Department of Commerce • National Oceanic & Atmospheric Administration • National Weather Service

NATIONAL WEATHER SERVICE INSTRUCTION 10-1202

DECEMBER 4, 2024

Operations and Services

Drought Services, NWSPD 10-12

NATIONAL DROUGHT PRODUCTS

NOTICE: This publication is available at: https://weather.gov/directives/.

OPR: W/AFS23 (M. Hurwitz) **Certified by:** W/AFS23 (M. Timofeyeva)
Type of Issuance: Routine

SUMMARY OF REVISIONS: This directive supersedes NWSI 10-1202, "National Drought Products" dated May 17, 2020.

This instruction has been updated for the following:

1. Sample products updated to reflect new graphics and regions covered by the U.S. Drought Outlooks.
2. Updated all broken links to NWS Directives System.

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November 20, 2024

Allison Allen
Director
Analyze, Forecast and Support Office

Date

National Drought Products

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1 Introduction

This instructional directive describes the narrative and graphical climate monitoring drought products issued by the National Weather Service's (NWS) Climate Prediction Center (CPC) and by the U.S. Drought Monitor author team (which includes CPC). World Meteorological Organization (WMO) headings and Advanced Weather Interactive Processing System (AWIPS) identifiers are listed, where relevant, for NWS dissemination systems. All products are available or linked through CPC's website (http://www.cpc.ncep.noaa.gov). For information concerning WFO Drought Information Statements, see NWSI 10-1201 (https://www.weather.gov/media/directives/010_pdfs/pd01012001curr.pdf).

2 Palmer Drought Severity Index

Internet issuance only. There is no WMO heading or AWIPS ID.

2.1 Mission Connection

The Palmer Drought Severity Index (PDSI) is prepared by CPC. This is produced for long-term planning by agricultural and water supply managers.

2.2 Issuance Guidelines

2.2.1 Creation Software

CPC uses ArcGIS software.

2.2.2 Issuance Criteria

This is a scheduled product.

2.2.3 Issuance Time

CPC issues this product each Monday at around 1:30 p.m. Eastern local time.

2.2.4 Valid Time

This product is valid for one week after issuance.

2.2.5 Product Expiration Time

This product expires one week after issuance.

2.3 Technical Description

CPC will follow the format and content described in this section.

2.3.1 Content

This index depicts prolonged (several months or longer) abnormal dryness or wetness. This index responds slowly and changes little from week to week. It reflects long-term moisture runoff, recharge and deep percolation, and evapotranspiration. This index is not generally indicative of short-term drought (instead, use the Crop Moisture Index; see NWSI 10-1002 (https://www.weather.gov/media/directives/010_pdfs/pd01010002curr.pdf).

2.3.2 Format

CPC assigns numerical index values within the contiguous U.S. (Figure 1).

2.4 Updates, Amendments and Corrections

CPC does not issue updates or amendments. Corrections will be issued as needed.

