NWS Form E-5 **U.S. DEPARTMENT OF COMMERCE** **(04-2006)** **NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION** **(PRES. BY NWS Instruction 10-924)** **NATIONAL WEATHER SERVICE**	HYDROLOGIC SERVICE AREA (HSA) Burlington VT
MONTHLY REPORT OF HYDROLOGIC CONDITIONS	REPORT FOR: MONTH: December YEAR: 2021
TO: Hydrologic Information Center, W/OS31 NOAA's National Weather Service 1325 East West Highway Silver Spring, MD 20910-3283	SIGNATURE /s/ John Goff, Senior Service Hydrologist DATE January 7, 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).

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

From a hydrological perspective, the month of December 2021 was a rather uneventful one across the NWS Burlington (BTV) Hydrologic Service Area (HSA). The 31-day period could be characterized by relative dryness with intermittent bouts of light to moderate precipitation driven largely by cold front passages and modestly deep low pressure systems. Monthly percent of normal precipitation values averaged within the 25th to 75th percentile range, save portions of the Champlain Valley of Vermont and a portion of the northern Adirondack Mountains in northeastern New York (Figure 1). These negative departures are also illustrated in Figure 2 showing values ranging from a few tenths to nearly 1.5 inches in the case of Springfield, VT. The most impactful event occurred from the 18th to the 19th when low pressure took an easterly track from the Ohio Valley across the northern Mid-Atlantic into coastal southern New England. This system produced a 12-18 period of steady light to moderate snows across the BTV HAS and made for locally hazardous travel conditions. Average snowfall totals ranged from 4-8 inches with some slight variability (Figure 2).

From a ground water and moisture supply standpoint, the relative dryness observed in December continued prior trends from Fall 2021 did little to alleviate the longer term dryness in place across northeastern Vermont. While monthly streamflow averages for the BTV HSA remained in the normal to slightly above normal range (Figures 3 and 4), by month's end, some increasing dryness was noted, particularly in northeastern Vermont per experimental National Water Model output (Figure 5). As a result, the weekly U.S. Drought Monitor maintained an area of solid D0 (abnormally dry) conditions in northeastern Vermont throughout the month, this being largely unchanged from November (Figure 6).

