



Drought Recovery Projections

A Potential New Tool from NOAA NCEI

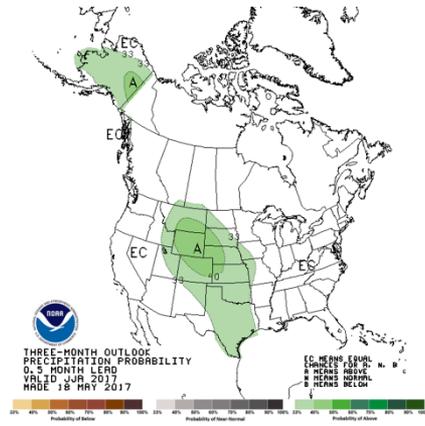
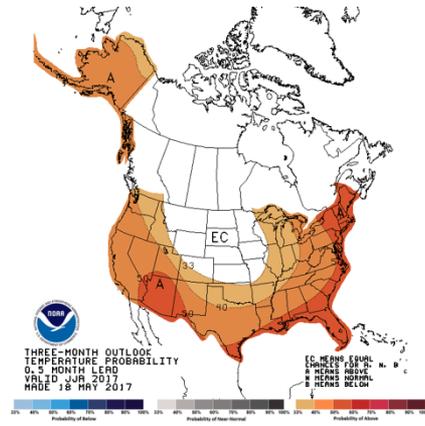
Michael Kruk (ERT, Inc. at NOAA's NCEI)
Anthony Arguez (NOAA NCEI)



Projections?



- Output from drought recovery workshop in Orange County, CA back in September 2015.
- Attendees requested “drought outlooks”.
- Partnered with NOAA’s Climate Prediction Center to incorporate their seasonal outlook into existing NCEI drought product.





Doesn't this already exist?



U.S. Seasonal Drought Outlook Drought Tendency During the Valid Period

Valid for May 18 - August 31, 2017
Released May 18, 2017

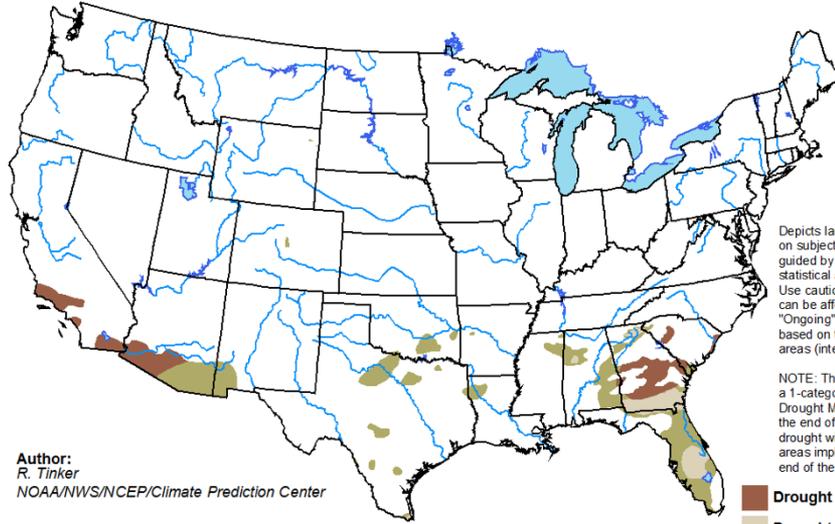
National Weather Service Climate Prediction Center

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Discussion for the Seasonal Drought Outlook

Tools used in the U.S. Seasonal Drought Outlook (SDO) included the official Climate Prediction Center (CPC) temperature and precipitation outlooks for June through August (JJA) 2017, various short- and medium-range forecasts and models such as the 7-day quantitative precipitation forecast (QPF) totals from the Weather Prediction Center (WPC), the 6-10 day and 8-14 day CPC extended-range forecasts (ERFs), Weeks 3-4, dynamical models (CFSv2, NMME, IRI, IMME, and ECMWF), the 384-hour total precipitation forecasts from several runs of the GFS, the four-month Palmer drought termination and amelioration probabilities, climatology for the JJA season, and initial conditions (the 5/16/2017 U.S. Drought Monitor). ENSO-neutral conditions are expected for the next few months.



