

# CBE0:N

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## Chesapeake Bay Environmental Observatory as a Network Node

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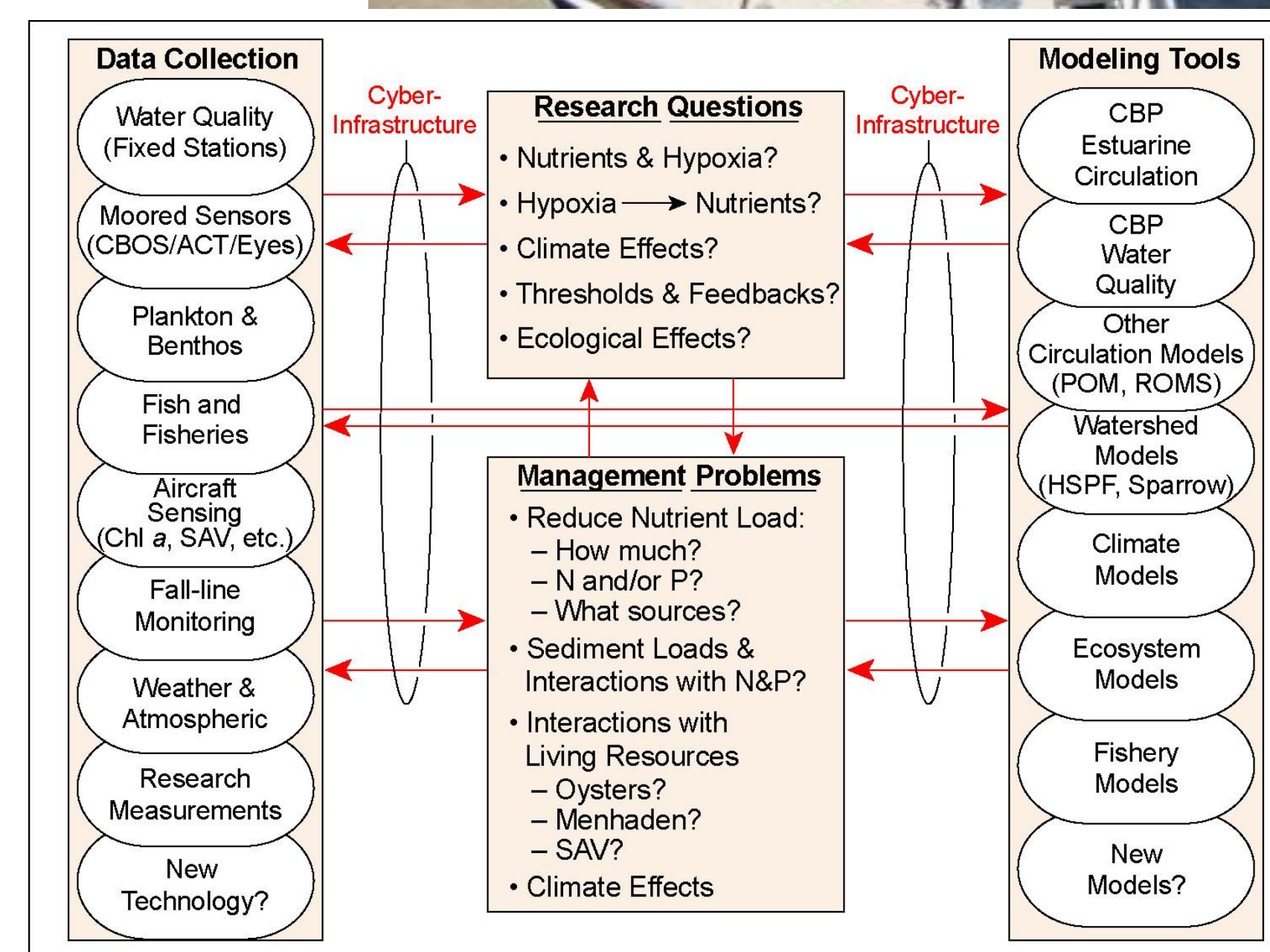
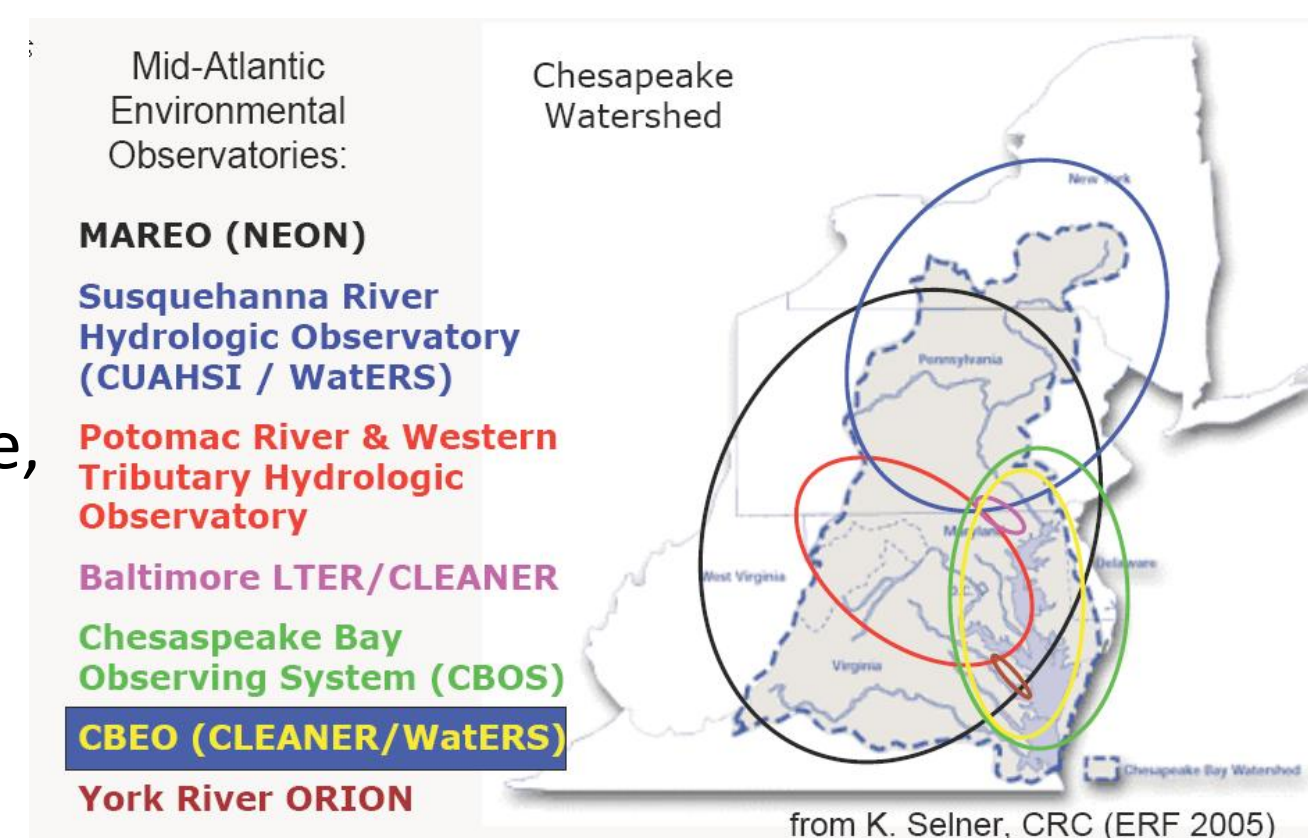
<http://geon16.sdsc.edu:8080/gridsphere>

