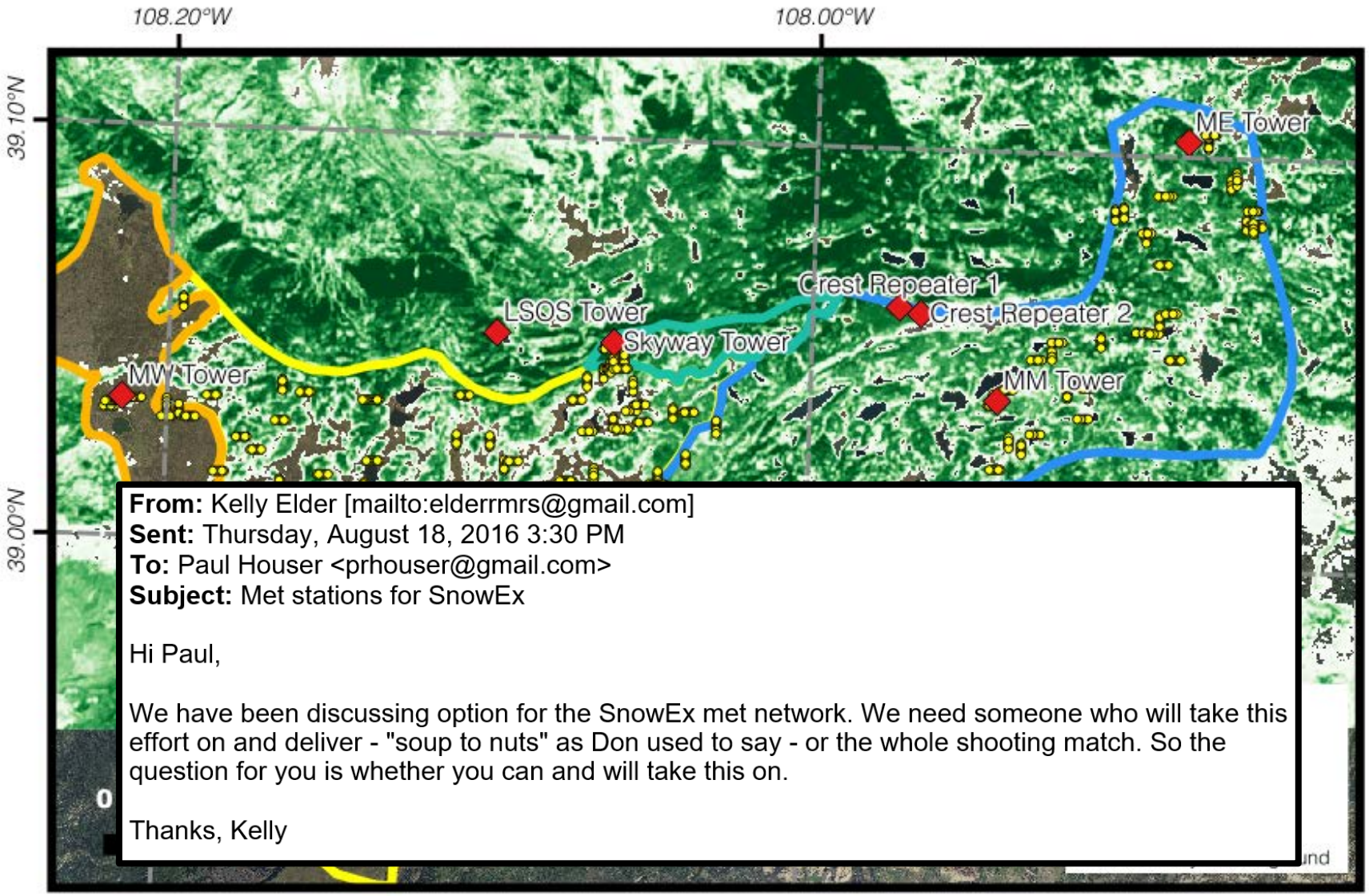
SnowEx 2017
Grand Mesa Automatic Meteorological and Snow Observations



From: Kelly Elder [mailto:elderrmrs@gmail.com]
Sent: Thursday, August 18, 2016 3:30 PM
To: Paul Houser <prhouser@gmail.com>
Subject: Met stations for SnowEx

