

2021 Weather in Review: Sagamore Hill National Historic Site

Weather and climate play significant roles in driving both physical and ecological processes. For example, the active processes that shape the North Atlantic coastline are largely the result of meteorological events such as wind-driven waves. For research and long-term ecological monitoring, weather and climate data provide the potential for correlations to be made with observed physical and ecological pattern data. This resource brief provides a summary of both historic and current (2021) weather data for Sagamore Hill National Historic Site (SAHI), New York (NY). Because tide levels and wind can be significant for coastal parks, the annual water level and wind data are included.

Temperature

Overall, 2021 was the 4th warmest year on record with an average temperature of 55.7°F — 3.5 degrees above average (Table 1). 2021 also had the 3rd warmest autumn on record. The warmest month was August with an average of 76.6°F — 3.8 degrees above the monthly average. Seasonally, autumn, summer, and spring fell within "much above normal" temperatures, while winter fell within "above normal" temperatures (Figure 1).

Table 1. Nassau County, New York average monthly, average annual, and departures from long-term average temperatures. Departures from average are based on a comparison of 2021 average temperatures to relevant averages from 1895-2020. Data are available at the NOAA National Centers for Environmental Information, Climate at a Glance: County Time Series website.

Month (2021)	Average temperature (°F)	Departure from long-term average temperature (°F)
January	34.5	+3.6
February	33.2	+1.8
March	43.7	+4.5
April	52.1	+3.0
May	60.7	+1.3
June	72.0	+3.3
July	75.5	+1.2
August	76.6	+3.8
September	70.0	+3.8
October	62.2	+6.7
November	45.6	+0.7
December	42.8	+7.8
Annual	**55.7**	**+3.5**

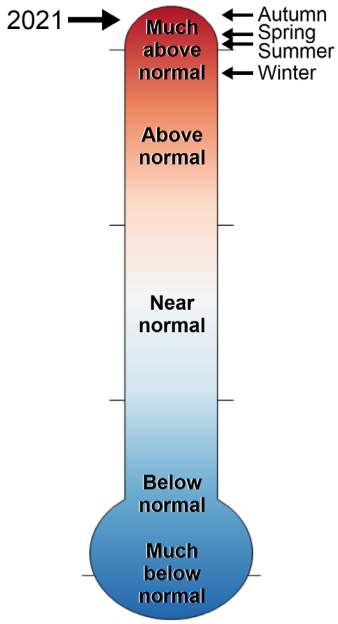


Figure 1. Nassau County, New York annual and seasonal temperature rankings from 1895-2021. Of the 127 records, 2021 was the 4th warmest year. Seasonally, it was the 15th warmest winter, 7th warmest spring, 9th warmest summer, and the 3rd warmest autumn. Data are available at the NOAA National Centers for Environmental Information, Climate at a Glance: County Time Series website.

Precipitation

Overall, 2021 was the 53rd driest year on record with a total of 45.24 inches — only 0.36 inches above the average annual precipitation (Table 2). November had the least precipitation with only 0.86 inches — 2.71 inches below average, while August had the greatest amount in 2021 with 7.35 inches— 3.19 inches above average. Seasonally, spring, autumn, and winter and fell within "below normal" levels, while summer reached "much above normal" levels.

Table 2. Nassau County, New York monthly and annual total precipitation and departures from long-term average totals. Departures from average are based on a comparison of 2021 precipitation levels to relevant averages from 1895-2020. Data are available at the NOAA National Centers for Environmental Information, Climate at a Glance: County Time Series website.

Month (2021)	Total precipitation (in)	Departure from long-term average precipitation (in)
January	2.16	-1.27
February	4.10	+0.84
March	3.21	-0.92
April	2.96	-0.88
May	4.25	+0.45
June	2.13	-1.49
July	6.12	+2.14
August	7.35	+3.19
September	6.05	+2.37
October	4.74	+1.13
November	0.86	-2.71
December	1.31	-2.49
Annual	**45.24**	**+0.36**

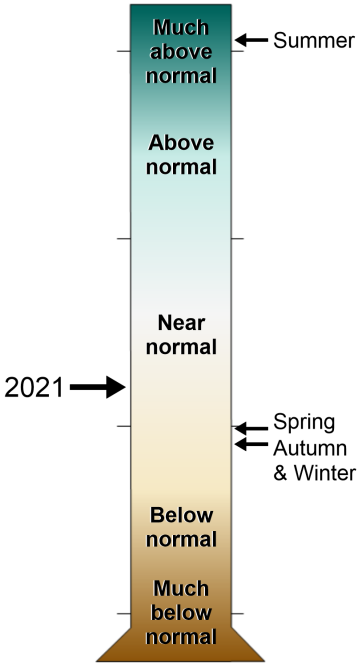


Figure 2. Nassau County, New York annual and seasonal precipitation rankings from 1895-2021. Of the 127 records, 2021 was the 74th wettest year. Seasonally, it was the 42nd driest winter, 45th driest spring, 8th wettest summer, and 42nd driest autumn. Data are available at the NOAA National Centers for Environmental Information, Climate at a Glance: County Time Series website.



