Winter (December-January-February) 2023-24 Outlook

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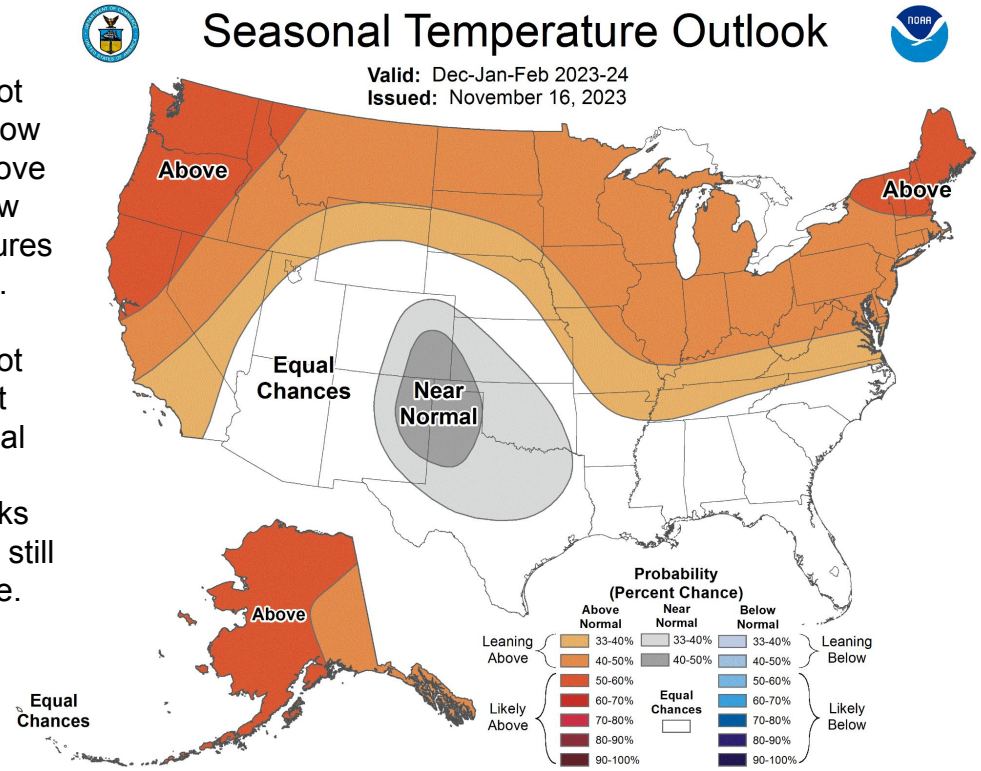
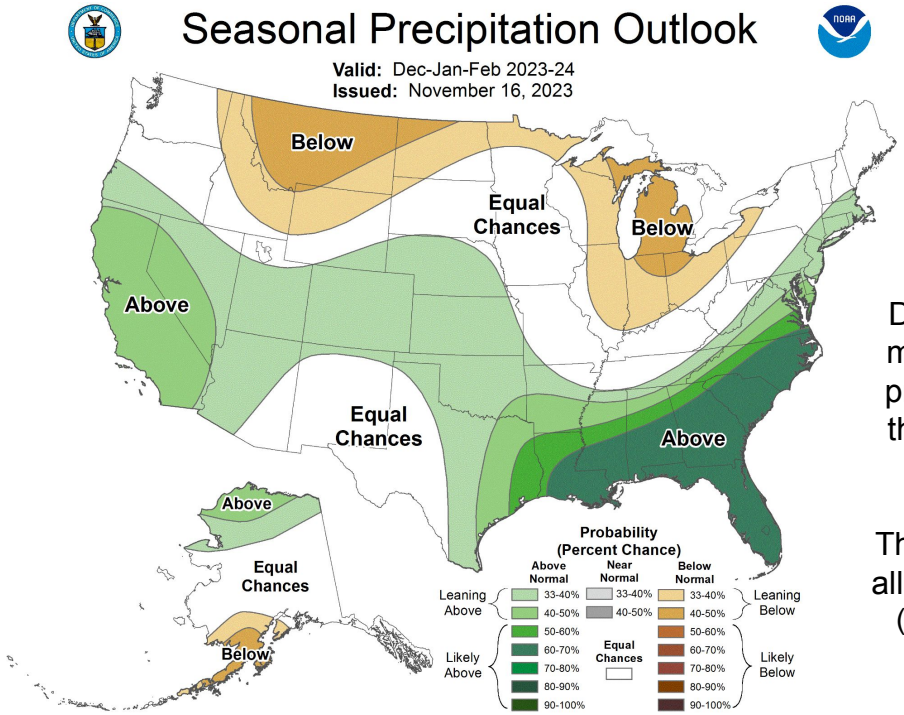
Temperature

- Warmer-than-average temperatures are favored across the northern tier of the United States and much of the Far West.
- The greatest odds for warmer-than-average conditions are in Alaska, the Pacific Northwest and northern New England.

Does not predict how much above or below temperatures will be.

Does not predict individual arctic outbreaks which are still possible.





Does not predict how much above or below precipitation will be or the number of storms or their intensity.

The outlook represents all types of precipitation (rain, snow, sleet, and freezing rain).

Precipitation

- Wetter-than-average conditions are most likely in northern Alaska, some areas of the West from parts of California to the south-central Rockies, the southern Plains, Gulf Coast, Southeast and lower mid-Atlantic.
- The greatest odds for drier-than-average conditions are forecast in portions of the northern Rockies and central Great Lakes region, especially for Michigan and northern Ohio and Indiana.

