

# Temporally Dynamic Representations of Delaware Basin Continuous Data Sets

Delaware Estuary Science & Environmental Summit

Cape May, NJ

January 2013



**Delaware River Basin Commission**  
**DELAWARE • NEW JERSEY**  
**PENNSYLVANIA • NEW YORK**  
**UNITED STATES OF AMERICA**

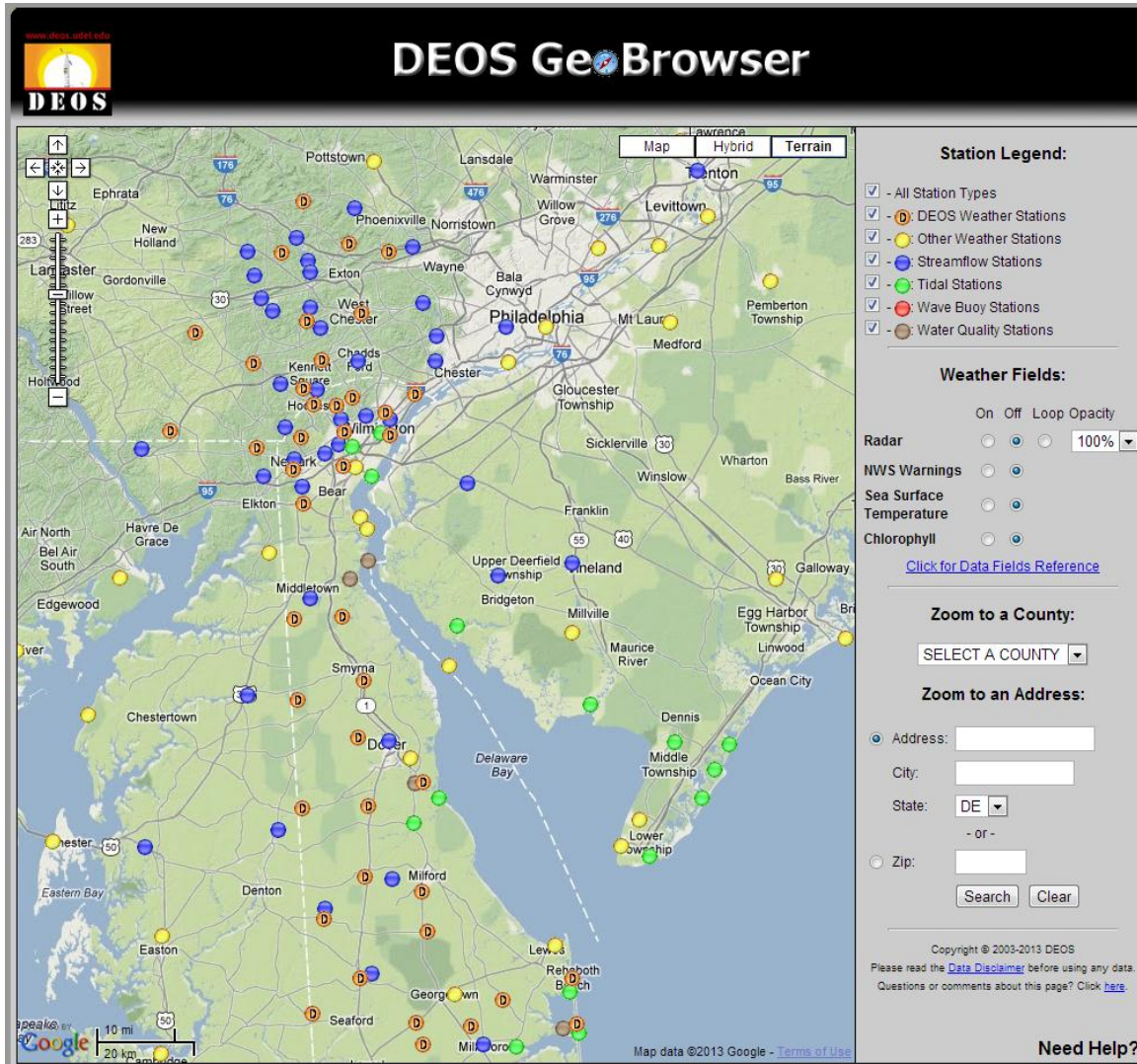
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Supervisor, Standards & Assessment

Delaware River Basin Commission

This PDF version includes links to the video clips presented on Jan. 28<sup>th</sup>. Click the links to see the video clips.

