



Office of the Washington State Climatologist

February 2024 Report and Outlook

February 7, 2024

<http://www.climate.washington.edu/>

January Event Summary

Mean January temperatures were below normal across most of Washington State, with the temperature anomalies in eastern WA greater than in western WA. January precipitation was generally above normal across the state, with a few exceptions (more in the Climate Summary on page 7).

The month was characterized by two, distinct periods of quite anomalous temperatures (Figure 1). The first began on January 12 and lasted for about a week. Anomalous northerly flow, the usual suspect in our cold-air outbreaks, occurred throughout this period. Daily record low

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minimum and maximum temperatures were set over the week. For example, Pullman (-19°F), Spokane AP (-7°F), Wenatchee (-7°F), Ephrata (-4°F), and Bellingham (3°F) set record low

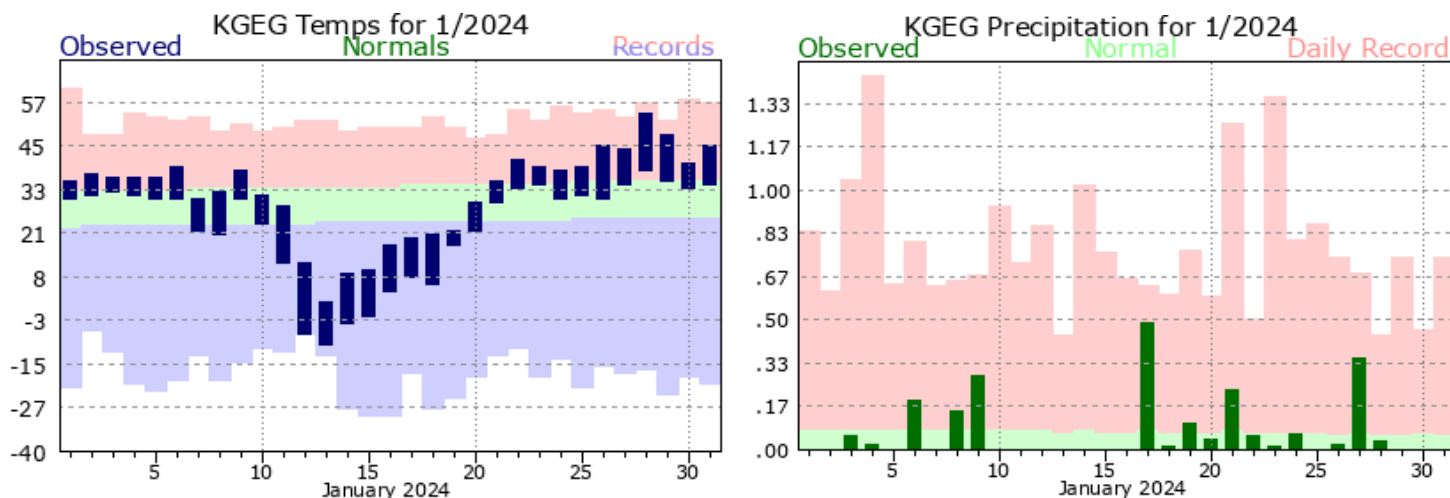


Figure 1: January 2024 daily temperatures (left) and precipitation (right) for Spokane International Airport compared to the 1991-2020 normal (green envelope) and previous records (blue and red envelopes; NWS).

minimum temperatures on the 12th. Record low maximum temperatures were also set on that same day at Bellingham (10°F), SeaTac (25°F), the Seattle Weather Forecasting Office (28°F), Olympia (30°F), and Hoquiam (37°F). On the 13th, record low daily minimum temperatures (Pullman, -21°F; Walla Walla, -14°F; Omak, -13°F; Wenatchee, -10°F; Bellingham, 7°F; Hoquiam, 20°F) and record low maximum temperatures (Bellingham, 19°F; Hoquiam, 26°F) were also set. Various other weather stations set record daily low maximum or minimum temperatures through the 16th.

There were also several instances of lower elevation snow beginning on the morning of the 12th with snow on the northern Olympic Peninsula and in the southern Puget Sound region. The northern Puget Sound region also had several days with snow, one of which is shown in Figure 2, with the Bellingham area receiving the largest accumulations. East of the Cascades, Spokane recorded a maximum daily snowfall total of 5.1" on the 17th.

