Idaho DCO Update

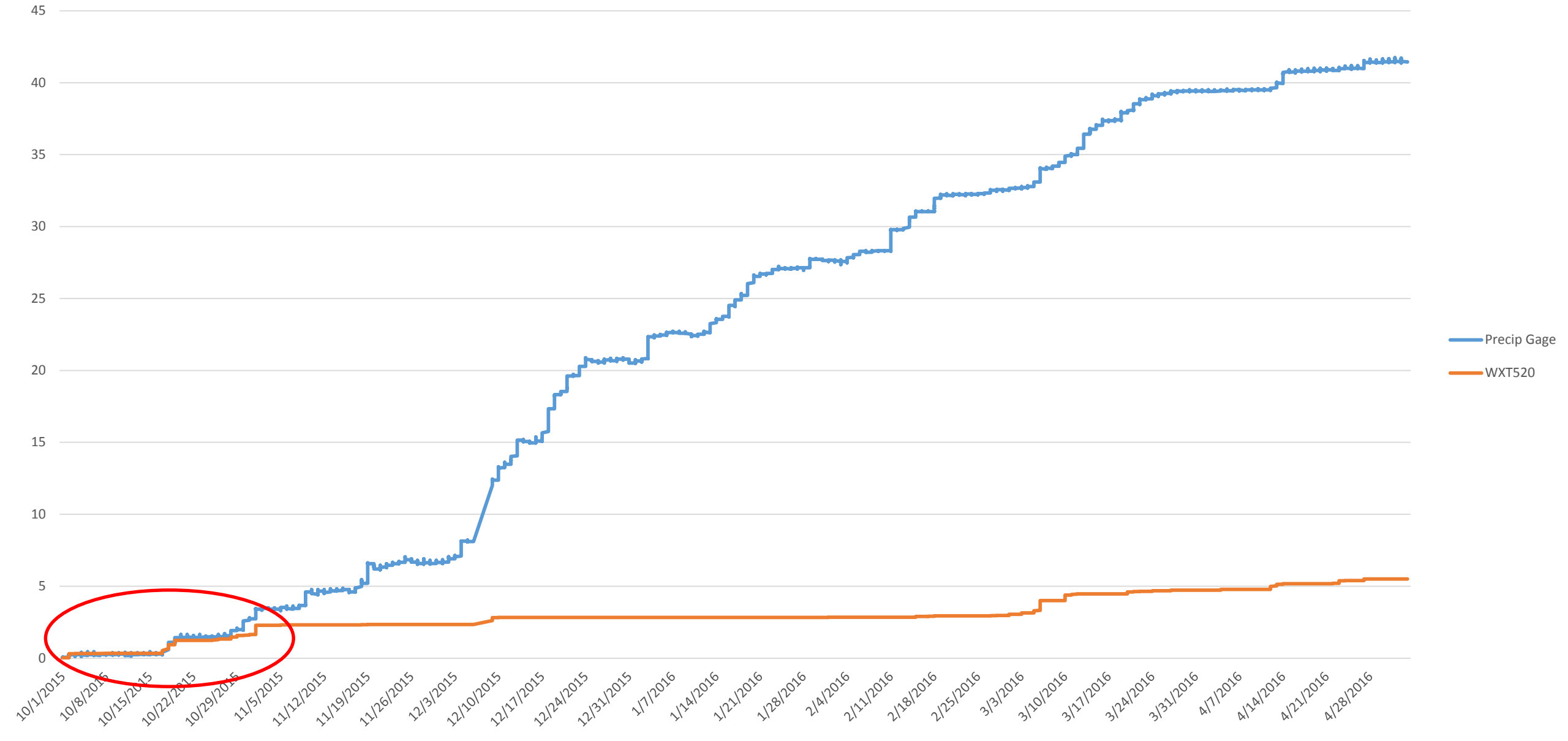
2016

WY 2015 by the numbers

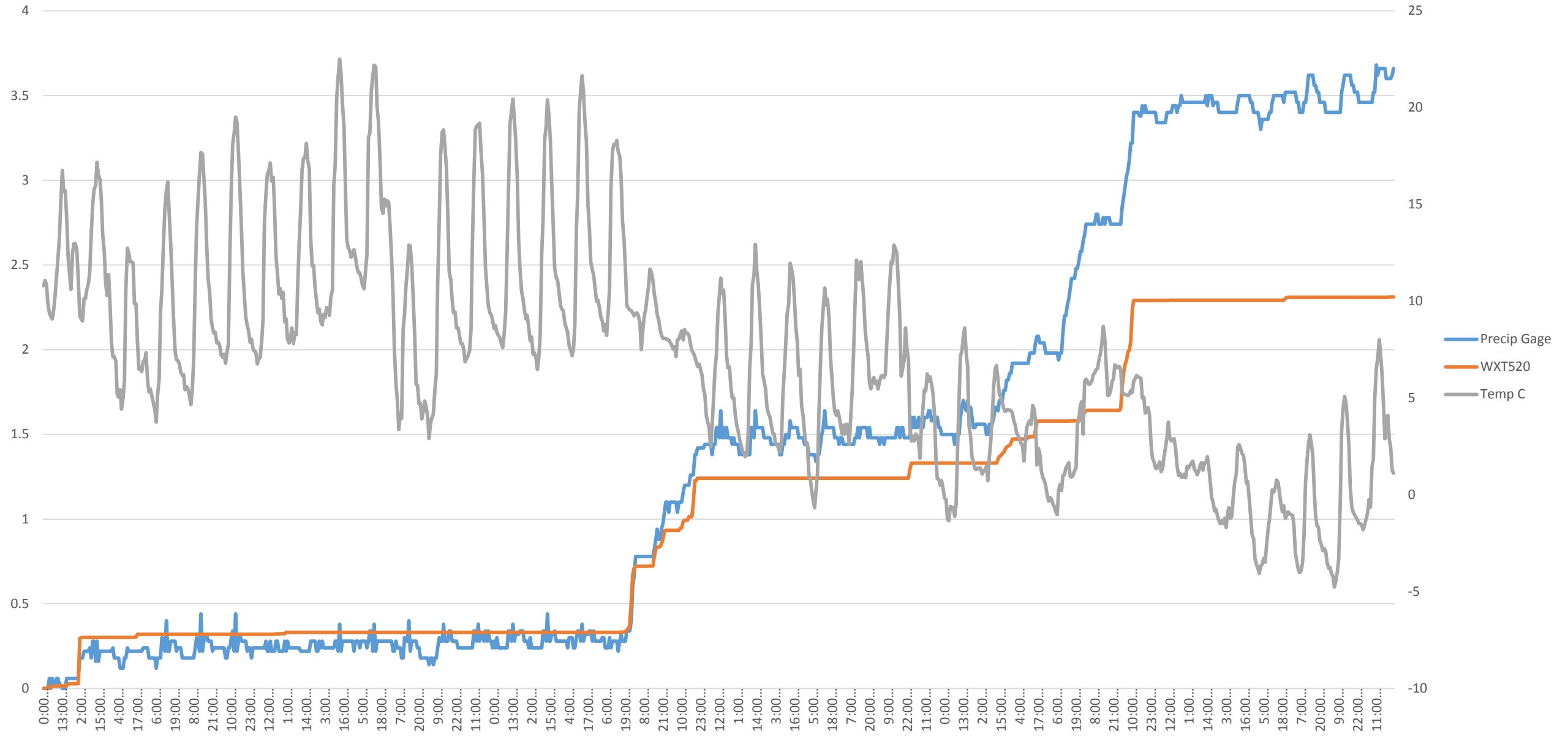
- 39,192 - Miles driven to service 118 sites.
  - 4,826 gallons of fuel consumed (8.1 mpg)
- 5 – Non-commercial flights: 4 rotary, 1 fixed wing
- At 118 SNOTEL sites:
  - 68 - batteries swapped
  - 68 - transducers swapped
  - 20 - radios replaced
  - 20 - Snow depth sensors (3 new installs, 17 swaps)
  - 5 - pillows replaced
  - 5 - towers installed
  - 3 - soil moisture installs (53 total)
  - 3 - wind installs (23 total)

07/27/2015

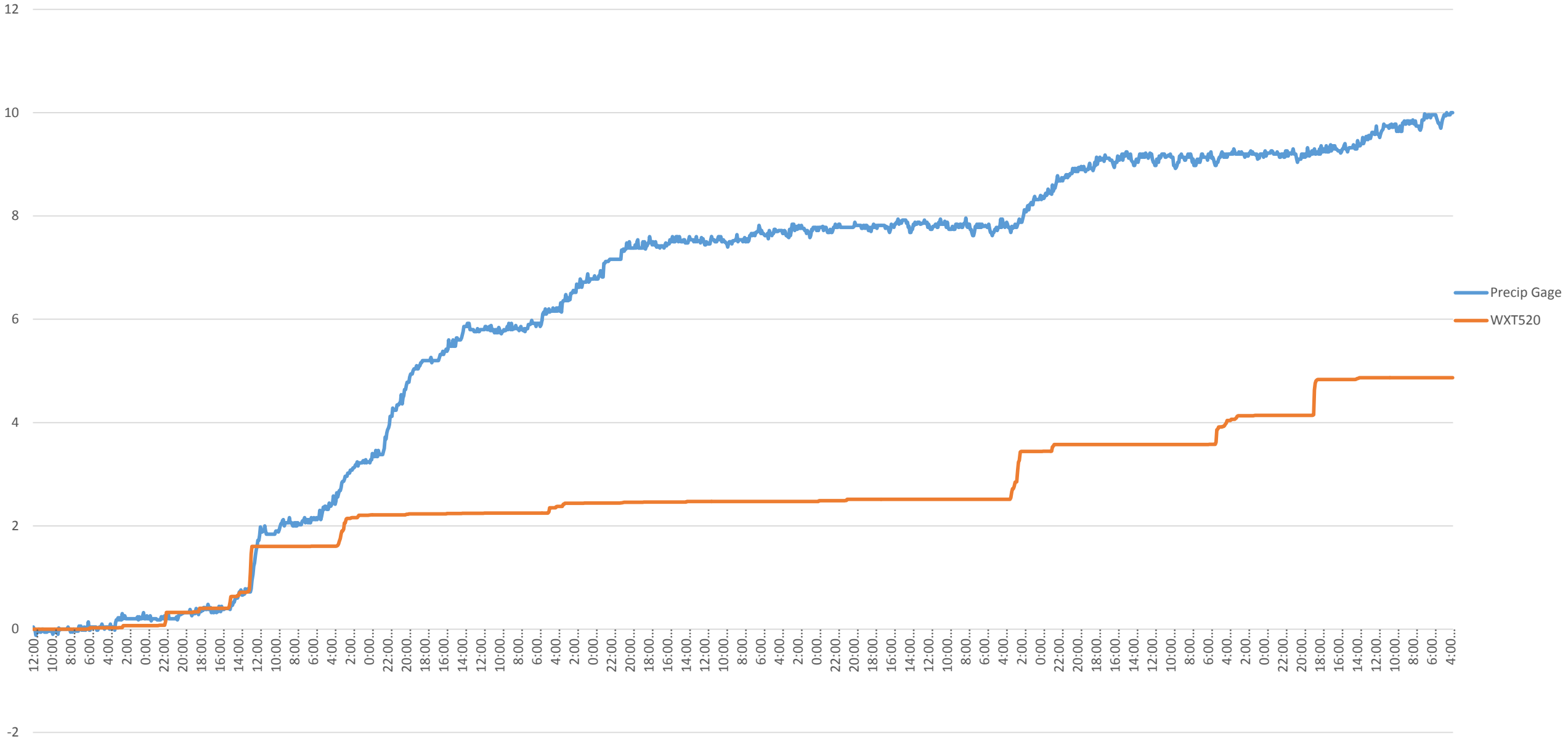
Mores Creek Summit
WXT520 and Precipitation Gage Comparison
Hourly Data 10/01/2015 - 05/04/2016