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Depicts large-scale trends based on subjectively derived probabilities guided by short- and long-range statistical and dynamical forecasts. Use caution for applications that can be affected by short lived events. "Ongoing" drought areas are based on the U.S. Drought Monitor areas (intensities of D1 to D4).

NOTE: The tan areas imply at least a 1-category improvement in the Drought Monitor intensity levels by the end of the period, although drought will remain. The green areas imply drought removal by the end of the period (D0 or none).

- Drought persists
- Drought remains but improves
- Drought removal likely
- Drought development likely



<http://go.usa.gov/3eZ73>

http://www.cpc.ncep.noaa.gov/products/expert_assessment/sdo_summary.php



So What's Different?



- Climate Division scale
- Palmer Hydrological Drought Index only
- Mathematical - objective
- Not a forecast
- No discussion of trends/upper air patterns/etc.



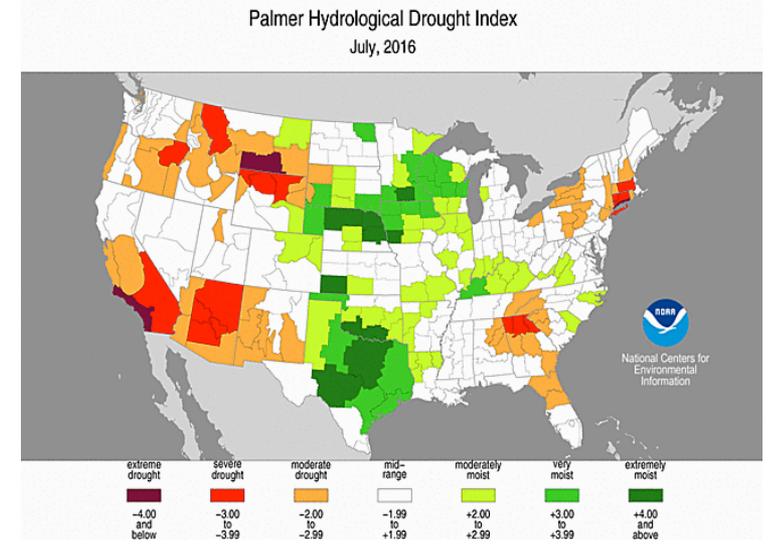
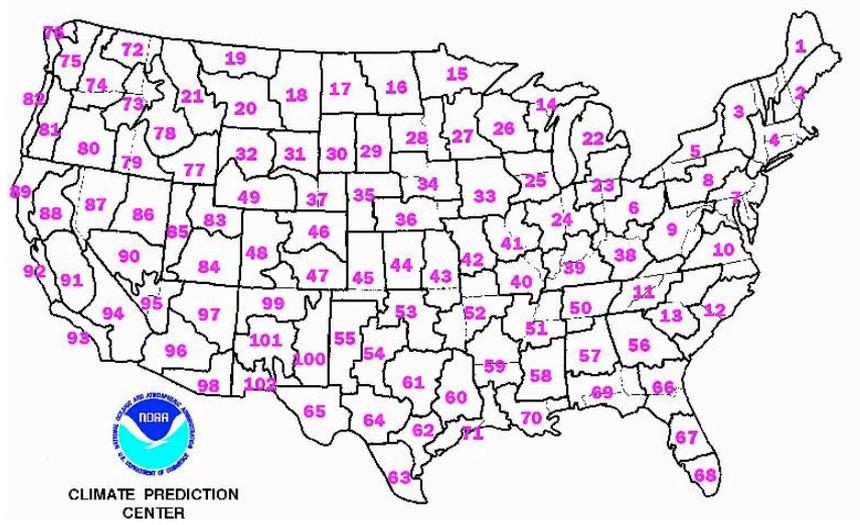
Methodology