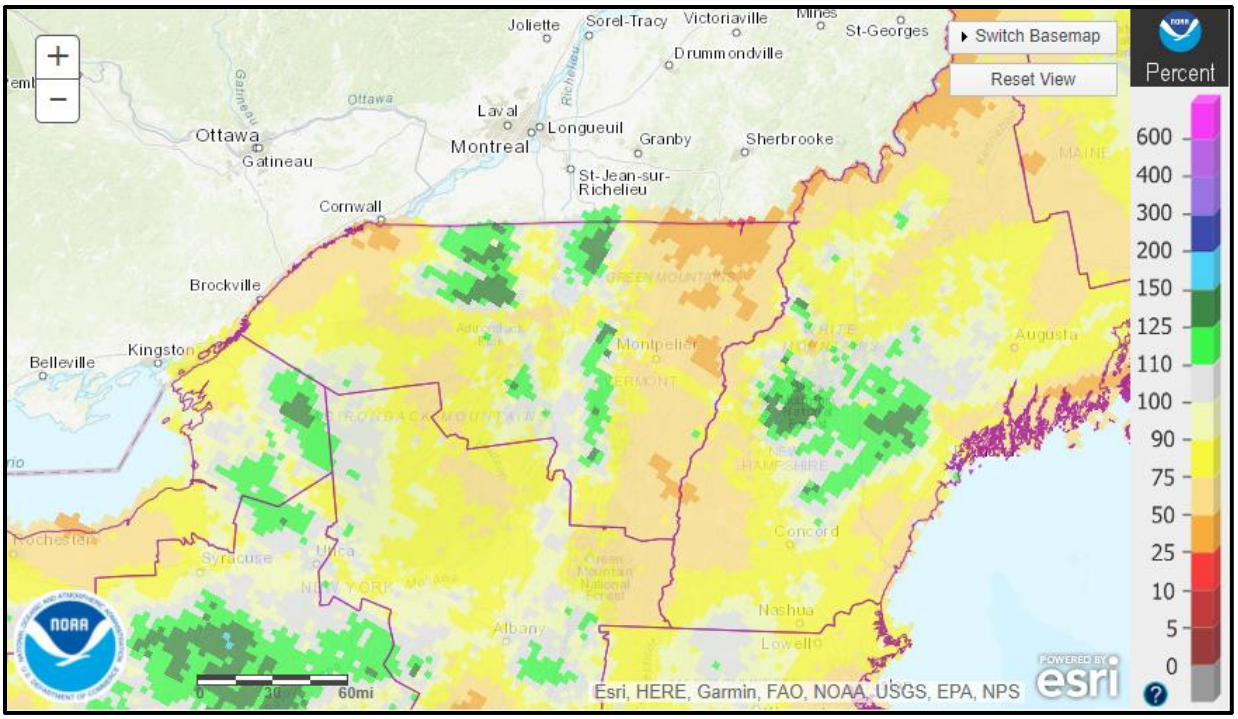

Figure 1: December 2021 percent of normal precipitation for NWS Burlington's Hydrologic Service Area. Values generally ran in the 25th to 75th percentile for most of the area except portions of the Champlain Valley and a small area of the northern Adirondacks.

OBSERVING SITE (ASOS platforms)	PRECIPITATION DEPARTURE (inches, DEC 2021)
St. Johnsbury, VT	-0.18
Burlington, VT	-0.79
Montpelier, VT	-1.25
Morrisville, VT	-0.11
Springfield, VT	-1.44
Massena, NY	-0.67
Saranac Lake, NY	-0.06
Plattsburgh, NY	-0.57

Table 1: December 2021 precipitation departure (in inches) for selected NWS ASOS platforms in the NWS Burlington HSA. All sites showed slight to modest negative departures.

