

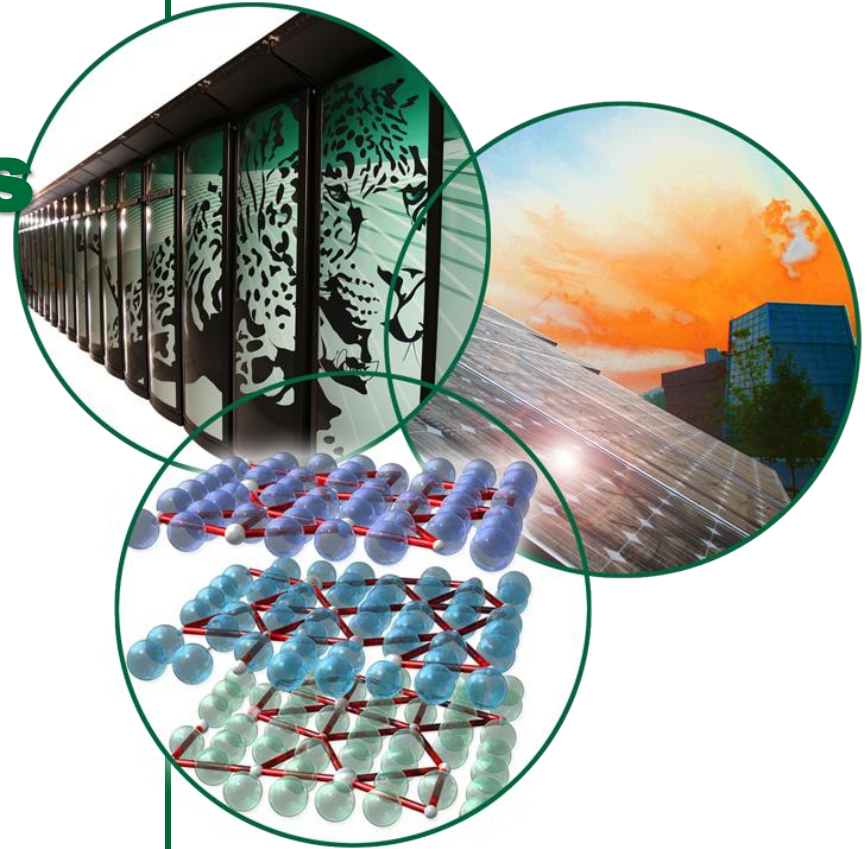
A Geospatial Tool for Assessing the Importance of Marine Waterways

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Moraes Oliveira-Neto, PhD

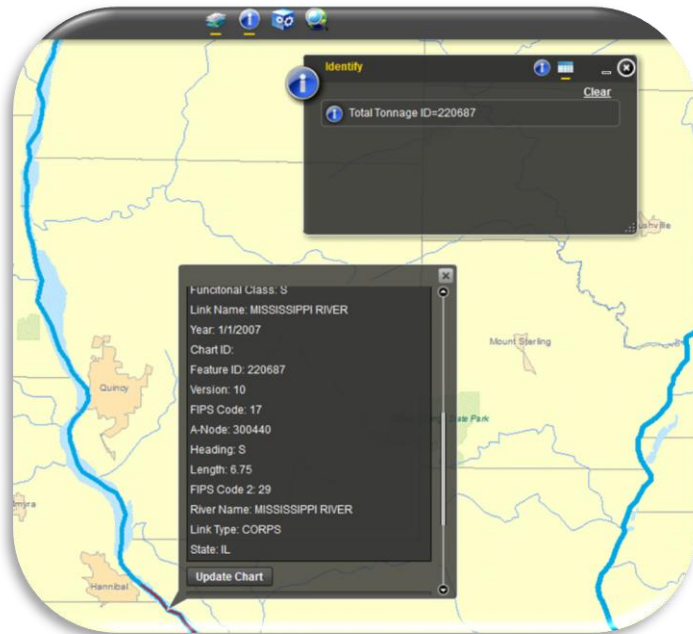
*Center for Transportation Analysis
Oak Ridge National Laboratory*