Temperature and Precipitation Trends (1895–2021)

Temperature and precipitation data are gathered from the U.S. Climate Divisional Database, which stores data from January 1895 to the present, and can be accessed via the National Oceanic and Atmospheric Administration's (NOAA) National Centers for Environmental Information (NCEI) website (Figure 3). Users can choose different geographic scales (i.e., global, national, statewide), different temporal scales, and display them in various types of graphical formats. Temperature and precipitation data presented in this brief are for Nassau County, NY.

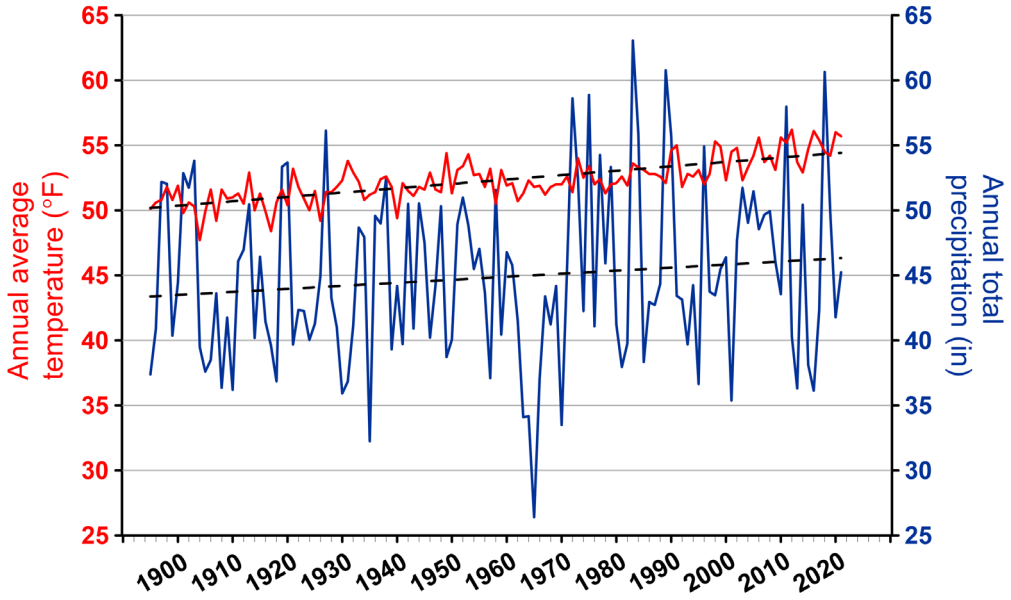


Figure 3. Nassau County, New York yearly average temperature and precipitation levels from 1895 to 2021. Dashed lines represent the 1895-2021 trend for each parameter; +0.3°F/decade increase for temperature and +0.02 in/decade increase for precipitation. Data are available at the NOAA National Centers for Environmental Information, Climate at a Glance: County Time Series website.

Tide Levels

Water level data was collected from the NOAA National Water Level Observation Network (NWLON) station 8516945 on the sheltered northwest side of Long Island, NY. Located at Kings Point, this station has records dating back to 1998.

The data is graphed to show the difference in the predicted tide level verses what was observed (Figure 4). The offsets in height reflect the effect from storm surge on the normal, astronomically driven tide level.

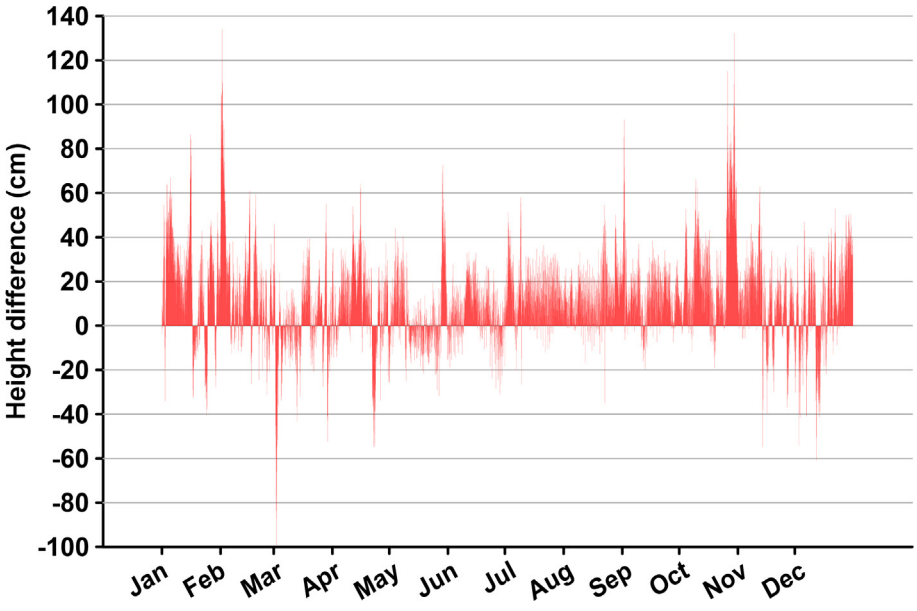


Figure 4. The difference in the predicted and observed tide levels at NOAA NWLON station 8516945, Kings Point, New York during 2021. Data available at the NOAA Tides & Currents website.

