

Subject: Prelim 2005-06 snowpack report
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Greetings for this new winter season! A preliminary report.

Although winter is still officially a week or so away, and the first official snowpack and depth report from Niwot Ridge will not be until the end of this month, a few preliminary comments might be worthwhile.

It is still very early into this snowpack season, but there is an interesting pattern emerging, particularly when paired with last year. The ENSO signal (El Nino or La Nina, based on sea surface temperatures) has been a reasonable predictor of snowpack distribution over the western US in many of the past years, but the this signal is currently near neutral, and expected to remain so for the next six to nine months (NOAA CDC, 8 Dec 2005). It was near neutral last season as well. However, this seasons snowpack distribution so far, is essentially the opposite of last seasons. So, if this pattern continues, an underlying question to ponder could be, "What are the good predictors of snowpack distribution in ENSO neutral years?"

On to current conditions (as of December 15, 2005):

With the exception of Oregon, Washington, and Utah, the Snowpack Index is less than one, meaning less water is sequestered in the snowpack than normal, for the given precipitation that has fallen since Oct 1 this season. This is also true of all the major river basins excepting the Columbia. [This Snowpack Index (SI) is the ratio of % of average SWE to % of average precipitation, and normalizes for precipitation variability. Thus, if the SI is less than one, factors other than precipitation (higher than normal temperatures, or increased ablation from wind or sun, for example) are reducing the amount of water banked in the snowpack. SI's less than one suggests less water for spring runoff, available to streams and reservoirs.]

For those following the Lake Powell levels, right now it looks like it may only be the upper Colorado basin contributing this year. The lower Colorado basin SWE (snow water equivalent) is 15% of average (42% season-to-date precipitation), and the upper Colorado SWE is 99% (111% precipitation). [12/17/05 note added: More accurately, Lake Powell is almost entirely filled by the Colorado, Green, and San Juan Rivers in the upper Colorado River basin. Last year the San Juan's contribution was probably very much above average, but this year the other two basins will be nearly the only contributors, if present trends persist.]

Other states (% SWE / % season-to-date precipitation)

Arizona 12/37
New Mexico 22/57
Colorado 102/119
Oregon 104/94
Washington 80/73
Utah 91/92

More locally (if you live in Colorado)

Niwot (C1) 112/146
Loveland basin 226/140
Wolf Creek 29/68

And finally, a comprehensive reporting of snowpack and drought conditions can be found at:

<ftp://ftp.wcc.nrcs.usda.gov/support/drought/dmrpt-20051123.pdf>

In conclusion, this season promising to be as interesting, but as always in different or unsuspected ways, as those in the past. Stay tuned!

Cheers!
Mark