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Maryland Climate Bulletin
May 2025

Prepared by
Dr. Alfredo Ruiz-Barradas
Maryland State Climatologist

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DEPARTMENT OF ATMOSPHERIC & OCEANIC SCIENCE
Sumant Nigam, Chair

Maryland State Climatologist Office

Summary

Statewide averages indicate that May 2025 was warmer and wetter than normal (i.e., 1991-2020 averages). Regionally, monthly mean temperatures were in the 57–68°F range, maximum temperatures were between 66 and 77°F, and minimum temperatures were in the 46–59°F range. Monthly total precipitation was between 5 and 12 inches.

Maryland Regional Features (Figures 1-6, C1, and D1)

- The mean temperature was warmer than normal throughout the whole state, especially over southern Saint Mary's and Calvert counties (2.6 to 3.0°F), and western Talbot and Dorchester counties (2.2 to 2.6°F).

- The maximum temperature was colder than normal over the majority of the state, particularly over parts of Prince George's, Montgomery, Anne Arundel, Howard, and Baltimore counties, and also over Washington County (1.4 to 1.6°F below). Warmer-than-normal temperatures appeared in southern Maryland, notably over southern Saint Mary's and Calvert counties (2.0–2.4°F), western Dorchester County (1.4–1.8°F), and Garrett County (0.6°F).

- The minimum temperature was also warmer than normal in the entire state, especially over the Eastern Shore in Kent, Queen Anne's, Talbot, Caroline, and Dorchester counties (3.4 to 3.8°F), and southern Saint Mary's and Calvert counties (3.2 to 3.6°F) and Harford and Cecil counties (3.2 to 3.4°F).

- Precipitation was above normal everywhere in the state, particularly in the northern counties such as Garrett and Allegany (6.0 to 7.0 inches), Washington, Frederick, and Carroll (5.0 to 6.0 inches), and Baltimore, Harford, and Cecil (around 5.0 inches). All of these counties received at least twice their climatological precipitation for the month, and the anomalies exceeded three standard deviations.

- Drought conditions improved substantially by the end of May and start of June, as approximately 51% of the state was now drought-free, and Severe Drought conditions were no longer affecting the state. The extent of Moderate Drought also decreased from 22% to 14% in the same period. The extent of Abnormally Dry conditions, on the other hand, increased from around 15% to 35%, largely impacting the central and eastern Piedmont, as well as some coastal counties on both sides of the Bay, reflecting the transition of these areas toward improved conditions. Streams and rivers experienced from normal to much above-normal streamflow in western Maryland and the Piedmont. Still, some streams and rivers on the Eastern Shore had below-normal stream flow.

Maryland Climate Divisions (Figures 7-8, B1, and B2)

- All climate divisions were warmer than normal, with Climate Division 1, Southeastern Shore, and Climate Division 3, Lower Southern, being the warmest (2.2°F above).

Similarly, all the climate divisions were wetter than normal, with Climate Division 7, the Appalachian Mountains, being the wettest (5.30 inches above).

- The statewide temperature was warmer than normal (1.3°F) for the fourth month in May 2025. Statewide precipitation was also above normal (3.54 inches), following drier-than-normal conditions in April and March. Climate Divisions 4 to 7 experienced wetter-than-normal conditions after being under drier-than-normal conditions since September 2024.

Extreme daily temperatures, precipitation, and growing degree days (Figures 9-11)

- Statewide maximum and minimum daily temperatures from January 1 to May 31, 2025, indicated that there haven't been hot days (maximum temperatures larger than 86°F) or warm nights (minimum temperatures larger than 68°F), but some warm days (maximum temperature larger than 80°F). While the number of hot days was 3 days below normal (0 vs. 3) and the number of heat waves was 1 wave below normal (0 vs. 1) by the end of May, the number of warm nights and their warm spells were normal (0). Similarly, there were 2 warm days below normal (10 vs. 12) by the end of May, and a normal number of warm day spells occurred (2); May had 8 of these warm days and the 2 spells.

- Statewide daily total precipitation from January 1 to May 31, 2025, showed 1 more day with extreme precipitation (at least 0.64 inches; the 95th percentile in 1951−2000) than normal (8 vs. 7), and the last four were in May. The number of dry spells (two or more consecutive days with daily precipitation of no more than 0.04 inches) from January 1 to May 31 was 2 spells fewer than normal (19 vs. 21), but their mean duration was 1 day longer-than-normal (5 vs. 4). There were 3 dry spells in May with the longest one lasting 4 days and starting on the 24th.

- The cumulative calendar year (January 1 to May 31, 2025) modified growing degree days (base 86/50°F) reached around 979°FDD by the end of May and have been greater than normal since the second week of March, with a departure above normal of 135°FDD by the end of May. Similarly, growing degree days (base 50°F) reached around 779°FDD by the end of May and have been above normal since the last week of March, with a departure from normal of 139°FDD by the end of May. The modified growing degree days in May were larger than those in May of last year, but they began to approach last year's values within the last two weeks of May, making them comparable by the end of the month.

Historical Context (Figure 12, Tables A1 and A2)

- Statewide mean, maximum, and minimum temperatures in May 2025 (64.7, 74.1, 55.3°F) were above their long-term means (1895-2024); the minimum temperature was

among the 10% of its highest values. The mean, maximum, and minimum temperatures were still far from their historical record highs of 69.3°F in 2004, 80.6°F in 1991, and 58.8°F in 2004, respectively. Statewide precipitation (7.57 inches) in May was slightly below the record high of 7.61 inches in 2018.

- Statewide mean, maximum, and minimum temperatures indicated that May 2025 was the twenty-third, seventy-second, and thirteenth warmest May since 1895, respectively. Ten of the counties got minimum temperatures among the ten warmest on record; from these, Saint Mary's and Worcester reached their tenth warmest May; Cecil, Harford and Washington, experienced their ninth warmest; Kent, Queen Anne's, and Somerset reached their eighth warmest; Dorchester got its seventh warmest, and Caroline reached its sixth warmest May.

- Statewide precipitation showed that May 2025 was the second wettest since 1895. Fifteen counties got precipitation totals among the ten wettest on record; from these, Prince George's and Saint Mary's reached their tenth wettest May; Anne Arundel and Queen Anne's got their sixth wettest; Montgomery got its fourth wettest; Kent had its third wettest; Baltimore, Carroll, Cecil, Harford, and Howard experienced their second wettest, and Allegany, Frederick, Garrett, and Washington reached their wettest May.

Century-Plus Trends, 1895-2025 (Figures 13, 14)

- Statewide mean temperature, heating degree days, cooling degree days and precipitation in May showed significant trends: a warming trend (1.2°F/century), a decreasing heating trend (−20.6°FDD/century), an increasing cooling trend (17.3°FDD/century), and a wetting trend (0.87 in/century), respectively.

- Regionally, mean temperatures in May showed significant warming trends in almost the entire state. In particular, warming trends were the largest over Baltimore City (2.0°F/century), and the counties of Baltimore, Caroll, Howard, Anne Arundel, Harford, Caroline, Talbot, Dorchester, Somerset, Wicomico, and Worcester (1.4−1.8°F/century).

- Regionally, precipitation in May had significant wetting trends over the northern counties west of Bay and counties in the southern Eastern Shore. In particular, wetting trends were the largest over areas of Garrett, Montgomery, Howard, Carol, and Baltimore counties (1.3–1.4 inches/century), and Somerset and Worcester counties (0.8−0.9 in/century).

Contents

1. Introduction

The Maryland Climate Bulletin is issued by the Maryland State Climatologist Office (MDSCO), which resides in the Department of Atmospheric and Oceanic Science at the University of Maryland, College Park. It documents the surface climate conditions observed across the state in a calendar month and is issued in the second week of the following month.

Maryland's geography is challenging, with the Allegheny and Blue Ridge mountains to the west, the Piedmont Plateau in the center, the Chesapeake Bay, and the Atlantic Coastal Plain to the east. The range of physiographic features and the state's eastern placement within the expansive North American continent contribute to a comparatively wide range of climatic conditions.

The bulletin aims to document and characterize monthly surface climate conditions in the state, situating them within the context of regional and continental climate variability and change, to help Marylanders interpret and understand recent climate conditions.

The monthly surface climate conditions for May 2025 are presented via maps of key variables, such as average surface air temperature, maximum surface air temperature, minimum surface air temperature, total precipitation, and their anomalies (i.e., departures from normal); they are complemented by drought conditions for the state, as given by the U.S. Drought Monitor, and streamflow anomalies as given by the U.S. Geological Survey Water Watch in Section 3. Statewide and climate division averages for the month are compared against each other via scatter plots in Section 4. Extreme warm daily maximum and minimum temperatures and precipitation, as well as growing degree days, are presented from the analysis of daily statewide averaged temperatures and precipitation in Section 5. Monthly statewide averages are placed in the context of the historical record via box and whisker plots in Section 6. Century-plus trends in statewide air temperature, heating and cooling degree days, precipitation, and state maps of air temperature and precipitation are presented in Section 7. Ancillary statewide, climate division, and county-level information is provided in tables and plots in Appendices A and B; climatology and variability maps are included in Appendices C and D, along with the percentage of normal precipitation and normalized anomalies for each month.

2. Data & Methods

Surface air temperatures, total precipitation, and degree-days data in this report are from the following sources:

- NOAA Monthly U.S. Climate *Gridded* Dataset at 5-km horizontal resolution (NClimGrid – Vose et al., 2014). It is available in a preliminary status at:
- https://www.ncei.noaa.gov/data/nclimgrid-monthly/access/
  Data was downloaded on 6/10/2025.

- NOAA Monthly U.S. Climate *Divisional* Dataset (NClimDiv – Vose et al., 2014). It is available in a preliminary status (v1.0.0-20250605) at:
  https://www.ncei.noaa.gov/pub/data/cirs/climdiv/
  Data was downloaded on 6/10/2025.

- NOAA area averages of daily temperatures and precipitation dataset (nClimGrid−Daily −Durre et al., 2022). It is available in a preliminary status, v1.0.0, at:
  https://www.ncei.noaa.gov/products/land-based-station/nclimgrid-daily
  Data labeled as "scaled" was downloaded on 6/5/2025.

Drought conditions are from the U.S. Drought Monitor website:
https://droughtmonitor.unl.edu/Maps/MapArchive.aspx

Streamflow conditions are from the U.S. Geological Survey Water Watch website:
https://waterwatch.usgs.gov/index.php

Some definitions:

About climate and climatology. Weather and climate are closely related, but they are not the same. Weather represents the state of the atmosphere (temperature, precipitation, etc.) at any given time. On the other hand, climate refers to the time average of the weather elements when the average is over long periods. If the average period is long enough, we can start to characterize the climate of a particular region.

It is customary to follow the World Meteorological Organization (WMO) recommendation and use 30 years for the average. The 30-year averaged weather data is traditionally known as Climate Normal (Kunkel and Court, 1990) and is updated every ten years (WMO, 2017). Establishing a climate normal or climatology is important as it allows one to compare a specific day, month, season, or even another normal period with the current normal. Such comparisons characterize anomalous weather and climate conditions, climate variability and change, and help define extreme weather and climate events (Arguez et al., 2012). The current climate normal, or just the climatology, is defined for 1991–2020.

About the anomalies: Anomalies for a given month (e.g., May 2025) are the departures of the monthly value from the corresponding month's 30-year average (i.e., from the average of 30 Mays) during 1991-2020. When the observed monthly value exceeds its climatological value, it is referred to as above normal (e.g., warmer than normal or wetter than normal) or a positive anomaly. In contrast, when this value is smaller than its climatological value, it is referred to as below normal (e.g., colder than normal or drier than normal) or negative anomaly.

About variability. The monthly standard deviation of a climate variable measures its dispersion relative to its monthly mean and assesses its year-to-year, or interannual, variability. Anomalies

are sometimes compared against that variability to identify extremes in the climate record. When anomalies are divided by the standard deviation, they are referred to as standardized anomalies.

