

MONTHLY REPORT OF HYDROLOGIC CONDITIONS

WFO Caribou, Maine

REPORT FOR:
MONTH YEAR

August 2024

SIGNATURE

**James Sinko - Meteorologist
Hydrology Program Manager**

DATE

September 6, 2024

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.

August 2024

August 2024 featured near to slightly average temperatures and near to below average rainfall across much of Eastern and Northern Maine except above average rainfall in the North Woods. August, the North Atlantic Oscillation (NAO) monthly mean was +0.63 SD as a Bermuda high was in place but lowering heights with a slight shift east in the Atlantic. At the same time the Pacific North American Pattern (PNA) completely flipped from July 2024 with a monthly mean of -1.01 SD resulting in more robust troughing. The El Niño-Southern Oscillation (ENSO) pattern remains ENSO Neutral as the Niño 1+2 SST departures sit at -0.5°C and the Niño 3 region dropped to -0.5°C with Niño 3.4 region at -0.2°C. August's mean pattern at 500mb across Maine featured persistent troughing with a large ridge that shifted into the Rockies & Plains compared to July 2024. The Bermuda high in July 2024 shifted east in the Atlantic to more centrally located over the Mid-Atlantic ridge. This resulted in 500mb heights generally near average heights for August as the appearance of several cutoff lows took place over the Northeast.

