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Site locations

3 sites on the Mississippi/Atchafalaya system:
Mississippi R. at Baton Rouge
Atchafalaya R. at Morgan City
Wax Lake Outlet

4 sites in the Lake Pontchartrain basin
Pass Manchac
Tangipahoa River
Tchefuncte River
Nitrate Analyzer Specifications

- Wet chemistry (cadmium reduction/colorimetry), not ion-selective probe
- Automatic calibration with internal standard every 12 hrs
- Interfaces with USGS hardware & software for real-time data transmission
- Collects cadmium waste
Routine operation

• Site visit every 4 weeks: analyzer can run 2 months with readings every 2 hrs.
• QC samples collected
• Nitrate monitor cleaned, restocked, and given pre-deployment test
• Cadmium column checked: usually replaced
Nitrate analyzer waste disposal

- Waste bags drained & stored at the office for proper disposal (permit required)
- Approx. $700/yr
Acoustic Doppler discharge measurements

Directional-velocity instruments can be installed on-site to enable accurate discharge in tidally affected areas.
Tangipahoa River below Bedico Creek
Tangipahoa R. below Bedico Creek: May 12-June 12, 2008
Pass Manchac

Retrieved monitor showing partially-used reagents
Pass Manchac at Turtle Cove, 8/12-9/12/07

- **Stage**

- **Velocity**

- **Sp. Conductance**

- **Nitrate**
Data processing: Miss R. at Baton Rouge
NASA MODIS image, 4/29/08

The Rigolets

Crossover 2

Spillway at Hwy 61

Crossover 2

Chef Menteur Pass

Nitrate analyzer at Crossover 7/Mile 9

NASA MODIS image, 4/29/08
Miss. R. diversion into Lake Pontchartrain, 2008

1st stage: Freshwater/saltwater interactions

2nd stage: Eutrophication study

NASA “Aqua” photo: 4/29/08
250-meter resolution

Specific conductance, in millisiemens per centimeter
Nitrate, in milligrams per liter

Date
Crossover 7 hourly nitrate compared to Crossover 2 & Crossover 7 discrete (weekly) samples

Nitrite + Nitrate, in milligrams per liter

Date

Nitrate analyzer
CO-7 discrete samples
CO-2 discrete samples

USGS science for a changing world
Hourly multiparameter readings at Crossover 7
4/08-5/23/08
depth: 10 ft.
Onsite investigation of algal blooms
2\textsuperscript{nd} bloom?
8/21/08
Anabaena spiroides?

We understand the initial cause/effect, but do we understand the processes?
Conclusions, part 1

- The hardware & software are indeed “Ready for Prime Time,” but a substantial investment in trained personnel, both office & field, should be expected.

- The overall quality of the data is good.

- Deployments greater than 2 years, especially in estuarine systems, take its toll on the hardware.
Conclusions, part 2

- The high-resolution nitrate analyzer data accurately documented the evolution of the study from an inorganic chemistry (salinity, inorganic nitrate) study from April-early May to a biological (eutrophication/algal blooms) study in Mid-May through August.

- The instruments excel at limited-duration deployments with a clear objective.
Questions? Comments?

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Pre-deployment test: Passed!
Send us in coach!