About hot days, warm days, and warm nights. Extreme heat, detrimental to crops without irrigation and to populations lacking air conditioning, is tracked by the count of hot days, warm days and nights, and their consecutive occurrence (e.g., Tschurr et al. 2020, Barriopedro et al. 2023). A hot day is defined as one when the maximum temperature is greater than 86°F, a warm day is when the maximum temperature is greater than 80°F, while a warm night is when the minimum temperature is greater than 68°F. When these conditions persist for two or more days, they are referred to as heat waves for the hot days and warm spells for the warm days and nights. These threshold values correspond to the 89th and 75th percentiles of statewide daily maximum temperatures and the 95th percentile of statewide daily minimum temperatures for the period 1951- 2000.

About degree days. Degree days represent the difference between the daily mean temperature (calculated by averaging the high and low temperatures) and a predefined base temperature. Since energy demand is cumulative, degree-day totals are typically calculated on a daily, monthly, seasonal, and annual basis.

- *Heating and cooling degree days.* These are used to get a general idea of the amount of energy required to warm or cool buildings. The base temperature used for this purpose is 65°F, which is considered tolerable for human comfort (CPC, 2023).
- Growing Degree Days. These are used to estimate the growth and development of plants and insects during the growing season, under the assumption that development will only occur if the temperature exceeds a minimum development threshold temperature, or, in other words, if enough warmth is accumulated. Because actual development varies among different plants and insects, and the presence of weeds and precipitation can influence development, a base temperature of 50°F is generally considered acceptable for all plants and insects (OSU, 2024). However, this base temperature is best suited for the development of specific crops, such as corn, sweet corn, soybeans, tomatoes, and a few others.
    - Modified Growing degree days. The modified growing degree days are calculated by establishing base temperatures for the daily maximum and minimum temperatures before determining the daily mean temperature. When the base temperature for the daily maximum temperature is set to 86°F, and the base temperature for the daily minimum temperature is set to 50°F, the growing degree days are specific to corn development, as no appreciable growth is detected with temperatures lower than 50°F or greater than 86°F.

About extreme precipitation. This is defined as the yearly number of days with statewide averaged daily total precipitation equal to or greater than 0.64 inches. This threshold value represents the 95th percentile of statewide averaged daily total precipitation for 1951-2000.

About the dry day spells. A dry day is defined as a day with precipitation below 0.04 inches. These conditions are referred to as dry spells if they persist for two or more consecutive days. The number and duration of dry spells are particularly important during the vegetation period (Tschurr et al., 2020).

About NOAA's Climate Divisions. The term "climate division" refers to one of the eight divisions in the state that represent climatically homogeneous regions, as determined by NOAA: https://www.ncei.noaa.gov/access/monitoring/dyk/us-climate-divisions

The eight climate divisions in Maryland are:

- Climate Division 1: Southeastern Shore. It includes the counties of Somerset, Wicomico, and Worcester.
- Climate Division 2: Central Eastern Shore. It includes the counties of Caroline, Dorchester, and Talbot.
- Climate Division 3: Lower Southern. It includes the counties of Calvert, Charles, and St. Mary's.
- Climate Division 4: Upper Southern. It includes the counties of Anne Arundel and Prince George's.
- Climate Division 5: Northeastern Shore. It includes the counties of Kent and Queen Anne's.
- Climate Division 6: North Central. It includes the counties of Baltimore, Carroll, Cecil, Frederick, Harford, Howard, Montgomery, and the city of Baltimore.
- Climate Division 7: Appalachian Mountains. It includes the counties of Allegany and Washington.
- Climate Division 8: Allegheny Plateau. It includes Garrett County.

Note that these Climate Divisions do not correspond with the *Physiographic Provinces* in the state, as the former follow county lines. Climate Division 8 follows the *Appalachian Plateau Province*, Climate Division 7 follows the *Ridge and Valley Province*; however, Climate Division 6 includes the *Blue Ridge and the Piedmont Plateau provinces,* Climate Divisions 3, 4, and a portion of 6 include the *Upper Coastal Plain Province*, and Climate Divisions 1, 2, 5, and a portion of 6 include the *Lower Coastal Plain (or Atlantic Continental Shelf) Province*.

3. May 2025 Maps

A. Mean Temperatures

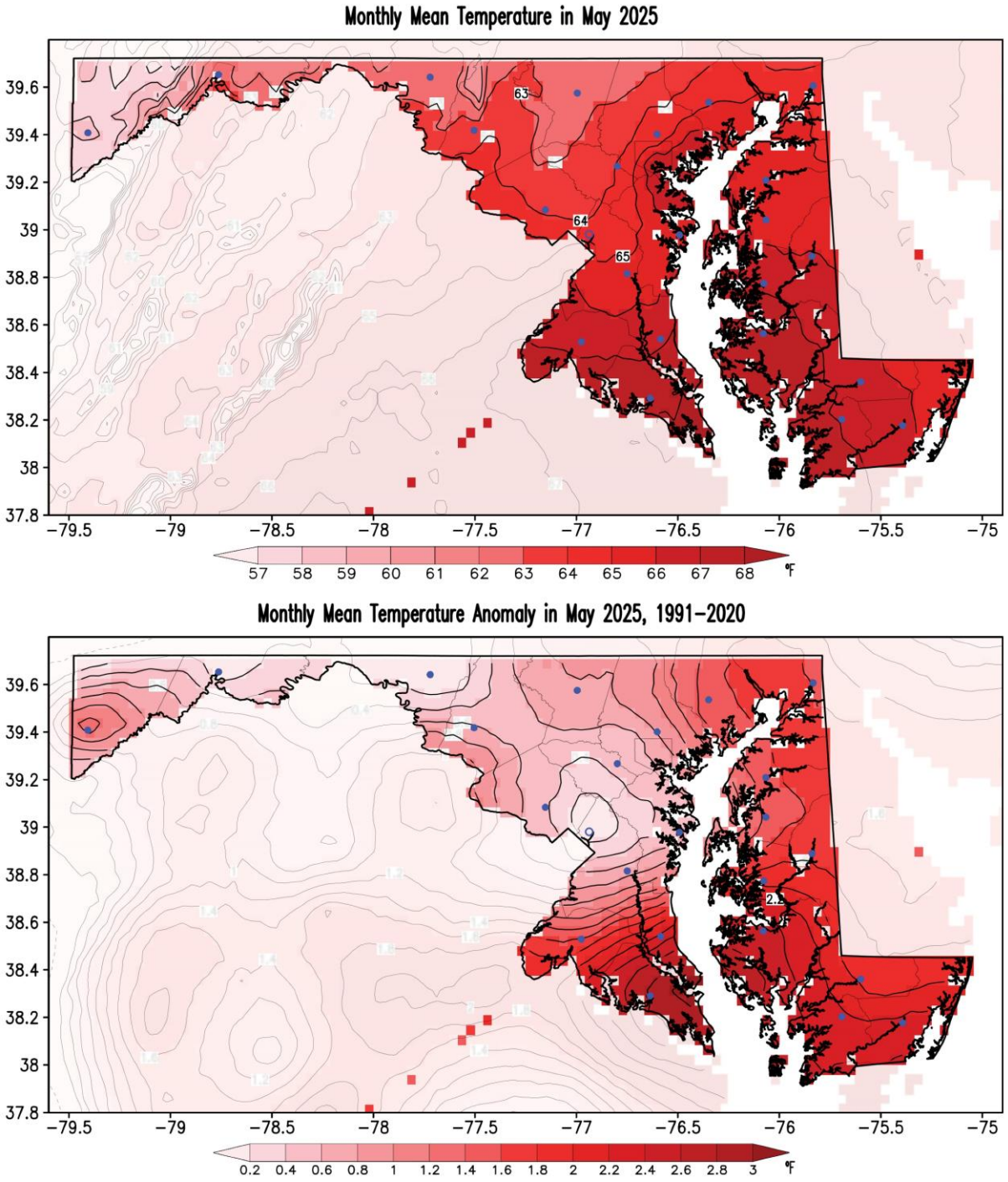

Figure 1. Monthly mean surface air temperature (top panel) and its anomaly with respect to the 1991-2020 climatology (bottom panel) for May 2025. Temperatures are in °F following the color bar. Red shading in the anomaly map marks warmer than normal conditions. Note shading outside the state has been washed out to facilitate focusing on Maryland. Filled blue circles mark the county seats.

B. Maximum Temperatures

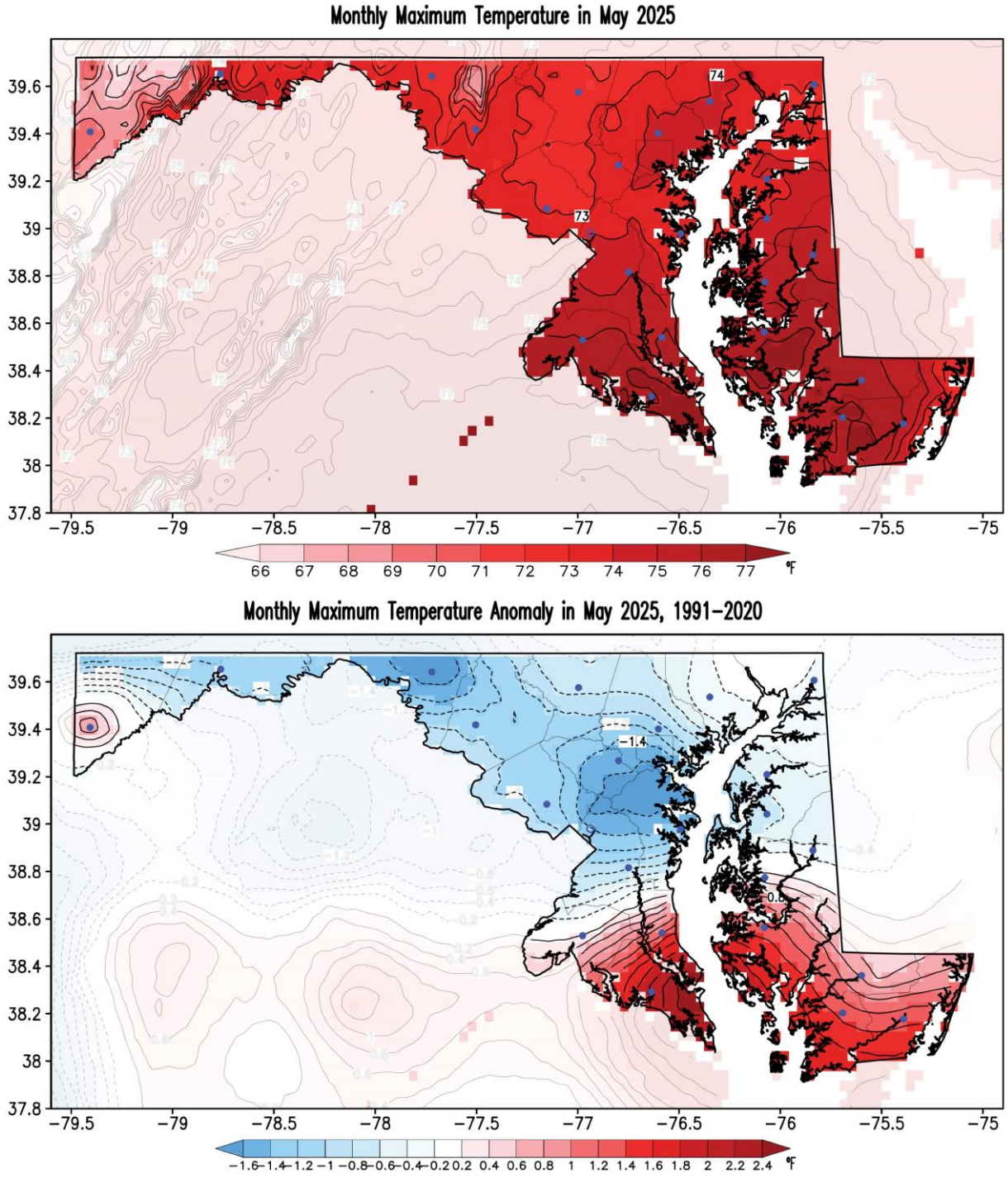

Figure 2. Monthly maximum surface air temperature (top panel) and its anomaly with respect to the 1991-2020 climatology (bottom panel) for May 2025. Temperatures are in °F following the color bar. Blue/red shading in the anomaly map marks colder/warmer than normal conditions. Note shading outside the state has been washed out to facilitate focusing on Maryland. Filled blue circles mark the county seats.

