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
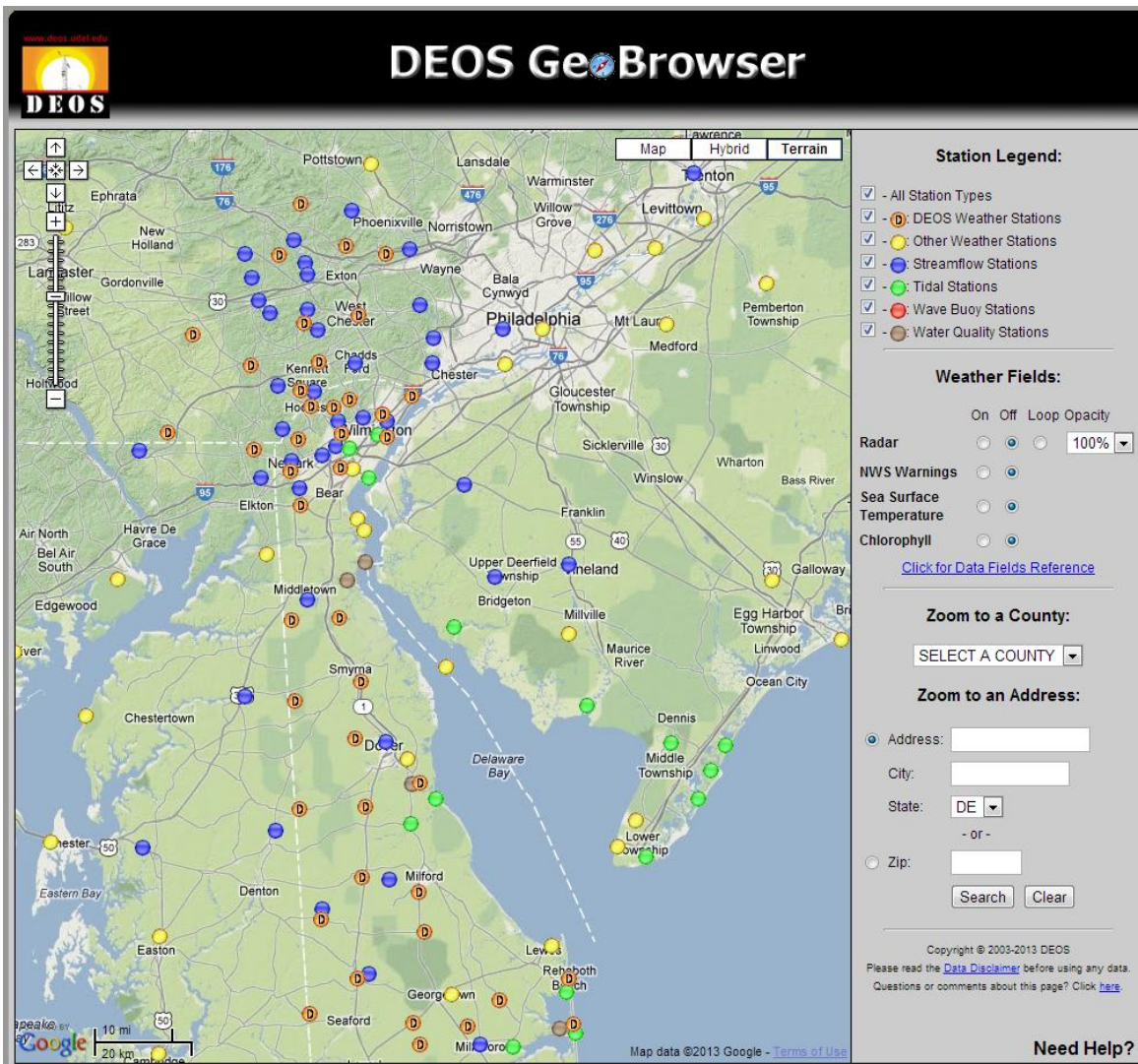PENNSYLVANIA • NEW YORK
UNITED STATES OF AMERICA

John Yagecic, P.E.

