

# TOTAL SALINITY LEVELS OF THE HUDSON RIVER

## Data Collection Information and Notes (Metadata)

### Data Information and Notes:

- Data was collected by participating students and teachers at various sites along the Hudson River.
- Data was compiled by the New York State Department of Environmental Conservation.
- The salt front (the leading edge of dilute sea water entering the Hudson) is located north of Piermont, where salinity reaches 100 ppm.
- Sea water has a salinity of approximately 35,000ppm.
- Salinity can be reported in many different units. Here the units are parts per million (ppm) of chloride (Cl-) to help compare between 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.

This chart shows the annual notes that were recorded on Snapshot Day ("A Day in the Life of the Hudson River"):

Year	Conditions that would affect the data collection
2004	10/6/04 sunny warm day.
2005	10/12/05 Snapshot Day Participants 2005 faced residual effects of Hurricane Tammy as they collected data. Weather conditions ranged from wet to wetter. Driving rains dumped inches of rain throughout the Hudson Estuary. Piermont area received 3.9 inches of rain during the day and Manhattan received 4.26 inches of rain, a record rainfall amount for one day according to the National Weather Service. Flood Watches were in place for much of the participating area. Many sites limited their sampling.
2006	10/2/06 Sprinkles and overcast during the day.
2007	10/2/07 came at the end of a very dry year with the salt front pushed up to close to record highs (RM78.2)
2008	10/7/08 Crisp, clear beautiful day with winds picking up mid morning
2009	10/8/09 a 'blow out tide' greeted samplers. The winds had been strong on the Hudson starting midday 10/7/09, and gained strength during the night. The strong wind affected tides which were extremely low exposing large expanses of mudflats. Fish catches were poor. A 10/7 rain event dropped salt levels.
2010	10/14/10 the day began shrouded in fog and for the afternoon samplers ended in rain. Recent rains throughout the watershed had left the river running very full and the salt front pushed down to ~ RM 36 - about half where it was in 2009. The weather was cool and crisp.
2011	10/18/11 the river was extremely turbid & swollen with rain after Hurricane Irene (8/28/11) & Tropical Storm Lee (9/8/11). The salt front was low, pushed down by all the rain. High sediment loads in the river. Sampling nets pulled in few blue crab but lots of y-o-y herring apparently washed out from upriver spawning .
2012	10/4/12 heavy mist and rain covered much of the Hudson during the day. The week leading up to the event was wet, although the summer had been very dry with the salt pushed way upriver to Poughkeepsie. Water plant vallisneria (water celery) was mostly absent post hurricanes possibly affecting fish counts upriver.
2013	10/10/13. Cold day- a full 10 degrees cooler than 2012. Very low numbers of Atlantic silversides were netted - perhaps a Hurricane Sandy aftermath. Tides were high and seining was a challenge at many sites with catches lower than normal and many sites pulled in nothing. Water plant vallisneria (water celery) was mostly absent post hurricane Sandy possibly affecting fish counts upriver.

This chart shows the site information and notes that were recorded for each sampling location:

Site Name	RM #	GPS location	Turbidity Sampling	Instrument	Site Issues
River Project	2	40°43'42.60" N, 74°00'50.12"W		<b>DO-</b> Early years this site has used winkler's titration method (when the River Project staff runs the station), however for the last 5 years, when the Trevor teachers run the station, they use the LaMotte Green kits which have much lower resolution.	Sample off a pier in NYC. 2004-2007 they were at Pier 26, 2008 they did not have a location, 2009-2013 they are at Pier 40.
Beczak	18	40°56'17.30" N, 73.54'10.24" W	2005 and 2006 used JTUs as noted.	2004-2012 sampling was with Saunders HS. 2013 they became a part of Sarah Lawrence College and moved to matching college students with elementary students so the sampling kits switched to LaMotte green kits.	Site has a created marsh bordering the north.
Piermont	25	41°02'34.98"N, 73°53'45.09"W	2005 used JTUs as noted	Seine and traps. Only Naked Gobies were caught in traps and all the gobies were trap caught.	Chemical samples are of a pier but the fishing is done along the northern edge in a protected embayment where students can stepping down to the water and seine. Traps are set under the pier.

Beacon	61	41°30'11.91"N, 73°59'17.24"W	2005, 2006 and 2010 used JTUs as noted		From 2004-2009 Scenic Hudson supported a station at Longdock. In 2010-2013 they moved to Riverfront Park a site in close proximity but not the same site. We have had another group at Riverfront 2011-2013 but not 2010 so I kept it consistently the Scenic Hudson site.
Norrie Point	84.5	41°49'53.84"N, 73°56'31.57"W	2005 and 2006 used JTUs as noted. Turbidity tied to tides because of the muddy conditions at Norrie. The lower the tide the higher the turbidity.	DO can be tied to tides because of the water chestnut beds - as the tide moves in the DO is higher than when the tide goes out moving the water out from the water chestnut beds.	2004 Norrie Point shows it sampled but no data was received.
Ulster Landing	97	42°00'39.43" N, 73°56'30.58" W	2004 and 2005 used secchi disk, 2006-2013 used a meter reading NTUs. Only site using a meter so I converted to cms which are less exact.	Ulster Landing uses meters for a lot of their sampling	
Green Island	153	42°44'52.61"N, 73°41'21.14"W			2004-2006 sampling occurred at Heatly school just south of the current Green Island Park (GI) 2007 and 2008 there is no data collected. 2009 sampling moved to GI Park.

**Related Websites:**

<http://www.dec.ny.gov/lands/47285.html>