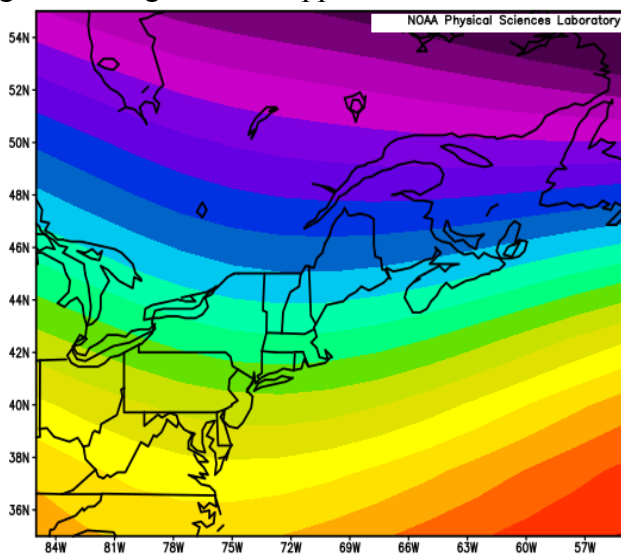


Figure 1: 500mb Geopotential Height (m) Anomalies (1991-2020 Climo) August 2024

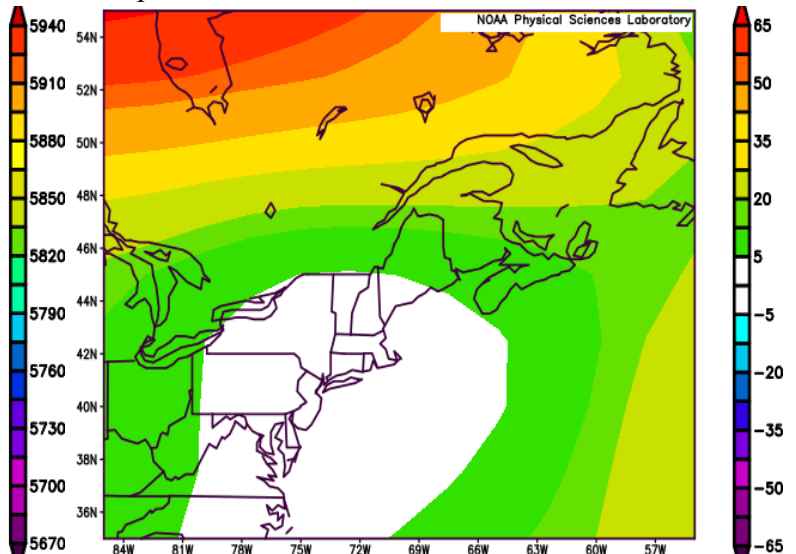


Figure 2: 500mb Geopotential Height (m) Composite Mean August 2024

Source: [NOAA Physical Sciences Laboratory](https://www.noaa.gov/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*	4.26	3.77	0.49	113.0%					
Fort Kent	5.27	3.73	1.54	141.3%	0.0	0.0	0.0	0	0.0
Van Buren	5.56	3.48	2.08	159.8%	0.0	0.0	0.0	0	0.0
Caribou	3.63	3.61	0.02	100.6%	0.0	0.0	0.0	0	0.0
Houlton	2.50	3.52	-1.02	71.0%					
Millinocket*	2.65	3.80	-1.15	69.7%	0.0			0	0.0
Greenville*	4.54	3.96	0.58	114.6%					
Moosehead*	3.89	3.85	0.04	101.0%	0.0	0.0	0.0	0	0.0
Corinna	4.37	3.59	0.78	121.7%	0.0	0.0	0.0	0	0.0
Bangor	4.82	3.06	1.76	157.5%	0.0	0.0	0.0	0	0.0
East Surry	4.48	3.14	1.34	142.7%	0.0	0.0	0.0	0	0.0
Robbinston*	3.16	3.45	-0.29	91.6%	0.0	0.0	0.0	0	0.0
Topsfield*	4.21	3.44	0.77	122.4%	0.0	0.0	0.0	0	0.0
Baileyville*	3.61	3.42	0.19	105.6%	0.0	0.0	0.0	0	0.0

*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 across Eastern and Northern Maine ranged widely from south to north due to multiple convective events. Precipitation ranged from 120-200% of normal across the St. John River basin in the North Woods to Estcourt Station eastward to Fort Kent and Hamlin. Precipitation ranged from 100-175% of normal across the Moosehead Region into Central and Northern Piscataquis County west of Mt. Katahdin. Precipitation ranged from 70-90% of normal across Eastern Aroostook County to the eastern side of Mt. Katahdin into Northern Washington County westward into the Piscataquis River Basin of Southern Piscataquis County. A strip of 110-160% of normal precipitation extended through Southern Penobscot County including Bangor eastward along the Route 9 corridor but ended before the St. Croix River basin. Additional spikes of 125-175% of normal precipitation existed in Coastal Downeast except Hancock County (including MDI) where here it was 75-90% of normal.

Monthly **Evaporation** at WFO Caribou was 4.43 inches with only 3.63 inches that resulted in dry grounds and patchy brown lawns at times. Additionally, many small creek ponds saw significant drawdown on water levels with many large scale rivers and streams falling. We did see noticeably dry grounds across the Downeast coast near MDI thanks to the continued spell of below normal precipitation. No **Drought** was present in the month of August. However, soil moisture conditions did fluctuate throughout the month across the area. Portions of the North Woods in the St. John River basin started the month in the 90-98th percentile (Very Wet Soils) for the top 2 inches of soil with this area significantly drying out by the end of the month back to normal conditions. Above normal soil moisture levels were noted in Northeast Aroostook thanks to the end of the month precipitation event and cooler cloudy conditions resulting in less evaporation. Much of Eastern and Northern Maine was near normal soil moisture conditions looking at the month as a whole. We do note slightly below normal soil moisture

conditions across Moosehead Lake and on MDI along the Hancock County coast where below normal precipitation has persisted for 2 months. Looking at 0-10 cm and 10-40 cm soil moisture depths most locations across Eastern/Northern Maine are running normal to slightly below normal but a few spots to note...Downeast several locations are running significantly below normal while the far northern part of the Crown is running well above normal.

