The System User Manual

The URL is: http://131.193.40.52/diseasemap.html

The user interface facilitates mapping of four major types of entities: disease outbreaks, ports, ships, and aggregate ship traffic.

Disease Outbreaks

Clicking the "Get Outbreaks" button will map all detected disease outbreaks within the date window specified.

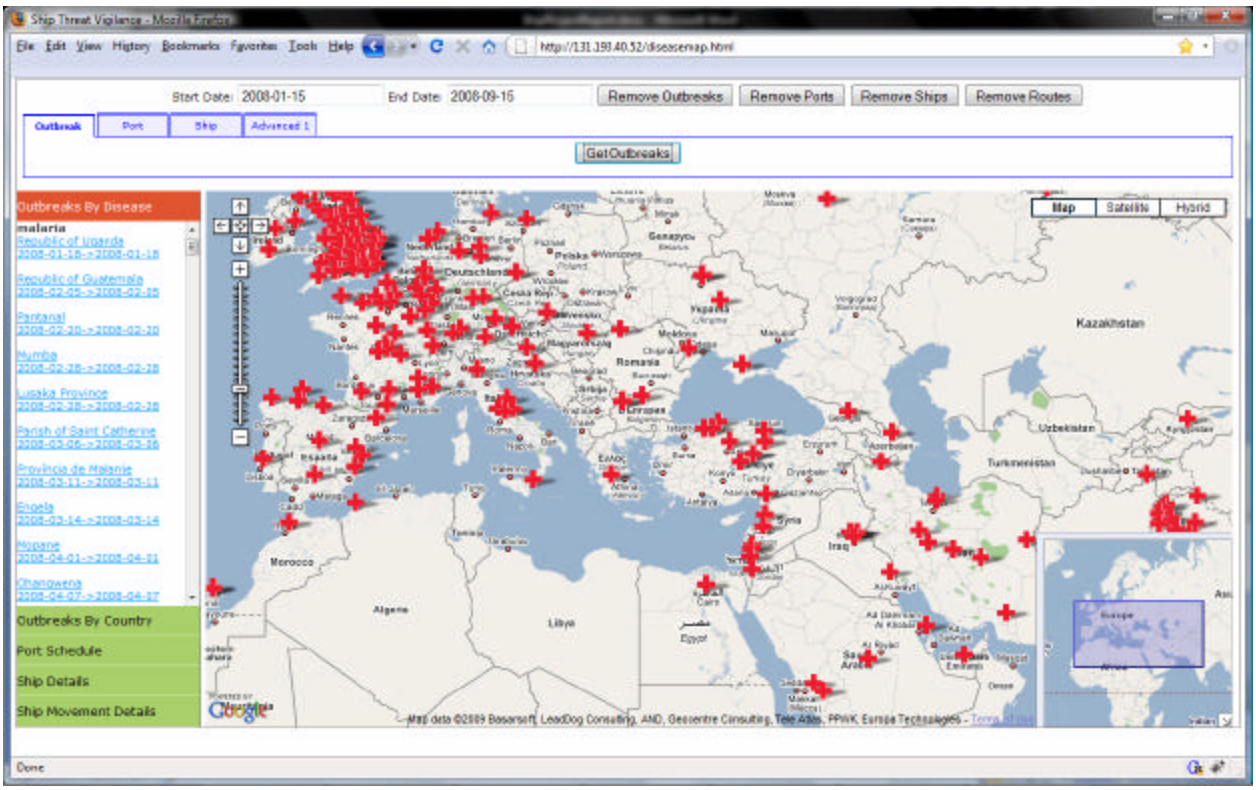


Figure 1. Mapped disease outbreaks.

Users can click each plotted point to view details about the outbreak including disease type, date, location, and a link to the news report. Alternate views of the outbreaks are provided in the left navigation, where users may view outbreaks grouped by disease type or by country.

Mapped outbreaks can be removed by clicking the "Remove Outbreaks" button at the top of the page.

Ports

Using the two buttons displayed under the Port tab, users can plot all ports in the system or all ports with associated schedule data.

