

NWS Form E-5 (04-2006) (PRES. BY NWS Instruction 10-924)	U.S. DEPARTMENT OF COMMERCE NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION NATIONAL WEATHER SERVICE	HYDROLOGIC SERVICE AREA (HSA)
		WFO Caribou, Maine REPORT FOR: MONTH YEAR December 2021
MONTHLY REPORT OF HYDROLOGIC CONDITIONS		SIGNATURE James Sinko, HPM
TO: Hydrologic Information Center, W/OS31 NOAA's National Weather Service 1325 East West Highway Silver Spring, MD 20910-3283		DATE January 22, 2022

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.

December 2021

Precipitation for the month of December ranged from 50-75% of average across the region as some areas across the southern basins such as Bangor came in with 1.19 inches below normal for the month, while Caribou was unique at 93.6% of normal with only 0.23 inches below normal. Bangor had 2.53 inches for the month, while Caribou had 3.37 inches. Frenchville came in with 0.88 inches below normal with a monthly total of 1.44 inches. Millinocket was 0.48 inches below normal with a monthly total of 2.97 inches, while Houlton was 0.80 inches below normal with a monthly total of 2.57 inches. There were no significant precipitation events, we did see the largest precipitation events on the 6th, 11th and 22nd. Frenchville, Millinocket, Houlton and Caribou had their heaviest precipitation day on the 6th with 0.47-1.24 inches falling while southern basins were below 0.5 inches. Bangor's heavier precipitation for the month occurred on the 22nd with a total of 0.58 inches. The 22nd saw a range of 0.35 to 0.68 inches across the north basins while southern basins were around 0.60 inches.

There were several mixed precipitation events in the month due to the negative Pacific North American Pattern (PNA) and positive North Atlantic Oscillation (NAO). The heaviest snowfall of the month occurred on the 22nd with upwards to 10 inches across far northeast Aroostook County, with much lighter amounts over Central and Downeast areas. Caribou measured 6.6 inches which was the largest event this month. Caribou finished the month with 23.1 inches which was 2.1 inches below average. Bangor's largest measurable event occurred on the 8th with 2.1 inches and a monthly total of 8.5 inches which was 6.2 inches below average.

The month finished 0.9 to 2.6 degrees above average across the region, except in the Saint John Valley where temperatures were very close to the 30-year averages. Temperatures alternated frequently during the course of the month from below average to above average. There was a pronounced lack of arctic air with only one night with a low temperature below zero in Caribou. On average, Caribou averages 6 nights with a low below zero during the month of December. In Bangor, the low for the month was 2 above on the 20th. Bangor typically averages 2 sub-zero nights during the month of December. Caribou's average monthly temperature was 29.5°, which was 2° above normal. Houlton's average monthly temperature was 32.2°, which was 2.6° above normal. Millinocket average monthly

temperature was 33.2°, which was 2.2° above average. Bangor’s average monthly temperature was 36.1°, which was 1.6° above normal for the month. Lastly, Frenchville’s average monthly temperature was 26.7° which was 0.9° above normal for the month.

Streamflows across the region not impacted by ice were near normal levels but most rivers were approaching below normal levels as the ground froze with little runoff into the headwaters. River ice thickened with several cold nights in a row to start the month. We saw thicker sheet ice develop as border ice filled in across the centers of both the Aroostook River & St. John River’s in the early part of the month. Additional ice developed on portions of the Piscataquis, Penobscot and Mattawamkeag rivers especially in the northern areas of each river. A significant warm up occurred on the 6th triggering an ice jam in the area of Dickey Bridge in Allagash to St. Francis. At the same time another ice jam developed between Castle Hill & Wade and extended downstream to Washburn and Crouseville. These two ice jams have remained locked in place since the beginning of the month and remain locked in as of the date of this report. Neither ice jam caused any flooding or impacts to nearby roads and homes. Towards the later part of the month ice began thickening across much of the rivers, streams, ponds and lakes across the north and Central Highlands. By the end of the month several rivers and streams across the north had ice thicknesses approaching 3-8 inches to the point of supporting the weight of wildlife. This was thanks to several spells of below freezing daytime highs and morning lows in the single digits.