A week-long cold air outbreak was somewhat unexpected during a winter with a strong El Niño. While overall we are still expecting average winter temperatures to be above normal, several events appear to have aligned for this cold and snowy period to occur in Washington (and to a larger extent, across the U.S.). The first is the negative phase of the Quasi-biennial Oscillation (QBO). The negative phase is favorable for sudden stratospheric warmings which cause breakdowns of the polar vortex, often allowing colder polar air to reach lower latitudes. While that was occurring, the Madden Julian Oscillation, which is an important source of short-term climate variability during winter, was in a phase that caused a slight (and temporary)

weakening of the El Niño in the tropical Pacific Ocean. All of these factors may have played a role in bringing us the period of unusually cold weather.

The second period of anomalous temperatures began around the 27th and lasted into early February. Temperatures were much above normal, and were first associated with heavy rain from an atmospheric river. On the 27th, Quillayute (2.93") and Bellingham (0.72") recorded maximum daily rainfall records. On the 28th, record high maximum temperatures were set at Walla Walla (65°F), Olympia (63°F), SeaTac (61°F), and Hoquiam (58°F) and record high minimum temperatures were set at Olympia (57°F), SeaTac AP (51°F), Hoquiam (51°F), the Seattle WFO (50°F - tie), and Bellingham (49°F). More daily high temperature records closed out the month, with the overall warmth being detrimental to the snowpack.

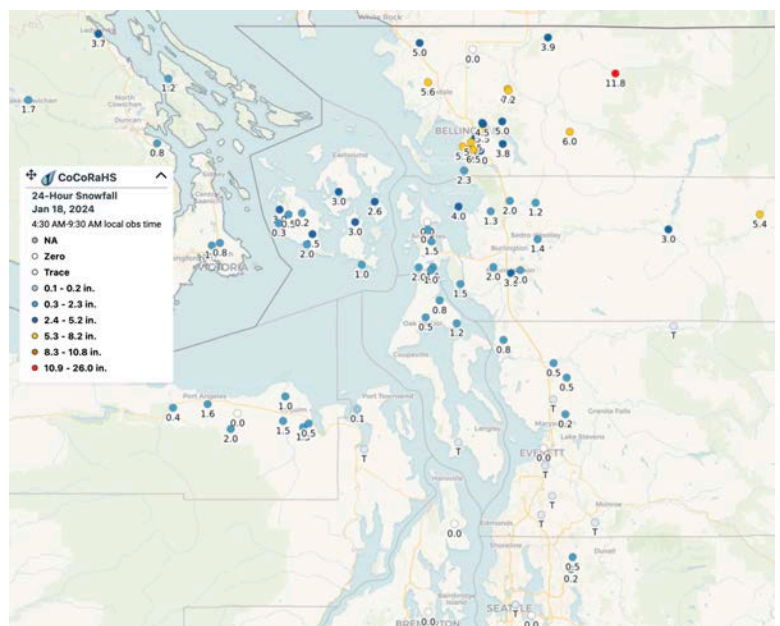


Figure 2: 24-hour snowfall observations on the morning of January 18, 2024 from the CoCoRaHS network.

Snowpack and Drought Summary

Despite colder than usual January temperatures and ample precipitation, WA snowpack is still subpar. We can blame the very warm December temperatures that meant low values at the beginning of the calendar year, and the mild spell at the end of January that also did not do the snowpack any favors. For many Cascade Mountain SNOTEL stations, there was steady growth in snowpack through most of January, but the warm temperatures at the end of the month caused some of the snow to melt.

The basin average snow water equivalent (SWE) percent of median from the Natural Resources Conservation Service (NRCS) as of February 1 (Figure 3) was below normal across Washington State. The Olympics are in the worst shape with only 32% of median SWE. The North Puget Sound, Upper Columbia, Central Puget Sound, Central Columbia, South Puget Sound, Lower Yakima, Klickitat, Lower Pend Oreille, and Spokane basins have between 51 and 69% of median SWE. The rest of the basins are faring

