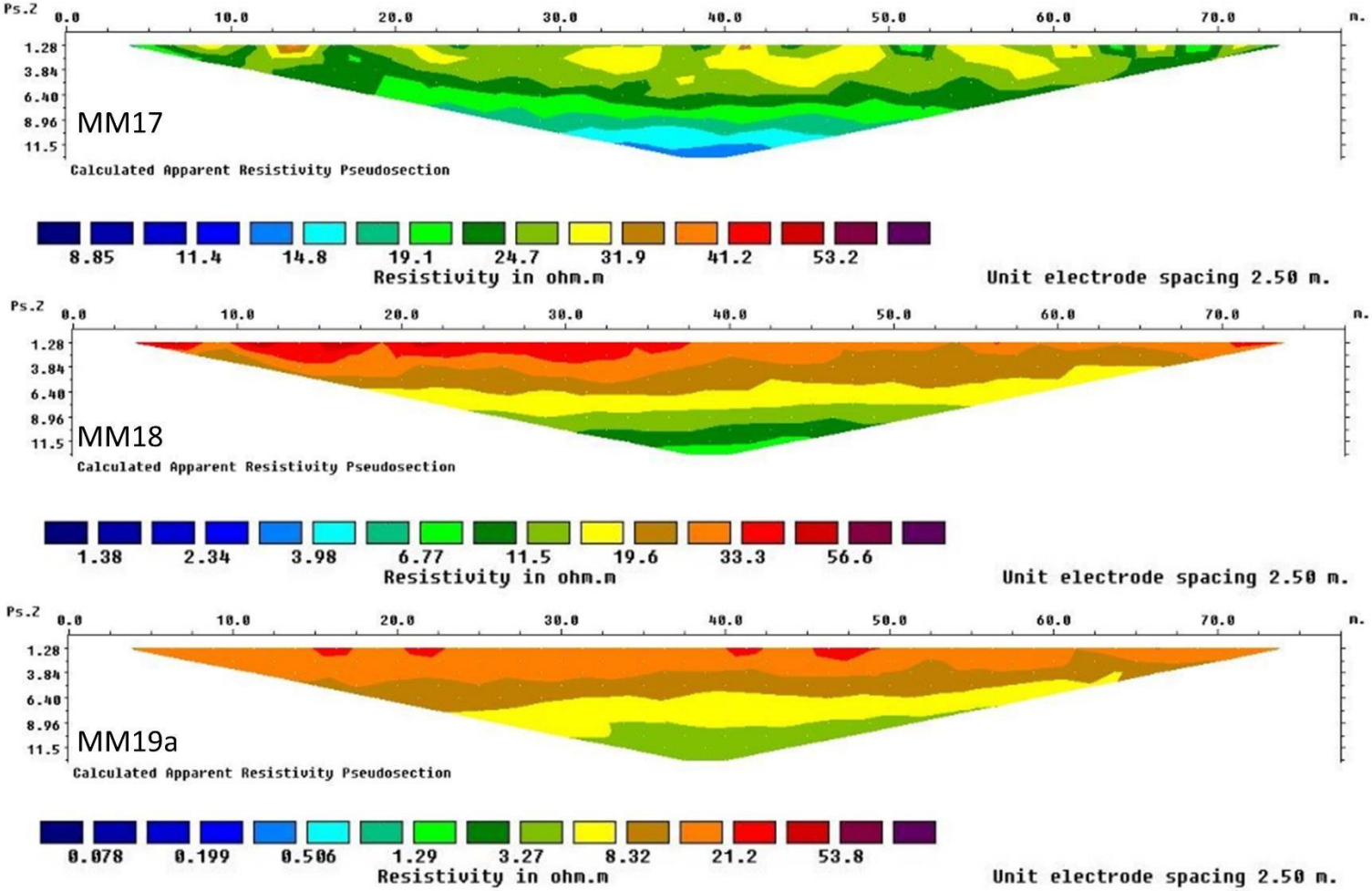
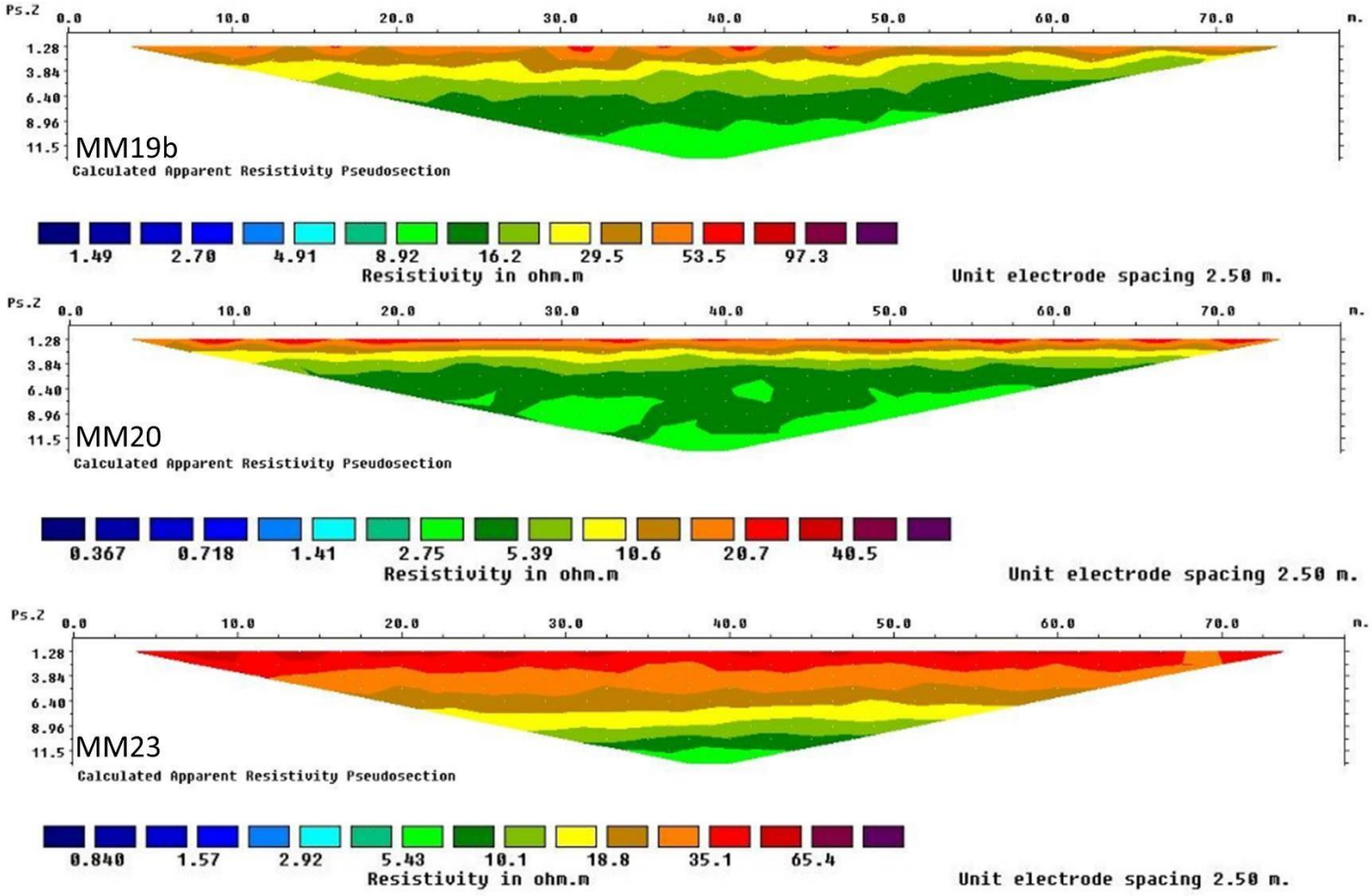
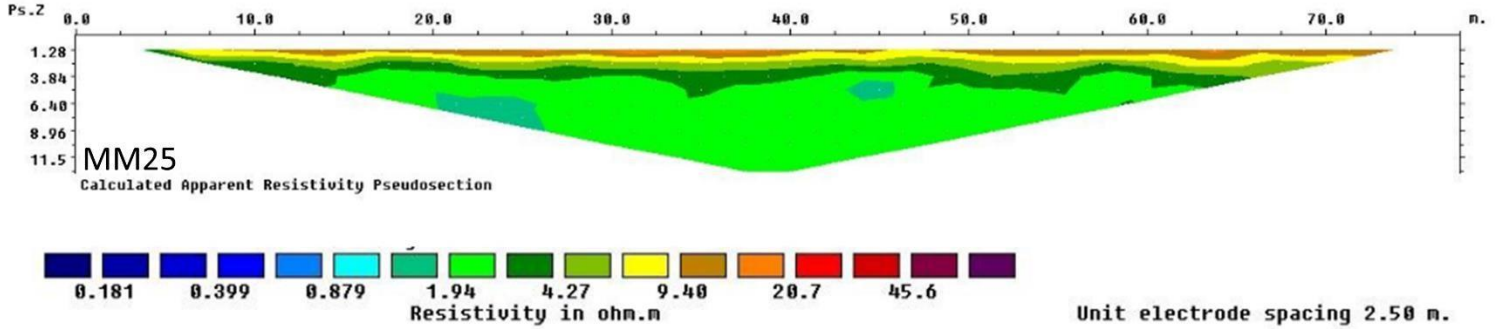
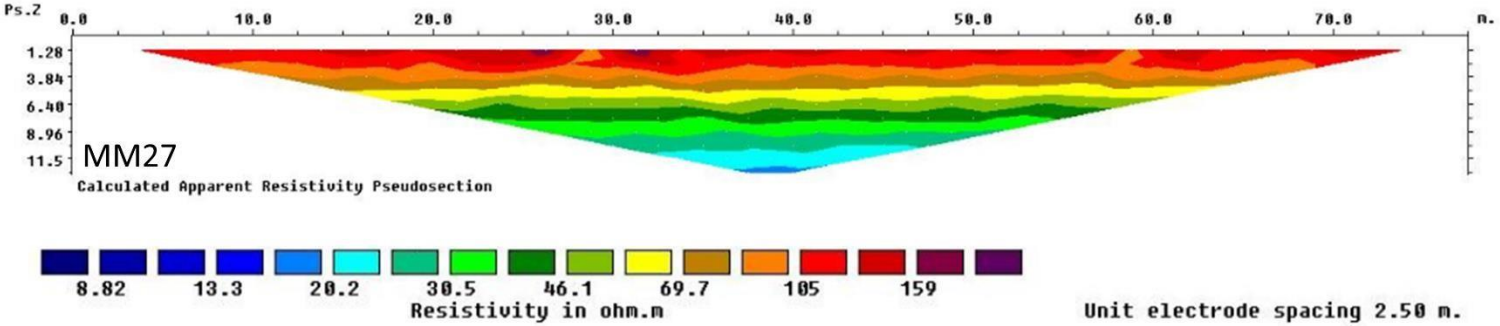
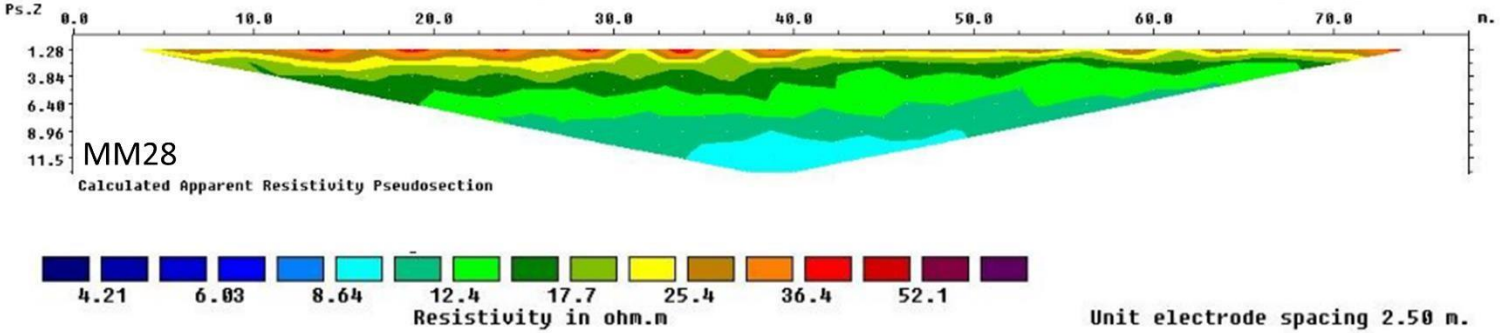
0.0
10.0
20.0
30.0
40.0
50.0
60.0
70.0
m
1.28
3.84
6.40
8.96
11.5
MM16
Calculated Apparent Resistivity Pseudosection
3.92
6.65
11.3
19.1
32.5
55.1
93.5
159
Resistivity in ohm.m
Unit electrode spacing 2.50 m.