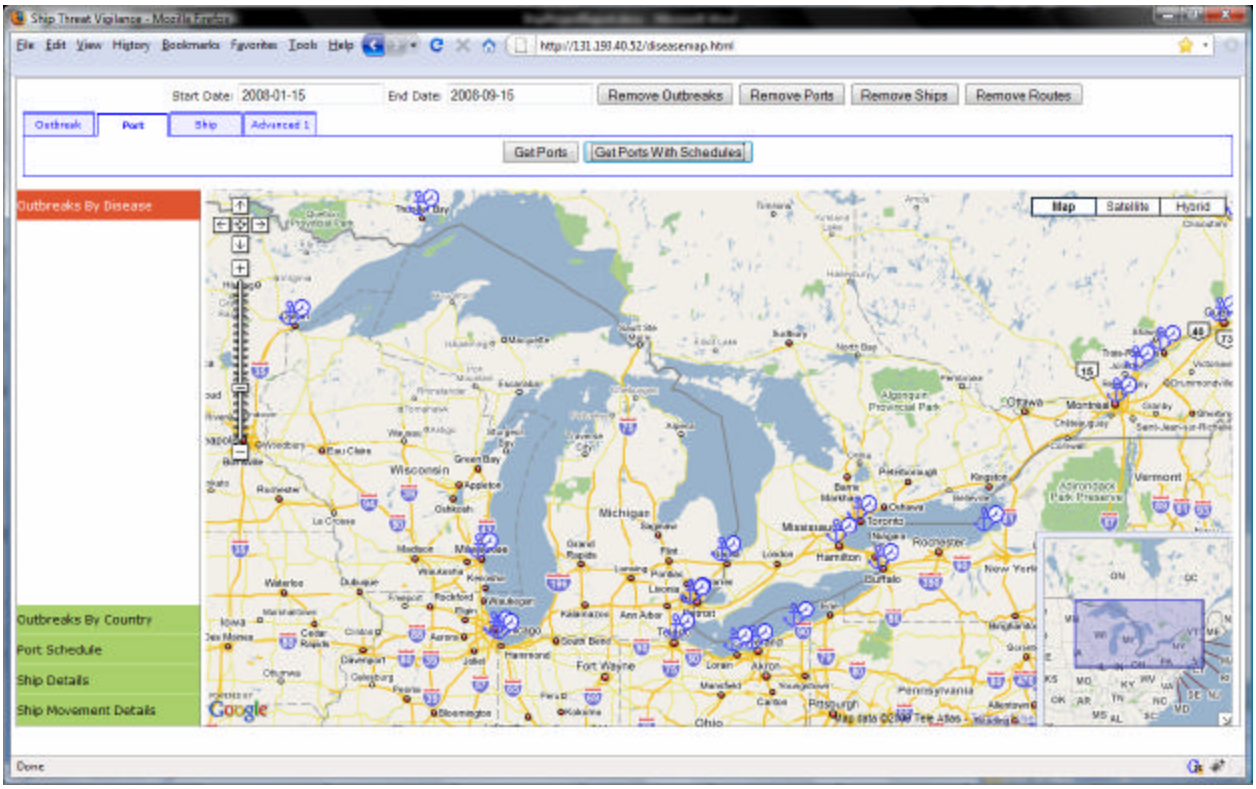


Figure 2. Plotted ports with schedules.

Clicking a port icon will display the name, ID, and location of the selected port. If the port has a webpage, a link will also be shown. The displayed balloon will also include a "Get Schedule" link which will populate the "Port Schedule" portion of the left sidebar with all ships scheduled to dock at the selected port at some point within the defined date window. Users are given the option to plot the route of each ship scheduled to dock at the port, which will include all past and future scheduled docking points for the ship along with detected ship movements.

Ports can be removed from the map by clicking the "Remove Ports" button at the top of the screen.

Ships

The "Ship" tab offers several ways to search and display ships on the map. Individual ships can be located either by call sign or ship name. Typing the first few characters of a call sign or ship name will produce an auto-suggest list of possible ship matches, aiding in search ease and accuracy. After selecting a ship and clicking the "Search" button, all observed ship movements within the given date range will be plotted on the map. The date of each point can be viewed by clicking a location marker. In addition, the list of all locations in the date range can be viewed under the "Ship Movement Details" section of the left sidebar. Clicking "Follow Ship" in this panel will automatically trace through each data point at an interval of one second per point.