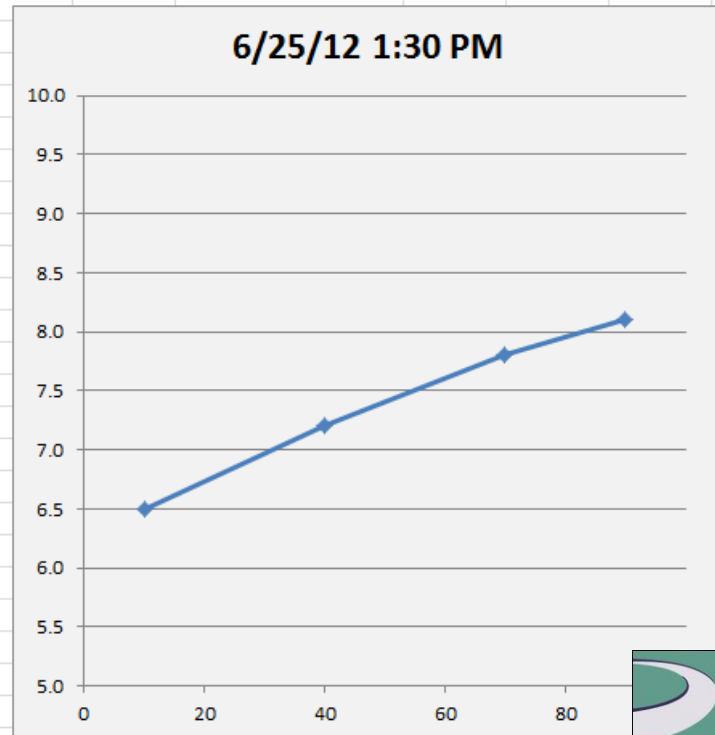
# Continuous Monitors in the Delaware



- **USGS**
  - Flow and Stage
  - Water Quality
- **NOAA (PORTS)**
  - Water surface elevations
  - Salinity
  - Water Temperature
  - Current
  - Meteorology
- **NOAA (NWS)**
  - Hydrologic predictions
  - Quantitative precipitation forecasts

# 'Continuous' Monitor Data

	A	B	C	D	E	F	G	H	I	J	K
1											
2		Dissolved Oxygen (mg/L)						6/25/12 1:30 PM			
3	Date & Time	RM 90	RM 70	RM 40	RM 10		RM	DO (mg/L)			
4	6/25/12 12:00 AM	8.1	7.8	7.2	6.5		90	8.1			
5	6/25/12 12:30 AM	8	7.6	7.1	6.6		70	7.8			
6	6/25/12 1:00 AM	7.9	7.4	7.0	6.7		40	7.2			
7	6/25/12 1:30 AM	7.8	7.2	6.9	6.8		10	6.5			
8	6/25/12 2:00 AM	7.7	7	6.8	6.9						
9	6/25/12 2:30 AM	7.6	6.8	6.7	7						
10	6/25/12 3:00 AM	7.5	6.6	6.6	7.1						
11	6/25/12 3:30 AM	7.4	6.4	6.5	7.2						
12	6/25/12 4:00 AM	7.3	6.2	6.4	7.3						
13	6/25/12 4:30 AM	7.2	6	6.3	7.4						
14	6/25/12 5:00 AM	7.1	5.8	6.2	7.5						
15	6/25/12 5:30 AM	7	5.9	6.1	7.6						
16	6/25/12 6:00 AM	6.9	6	6.0	7.7						
17	6/25/12 6:30 AM	6.8	6.1	5.9	7.8						
18	6/25/12 7:00 AM	6.7	6.2	5.8	7.9						
19	6/25/12 7:30 AM	6.6	6.3	6.0	8						
20	6/25/12 8:00 AM	6.5	6.4	6.2	8.1						
21	6/25/12 8:30 AM	6.4	6.5	6.4	8.2						
22	6/25/12 9:00 AM	6.3	6.6	6.6	8.3						
23	6/25/12 9:30 AM	6.2	6.7	6.8	8.4						
24	6/25/12 10:00 AM	6.4	6.8	6.9	8.2						
25	6/25/12 10:30 AM	6.7	7.0	6.9	7.9						
26	6/25/12 11:00 AM	6.9	7.1	7.0	7.7						
27	6/25/12 11:30 AM	7.2	7.3	7.0	7.5						
28	6/25/12 12:00 PM	7.4	7.4	7.1	7.2						
29	6/25/12 12:30 PM	7.6	7.5	7.1	7.0						
30	6/25/12 1:00 PM	7.9	7.7	7.2	6.7						
31	6/25/12 1:30 PM	8.1	7.8	7.2	6.5						
32											
33											
34	Go										
35											



