

Blowing Snow Climatology Study

WFO La Crosse Climatology Series #12

Todd Shea
WFO La Crosse



Methodology

- Hourly Surface Observations (1961-90)
 - La Crosse, WI (LSE)
 - Rochester, MN (RST)
 - Mason City, IA (MCW)
- Observations compared
 - BLSN Only
 - SN & BLSN

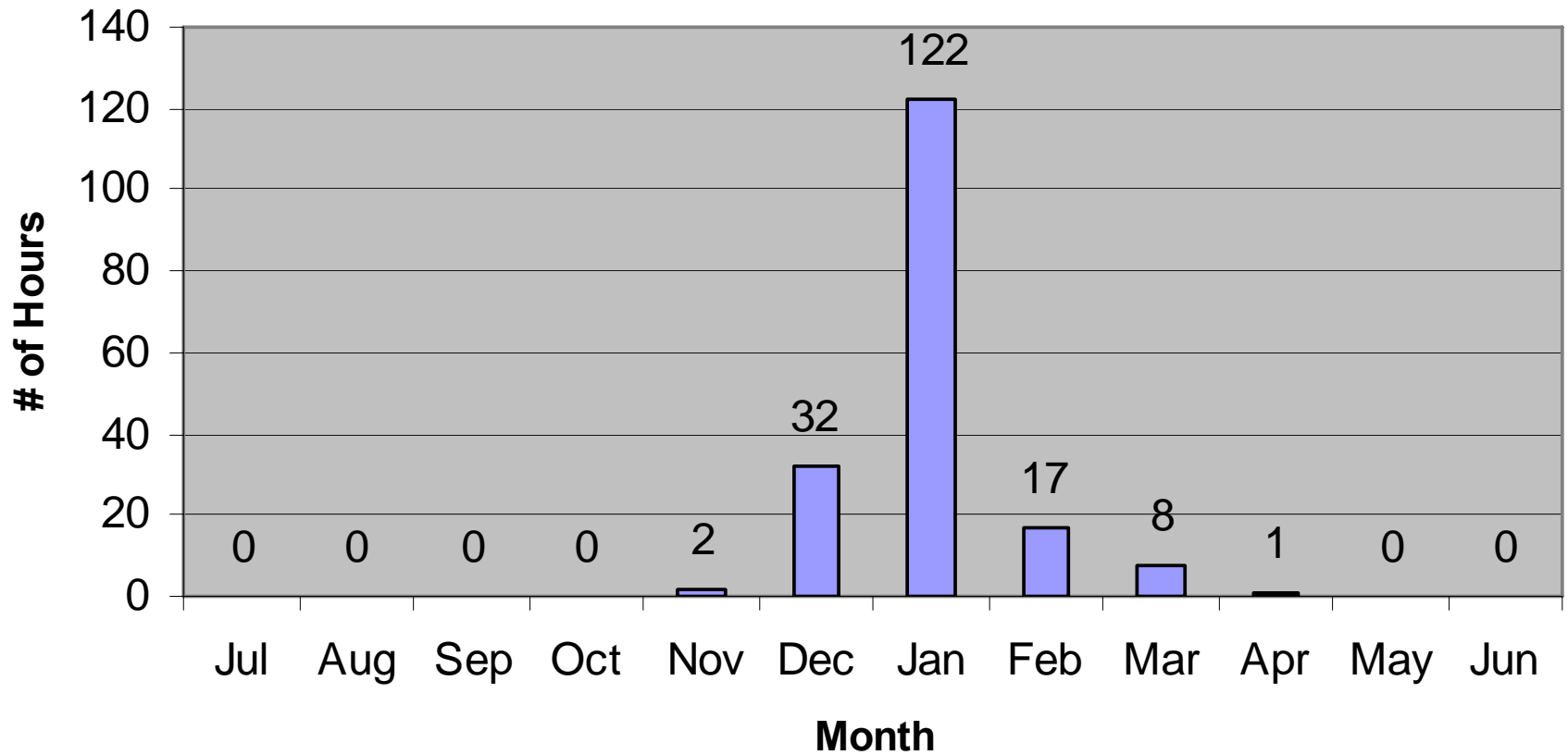


BLSN Observations

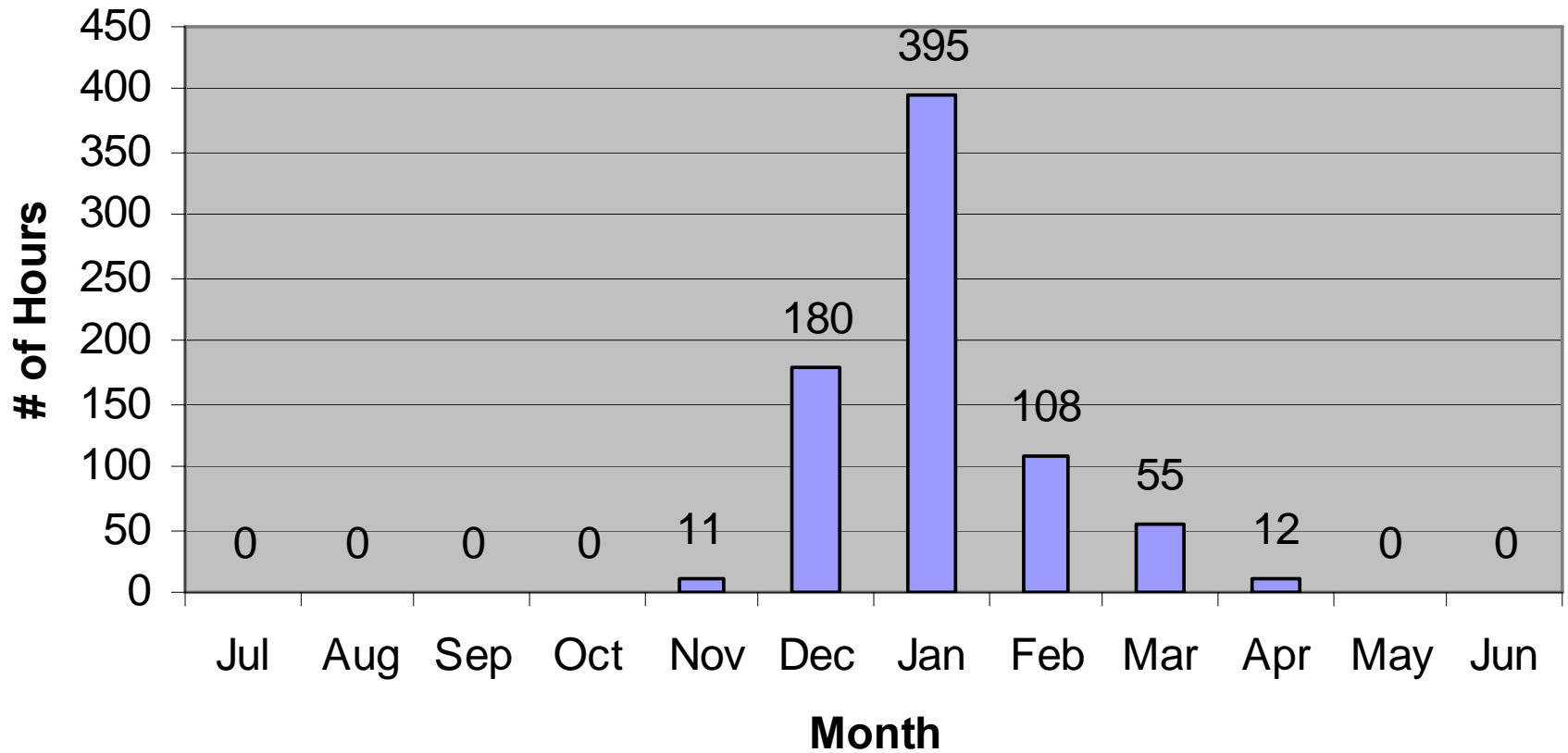
- All observations (vsby 0-6 miles)
 - LSE 182 hours
 - RST 761 hours (4x LSE)
 - MCW 1698 hours (9x LSE)
- Visibility 1 mile or less
 - LSE 15 hours
 - RST 144 hours (9x LSE)
 - MCW 439 hours (29x LSE)



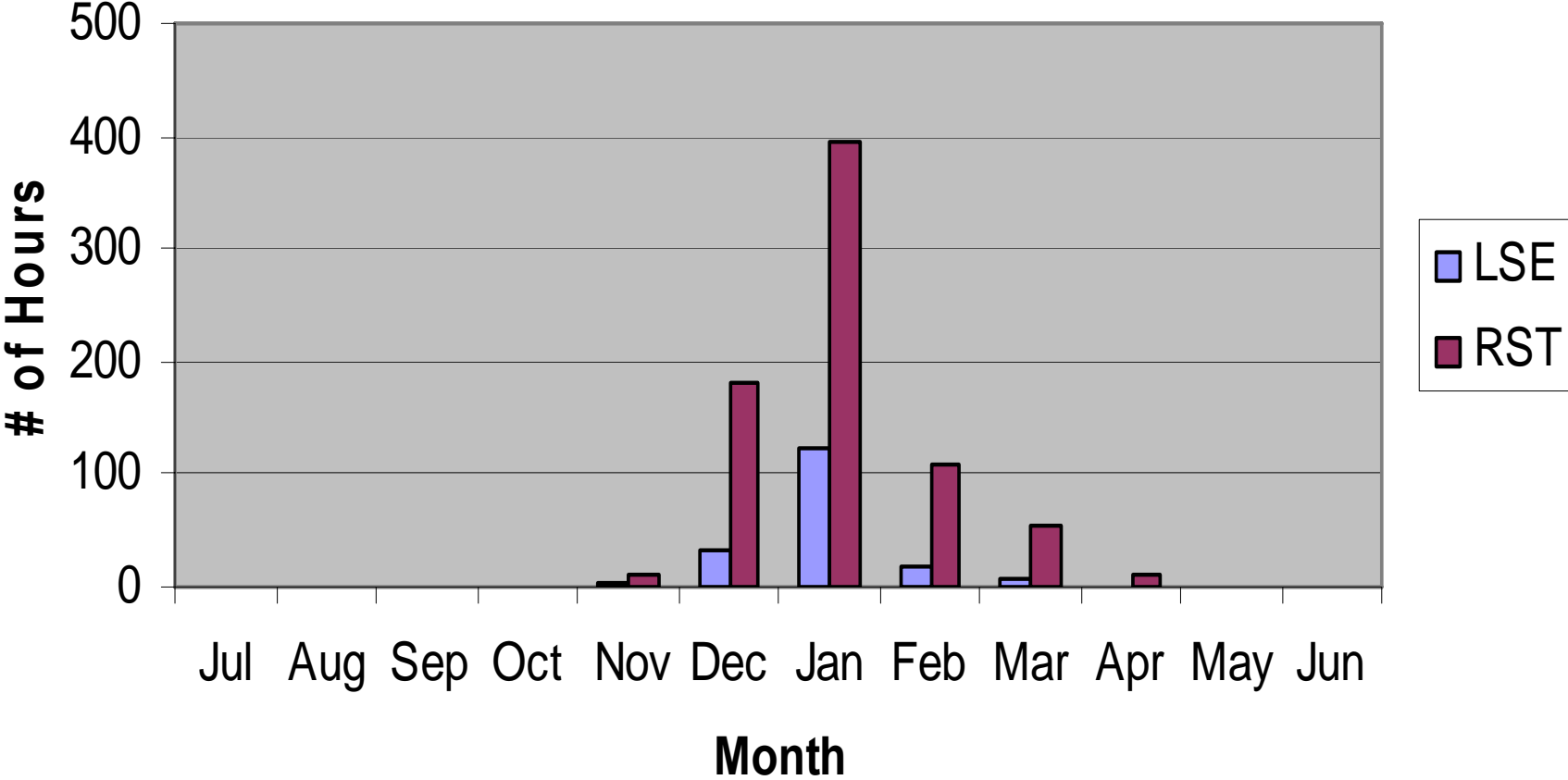
Blowing Snow / Month La Crosse, WI (LSE)



Blowing Snow / Month Rochester, MN (RST)

