

Using Web GIS in Science Teacher Education

Alec Bodzin and Denise Bressler



DR K-12
Award
1118677



Environmental Literacy and Inquiry Group

<http://www.ei.lehigh.edu/eli>

Alec Bodzin - Science and Environmental Education, Instructional Design

David Anastasio – Earth and Environmental Science

Dork Sahagian - Earth and Environmental Science

Lori Cirruci – Lead classroom science teacher

Allison Teletzke - GIS; Earth and Environmental Science

Jill Burrows - GIS; Earth and Environmental Science

Denise Bressler – Science Education

Scott Rutzmoyer – Web GIS

Violet Kulo – Instructional Design and Web Development

Laura Turner – Web Development

Farah Valleria– Data management

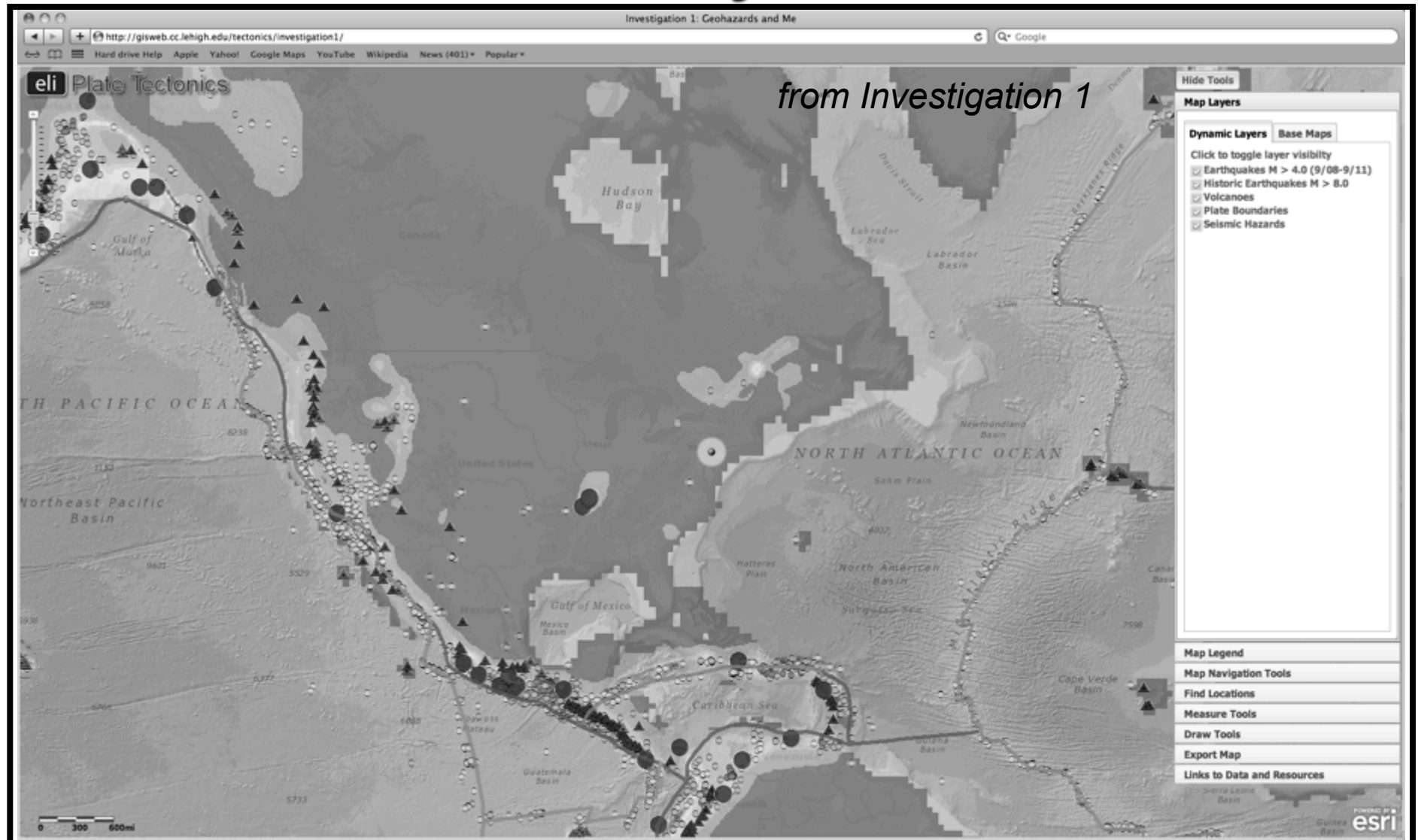
Middle school science teachers



Web GIS

- **Geographical Information System that includes data (information) and maps with a computer interface tied together to create a visualization tool.**
- **Representing, questioning, and analyzing geo-referenced and other data.**
- **Visualizations and tool features designed to enable geospatial thinking.**
- **Javascript Web GIS – platform independent (i.e. tablets, laptops, cellphones)**

Where's the nearest hazard to my location?



Where's the nearest hazard to my location?

