

Water Year 2012 Summary Report



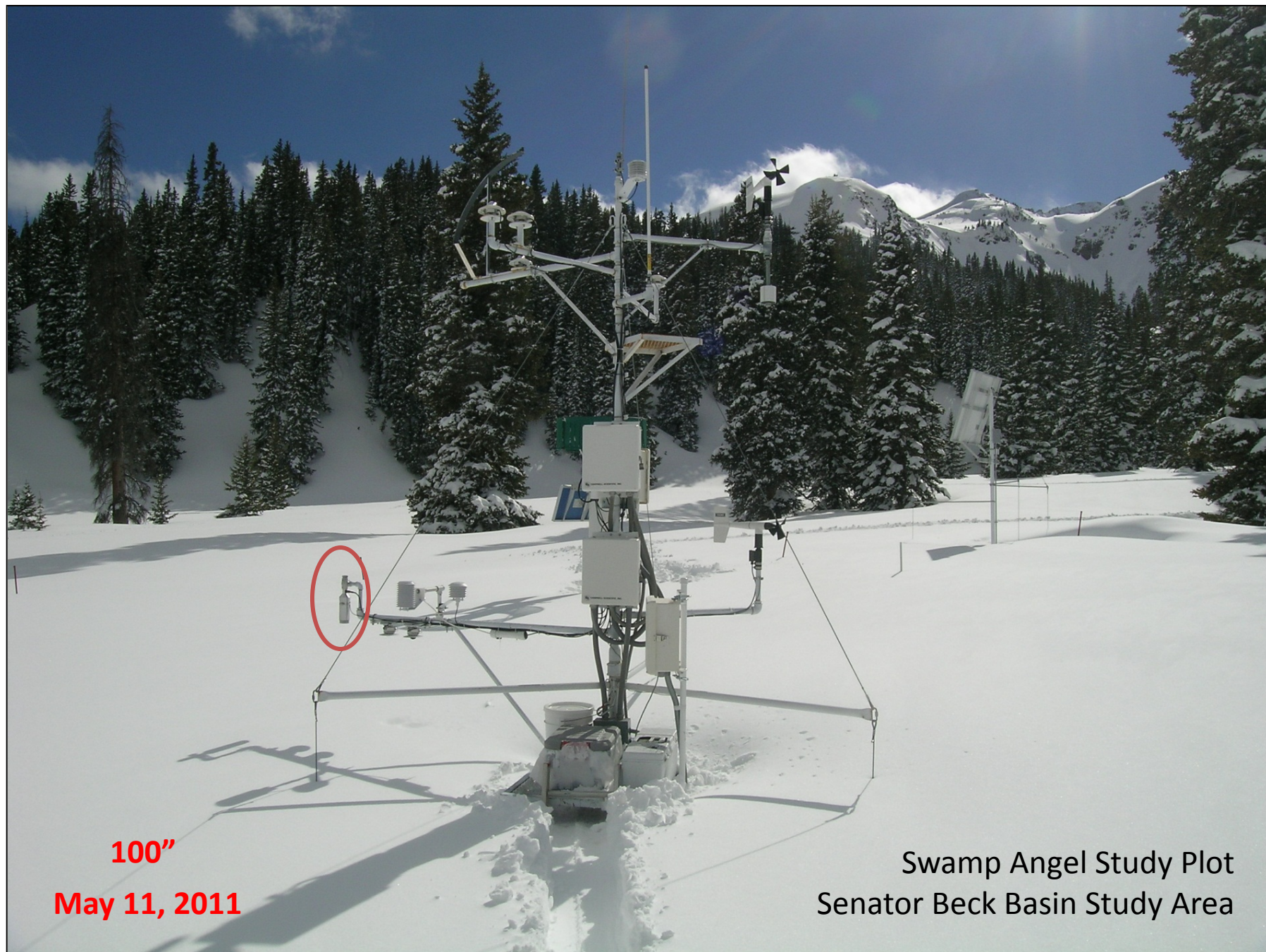
May 11, 2011



May 12, 2012

Swamp Angel Study Plot in Senator Beck Basin Study Area near Red Mountain Pass

A Case Study in Interannual Variability of Colorado Snowpack and the Role of Desert Dust



