



2019 Weather in Review: Fire Island National Seashore

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 (2019) weather and water level data for [Fire Island National Seashore](#).

Temperature

Overall, 2019 was the 17th warmest year on record with an average temperature of 52.6 °F, 1.9 degrees above the normal average (Figure 1). Autumn and winter seasons fell within the “above normal” level and spring and summer reached the “much above normal” level as the 10th and 8th warmest seasons on record, respectively. The warmest month was July with over 4 degrees above the normal monthly average (Table 1).

Table 1. Suffolk County, New York average monthly, average annual, and departures from long-term average temperatures. Departures from average are based on a comparison of 2019 average temperatures to relevant averages from 1895-2018. Data are available at https://www.ncdc.noaa.gov/cag/county/time-series/NY-103/tavg/all/12/2019-2019?base_prd=true&begbaseyear=1895&endbaseyear=2019&trend=true&trend_base=10&begtrendyear=1895&endtrendyear=2019.

Month/Year	Average temperature (°F)	Departure from average temperature (°F)
January	31.6	+1.7
February	33.8	+3.6
March	38.1	+0.5
April	50.8	+3.7
May	58.2	+1.0
June	67.8	+1.5
July	76.4	+4.3
August	72.8	+1.9
September	66.3	+1.9
October	57.3	+3.1
November	41.9	-2.1
December	36.6	+2.4
2019	52.6	+1.9

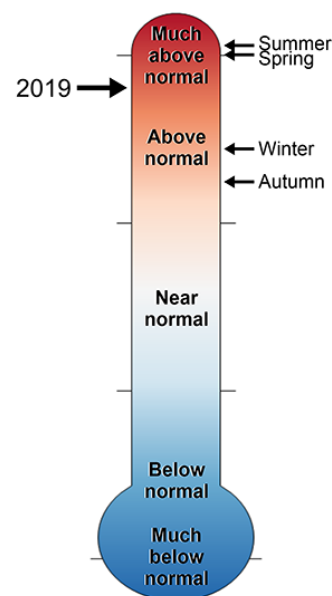


Figure 1. Suffolk County, New York annual and seasonal temperature rankings from 1895-2019. Of the 125 records, 2019 was the 17th warmest year. Seasonally, it was the 31st warmest winter, 10th warmest spring, 8th warmest summer, and the 37th warmest autumn. Data are available at <https://www.ncdc.noaa.gov/cag/county/rankings/NY-103/tavg/201912>.

Precipitation

Overall, 2019 was the 22nd wettest year on record with a total level of 51.05 inches of precipitation (Figure 2, Table 2). Seasonally, the winter was near the normal amount, with summer falling to “much below normal” level. Both spring and autumn reaching almost “much above normal” levels as the 13th and 12th wettest seasons on record, respectively. Four months had less than average precipitation amounts including February, August, September and November, while December had the greatest amount at over three inches above the average.

Table 2. Suffolk County, New York monthly and annual total precipitation and departures from long-term average totals. Departures from average are based on a comparison of 2019 precipitation levels to relevant averages from 1895-2018. Data are available at https://www.ncdc.noaa.gov/cag/county/time-series/NY-103/pcp/all/12/2019-2019?base_prd=true&begbaseyear=1895&endbaseyear=2019&trend=true&trend_base=10&begtrendyear=1895&endtrendyear=2019.

Month/Year	Total precipitation (in)	Departure from average precipitation (in)
January	4.89	+1.23
February	3.26	-0.21
March	3.12	-1.13
April	6.13	+2.23
May	5.10	+1.39
June	4.31	+0.93
July	3.90	+0.50
August	3.46	-0.49
September	0.97	-2.59
October	6.32	+2.68
November	2.19	-1.67
December	7.40	+3.33
2019	51.05	+6.21

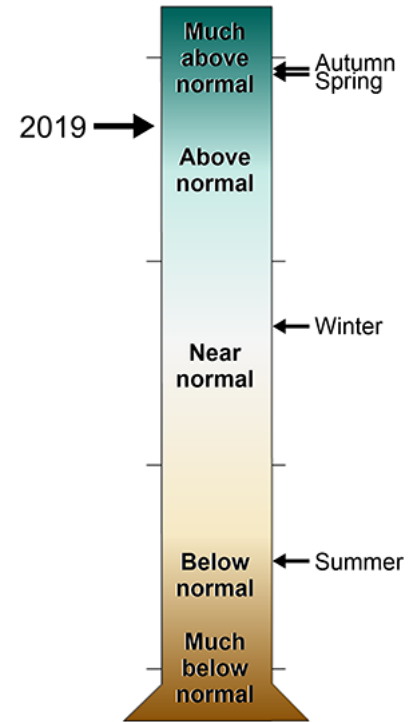


Figure 2. Suffolk County, New York annual and seasonal precipitation rankings from 1895-2019. Of the 125 records, 2019 was the 22nd wettest year. Seasonally, it was the 68th driest winter, 13th wettest spring, 28th driest summer, and 12th wettest autumn. Data available at <https://www.ncdc.noaa.gov/cag/county/rankings/NY-103/pcp/201912>.



