

MONTHLY REPORT OF HYDROLOGIC CONDITIONS

WFO Caribou, Maine

REPORT FOR:
MONTH YEAR

September 2022

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

SIGNATURE

James Sinko
Hydrology Program Manager

DATE

October 15, 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.

September 2022

September 2022 finished with near to slightly above normal temperatures region wide thanks to the North Atlantic Oscillation (NAO) monthly mean of -1.61 standard deviation which was a significant flip compared to August 2022. The Pacific North American Pattern (PNA) monthly mean continued to be around neutral at +0.21 standard deviation. This within the continued 2+ year long duration strong La Nina regime. Temperatures for the month ranged from -0.3 to +1.4 degree F across the region, beginning on a cool note the first few days, then a late summer surge of warmth between the 9th and 14th, followed with near to below normal temps for the remainder of the month. The warmest afternoons were the 11th and 12th where most climate sites had highs of lower to mid 80s, the coolest morning was on the 30th where mostly climate sites had lows of lower to mid 30s with remote northwest valley sites as low as the mid to upper 20s.

| <i>Town/City</i> | <i>Avg Monthly Temperature (°F)</i> | <i>Normal Monthly Temperature (°F)</i> | <i>Departure from Normal (°F)</i> |
|--------------------|-------------------------------------|--|-----------------------------------|
| Frenchville | 56.2 | 56.1 | +0.1 |
| Fort Kent | 55.7 | 54.3 | +1.4 |
| Caribou | 56.8 | 56.6 | +0.2 |
| Houlton | 57.2 | 56.2 | +1.0 |
| Millinocket | 58.9 | 58.2 | +0.7 |
| Greenville | 56.9 | 57.2 | -0.3 |
| Bangor | 60.2 | 59.9 | +0.3 |
| Robbinston | 60.2 | 59.0 | +1.2 |
| Topsfield | 58.4 | 58.3 | +0.1 |

Total rainfall ranged from 50 to 90 percent of average across the far north. Across North-Central areas to the Downeast coast precipitation ranged from 100 to 130 percent of average. At Caribou, the total of

1.86 inches for the month was the 11th driest there since records began in 1939, with 0.86 inches recorded in 1968 the driest on record. Heavier rainfall days, which mostly affected Central and Downeast areas, included the 4th-5th, 14th, 18th-20th, 22nd and 25th.

Streamflows across the St. John Basin including the Aroostook River were mostly at normal for the month, however the lack of rainfall in the Fish River Chain of Lakes caused the Fish River in Fort Kent to average Below Normal. The lack of rainfall in Central St. John Valley and below normal discharge from the Fish River caused the St. John River at Fort Kent to average Much Below Normal. Above normal rainfall in the Mattawamkeag and Penobscot basins allowed for the Mattawamkeag to average Above Normal and Normal in Grindstone on the Penobscot. Across the Piscataquis basin above average rainfall allowed for normal average for the month with generally 80-95% of normal discharge. The Narraguagus River in Cherryfield with significant rainfall was running Above Normal in the 75-90th percentile range. Further Downeast in the St. Croix basin with lake & reservoir levels continued running low this month. The St. Croix River in Vanceboro was Much Below Normal for September and at Baring it improved from August to Below Normal. Grand Lake Stream continued to remain Much Below Normal given the low releases from the lakes.

Groundwater wells are slowly improving across much of the southern and central areas of the forecast area with above normal precipitation. Across the north by the second half of the month as precipitation fell significantly below normal the wells struggled to improve from August. Fort Kent still is reporting above normal but was falling significantly towards average. There was improvement in the later part of the month that allowed for groundwater improvement in Central and Downeast areas allowing for an average of normal.

In regards to Drought monitoring, above normal rainfall allowed for gradual improvement of drought conditions by the end of the month in Downeast and Central areas. The Abnormally Dry (D0) conditions by the end of the month were cut back to just extreme western portions of Hancock County near Penobscot Bay and in far southeast Penobscot County.