Winter (December-January-February) 2023-24 Outlook

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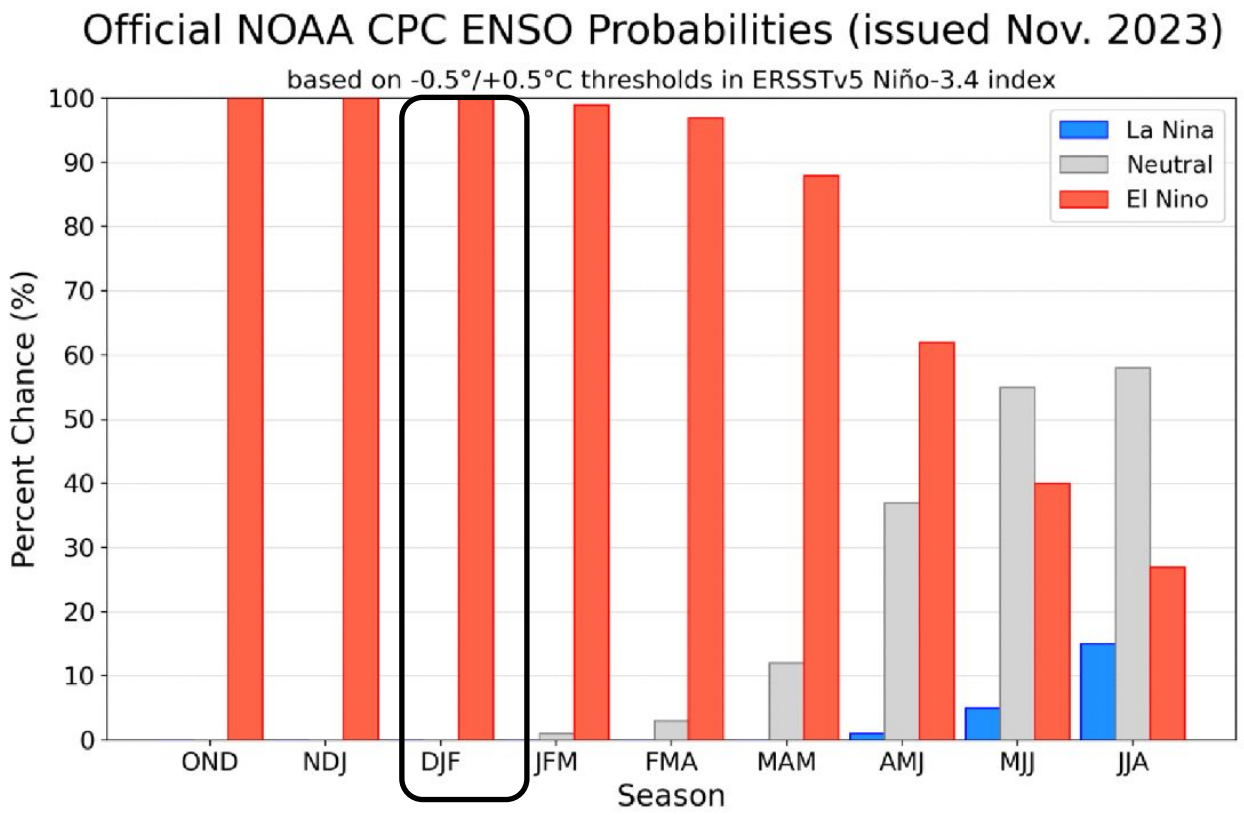
El Niño is anticipated to continue through the Northern Hemisphere spring; with nearly all guidance suggesting a moderate-to-strong El Niño will occur.



Official ENSO probabilities for the Niño 3.4 sea surface temperature index (5°N-5°S, 120°W-170°W). Figure updated 9 November 2023.

- El Niño-Southern Oscillation (ENSO) is one of the most important climate phenomena on Earth due to its ability to change the global atmospheric circulation, which in turn, influences temperature and precipitation patterns across the globe.
- There is a focus on ENSO when making seasonal outlooks because its arrival can often be predicted many seasons in advance of its strongest impacts on weather and climate.
- **El Niño is a warming of the ocean surface, or above-average sea surface temperatures, in the central and eastern tropical Pacific Ocean.**
- La Niña is a cooling of the ocean surface, or below-average sea surface temperatures, in the central and eastern tropical Pacific Ocean.

Typical Winter El Niño Pattern across the United States

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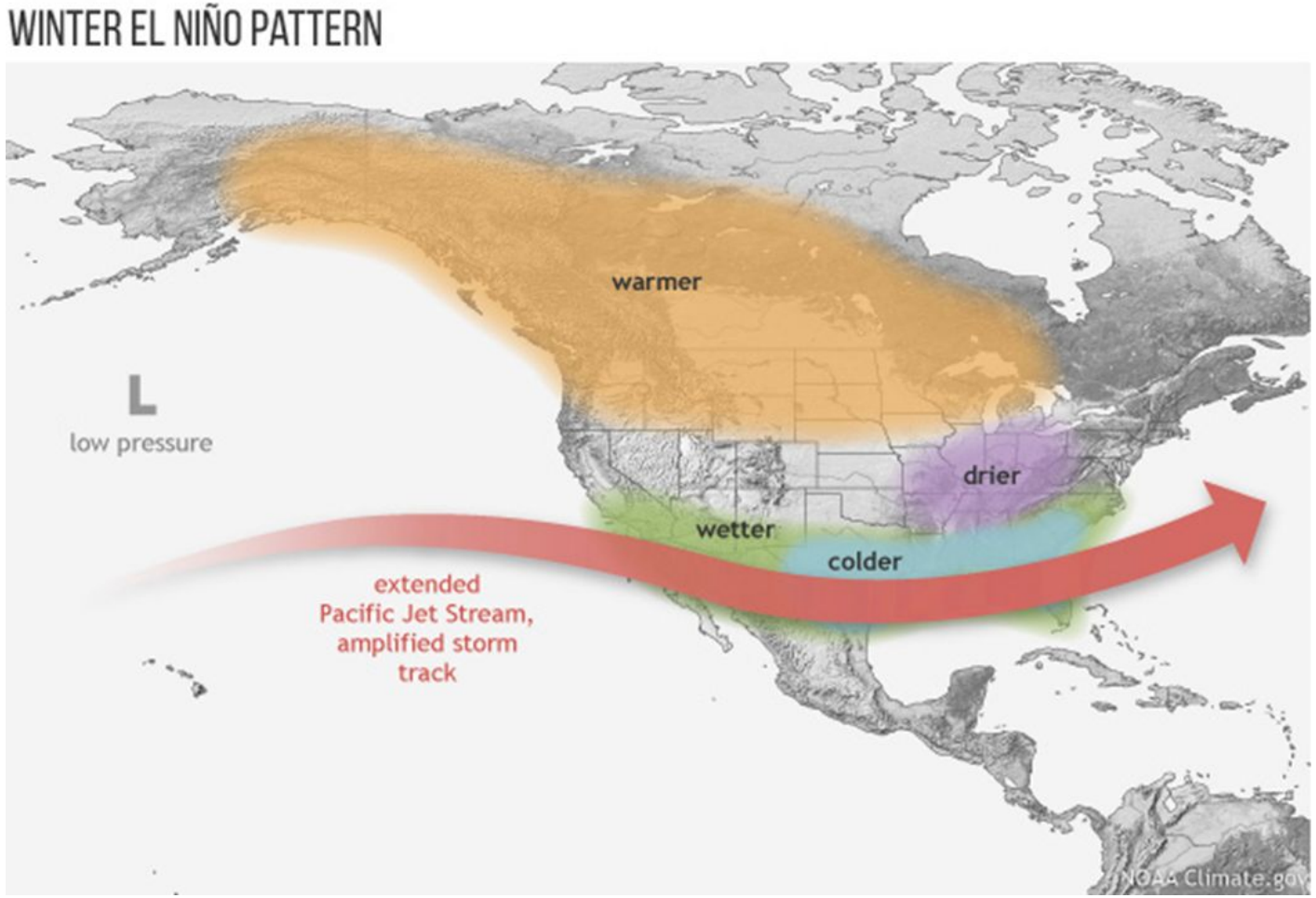

- During winter, El Niño episodes feature an equatorward/southward shifted, stronger-than-normal jet stream and wetter-than-average conditions across the southern part of the United States, and less storminess and milder-than-average conditions across the North.