100"
May 11, 2011

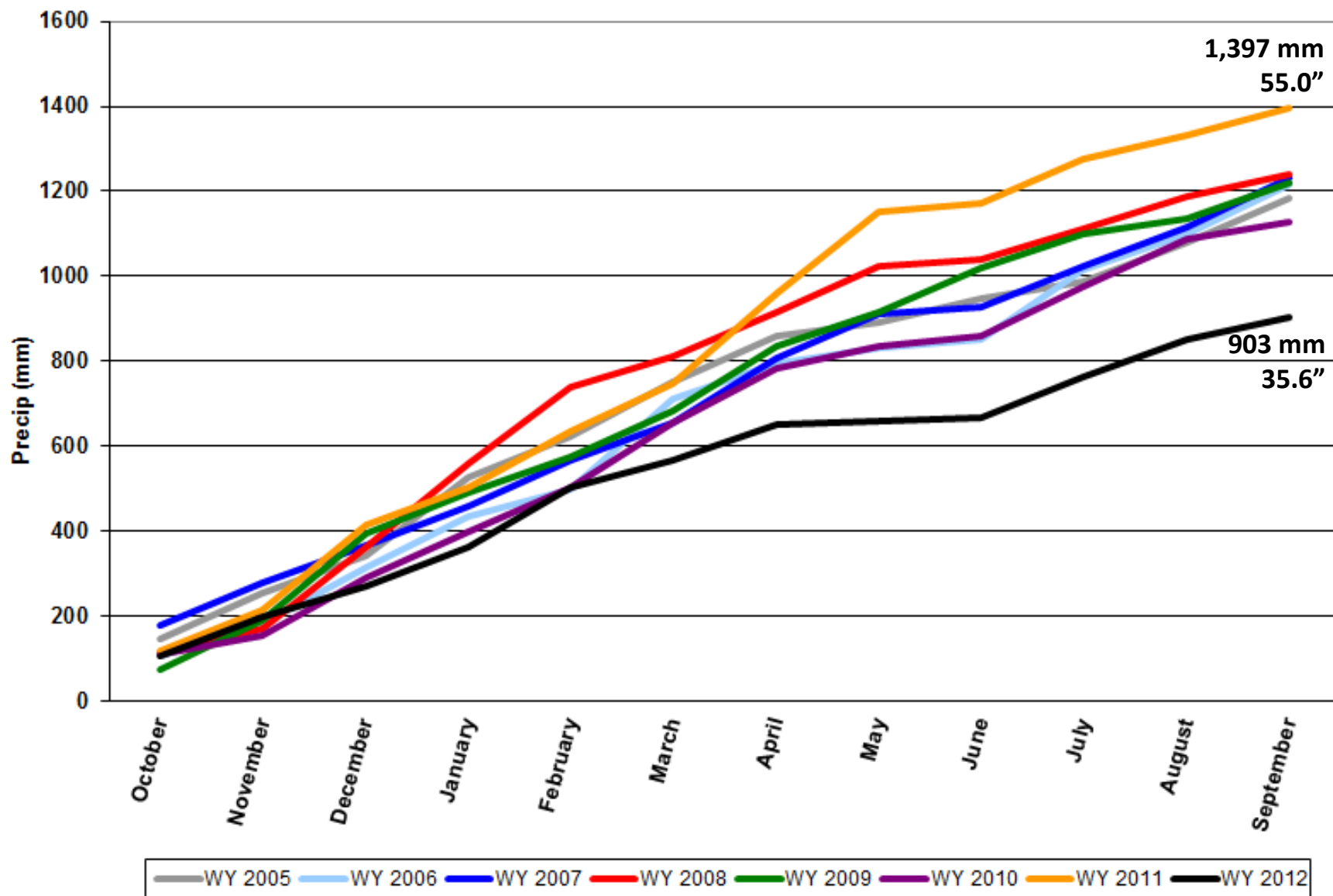
Swamp Angel Study Plot
Senator Beck Basin Study Area



0" (SAG)
May 12, 2012

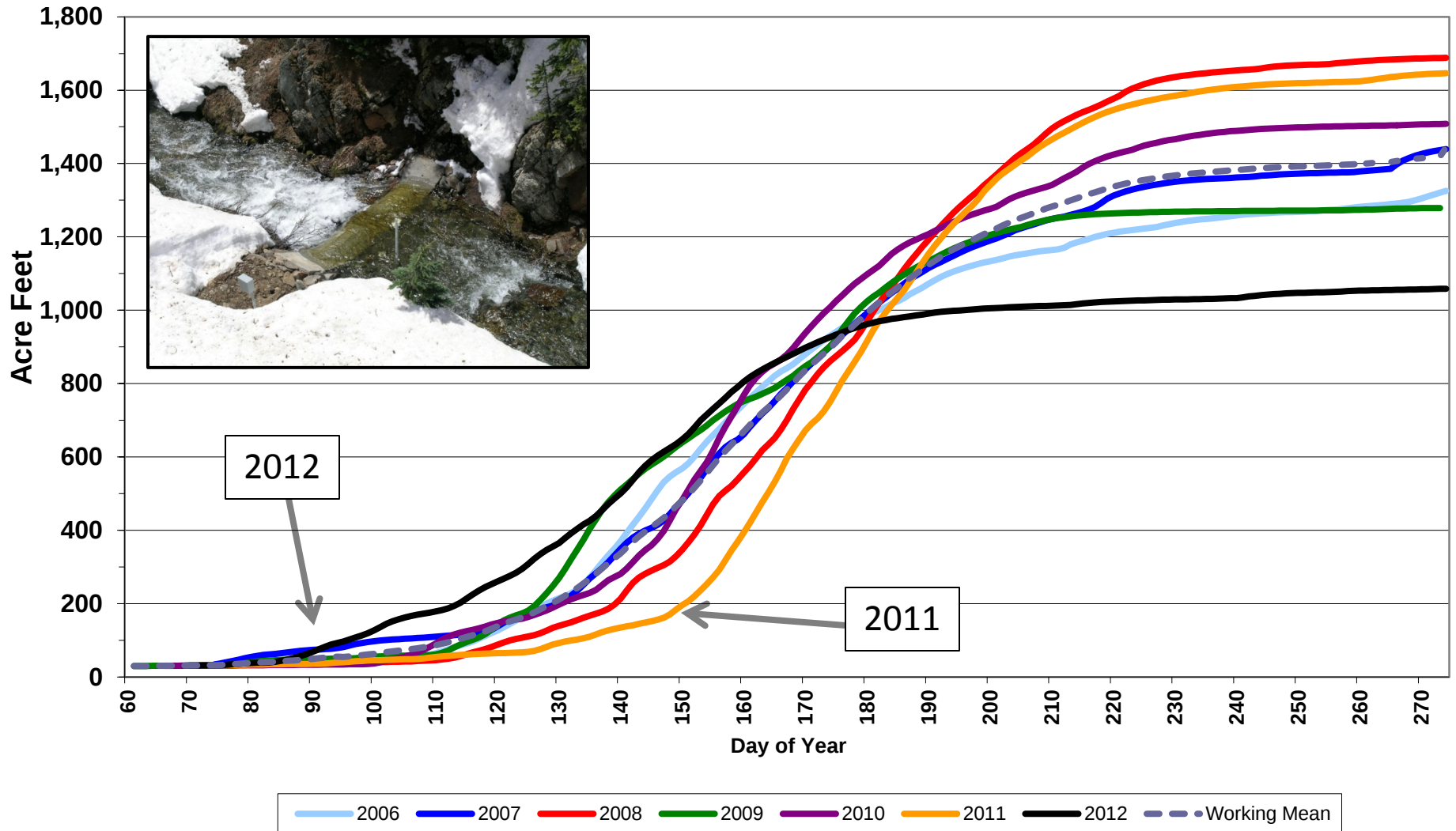
Water Year Cumulative Precipitation at End of Month