- Around Day 6 of the month, acquire the most recent CPC seasonal (3-month) forecasts of mean temperature and precipitation for 102 CPC Forecast Regions
- Assume that each projected seasonal temperature (precipitation) anomaly is constant (distributed evenly) over the three month forecast period
- Assume that each anomaly is equivalent for all NCEI Climate Divisions that comprise each CPC Forecast Region
- Append the projected mean temperature and precipitation values to the historical NCEI Climate Division dataset
- Analyze the extended dataset using the same suite of Palmer codes used in real-time monitoring applications



Downscaling from CPC to NCEI



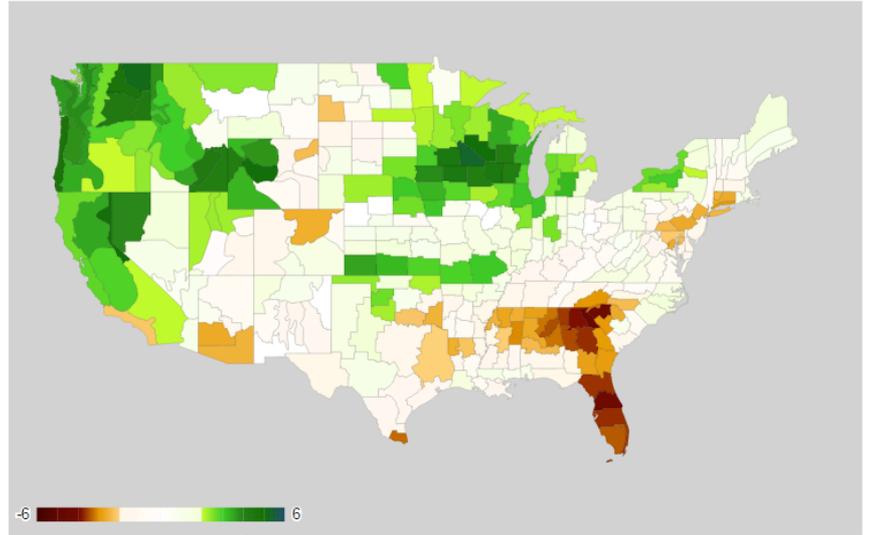


Put them together and what have you got?



Current Palmer Hydrological Drought Index

May 17, 2017

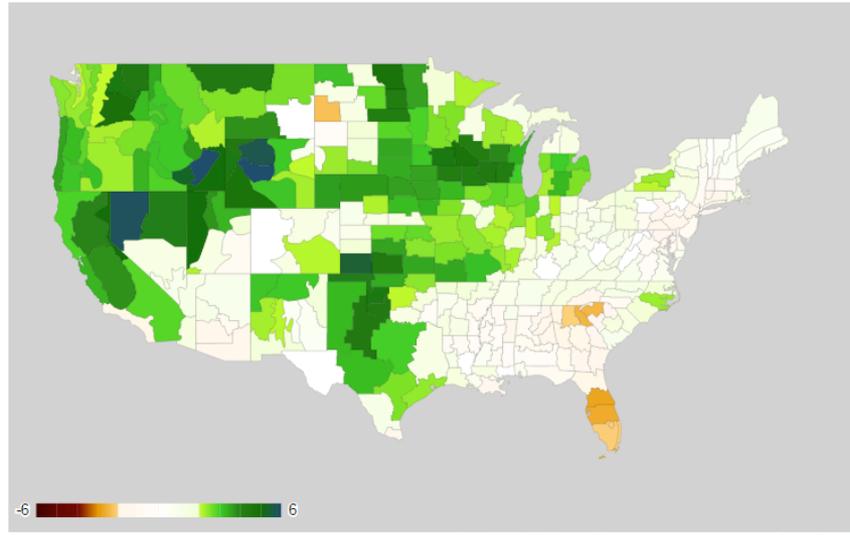


Download PHDI Data: [XML](#)

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Projected Palmer Hydrological Drought Index

July 31, 2017



Based on the most recent monthly precipitation and mean temperature data for NOAA/NCEI Climate Divisions extended by three months using NOAA/CPC Seasonal Forecasts of the 50th percentile of precipitation and the 50th percentile of mean temperature.