Freight Visualization Tool

- Made use of FAF data, Freight Performance Measure data, and other data; can be expanded to include other data layers as desired
- Demonstrated analytical functions using FAF data
- Users select map layers and data sets that most meet their needs
- Utilized various GIS interface designs for ease of operations
- Demonstration prototype development stage

Example of Tools

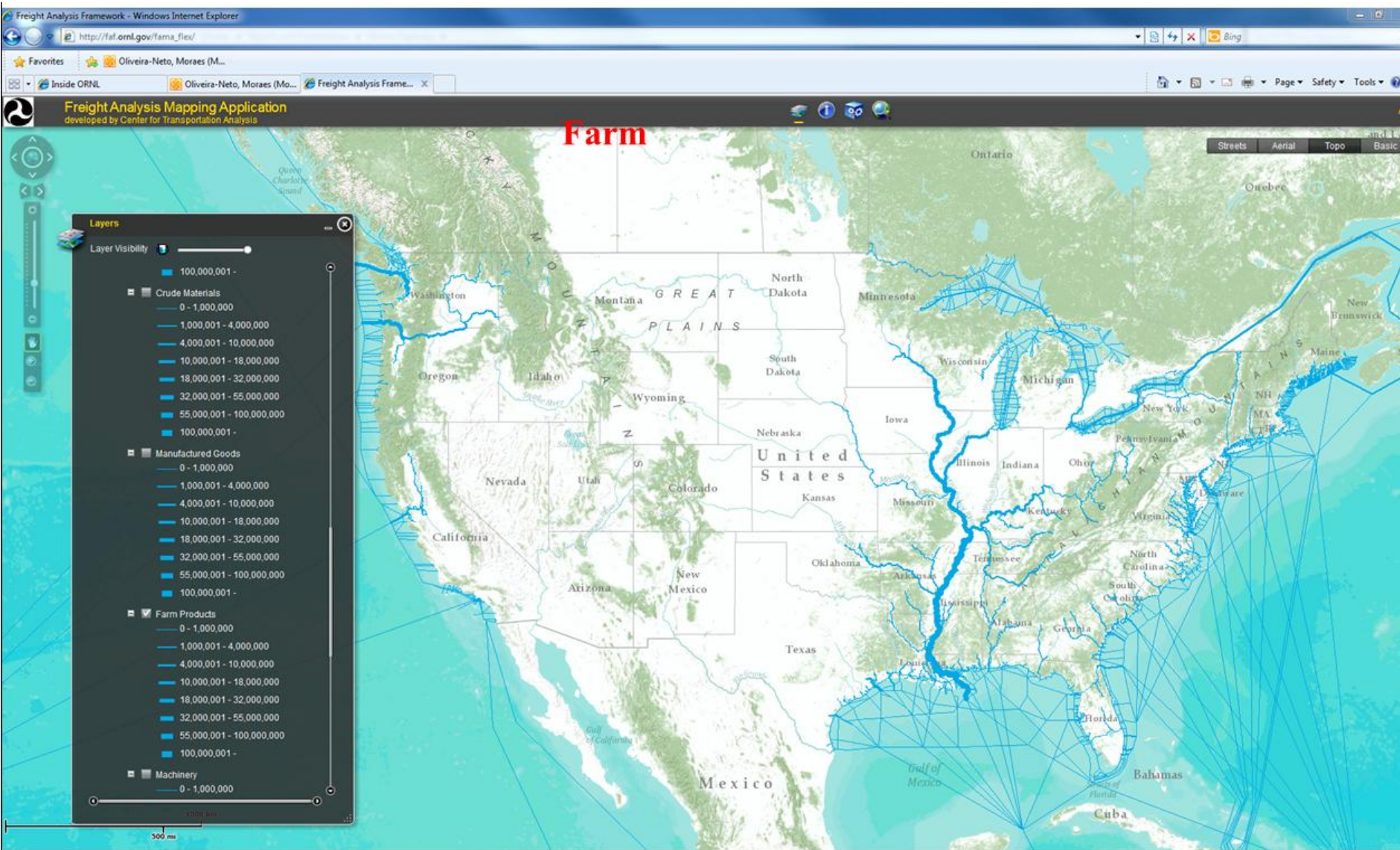


**Identification:
Attribute for a user-
selected feature**

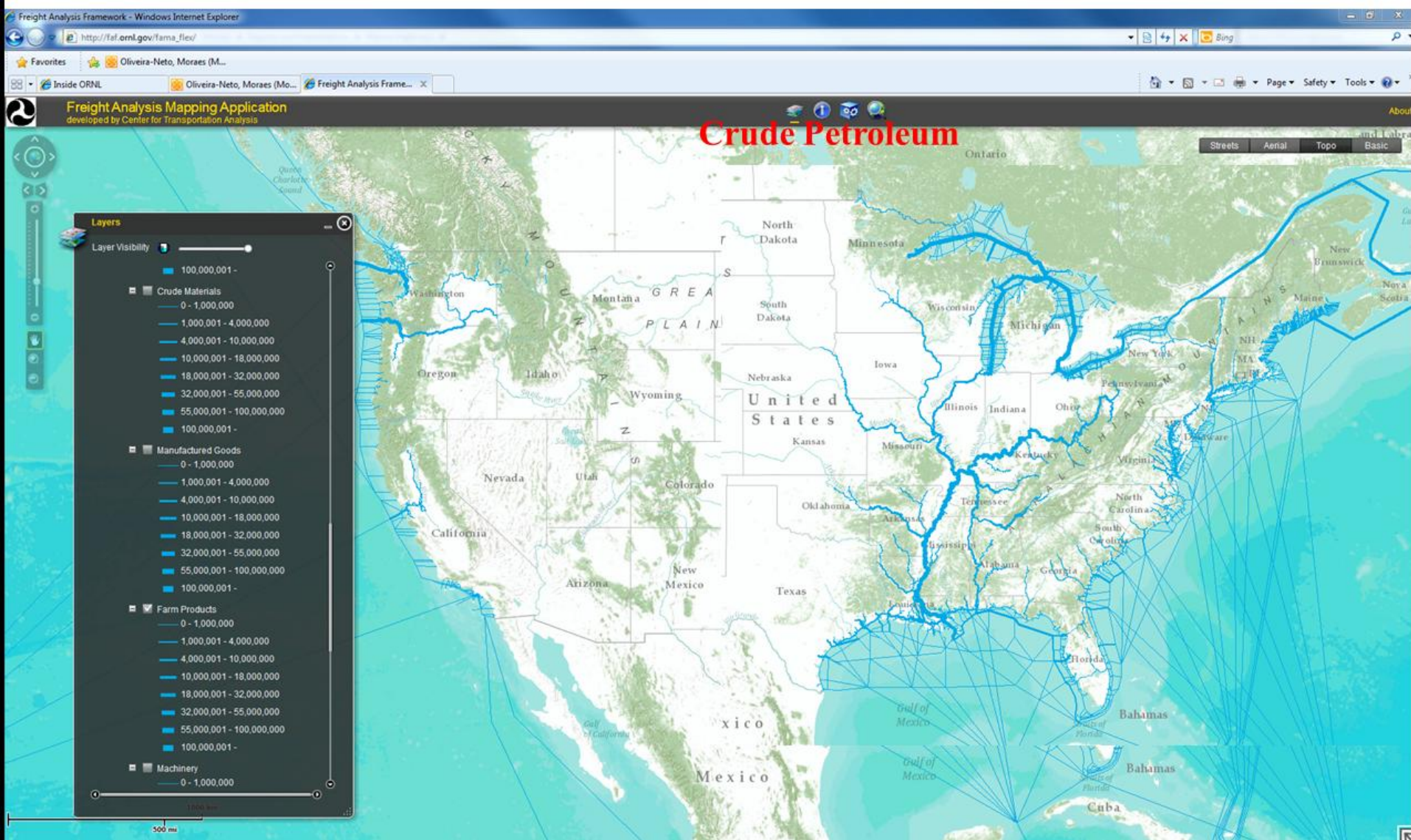
**Visual Comparison:
Truck flows for 2007 thru 2040**