Supervisor, Standards & Assessment

Delaware River Basin Commission

This PDF version includes links to the video clips presented on Jan. 28th. 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											

6/25/12 1:30 PM
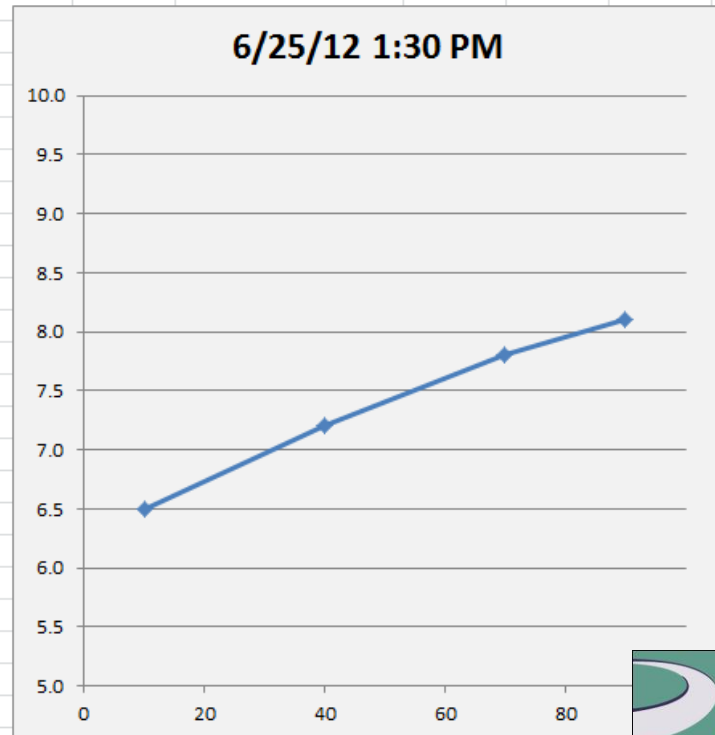
Why animate continuous data?

