Snow vs. Rain at Boise Using 850 Temperature and 850 - 700 mb Thicknesses

Matt Fugazzi, WFO Boise, ID

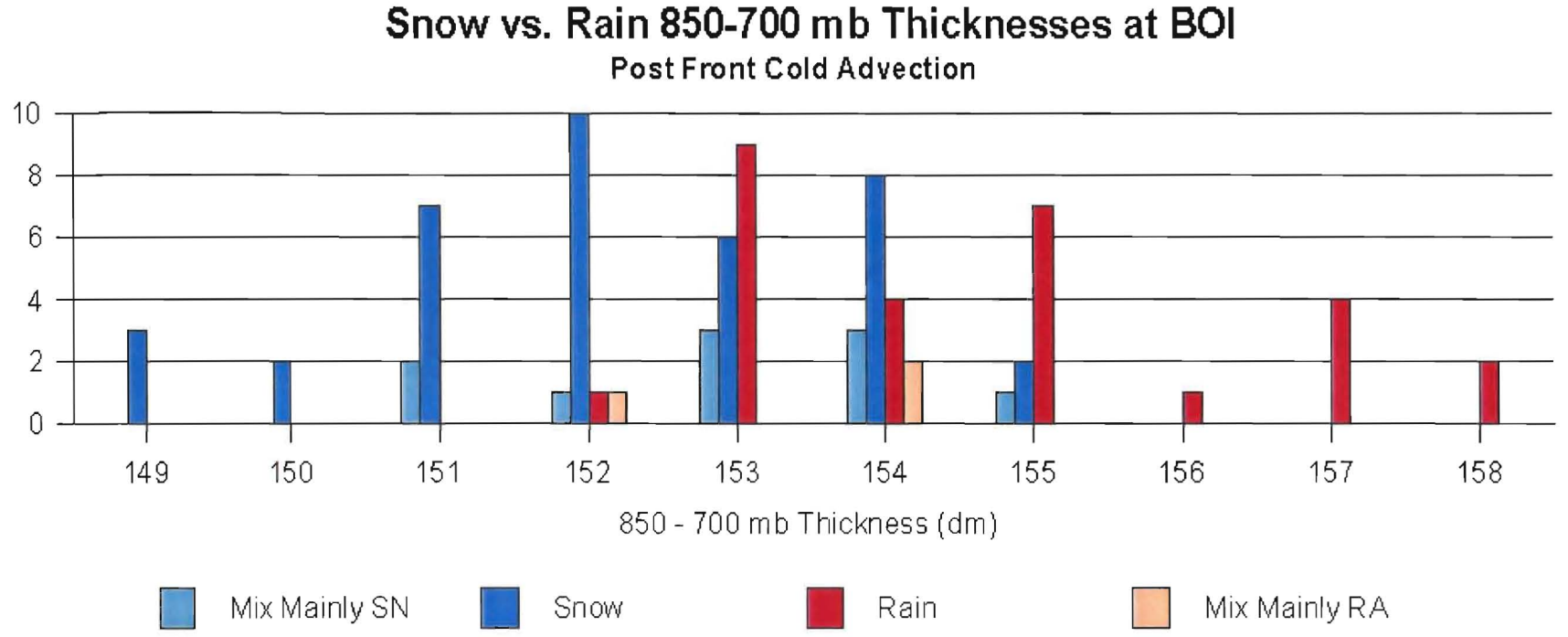
Temperature...