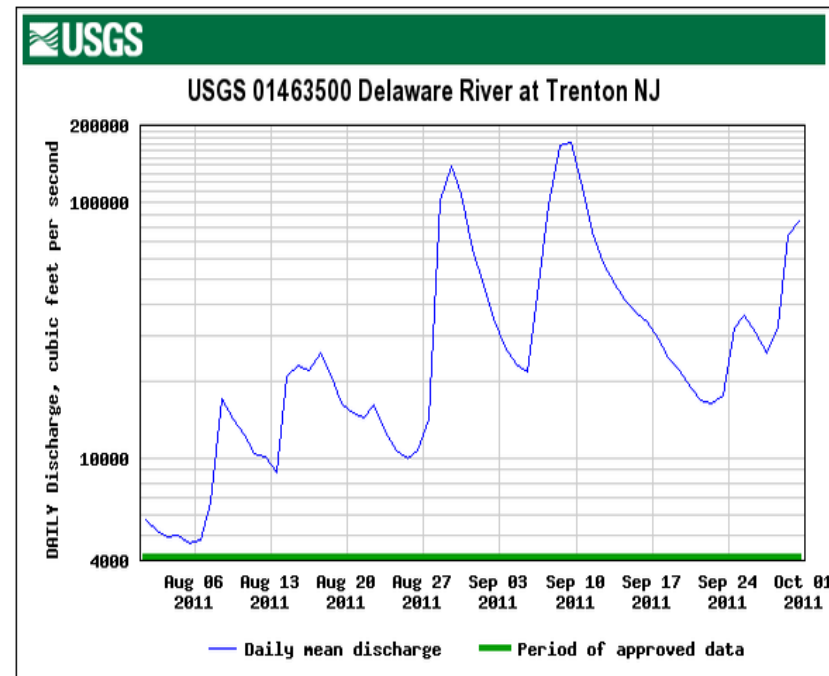
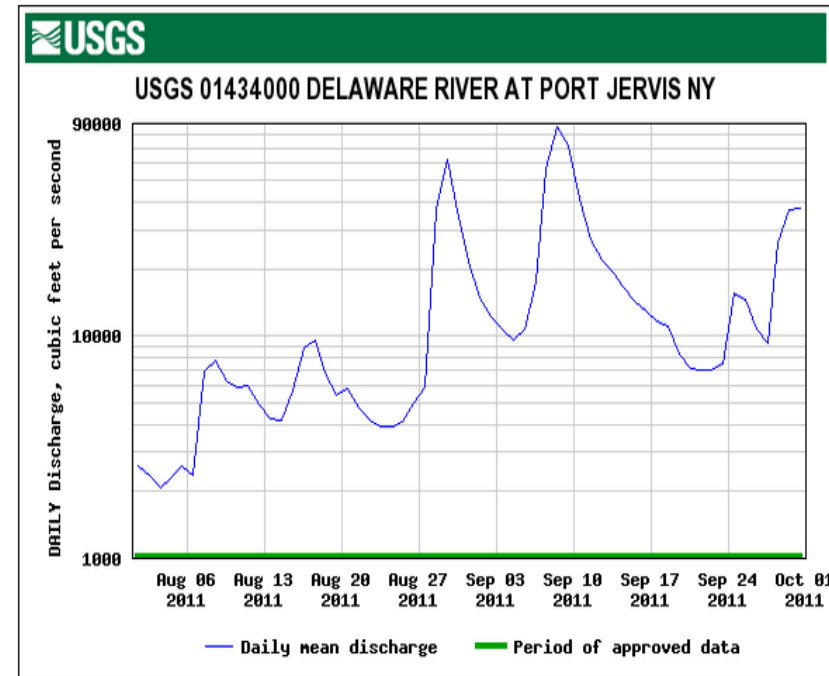
# Why animate continuous data?

