

USGS Storm-Tide Sensor Network and Historic Tidal Data along the Lower Delaware River

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US Geological Survey

New Jersey Water Science Center

USGS

DRBC Flood Advisory Committee Meeting - December 7, 2016

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New Jersey Water Science Center
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Delaware River Tide Gages ?

- What does the Delaware River Tide gage network look like?

If we search Google, Yahoo, and Bing..

Google

- [Station Selection - NOAA Tides & Currents](#)
- [Delaware - USGS Water Data for the Nation - U.S. Geological Survey](#)

Yahoo

- [Station Selection - NOAA Tides & Currents](#)
- [Delaware - USGS Water Data for the Nation - U.S. Geological Survey](#)

Bing

- [USGS Current Conditions for Delaware Streamflow](#)
- [Tide Location Selection for Delaware River](#)

Results of Search

- Delaware River at Trenton Streamgauge

NOAA Tides and Currents

Saltwater Tides

The screenshot shows the NOAA Tides and Currents website interface. At the top, there is a navigation menu with categories: PRODUCTS (Data, Analyses, and Publications), PROGRAMS (Serving the Nation), EDUCATION (Tides, Currents, and Predictions), and HELP & ABOUT (Info and how to reach us). Below the navigation, the page title is "Water Levels - Station Selection". There are two tabs: "Active Stations Only" (selected) and "Active & Historic Stations". A search bar is present with the text "Filter Enter a station name or ID". The main content area displays a list of stations, organized by state. The "Alabama" section is expanded, showing a table of stations with columns for Station ID, Name, and State. The "Alaska" section is also visible below it.

State	Station ID	Name	State
Alabama	8739803	Bayou La Batre Bridge, AL	8737138 Chickasaw Creek, AL
	8735189	Dauphin Island, AL	8735391 Dog River Bridge, AL
	8737648	Mobile State Docks, AL	8732828 Weeks Bay, Mobile Bay, AL
			8738643 West Fowl River Bridge, AL
Alaska	9461380	Adak Island, AK	9457804 Ahtak, AK
	9461719	Aika, AK	9454050 Cordova, AK
	9452219	Juneau, AK	9458460 Ketchikan, AK
	9457292	Kodiak Island, AK	9455760 Nikiski, AK
	9468756	Nome, Norton Sound, AK	9451054 Port Alexander, AK
	9497645	Pudhoe Bay, AK	9491094 Red Dog Dock, AK
	9455509	Seldovia, AK	9455099 Seward, AK
	9452400	Skagway, AK	9468333 Unalakleet, AK
	9454249	Valdez, AK	9464212 Village Cove, St Paul Island, AK
			9455920 Anchorage, AK
			9452634 Elni Cove, AK
			9459881 King Cove, AK
			9462450 Nikolai, AK
			9463502 Port Moller, AK
		9459450 Sand Point, AK	

The screenshot shows the SaltwaterTides.com website interface. At the top, there is a navigation menu with categories: TIDE, SUN, MOON, and TIDE. Below the navigation, there is a banner that says "ON A PHONE? CLICK FOR MOBILE SITE!". There is also a "GET THE APP" button. The main content area is titled "How to use: Pick the site along the Delaware River for the tides. Then scroll to the bottom of this page." and contains a list of sites along the Delaware River.

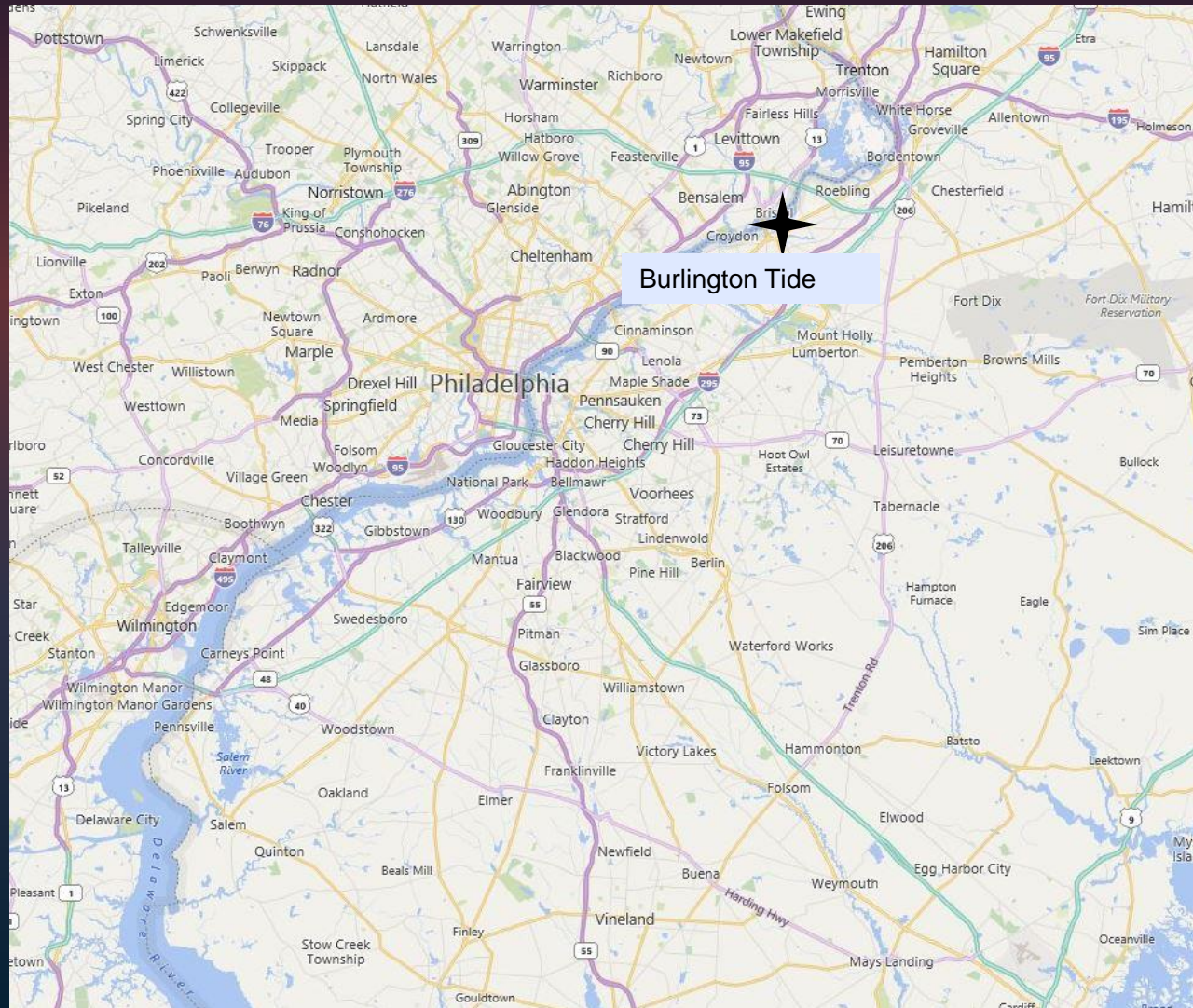
- Hope Creek, 0.6 n.mi. above entrance, N.J.
- Taylors Bridge, Blackbird Creek, Del.
- Artificial Island, Salem Nuclear Plant, N.J.
- **Alloway Creek, New Jersey**
 - 0.8 n.mi. above entrance
 - Abbots Meadow
 - 2.5 n.mi. above entrance
 - Coopers Creek bridge
 - Quinton
- **Salem River, New Jersey**
 - Sinnickson Landing
 - Salem
- **Chesapeake and Delaware Canal**
 - St. Georges, Delaware
 - Summit Bridge, Delaware
 - Chesapeake City, Maryland

