

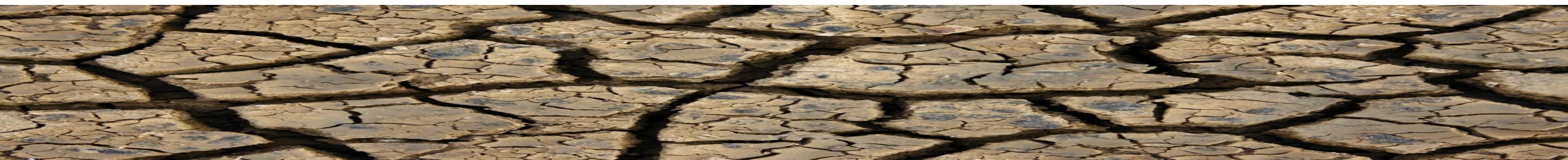


CPC's Week-2 Hazards: Rapid Onset Drought Risk & Probabilistic Drought Outlook



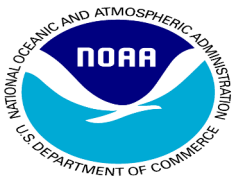
Adam Hartman and Brad Pugh
Climate Prediction Center/NCEP/NWS/NOAA

Southeast Drought Early Warning System
August 9, 2022





Motivation for Rapid Onset Drought Risk: CPC's Week-2 Hazards



- Feedback from stakeholders
- Apply tools and methodology used for the Monthly Drought Outlook to implement the ability of a rapid onset drought forecast to the Week-2 hazards, when conditions warrant
- Improve communication of the risk throughout the month
- CPC's major role in Decisions Support Services (DSS): Week-2 hazards (Daily briefing, HQ briefing, and Email to Regions when necessary)



Inputs to Rapid Onset Drought Risk Tool



- Initial conditions: soil moisture and also consider two to four week precipitation deficits, EDDI, etc
- Week-1: NDFD positive temperature anomalies and 7-day Weather Prediction Center (WPC) negative precipitation anomalies
- Week-2: CPC's 8-14 day temperature (elevated probabilities of above) and precipitation (elevated probabilities of below) outlook

OFFICIAL INPUTS

- HvySnow, Slight
- Windprob Probabilistic Label, Value
- HighWind, Moderate
- HighWind, Slight
- Temperature Deterministic
- Precipitation Deterministic
- Soils Deterministic
- TOOLS
 - Rapid Onset Drought
 - Forecast
 - NDFD_PosTmaxAnom_7day
 - WPC_NegPrpcAnom_7day
 - CPC_AbvNormTemp_8-14day
 - CPC_BelNormPrpc_8-14day
 - Observation
 - SoilMoisture_BelPctI30
- PSL_EDDI_30day
- HPRCC_SPI_D0-D4_30day
- HPRCC_SPI_D0-D4_60day
- US Drought Monitor
 - Current Drought
 - Change Maps
 - 1 Week
 - 2 Weeks
 - 3 Weeks
 - 4 Weeks

- Basemaps

ADDITIONAL TOOLS

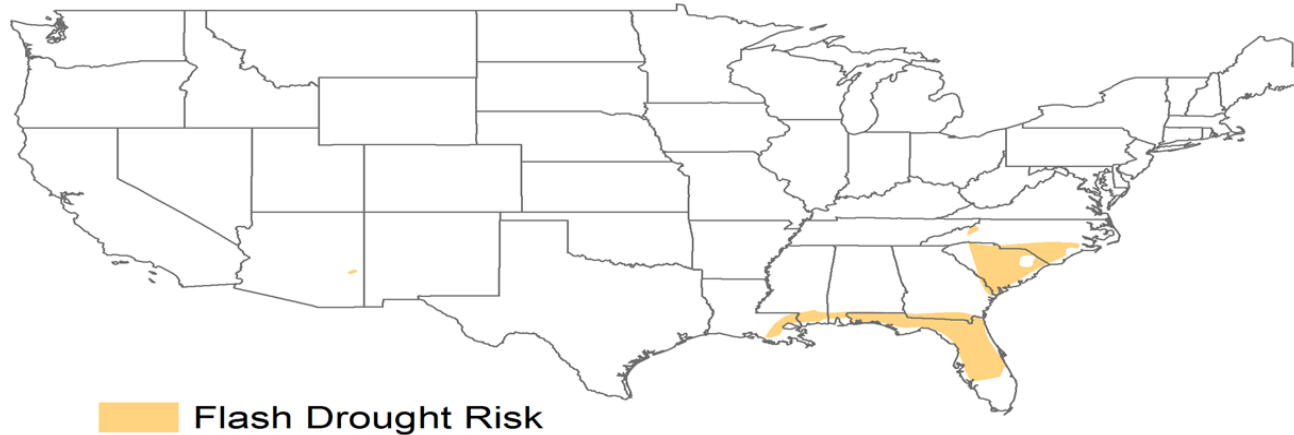
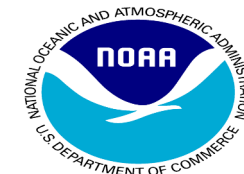