- 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?
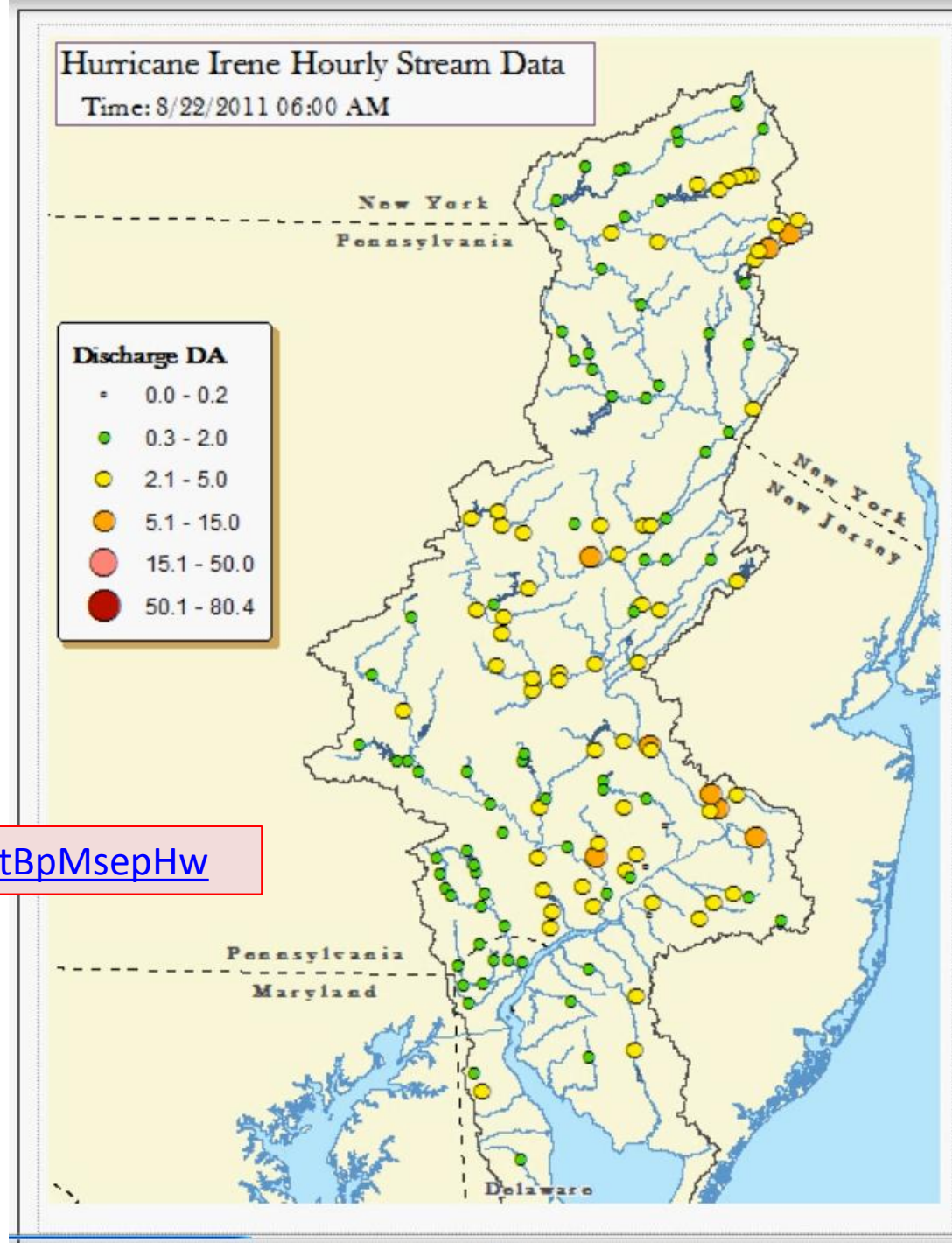
- Text book flood wave?