NOAA Tides and Currents

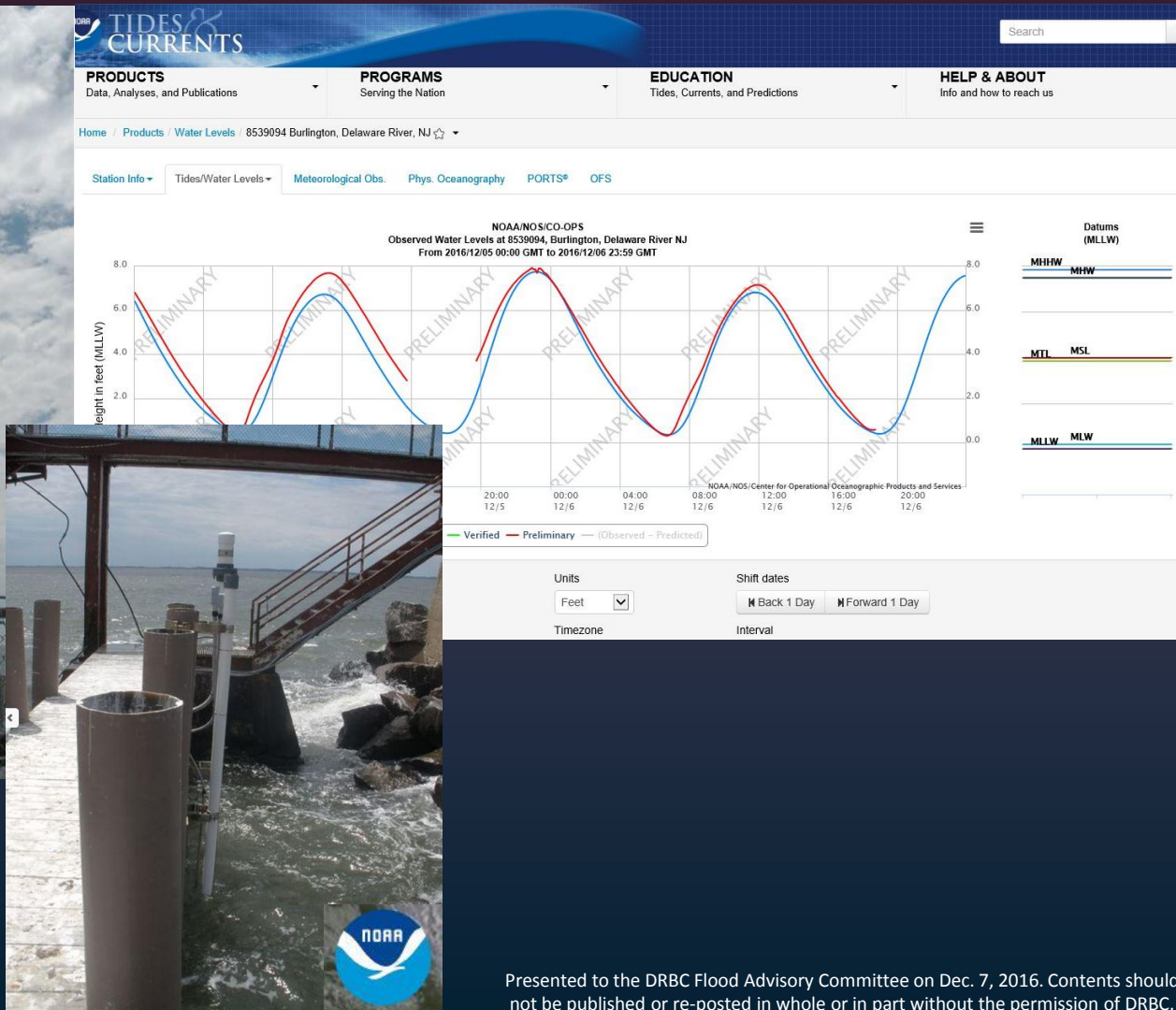
The screenshot displays the NOAA Tides and Currents website interface. At the top, there is a search bar and navigation tabs for PRODUCTS, PROGRAMS, EDUCATION, and HELP & ABOUT. Below the navigation, a breadcrumb trail reads 'Home / Products / Water Levels'. The main content area is organized by state, with sections for Massachusetts, Mississippi, New Hampshire, New Jersey, and New York. Each state section lists specific tide gauge locations with their respective IDs. The 'New Jersey' section is circled in blue, highlighting two gauges: 8539094 Burlington, Delaware River, NJ and 8537121 Ship John Shoal, NJ.

State	Gauge ID	Location
Massachusetts	8443970	Boston, MA
	8449130	Nantucket Island, MA
	8447435	Chatham, MA
Mississippi	8747437	Bay Waveland Yacht Club, MS
	8741533	Pascagoula NOAA Lab, MS
	8741041	Dock E, Port of Pascagoula, MS
New Hampshire	8423898	Fort Point, NH
New Jersey	8534720	Atlantic City, NJ
	8531680	Sandy Hook, NJ
	8539094	Burlington, Delaware River, NJ
New York	8519483	Bergen Point West Reach, NY
	8518750	The Battery, NY
	8537121	Ship John Shoal, NJ
	8516945	Kings Point, NY
	8447386	Fall River, MA
	8740166	Grand Bay NERR, Mississippi Sound, MS
	8536110	Cape May, NJ
	8510560	Montauk, NY

NOAA Tide Gage Locations



Ship John Shoal



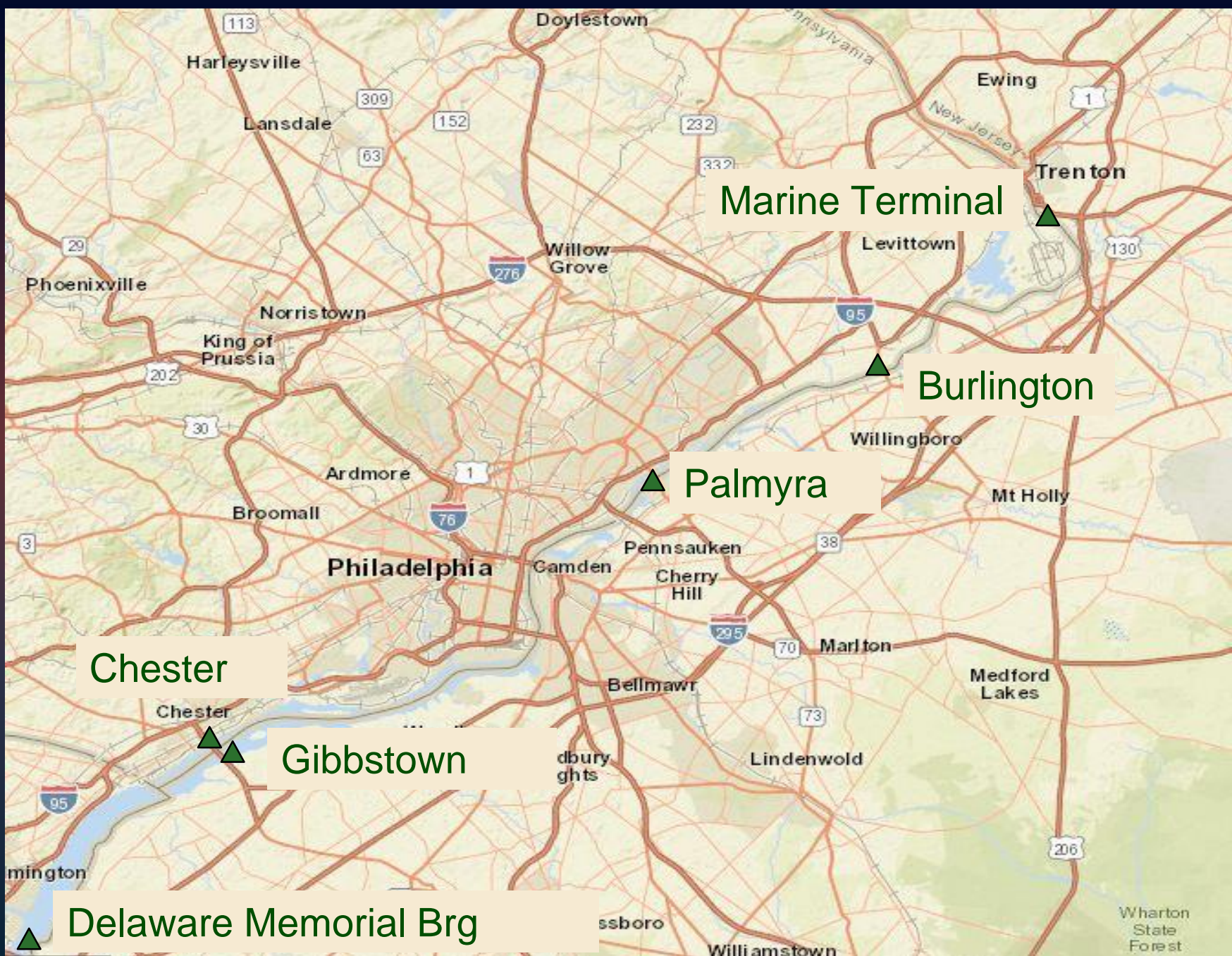
USGS Tidal Network along the Delaware River

