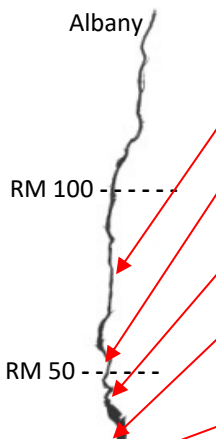


A Day in the Life of the Hudson and Harbor 2021: Salinity

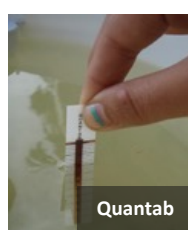
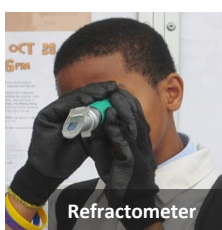
Teacher Version

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	2021	2020	2018	2017	2016
76	Poughkeepsie	Below detection	64 ppm	Below detection	32 ppm	178 ppm
52	West Point	29 ppm	-	-	-	-
41	Verplanck	290 ppm	-	Below detection	4,273 ppm	4,034 ppm
28-30	Nyack	621 ppm	5,535 ppm	46 ppm	5,426 ppm	5,037 ppm
25	Piermont	2,661 ppm	6,089 ppm	74 ppm	6,642 ppm	13,000 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 from the table were considered freshwater in 2021?
Poughkeepsie and West Point
- 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?
In 2018 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 14, 2021?

Use a pencil to plot salinity readings for 2021 (found in the table above) on the graph on the next page.

- Place a point for salinity readings from West Point to Piermont 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 14.