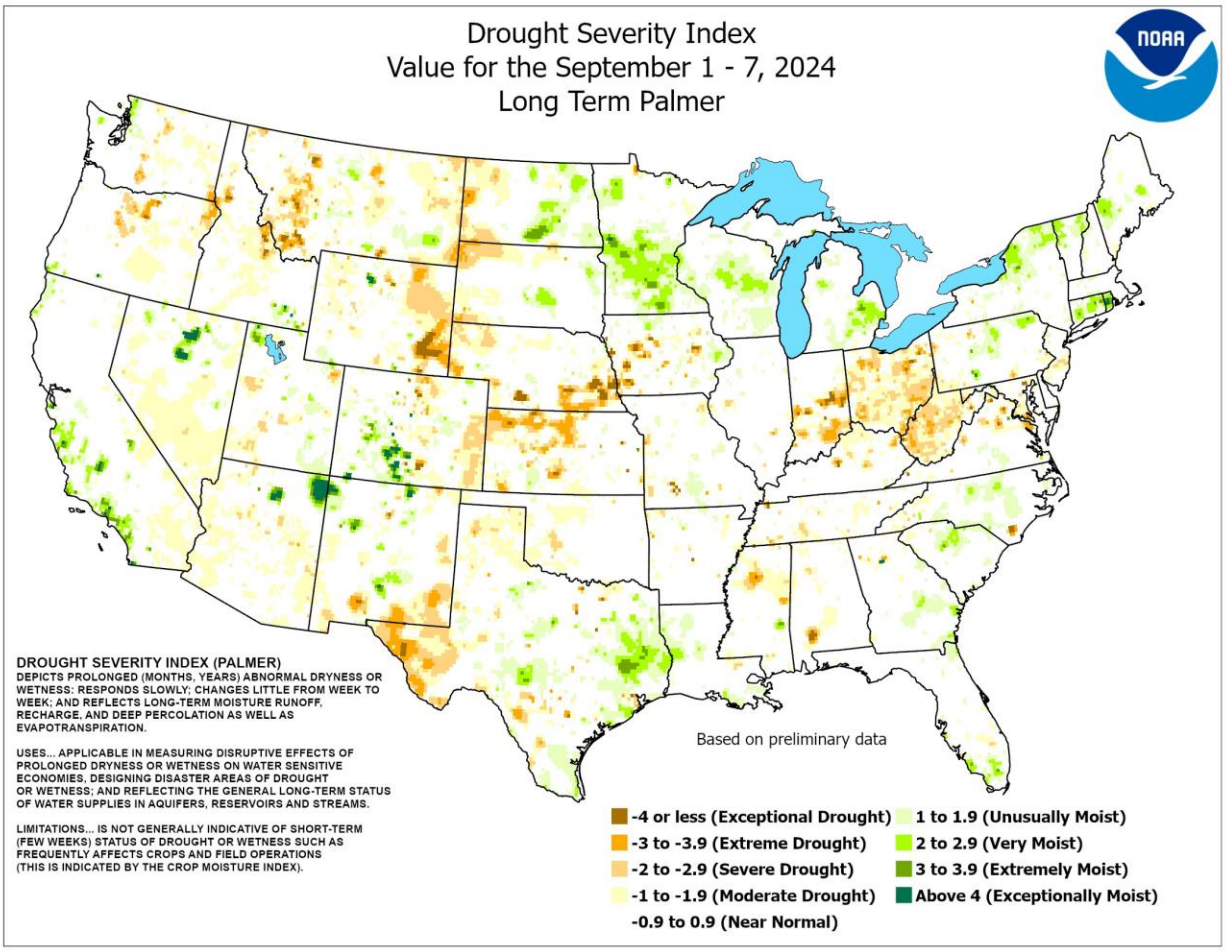

Figure 1. Sample product for Palmer Drought Severity Index.

3 U.S. Drought Monitor

WMO Heading = PYIA88 KWNC
The AWIPS ID = RBGDRO has been discontinued.

3.1 Mission Connection

This product is primarily intended for agricultural and water supply interests. A team of drought experts ("U.S. Drought Monitor authors") from NOAA's CPC and NCEI, USDA's World Agricultural Outlook Board (WAOB), the University of Nebraska's National Drought Mitigation Center (NDMC) (http://drought.unl.edu), and the Western Regional Climate Center (WRCC) issue this product. Lead responsibility rotates amongst team members.

WFO staff are encouraged to join the U.S. Drought Monitor mailing list and state-level drought monitoring groups to better understand and contribute to the drought monitoring process. WFO staff should contact their regional climate and/or water resources program managers for more information.

3.2 Issuance Guidelines

3.2.1 Creation Software

The U.S. Drought Monitor author team uses ArcGIS software.

3.2.2 Issuance Criteria

This is a scheduled product.

3.2.3 Issuance Time

The lead team member 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, this product is issued the Wednesday before the Thursday Holiday at 8:30 a.m. Eastern local time.

3.2.4 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.

3.2.5 Product Expiration Time

This product expires one week after issuance.

3.3 Technical Description

The U.S. Drought Monitor author team will follow the format and content described in this section.

3.3.1 Content

This product summarizes drought extent and intensity for U.S. and U.S.-affiliated territories.

3.3.2 Format

The U.S. Drought Monitor classifies drought intensity and type for the contiguous U.S., Alaska, Hawaii, Puerto Rico (Figure 2), U.S. Virgin Islands and the U.S.-affiliated Pacific Islands (Figure 3).

The U.S. Drought Monitor follows a classification system analogous to the schemes for hurricanes and tornadoes. The classification system combines key indicators of drought (i.e., precipitation, soil moisture, drought indices) as well as local impact reports and expertise to produce the final drought intensity rating. Precipitation datasets include those managed through NOAA's Office of Water Prediction (OWP), including 24-hour total, observed rainfall (https://water.noaa.gov). Drought intensity categories range from D0 to D4, and are defined by the frequency with which similar or drier conditions can be expected for the given location and season. U.S. Drought Monitor authors approximate thresholds for the D0, D1, D2, D3, and D4 classifications by the 30th percentile, 20th percentile, 10th percentile, 5th percentile, and 2nd percentile occurrence frequencies, respectively.

