

**MONTHLY REPORT OF HYDROLOGIC CONDITIONS**

**WFO Caribou, Maine**

REPORT FOR:  
MONTH YEAR

**April 2024**

SIGNATURE

**James Sinko - Meteorologist  
Hydrology Program Manager**

DATE

**May 14, 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.

**April 2024**

April 2024 finished with near normal to slightly above average temperatures and below average precipitation to near normal in spots. In April the North Atlantic Oscillation (NAO) monthly mean was  $-0.78SD$  as blocking took place over Greenland extended into the Canadian Maritimes with the weak Mid Atlantic low well southeast of Nova Scotia halfway to the Azores. At the same time the Pacific North American Pattern (PNA) shifted negatively with a monthly mean of  $-0.65SD$  which resulted in troughing over the Western United States allowing for warm air in the Eastern United States although was somewhat muted by the blocking in the North Atlantic. This pattern resulted within a weakening positive El Niño-Southern Oscillation (ENSO) regime transitioning to ENSO Neutral. We saw progressive systems for the most part, however a few times storm systems tapped into the dominant southern jet stream flows to produce precipitation within a generally warmer pattern.

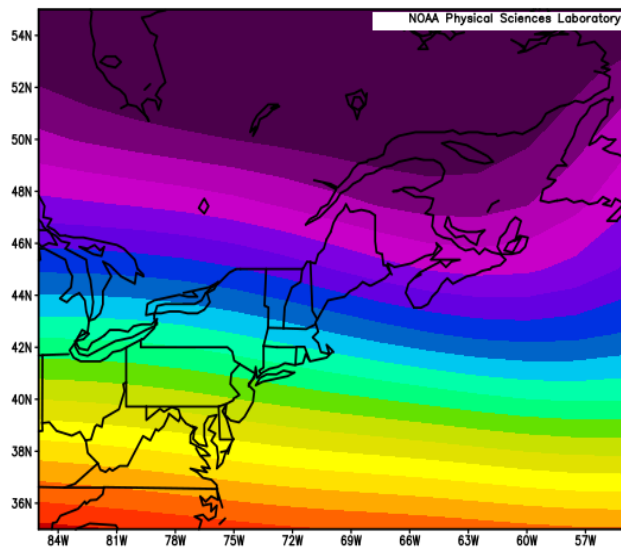


Figure 1: 500mb Geopotential Height (m) Anomalies (1991-2020 Climo) April 2024

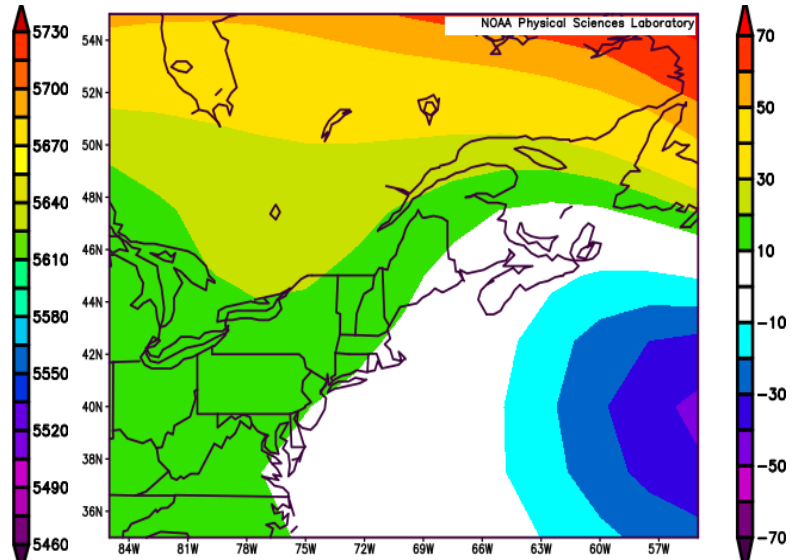


Figure 2: 500mb Geopotential Height (m) Composite Mean April 2024

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*	0.83	2.35	-1.52	35.3%					
Fort Kent	2.44	3.17	-0.73	77.0%	5.3	6.6	-1.3	4	0.4
Van Buren	0.78	3.06	-2.28	25.5%	0.0	5.7	-5.7	0	0.0
Caribou	1.02	2.99	-1.97	34.1%	1.4	8.3	-6.9	4	0.4
Houlton	1.56	2.94	-1.38	53.1%					
Millinocket*	1.90	3.51	-1.61	54.1%	6.0			6	0.4
Greenville*	3.30	3.59	-0.29	91.9%					
Moosehead*	2.67	3.28	-0.61	81.4%	12.5	7.5	5.0	12	2.9
Corinna	3.69	3.83	-0.14	96.3%	10.0	3.4	6.6	9	0.9
Bangor	2.71	3.61	-0.90	75.1%	9.0	3.7	5.3	8	0.7
Grand Lake Stream	3.71	3.63	0.08	102.2%	5.6	3.5	2.1	6	0.5
Robbinston*	4.09	4.39	-0.30	93.2%	7.1	6.0	1.1	5	0.2
Topsfield*	3.06	4.21	-1.15	72.7%	10.0	9.6	0.4	11	1.6

*\*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.*

*\*Frenchville ASOS has documented issues with precipitation measurements in the winter months.*

**Precipitation** (Snow melt included) was much below normal across much of Northern Maine from the Moosehead Region to Baxter State Park and into Eastern Aroostook County northward to the St. John Valley. In these locations precipitation was generally 50-75% of normal but there were some extremes with 25-50% of normal in the North Woods, to St. John Valley and Northeast Aroostook. Central Highlands including the Greater Bangor Area to Interior Downeast was generally 90-95% of Normal except at the Bangor International Airport which was only 75% of normal. A few locations across Interior Downeast were 100-105% of normal precipitation but overall near normal conditions. Along the Downeast Coast precipitation was generally 75-85% of normal. Caribou had 1.02 inches of precipitation which was the 6th least precipitation for the month of April since records began in 1939. Houlton's 1.56 inches was the 13th least for the month of April since 1949.

