



## REON II

### River and Estuary Observatory Network

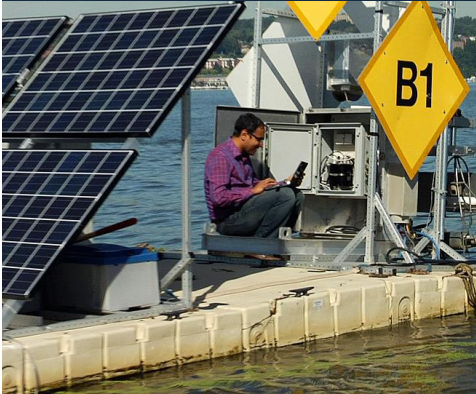
## REON I

- Real-time monitoring of Hudson and St. Lawrence River watersheds
- First deployed in 2008



## FLOATING PLATFORMS = \$250K

Meteorological Tower  
Acoustic Doppler  
Current Profiler (ADCP)



### Autonomous Robotic Profiler

- Laser In-Situ Scattering & Transmissometry
- Three-Channel Fluorimeter
- Optical Oxygen Sensor

## Imperatives:

Systematic

Continuous

Comprehensive

Affordable



## REON II



### Affordable + Appropriate = Adequate

#### Capital Investments

- Bending the cost curve (less costly sensors)
- Plug and Play– for every sensor deployed 2 backups are serviced)
- 2x Redundant sensor deployment ½ duty cycle “auto-QAPP”
- Simple/inexpensive vs. complex/expensive work
- Phased Capital Improvement  
(start simple, step-by-step improvement)



## Affordable + Appropriate = Adequate

### O & M

- Reduction of field Ops time
  - Reduce staff technical level in field
  - Plug & play
  - Auto-QAPP increased field efficiency
- D-Level maintenance (continuous build and upgrade)
- Convert reoccurring costs to single capital investment



## Maximize Benefits vs. Costs

### Benefits to Optimize

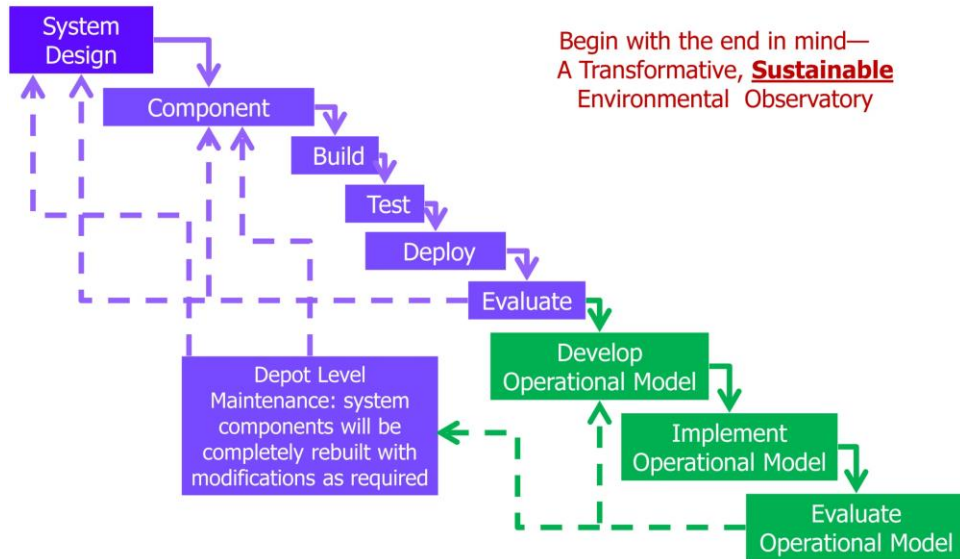
- Spatial Coverage
- Measurement Frequency
- Assortment of Parameters Monitored
- Accuracy
- Reliability
- Data Dissemination