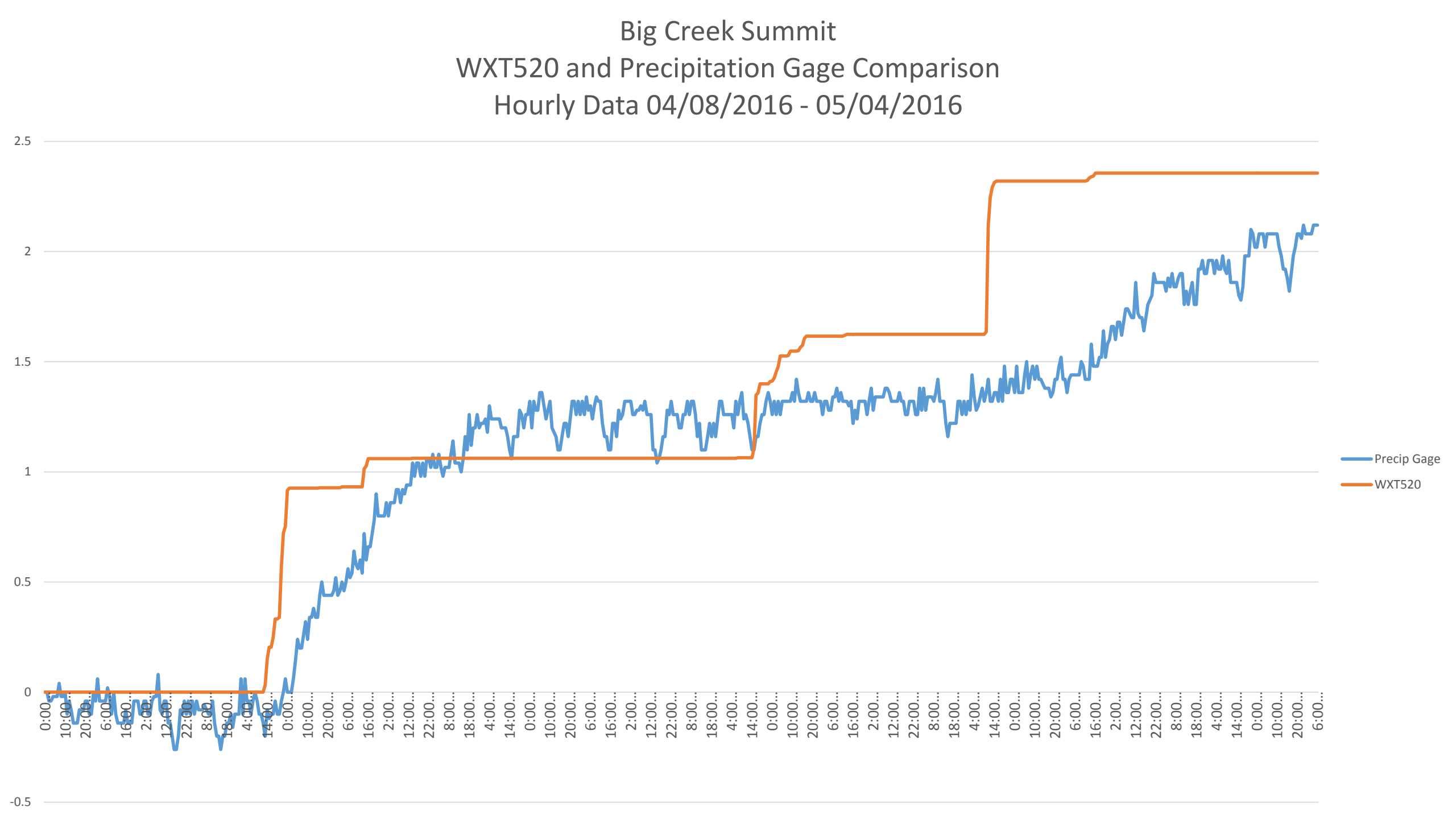


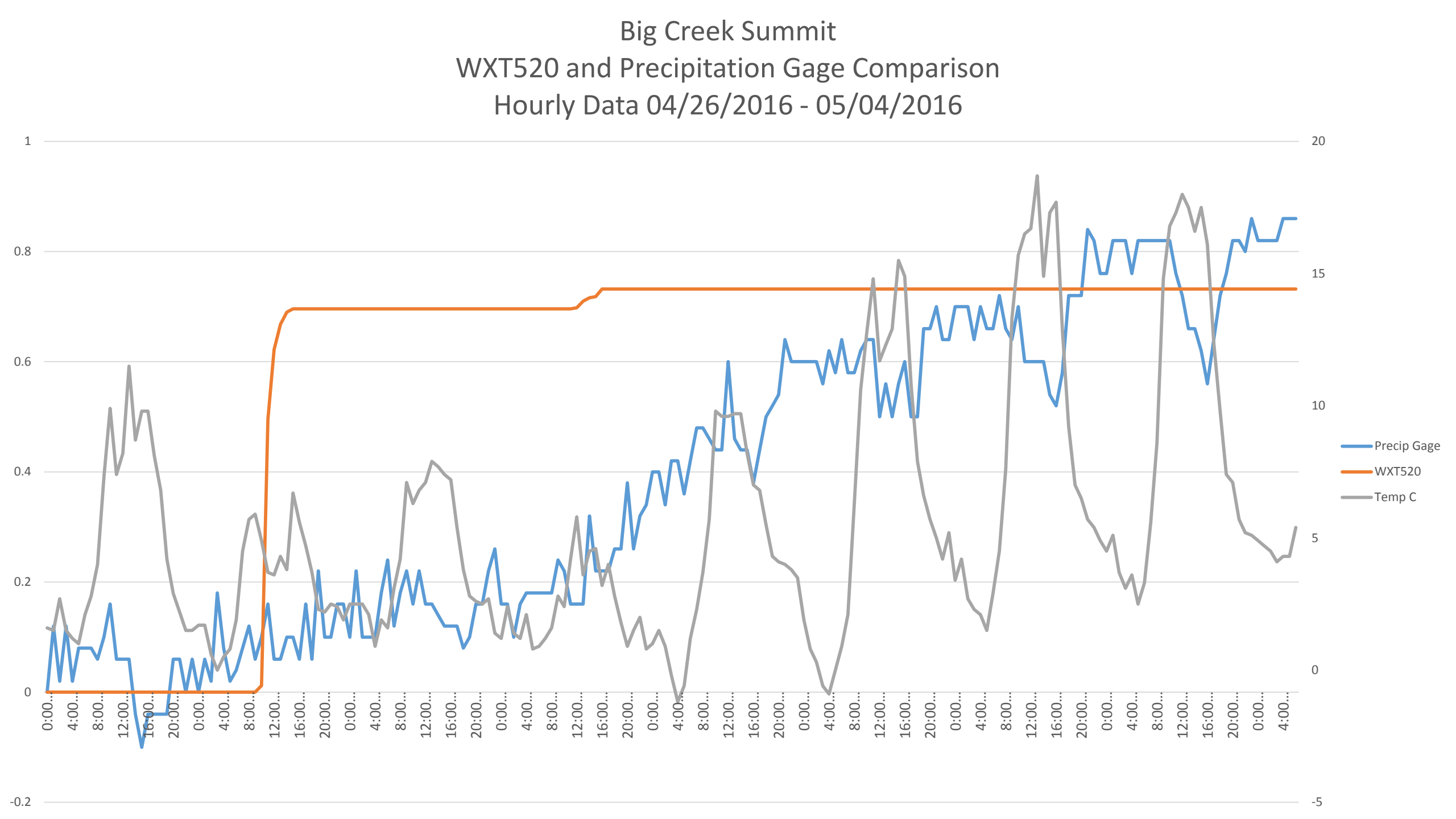
Mores Creek Summit
WXT520 and Precipitation Gage Comparison
Hourly Data 10/01/2015 - 11/08/2015