**Snowfall** ended up a split across the area with above normal monthly totals in the Moosehead Region to Bangor Region into Downeast Maine. Bangor saw 9 inches of snow in the month of April which was tied for 14th most snow in April since records began in 1927. Across Northern Maine there was a significant lack of snowfall for the month of April with areas generally 3-7 inches below normal. Caribou only saw 1.4 inches in April 2024 which was the 7th least snowiest April on record since 1940. Snow depths were generally dismal across the area with much of the snow melting in March 2024 but a few events did bring some days with snow depth across Northern areas. The snow was mainly gone by mid month which was significantly ahead of normal snowmelt process based on climatological records in Maine. The most significant storm system for snowfall was April 4th through early April 5th where snow totals ranged from 3-10 inches across the Downeast, 8-16 inches in the Central Highlands

and 1-9 inches across Northern Maine. This storm is the main reason we had much of anything for snow depth in the month of April.

**Streamflows** did see significant rises in the beginning of April thanks to the significant rainfall and snowmelt at the end of March 2024. Thankfully this only caused minor small stream and creek flooding with no significant impacts reported. The Mattawamkeag River at Mattawamkeag remained at Minor Flood Stage from late March into early April 2024. A River Flood Warning remained in effect until Wednesday, April 3, 2024 when conditions fell below flood stage. On April 4th water levels in the Interior Downeast Lakes continued to rise to the point where Dam Operators needed to begin releasing significant amounts of water. Operators of the Dam in Vanceboro began releasing at greater than 6000 cubic feet per second which did cause minor flooding of low lying properties on Salmon Brook Road in Vanceboro. Much of the flooding did only impact very rural areas of interior Washington County along the New Brunswick border below the Vanceboro Dam downstream to the Grand Falls Flowage. The next significant rainfall event occurred on April 12th after significant snowfall fell across the Central Highlands that impacted mainly the Piscataquis River basin. 1-2 inches of rain fell onto melting snowpack that released nearly 1-2 inches of liquid equivalent. This caused the Piscataquis River along with the tributaries to rapidly rise resulting in the need of a River Flood Warning for the Piscataquis River at Dover-Foxcroft which peaked on the morning of April 13th. The river peaked at 11.71ft which is above minor flood stage and had a flow of 12,300 cubic feet per second. Based on reports there were just minor impacts and no significant flooding reported. After this event towards the end of the month we saw rapid decline in streamflows due to the lack of precipitation. The month as a whole averaged out near normal for much of the basins with some exceptions of Above Normal conditions on the St. Croix basin and Allagash. Values on the Fish River and lower St. John River averaged below normal for April with the upper stretches of the St. John near average.