Realtime Streamgauge and Tide Gages

- [USGS 01463500 Delaware River at Trenton NJ - USGS Water Data for ...](#)
- [USGS 01412150 Maurice River at Bivalve, NJ](#)
- [USGS 01413038 Cohansey River at Greenwich, NJ](#)

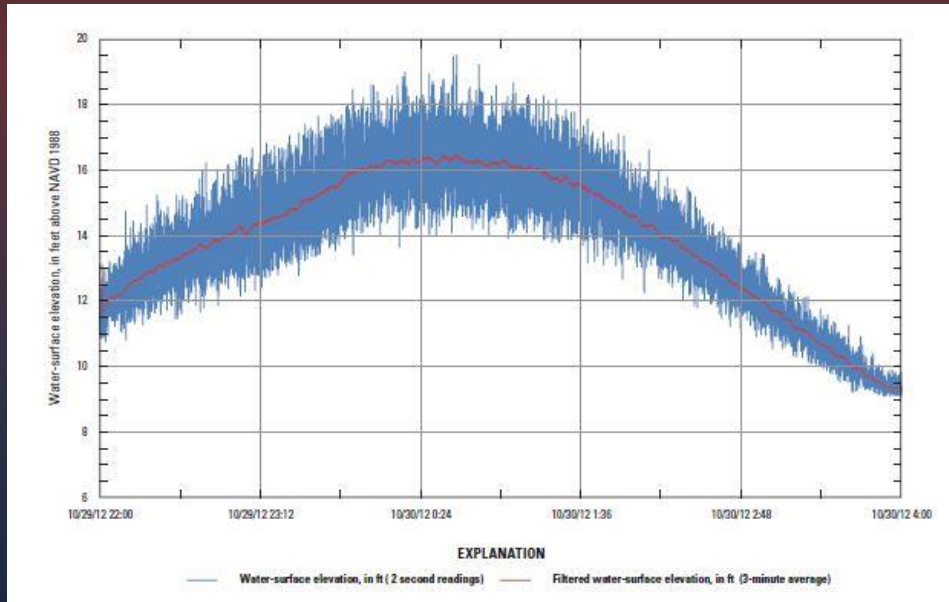
Selected Partial Record sites – Tidal Crest-stage Gages (active and inactive)

Delaware River at Marine Terminal-NJ, Burlington-NJ, Palmyra-NJ, Gibbstown-NJ, Chester-PA, Delaware Memorial Bridge-DE, and Alloway Creek at Hancocks Bridge-NJ.



