

MONTHLY REPORT OF HYDROLOGIC CONDITIONS

WFO Caribou, Maine

REPORT FOR:
MONTH YEAR

January 2025

SIGNATURE

**James Sinko - Meteorologist
Hydrology Program Manager**

DATE

February 9, 2025

TO: Hydrologic Information Center, W/OS31
NOAA's National Weather Service
1325 East West Highway
Silver Spring, MD 20910-3283

When no flooding occurs, include miscellaneous river conditions below the small box, such as significant rises, record low stages, ice conditions, snow cover, droughts, and hydrologic products issued (NWS Instruction 10-924).

An X inside this box indicates that no flooding occurred within this hydrologic service area.

January 2025

January 2025 put us back into a precipitation deficit across the area with a rather progressive weather pattern. We entered a weak negative ENSO and La Nina was declared at the beginning of the month. The North Atlantic Oscillation (NAO) monthly mean was -0.52 SD, the Arctic Oscillation (AO) monthly mean was -0.07 SD with the Pacific North American Pattern (PNA) monthly mean at +1.05 SD. Overall, the pattern featured significantly lower heights over the North Atlantic. At the same time the positive PNA pattern with higher height anomalies was over the NW United States. This resulted in ridging in the Western United States and the long wave troughing in the Eastern United States. The troughing was very deep in the Eastern United States which resulted in a rather progressive pattern in Maine resulting in numerous cold shots but only resulted in short periods of below average temperatures. The month featured numerous longer periods above normal temperatures and progressive pattern meant a lack of precipitation. This pattern was very poor to produce a healthy snowpack across the area and will be discussed below...