- More explicit representation of sequence;
- Immediately intuitive experience of very dense data sets;
- Combine and synchronize disparate data sets;
- Improved conceptual model of environmental processes;
- Templates facilitate processing of new data sets;

# Sequence

- USGS Gages
- Hurricane Irene and Tropical Storm Lee
- When was flood threshold exceeded at different gages?
- Text book flood wave?

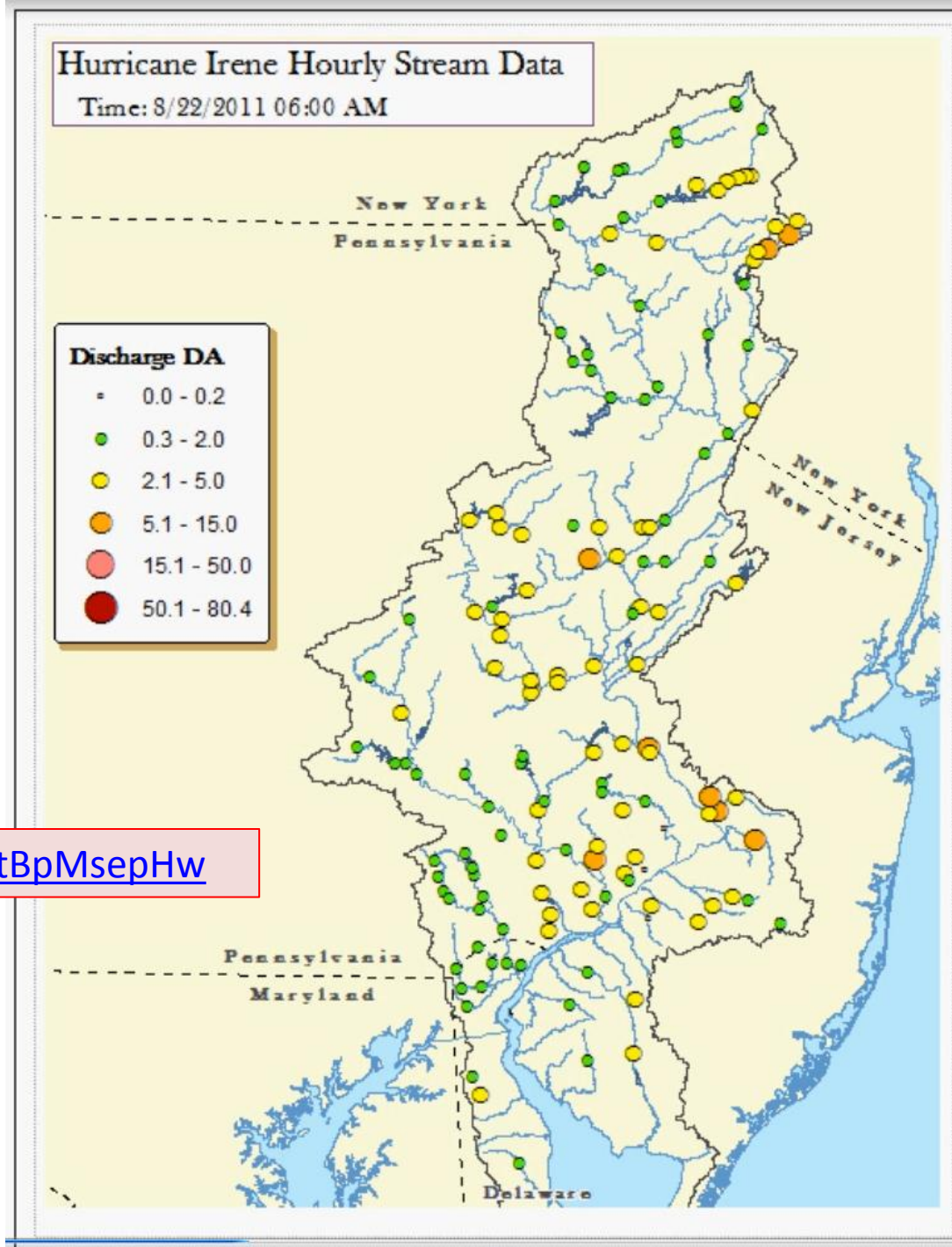
[http://www.youtube.com/watch?v=p\\_MKFQN5Zbc](http://www.youtube.com/watch?v=p_MKFQN5Zbc)



# Sequence (whole basin)

- Automated program that pulls and processes data from all the gages in the basin.