Table 1 provides examples of drought indicators which independently meet the D0 to D4 criteria.

Note that the Palmer Drought Severity Index and Standardized Precipitation Index are not expressed as percentiles. Also, note that the values shown in Table 1 represent the national and annual average conditions that suggest classification at the D0 to D4 level, but will in practice vary with location and time of year. When the various indicators do not indicate the same drought intensity classification, the lead U.S. Drought Monitor author will decide on the final drought intensity classification for a region based on the majority of the indicators, how the drought indicators represent reported drought impacts and how well drought indicators perform in various parts of the country and at different times of the year. In the western continental U.S., where winter snowfall has a strong bearing on water supply, U.S. Drought Monitor authors include additional hydrologic indicators in making their final drought classification decisions.

U.S. Drought Monitor maps indicate whether short-term (S), long-term (L), or both (SL) drought is occurring, since the severity and type of drought impacts depend on drought duration.

3.4 Updates, Amendments and Corrections

The U.S. Drought Monitor author team does not issue updates or amendments. Corrections will be issued as needed.

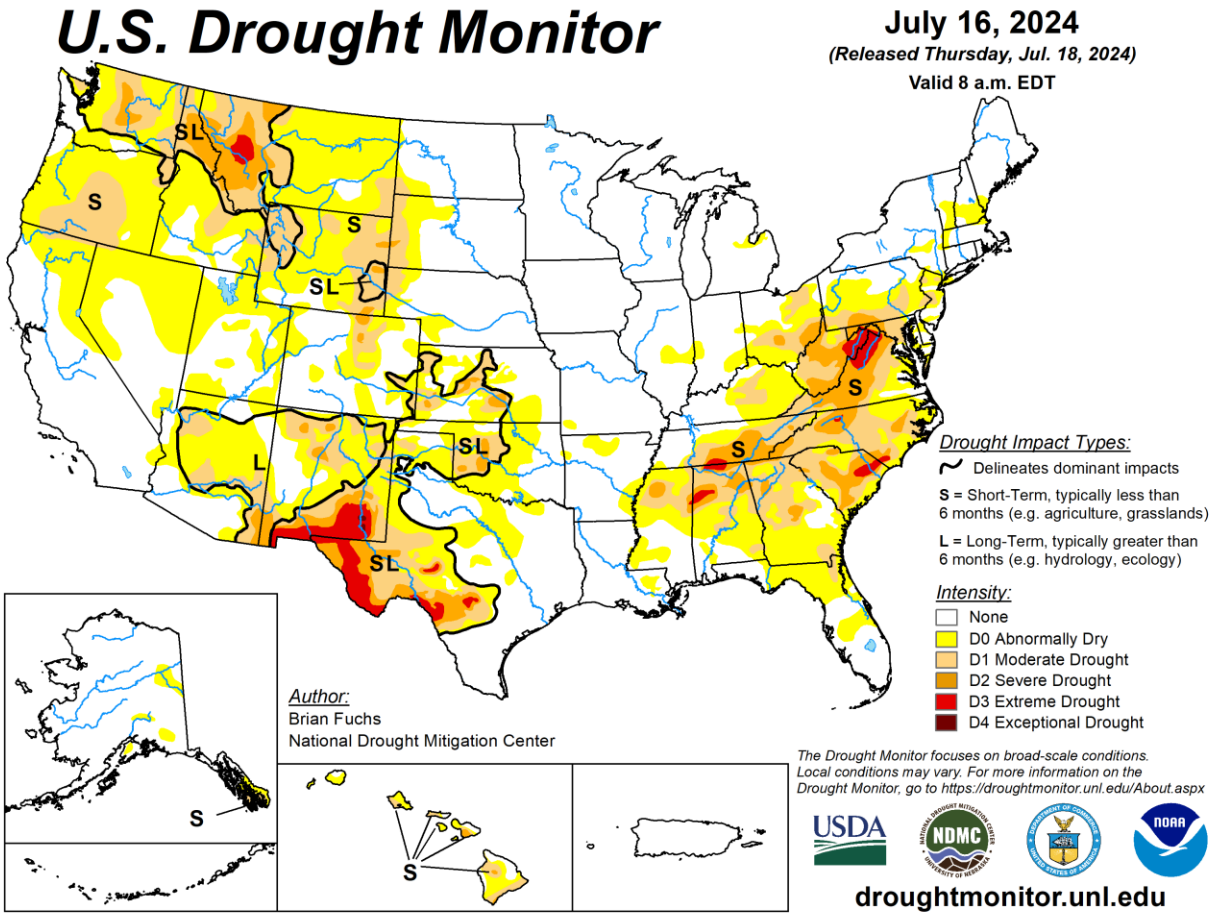

Figure 2. Sample product for page 1 of the U.S. Drought Monitor, covering the contiguous U.S., Alaska, the Aleutian Islands, Hawaii and Puerto Rico.

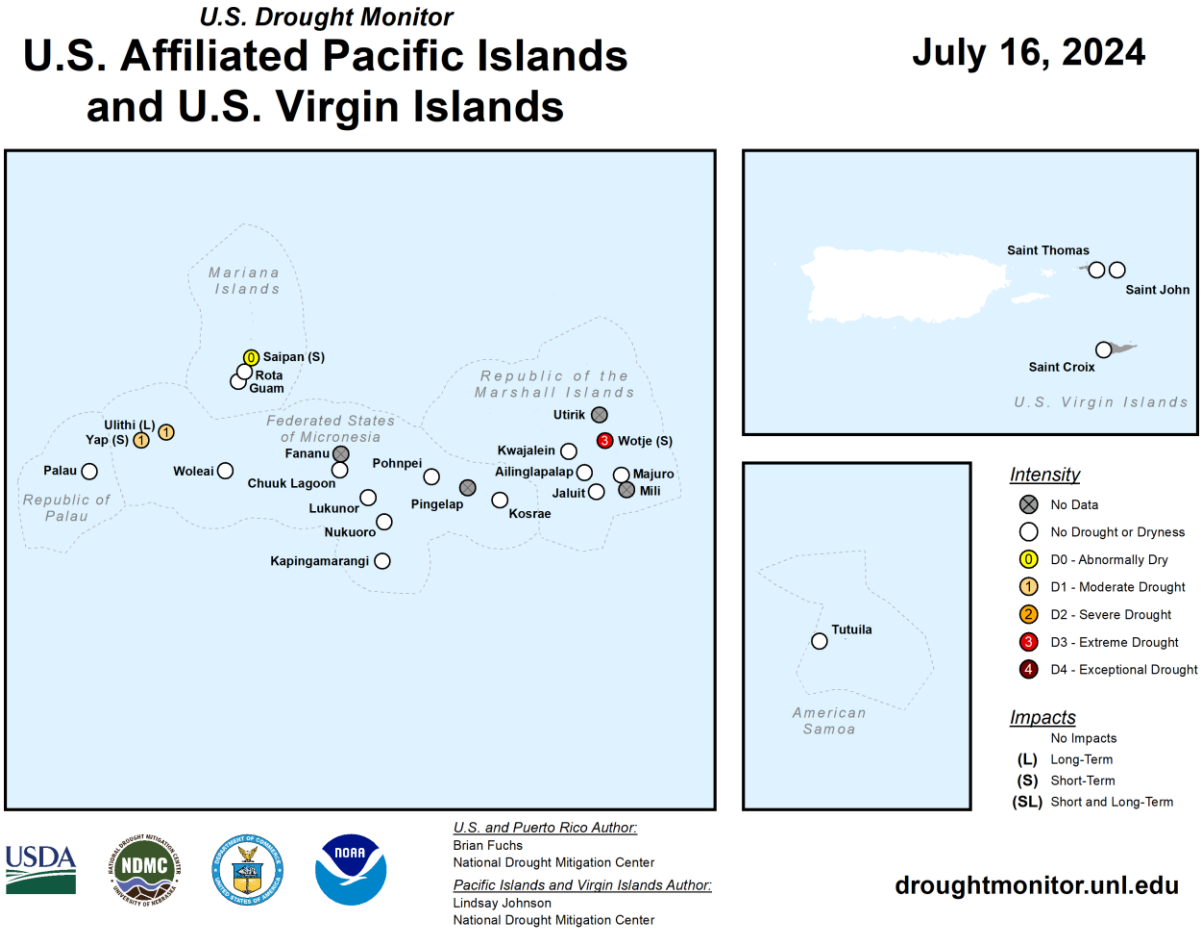

Figure 3. Sample product for page 2 of the U.S. Drought Monitor, covering U.S.-affiliated Pacific Islands and the U.S. Virgin Islands.

