

Probability of precipitation

Source: <http://sci.tech-archive.net/Archive/sci.geo.meteorology/2005-12/msg00078.html>

- *From:* Jack Crane <jdcrane7@xxxxxxxx>
 - *Date:* Thu, 29 Dec 2005 01:09:03 -0800
-

What do the probabilities of precipitation mean in weather forecasts? I THINK that, say, 60% means the probability of 0.1 inch of precipitation is 0.6.

If so, this leads to some fairly obvious contradictions. At <http://www.wunderground.com/cgi-bin/findweather/getForecast?query=seattle> right now the probability of precipitation on New Year's Day is 70%. But clicking on the "Details" link for that day shows the day broken up into 4 6-hour periods, for all of which the probability is also 70%. See <http://www.wunderground.com/cgi-bin/findweather/getForecast?query=98101&hourly=1&yday=1&weekday=Monday>

Another example is Friday, Dec. 30. Probability for the day is 90%; the details page for Friday shows it broken into 8 3-hour periods, for which the probabilities are 70%, 70%, 90%, 90%, 90%, 90%, 80% and 80%, respectively.

Now for the first example, the probability of less than 0.1 inch of rain during the day would be 30% (1 - 70%). The same for each of the 4 6-hour periods. And $.3 \times .3 \times .3 \times .3$ is 0.0089, the probability of less than 0.1 inch in all of the 4 periods together. Therefore the probability that at least one of the 4 periods having more than 0.1 inch is $1 - 0.0089 = 0.991$. And yet the probability of precipitation for the whole day is supposed to be only 70%.

For the second example the analogous probabilities are 0.9999 vs. 0.9.

Something seems to be wrong here. Am I correct?

.

- *Follow-Ups:*
 - ◆ **Re: Probability of precipitation**
◇ *From:* Bill DeWitt
 - ◆ **Re: Probability of precipitation**
◇ *From:* wxforecaster
- Prev by Date: **NEW ENGLAND – TODDGROSS.COM is now open for business**

Probability of precipitation

- Next by Date: ***Re: Probability of precipitation***
- Previous by thread: ***NEW ENGLAND – TODDGROSS.COM is now open for business***
- Next by thread: ***Re: Probability of precipitation***
- Index(es):
 - ◆ ***Date***
 - ◆ ***Thread***