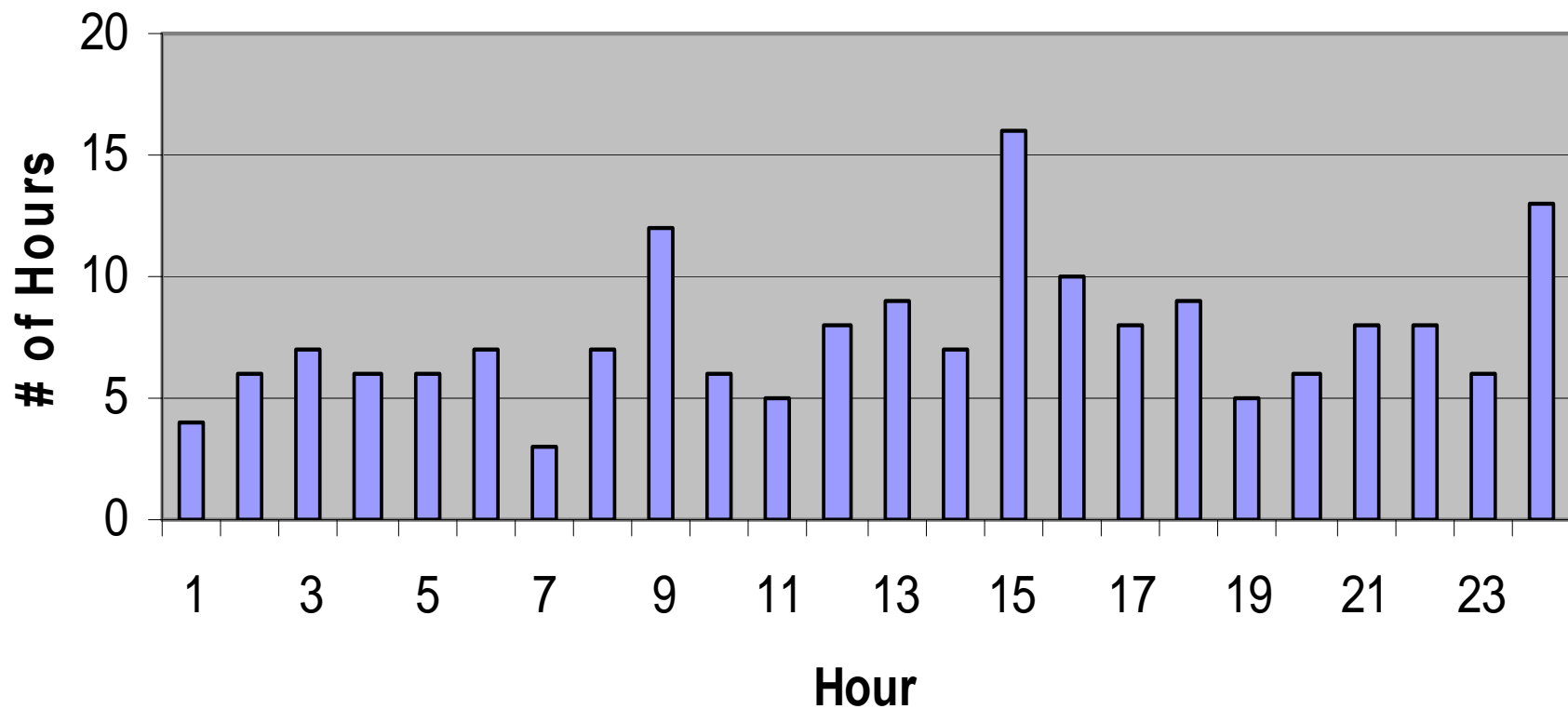


Blowing Snow / Month



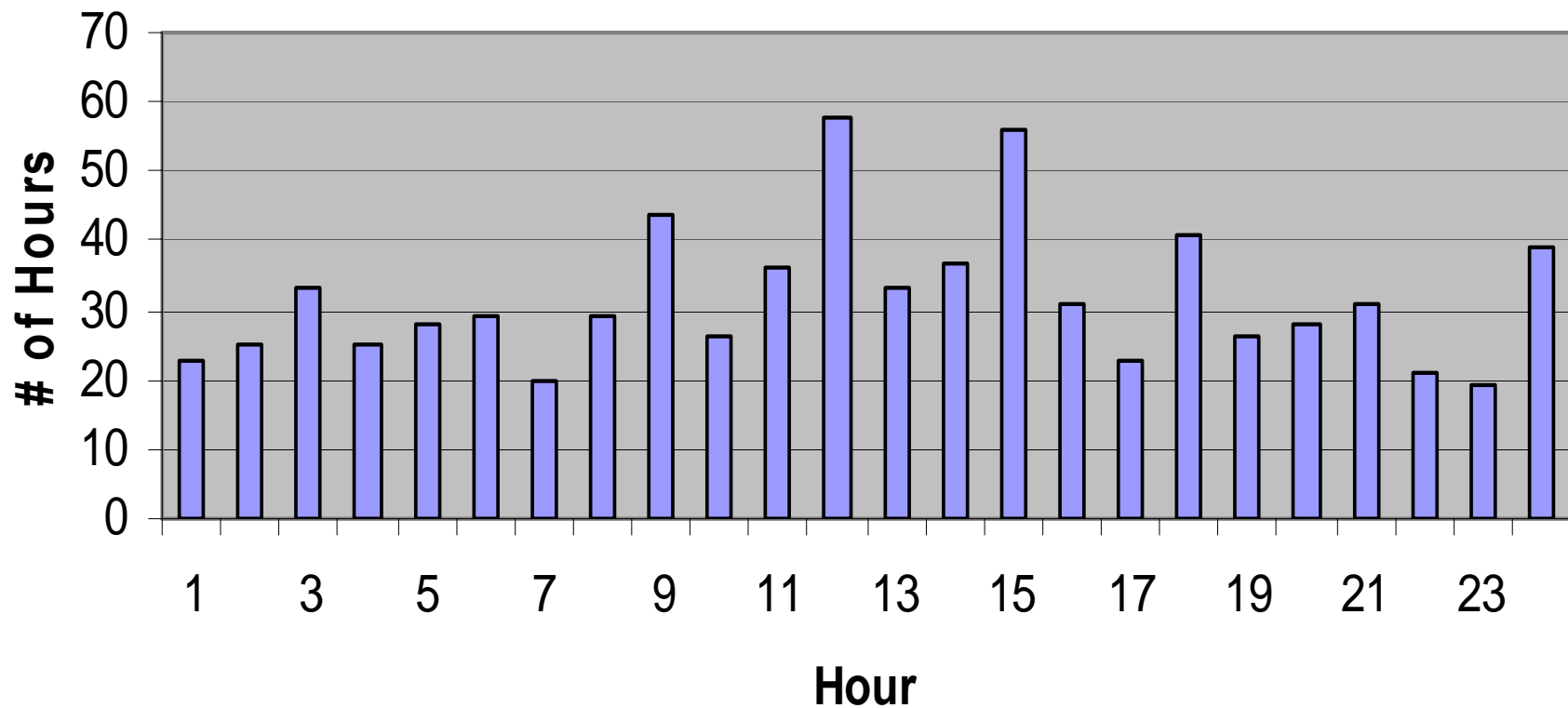
Blowing Snow / Hour of Day

La Crosse, WI (LSE)



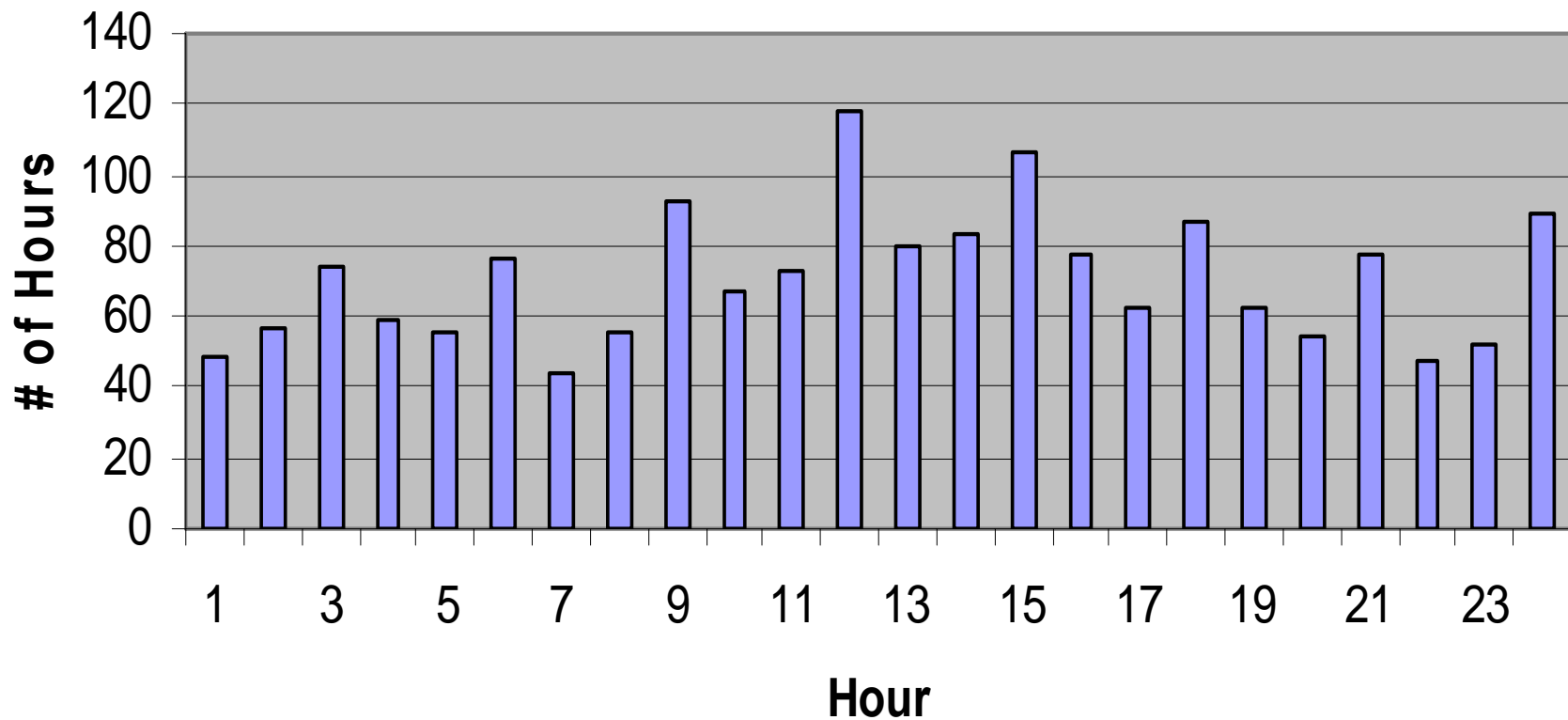
Blowing Snow / Hour of Day

Rochester, MN (RST)



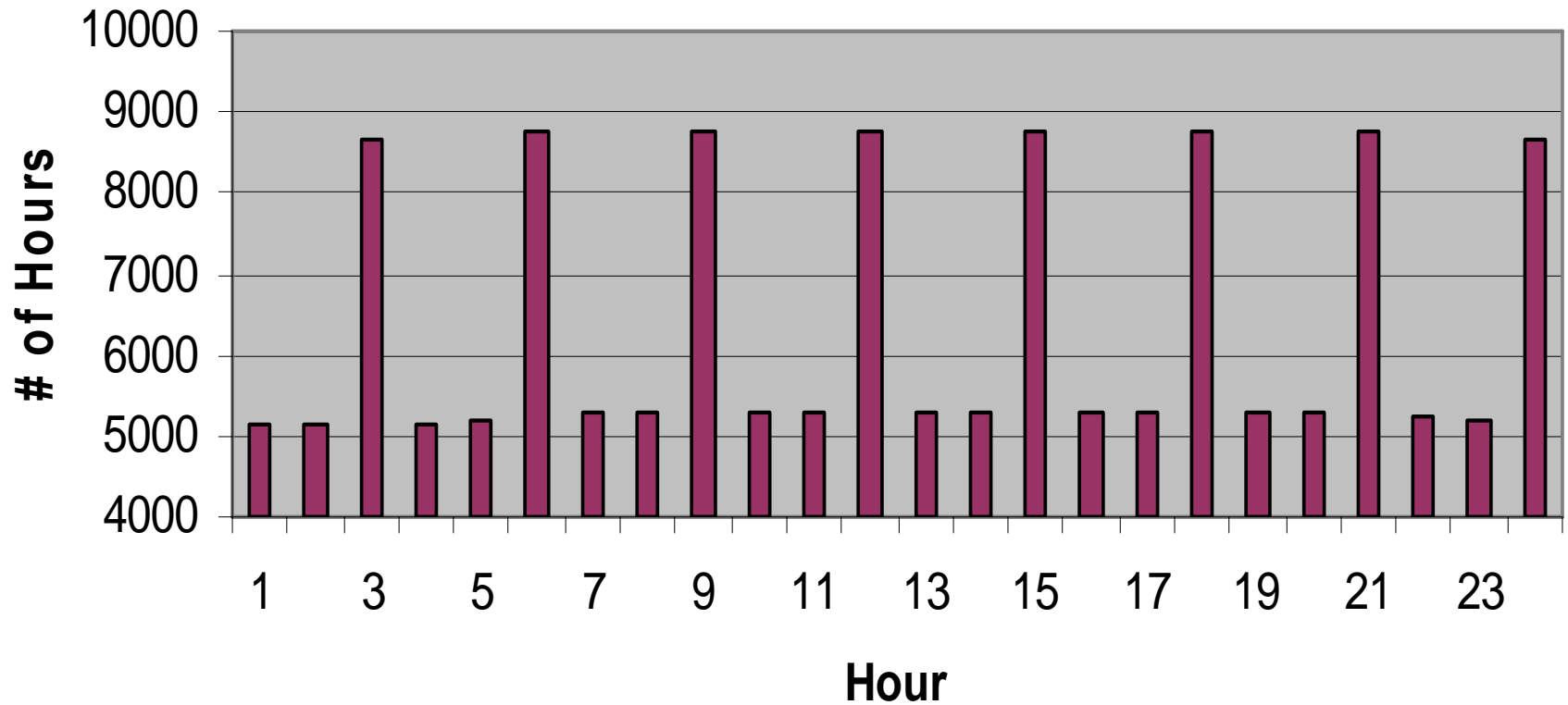
Blowing Snow / Hour of Day

Mason City, IA (MCW)



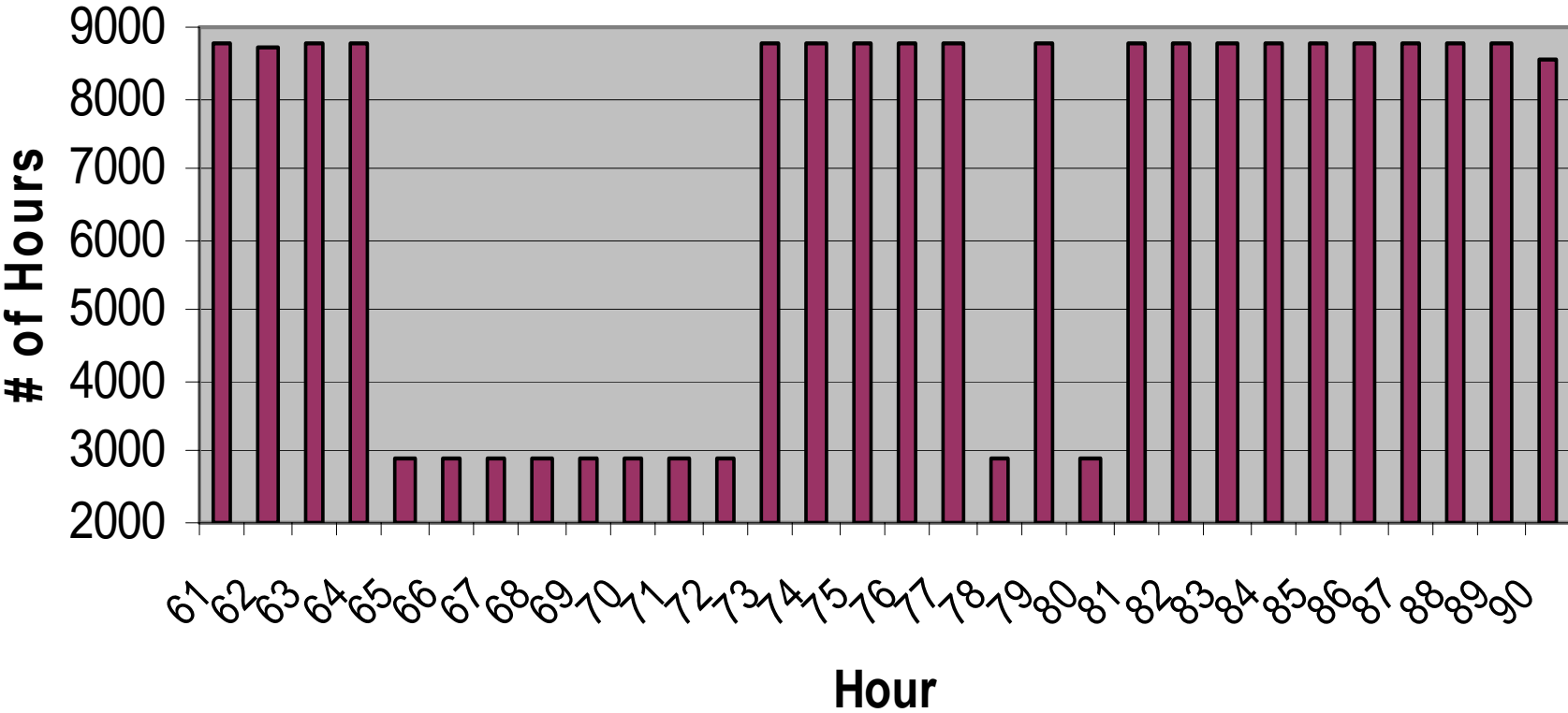
Wx Obs Taken by Hour of Day

La Crosse, WI (1961-1990)