Streamflows remained above normal conditions on the St. John River and Allagash River upstream of the Narrow Gauge in St. Francis. Big Black, Allagash, St. Francis and St. John all saw monthly average flows Above Normal in the 75-90th percentile. The Fish River lakes remain below normal resulting in reduced flow into the Fish River at Fort Kent with the below normal conditions. This likely aided in the St. John River at Fort Kent being Normal for the month of August. Aroostook River remains normal with generally 57-64% of normal (mean) conditions but August is typically one of the lowest flows for summer which was noted by observers. Looking Downeast at the St. Croix basin including Grand Lake Stream the conditions remain Much Below Normal with lack of rainfall and regulation operations continuing to reduce flow in the rivers. Normal conditions were noted on the Narraguagus River, Penobscot River and Mattawamkeag with the stretch of decent rainfall that fell in the catch basin. Significant convective activity resulted in Above Normal flows on the Piscataquis River and its tributaries including the Sebec River.

Groundwater conditions for the month finished Normal conditions across Northern Maine with Much Above Normal conditions noted in the North Woods. Normal groundwater conditions noted in the Greater Bangor area into Downeast Coast with Much Above Normal at Calais. Across the Central Highlands the conditions finished Below Normal.

Temperatures across the region ranged from around average to 2°F above the 30 year (1991-2020) normals. In Caribou, it was the 8th warmest August on record (Mean 66.5°F), records in Caribou date back to 1939.

Town/City	Avg Monthly Temperature (°F)	Normal Monthly Temperature (°F)	Departure from Normal (°F)
Frenchville	65.4	64.6	0.8
Fort Kent	64.1	62.9	1.2
Van Buren	66.0	64.1	1.9
Caribou	66.5	64.9	1.6
Houlton	65.5	64.4	1.1
Millinocket	67.7	66.5	1.2
Greenville*	65.5	64.8	0.7
Moosehead	64.7	63.3	1.4
Corinna	68.0	67.7	0.3
Bangor	68.4	68.2	0.2
East Surry	66.5	66.7	-0.2
Robbinston*	67.0	66.3	0.7
Topsfield*	67.2	66.7	0.5
Baileyville*	67.3	69.8	-2.5