D0 Abnormally Dry	
Going into drought: short-term dryness slowing planting, growth of crops or pastures. Coming out of drought: some lingering water deficits; pastures or crops not fully recovered.	
Palmer Drought Severity Index (PDSI)	-1.0 to -1.9
Standard Precipitation Index (SPI)	-0.5 to -0.7
CPC Soil Moisture Model	21-30 percentile
U.S. Geological Survey (USGS) Weekly Streamflow	21-30 percentile
Objective Short and Long-term Drought Indicator Blends	21-30 percentile
D1 Moderate Drought	
Some damage to crops, pasture; streams, reservoirs, or wells low; some water shortage developing or imminent; voluntary water use restrictions requested.	
PDSI	-2.0 to -2.9
SPI	-0.8 to -1.2
CPC Soil Moisture Model	11-20 percentile
USGS Weekly Streamflow	11-20 percentile
Objective Short and Long-term Drought Indicator Blends	11-20 percentile
D2 Severe Drought	
Crop or pasture losses likely; water shortages common; water restrictions imposed.	
PDSI	-3.0 to -3.9
SPI	-1.3 to -1.5
CPC Soil Moisture Model	6-10 percentile
USGS Weekly Streamflow	6-10 percentile
Objective Short and Long-term Drought Indicator Blends	6-10 percentile
D3 Extreme Drought	
Major crop/pasture losses; widespread water shortages or restrictions.	
PDSI	-4.0 to -4.9
SPI	-1.6 to -1.9
CPC Soil Moisture Model	3-5 percentile
USGS Weekly Streamflow	3-5 percentile
Objective Short and Long-term Drought Indicator Blends	3-5 percentile
D4 Exceptional Drought	
Exceptional and widespread crop/pasture losses; shortage of water in reservoirs, streams and wells creating water emergencies.	
PDSI	-5.0 or less
SPI	-2.0 or less
CPC Soil Moisture Model	0-2 percentile
USGS Weekly Streamflow	0-2 percentile
Objective Short and Long-term Drought Indicator Blends	0-2 percentile

Table 1. Examples of key drought indicators and impacts that could designate a region as belonging to a particular intensity classification by the U.S. Drought Monitor. PDSI is further described in Section 2.

4 National Drought Summary

WMO heading – FXUS25 KWNC
The AWIPS ID = PMDDRO has been discontinued.

4.1 Mission Connection

Similarly to the U.S. Drought Monitor (Section 3), the National Drought Summary is primarily intended for agricultural and water supply interests. A team of drought experts ("U.S. Drought Monitor authors") issue this product. Lead responsibility rotates amongst team members.

4.2 Issuance Guidelines

4.2.1 Creation Software

The U.S. Drought Monitor author team uses text editing software.

4.2.2 Issuance Criteria

This is a scheduled product.

4.2.3 Issuance Time

This product is issued concurrently with the U.S. Drought Monitor (see Section 3). The lead team member issues this product every Thursday at 8:30 a.m. Eastern local time except if Thursday is a Federal Holiday. In case of a Thursday holiday, the lead team member will issue the product the Wednesday before the Thursday Holiday at 8:30 a.m. Eastern local time.

4.2.4 Valid Time

This product is valid as of 1200 UTC on the Tuesday prior to issuance until 1200 UTC the following Tuesday.

4.2.5 Product Expiration Time

This product expires one week after issuance.

4.3 Technical Description

4.3.1 Content

This product is a text summary that accompanies the U.S. Drought Monitor. The team summarizes the drought intensity and extent, recent climatic and hydrologic conditions, along with a summary of weather conditions expected in the ensuing 10 days. This product covers the same regions as the U.S. Drought Monitor: the contiguous U.S., Alaska, Hawaii, Puerto Rico, the U.S. Virgin Islands and U.S.-affiliated Pacific Islands.

4.3.2 Format

This product includes: the product title and issuance date, an executive summary describing key conditions and changes since the previous issuance, regional drought summaries (e.g., U.S.-affiliated Pacific Islands), a summary of expected weather conditions and changes in drought conditions, and the lead author's name and affiliation. The generic format is shown in Figure 4.

National Drought Summary for <*issuance date*>

Summary: <*text of executive summary*>

<Region name (e.g., Northeast)>: <*text of regional summary*>

<*further regional summaries*>

Looking ahead: <*summary of expected weather and changes in drought conditions*>

Author: <*lead author name and affiliation*>

Figure 4. Generic format for the National Drought Summary.