Hi Paul,

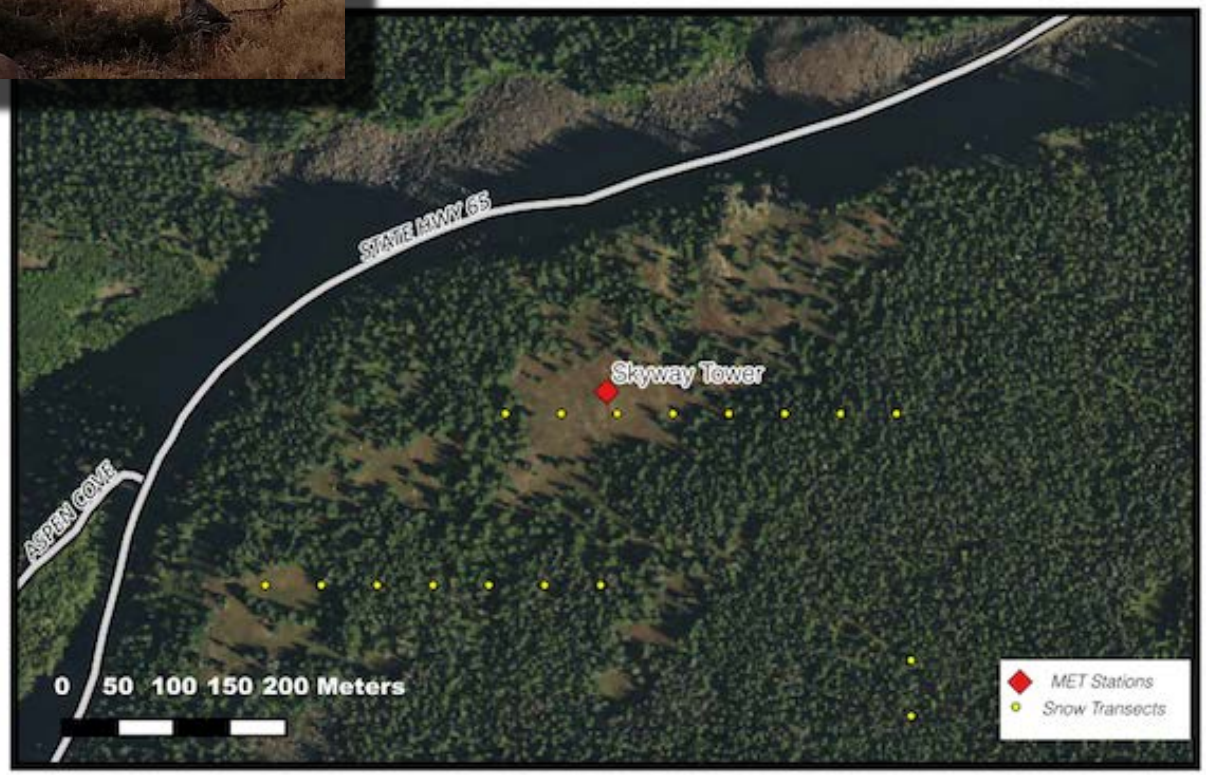
We have been discussing option for the SnowEx met network. We need someone who will take this effort on and deliver - "soup to nuts" as Don used to say - or the whole shooting match. So the question for you is whether you can and will take this on.

Thanks, Kelly

September 2017

GMSP (Skyway) Tower (30ft)

- Lat: 39.05074
- Lon: -108.06143
- Elev: 3239m
- 1X Campbell CR6, 10s sampling, 10min and hourly sample, average, max, min, standard deviation)
- 3X Stevens HydraProbe II soil moisture sensors (-5cm, -20cm, -50cm)
- 3X Apogee IR Radiometers (Nadir, 30deg N, 30deg S)
- 25 node Soil/Snow Thermocouple String (300,275,225,175,150,125,100,75,50,40,30,20,10,5,2.5,0,-2.5,-5,-10,-20,-30,-40,-50cm)
- 1X Verizon Raven Cellular Modem
- 2X RF451 Radio Modems
- 1X Time-lapse Camera, 3hr



