

RIVER MONITORING

New York Research Institute Hopes to Go With the Flow

An ambitious plan to monitor the entire Hudson River in real time is one step closer to reality, thanks to a new collaboration with IBM announced last week. The ultimate goal is a system that could track the movement of PCB-contaminated sediment, for example, or warn a commercial power plant to shut its intake valve temporarily because of an approaching school of fish. "It will be the first real-time, distributed river network in the world," says John Cronin, director of the non-profit Beacon Institute for Rivers and Estuaries in New York.

The River and Estuary Observatory Network (REON) is part of a new wave of observing networks, like the even more ambitious Integrated Ocean Observing System, a federally funded program to expand and link regional coastal networks (*Science*, 3 August, p. 591). Meanwhile, another group of scientists is hoping to interest the National Science Foundation in funding a network of eight to 10 research stations around the country that would study threats to water supplies.

Since 2003, the Beacon Institute has been coordinating a prototype, called Riverscope. Researchers from Lamont-Doherty Earth Observatory and Rensselaer Polytechnic Institute have measured temperature, salinity, and other variables in a few spots along the Hudson River. Although REON is still early in the design phase, heavyweights have already signed on. The state of New York has committed \$50 million, most of which will support a new research building. Groundbreaking is expected in 2009 at Denning's Point near Beacon, New York, but scientists hope to begin deploying new sensors this spring.

On 16 August, the Beacon Institute announced a major partnership: IBM will pick up the tab for a new computer system designed to analyze streams of data in real time—a contribution worth perhaps tens of millions of dollars. "It is very, very exciting," says ecologist Margaret Palmer of the University of Maryland Center for Environmental Science in Cambridge, Maryland.

The river network will be IBM's first public application of its System S, a new type of computer system called stream computing that can handle many types of data—such as video and sound—simultaneously. With processors distributed near the sensors, the system can filter and classify the data in real time and autonomously decide whether to take more detailed or frequent readings at a particular site, for example, during flooding. "The system will learn," says IBM's Harry Kolar, who says that IBM

Research platform. Sensors to monitor the flow of contaminants into the Hudson River will be part of the planned REON.



is getting a chance to test its technology.

A second phase, at least 10 years away, would include permanent sensors and perhaps even robotic submersibles that can beam back data. This full system will require another \$150 million of fundraising, Cronin estimates. Philip Bodgen, who directs the Gulf of Maine Ocean Observing System, says he thinks the institute has a good chance of finding the money needed for ongoing maintenance and operations because the Hudson River is less challenging logistically than the ocean and the project is more visible to potential donors.

Once running, REON could be used for everything from studying the impact of fertilizers to monitoring the quality of drinking water. "It will be a net savings to the state to get ahead of their environmental problems," predicts Thomas Harmon, an environmental engineer at the University of California, Merced. **—ERIK STOKSTAD**

Thais Say Aye to GM?

BANGKOK—Thailand may lift a 6-year-old ban on field trials of genetically modified (GM) crops. Concerned that the country's agriculture efforts are lagging behind those of China and other neighbors, Thailand's agriculture ministry was expected this week to petition the country's Cabinet, installed after a coup last year, to rescind a moratorium on open-air experiments. Critics of GM crops say the country lacks adequate biosafety laws and are urging the Cabinet to stand firm. The ministry's top priority is a GM papaya strain resistant to a ringspot virus that has decimated orchards in Thailand and elsewhere. **—RICHARD STONE**

German Physics Facilities Achieve Fusion

BERLIN—Materials scientists will have a new one-stop shop in Berlin when BESSY, an accelerator-driven x-ray source, and the Hahn-Meitner Institute (HMI), which boasts a reactor-based neutron source, merge into a single institute in 2009. Both facilities allow scientists to probe the atomic structure of materials, from protein crystals to high-tech ceramics. The merger, announced last week, will produce an institute with 1000 employees and a yearly budget of \$136 million, almost entirely from the German federal government. That is a significant funding boost for BESSY, which will no longer have to charge users for beam time. The fusion will produce one of the few places in the world with expertise with both types of probes, says HMI Director Michael Steiner.

—GRETCHEN VOGEL

Mmmm, Beer

Farmers, biofuel enthusiasts, and, yes, brewers could soon get a little enlightenment from German plant geneticists. Last week, the German government put up \$8 million to more fully map and partially sequence the genome of barley, a key crop used worldwide in animal feed, human food, and beer.

Funding agencies have been slow to tackle crops such as wheat and barley because of the daunting size of their genomes. At 5 billion bases, barley's genome is nearly double the size of the human genome. But it is only one-third wheat's size and lacks that genome's multiple copies, so it should be easier to sequence, says plant geneticist Nils Stein of the Institute of Plant Genetics and Crop Plant Research in Gatersleben, Germany, whose team will create a draft sequence of 10% of the genome. Stein hopes the work, along with a British-led barley sequencing pilot, will set the table for a large-scale sequencing project. **—ELIZABETH PENNISI**