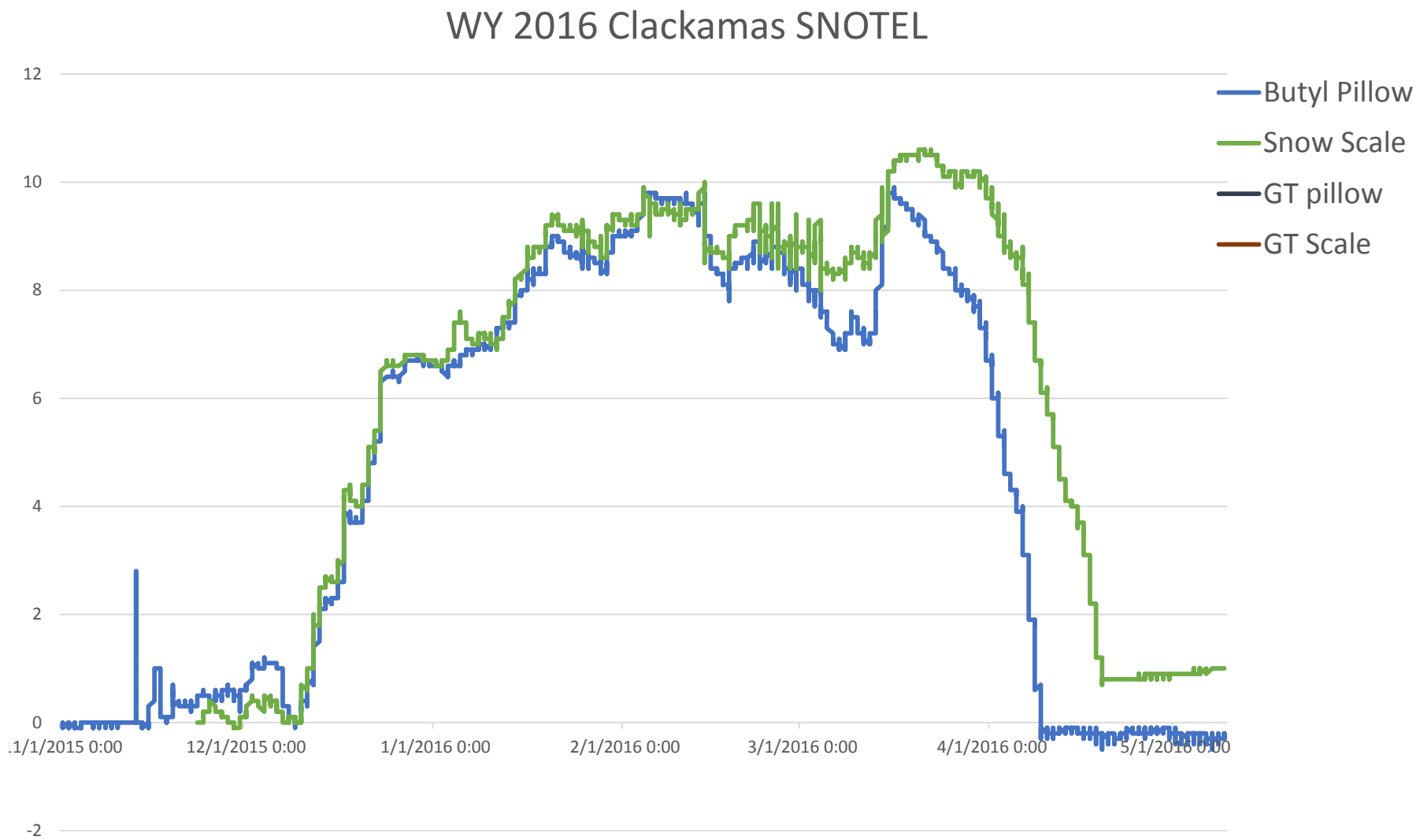


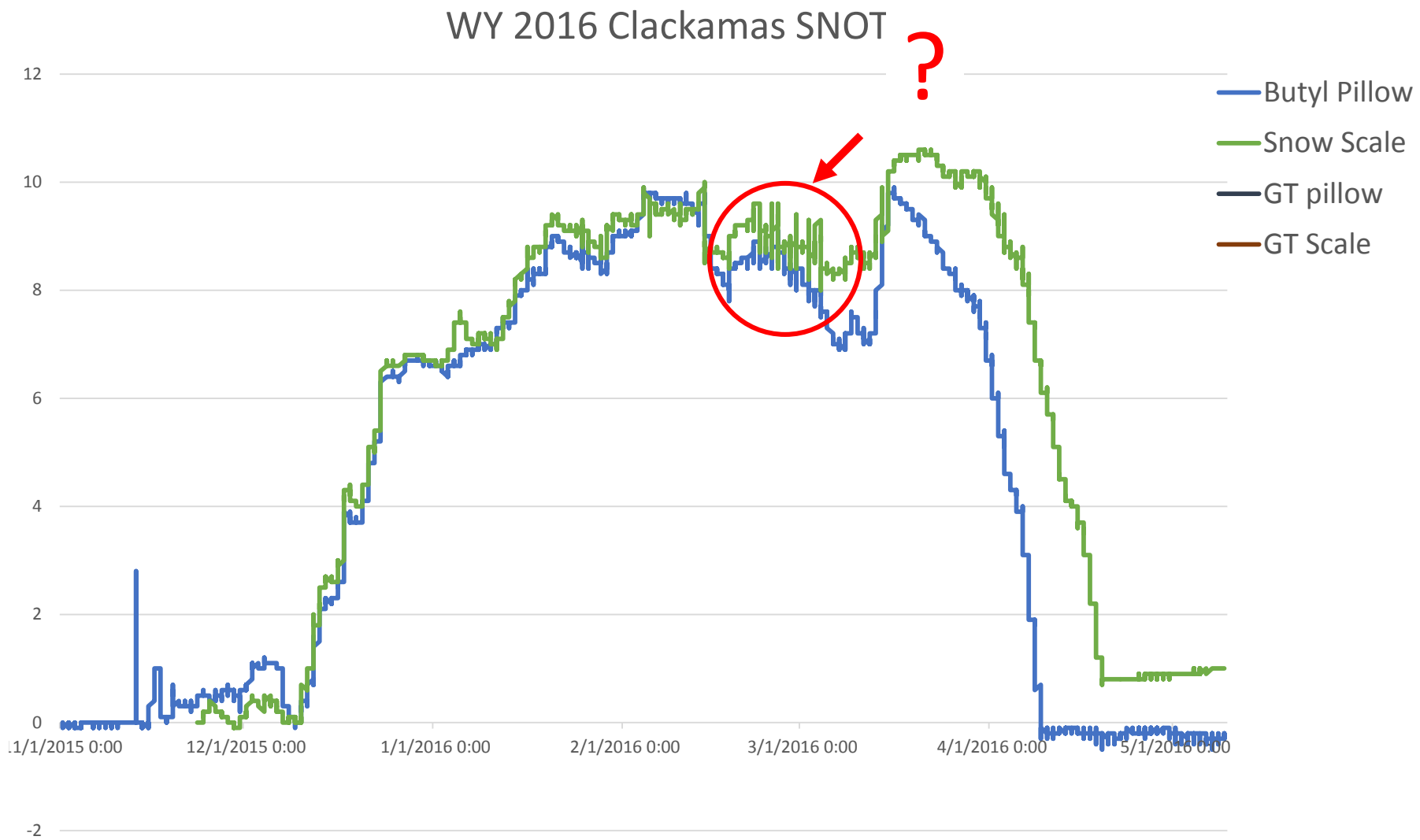
Big Creek Summit
WXT520 and Precipitation Gage Comparison
Hourly Data 02/24/2016 - 05/04/2016



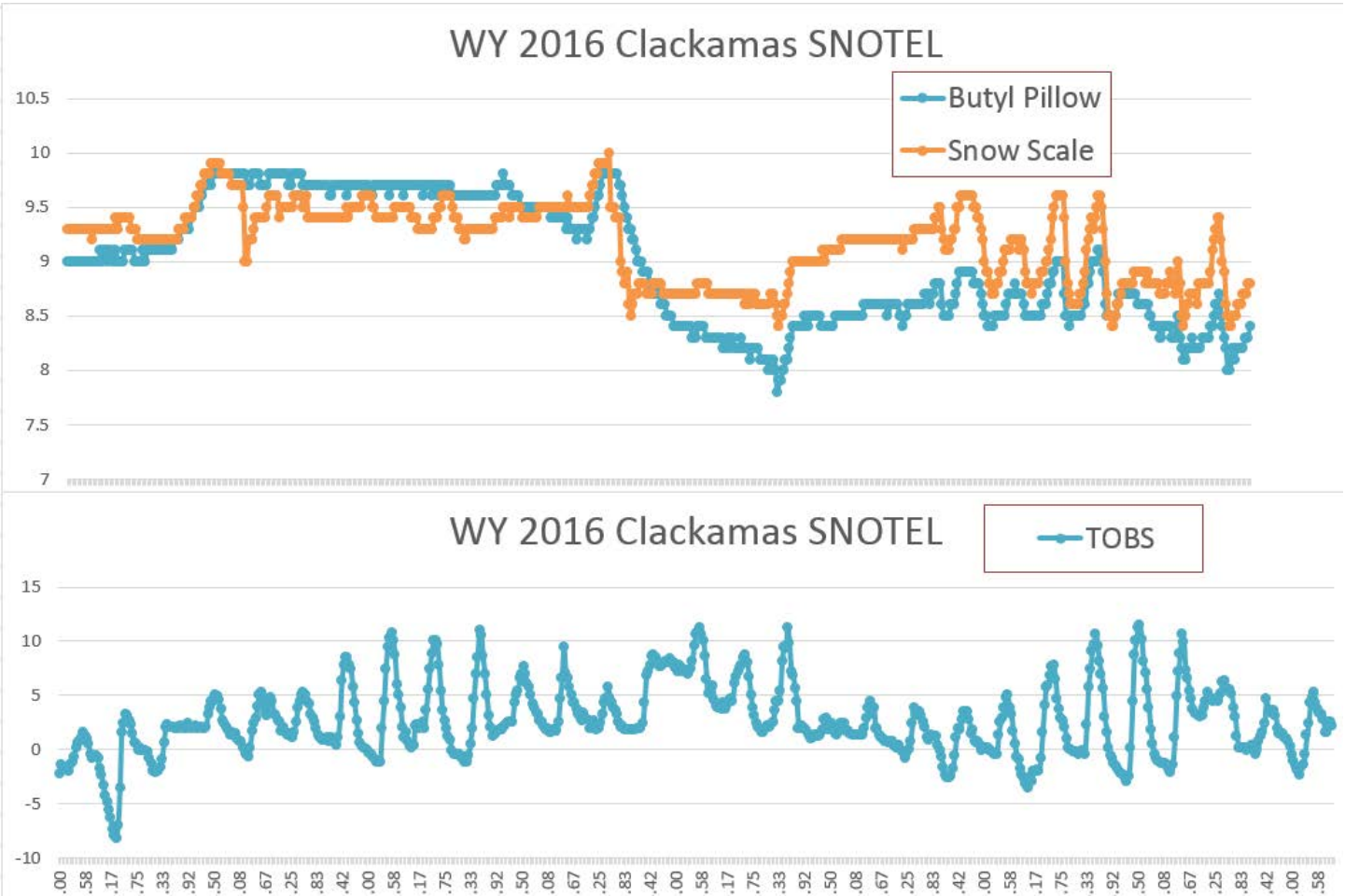

Big Creek Summit
WXT520 and Precipitation Gage Comparison
Hourly Data 04/08/2016 - 05/04/2016
2.5
2
1.5
1
0.5
0
-0.5
Precip Gage
WXT520


Big Creek Summit
WXT520 and Precipitation Gage Comparison
Hourly Data 04/26/2016 - 05/04/2016
1
0.8
0.6
0.4
0.2
0
-0.2
20
15
10
5
0
-5
Precip Gage
WXT520
Temp C
0:00...
4:00...
8:00...
12:00...
16:00...
20:00...

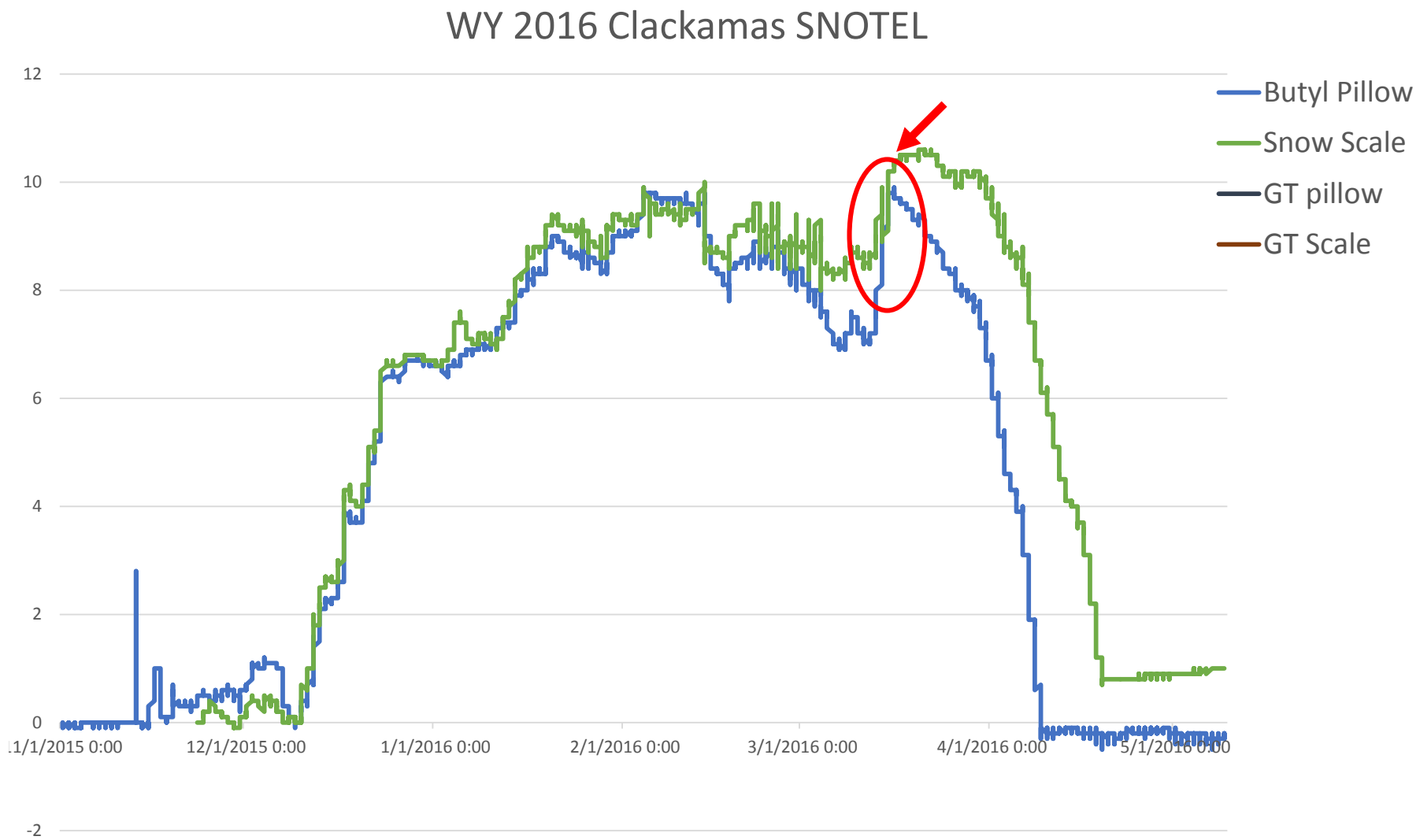

WY 2016 Clackamas SNOTEL
12
10
8
6
4
2
0
-2
11/1/2015 0:00
12/1/2015 0:00
1/1/2016 0:00
2/1/2016 0:00
3/1/2016 0:00
4/1/2016 0:00
5/1/2016 0:00
Butyl Pillow
Snow Scale
GT pillow
GT Scale