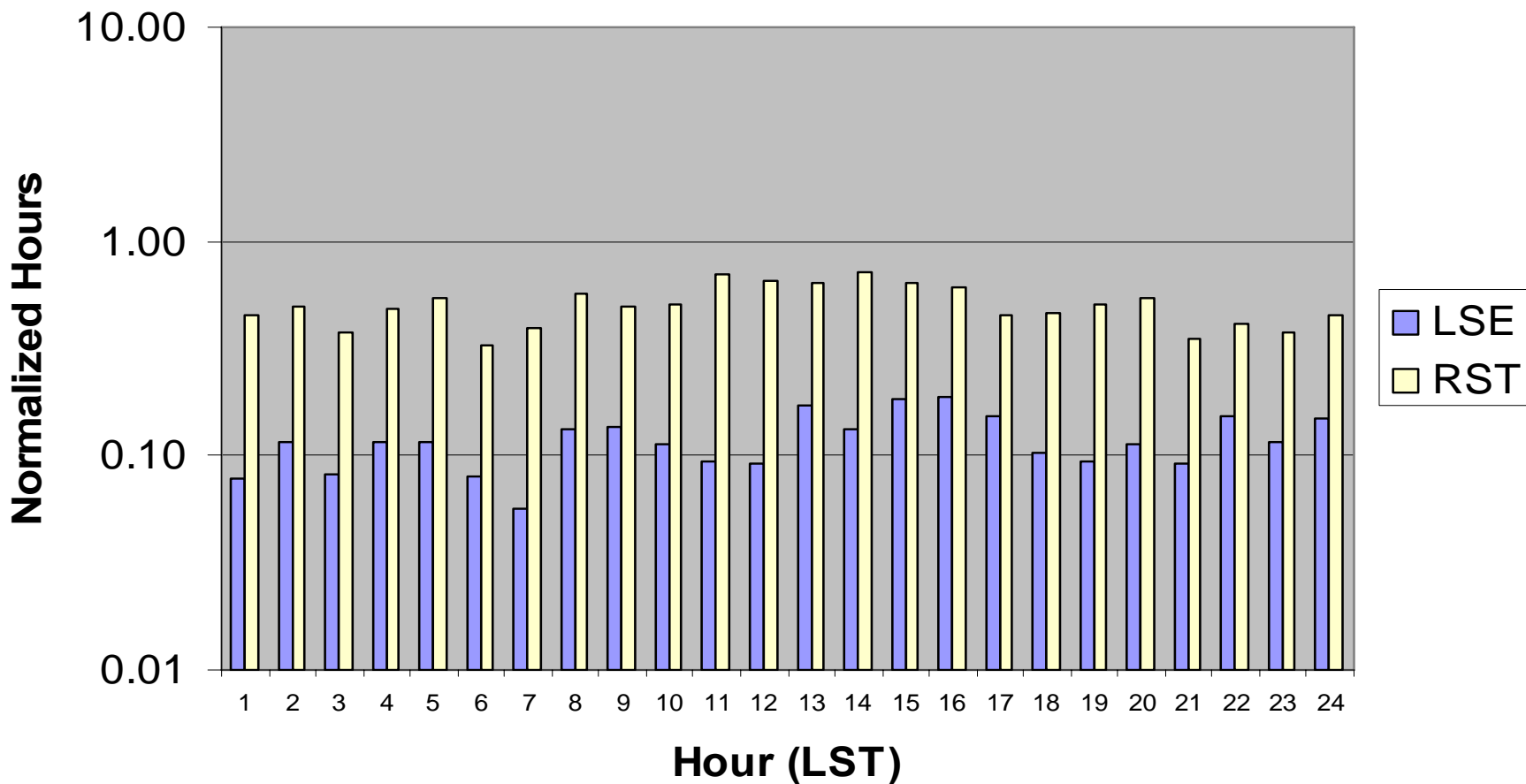


Wx Obs Taken by Year

RST (1961-1990)

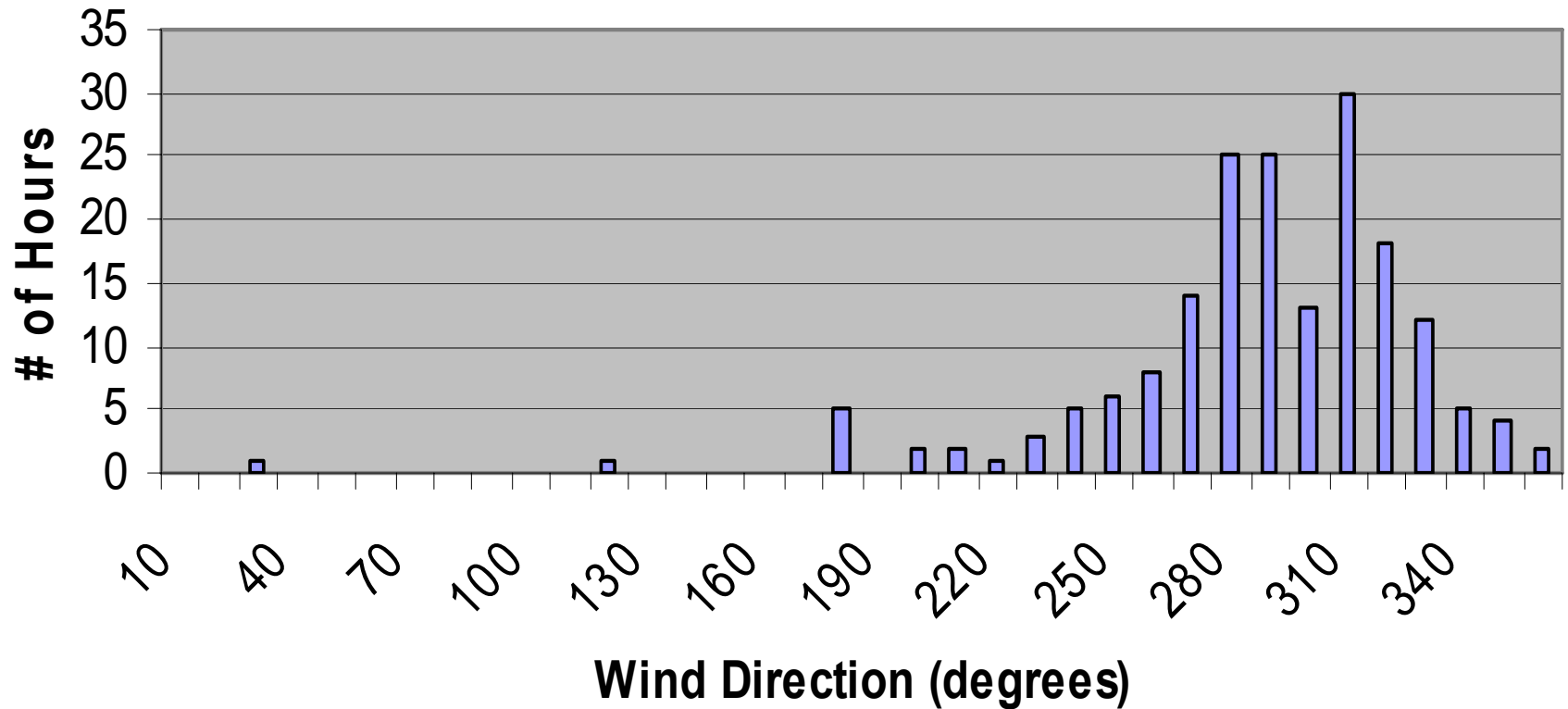


Normalized BLSN Reports by Hour (1961-1990)

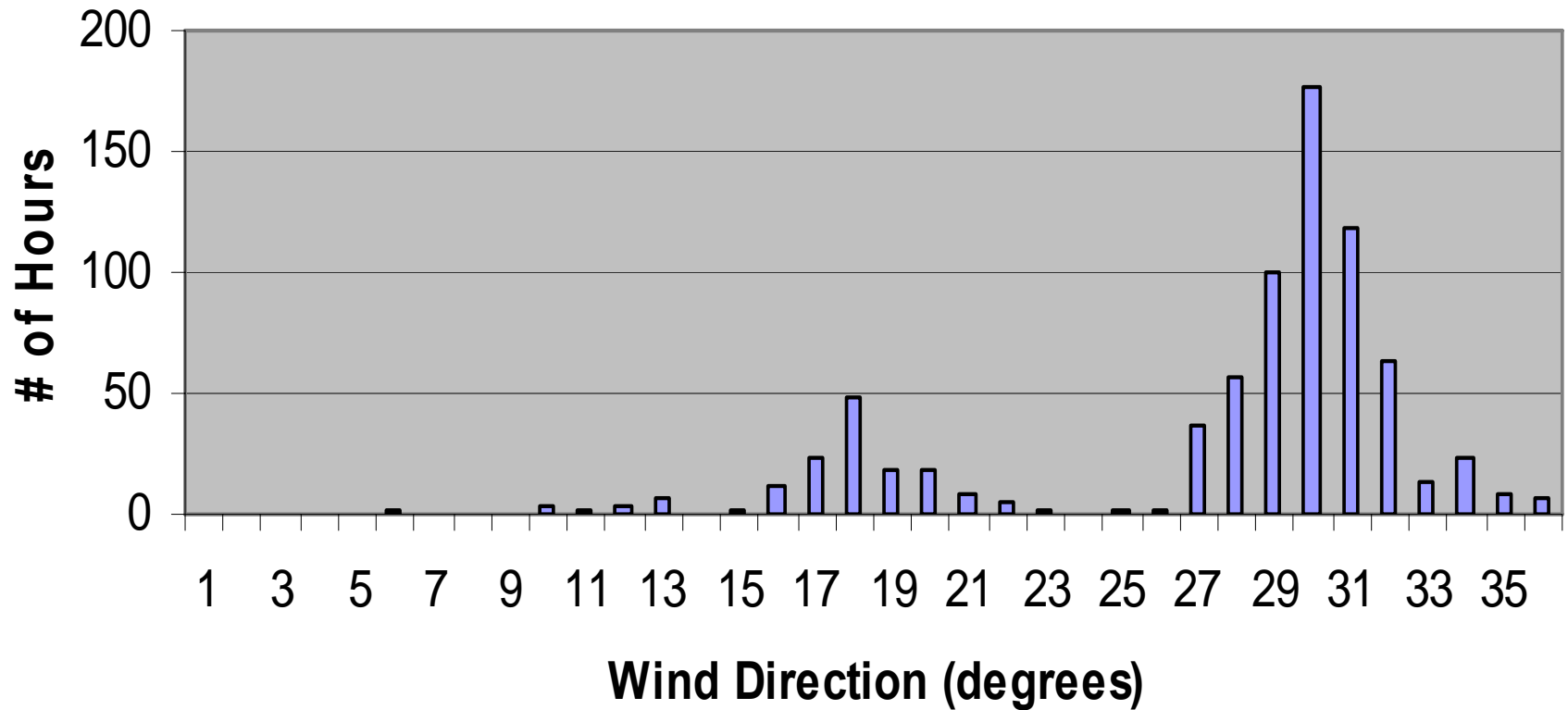


Blowing Snow / Wind Direction

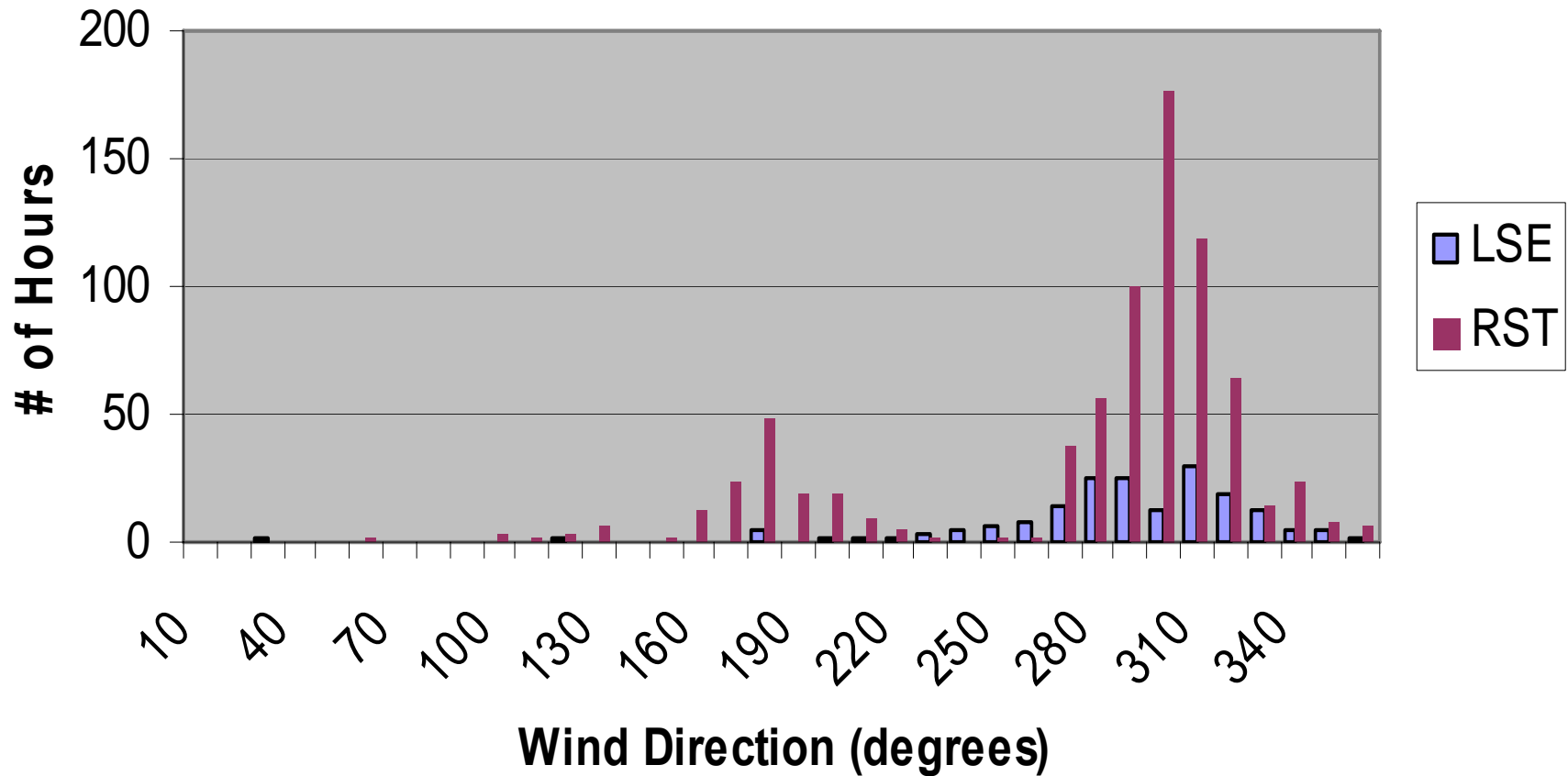
La Crosse, WI (LSE)



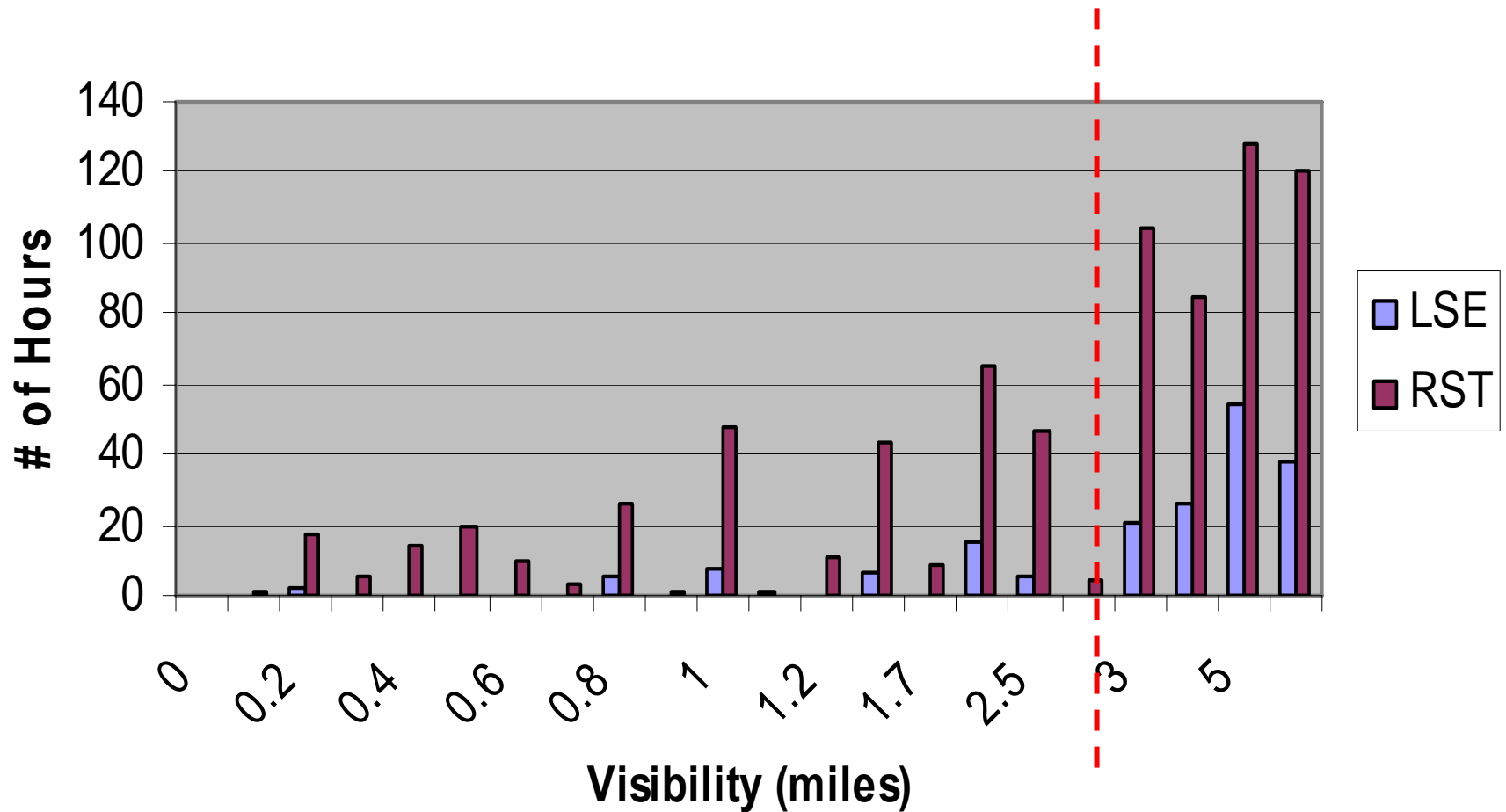
Blowing Snow / Wind Direction Rochester, MN (RST)