Swamp Angel Study Plot - Senator Beck Basin Study Area at Red Mountain Pass

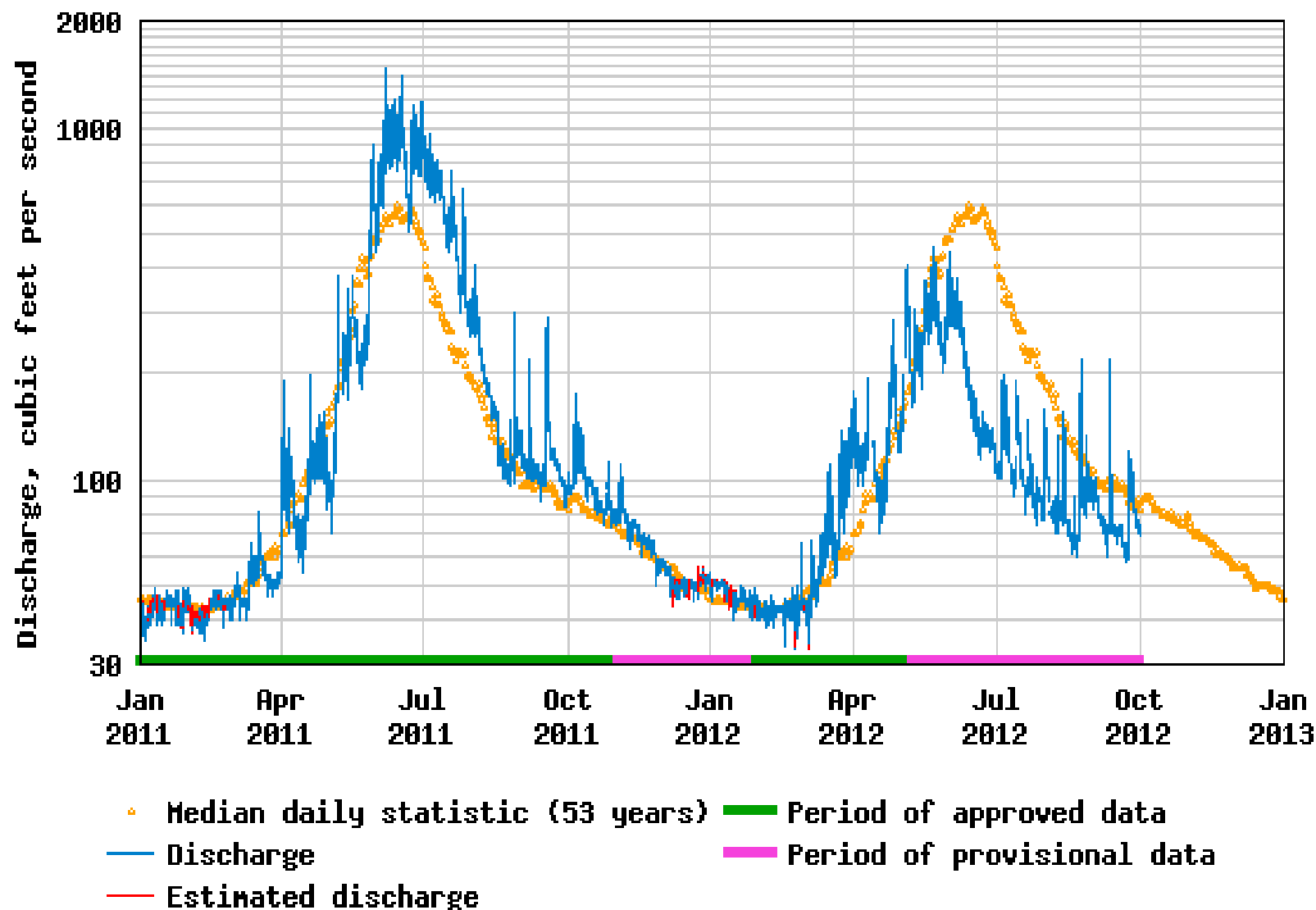


Senator Beck Basin Cumulative Discharge - 2006 to 2012

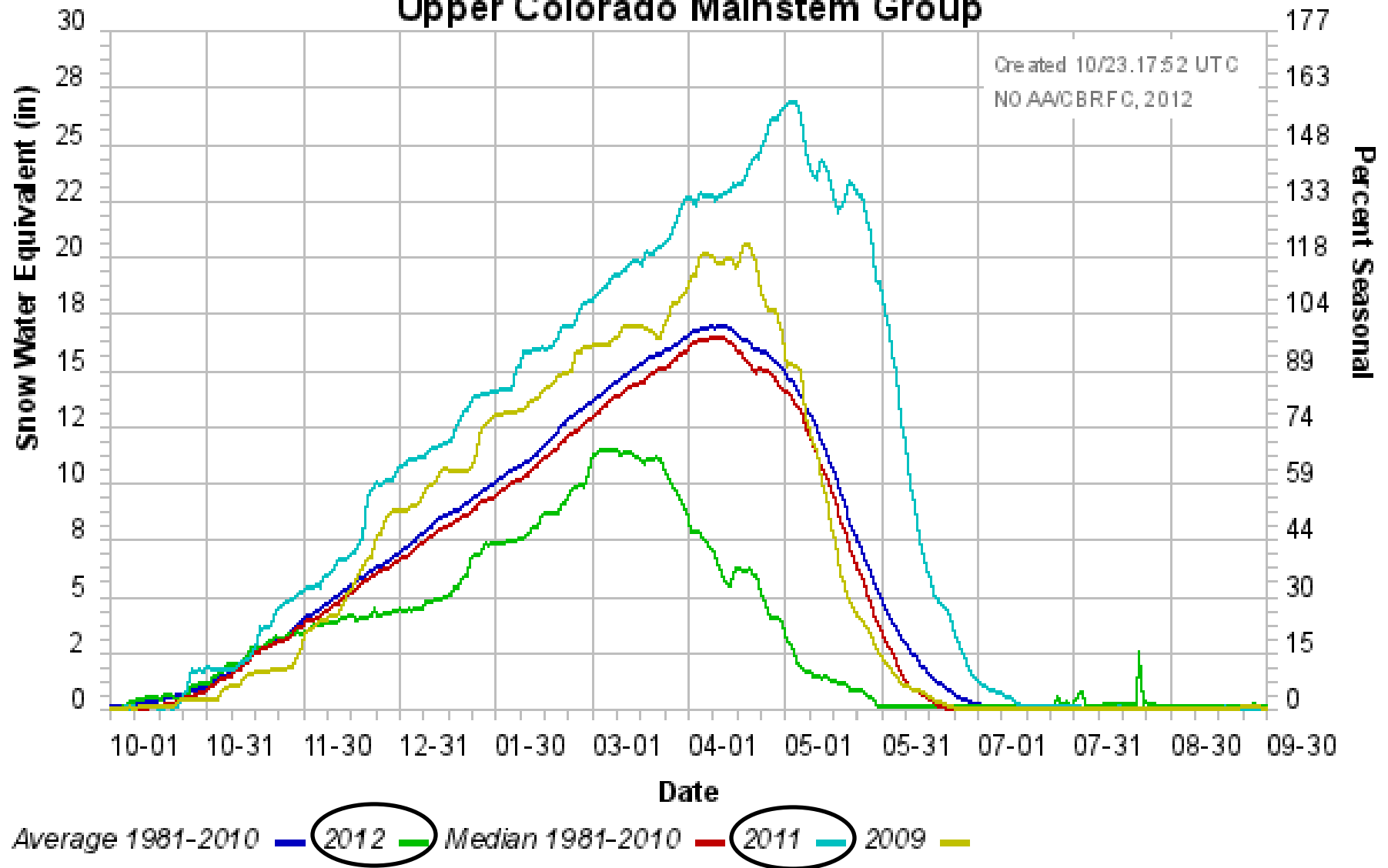
as measured at Senator Beck Stream Gauge (SBSG)



USGS 09146200 UNCOMPAHGRE RIVER NEAR RIDGWAY, CO.