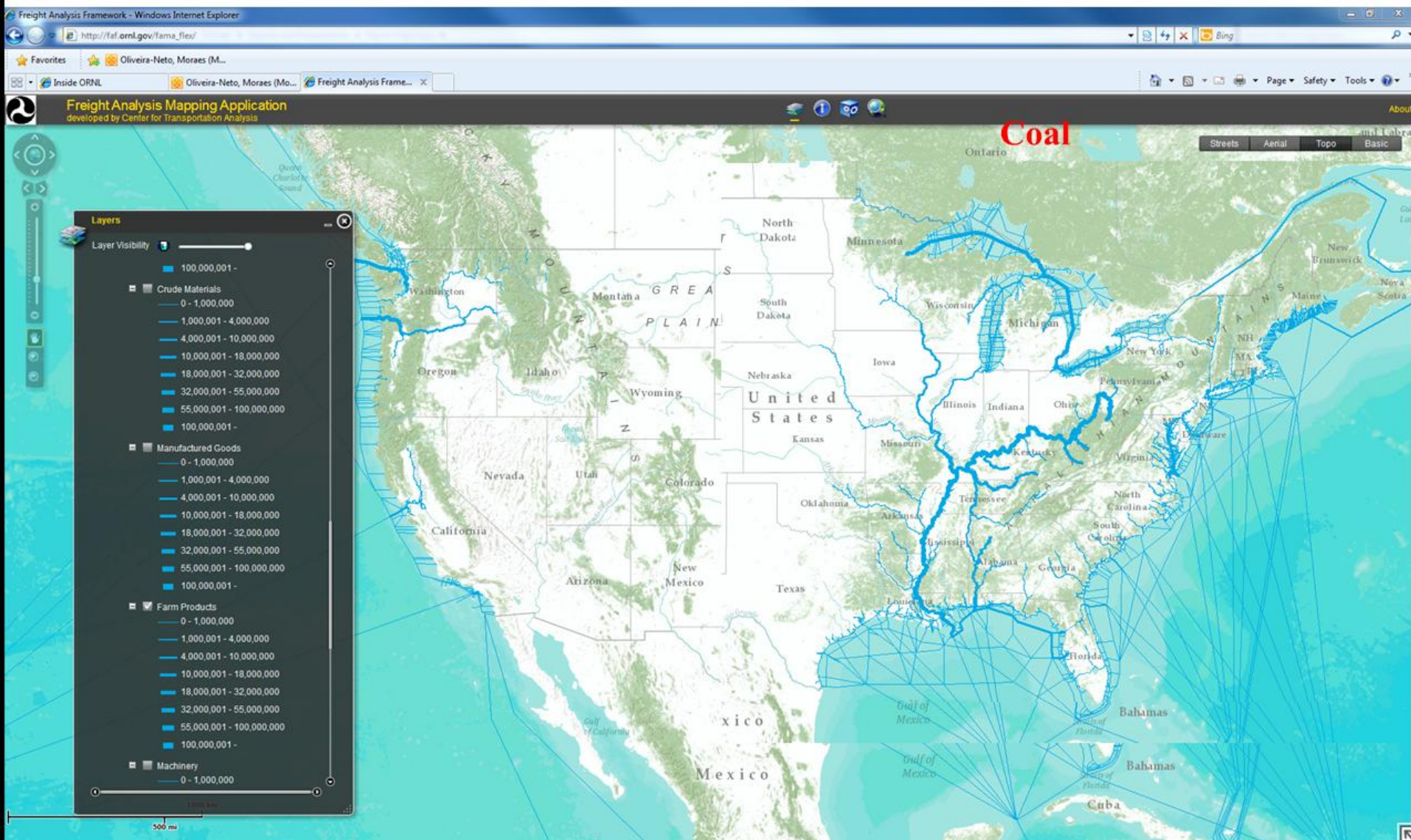
Water flows on top three products moved