Experimental

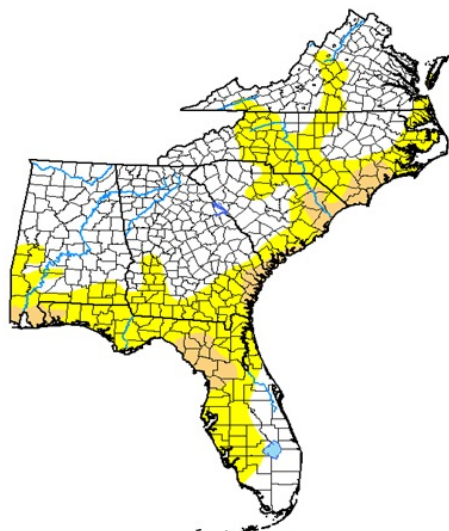
Flash Drought Risk

Released: February 23, 2022

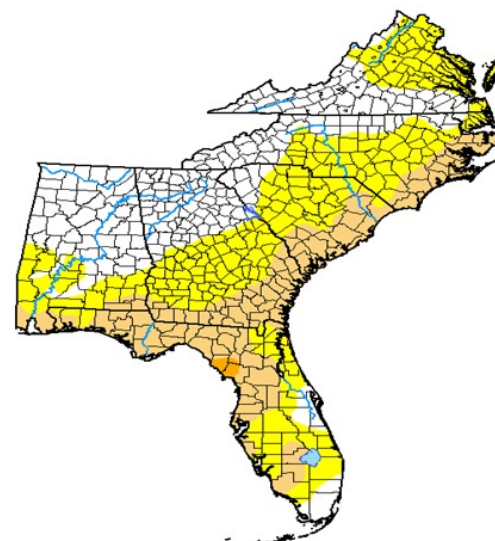
Valid: March 3 - 9, 2022



February 22, 2022



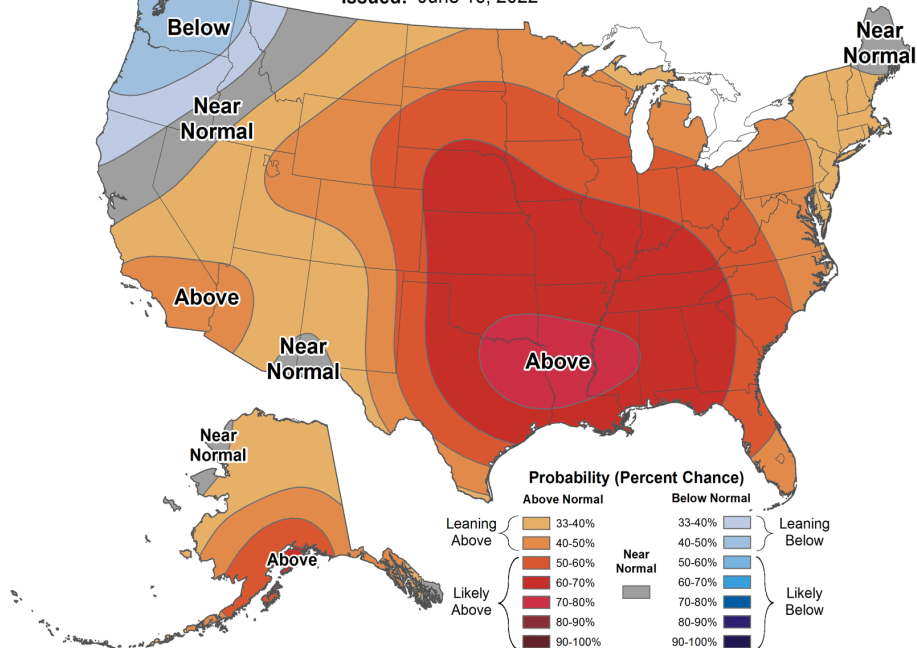
March 8, 2022





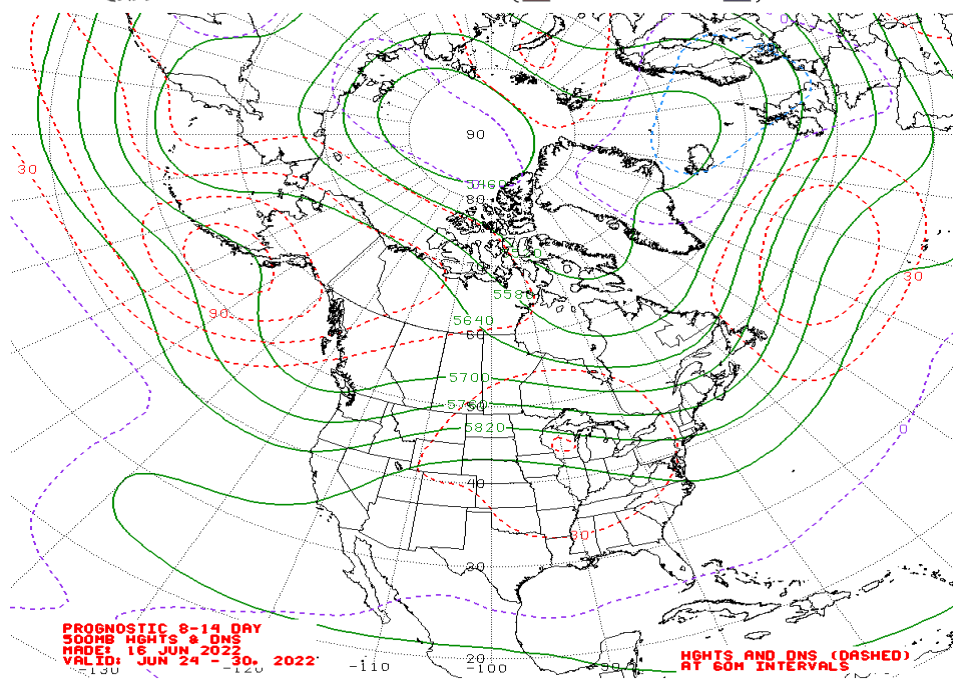
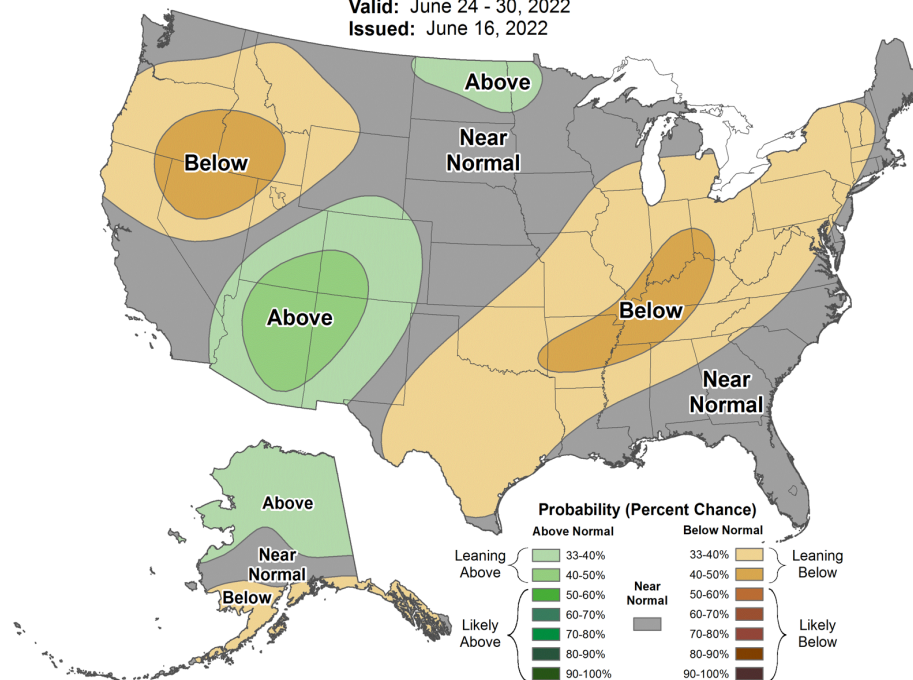
8-14 Day Temperature Outlook