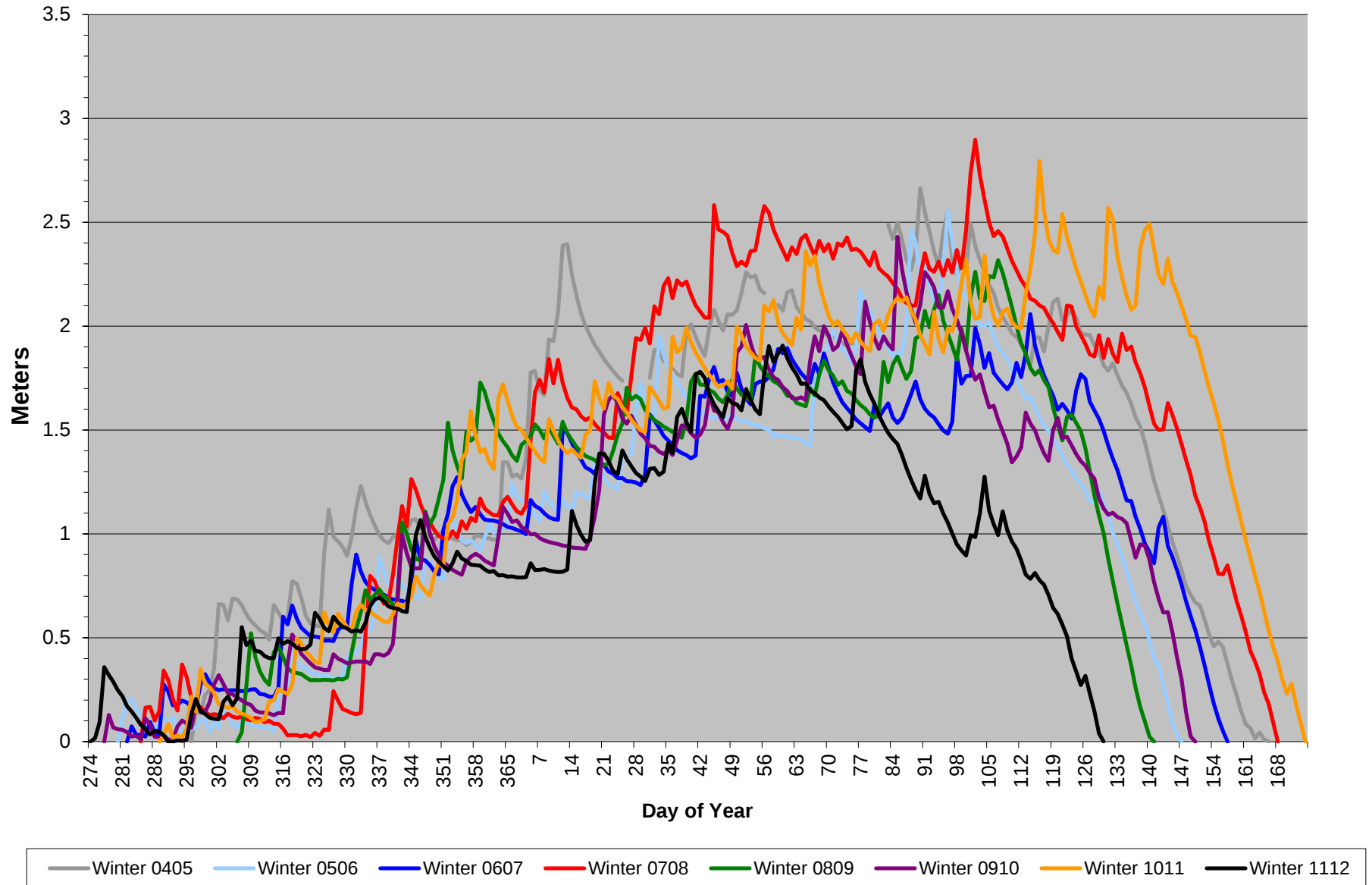


Colorado Basin River Forecast Center Upper Colorado Mainstem Group



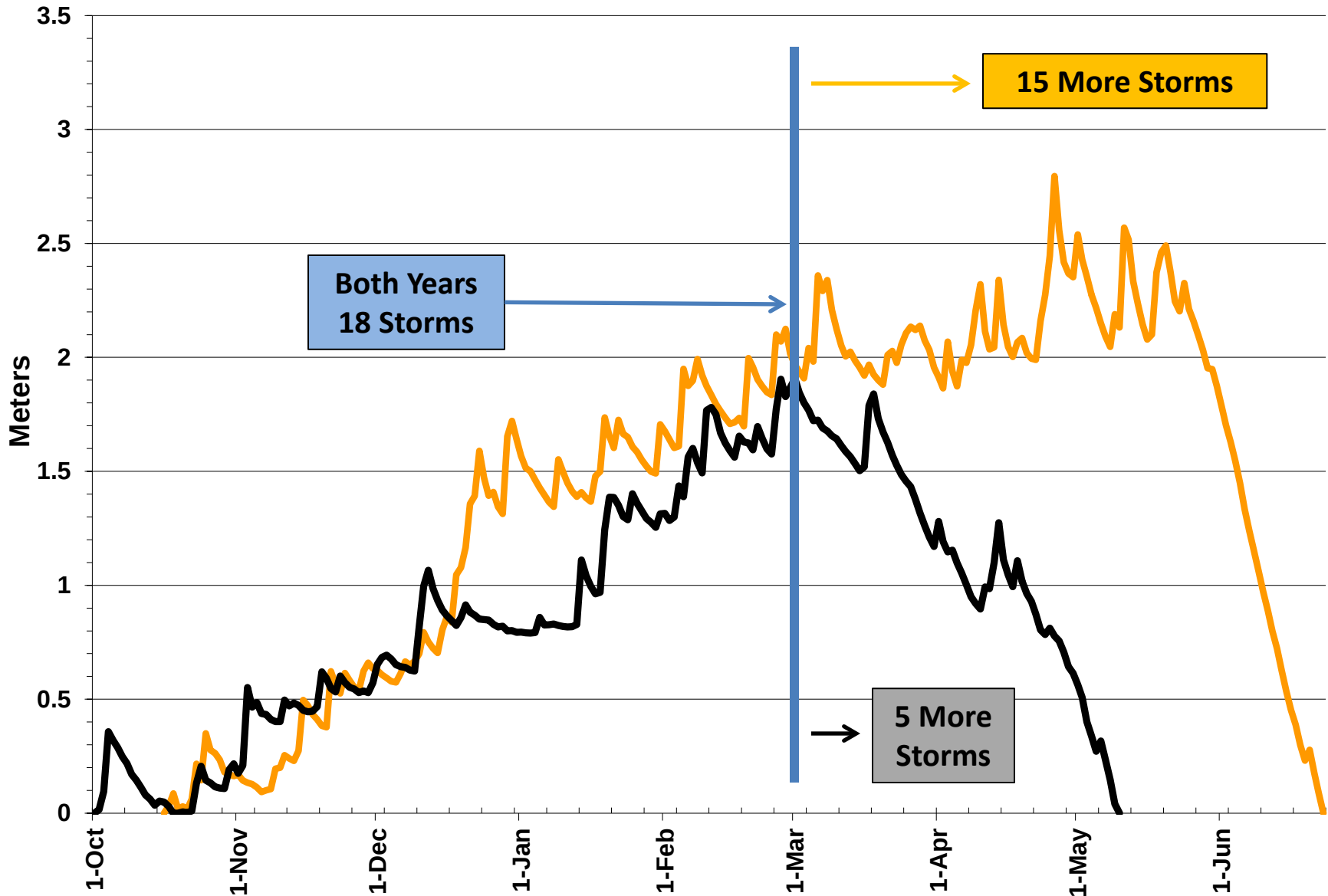
Height of Snow - Swamp Angel Study Plot

as of 2400 hours



Height of Snow - Swamp Angel Study Plot

as of 2400 hours



Both Years
18 Storms

15 More Storms

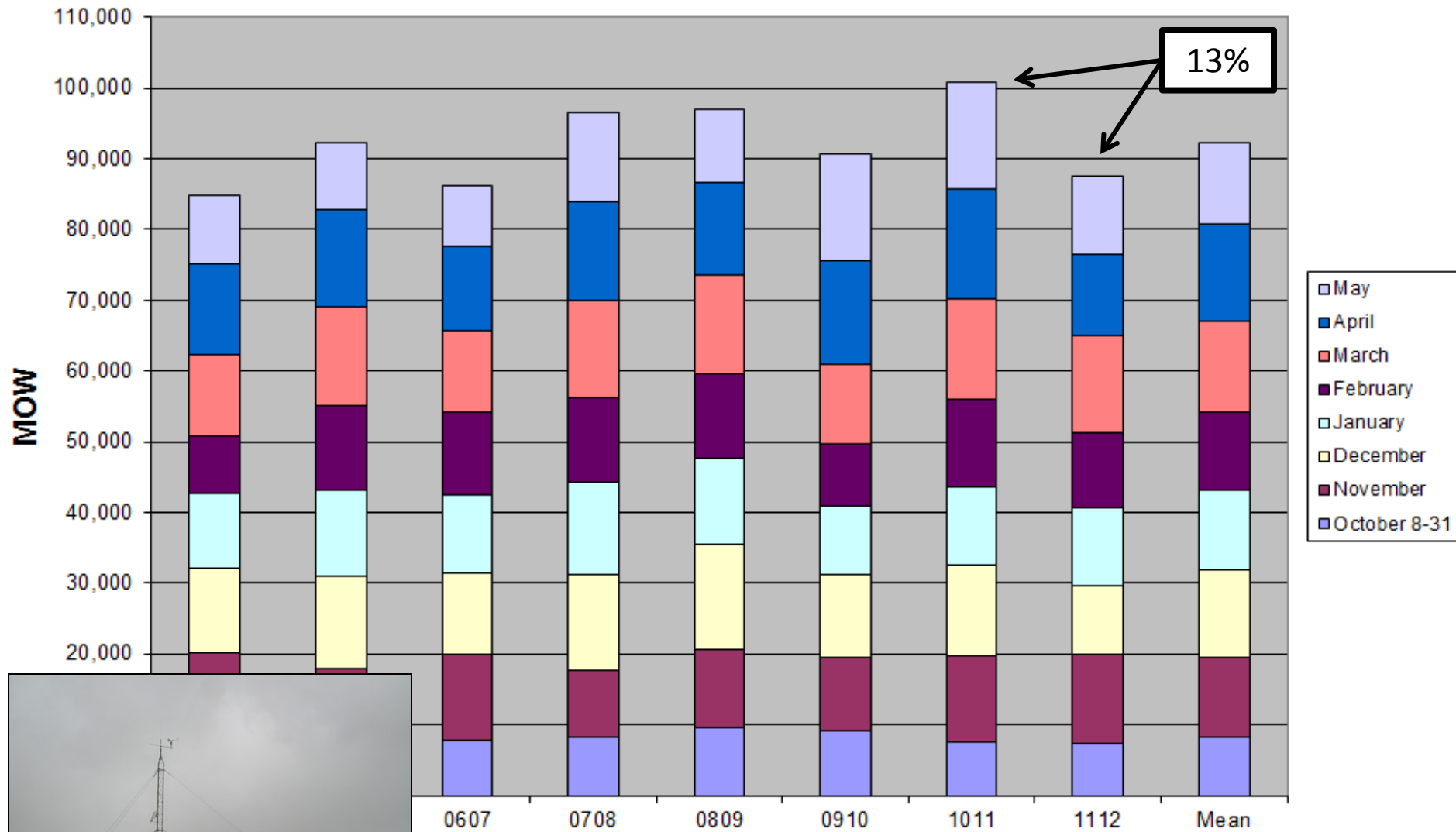
5 More