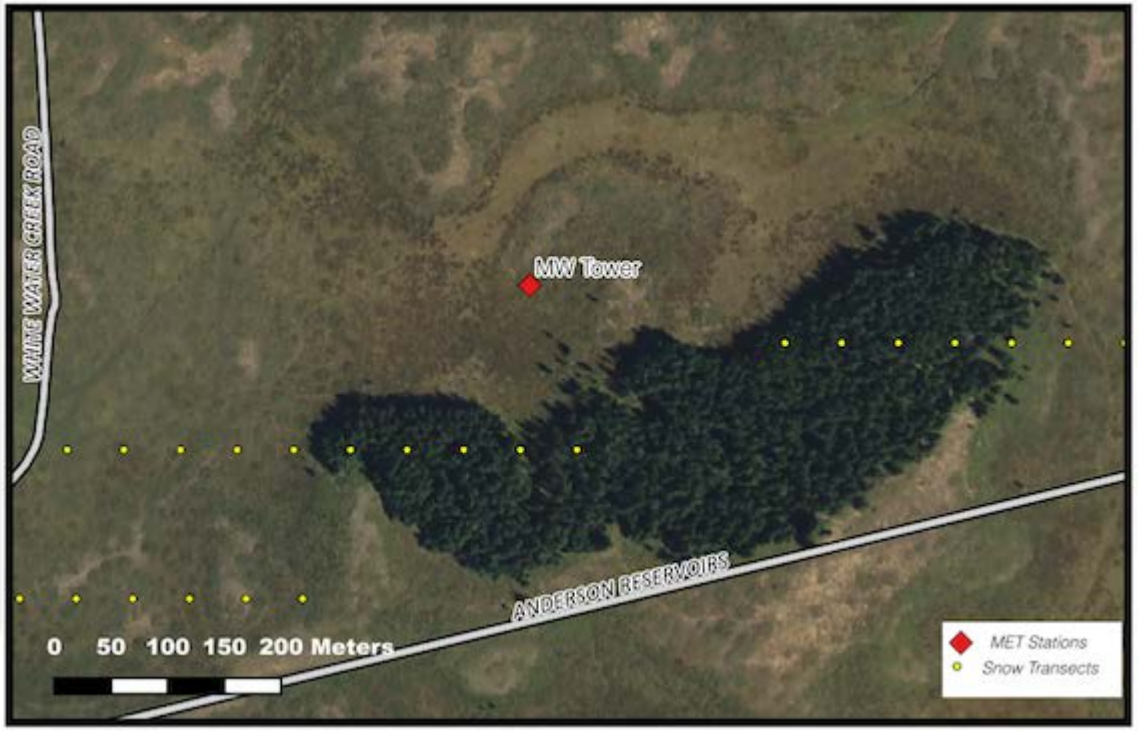
LSOS Tower (20ft)

- Lat:39.05225L
- Lon:-108.09792
- Elev:2974m
- 1X Campbell CR6, 10s sampling, 10min and hourly sample, average, max, min, standard deviation
- 3X Stevens HydraProbe II soil moisture sensors (-5cm, -20cm, -50cm)
- 4X Apogee IR radiometers (2X Nadir, 30deg N, 30deg S)
- 2X RM Young 05103 wind sensor (10ft, 20ft)
- 2X HC2S3 temperature/humidity sensor (10ft, 20ft)
- 1X SR50A sonic snow depth sensor
- 1X CNR4 4 component net radiometer
- 1X CS106 barometric pressure
- 25 node soil/snow thermocouple string (300,275,225,175,150,125,100,75,50,40,30,20,10,5,2.5,0,-2.5,-5,-10,-20,-30,-40,-50cm)
- 1X RF451 radio modem
- 1X time-lapse camera, 3hr

(note that several other sensors are installed nearby)

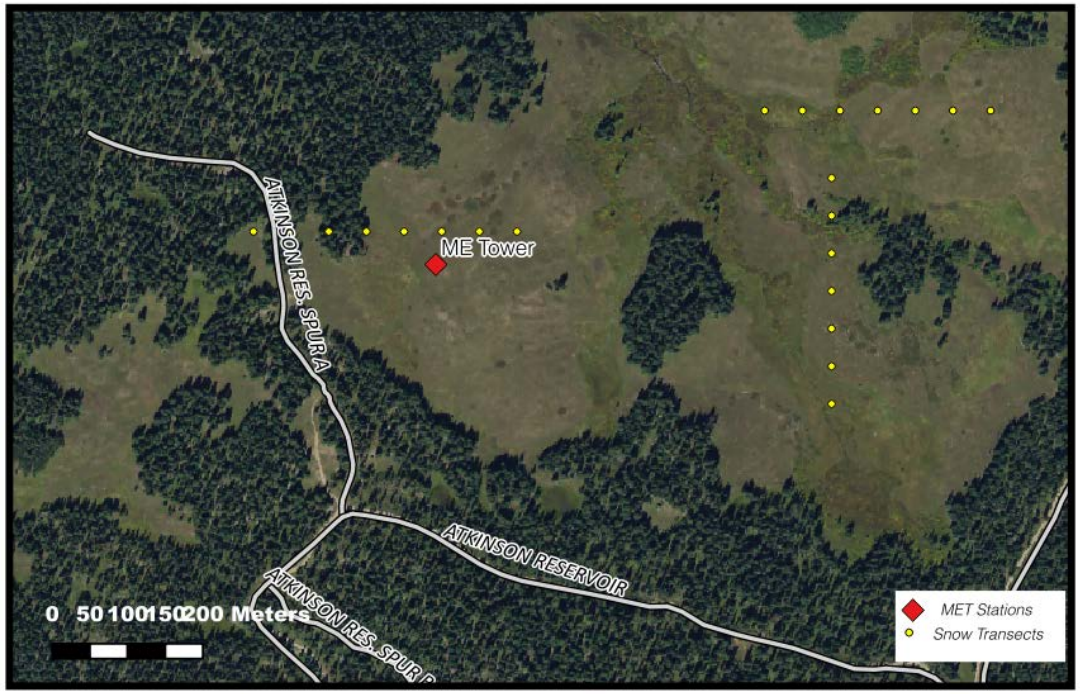
MW Tower (20ft)