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

Precipitation Totals for Select Locations with all units in inches

| Location | Total Precip | Normal Precip | Departure from Normal | % of Normal | Snowfall | Normal Snowfall | Departure from Normal | Greatest Snow Depth |
|--------------|--------------|---------------|-----------------------|-------------|----------|-----------------|-----------------------|---------------------|
| Frenchville | 2.33 | 3.46 | -1.13 | 67.3% | | | | |
| Fort Kent | 3.27 | 3.72 | -0.45 | 87.9% | 0.0 | 0.0 | 0 | 0 |
| Caribou | 1.86 | 3.44 | -1.58 | 54.0% | 0.0 | 0.0 | 0 | 0 |
| Houlton | 4.10 | 3.40 | +0.70 | 120.6% | | | | |
| *Millinocket | 4.25 | 3.61 | +0.64 | 117.7% | 0.0 | | | 0 |
| Greenville | 4.44 | 3.44 | +1.00 | 129.0% | | | | |
| Bangor | 4.78 | 3.76 | +1.02 | 127.1% | 0.0 | 0.0 | 0 | 0 |
| Robbinston | 7.36 | 4.23 | +3.13 | 173.9% | 0.0 | 0.0 | 0 | 0 |
| Topsfield | 7.92 | 4.01 | +3.91 | 197.5% | 0.0 | 0.0 | 0 | 0 |

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

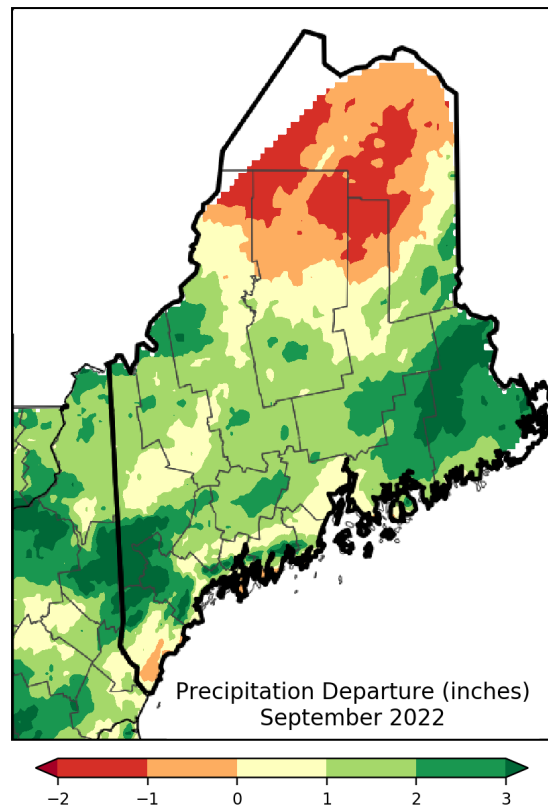
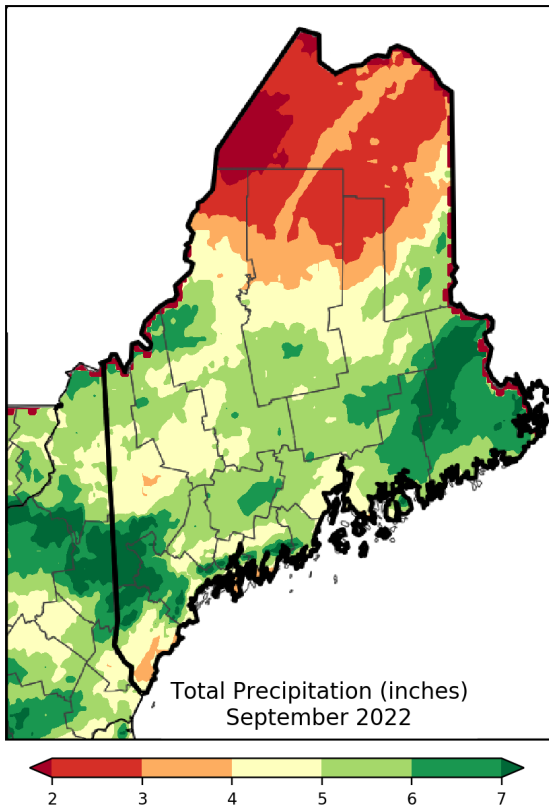