Photos Courtesy Sidney Folland from April 4, 2024. Left picture shows the significant release of water from the Vanceboro Dam with both gates open. The right picture shows minor flooding off the Salmon Brook Road in Vanceboro.

**Groundwater** experienced significant pull back of values with dry conditions and no snowmelt making it into the soils. Averages for the month were mainly Above Normal thanks to the previous snowmelt of March and significantly above normal precip in March. Significant drying after the frost was melted out in early April across the North Woods resulted in Clayton Lake turning Normal and started to show signs of below normal conditions by late month.

**Temperatures...** across the area ranged mainly from 0.5 to 2.1 degrees above 1991-2020 normals.

<b>Town/City</b>	<b>Avg Monthly Temperature (°F)</b>	<b>Normal Monthly Temperature (°F)</b>	<b>Departure from Normal (°F)</b>
<b>Frenchville</b>	39.0	37.7	<b>1.3</b>
<b>Fort Kent</b>	37.0	35.4	<b>1.6</b>
<b>Van Buren</b>	38.2	36.4	<b>1.8</b>
<b>Caribou</b>	40.3	38.5	<b>1.8</b>
<b>Houlton</b>	39.8	38.6	<b>1.2</b>
<b>Millinocket</b>	41.8	40.4	<b>1.4</b>
<b>Greenville*</b>	39.8	38.0	<b>1.8</b>
<b>Moosehead</b>	39.3	37.2	<b>2.1</b>
<b>Corinna</b>	43.2	42.6	<b>0.6</b>
<b>Bangor</b>	43.3	42.8	<b>0.5</b>
<b>Grand Lake Stream</b>	NA	NA	<b>NA</b>
<b>Robbinston*</b>	43.0	41.4	<b>1.6</b>
<b>Topsfield*</b>	42.0	40.6	<b>1.4</b>

*\*Topsfield Records date back to 2000, \*Robbinston Records date back to 1994*

*\*Greenville data gap between 1975 and 1999 \*Moosehead Site is in GYX CWA on CWA border*

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

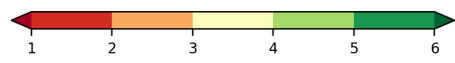
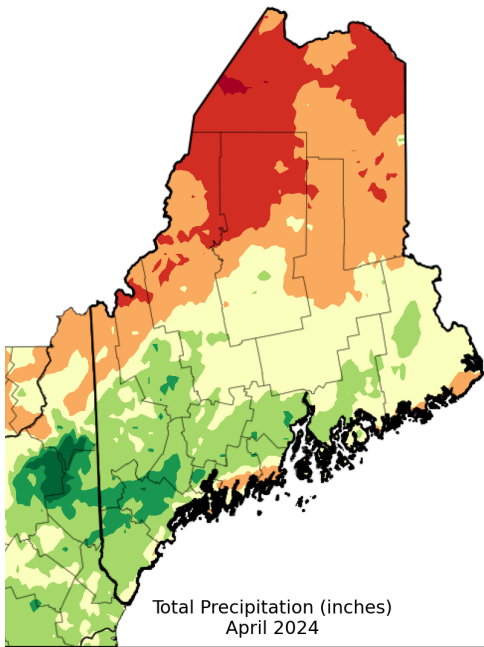


Figure 3: Total Liquid Precipitation for April

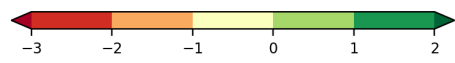
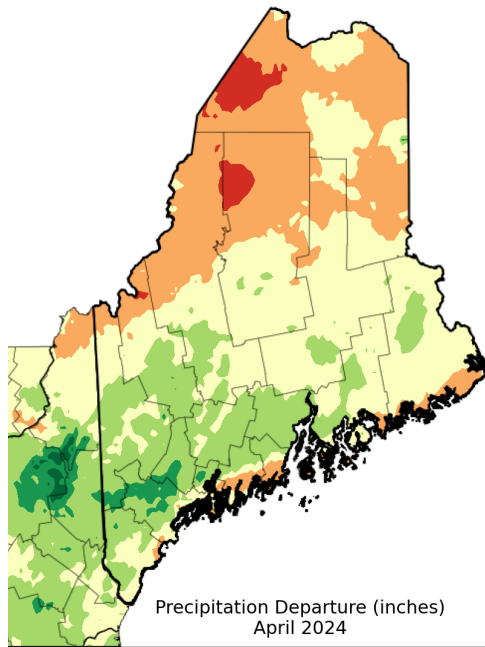


