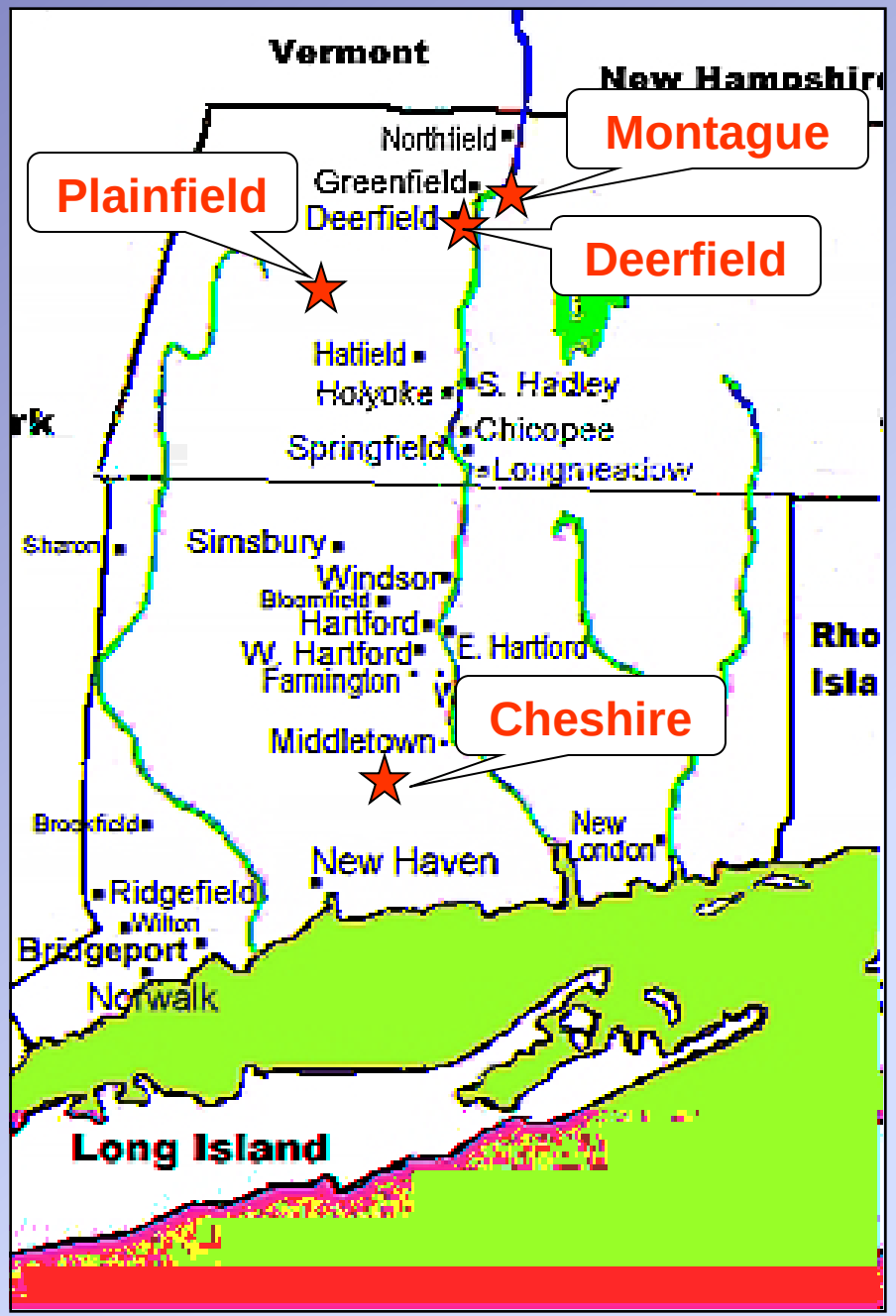
Vernal Pools in Southern New England

Vernal Pool

Confined basin depression which

- Holds water for 60+ days during the spring and summer
- Free of fish populations
- No obvious flow channel