4.4 Updates, Amendments and Corrections

The U.S. Drought Monitor author team does not issue updates or amendments. Corrections will be issued as needed.

5 Monthly and Seasonal U.S. Drought Outlooks

WMO heading – PMNV88 KWNC
The AWIPS ID = RGBDRK has been discontinued.

5.1 Mission Connection

CPC issues the monthly and seasonal U.S. Drought Outlooks for planning by agricultural, water supply and fire weather managers, and other stakeholders (e.g., tourism industry).

5.2 Issuance Guidelines

5.2.1 Creation Software

CPC uses ArcGIS software.

5.2.2 Issuance Criteria

This is a scheduled product.

5.2.3 Issuance Time

The monthly U.S. Drought Outlook is issued at 3:00 p.m. Eastern local time on the last day of each calendar month, concurrently with the finalized one-month temperature and precipitation outlooks. The initial seasonal U.S. Drought Outlook is issued at 8:30 a.m. Eastern local time on the third Thursday of the month, concurrently with the three-month and initial one-month temperature and precipitation outlook products. The updated seasonal U.S. Drought Outlook is issued concurrently with the release of the monthly U. S. Drought Outlook, to ensure consistency between the two products.

5.2.4 Valid Time

The monthly U.S. Drought Outlook is valid for the next calendar month following the release

date (e.g., the October 31st release would be valid for the month of November). The initial seasonal U.S. Drought Outlook is valid for the remainder of the release month plus the next three calendar months, while the updated seasonal U.S. Drought Outlook is valid for the next three calendar months.

5.2.5 Product Expiration Time

The monthly/seasonal products expire when the next monthly/seasonal outlook is issued.

5.3 Technical Description

5.3.1 Content

CPC depicts large-scale trends based on subjectively derived probabilities and guided by numerous indicators, including short- and long-range statistical and dynamic forecasts. CPC indicates predicted trends of ongoing drought, as depicted in the U.S. Drought Monitor, as well as areas of potential drought development.

5.3.2 Format

CPC uses four categories to depict expected drought conditions for the contiguous U.S., Alaska, Hawaii, Puerto Rico and the U.S. Virgin Islands, for the upcoming month and season. The same color-coding of expected drought areas applies to both the monthly (Figure 5) and seasonal (Figure 6) U.S. Drought Outlooks. White areas of the map indicate that drought conditions are not expected.