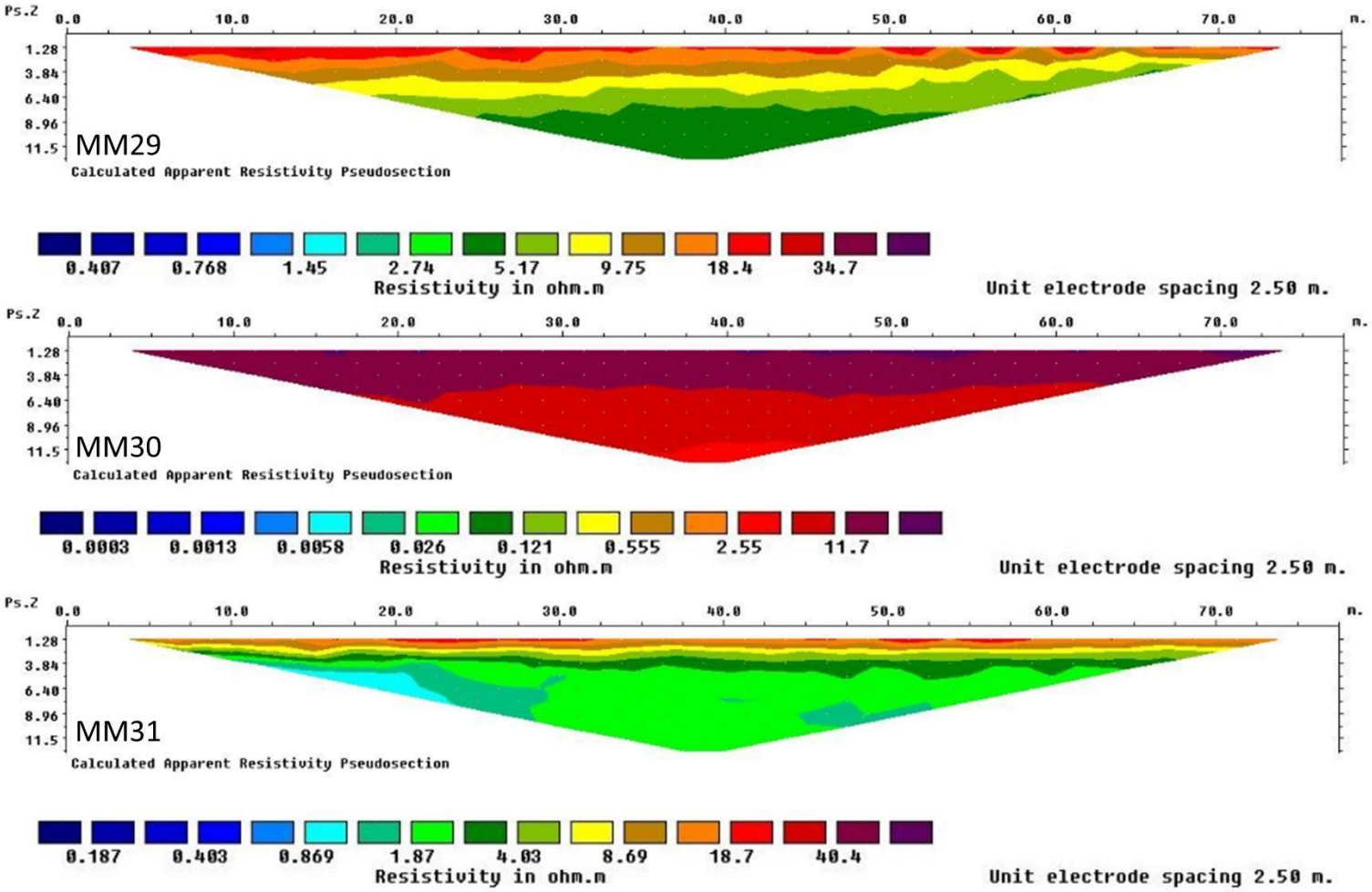

Ps.Z
0.0
10.0
20.0
30.0
40.0
50.0
60.0
70.0
m.
1.28
3.84
6.40
8.96
11.5
MM17
Calculated Apparent Resistivity Pseudosection
8.85
11.4
14.8
19.1
24.7
31.9
41.2
53.2
Resistivity in ohm.m
Unit electrode spacing 2.50 m.
MM18
Calculated Apparent Resistivity Pseudosection
1.38
2.34
3.98
6.77
11.5
19.6
33.3
56.6
Resistivity in ohm.m
Unit electrode spacing 2.50 m.
MM19a
Calculated Apparent Resistivity Pseudosection
0.078
0.199
0.506
1.29
3.27
8.32
21.2
53.8
Resistivity in ohm.m
Unit electrode spacing 2.50 m.