Wind

Wind data (wind speed and direction) is also collected from the NOAA NWLON station 8516945, Kings Point, NY. Each direction is divided up into categories called bins that are color coated to represent the frequency of a certain wind speed. The length of the bin represents the number of times wind comes from a given direction as well as the speed of the wind. The longer the length of the bin, the more frequent the given speed was recorded (Figure 5).

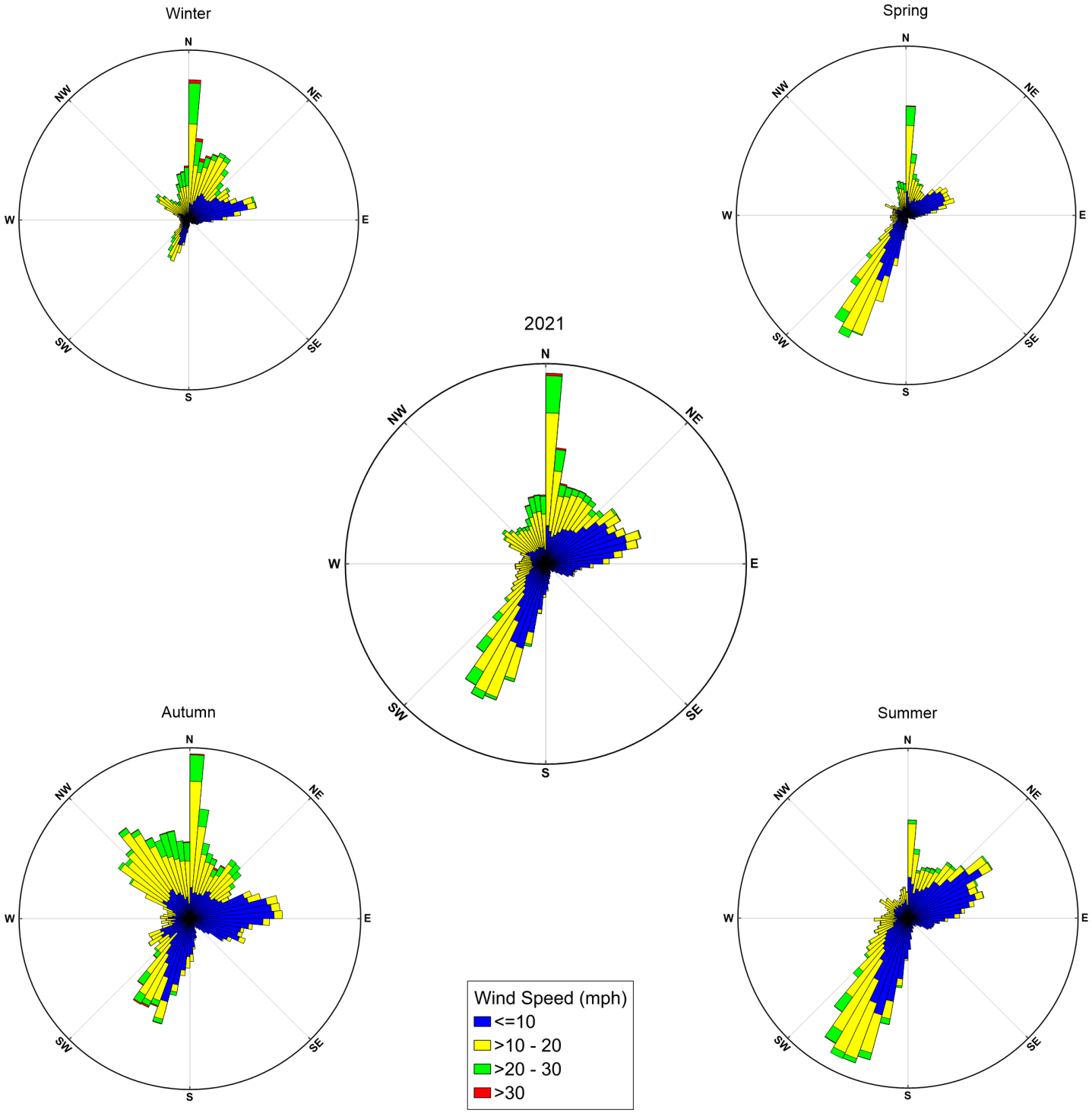


Figure 5. Wind charts reflecting both the seasonal and annual wind direction and speed at NOAA NWLON station 8516945, Kings Point, New York during 2021. Each direction is divided up into categories called bins that are color coated to represent the frequency of a certain wind speed. The length of the bin represents the number of times wind comes from a given direction as well as the speed of the wind. The longer the length of the bin, the more frequent the given speed was recorded. These wind charts reflect both the seasonal and annual wind direction and speed at for the year 2021. Data available at the NOAA Tides & Currents website.

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https://www.nps.gov/im/ncbn/index.htm