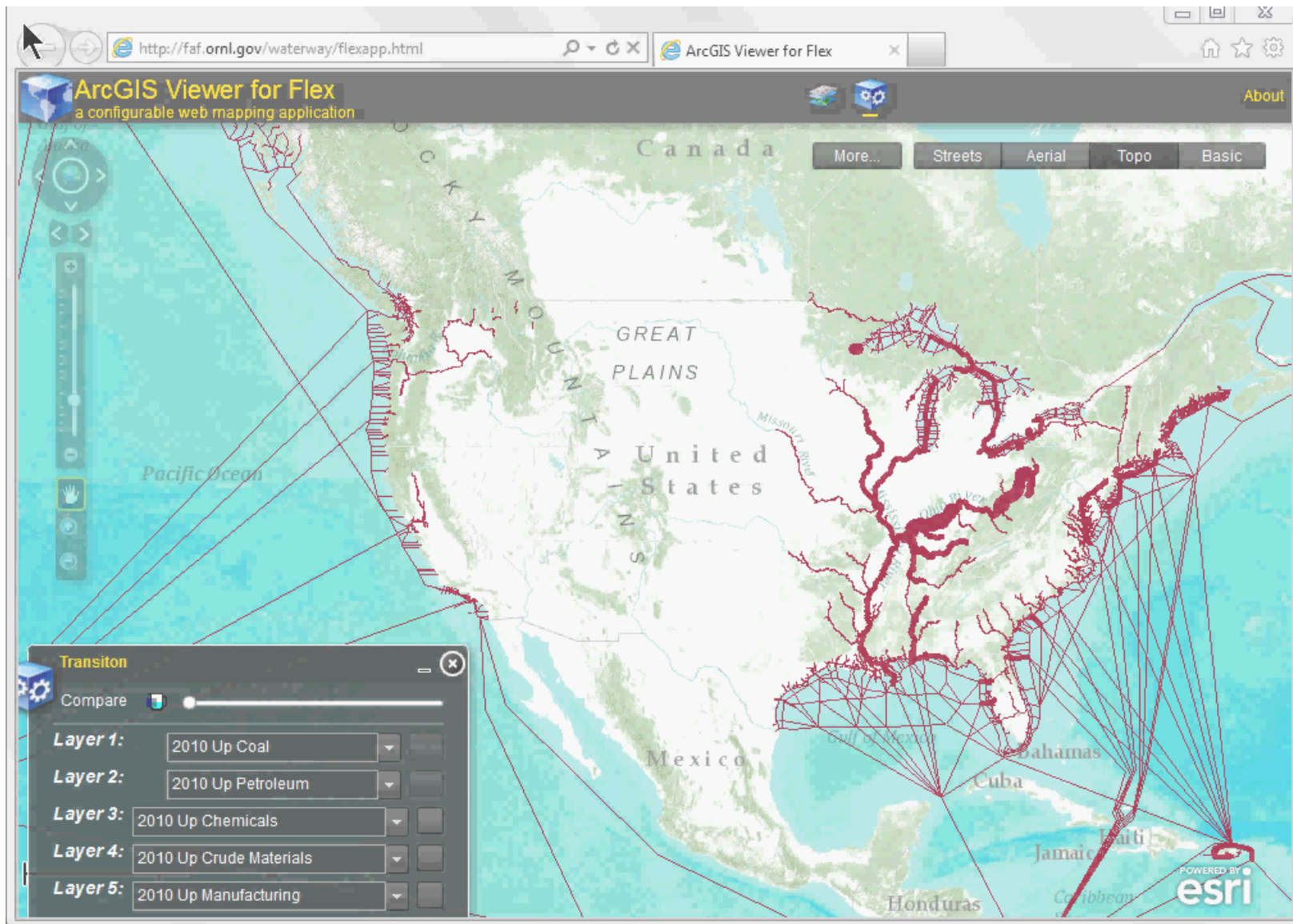
Water flows on top three products moved