- **One or more of these climate patterns have occurred during many El Niño events in the past. That doesn't mean that all of these impacts happen during every episode. Every event is somewhat different. In other words, the influence of El Niño on U.S. winter climate is a matter of probability, not certainty.**

- By modifying the jet streams, El Niño can affect temperature and precipitation across the United States and other parts of the world. The influence on the U.S. is strongest during the winter (December-February), but it may linger into early spring.

Winter (December-January-February) 2023-24 Outlook

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General Comments:

- No two El Niño events are the same. Historical composites can tell us what happens on average, and how often certain impacts occur, but a range of outcomes is always possible.
- These correlations are meant to give an idea of what can happen and what may be most likely in a given area based on past events. However, some correlations and impacts are most likely or more persistent during the stronger and longer lasting El Niños. Others are tilted towards a portion of the winter when the El Niño signal is strongest.
- El Niño does not mean the entire winter season will feature weeks of the same weather. El Niño does influence the main storm tracks, but variability can occur at a point or points in the season, and allow for more 'normal' conditions or even the opposite of typical impacts at times.
- Outlier events can still happen even in a cold season that is otherwise warm, wet or relatively lacking in snow. The February 1983 "Megalopolitan Snowstorm" and late January 2016 Blizzard are excellent examples of crippling I-95 corridor snowstorms in otherwise snow-starved and mild winters.
- Impacts are more pronounced in some areas of the Eastern United States than others. In some areas no clear correlation exists, especially in weaker to moderate strength El Niños.

Northeast/Coastal Mid-Atlantic:

- Precipitation tends to be above normal closer to the coast and into the Mid-Atlantic. There tends to be a more active southern branch of the jet stream during El Niño, which can favor a more frequent coastal storm track.
- The more active coastal storm track creates higher probabilities of coastal storms increasing the potential for coastal flooding, beach erosion and high wind events near the coast.
- Snowfall tends to be above normal in most of the coastal plain of the Mid-Atlantic regardless of the strength of the El Niño. Snowfall also tends to be below normal in northern New York and interior southern New England regardless of strength. Elsewhere snowfall tends to be variable with a more pronounced below normal tendency in the Boston to New York City corridor in stronger events.
- Temperatures tend to average above normal in the Northeast.

Winter (December-January-February) Temperature Outlook

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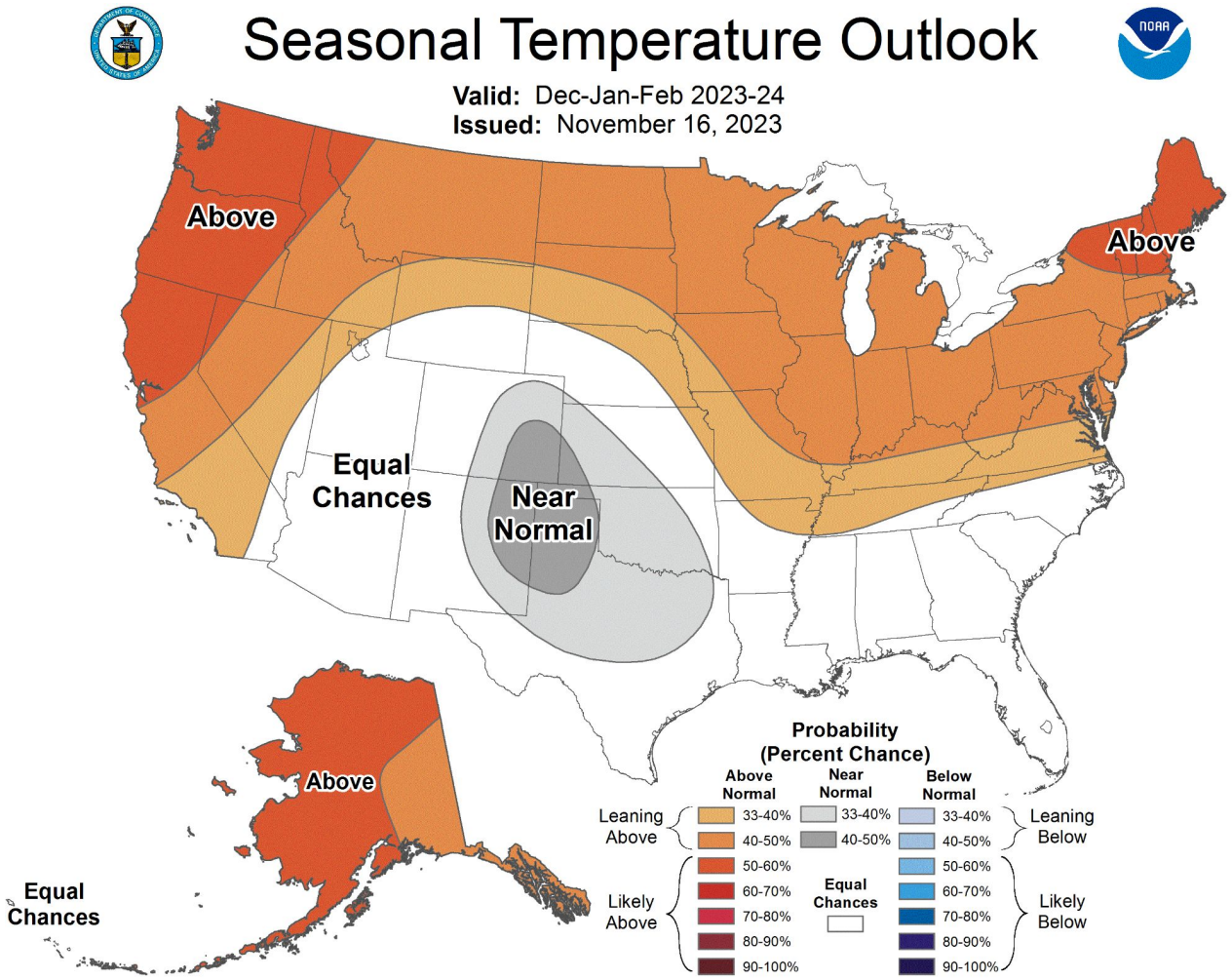