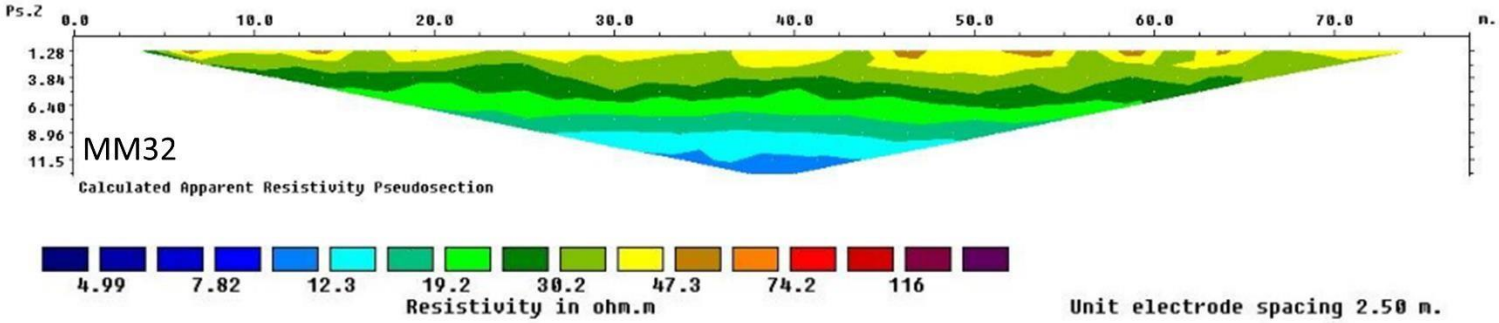

Ps.Z
0.0
10.0
20.0
30.0
40.0
50.0
60.0
70.0
m.
1.28
3.84
6.40
8.96
11.5
MM19b
Calculated Apparent Resistivity Pseudosection
1.49
2.70
4.91
8.92
16.2
29.5
53.5
97.3
Resistivity in ohm.m
Unit electrode spacing 2.50 m.
MM20
Calculated Apparent Resistivity Pseudosection
0.367
0.718
1.41
2.75
5.39
10.6
20.7
40.5
Resistivity in ohm.m
Unit electrode spacing 2.50 m.
MM23
Calculated Apparent Resistivity Pseudosection
0.840
1.57
2.92
5.43
10.1
18.8
35.1
65.4
Resistivity in ohm.m
Unit electrode spacing 2.50 m.


Ps.Z
0.0
10.0
20.0
30.0
40.0
50.0
60.0
70.0
m.
1.28
3.84
6.40
8.96
11.5
MM25
Calculated Apparent Resistivity Pseudosection
0.181
0.399
0.879
1.94
4.27
9.40
20.7
45.6
Resistivity in ohm.m
Unit electrode spacing 2.50 m.

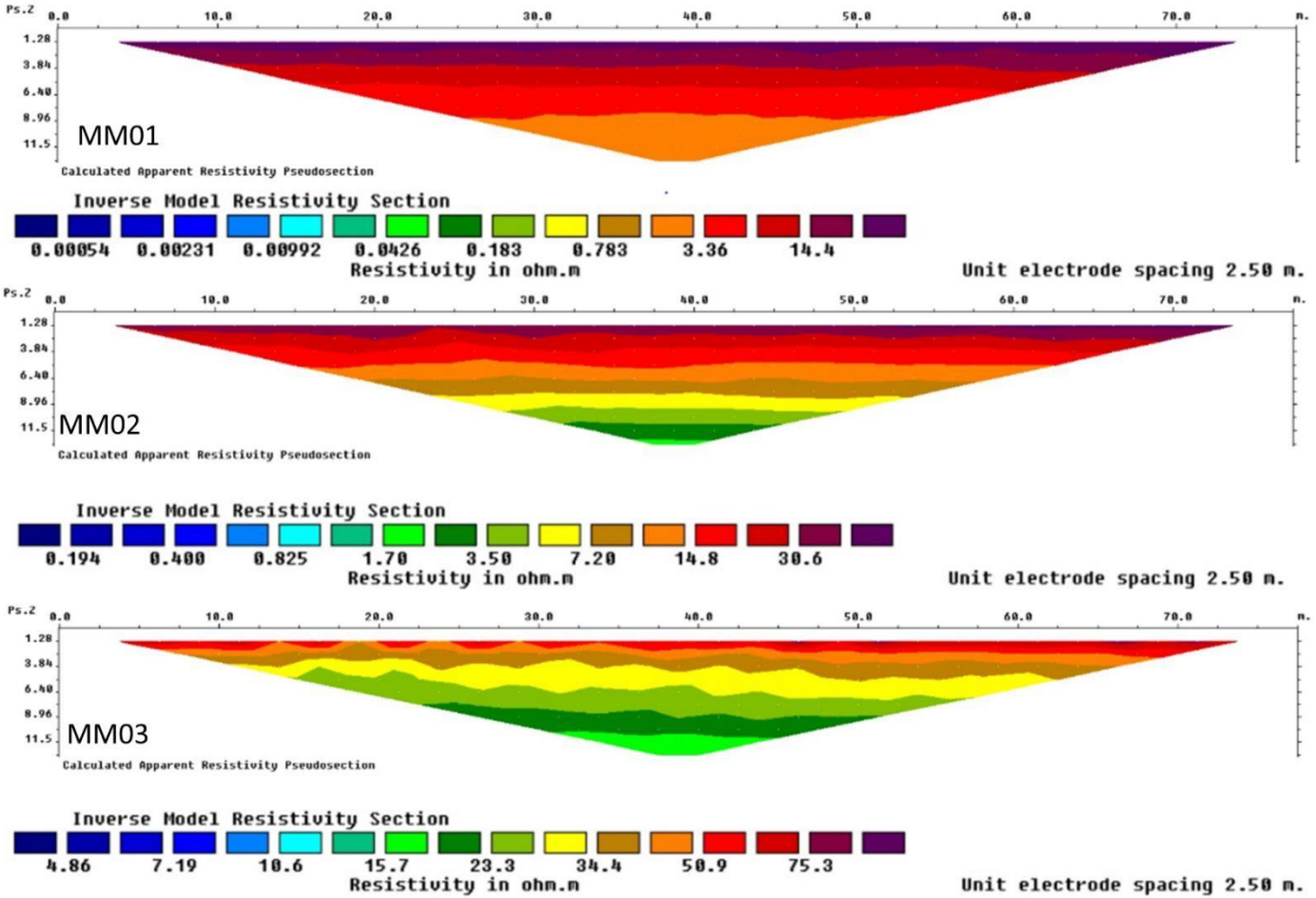

Ps.Z
0.0
10.0
20.0
30.0
40.0
50.0
60.0
70.0
m.
1.28
3.84
6.40
8.96
11.5
MM27
Calculated Apparent Resistivity Pseudosection
8.82
13.3
20.2
30.5
46.1
69.7
105
159
Resistivity in ohm.m
Unit electrode spacing 2.50 m.

