Here is the *Virginia Water Central* News Grouper's **monthly water-status report on precipitation, stream flow, flooding, and drought,** as of the end of December 2024. The Virginia Water Resources Research Center thanks the agencies mentioned below for providing the data and maps used in this post. Icons for precipitation, stream flow, groundwater, and drought are by George Wills of Blacksburg, Va. (https://www.etsy.com/shop/BlacksburgArt). For previous monthly water status reports, please see this link: http://vawatercentralnewsgrouper.wordpress.com/?s=Water+Status.

Here are National Weather Service (NWS) *preliminary* (still needing verification) precipitation totals for December 2024 at 12 Virginia or near-Virginia locations, along with the "normal" (three-decade average) for this month of the year at each location. Also shown are the precipitation totals at each location for the previous 12 months and the annual precipitation normals for each location. The values are in inches.

Location	December 2024 Observed	Monthly Normal	January 2024 – December 2024 Observed	Annual Normal based on 1991-2020
Blacksburg	3.35	3.30	35.96	42.64
Bluefield	2.61	3.01	42.55	41.24
Bristol	3.02	3.76	42.99	43.97
Charlottesville	2.83	3.04	35.41	41.61
Danville	2.25	3.06	48.84	43.73
Lynchburg	4.36	3.50	43.48	42.76
Norfolk	2.90	3.28	49.48	49.18
Richmond	2.00	3.51	47.64	45.50
Roanoke	3.09	3.08	39.83	42.82
Wallops Island	3.14	3.75	38.79	43.25
Washington-Dulles Airport	3.34	3.30	34.37	43.24
Washington-National Airport	2.88	3.41	37.57	41.82

The normal values used by the National Weather Service (NWS) in these provisional reports are based on the period from 1991 to 2020, and were released on May 4, 2021. For information on the normal values, see the "U.S. Climate Normals" page at https://www.ncei.noaa.gov/products/land-based-station/us-climate-normals.

Location Notes

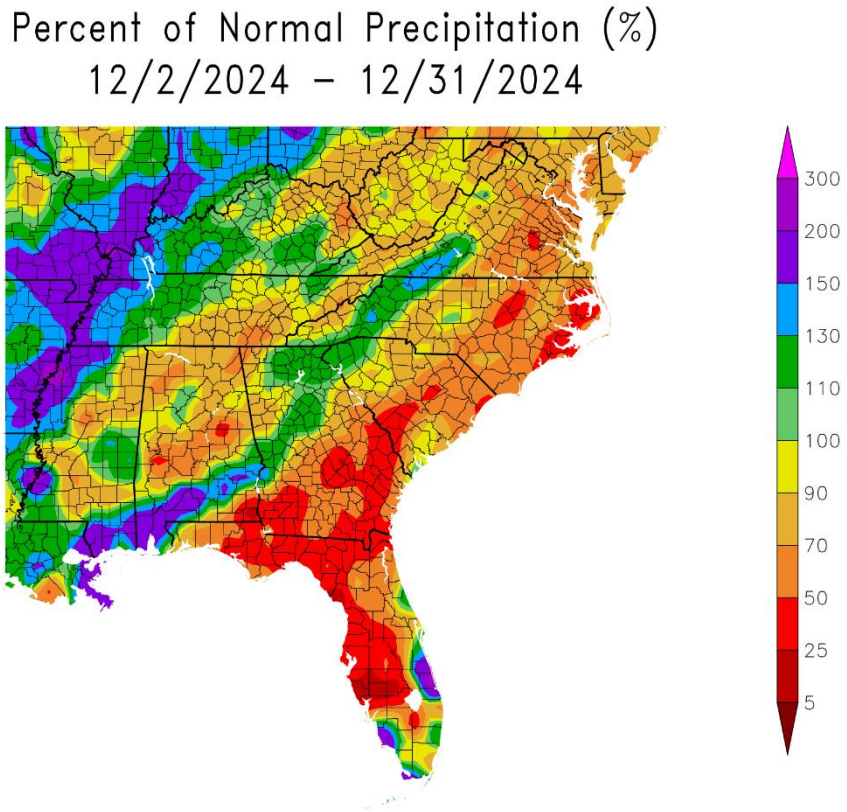
The Blacksburg location is the Blacksburg National Weather Service Office.

