TEAM KENTUCKY
ENERGY AND ENVIRONMENT CABINET

MONTHLY WATER RESOURCE REPORT

Kentucky Division of Water
Water Supply Section

April 2025

Precipitation

During April, precipitation totals across Kentucky were significantly above climatological normals for the majority of the Commonwealth. The primary exception was observed in southeastern Kentucky, where precipitation amounts ranged from near-normal to slightly below normal.

The most substantial precipitation event occurred during the first week of the month (April 1–6), characterized by multiple rounds of moderate to heavy rainfall. Widespread accumulations exceeded 5 inches across much of the state, with much of western and west-central Kentucky exceeding 10 inches. These conditions resulted in extensive hydrologic impacts, including widespread flooding.

Conditions turned drier in the middle of the month, providing time for recovery before April concluded with scattered showers and thunderstorms. According to the April 29th issuance of the U.S. Drought Monitor, Kentucky was entirely free from any classification of drought or abnormal dryness. Preliminary data estimates the statewide average precipitation for April at 9.49 inches—5.43 inches above normal—making it the second-wettest April in the 131-year record. According to the Kentucky Mesonet, Marshall County recorded the highest total at 17.43 inches, while the lowest was in Letcher County at 2.93 inches.

Table 1. *Regional precipitation patterns*

Climate Region	Departure From Normal (inches)					Palmer Drought Severity Index*
	This Month	Past 2 Mos.	Past 3 Mos	Past 6 Mos	Past 12 Mos	
Western	6.95	6.71	10.63	15.74	23.01	5.48
Central	7.33	7.65	12.66	14.95	18.27	4.87
Bluegrass	6.04	6.25	10.30	11.80	9.76	3.18
Eastern	2.50	1.54	6.56	7.51	8.21	1.93

*4.0 and above (Extremely Moist)
3.0 to 3.9 (Very Moist Spell)
2.0 to 2.9 (Unusual Moist Spell)
-1.9 to 1.9 (Near Normal)
-2.0 to -2.9 (Moderate Drought)
-3.0 to -3.9 (Severe Drought)
-4.0 or less (Extreme Drought)