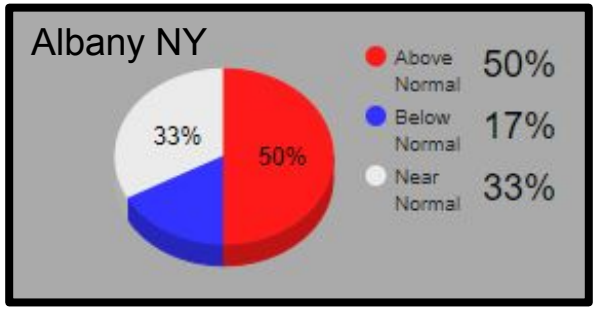

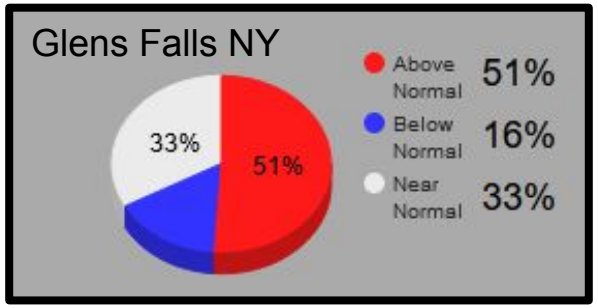

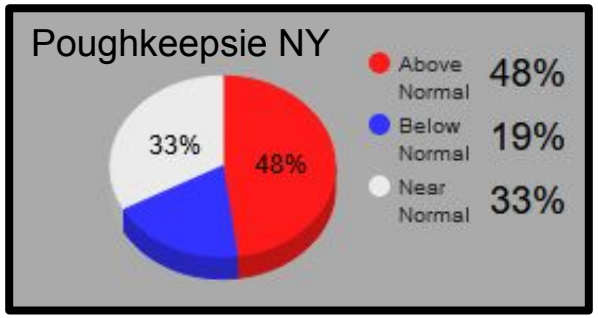

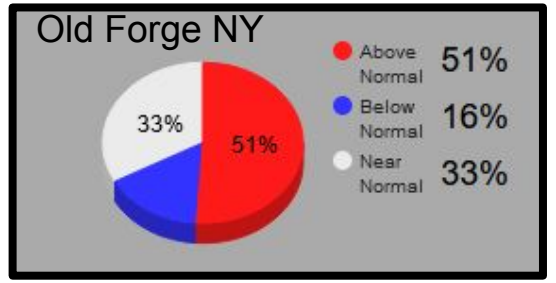

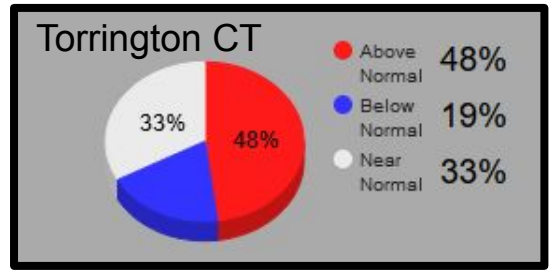

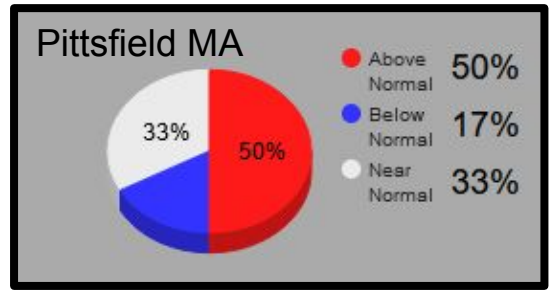

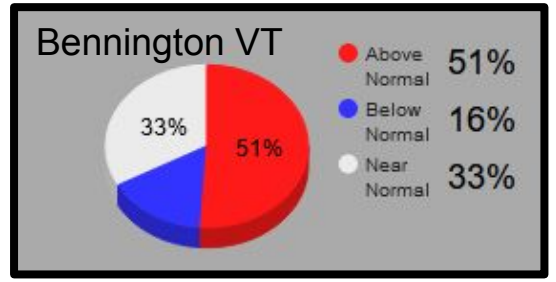

This outlook does not predict individual arctic outbreaks which are still possible.