Mass. Sites

Montague – Dr. Deb Picking,

Deerfield – Dr. Mickey Spokas,

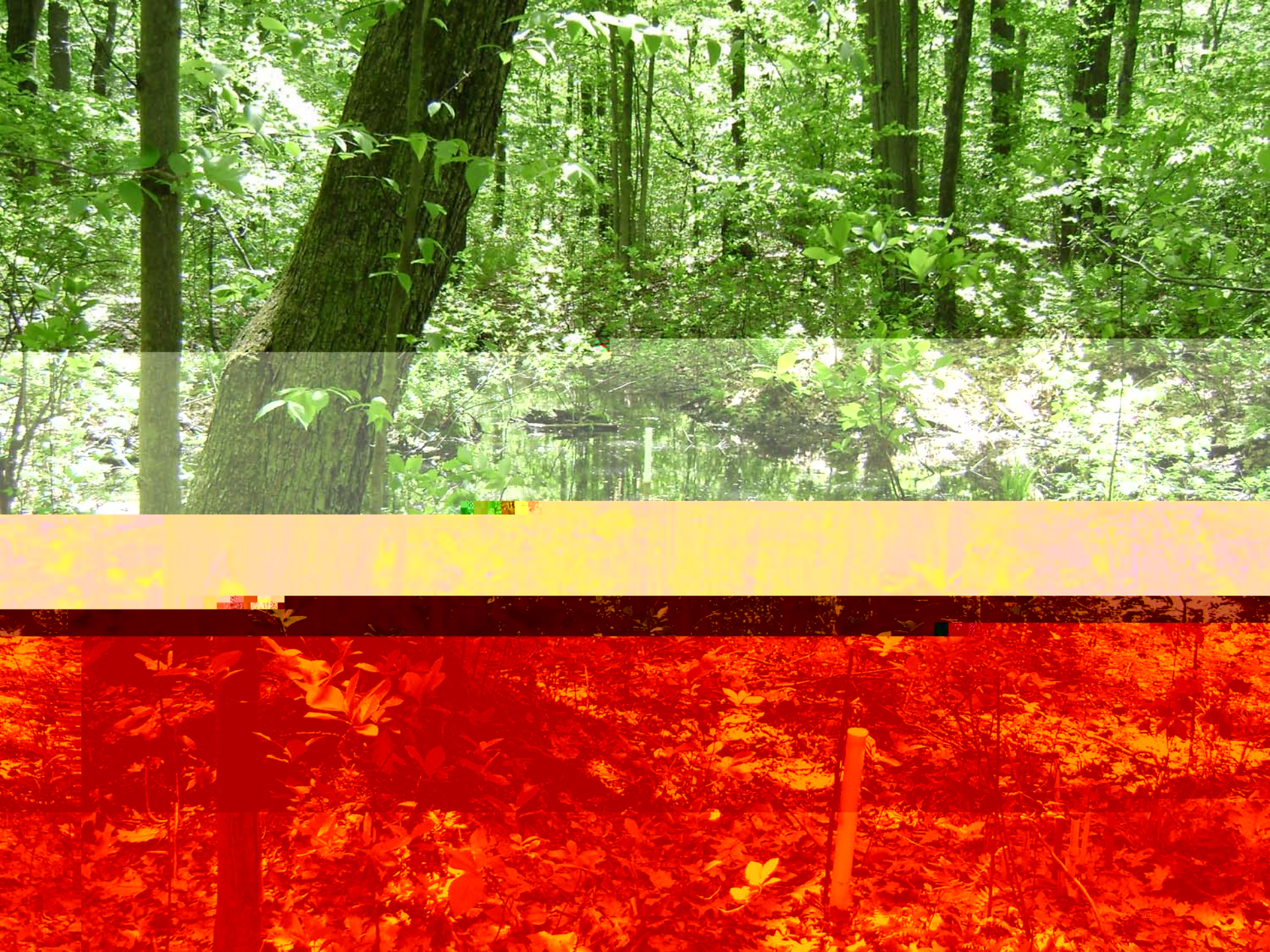
Plainfield – Emily K.D. Stockman,

Stockman Associates

Conn. Site

Cheshire – Dr. Beth Johnson,

Post University



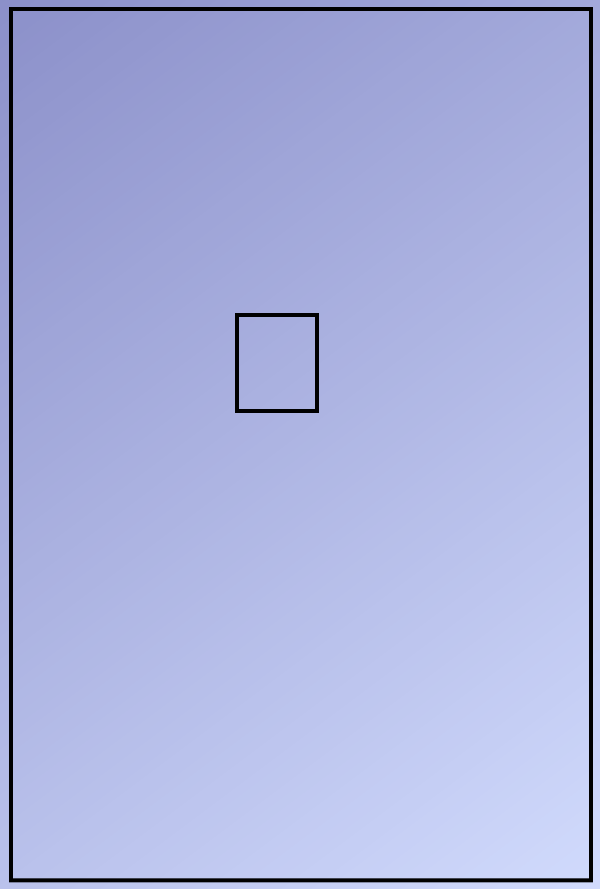
Montague VP

Light pink (c): sand and gravel deposits and sand deposits, undifferentiated,

Purple (u): undifferentiated outwash (all particle sizes),

Light Blue (l): sand and fine particles,

Cheshire VP



White: till

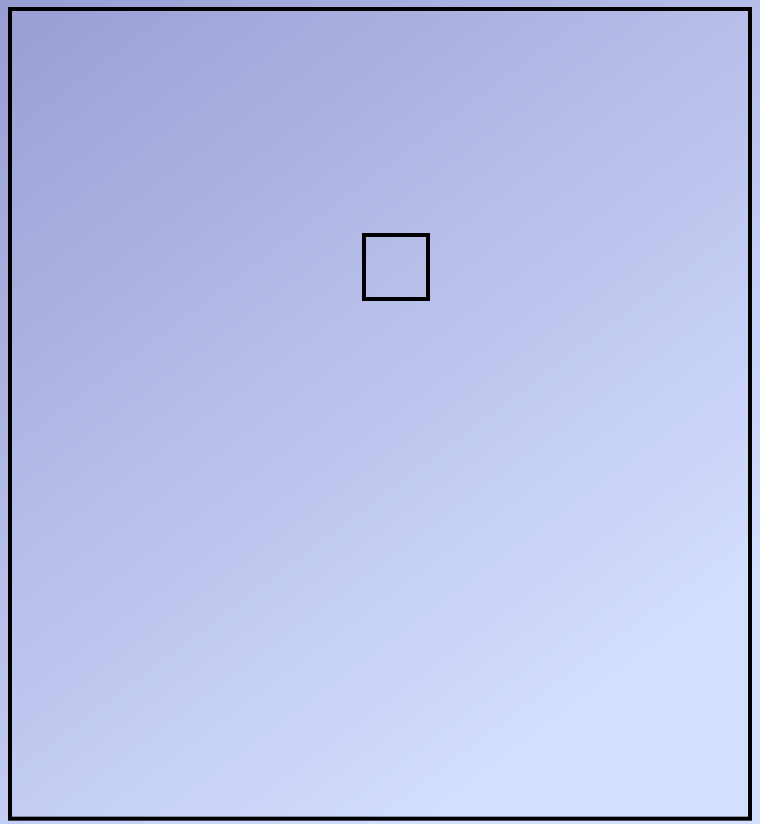
Light pink (c): sand deposits where as much as 50% may be fine particles

Blue (f): fine particles

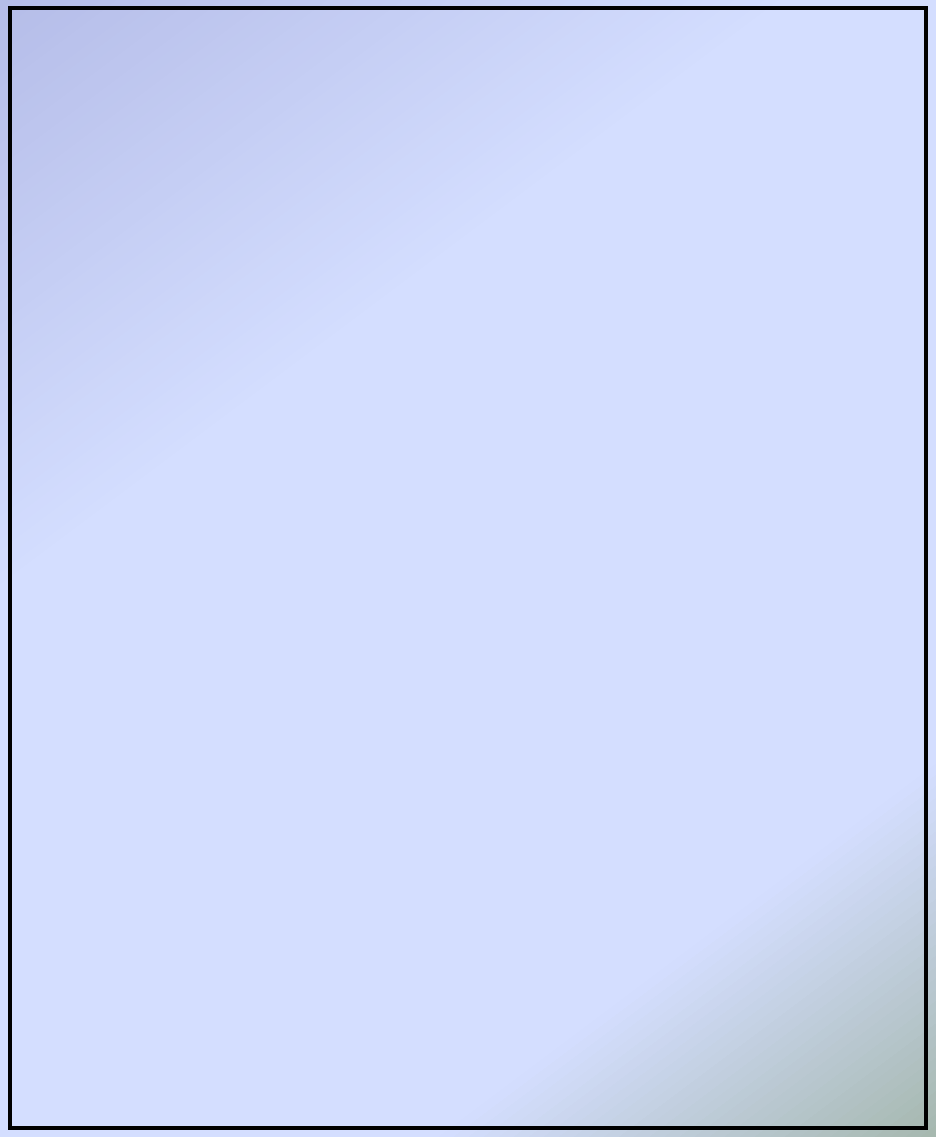
Cheshire VP

Depth (cm)	Horizon	Color	Texture	Structure	Redox Features	USACOE Indicator	NE Indicator
---------- Summit ----------							
0-20	Ap	10YR 3/4	fsl	granular	5YR 3/4 pore linings 2%		--------
20-38	B	10YR 3/1	fsl	massive	5YR 3/4 pore linings 2% 2.5YR 6/2 -25%		
38-51	Cg	10YR 6/1	fsl	massive	10YR 3/4 pore linings 2% 10YR 3/1 – 10%		
51-68.5	C2	10YR 4/1	fsl	massive	2.5Y 5/1 – 40-50%		
68.5-92	C3	5YR 4/6		massive	10YR 4/2 ped interiors		
---------- Rim ----------							
0-19	Mucky A	10YR 2/1	sl	granular	10YR 5/25%	A11 Depleted Below Dark Surface	VI. Depleted or Gleyed Matrix
19-58	Cg	10YR 4/2	ls	single grain	10YR 4/6 pore linings 8% at boundary 2% elsewhere *		
58-79	Cg2	10YR 6/1	silt	massive	7.5YR 5/8 pore linings 8% 7.5YR 3/4 soft masses 10%		
79-86	Cg3	10YR 4/1	sil	massive	2.5Y 6/1 – 8% 7.5YR 3/4 soft masses10%		
---------- Basin ----------							
23-19	Oi					A2 Histic Epipedon	I. Ponded or Flooded Soils
19-6	Oe	10YR 2/2	sl	granular	10YR 4/3 streak through layer 45%		
6-0	Oa	2.5Y 2.5/1	sil	granular	10YR 3/4 root channels 5-8%		
0-53	C	2.5Y 4/4	vfsl	massive	unknown		