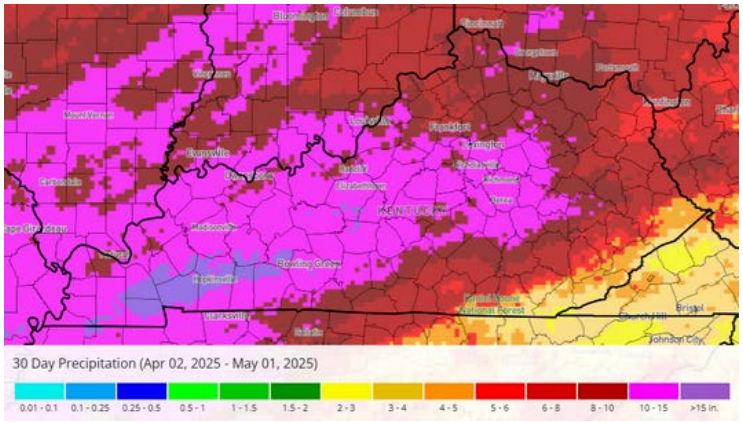

Figure 1. *Monthly precipitation map.*

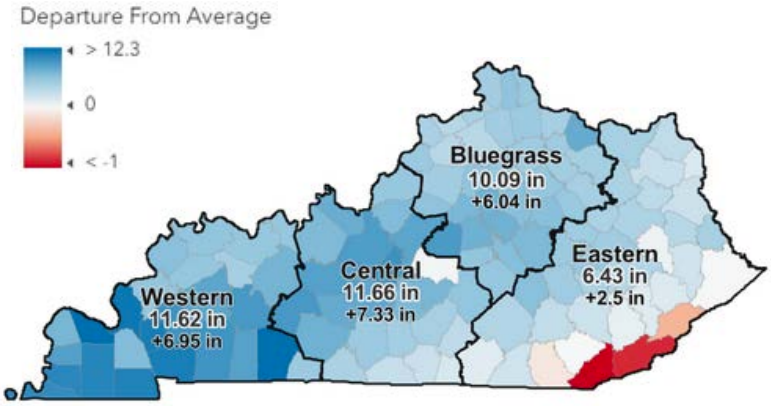

Figure 2. *Departure from normal precipitation by county and climate division.*

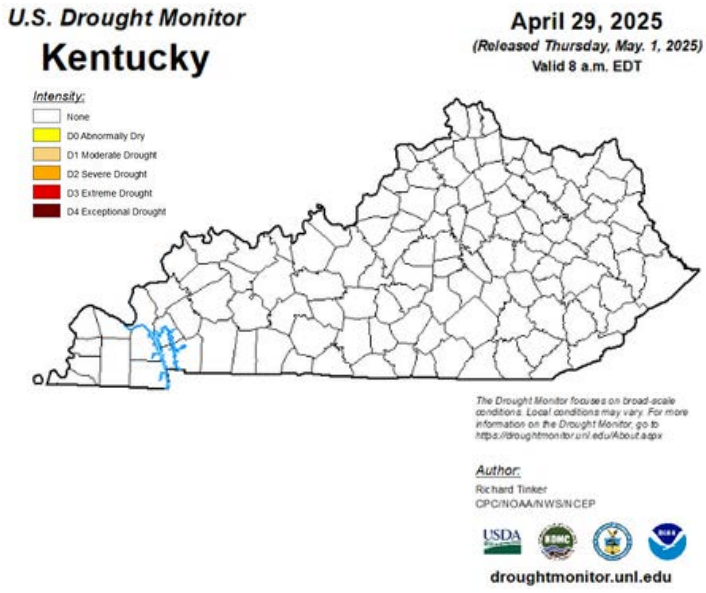

Figure 3. *Current US Drought Monitor Map.*

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Streamflow

Streamflows in April were generally above normal across the state. The month began with moderate to major river flooding. This flood event resulted in historic and near-record breaking river flooding along many river basins. The Green, Kentucky, Licking, Salt, Tradewater and Ohio River basins were among the hardest hit. Historic river crests included the Kentucky River at Camp Nelson, the 2nd highest crest at Frankfort, and 3rd highest on the Green River at Paradise.

By mid-month, most rivers and streams had receded to near-normal flow levels and remained stable through the end of the month. However, the Big Sandy watershed and portions of the Upper Cumberland watershed experienced a decline, with flows falling below normal during the last week of April.

There are currently no concerns regarding streamflow in the state.