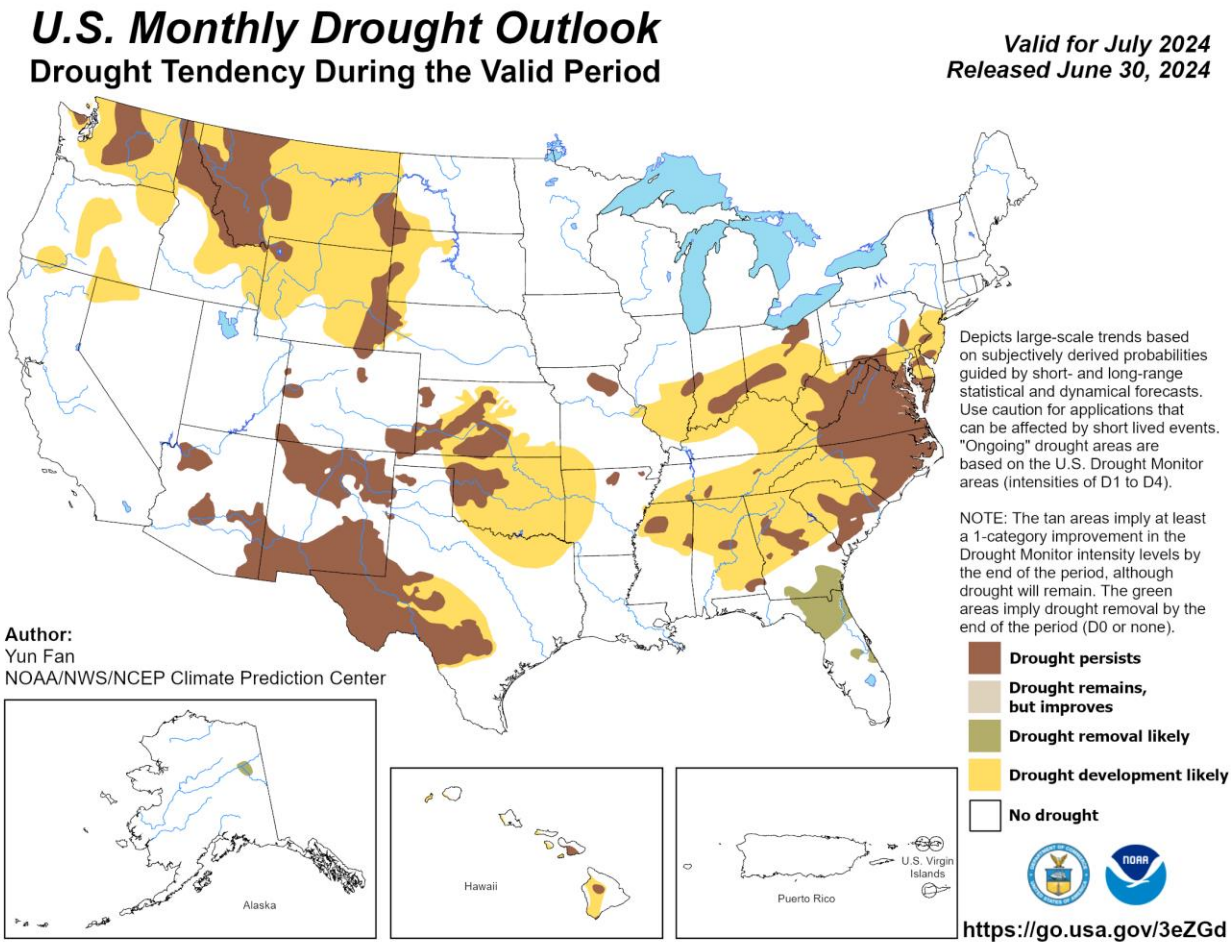

Figure 5. Sample Monthly U.S. Drought Outlook.