Blowing Snow / Wind Direction

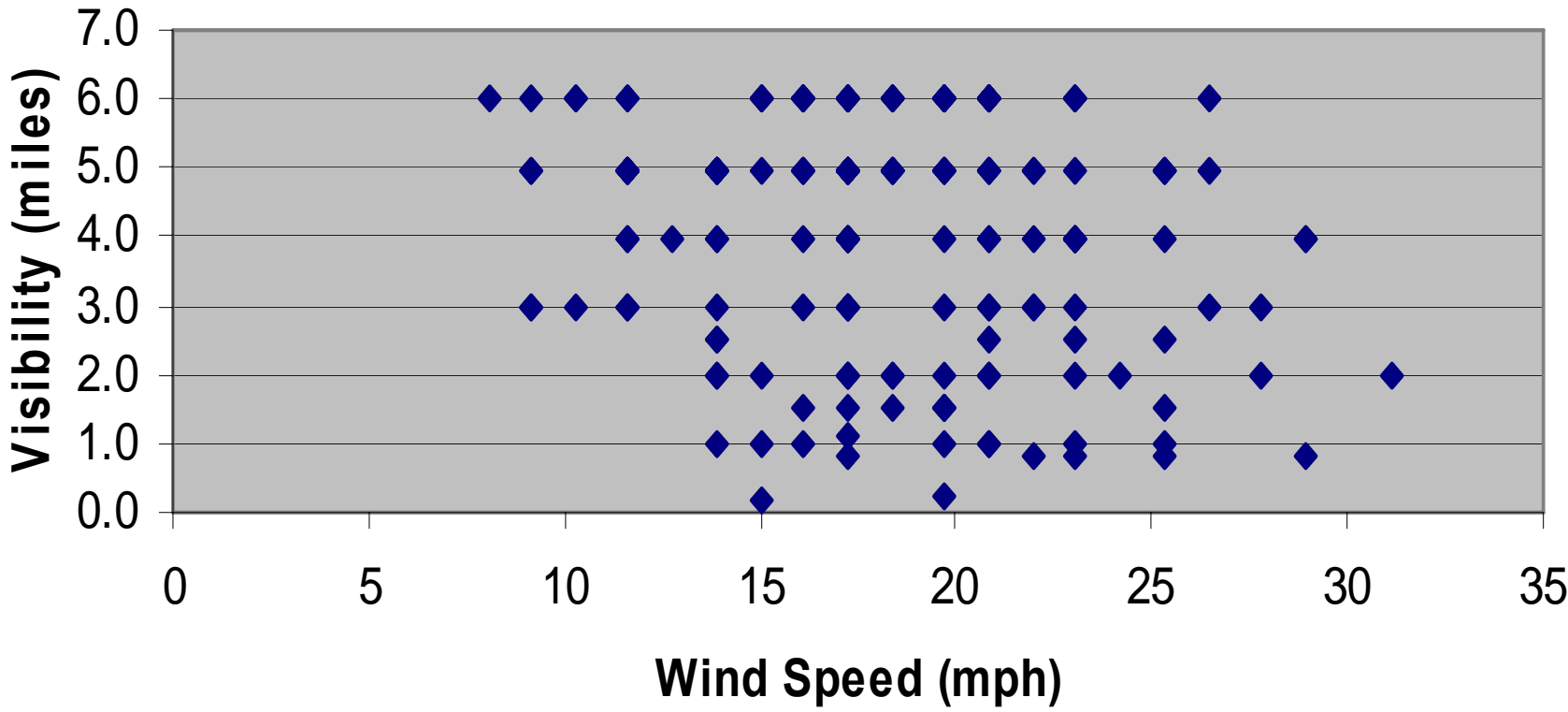


Blowing Snow / Visibility



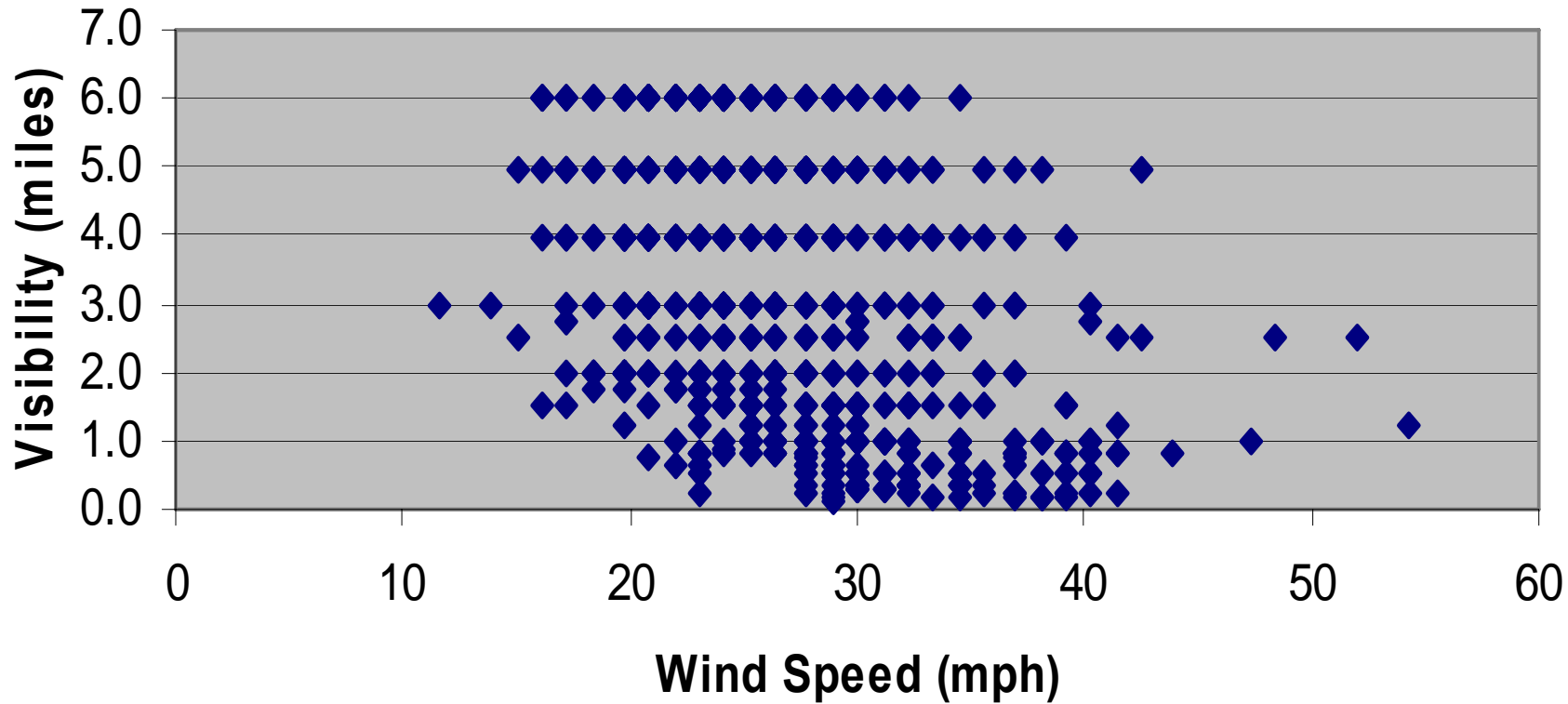
Blowing Snow

La Crosse, WI (LSE)

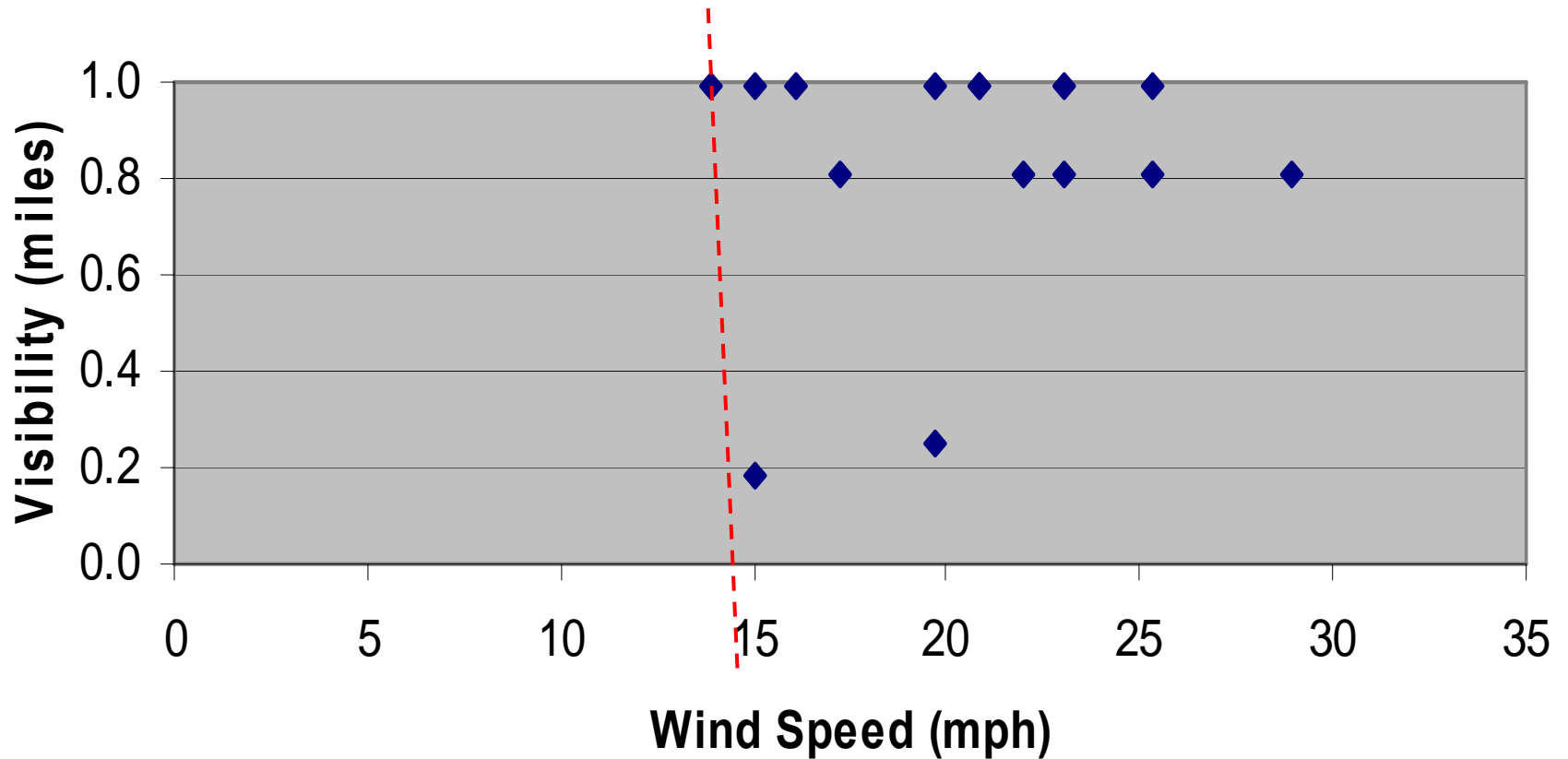


Blowing Snow

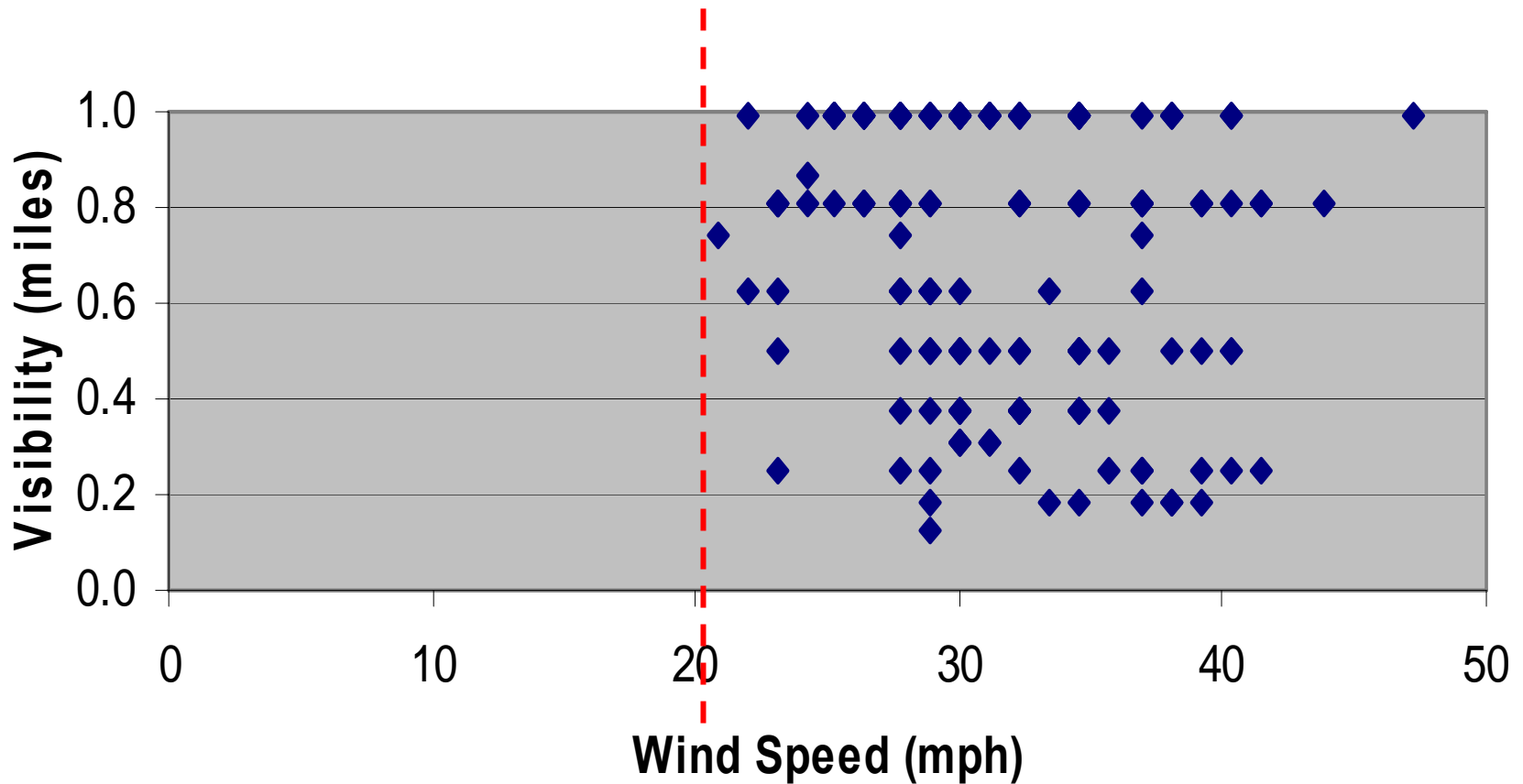
Rochester, MN (RST)