Figure 4: Liquid Precipitation Departure for April  
Source: [Northeast Regional Climate Center](#)

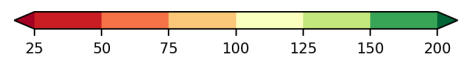
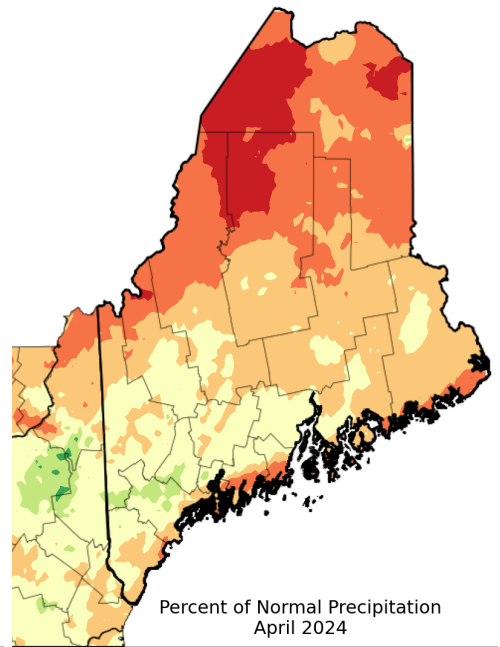


Figure 5: Percent of Normal Precipitation for April

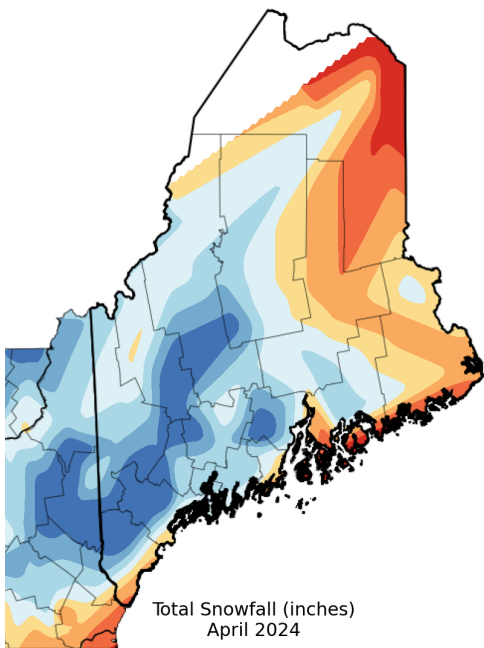


Figure 6: Total Snowfall for April

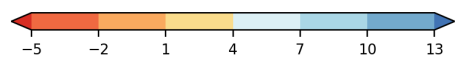
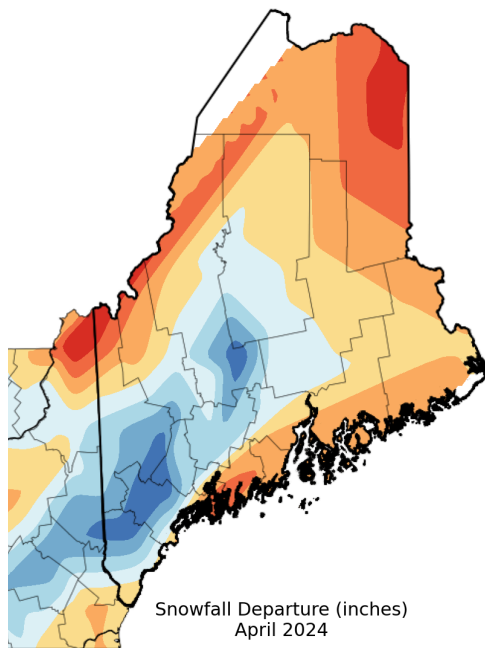


Figure 7: Total Snowfall Departure for April  
Source: [Northeast Regional Climate Center](#)

