

Why Use Data from Day in the Life of the Hudson River?

Day in the Life of the Hudson River
Teacher Workshop

8/21/13

@ Lamont-Doherty Earth Observatory



Strengths

- Authentic Data
- Active Learning not canned lesson
- Critical Thinking & Data Analysis
- Develop the Ability to Pose Good Questions & Answer them
- Learn the importance of Metadata
- Good transition to the use of larger datasets – Real Time Remote Sensing Data etc.

Skills Development

- Critical Thinking
- Hypothesis Formation
- Discussion Around Data
- Use of Real Data in Learning about the Earth & Environment
- Graphing/Charting

What Might This Use of Day In the Life Data Look Like?

- It can look MESSY!
- Look at Trends in the River on the sampling day
- Look at trends through time at a specific site
- Look at Processes to cement understanding such as:
 - water holds temperature differently than air
 - tides really do change water levels in the river
 - the tides do bring in salty water from the ocean

What Might This Use of Day In the Life Data Look Like?

- OR they can Identify a process on their own in the collected data & then look to a larger dataset
 - Pattern Recognition
 - Identify what else they need to know and where to find it
 - Predictions
 - What would you expect to find
 - How might this change if 'x' occurs
 - What happens if your 'findings' don't agree with your prediction or hypothesis?

Connections to NGSS Science & Engineering Practice Codes

- Asking Questions & Defining Problems
- Developing & Using Models
- Planning & Carrying Out Investigations
- Analyze & Interpret Data
- Use Math & Critical Thinking Skills
- Construct Explanations & Design Solutions
- Engage in Argumentation
- Obtaining, Evaluating & Communicating Information

Connections to Other Topics You Teach

- Climate Change – Changing Local Environment, Changing Processes, Effects in your sample area of sea level rise
- Human's as part of the Earth system
- System Science – physical, chemical and biological all connected
- Ecoregions
- Remote Sensing in Science
- Use of Data in Management & Policy
- Citizen Science Data

Hudson River Remote Sensing Data Sites - URLs

1. HRECOS (Hudson River Environmental Conditions Observing System) network:

<http://www.hrecos.org/joomla/>

Click on Current Conditions to choose sites and parameters and create graphs.

HRECOS has real time sondes measuring at sites in the brackish and freshwater sections of the river. You can graph 2 parameters at one time at one station OR the same parameter at 2 stations. You can display data in 15 minute increments or on a daily basis (averaged) and you can chose to see a range of data. Data can be downloaded for use in excel. Some of the sondes in the system have been retired – these are labeled, however there is still archived data available at the station for

2. Mobile Stations on HRECOS – Pioneer & Clearwater

<http://hudson.dl.stevens-tech.edu/maritimeforecast/MOBILE/>

There are two mobile sondes as part of the HRECOS system – (1) Clearwater docked in various locations on the Hudson (2) Pioneer docked at Southstreet Seaport. These can be selected showing the track, time, and data. They can be run at various speeds. It can be interesting to see how salinity, temperature, oxygen etc. vary with time and location.

3. GW Bridge & Castle Point and other stations from The Center for Maritime Systems at Stevens Institute of Technology

<http://hudson.dl.stevens-tech.edu/maritimeforecast/PRESENT/data.shtml>

This set of stations shows modeled data not actual real time readings.



Other Useful Remote Sensing Data Sites - URLs

1. NOAA (National Oceanic & Atmospheric Administration) tide gauge at the Battery, New York City: <http://tidesandcurrents.noaa.gov/geo.shtml?location=8518750>

In the Products column, click on Preliminary Water Level to see graph.

2. NOAA data buoy 44065 in the Atlantic Ocean at the entrance to New York Harbor: http://www.ndbc.noaa.gov/station_page.php?station=44065

Scroll down the page to view or graph conditions.

3. US Geological Survey Hudson River gages (Albany, Poughkeepsie, links to others): http://ny.water.usgs.gov/projects/dialer_plots/saltfront.html

The home of the prior 'salt front' site this resource is now a source for stream gages, and archived data.

4. Beacon Institute for Rivers and Estuaries – River and Estuary Observatory Network (REON) http://serf.clarkson.edu/cgi-bin/reon_platform_locations.htm

Note that the Dennings Point site which is located on the Hudson River is perhaps the most robust site in this system. It can provide a realtime look at many of the same parameters included in the HRECOS system.

5. Long Island Sound Integrated Coastal Observing System <http://lisicos.uconn.edu/>

A series of water quality sampling stations in Long Island Sound that collect a comparable array of data to what we collect in HRECOS. Select a station (Western Sound station is useful as it is close to the East River), click on Water Quality Panel to see the readings in numbers and dials. Recent history shows hourly readings through time.



2nd Other Useful Remote Sensing Data Sites - URLs

6. Great Lakes Website

<http://www.glerl.noaa.gov/res/recon/>

Interesting to look at oxygen levels at depth in the Great Lakes.

7. West Point – National Atmospheric Deposition Program Site

<http://nadp.sws.uiuc.edu/sites/siteinfo.asp?net=NTN&id=NY99>

West Point trends through time link for NADP site –

<http://nadp.sws.uiuc.edu/sites/ntn/NTNtrends.html?siteID=NY99>

pH plot is interesting – shows the impact of our air emissions standards and the effect of limiting coal fire plants

