Not all snow is created equal

Snow-water equivalent (SWE) measures the average water content (in inches) contained in snowpack. If “snowpack” were a bag of potato chips, think of SWE as the total amount of edible material (crumbs and all) inside the bag.

**BY THE NUMBERS: SWE (AS OF 5/6/13)**

<table>
<thead>
<tr>
<th>Percentage</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>79%</td>
<td>Percentage of Colo. statewide snow-water equivalent (SWE) compared to historical average for this date (May 6).</td>
</tr>
<tr>
<td>102%</td>
<td>Percentage of SWE compared to historical average in the South Platte River Basin (Denver Metro Area)</td>
</tr>
<tr>
<td>28%</td>
<td>Percentage of SWE compared to historical average in the Upper Rio Grande basin in southern Colo.</td>
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**@WRADV Drought Fact Sheet (#3)**

**Is Colorado still facing a major drought...or not?**

In early April, it appeared all but certain that Colorado would be facing a major drought for a second consecutive year (following a 2012 drought that was among the worst in state history). In fact, many water providers had already implemented mandatory watering restrictions and approved plans for summer surcharges.

And then in central and northern Colorado it snowed...and snowed...and snowed. Colorado saw record snowfall throughout the month of April, leaving large portions of the state with snow-water equivalent (SWE) measurements greater than 100% of average. But heavy snowfall didn’t reach all of Colorado, and dust-on-snow events in some places have led to wide disparities in SWE levels. The entire southern half of the state is still experiencing SWE levels that are well below average for this time of year. And all river basins are projecting below-average forecasted stream flows for this spring and summer.

So what’s the answer? Colorado is still facing a significant drought in 2013, but the most heavily-populated areas of the state are not going to experience the kind of disruptive drought conditions that were anticipated in early April.

There are many other important factors to consider for drought. Crop losses, soil moisture, rainfall, stream flow, and reservoir levels all play a role in overall drought conditions, as will the weather that unfolds over this coming summer.
Q&A: Don’t Doubt the Drought

Q: What is “Snow-Water Equivalent” (SWE), and why does it matter?

A: Roughly 80% of Colorado’s total yearly water supply comes from melting snowpack, and water providers need to know how much of that snow will end up as water in their reservoirs. In order to make projections on water supply, they monitor SWE levels, which measure the average water content of snowpack (in inches). Champagne powder that falls in January might have a water/snowfall equivalent of 1:20, whereas a wet spring snow might be 1:10.

Q: Are SWE figures more important than snowpack numbers?

A: The SWE numbers are certainly more useful, particularly when it comes to trying to predict runoff and future water supplies.

Q: What is “Dust on Snow” and how does it affect our water supply?

A: Dust-on-snow events are common in Southern Colorado and on the Western Slope, thanks to close proximity to dry areas of New Mexico, Arizona, and Utah. When the dust finally settles (literally), it can decimate snowpack levels. Clean snow reflects sunlight and absorbs just 5-20% of solar energy; but dust-covered snow absorbs about 70% of solar energy, which can cause it to sublime and evaporate into the air (rather than melting and going into a river). Dust on Snow also speeds snowmelt, preventing the kind of slow and steady runoff that keeps rivers and reservoirs replenished for months.

Q: What are “peak snowpack totals” and why does the date matter?

A: Peak snowpack levels in Colo. were finally reached on April 24, more than two weeks later than the long-term average date. The term represents a specific moment when snowpack reaches its high point and begins melting faster than it accumulates.

Q: SWE data graphs shows many different “averages.” How do you read these graphs correctly?

A: The data can certainly be confusing, with “Percent of Average,” “Percent of Average Peak,” and “Average Peak Date” among several data points. The key is to think of these graphs as a snapshot of snowfall at a certain point in time; they should not be read cumulatively, because snowfall rates vary by month and year.

The most important line is “Current Peak as Percentage of Average Peak,” which essentially shows the snowpack average for the entire season. As you can see in the chart at right, in the South Platte areas important for Denver, snowpack levels are comparable to average for early May, but the peak snowpack was well below the historical peak. The green diamonds represent historical peaks: notice the significant space between those peak averages and the 2012-13 snowpack line.

Q: In parts of Colorado where SWE numbers look promising, will we see a change in mandatory water restrictions?

A: In April, Denver Water (Colorado’s largest water provider) implemented Stage 2 drought restrictions for the first time since 2002. Most providers appear to be taking a cautious approach and have not relaxed any previously-announced restrictions. For provider-specific information, visit www.COH20.com.