C. Minimum Temperatures

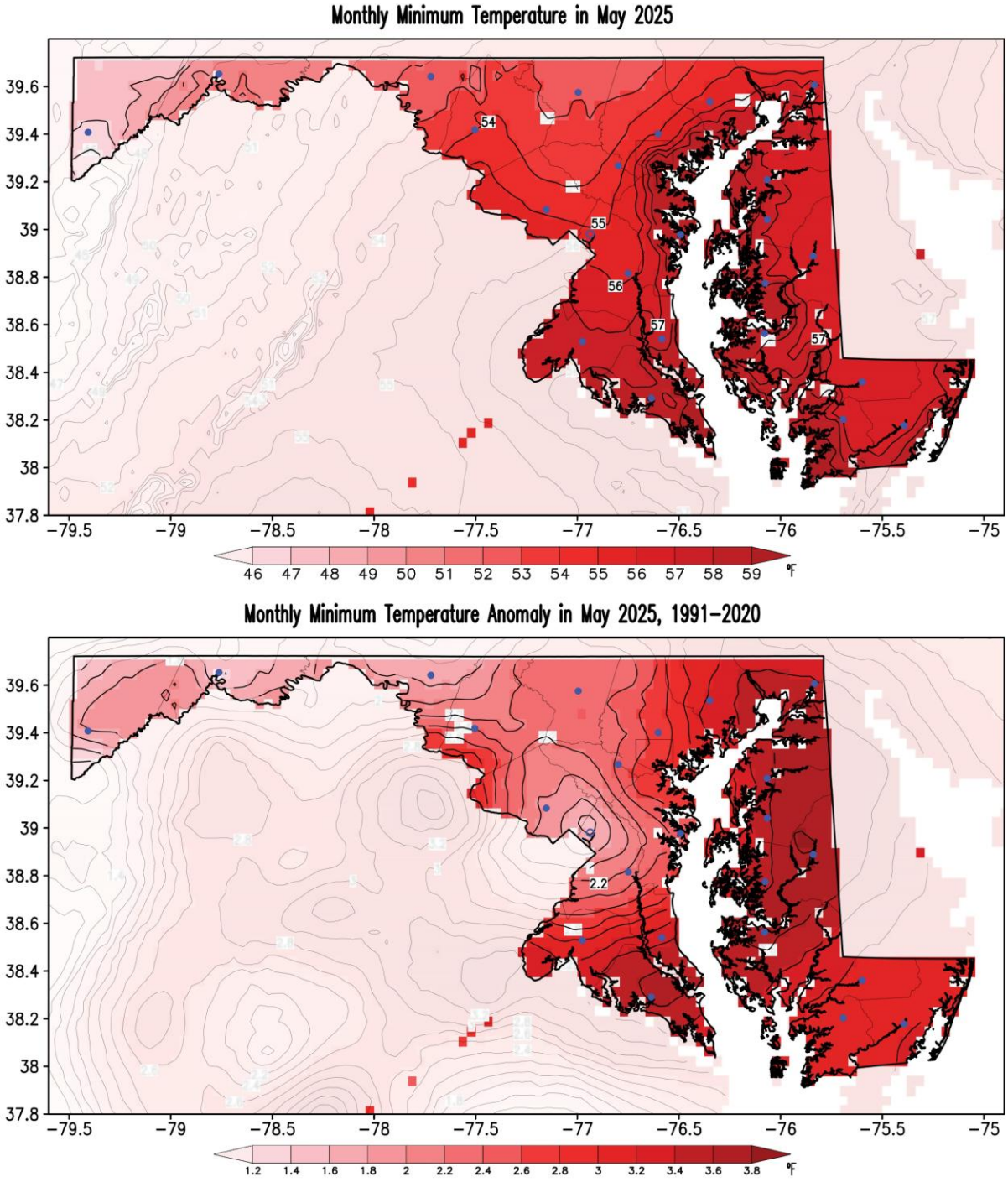

Figure 3. Monthly minimum surface air temperature (top panel) and its anomaly with respect to the 1991-2020 climatology (bottom panel) for May 2025. Temperatures are in °F following the color bar. Red shading in the anomaly map marks warmer than normal conditions. Note shading outside the state has been washed out to facilitate focusing on Maryland. Filled blue circles mark the county seats.

D. Precipitation

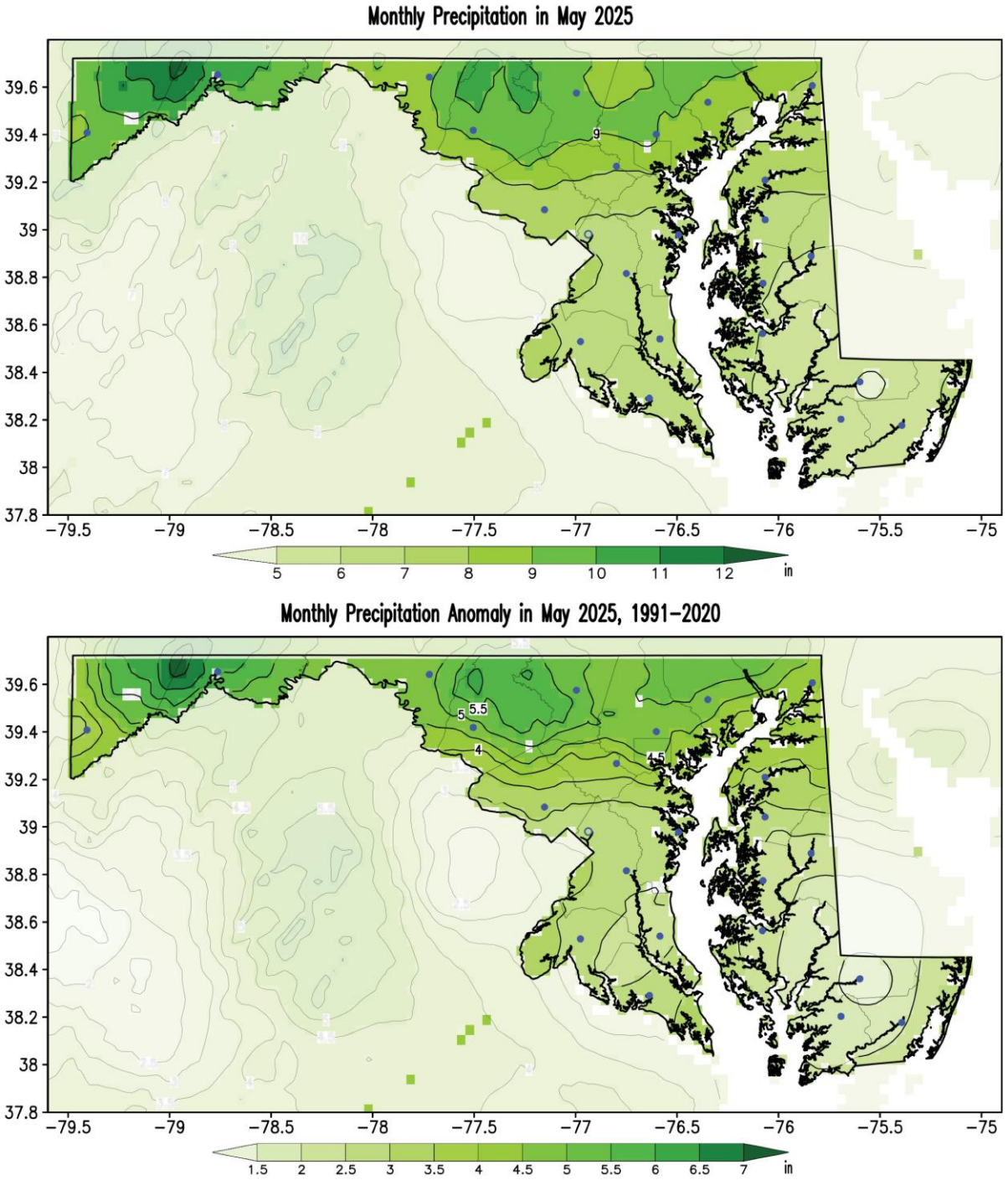

Figure 4. Monthly total precipitation (top panel) and its anomaly with respect to the 1991-2020 climatology (bottom panel) for May 2025. Precipitation is in inches following the color bar. Green shading in the anomaly map marks wetter than normal conditions. Note shading outside the state has been washed out to facilitate focusing on Maryland. Filled blue circles mark the county seats.

E. Drought

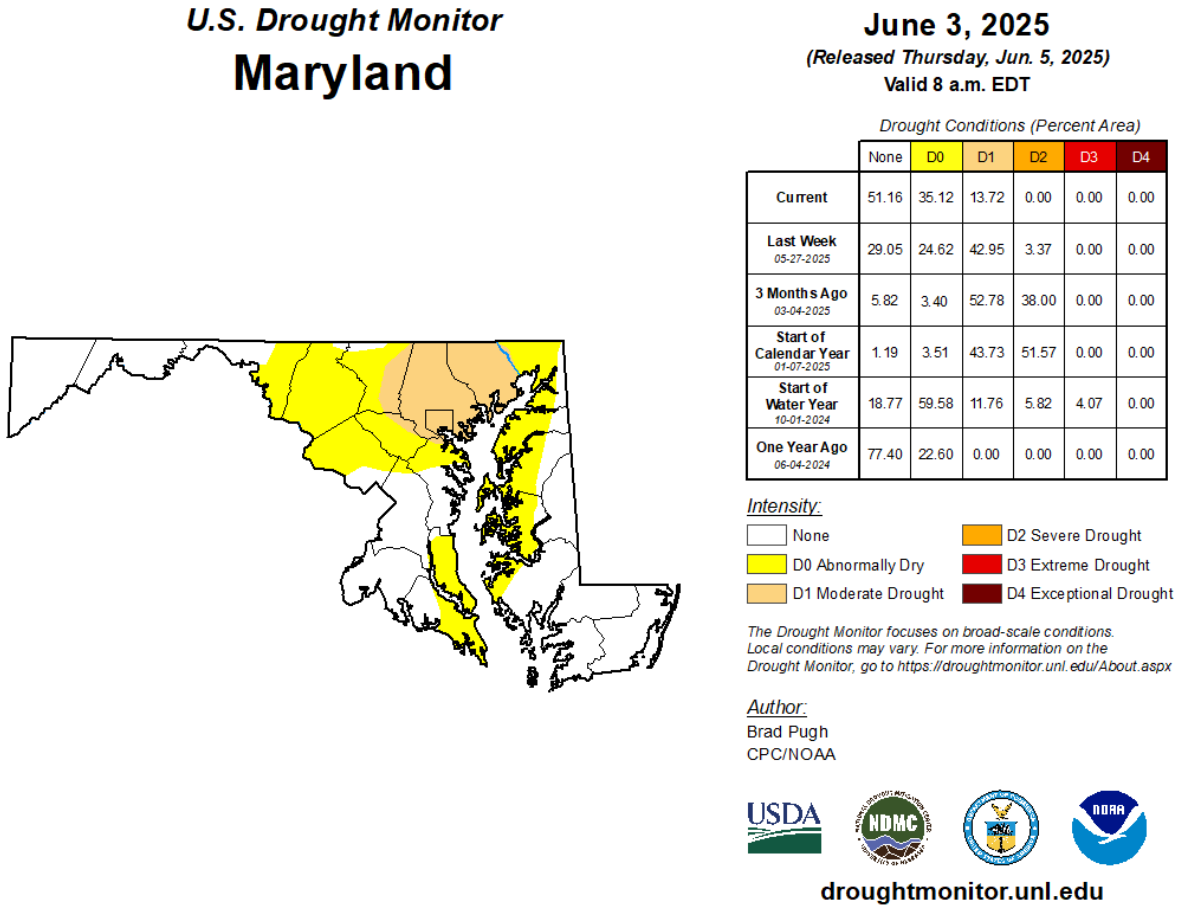

Figure 5. Drought conditions as reported by the U.S. Drought Monitor on June 3, 2025. Conditions have improved for a second consecutive month, as 51% of the state is now drought-free, and the extent of the other drought categories has also decreased at this time. Severe Drought was no longer affecting the state, the extent of Moderate Drought conditions was reduced to around 14%, and the extent of Abnormally Dry conditions reached 35%, largely impacting the central and eastern Piedmont, and some coastal counties at both sides of the Bay. Yellow shading indicates abnormally dry regions, while light orange shading shows regions under a moderate drought, as indicated by the drought intensity key. Numbers in the table indicate the percentage of the state covered under the particular drought conditions at the time (in the left column). Areas shown in yellow (Abnormally Dry) indicate land that is going into or coming out of drought. Light orange areas (Moderate Drought) highlight land that may experience low water supply and damage to crops and pastures. Current conditions can be monitored from the U. S. Drought Monitor website. If interested, you can help monitor drought conditions by submitting a report of your local soil conditions through the National Drought Mitigation Center's Drought Impact Toolkit by using the Condition Monitoring Observer Reports system.