USGS Storm Tide (surge) Sensors

Short-term network



USGS Flood Event Viewer



Flood Event Viewer

ABOUT

EVENT:
Noreaster of January 2016
20 Jan 2016 thru 26 Jan 2016

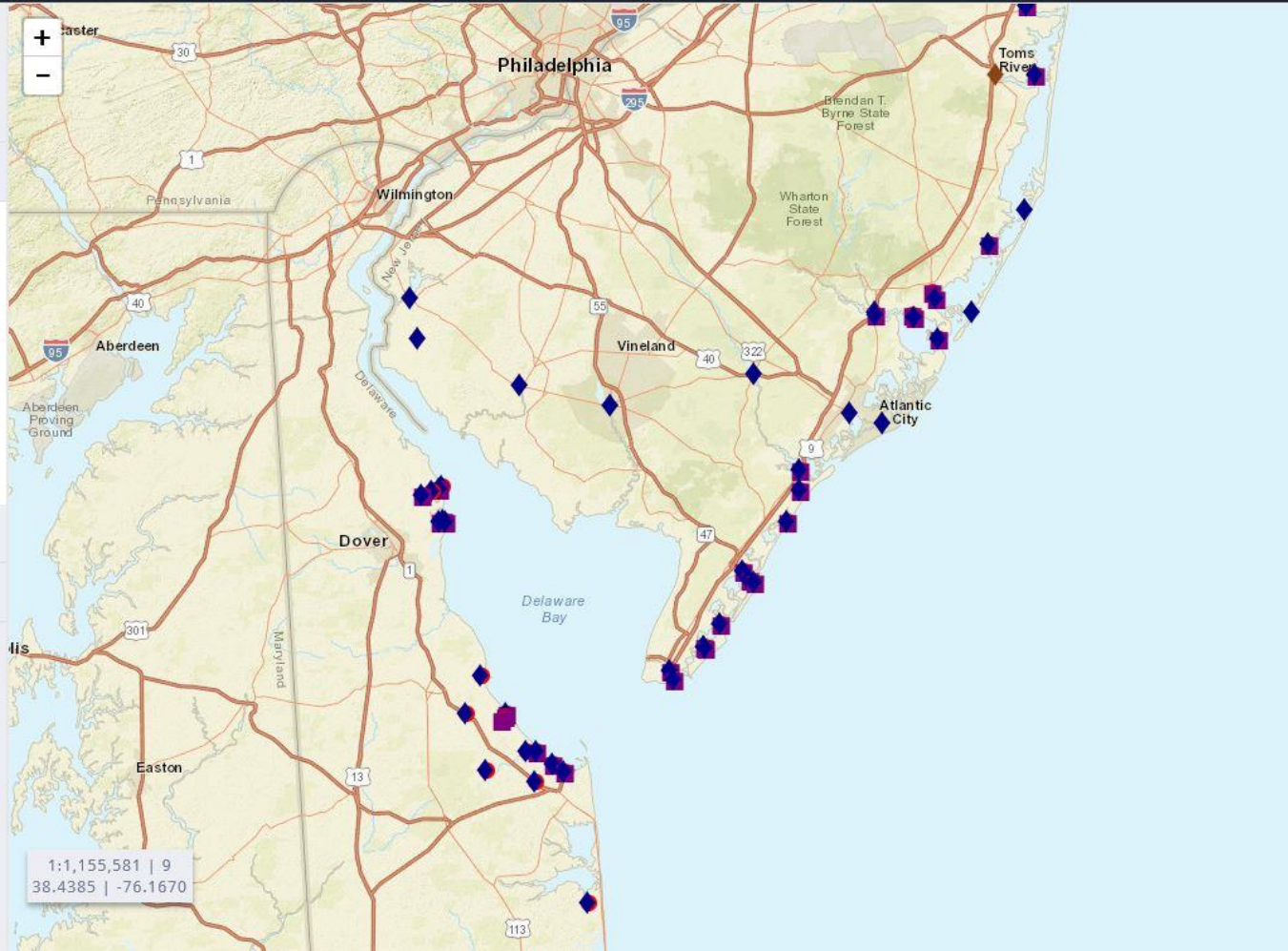
BASEMAPS >

- STREETS
- SATELLITE
- TOPO
- TERRAIN