WY 2016 Clackamas SNOT
?
12
10
8
6
4
2
0
-2
11/1/2015 0:00
12/1/2015 0:00
1/1/2016 0:00
2/1/2016 0:00
3/1/2016 0:00
4/1/2016 0:00
5/1/2016 0:00
Butyl Pillow
Snow Scale
GT pillow
GT Scale

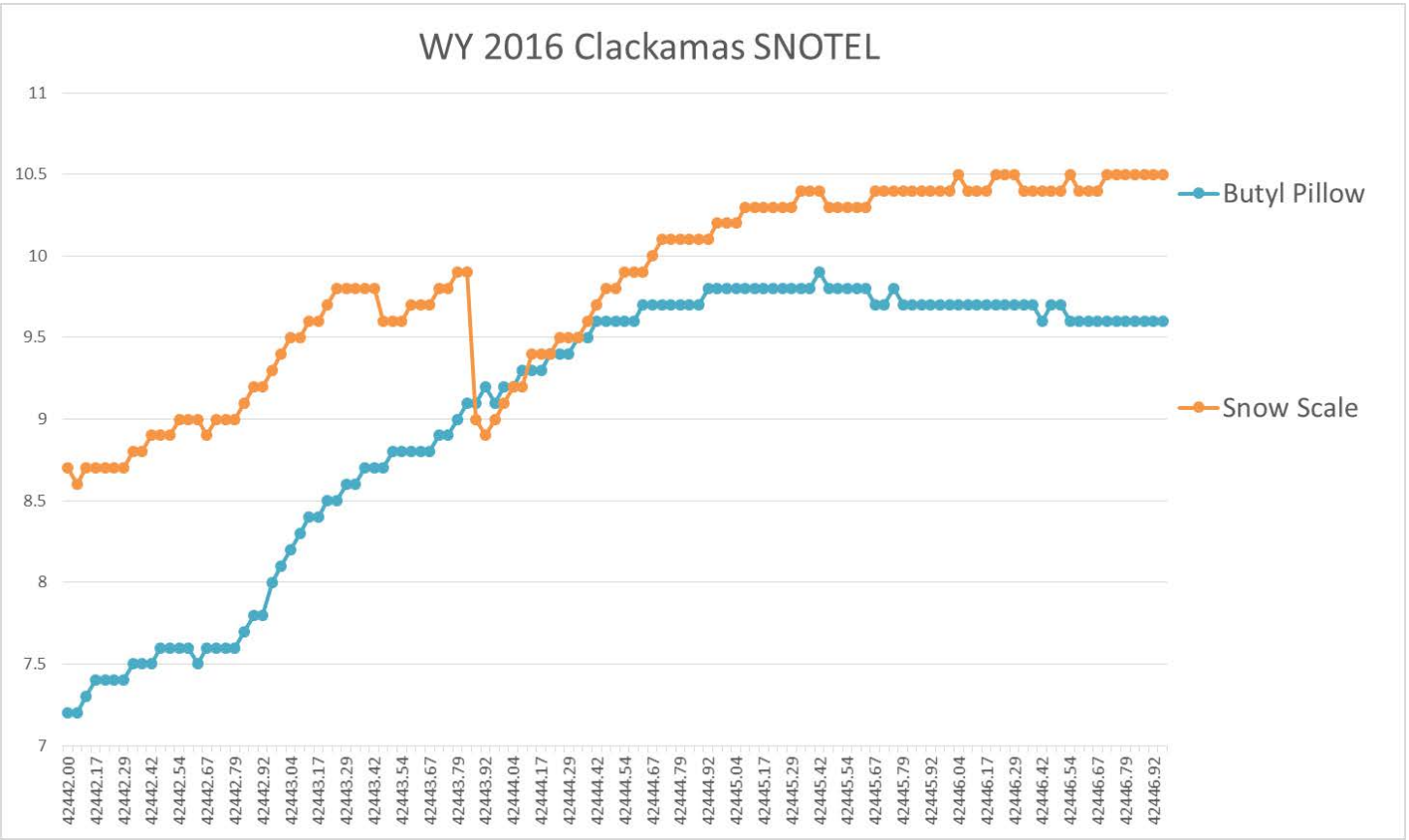
Feb 5th – 22nd, 2016



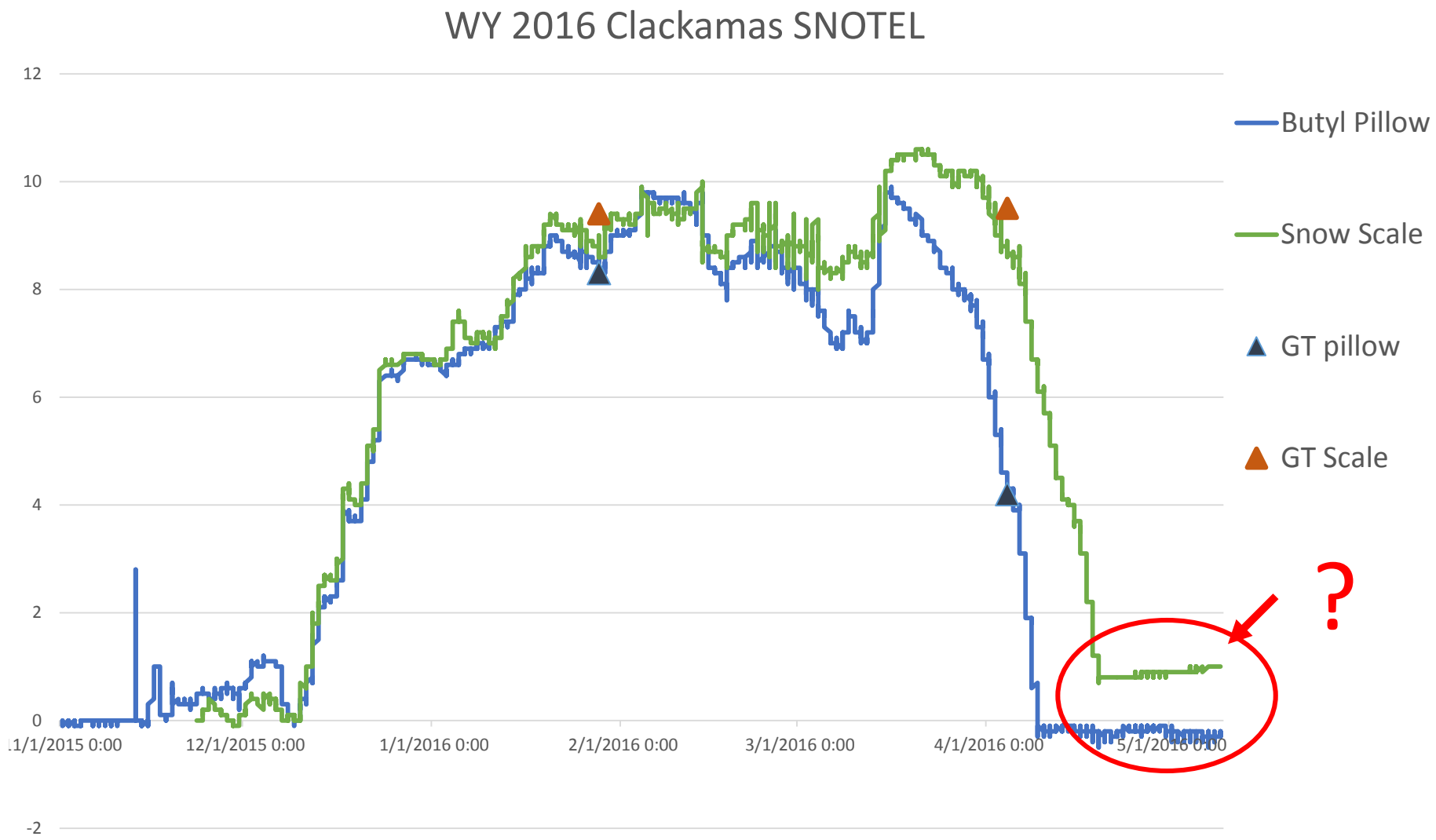
- Snow Scale data bounced up to ~1.2” while the butyl only bounced 0.6”
- Densities were between 40 and 44% during largest bounces
- Reason for this?