F. Streamflow

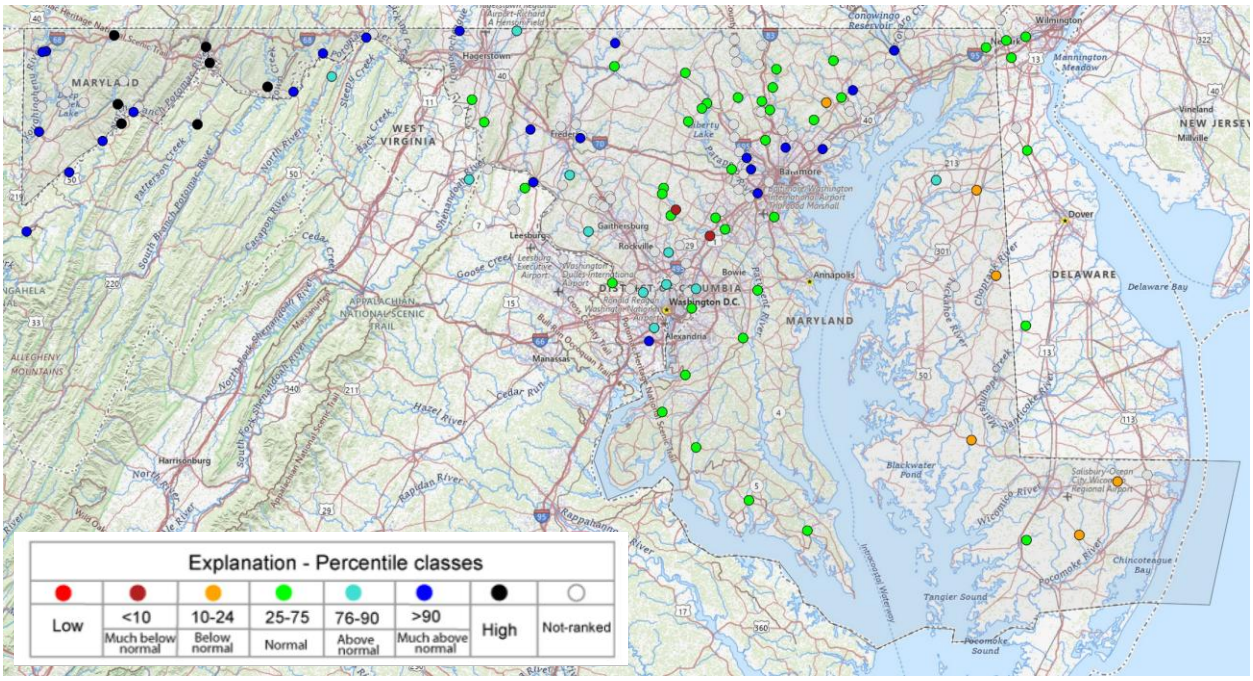

Figure 6. Monthly averaged streamflow class anomalies as reported by the U.S. Geological Survey (USGS) Water Watch for May 2025. Orange to red-filled circles denote below-normal streamflow conditions, cyan to black-filled circles denote above-normal streamflow conditions, and green-filled circles represent normal streamflow conditions. Streams and rivers experienced much above-normal streamflow in western Maryland, and to the west of the Bay. Still, some streams and rivers on the Eastern Shore had below-normal stream flow. Current conditions can be monitored from the U. S. Geological Survey website.

4. May and MAM 2025 Climate Divisions Averages

A. May 2025 Scatter Plots

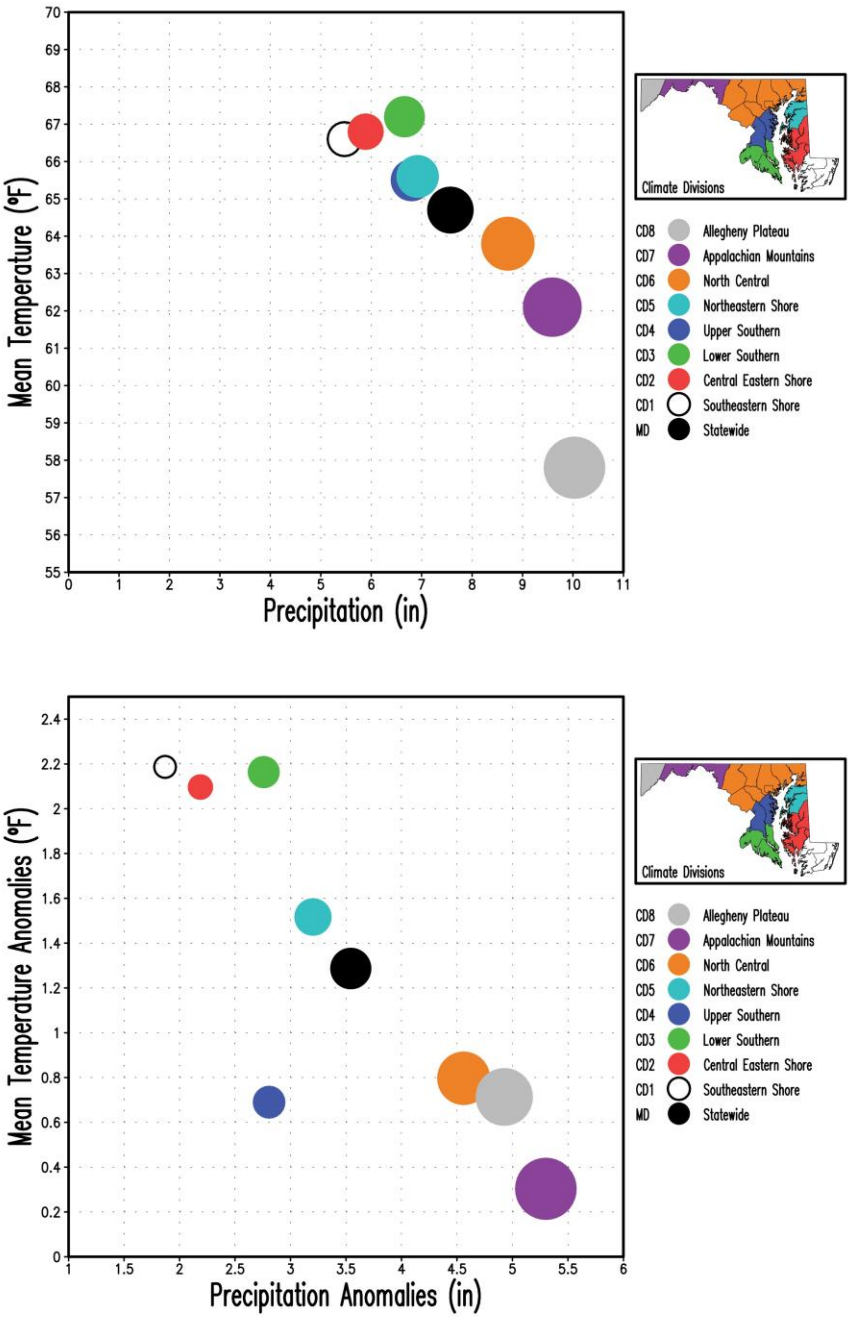

Figure 7. Scatter plots of Maryland (statewide) and Climate Divisions (CD#) monthly mean surface air temperature vs. total precipitation for May 2025. The upper panel shows the mean temperature and total precipitation, and the bottom panel displays their anomalies with respect to the 1991-2020 climatology. Temperatures are in °F and precipitation is in inches. The size of the circles is proportional to the total precipitation scaled down by the maximum precipitation (10.03 inches in CD8, top panel) and by the maximum precipitation anomaly 5.30 inches in CD7, bottom panel) among the nine regions. Note that the color of the filled circles corresponds to the color in the Climate Divisions according to the inset map.

B. March – May 2025 Scatter Plots

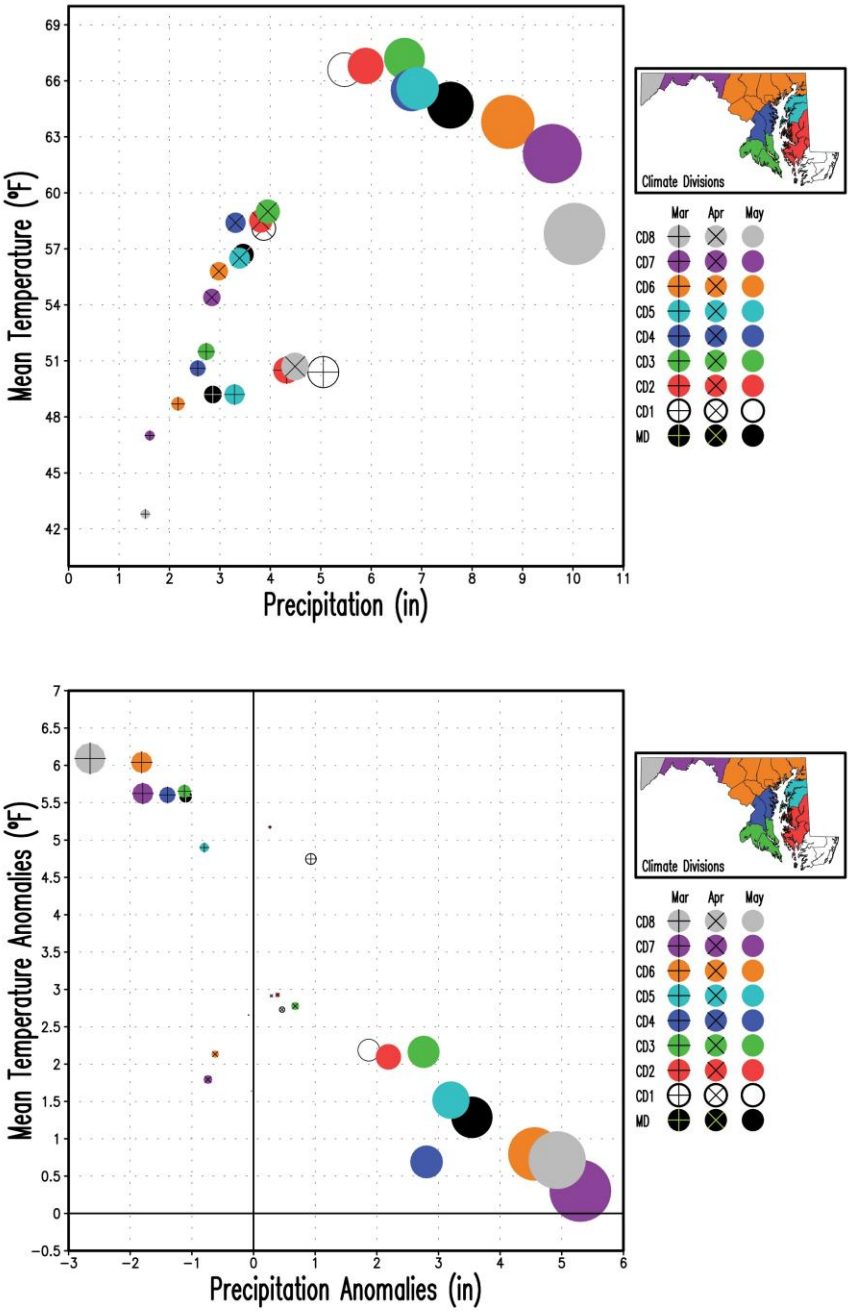

Figure 8. Scatter plots of Maryland (statewide) and Climate Divisions (CD#) monthly mean surface air temperature vs. total precipitation for March, April and May 2025. The upper panel shows the mean temperature and total precipitation, and the bottom panel displays their anomalies with respect to the 1991-2020 climatology. Temperatures are in °F, and precipitation is in inches. The size of the circles is proportional to the total precipitation scaled down by the maximum precipitation (10.03 inches in CD8 in May, top panel) and by the maximum precipitation anomaly (5.30 inches in CD7 in May, bottom panel) among the nine regions and three months. May is displayed with filled circles only, while April and March are displayed with superposed multiplication and addition signs, respectively.