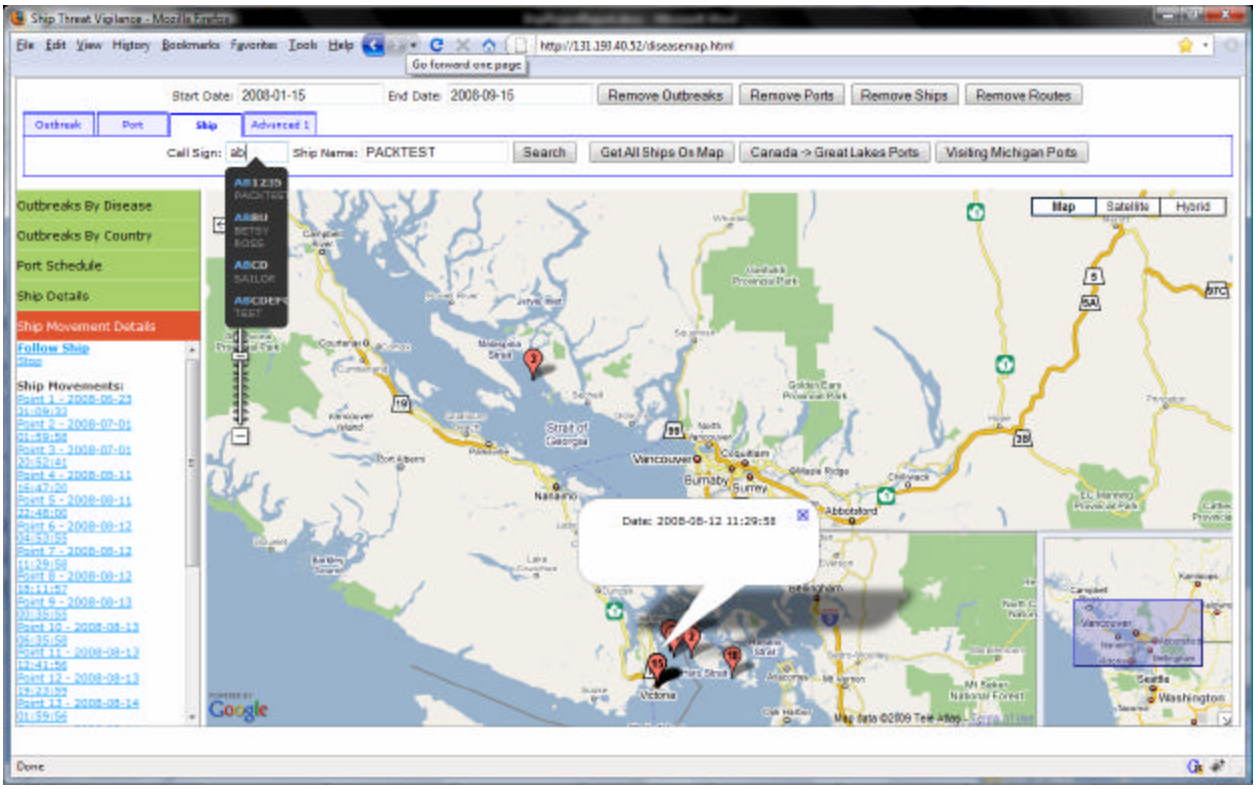


Figure 3. Ship search and route mapping.

"Get All Ships On Map" will plot all ships traveling within the bounds of the displayed map window for the specified date range. In cases where the ship appeared multiple times in that location and time window, the most recent point will be plotted. Clicking a ship marker displays the ship call sign, name, and a link to plot the overall route for the ship within the designated date range.