### About CBE0

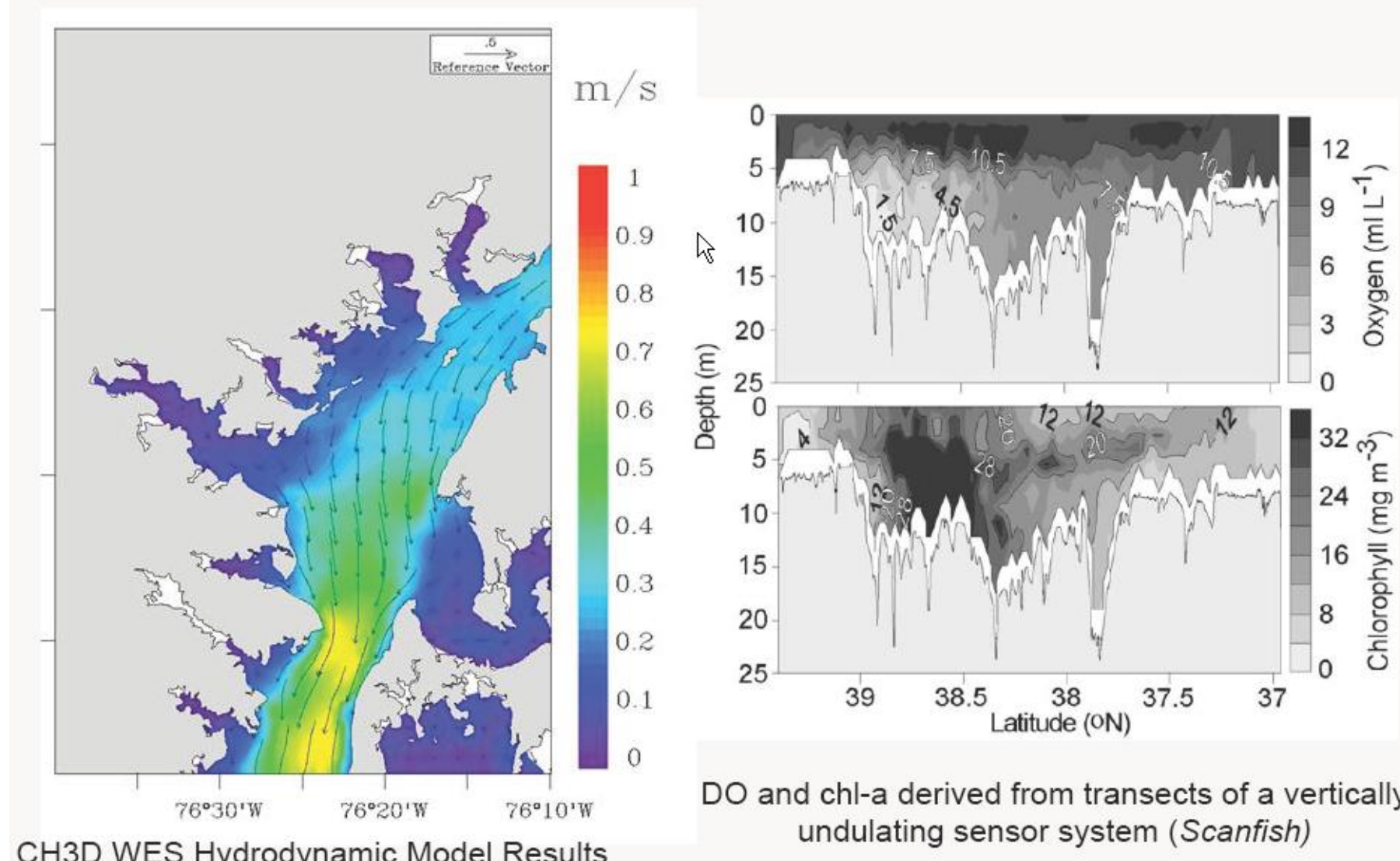
The mission of the CBE0 project is development of a Chesapeake Bay Environmental Observatory as a prototype of cyberinfrastructure (CI) for environmental observatory networks (EONs) demonstrating the transformative power of CI.