Custom GIS For Each Investigation

from Investigation 5

Volcano Type

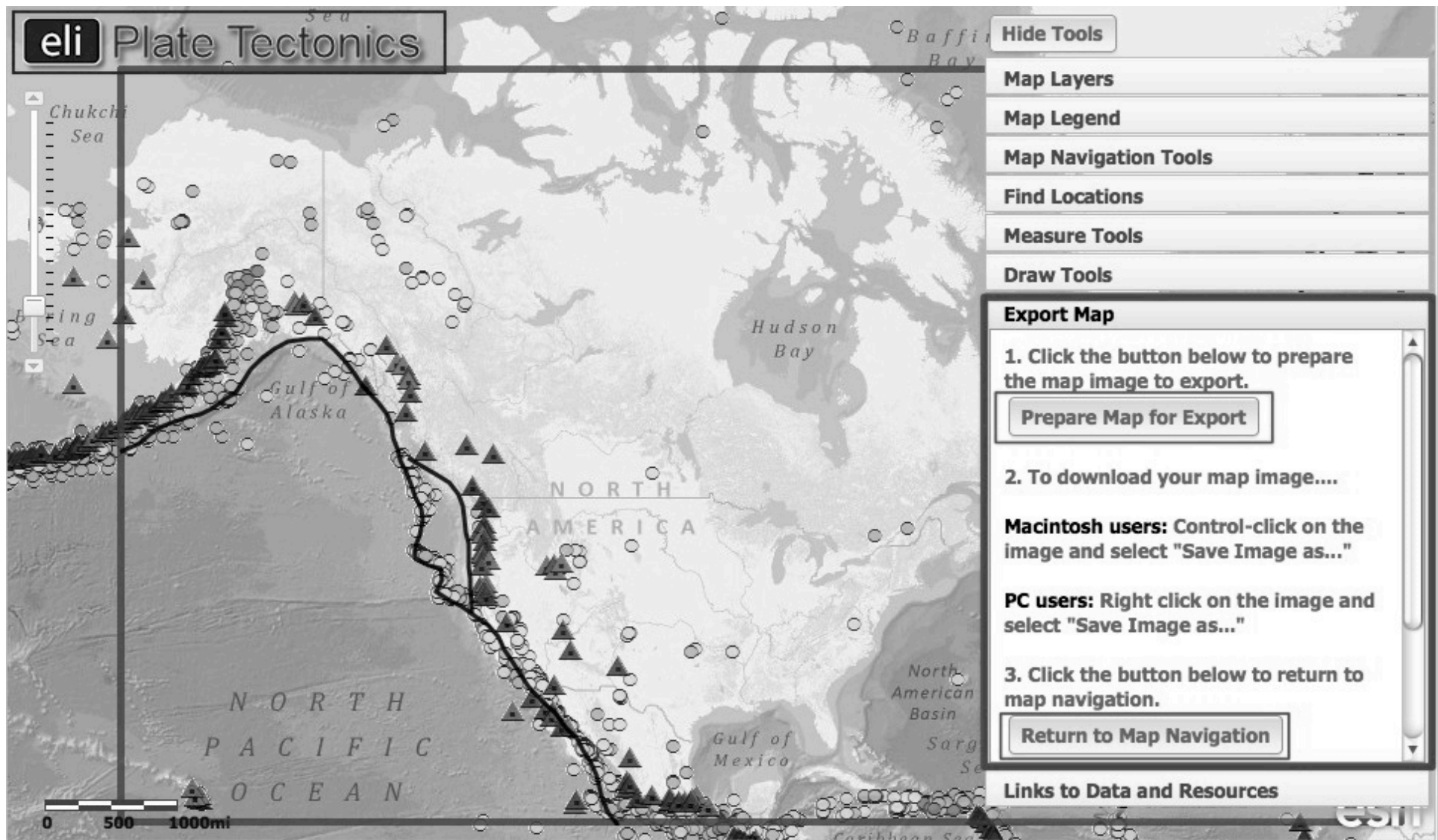
Earthquake Query

The screenshot displays a web-based GIS application titled "Investigation 1: Geohazards and Me". The main map area shows a geographical region with various hazard markers. Overlaid on the map are several interactive panels:

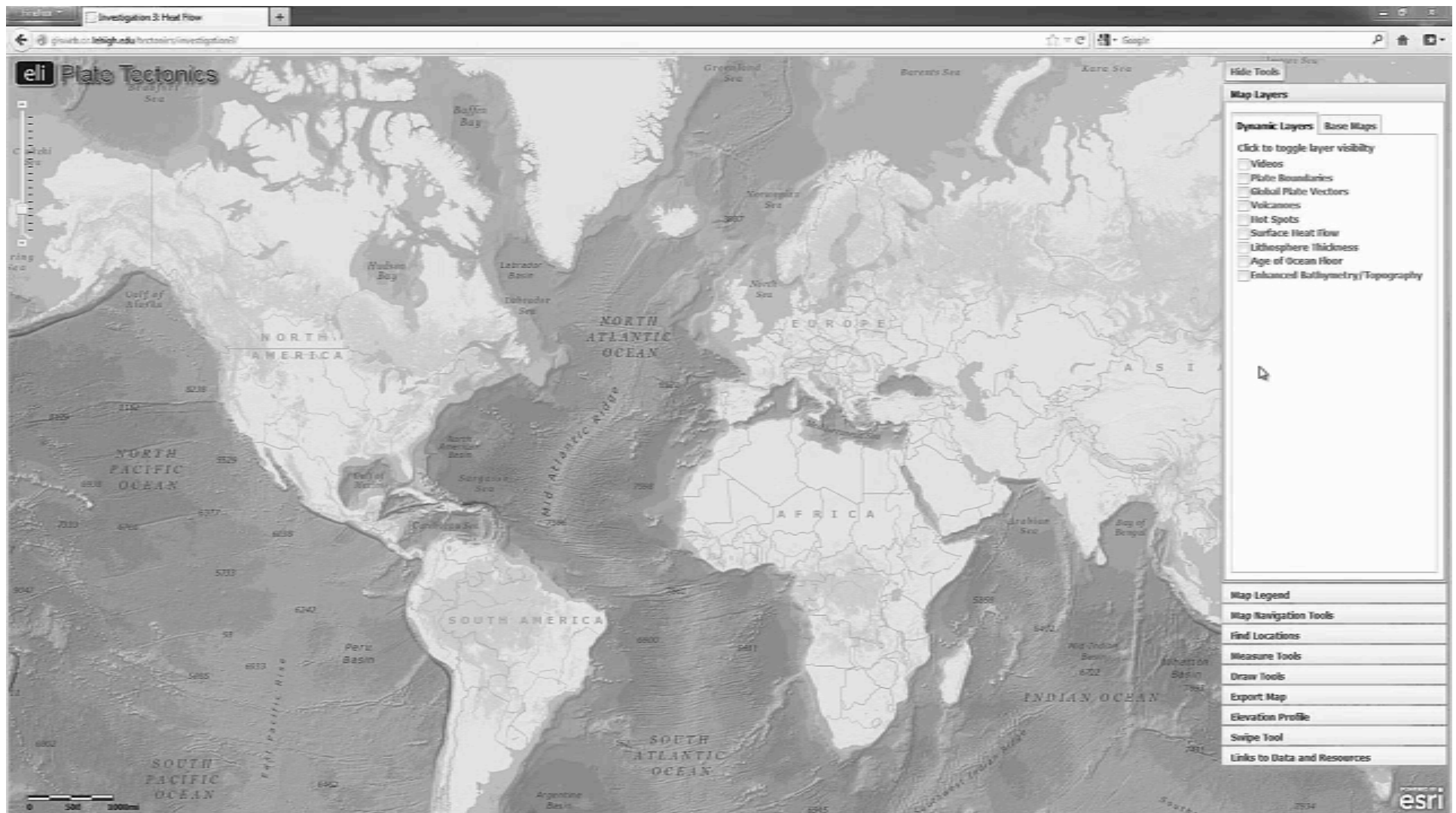
- Map Legend:** Located in the top right, it defines symbols for Plate Boundaries (Convergent, Divergent, Transform), Historic Earthquakes (M > 8.0), Volcanoes (Cinder Cone, Composite, Shield), Earthquakes (M > 4.0 with focal depth filters), and Seismic Hazards (1-9 risk levels).
- Map Layers:** A panel on the left with "Dynamic Layers" and "Base Maps" tabs. It includes a "Click to toggle layer visibility" section with checkboxes for Plate Motion Videos, Earthquake Images, Plate Boundaries, Volcanoes, Earthquakes M > 4.0 (9/08-9/11), Historic San Andreas Earthquakes, San Andreas Area Faults, GPS Plate Vectors, Charlie-Gibbs Fracture Zone, USA Population Density, Seismic Hazards, Age of Ocean Floor, and Enhanced Bathymetry/Topography.
- Measure Tools:** A central panel titled "Measure Tools" with the instruction "Use the tools below to calculate areas, measure distances, or mark locations on the map." It includes icons for area, distance, and point tools, and a "Measurement Result" section.
- Links to Data and Resources:** A panel at the bottom center listing external resources: Environmental Literacy and Inquiry, Esri Data and Maps, NOAA Historic Earthquakes, USGS Recent Earthquakes, Smithsonian Volcanoes, GSHAP Geologic Hazards, and UNAVCO Plate Vectors.
- Earthquake Query:** A panel on the right titled "Query Earthquakes" with instructions to filter by depth and primary fault type. It includes dropdown menus for "Select Earthquake Depth:" (All Depths) and "Select Primary Fault Type:" (Contractional), along with "View Results" and "Clear" buttons.
- Map Navigation Tools:** A vertical toolbar on the far right containing buttons for "Find Locations", "Measure Tools", "Draw Tools", "Export Map", and "Links to Data and Resources".

The application is powered by ESRI, as indicated by the logo in the bottom right corner.

How do we recognize plate boundaries?



How does thermal energy move around in the Earth?