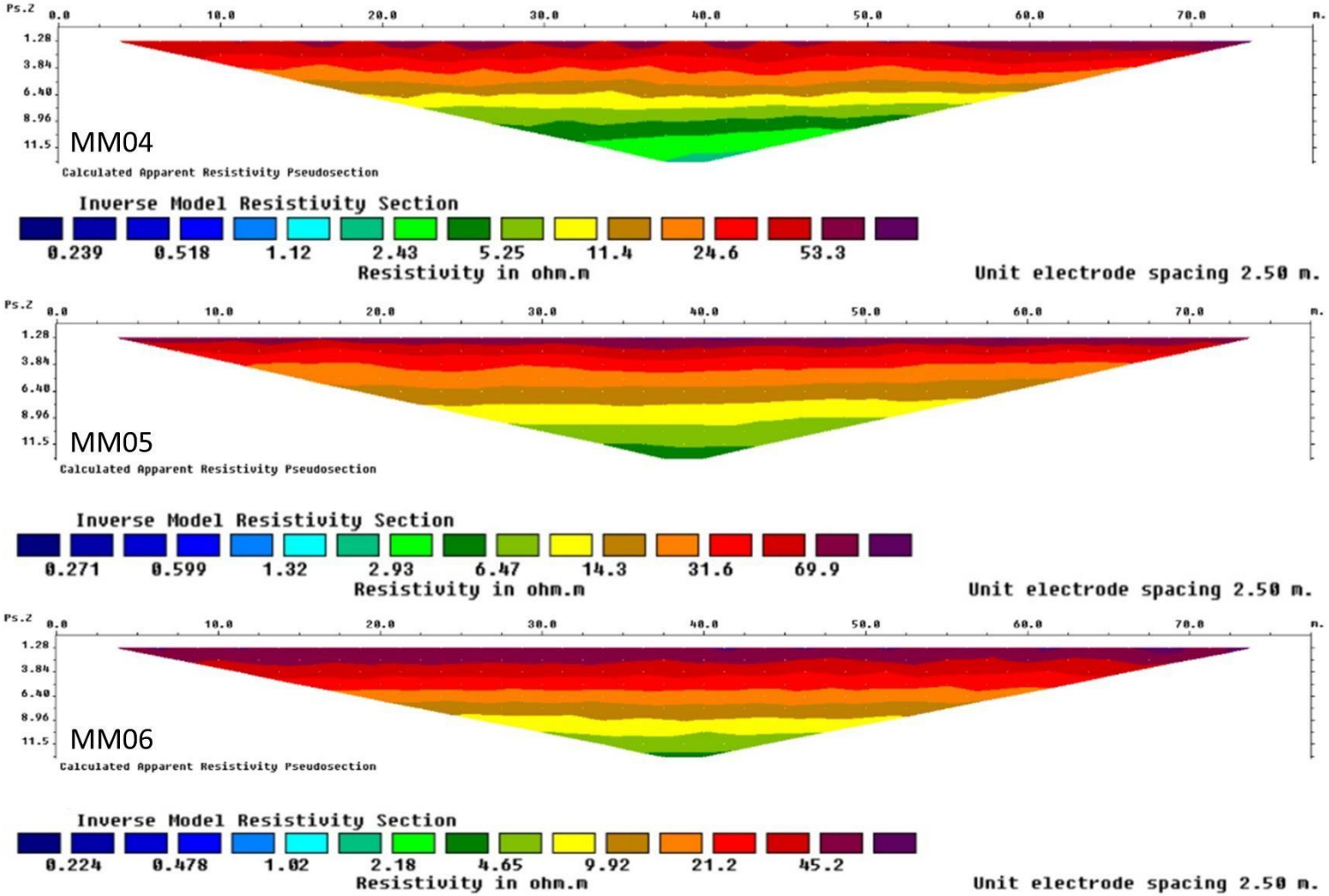

Ps.Z
0.0
10.0
20.0
30.0
40.0
50.0
60.0
70.0
m.
1.28
3.84
6.40
8.96
11.5
MM28
Calculated Apparent Resistivity Pseudosection
4.21
6.03
8.64
12.4
17.7
25.4
36.4
52.1
Resistivity in ohm.m
Unit electrode spacing 2.50 m.

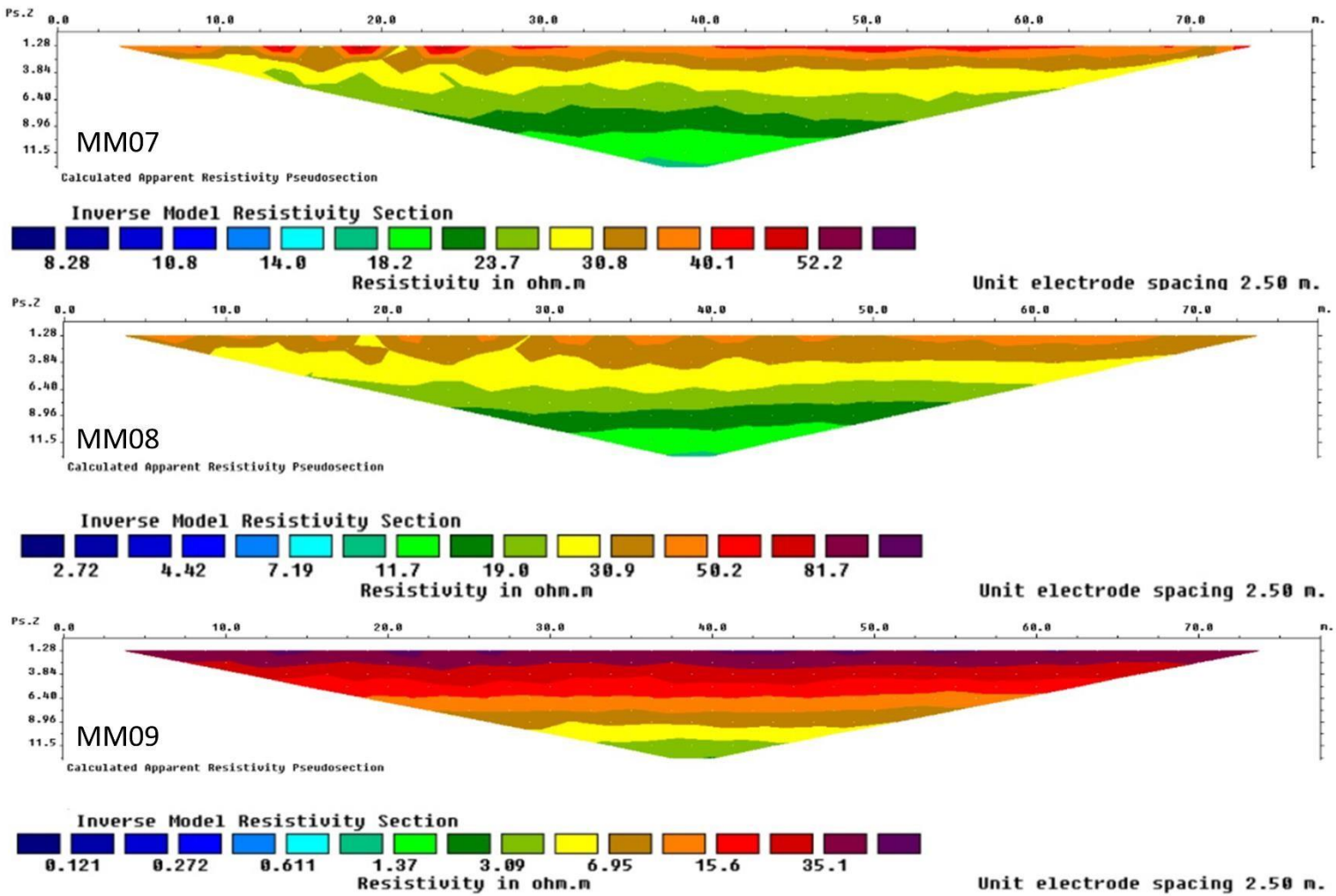

Ps.Z
0.0
10.0
20.0
30.0
40.0
50.0
60.0
70.0
m.
1.28
3.84
6.40
8.96
11.5
MM29
Calculated Apparent Resistivity Pseudosection
0.407
0.768
1.45
2.74
5.17
9.75
18.4
34.7
Resistivity in ohm.m
Unit electrode spacing 2.50 m.
Ps.Z
0.0
10.0
20.0
30.0
40.0
50.0
60.0
70.0
m.
1.28
3.84
6.40
8.96
11.5
MM30
Calculated Apparent Resistivity Pseudosection
0.0003
0.0013
0.0058
0.026
0.121
0.555
2.55
11.7
Resistivity in ohm.m
Unit electrode spacing 2.50 m.
Ps.Z
0.0
10.0
20.0
30.0
40.0
50.0
60.0
70.0
m.
1.28
3.84
6.40
8.96
11.5
MM31
Calculated Apparent Resistivity Pseudosection
0.187
0.403
0.869
1.87
4.03
8.69
18.7
40.4
Resistivity in ohm.m
Unit electrode spacing 2.50 m.