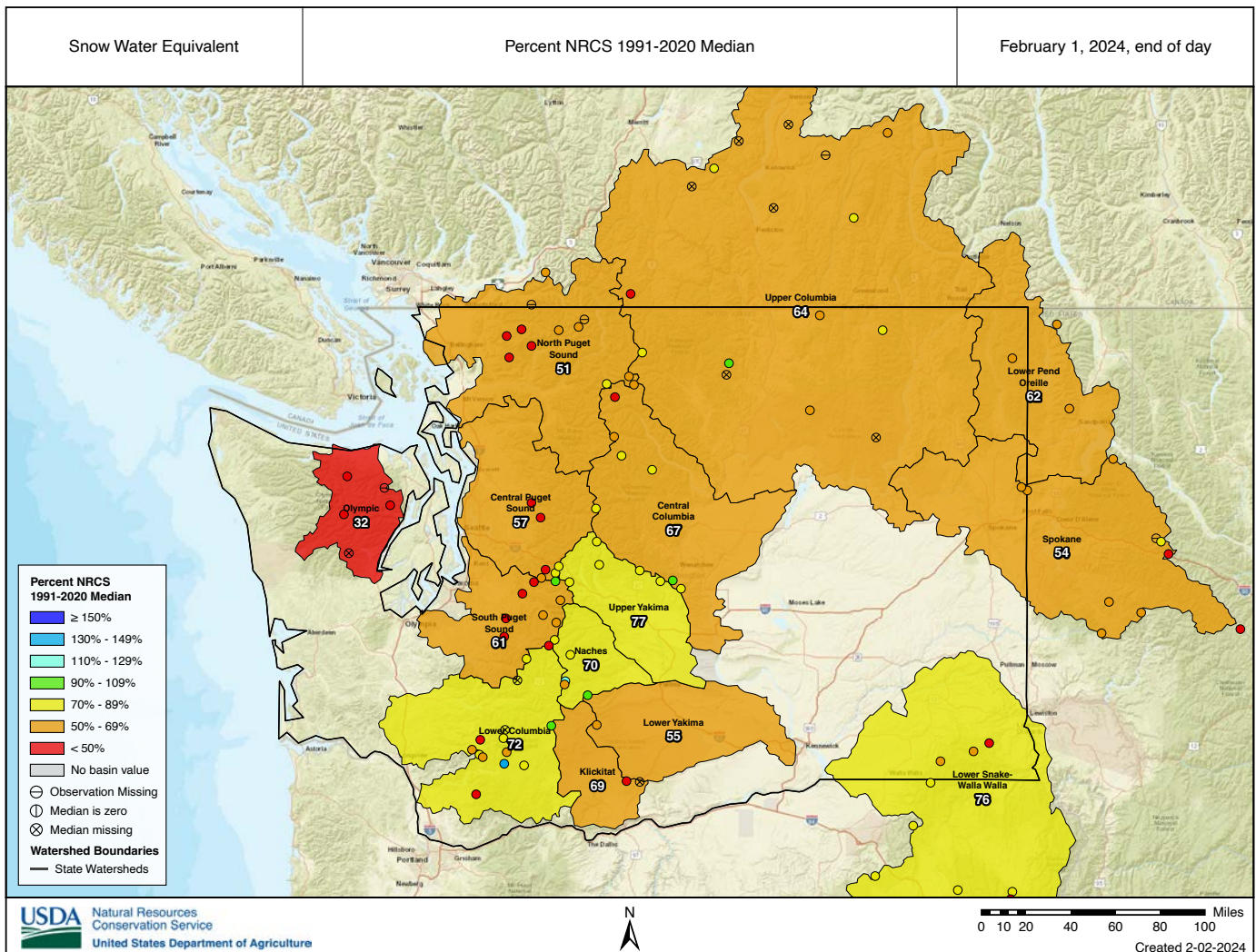
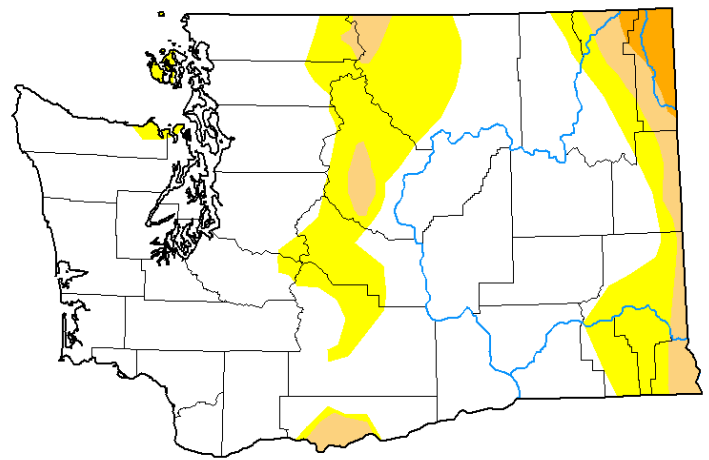


Figure 3: Snowpack (in terms of snow water equivalent) as of February 1, 2024 (NRCS).

better, and have between 70 and 77% of median SWE.