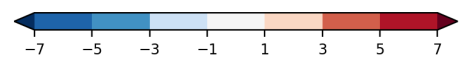
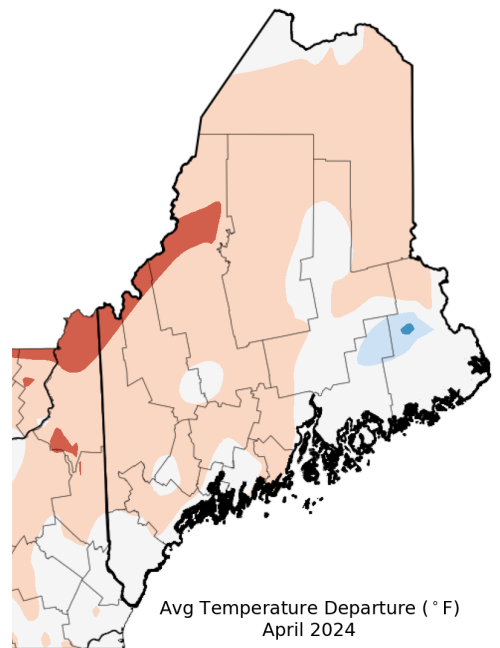


Figure 8: Average Temperature Departure for April



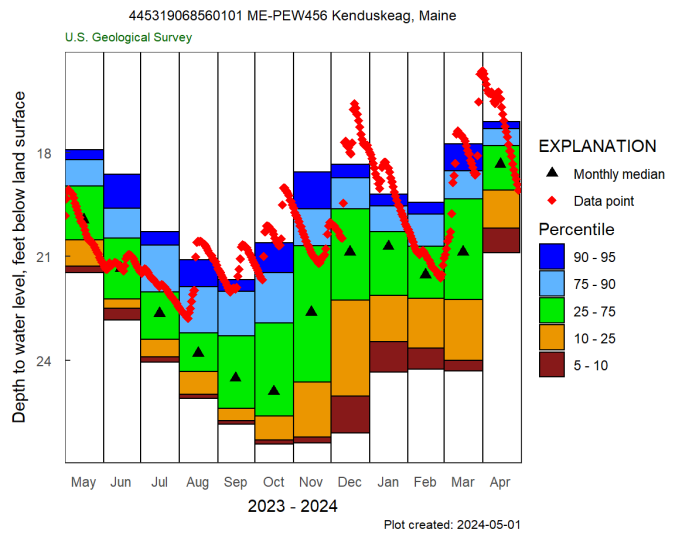
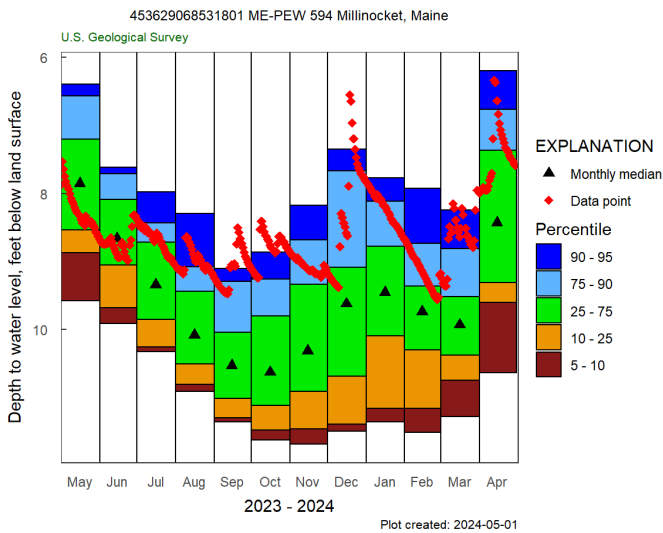
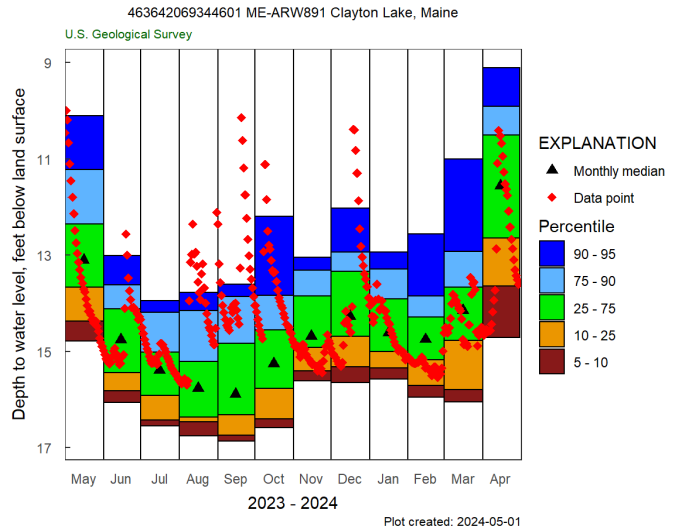
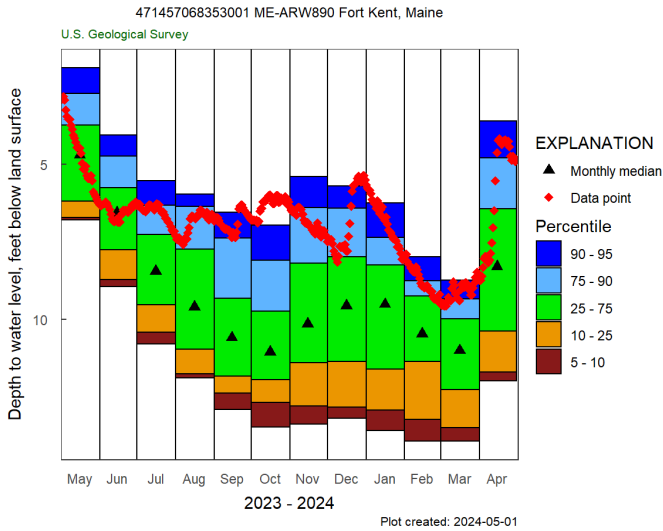
### April Streamflows for Rivers