- GRAY
- NATGEO

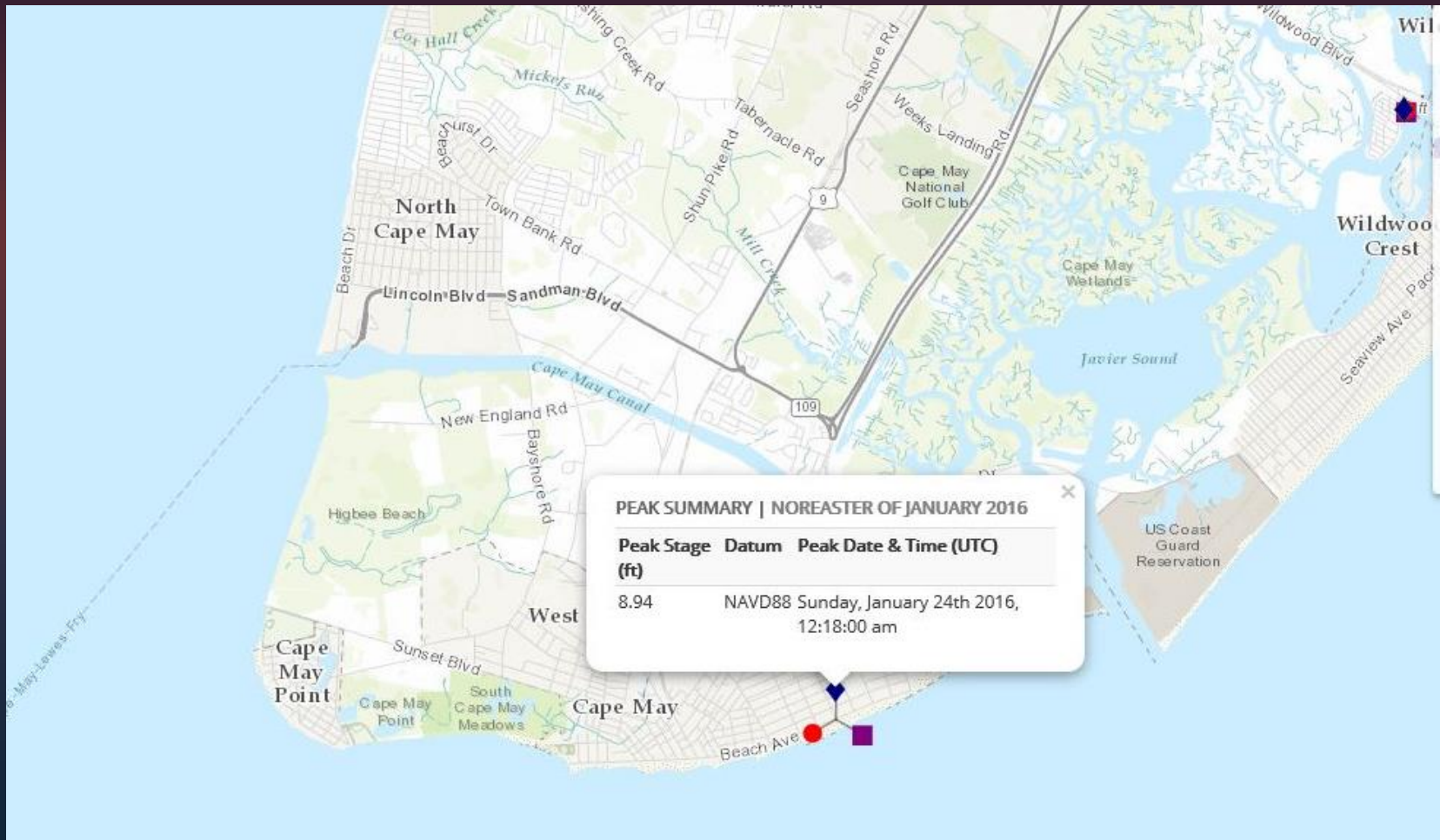
FILTERS >

GET DATA >

POWERED BY WIM

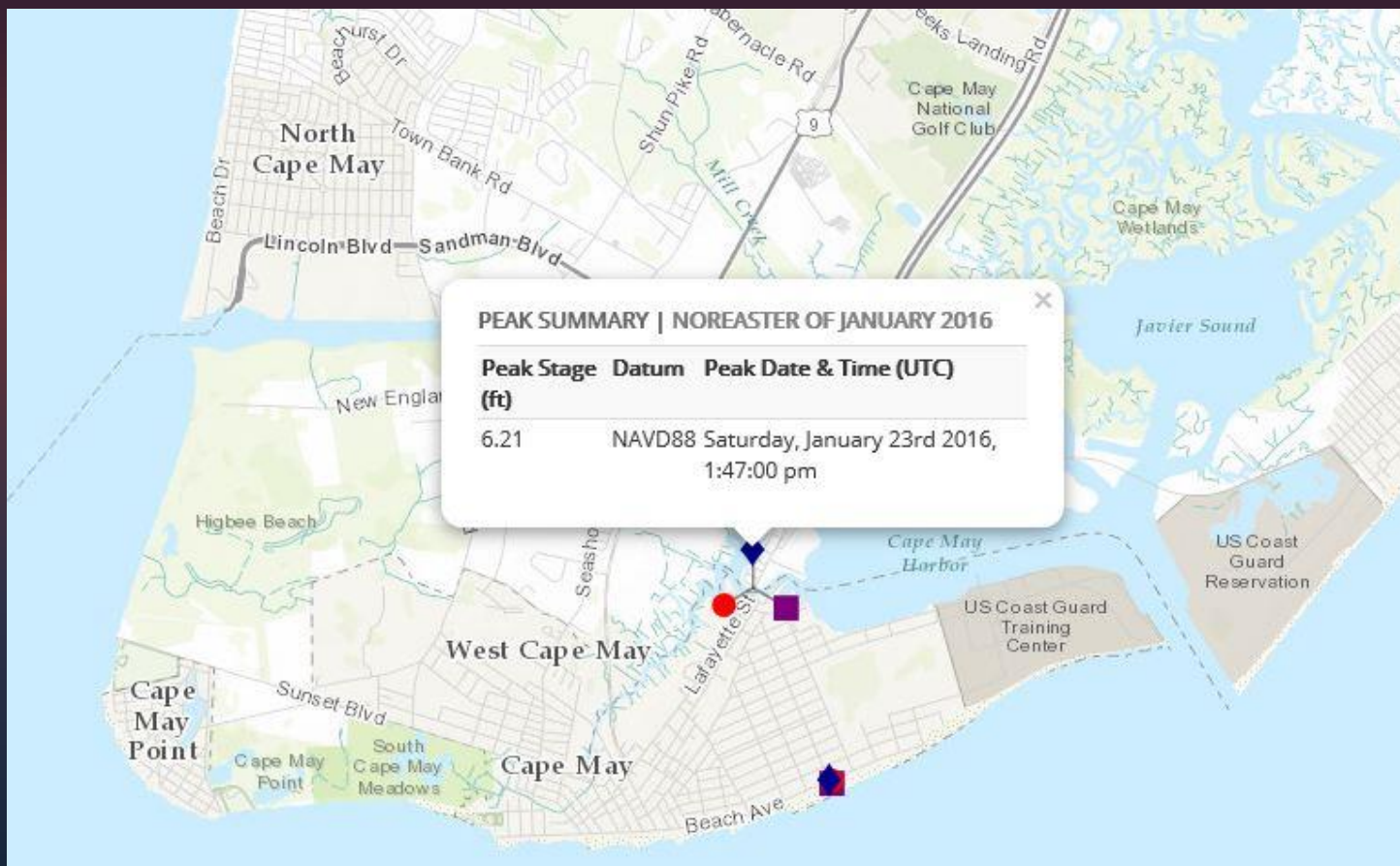


Zoom - Locate - Click to Expand - View Data

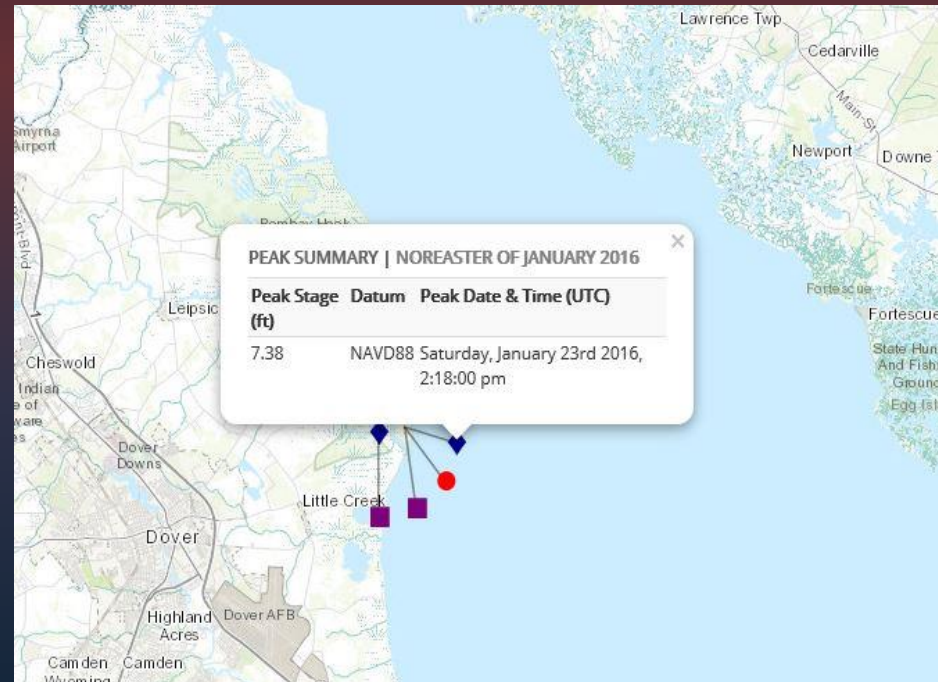
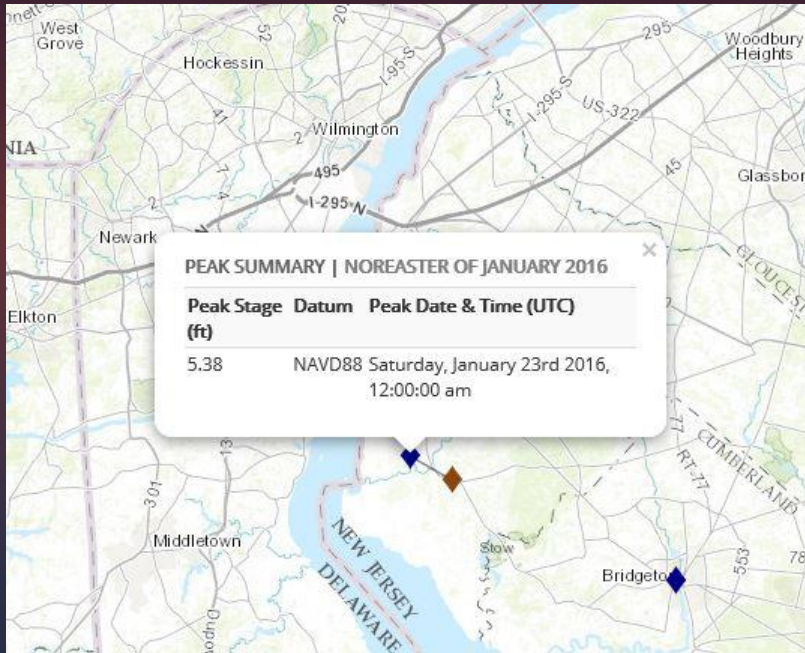


