



Great Lakes to Gulf
VIRTUAL OBSERVATORY

Great Lakes to Gulf: Supporting the HTF on measuring progress through analyzing trends in watersheds across the MARB

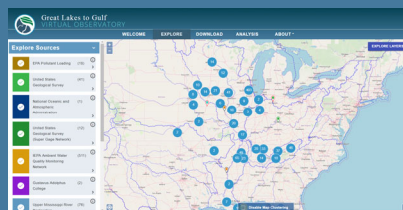
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National Great Rivers Research and Education Center
National Center for Supercomputing Applications
October 1, 2020



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What is the Great Lakes to Gulf Virtual Observatory?

- The GLTG Virtual Observatory is a web-based geospatial application that integrates water quality data and analytical tools from multiple sources allowing a user to visualize and understand nutrient pollution and water quality conditions in the Mississippi River watershed.
- The online interactive application provides users with tools to explore, analyze and compare water quality data from the Mississippi River and its tributaries.

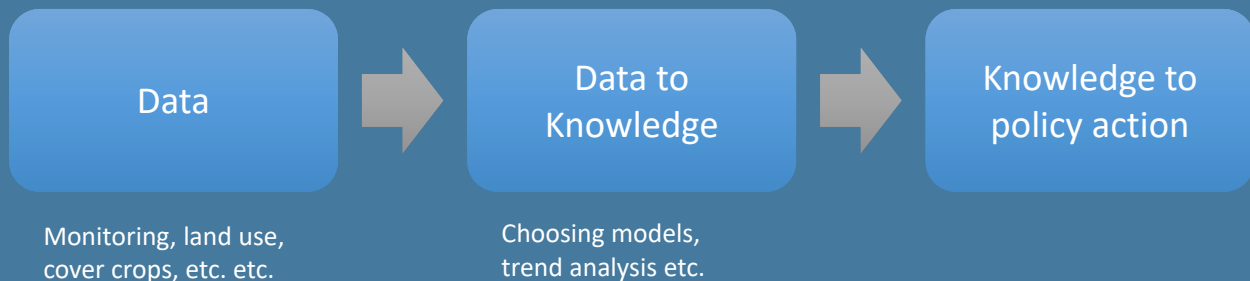




Data to Decision Support

- Support states and other stakeholders “where they are” through narratives, visual tools, and analyses

Nutrient Reduction Progress Tracking Journey



How Great Lakes to Gulf Supports Nutrient Reduction Efforts by Federal Government, States and NGOs

Work with collaborators to:

- Add value to existing data, projects and efforts
- Provide context for efforts
- Provide a tool for non-scientists
- Provide a tool to support decision making
- Provide a framework for collaboration



Summaries, Model Outputs and Analyses

Provide users with information on “what the data mean” through:

- Narrative storyboards
 - Gives background and explanation
 - Tells a “story” based on the data
- Annual Statistics
- Trends
- Model outputs
- Piecing data and projects together into coherent story



HTF Trends Workgroup Collaboration

- Progress tracking through analysis/visualization/interpretation of water quality trends
- Met with members of work group on “site criteria” to choose trend sites:
 - Within MARB
 - Nitrate, Total Nitrogen, Total Phosphorus, Orthophosphate
 - ~15 year trends going backward from 2017
 - Weighted Regression on Time Discharge and Season (WRTDS)
- Narrative Storyboards



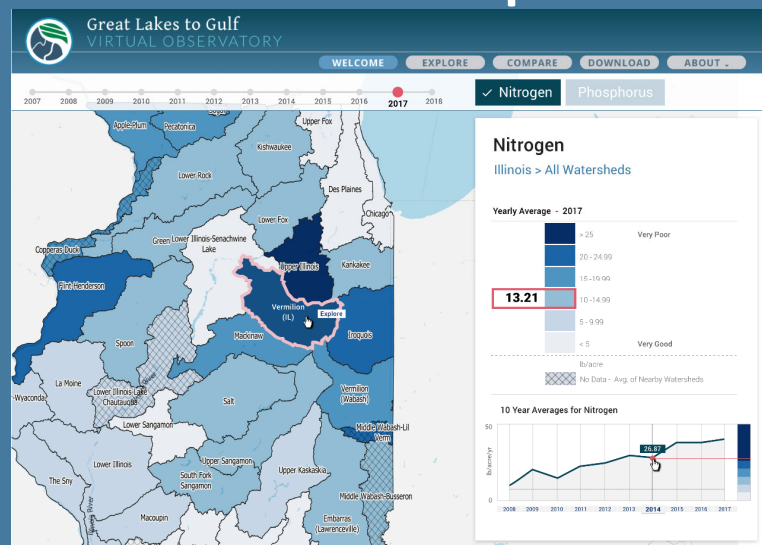
HTF Trends Workgroup Collaboration

- Progress and timeline
 - Set criteria that site data must meet - *complete*
 - “Data harmonization” – *in progress* (thankful for help from EPA via TetraTech)
 - Demonstrate trend analysis on two sites – *October 2020*
- Live mockup of the trend dashboard – *complete & ongoing*
- Full trend site list to workgroup for review – *End of 2020*
- Analysis complete and dashboard fully live – *April 2021*
- Narrative Storyboards – *ongoing, 2021*