Winter (December-January-February) Precipitation Outlook

Albany, NY
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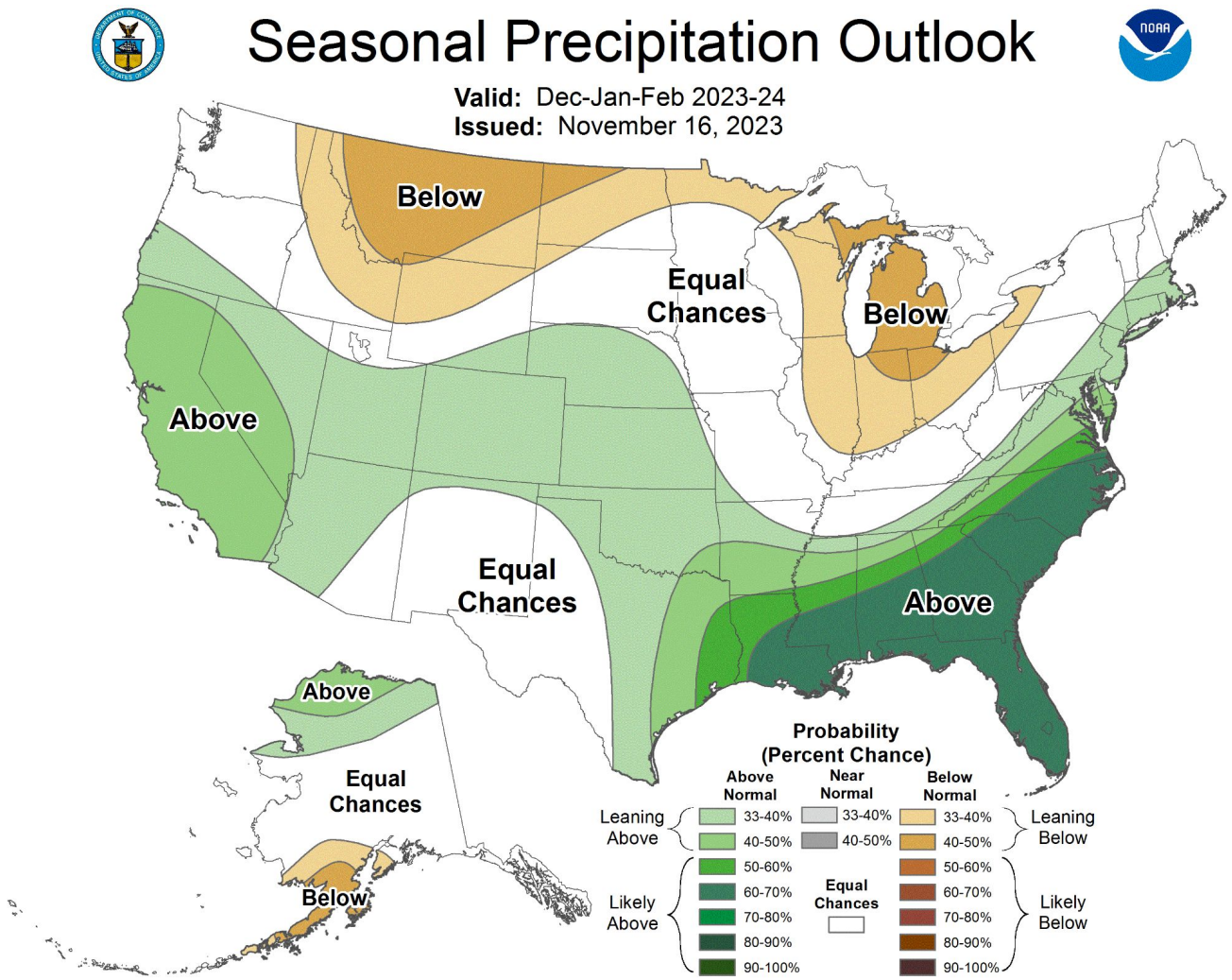
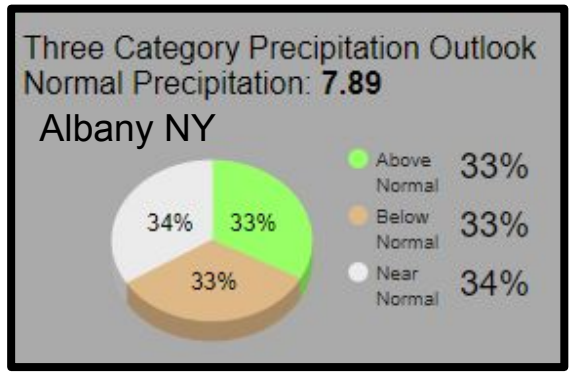
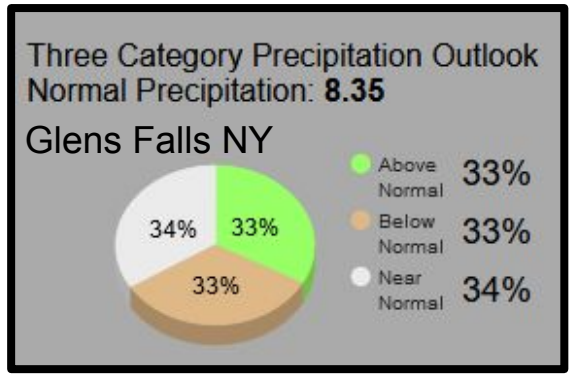
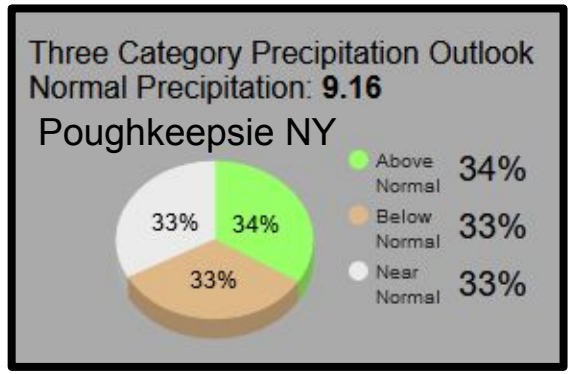
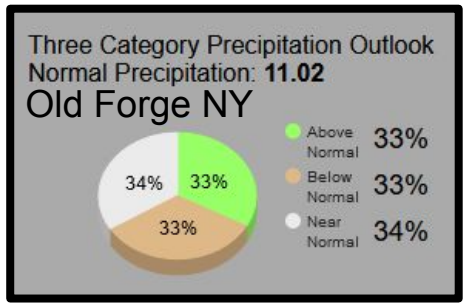


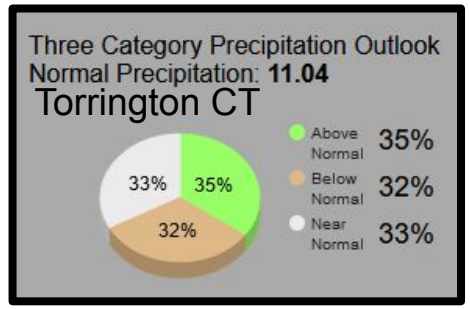
- Precipitation represents rain, snow, sleet and freezing rain events.
- This outlook does not represent the number of storms or their intensity.

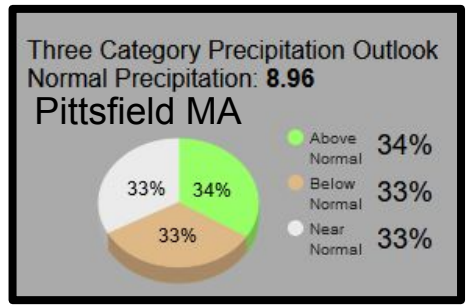


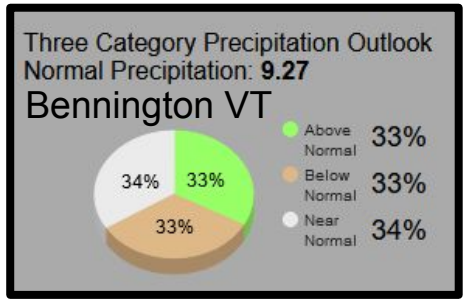












Albany NY - Winter (December-January-February) 2023-24 Outlook

Albany, NY
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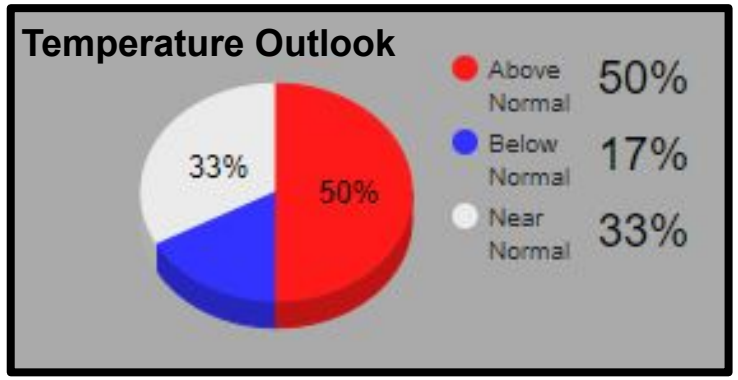

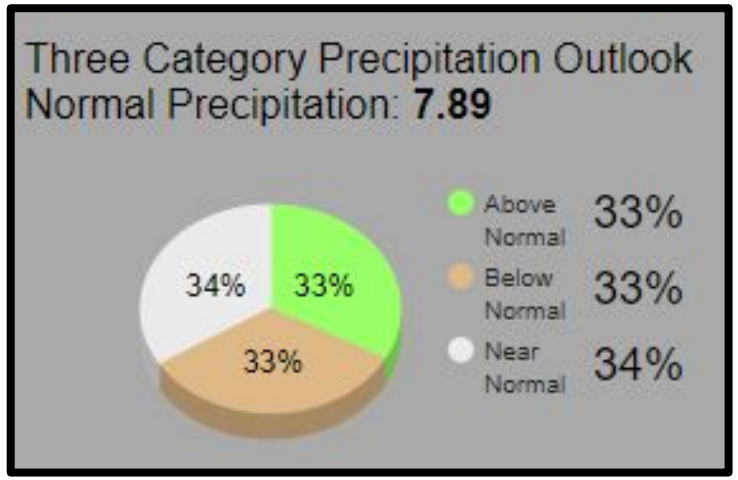

Very Strong El Niño	Dec-Jan-Feb Snowfall	Seasonal Snowfall
1982-83	50.4”	75.0”
1997-98	34.2”	52.1”
2015-16	10.3”	16.9”