Storm Sensor Data January 2016

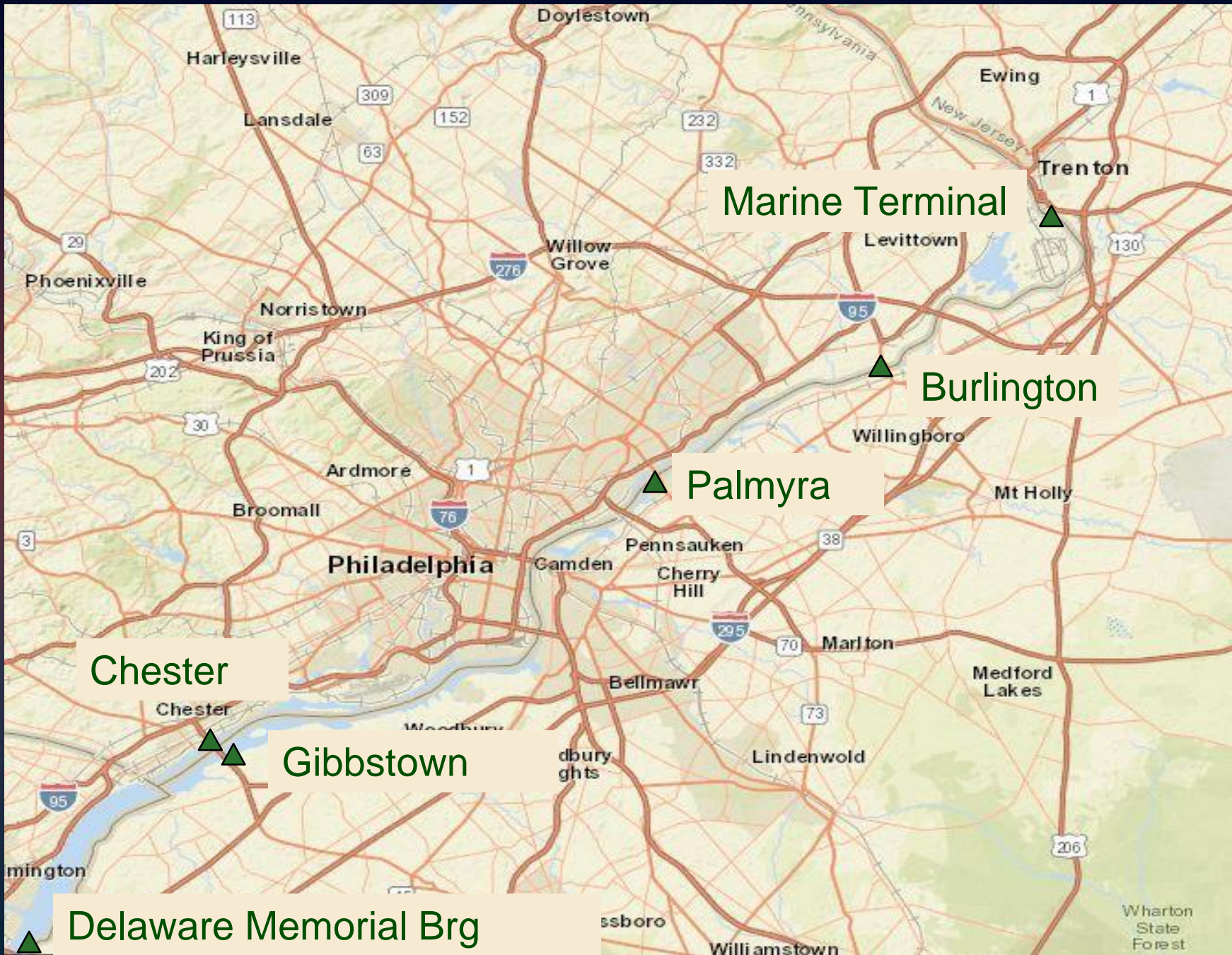
Cape May, New Jersey



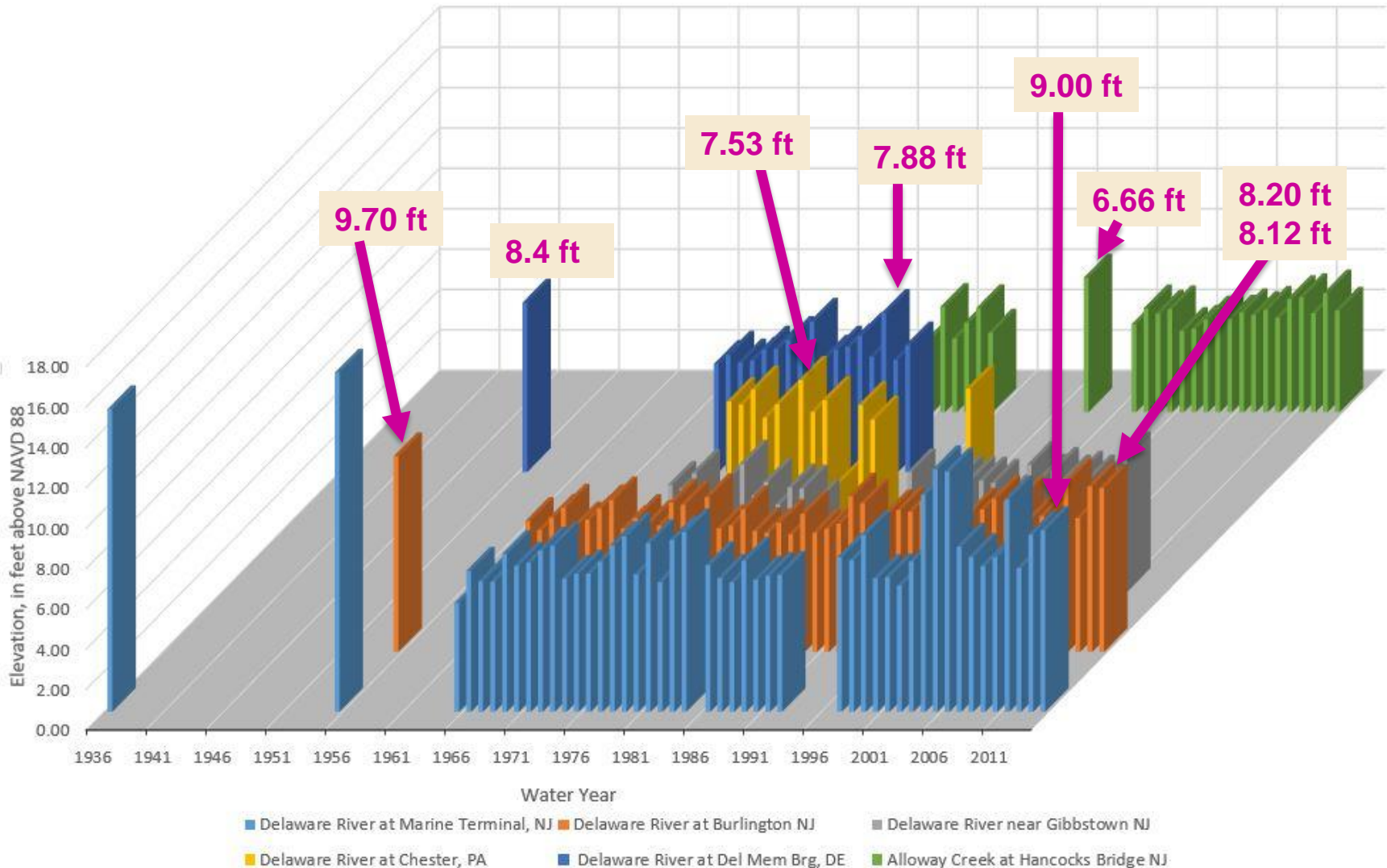
January 2016 data along the Lower Delaware River



Historic USGS Tidal Peak water-surface Elevation Data

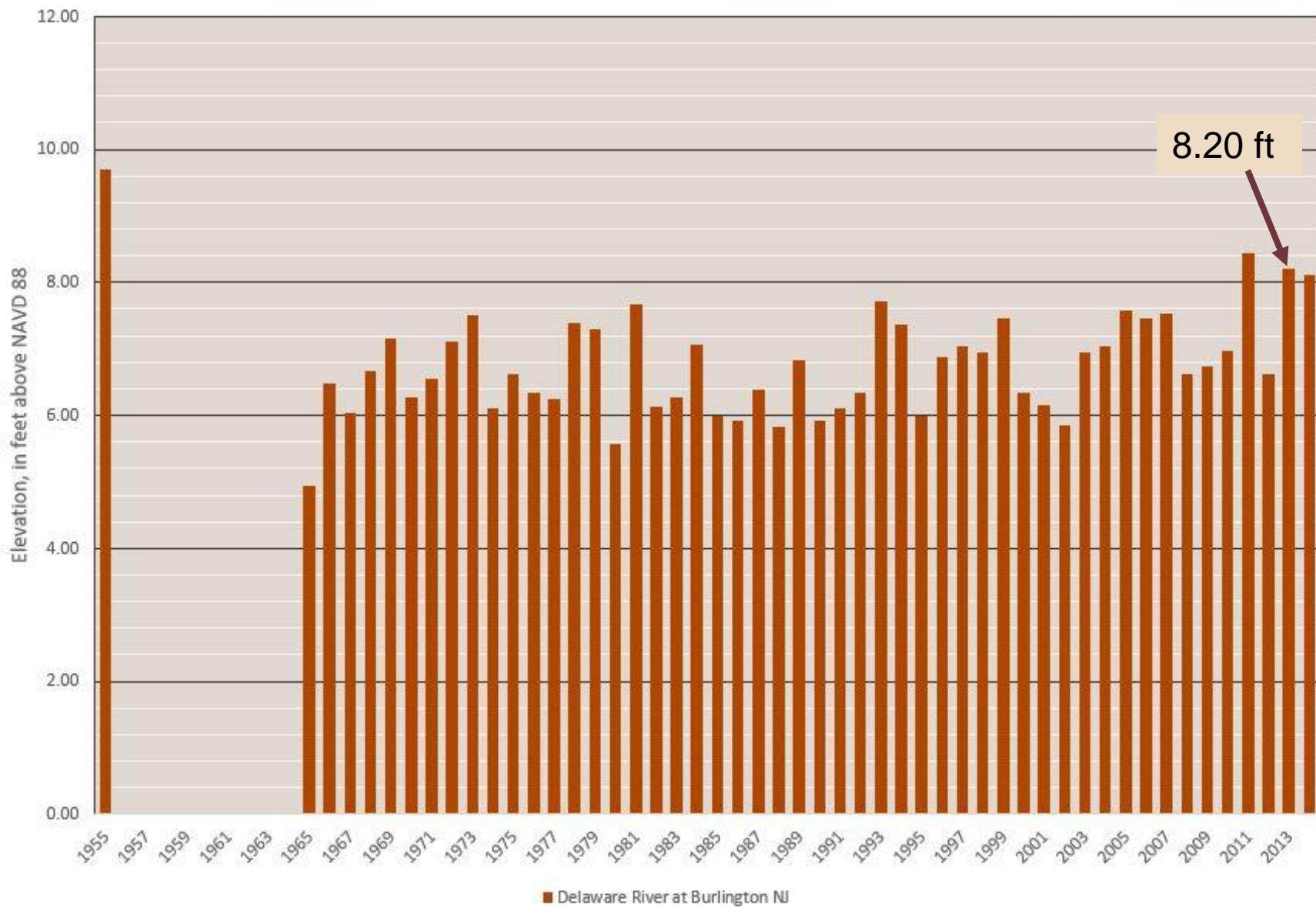


Annual Peak Water-surface Elevations at Selected USGS tide gages along the Lower Delaware River