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

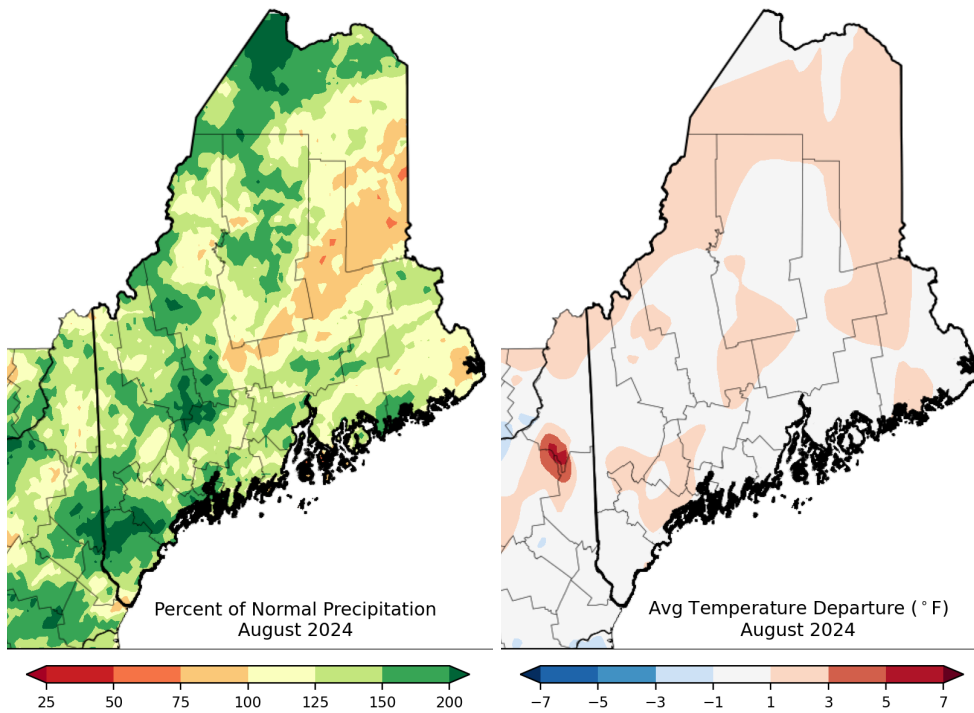
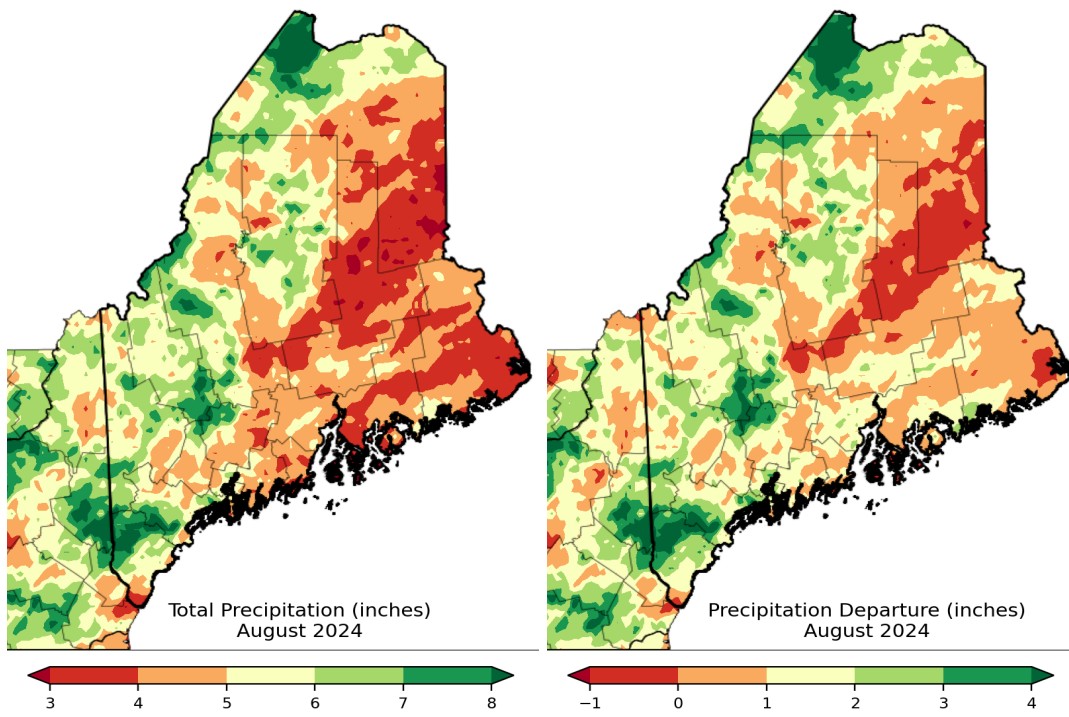


Figure 5: Percent of Normal Precipitation for August

Figure 6: Average Temperature Departure for August

Source: [Northeast Regional Climate Center](#)