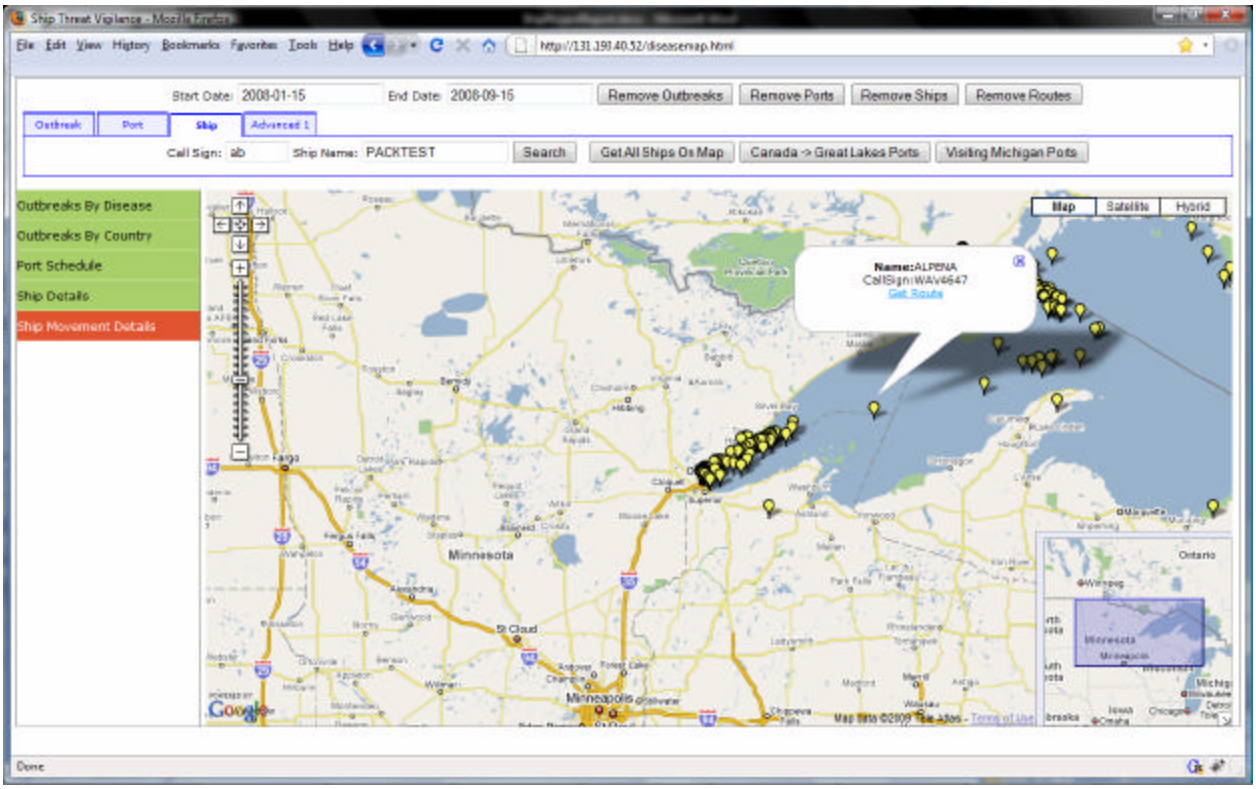


Figure 4. Plotting multiple ships.

Two other buttons are provided for displaying specific sets of ships. The "Canada → Great Lakes Ports" plots all ships that were scheduled to dock in a Canadian port prior to a Great Lakes port. The "Visiting Michigan Ports" displays all ships scheduled to dock in a Michigan port. Ships are marked at their most recently observed point.

Advanced Search

The "Advanced 1" tab provides a mechanism for viewing all ships visiting specific Great Lakes ports along with the traffic of these ships within a specified timeframe prior to visiting the selected port. "Visiting" a port can be defined either by proximity to the port (1, 3, or 5 miles) or by a scheduled docking at the port. Selecting a port from the "select a port" drop-down list will plot the most recent proximate (or docked) points for all ships visiting the selected port. It will also populate a second drop-down list with the names of all retrieved ships. Selecting one of these ships from the drop-down list will plot the observed route of the ship.