Storms

— Winter 1011

— Winter 1112

Total Miles of Wind at PTSP by Season

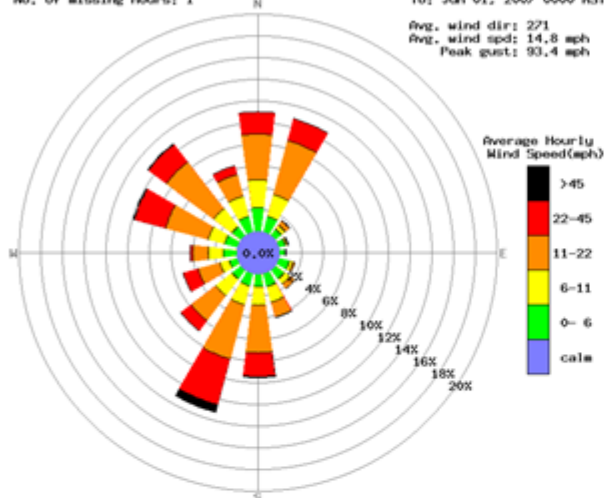
2004/2005 – 2011/2012



Putney Study Plot – 12,325'

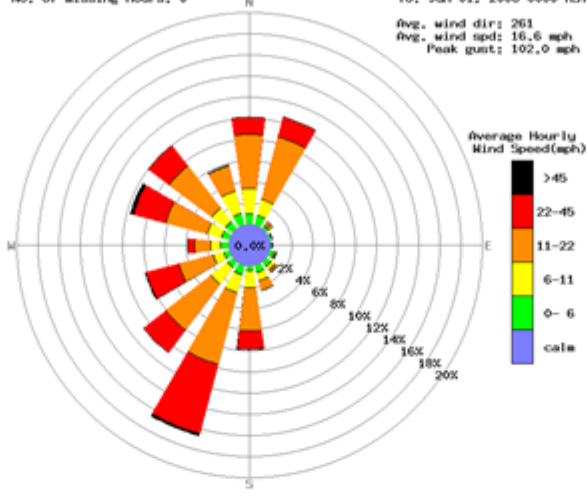
PTSP Winter Wind Roses (10/1 – 5/31)

CSRS Putney Study Plot 12,323 ft.
No. of hours: 5831
No. of missing hours: 1
From hour ending: Oct 01, 2006 0100 MST