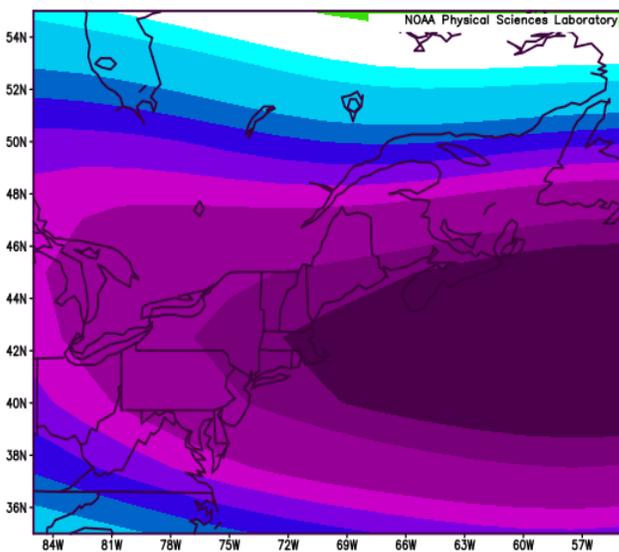


Figure 1: 500mb Geopotential Height (m) Anomalies (1991-2020 Climo) January 2025

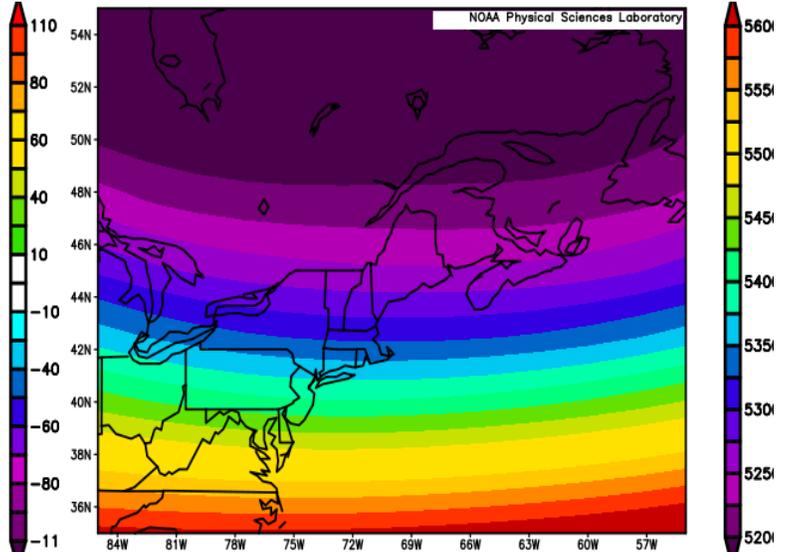


Figure 2: 500mb Geopotential Height (m) Composite Mean January 2025

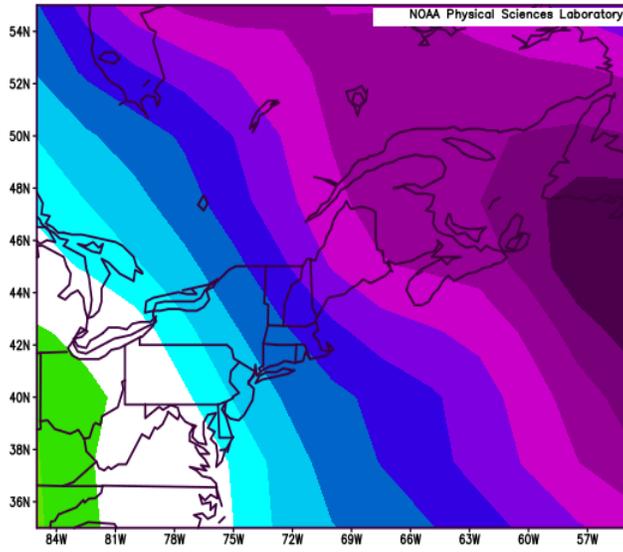


Figure 3: Sea Level Pressure (mb) Anomalies (1991-2020 Climo) January 2025

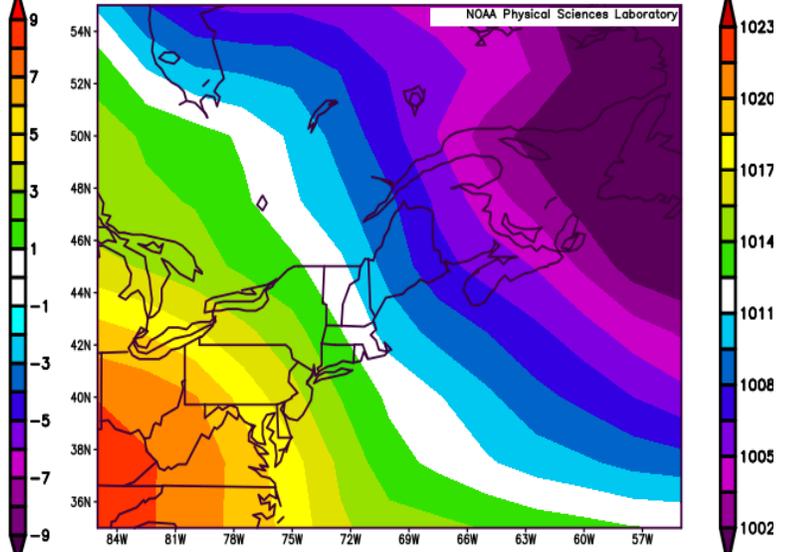


Figure 4: Sea Level Pressure (mb) Composite Mean January 2025

Figure 1-4 Source: [NOAA Physical Sciences Laboratory](#)

Precipitation Totals for Select Locations (All Units in Inches)

Location	Total Precip	Normal Precip	Departure from Normal	% of Normal	Snowfall	Normal Snowfall	Departure from Normal	Greatest Snow Depth	Monthly Average Snow Depth
Frenchville*	0.24	1.51	-1.27	15.9%					
Fort Kent	1.43	2.78	-1.35	51.4%	11.5	20.3	-8.8	8	5.7
Van Buren	1.42	2.87	-1.45	49.5%	10.3	24.5	-14.2	8	5.3
Caribou	1.69	2.95	-1.26	57.3%	17.2	25.0	-7.8	5	3.7
Houlton	0.75	2.65	-1.90	28.3%					
Millinocket*	1.43	2.70	-1.27	53.0%	8.5			4	0.9
Greenville*	1.83	2.98	-1.15	61.4%					
Moosehead*	1.84	2.69	-0.85	68.4%	15.5	20.2	-4.7	12	8.6
Dover-Foxcroft	1.99	3.47	-1.48	57.3%	7.0	18.1	-11.1	7	4.3
Corinna	1.80	3.36	-1.56	53.6%	9.4	16.6	-7.2	4	1.2
Bangor	1.53	3.17	-1.64	48.3%	12.4	18.6	-6.2	7	2.2
East Surry	2.34	4.07	-1.73	57.5%	15.0			6	2.6
Robbinston*	2.89	4.85	-1.96	59.6%	16.1	24.8	-8.7	7	2.8
Topsfield*	1.94	4.13	-2.19	47.0%	12.1	23.6	-11.5	6	2.9

*Millinocket snowfall measured at CoOp site, not the ASOS site. *Moosehead Site is in GYX CWA. *Topsfield Records date back to 2000. *Robbinston Records dates back to 1994. *Greenville data gap between 1975 and 1999. *Baileyville is a partial complete record to 1917. *Frenchville ASOS has documented issues with precipitation measurements in the winter months.

Precipitation ranged from 40 to 80% of normal for much of the area for January. No long-term climate site finished in the top 10 extremes for precipitation or snowfall. Snowfall was below average with a total of 17.2 inches in Caribou, which was 7.8 inches below average. It was the least snowy January in Caribou since 2021. In Bangor, a total of 12.4 inches of snow was observed, which was 6.2 inches below average, also making it the least snowy January since 2021. The month began with no snow on the ground in Caribou, which is very unusual and had only occurred in 1983, 2002, and 2004 since weather records began. The greatest snow depth for the entire month was only 5 inches, which is also unusually low. In fact, this set a record for the lowest maximum snow depth in the month of January, breaking the old record of 6 inches in 1992. The average snow depth for the month of 3.7 inches was the third lowest on record, behind only 1962 and 1992. At the end of the month, the snow depth around the region ranged from 3 to 8 inches, except for 12 to 18 inches across the higher elevations from Route 11 west to the Quebec border. There were no major snowstorms during the month of January, with a lot of small events. The two largest events occurred on January 1st-3rd, when 6 to 12 inches of snow was observed in parts of the North Woods, with significantly less snow elsewhere. The largest event was Downeast on the 19th into the 20th, when 6 to 10 inches of snow fell along and near the coast, with 4 to 6 inches in the Greater Bangor region. Very little snow fell with this event north of Millinocket. The lack of snow had significant impacts on outdoor winter recreation across the region.

Looking at the **Drought Monitor** with frost forming and no absorption of moisture the drought monitor remained the same for the month. Moderate Drought (D1) included 53.52% of the State of Maine. Abnormally Dry (D0) or worse accounted for 93.47% of the state. Drought monitor graphics below. The frost depth at the Caribou National Weather Service Office was 8 inches on January 7th, 11 inches on the 21st and 15 inches on the 28th. The frost continued to penetrate deep in the soil with the lack of snowfall providing an insulated blanket.

Streamflows started the month significantly above normal to start the month with recent rainfall in December 2024 and complete snowpack loss in much of the state. By the end of the month the average flows for the entire area rapidly fell to near normal or slightly below normal conditions. Significantly weighted to the high flows in the early month the following ended up being the monthly averages. For the Penobscot & Piscataquis River Basins the streamflows ended the month above normal in the 76-90th percentile range thanks to the high flows in the beginning of the month. The Aroostook & St. John River basins along with their tributaries ended the month with averages around normal for January. The Downeast basins not including the St. Croix were near normal to slightly below normal for monthly averages. The St. Croix remained below normal to much below normal in spots but this river system is heavily regulated for the mills. In terms of **Water Storage** the Penobscot River system ended the month at 51.5% full which was 16.8% above long term average. Ripogenus Dam storage finished the month at around 16 Billion Cubic Feet of water above the dam which was within normal ranges for January. The Union River storage finished the month at 67.6% full which was 0.9% above long term averages.