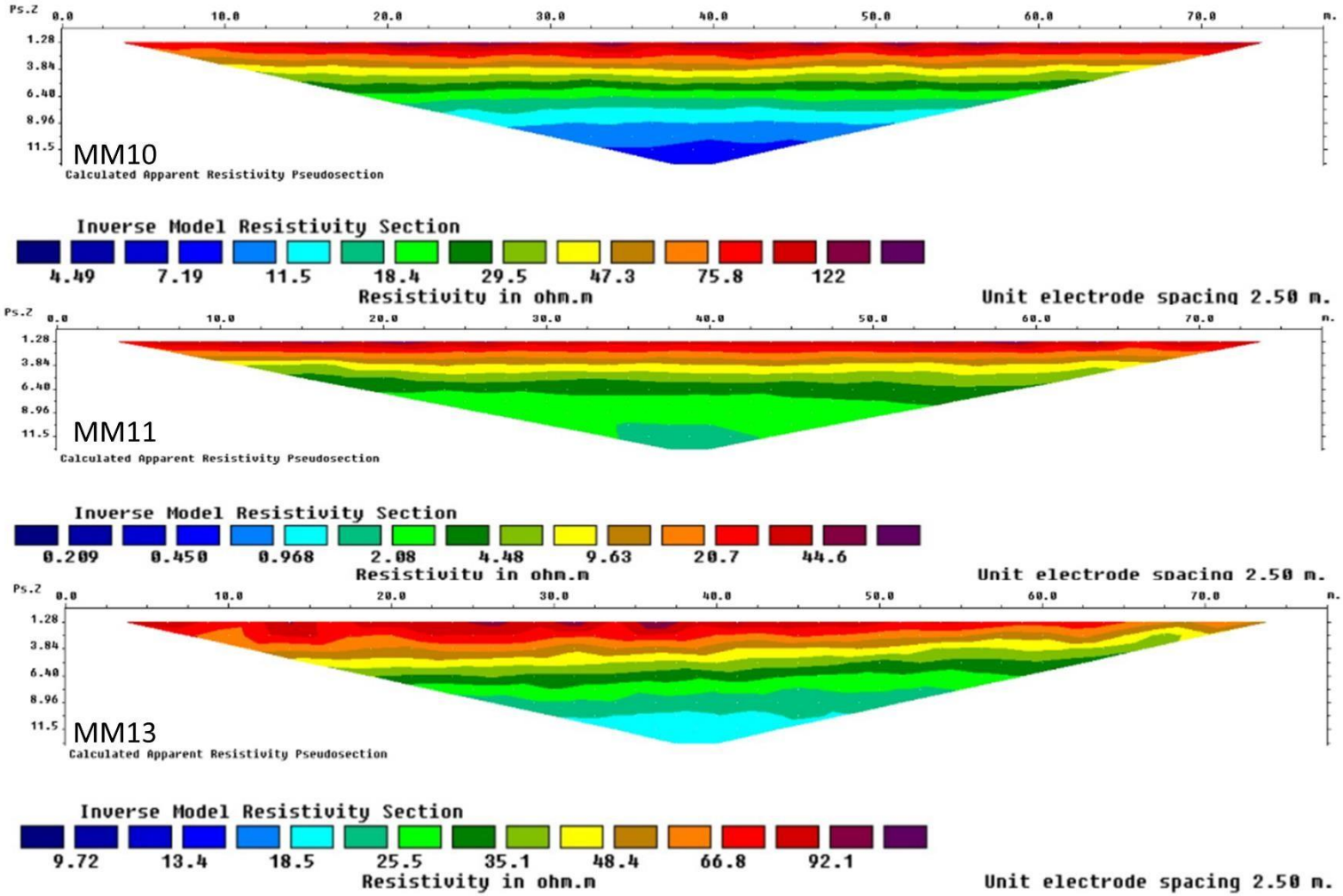

Ps.2
0.0
10.0
20.0
30.0
40.0
50.0
60.0
70.0
m.
1.28
3.84
6.40
8.96
11.5
MM32
Calculated Apparent Resistivity Pseudosection
4.99
7.82
12.3
19.2
30.2
47.3
74.2
116
Resistivity in ohm.m
Unit electrode spacing 2.50 m.