To: Jun 01, 2007 0000 MST
Avg. wind dir: 271
Avg. wind spd: 14.8 mph
Peak gust: 93.4 mph



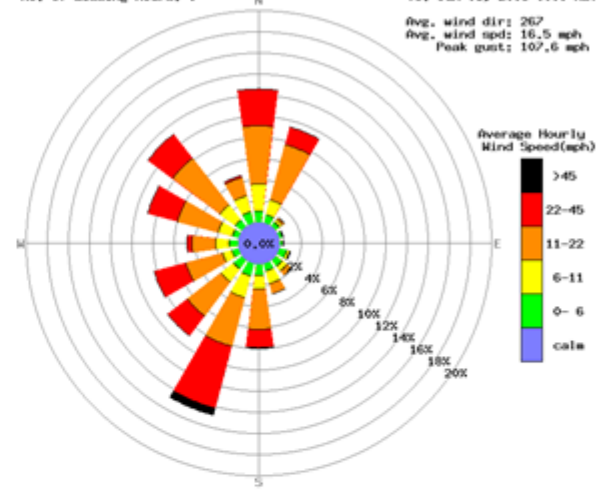
2006/2007

CSRS Putney Study Plot 12,323 ft.
No. of hours: 5856
No. of missing hours: 0
From hour ending: Oct 01, 2007 0100 MST
To: Jun 01, 2008 0000 MST
Avg. wind dir: 261
Avg. wind spd: 16.6 mph
Peak gust: 102.0 mph