Temperature and Precipitation Trends (1895–2019)

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 NOAA's [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 Suffolk County, NY.

NCEI has placed each year and season into historical context by assigning a rank based on how the temperature and precipitation values compare within the entire record. The “below normal”, “near normal”, and “above normal” on Figures 1 and 2 represent the bottom, middle, and upper tercile (three equal portions) of the distribution of values from the entire record. The lowest and uppermost decile (10%) of the distribution are marked as “well below normal” and “well above normal” respectively.

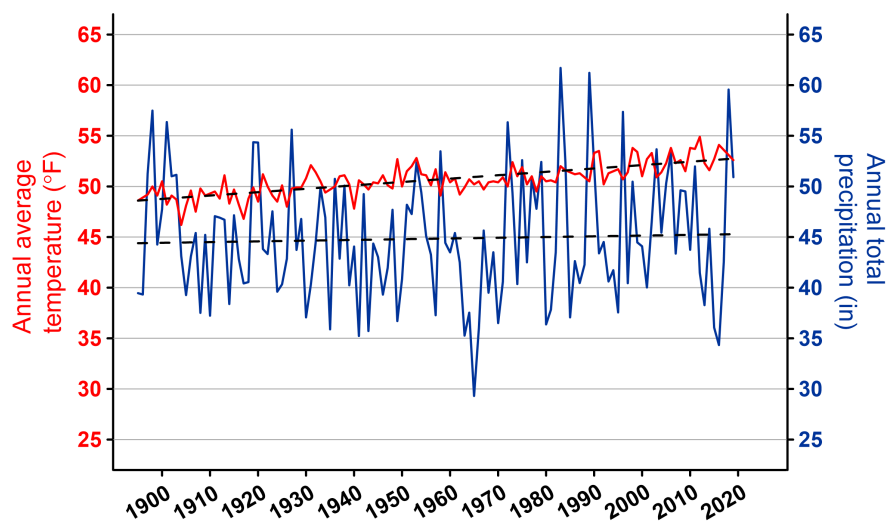


Figure 3. Suffolk County, New York yearly average temperature and precipitation from 1895 to 2019. Dashed lines represent the 1895-2019 trend for each parameter; $+0.3^{\circ}\text{F}/\text{decade}$ for temperature and $+0.07\text{ in}/\text{decade}$ for precipitation. Data are available at <https://www.ncdc.noaa.gov/cag/county/time-series/>.

Tide Levels

Water level data is collected from the NOAA NWLON station 8531680 on the high wave energy, ocean side of Fire Island. Located at Sandy Hook, NJ, this station has records dating back to 1910.

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.

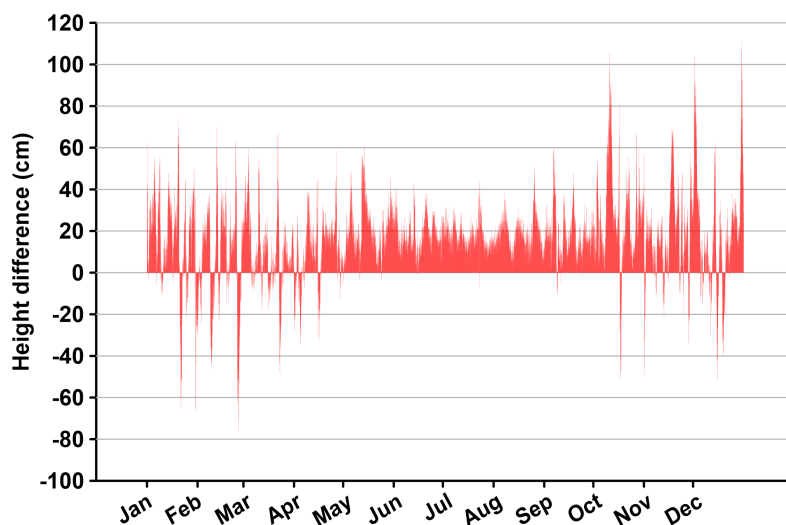


Figure 4. This bar graph (right) depicts the difference in the predicted and observed tide levels at Sandy Hook, New Jersey for 2019. Data available at <https://tidesandcurrents.noaa.gov/stationhome.html?id=8531680>.

