

# Interactive Internet Conferencing for High School Environmental Science Projects at the NSLS - A Live Demonstration

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*NSLS/CFN User Meeting  
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**BROOKHAVEN**  
NATIONAL LABORATORY  
*a passion for discovery*



## Participants at the NSLS:

Joe Smith (1928-2007):

- Early collaborator on the X26A beam line.
- **Proposed using internet for education at the time of its inception in the early 1990s.**



X26A: Tony Lanzirotti, Bill Rao, Steve Sutton, Mark Rivers, Keith Jones. MY PRT Time.

X27A: Ryon Tappero, Randy Smith. General User Time.

U2B: Nebojsa Marinkovic, Jenn Bohon. General User Time.

# Study Participants

Sayville	New School, NYC
Islip	Kingsborough CC, NYC
Bellport	Harbor School, Brooklyn
William Floyd	River Project, NYC
Longwood	
South Shore	Washington, DC
Westhampton	Southern U, New Orleans
Syosset	
Kings Park	
Southampton	Pisa, Italy
Patchogue	KFK, Budapest
Comsewogue	MGIS, Ahmedabad, India
	Hyderabad, India
	Ste. Maxime, France
	Craponne, France

# TRI-STATE PROJECT FOR ENERGY, ENVIRONMENT, WORKFORCE DEVELOPMENT, AND EDUCATION



## **Tri-State Project Objectives:**

- The Tri-State Project is focused on major national and DOE concerns: energy, environment, workforce development, and education.
- The internet is used as a means of bringing the resources of BNL into school science teaching and research programs.
- Study of bivalves in the region is used as a program starting point.
- Bivalves are useful as an indicator of environmental health in our estuaries with links to many different sciences.

## PROJECT EXECUTION:

- Site selection by teacher and students.
- Sample collection by students.
- Characterization work at school by students.
- Analysis at NSLS.

Students become users and run the beam line equipment (**to be shown**) or participate by remote access via the internet (**to be shown**). BNL scientists serve as advisors via email or internet conference).

- Students interpret results, prepare reports, and participate in competitions, and science fairs.

# INTERNET CONFERENCING EQUIPMENT:

High Speed Internet Connection

Computer

Echo cancelling microphone, speakers.

Software.

**EVO:** <http://evo.caltech.edu>. Free, registration, needs download, session recording, multiple users. Desktop sharing.

**Adobe ConnectNow:**

<http://www.adobe.com/acom/connectnow/>

Free for 3 users. Registration, but download not required. Desktop sharing. Allows control of desktop by remote user.

# Long Island Student Wins Westinghouse Contest

By **LEE A. DANIELS**

**Published: New York Times, March 10, 1992**

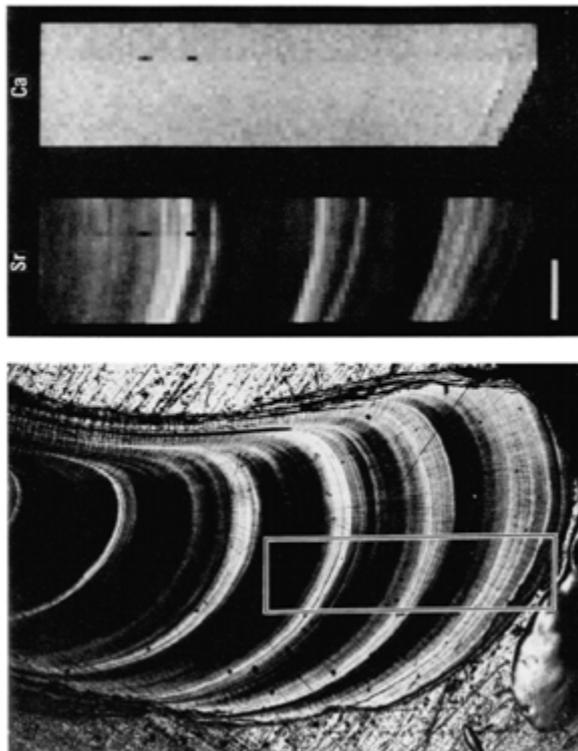
A Long Island youth who discovered a new way of tracing the history of pollution in bodies of waters won the first-place award in the Westinghouse Science Talent Search yesterday. Kurt Thorn, a 16-year-old senior at Shoreham-Wading River High School, was selected as the nation's top high school scientist by the eight-member panel of eminent scientists convened by the National Academy of Science.....

# Elemental Distributions in Marine Bivalve Shells as Measured by Synchrotron X-Ray Fluorescence

KURT THORN<sup>1,\*</sup>, ROBERT M. CERRATO<sup>2</sup>, AND MARK L. RIVERS<sup>1</sup>

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Reference: Biol. Bull 188: 57-67, (February/March, 1995).



**Figure 5.** Two-dimensional scan (map) of Sr and Ca concentration in the hinge region of *Mercenaria mercenaria*. Each pixel measures 20  $\mu\text{m}$  on a side, and was collected for 20 s. The data were recorded as background-subtracted regions of interest and have been normalized to beam intensity and detector live time. The box on the photomicrograph approximately corresponds to the region scanned. Note the correlation of the variations in strontium concentration with the seasonal banding in the chondrophore.

# FURTHER USE OF THE INTERNET:

SBU BUS 340. Managing Information Systems.