### Costs to Minimize

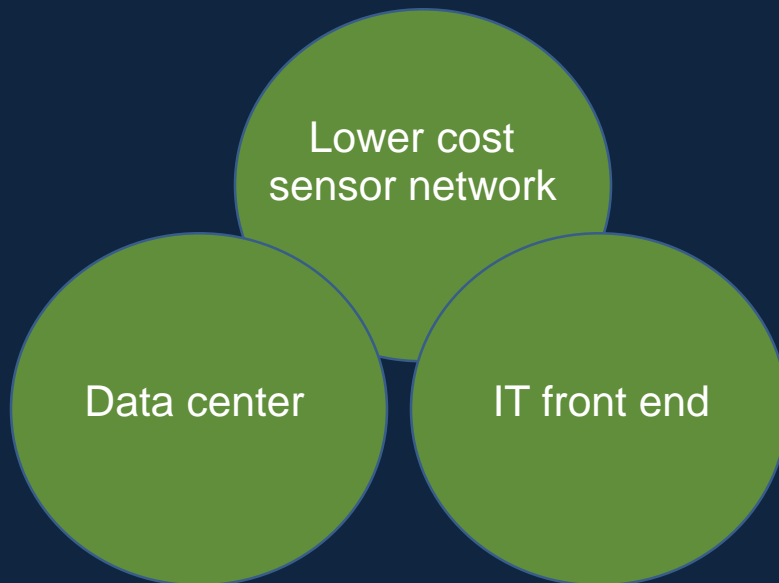
- Development
- Construction
- Testing
- Calibration
- Installation
- Operation & Maintenance



## REON Iterative Adaptive Design Approach



# REON II Components







Real-Time  
Hydrologic Station  
(RTHS)



RTHS

REON II  
Sonde



## Parameters

- Turbidity (Multiwavelength)
- Chlorophyll-a
- Colored Dissolved Organic Matter
- Dissolved Oxygen
- pH
- Conductivity
- Petroleum fractions





## Design Features

- Low cost
- Good field performance
- Ambient light rejection
- Tested to 100psi submersible depth



## River and Estuary Observatory Network (REON)

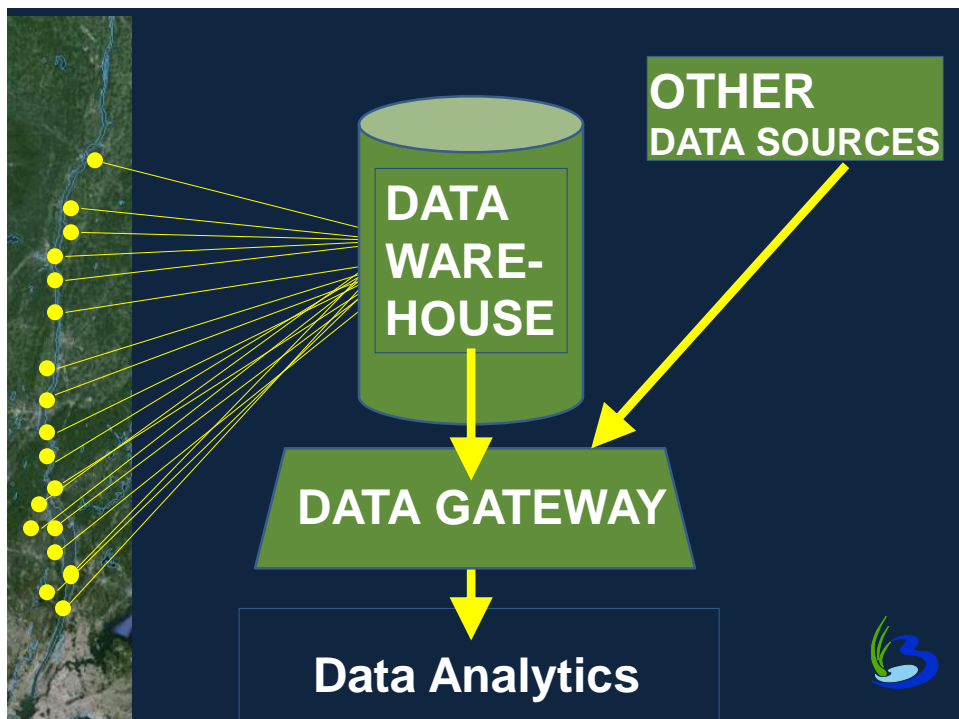
Monitors from Troy ...