The project is organized around the following four concurrent and interacting activities:

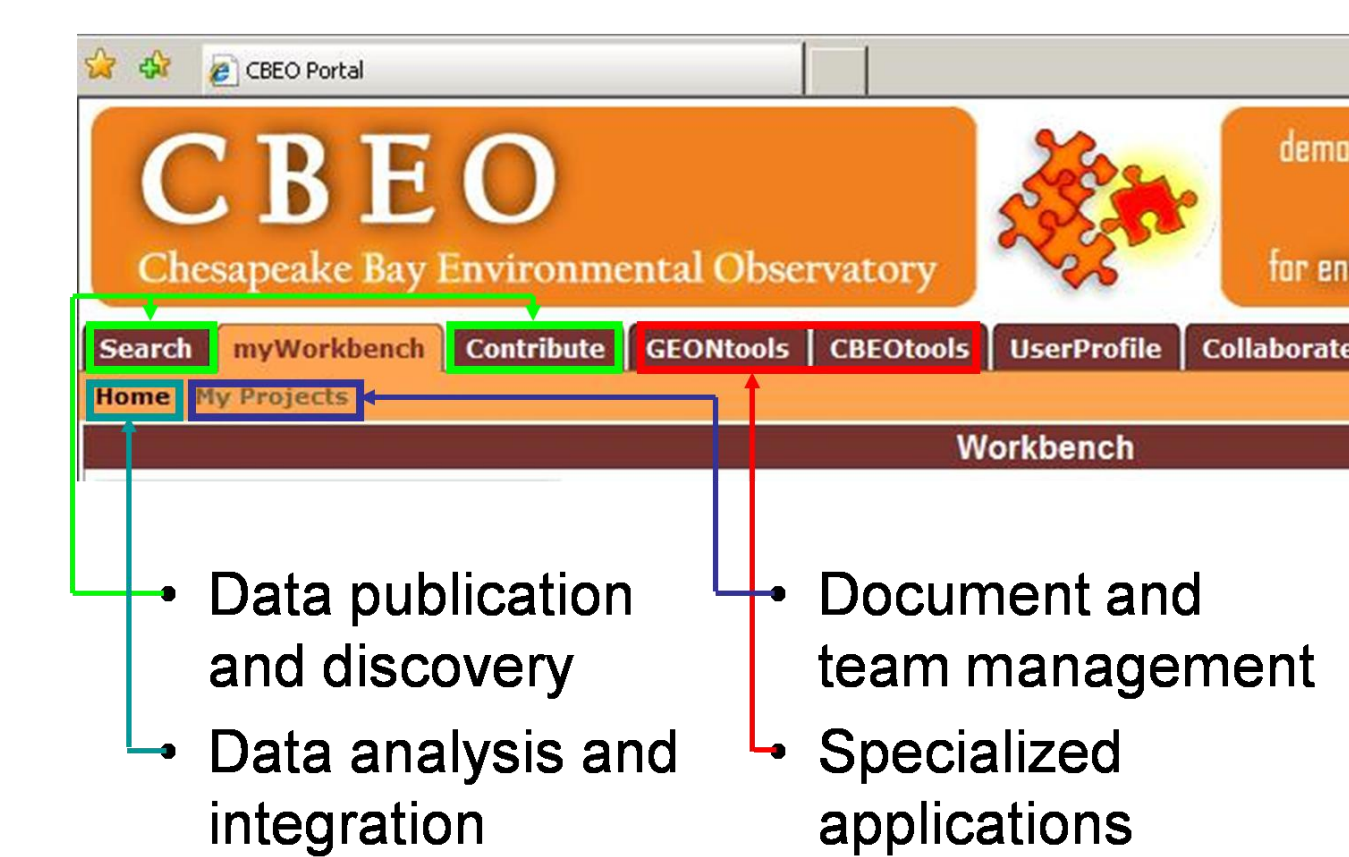
- **CBE0:N** incorporates the test bed CI into the national EONs
  - by constructing a GEON-based node and a CBE0 web portal
  - by developing a CUAHSI-HIS-based node, available under the same portal
  - by prototyping CBE0 tools that can be re-used through the portal
- **CBE0:E** is the education and outreach element, with the mission to translate observational science for public consumption
  - MAST: Multicultural students At Sea Together, Hampton University.
  - Field Courses, Science Workshops
  - Center for Ocean Science Excellence for the Mid-Atlantic region (COSEE-MA)
- **CBE0:S** provides science, engineering, and management research context for various cyberinfrastructure tools and techniques
  - focus on hypoxia in Chesapeake Bay, in particular non-linear O<sub>2</sub> responses to management and climate; effects of land use, water quality, hydrodynamics, biota, etc.
- **CBE0:T** constructs a locally accessible CBE0 test-bed prototype
  - managing 10 years of Chesapeake Bay water quality and hydrodynamics model
  - CIMS, MD DNR, overflight chl-a
  - spatial indexing for cross-data set queries