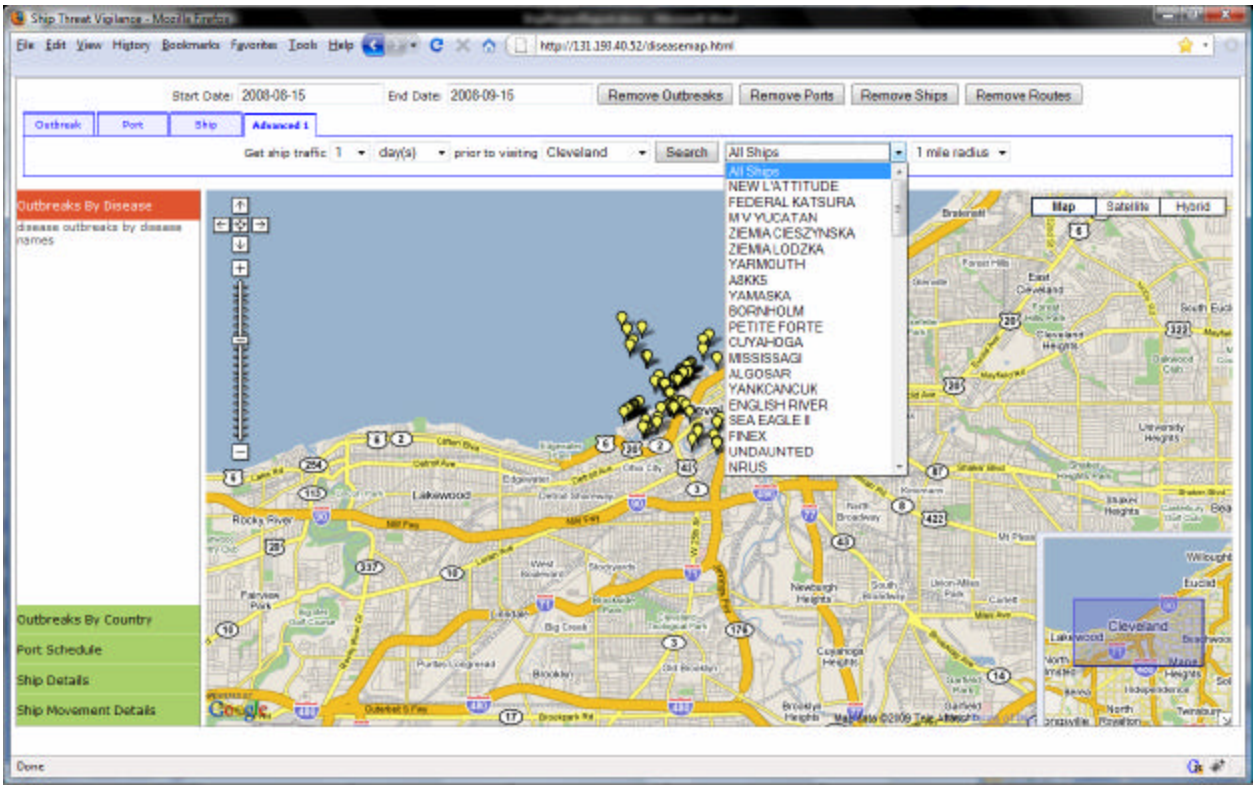


Figure 5. Ships traveling within 1 mile of the port of Cleveland.

Once a port has been selected, prior traffic can be plotted by selecting a timeframe (1-12 days, weeks, or months) and clicking the "Search" button. Observed points are also restricted by the selected start and end dates at the top of the screen.