5. Extremes & Growing Degree Days

A. Hot Days, Warm Days, and Warm Nights

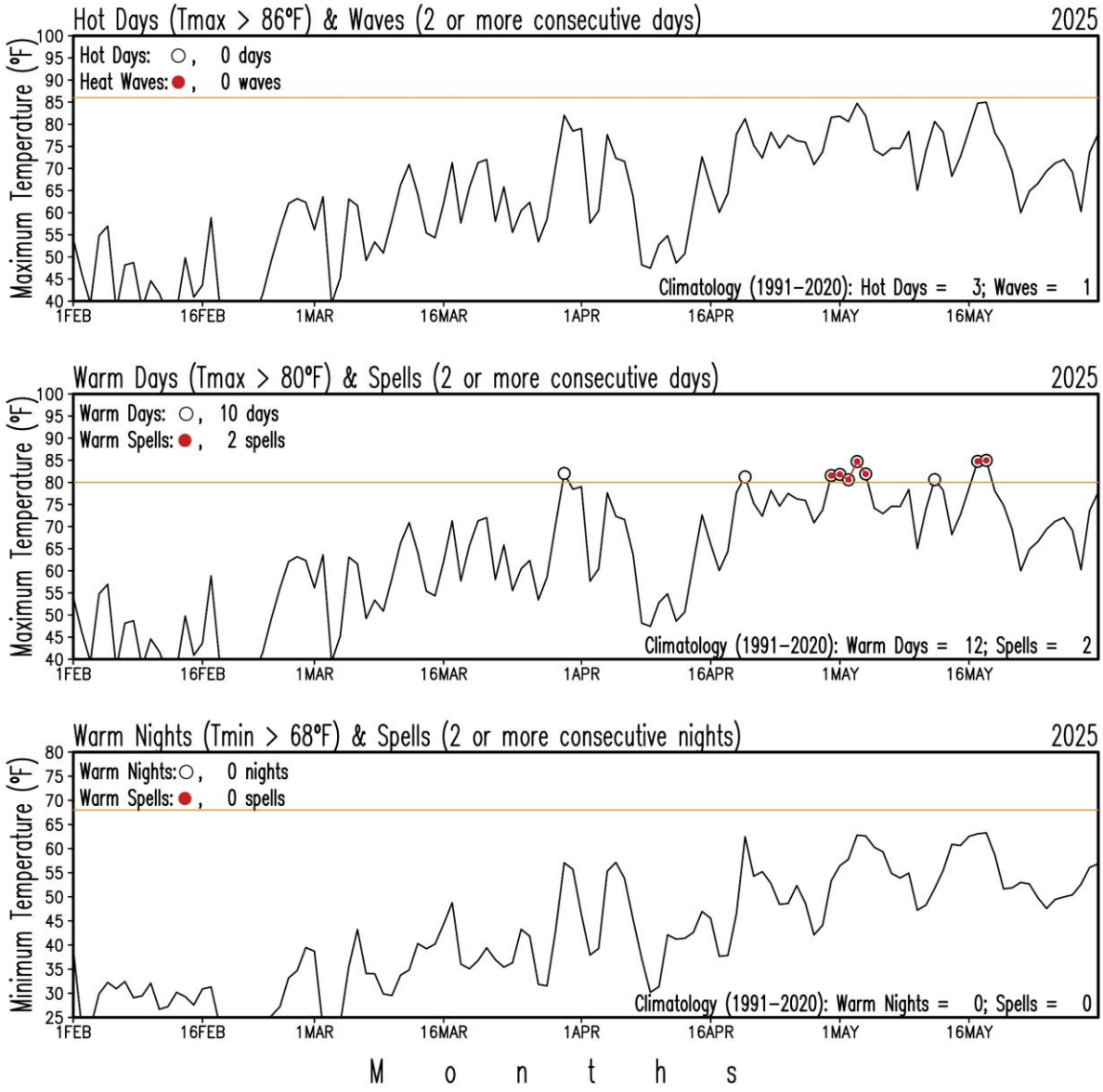

Figure 9. Maryland (statewide) number of hot days, warm days, warm nights, and their consecutive occurrence for the period January 1 – May 31, 2025. The upper panel shows hot days in open circles and heat waves in red-filled circles from statewide daily maximum temperatures. The middle panel shows warm days in open circles and warm day spells in red-filled circles from statewide daily maximum temperatures. The bottom panel shows warm nights in open circles and warm night spells in red-filled circles from statewide daily minimum temperatures. The orange line in each panel marks the threshold temperatures of 86°F, 80°F and 68°F for each case. Figures at the county and climate division levels and summary tables can be found on the MDSCO website.

B. Extreme Precipitation and Dry Spells

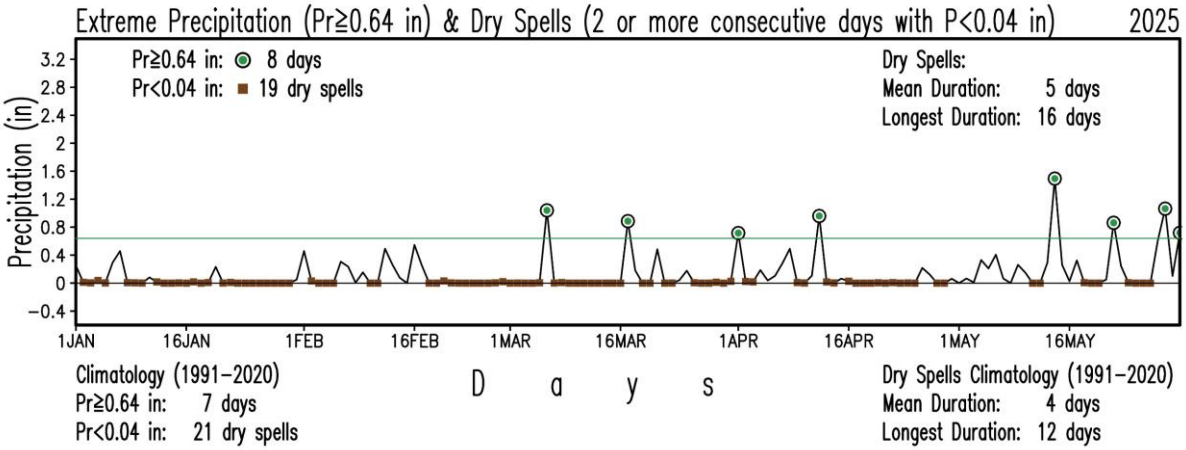

Figure 10. Maryland (statewide) number of days with extreme precipitation and dry day spells for the period January 1 – May 31, 2025. Extreme precipitation days (precipitation equal to or larger than 0.64 in) are identified by green-filled circles. Dry spells (consecutive days with daily total precipitation less than 0.04 in) are shown by brown-filled squares. Both extremes are identified from the statewide area-averaged total daily precipitation. Figures at the county and climate division levels and summary tables can be found on the MDSCO website.

C. Growing Degree Days

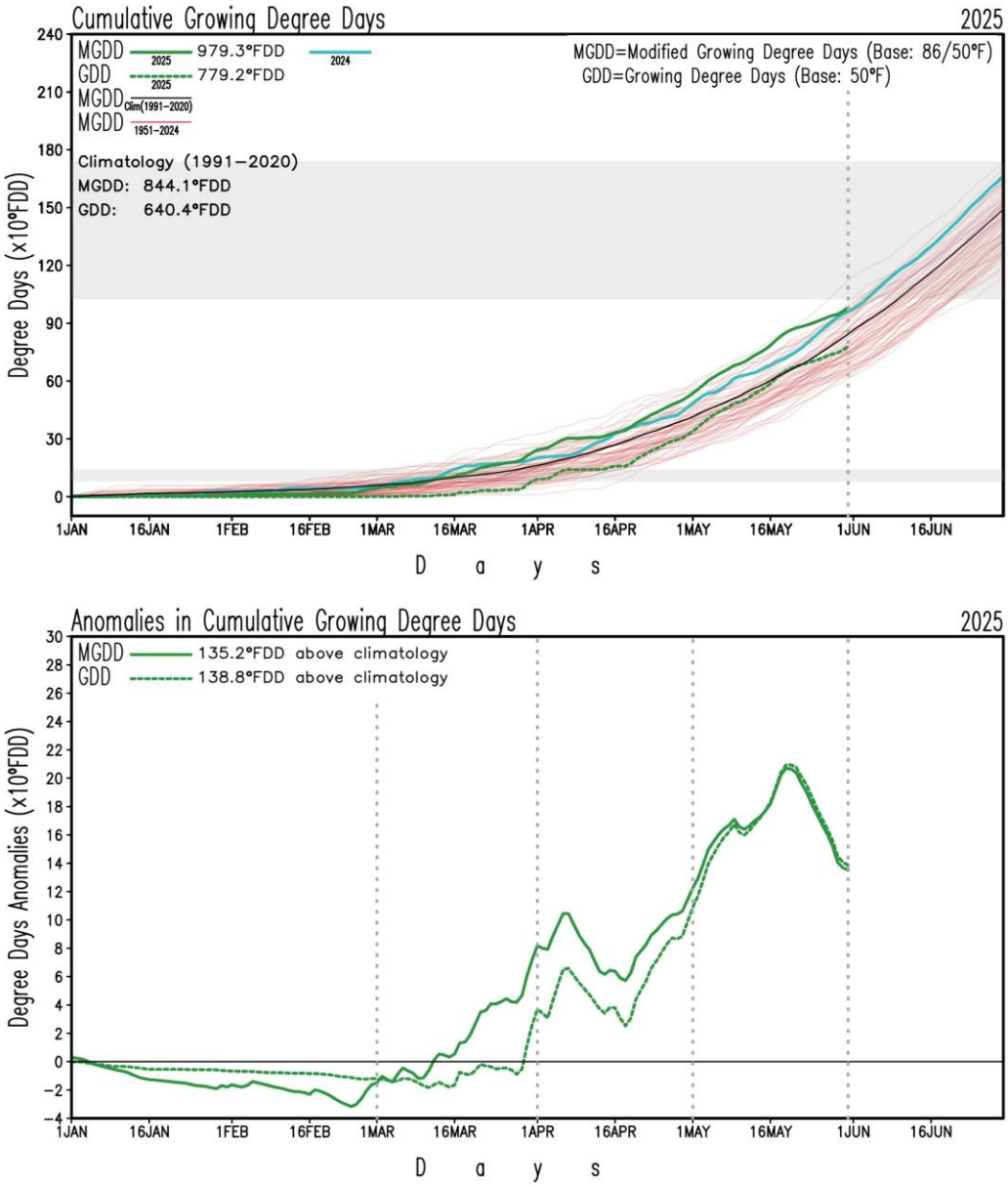

Figure 11. Maryland (statewide) cumulative growing degree days (upper panel) and its anomaly with respect to the 1991-2020 climatology (lower panel) for the period January 1 - May 31, 2025. The growing degree days are displayed with the dashed green line, while the modified growing degree days are shown with the continuous green line in the upper panel; for reference the modified growing degree days for 2024 are displayed with the continuous cyan line; the black line shows the 1991-2020 climatology of the cumulative modified growing degree days; the thin red lines display the cumulative modified growing degree days every year from 1951 to 2023. The gray shaded areas mark a range of values for emergence (82-140) and tassel-silk (1024-1740) in corn development (IPAD, 2023). Anomalies with respect to the 1991-2020 climatology in the cumulative modified growing degree days (bottom panel) are displayed with the continuous green line, while those for the cumulative growing degree days are shown with the dashed green line. The vertical dotted gray lines mark the start of March, April and start and end of May. The accumulated growing degree days and their anomalies in May 31 are displayed at the top left in each panel. Figures at the county and climate division level and summary tables can be found on the MDSCO website.