Plainfield VP



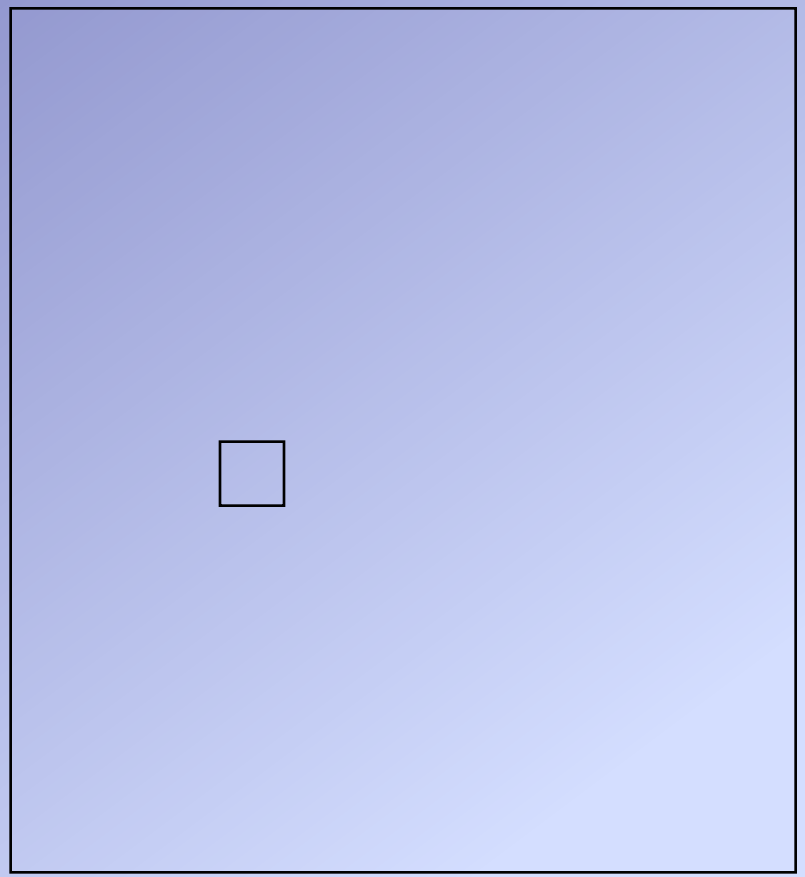
White: till.



Plainfield VP

Depth (cm)	Horizon	Color	Texture	Structure	Redox Features	US ACOE Indicator	NE Indicator
---------- Summit ----------							
0-30	Mucky A	10YR 3/2	fsl	granular	7.5YR 3/4, 5% fine, faint	---	---
30-60	Bw	10YR 4/6	fsl	granular	---		
---------- Rim ----------							
0-13	A	2.5Y 3/3	---	granular	2.5Y 5/2, 5% fine, faint	F3 depleted matrix	I. Ponded or Flooded Soil VI. Depleted or gleyed matrix
13-41	Eg	2.5Y 5/2	fsl	granular	7.5YR 3/4,10% med, prominent		
41-61	Bw	10YR 4/4	fsl	granular	---		
---------- Basin ----------							
33-23	Oa	10YR 2/2	---	granular	---	F3 Depleted Matrix F8 Redox Depressions	I. Ponded or Flooded Soil V. Mineral Histic
23-0	Oa2	10YR 2/1	fsl	massive	7.5YR 3/4 -20% fine, distinct		
0-23	Eg	2.5YR 5/2	fsl	massive	10YR 4/6 10%, med-coarse, prominent 5Y 5/1, 5% med, faint 10 YR 2/2 10% med, prominent		