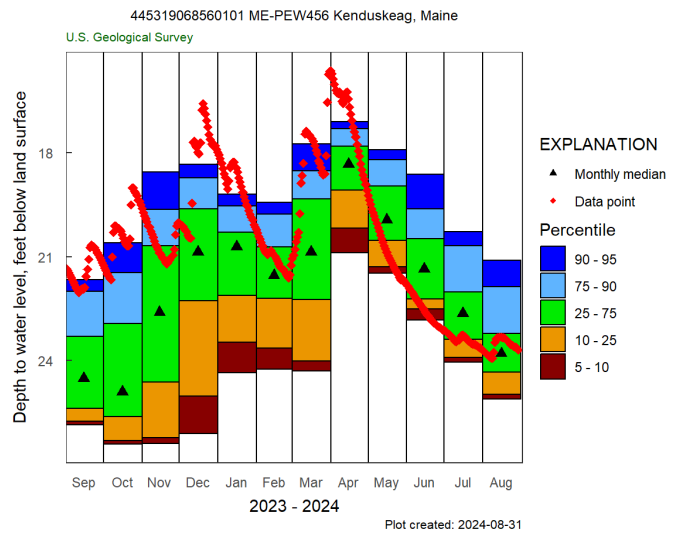
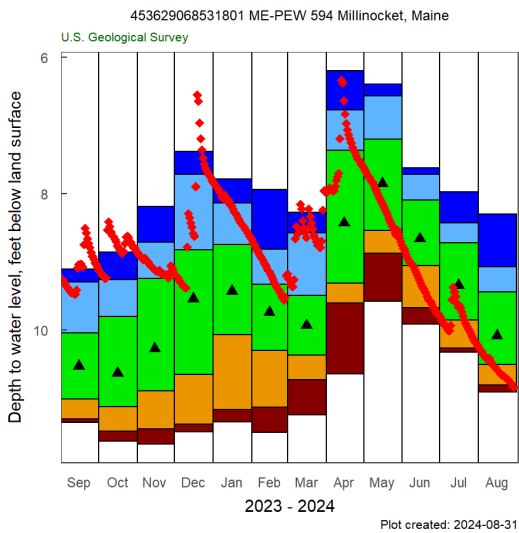
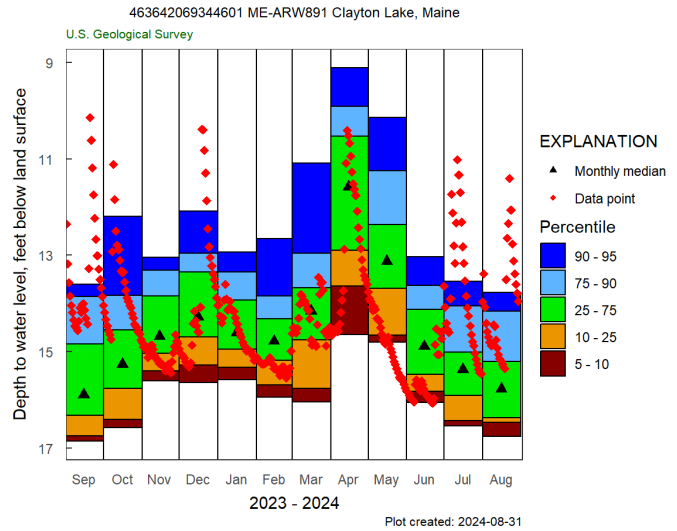
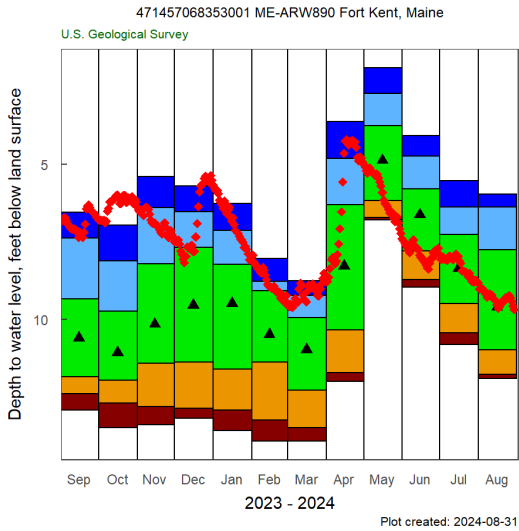
August Average Monthly Streamflows