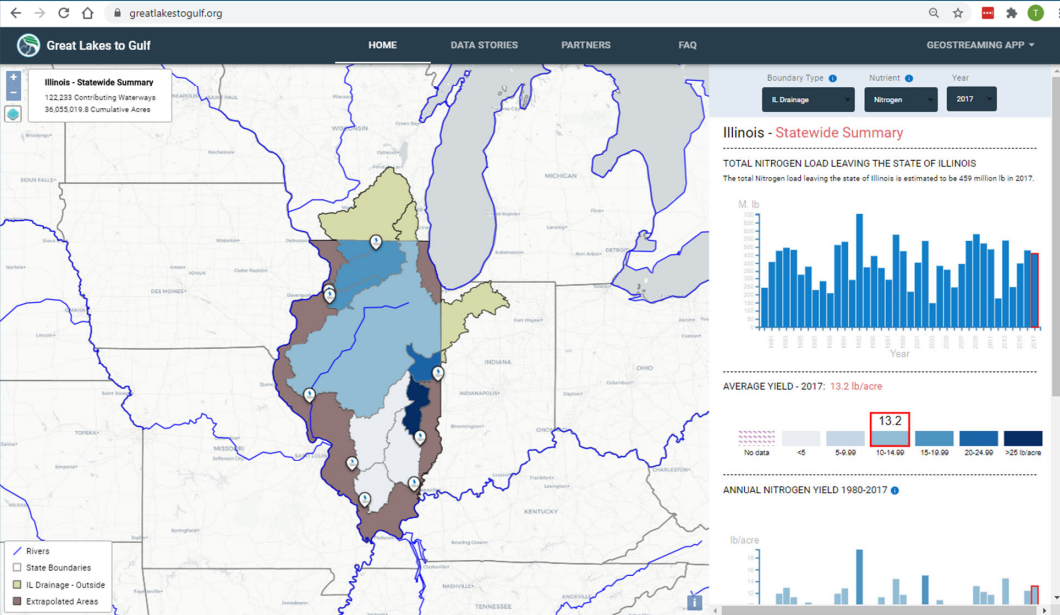
Collaboration with IL – NLRs as an example

- Collaborating with IEPA in support of Illinois Nutrient Loss Reduction Strategy
- Geospatial data support for analyses on N/P changes over time

