

# NYS RESILIENCY INSTITUTE FOR STORMS & EMERGENCIES (NYS RISE)

Consortium of Stony Brook University, New York University, Columbia University, Cornell University, CUNY, and Brookhaven National Laboratory, Phase I (10/1/2013 - 3/31/2014)

## **Work Unit 4.2. Integration of Multiple Monitoring Systems Targeting Coastal Zones** **Workshop Presentation, March 27, 2014**

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### Work Unit 4.2 Task Summary:

- Identify, Describe, and Evaluate Environmental Monitoring Efforts and Databases
- Identify Threats to Current Monitoring Efforts
- Recommend Improved Monitoring to Support Storm and Emergency Management



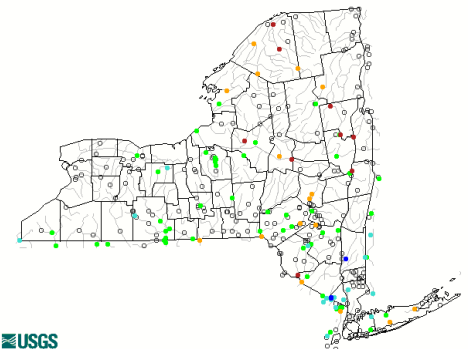
# ENVIRONMENTAL MONITORING EFFORTS AND DATABASES

**Sample Results: The following monitoring efforts and databases have been identified and types of parameters covered have been evaluated:**

- NYS Department of Environmental Conservation - Water
  - The Rotating Integrated Basin Studies (RIBS) Program: <http://www.dec.ny.gov/chemical/29576.html>
  - Stream Biomonitoring
  - Toxicity Testing Program
  - Lake Classification and Inventory (LCI) and Citizens Statewide Lake Assessment Program (CSLAP)
  - Water Assessments by Volunteer Evaluators (WAVE)
  - Groundwater Sampling in New York State
- U.S. Geological Survey (USGS) – Real-time, daily, 7-day average, 14-day average, 28-day average, monthly and annual average data  
[http://waterwatch.usgs.gov/index.php?r=ny&id=ww\\_current](http://waterwatch.usgs.gov/index.php?r=ny&id=ww_current)
  - Streamflow data
  - Flood conditions
  - Turbidity
  - Dissolved oxygen
  - Water temperature
- Great Lakes Monitoring Network – NOAA
- NYS Department of Environmental Conservation – Air quality



Thursday, March 20, 2014 17:30ET



USGS

Explanation - Percentile classes							
	●	●	●	●	●	●	○
Low	<10	10-24	25-75	76-90	>90	High	Not-ranked
	Much below normal	Below normal	Normal	Above normal	Much above normal		

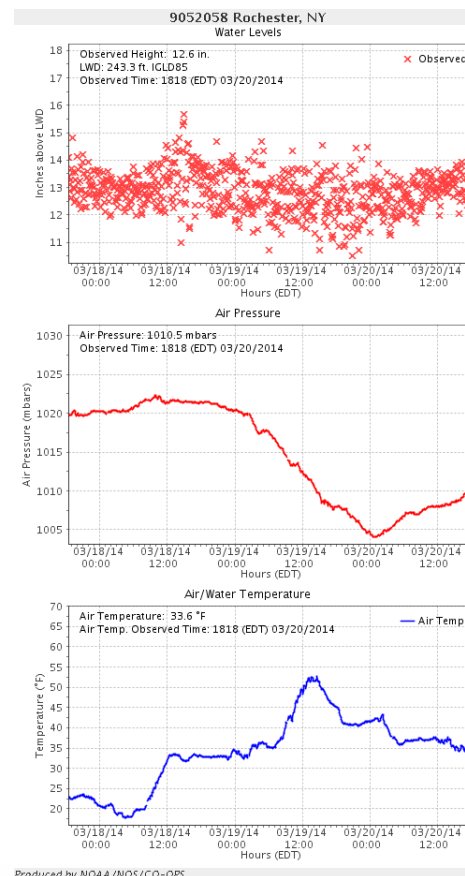
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# VARIATION IN AVAILABLE PARAMETERS AMONG STATIONS ALONG THE GREAT LAKES – NOAA - (MARCH 21, 2014)

Body of Water	Station Name	Parameters Included
St. Lawrence River	Ogdensburg, NY	No real time data available
	Alexandria Bay, NY	Water levels, air pressure, water temperature
Lake Ontario	Cape Vincent, NY	Water levels
	Oswego, NY	Water levels, winds, air pressure, air temperature, relative humidity
	Rochester, NY	Water levels, air pressure, air temperature
	Olcott, NY	Water levels
Niagara River	Ashland Ave., NY	Water levels
	American Falls, NY	Water levels
	Niagara Intake, NY	Water levels, air pressure, air temperature
Lake Erie	Buffalo, NY	Water levels, winds, air pressure, air temperature, water temperature, relative humidity
	Sturgeon Point, NY	Water levels, air pressure, air temperature