Strong El Niño	Dec-Jan-Feb Snowfall	Seasonal Snowfall
1957-58	59.1”	74.4”
1965-66	56.0”	67.1”
1972-73	46.2”	70.9”
1987-88	59.1”	76.7”
1991-92	22.4”	30.7”

1991-2020 Normal Dec-Jan-Feb Snowfall = 42.6 inches

1991-2020 Normal Seasonal Snowfall = 59.2 inches
Seasonal Snowfall = October - May

Moderate El Niño	Dec-Jan-Feb Snowfall	Seasonal Snowfall
1951-52	51.1”	69.4”
1963-64	69.7”	77.0”
1968-69	45.1”	63.3”
1986-87	70.9”	80.6”
1994-95	22.2”	30.9”
2002-03	82.1”	105.4”
2009-10	45.2”	45.4”

Saratoga Springs 4SW, NY - Winter (December-January-February) 2023-24 Outlook

Albany, NY
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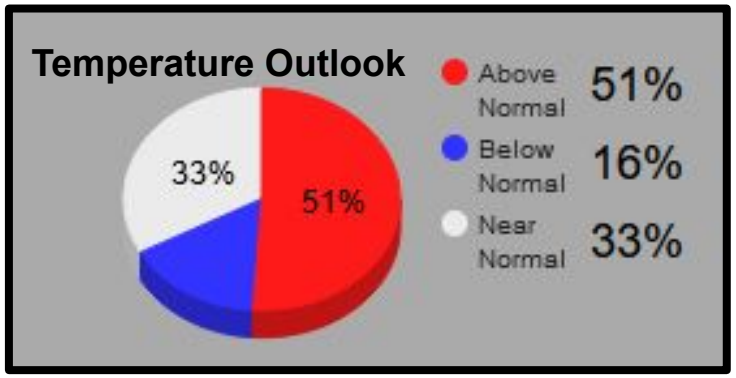

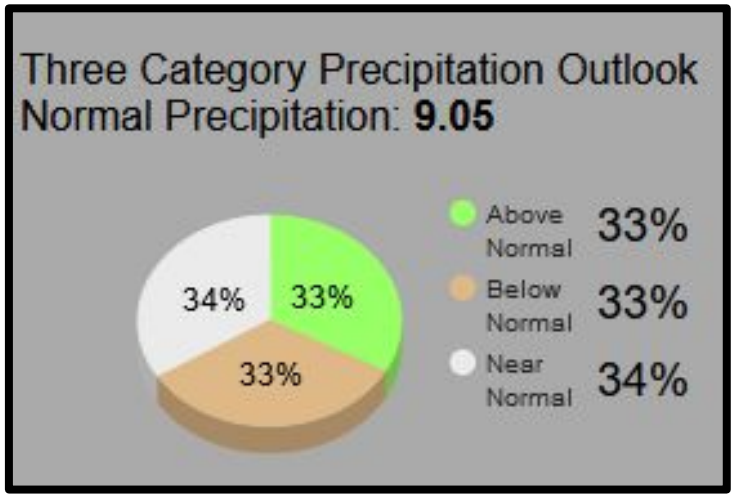

Very Strong El Niño	Dec-Jan-Feb Snowfall	Seasonal Snowfall
1982-83	40.0”	57.5”
1997-98	32.2”	58.4”
2015-16	11.7”	18.0”

Strong El Niño	Dec-Jan-Feb Snowfall	Seasonal Snowfall
1957-58	Missing	Missing
1965-66	58.1”	62.8”
1972-73	44.7”	52.7”
1987-88	54.7”	65.7”
1991-92	22.6”	29.9”

1991-2020 Normal Dec-Jan-Feb Snowfall = 45.9 inches

1991-2020 Normal Seasonal Snowfall = 62.6 inches
Seasonal Snowfall = October - May

Moderate El Niño	Dec-Jan-Feb Snowfall	Seasonal Snowfall
1951-52	Missing	Missing
1963-64	47.3”	57.7”
1968-69	37.6”	48.2”
1986-87	84.0”	94.5”
1994-95	26.1”	37.9”
2002-03	75.7”	94.8”
2009-10	45.5”	45.5”

Stillwater Reservoir NY - Winter (December-January-February) 2023-24 Outlook

Albany, NY
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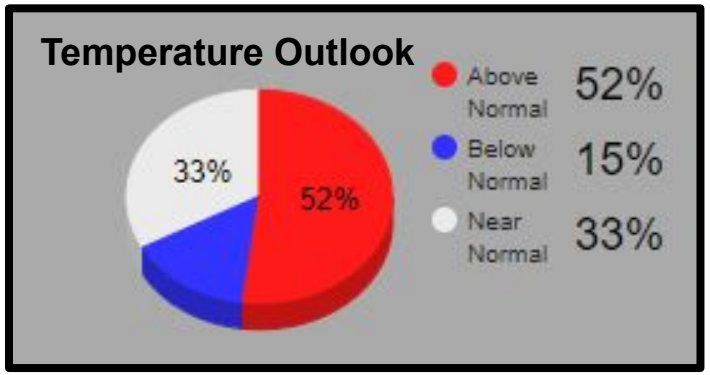

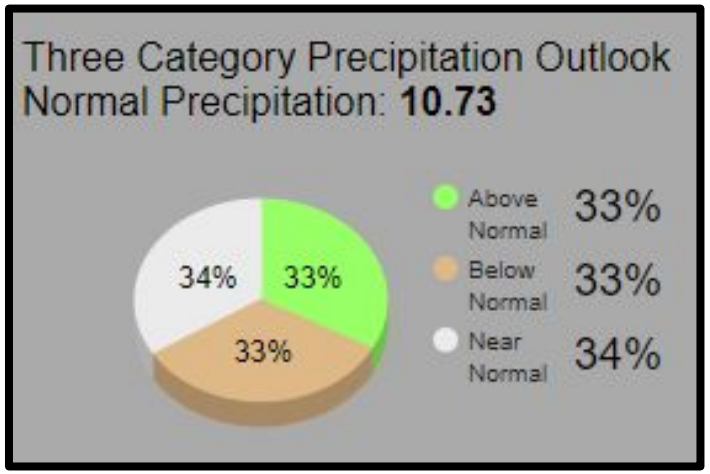

Very Strong El Niño	Dec-Jan-Feb Snowfall	Seasonal Snowfall
1982-83	58.5”	110.0”
1997-98	104.5”	173.5”
2015-16	72.5”	86.0”