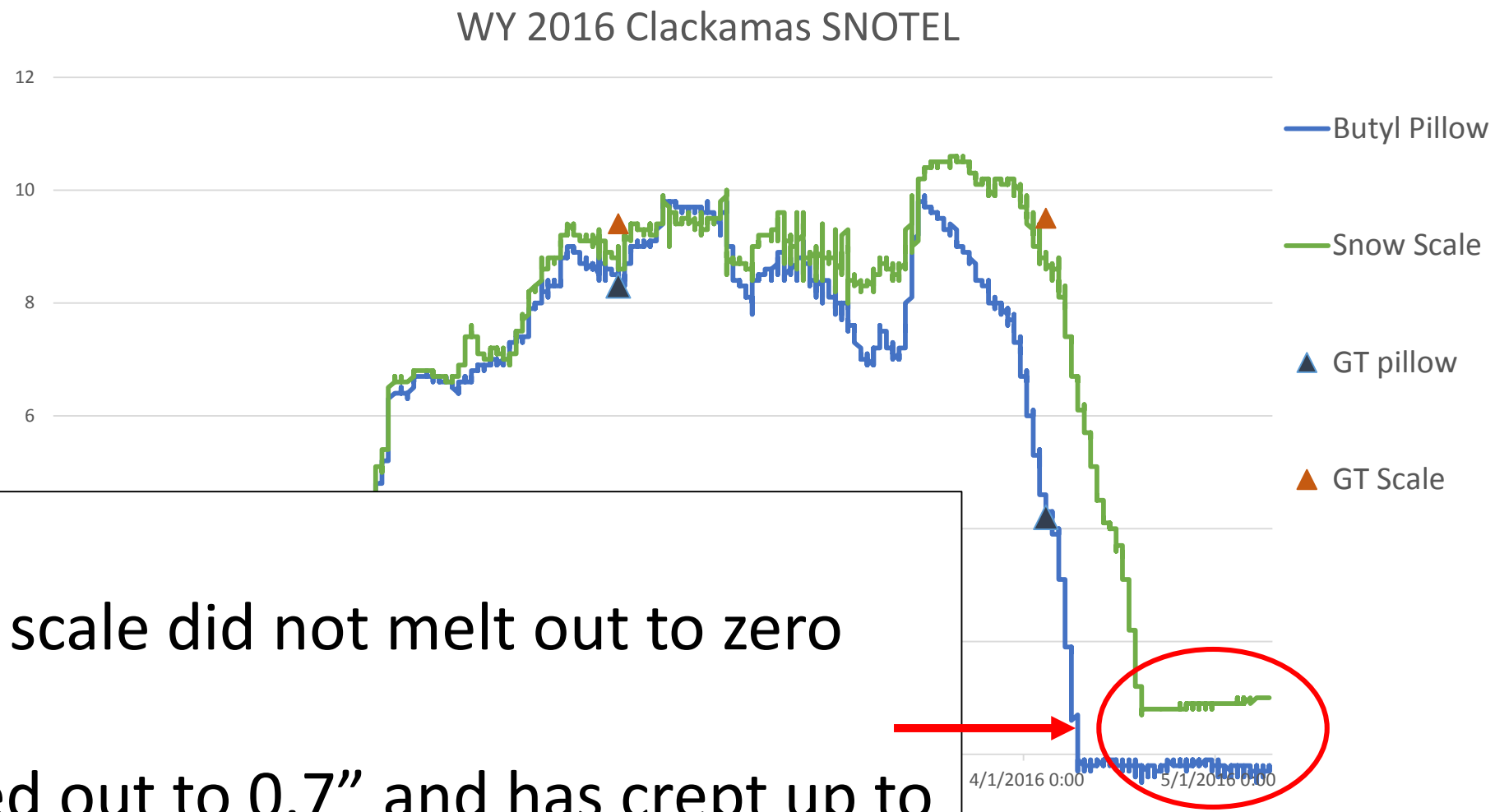

WY 2016 Clackamas SNOTEL
12
10
8
6
4
2
0
-2
11/1/2015 0:00
12/1/2015 0:00
1/1/2016 0:00
2/1/2016 0:00
3/1/2016 0:00
4/1/2016 0:00
5/1/2016 0:00
Butyl Pillow
Snow Scale
GT pillow
GT Scale

March 14th – 15th, 2016



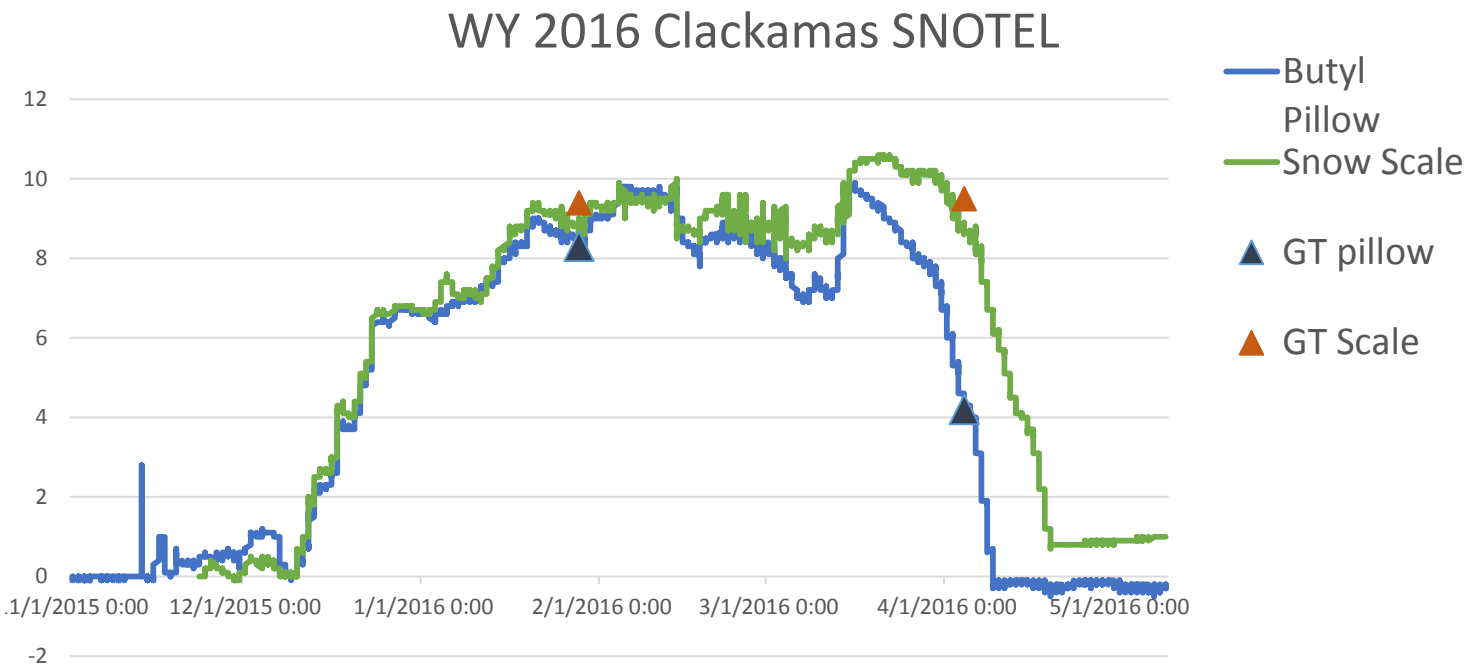
- Strange drop from 9.9” to 8.9” between 8pm and 10pm
- Recovered to 9.9” by 1pm the following day
- Density was at 28%
- Temperatures went from -0.7 to 2.3


WY 2016 Clackamas SNOTEL
12
10
8
6
4
2
0
-2
11/1/2015 0:00
12/1/2015 0:00
1/1/2016 0:00
2/1/2016 0:00
3/1/2016 0:00
4/1/2016 0:00
5/1/2016 0:00
Butyl Pillow
Snow Scale
GT pillow
GT Scale
?

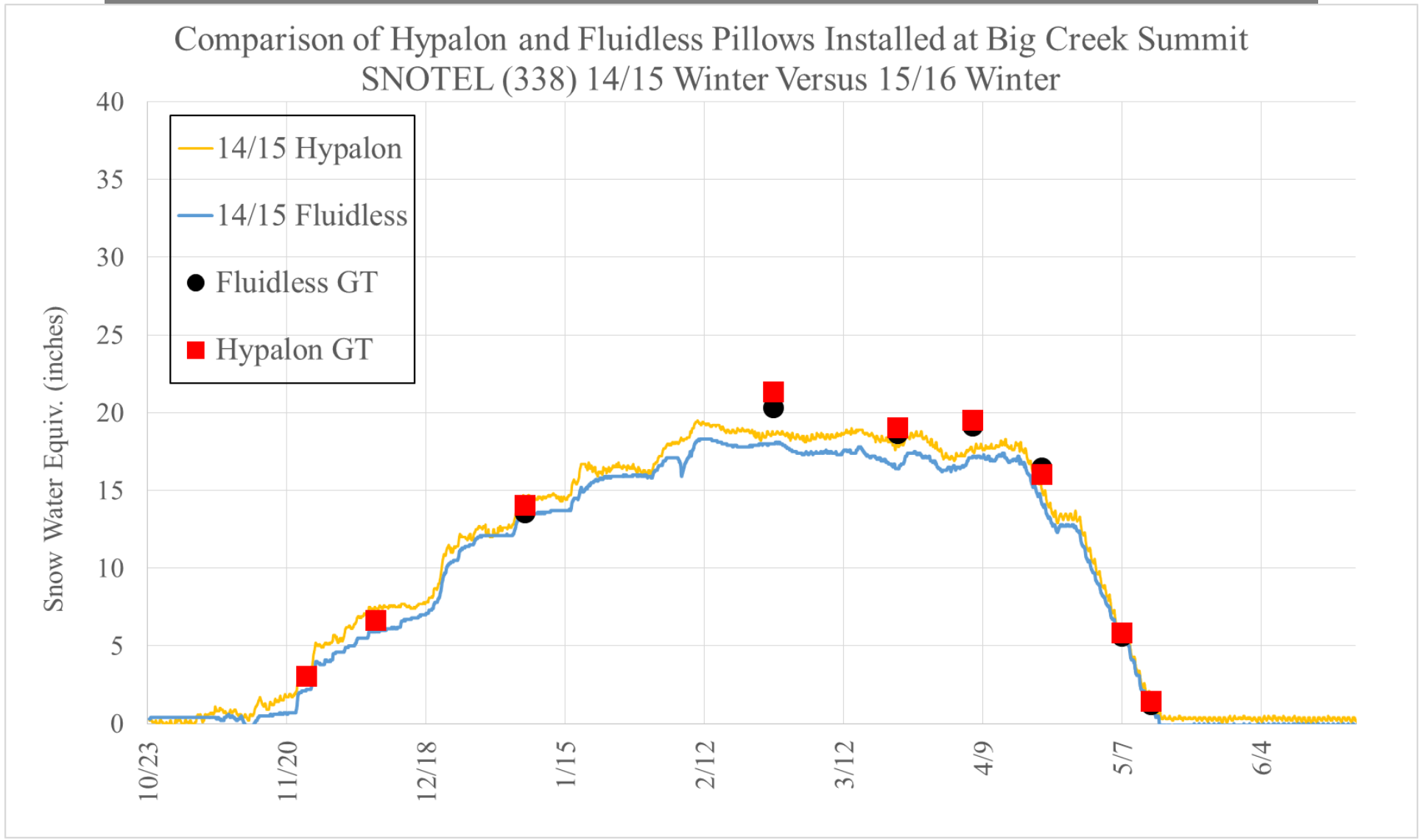


- Snow scale did not melt out to zero
- Melted out to 0.7” and has crept up to 1.0” in the days since then