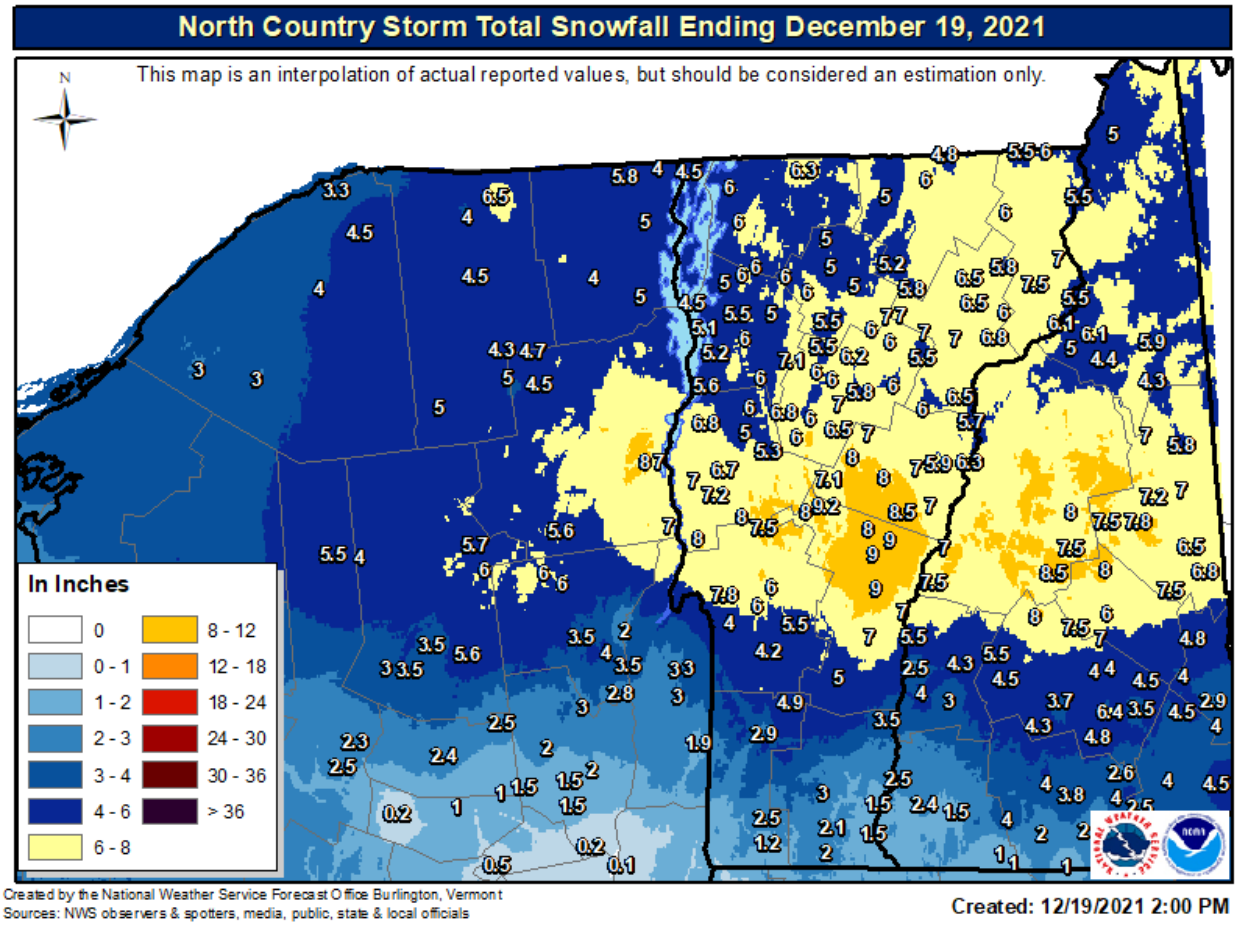

Figure 2: Storm total snowfall from December 18-19, 2021 event. While modest by North Country standards, a widespread 4-8 inches was observed across the BTV HSA with slight variability.