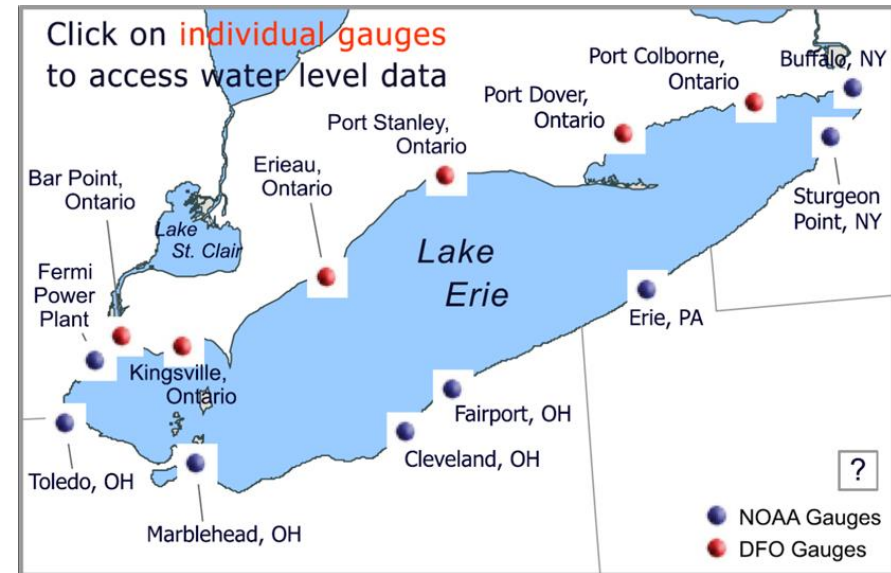
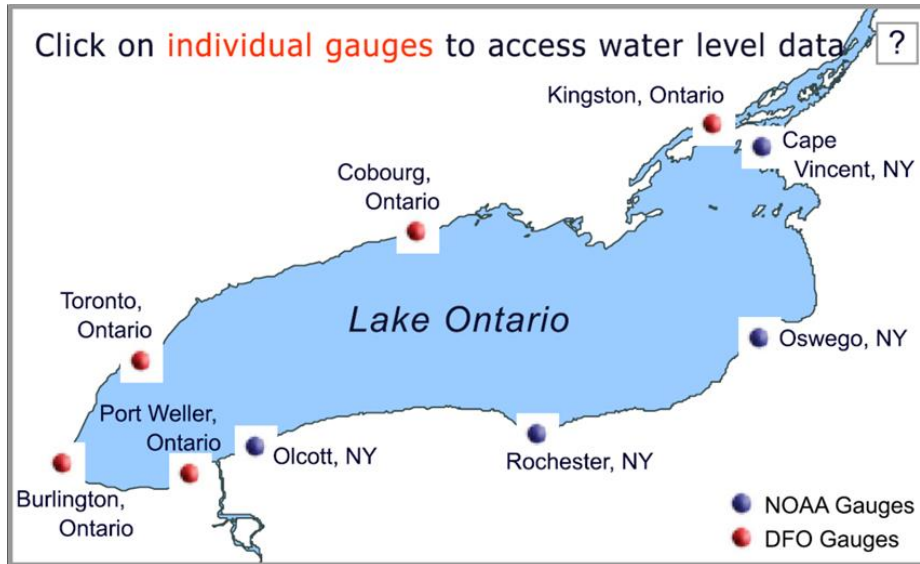
## Rochester example: Station 9052058



Produced by NOAA/NOS/CO-OPS

Source: NOAA - [http://glakesonline.nos.noaa.gov/glin.shtml?station\\_info=9052058+Rochester,+NY](http://glakesonline.nos.noaa.gov/glin.shtml?station_info=9052058+Rochester,+NY)

# WATER LEVELS IN THE GREAT LAKES



The Great Lakes Network provides information about water gauges and water levels in the Great Lakes

The gauges are maintained by NOAA along the U.S. side and by the Department of Fisheries and Oceans (DFO) Canada along the Canadian side

Source: Great Lakes Network; <http://www.great-lakes.net/envt/water/levels/levels-cur/ontwlc.html>



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# STORM EFFECTS ON WATER GAUGES

- The destruction of gauges during storms seriously compromises the ability to obtain data on stream surge and other storm characteristics.
  - During Hurricane Irene and Tropical Storm Lee: “In Eastern New York, 3 gauges were destroyed, 58 had some type of damage, 17 were flooded, and 1 exceeded operational limits;” Failure of Gilboa Dam (Schoharie County) gauges created uncertainty about how much water was going into and out of the dam\*
  - In Hurricane Sandy, NOAA reported 73 tide stations damaged\*\*
- More robust gauges are needed, and the technology exists to harden them against storms.\*

## Sources:

\*U.S. Department of Commerce, NOAA (September 2012) Service Assessment Hurricane Irene, August 21–30, 2011 Silver Spring, MD: U.S. Department of Commerce, NOAA, p. 76.

\*\*J. Gillis, NYT, 1/13/14

Flooded Tide Gauge, NOAA p. 76



# SUMMARY: FINDINGS & RESULTS TO DATE

- Environmental monitoring programs for stream flow, water quality and ecosystem health (databases and parameters) throughout NYS were identified and described (with NYU focusing on areas north of NYC and SBU focusing on NYC and Long Island).
- These programs are currently being carried out by Federal, State and local agencies, academic institutions (e.g., Stevens UOO and HESC), and sometimes with citizen and community groups and others that have also been identified and described.
- Available data immediately before and after Sandy have been compiled to understand Sandy's impacts on environmental parameters and monitoring systems.
- We have initiated an evaluation of the spatial coverage of environmental monitoring programs for uploading at: <http://www.nysrise.org/pages/RT-buoys.php>.
- We have identified potential threats to the successful continuation of these environmental monitoring programs such as budgetary cutbacks and robustness of monitoring systems during storms and extreme weather events.
- Given concerns about air quality in some communities affected by Sandy from particulate matter from sand and construction debris, an initial review of air sampling stations and delays in deployment of these monitoring systems in affected communities was carried out.