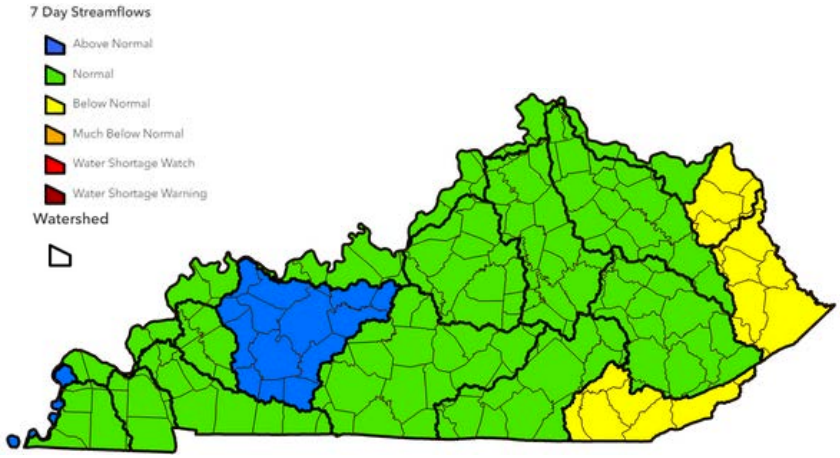

Figure 5. *Average streamflow by watershed over the past 7-days (April 24-30).*

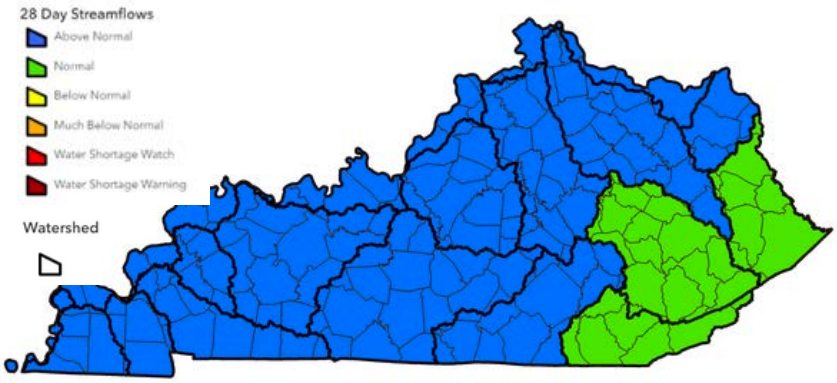

Figure 6. *Average streamflow by watershed over the past 28-days (April 3-30).*

Table 2. *Mean Stream Discharge select stream gages.*

River and Location	Drainage Area (mi2)	7 Day		28 Day	
		Average Flow (cfs)	% of Normal*	Average Flow (cfs)	% of Normal*
Levisa Fork at Pikeville	2144	768	77	1136	105
Little Sandy River near Grayson	400	175	53	1694	483
North Fork Licking River nr Mt Olivet	226	253	117	1358	587
Kentucky River at Lock 14	2657	2480	95	5892	202
Kentucky River at Lock 2	6180	6601	114	35246	554
Cumberland River at Cumberland Falls	1977	2155	99	4357	178
Beaver Creek near Monticello	43	63	184	141	359
Beech Fork at Bardstown	669	876	117	6745	846
Barren River at Bowling Green	1849	5206	252	7925	376
Green River at Calhoun	7566	31438	392	50679	596
Tradewater River at Olney	255	346	154	2498	987
Clarks River at Almo	134	116	83	1493	1018
Bayou De Chien near Clinton	69	43	52	740	869
Ohio River at Greenup Dam	62000	87438	138	86236	124
Ohio River at Cannelton Dam	97000	151500	157	152000	144
Mississippi River @ Thebes, IL	713200	346625	142	323448	129

* Base Period 1980-2023

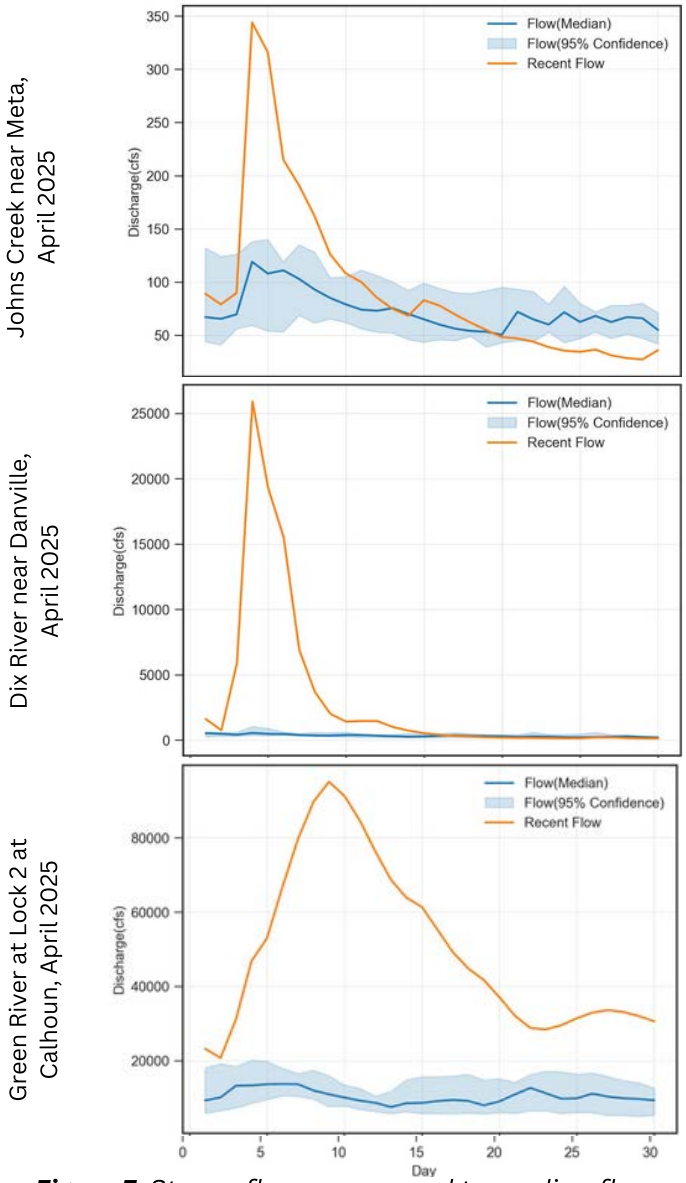

Figure 7. *Streamflows compared to median flows for the month.*

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Reservoir Storage

Reservoir storage for water supply lakes remain normal for the entire state.