Deerfield VP



White: till,

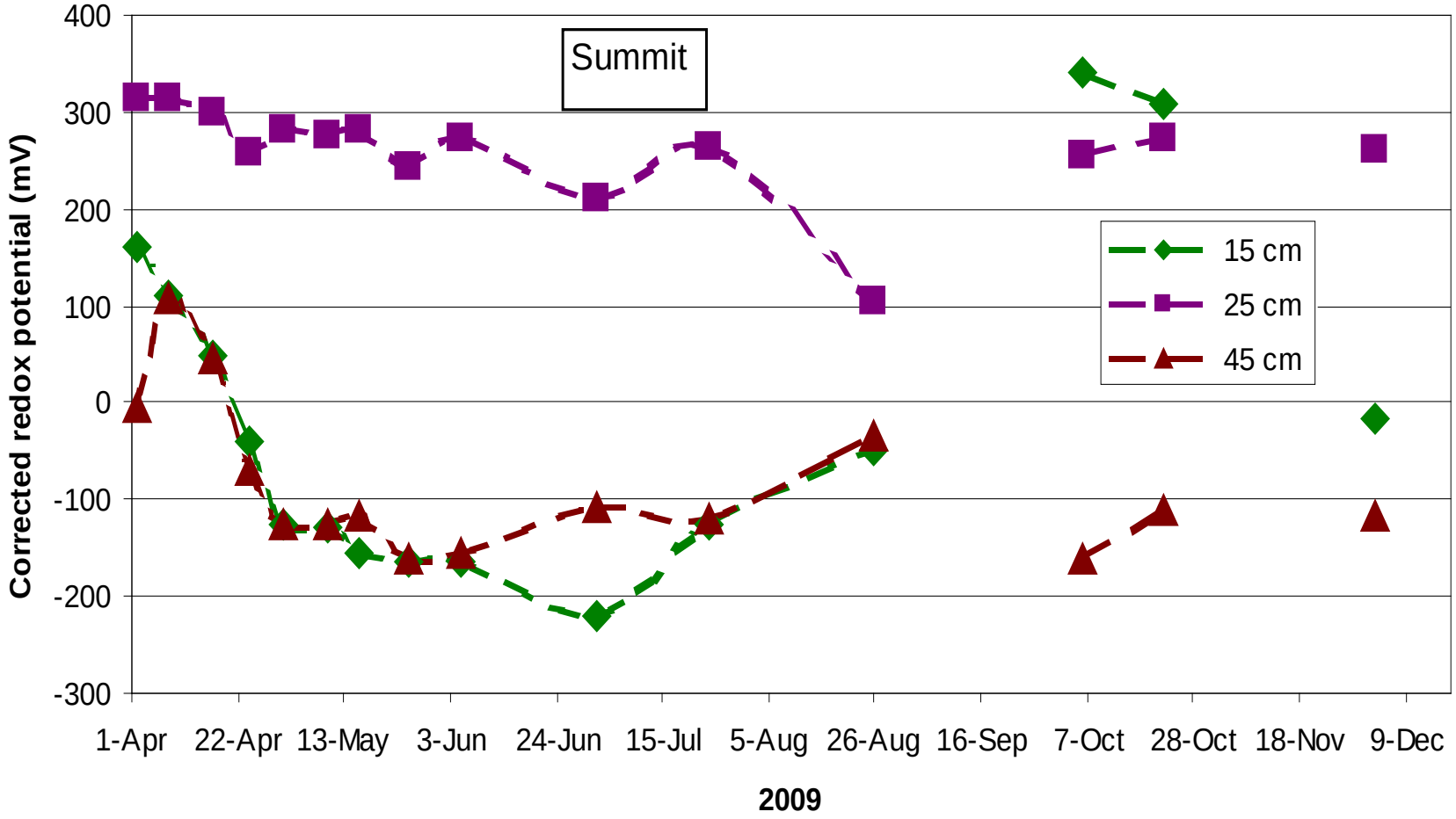
Purple (Sr): “slider rock”,

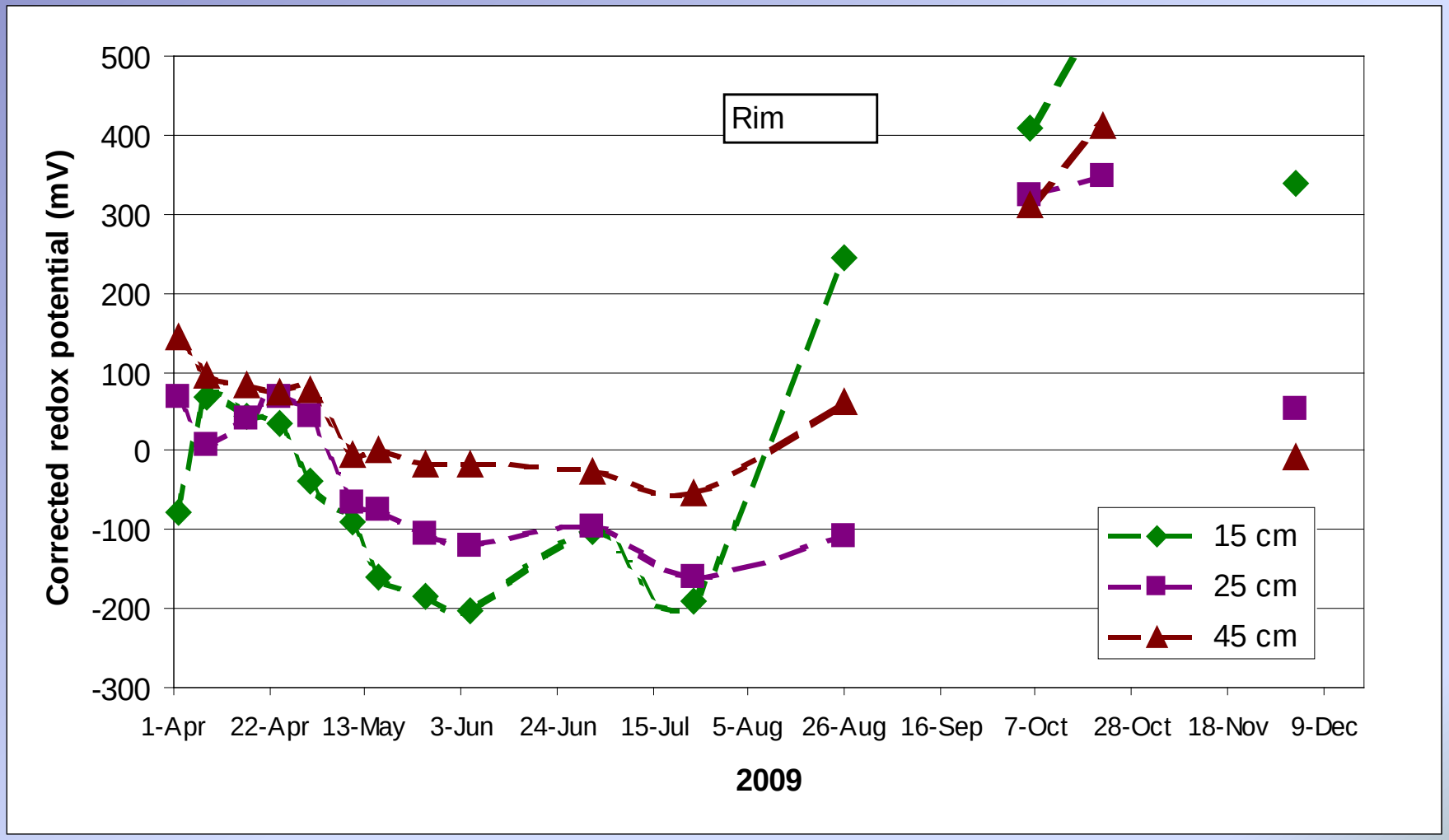
Light Blue (l): sand and fine particles.