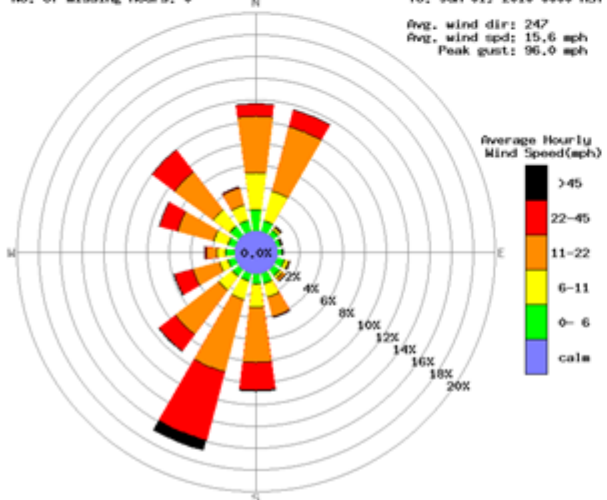
2007/2008

CSRS Putney Study Plot 12,323 ft.
No. of hours: 5832
No. of missing hours: 0
From hour ending: Oct 01, 2008 0100 MST
To: Jun 01, 2009 0000 MST
Avg. wind dir: 267
Avg. wind spd: 16.5 mph
Peak gust: 107.6 mph



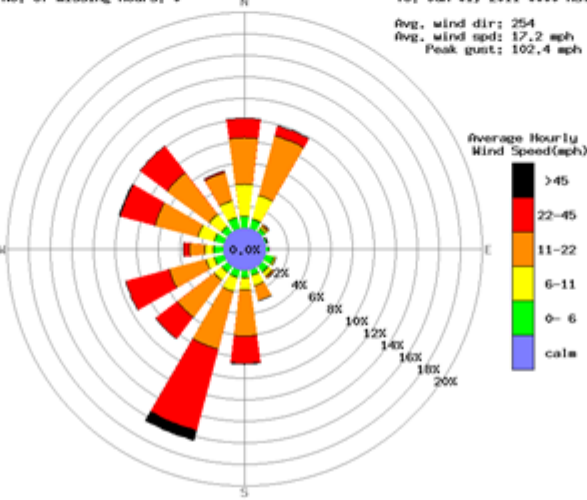
2008/2009

CSRS Putney Study Plot 12,323 ft.
No. of hours: 5832
No. of missing hours: 0
From hour ending: Oct 01, 2009 0100 MST
To: Jun 01, 2010 0000 MST
Avg. wind dir: 247
Avg. wind spd: 15.6 mph
Peak gust: 96.0 mph



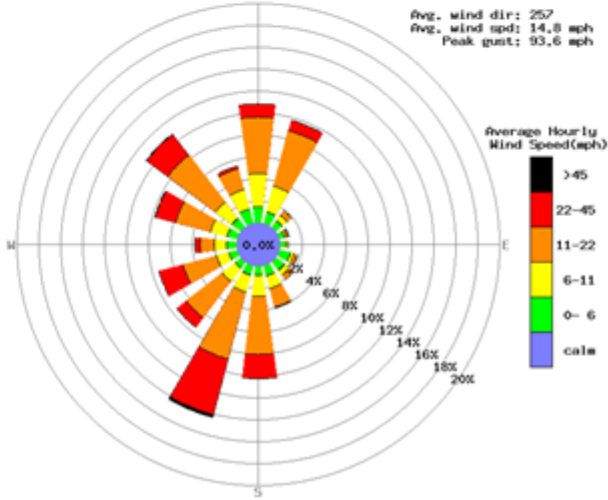
2009/2010

CSRS Putney Study Plot 12,323 ft.
No. of hours: 5832
No. of missing hours: 0
From hour ending: Oct 01, 2010 0100 MST
To: Jun 01, 2011 0000 MST
Avg. wind dir: 254
Avg. wind spd: 17.2 mph
Peak gust: 102.4 mph



2010/2011

CSRS Putney Study Plot 12,323 ft.
No. of hours: 5856
No. of missing hours: 0
From hour ending: Oct 01, 2011 0100 MST
To: Jun 01, 2012 0000 MST
Avg. wind dir: 257
Avg. wind spd: 14.8 mph
Peak gust: 93.6 mph



2011/2012

Dust-on-Snow Events Documented per Month, by Winter
Senator Beck Basin Study Area at Red Mountain Pass – San Juan Mountains

	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Total
2002/2003					2		1			3
2003/2004							2	1		3
2004/2005	0	0	0	0	0	1	2	1	0	4
2005/2006	0	0	1	0	1	1	3	2	0	8
2006/2007	0	0	1	0	1	1	3	1	1	8
2007/2008	0	0	0	0	0	3	3	1	0	7
2008/2009	1	0	1	0	1	4	5	0	0	12
2009/2010	1	0	0	0	0	1	4	3	0	9
2010/2011	0	0	0	0	1	3	3	4	0	11
2011/2012	0	2	1	0	0	3	2	4	0	12



June 6, 2011 (D2-11 merged)