In terms of **River Ice** we started the month with minimal ice cover on the rivers and lakes of the St. Croix system along with the other Downeast basins. Ice was present on the northern river basins including the St. John, Allagash and Aroostook but many open areas existed thanks to the warm spells, rainfall and complete snowpack loss in December. By mid month with much colder temperatures we saw rapid ice growth across all river basins. Sentinel-2 imagery and ground observations showed river ice in Bangor rapidly thickening, Penobscot had ice between Passadumkeag and Milford except right near the dams. The Piscataquis was mostly 50% frozen with a ton of jammed up jumbled ice in numerous locations but rapid frazil production was underway. Mid month featured rapidly freezing St. John, Aroostook, Allagash and Meduxnekeag rivers. By the end of the month the St. Croix system featured significant ice between dams and the flowage areas. At the end of January Sentinel-2 imagery showed ice present on the Narraguagus River from the north side of Milbridge northward to Cherryfield dam and then continued upstream to the headwaters of Eagle Lake in Township 34 MD. All rivers were 80-90% ice covered

by the end of January. There were a few freeze up ice jams on smaller tributaries across Northern Maine in January. The most notable one was on January 10th at approx 8:54AM. Photos via social media confirmed an Ice Jam on the Allagash River developed January 7, 2025 and continued as of the report time. The jam “toe” was located near the public boat launch and extended upstream to 3 mile island. Photos showed the jam was significantly jumbled ice measuring 8-14 inches thick. ALLM1 gage showed a max stage of 12.96 feet but thankfully no flooding. The water levels rose 9.3 feet between January 7th and the 9th. NWS Caribou Hydrology Program Manager conducted a survey of the Ice Jam on January 11th and found the jumbled ice chunks to be 1.5-3.5 feet thick in spots and the jam was approximately 5-7 river miles long. Photos are included below.

Ice thickness reports below thanks to the United States Geological Survey

Date of Obs	River Gage ID	Snow on Ice	Avg Ice Thickness	Flow (CFS)
1/21	PEAM1	< 1 inch	5 inches	2.51
1/21	MXLM1	< 1 inch	8 inches	58.9
1/21	GRNM1	< 1 inch	12 inches	766
1/21	WYTM1	< 1 inch	12 inches	23.6
1/22	BLAM1	< 1 inch	12 inches	57.3
1/22	ABTM1	< 1 inch	12 inches	64.6
1/22	DOVM1	< 1 inch	7 inches	154
1/22	BSTM1	< 1 inch	6 inches	14.8
1/27	GLMM1	0 inch	0 inches	401
1/27	SBSM1	1 inch	10 inches	93.6
1/27	MASM1	1 inch	13 inches	334
1/27	PHRM1	1 inch	4-5 inches	1.37
1/28	WSHM1	1 inch	15-16 inches	647
1/28	HWBM1	1 inch	6 inches	2.68
1/28	LMRM1	< 3 inches	12 inches	70.2
1/28	FTKM1	< 3 inches	6-12 inches	2870
1/29	BBRM1	6 inches	18 inches	56.1
1/29	DICM1	2.4 inches	15-16 inches	1080
1/30	ALLM1	6 inches	14 inches	560
1/30	FIHM1	2 inches	9-10 inches	NA
1/30	MXKM1	1 inch	8 inches	26.2

Groundwater continued to struggle given the frozen grounds and what was a flash drought in the fall and early winter of 2024. There were some locations that continue to hold on to normal conditions which includes the Fort Kent groundwater site, Clayton Lake was Normal conditions for January 2025 but significantly falling from high end Normal to low end normal by the end of the month. The Kenduskeag groundwater site reported high end normal conditions for the start of the month and continued to decline through the end of the month but remained normal. The Calais groundwater site started January in the 90-95th percentile which is much above normal but ended the month in the 25-30th percentile which is low end normal conditions showing the rapid loss of groundwater levels. The groundwater observation site at Hadley Lakes in Township T24MD BPP reported 10-15th percentile at the beginning of the month which is below normal conditions and by the end of the month worsened to much below normal conditions. Lastly, groundwater levels at the gage in Millinocket continue to suffer from the flash drought of 2024. The gage remained less than 5th percentile record low levels showing the very dry

conditions under the frost depth. Groundwater graphics for the observation sites in Eastern & Northern Maine are below...

Temperatures ranged from 1 to 3 degrees (F) above the 1991-2020 normals, except right along the coast where temperatures were very close to average. The month featured short periods of below average temperatures with longer periods of above average temperatures. There were a total of 9 nights with a low below zero in Caribou, which was below the long-term average of 16. In Bangor, there were 8 nights with a low below zero, which was also below the long-term average of 10 for the month of January.

Town/City	Avg Monthly Temperature (°F)	Normal Monthly Temperature (°F)	Departure from Normal (°F)
Frenchville	13.1	11.3	1.8
Fort Kent	12.2	7.9	4.3
Van Buren	12.6	7.4	5.2
Caribou	14.8	11.7	3.1
Houlton	14.9	12.9	2.0
Millinocket	16.4	15.5	0.9
Greenville*	13.8	14.2	-0.4
Moosehead	12.9	13.0	-0.1
Dover-Foxcroft	17.1	14.7	2.4
Corinna	19.0	17.1	1.9
Bangor	18.4	18.5	-0.1
East Surry	18.8	20.1	-1.3
Robbinston*	19.6	19.9	-0.3
Topsfield*	17.1	15.6	1.5

Read below for specific details & maps of Streamflows, Groundwater Levels, Non-Routine Hydrologic Products issued by WFO Caribou and Drought conditions.