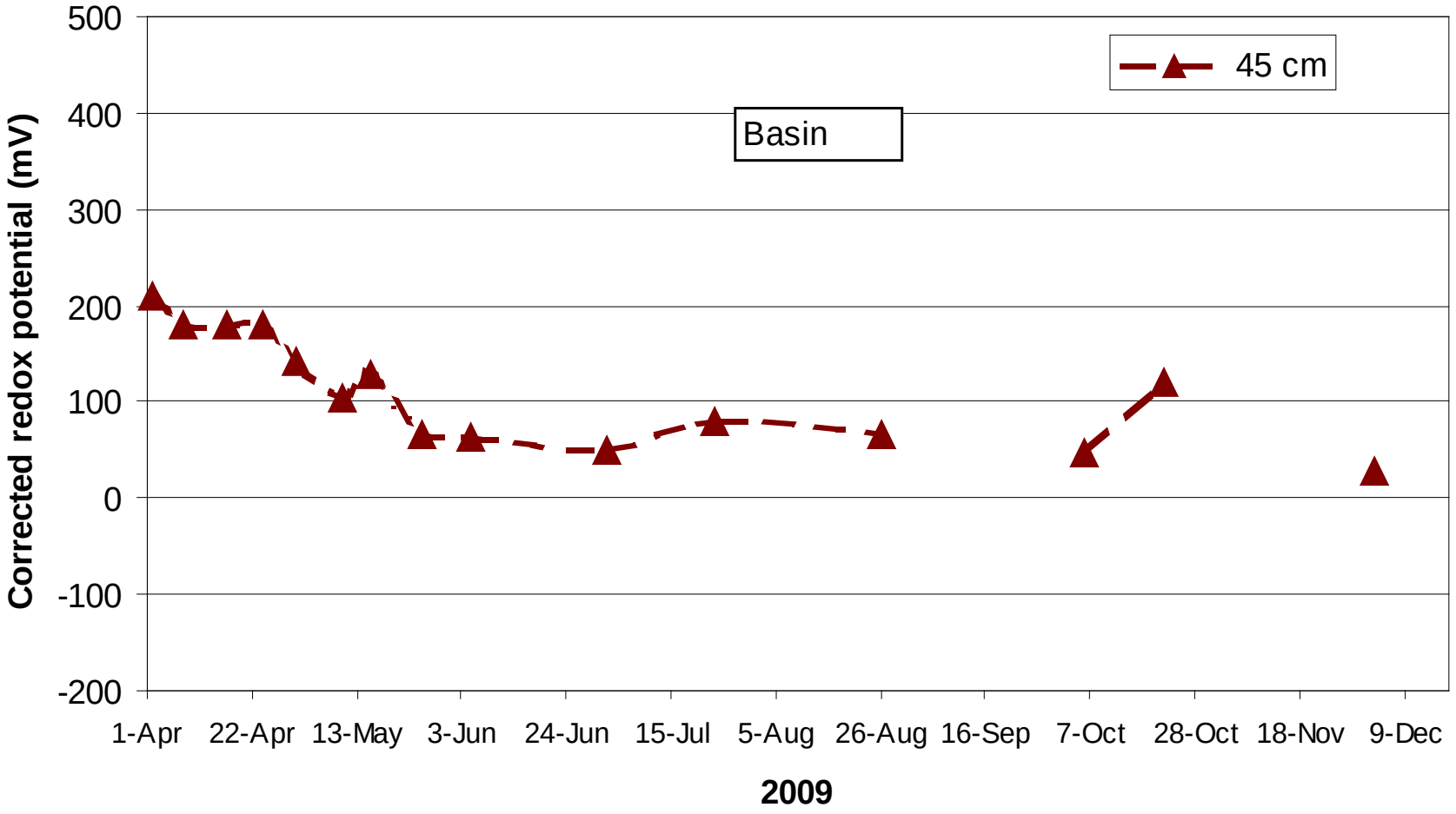
Deerfield VP

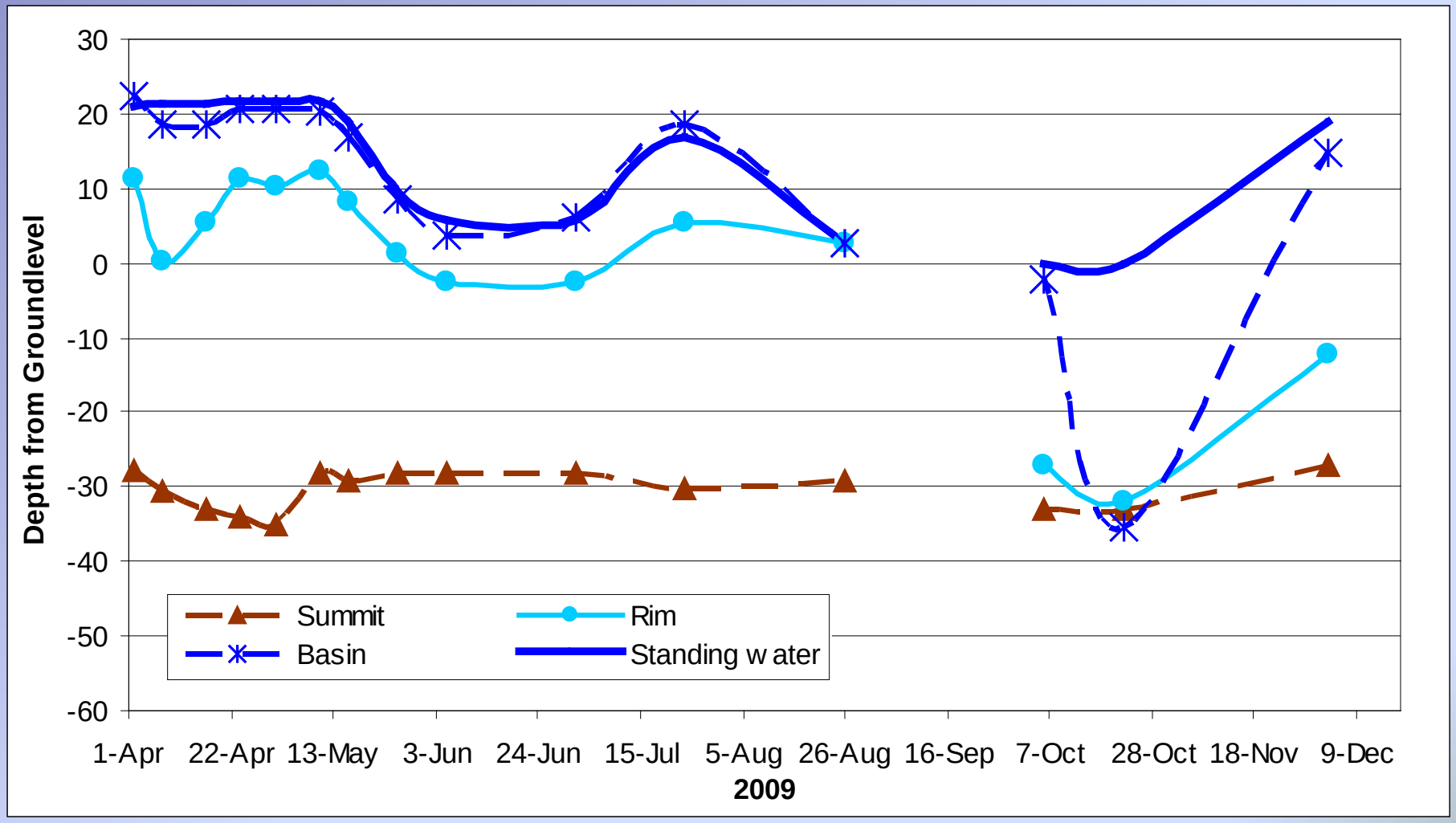
Depth (cm)	Horizon	Color	Texture	Structure	Redox Features	US ACOE Indicator	NE Indicator
---------- Summit ----------							
5-0	Oi	10YR 2/1	---	---	---	---	---
0-20	Mucky A	2.5Y 4/4	sil	granular	7.5YR 3/4,5% fine, distinct		
20-28	Bw	5Y 4/4	sil	granular	10YR 4/6, 5% med-fine, prominent		
28-58	C1	5Y 4/3	sil	massive	5Y 5/1, 10% coarse, distinct 10YR 4/6, 25%, coarse prominent		
58-68	Cg	5Y 4/1	l	massive	7.5YR 3/4, 10% coarse, prominent		
---------- Rim ----------							
2.5-0	Oi	10YR 2/2	---	---	---	F.6. Redox dark surface	I. Ponded or Flooded Soil
0-18	Mucky A	10YR 2/1	sil	granular	7.5YR 3/4, 5% fine, distinct		
18-43	A/C	2.5Y 3/3	sil	granular	---		
43-48	C1	5Y 4/3	silt	massive	5Y 5/1, 10% medium, distinct 10YR 4/6, 25%, med-coarse prominent		
48-61	Cg	5Y 4/1	sil	massive	10YR 4/6, 25%, coarse prominent		
---------- Basin ----------							
0-30	Mucky A	10 YR 2/1	sil	w. granular	7.5YR 3/4 pore linings -2% fine 10YR 5/1 – 2%	A.12 – Thick Dark Surface	XI Any Texture A1 Ponded or Flooded Soils
16-41	A/C	7.5YR 2.5/1	sil	massive	7.5YR 3/4 pore linings 5% med 10 YR 4/1 soft masses 5%		
41-65	Cg	5Y 4/1	silt	massive	7.5 YR 6/8 pore linings – 5% 7.5YR 5/8 soft masses		