Figure 1: Monthly Precipitation Totals for September 2022

Figure 2: Monthly Precipitation Departures from Normal for September

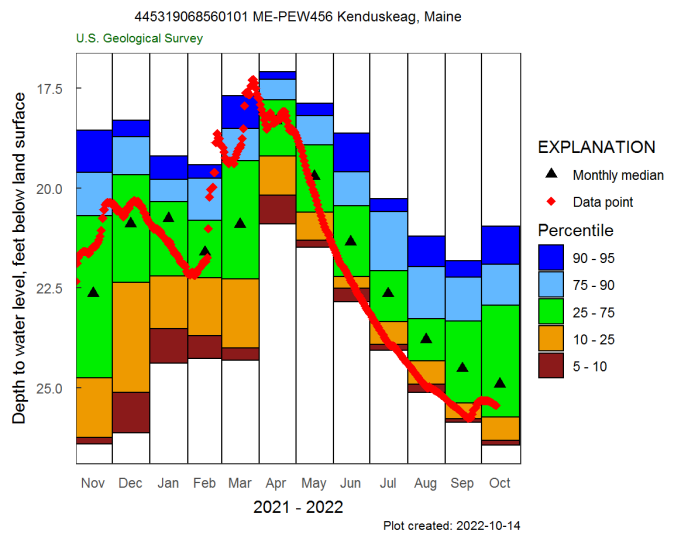
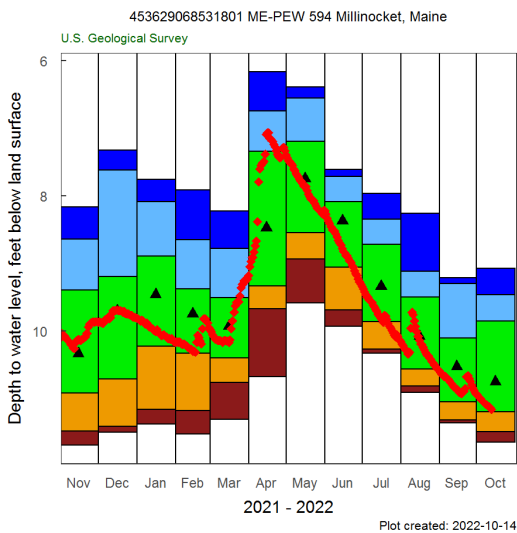
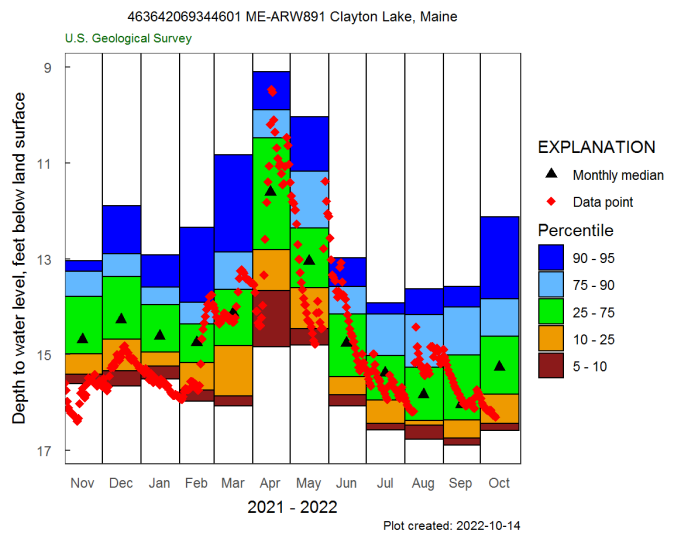
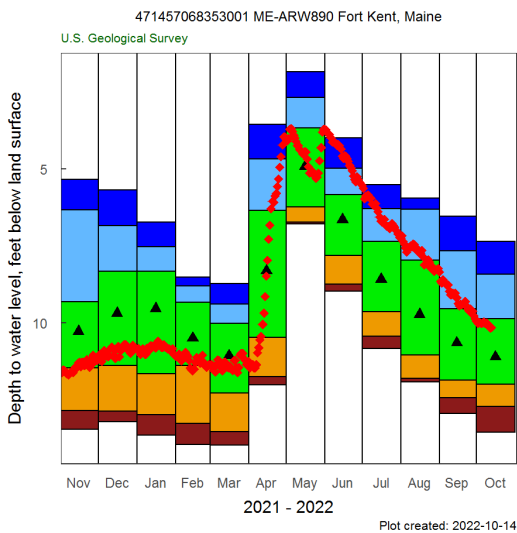
Source: [Northeast Regional Climate Center](#)