Download Projected PHDI Data: [XML](#)

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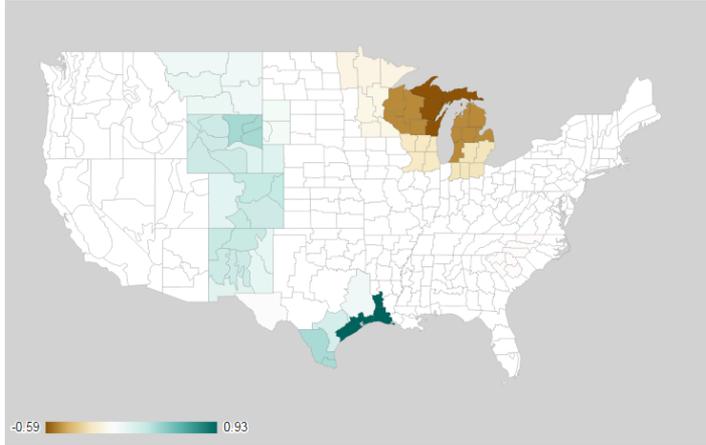


Contributing Factors



Projected Precipitation Anomalies

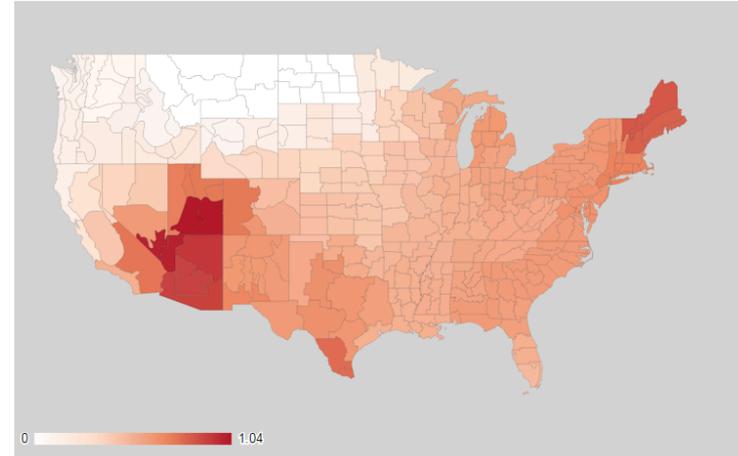
July 31, 2017



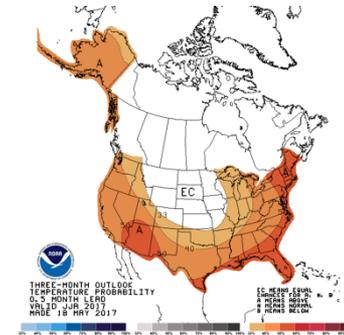
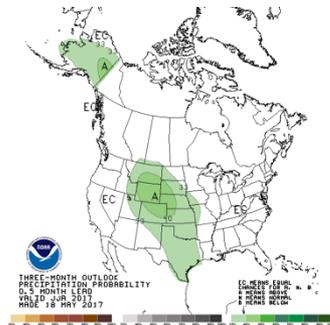
NOAA/CPC Seasonal (3-month) Precipitation Forecast Anomalies (50th percentile)

Projected Temperature Anomalies

July 31, 2017



NOAA/CPC Seasonal (3-month) Temperature Forecast Anomalies (50th percentile)





Options...options...options...



- CPC outlooks are a mean of the ensemble runs.
 - But the data also contain tails of the distribution.
- Is there any value?
- Would you like to see the 95th and 5th percentiles? Decision-making purposes? Sort of like a worst/best-case scenario?



Looking Ahead



- Operational status -
 - Pending live release (after this workshop). Transitioned to operations.
- Latency / lag issues -
 - CPC updates mid-month.
 - What happens during the 2-week gap?
 - NCEI ingests CPC outlook on 6th of the following month (nClimDiv becomes ready on the 6th)
- Available only on the new website
- Go live date - 2-3 weeks after conclusion of this workshop pending your feedback delivered to the web developer.