6. May 2025 Statewide Averages in the Historical Record

A. Box and Whisker Plots

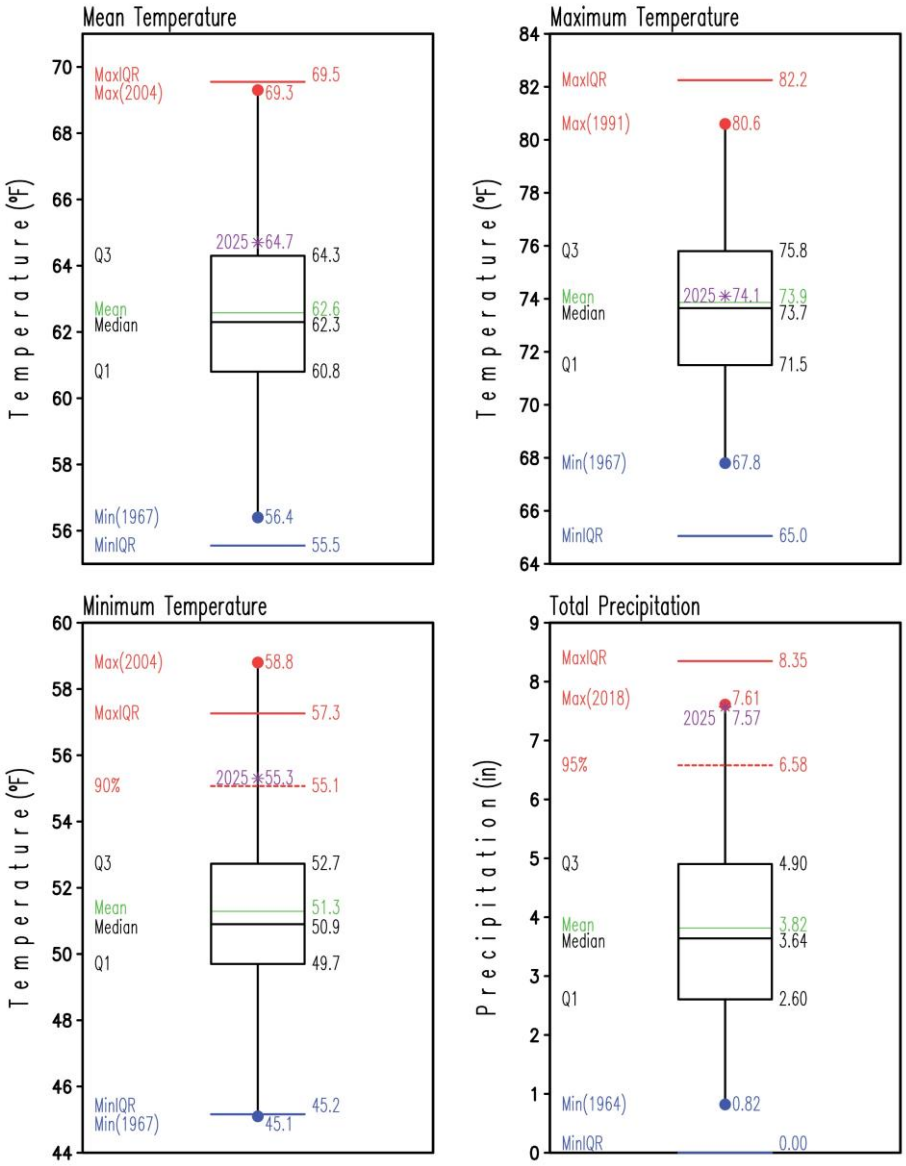

Figure 12. Box and Whisker plots of Maryland (statewide) monthly mean (upper left), maximum (upper right), minimum (lower left) surface air temperatures, and total precipitation (lower right) for May for the period 1895-2024. The label and asterisk in purple represent conditions for May 2025. Statistics for the period 1895-2024 are labeled at the left side of each box and whisker plot and their values at their right. Temperatures are in °F, and precipitation is in inches. The mean is the green line within the box, while the median is the black line within the box. The lower (Q1) and upper (Q3) quartiles, indicating the values of the variable that separate 25% of the smallest and largest values, are the lower and upper horizontal black lines of the box, respectively. For reference, the 90th percentile in minimum temperature and the 95th percentile in precipitation are displayed with a red dashed line. The blue and red dots mark the minimum and maximum values in the period at the end of the whiskers; the year of occurrence is shown in parenthesis. The blue and red horizontal lines represent extreme values defined by Q1-1.5×(Q3-Q1) and Q3+1.5×(Q3-Q1), respectively.

7. 1895-2025 May Trends

A. Statewide Mean Temperature, Heating Degree-Days, Cooling Degree-Days, and Precipitation

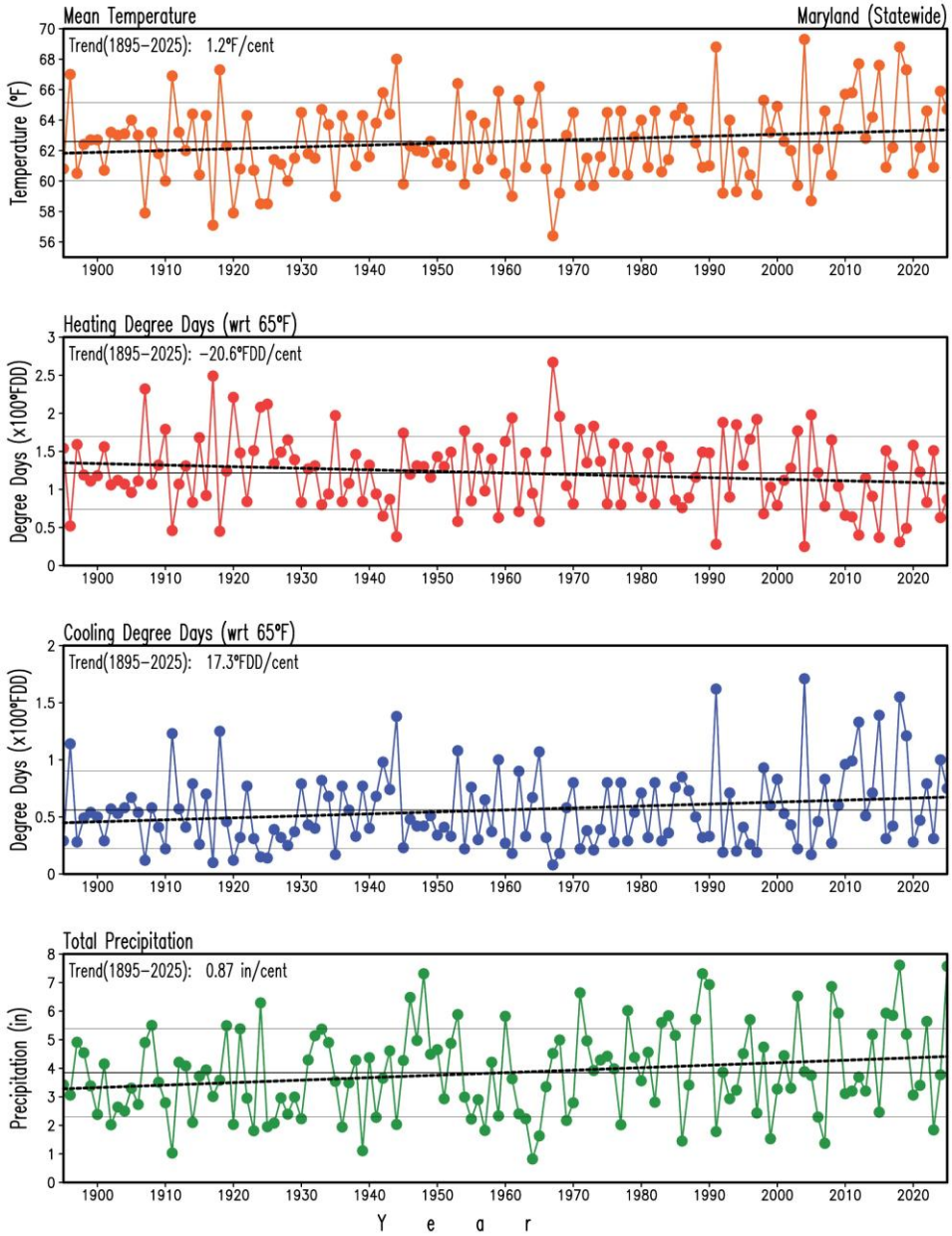

Figure 13. Maryland (statewide) mean surface air temperature, heating degree days, cooling degree days, and precipitation in May for the period 1895-2025. Temperature is in °F, degree-days are in °F degree-days (°FDD), and precipitation is in inches. The thin, continuous black lines in each panel display the long-term means (62.6°F, 121.7°FDD, 56.1°FDD and 3.84 in, 1895-2025), and the double thin, continuous gray lines indicate the standard deviation (2.6°F, 47.8°FDD, 33.9°FDD and 1.54 in) above/below the long-term mean. The thick dashed black lines show the long-term linear trend. The warming temperature trend (1.2°F/century), the decreasing heating degree-days trend (−20.6°FDD/century), the increasing cooling degree-days trend (17.3°FDD/century), and the precipitation wetting trend (0.87 in/century) are statistically significant at the 95% level (*Student's t-test* −Santer et al. 2000).

B. Temperature and Precipitation Maps

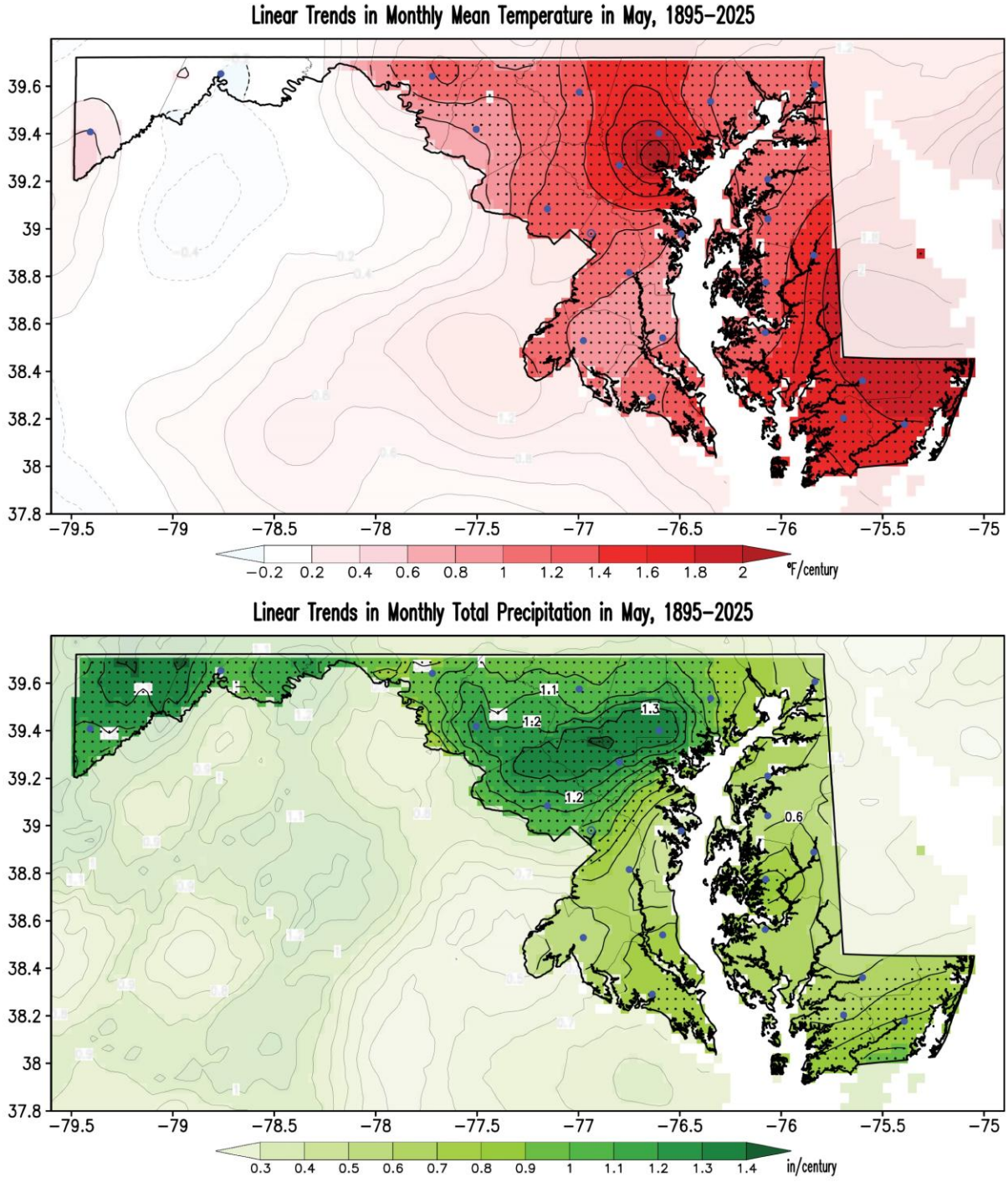

Figure 14. Linear trends in surface air mean temperature and precipitation in May for the period 1895-2025. Temperatures are in °F/century, and precipitation is in inches/century following the color bars. Blue/red shading in the temperature map marks cooling/warming trends. Green shading in the precipitation map shows wetting trends. Stippling in the maps shows regions where trends are statistically significant at the 95% level (*Student's t-test* −Santer et al. 2000). Note that shading outside the state has been washed out to facilitate focusing on Maryland. Filled blue circles mark the county seats.