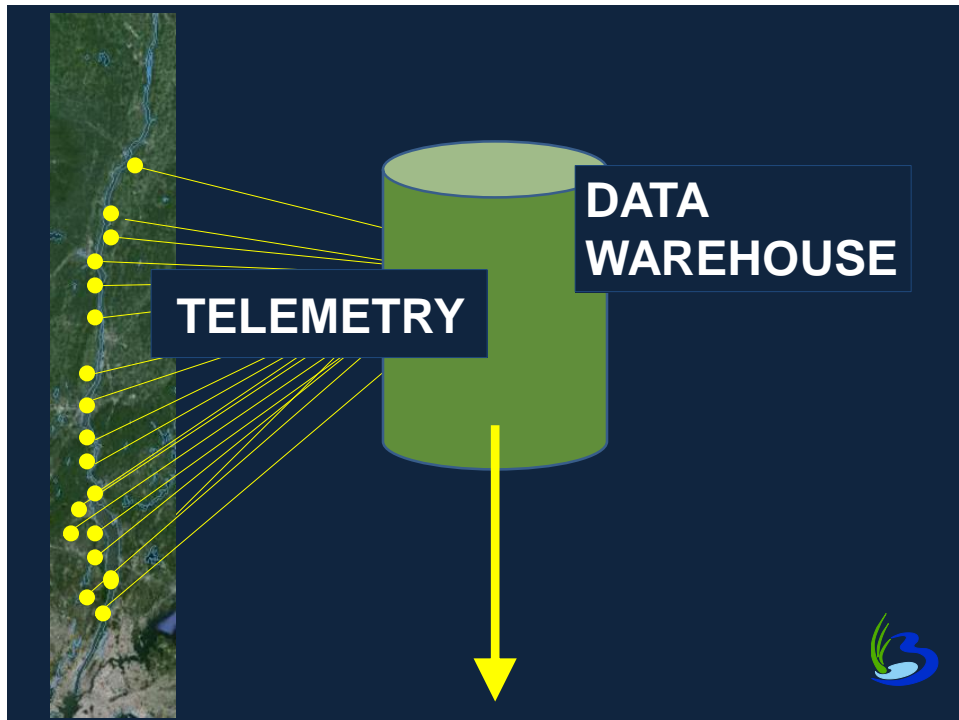
## River and Estuary Observatory Network (REON)

... to New York City:

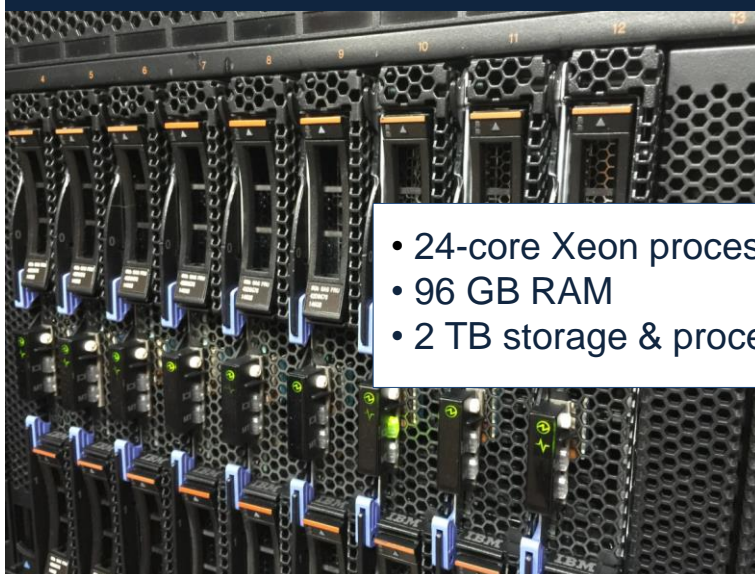
- 18 current
- 30 target





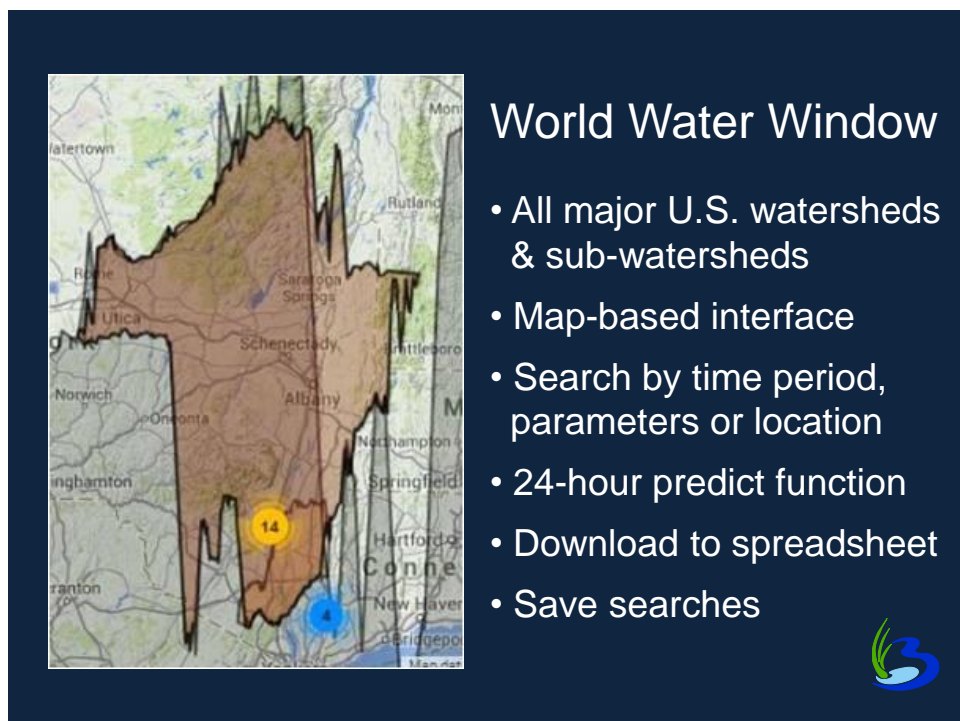
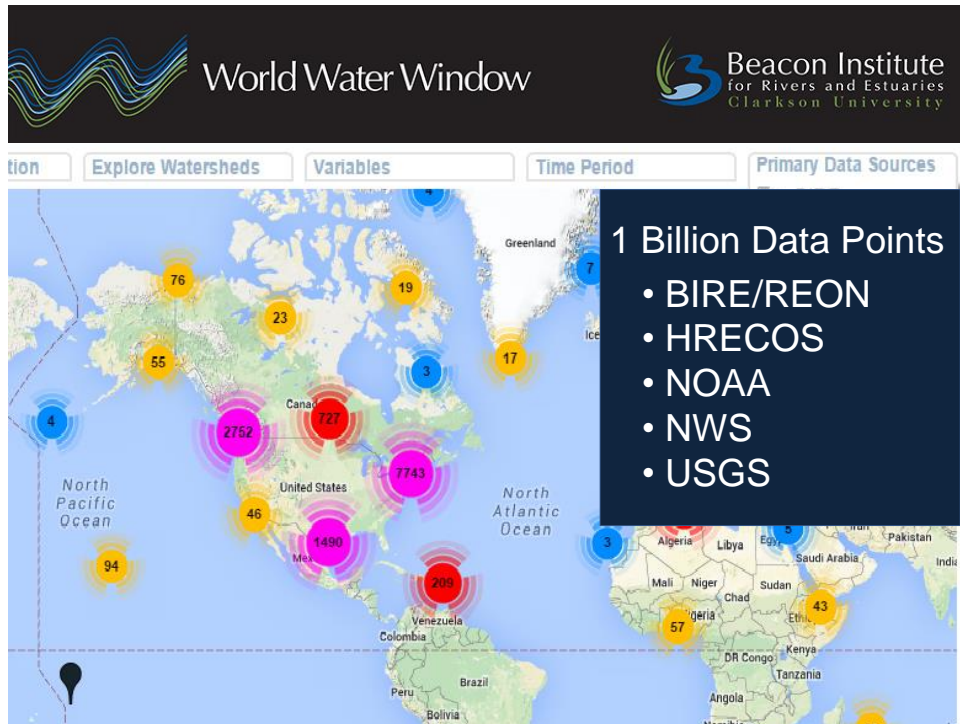


## GREEN DATA CENTER



- 24-core Xeon processor server
- 96 GB RAM
- 2 TB storage & processing





# end game