We are currently in the time of year where reservoirs refill. Reservoirs were already at or above pool at the start of the month and remained there through the month.

Groundwater

General Statement: Kentucky is a geologically, and hydrogeologically, diverse state. Groundwater data is limited in availability and where available may only be applicable to the immediate area given regional geologic variability. Local conditions may not be accurately reflected by the reference locations selected and local rainfall and surface water conditions may provide additional or more representative information. Current data is compared to a 30-year reference period (1980 – 2010) or the longest available period of continuous data.

Inner Bluegrass: Flow at Royal Springs (Scott Co.) started the month with increased flows during storm response. The recession of storm flow continued until late in the month and remained above the median for the reference period through the end of April. Groundwater levels are expected to be at or above seasonal levels following regular rainfall across April. As Spring comes to an end, groundwater levels will likely decline in response to higher evapotranspiration.

Jackson Purchase: Water levels in the Viola Well (Graves Co.) began the month above the reference median but rapidly fell more than 6-feet below by the end of the month. This likely a response to the onset of pumping for irrigation. Groundwater levels are expected to trend lower seeking an equilibrium between recharge from rainfall and the influence of evapotranspiration and pumping for irrigation.

Middlesboro: Water levels within the Middlesboro well (Bell Co.) followed the median of the reference period across almost all of April. Groundwater levels are expected to fall to seasonal levels as spring advances into summer and evapotranspiration increases.

Additional data can be found at:
https://www.uky.edu/KGS/water/water-groundwater-monitoring.php

Figure 8. *Locations of reference reservoirs across the state. Status of reservoir levels indicated by color.*

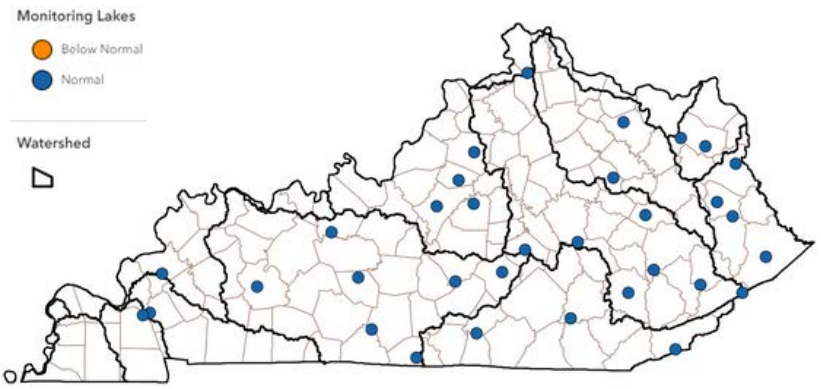
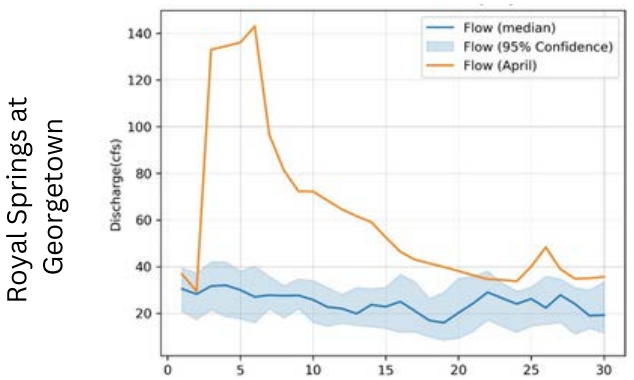
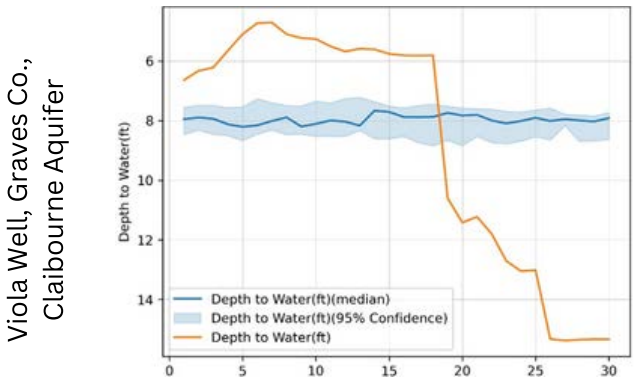
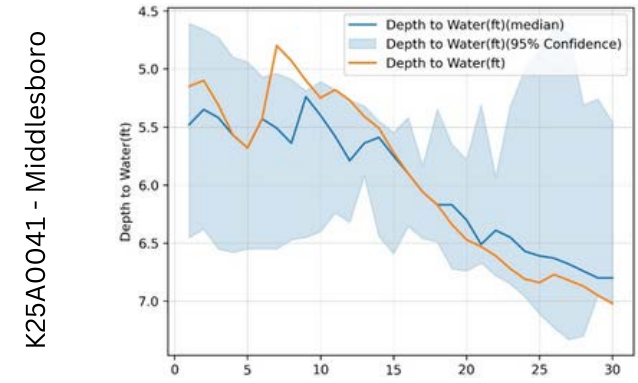