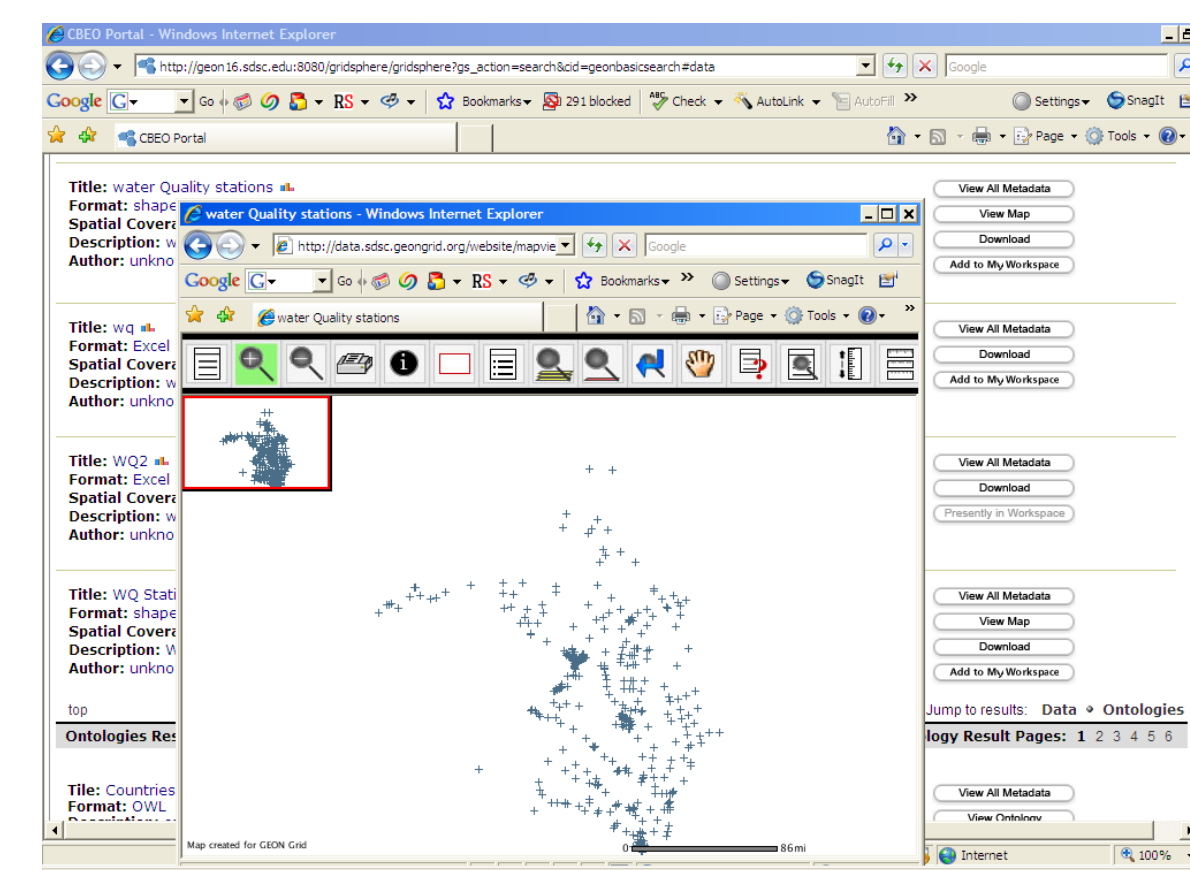
Need new means of integrating disparate data