The Bluefield location is the Mercer County, W. Va., airport, near the Va.-W.Va. state line.
The Bristol location is the Tri-Cities Airport in Tenn., about 20 miles from Bristol, Va./Tenn.
The Charlottesville location is the Charlottesville-Albemarle Airport.
The Danville location is the Danville Regional Airport.
The Lynchburg location is the Lynchburg Regional Airport.
The Norfolk location is the Norfolk International Airport.
The Richmond location is the Richmond International Airport.
The Roanoke location is the Roanoke-Blacksburg Regional Airport.
The Wallops Island is in Accomack County; the location is the NASA Test Facility.
Washington-Dulles Airport is in Loudoun County, Va.
Washington-National Airport is in Arlington County, Va.

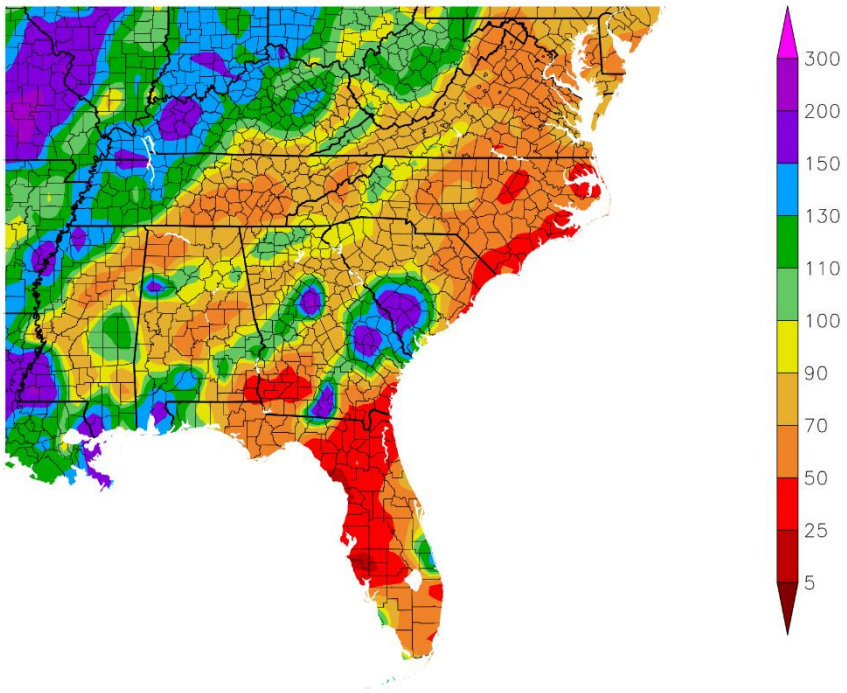
Precipitation Sources

Climate pages of the following National Weather Service Forecast Offices:
Blacksburg, Va., online at https://www.weather.gov/wrh/climate?wfo=rnk, for Blacksburg, Bluefield, Danville, Lynchburg, and Roanoke;
Morristown, Tenn., online at https://www.weather.gov/wrh/climate?wfo=mrx for Bristol;
Baltimore-Washington, online at https://www.weather.gov/wrh/climate?wfo=lwx, for Charlottesville, Reagan-National, and Dulles;
Wakefield, Va., online at https://www.weather.gov/wrh/climate?wfo=akq, for Norfolk, Richmond, and Wallops Island.

For **graphs** of precipitation, visit the High Plains Regional Climate Center at https://hprcc.unl.edu/maps.php?map=ACISClimateMaps), where you can find maps of total precipitation and percent of normal precipitation for the past 7 days or longer periods (up to five years) for all U.S. regions; or the NWS' Advanced Hydrologic Prediction Service at http://water.weather.gov/precip/ for a map of precipitation nationwide or by state, with capability to show county boundaries, and archives available for specific days, months, or years. Shown below are the preliminary maps from the High Plains Center of the percent-of-normal precipitation for the southeastern United States for the previous 30 days, 60 days, and 90 days, through December 31, 2024; and for Virginia, the precipitation and the departure from normal precipitation, both in inches, for the previous 30 days, also through December 31.