Wind

Data is downloaded from the Great South Bay Buoy #1, which among other parameters, records wind speed and direction (Figure 5). 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. This buoy and data are made possible by Charlie Flagg of Stony Brook University. More information about this initiative as well as other data products can be found at [The Great South Bay Project website](#). Note, there are data gaps from January 1st through March 13th and from April 7th through May 2nd.

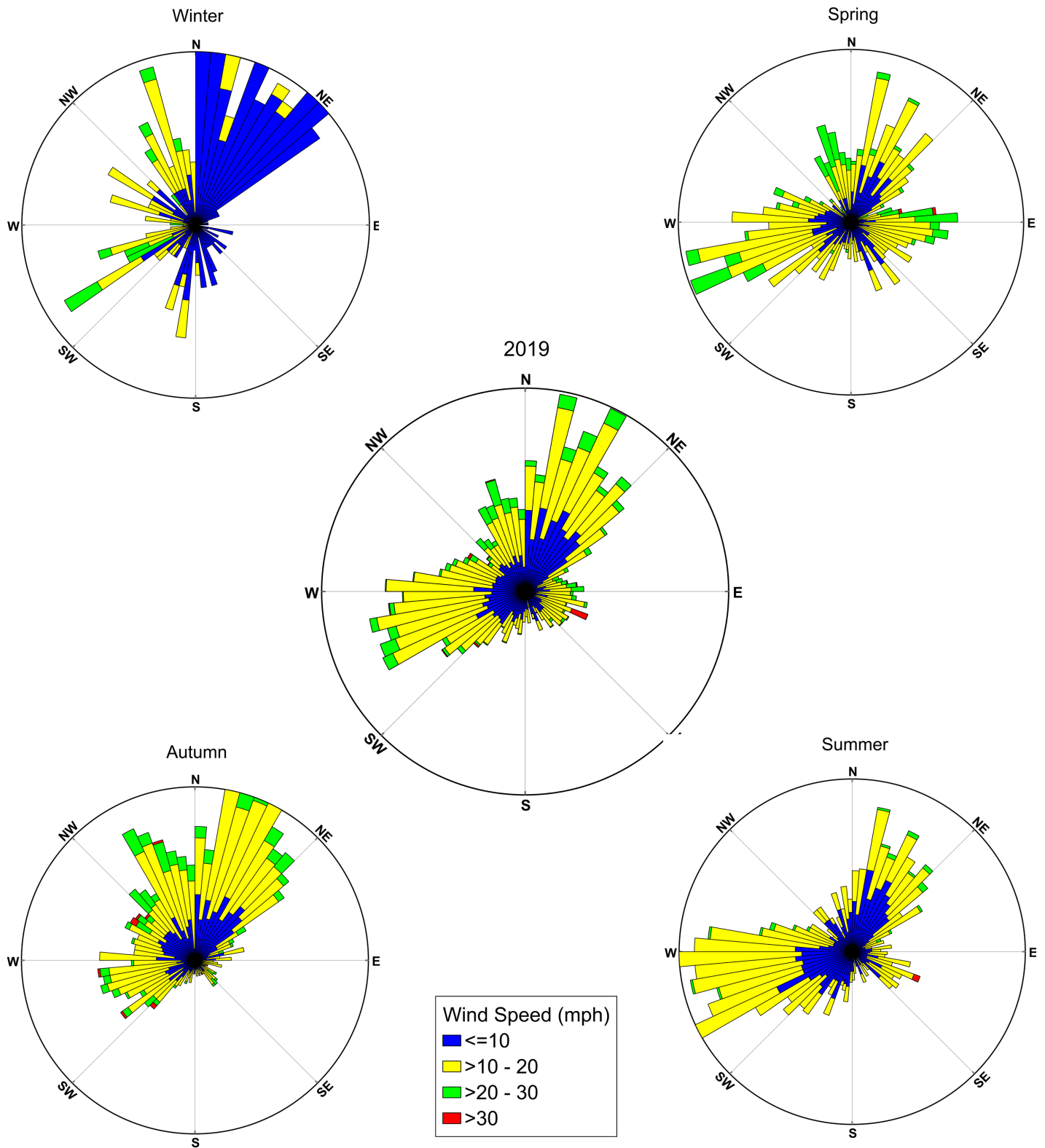


Figure 5. These wind charts reflect both the seasonal and annual wind direction and speed of the Great South Bay, New York for the year 2019 (Note, the annual chart precludes data from January 1st through March 13th). Data available at <http://po.msrb.sunyeb.edu/GSB/>.



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