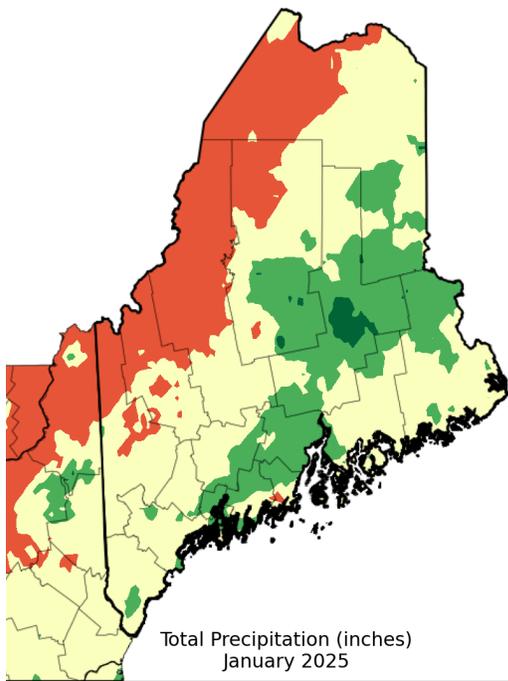


Figure 5. Total Precipitation (inches) January 2025

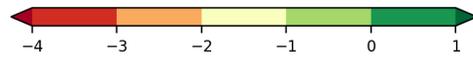
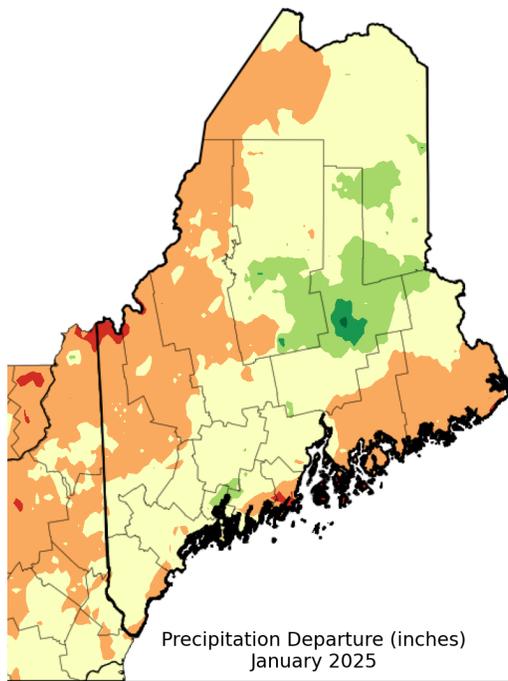


Figure 6. % of Normal Precipitation January 2025

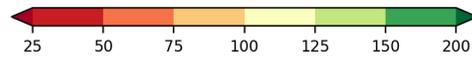
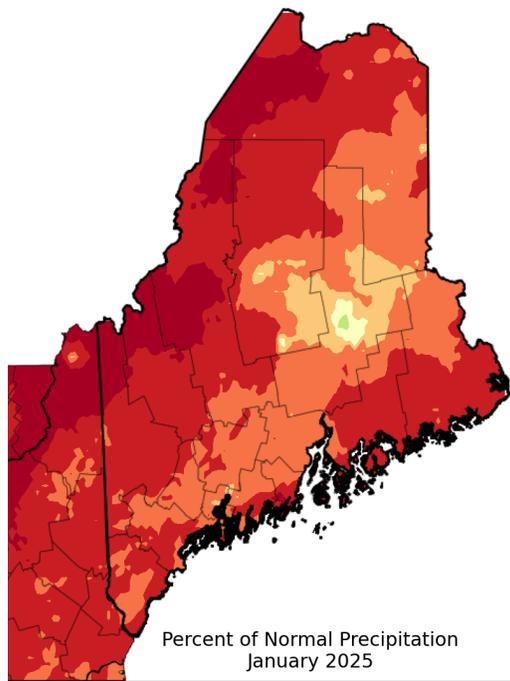


Figure 7. Precipitation Departure (inches) January 2025

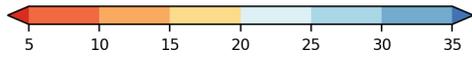
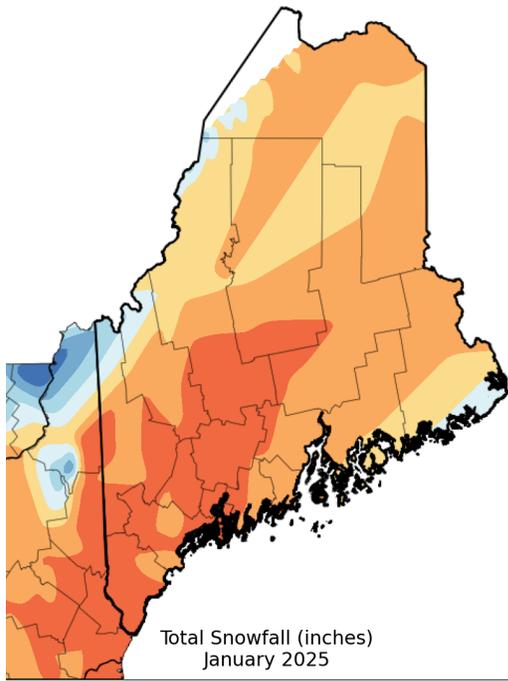


Figure 8. Total Snowfall January 2025

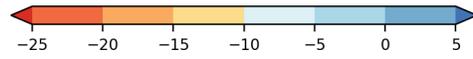
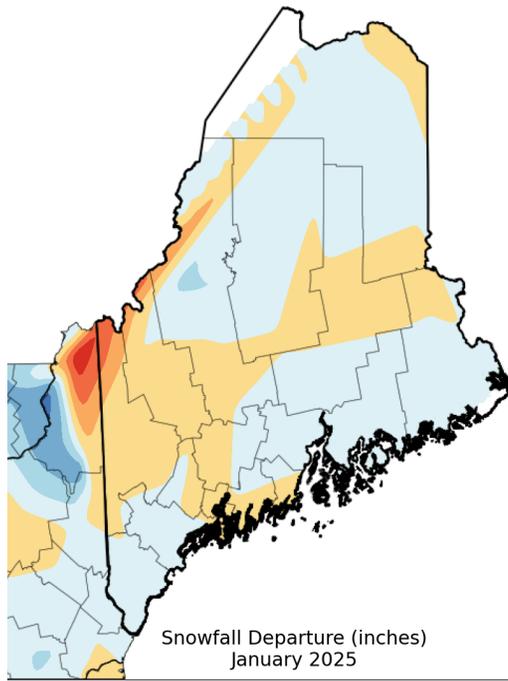