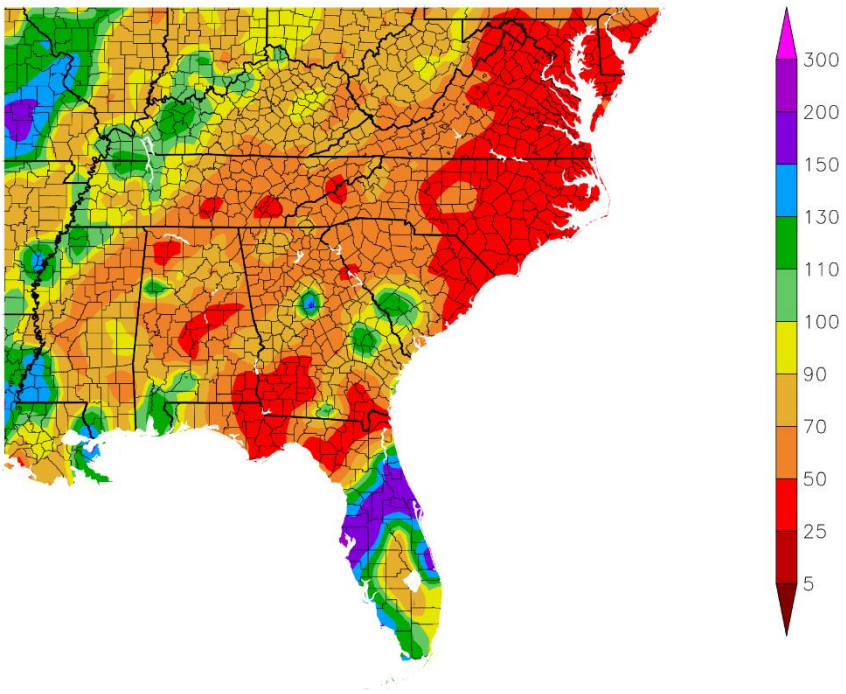
Percent of Normal Precipitation (%)
11/2/2024 – 12/31/2024



Generated 1/1/2025 at HPRCC using provisional data.

NOAA Regional Climate Centers

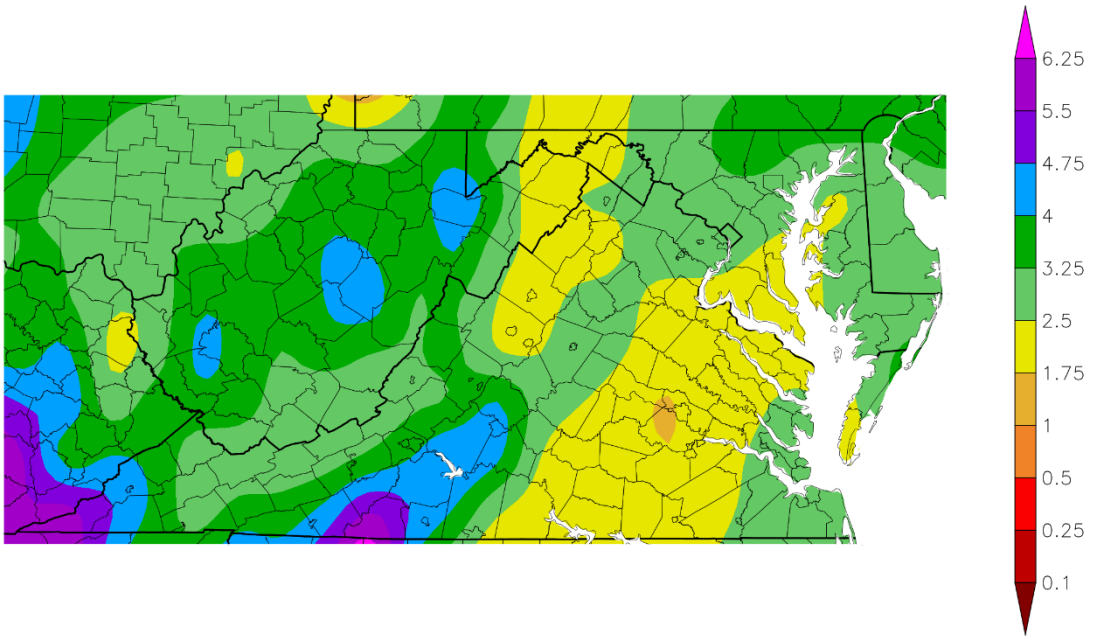
Percent of Normal Precipitation (%)
10/3/2024 – 12/31/2024



Generated 1/1/2025 at HPRCC using provisional data.

