2013-2014 WINTER STORM REPORTS:

STORM #25

Storm precip began between 1300-1400 hrs MST Saturday May 24 (DOY 144)
Storm precipitation ended: 0300 hrs MST Sunday May 25 (DOY 145)
Storm duration = 14 hrs
Storm total water content at SASP = 18 mm (0.7 inches)
Mean Precip intensity: 1.29 mm/hr
Max Precip intensity: 4 mm/hour between 0100-0200 on May 25
Max gain in snow depth at SASP = 17 cm (6.7 inches) of snow
Max gain in snow depth at SBSP (wind affected) = 18 cm (7.1 inches) of snow

CSAS Putney Study Plot 12,323 ft.

No. of hours: 14
No. of missing hours: 0
From hour ending: May 24, 2014 1400 MST
To: May 25, 2014 0300 MST

Avg. wind dir: 236
Avg. wind spd: 4.8 mph
Peak gust: 32.3 mph

Average Hourly Wind Speed (mph)
Storm precip began between 2200-2300 hrs MST Saturday May 10 (DOY 130)

Storm precipitation ended: 2000 hrs MST Sunday May 11 (DOY 131)

Storm duration = 22 hrs

Storm total water content at SASP = 32 mm (1.26 inches)

Mean Precip intensity: 1.5 mm/hr

Max Precip intensity: 7 mm/hour between 0700-0800 on May 11th

Max gain in snow depth at SASP = 31 cm (12.2 inches) of snow

Max gain in snow depth at SBSP (wind affected) = 31 cm (12.2 inches) of snow (yes, the same as SASP)

CSAS Putney Study Plot 12,323 ft.

No. of hours: 22

No. of missing hours: 0

From hour ending: May 10, 2014 2300 MST

To: May 11, 2014 2000 MST

Avg. wind dir: 192
Avg. wind spd: 24.7 mph
Peak gust: 65.3 mph
This storm dropped more water at Swamp Angel Study Plot than any other so far this year! It also brought our 7th dust-on-snow event of the season, coinciding with this storm’s most intense precip on the mid-afternoon of Saturday April 26th.

**Storm precip began** between 0600-0700 hrs MST Saturday April 26 (DOY 116)

**Storm precipitation ended:** 2100 hrs MST Tuesday April 29 (DOY 119)

**Storm duration** = 87 hrs

**Storm total water content at SASP** = 65 mm (2.6 inches)

**Mean Precip intensity:** 0.75 mm/hr

**Max Precip intensity:** 4 mm/hour between 1500-1600 on April 26th (1st day of storm)

**Max gain in snow depth at SASP** = 67 cm (26.4 inches) of snow

**Max gain in snow depth at SBSP** (wind affected) = 30 cm (11.8 inches) of snow
Storm precip began between 1500-1600 hrs MST Saturday April 12 (DOY 102)

Storm precipitation ended: 0900 hrs Monday April 14 (DOY 104)

Storm duration = 42 hrs

Storm total water content at SASP = 26 mm (1 inch)

Mean Precip intensity: 0.6 mm/hr

Max Precip intensity: 4 mm/hour during the first hour of the storm

Max gain in snow depth at SASP = 32 cm (12.6 inches) of snow

Max gain in snow depth at SBSP (wind affected) = 21 cm (8.3 inches) of snow
Storm precip began between 1200-1300 hrs MST Saturday April 5 (DOY 95)
Storm precipitation ended: 0900 hrs Monday April 7 (DOY 97)
Storm duration = 45 hrs
Storm total water content at SASP = 24 mm (0.9 inches)
Mean Precip intensity: 0.5 mm/hr
Max Precip intensity: 4 mm/hour between 2200-2300 hrs on April 6 (DOY 96)
Max gain in snow depth at SASP = 31 cm (12.2 inches) of snow
Max gain in snow depth at SBSP (wind affected) = 26 cm (10.2 inches) of snow