September Streamflows for Rivers

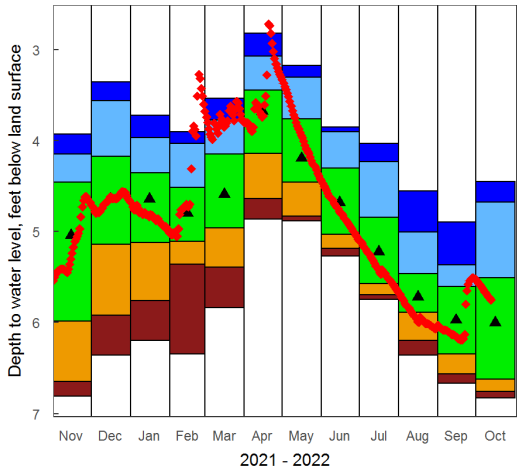
| River | Monthly Mean Flow (cfs) | % Normal (mean) | Percentile Class | Drainage (mi ²) | Years of Record |
|---|-------------------------|-----------------|-------------------|-----------------------------|-----------------|
| Big Black River near Depot Mtn | 46.58 | 36.96% | Normal | 171 | 38 |
| St. John River at Ninemile Bridge | 657.13 | 53.01% | Normal | 1341 | 71 |
| Allagash River near Allagash | 721.70 | 69.96% | Normal | 1478 | 92 |
| St. John River at Dickey | 935.87 | 41.07% | Normal | 2680 | 77 |
| St. John River at Fort Kent | 1169.02 | 25.46% | Much Below Normal | 5929 | 95 |
| Fish River near Fort Kent | 200.64 | 34.67% | Below Normal | 873 | 92 |
| Aroostook River near Masardis | 331.73 | 49.77% | Normal | 892 | 64 |
| Aroostook River at Washburn | 672.33 | 59.47% | Normal | 1654 | 91 |
| St. Croix River at Vanceboro | 317.89 | 44.73% | Much Below Normal | 413 | 93 |
| St. Croix River at Baring | 1009.78 | 60.98% | Below Normal | 1374 | 62 |
| Grand Lake Stream at Grand Lake Stream | 200.21 | 45.22% | Much Below Normal | 228.3 | 93 |
| Narraguagus River at Cherryfield | 244.33 | 146.51% | Above Normal | 227 | 74 |
| East Branch Penobscot River at Grindstone | 814.00 | 83.97% | Normal | 837 | 119 |
| Mattawamkeag near Mattawamkeag | 1105.47 | 133.39% | Above Normal | 1418 | 87 |
| Piscataquis River near Dover-Foxcroft | 183.66 | 99.19% | Normal | 298 | 119 |
| Sebec River at Sebec | 302.23 | 83.76% | Normal | 326 | 67 |
| Piscataquis River at Medford | 882.83 | 95.77% | Normal | 1162 | 91 |
| Penobscot River at West Enfield | 7175.67 | 107.09% | Normal | 6422 | 119 |

September Groundwater Levels

| Station | Percentile Class | Years of Record |
|--------------|------------------|-----------------|
| Hadley Lakes | Normal | 36 |
| Kenduskeag | Below Normal | 44 |
| Calais | Normal | 22 |
| Millinocket | Normal | 28 |
| Clayton Lake | Normal | 43 |
| Fort Kent | Above Normal | 44 |