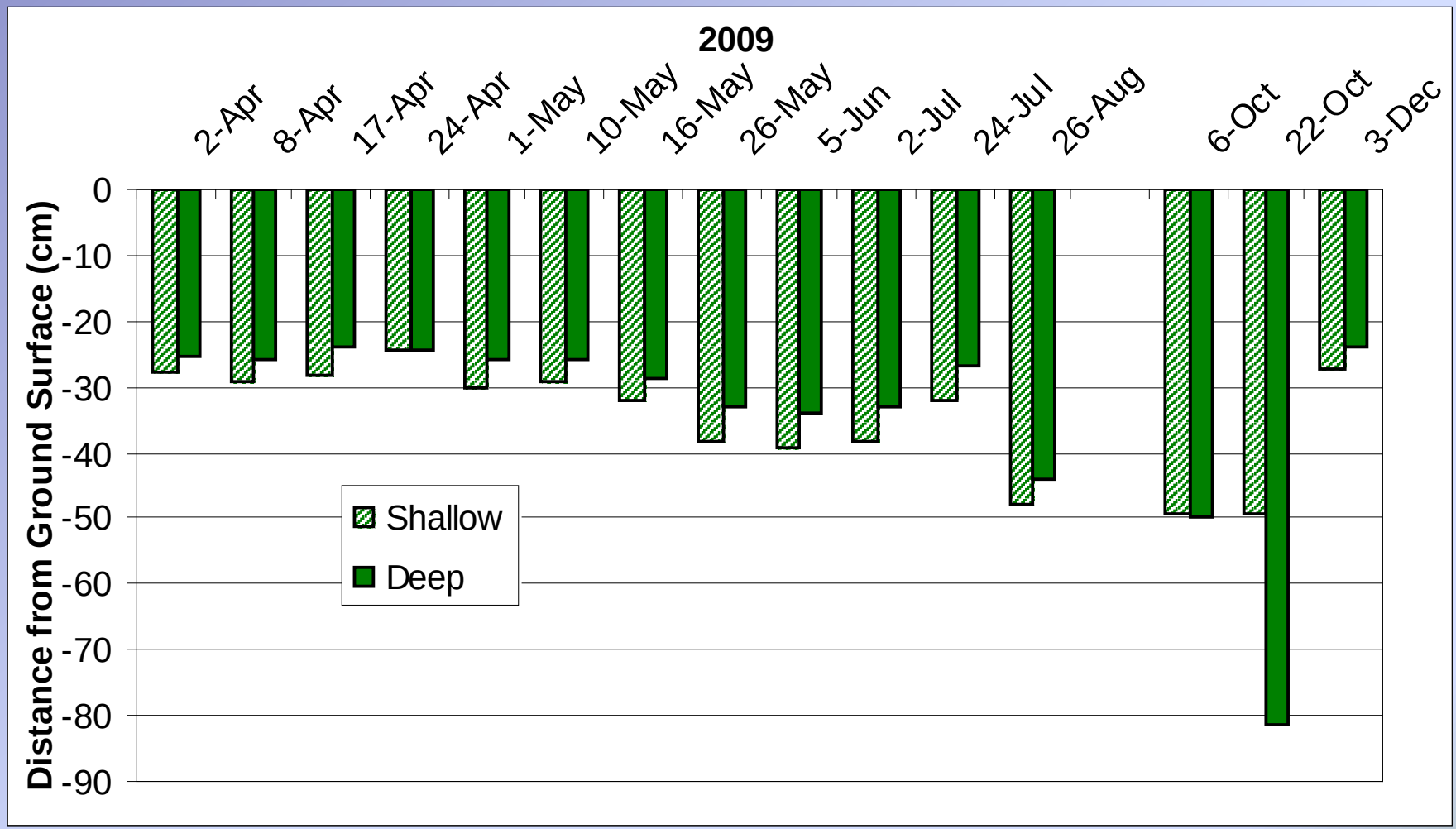
7
8
9
10
27
28
29
30
31
32
11
12

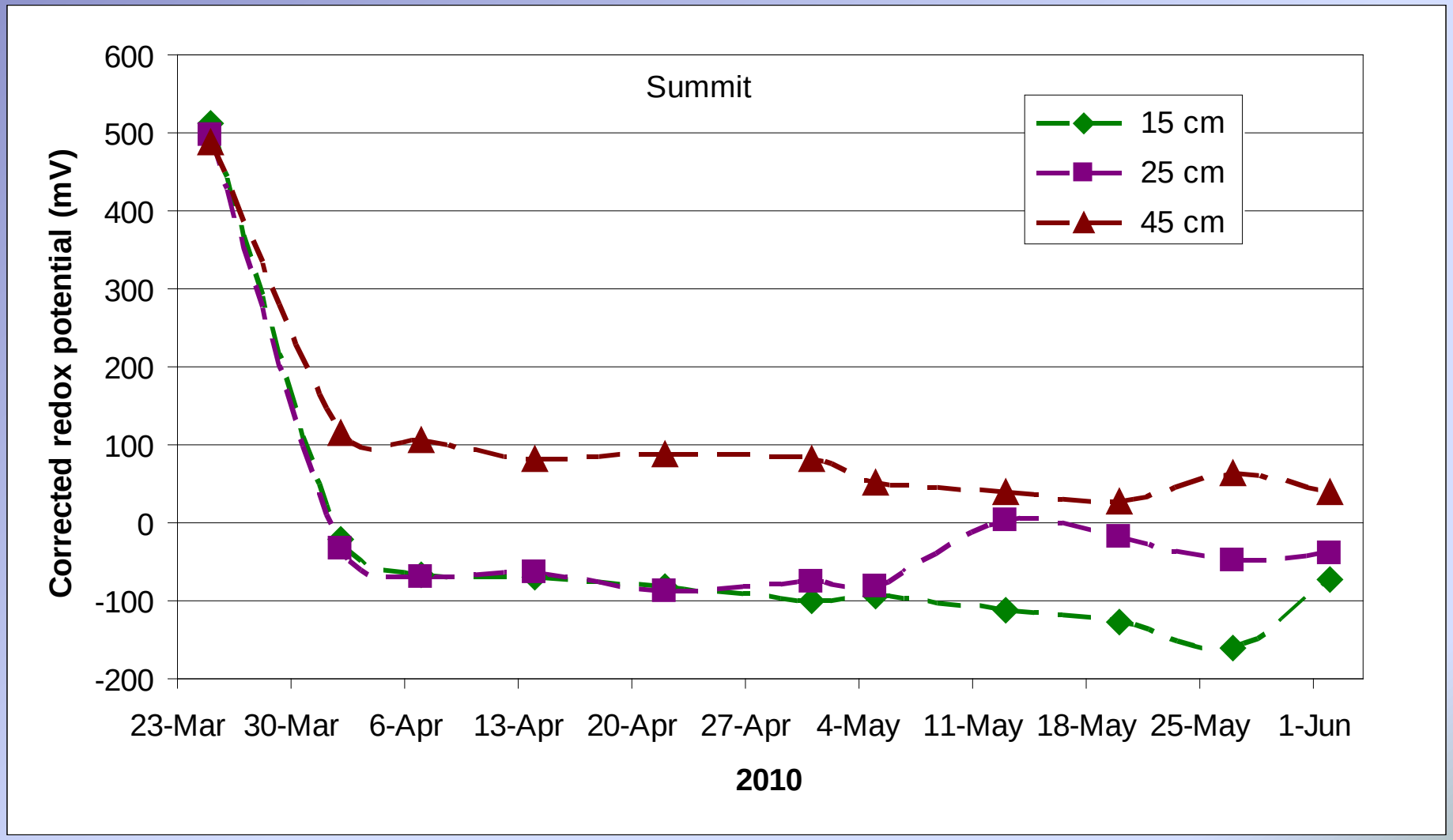

Summit
Corrected redox potential (mV)
400
300
200
100
0
-100
-200
-300
1-Apr
22-Apr
13-May
3-Jun
24-Jun
15-Jul
5-Aug
26-Aug
16-Sep
7-Oct
28-Oct
18-Nov
9-Dec
2009
15 cm
25 cm
45 cm

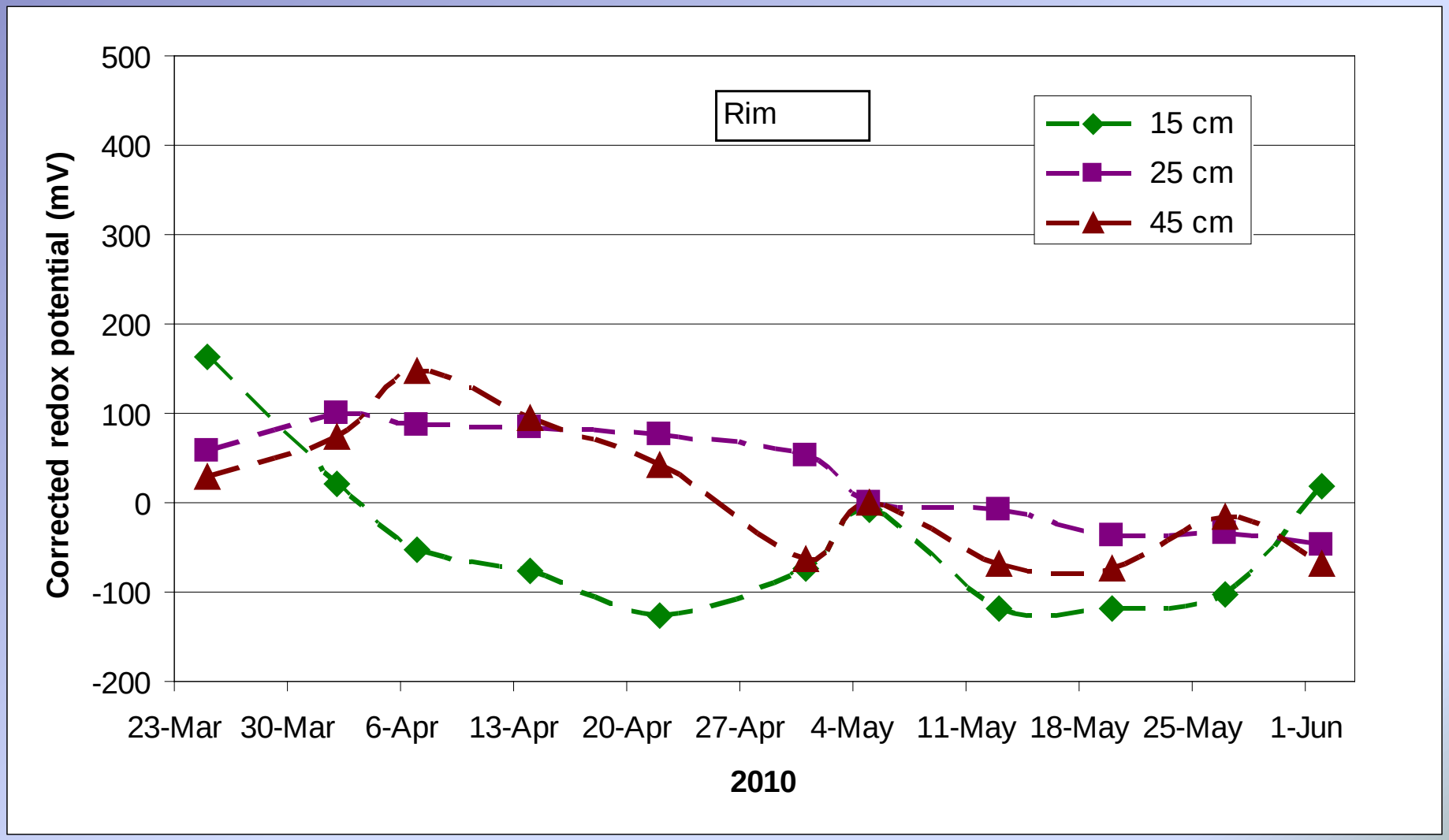

Rim
Corrected redox potential (mV)
500
400
300
200
100
0
-100
-200
-300
1-Apr
22-Apr
13-May
3-Jun
24-Jun
15-Jul
5-Aug
26-Aug
16-Sep
7-Oct
28-Oct
18-Nov
9-Dec
2009
15 cm
25 cm
45 cm