\*Data provided by the U.S. Geological Survey\*

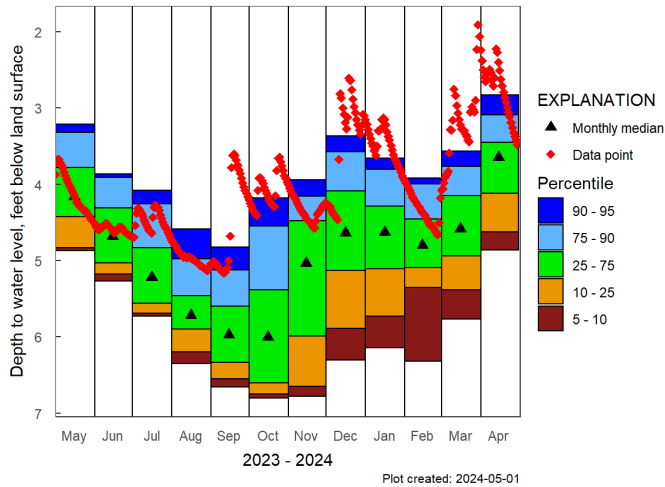
River	Monthly Mean Flow (cfs)	% Normal (mean)	Percentile Class	Drainage (mi <sup>2</sup> )	Years of Record
Big Black River near Depot Mtn	1263	96%	Normal	171	39
St. John River at Nine Mile Bridge	8968	113%	Normal	1341	72
Allagash River near Allagash	7321	141%	Above Normal	1478	91
St. John River at Dickey	15886	102%	Normal	2680	76
St. John River at Fort Kent	14303	53%	Below Normal	5929	96
Fish River near Fort Kent	2103	61%	Below Normal	873	93
Aroostook River near Masardis	5306	106%	Normal	892	65
Aroostook River at Washburn	9064	103%	Normal	1654	92
St. Croix River at Vanceboro	1579	197%	Above Normal	413	94
St. Croix River at Baring	4538	84%	Normal	1374	63
Grand Lake Stream at Grand Lake Stream	719	191%	Above Normal	228.3	94
Narraguagus River at Cherryfield	1338	110%	Normal	227	75
East Branch Penobscot River at Grindstone	5732	112%	Normal	837	101
Mattawamkeag near Mattawamkeag	8761	100%	Normal	1418	88
Piscataquis River near Dover-Foxcroft	2063	99%	Normal	298	120
Sebec River at Sebec	2219	129%	Above Normal	326	68
Piscataquis River at Medford	7546	104%	Normal	1162	91
Penobscot River at West Enfield	32863	109%	Normal	6422	120