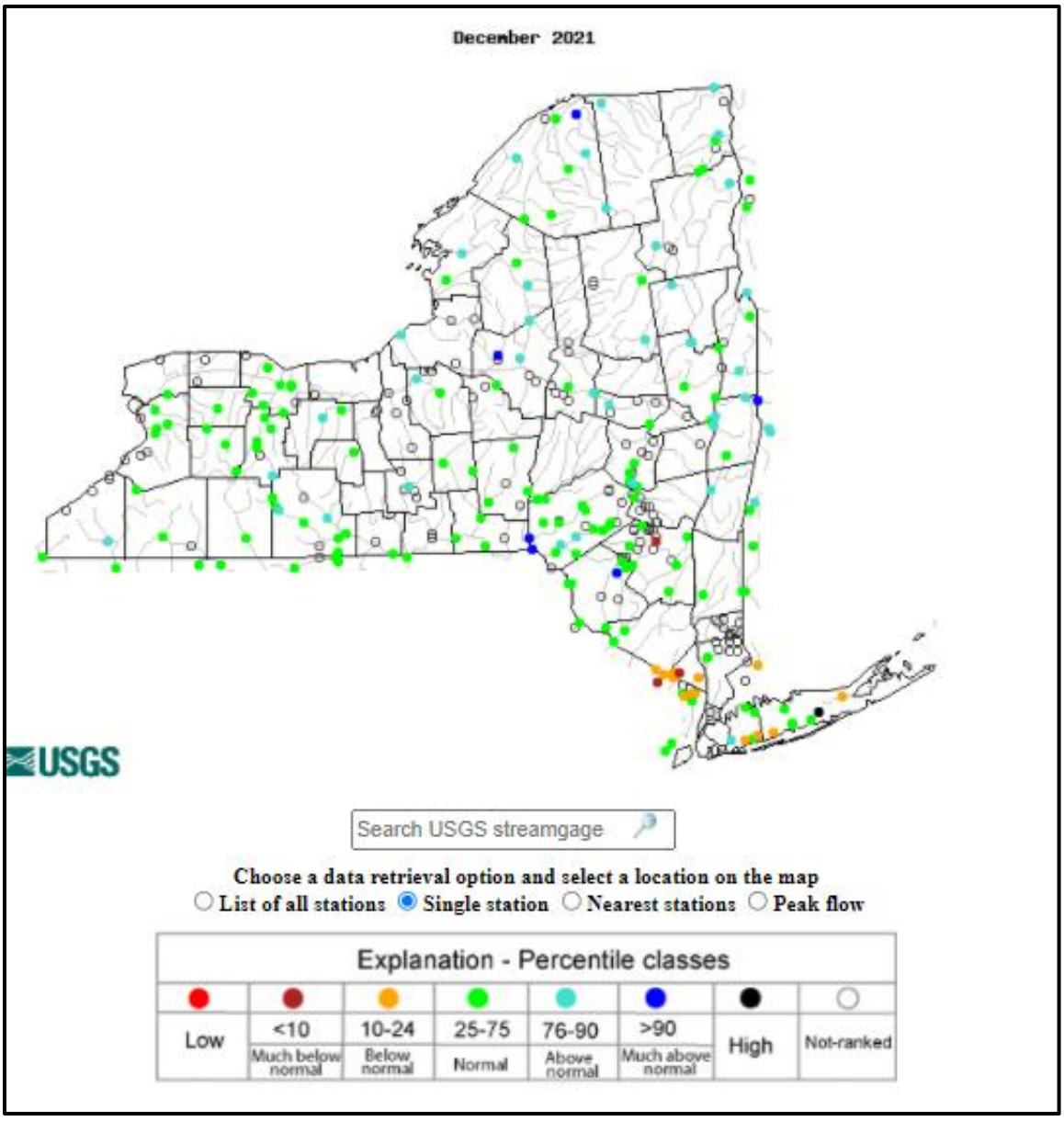

Figure 3. November monthly average streamflow for New York. Note near to above normal values for all sites in far northern portions of the state.