- Lat:39.03388
- Lon:-108.21399
- Elev:3033m
- 1X Campbell CR6, 10s sampling, 10min and hourly sample, average, max, min, standard deviation
- 3X Stevens HydraProbe II soil moisture sensors (-5cm, -20cm, -50cm)
- 4X Apogee IR radiometers (2X Nadir, 30deg N, 30deg S)
- 2X RM Young 05103 wind sensor (10ft, 20ft)
- 2X HC2S3 temperature/humidity sensor (10ft, 20ft)
- 1X SR50A sonic snow depth sensor
- 1X CNR4 4 component net radiometer
- 25 node soil/snow thermocouple string (300,275,225,175,150,125,100,75,50,40,30,20,10,5,2.5,0,-2.5,-5,-10,-20,-30,-40,-50cm)
- 1X RF451 radio modem
- 1X time-lapse camera, 3hr



ME Tower (20ft)

- Lat: 39.10374
- Lon: -107.88448
- Elev: 3078m
- 1X Campbell CR6, 10s sampling, 10min and hourly sample, average, max, min, standard deviation
- 3X Stevens HydraProbe II soil moisture sensors (-5cm, -20cm, -50cm)
- 4X Apogee IR radiometers (2X Nadir, 30deg N, 30deg S)
- 2X RM Young 05103 wind sensor (12ft, 20ft)
- 2X HC2S3 temperature/humidity sensor (12ft, 20ft)
- 1X SR50A sonic snow depth sensor
- 1X CNR4 4 component net radiometer
- 1X CS106 barometric pressure
- 25 node soil/snow thermocouple string (300,275,225,175,150,125,100,75,50,40,30,20,10,5,2.5,0,-2.5,-5,-10,-20,-30,-40,-50cm)
- 1X RF451 radio modem
- 1X time-lapse camera, 3hr



MM Tower (20ft)

- Lat: 39.03954
- Lon: -107.94174
- Elev:3176m
- 1X Campbell CR6, 10s sampling, 10min and hourly sample, average, max, min, standard deviation
- 3X Stevens HydraProbe II soil moisture sensors (-5cm, -20cm, -50cm)
- 4X Apogee IR radiometers (2X Nadir, 30deg N, 30deg S)
- 2X RM Young 05103 wind sensor (12ft, 20ft)
- 2X HC2S3 temperature/humidity sensor (12ft, 20ft)
- 1X SR50A sonic snow depth sensor
- 1X CNR4 4 component net radiometer
- 25 node soil/snow thermocouple string (300,275,225,175,150,125,100,75,50,40,30,20,10,5,2.5,0,-2.5,-5,-10,-20,-30,-40,-50cm)
- 1X RF451 radio modem
- 1X time-lapse camera, 3hr

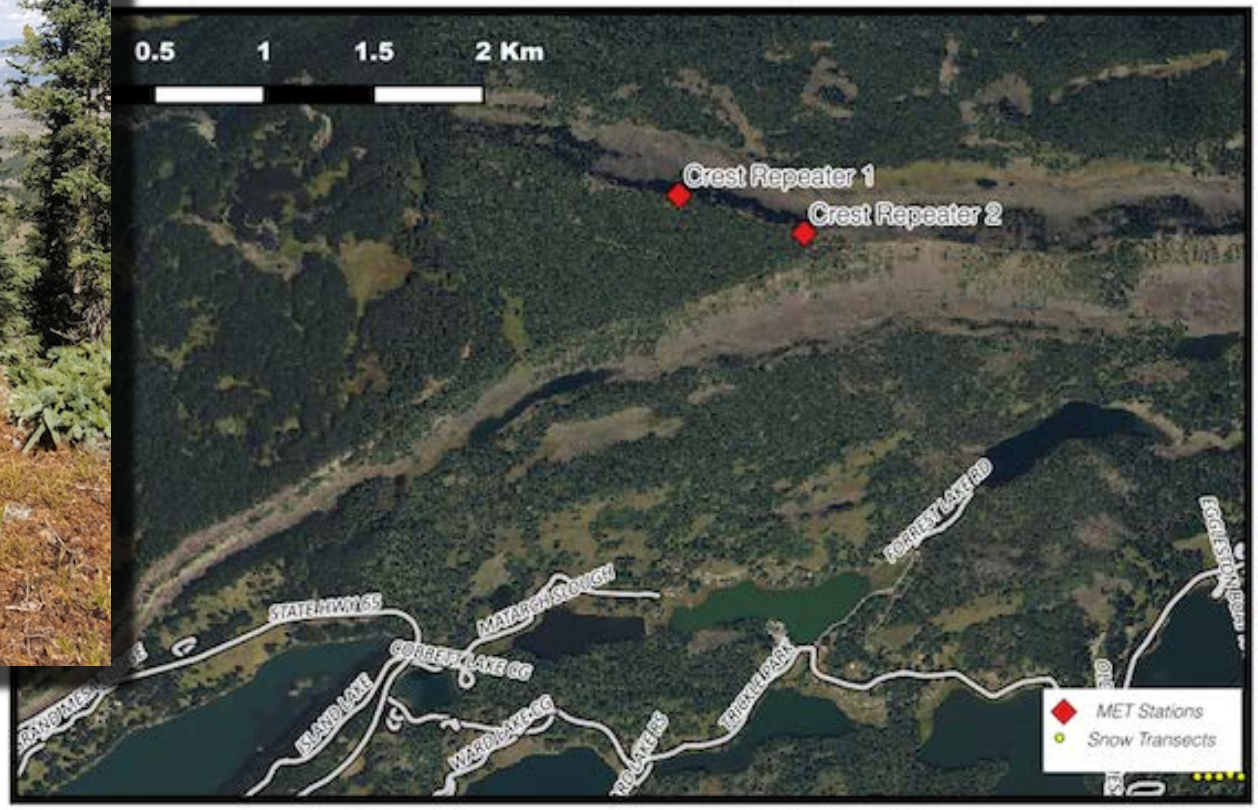
(note that a precipitation sensor is installed nearby)