Data provided by the U.S. Geological Survey

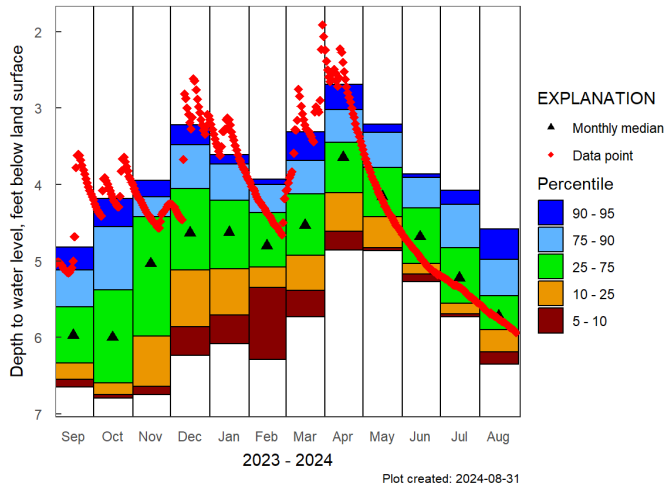
River	Monthly Mean Flow (cfs)	% Normal (mean)	Percentile Class	Drainage (mi ²)	Years of Record
Big Black River near Depot Mtn	326	211%	Above Normal	171	40
St. John River at Nine Mile Bridge	2538	191%	Above Normal	1341	73
Allagash River near Allagash	1808	157%	Above Normal	1478	94
St. John River at Dickey	3855	152%	Above Normal	2680	79
St. John River at Fort Kent	3467	66%	Normal	5929	97
Fish River near Fort Kent	244	33%	Below Normal	873	94
Aroostook River near Masardis	364	57%	Normal	892	66
Aroostook River at Washburn	700	64%	Normal	1654	93
St. Croix River at Vanceboro	382	49%	Much Below Normal	413	95
St. Croix River at Baring	699	44%	Much Below Normal	1374	64
Grand Lake Stream at Grand Lake Stream	153	34%	Much Below Normal	228.3	95
Narraguagus River at Cherryfield	106	75%	Normal	227	76
East Branch Penobscot River at Grindstone	711	76%	Normal	837	102
Mattawamkeag near Mattawamkeag	595	75%	Normal	1418	89
Piscataquis River near Dover-Foxcroft	321	176%	Above Normal	298	121
Sebec River at Sebec	362	128%	Above Normal	326	69
Piscataquis River at Medford	1163	141%	Above Normal	1162	93
Penobscot River at West Enfield	5677	87%	Normal	6422	121

August Average Groundwater Levels

Station	Percentile Class	Years of Record
Hadley Lakes	Normal	38
Kenduskeag	Normal	45
Calais	Much Above Normal	24
Millinocket	Below Normal	29
Clayton Lake	Much Above Normal	45
Fort Kent	Normal	45



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



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

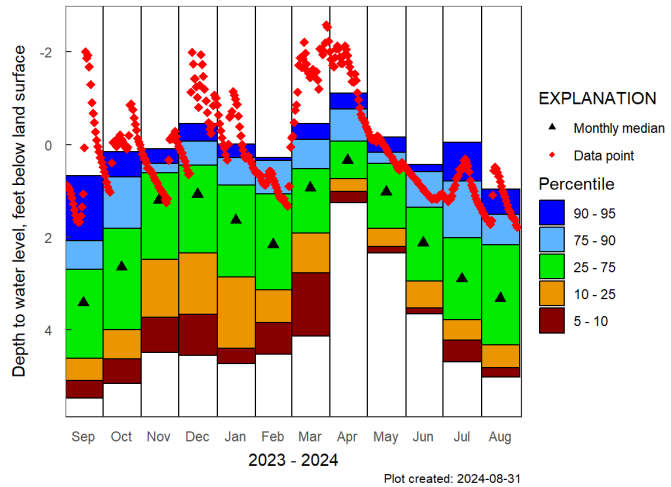


Figure 7-12: Groundwater Level Yearly Plots to Current
Source: [United States Geological Survey](https://www.usgs.gov/)

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
August 2024**

Product	How Many Issued	Reason for Issuance
Flood Advisory	7	Excessive Rainfall from Convection

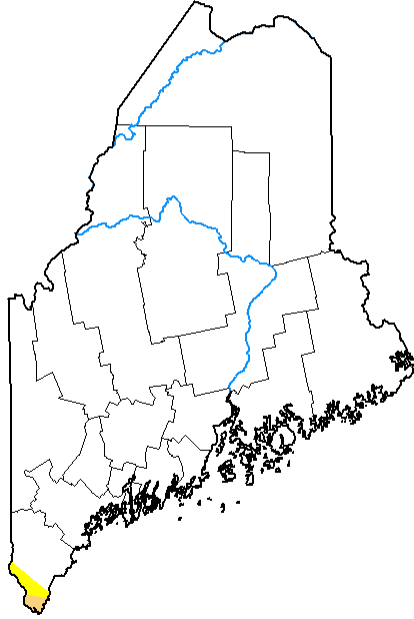
**CoCoRaHS Complete Precipitation Reports
www.cocorahs.org
August 2024**