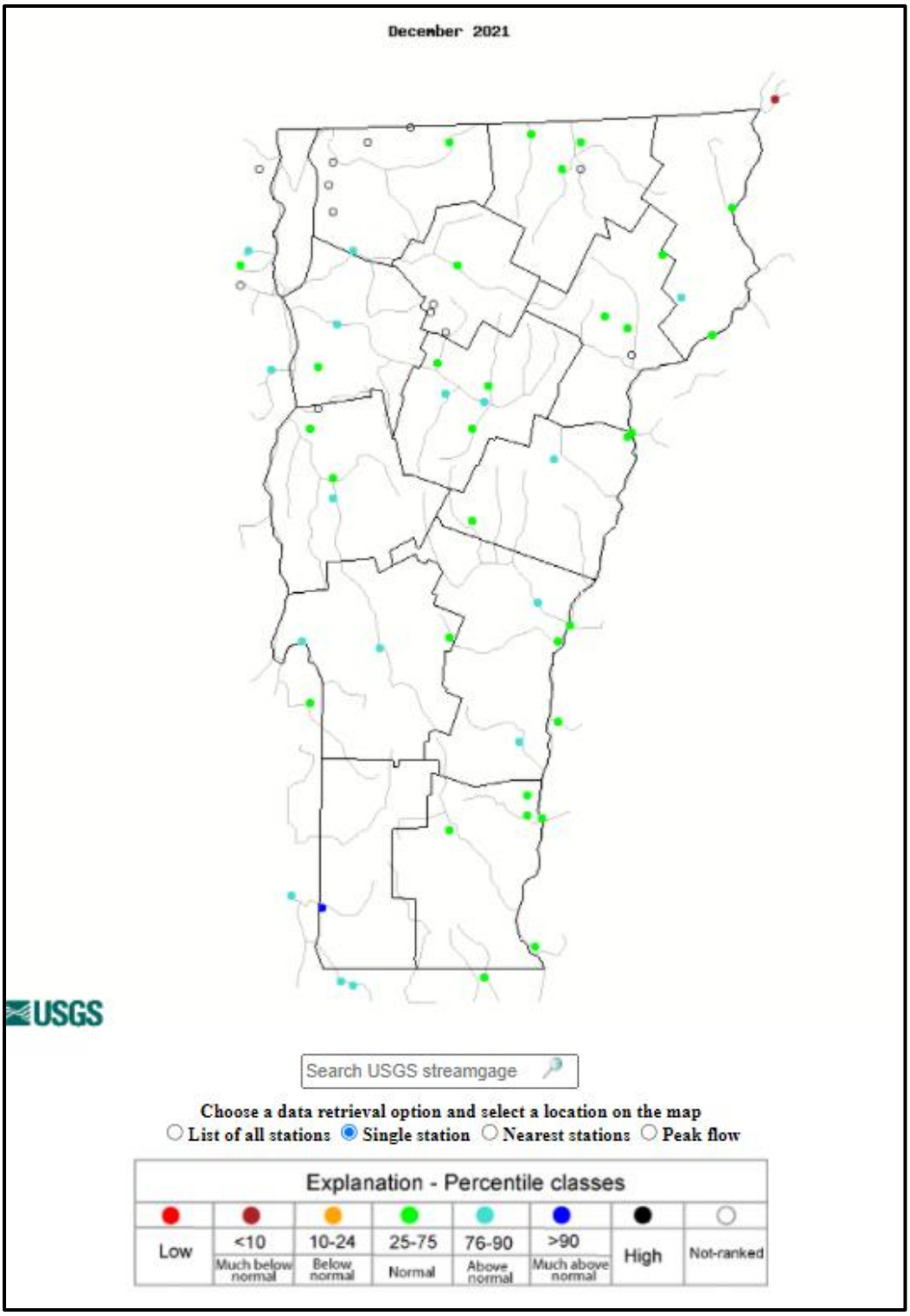

Figure 4. November monthly average streamflow for Vermont. Values for most streams and rivers ran in the near to above normal range.