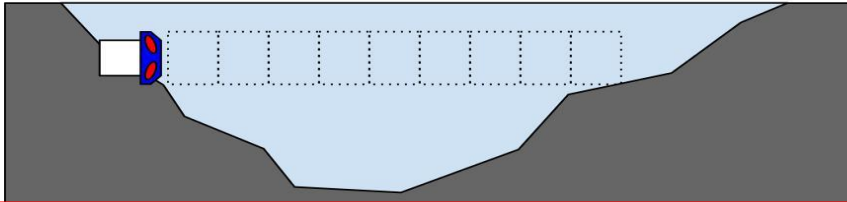
<http://www.youtube.com/watch?v=hEtBpMsepHw>



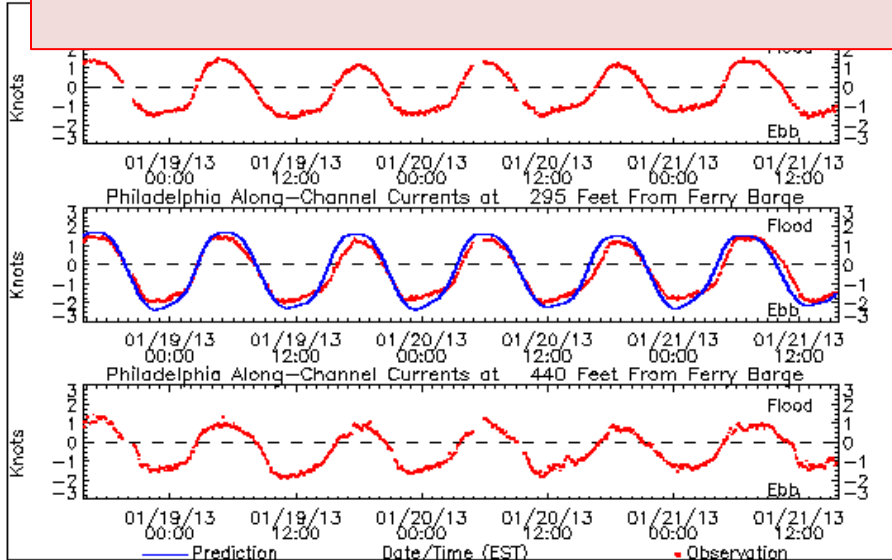
# Intuitive experience of dense data

## NOAA-PORTS

### Side-Looking ADCP at Philadelphia



<http://www.youtube.com/watch?v=AGHwwenKG-4>



**TIDES & CURRENTS**

Home Products Programs Partnerships Education Help

\*\*\*\*\* PRELIMINARY DATA \*\*\*\*\*

THIS RAW DATA HAS NOT BEEN SUBJECT TO THE NATIONAL OCEAN SERVICE'S QUALITY CONTROL OR QUALITY ASSURANCE PROCEDURES AND DOES NOT MEET THE CRITERIA AND STANDARDS OF OFFICIAL NATIONAL OCEAN SERVICE DATA. IT IS RELEASED FOR LIMITED PUBLIC USE AS PRELIMINARY DATA TO BE USED ONLY WITH APPROPRIATE CAUTION.

\*\*\*\*\* PRELIMINARY DATA \*\*\*\*\*

CD - Calendar date (year/month/day)  
 T - Time (hour:minute)  
 TZ - Timezone  
 CS - Current speed (knots)  
 DR - Current direction (true degree)  
 AV - Average velocity (knots)  
 CV - Current vector velocity (knots)

Fields filled with "9"s, indicates that no data was collected during that sample period.