http://www.youtube.com/watch?v=p_MKFQN5Zbc

USGS 01434000 DELAWARE RIVER AT PORT JERVIS NY

USGS 01463500 Delaware River at Trenton NJ
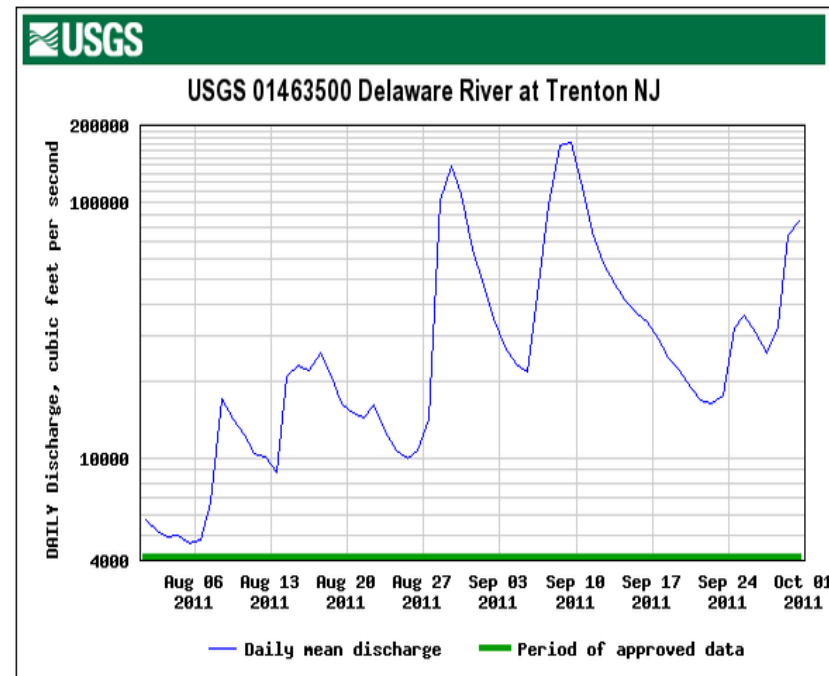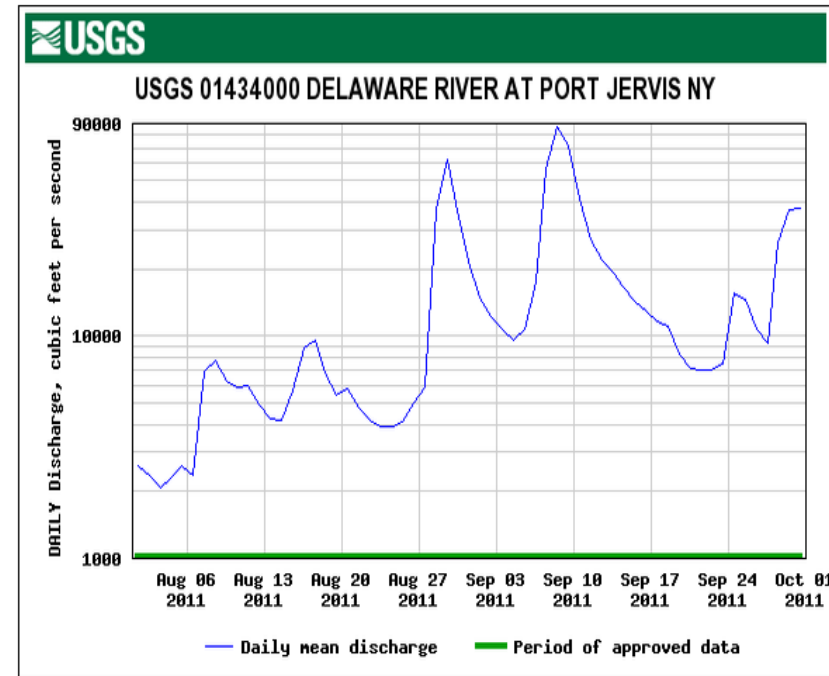
Sequence (whole basin)

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

http://www.youtube.com/watch?v=hEtBpMsepHw
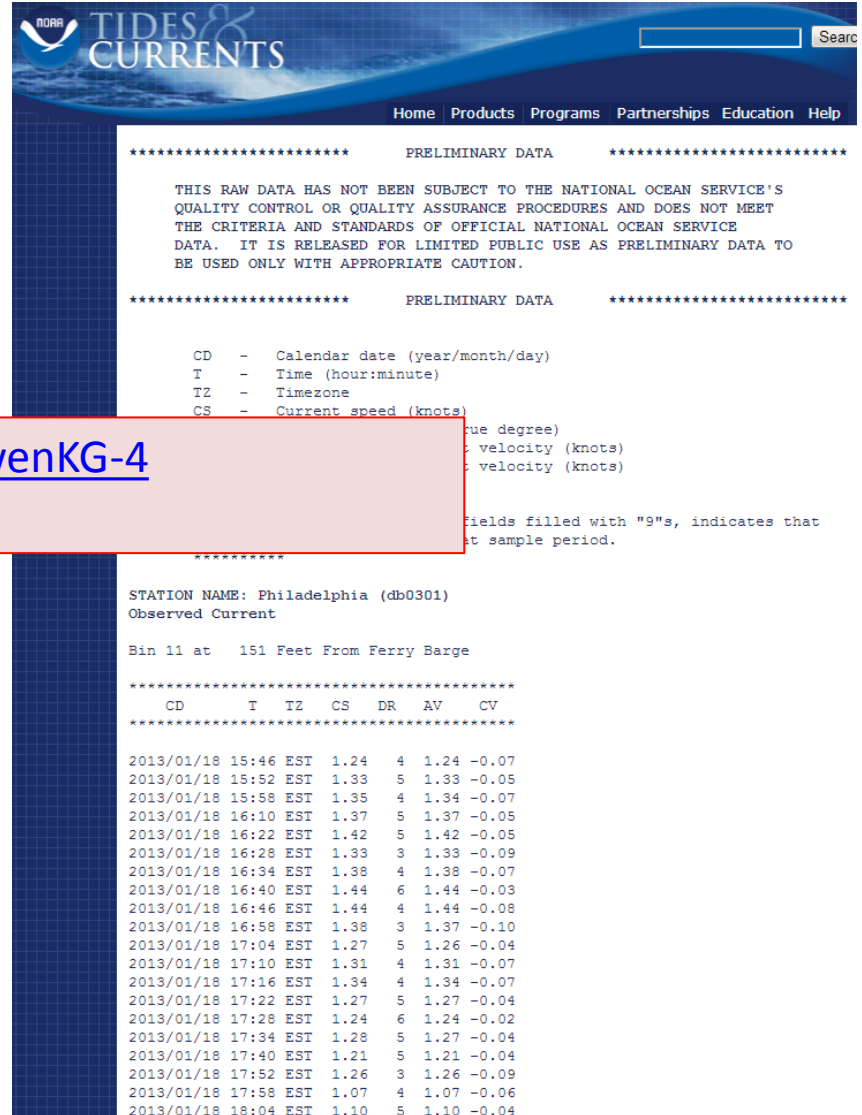
Intuitive experience of dense data