Valid: June 24 - 30, 2022
Issued: June 16, 2022



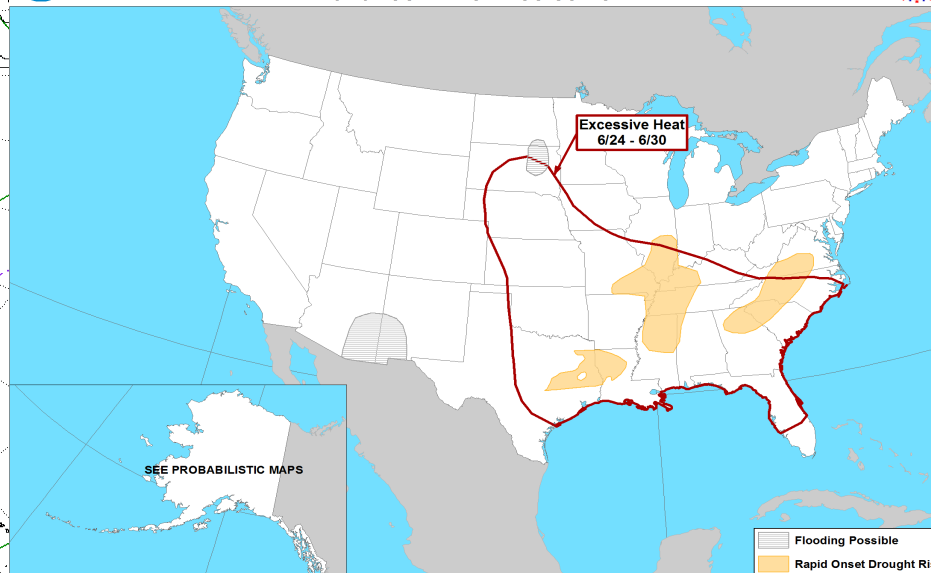
8-14 Day Precipitation Outlook

Valid: June 24 - 30, 2022
Issued: June 16, 2022



Day 8-14 U.S. Hazards Outlook

Valid: 06/24/2022-06/30/2022

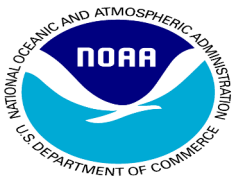


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Made: 06/16/2022 3PM EDT

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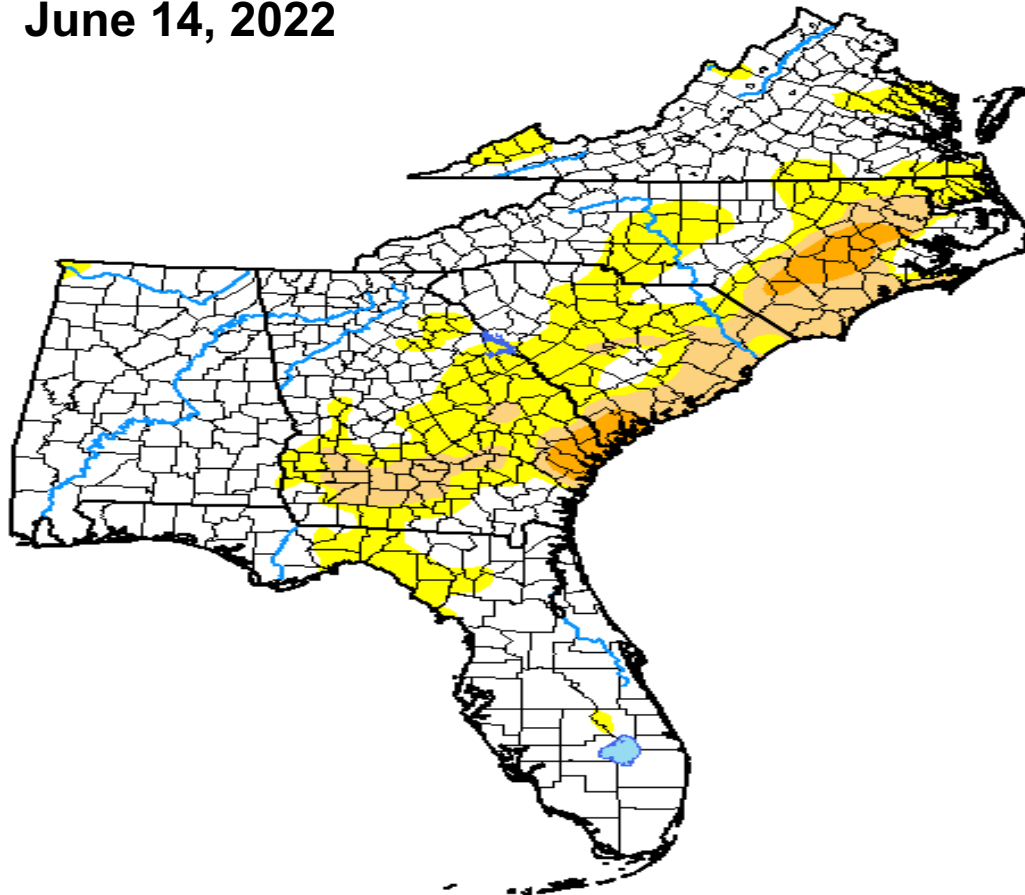