Wells across eastern and northern Maine reported normal levels with Clayton Lake the only exception running much below normal. Generally, similar to November but noticed very slight improvement at Clayton Lake this month with the mean water level below land-sfc.

In regards to Drought monitoring, we continued to hold status quo from the beginning of the month to the end of the month given the winter conditions and frozen grounds. Much of Eastern & Northeastern Maine remained out of drought conditions. Moosehead Lakes region into the North Woods and headwaters of the St. John River remained at Abnormally Dry (D0) / **Moderate Drought (D1)**, there remains a very small **Severe (D2)** area in Northern Somerset count along the Quebec border. This has been classified as a long-term impacts drought which is typically greater than 6 months impacting both hydrology and ecology.

Precipitation Totals for Select Locations with all units in inches

Location	Total Precip	Normal Precipitation	Departure from Normal	Snowfall	Normal Snowfall	Departure from Normal Snowfall	Greatest Snow Depth
Frenchville	1.44	2.27	-0.83	NA	NA	NA	NA
Caribou	3.37	3.60	-0.23	23.1	25.2	-2.1	9 ¹
Houlton	2.57	3.37	-0.80	NA	NA	NA	NA
*Millinocket	2.97	3.45	-0.48	13.3	NA	NA	6 ²
Bangor	2.53	3.72	-1.19	8.5	14.7	-6.2	4 ³

*Millinocket snowfall measured at wastewater treatment plant, not the ASOS site. No departure data is available.

¹Caribou’s greatest snow depth was observed on the 23rd and again on the 29th.

²Millinocket’s greatest snow depth was observed on the 29th through the 31st.

³Bangor’s greatest snow depth was observed on the 29th through the 31st.

December Stream Flows for Selected Rivers

River	Normal Flow (cfs)	Monthly Mean Flow (cfs)	Monthly Mean (in)	Percentile Class	Drainage (mi²)	Years of Record
St. John River at Ninemile Bridge	NA	NA	NA	NA	1341	70
St. John River at Fort Kent	3550 – 7600	4250	0.83	Normal	5929	95
Aroostook River at Washburn	NA	NA	NA	NA	1654	90
Narraguagus River at Cherryfield	371 – 936	597	3.03	Normal	227	73
E Br Penobscot River at Grindstone	NA	NA	NA	NA	837	118
Mattawamkeag nr Mattawamkeag	1470 – 3730	2500	2.03	Normal	1418	87
Piscataquis River nr Dover-Foxcroft	263 – 794	328	1.27	Normal	298	119

Groundwater Levels

Station	Normal Range (ft)	Mean Water Level Below Land-sfc Datum (ft)	Departure from Month-end Median (ft)	Percentile Class	Years of Record
Amherst	NA	NA	NA	NA	30
Crooked Road	NA	NA	NA	NA	15
Hadley Lakes	5.39 – 4.14	4.66	0.02	Normal	36
Kenduskeag	22.10 – 19.70	20.51	-0.49	Normal	43
Calais	1.59 – 0.40	0.54	-0.37	Normal	22
Millinocket	10.70 – 9.18	9.77	0.15	Normal	28
Clayton Lake	14.60 – 13.30	15.14	0.94	Very Low	43
Fort Kent	11.50 – 8.36	10.89	1.21	Normal	44