Craigs Crest Radio Repeater 1 & TimeCam

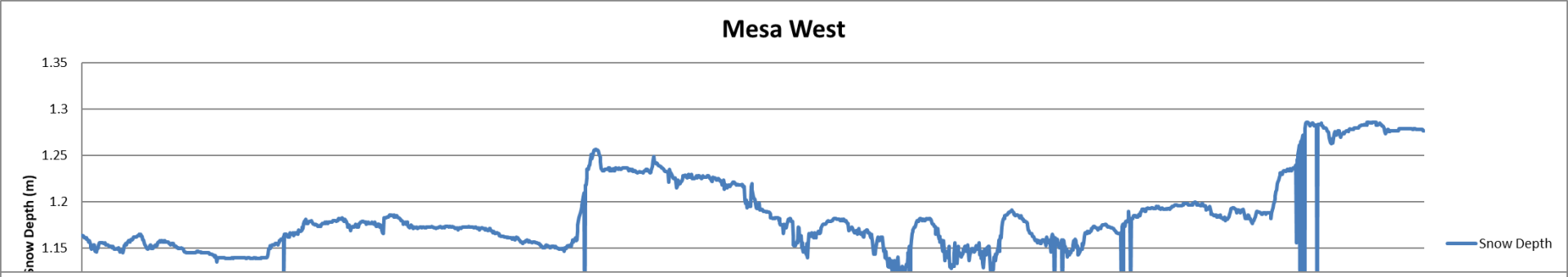
- Lat: 39.06154
- Lon: -107.97297
- Elev: 3407m