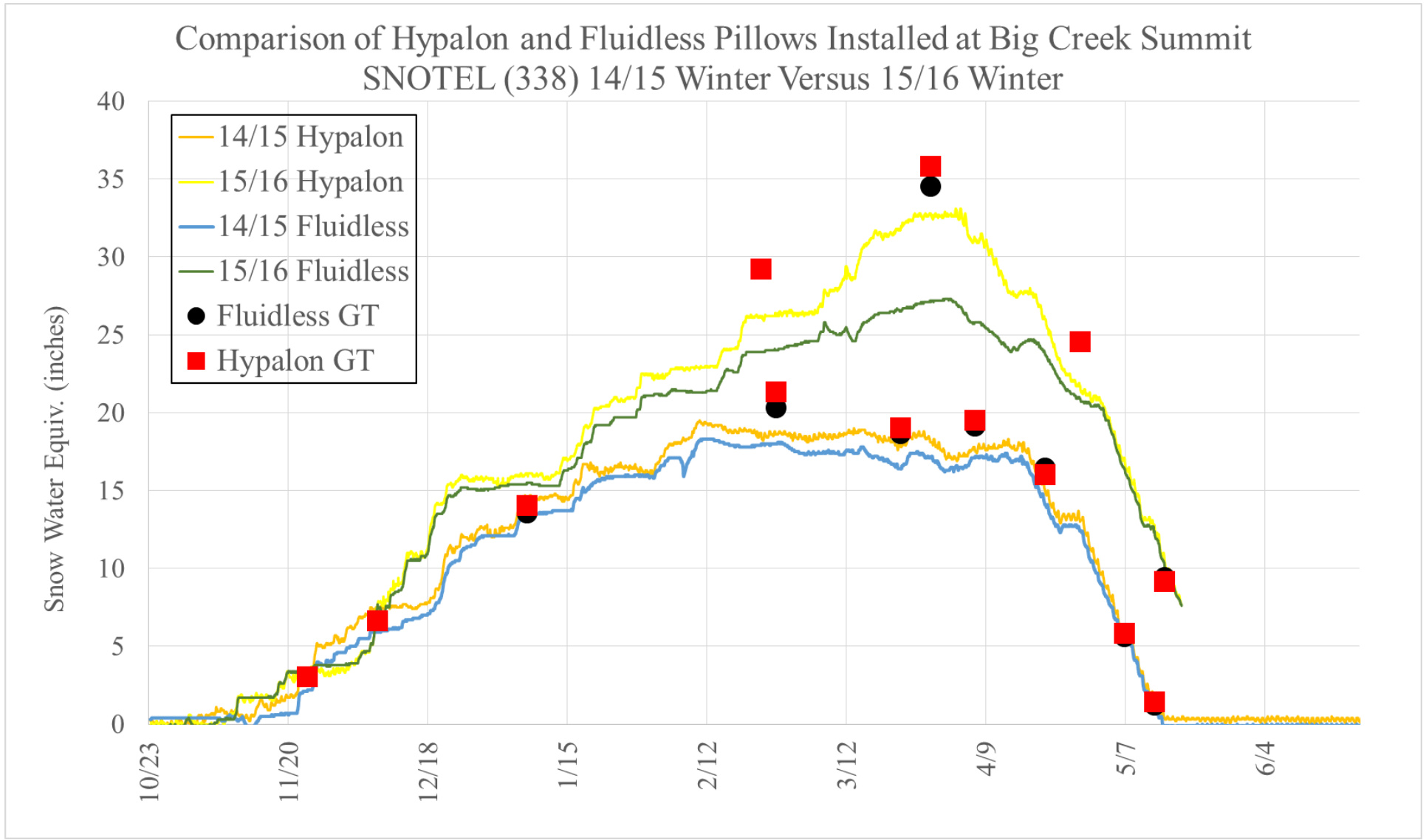
- Clackamas Snow scale showed some odd behavior but no problems more than what we see with snow pillows
- Ground truths were all within 9% of their respective pillows



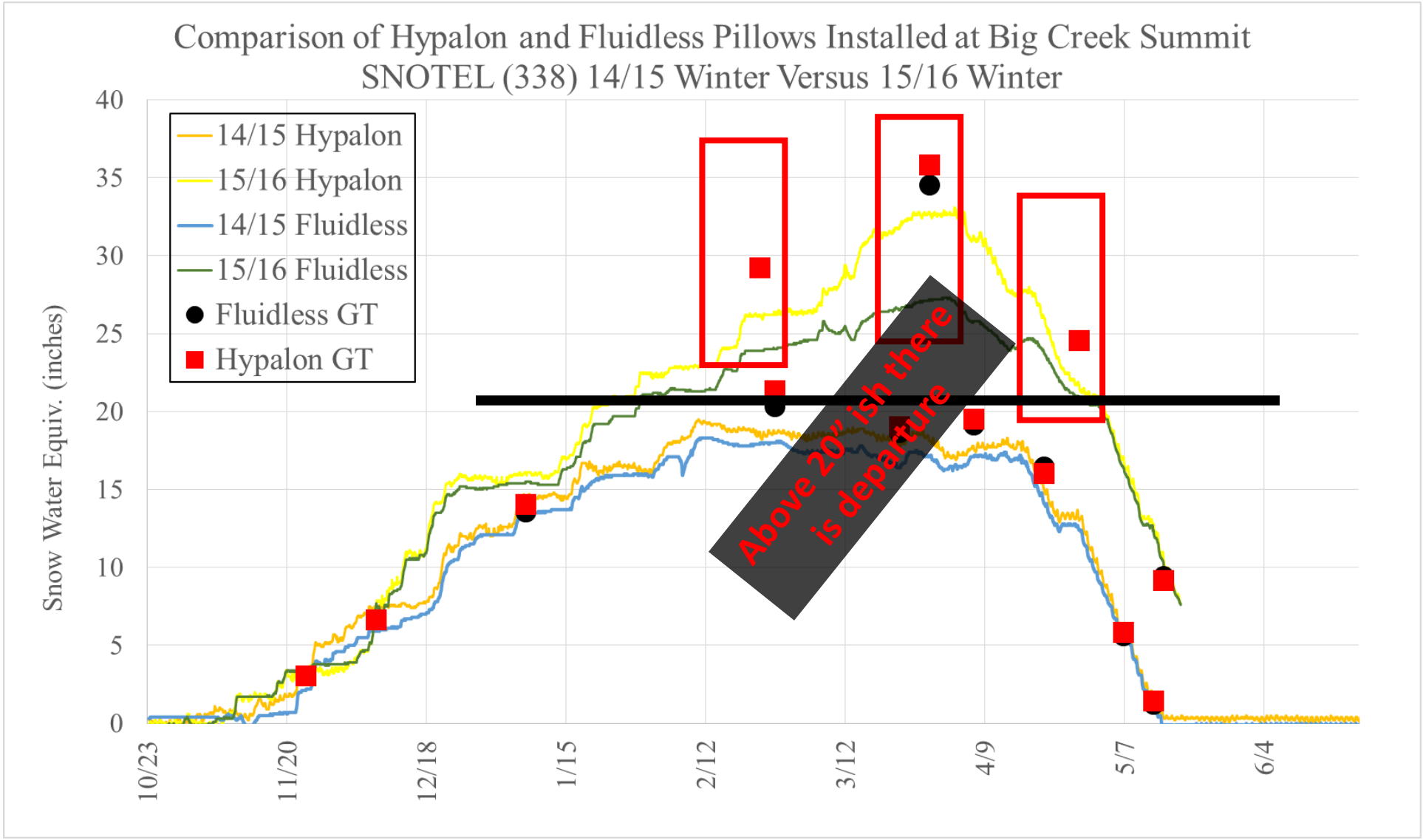
Last Year at field ops we presented the winter 14/15 data, and we were EXCITED!!