USDM: June 14 to July 5, 2022



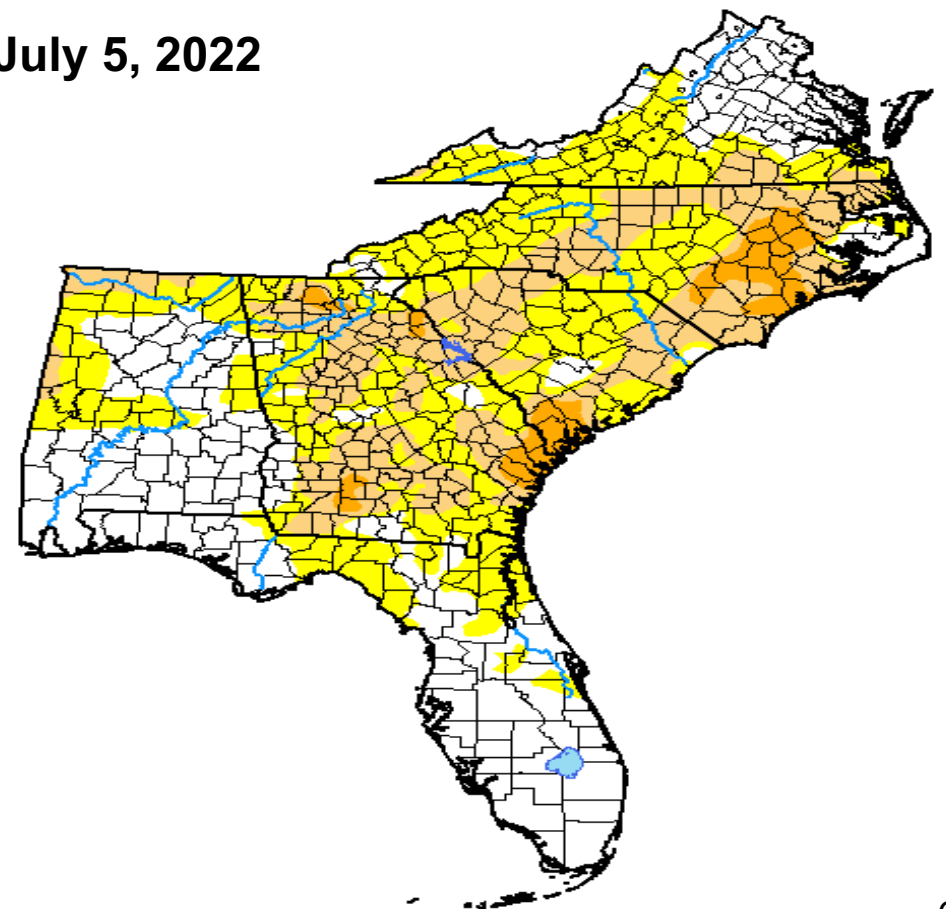
U.S. Drought Monitor **Southeast**

June 14, 2022



U.S. Drought Monitor **Southeast**

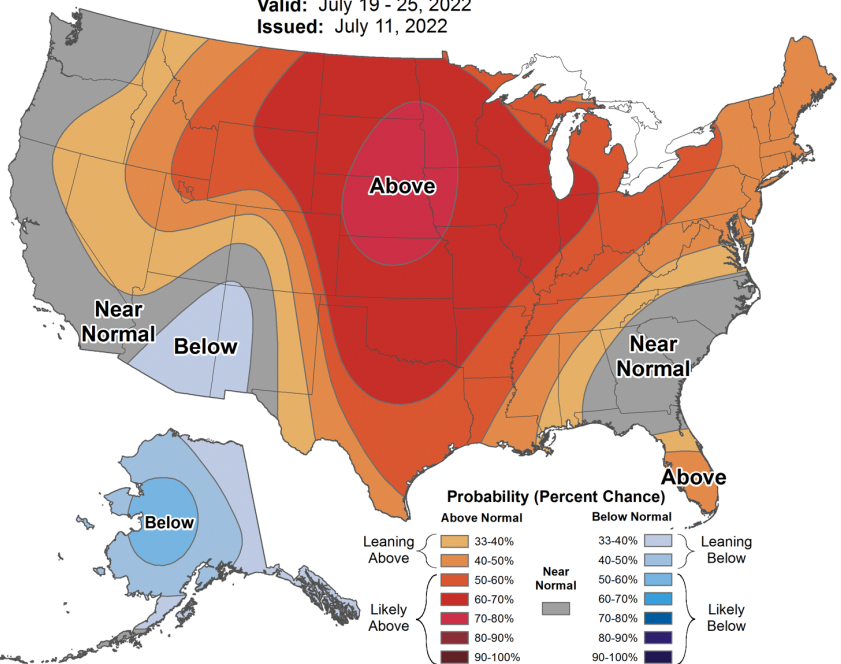
July 5, 2022





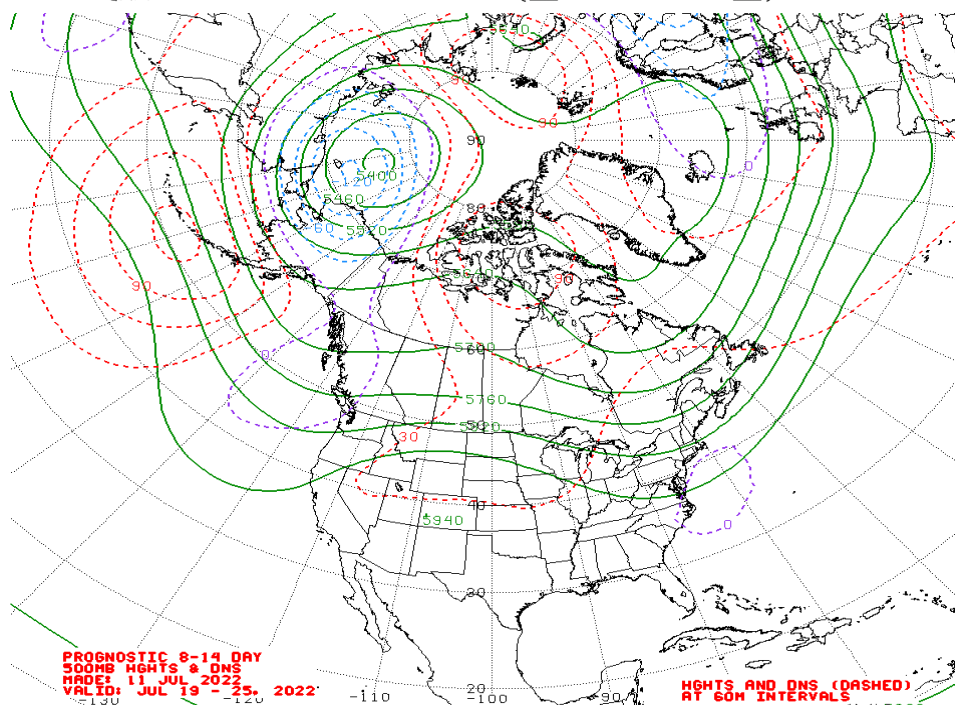
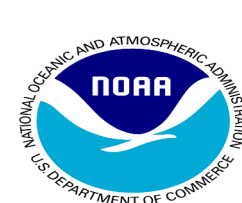
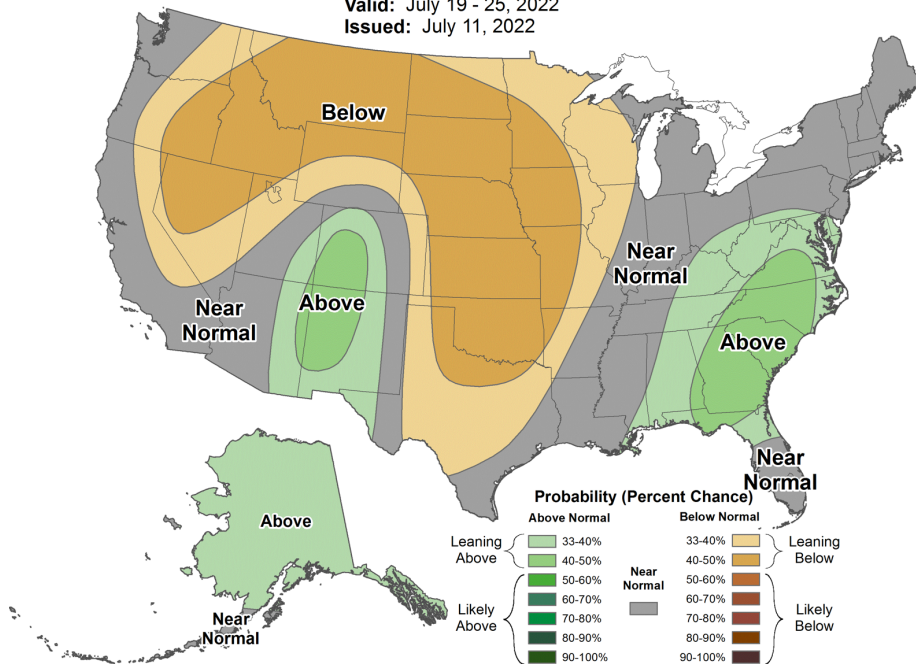
8-14 Day Temperature Outlook