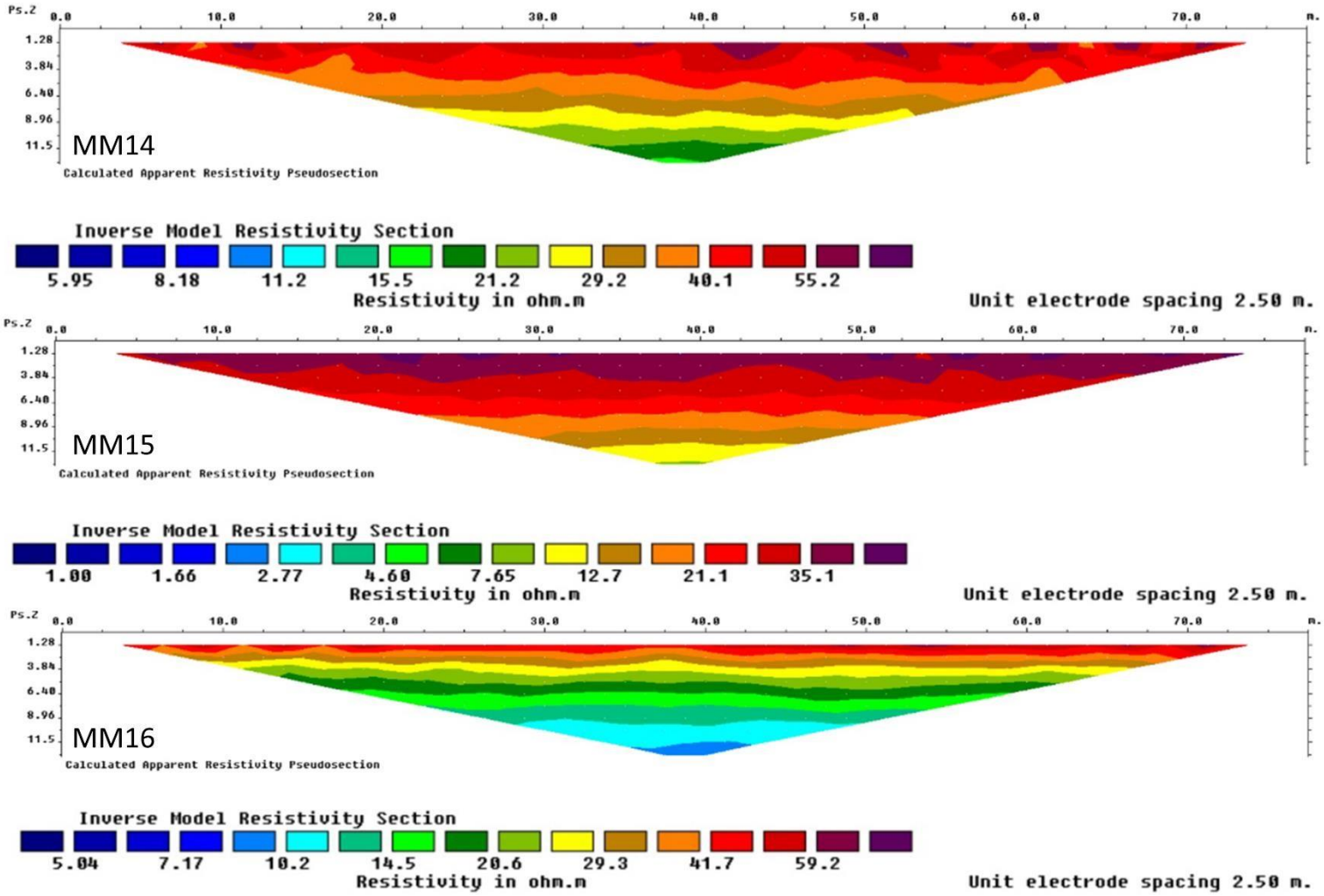
Section E: Summer ERT Survey Scans

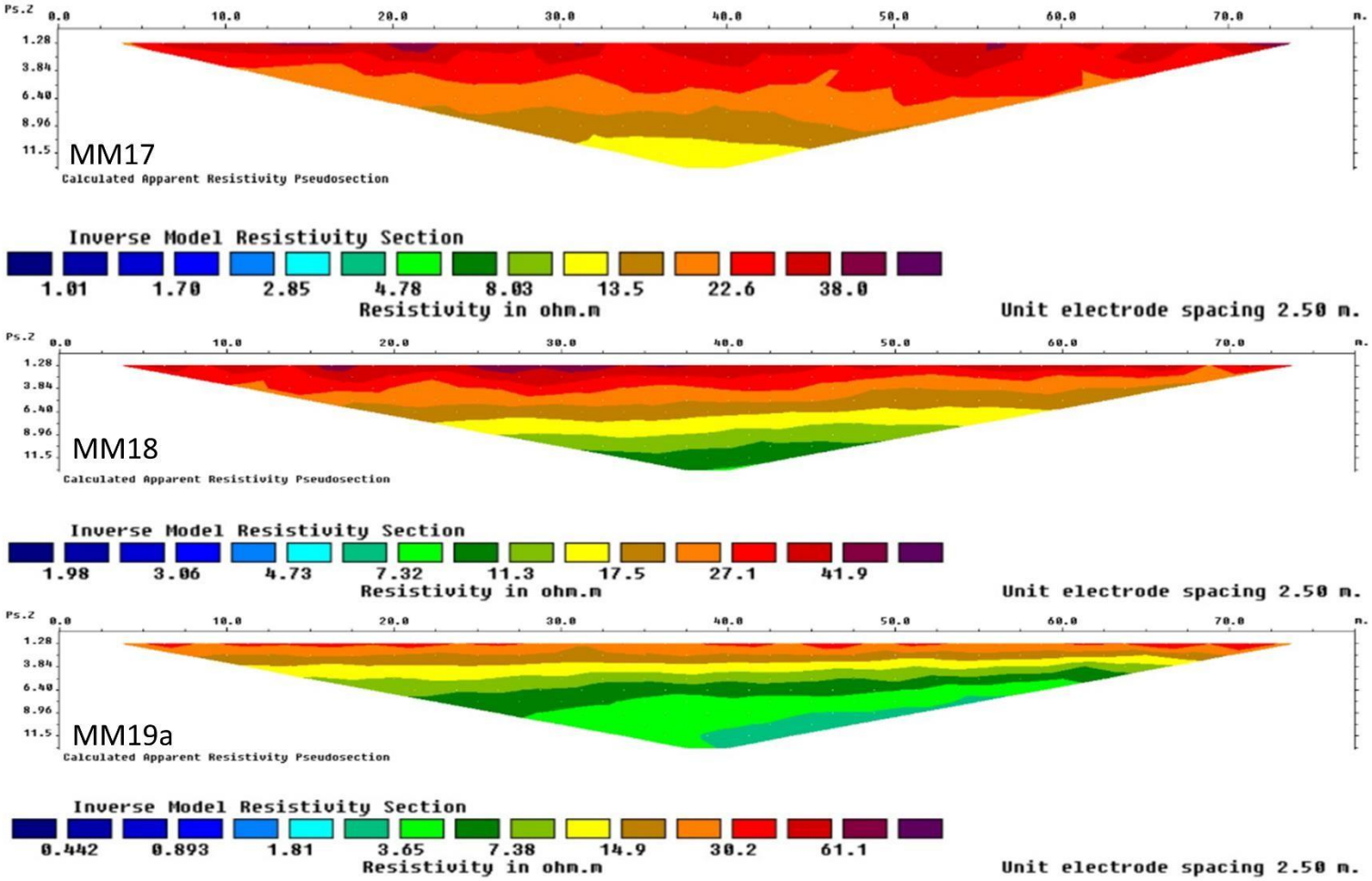


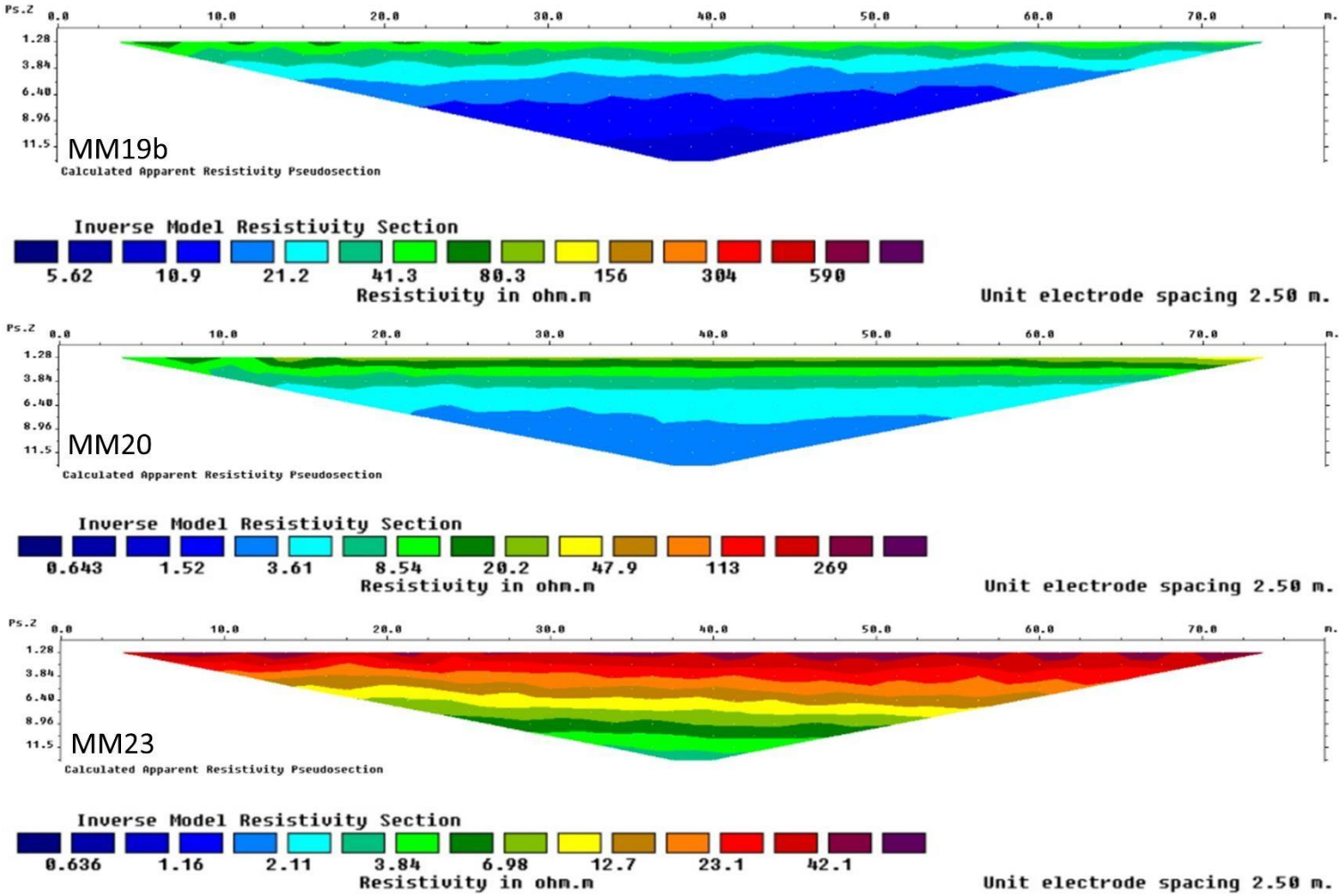

Ps.Z
0.0
10.0
20.0
30.0
40.0
50.0
60.0
70.0
m.
1.28
3.84
6.40
8.96
11.5
MM04
Calculated Apparent Resistivity Pseudosection
Inverse Model Resistivity Section
0.239
0.518
1.12
2.43
5.25
11.4
24.6
53.3
Resistivity in ohm.m
Unit electrode spacing 2.50 m.
MM05
Calculated Apparent Resistivity Pseudosection
Inverse Model Resistivity Section
0.271
0.599
1.32
2.93
6.47
14.3
31.6
69.9
Resistivity in ohm.m
Unit electrode spacing 2.50 m.
MM06
Calculated Apparent Resistivity Pseudosection
Inverse Model Resistivity Section
0.224
0.478
1.02
2.18
4.65
9.92
21.2
45.2
Resistivity in ohm.m
Unit electrode spacing 2.50 m.

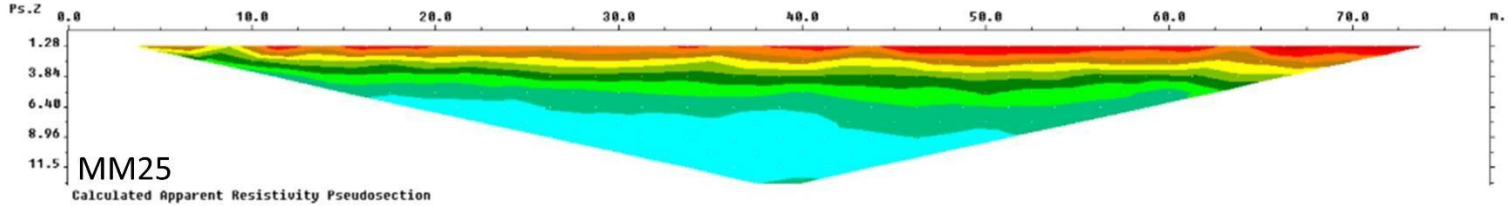

Ps.Z
0.0
10.0
20.0
30.0
40.0
50.0
60.0
70.0
m.
1.28
3.84
6.40
8.96
11.5
MM07
Calculated Apparent Resistivity Pseudosection
Inverse Model Resistivity Section
8.28
10.8
14.0
18.2
23.7
30.8
40.1
52.2
Resistivity in ohm.m
Unit electrode spacing 2.50 m.
Ps.Z
MM08
Calculated Apparent Resistivity Pseudosection
Inverse Model Resistivity Section
2.72
4.42
7.19
11.7
19.0
30.9
50.2
81.7
Resistivity in ohm.m
Unit electrode spacing 2.50 m.
Ps.Z
MM09
Calculated Apparent Resistivity Pseudosection
Inverse Model Resistivity Section
0.121
0.272
0.611
1.37
3.09
6.95
15.6
35.1
Resistivity in ohm.m
Unit electrode spacing 2.50 m.