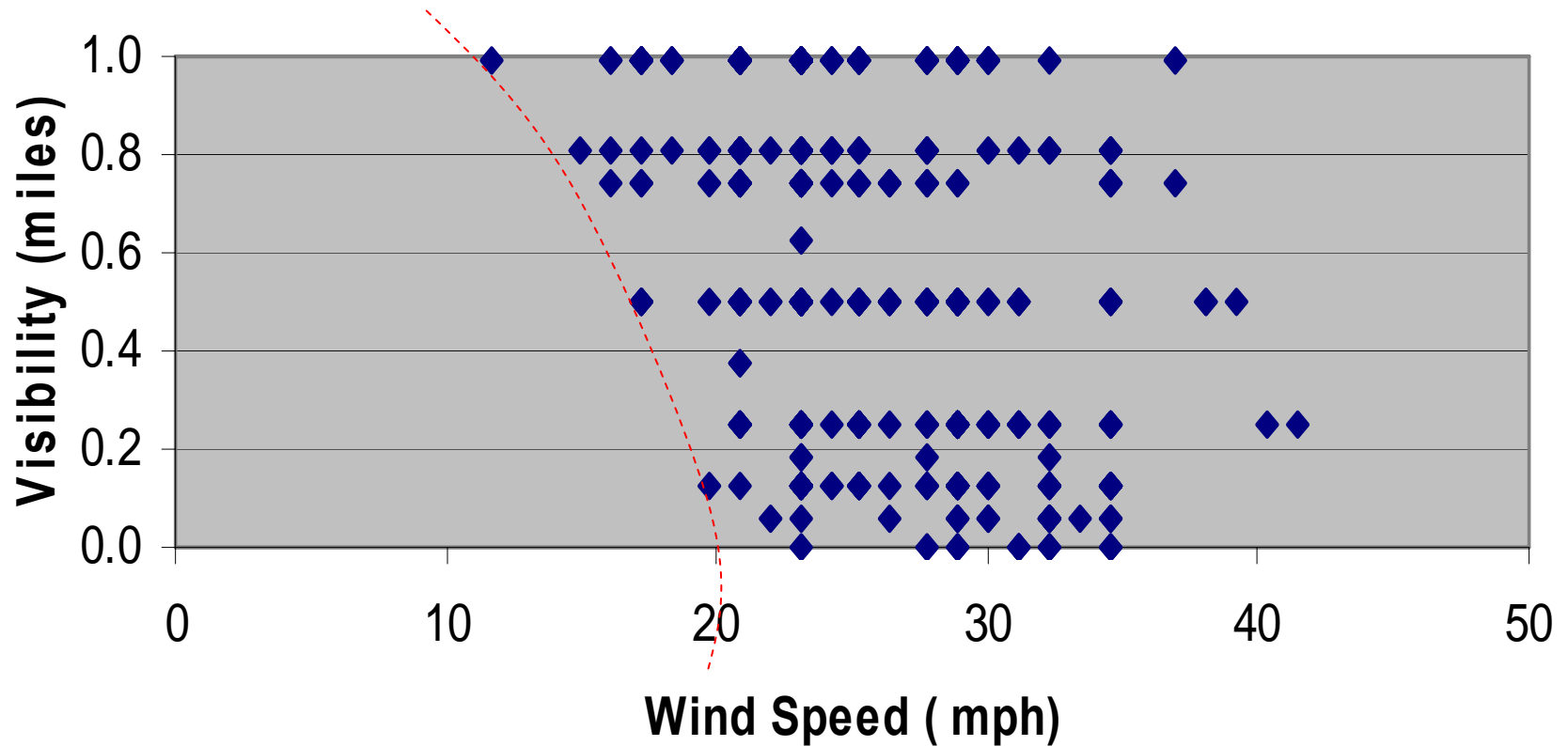
Blowing Snow (≤ 1 Mile) La Crosse, WI (LSE)



Blowing Snow (≤ 1 Mile) Rochester, MN (RST)

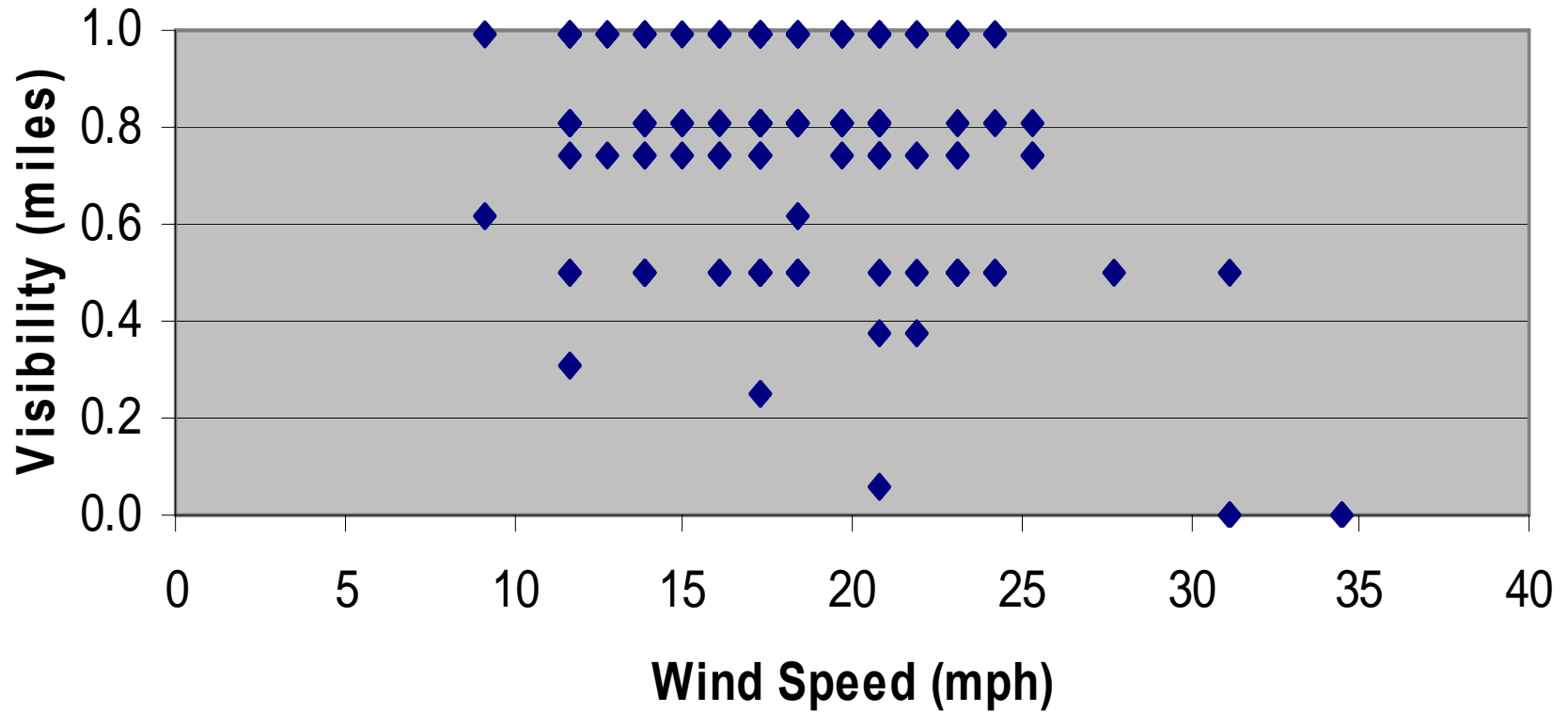


Blowing Snow (≤ 1 Mile) Mason City, IA (MCW)



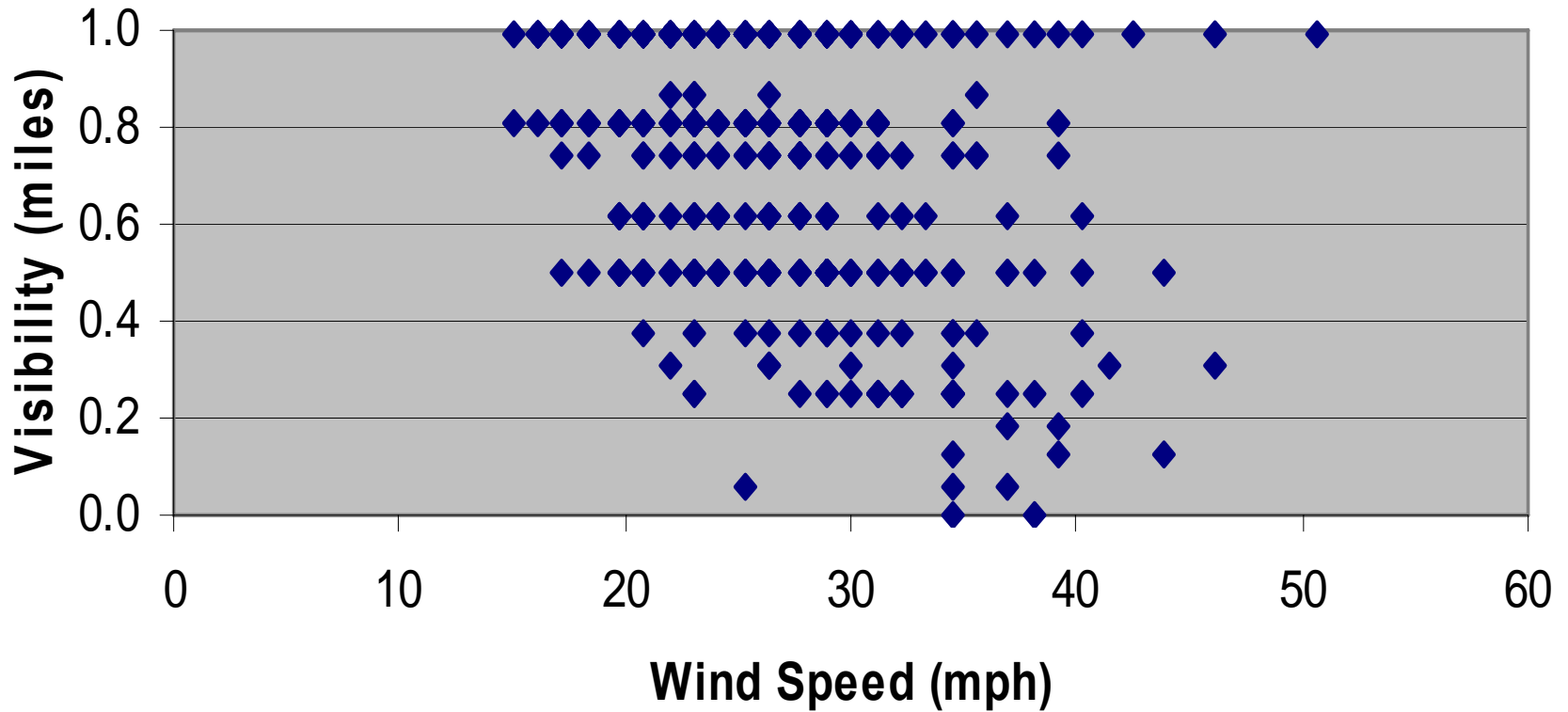
Snow & Blowing Snow (≤ 1 Mile)

La Crosse, WI (LSE)



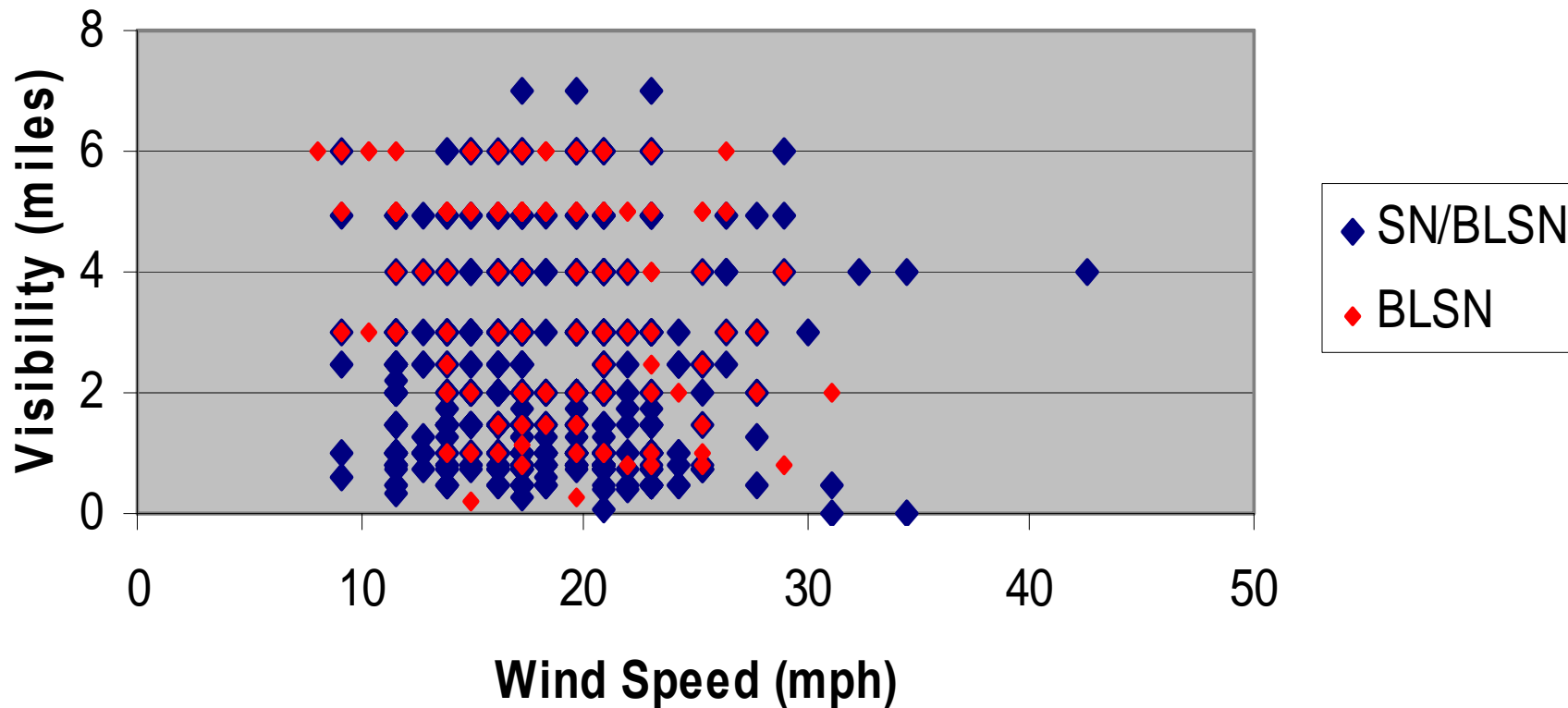
Snow & Blowing Snow (≤ 1 Mile)

Rochester, MN (RST)