NOAA Regional Climate Centers

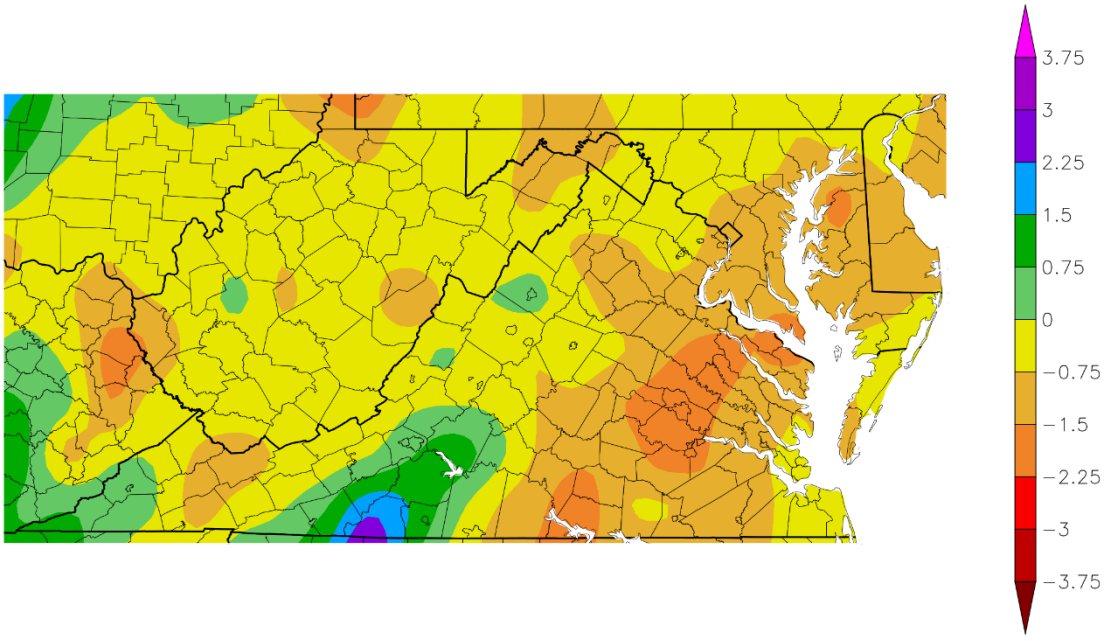
Precipitation (in)
12/2/2024 – 12/31/2024



Generated 1/1/2025 at HPRCC using provisional data.

NOAA Regional Climate Centers

Departure from Normal Precipitation (in)
12/2/2024 – 12/31/2024

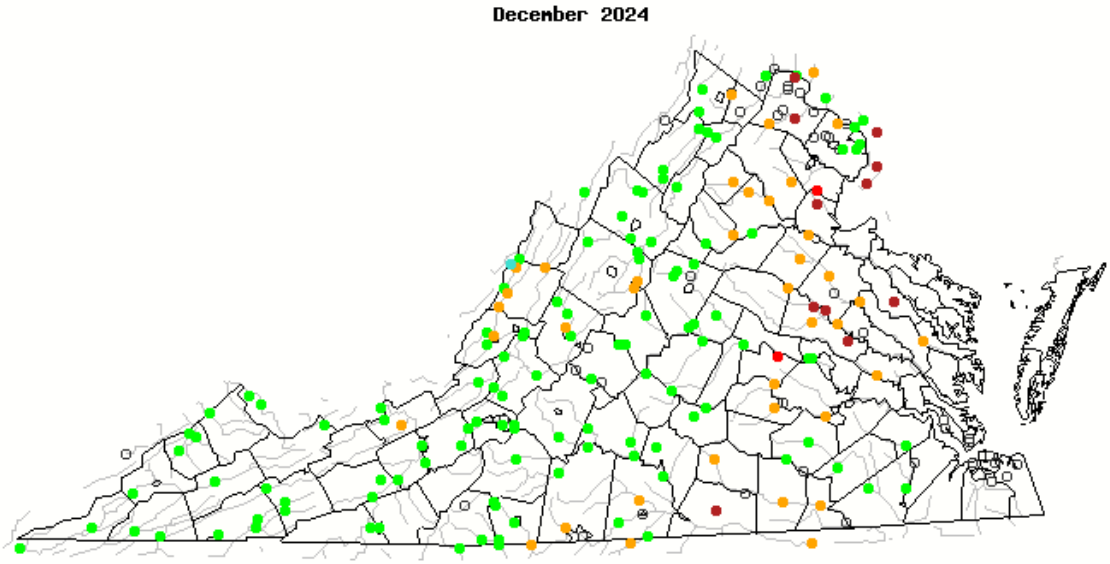


Generated 1/1/2025 at HPRCC using provisional data.