Appendix A. May 2025 Data Tables: Statewide, Climate Divisions, and Counties

A. Mean Temperature and Precipitation

Region	Mean Air Temperature (°F)	Rank (#)
Statewide	64.7	109
Climate Division 1	66.6	117
Climate Division 2	66.8	115
Climate Division 3	67.2	115
Climate Division 4	65.5	92
Climate Division 5	65.6	111
Climate Division 6	63.8	92
Climate Division 7	62.1	80
Climate Division 8	57.8	85
Allegany	61.6	78
Anne Arundel	65.6	91
Baltimore	64.2	95
Baltimore City	65.8	96
Calvert	66.9	114
Caroline	66.1	114
Carroll	62.7	92
Cecil	64.7	110
Charles	66.9	111
Dorchester	67.4	119
Fredrick	63.1	88
Garrett	57.8	85
Harford	64.8	106
Howard	63.5	91
Kent	65.5	111
Montgomery	63.9	90
Prince George's	65.3	92
Queen Anne's	65.7	111
Saint Mary's	67.7	120
Somerset	67.3	118
Talbot	66.7	114
Washington	62.6	85
Wicomico	66.5	114
Worcester	66.1	116

Region	Total Precipitation (in)	Rank (#)
Statewide	7.57	130
Climate Division 1	5.47	115
Climate Division 2	5.89	119
Climate Division 3	6.66	123
Climate Division 4	6.80	124
Climate Division 5	6.92	127
Climate Division 6	8.71	130
Climate Division 7	9.59	131
Climate Division 8	10.03	131
Allegany	10.22	131
Anne Arundel	6.79	126
Baltimore	8.80	130
Baltimore City	8.62	129
Calvert	6.38	119
Caroline	5.98	119
Carroll	9.35	130
Cecil	8.05	130
Charles	6.84	121
Dorchester	5.77	117
Fredrick	9.54	131
Garrett	10.04	131
Harford	8.64	130
Howard	8.18	130
Kent	7.25	129
Montgomery	7.73	128
Prince George's	6.83	122
Queen Anne's	6.70	126
Saint Mary's	6.53	122
Somerset	5.49	116
Talbot	6.07	118
Washington	8.98	131
Wicomico	5.21	110
Worcester	5.63	118

Table A1. Monthly mean surface air temperature (left) and total precipitation (right) at Maryland (statewide), climate division, and county levels for May 2025. Temperatures are in °F, and precipitation is in inches. The rank is the order that the variable for May 2025 occupies among the 131 Mays after the 131 values have been arranged from the lowest to the highest in the *standard competition ranking method*. The closer to 131 the rank is, the larger (i.e., the warmer/wetter) the value of the surface variable is in the record; similarly, the closer to 1 the rank is, the smaller (i.e., the colder/drier) the value of the surface variable is in the record.

B. Maximum and Minimum Temperatures

Region	Maximum Air Temperature (°F)	Rank (#)
Statewide	74.1	72
Climate Division 1	75.8	102
Climate Division 2	76.2	89
Climate Division 3	76.5	88
Climate Division 4	74.3	58
Climate Division 5	74.1	61
Climate Division 6	73.1	58
Climate Division 7	72.8	51
Climate Division 8	68.2	61
Allegany	72.9	55
Anne Arundel	73.9	53
Baltimore	73.6	61
Baltimore City	74.2	57
Calvert	75.9	92
Caroline	75.6	74
Carroll	72.6	58
Cecil	73.2	66
Charles	76.2	74
Dorchester	76.8	97
Fredrick	72.6	57
Garrett	68.2	61
Harford	73.8	67
Howard	73.0	54
Kent	73.8	64
Montgomery	73.1	57
Prince George's	74.6	58
Queen Anne's	74.3	61
Saint Mary's	77.0	104
Somerset	76.5	105
Talbot	75.5	80
Washington	72.8	47
Wicomico	76.3	96
Worcester	75.0	103

Region	Minimum Air Temperature (°F)	Rank (#)
Statewide	55.3	119
Climate Division 1	57.3	123
Climate Division 2	57.5	125
Climate Division 3	58.0	121
Climate Division 4	56.6	117
Climate Division 5	57.1	124
Climate Division 6	54.6	117
Climate Division 7	51.3	113
Climate Division 8	47.4	112
Allegany	50.3	108
Anne Arundel	57.3	118
Baltimore	54.8	118
Baltimore City	57.3	122
Calvert	57.9	120
Caroline	56.5	126
Carroll	52.9	117
Cecil	56.1	123
Charles	57.6	121
Dorchester	57.9	125
Fredrick	53.6	116
Garrett	47.4	112
Harford	55.7	123
Howard	54.0	117
Kent	57.3	124
Montgomery	54.7	116
Prince George's	56.0	117
Queen Anne's	57.1	124
Saint Mary's	58.5	122
Somerset	58.1	124
Talbot	57.9	121
Washington	52.3	113
Wicomico	56.8	123
Worcester	57.1	122

Table A2. Monthly maximum (left) and minimum (right) surface air temperatures at Maryland (statewide), climate division, and county levels for May 2025. Temperatures are in °F. The rank is the order that the variable for May 2025 occupies among the 131 Mays after the 131 values have been arranged from the lowest to the highest using the *standard competition ranking method*. The closer to 131 the rank is, the larger (i.e., the warmer) the value of the surface variable is in the record; similarly, the closer to 1 the rank is, the smaller (i.e., the colder) the value of the surface variable is in the record.

Appendix B. May 2025 Bar Graphs: Statewide, Climate Divisions, and Counties

A. Temperatures and Precipitation

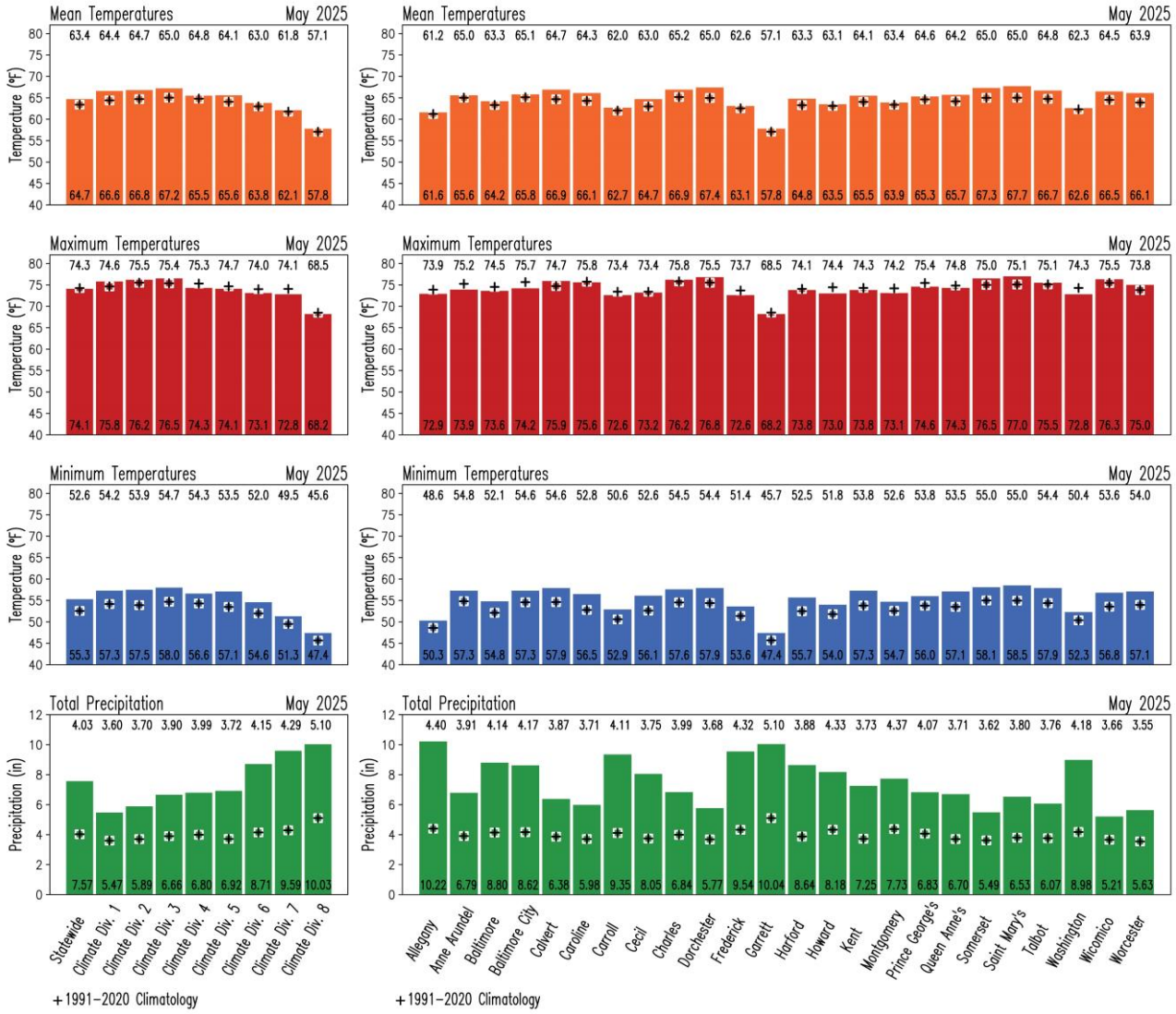

Figure B1. Monthly surface variables in Maryland for May 2025. Color bars represent the variables as follows: mean surface air temperature (orange), maximum surface air temperature (red), minimum surface air temperature (blue), and total precipitation (green) at statewide and climate division (left column), and county (right column) levels. Temperatures are in °F, and precipitation is in inches. The numbers at the base of the bars indicate the magnitude of the variable for May 2025. For comparison, the corresponding 1991-2020 climatological values for May are displayed as black addition signs, and their magnitudes are shown at the top of the panels.