Figure 9. Snowfall Departure January 2025

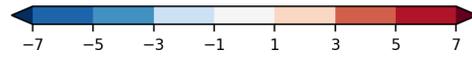
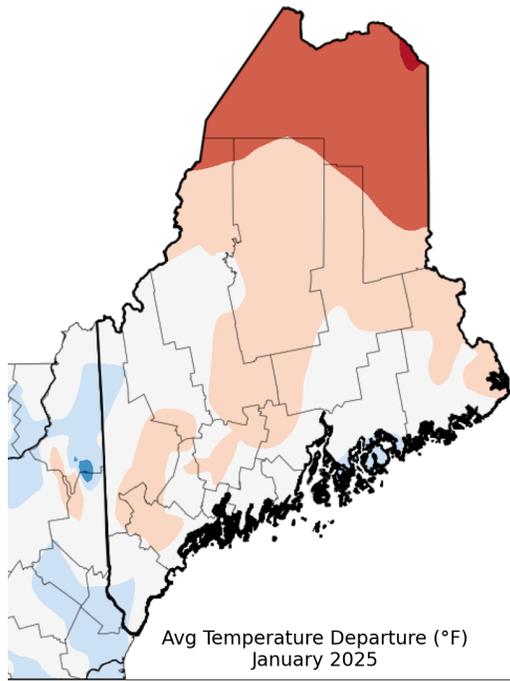


Figure 10. Avg Temperature Departure January 2025

Figure 5-10 Source: [Northeast Regional Climate Center](#)

January Average Monthly Streamflows

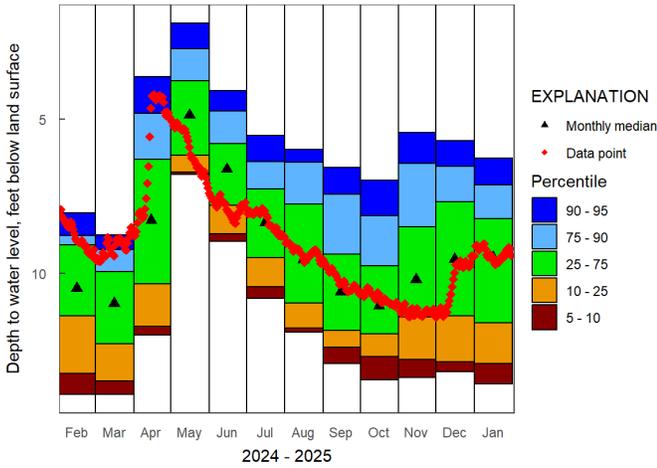
Data provided by the U.S. Geological Survey

River	Monthly Mean Flow (cfs)	% Normal (mean)	Percentile Class	Drainage (mi ²)	Years of Record
Big Black River near Depot Mtn	NA	NA	Ice Impacted	171	40
St. John River at Nine Mile Bridge	NA	NA	Ice Impacted	1341	73
Allagash River near Allagash	NA	NA	Ice Impacted	1478	94
St. John River at Dickey	NA	NA	Ice Impacted	2680	79
St. John River at Fort Kent	NA	NA	Ice Impacted	5929	97
Fish River near Fort Kent	553	75%	Normal	873	94
Aroostook River near Masardis	NA	NA	Ice Impacted	892	66
Aroostook River at Washburn	NA	NA	Ice Impacted	1654	93
St. Croix River at Vanceboro	250	32%	Much Below Normal	413	96
St. Croix River at Baring	1096	44%	Much Below Normal	1374	65
Grand Lake Stream at Grand Lake Stream	66	17%	Low	228.3	95
Narraguagus River at Cherryfield	NA	NA	Ice Impacted	227	75
East Branch Penobscot River at Grindstone	1528	132%	Above Normal	837	102
Mattawamkeag near Mattawamkeag	NA	NA	Ice Impacted	1418	89
Piscataquis River near Dover-Foxcroft	498	149%	Above Normal	298	121
Sebec River at Sebec	558	127%	Above Normal	326	68
Piscataquis River at Medford	NA	NA	Ice Impacted	1162	92
Penobscot River at West Enfield	NA	NA	Ice Impacted	6422	121

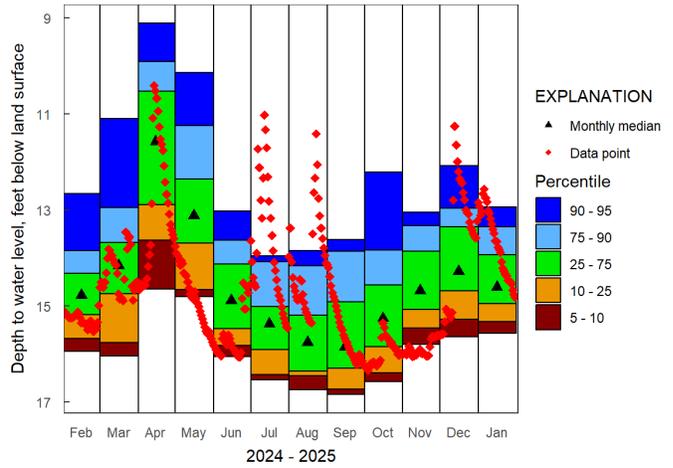
January Monthly Average Groundwater Levels

Station	Percentile Class	Years of Record
Hadley Lakes	Below Normal	39
Kenduskeag	Normal	44
Calais	Normal	43
Millinocket	Low	30
Clayton Lake	Above Normal	35
Fort Kent	Normal	48