NOAA Regional Climate Centers

Stream flow

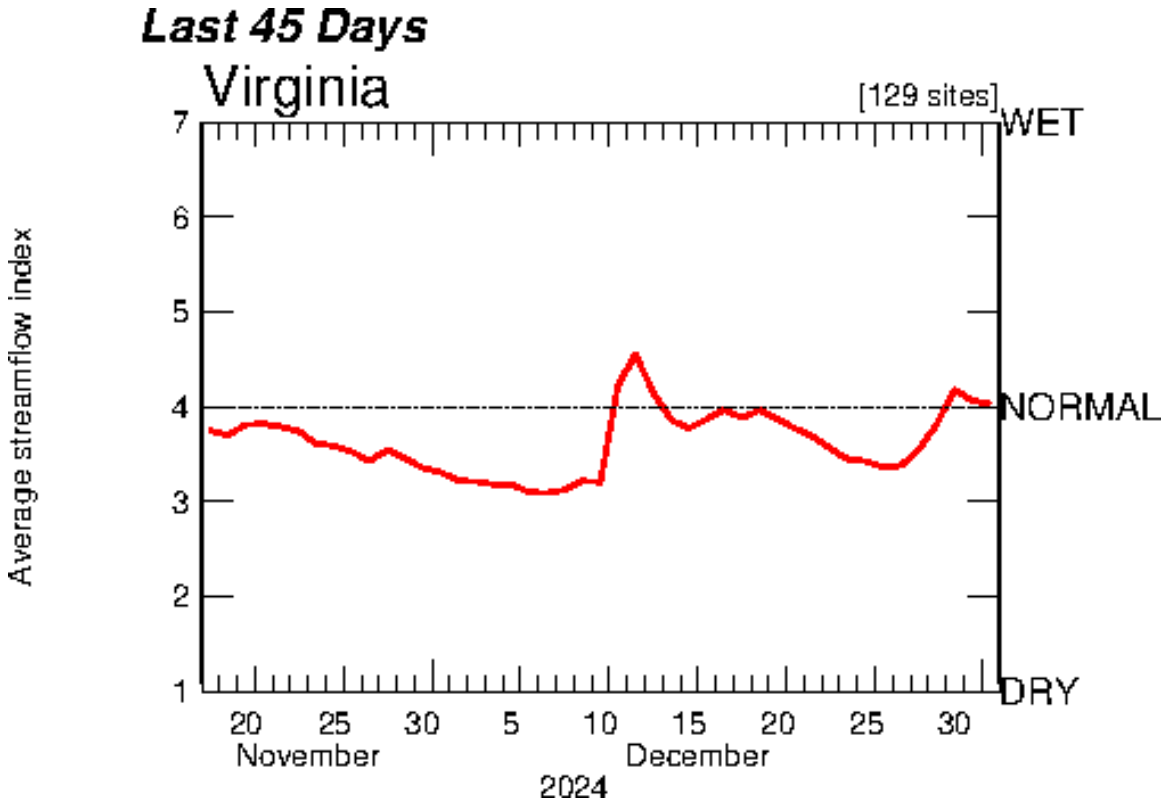
Shown below is a color-coded percentile map of ***monthly*** **average stream flow values** for December 2024 at stream gages in Virginia and just beyond the state border, **compared to the historical range for each gage**. The map is from the **U.S. Geological Survey (USGS) WaterWatch for Virginia**, accessed online at https://waterwatch.usgs.gov/index.php?m=mv01d&r=va&w=map. The chart below the map shows the color codes/percentile classes used by USGS to compare flows to historical records for the month.



USGS

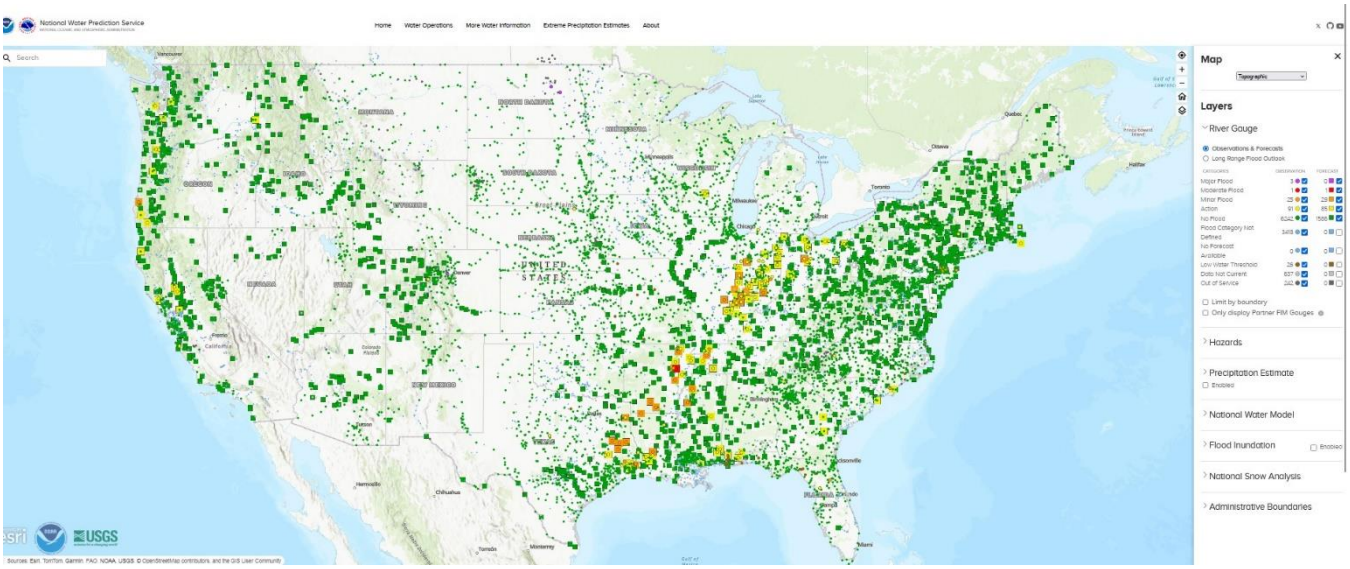
Explanation - Percentile classes							
Low	<10	10-24	25-75	76-90	>90	High	Not-ranked
	Much below normal	Below normal	Normal	Above normal	Much above normal		