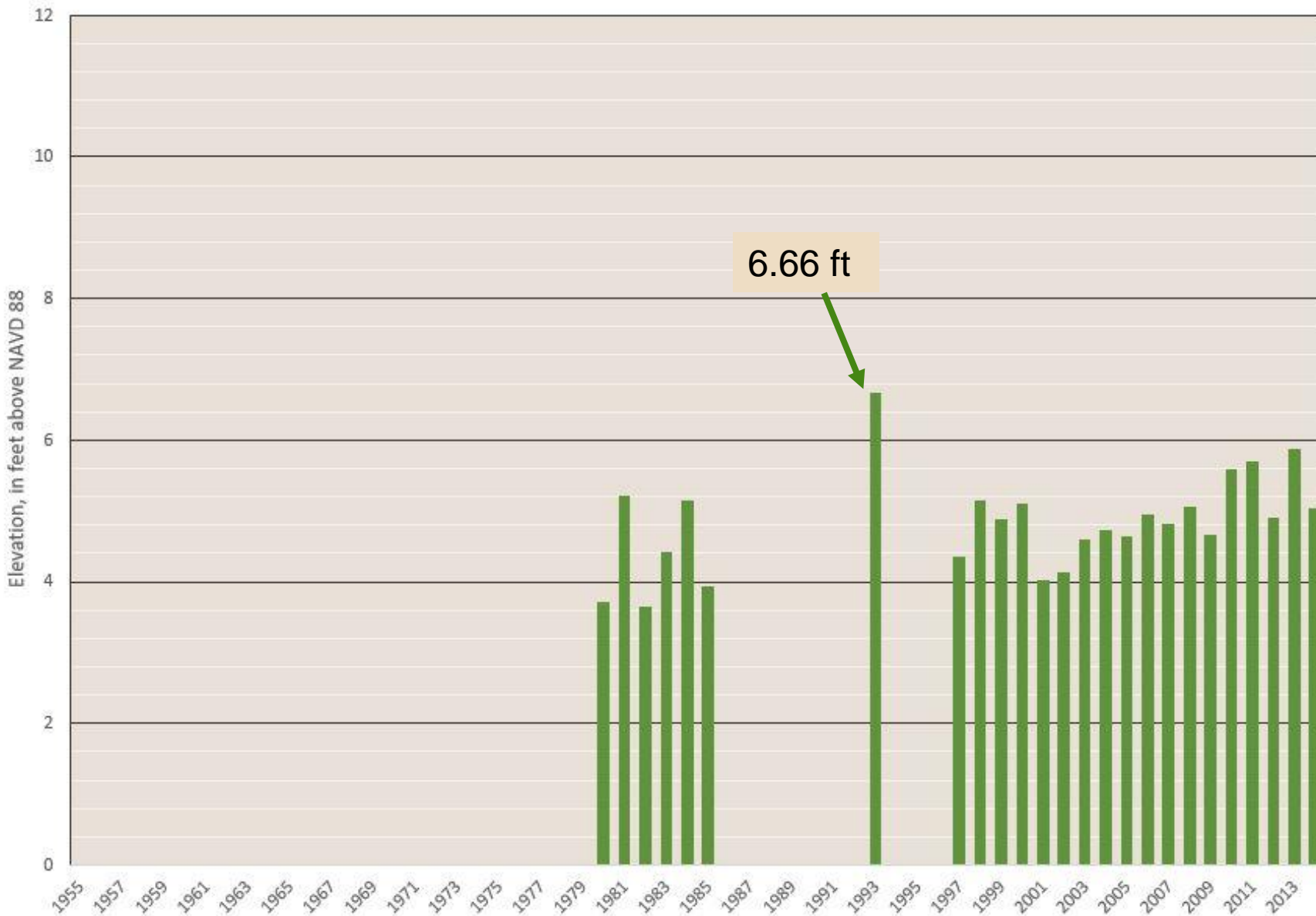


- Delaware River at Marine Terminal, NJ
 ■ Delaware River at Burlington NJ
 ■ Delaware River near Gibbstown NJ
- Delaware River at Chester, PA
 ■ Delaware River at Del Mem Brg, DE
 ■ Alloway Creek at Hancocks Bridge NJ