Strong El Niño	Dec-Jan-Feb Snowfall	Seasonal Snowfall
1957-58	101.0”	135.6”
1965-66	133.5”	200.5”
1972-73	108.0”	149.4”
1987-88	124.0”	159.5”
1991-92	85.5”	125.0”

1991-2020 Normal Dec-Jan-Feb Snowfall = 106.0 inches

1991-2020 Normal Seasonal Snowfall = 149.1 inches
Seasonal Snowfall = October - May

Moderate El Niño	Dec-Jan-Feb Snowfall	Seasonal Snowfall
1951-52	Missing	Missing
1963-64	109.5”	156.5”
1968-69	143.0”	209.5”
1986-87	122.5”	147.5”
1994-95	113.5”	138.8”
2002-03	115.0”	175.5”
2009-10	105.5”	113.0”

Mohonk Lake NY - Winter (December-January-February) 2023-24 Outlook

Albany, NY
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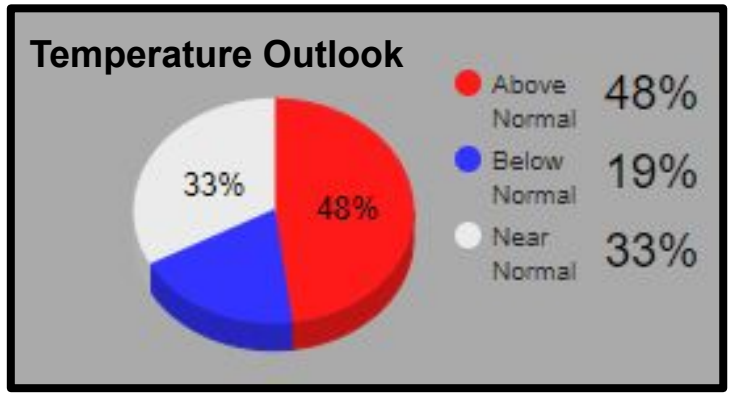

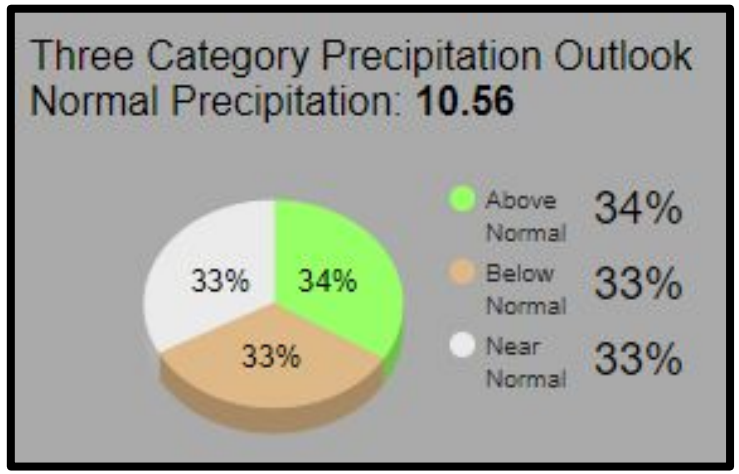

Very Strong El Niño	Dec-Jan-Feb Snowfall	Seasonal Snowfall
1982-83	51.9”	77.4”
1997-98	32.9”	47.6”
2015-16	7.9”	15.3”

Strong El Niño	Dec-Jan-Feb Snowfall	Seasonal Snowfall
1957-58	59.7”	98.0”
1965-66	51.6”	61.5”
1972-73	34.5”	46.3”
1987-88	66.9”	82.1”
1991-92	19.0”	31.3”

1991-2020 Normal Dec-Jan-Feb Snowfall = 41.8 inches

1991-2020 Normal Seasonal Snowfall = 58.7 inches
Seasonal Snowfall = October - May

Moderate El Niño	Dec-Jan-Feb Snowfall	Seasonal Snowfall
1951-52	40.8”	63.1”
1963-64	70.2”	72.5”
1968-69	37.7”	74.9”
1986-87	50.0”	70.2”
1994-95	21.1”	30.9”
2002-03	71.8”	94.0”
2009-10	80.2”	83.8”

Norfolk 2SW CT - Winter (December-January-February) 2023-24 Outlook

Albany, NY
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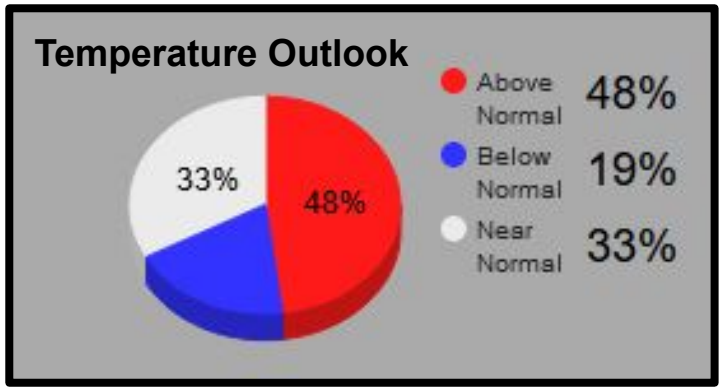

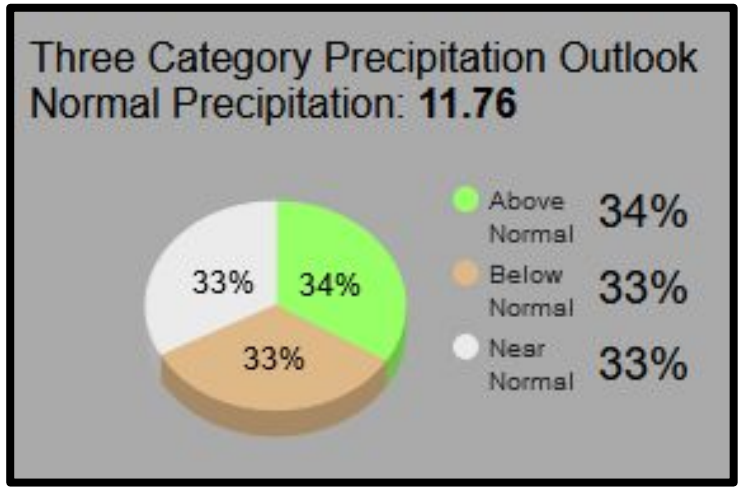

Very Strong El Niño	Dec-Jan-Feb Snowfall	Seasonal Snowfall
1982-83	68.7”	110.8”
1997-98	39.3”	59.7”
2015-16	26.2”	35.5”

Strong El Niño	Dec-Jan-Feb Snowfall	Seasonal Snowfall
1957-58	83.3”	141.1”
1965-66	72.0”	93.0”
1972-73	61.3”	76.0”
1987-88	79.4”	116.4”
1991-92	24.5”	43.7”