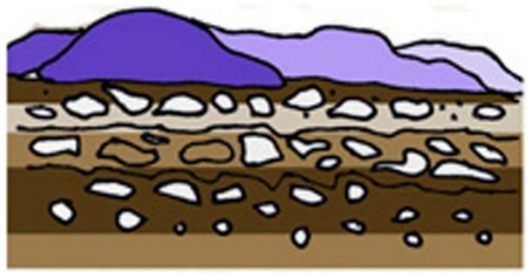
An overall look at Virginia streamflow conditions is provided in the USGS WaterWatch **summary plot of *daily* average** streamflow conditions, compared to historical records for any given date. Below (next page) is the summary plot for 129 Virginia sites during the 45-day period ending December 31, 2024, accessed on January 3, 2025, at https://waterwatch.usgs.gov/index.php?id=pa01d&sid=w__plot&r=va.



NATIONWIDE FLOODING OVERVIEW

Following is the **National Weather Service's Advanced Hydrologic Prediction Service's (AHPS) map of stream and river levels relative to flood stage** (color-coded) for the continental United States, as of 2:10 p.m. EST on January 1, 2025. The current map is available online at [this link]; at that site, one can use the search tool to select Virginia or any other state of interest.





Groundwater levels

Information on **current groundwater levels** in Virginia monitoring wells is available from the U.S. Geological Survey's National Water Information System, online at http://waterdata.usgs.gov/va/nwis/current/?type=gw.

Drought watch

DROUGHT IN VIRGINIA

The weekly **U.S. Drought Monitor report** from the University of Nebraska-Lincoln (http://droughtmonitor.unl.edu/) report of January 1, 2025, for conditions as of December 31, 2024, categorized about 92.5% of Virginia as abnormally dry or worse, about 29.8% in moderate drought or worse, and about 6.6% in severe drought.

Drought Monitor categories are as follows:
D0 = abnormally dry;
D1 = moderate drought;
D2 = severe drought;
D3 = extreme drought;
D4 = exceptional drought.

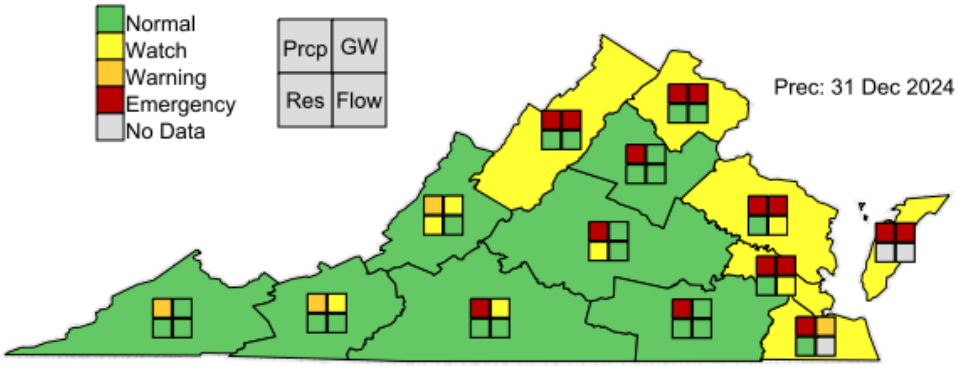
The Drought Monitor notes that it "focuses on broad-scale conditions [and] local conditions may vary."