Prof. M. Margot Palermo and class considered use of the internet to:

- Archive data.
- Library of school projects.
- Facilitate collaboration between schools, and other groups.
- Enable internet-based data analysis.

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**ATTENTION VISITORS: BE AWARE THAT THIS WEBSITE IS MERELY A TEST SITE FOR A STONY BROOK UNIVERSITY CLASS PROJECT**

## Welcome to Brookhaven National Laboratory's High School CEES Program!

Brookhaven National Laboratory (BNL) has created an educational, research-based program to better prepare high school students and teachers for what they believe to be some of the pertinent challenges of the 21st century. These challenges include sustainability, the environment, and education and workforce development. Thus, BNL hopes to be able to develop the expertise of each student and teacher in basic and applied energy science, environmental science, science education, and workforce development through this program. BNL hopes to do this through Cyber-enabled Environmental Science (CEES). CEES is a model that represents how students may become involved in distance learning and experimentation and how this can help foster their skills in math, science, technology and engineering.

### [Bnl Scientist](#)

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kiran.lorick@yahoo.com  
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**Longwood High School.** Ivan Suarez (Teacher) and Devon McGhee (Student).

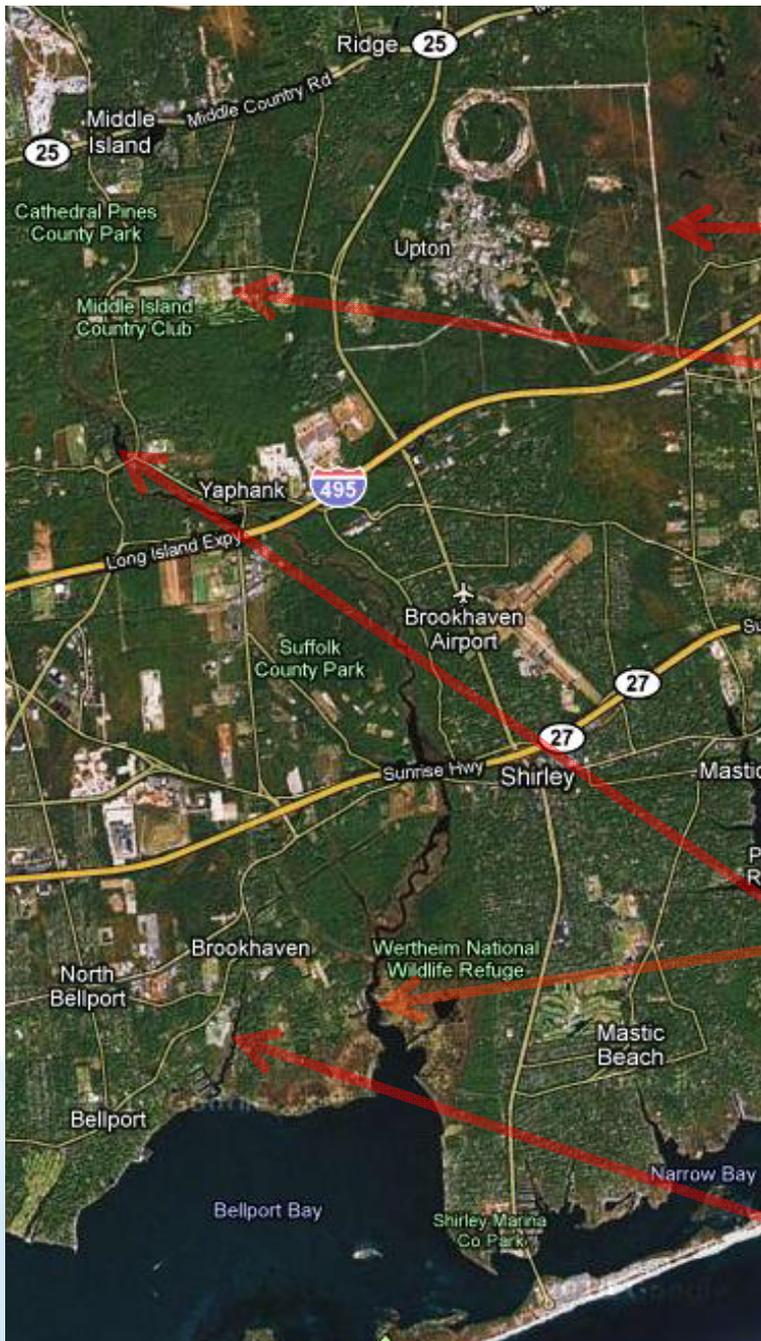
Small amounts of As found in Yaphank Lake Clam samples of soft tissue and shell.

**Sayville High School.** Maria Brown and Janet Kaczmarek. Relatively high levels of As found in soft tissue and sediments.

This suggests investigation of As origin and transport in Long Island soils and sediments.



# Carmans River Study, June 2010



BNL

Longwood  
High School

Carmans  
River

Bellport  
High School

- Determine metals including Pb and As.

- Cooperating High Schools:  
Longwood  
Sayville  
Bellport  
Patchogue

- NSLS Analysis at X27A 6/10-13

# CONCLUSIONS:

1. Long Island high school science programs, science teachers, and students are amazing.
2. The demonstration internet-based bivalve project between high schools and the BNL NSLS was successful.
3. The concept could be a foundation for further work to investigate energy and environmental issues in our tri-state ecosystem.
4. Outreach to other US regions and other countries is a possibility.