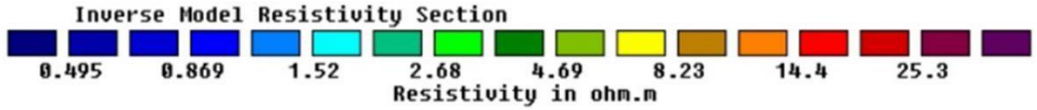

Ps.Z
0.0
10.0
20.0
30.0
40.0
50.0
60.0
70.0
m.
1.28
3.84
6.40
8.96
11.5
MM10
Calculated Apparent Resistivity Pseudosection
Inverse Model Resistivity Section
4.49
7.19
11.5
18.4
29.5
47.3
75.8
122
Resistivity in ohm.m
Unit electrode spacing 2.50 m.
MM11
Calculated Apparent Resistivity Pseudosection
Inverse Model Resistivity Section
0.209
0.450
0.968
2.08
4.48
9.63
20.7
44.6
Resistivity in ohm.m
Unit electrode spacing 2.50 m.
MM13
Calculated Apparent Resistivity Pseudosection
Inverse Model Resistivity Section
9.72
13.4
18.5
25.5
35.1
48.4
66.8
92.1
Resistivity in ohm.m
Unit electrode spacing 2.50 m.


Ps.Z
0.0
10.0
20.0
30.0
40.0
50.0
60.0
70.0
m.
1.28
3.84
6.40
8.96
11.5
MM14
Calculated Apparent Resistivity Pseudosection
Inverse Model Resistivity Section
5.95
8.18
11.2
15.5
21.2
29.2
40.1
55.2
Resistivity in ohm.m
Unit electrode spacing 2.50 m.
MM15
Calculated Apparent Resistivity Pseudosection
Inverse Model Resistivity Section
1.00
1.66
2.77
4.60
7.65
12.7
21.1
35.1
Resistivity in ohm.m
Unit electrode spacing 2.50 m.
MM16
Calculated Apparent Resistivity Pseudosection
Inverse Model Resistivity Section
5.04
7.17
10.2
14.5
20.6
29.3
41.7
59.2
Resistivity in ohm.m
Unit electrode spacing 2.50 m.

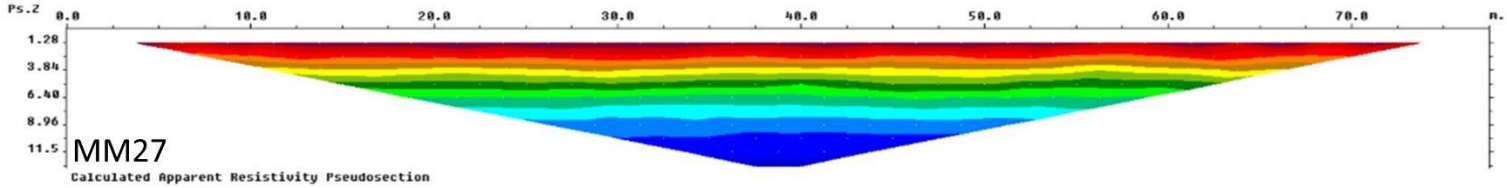

Ps.Z
0.0
10.0
20.0
30.0
40.0
50.0
60.0
70.0
m.
1.28
3.84
6.40
8.96
11.5
MM17
Calculated Apparent Resistivity Pseudosection
Inverse Model Resistivity Section
1.01
1.70
2.85
4.78
8.03
13.5
22.6
38.0
Resistivity in ohm.m
Unit electrode spacing 2.50 m.
MM18
Calculated Apparent Resistivity Pseudosection
Inverse Model Resistivity Section
1.98
3.06
4.73
7.32
11.3
17.5
27.1
41.9
Resistivity in ohm.m
Unit electrode spacing 2.50 m.
MM19a
Calculated Apparent Resistivity Pseudosection
Inverse Model Resistivity Section
0.442
0.893
1.81
3.65
7.38
14.9
30.2
61.1
Resistivity in ohm.m
Unit electrode spacing 2.50 m.

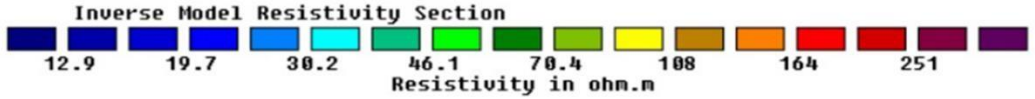

Ps.Z
0.0
10.0
20.0
30.0
40.0
50.0
60.0
70.0
m.
1.28
3.84
6.40
8.96
11.5
MM19b
Calculated Apparent Resistivity Pseudosection
Inverse Model Resistivity Section
5.62
10.9
21.2
41.3
80.3
156
304
590
Resistivity in ohm.m
Unit electrode spacing 2.50 m.
MM20
Calculated Apparent Resistivity Pseudosection
Inverse Model Resistivity Section
0.643
1.52
3.61
8.54
20.2
47.9
113
269
Resistivity in ohm.m
Unit electrode spacing 2.50 m.
MM23
Calculated Apparent Resistivity Pseudosection
Inverse Model Resistivity Section
0.636
1.16
2.11
3.84
6.98
12.7
23.1
42.1
Resistivity in ohm.m
Unit electrode spacing 2.50 m.



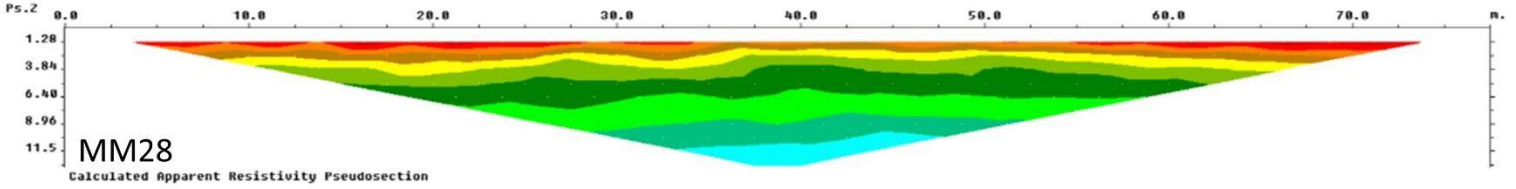


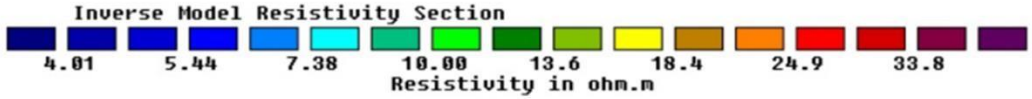
Unit electrode spacing 2.50 m.



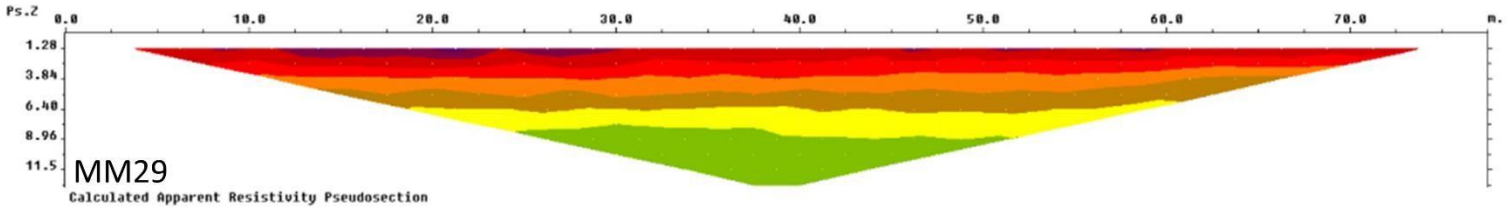


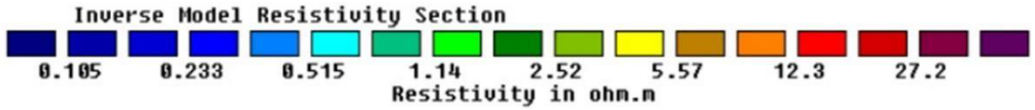
Unit electrode spacing 2.50 m.