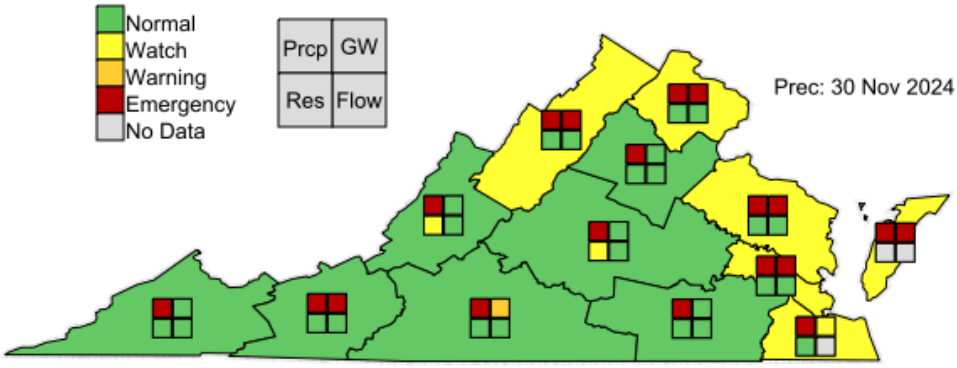
For comparison, here are Virginia ratings from previous Drought Monitors for conditions as about one month, two months, three months, and one year ago:
11/26/24 – 99.7% abnormally dry or worse, 49.6% in moderate drought or worse, 10.1% in severe drought.
10/29/24 – 90.0% abnormally dry or worse, 13.5% in moderate drought.
10/1/24 – 17.4% abnormally dry or worse, 2.1% in moderate drought or worse, 0.01% in severe drought.

12/26/23 –77.6% abnormally dry or worse, 50.7% in moderate drought or worse, 7.9% in severe drought.

On December 18, 2024, the **Virginia Drought Monitoring Task Force (DMTF)**, a collaboration of state and federal agencies, issued its most recent report (as of 1-1-25). A link to that report, along with other current drought-status information, is available online at https://www.deq.virginia.gov/our-programs/water/water-quantity/drought. The DMTF's reports typically include information on weather, surface water, and groundwater from some or all of the following agencies: National Weather Service, U.S. Geological Survey (USGS), and the Virginia departments of Agriculture and Consumer Services, Health, and Environmental Quality.

The Virginia DEQ produces a **daily map rating drought-status indicators**, also online at https://www.deq.virginia.gov/our-programs/water/water-quantity/drought. Shown below is the map for December 31, 2024, followed by the map from a month earlier. The status-indicator abbreviations on that map are as follows: GW = groundwater levels, Prcp = precipitation deficits, Res - reservoir storage, and Flow = stream flow conditions. For each region of Virginia, the indicators are color coded for "normal," "watch," "warning," or "emergency" conditions.





DROUGHT ELSEWHERE

The January 1, 2025, U.S. Drought Monitor, for conditions as of December 31, 2024, categorized about 56.8% of the United States (including all or parts of all 50 states) as being abnormally dry or worse. (The highest percentage in the abnormally or worse categories—that is, in all categories—reported by the Drought Monitor since it began in 2000 was 72.38% of the country for conditions as of July 17, 2012.) The Drought Monitor categorized about 12.1% of the country (including all or parts of 31 states) as being in severe drought or worse (categories D2, D3, and D4). (The highest percentage in the severe-or-worse categories reported by the Drought Monitor since it began in 2000 was 38.49% of the country in the report for conditions as of August 7, 2012.)

The nationwide percentages for abnormally dry or worse (categories D0-D4) and severe or worse (categories D2-D4) for conditions in the previous three months and one year ago were as follows:
11/26/24 – 61.9% abnormally dry or worse; 13.7% in severe drought or worse;
10/29/24 – 73.2% abnormally dry or worse; 23.1% in severe drought or worse;
10/1/24 – 59.5% abnormally dry or worse, 7.8% in severe drought or worse;
12/26/23 – 45.5% abnormally dry or worse, 14.0% in severe drought or worse.

The following states had over 50% land area categorized by the Drought Monitor as being in severe-or-worse drought, as of December 31:
Delaware = 100%;
Maryland = 52%;
New Jersey = 56%;
Wyoming = 71%.

Following are **excerpts from Drought Monitor reports during December** on conditions in various parts of the United States.