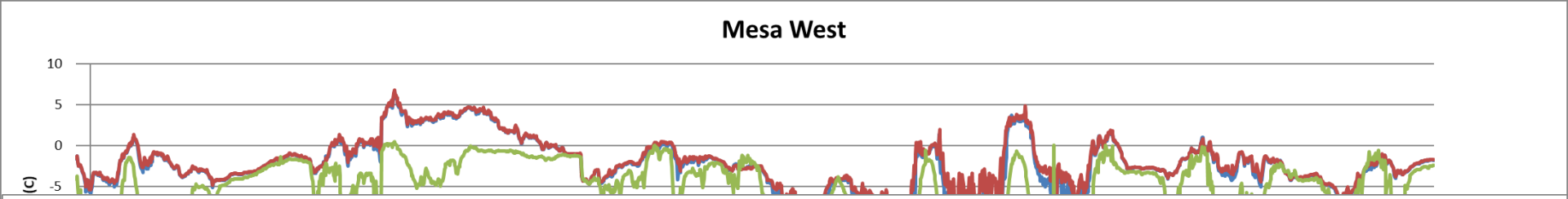
Craigs Crest Radio Repeater 2 |

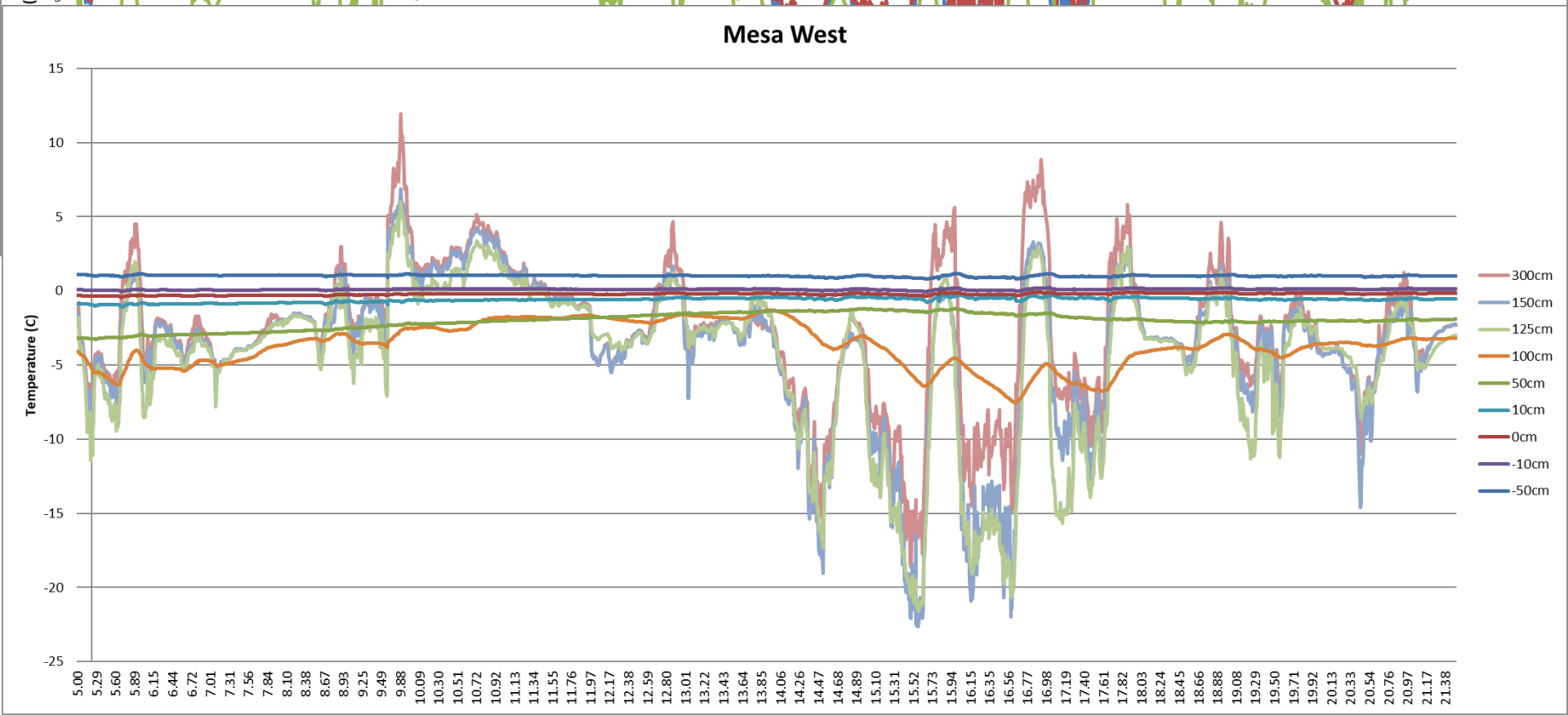
- Lat: 39.06014
- Lon: -107.96630
- Elev: 3394m