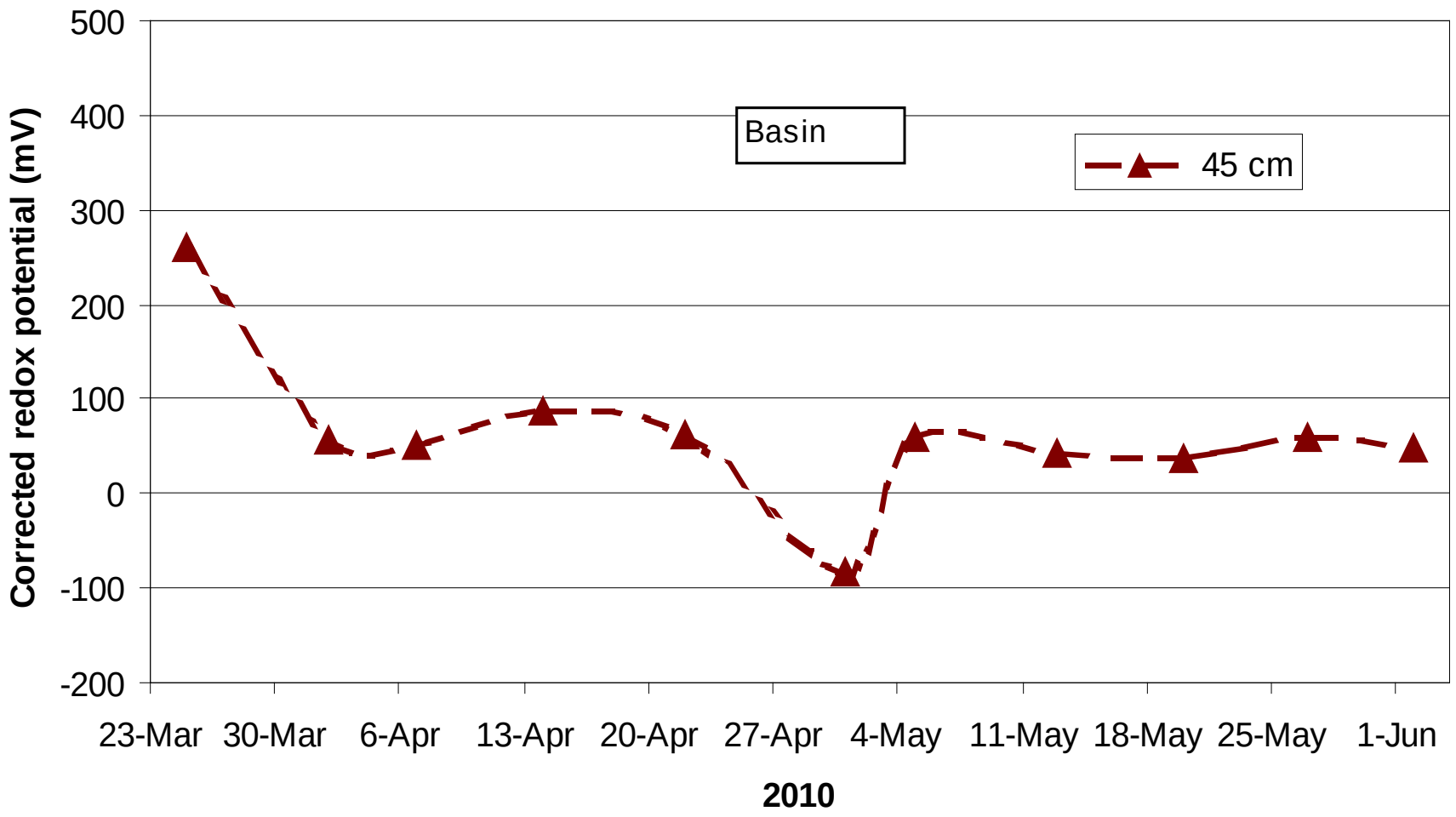

Corrected redox potential (mV)
500
400
300
200
100
0
-100
-200
45 cm
Basin
1-Apr
22-Apr
13-May
3-Jun
24-Jun
15-Jul
5-Aug
26-Aug
16-Sep
7-Oct
28-Oct
18-Nov
9-Dec
2009

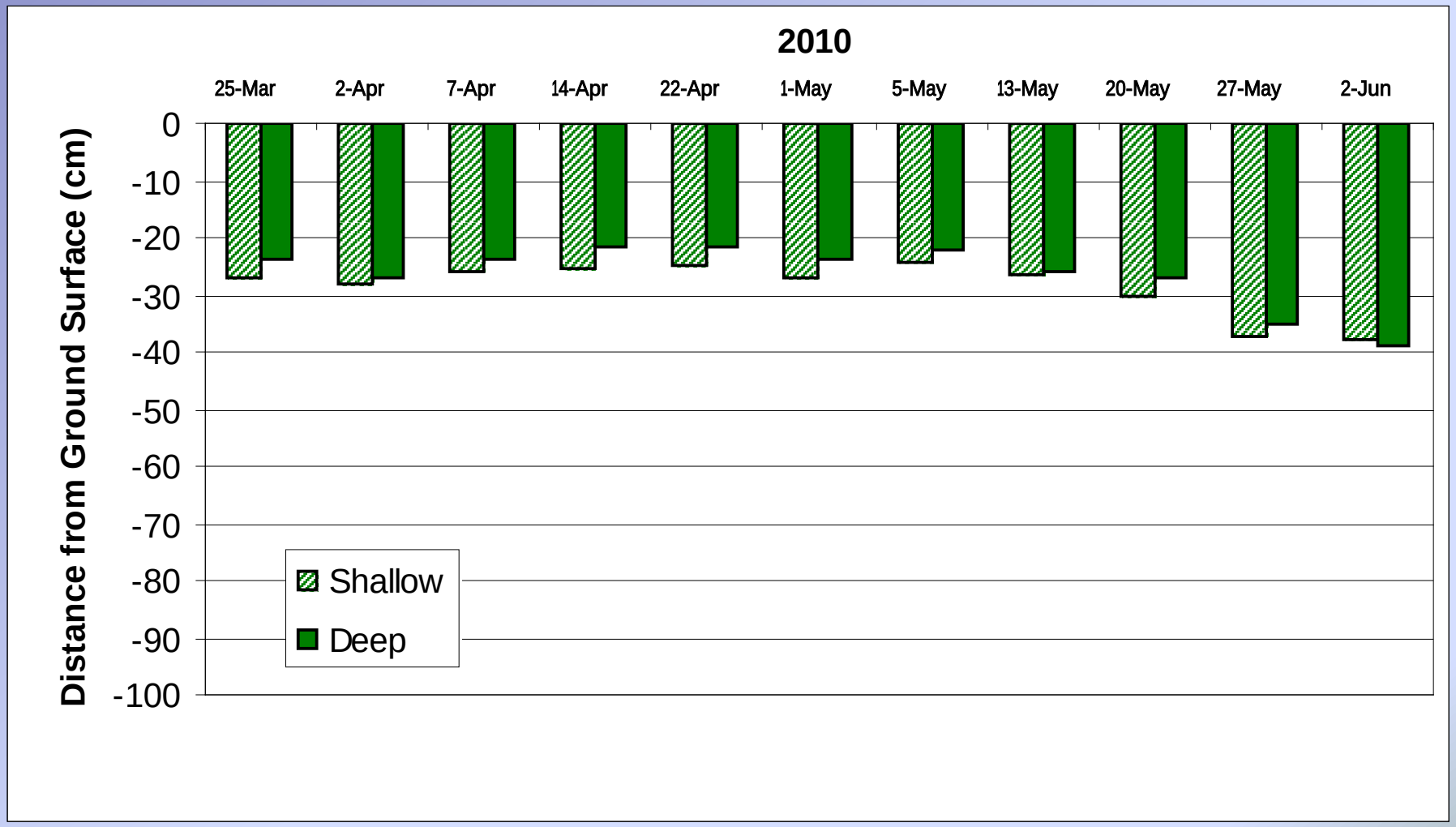

30
20
10
0
-10
-20
-30
-40
-50
-60
Depth from Groundlevel
Summit
Rim
Basin
Standing w ater
1-Apr
22-Apr
13-May
3-Jun
24-Jun
15-Jul
5-Aug
26-Aug
16-Sep
7-Oct
28-Oct
18-Nov
9-Dec
2009