\*\*\*\*\*

STATION NAME: Philadelphia (db0301)  
 Observed Current

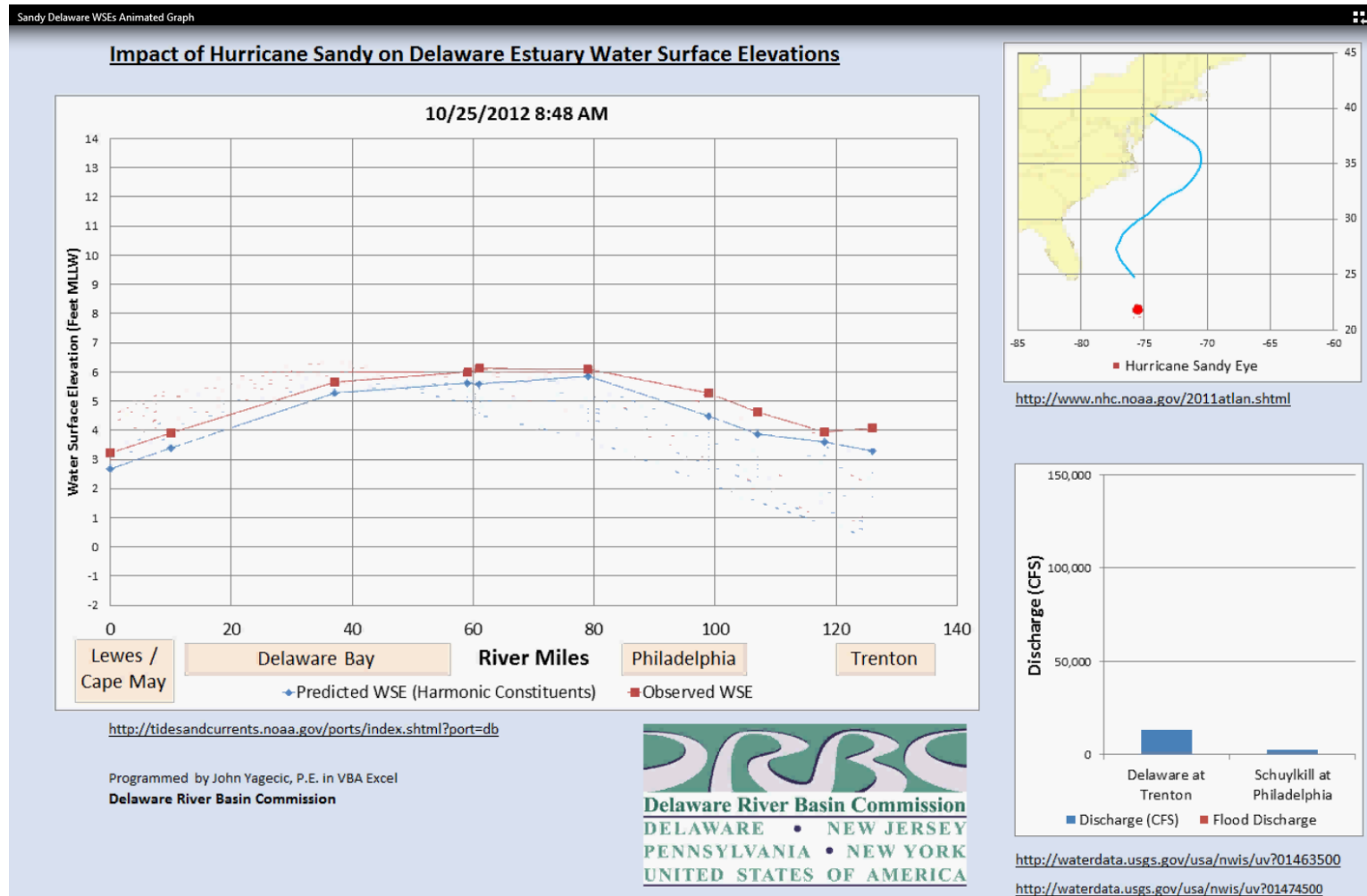
Bin 11 at 151 Feet From Ferry Barge

CD	T	TZ	CS	DR	AV	CV
2013/01/18	15:46	EST	1.24	4	1.24	-0.07
2013/01/18	15:52	EST	1.33	5	1.33	-0.05
2013/01/18	15:58	EST	1.35	4	1.34	-0.07
2013/01/18	16:10	EST	1.37	5	1.37	-0.05
2013/01/18	16:22	EST	1.42	5	1.42	-0.05
2013/01/18	16:28	EST	1.33	3	1.33	-0.09
2013/01/18	16:34	EST	1.38	4	1.38	-0.07
2013/01/18	16:40	EST	1.44	6	1.44	-0.03
2013/01/18	16:46	EST	1.44	4	1.44	-0.08
2013/01/18	16:58	EST	1.38	3	1.37	-0.10
2013/01/18	17:04	EST	1.27	5	1.26	-0.04
2013/01/18	17:10	EST	1.31	4	1.31	-0.07
2013/01/18	17:16	EST	1.34	4	1.34	-0.07
2013/01/18	17:22	EST	1.27	5	1.27	-0.04
2013/01/18	17:28	EST	1.24	6	1.24	-0.02
2013/01/18	17:34	EST	1.28	5	1.27	-0.04
2013/01/18	17:40	EST	1.21	5	1.21	-0.04
2013/01/18	17:52	EST	1.26	3	1.26	-0.09
2013/01/18	17:58	EST	1.07	4	1.07	-0.06
2013/01/18	18:04	EST	1.10	5	1.10	-0.04

