

Jeff Craven, CR SSD Chief. Something I have been "chewing" on for a few years is the issue of Outlook, Watch, Warning/Advisory.

30% chance for headline in HWO
50% chance for Watch
80% chance for Warning/Advisory

What does that mean? According to our Directives:

<http://www.nws.noaa.gov/directives/sym/pd01005013curr.pdf>
<http://www.nws.noaa.gov/directives/sym/pd01005017curr.pdf>

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6.2.2 Issuance Criteria. 6.2.2.1 Winter Weather Watch Issuance Criteria.

....WFOs should issue winter weather watches with as much lead time as possible when there is a 50 percent or greater chance of a hazardous winter weather event meeting or exceeding local warning and / or impact criteria. Watches are typically issued with lead times of 36 to 48 hours, and are encouraged to be issued with longer lead times in the three to four day time period when confidence is high.....

6.2.2.2 Winter Weather Warning and Advisory Criteria.

....WFOs should issue winter weather warnings and advisories with as much lead time as possible for the first, second, or occasionally third forecast periods (fourth period on rare occasions), when there is an 80 percent or greater chance of a hazardous winter weather event meeting or exceeding local warning, advisory and / or impact criteria.

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Winter Weather and Non Precipitation.WFOs should mention winter weather hazards in the Day 3 through Day 7 time period when there is a 30 percent or greater chance of these types of weather events meeting or exceeding local warning or advisory criteria....

So let me give you a scenario. Assuming that a deterministic forecast is close to a 50% chance of exceedance....

Simple example

Forecast period	Deterministic Snow/Prob	6"	Product
Day 7	6"	50%	HWO
Day 6	6"	50%	HWO
Day 5	6"	50%	HWO
Day 4	6"	50%	HWO
Day 3	6"	50%	HWO
Day 2	6"	50%	Watch
Day 1	6"	50%	Advisory

Why Advisory? Because according to Directive, you need an "80% chance of exceeding local warning, advisory criteria." But you have a deterministic forecast of 6". With a normal distribution, there is a 50% chance of less than 6" of snow and a 50% chance of more than 6". There is probably an 80% chance of 4" in this simple case.

A more common example: Increase snow amount by 1" each day

Forecast period	Deterministic Snow/Prob	6"	Product
Day 7	2"	20%	
Day 6	3"	25%	
Day 5	4"	30%	HWO
Day 4	5"	40%	HWO
Day 3	6"	50%	HWO
Day 2	7"	65%	Watch
Day 1	8"	80%	Warning

So, you can see, depending on how we interpret what 80% means, we could certainly have a variety of calibration issues. I am sure many people are issuing Warnings for 6" as that is the marginal criteria. And, because we would issue for 6" and give a 4-8" range, that might be correct.

I am struggling with how we would build a calibrated ensemble probability system for the future of IDSS using our current probability schemes. We want to be consistent from WFO to WFO and region to region. But I am not sure we are even calibrated in what we do today without widespread use of probabilities.

Thoughts and solutions are welcome.

JPC