From the 12/5/24 report (conditions as of 12/3/24)
FROM NATIONWIDE SUMMARY
"In terms of reservoir storage in areas of the West, California's reservoirs continue to be at or above historical averages for the date (December 3) with the state's two largest reservoirs, Lake Shasta and Lake Oroville, at 113% and 109% of their averages, respectively. In the Southwest, Lake Powell is currently 37% full (59% of typical storage level for the date) and Lake Mead is 33% full (53% of average), with the total Lower Colorado system 42% full as of December 2 (compared to 43% full at the same time last year), according to the U.S. Bureau of Reclamation."

From the 1/1/25 report (conditions as of 12/31/24)
FROM NATIONWIDE SUMMARY
"Precipitation fell across much of the U.S. this week, with heavier amounts (> 1 inch) falling across large portions of the Northwest U.S. and from south-central U.S. to the Ohio Valley. Coastal areas of the Pacific Northwest, from Washington to northern California, reported weekly rainfall totals between 2 to 15 inches, while precipitation totals of 2 to 10 inches were reported in areas from eastern Texas to Alabama, as well as parts of the Ohio Valley and the Southeast. Above-normal precipitation supported drought improvements across large portions of the South and Midwest, and in parts of the Pacific Northwest, Midwest and Southeast. Conversely, weekly precipitation totals were below normal in areas of the southwestern U.S., Mid-Atlantic and Northeast. Drought and abnormal dryness were expanded or intensified in portions of the Southwest and in small pockets of the High Plains."

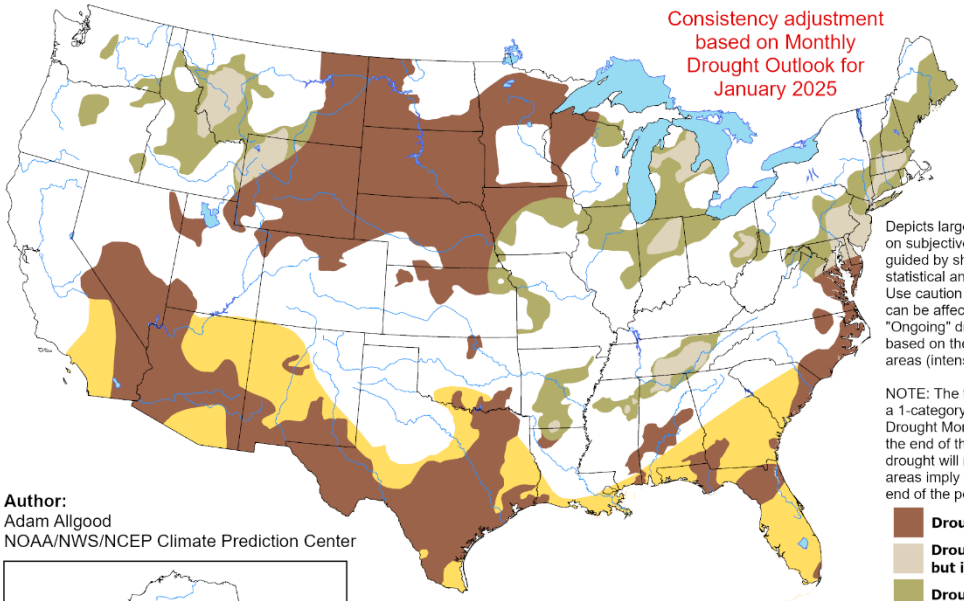
3-MONTH DROUGHT OUTLOOK

For a look ahead, the National Weather Service/Climate Prediction Center's "U.S. Seasonal Drought Outlook" is available at http://www.cpc.ncep.noaa.gov/products/expert_assessment/sdo_summary.php. Shown below (next page) is the outlook map available on January 1, 2025.

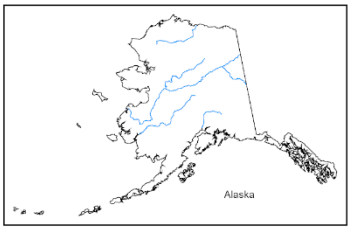
U.S. Seasonal Drought Outlook

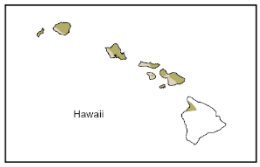
Drought Tendency During the Valid Period

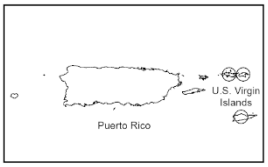
Valid for January 1 - March 31, 2025
Released December 31, 2024



Author:
Adam Allgood
NOAA/NWS/NCEP Climate Prediction Center







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**
- **No drought**

https://go.usa.gov/3eZ73