# Improved Conceptual Model of Environmental Processes

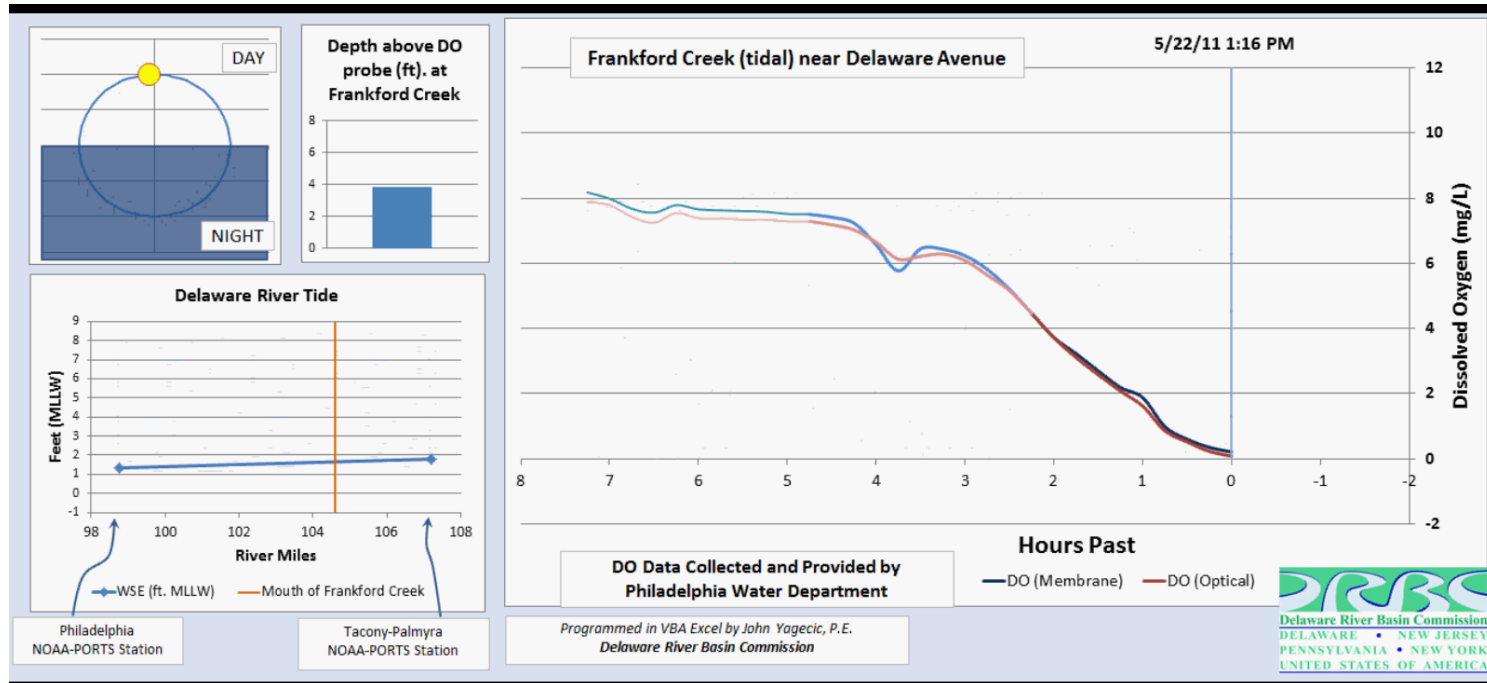
## Water Surface Elevations During Hurricane Sandy

<http://www.youtube.com/watch?v=LFioBnHs88I>





# Synchronization of Disparate Data Sets



[http://www.youtube.com/watch?v=JgP\\_TtZ4Zx8](http://www.youtube.com/watch?v=JgP_TtZ4Zx8)

- Dissolved Oxygen measurements – Philadelphia Water Department;
- Tidal Elevations – NOAA PORTS
- Daily sunrise, sunset, solar noon

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## Questions?



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