### April Average Groundwater Levels

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



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



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

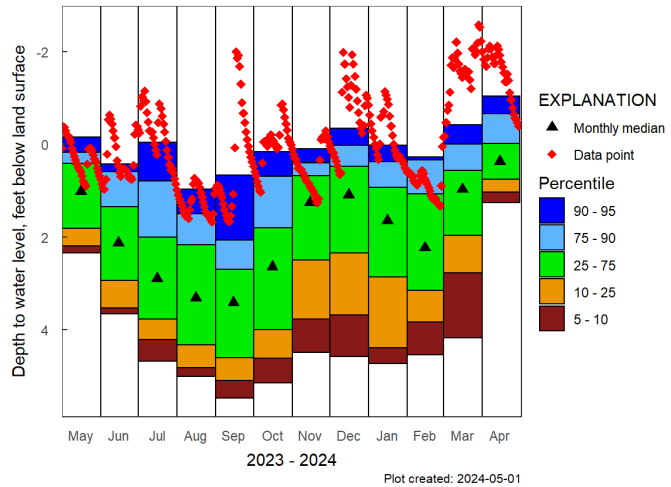


Figure 9-14: Groundwater Level Yearly Plots to Current  
Source: [United States Geological Survey](https://www.usgs.gov/)

Flow or Water Level	Percentile Range	Explanation
Ice Impacted	NA	Ice impacted resulting in No Data available
Low	0 <sup>th</sup>	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 <sup>th</sup> to 10 <sup>th</sup>	The monthly mean streamflow or median water level during this month is less than the 10 <sup>th</sup> percentile when compared to all of the months during the period of record for this site.
Below Normal	10 <sup>th</sup> to 25 <sup>th</sup>	The monthly mean streamflow or median water level during this month is between the 10 <sup>th</sup> and 25 <sup>th</sup> percentiles when compared to all of the months during the period of record for this site.
Normal	25 <sup>th</sup> to 75 <sup>th</sup>	The monthly mean streamflow or median water level during this month is between the 25 <sup>th</sup> and 75 <sup>th</sup> percentiles when compared to all of the months during the period of record for this site.
Above Normal	75 <sup>th</sup> to 90 <sup>th</sup>	The monthly mean streamflow or median water level during this month is between the 75 <sup>th</sup> and 90 <sup>th</sup> percentiles when compared to all of the months during the period of record for this site.
Much Above Normal	90 <sup>th</sup> to 100 <sup>th</sup>	The monthly mean streamflow or median water level during this month is greater than the 90 <sup>th</sup> percentile when compared to all of the months during the period of record for this site.
High	100 <sup>th</sup>	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 April 2024

