

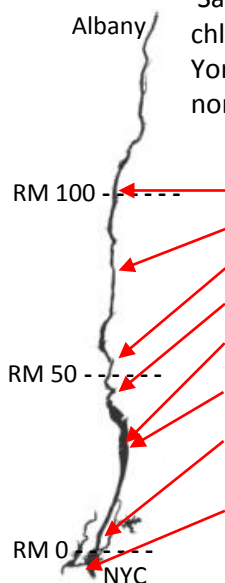
A Day in the Life of the Hudson and Harbor 2019: Salinity *Teacher Version*

Your site: _____ If measured, your salinity on Oct 22, 2019: _____

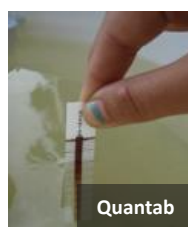
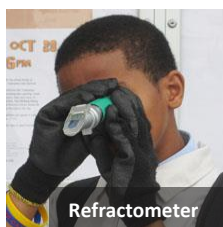
2019 was the 17th year of A Day in the Life of the Hudson and Harbor. Thanks to all of the participants who made this year a success! Let's compare some of the data you collected with data from earlier years.

Salinity Data Table

Salinity can be reported in many different units. Here the units are **parts per million (ppm)** of chloride (Cl⁻) to help compare results from sites far apart on the estuary. In saltier areas, like New York City, salinity is usually measured in **parts per thousand (ppt)**. **River miles (RM)** are measured north from the Battery in NYC.



RM	Site	2019	2018	2017	2016
100	Saugerties	32 ppm	below detection	37 ppm	46 ppm
76	Poughkeepsie	45 ppm	32 ppm	32 ppm	136 ppm
52	West Point	110 ppm	below detection	2,335 ppm	2,509 ppm
41	Verplanck	902 ppm	below detection	4,273 ppm	7,288 ppm
25	Piermont Pier	2,426 ppm	99 ppm	6,642 ppm	6,366 ppm
22	Hastings	2,891 ppm	2,768 ppm	8,857 ppm	8,303 ppm
4-6	Manhattan (West Side)	5,800 ppm	3,875 ppm	11,624 ppm	11,071 ppm
NY Harbor	Staten Island	10,545 ppm	9,964 ppm	16,606 ppm	-



People use different tools to measure salinity. Hydrometers and refractometers are best used in saltier water, while quantabs are best for fresh and slightly salty water.

1. The salt front (the leading edge of dilute sea water entering the Hudson) is located where salinity reaches 100 ppm.

- Which sites were considered freshwater in 2019?
Beacon, Poughkeepsie, Saugerties
- In what year shown did the salt front reach the farthest north? Why might this be? Hint: How might weather affect salinity?
2016 had a very dry summer and fall, allowing for saltwater to push upriver past Poughkeepsie
- In what year shown was the salt front the farthest south? What conditions would cause this?
Last year the salt front was unusually far south, all the way at Piermont (River Mile 25). A rainy summer and fall and a saturated watershed pushed the saltwater downriver in 2018

2. Where was the salt front on October 22, 2019?

Use a pencil to plot salinity readings for 2019 (found in the table above) on the graph on the next page.

- Place a point for salinity readings from Hastings to Saugerties directly above the listed river mile.
- Using a ruler, draw a line from one point to the next. Start at the point for the lowest river mile and continue to the highest.
- The salt front is located where salinity equals 100 ppm of chlorides. Using your graph plot and the horizontal line at 100 ppm, estimate (in river miles) the position of the salt front on October 22.