OneGeology

<http://www.onegeology.org/>

ONE *Geology* Making Geological Map Data for the Earth Accessible Automatically display layers depending on scale and location ☒ **OneGeology Portal**

Active Layers Properties

none

Service title : AZGS USGIN Geology

Abstract : This layer provides a... are categorized according to geologic age of the United States geologic time scale. For geologic histories, the representative, interpretive, and typical age is used in this portal. The symbolization for this layer is available at <http://repository.azgs.gov/GeologicAge/UGS200>

Owner : Unknown

Visibility : 1/400000000 < Scale <

Contact : Steve Richard
Arizona Geological Survey
416 W. Congress St, Ste. 100
85701 Tucson
United States of America
metadata@usgin.org

Legend Metadata URL Service URL

Legend

USA USGIN 1:3M Geologic Age

representativeAge_uri

- Holocene
- Quaternary
- Cenozoic
- Phanerozoic
- Upper Pleistocene
- Pleistocene
- Ionian
- Calabrian
- Pliocene
- Neogene
- Messinian
- Miocene
- Oligocene
- Palaeogene
- Priabonian
- Eocene
- Lutetian
- Ypresian
- Paleocene
- Upper Cretaceous
- Cretaceous
- Lower Cretaceous

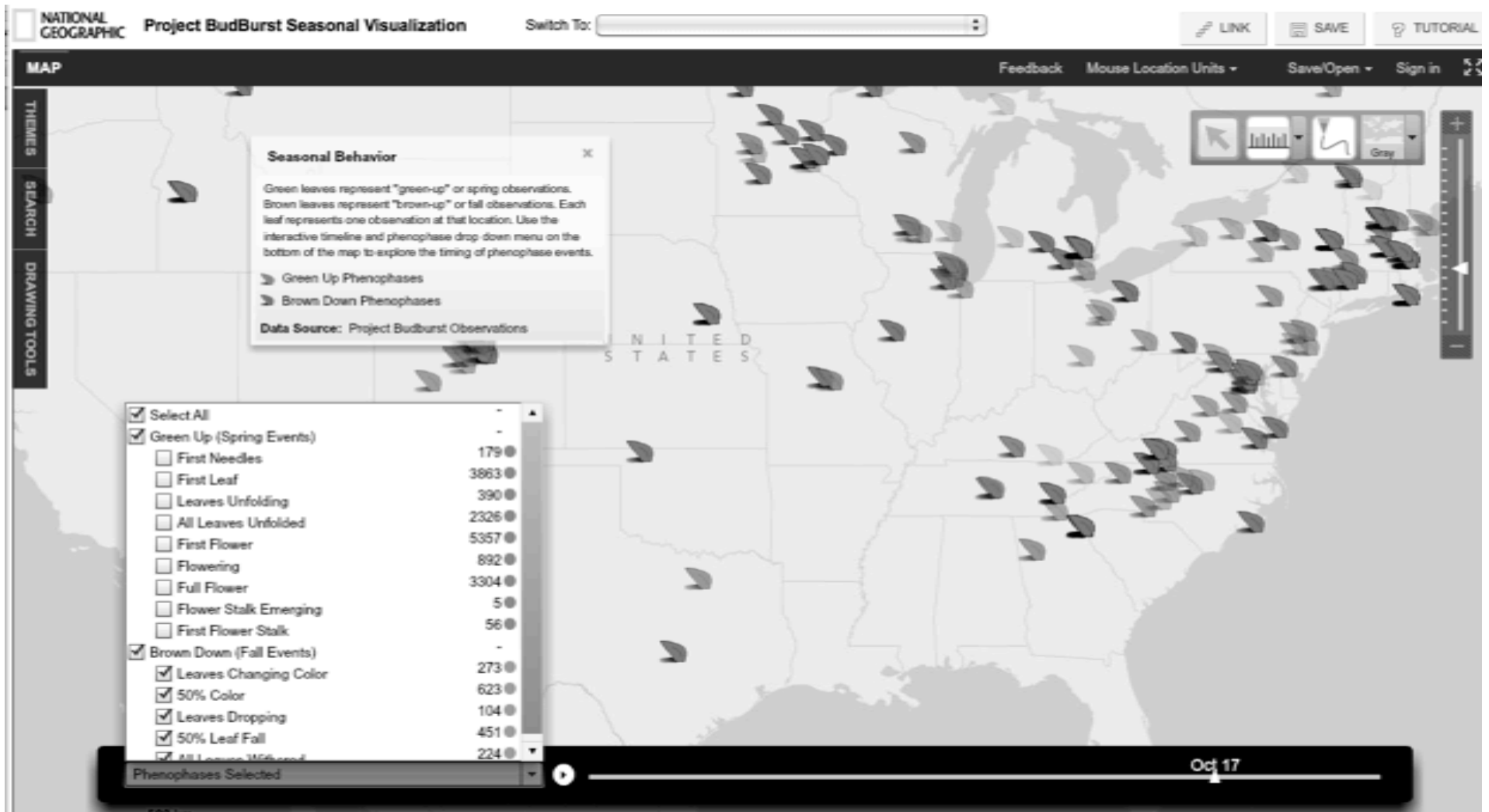
North America U

1:1600 km

X: -142.60 Y: 6.82

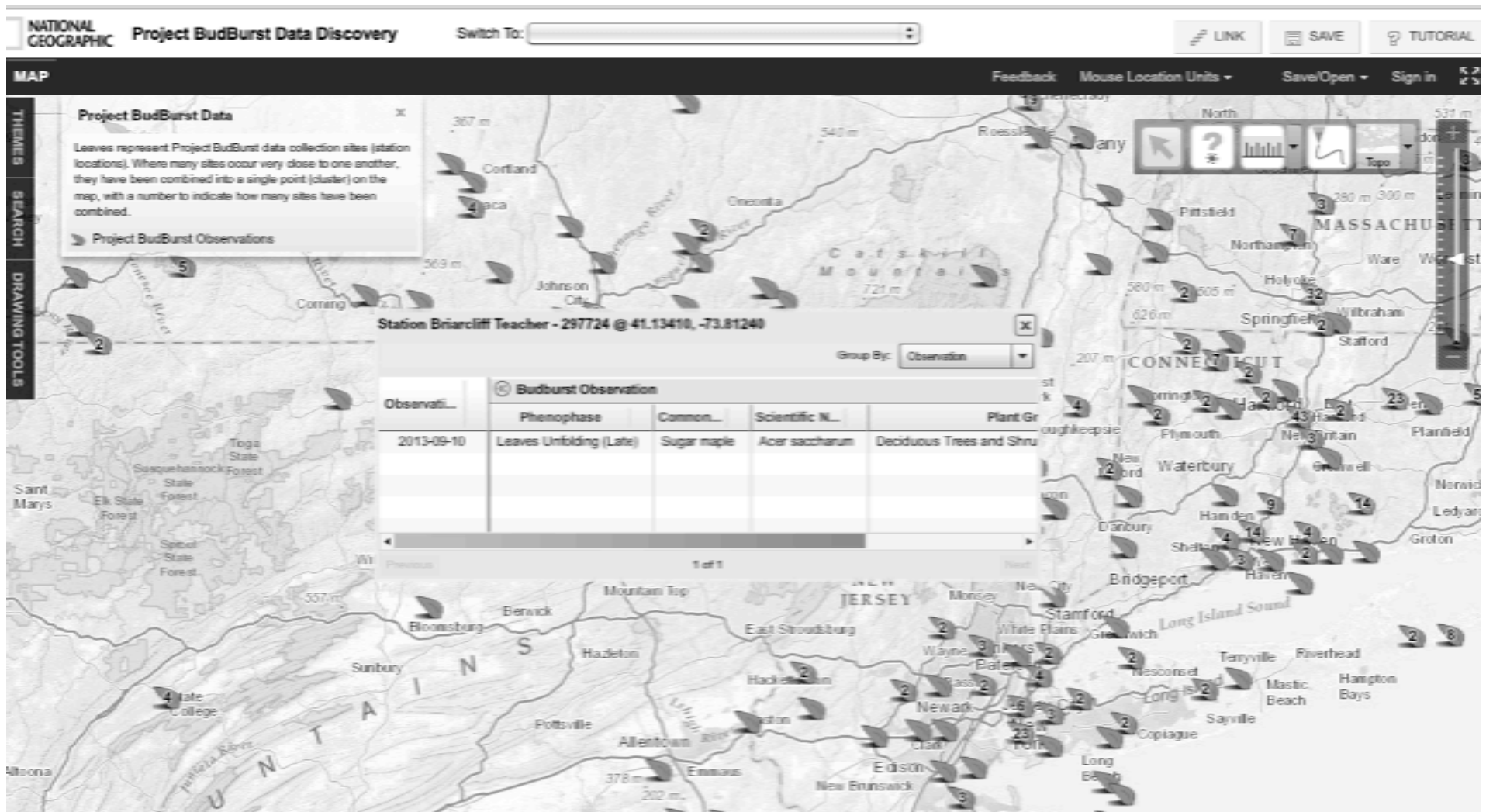
Project Budburst (Fieldscope)