Valid: July 19 - 25, 2022
Issued: July 11, 2022



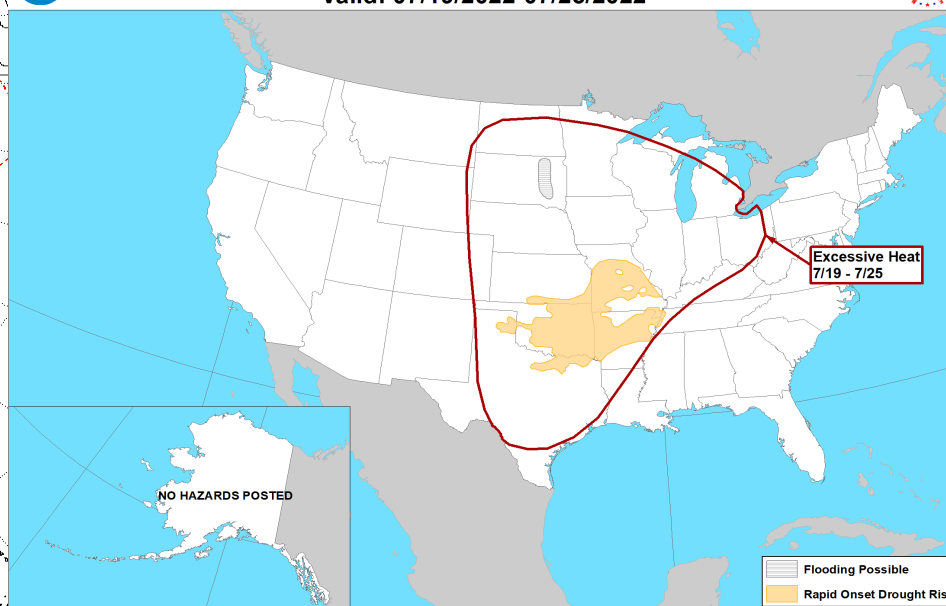
8-14 Day Precipitation Outlook

Valid: July 19 - 25, 2022
Issued: July 11, 2022



Day 8-14 U.S. Hazards Outlook

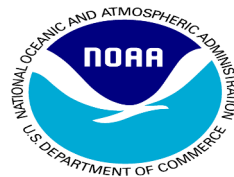
Valid: 07/19/2022-07/25/2022



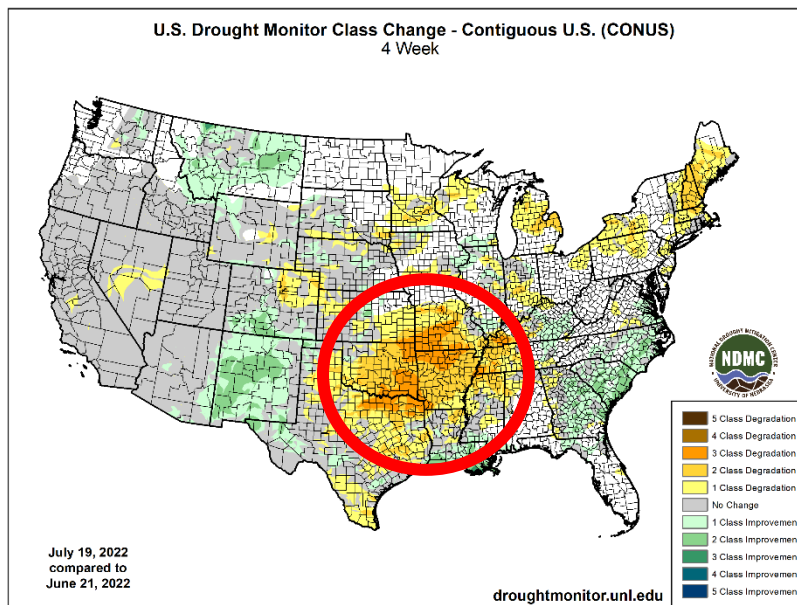
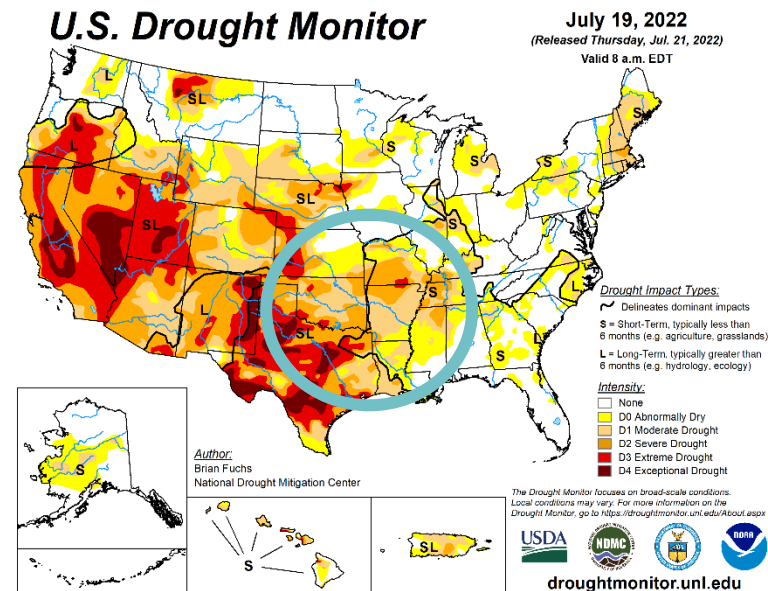
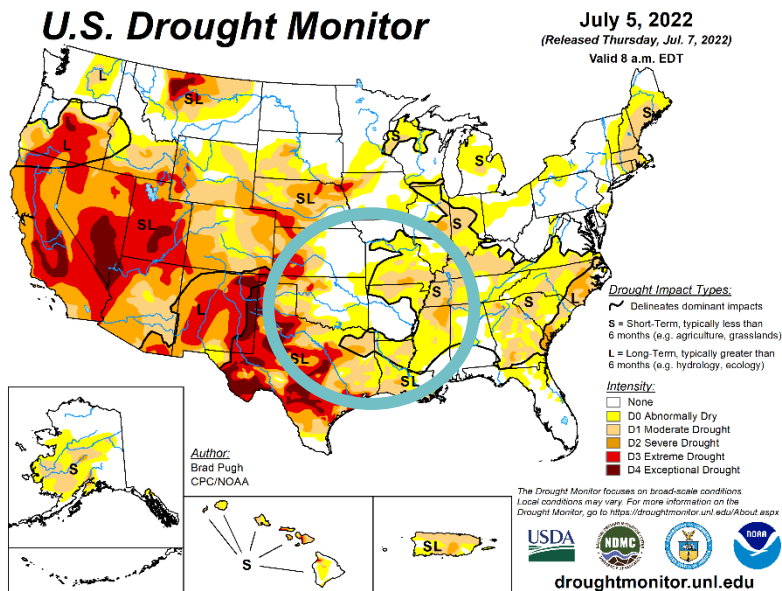
Climate Prediction Center
Made: 07/11/2022 3PM EDT