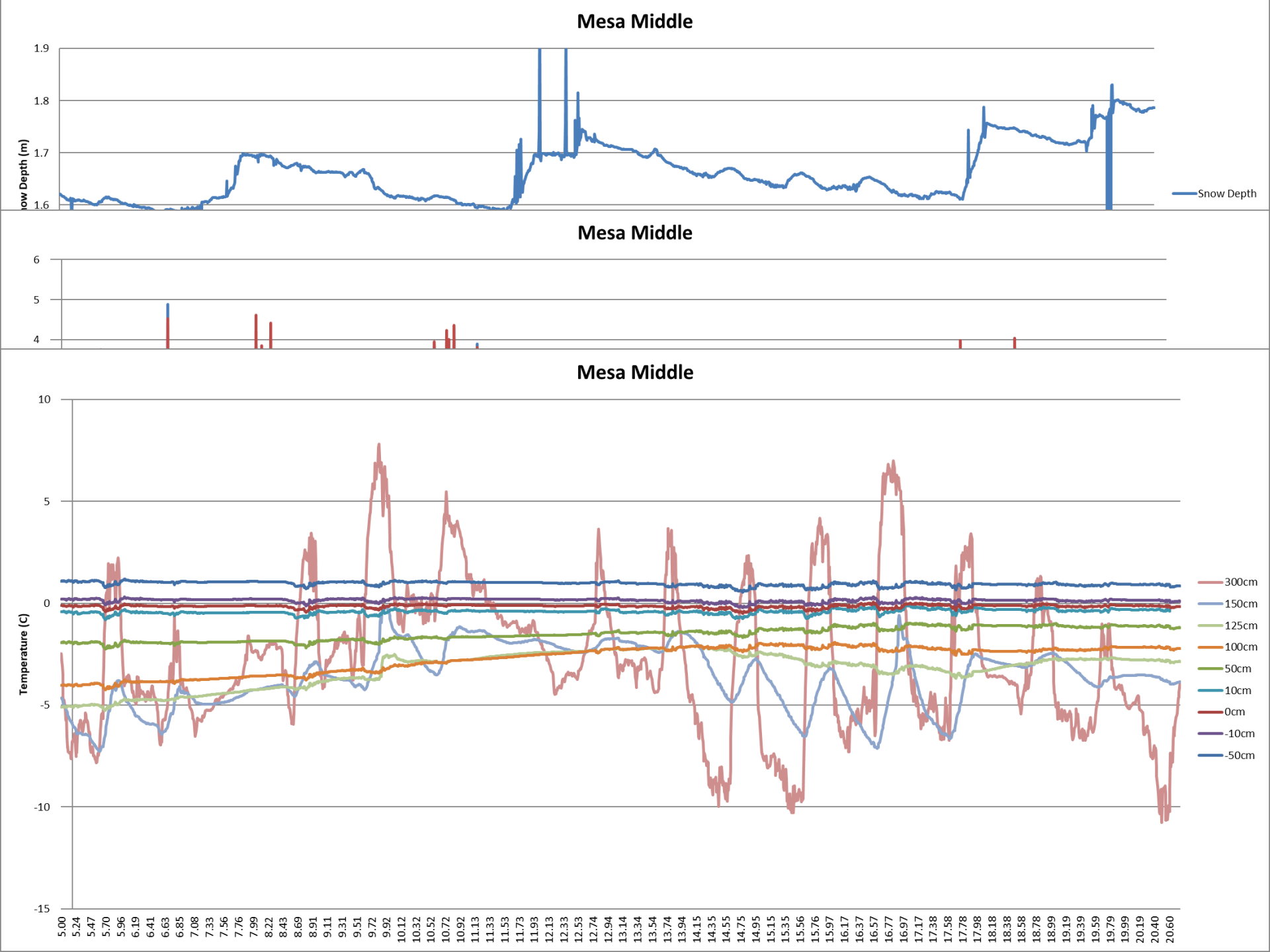


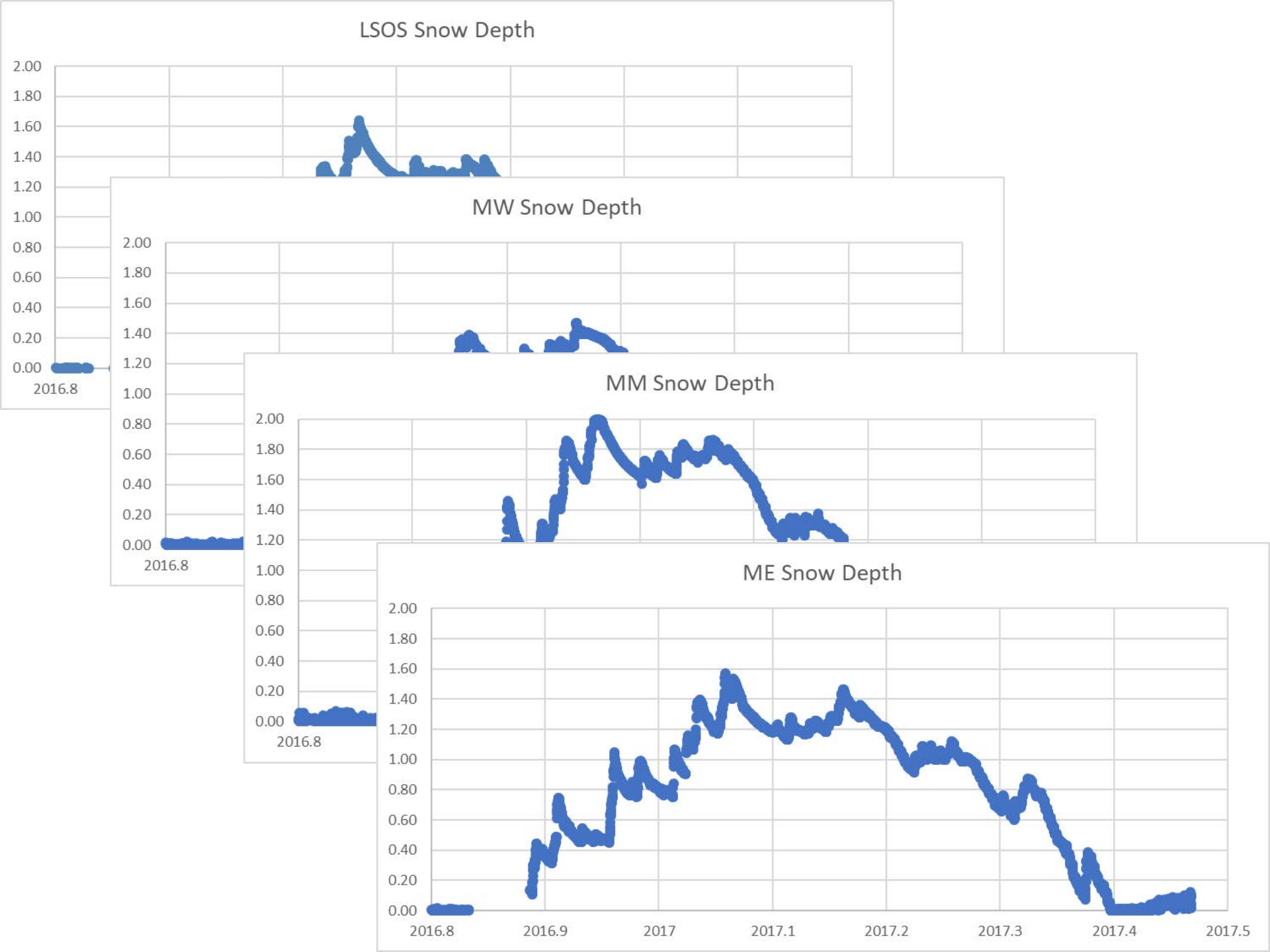
February 2017
Research Meteorological Station