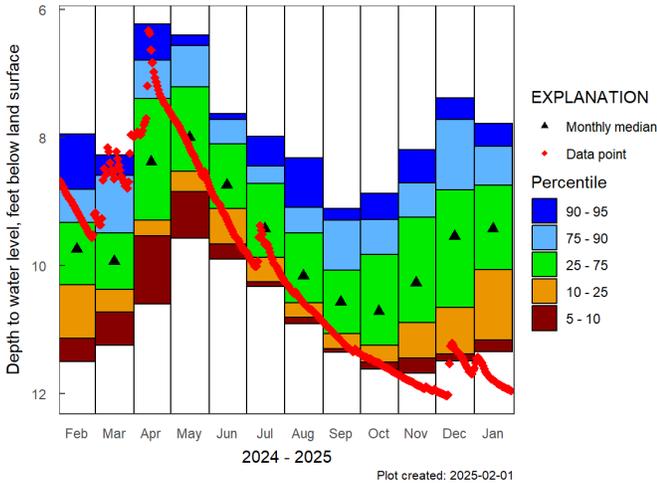
471457068353001 ME-ARW890 Fort Kent, Maine
U.S. Geological Survey



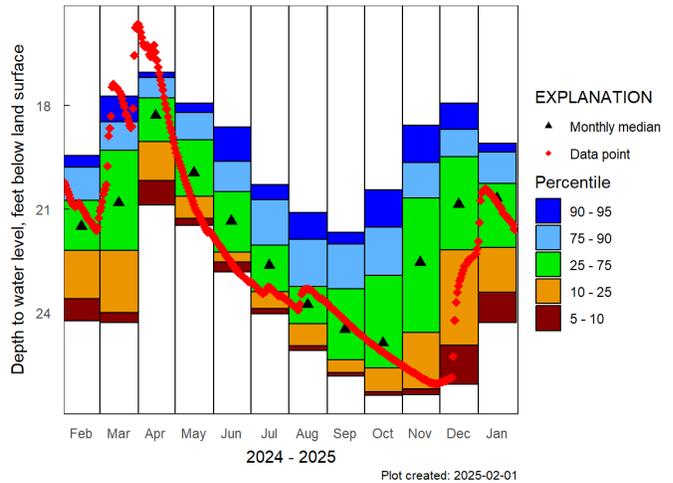
463642069344601 ME-ARW891 Clayton Lake, Maine
U.S. Geological Survey



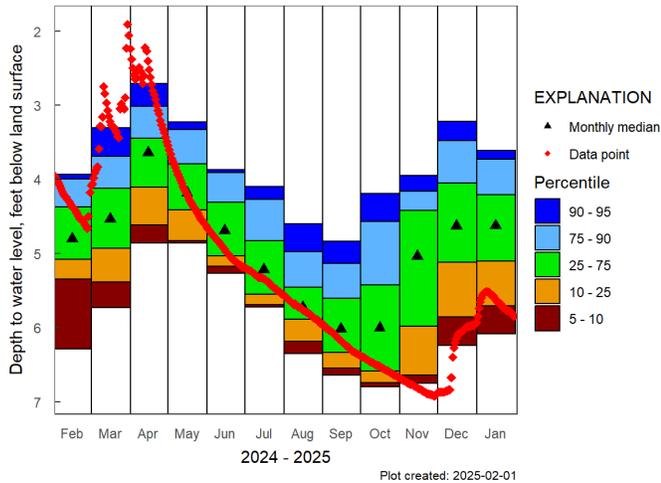
453629068531801 ME-PEW 594 Millinocket, Maine
U.S. Geological Survey



445319068560101 ME-PEW456 Kenduskeag, Maine
U.S. Geological Survey



445227067520101 ME-WW797 Township T24MD BPP (Hadley Lakes)
U.S. Geological Survey



450713067162801 ME-WW796 Calais, Maine
U.S. Geological Survey

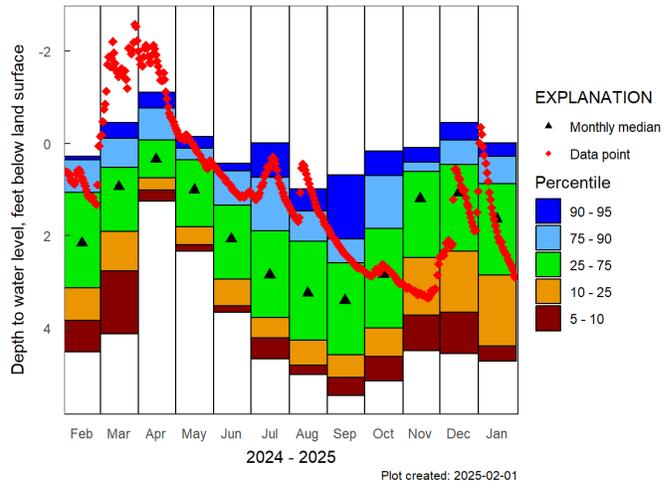


Figure 11-16: Groundwater Level Yearly Plots to Current
Source: [United States Geological Survey](https://www.usgs.gov/)

Flow or Water Level	Percentile Range	Explanation
Ice Impacted	NA	Ice impacted resulting in No Data available
Low	0 th	The monthly mean streamflow or median water level during this month is the lowest ever recorded during the period of record for this site.
Much Below Normal	0 th to 10 th	The monthly mean streamflow or median water level during this month is less than the 10 th percentile when compared to all of the months during the period of record for this site.
Below Normal	10 th to 25 th	The monthly mean streamflow or median water level during this month is between the 10 th and 25 th percentiles when compared to all of the months during the period of record for this site.
Normal	25 th to 75 th	The monthly mean streamflow or median water level during this month is between the 25 th and 75 th percentiles when compared to all of the months during the period of record for this site.
Above Normal	75 th to 90 th	The monthly mean streamflow or median water level during this month is between the 75 th and 90 th percentiles when compared to all of the months during the period of record for this site.
Much Above Normal	90 th to 100 th	The monthly mean streamflow or median water level during this month is greater than the 90 th percentile when compared to all of the months during the period of record for this site.
High	100 th	The monthly mean streamflow or median water level during this month is the highest ever recorded during the period of record for this site.