<http://budburst.fieldscope.org/>



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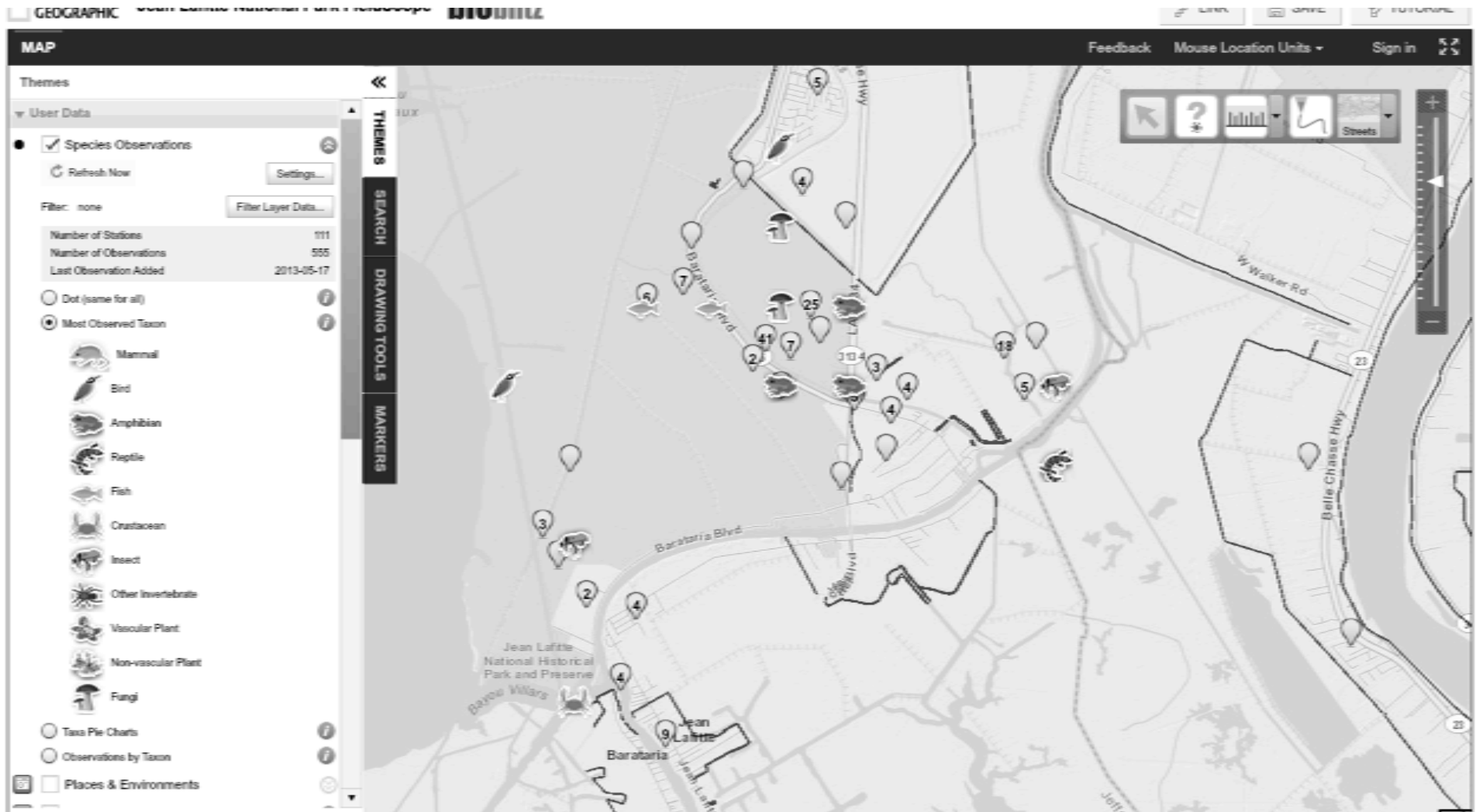
Jean Lafitte Biolblitz