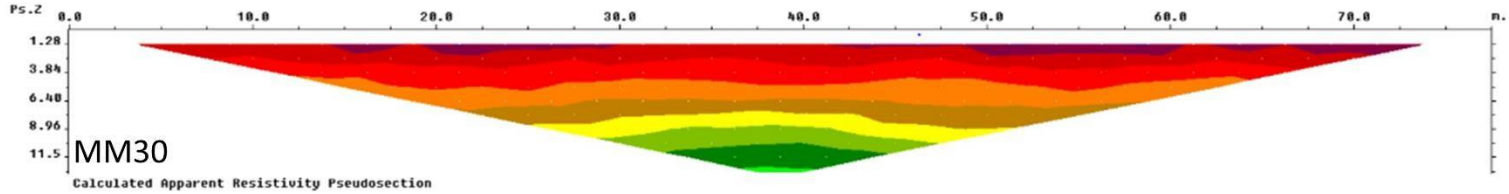


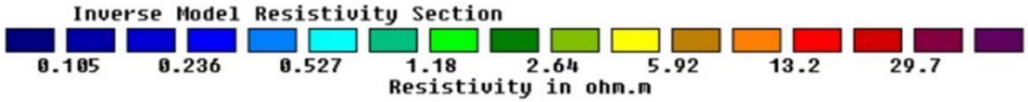
Unit electrode spacing 2.50 m.



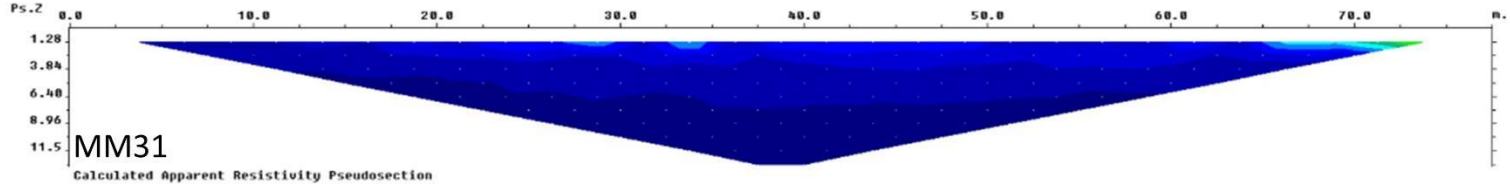


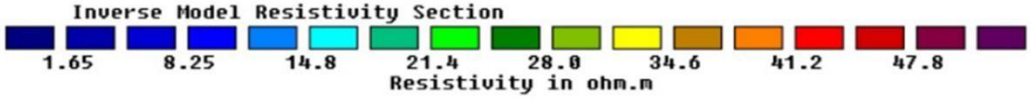
Unit electrode spacing 2.50 m.



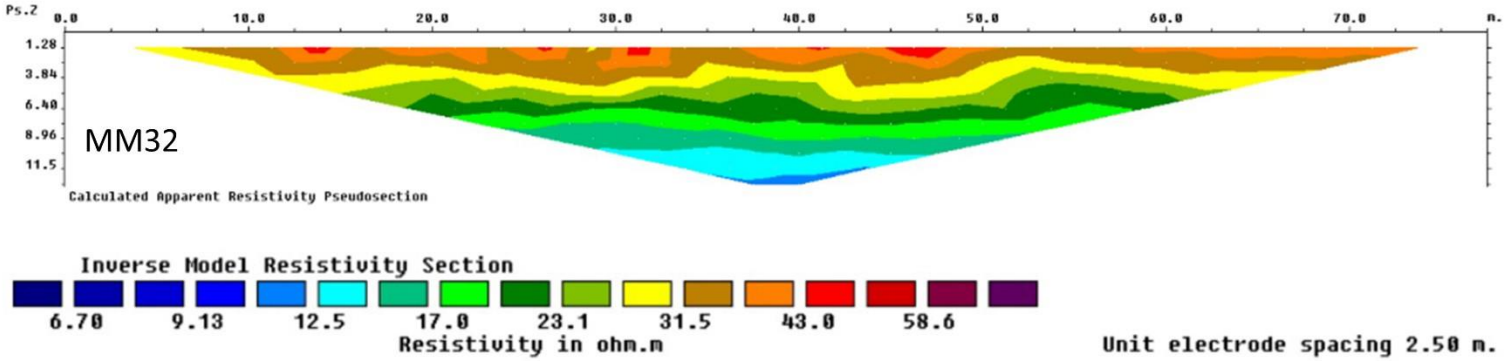


Unit electrode spacing 2.50 m.



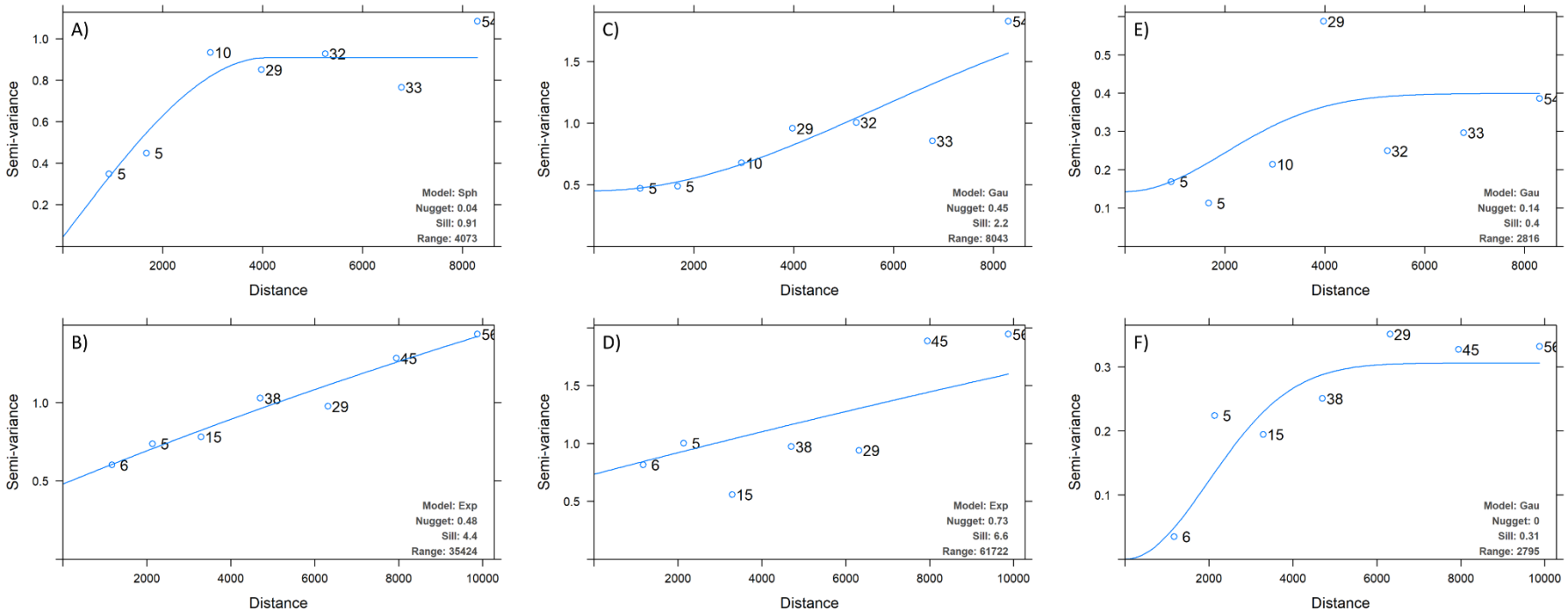


Unit electrode spacing 2.50 m.


Ps.z
0.0
10.0
20.0
30.0
40.0
50.0
60.0
70.0
m.
1.28
3.84
6.40
8.96
11.5
MM32
Calculated Apparent Resistivity Pseudosection
Inverse Model Resistivity Section
6.70
9.13
12.5
17.0
23.1
31.5
43.0
58.6
Resistivity in ohm.m
Unit electrode spacing 2.50 m.

Section F: Geostatistical Variograms

Variograms for the Inferred Water Level (m MSL) for the winter (A) and summer season (B), Inferred Freshwater Saline Interface (m MSL) in February 2021 (C) and August 2021 (D), and Freshwater Lens Thickness (m) in the February 2021 (E) and August 2021 (F).



Section G: Water Level and Freshwater-Saline Interface Variance Error Maps