**Non-Routine Hydrologic Products from WFO Caribou, ME
January 2025**

Product	How Many Issued	Reason for Issuance
None	None	None

**CoCoRaHS Complete Precipitation Reports
www.cocorahs.org
January 2025**

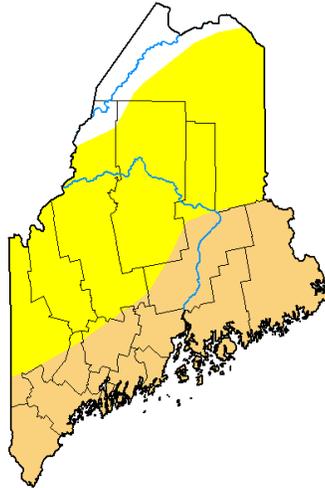
Station Number	Station Name/Location	Total Precipitation (inches)	Total Snowfall (inches)
ME-AR-15	Presque Isle 1.3 WSW	1.85	13.2
ME-AR-18	New Sweden 4.9 NNW	1.67	13.8
ME-AR-41	Castle Hill 1.0 S	1.78	19.0
ME-AR-42	Houlton 2.5 NNW	1.20	9.0
ME-HN-2	East Surry	2.24	14.1
ME-HN-4	Mariaville 1.4 ESE	1.66	6.3
ME-HN-64	Southwest Harbor 0.9 NW	2.83	8.9
ME-PN-10	Lincoln 4.3 NE	1.96	8.6
ME-PN-47	Milford 0.8 SSW	2.14	11.7
ME-PN-55	Orono 1.1 SSW	2.24	12.8
ME-PN-58	Hudson 2.4 ESE	1.83	8.1
ME-PN-59	Glenburn 1.5 ENE	1.88	11.9
ME-PN-62	Glenburn 2.0 ESE	2.08	9.7
ME-PS-9	Abbot 4.6 WNW	1.95	9.5
ME-WS-11	Whiting 2.3 WSW	3.57	18.5
ME-WS-31	Eastport 1.4 ESE	3.23	21.8

***Additional CoCoRaHS reports were not complete with 30 days of record**

Drought Monitor January 7, 2025

U.S. Drought Monitor
Maine

January 7, 2025
(Released Thursday, Jan. 9, 2025)
Valid 7 a.m. EST



Intensity:

- None
- D0 Abnormally Dry
- D1 Moderate Drought
- D2 Severe Drought
- D3 Extreme Drought
- D4 Exceptional Drought

The Drought Monitor focuses on broad-scale conditions. Local conditions may vary. For more information on the Drought Monitor, go to <https://droughtmonitor.unl.edu/About.aspx>

Author:
Brad Pugh
CPC/NOAA

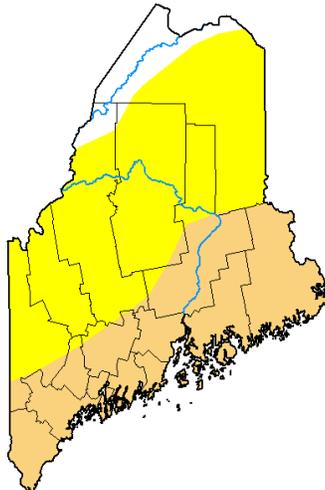


droughtmonitor.unl.edu

Drought Monitor January 28, 2025

U.S. Drought Monitor
Maine

January 28, 2025
(Released Thursday, Jan. 30, 2025)
Valid 7 a.m. EST



Intensity:

- None
- D0 Abnormally Dry
- D1 Moderate Drought
- D2 Severe Drought
- D3 Extreme Drought
- D4 Exceptional Drought

The Drought Monitor focuses on broad-scale conditions. Local conditions may vary. For more information on the Drought Monitor, go to <https://droughtmonitor.unl.edu/About.aspx>

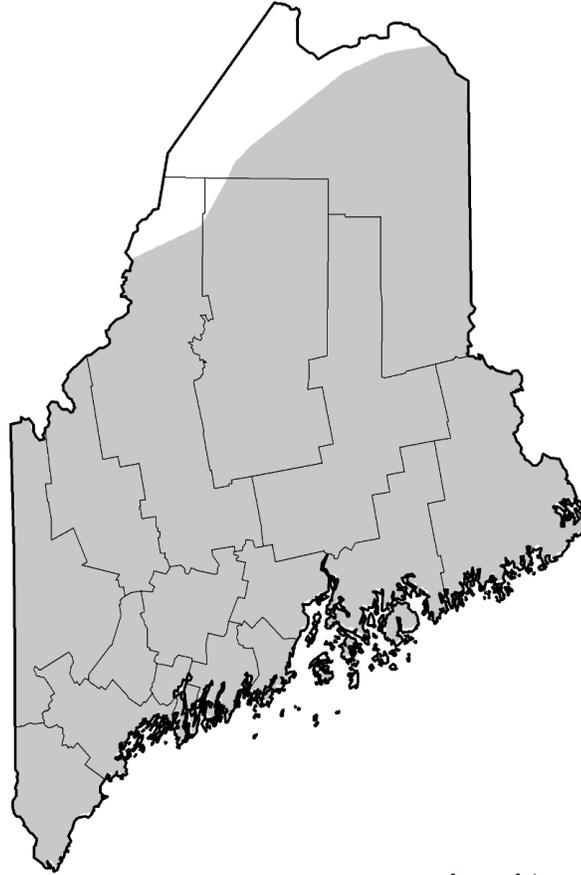
Author:
Brian Fuchs
National Drought Mitigation Center



droughtmonitor.unl.edu

Drought Monitor Change in January 2025

U.S. Drought Monitor Class Change - Maine 3 Week



January 28, 2025
compared to
January 7, 2025



- 5 Class Degradation
- 4 Class Degradation
- 3 Class Degradation
- 2 Class Degradation
- 1 Class Degradation
- No Change
- 1 Class Improvement
- 2 Class Improvement
- 3 Class Improvement
- 4 Class Improvement
- 5 Class Improvement

droughtmonitor.unl.edu

Week	None (%)	D0-D4 (%)	D1-D4 (%)	D2-D4 (%)	D3-D4 (%)	D4 (%)	DSCI
1/7/2025	7.31	92.69	38.12	0.00	0	0	131
1/28/2025	7.31	92.69	38.12	0.00	0	0	131
Change	0.00	0.00	0.00	0.00	0	0	0