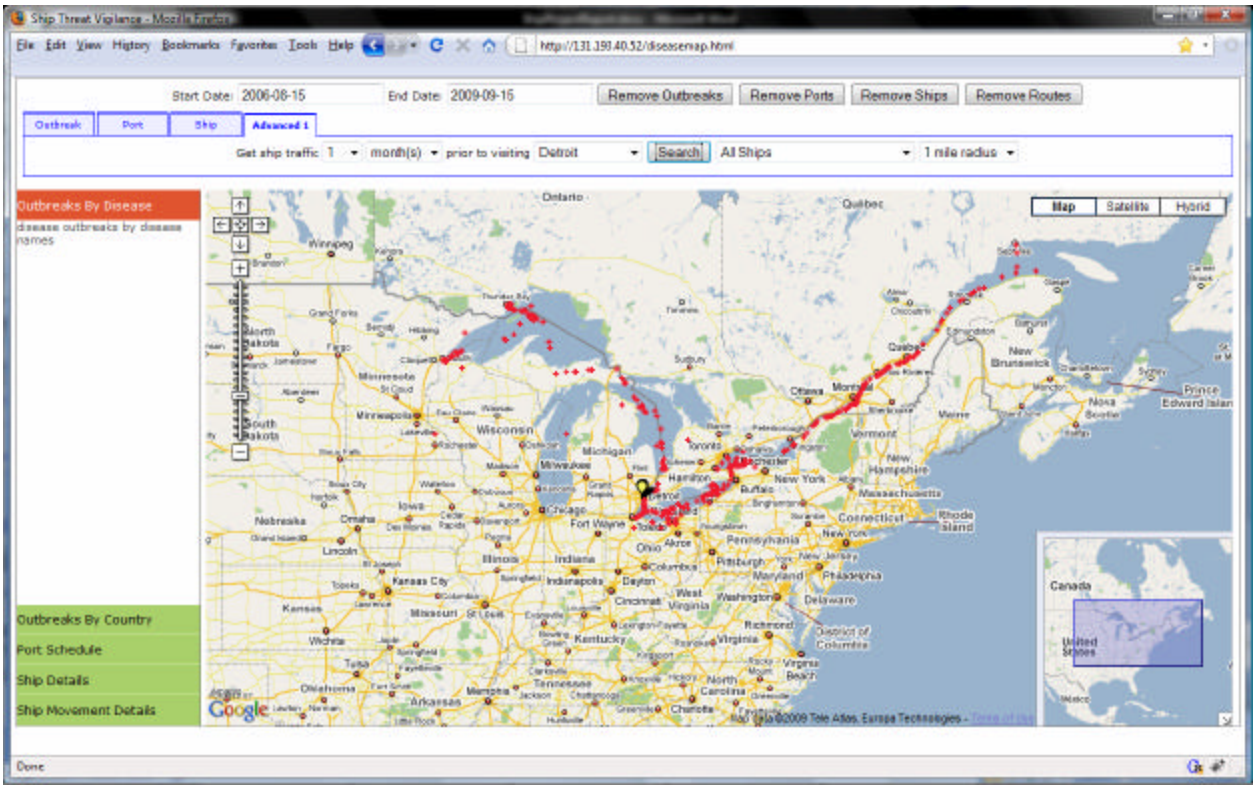


Figure 6. Ship traffic prior to visiting the port of Detroit.

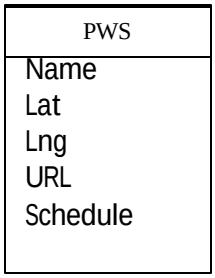
Database Schemas for Tables

Port Schema Design

Ports with schedule

Field	Type	Null	Key	Default	Extra
lat	float	YES		NULL	
lng	float	YES		NULL	
name	varchar(100)	YES		NULL	
url	varchar(500)	YES		NULL	
schedule	varchar(500)	YES		NULL	

Class Diagram

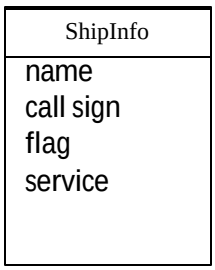


Ship Info Schema Design

shipinfo

Field	Type	Null	Key	Default	Extra
name	varchar(100)	YES		NULL	
call sign	varchar(100)	YES		NULL	
flag	varchar(100)	YES		NULL	
service	varchar(100)	YES		NULL	

Class Diagram

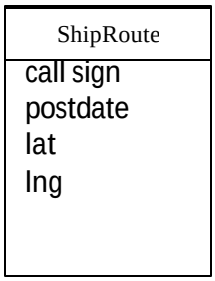


Ship Route Schema Design

shiproute

Field	Type	Null	Key	Default	Extra
call sign	varchar(100)	NO	PRI		
postdate	datetime	NO	PRI	0000-00-00 00:00:00	
lat	float	YES		NULL	
lng	float	YES		NULL	

Class Diagram



Schedule Schema Design

shipsinport

Field	Type	Null	Key	Default	Extra
portname	varchar(100)	YES		NULL	
shipname	varchar(100)	YES		NULL	
call sign	varchar(100)	YES		NULL	

Class Diagram

Overall Database Design