NOAA-PORTS
Side-Looking ADCP at Philadelphia

http://www.youtube.com/watch?v=AGHwwenKG-4
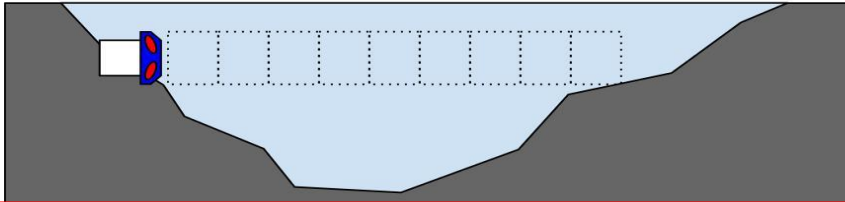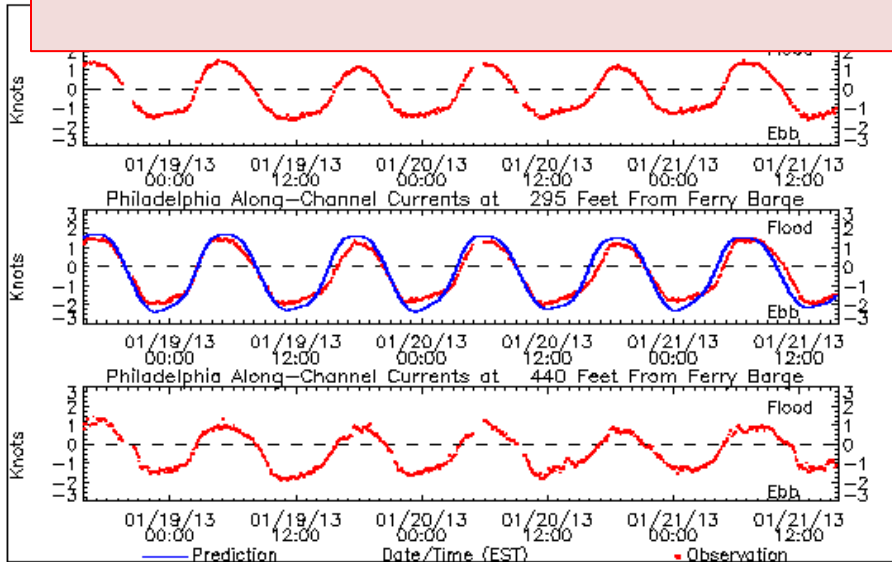
TIDES & CURRENTS

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************************ 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)
        rue degree)
        velocity (knots)
        velocity (knots)

        fields filled with "9"s, indicates that
        t 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