### CBE0 Network Node in GEON Grid



Visualization of registered spatial data

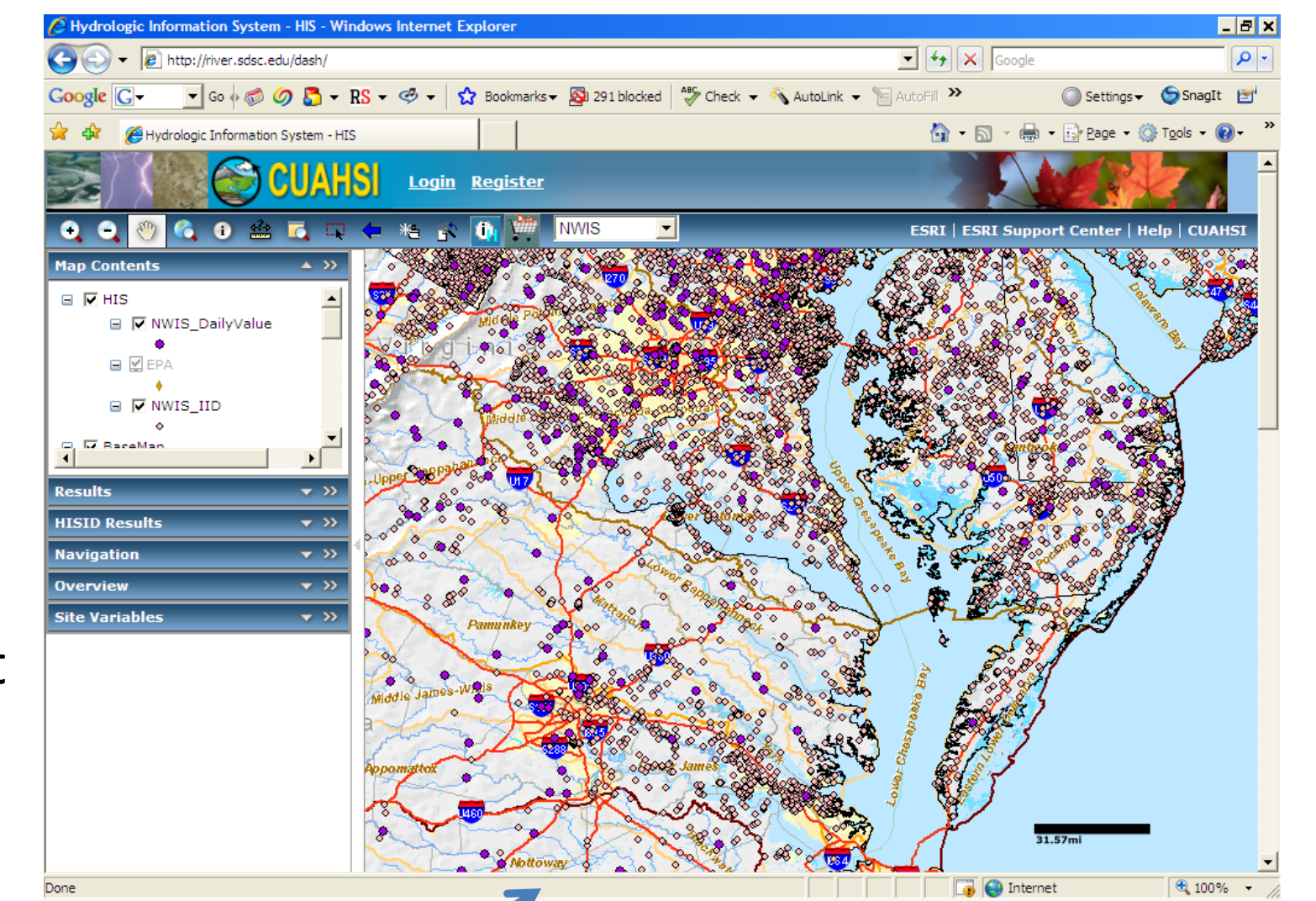


Querying CBE0 relational databases registered to the portal

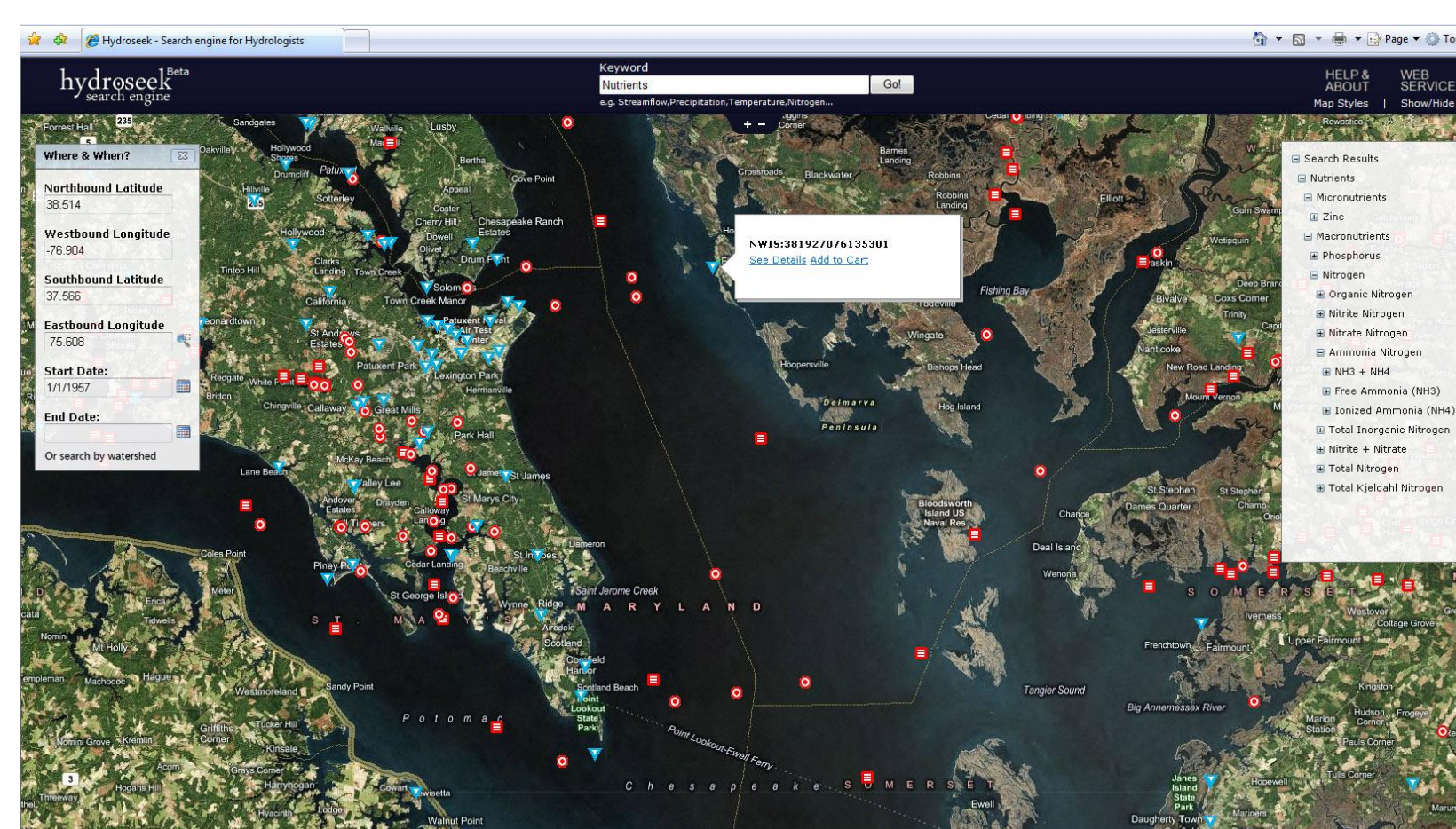
The GEON-based portal supports publication, discovery, analysis, visualization and integration of data resources registered by portal users, or available elsewhere in GEON-managed portals

### CBE0 Node in CUAHSI HIS

CUAHSI HIS (Consortium of Universities for the Advancement of Hydrologic Sciences, Inc., Hydrologic Information System) develops a distributed network of hydrologic services and applications for sharing and integrating observational data. An HIS Server for the Chesapeake Bay area is available on the CBE0 portal. It provides access to CBE0 datasets using a common language (*WaterML*)