Mesa West
Snow Depth (m)
1.35
1.3
1.25
1.2
1.15
Snow Depth


Mesa West
(C)
10
5
0
-5


Mesa West
Temperature (C)
15
10
5
0
-5
-10
-15
-20
-25
5.00
5.29
5.60
5.89
6.15
6.44
6.72
7.01
7.31
7.56
7.84
8.10
8.38
8.67
8.93
9.25
9.49
9.88
10.09
10.30
10.51
10.72
10.92
11.13
11.34
11.55
11.76
11.97
12.17
12.38
12.59
12.80
13.01
13.22
13.43
13.64
13.85
14.06
14.26
14.47
14.68
14.89
15.10
15.31
15.52
15.73
15.94
16.15
16.35
16.56
16.77
16.98
17.19
17.40
17.61
17.82
18.03
18.24
18.45
18.66
18.88
19.08
19.29
19.50
19.71
19.92
20.13
20.33
20.54
20.76
20.97
21.17
21.38
300cm
150cm
125cm
100cm
50cm
10cm
0cm
-10cm
-50cm


Mesa Middle
Snow Depth (m)
1.9
1.8
1.7
1.6
Snow Depth
Mesa Middle
6
5
4
Mesa Middle
Temperature (C)
10
5
0
-5
-10
-15
300cm
150cm
125cm
100cm
50cm
10cm
0cm
-10cm
-50cm
5.00
5.24
5.47
5.70
5.96
6.19
6.41
6.63
6.85
7.08
7.33
7.56
7.76
7.99
8.22
8.43
8.69
8.91
9.11
9.31
9.51
9.72
9.92
10.12
10.32
10.52
10.72
10.92
11.13
11.33
11.53
11.73
11.93
12.13
12.33
12.53
12.74
12.94
13.14
13.34
13.54
13.74
13.94
14.15
14.35
14.55
14.75
14.95
15.15
15.35
15.56
15.76
15.97
16.17
16.37
16.57
16.77
16.97
17.17
17.38
17.58
17.78
17.98
18.18
18.38
18.58
18.78
18.99
19.19
19.39
19.59
19.79
19.99
20.19
20.40
20.60


LSOS Snow Depth
MW Snow Depth
MM Snow Depth
ME Snow Depth
2.00
1.80
1.60
1.40
1.20
1.00
0.80
0.60
0.40
0.20
0.00
2016.8
2016.9
2017
2017.1
2017.2
2017.3
2017.4
2017.5

June 20, 2017

Research Meteorological Station
This weather station is part of a NASA-funded research study aimed at measuring water stored in the snowpack and ground.
Help us collect good measurements: please do not approach, tamper, or destroy this installation.
If you have any questions, please call 301-329-8218
NASA

SLOW
ADULTS AT PLAY

- Measurements ongoing
- GM Year 1 Data to NSIDC by Sept 1
- Monitoring real-time telemetry
- Working with local NWS

- Plan to include Senator Beck, Snotel, GJ data