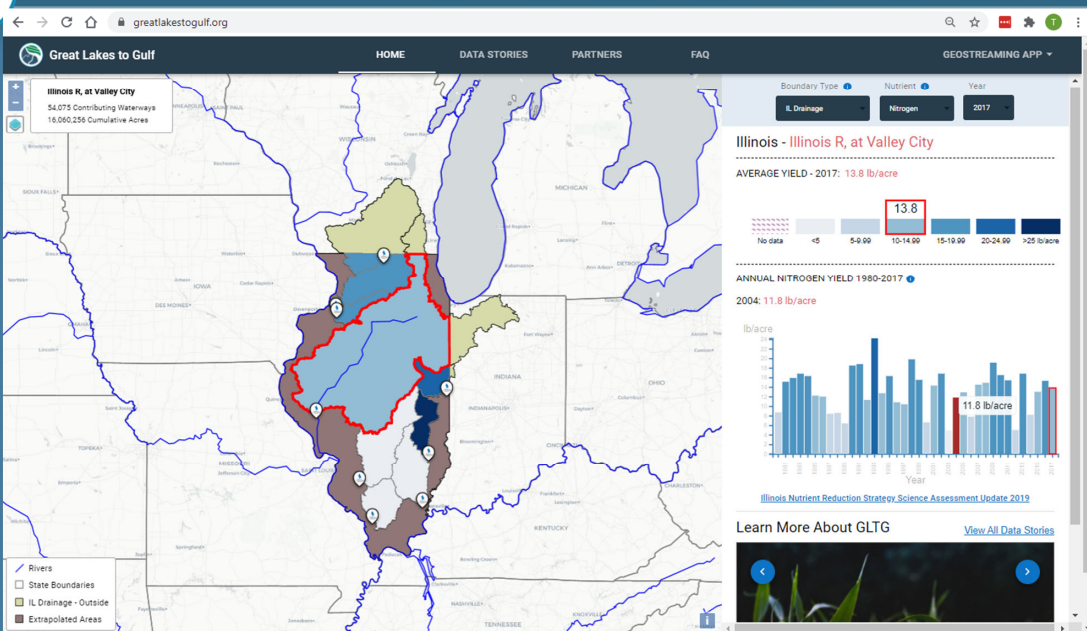




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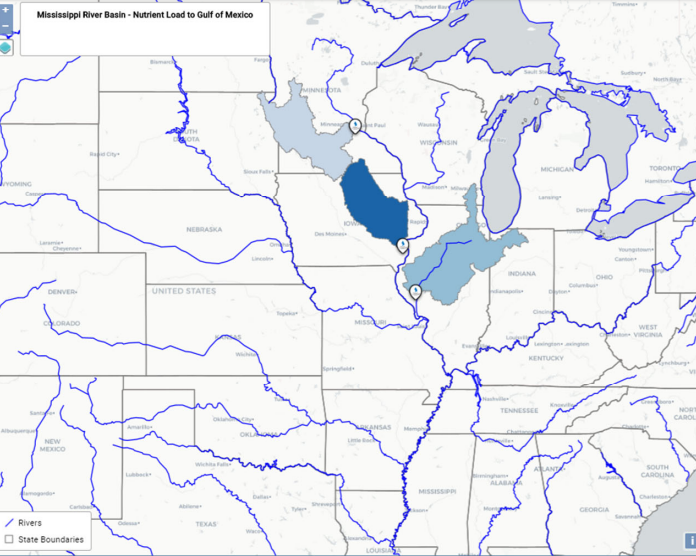
HOME

DATA STORIES

PARTNERS

FAQ

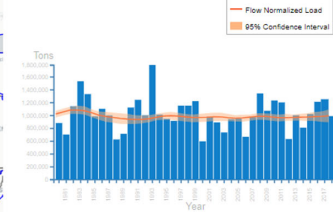
GEOSTREAMING APP



Boundary Type: Trend Watersheds
Nutrient: Nitrogen
Year (N/A)

Mississippi River Basin - Nutrient Load to Gulf of Mexico

ANNUAL NITRATE LOAD



Learn More About GLTG

[View All Data Stories](#)



Illinois Nutrient-Loss Reduction Strategy



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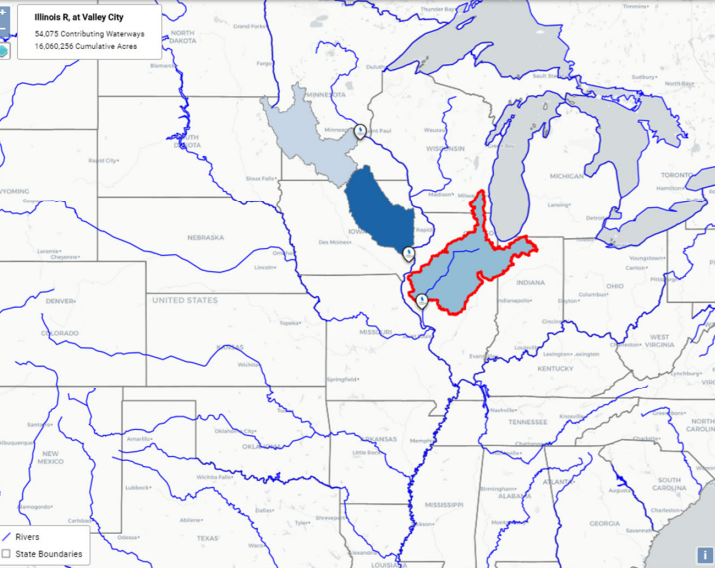
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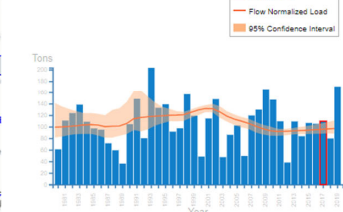


Illinois R, at Valley City
54,075 Contributing Watersheds
16,060,256 Cumulative Acres

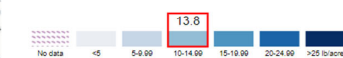
Boundary Type: Trend Watersheds
Nutrient: Nitrogen
Year: 2017

Mississippi River Basin - Illinois R, at Valley City

ANNUAL NITRATE LOAD



AVERAGE YIELD - 2017: 13.8 lb/acre



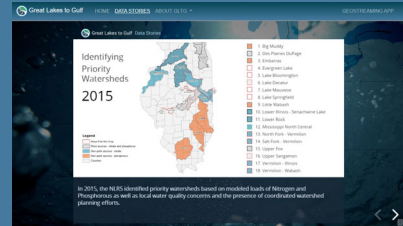
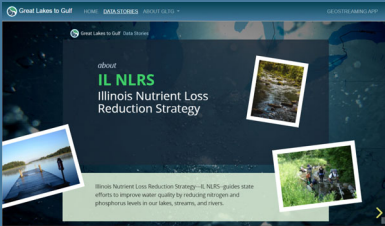
ANNUAL NITROGEN YIELD 1980-2017





Narrative / Storyboard

- Capability to develop and house short presentations that explain what is seen in trends



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Illinois Nutrient-Loss Reduction Strategy

Nutrient Pollution

Nutrient pollution comes from various sources in the Mississippi River Watershed and makes its way to the Gulf of Mexico where it creates the conditions that lead to a zone of decreased oxygen called hypoxia or a "dead zone."

Geosashboard v3.1.0



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Evaluating Nitrogen and Phosphorus Loads in Mississippi

These Sentinel Sites were chosen because they have the characteristic of measuring upstream watersheds mostly contained within a single state. The data from these sites, when analyzed in the same way, allow for comparison of each state's nutrient reduction efforts.

Geospatial v.3.1.0



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Thanks to all our collaborators and funders