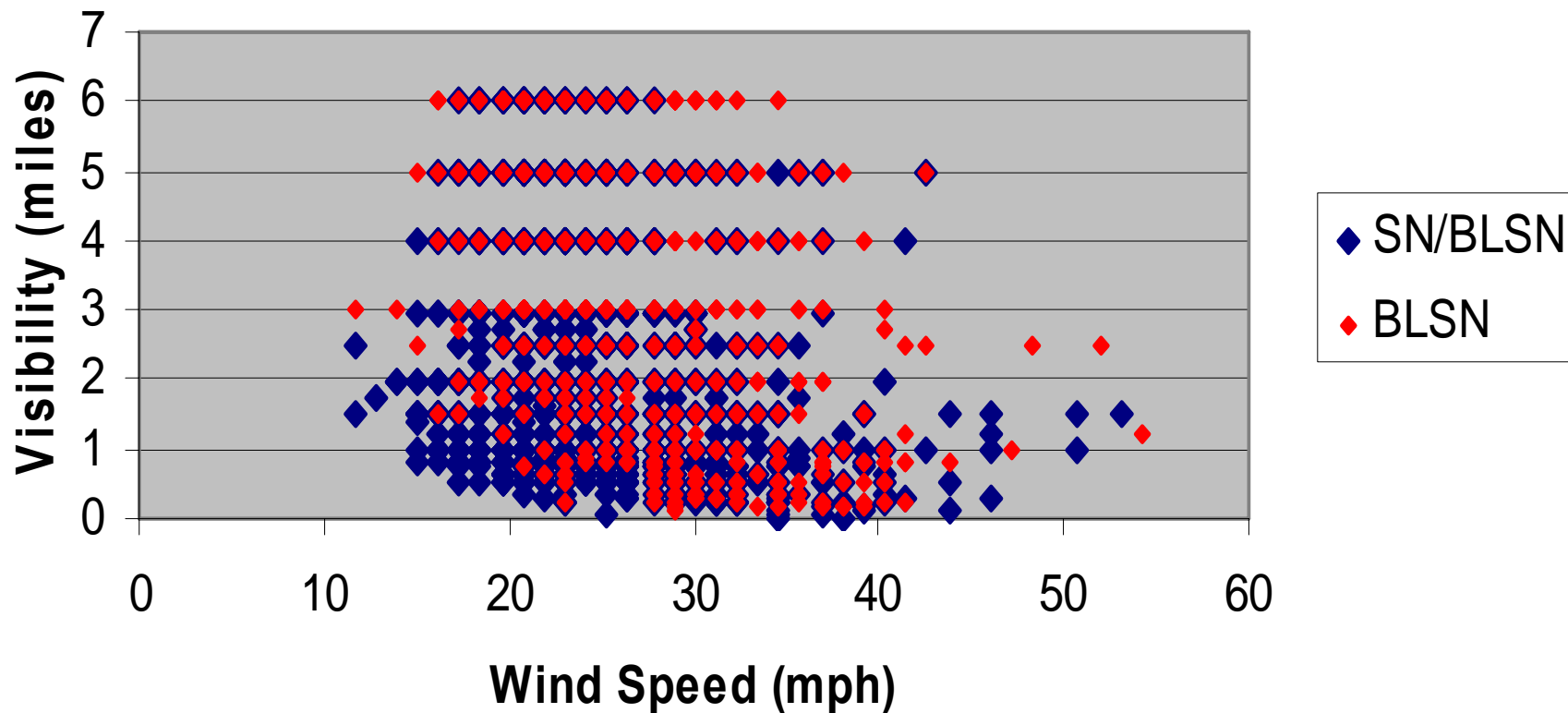


Snow & Blowing Snow

La Crosse, WI (LSE)

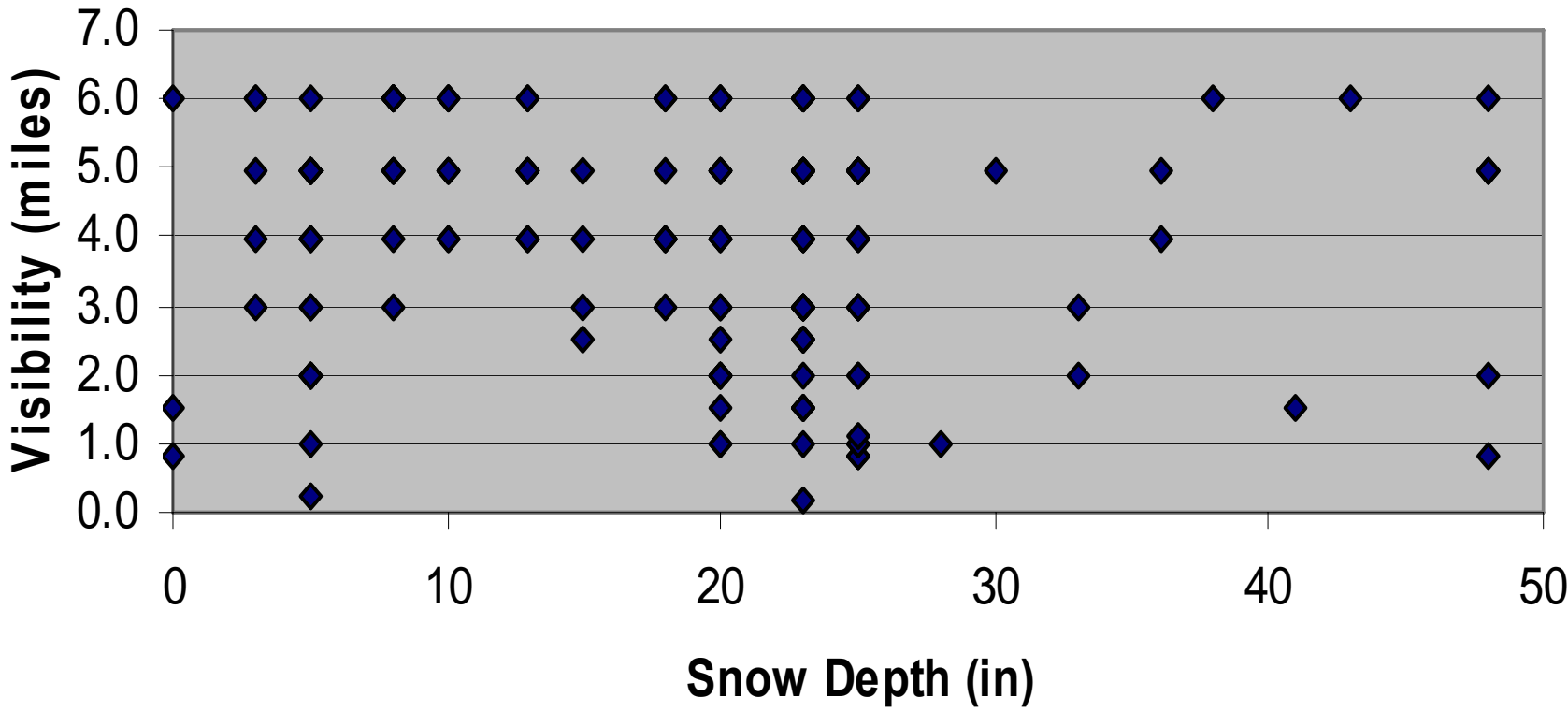


Snow & Blowing Snow Rochester, MN (RST)



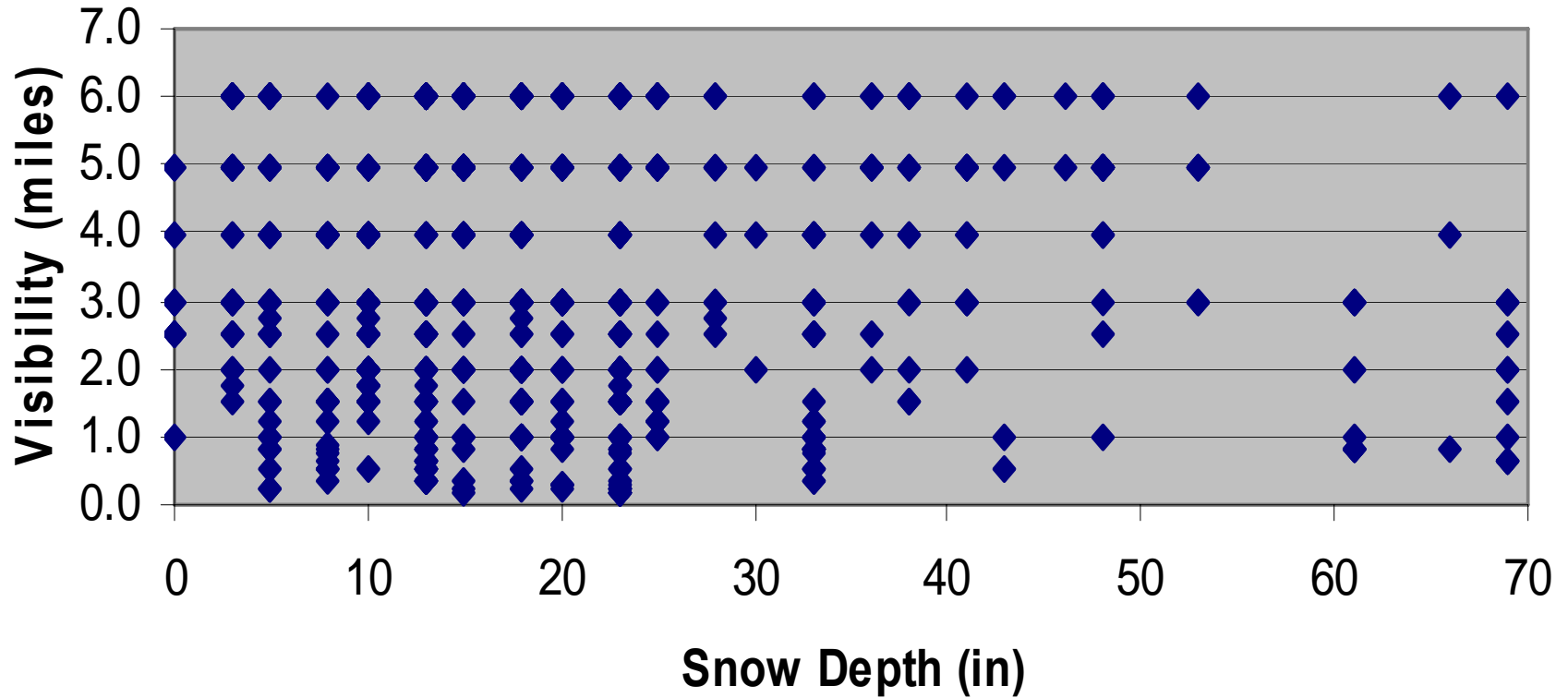
Blowing Snow

La Crosse, WI (LSE)



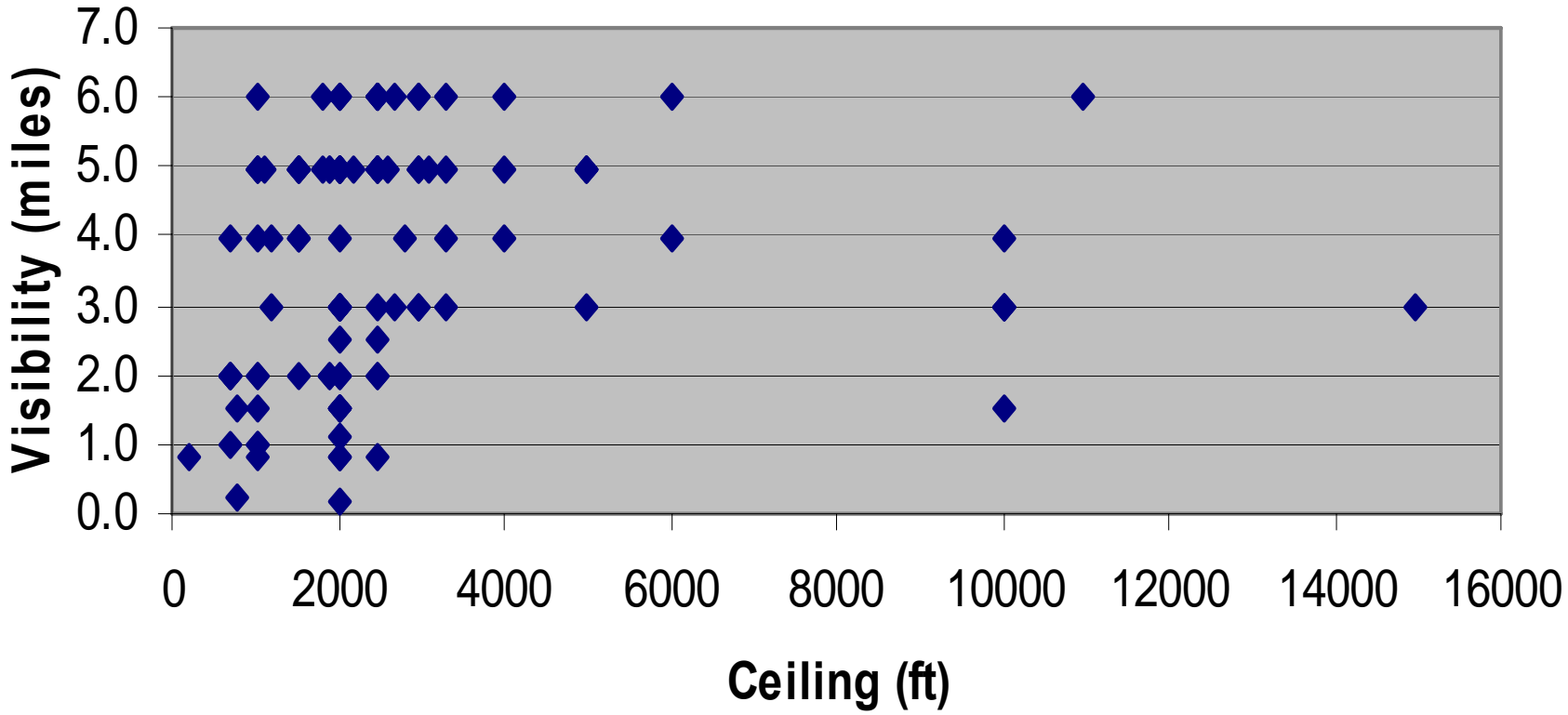
Blowing Snow

Rochester, MN (RST)



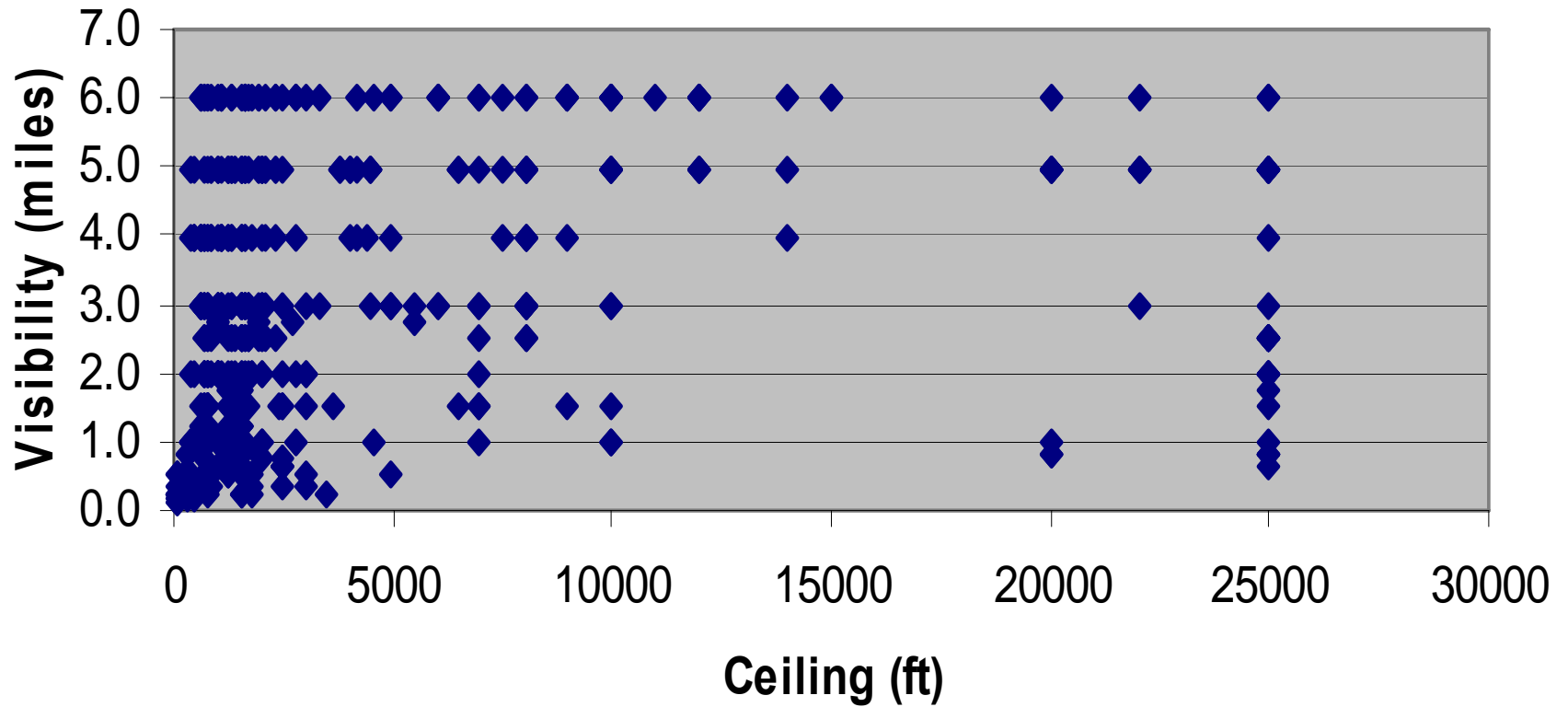
Blowing Snow

La Crosse, WI (LSE)