Improvements in streamflow that began in early November were sustained through January (not shown), and that, in combination with the above normal January precipitation, brought major improvements to the U.S. Drought Monitor (Figure 4). Even with improvements, there is still concern for what the lack of snowpack might mean for water supplies this upcoming summer. While the combined reservoir storage for Seattle Public Utilities is [slightly above average](#), the Yakima Basin reservoir system remains both below average and below last year ([USBR](#)). The statewide drought advisory and drought emergency for parts of 12 counties issued by the WA State Department of Ecology last year is still in effect through at least June 30, 2024.



Intensity:



Figure 4: The February 1, 2024 edition of the U.S. Drought Monitor.



Report Your Drought Impacts

Are you experiencing a drought impact? Your on-the-ground observations are critical in helping us understand the broad picture of drought in the state. The National Drought Mitigation Center and partners have developed Condition Monitoring Observer Reports on Drought ([CMOR-drought](#)), a short survey that allows the public to enter their observations regarding crops, water supply, fire, etc. We would greatly appreciate your input, and these reports help experts assess drought impacts for both the U.S. Drought Monitor depiction and on the state level.

Office of the Washington State Climatologist

Strategic Plan

Our [new strategic plan](#) is now available, and will serve as a guide for our future work. The plan was developed over 2022 and 2023 in collaboration with the Climate Impacts Group and with support from the College of the Environment. Survey responses from this very newsletter distribution list were one of the sources of information used to formulate our priorities. The plan outlines four strategic goals in support of our refined mission:

- 1) provide reputable climate data and interpretation,
- 2) broaden climate services through targeted engagement,
- 3) coproduce new applied climate research, and
- 4) acquire resources for the sustainability of the Office.

Several strategies were developed to achieve these goals, and specific activities to implement those strategies were also identified. Figure 5 is an example of the strategies to support Goal 1.

Building off of our long history of providing climate data and information for local and state governments, communities, tribes and other organizations, we will develop new long-term partnerships with priority stakeholders, help build capacity among key partners, and cultivate applied and multi-disciplinary research collaborations. The Office will also explore new avenues of funding to help grow and sustain the program over the long-term.

One key focus area will be to replicate our successful drought partnership with state agencies, for example by focusing on a new effort of sharing weather and climate information with state and local health departments. Modeled after their coordination with the Water Supply Availability Committee (a Washington state interagency committee), the Climatologist's Office looks to share information and help build capacity for planning and responding to other climate risks.

Strategies:



Figure 5: OWSC strategies to achieve Strategic Goal 1.

We're Hiring a State Climatologist!

It is an exciting time at OWSC! Just last summer we [joined the Climate Impacts Group](#) and became a member organization of EarthLab. Our newly-released strategic plan, described above, is set to guide our next five years of work. And now, we are celebrating the retirement of Dr. Nick Bond and beginning our [search for a new State Climatologist](#).

The State Climatologist will direct the Deputy State Climatologist to fulfill the Office's mission while executing on the Office's strategic plan. A major component of this work will be to fundraise to build capacity for the Office. Additionally, the State Climatologist will respond to media requests and public presentation requests and engage with state agencies and other decision makers. This position will also serve as the lead principal investigator for the Office and conduct applied research on regional weather, climate, and climate change.