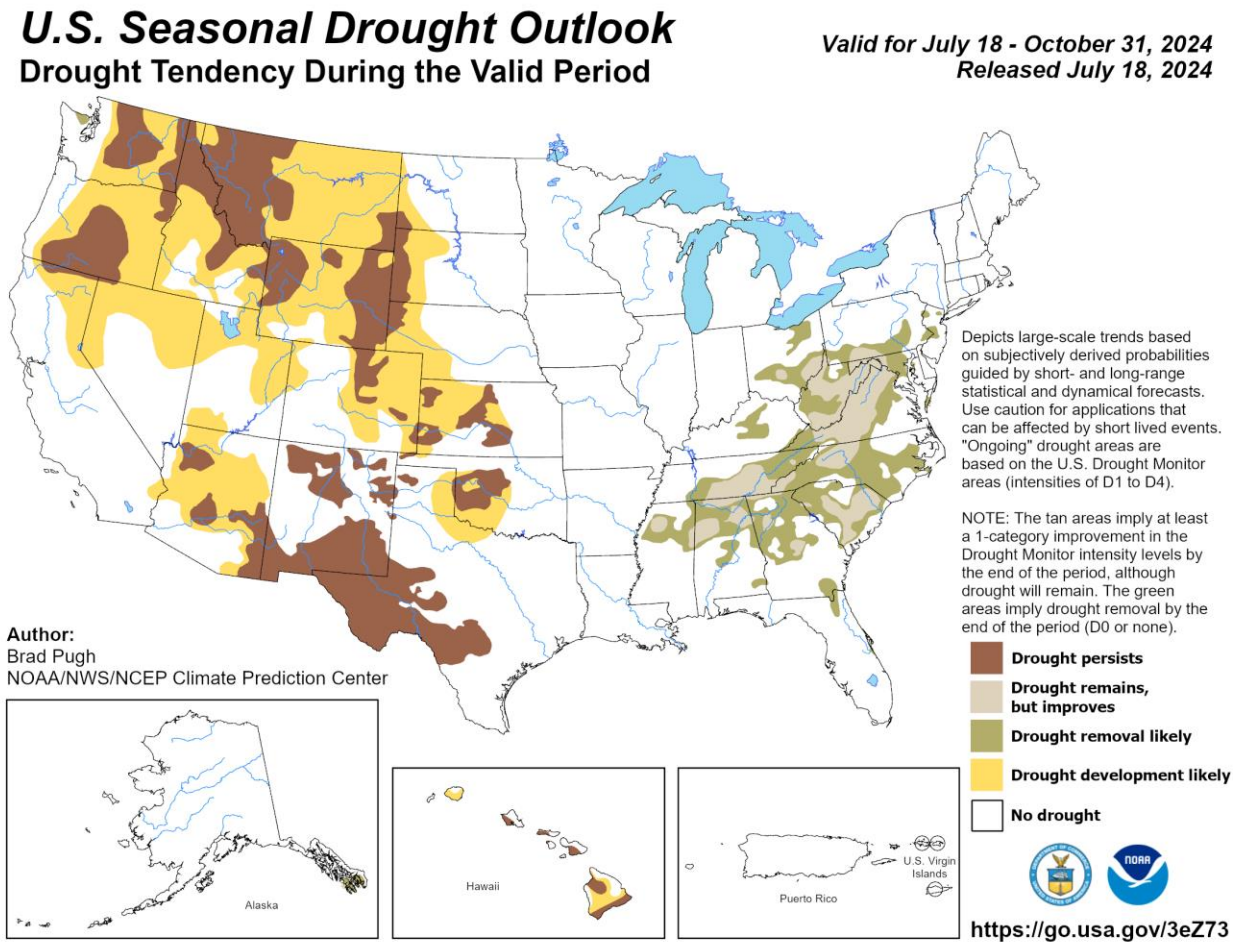

Figure 6. Sample Seasonal U.S. Drought Outlook.

6 Monthly and Seasonal U.S. Drought Outlook Summaries

WMO heading – FXUS22 KWNC
The AWIPS ID = PMDDRK has been discontinued.

6.1 Mission Connection

CPC issues the monthly and seasonal U.S. Drought Outlook Summaries for seasonal planning by agricultural, water supply and fire weather managers.

6.2 Issuance Guidelines

6.2.1 Creation Software

CPC uses text editing software.

6.2.2 Issuance Criteria

This is a scheduled product.

6.2.3 Issuance Time

CPC issues the seasonal U.S. Drought Outlook Summary at 8:30 a.m. Eastern local time on the third Thursday of the month, concurrently with the release of the initial seasonal U.S. Drought Outlook. CPC issues the monthly U.S. Drought Outlook Summary at 3:00 p.m. on the last day of each calendar month, currently with the updated monthly U.S. Drought Outlook.

6.2.4 Valid Time

The monthly U.S. Drought Outlook Summary is valid for the next calendar month following the release date (e.g., the October 31st release would be valid until the end of November). The seasonal U.S. Drought Outlook Summary is valid for the remainder of the release month plus the next three calendar months.

6.2.5 Product Expiration Time

The monthly/seasonal U.S. Drought Outlook Summaries expire when the next monthly/seasonal U.S. Drought Outlook Summaries are issued.

6.3 Technical Description

6.3.1 Content

To accompany the graphical U.S. Drought Outlooks (see Section 5), CPC provides a prognostic discussion detailing the atmospheric, hydrologic, and climatic conditions affecting the persistence, worsening or removal of drought areas.

6.3.2 Format

Figures 7 and 8 provide the generic format for the Monthly and Seasonal U.S. Drought Outlook Summaries. Note that this product contains two parts: an Executive Summary (generic format for the Monthly Executive Summary is shown in Figure 7) as well as a link to a Discussion (generic format for the Monthly Discussion is shown in Figure 8). The generic formats for the seasonal products are the same for the monthly product, but for the word “monthly” and the valid time. The Executive Summary provides a 1-2 paragraph summary of expected changes in drought conditions for the valid time. The Discussion will include a more detailed explanation of the monthly/seasonal expected changes in drought conditions by region, along with a discussion of the weights given to various forecast tools and an indication of forecast confidence.

Monthly U.S. Drought Outlook Executive Summary
<valid time (e.g., April 2024)>

Summary: *<text of executive summary>*

Author: *<lead author name and affiliation>*

<next product issuance date>

<link to the Monthly U.S. Drought Outlook Discussion>

Figure 7. Generic format for the Executive Summary portion of the Monthly U.S. Drought Outlook Summary.

Monthly U.S. Drought Outlook Summary
<valid time (e.g., April 2024)>

Summary: *<text of executive summary>*

<Region name (e.g., Northeast)>: *<text of regional summary>*

<further regional summaries>

Author: *<lead author name and affiliation>*

<next product issuance date>

Figure 8. Generic format for the Discussion portion of the Monthly/Seasonal U.S. Drought Outlook Summary.

6.4 Updates, Amendments and Corrections

CPC does not issue updates or amendments. Corrections will be made as needed.