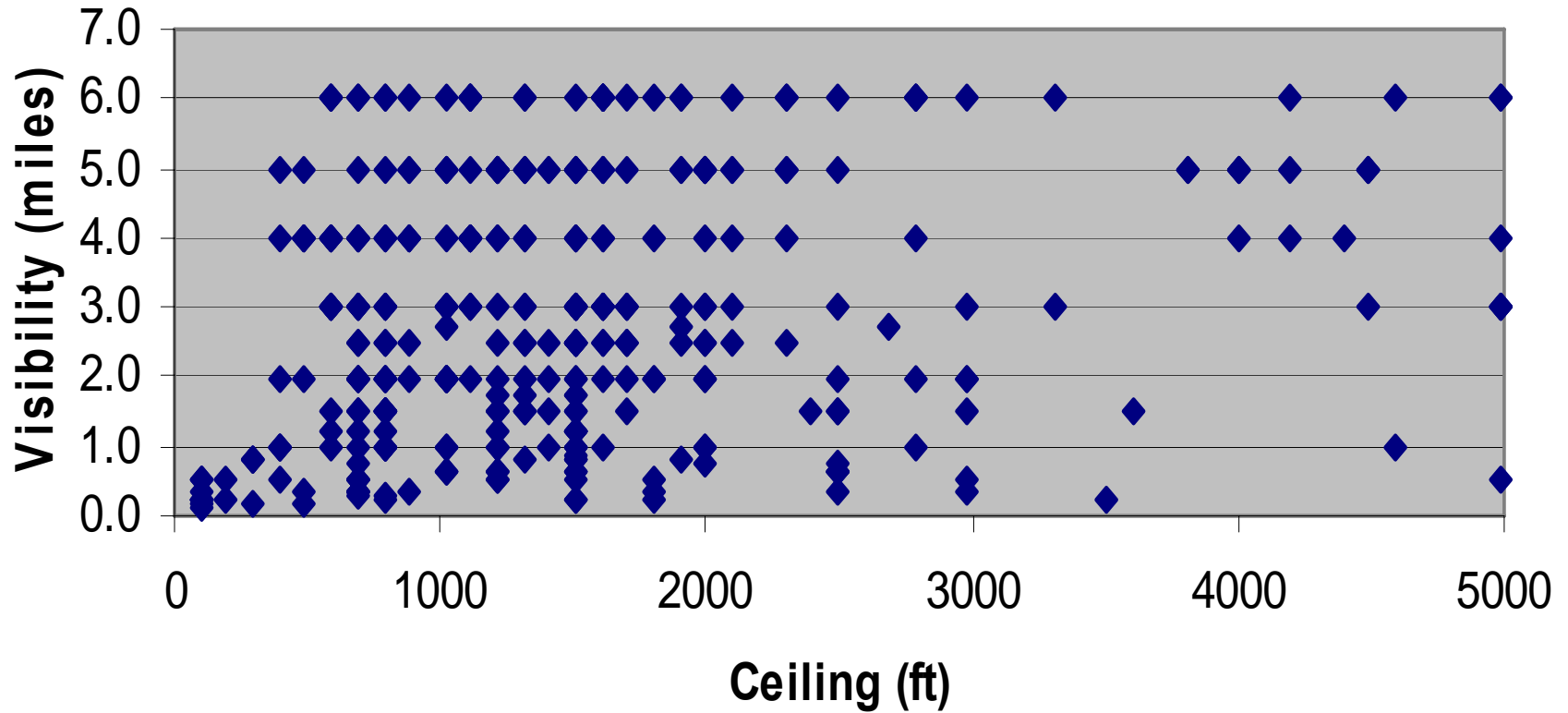
Blowing Snow

Rochester, MN (RST)

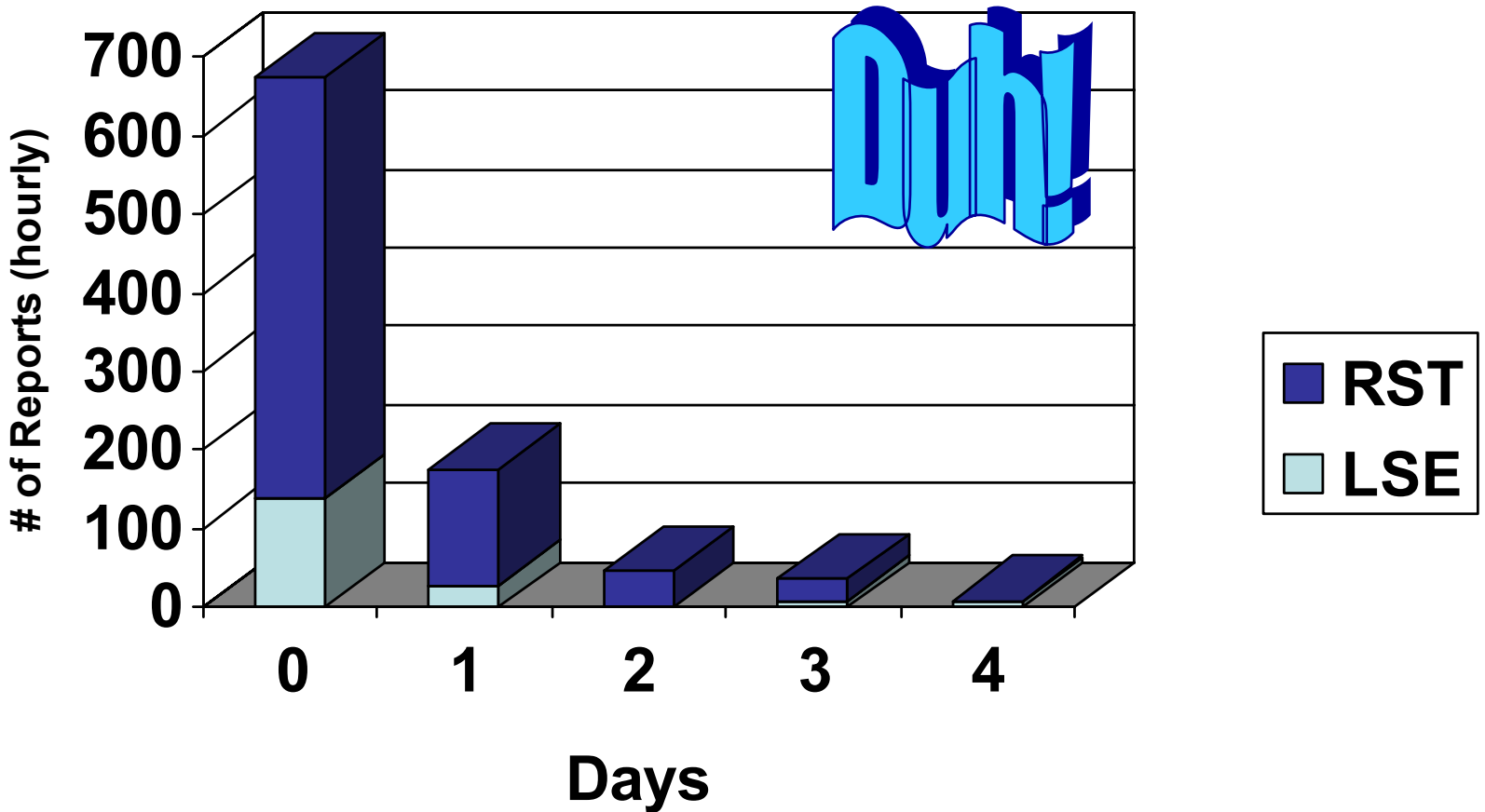


Blowing Snow

Rochester, MN (RST)

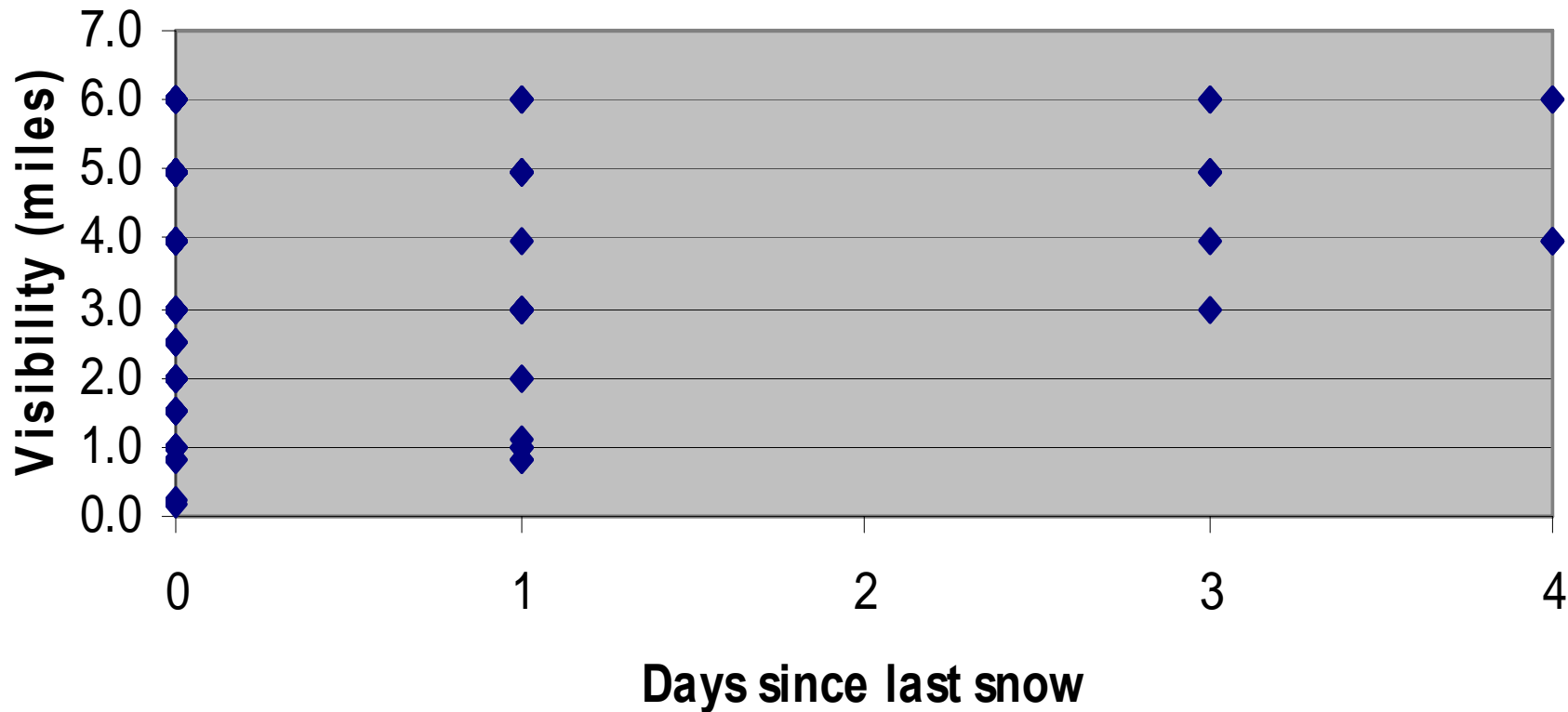


Days Since Last Snow



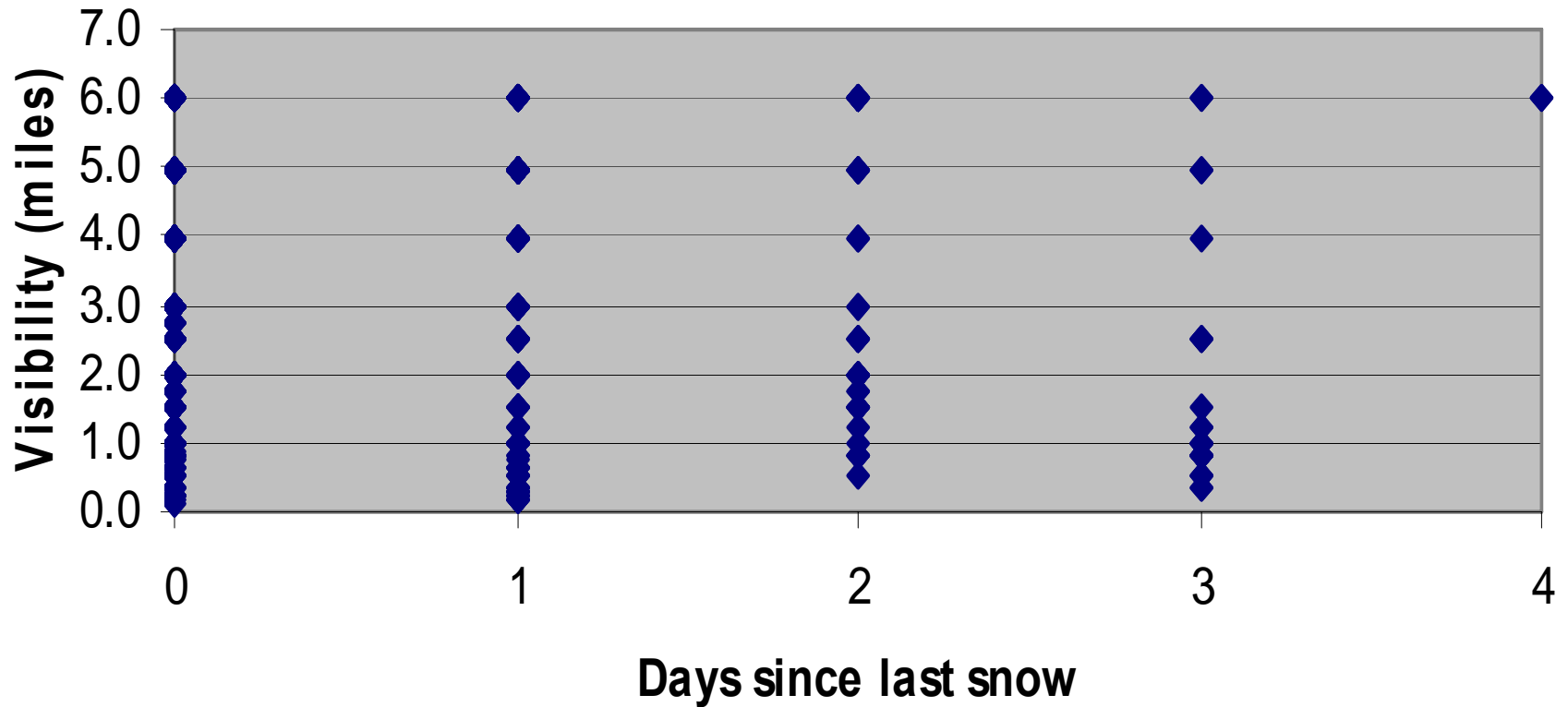
Blowing Snow / Visibility

La Crosse, WI (LSE)



Blowing Snow / Visibility

Rochester, MN (RST)