Figure 9. *Groundwater observations compared to normal for the month.*







Wet Spring = Wet Summer?

The significant precipitation event this month was the second major precipitation event of 2025. The first occurred in mid-February when 2-6+ inches of precipitation fell resulting in widespread flooding, especially in eastern KY. With two large events, it is not surprising that 2025 is the now the wettest January-through-April period on record. But what might this early-season wetness mean for the rest of the year? Climatologically there is no correlation between spring and summer precipitation trends as they are driven by different climatic conditions. However, we can look at historical records to look at how other years featuring a wet February through April to see how wet or dry the summer was that year.

Figure 10 is a chart showing the past 130 years in terms of precipitation in February-April (Early 2025) vs June-August (Summer). The vertical dark blue line represents average early 2025 precipitation, the blue horizontal line represents average summer precipitation and the light blue vertical line represents 2025 location in terms of year-to-date precipitation. This graph shows that years with similar wetness had relatively average precipitation in the summer.

Figure 11 shows the monthly precipitation for each analog year, along with the driest year on record (1930). The wettest year, 2011, is already included as an analog year. The ENSO climate pattern is also included. It is important to note that like 2025, every analog year, except 1897 was an La Nina winter. Looking at each month individually, 2025 matches up best with 2011, the wettest year on record. While this does not guarantee that we will not see drought conditions develop in Kentucky, it makes the likelihood of it occurring appear less likely.