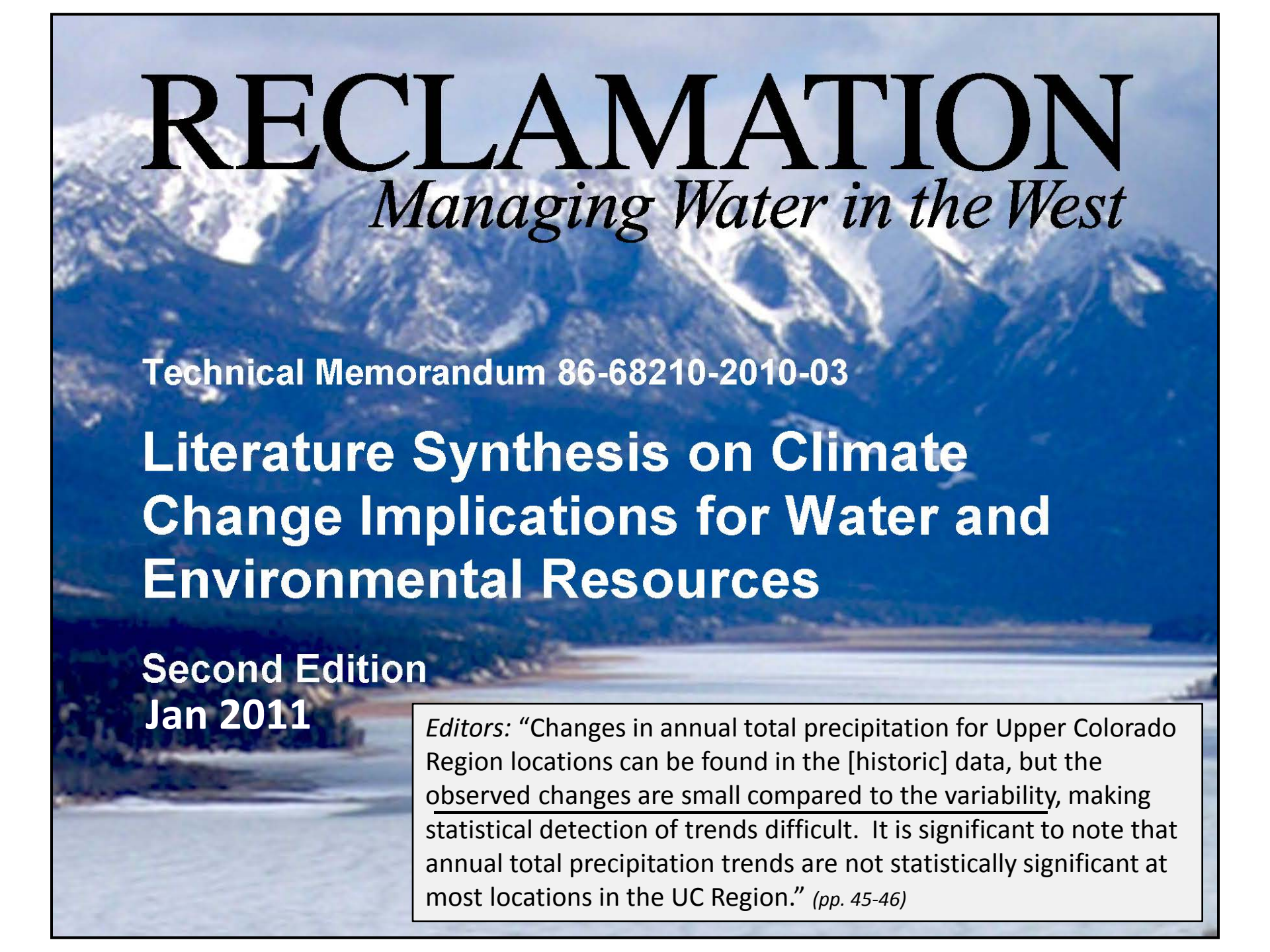
Dust Loading Similar

WY2011 = 14 grams/m²

WY 2012 = 11-12 grams/m²



May 7, 2012 (D10, 11, 12 after SAG)



RECLAMATION

Managing Water in the West

Technical Memorandum 86-68210-2010-03

Literature Synthesis on Climate Change Implications for Water and Environmental Resources

Second Edition
Jan 2011

Editors: "Changes in annual total precipitation for Upper Colorado Region locations can be found in the [historic] data, but the observed changes are small compared to the variability, making statistical detection of trends difficult. It is significant to note that annual total precipitation trends are not statistically significant at most locations in the UC Region." (pp. 45-46)



What varied during (Colorado) Water Years 2011 and 2012?

- Precipitation (snow)
- Timing of dust-on-snow impacts ... and
 - snowmelt runoff timing
 - Runoff yield

What was not as variable?

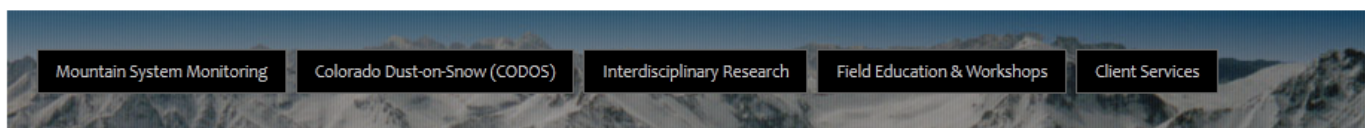
- Wind
- Dust deposition

What caused the variations in storm frequency after March 1?

- Arctic Oscillation
- (weakening La Nina)

Will inter-annual variability change (amplify) with regional change?

- What drives inter-annual variability? At what scales?
- With what effects on mountain systems (as CRB reservoirs)?



Mountain System Monitoring

Colorado Dust-on-Snow (CODOS)

Interdisciplinary Research

Field Education & Workshops

Client Services



Swamp Angel Study Plot (subalpine)



Senator Beck Study Plot (alpine)

MOUNTAIN SYSTEM MONITORING: CURRENT CONDITIONS

Our Mountain System Monitoring data is made possible by private donations, funding from stakeholders, and the research community.

Donate



Senator Beck Basin Study Area at Red Mountain Pass, Colorado:

- See our [Archived Data](#) for datasets and comprehensive metadata.
- All times shown are in Mountain Standard Time (MST); we do not utilize Daylight Savings time.
- The 24-Hour summary reports below are for calendar days and end at midnight (MST).

The following are **provisional data** collected and displayed directly from instrumentation in Senator Beck Basin. These data have not undergone rigid quality control procedures, and should be used solely for informational purposes.

Study Plot:	SBSP	SASP	PTSP	SBSG
Precipitation & Snowpack:	Hourly 24hr	Hourly 24hr		
Barometric Pressure:		Hourly		
Wind (tabular data):	Hourly 24hr		Hourly 24hr	
Wind (graphical wind rose):	1hr 12hr 24hr		1hr 12hr 24hr	
Temp:	Hourly 24hr	Hourly 24hr	Hourly 24hr	
Radiation Data:	Hourly 24hr	Hourly 24hr		
Relative Humidity:	Hourly	Hourly	Hourly	
Stream Flow:				Hourly 24-Hr Re-started for season