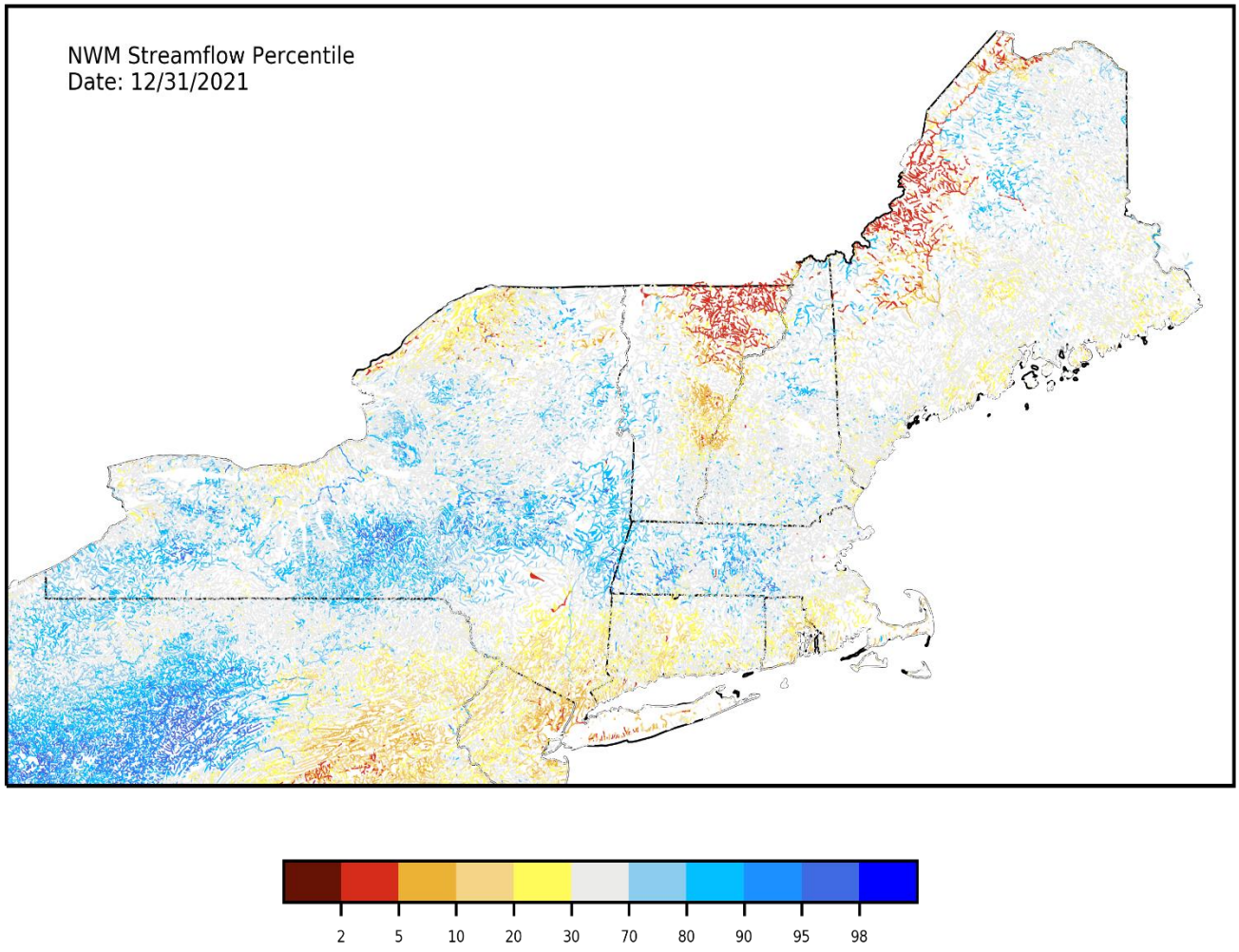

Figure 5: Experimental National Water Model (NWM) streamflow percentiles for December 31, 2021, showing lower flows in the current USDM D0 areas of northeastern VT. For more on this and other NWM products, please visit: https://water.noaa.gov/about/nwm.

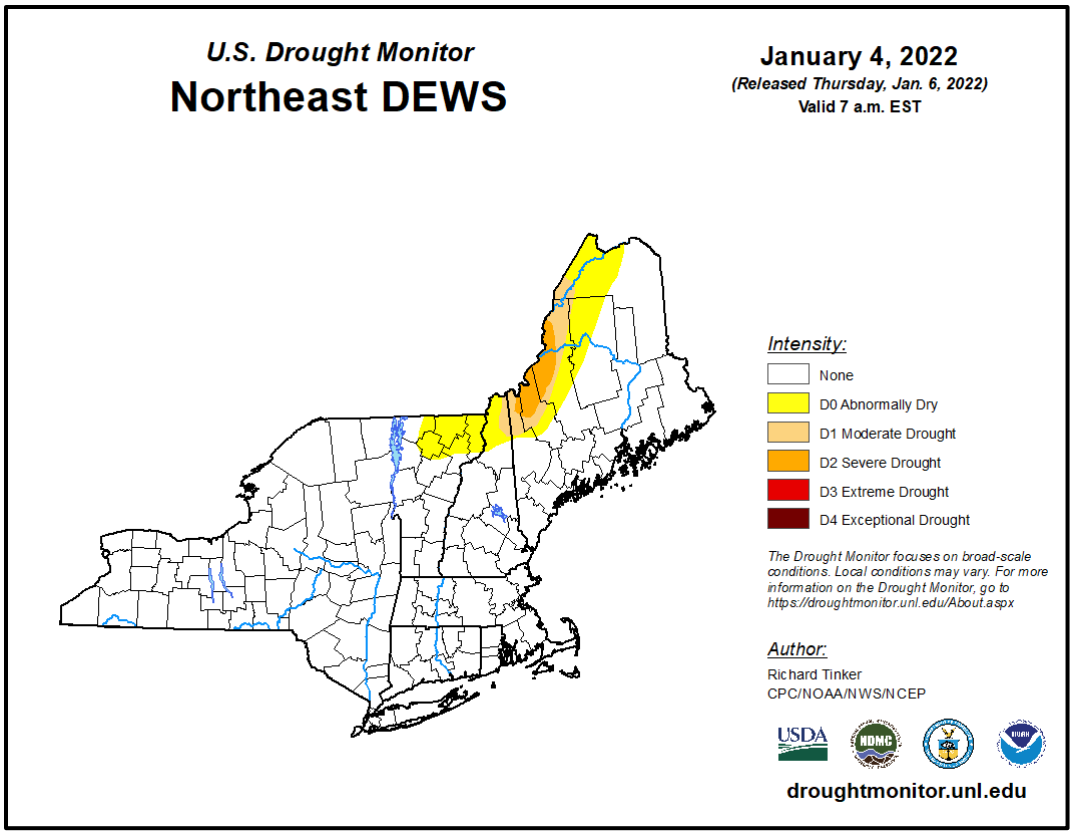

Figure 6: US Drought Monitor map for the last week of December 2021 and first week of January 2022. The areal coverage of D0 (abnormally dry conditions) remained virtually unchanged during the month. Despite slight to modest recovery in soil moisture and streamflow levels, precipitation totals averaged below normal in this area.