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Forecaster:
Tom Collow



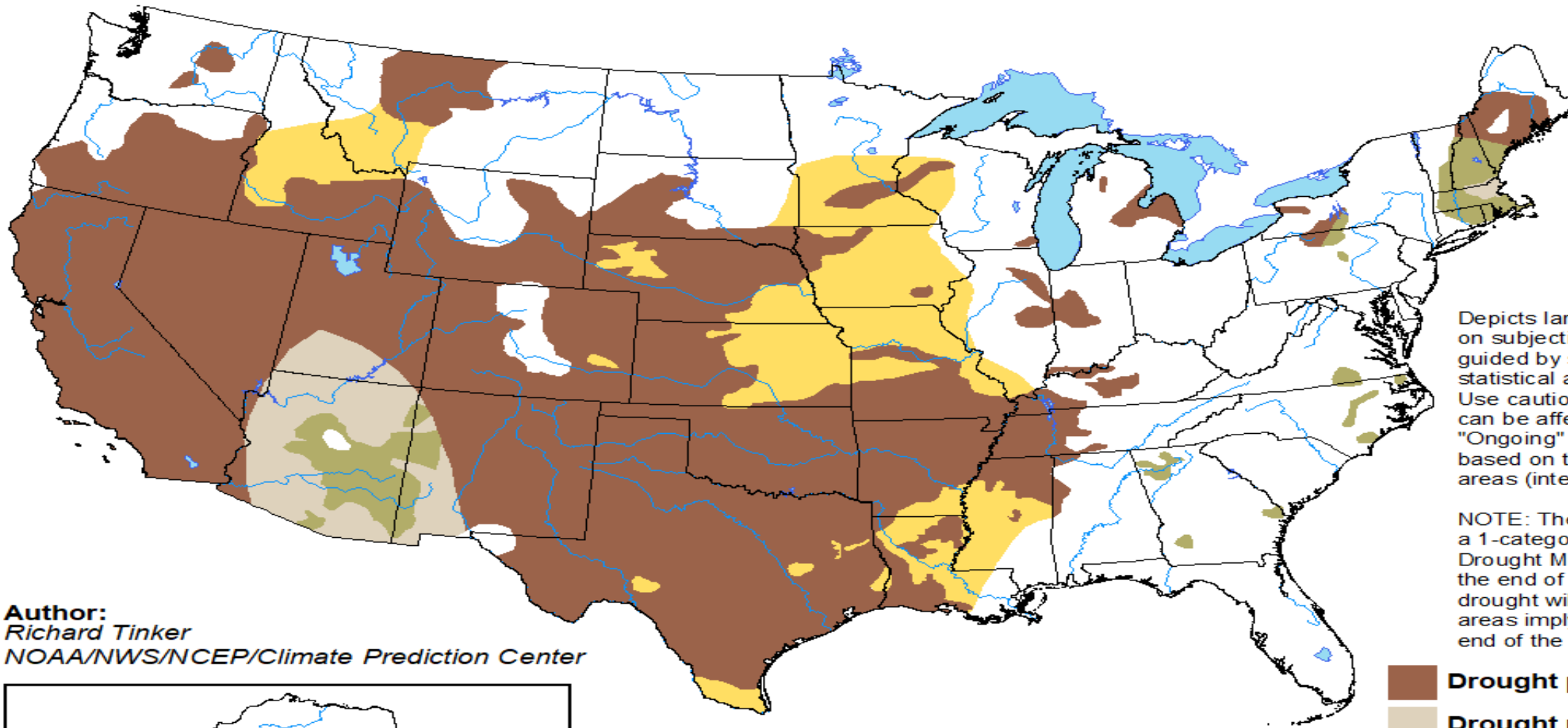
High Impact Rapid Onset Drought: Southern Plains and Ozarks Region



U.S. Seasonal Drought Outlook

Drought Tendency During the Valid Period




Valid for July 21 - October 31, 2022
Released July 21

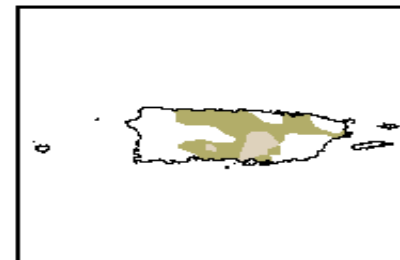
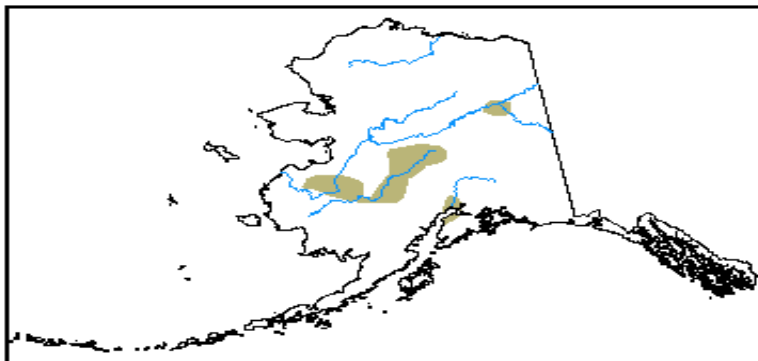


Depicts large-scale trends based on subjectively derived probabilities guided by short- and long-range statistical and dynamical forecasts. Use caution for applications that can be affected by short lived events. "Ongoing" drought areas are based on the U.S. Drought Monitor areas (intensities of D1 to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

Author:
Richard Tinker
NOAA/NWS/NCEP/Climate Prediction Center

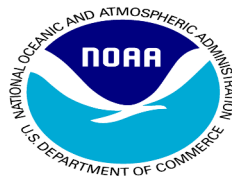
-  **Drought persists**
-  **Drought remains but improves**
-  **Drought removal likely**
-  **Drought development likely**



