

# Analyzing Water Quality with Images Acquired from Airborne Sensors

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**Year of Water:  
Thirty Years of Progress  
Through Partnering**

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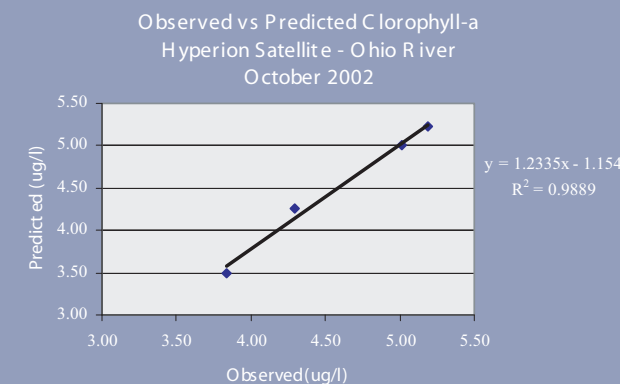
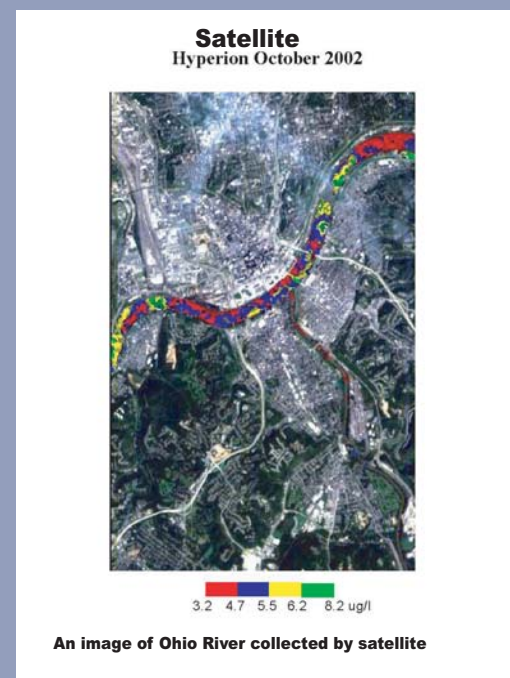
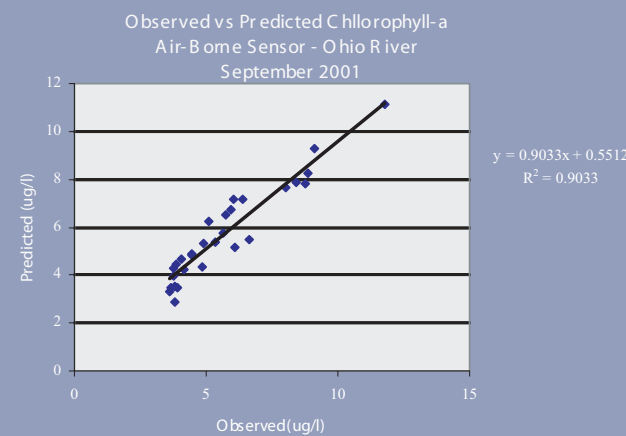
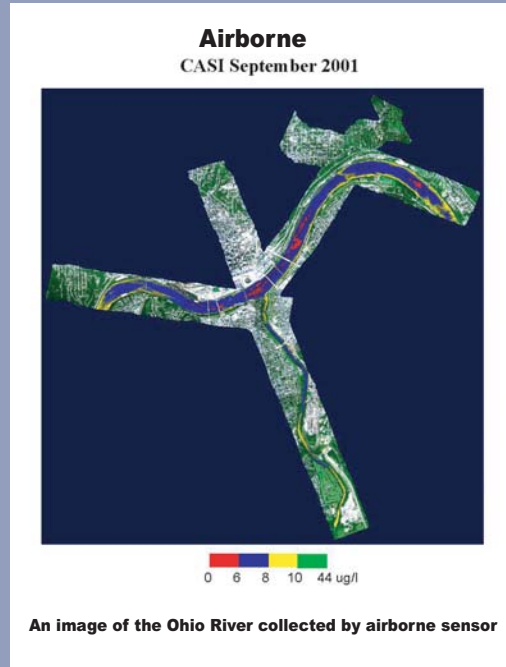
## The Problem:

Traditional water quality monitoring methods are:

- Expensive
- Time Consuming
- Provide Only a "Snapshot" of
  - Small Spaces and/or
  - A Short Period of Time

## Objectives:

- Our objectives are to develop methods to monitor water quality using airborne or satellite sensors (remote sensing). Once fully developed, these methods will:
  - Save Time
  - Save Money
  - Provide Water Quality Monitoring Over Large Areas and Over Long Periods of Time



## Approach:

### 1999

- Using an airplane, we flew a sensor over the Great Miami River, Ohio.
- This sensor detected very small bands of wavelengths of light (Hyperspectral).
- We were able to detect concentrations of those indicators of water quality:  
Chlorophyll  
Turbidity  
Phosphorous

### 2001

- We used an airplane to fly a hyperspectral sensor over the Ohio River.
- We found that Chlorophyll looked the same here as it did on the Great Miami River (Had the same spectral signature).
- But Turbidity and Phosphorous had different spectral signatures.

### 2002 - 2003

- We are currently obtaining images of the Ohio River using a hyperspectral sensor on a satellite.
- Initial indications are that we can use these images to find the concentrations of Chlorophyll.

## Impact:

This research IS:

- leading toward the development of efficient water quality monitoring tools,
- pioneering the use of Satellites to monitor Rivers, and
- providing us results to indicate that monitoring is a feasible remote sensing application.

## Future Impacts

This research will allow resource managers to:

- monitor water quality quickly and cheaply,
- obtain water quality data for every point in a water body,
- track changes in water quality over time, and
- monitor water quality in near real time.