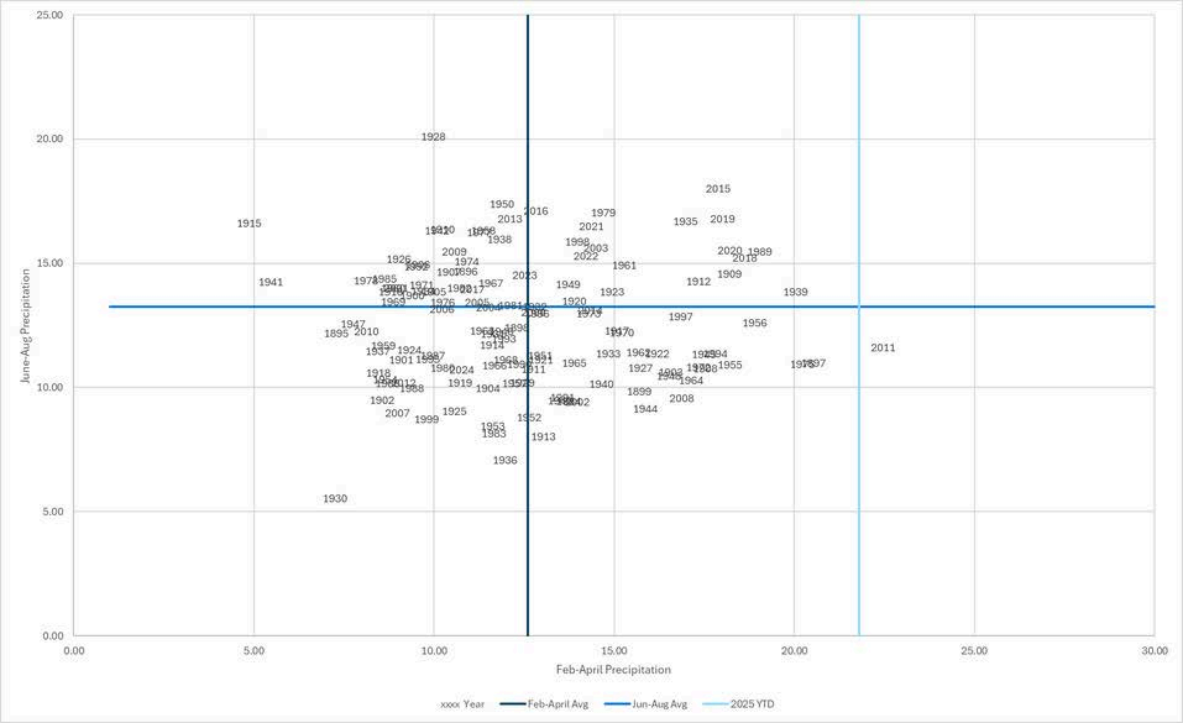


***Figure 10**. The past 130 years rank in terms of Early (Feb-April) precipitation vs. Summer (June-Aug) precipitation.*

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Enso
1897	3.31	6.42	7.95	6.16	3.71	3.71	4.44	2.85	0.30	1.12	3.95	3.91	El Nino
1930	4.87	3.54	2.40	1.31	3.03	1.81	1.44	2.29	2.69	1.45	2.20	2.22	Neutral
1939	5.63	8.33	5.70	5.99	1.90	6.00	4.97	2.90	1.23	2.18	1.06	2.88	La Nina
1956	3.91	8.92	5.05	4.92	3.66	3.62	6.00	3.00	2.16	1.97	2.13	6.82	La Nina
1975	4.32	4.84	10.50	4.87	3.89	3.62	3.24	4.09	5.73	4.66	2.25	4.67	La Nina
1989	4.56	9.85	5.96	3.22	4.61	6.62	4.71	4.16	4.62	3.92	4.07	2.40	La Nina
2011	2.16	4.88	5.51	12.07	6.75	5.36	3.94	2.31	5.89	2.94	7.46	4.11	La Nina
2018	2.47	8.99	5.18	4.45	4.88	6.16	4.27	4.80	8.06	3.07	6.09	5.69	La Nina
2025	3.97	7.55	4.15	10.09								0.00	La Nina

***Figure 11**. Monthly precipitation amounts and El Nino-Southern Oscillation (ENSO) pattern for select years.*

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Forecast

The Climate Prediction Center (CPC) is currently predicting equal chances for above and below normal precipitation for much of Kentucky in May with a slightly increased chance for below normal precipitation in northern Kentucky. The seasonal forecast, May through July, is predicting equal chances for above or below normal precipitation for the entire state, with drier weather predicted across much of the western US and above normal precipitation is predicted just to the east of Kentucky.

The current U.S Monthly Drought Outlook shows no drought is expected to develop in Kentucky during the month of May.

Note: these forecasts do not provide the quantity above or below normal, just the probability it will occur.