CSAS Putney Study Plot 12,323 ft.
No. of hours: 45
No. of missing hours: 0
From hour ending: Apr 06, 2014 1300 MST
To: Apr 07, 2014 0900 MST
Avg. wind dir: 2
Avg. wind spd: 16.5 mph
Peak gust: 54.0 mph

Average Hourly Wind Speed(mph)
Storm precip began between 0800-0900 hrs MST Wednesday April 2 (DOY 92)
Storm precipitation ended: 1300 hrs Thursday April 3 (DOY 93)
Storm duration = 29 hrs
Storm total water content at SASP = 18 mm (0.7 inches)
Mean Precip intensity: 0.6 mm/hr
Max Precip intensity: 2 mm/hour
Max gain in snow depth at SASP = 19 cm (7.5 inches) of snow
Max gain in snow depth at SBSP (wind affected) = 30 cm (11.8 inches) of snow
STORM #19

Storm precip began between 0100-0200 hrs MST Wednesday Mar 26 (DOY 85)

Storm precipitation ended: 0400 hrs Friday March 28 (DOY 87)

Storm duration = 51 hrs

Storm total water content at SASP = 32 mm (1.3 inches)

Mean Precip intensity: 0.6 mm/hr

Max Precip intensity: 4 mm/hour between 1500-1600 hrs, Weds Mar 26

Max gain in snow depth at SASP = 40 cm (16 inches) of snow

Max gain in snow depth at SBSP (wind affected) = 36 cm (14 inches) of snow
Storm precip began between 0100-0200 hrs MST Friday Mar 7 (DOY 66)
Storm precipitation ended: 0700 hrs Sat March 8 (DOY 67)
Storm duration = 30 hrs
Storm total water content at SASP = 14 mm (0.55 inches)
Mean Precip intensity: 0.5 mm/hr
Max Precip intensity: 2 mm/hour
Max gain in snow depth at SASP = 14 cm (5.5 inches) of snow
Max gain in snow depth at SBSP (wind affected) = 13 cm (5.1 inches) of snow
Storm precip began between 1800-1900 hrs MST Tuesday Mar 4 (DOY 63)
Storm precipitation ended: 0100 hrs Weds March 5 (DOY 64)
Storm duration = 7 hrs
Storm total water content at SASP = 12 mm (0.5 inches)
Mean Precip intensity: 1.7 mm/hr
Max Precip intensity: 3 mm/hour during the first hour of storm
Max gain in snow depth at SASP = 18 cm (7 inches) of snow
Max gain in snow depth at SBSP (wind affected) = 19 cm (7.5 inches) of snow
Storm precip began between 1400-1500 hrs MST Fri Feb 28 (DOY 59)
Storm precipitation ended: 1600 hrs Sunday March 2 (DOY 61)
Storm duration = 50 hrs
Storm total water content at SASP = 30 mm (1.2 inches)
Mean Precip intensity: 0.6 mm/hr
Max Precip intensity: 3 mm/hour between 0500-0600 hrs on Sat March 1 (DOY 60)
Max gain in snow depth at SASP = 19 cm (7.5 inches) of snow
Max gain in snow depth at SBSP (wind affected) = 15 cm (6 inches) of snow
STORM #15

Storm precip began between 1100-1200 hrs MST Thurs Feb 27 (DOY 58)
Storm precipitation ended: 0700 hrs Friday Feb 28 (DOY 59)
Storm duration = 20 hrs
Storm total water content at SASP = 30 mm (1.2 inches)
Mean Precip intensity: 1.5 mm/hr
Max Precip intensity: 5 mm/hour between 1800-1900 hrs
Max gain in snow depth at SASP = 33 cm (13 inches) of snow
Max gain in snow depth at SBSP (wind affected) = 27 cm (10.6 inches) of snow
STORM #14

2013-14 Winter Storm #14: February 19-20, 2014
Senator Beck Basin Study Area, at Red Mountain Pass, CO