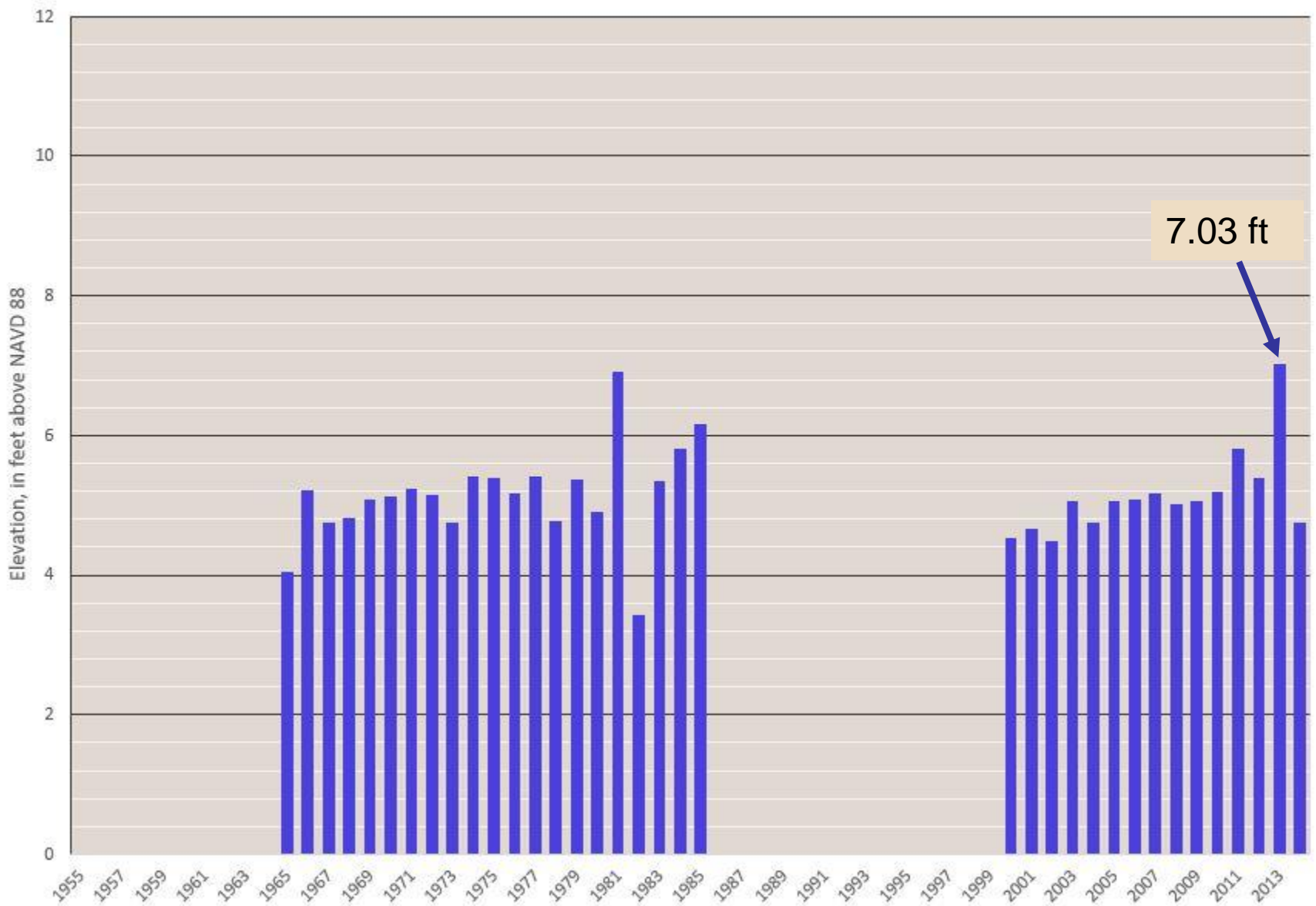
Delaware River at Burlington NJ



Alloway Creek at Hancocks Bridge NJ



Maurice River at Bivalve, NJ

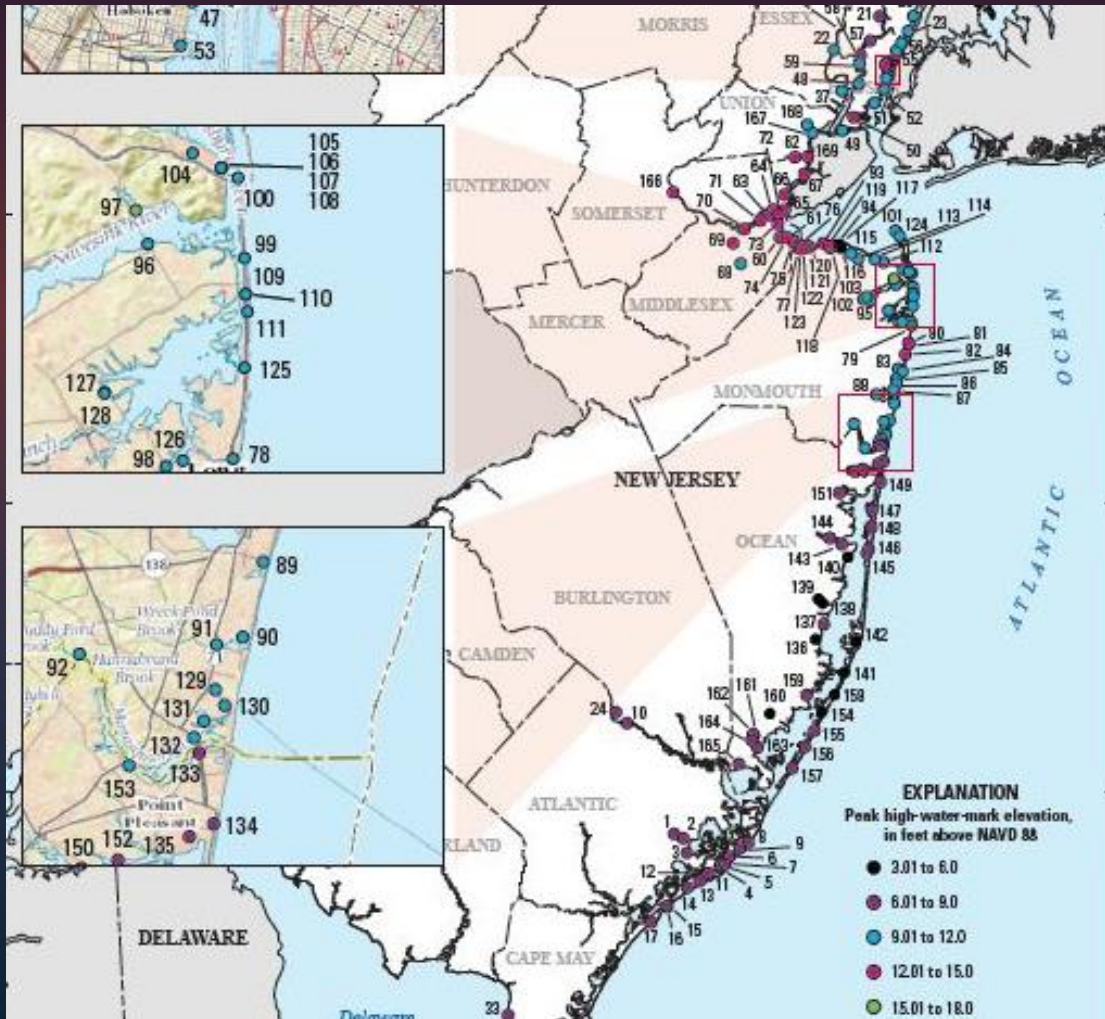


7.03 ft

Historic Tidal Peaks

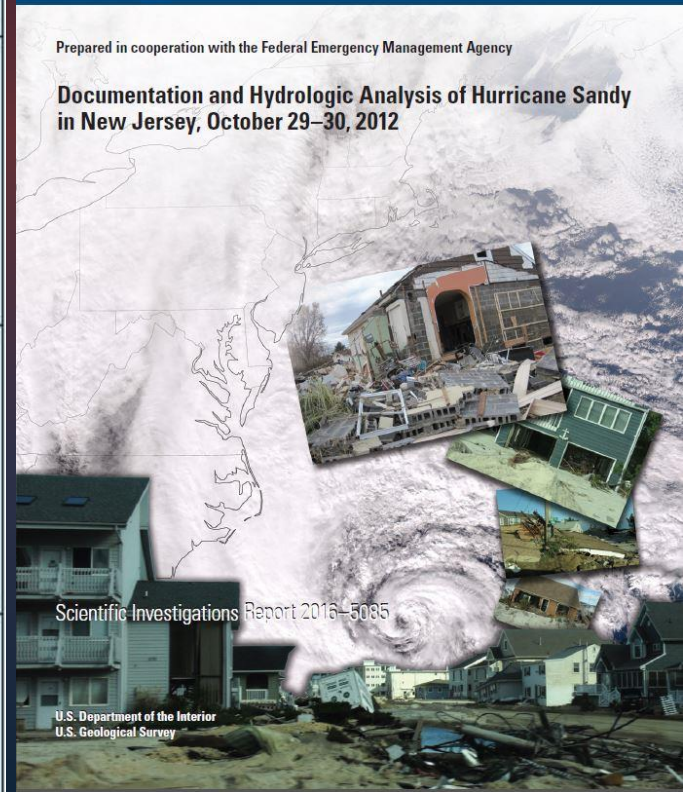
- Delaware River peak elevations can result from:
 1. Rain and snow melt runoff in freshwater reach
 2. Tidal / Storm-tide (surge) along lower Delaware reach
- The floods of 1955 generated the highest peak flows along the upper reach of the Delaware River (Port Jervis to Trenton).
- The period-of-record peak elevation at Delaware River at Burlington tidal crest-stage gage was recorded in Aug.1955 at 9.70 ft.
- Hurricane Sandy wind driven surge reached elevations of greater than 12-13 ft in the back bays along the northern coast of New Jersey and in Raritan Bay.

Higher Peaks Documented in Hurricane Sandy Report for New Jersey



Prepared in cooperation with the Federal Emergency Management Agency

Documentation and Hydrologic Analysis of Hurricane Sandy in New Jersey, October 29–30, 2012



Scientific Investigations Report 2016-5085

U.S. Department of the Interior
U.S. Geological Survey



What if ?

Questions ?

Comments