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Michaels—Snow Forecast: Cloudy With a Chance of Accuracy

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WASHINGTON Central Virginians fear the snow. Forecast more than an inch and hordes descend upon Ukrop's, gas stations run on empty, beer and cigarettes fly out of the 7-Eleven, and schoolkids turn off Guitar Hero and turn on The Weather Channel.

More often than not, it seems, there's big disappointment. Instead of a pile of white, all people are left with is a full tank of gas, way too much milk and bread, and another day of school.

While forecasts of possible snowstorms days in advance have improved tremendously in the past 20 years, the very nature of mid-Atlantic storms and Virginia geography will forever conspire against precise snow forecasting more than 24 hours ahead of time. Even when a storm is imminent, we still bracket our forecasts with a lot of inches. Four-inch ("4 to 8") ranges are as common now as they were in 1980. No one goes out on a limb and says "tomorrow's snow total will be 7 inches."

The problem is that snow is water, and a little water makes a lot of snow, especially when the atmosphere is colder than it usually is around here, like it was on the last weekend in January. That allows picture-perfect snowflakes -- called dendrites -- to form, which fluffily add up on the ground into much deeper piles than our usual "wintry mix" of mushy snow, sleet, and freezing rain (which I prefer to conjunct into "sleeze"). Normally we will get about 8 inches of snow out of one inch of water, but the last storm's ratio was closer to 20-to-1 away from the immediate Atlantic coast.

A little bit of water makes a big difference in snow. How many people are upset, or even notice if a spring storm produces a tenth of an inch of rain when it was forecast to produce a half? But in the cold atmosphere of Jan. 30, that would be the difference between 2 and 10 inches of snow, something most people -- especially those who endured endless checkout lines -- will notice.

Virginia's heaviest snowstorms are matters of odd coincidence. Sure, we have plenty of low pressure areas ("northeasters") capable of throwing Atlantic moisture inland. It's the cold air that's usually in short supply, which is why we have so many more winter rainstorms than snowstorms.

It's worth noting that dreaded global warming should in fact warm the cold air of winter more than anything else, and therefore heavy snowstorms around here should become even more infrequent. They haven't. Richmond's snow history for the past century reveals decades of snowy winters and decades of rainy ones, but no overall trend.

Our big snows occur when the jet stream encourages enough cold air to pile up in New England and southern Canada at the same time that a northeaster spins up off the Georgia/South Carolina coast. The cold air slides down the Piedmont and coastal plain, "dammed" by the Appalachian mountains. Meanwhile, the warm Atlantic moisture from the northeaster rides aloft and tends to erode the cold air to the point that snow changes to sleet and rain. Consequently, there has to be a lot of cold air flowing in from the Northeast to keep the precipitation in the form of snow, but if there's too much, it's too dry and any snow that forms evaporates before it gets down to the surface.

Obviously (because of the rarity of heavy snow), the "window" between too little and too much cold air isn't very large, and the difference between a foot of snow and none is often a matter of miles, which is impossible to pinpoint three days in advance of a low pressure system that hasn't even formed!

The art of snow forecasting comes from trying to tease out of computer models where the rain/snow line will be and where the snow will cut to nothing.

Last weekend, the trick to the correct forecast was to look at the trends in the computer models as they whirred a new forecast every six hours. All agreed that there was going to be plenty of cold air, and that the snow/no snow line was going to be very sharp. Each succeeding run tended to bring that line a bit further to the north. Forecasters who bet that this meant that the computer models were underestimating the northward spread of heavy snow were right. Northern Virginia got a lot more than the computer said it would, and some areas in Southeastern Virginia got less. Richmond was in the middle and the forecasts were in general very good.

Good forecast or not, heavy snow will remain a peculiarity in Richmond, so one sure bet is that any rumor of accumulating snow will cause a run on groceries, gas, and drinks.

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