<http://lafitte.fieldscope.org/>

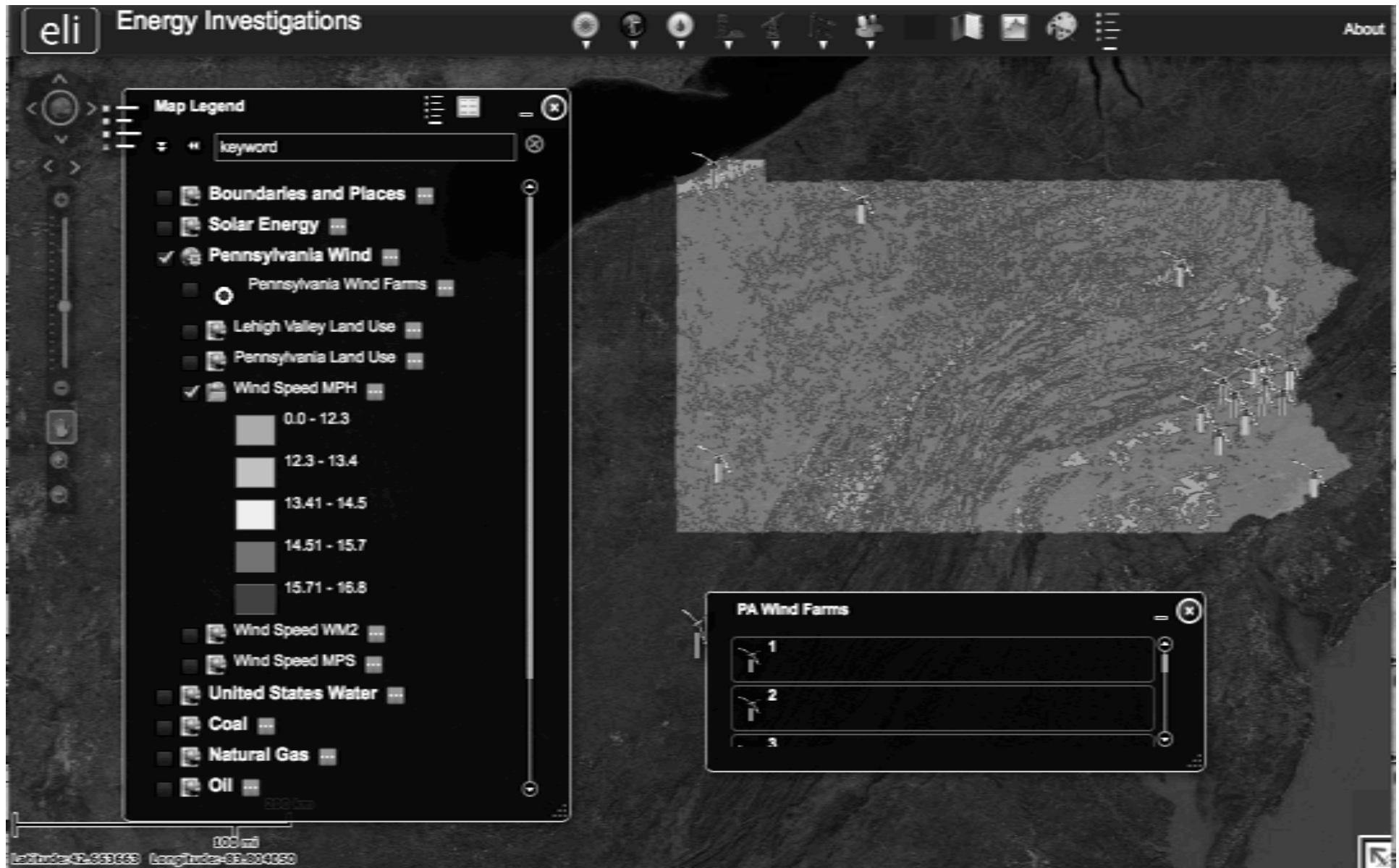


Jean Lafitte Biolblitz

<http://lafitte.fieldscope.org/>



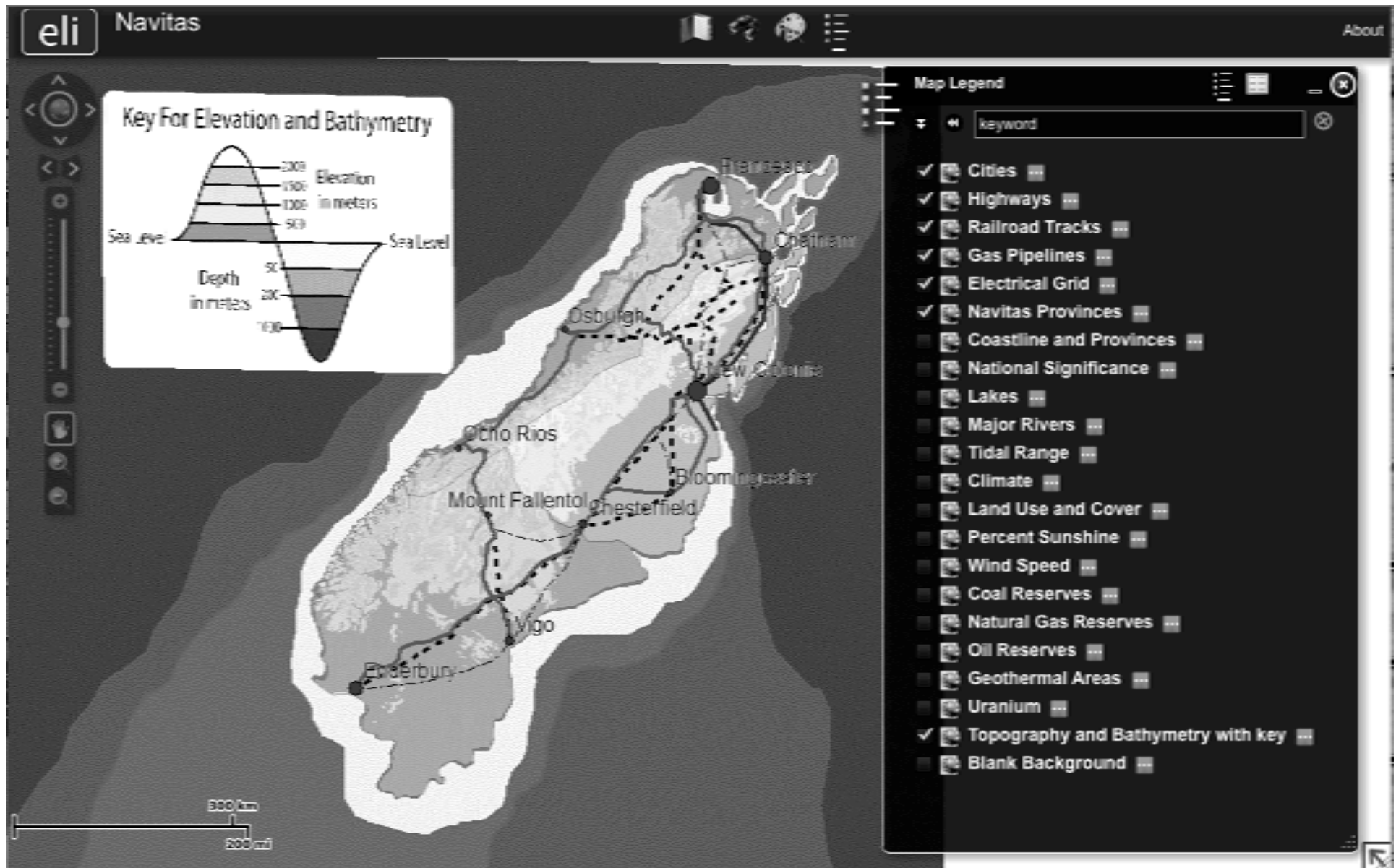
Where is the best place to locate a new wind farm?