Philadelphia Along—Channel Currents at   295 Feet From Ferry Barge

Philadelphia Along—Channel Currents at   440 Feet From Ferry Barge

— Prediction   Date/Time (EST)   • Observation

Improved Conceptual Model of Environmental Processes
Water Surface Elevations During Hurricane Sandy

http://www.youtube.com/watch?v=LFioBnHs88I
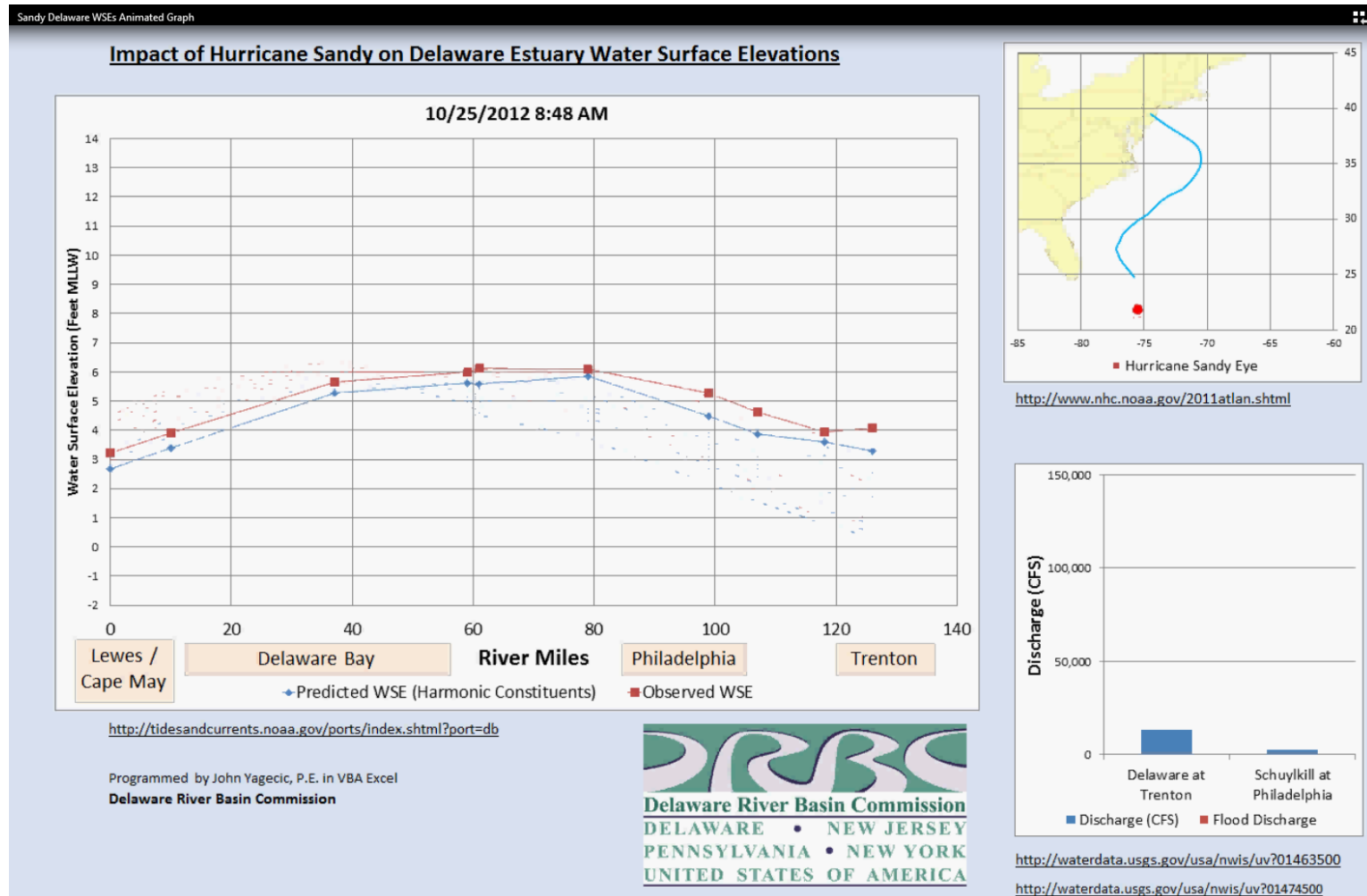
Synchronization of Disparate Data Sets
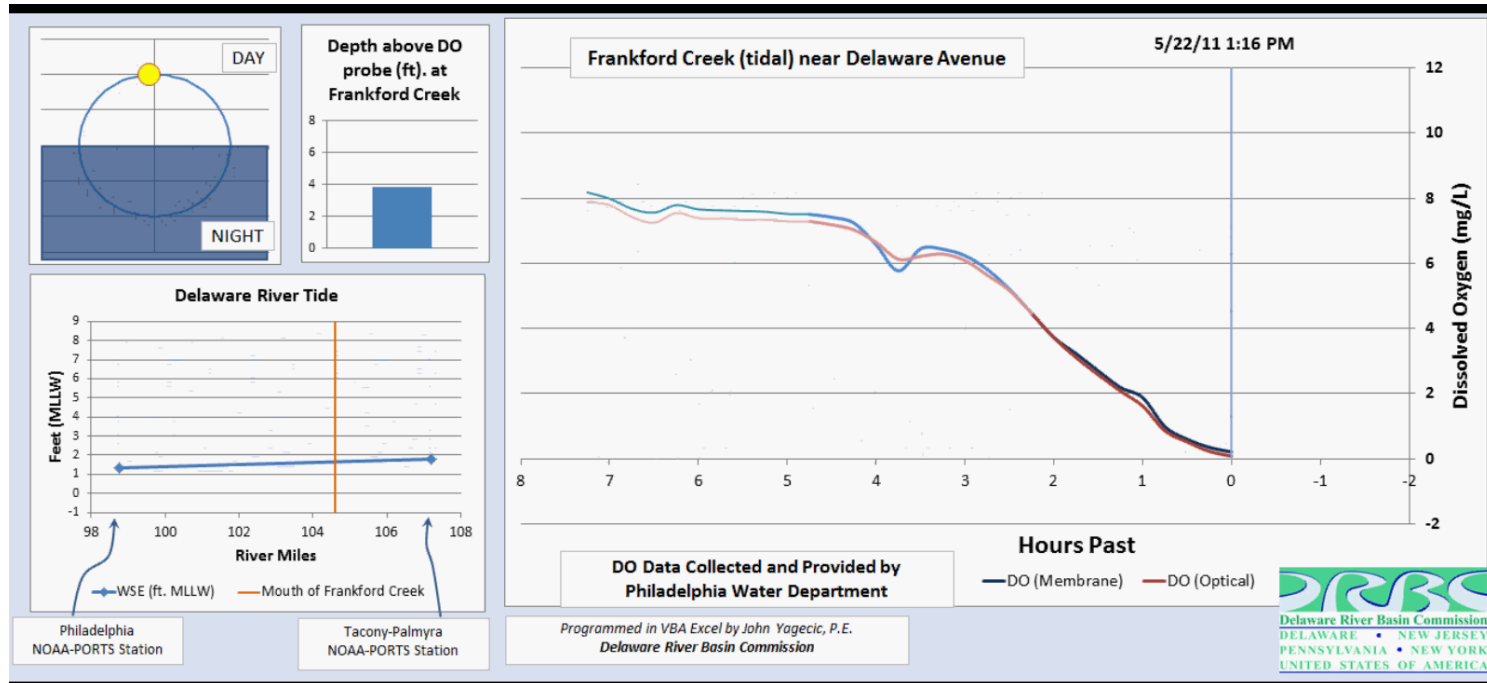
http://www.youtube.com/watch?v=JgP_TtZ4Zx8

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

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Questions?

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