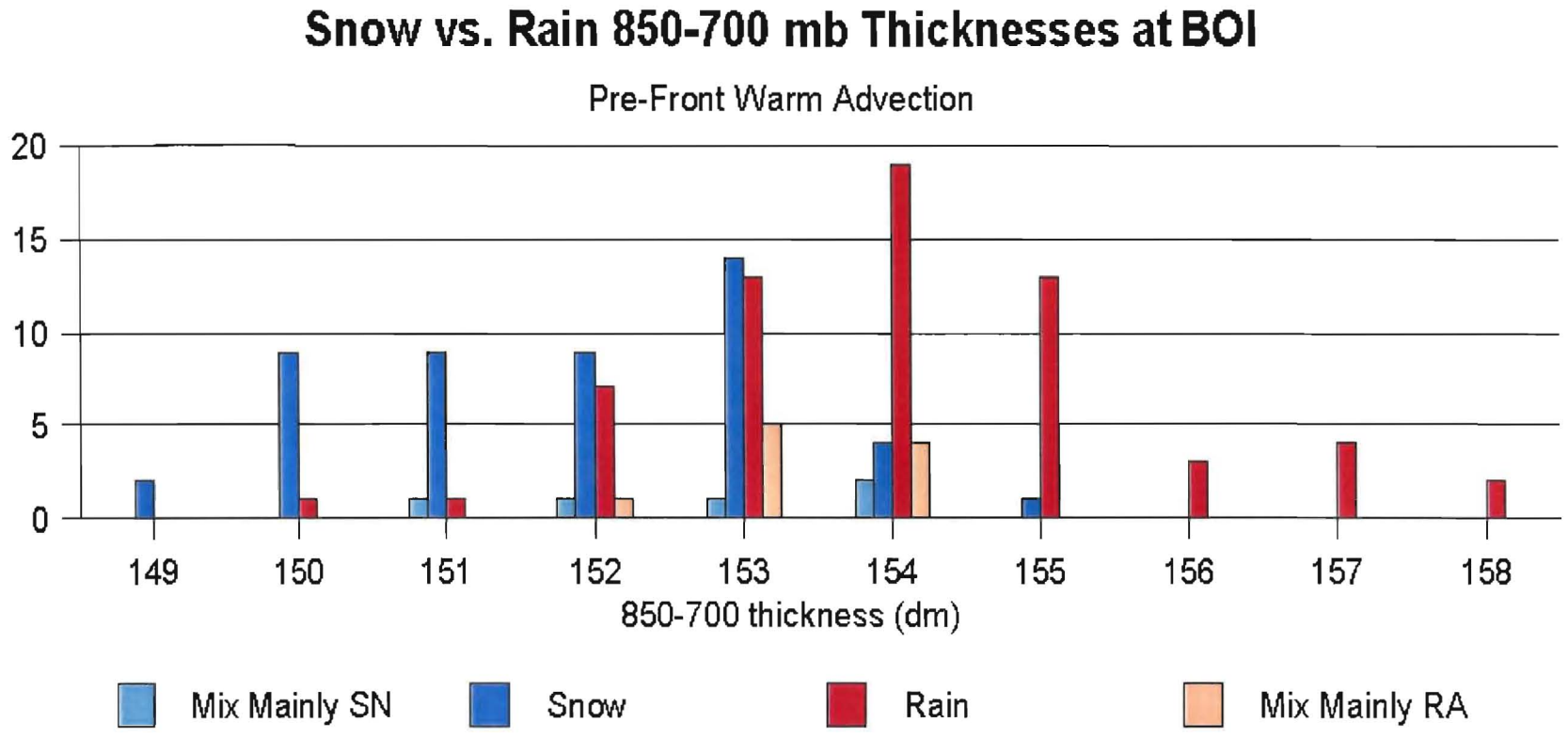
The 850 mb temperature can be as high as **1.5 degrees** Celsius to produce snow on the valley floor providing the surface temperature is **35F** or below...with a mixed precipitation range from 34 to 37 degrees F. In only 4 out of 148 cases did pure rain fall with a surface temp of <35F. In only 1 case did pure snow fall above 35 degrees.