<http://gisweb.cc.lehigh.edu/energy/>

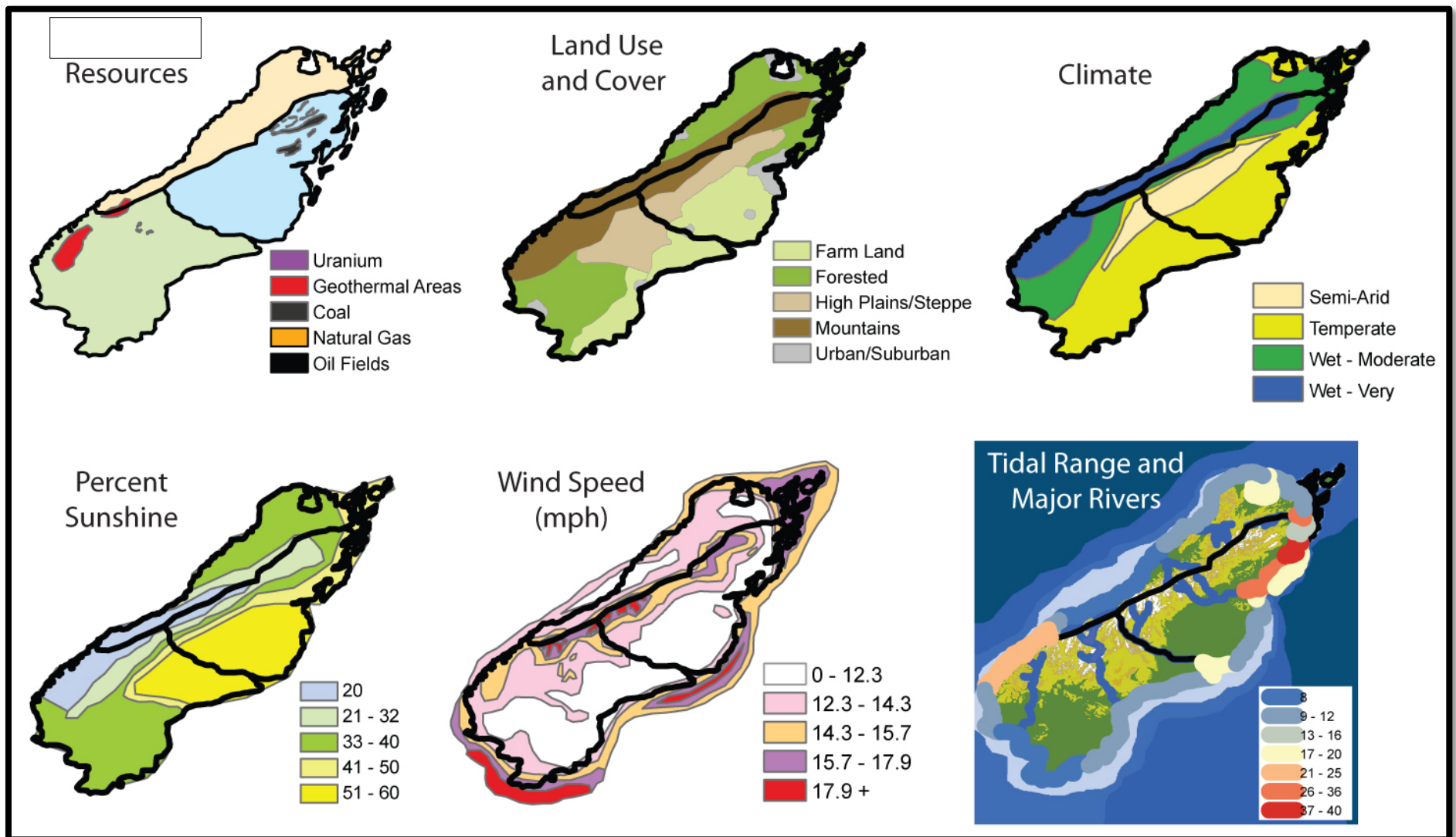
ArcGIS viewer for Flex

Energy Culminating Investigation: Island of Navitas



<http://gisweb.cc.lehigh.edu/navitas/>

ArcGIS viewer for Flex



Questions or Comments?

Featured Web sites

Environmental Literacy and Inquiry

<http://www.ei.lehigh.edu/eli>

FieldScope

**[http://education.nationalgeographic.com/education/program/
fieldscope](http://education.nationalgeographic.com/education/program/fieldscope)**

OneGeology

www.onegeology.org