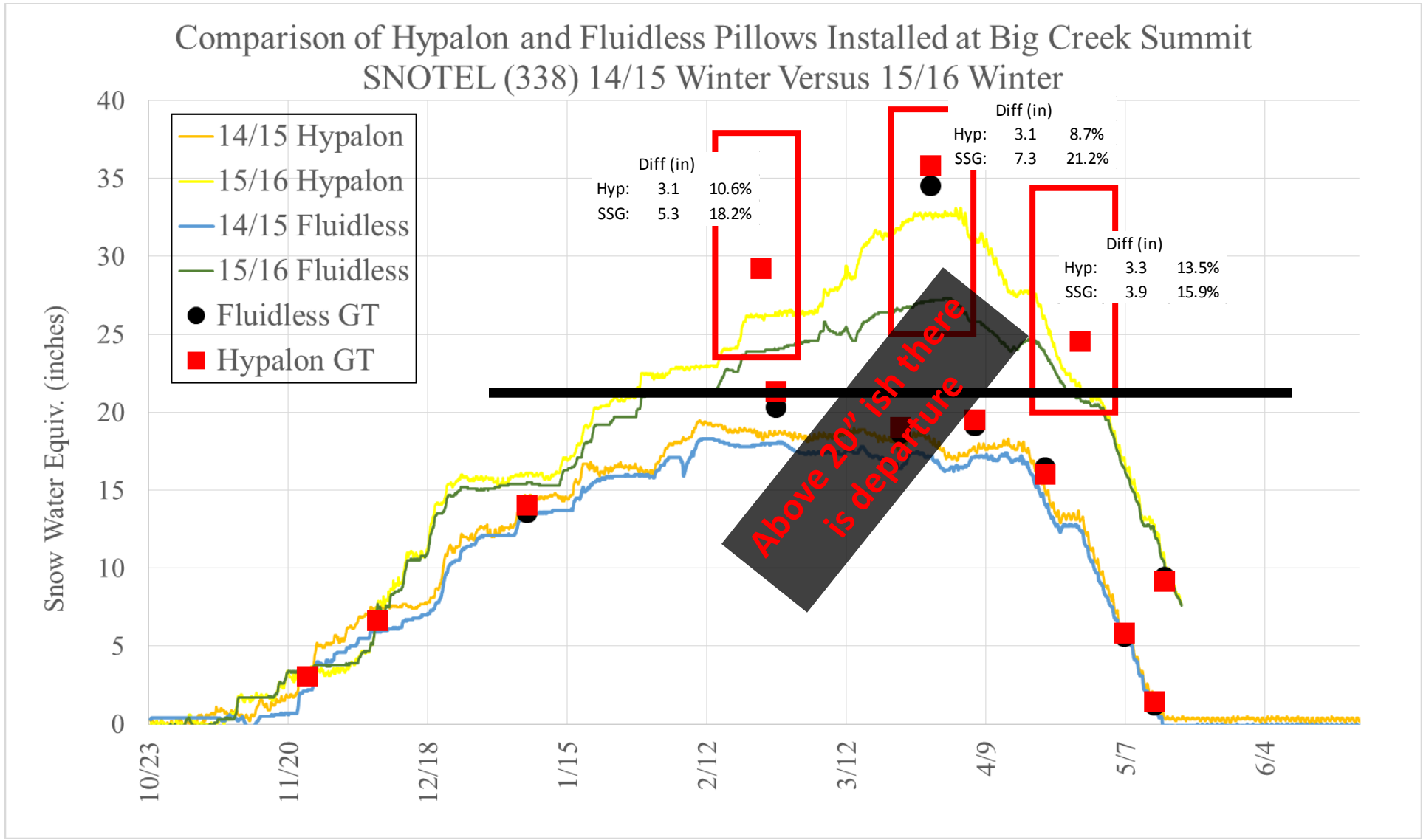
This Year NOT SO MUCH

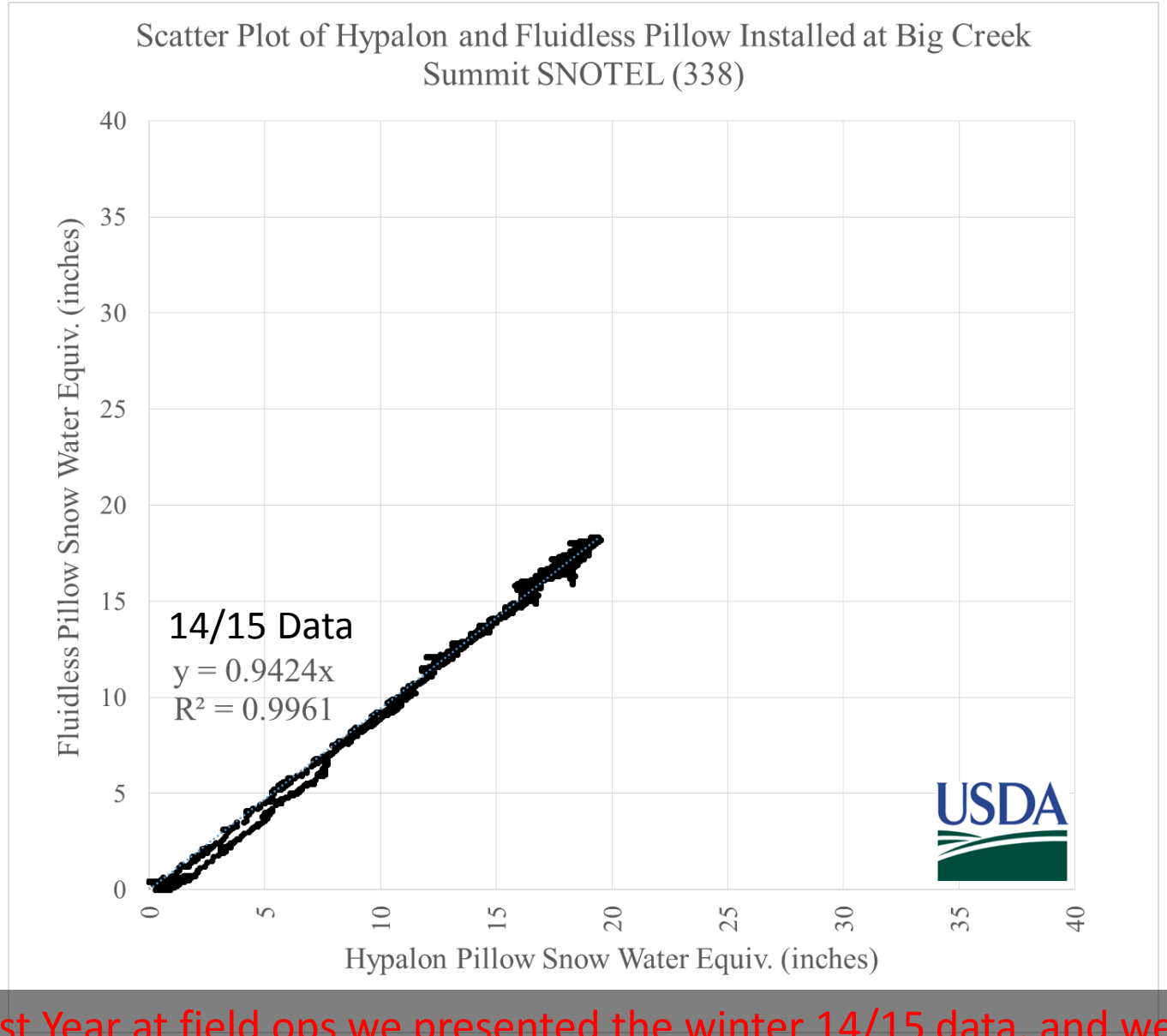


This Year NOT SO MUCH



This Year NOT SO MUCH





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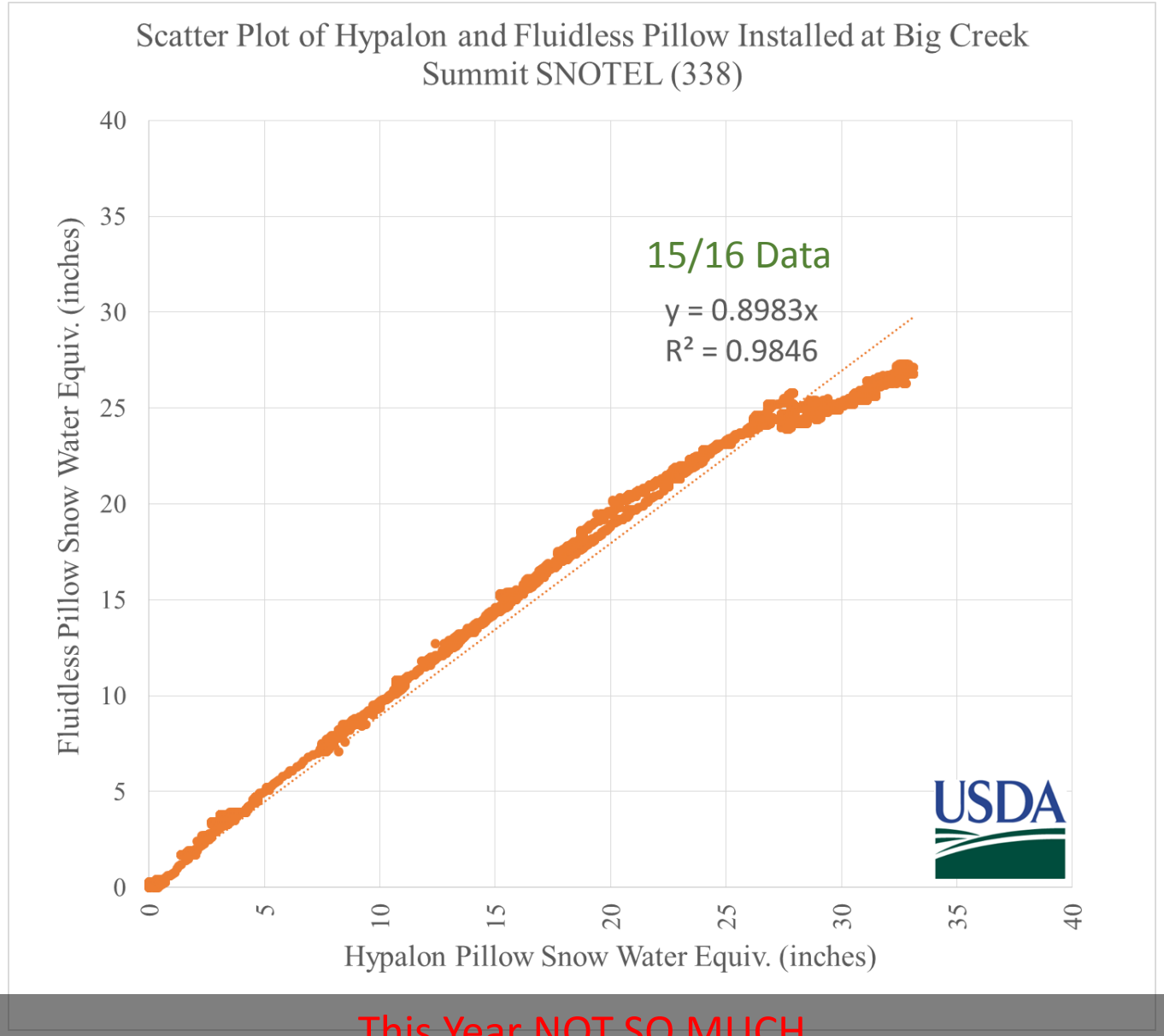
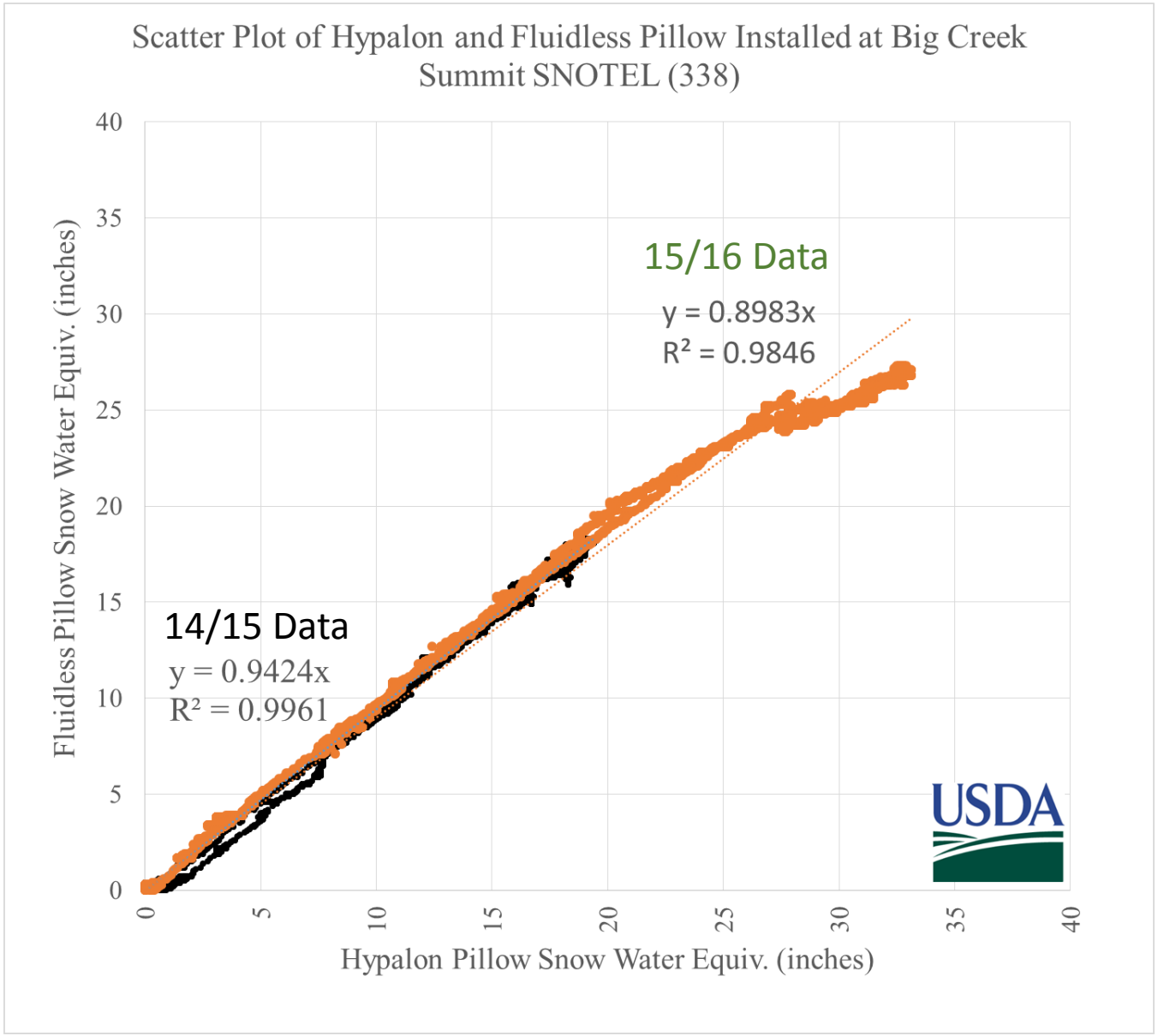
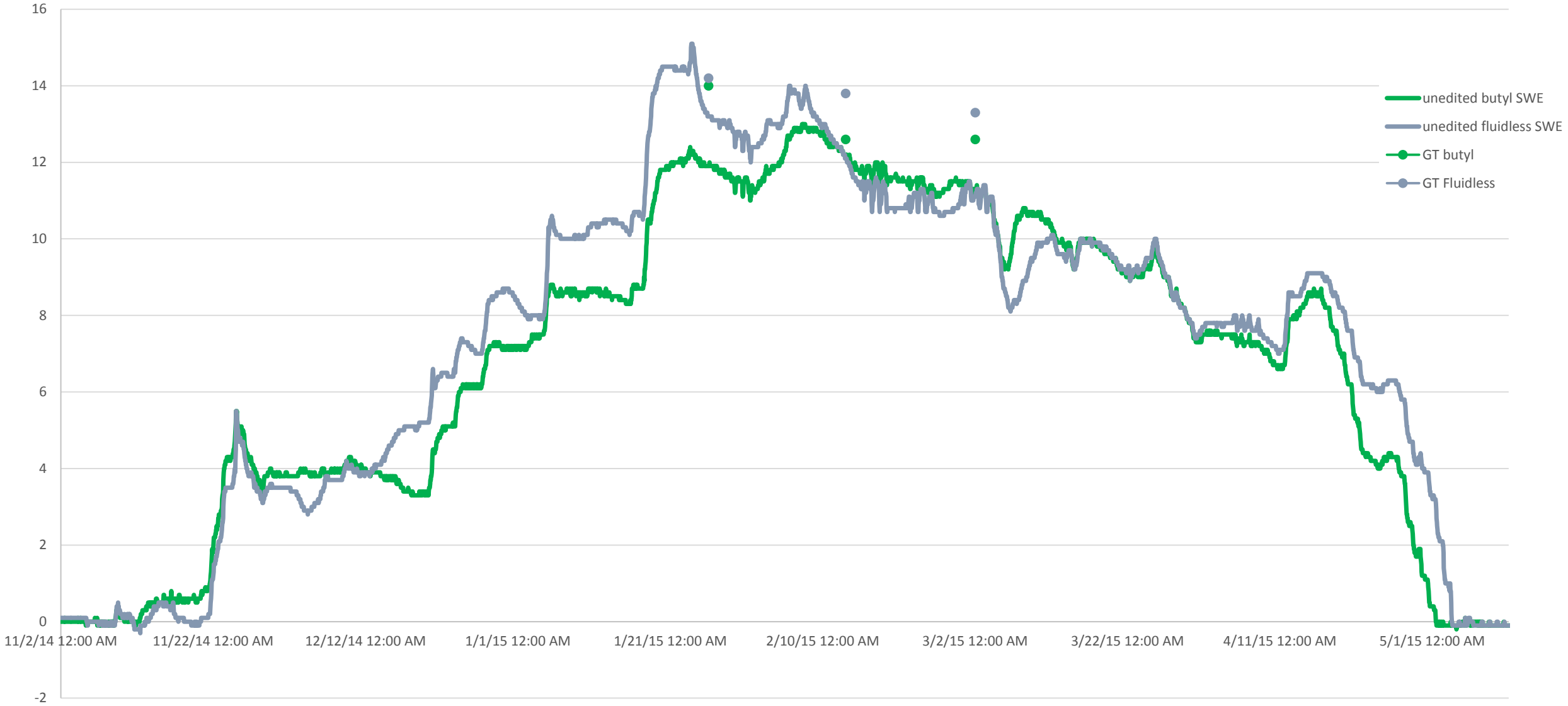