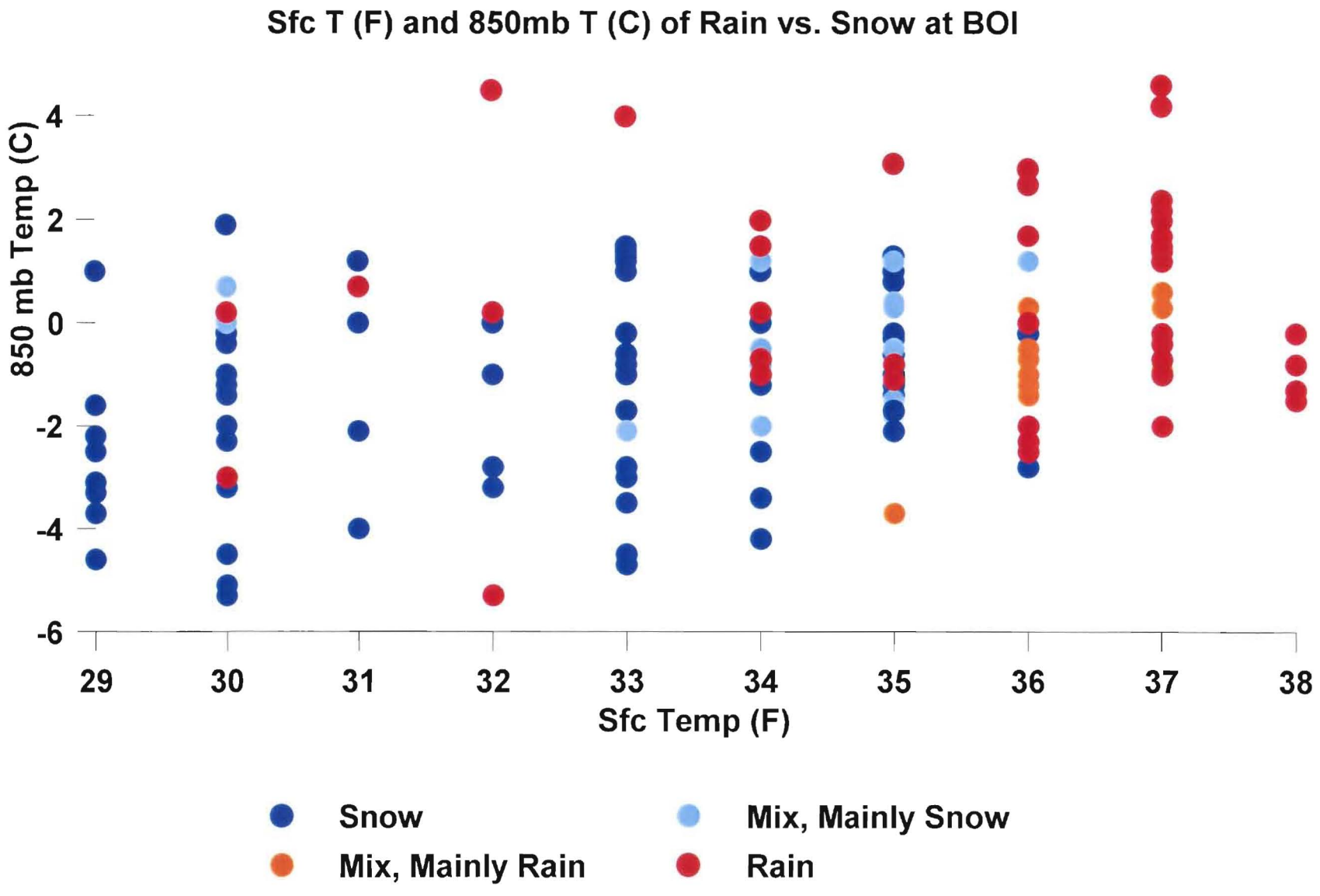
Thickness...

For the **850 to 700 mb** thickness graph, values below 153dm overwhelmingly produce snow and values above 154dm overwhelmingly produce rain regardless of any other parameters.

The demarcation thickness values can be further narrowed by identifying the event type. With a pre-front **Warm Advection** event the 850mb-700mb thickness rain/snow demarcation is lower than with a post- front **Cold Advection** event. Successfully forecasting rain vs. snow for the "either-or" ranges is absolutely dependent on the surface temperature. **35F** is the demarcation temperature between rain and snow in all but 1 FZRA case for these thickness ranges. (≤35F = snow...>35F = rain).


Snow vs. Rain 850-700 mb Thicknesses at BOI
Post Front Cold Advection
10
8
6
4
2
0
149
150
151
152
153
154
155
156
157
158
850 - 700 mb Thickness (dm)
Mix Mainly SN
Snow
Rain
Mix Mainly RA


Snow vs. Rain 850-700 mb Thicknesses at BOI
Pre-Front Warm Advection
20
15
10
5
0
149
150
151
152
153
154
155
156
157
158
850-700 thickness (dm)
Mix Mainly SN
Snow
Rain
Mix Mainly RA


Sfc T (F) and 850mb T (C) of Rain vs. Snow at BOI
850 mb Temp (C)
4
2
0
-2
-4
-6
29
30
31
32
33
34
35
36
37
38
Sfc Temp (F)
Snow
Mix, Mainly Snow
Mix, Mainly Rain
Rain