We are seeking candidates with expertise in meteorology, climatology or other environmental fields, who have experience presenting technical information to a variety of audiences. We are also seeking candidates with experience co-producing research, fundraising and writing grant proposals. The State Climatologist will join a team of principal investigators at the UW Climate Impacts Group. **This is a 0.5 FTE position; additional fundraising and grant writing would be required to develop this role into a full-time position.**

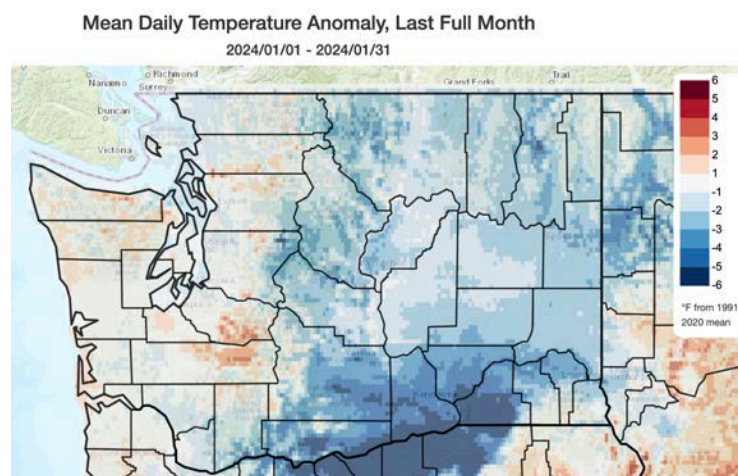
We will start reviewing applications for this position on March 1, 2024. To learn more and apply, visit the [UW hires website](#). Please join us in this search by helping to spread the word!

APPLY NOW



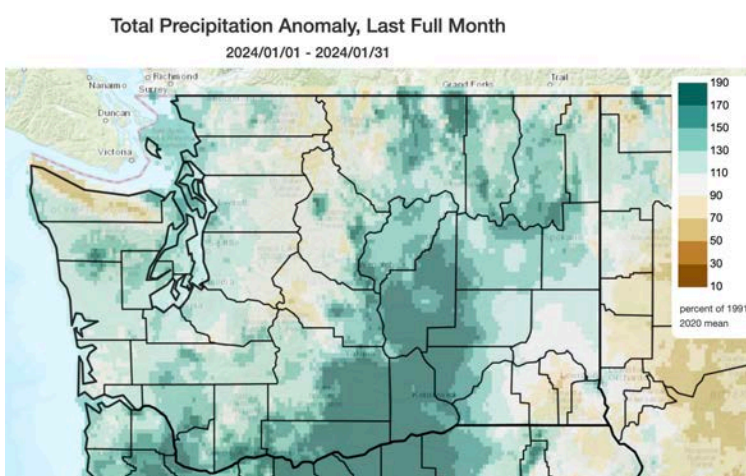
Climate Summary

In a reversal from the previous month of December, mean January temperatures were below normal for most of the state, particularly in eastern WA. Temperatures in eastern WA were as much as 3 to 6°F below normal in the southern portion, according to the map on the right hand side from the Climate Toolbox. Pullman and Pasco, for example, were 3.5 and 3.6°F below normal for January, respectively (Table 1). Average January temperatures were closer to normal in western WA (e.g., -0.5°F at the Seattle Weather Forecasting Office), though there were some exceptions. Bellingham, for example, was 2.2°F below normal.



January temperature (°F) departure from normal relative to the 1991-2020 normal (Climate Toolbox).

January precipitation was above normal for a majority of the state, ranging between 110 and 170% of normal. Ephrata, Omak, and Hanford were especially wet relative to normal with 149, 165, and 172% of normal precipitation, respectively. In western WA, Vancouver and Bellingham were the wettest relative to normal, with 171 and 150% of normal. SeaTac Airport and Olympia Airport were closer to normal with 109 and 113% of normal, respectively (Table 1). While many snowfall totals were unavailable and are missing from Table 1, there were several occurrences of lower elevation snowfall during January across western WA. According to CoCoRaHS observers in the Bellingham area, for example, about 7" of snow fell over the month. Spokane's snowfall was lower than normal, but Hanford received more than usual.



January total precipitation percent of the 1991-2020 normal (Climate Toolbox).