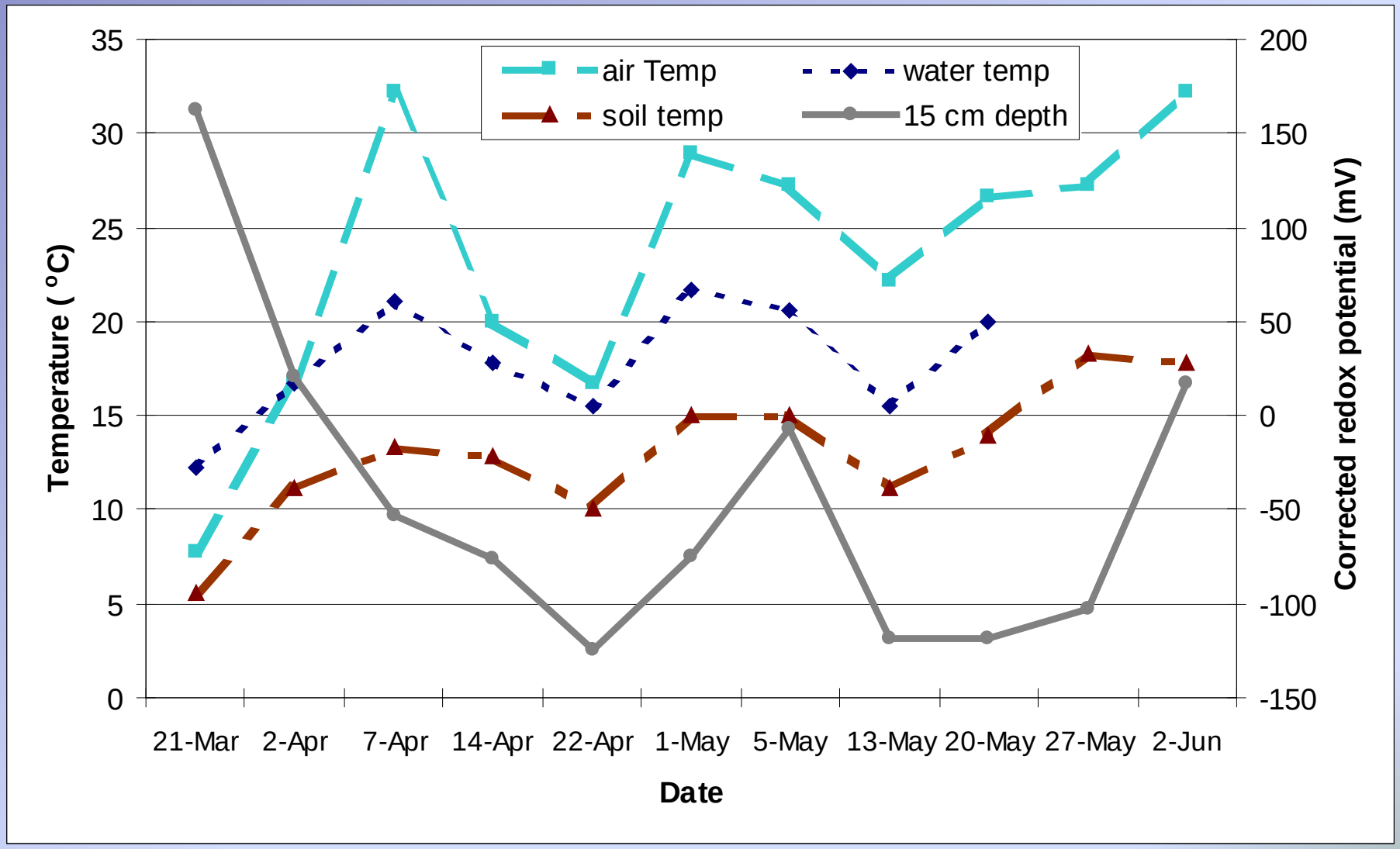
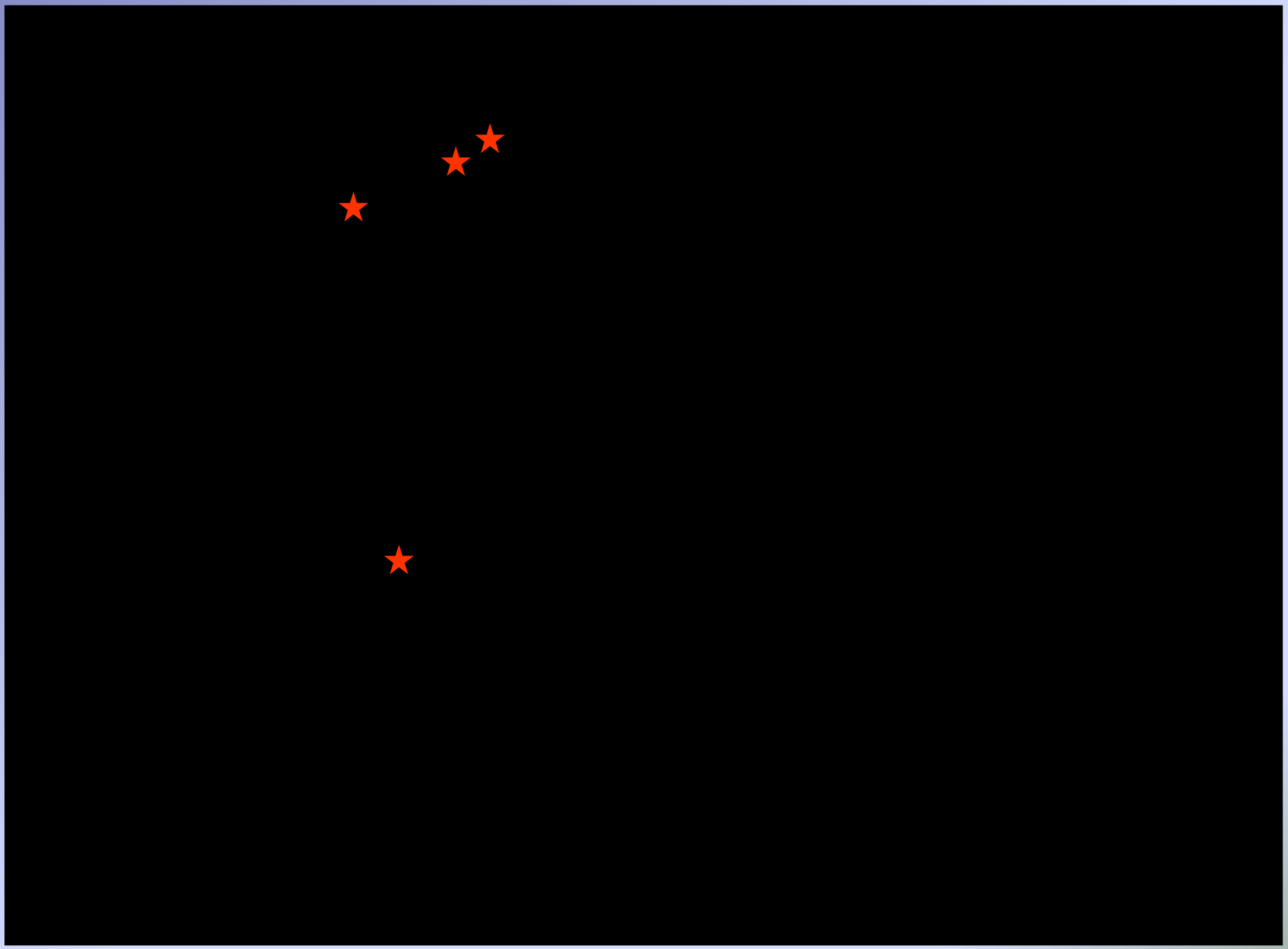

2009
2-Apr
8-Apr
17-Apr
24-Apr
1-May
10-May
16-May
26-May
5-Jun
2-Jul
24-Jul
26-Aug
6-Oct
22-Oct
3-Dec
Distance from Ground Surface (cm)
0
-10
-20
-30
-40
-50
-60
-70
-80
-90
Shallow
Deep


Summit
15 cm
25 cm
45 cm
Corrected redox potential (mV)
600
500
400
300
200
100
0
-100
-200
23-Mar
30-Mar
6-Apr
13-Apr
20-Apr
27-Apr
4-May
11-May
18-May
25-May
1-Jun
2010


Rim
15 cm
25 cm
45 cm
Corrected redox potential (mV)
500
400
300
200
100
0
-100
-200
23-Mar
30-Mar
6-Apr
13-Apr
20-Apr
27-Apr
4-May
11-May
18-May
25-May
1-Jun
2010


Basin
45 cm
Corrected redox potential (mV)
500
400
300
200
100
0
-100
-200
23-Mar
30-Mar
6-Apr
13-Apr
20-Apr
27-Apr
4-May
11-May
18-May
25-May
1-Jun
2010


2010
25-Mar
2-Apr
7-Apr
14-Apr
22-Apr
1-May
5-May
13-May
20-May
27-May
2-Jun
0
-10
-20
-30
-40
-50
-60
-70
-80
-90
-100
Distance from Ground Surface (cm)
Shallow
Deep


air Temp
water temp
soil temp
15 cm depth
Temperature (°C)
Corrected redox potential (mV)
Date
35
30
25
20
15
10
5
0
200
150
100
50
0
-50
-100
-150
21-Mar
2-Apr
7-Apr
14-Apr
22-Apr
1-May
5-May
13-May
20-May
27-May
2-Jun