1991-2020 Normal Dec-Jan-Feb Snowfall = 50.4 inches

1991-2020 Normal Seasonal Snowfall = 74.7 inches
Seasonal Snowfall = October - May

Moderate El Niño	Dec-Jan-Feb Snowfall	Seasonal Snowfall
1951-52	74.0”	106.3”
1963-64	112.0”	127.0”
1968-69	89.5”	129.1”
1986-87	75.2”	106.3”
1994-95	31.7”	40.9”
2002-03	68.8”	93.6”
2009-10	68.1”	73.3”

Lenox Dale MA - Winter (December-January-February) 2023-24 Outlook

Albany, NY
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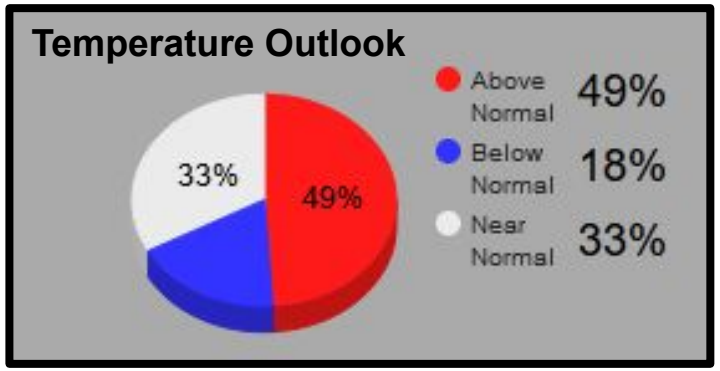
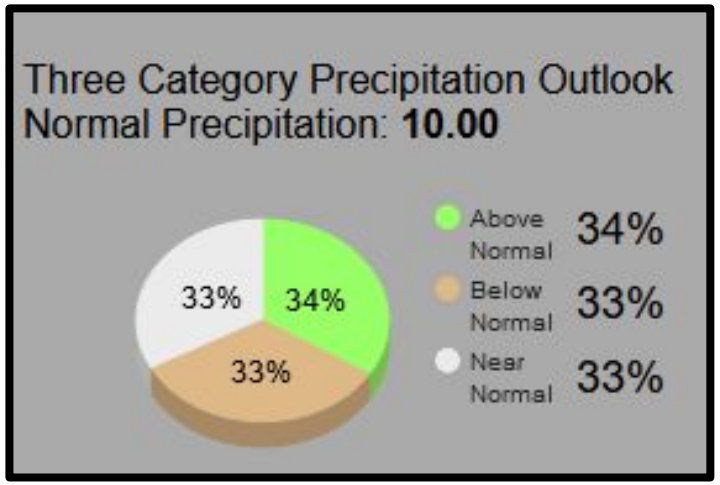




Very Strong El Niño	Dec-Jan-Feb Snowfall	Seasonal Snowfall
1982-83	Missing	Missing
1997-98	39.3”	59.7”
2015-16	16.6”	26.1”

Strong El Niño	Dec-Jan-Feb Snowfall	Seasonal Snowfall
1957-58	Missing	Missing
1965-66	Missing	Missing
1972-73	Missing	Missing
1987-88	Missing	Missing
1991-92	Missing	Missing

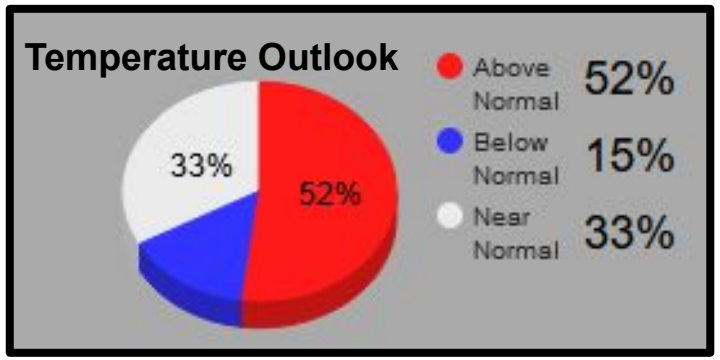
1991-2020 Normal Dec-Jan-Feb Snowfall = 43.9 inches

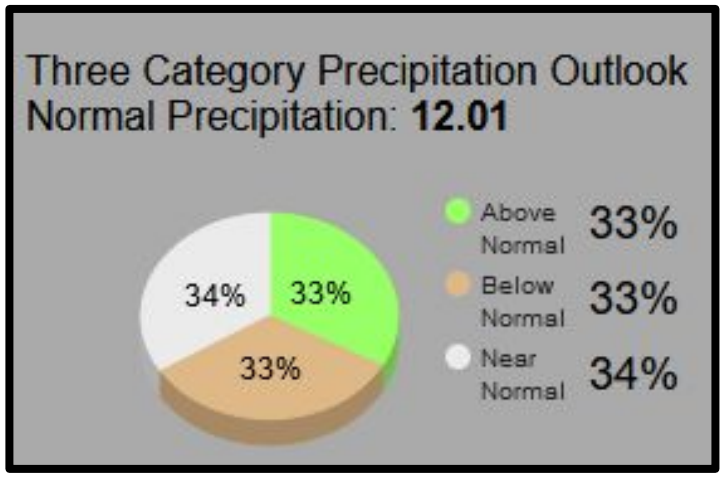
1991-2020 Normal Seasonal Snowfall = 62.2 inches
Seasonal Snowfall = October - May

Moderate El Niño	Dec-Jan-Feb Snowfall	Seasonal Snowfall
1951-52	Missing	Missing
1963-64	Missing	Missing
1968-69	Missing	Missing
1986-87	Missing	Missing
1994-95	Missing	Missing
2002-03	74.1”	99.5”
2009-10	59.3”	60.0”

Peru, VT - Winter (December-January-February) 2023-24 Outlook

Albany, NY
WEATHER FORECAST OFFICE





Very Strong El Niño	Dec-Jan-Feb Snowfall	Seasonal Snowfall
1982-83	51.0”	100.0”
1997-98	36.5”	80.8”
2015-16	37.1”	45.2”

Strong El Niño	Dec-Jan-Feb Snowfall	Seasonal Snowfall
1957-58	76.0”	110.0”
1965-66	57.0”	87.5”
1972-73	91.9”	139.4”
1987-88	81.0”	126.0”
1991-92	55.3”	84.1”

1991-2020 Normal Dec-Jan-Feb Snowfall = 73.1 inches

1991-2020 Normal Seasonal Snowfall = 111.4 inches
Seasonal Snowfall = October - May

Moderate El Niño	Dec-Jan-Feb Snowfall	Seasonal Snowfall
1951-52	87.7”	131.8”
1963-64	82.0”	110.2”
1968-69	98.0”	161.0”
1986-87	94.0”	131.5”
1994-95	66.2”	85.2”
2002-03	64.1”	120.6”
2009-10	110.2”	116.1”

1991-2020 Normal Seasonal Snowfall