Station	Mean Temperature (°F)			Precipitation (inches)			Snowfall (inches)		
	Avg	Norm	Departure from Normal	Total	Norm	Percent of Normal	Total	Norm	Percent of Normal
Western Washington									
Olympia	41.4	39.6	1.8	8.82	7.80	113	M	M	-
Seattle WFO	41.8	42.3	-0.5	6.33	5.14	123	T	0.9	0
SeaTac AP	41.5	42.8	-1.3	6.31	5.78	109	T	1.8	0
Quillayute	-	41.7	-	17.81	15.59	114	M	M	-
Hoquiam	42.9	42.8	0.1	12.29	10.91	113	M	M	-
Bellingham AP	38.0	40.2	-2.2	6.72	4.49	150	M	M	-
Vancouver AP	39.1	40.7	-1.6	9.15	5.34	171	M	M	-
Eastern Washington									
Spokane AP	27.8	29.6	-1.8	2.08	1.97	106	9.6	12.3	78
Wenatchee	26.9	28.9	-2.0	1.20	1.02	118	M	M	-
Omak	27.1	28.0	-0.9	2.19	1.33	165	M	M	-
Pullman AP	29.2	32.7	-3.5	1.75	2.15	81	M	M	-
Ephrata	28.8	29.6	-0.8	1.36	0.91	149	M	M	-
Pasco AP	31.0	34.6	-3.6	1.22	1.03	118	M	M	-
Hanford	30.2	33.3	-3.1	1.74	1.01	172	6.6	5.0	132

Table 1: January 2024 climate summaries for locations around Washington with a climate normal baseline of 1991-2020. *Quillayute appears to be warmer than some of the other surrounding stations so data are pending a temperature sensor check.

Climate Outlook

According to the Climate Prediction Center (CPC), a strong El Niño remains present in the equatorial Pacific Ocean and an “El Niño Advisory” is still in effect. Over the last month, the strength of the above normal sea surface temperature (SST) anomalies in the equatorial Pacific Ocean have weakened slightly. There has been more moderation of the warm ocean temperatures in the central equatorial Pacific Ocean at depths near 100 meters. Tropical Pacific atmospheric conditions are still mostly consistent with El Niño. ENSO models are certain that El Niño will persist through the winter; the chances of El Niño for the February-April period are 94%. The odds of neutral conditions are higher in April-June (73%), with the likelihood of El Niño reduced to 20%.

The CPC February temperature outlook (Figure 6) has increased chances of above normal temperatures statewide. The odds of warmer than normal temperatures are highest for the northeastern half of the state, between 50 and 60% on the three-tiered scale. The February precipitation outlook has increased chances of below normal precipitation statewide.

The February-March-April (FMA) temperature outlook (Figure 7) has high odds (between 50 and 60% on the three tiered scale) of above normal temperatures statewide. FMA precipitation is more likely to be below normal statewide, with the highest odds of below normal precipitation across eastern Washington.

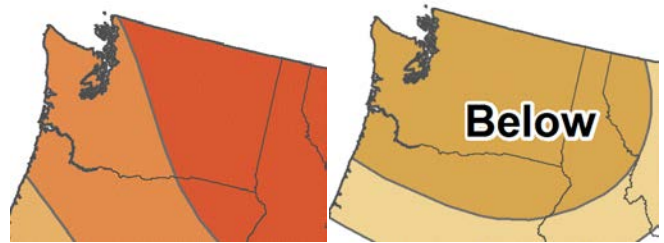


Figure 6: February outlook for temperature (left) and precipitation (right).

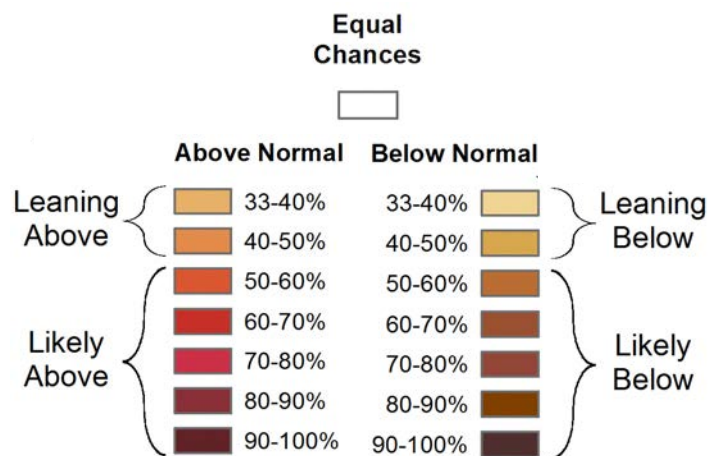


Figure 7: February-March-April outlook for temperature (left) and precipitation (right) (Climate Prediction Center).