Storm precip began between 1400-1500 hrs MST Wednesday Feb 19 (DOY 50)
Storm precipitation ended: 0200 hrs Thursday Feb 20 (DOY 51)
Storm duration = 12 hrs
Storm total water content at SASP = 14 mm (0.55 inches)
Mean Precip intensity: 1.2 mm/hr
Max Precip intensity: 3mm/hour between 1700-1900 hrs
Max gain in snow depth at SASP = 19 cm (7.5 inches) of snow
Max gain in snow depth at SBSP (wind affected) = 14 cm (5.5 inches) of snow

CSAS Putney Study Plot 12,323 ft.
No. of hours: 12
No. of missing hours: 0
From hour ending: Feb 19, 2014 1500 MST
To: Feb 20, 2014 0200 MST
Avg. wind dir: 292
Avg. wind spd: 33.8 mph
Peak gust: 78.4 mph

Average Hourly Wind Speed(mph)
STORM #13

Storm precip began between 0000-0100 hrs MST Saturday Feb 8 (DOY 39)
Storm precipitation ended: 2000 hrs Monday Feb 10 (DOY 41)
Storm duration = 68 hrs
Storm total water content at SASP = 42 mm (1.7 inches)
Mean Precip intensity: 0.62 mm/hr
Max Precip intensity: 2mm/hour
Max gain in snow depth at SASP = 28 cm (11 inches) of snow
Max gain in snow depth at SBSP (wind affected) = 11 cm (4.3 inches) of snow
STORM #12

Storm precip began between 0100-0200 hrs MST Monday Feb 3 (DOY 34)
Storm precipitation ended: 0500 hrs Wednesday Feb 5 (DOY 36)
Storm duration = 52 hrs
Storm total water content at SASP = 19 mm (0.75 inches)
Mean Precip intensity: 0.37 mm/hr
Max Precip intensity: 2mm/hour between 1600-1700 hours on Tues Feb 4
Max gain in snow depth at SASP = 7 cm (2.8 inches) of snow
Max gain in snow depth at SBSP (wind affected) = 13 cm (5 inches) of snow
STORM #11

Storm precip began between 2000-2100 hrs MST Weds January 29, 2014

Storm precipitation ended: 1400 hrs Saturday Feb 1st

Storm duration = 66 hrs

Storm total water content at SASP = 45 mm (1.8 inches)

Mean Precip intensity: 0.7 mm/hr

Max Precip intensity: 2 mm/hr

Max gain in snow depth at SASP during storm = 47 cm (18.5 inches) of snow

Max gain in snow depth at SBSP during storm (wind affected) = 19 cm (7.5 inches) of snow
Storm precip began between 0800-0900 hrs MST Sunday January 12, 2014
Storm precipitation ended: 0700 hrs Monday Jan 13th
Storm duration = 23 hrs
Storm total water content at SASP = 16 mm (0.6 inches)
Mean Precip intensity: 0.7 mm/hr
Max Precip intensity: 3 mm/hr between 1000 and 1100 hrs
Max gain in snow depth at SASP during storm = 17 cm (6.7 inches) of snow
Max gain in snow depth at SBSP during storm (wind affected) = 11 cm (4.3 inches) of snow
STORM #9

Storm precip began between 1300-1400 hrs MST Wednesday January 8, 2014
Storm precipitation ended: 2200 hrs Friday Jan 10th
Storm duration = 57 hrs
Storm total water content at SASP = 32 mm (1.3 inches)
Mean Precip intensity: 0.6 mm/hr
Max Precip intensity: 2 mm/hr
Max gain in snow depth at SASP during storm = 40 cm (16 inches) of snow
Max gain in snow depth at SBSP during storm (wind affected) = 25 cm (10 inches) of snow
This storm was another low intensity storm, this time with comparatively lighter winds.