B. Temperatures and Precipitation Anomalies

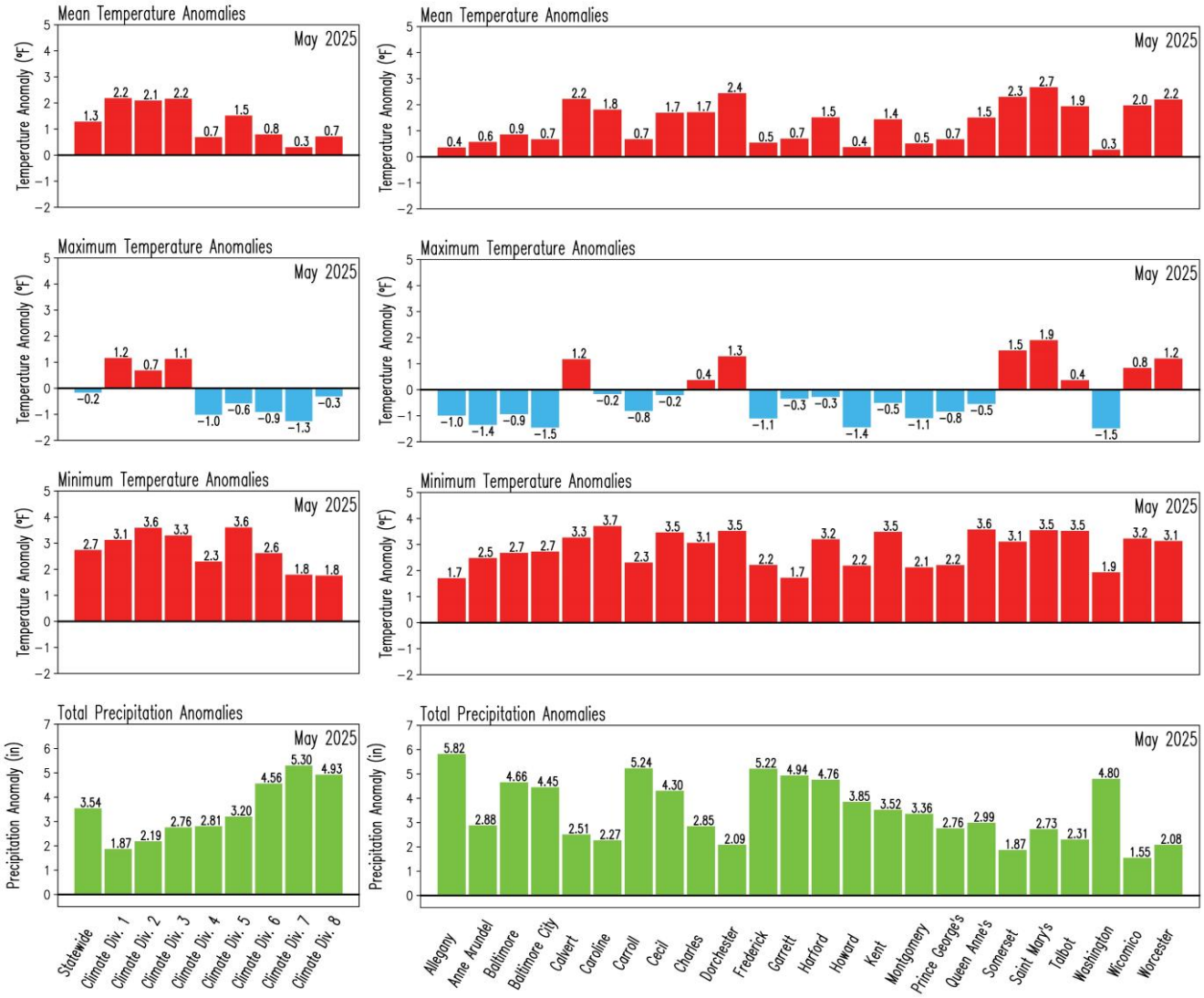

Figure B2. Anomalies of the monthly surface variables in Maryland for May 2025. Anomalies are with respect to the 1991-2020 climatology. Red/blue color represents positive/negative (warmer/colder than normal) anomalies for mean surface air temperature (upper row), maximum surface air temperature (second row from top), and minimum surface air temperature (third row from top), while green color indicates positive (wetter than normal) anomalies in total precipitation (bottom row) at statewide and climate division (left column) and county (right column) levels. Temperatures are in °F, and precipitation is in inches. The numbers outside the bars indicate the magnitude of the anomaly for May 2025.

Appendix C. May 1991-2020 Climatology Maps and May 2025 Precipitation as Percentage of Climatology

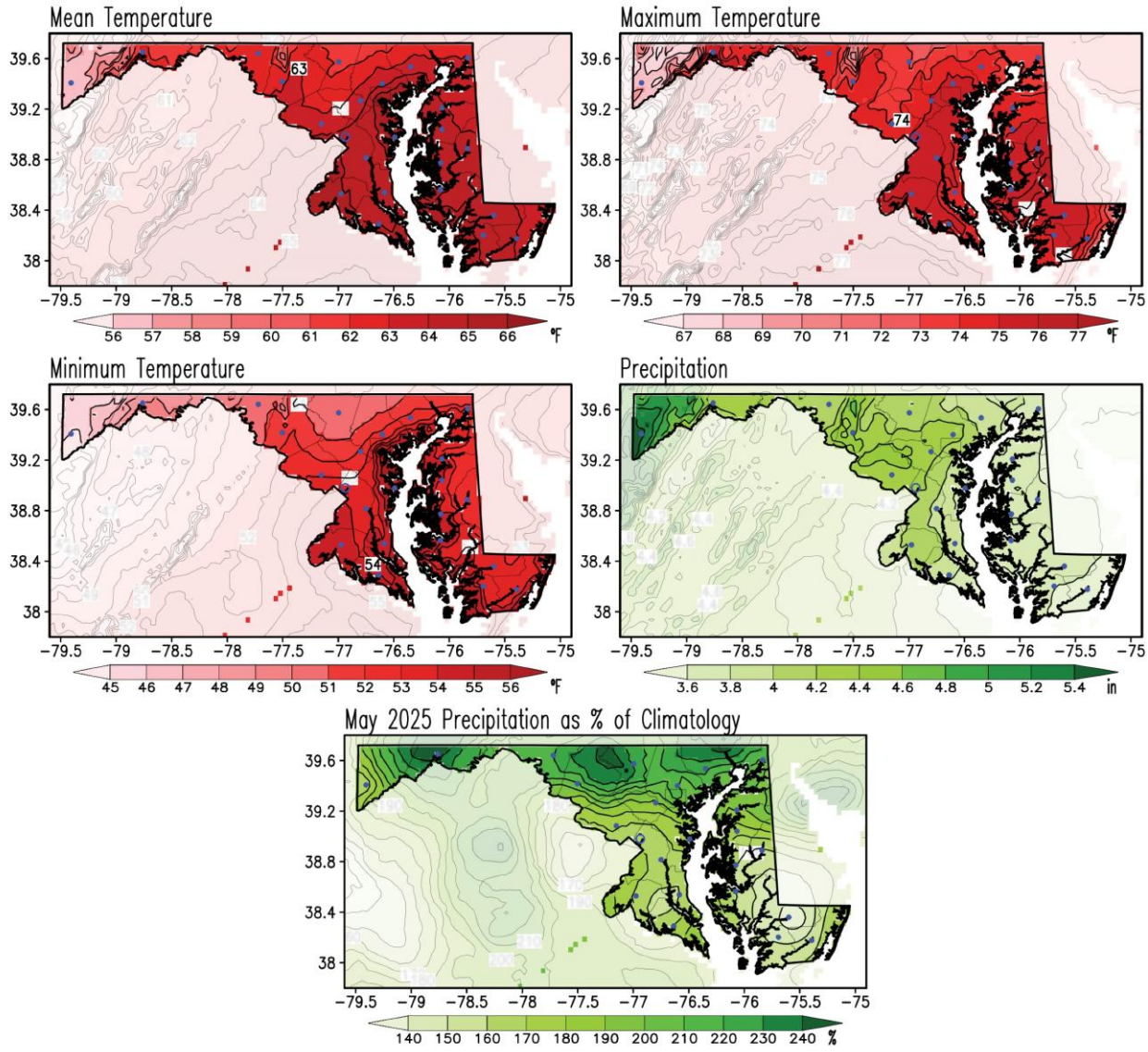

Figure C1. May climatology of the monthly mean, maximum, and minimum surface air temperatures, and total precipitation for the period 1991-2020 (upper and middle rows), and precipitation in May 2025 as a percentage of climatology (bottom row). Temperatures are in °F, and precipitation is in inches according to the color bars. This is the current climate normal against which the May 2025 conditions are compared to obtain the May 2025 anomalies (from Figures 1 to 4). The precipitation as a percentage is obtained by dividing the total precipitation (from Figure 4) by the climatology (from the middle right panel) and multiplying that ratio by 100, so units are in percent of climatology (%); green shading in this map shows wetter than normal conditions. Note that shading outside the state has been washed out to facilitate focusing on Maryland. Filled blue circles mark the county seats.

Appendix D. May Standard Deviation and May 2025 Standardized Anomalies Maps

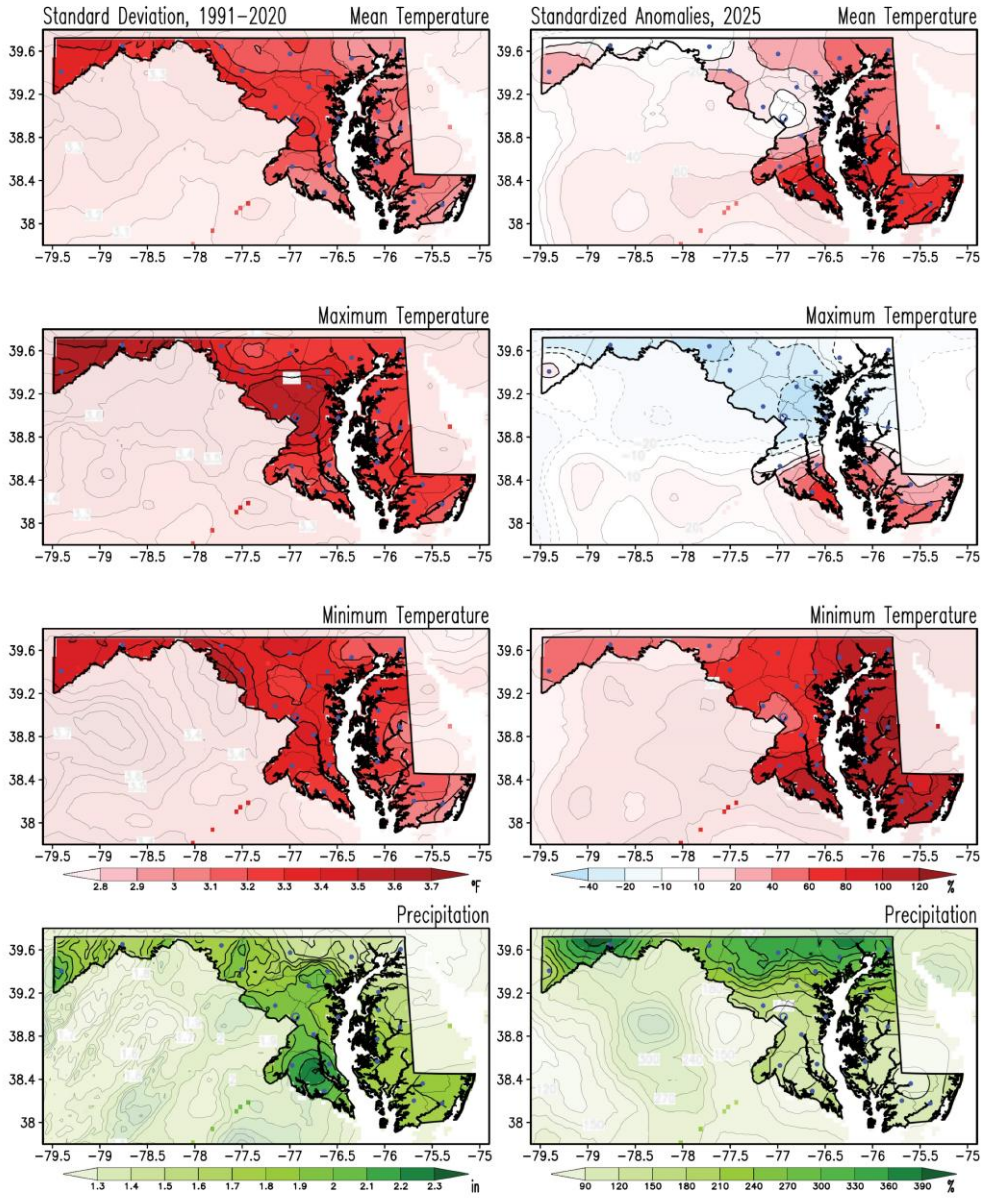

Figure D1. Standard deviation for May and standardized anomalies of temperatures and precipitation for May 2025. Standard deviations for monthly mean, maximum, and minimum surface air temperatures and total precipitation were obtained from the 1991-2020 period (left column). Anomalies for May 2025 (right column) are obtained as a percentage of the standard deviations. The standard deviations in temperatures are in °F, and those in precipitation are in inches according to the color bars. Blue/red shading in the anomaly temperature maps marks colder/warmer than normal conditions; green shading in the anomaly precipitation map marks wetter than normal conditions. The standardized anomalies are obtained by dividing the raw anomalies (from Figures 1 to 4) by the standard deviation (from left column panels) and multiplying that ratio by 100; hence, units are in percent (%). Note that shading outside the state has been washed out to facilitate focusing on Maryland. Filled blue circles mark the county seats.

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