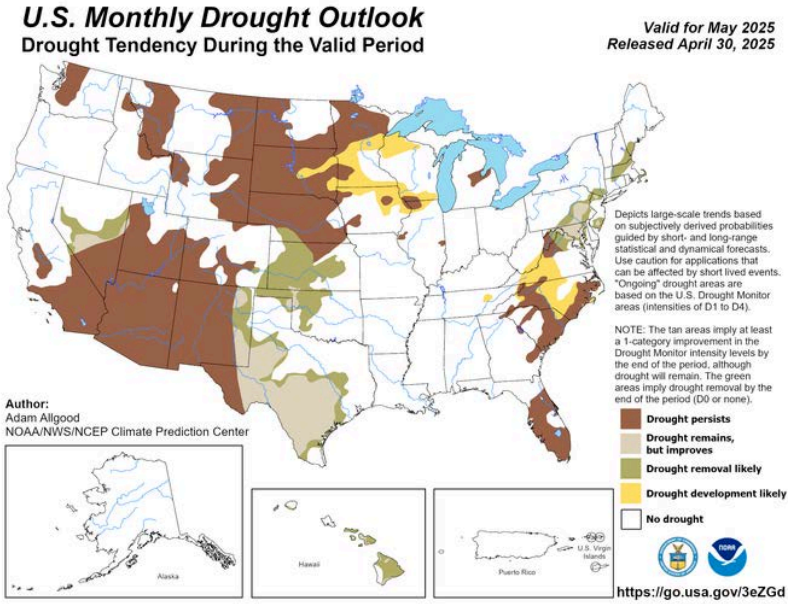

Figure 12. *Monthly drought outlook.*

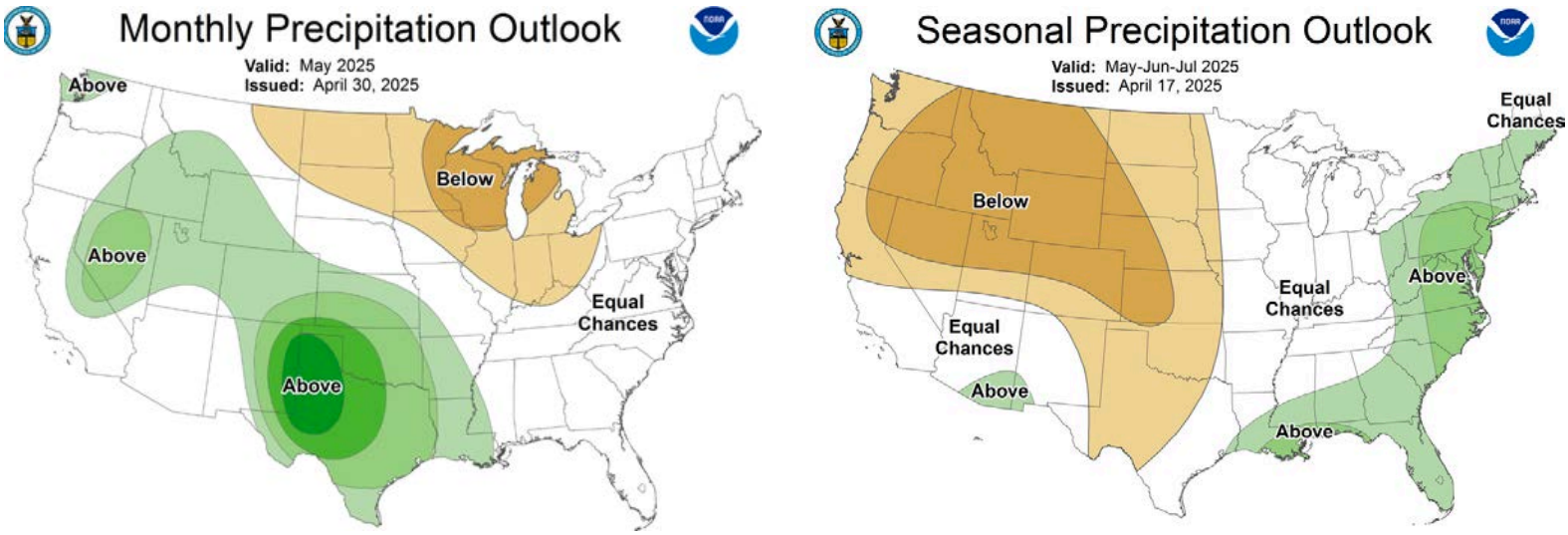

Figure 13. *Monthly and seasonal precipitation outlooks.*

Contact Us

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Report Drought Conditions

Acknowledgments

Precipitation Data:
U.S. Department of Commerce, National Oceanic and Atmospheric Administration, National Centers for Environmental Information; Kentucky Mesonet; Midwest Regional Climate Center; Southern Regional Climate Center.

Streamflow Data:
U.S. Geological Survey, Water Resources Division.

Reservoir Data:
U.S. Army Corps of Engineers, Huntington, Louisville, and Nashville Districts; Kentucky Division of Water, Water Supply Section.

Forecast Data:
U.S. Department of Commerce, National Oceanic and Atmospheric Administration, Climate Prediction Center.