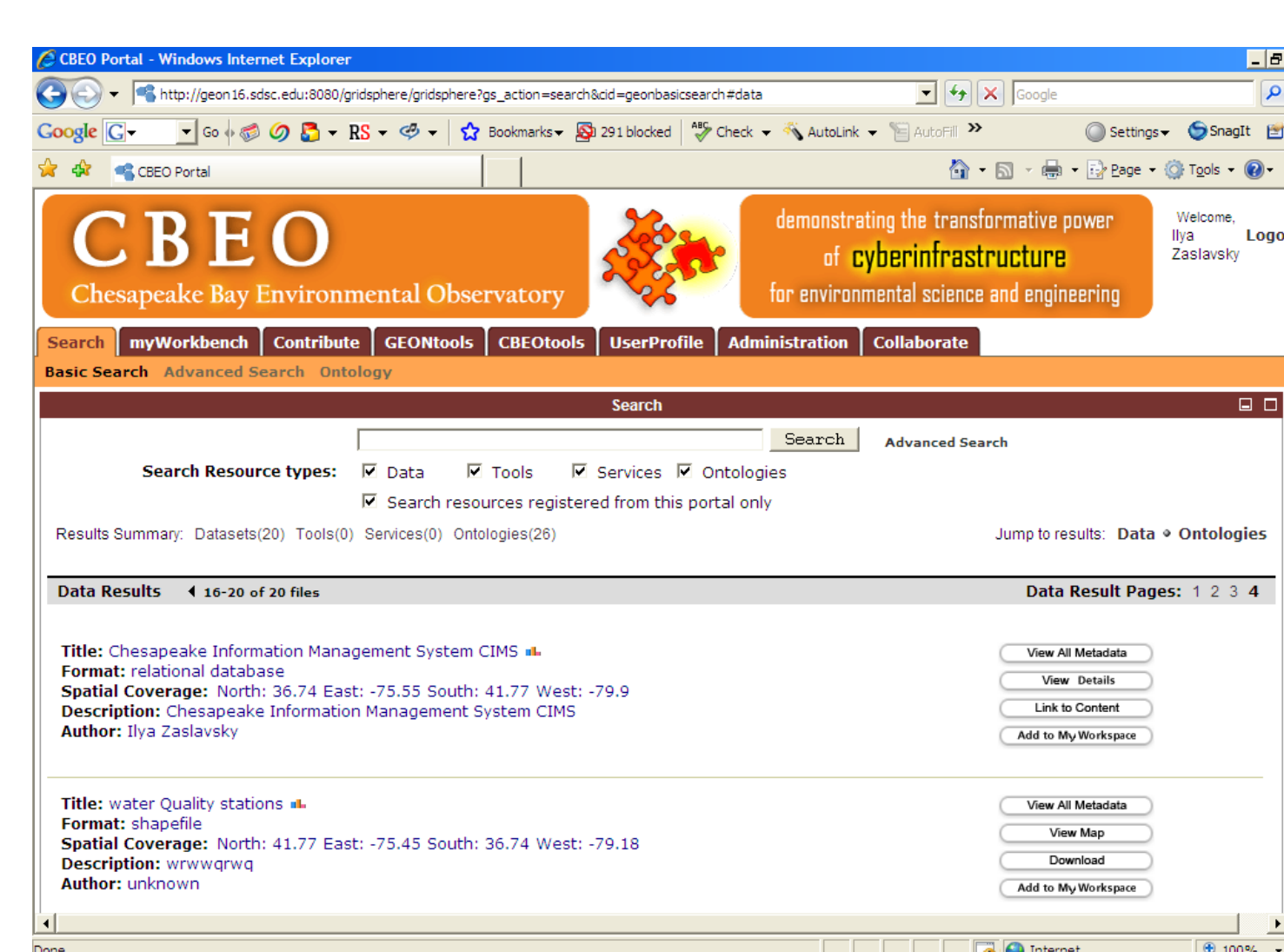


Data Access System for Hydrology (DASH) application for the Chesapeake Bay area, available via the portal



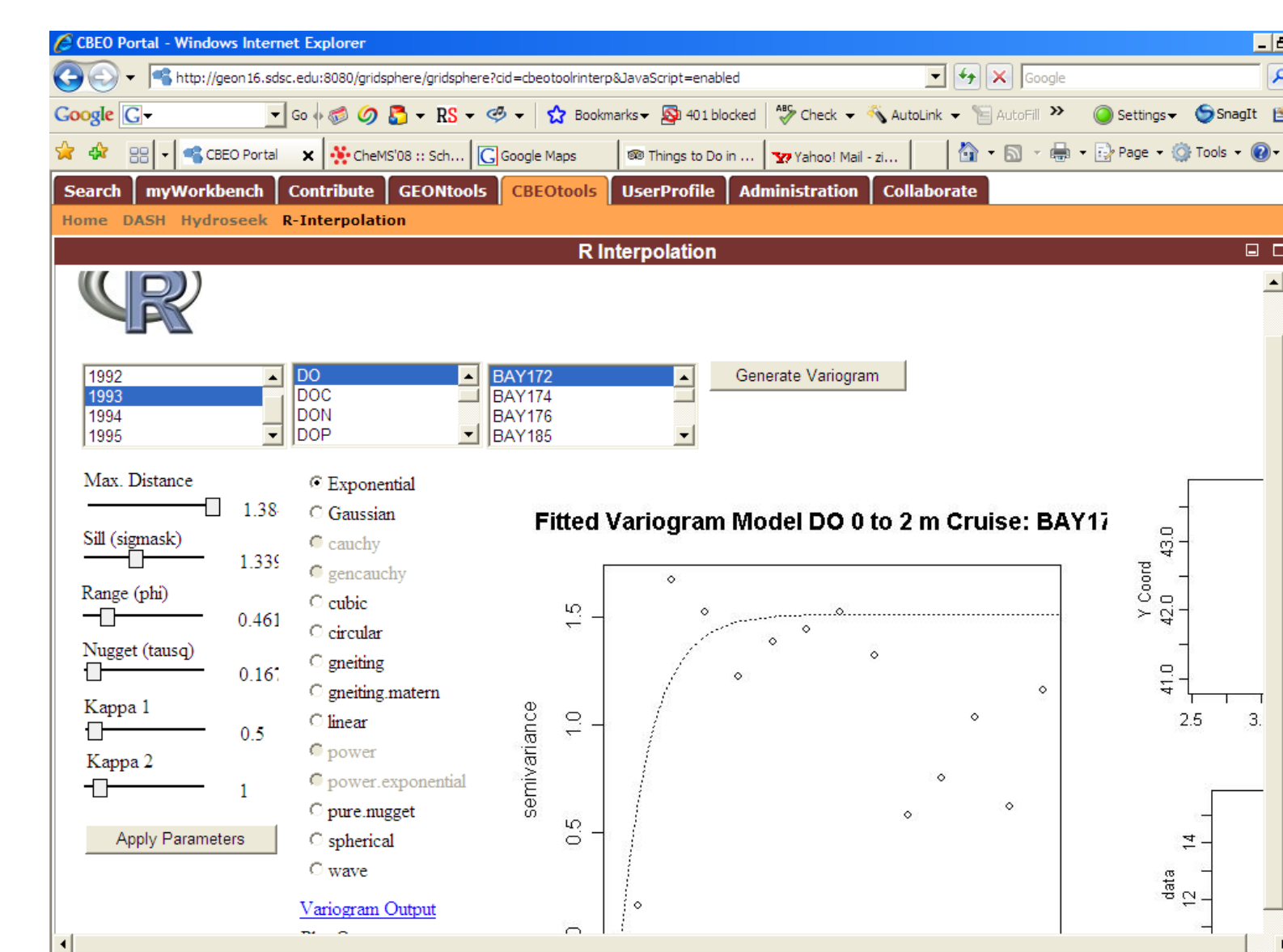
Hydroseek, an application for ontology-aware search for hydrologic observations, is also available via the portal, as part of "CBE0 Tools". It allows users to find and assemble information from multiple observation networks regardless of structural and semantic differences between them.

