

**NATIONAL WEATHER SERVICE
PRODUCT/SERVICE DESCRIPTION DOCUMENT (PDD)
TYPE: Experimental Product
DATE: July 27, 2003**

OBJECTIVE BLENDS OF DROUGHT INDICATORS - CONTIGIOUS U.S.

Part 1 - Mission Connection

1. Product/Service Description:

NOAAs Climate Prediction Center (CPC) and National Climatic Data Center (NCDC), the U.S. Department of Agriculture, and the National Drought Mitigation Center (NDMC) jointly issues these graphics to confer information about drought status on different time scales. This team is issuing two new experimental products which will serve as timescale-specific supplements to the Drought Monitor at a basic level. The team assesses conditions based on a blend of several drought indicators, and are depicted relative to the local historic record.

2. Purpose/Intended Use:

The product is intended for short-term planning (a few days to a few months) and long term planning (several months to a few years).

3. Audience:

The audience is primarily agricultural and water supply managers.

4. Presentation Format:

The team also posts the graphics on the CPC web site.

5. Feedback Method:

Go to <http://www.cpc.ncep.noaa.gov/NWS-feedback-form.html>. Experimental feedback period through October 5, 2003.

Part 2 - Technical

1. Format and Science Basis:

The *Short-Term Blend* approximates drought-related impacts that respond to precipitation (and secondarily other factors) on time scales ranging from a few days to a few months, such as [wildfire danger](#), [non-irrigated agriculture](#), [topsoil moisture](#), [range and pasture conditions](#), and [unregulated streamflows](#).

The *Long-Term Blend* approximates drought-related impacts that respond to precipitation on time scales ranging from several months to a few years, such as [reservoir stores](#), [irrigated agriculture](#), [groundwater levels](#), and [well water depth](#).

It should be noted that the relationship between indicators and impacts varies, sometimes markedly, with location and season. This is particularly true of water supplies, which are additionally dependent on the source (or sources) tapped, management practices, and legal

mandates. Exercise caution when attempting to relate these maps to specific impact implications for a particular location and time of year. The blend-to-impact correlation is not always direct, and will vary spatially and temporally.

The following bullets describe the composition of these experimental blends:

The team generates these products using CPC's real-time daily & weekly climate division data, and the National Climatic Data Center's monthly climate division data archive, back to 1932. The indices used in the blends and their weights are as follows:

- **SHORT-TERM:** 35% Palmer Z-Index; 25% 3-Month Precipitation; 20% 1-Month Precipitation; 13% Climate Prediction Center Soil Moisture Model; and 7% Palmer (Modified) Drought Index.
- **LONG-TERM:** 25% Palmer Hydrologic Drought Index; 20% 12-Month Precipitation; 20% 24-Month Precipitation; 15% 6-Month Precipitation; 10% 60-Month Precipitation; 10% Climate Prediction Center Soil Moisture Model.

The team renders all parameters as percentiles with respect to 1932-2000 data using a percent rank method. Most parameters are ranked relative to the National Climatic Data Center's historic climate division data for the current month, except for the Z-Index which is rendered relative to all months on record (this introduces evaporative seasonality into the short-term blend).

For each blend, the team calculates the averages of the percentile inputs, with each input weighted as described above. This yields a "weighted raw average" of the individual component percentiles for each blend. Then, each raw average is compared to its historic (1932 - 2000) distribution (these have been retrospectively generated from the climate division data archive). The team compares real-time data to ALL retrospective months, not just the current month, since the individual percentile inputs were each generated (for all but the Z-Index) relative to the history of the current month only. This allows for a more confident estimation of the percentile by using more data to define the historical array (12 times as many as if we assessed the blends' raw weighted averages relative to the current month only).

The team generates the precipitation percentile inputs in a somewhat unusual way, combining month-to-date numbers from CPC with the National Climatic Data Center's monthly totals for prior months. As daily precipitation totals for the current month are ingested into the x-month totals, an identical proportion of the monthly precipitation that fell during the first month in the x-month period is eliminated (e.g., to determine a 6-month precipitation total, from which a percentile will be calculated and incorporated into the blend, for the period ending September 21, 2002, we add the daily preliminary precipitation amounts for September 1-21 to the 6-month total for March-August 2002, then subtract 21/30 of the March total from the result, since 21/30 of September have been added). This process (a) emulates natural cycles by adding precipitation as it falls but eliminating early-period precipitation evenly over the course of a month; and (b) ensures that the data utilized in

real time are as consistent with the historical array as possible. The near-real-time climate division precipitation data are biased in some areas relative to the final NCDC monthly archive, with wet near-real-time biases in the central and northern Rockies particularly extreme. The data are adjusted where appropriate at the end of each month, but the biases remain in the data for all precipitation time scales since the end of the previous calendar month. In addition, the biased near-real-time data are used in the Palmer Drought Index, the Palmer Hydrologic Drought Index, the Z-Index, and CPC's modeled soil moisture data, and can remain in those calculations for several weeks. For more information, a graphic is available at

<http://www.cpc.ncep.noaa.gov/products/predictions/experimental/edb/biasmaps.jpg>

for (a) for the 12 most recent 3-month periods, and (b) for the last 3 years in each season.

2. **Availability:**

The team issues this product every Thursday at 8:30 a.m. Eastern local time except if Thursday is a Federal Holiday. In the case of a Thursday holiday, the team will issue the product the Wednesday before the Thursday Holiday at 8:30 a.m. Eastern local time. They are issued on CPCs web site at:

<http://www.cpc.ncep.noaa.gov/products/predictions/experimental/edb/droughtblend-access-page.html>

3. **Additional Information:**

- Valid Time: This product is valid as of 1200 Universal Coordinated Time (UTC) on the Tuesday prior to issuance until 1200 UTC the following Tuesday
- Product Expiration Time: This product expires with the next issuance one week later.
- Creation Software: The team uses CorelDraw for personal computers.