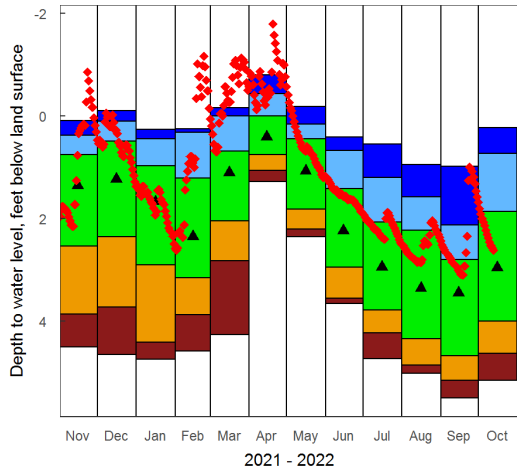


445227067520101 ME-WW797 Township T24MD BPP (Hadley Lakes)
U.S. Geological Survey



Plot created: 2022-10-14

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



Plot created: 2022-10-14

Figure 3-8: Groundwater Level Yearly Plots to Current
Source: [United States Geological Survey](https://www.usgs.gov/)

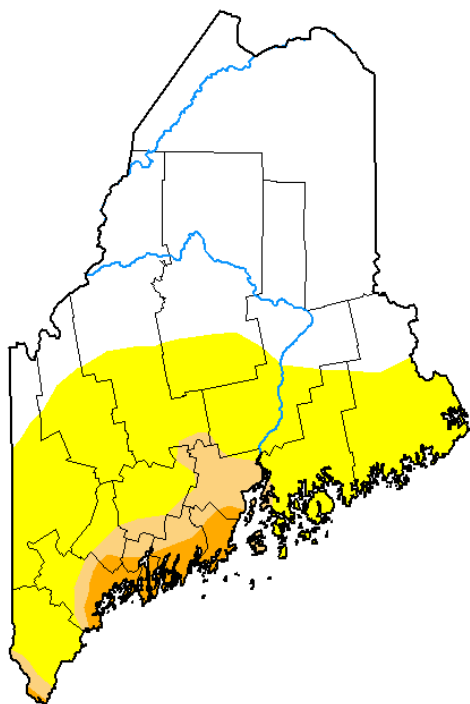
| Flow or Water Level | Percentile Range | Explanation |
|---------------------|---------------------------------------|--|
| Low | 0 th | The monthly mean streamflow or median water level during this month is the lowest ever recorded during the period of record for this site. |
| Much below normal | 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
September 2022
WFO Caribou, ME**

| Product | How Many Issued | Reason for Issuance |
|----------------|-----------------|---------------------|
| Flood Advisory | 2 | Excessive Rainfall |

Drought Conditions for September 2022

**U.S. Drought Monitor
Maine**



September 6, 2022
(Released Thursday, Sep. 8, 2022)
Valid 8 a.m. EDT

Drought Conditions (Percent Area)

| | None | D0-D4 | D1-D4 | D2-D4 | D3-D4 | D4 |
|--|-------|-------|-------|-------|-------|------|
| Current | 51.35 | 48.65 | 9.15 | 3.42 | 0.00 | 0.00 |
| Last Week <small>08-30-2022</small> | 51.35 | 48.65 | 11.70 | 3.38 | 0.00 | 0.00 |
| 3 Months Ago <small>06-07-2022</small> | 65.16 | 34.84 | 0.00 | 0.00 | 0.00 | 0.00 |
| Start of Calendar Year <small>01-04-2022</small> | 72.42 | 27.58 | 11.82 | 5.32 | 0.00 | 0.00 |
| Start of Water Year <small>09-28-2021</small> | 66.54 | 33.46 | 15.50 | 4.85 | 0.00 | 0.00 |
| One Year Ago <small>09-07-2021</small> | 38.51 | 61.49 | 53.43 | 9.15 | 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:

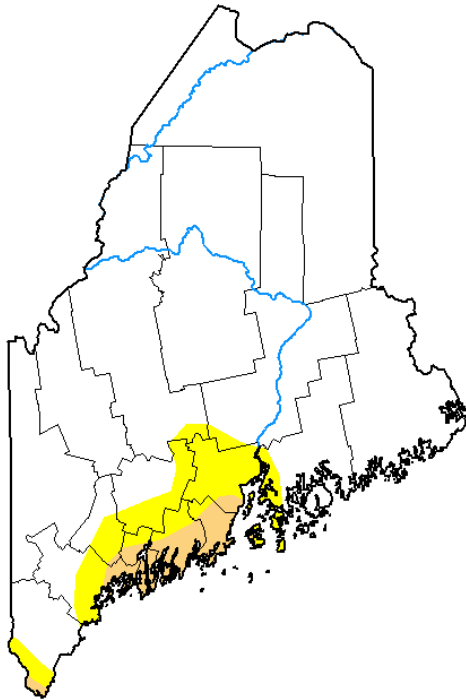
David Simeral
Western Regional Climate Center