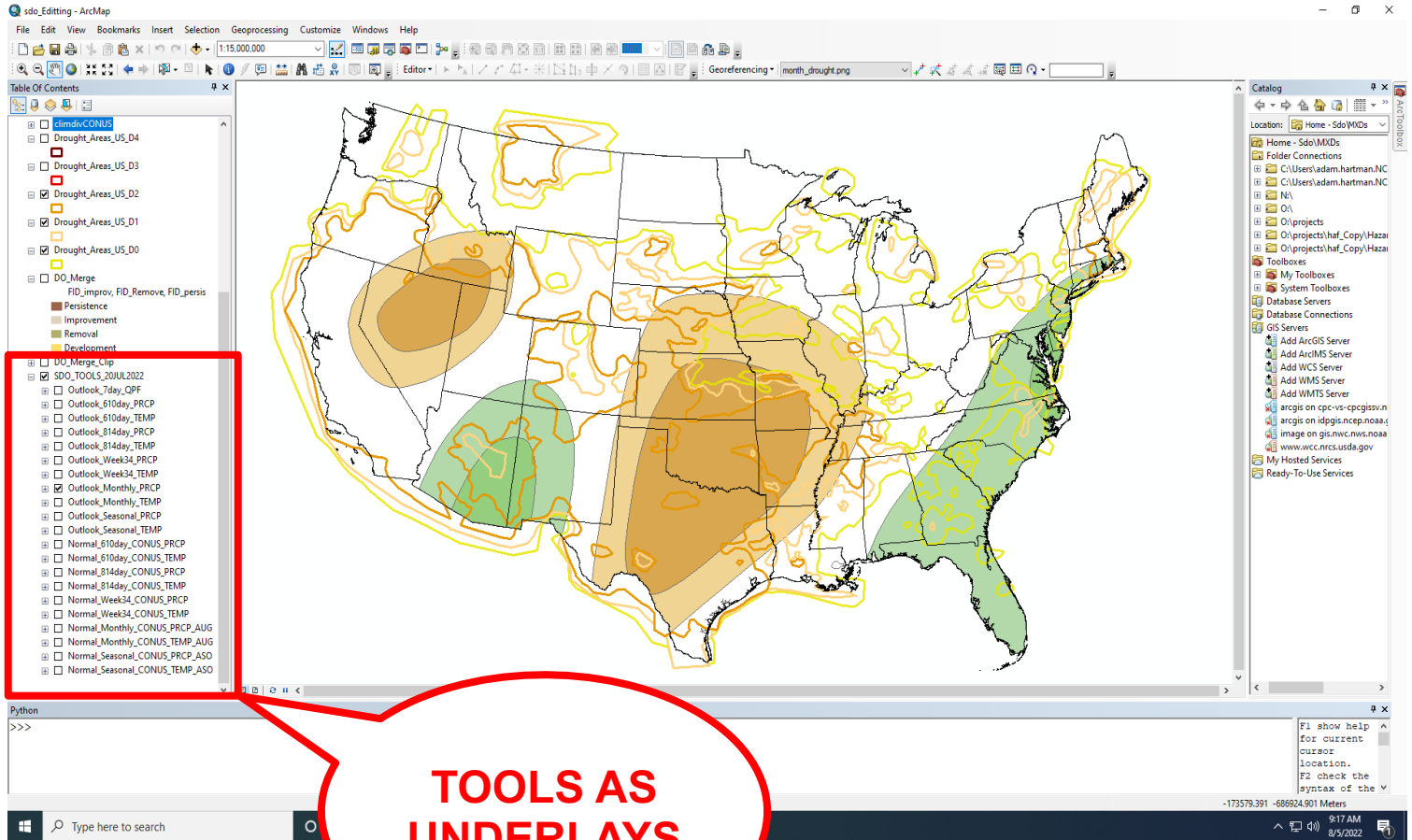
<http://go.usa.gov/3eZ73>



Seasonal Drought Outlook: Tools

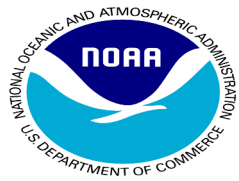


- Climatology (dry/wet season: more applicable for Great Plains and West)
- ENSO Composites
- Weeks 1 and 2 temperature and precipitation
- Weeks 3-4 outlooks
- Monthly and Seasonal temperature and precipitation





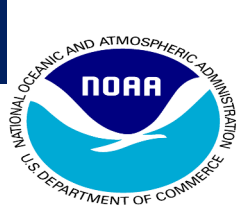
CPC-NIDIS Project: Developing *Probabilistic* Drought Outlooks (DOs)



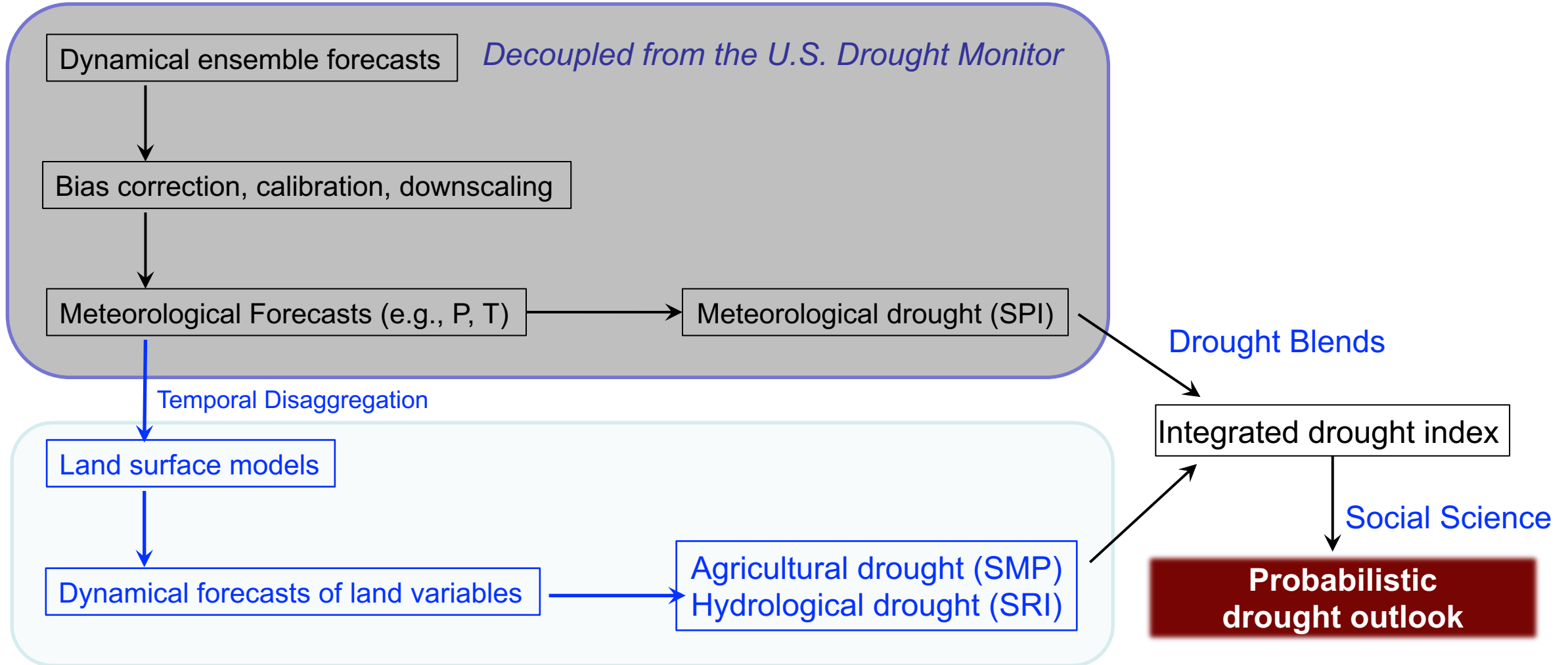
- **DO Products:** Flash drought DO, monthly DO and seasonal DOs