### CBE0 Data and Tools



Many types of resources can be registered to the CBE0 portal, including shapefiles, Excel spreadsheets, relational databases, ASCII files, GMT rasters, KML, geoTIFF, XML, NetCDF files, documents (Word, Powerpoint, PDF), applications and services (WMS, WFS), web sites. CBE0 data available via the portal include CIMS observations data, model runs, aircraft remote sensing data, model grids, station locations, estuary maps, and education data.

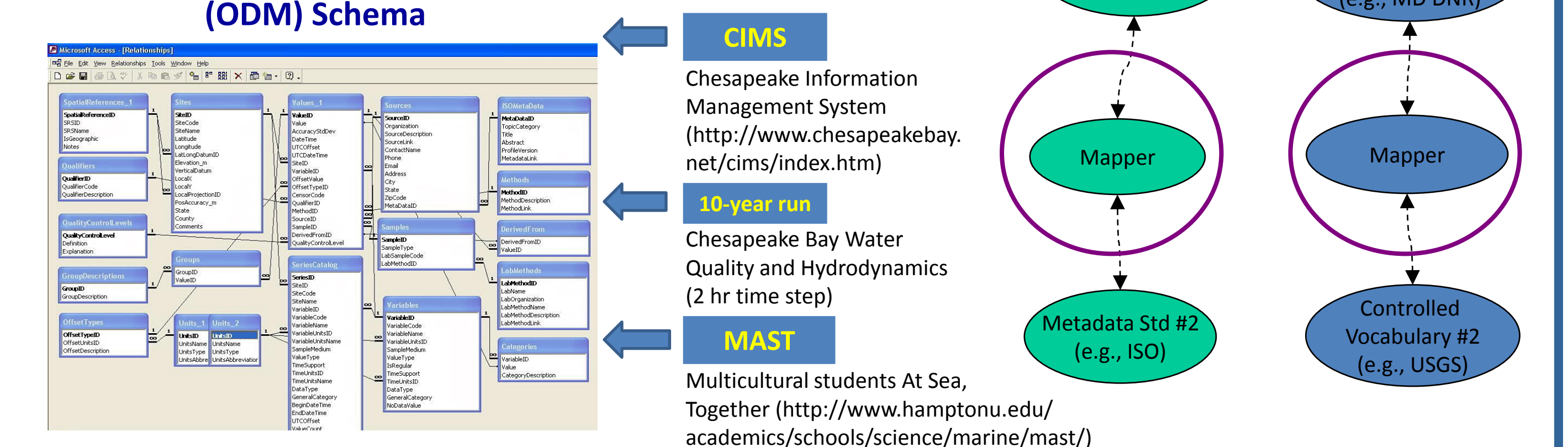
An R-based interpolator developed by Rebecca Murphy from JHU and used to model hypoxia in the Bay, is now available via the portal, as part of CBE0 tools.



### Resolving metadata heterogeneity

Within CBE0:N, several commonly-used Chesapeake Bay datasets are converted into CUAHSI ODM (Observations Data Model), made accessible via WaterOneFlow web services, and registered to CUAHSI's HISCentral application (*hiscentral.cuahsi.org*). This makes the datasets available within the national network of hydrologic observations.

CUAHSI "Observations Data Model" (ODM) Schema



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