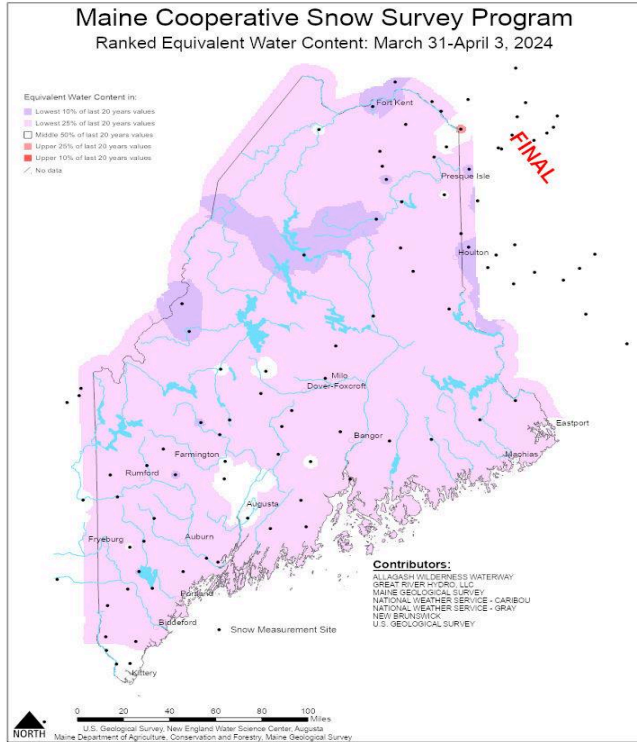
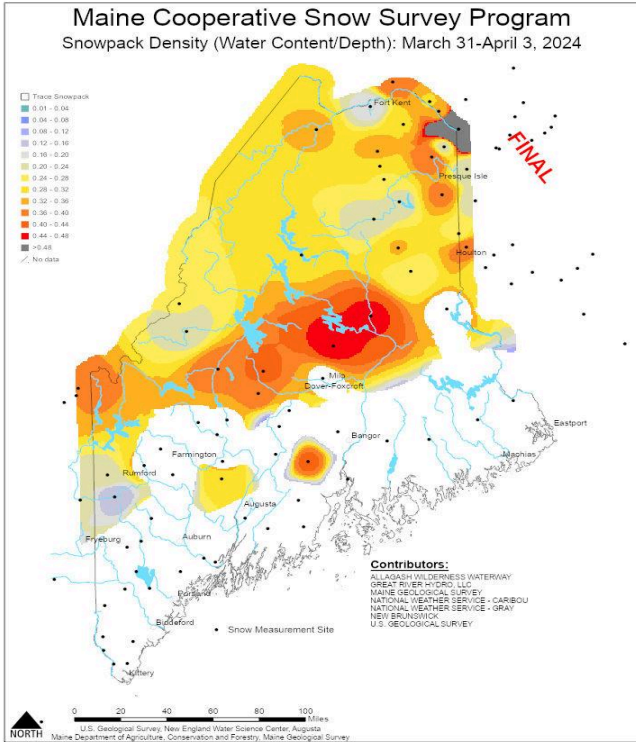
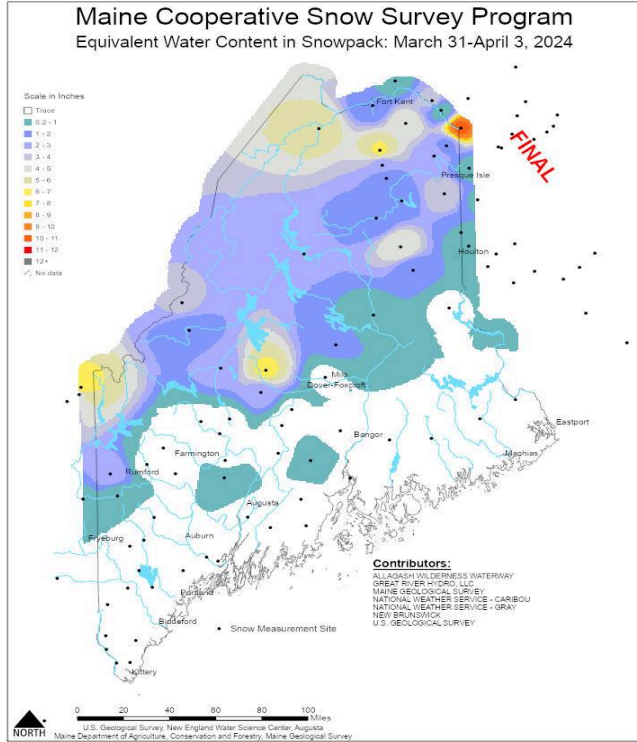
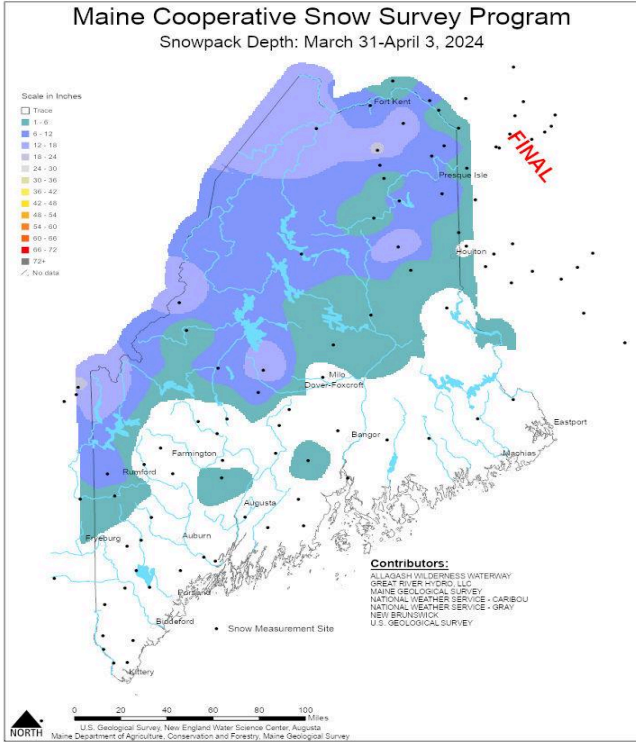
Product	How Many Issued	Reason for Issuance
Flood Watch	1	Heavy Rain & Snowmelt
Flood Advisories	1	Dam Floodgate Release
Flood Warning	2	River Flooding @ Forecast Points



# Maine Cooperative Snow Survey Program Comparison

## April 3, 2024 Report

### Snowpack Depth, SWE, Density, SWE Ranking



# Maine Cooperative Snow Survey Program Comparison

## April 17, 2024 Report

### Snowpack Depth, SWE, Density, SWE Ranking