	Flash drought	Monthly DO	Seasonal DOs
Lead time	2-5 weeks	1 month	2-6 months
Production frequency	weekly	weekly/monthly	monthly
Input dynamical forecasts	Subseasonal (e.g., GEFSv12, ECMWF, CFSv2)		Seasonal (e.g., NMME)
Forecast drought anomalies	Flash drought only	Short-term drought, long-term drought, all drought conditions	

- **Timeline**
 - **Years 1-2:** Seasonal DOs
 - **Years 3-5:** Flash drought DO, monthly DO

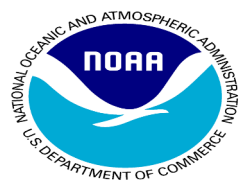


A Schematic for Probabilistic DO Production





Impact-based Decision Support Services (IDSS)



Click on product title to go to product page. Move cursor over product parameter name to display the graphic -- click to enlarge. Links to these same products are also available below.

6-10 Day Outlook (Interactive) Temperature Precipitation	One Month Outlook (Interactive) Temperature Precipitation
8-14 Day Outlook (Interactive) Temperature Precipitation	Three Month Outlook (Interactive) Temperature Precipitation
Week 3-4 Outlooks Temperature Precipitation	8-14 Day U.S. Hazards Outlook Probabilistic: Temp Precip Snow Wind
U.S. Drought Information Monthly Outlook Seasonal Outlook	Global Tropics Hazards Outlook Weeks 1 and 2

U.S. Seasonal Drought Outlook
Drought Tendency During the Valid Period
Valid for August 1 - October 31, 2022
Released July 31, 2022

Consistency adjustment based on Weekly Drought Outlook for August 2022

NOTE: Large scale trends based on long-term (30-year) observations, adjusted by short- and long-range (10- and 30-day) trends. One outlier for each state that is not consistent with the trend is highlighted in red. The U.S. Drought Monitor uses the term "DROUGHT" to indicate areas where the soil moisture deficit is at least 2.0 inches (5.1 cm) below the long-term average for the month of the event, adjusted for the long-term trend (20-year). The U.S. Drought Monitor uses the term "SEVERE DROUGHT" to indicate areas where the soil moisture deficit is at least 3.0 inches (7.6 cm) below the long-term average for the month of the event, adjusted for the long-term trend (20-year).

NOTE: The US areas listed at least 2.0 inches (5.1 cm) below the long-term average for the month of the event, adjusted for the long-term trend (20-year). The U.S. Drought Monitor uses the term "DROUGHT" to indicate areas where the soil moisture deficit is at least 2.0 inches (5.1 cm) below the long-term average for the month of the event, adjusted for the long-term trend (20-year). The U.S. Drought Monitor uses the term "SEVERE DROUGHT" to indicate areas where the soil moisture deficit is at least 3.0 inches (7.6 cm) below the long-term average for the month of the event, adjusted for the long-term trend (20-year).

Author: Patrick Taylor
NOAA/NWS/CPC/Climate Prediction Center
<http://go.usa.gov/3e273>



Climate Prediction Center

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Drought Information

U.S. Seasonal Drought Outlook Underway
U.S. Monthly Drought Outlook
U.S. Seasonal Drought Outlook Update
U.S. Drought Outlook Support Tools

Click on the title or the graphic (above) to access the U.S. Weekly Drought Monitor. [PDF Version of Graphic](#)

Click on the title or the graphic (above) to access the U.S. Monthly Drought Outlook. [PDF Version of Graphic](#)

Click on the title or the graphic (above) to access the U.S. Seasonal Drought Outlook Update. [PDF Version of Graphic](#)

Click on the title or the graphic (above) to access the U.S. Drought Outlook Support Tools. [PDF Version of Graphic](#)

ATTENTION:

Consistent messaging is a vital part of the Climate Prediction Center's (CPC) mission to deliver climate information and products. The United States Drought Monitor (USDM) serves as initial conditions for the CPC's drought outlooks. Due to the 7-16 day time span between releases of the Seasonal Drought Outlook (SDO) on the third Thursday of each month and Monthly Drought Outlook (MDO) on the last day of each month, large changes may occur in the USDM. Since the valid periods for the drought outlooks overlap, forecast consistent inconsistencies may result between the two products, which can lead to conflicting messaging and cause confusion. In order to address this issue, the CPC will adjust the SDO at the end of each month immediately following the release of the MDO. This adjustment has the goal of eliminating inconsistencies between the drought outlooks to provide consistent outlook maps and a consistent message to end users. A complete review of forecast update of the entire domain is not part of this process - only conflicting areas will be assessed for consistency. If a consistency adjustment to the SDO is necessary based on the end-of-month assessment, SDO web images, Geographic Information System (GIS) files on the CPC FTP site (for data downloads), and GIS services (via the NOAA Integrated Dissemination Program) will be updated. A summary addressing the necessary adjustments will also be provided and added above the summary and narrative from the official SDO release. If no consistency adjustments are required for a given month, "No consistency adjustments to the Seasonal Drought Outlook were necessary" will instead be added above the summary and narrative from the official SDO release. Please note, the SDO summary and discussion from the official release on the 3rd Thursday of the month will remain unchanged, even in instances when consistency adjustments are made.

Please view this [case study](#) summarizing the new workflow.

MDO Statistics

Climate Prediction Center

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Monthly Drought Outlook - Statistics

Choose a Statistic Type to View from Buttons Below

Agricultural Population and Land Area Reservoir Energy

Developer: Ryan Bolt

Statistics for Agriculture Shown:

Mouse over a region below to display a DEWS Region
Click on Region for Static Image

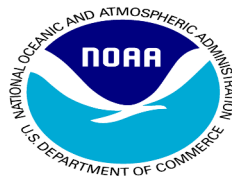
Crop Density Layers

Corn Statistics

Removal	0
Development	8,496,577
Persistence	4,845,104
Improvement	0

Soybeans Statistics

Removal	0
Development	9,822,797
Persistence	4,339,842
Improvement	0



CPC Contacts

- Week-2 Rapid Onset Drought hazard and Monthly and Seasonal Drought Outlooks:

Brad Pugh – brad.pugh@noaa.gov

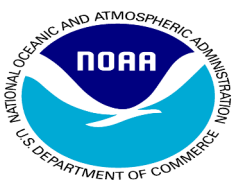
Adam Hartman – adam.hartman@noaa.gov

- Probabilistic Drought Outlooks:

Hailan Wang – hailan.wang@noaa.gov

- GIS data and services:

Adam Hartman – adam.hartman@noaa.gov



Thank You!

Any Questions?