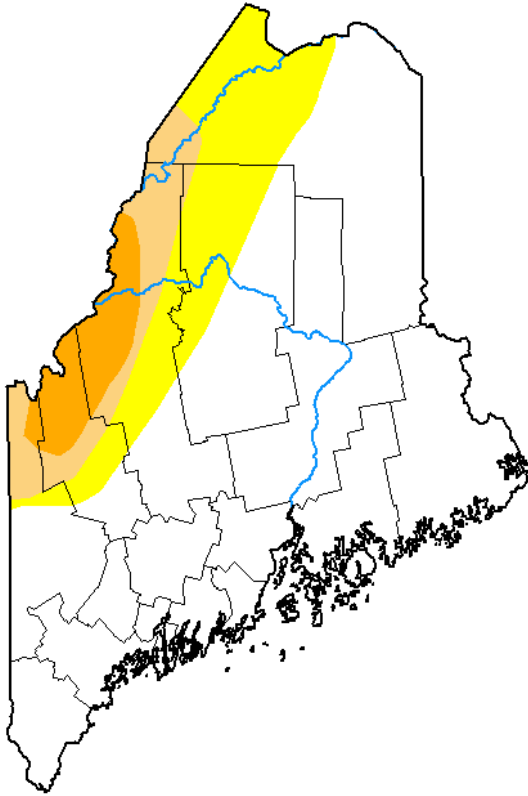
Flow or Water Level	Percentile Range	Explanation
Record Low	0 th	The monthly mean streamflow or median water level during this month is the lowest ever recorded during the period of record for this site.
Very Low	0 th to 10 th	The monthly mean streamflow or median water level during this month is less than the 10 th percentile when compared to all of the months during the period of record for this site.
Low	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.
High	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.
Very High	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.
Record 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
December 2021
WFO Caribou, ME**

WMO Identifier	Date	Issuance	Name of Product

Drought Conditions for December 2021

U.S. Drought Monitor Maine



December 7, 2021

(Released Thursday, Dec. 9, 2021)

Valid 7 a.m. EST

Drought Conditions (Percent Area)

	None	D0	D1	D2	D3	D4
Current	72.42	15.76	6.50	5.32	0.00	0.00
Last Week <i>11-30-2021</i>	72.42	15.76	6.50	5.32	0.00	0.00
3 Months Ago <i>09-07-2021</i>	38.51	8.06	44.28	9.15	0.00	0.00
Start of Calendar Year <i>12-29-2020</i>	91.54	8.46	0.00	0.00	0.00	0.00
Start of Water Year <i>09-28-2021</i>	66.54	17.96	10.65	4.85	0.00	0.00
One Year Ago <i>12-08-2020</i>	78.43	16.04	5.53	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:

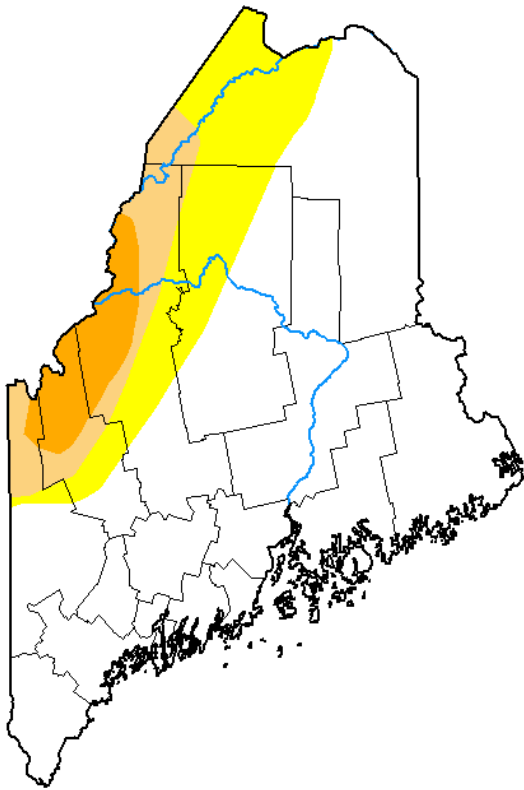
David Simeral
Western Regional Climate Center



droughtmonitor.unl.edu

U.S. Drought Monitor
Maine

December 28, 2021
(Released Thursday, Dec. 30, 2021)
Valid 7 a.m. EST



Drought Conditions (Percent Area)

	None	D0	D1	D2	D3	D4
Current	72.42	15.76	6.50	5.32	0.00	0.00
Last Week 12-21-2021	72.42	15.76	6.50	5.32	0.00	0.00
3 Months Ago 09-28-2021	66.54	17.96	10.65	4.85	0.00	0.00
Start of Calendar Year 12-29-2020	91.54	8.46	0.00	0.00	0.00	0.00
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Author:

Brad Pugh
CPC/NOAA



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