Storm precip began between 1800-1900 hrs MST Thursday December 19th (DOY 353)
Storm precipitation ended: 2000 hrs Friday Dec 20th (DOY 354)
Storm duration = 26 hrs
Storm total water content at SASP = 16 mm (0.6 inches)
Mean Precip intensity: 0.6 mm/hr
Max Precip intensity: 2 mm/hr between 1700-1800 hrs on Friday Dec 20th (DOY 354)
Max gain in snow depth at SASP during storm = 29 cm (11.4 inches) of snow
Max gain in snow depth at SBSP during storm (wind affected) = 21 cm (8.3 inches) of snow
STORM #7

This one was just barely a storm (12mm of SWE in 25hrs) - a low intensity precip event with high winds, resulting in very little change in snow depth in either the subalpine or alpine.

Storm precip began between 1100-1200 hrs MST Saturday December 7th (DOY 341)
Storm precipitation ended: 1200 hrs Sunday Dec 8th (DOY 342)
Storm duration = 25 hrs
Storm total water content at SASP = 12 mm (0.5 inches)
Mean Precip intensity: 0.5 mm/hr
Max Precip intensity: 1 mm/hr
Max gain in snow depth at SASP during storm = 10 cm (3.9 inches) of snow
Max gain in snow depth at SBSP during storm (wind affected) = 2 cm (0.8 inches) of snow

CSAS Putney Study Plot 12,323 ft.

No. of hours: 25  From hour ending: Dec 07, 2013 1200 MST
No. of missing hours: 0  To: Dec 08, 2013 1200 MST
Avg. wind dir: 244
Avg. wind spd: 30.3 mph
Peak gust: 68.1 mph
As seen from Silverton, snow was blowing horizontal during the entire duration of Storm #6. The cold front at the backside of the storm hit Swamp Angel between 7am and 8am Wednesday Dec 4th with a sharp drop in temp as barometric pressure began rising, after 3 days of dropping. It took about another hour for the front’s cold air pool to reach Putney’s elevation. The strong winds reduced total snow cover in the alpine at Senator Beck Study Plot. Winds at the relatively protected Swamp Angel averaged only 5mph during the storm (compared to 25mph at Senator Beck and 36mph at Putney).

Storm precip began between 1700-1800 hrs MST Tuesday December 3rd (DOY 337)
Storm precipitation ended: 1500 hrs Wednesday Dec 4th (DOY 338)
Storm duration = 22 hrs
Storm total water content at SASP = 31 mm (1.2 inches)
Mean Precip intensity: 1.4 mm/hr
Max Precip intensity: 3 mm/hr between 0800 - 0900 on Weds Dec 4th
Max gain in snow depth at SASP during storm = 36 cm (14.2 inches) of snow
Max gain in snow depth at SBSP during storm (wind affected) = 14 cm (5.5 inches) of snow
STORM #5

Storm 5 was really a much delayed wrap-around from Storm 4. There was a 14 hour gap in recorded precip between storm #4 and what we're calling "storm" #5.

2013-14 Winter Storm #5: November 24 - 25, 2013
Senator Beck Basin Study Area, at Red Mountain Pass, CO

Storm precip began between 1400-1500 hrs MST Sunday November 24th (DOY 328)
Storm precipitation ended: 0200 hrs Monday Nov 25th (DOY 329)
Storm duration = 12 hrs
Storm total water content at SASP = 12 mm (0.5 inches)
Mean Precip intensity: 1 mm/hr
Max Precip intensity: 2 mm/hr
Max gain in snow depth at SASP during storm = 8 cm (3 inches) of snow
Max gain in snow depth at SBSP during storm (wind affected) = 5 cm (2 inches) of snow

CSAS Putney Study Plot 12,323 ft.
No. of hours: 12
No. of missing hours: 0
From hour ending: Nov 24, 2013 1500 MST
To: Nov 25, 2013 0200 MST
Avg. wind dir: 6
Avg. wind spd: 17.3 mph
Peak gust: 32.3 mph

Average Hourly Wind Speed (mph)
STORM #4

With no recorded precip for 12 consecutive hours (since midnight Saturday Nov 23), we've wrapped up Winter Storm #4. The National Weather Service is calling for additional snow accumulation Sunday afternoon and overnight. If we get at least another 1/2” of SWE (12mm), we will count that as winter storm #5.