This Year NOT SO MUCH

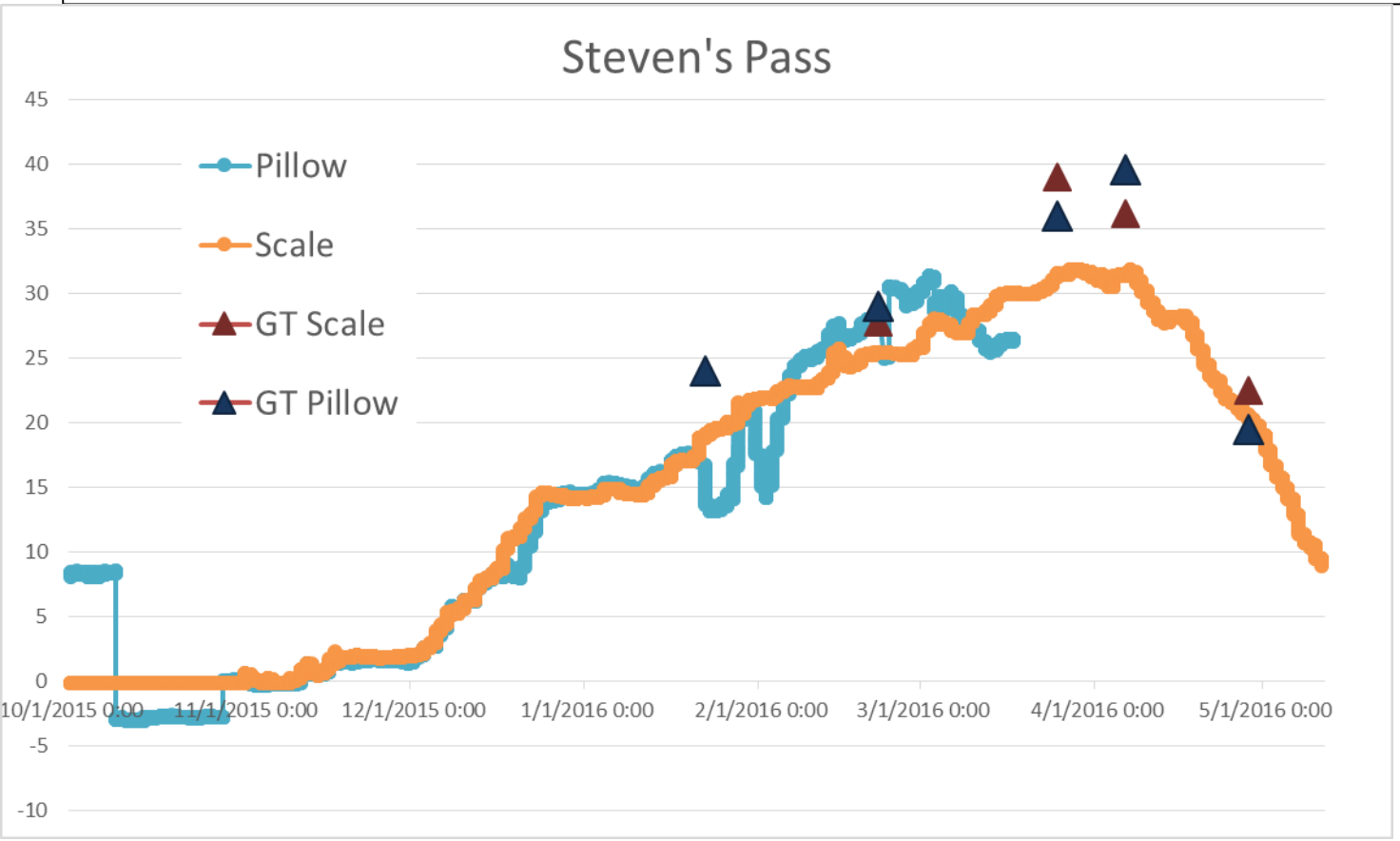

Scatter Plot of Hypalon and Fluidless Pillow Installed at Big Creek Summit SNOTEL (338)
Fluidless Pillow Snow Water Equiv. (inches)
Hypalon Pillow Snow Water Equiv. (inches)
0
5
10
15
20
25
30
35
40
15/16 Data
y = 0.8983x
R² = 0.9846
14/15 Data
y = 0.9424x
R² = 0.9961
USDA

Stevens Pass
Hypalon Pillow and Sommer Load Cell Comparison
Hourly Data From 11/02/2014 – 5/10/2015

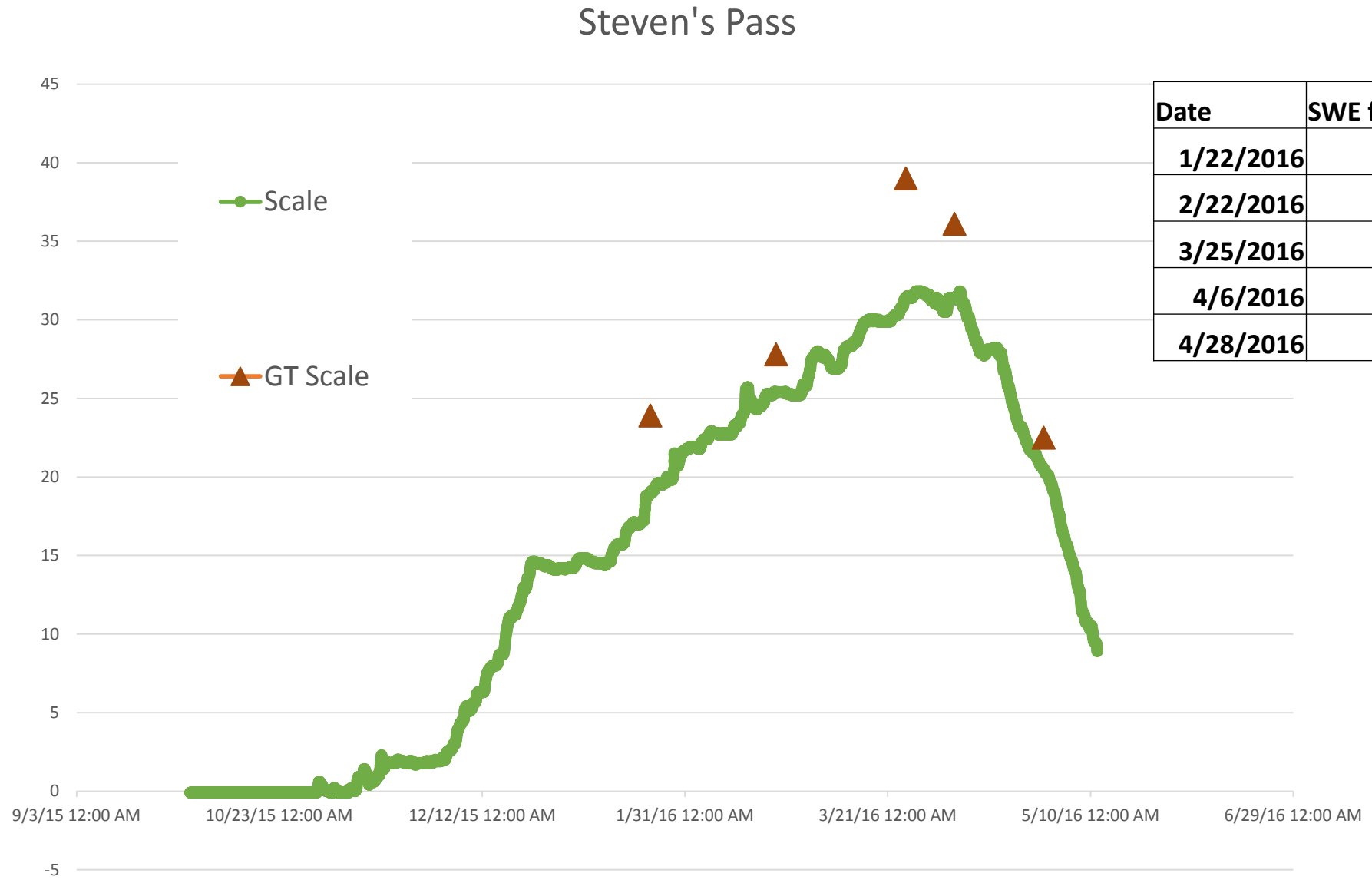


Steven's Pass

- Butyl pillow line was crushed in the late summer and that data was bad ever since
- Melissa gave up on editing the butyl data and switched the scale to the primary channel in late March



Ground truth SWE up to 26% different than Scale SWE



Date	SWE from Scale	SWE from GT	Percent Difference
1/22/2016	19	23.9	20.50%
2/22/2016	25.4	27.8	8.60%
3/25/2016	31.4	39	19.50%
4/6/2016	31.4	36.1	13%
4/28/2016	20.5	22.5	8%

KLIM
KLIM
KLIM
bca