droughtmonitor.unl.edu

U.S. Drought Monitor
Maine

September 27, 2022
(Released Thursday, Sep. 29, 2022)
Valid 8 a.m. EDT



Drought Conditions (Percent Area)

| | None | D0-D4 | D1-D4 | D2-D4 | D3-D4 | D4 |
|---|-------|-------|-------|-------|-------|------|
| Current | 88.92 | 11.08 | 3.23 | 0.00 | 0.00 | 0.00 |
| Last Week 09-20-2022 | 54.35 | 45.65 | 8.62 | 2.63 | 0.00 | 0.00 |
| 3 Months Ago 06-28-2022 | 40.34 | 59.66 | 17.77 | 0.00 | 0.00 | 0.00 |
| Start of Calendar Year 01-04-2022 | 72.42 | 27.58 | 11.82 | 5.32 | 0.00 | 0.00 |
| Start of Water Year 09-28-2021 | 66.54 | 33.46 | 15.50 | 4.85 | 0.00 | 0.00 |
| One Year Ago 09-28-2021 | 66.54 | 33.46 | 15.50 | 4.85 | 0.00 | 0.00 |

Intensity:

- None
- D0 Abnormally Dry
- D1 Moderate Drought
- D2 Severe Drought
- D3 Extreme Drought
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Author:

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NCEI/NOAA



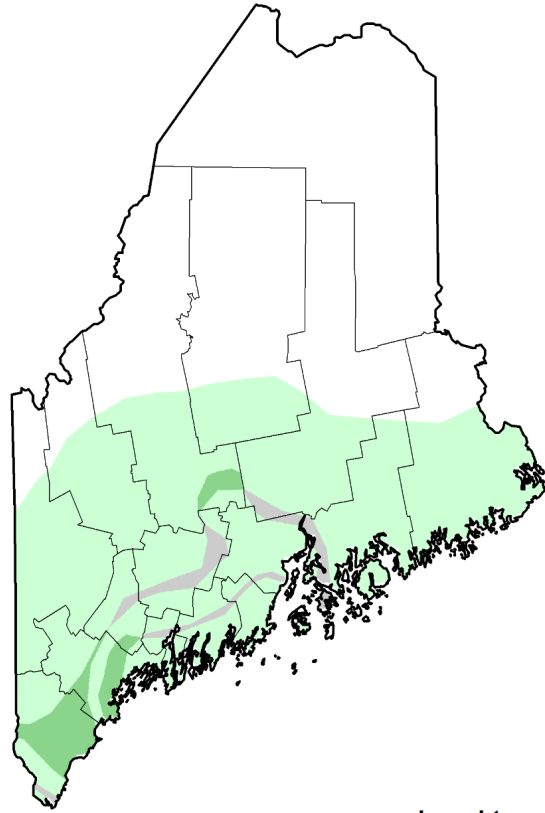
droughtmonitor.unl.edu

Drought Classification (Cumulative Percent Area %)

| Week | None | D0-D4 | D1-D4 | D2-D4 | D3-D4 | D4 | DSCI |
|-----------|-------|--------|-------|-------|-------|------|------|
| 9/6/2022 | 51.35 | 48.65 | 9.15 | 3.42 | 0.00 | 0.00 | 61 |
| 9/27/2022 | 88.92 | 11.08 | 3.23 | 0.00 | 0.00 | 0.00 | 14 |
| Change | 37.57 | -37.57 | -5.92 | -3.42 | 0.00 | 0.00 | -47 |

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

September 27, 2022
compared to
August 30, 2022



- 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

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Figure 9-11: U.S. Drought Monitor Drought Classification & Statistics for August
Source: U.S. Drought Monitor