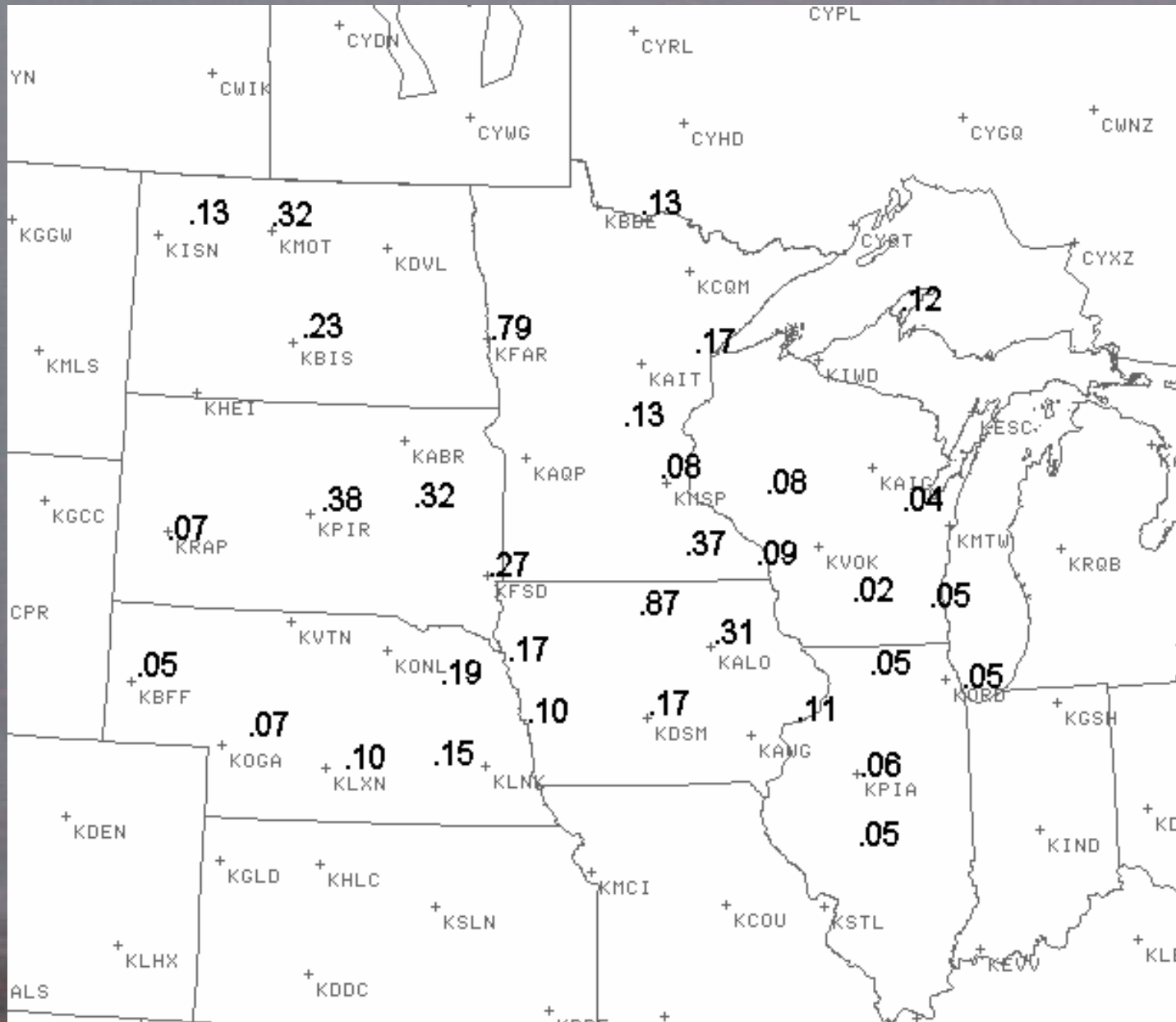
Aviation Climatology of BLSN

		Wind Sp (kts) Ave/Min	Snow Age (Days)	Hours
RST	<1 mi	14/9.3	0.80	96
	1 to <3 mi	12.5/6.7	0.56	227
LSE	<1 mi	9.8	0.42	7
	1 to <3 mi	8.9	0.16	36

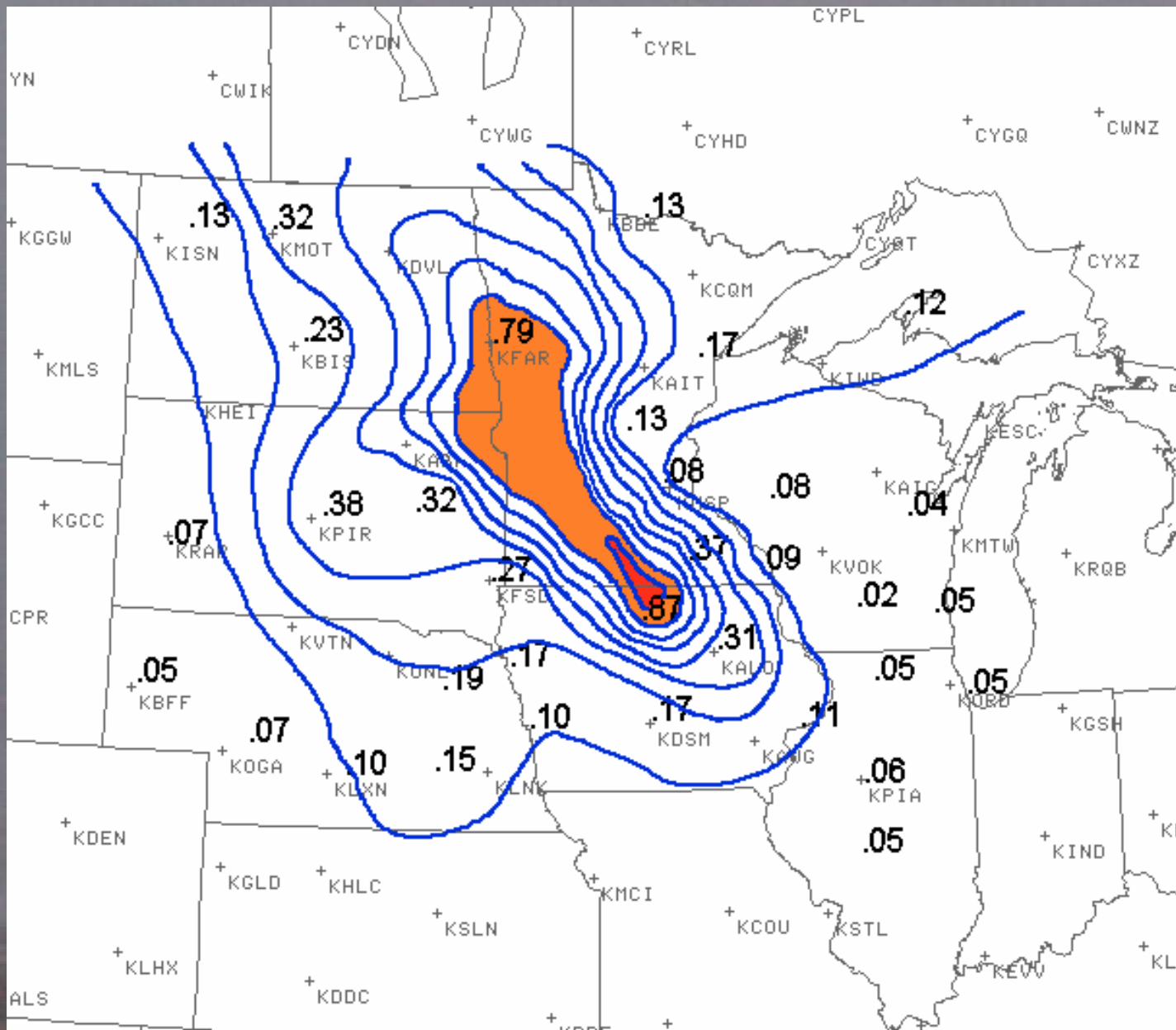
- Do not forecast BLSN at KLSE in the TAF.
- Newer snow is better for IFR BLSN.
- No great difference between LIFR and IFR BLSN wind speeds.
- Lower threshold for 0 to <3 mi BLSN is about 12 knots.



% BLSN Observations



% BLSN Observations



Blizzards



Methodology

- Hourly Surface Observations (1961-90)
 - LSE, RST, MCW
- Criteria searched:
 - ½ mile visibility or less
 - 30 mph wind speeds or higher
 - SN or SN/BLSN

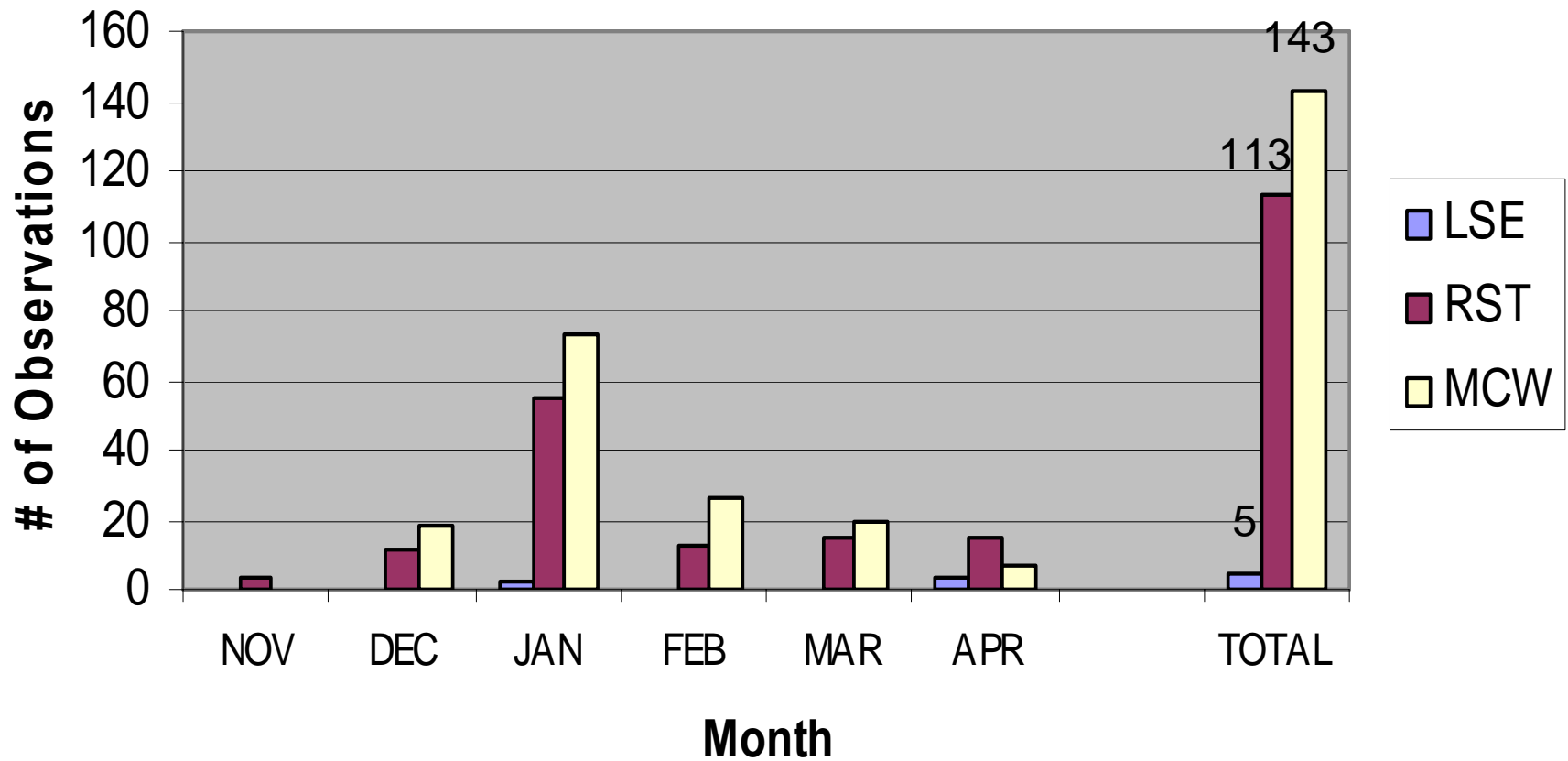


Blizzard Observations

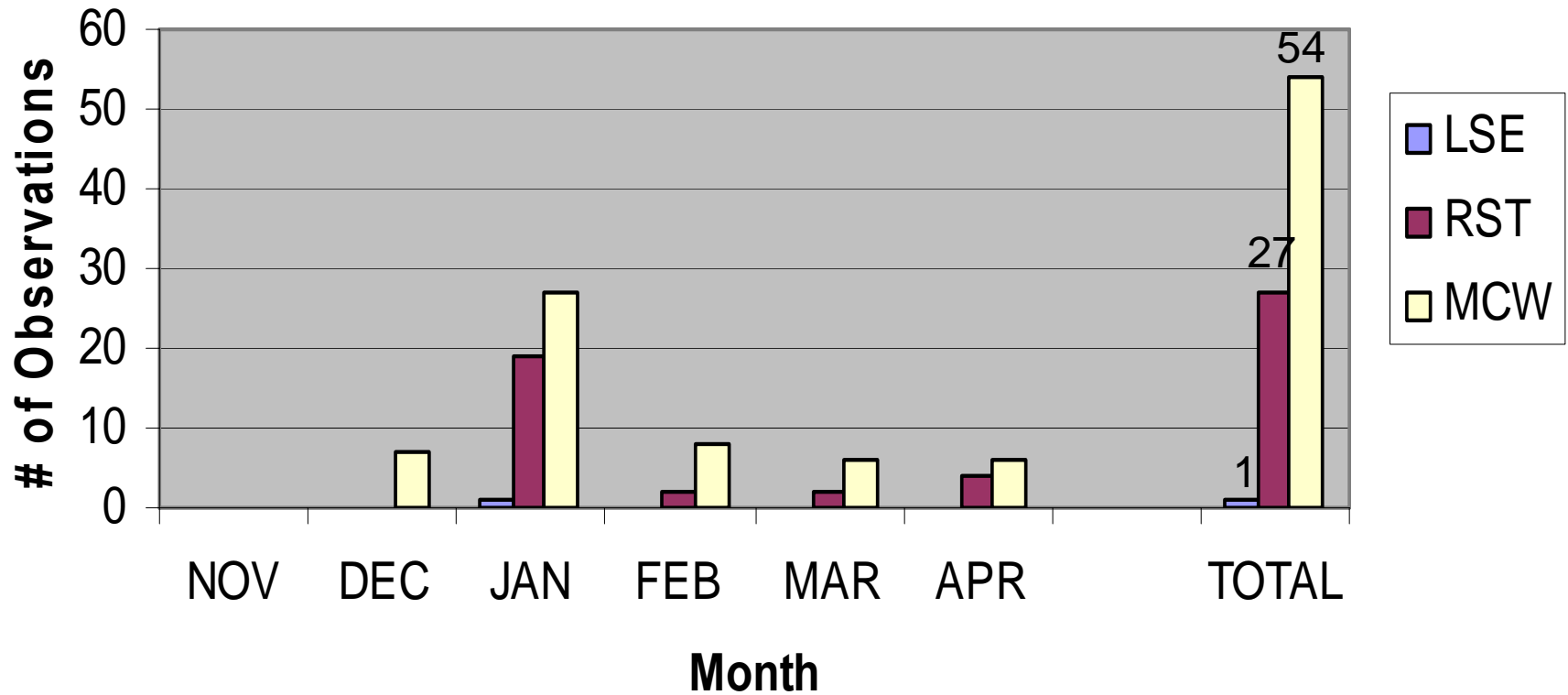
- Near Blizzard
 - ½ mile or less visibility
 - 30 mph wind speeds or higher
 - SN or SN/BLSN
- Blizzard
 - ¼ mile or less visibility
 - 35 mph wind speeds or higher
 - SN or SN/BLSN
- “True” Blizzard
 - 3 hours or more



Near Blizzard Observations (1/2 mi / 30+ mph)



Blizzard Observations (1/4 mi / 35+ mph)



“True” Blizzards

- La Crosse – 0
- Rochester – 3
 - January 11, 1975
 - April 5, 1979
 - January 10, 1982



“True” Blizzards

- Mason City – 7
 - February 26-27, 1971
 - January 11, 1975
 - January 10, 1982
 - April 3, 1982
 - December 24, 1983
 - December 1, 1985
 - March 28-29, 1987



Acknowledgement

THANKS to Dan Baumgardt (ARX SOO) for
retrieving data and assistance with review !