Station Number	Station Name	Total Precipitation (inches)
ME-AR-15	Presque Isle 1.3 WSW	3.99
ME-AR-28	Presque Isle 4.2 S	3.75
ME-AR-41	Castle Hill 1.0 S	3.73
ME-HN-2	East Surry	4.48
ME-HN-4	Mariaville 1.4 ESE	3.52
ME-HN-56	Surry 2.5 SSE	4.56
ME-HN-66	Lamoine 2.6 SSW	3.58
ME-PN-10	Lincoln 4.3 NE	3.65
ME-PN-55	Orono 1.1 SSW	5.04
ME-PN-58	Hudson 2.4 ESE	4.23
ME-WS-31	Eastport 1.4 ESE	3.78

***Additional CoCoRaHS reports were not complete with 31 days of record**

Drought Monitor August 6, 2024

U.S. Drought Monitor Maine



August 6, 2024

(Released Thursday, Aug. 8, 2024)

Valid 8 a.m. EDT

Drought Conditions (Percent Area)

	None	D0-D4	D1-D4	D2-D4	D3-D4	D4
Current	99.38	0.62	0.21	0.00	0.00	0.00
Last Week 07-30-2024	96.47	3.53	0.21	0.00	0.00	0.00
3 Months Ago 05-07-2024	95.89	4.11	0.00	0.00	0.00	0.00
Start of Calendar Year 01-02-2024	100.00	0.00	0.00	0.00	0.00	0.00
Start of Water Year 09-26-2023	100.00	0.00	0.00	0.00	0.00	0.00
One Year Ago 08-08-2023	100.00	0.00	0.00	0.00	0.00	0.00

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:

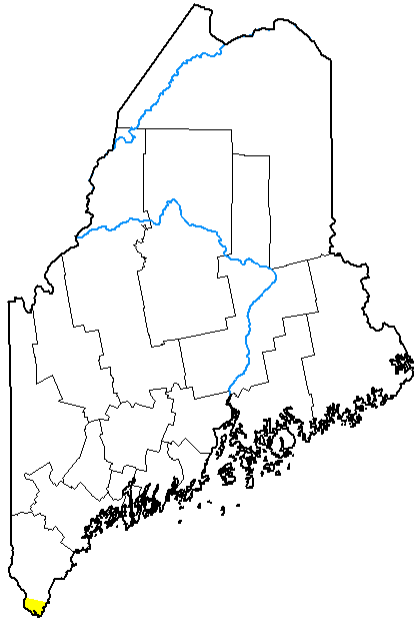
David Simeral
Western Regional Climate Center



droughtmonitor.unl.edu

Drought Monitor August 27, 2024

U.S. Drought Monitor Maine



August 27, 2024

(Released Thursday, Aug. 29, 2024)

Valid 8 a.m. EDT

Drought Conditions (Percent Area)

	None	D0-D4	D1-D4	D2-D4	D3-D4	D4
Current	99.79	0.21	0.00	0.00	0.00	0.00
Last Week 08-20-2024	99.79	0.21	0.00	0.00	0.00	0.00
3 Months Ago 05-28-2024	92.93	7.07	0.00	0.00	0.00	0.00
Start of Calendar Year 01-02-2024	100.00	0.00	0.00	0.00	0.00	0.00
Start of Water Year 09-26-2023	100.00	0.00	0.00	0.00	0.00	0.00
One Year Ago 08-29-2023	100.00	0.00	0.00	0.00	0.00	0.00

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:

Richard Heim
NCEI/NOAA



droughtmonitor.unl.edu

Drought Monitor Change in August 2024