Storm #4 had generally lighter winds than previous storms this season, averaging only 12mph at Putney. Although it was the longest storm we've recorded since December 2010, there were several breaks in precip lasting up to nine hours.

![Graph showing winter storm data](image)

Storm precip began between 1500-1600 hrs MST Wednesday Nov 20
Storm precipitation ended: 2400 hrs Saturday Nov 23
Storm duration = 81 hrs
Storm total water content at SASP = 37 mm (1.5 inches)
Mean Precip intensity: 0.5 mm/hr
Max Precip intensity: 3 mm/hr at 10am on Thursday Nov 21
Max gain in snow depth at SASP during storm = 42 cm (16.5 inches) of snow
Max gain in snow depth at SBSP during storm (wind affected) = 46 cm (18 inches) of snow
Storm precip began between 1600-1700 hrs MST Friday Nov 15 (DOY 319)
Storm precipitation ended: 2400 hrs Saturday Nov 16 (DOY 320)
Storm duration = 32 hrs
Storm total water content at SASP = 29 mm (1.1 inches)
Mean Precip intensity: 0.9 mm/hr
Max Precip intensity: 4 mm/hr from 1700-1800 and 1900-2000 hrs on Nov 15;
Max gain in snow depth at SASP during storm = 33 cm (13 inches) of snow
Max gain in snow depth at SBSP during storm (wind affected) = 19 cm (7.5 inches) of snow
STORM #2

Storm precip began between 0900-1000 hrs MST Tuesday Oct 29 (DOY 302)
Storm precipitation ended: 0200 hrs Wednesday Oct 30 (DOY 303)
Storm duration = 17 hrs
Storm total water content at SASP = 23 mm (0.9 inches)
Mean Precip intensity: 1.35 mm/hr
Max Precip intensity: 4 mm/hr from 2000-2100 hrs;
Max gain in snow depth at SASP during storm = 29 cm (11.4 inches) of snow
Max gain in snow depth at SBSP during storm (wind affected) = 16 cm (6.3 inches) of snow
Wind behavior at PTSP:

CSAS Putney Study Plot 12,323 ft.
No. of hours: 51
No. of missing hours: 0
From hour ending: Oct 29, 2013 1000 MST
To: Oct 31, 2013 1200 MST
Avg. wind dir: 209
Avg. wind spd: 16.7 mph
Peak gust: 64.5 mph

Average Hourly Wind Speed (mph)

- >45
- 22-45
- 11-22
- 6-11
- 0-6
- calm
began between 2000-2100 hrs MST Wednesday Oct 9 (DOY 282)
Storm precipitation ended: 1900 hrs Thursday Oct 10 (DOY 283)
Storm duration = 24 hrs
Storm total water content at SASP = 55 mm (2.2 inches)
Mean Precip intensity: 2.3 mm/hr
Max Precip intensity: 7 mm/hr from 0900-1000 hrs;
also of note: 5 mm/hr between 0700-0800 hrs and again 1000-1100 hrs
Max gain in snow depth at SASP during storm = 54 cm (21 inches) of snow
Max gain in snow depth at SBSP during storm (wind affected) = 39 cm (15 inches) of snow
Wind behavior at PTSP:

CSAS Putney Study Plot 12,323 ft.
No. of hours: 24                              From hour ending: Oct 09, 2013 2000 MST
No. of missing hours: 0                        To: Oct 10, 2013 1800 MST
Avg. wind dir: 178
Avg. wind spd: 17.1 mph
Peak gust: 63.8 mph

Average Hourly Wind Speed (mph)