River Ice Photos

St. John River @ St. Francis "Narrow Gauge" on January 2, 2025
Courtesy: Craig Ouellette



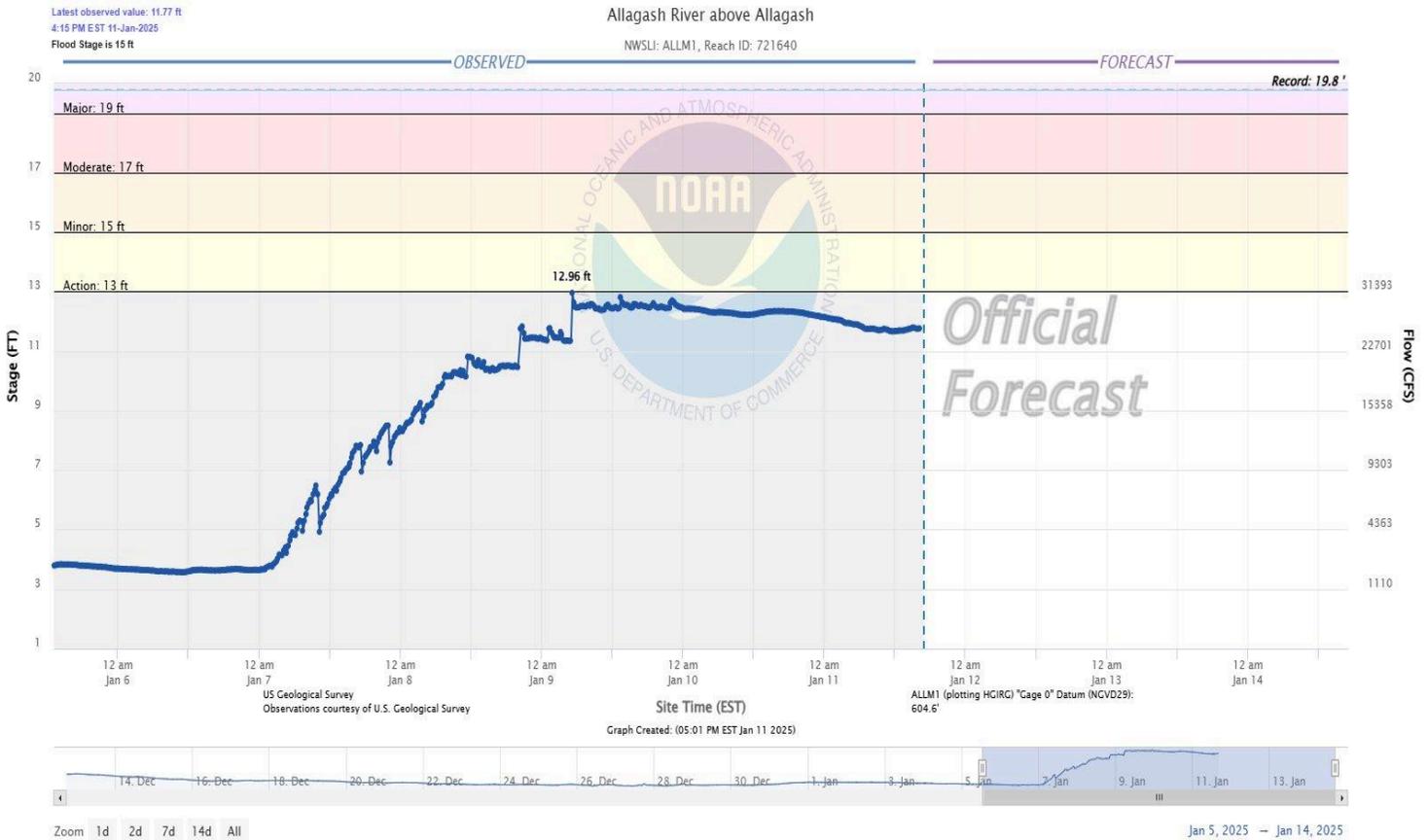
St. John River @ St. Francis "Narrow Gauge" on January 6, 2025
Courtesy: Craig Ouellette



St. John River @ St. Francis "Narrow Gauge" on January 31, 2025
 Courtesy: Craig Ouellette



Allagash River Ice Jam River Gage Data



Allagash River @ ALLM1 Gage (Allagash) on January 11, 2025
Courtesy: James Sinko



Allagash River @ ALLM1 Gage (Allagash) on January 11, 2025
Courtesy: James Sinko | 5-7 River Mile Jam



Allagash River @ ALLM1 Gage (Allagash) on January 11, 2025
Courtesy: James Sinko | 5-7 River Mile Jam (Looking @ Head of Jam)



Aroostook River Headwaters @ Millinocket Lake on January 16, 2025
Courtesy: NOAA



Aroostook River @ Oxbow on January 16, 2025
Courtesy: NOAA



Aroostook River @ MASM1 Gage (Masardis) on January 16, 2025
Courtesy: NOAA



Penobscot River @ Weldon Dam on January 15, 2025
Courtesy: NOAA



Penobscot River @ Mattawamkeag River Confluence on January 15, 2025
Courtesy: NOAA



Penobscot River @ Mattanawcook Island in Lincoln on January 15, 2025
Courtesy: NOAA



Aroostook River @ MASM1 Gage (Masardis) on January 7, 2025
Courtesy: James Sinko



Penobscot River @ Bangor on January 8, 2025
Courtesy: [@GSn04401](#) on X



Penobscot River @ Bangor on January 8, 2025
Courtesy: [@GSn04401](#) on X



Penobscot River @ Veazie on January 14, 2025
Courtesy: NOAA



Penobscot River @ Milford/Old Town (Milford Dam) on January 14, 2025
Courtesy: NOAA



Penobscot River @ Piscataquis River Confluence (West Enfield) on January 14, 2025
Courtesy: NOAA



Penobscot River @ Salmon Stream Confluence (Medway) on January 14, 2025
Courtesy: NOAA