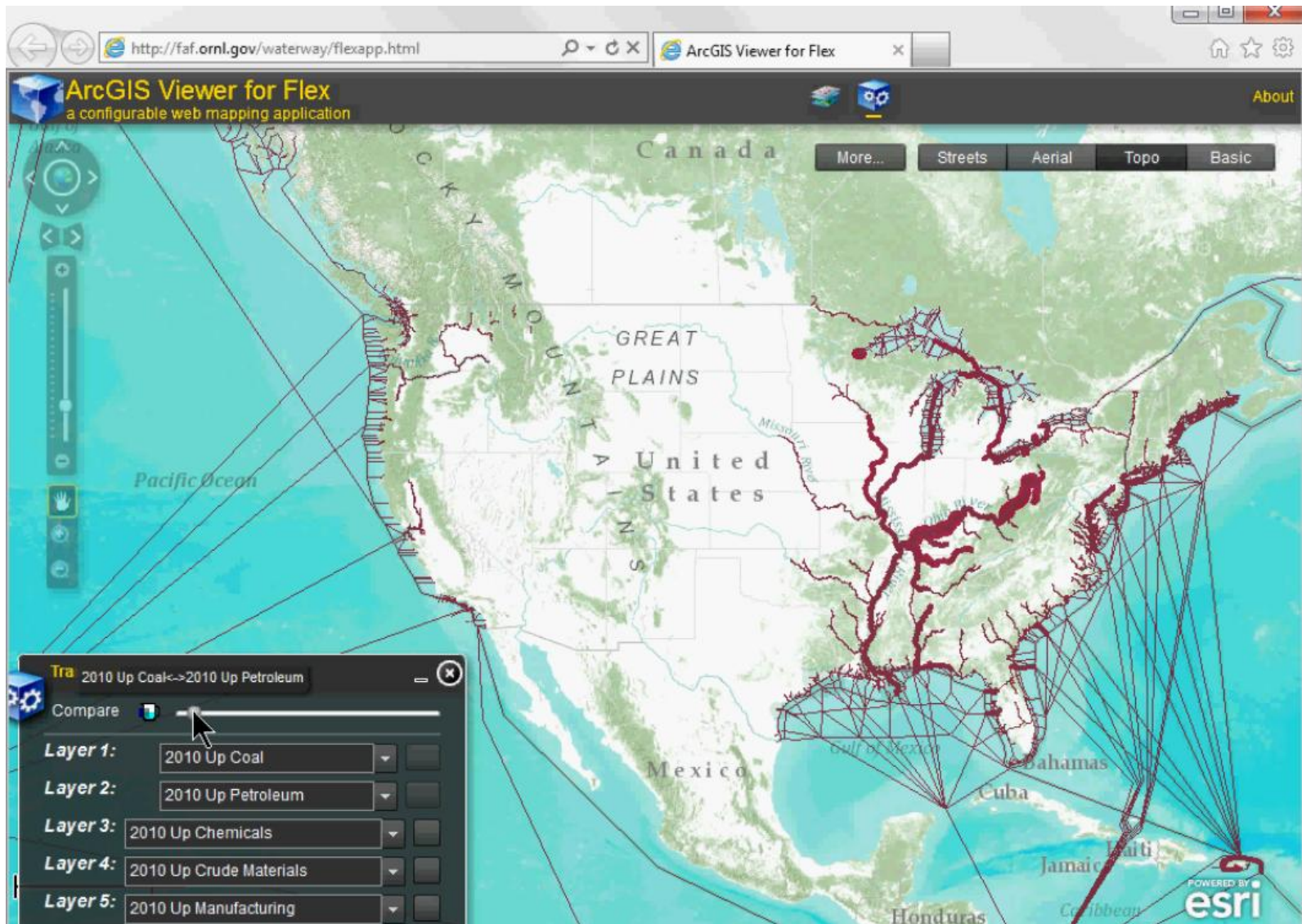
Water flows on top three products moved



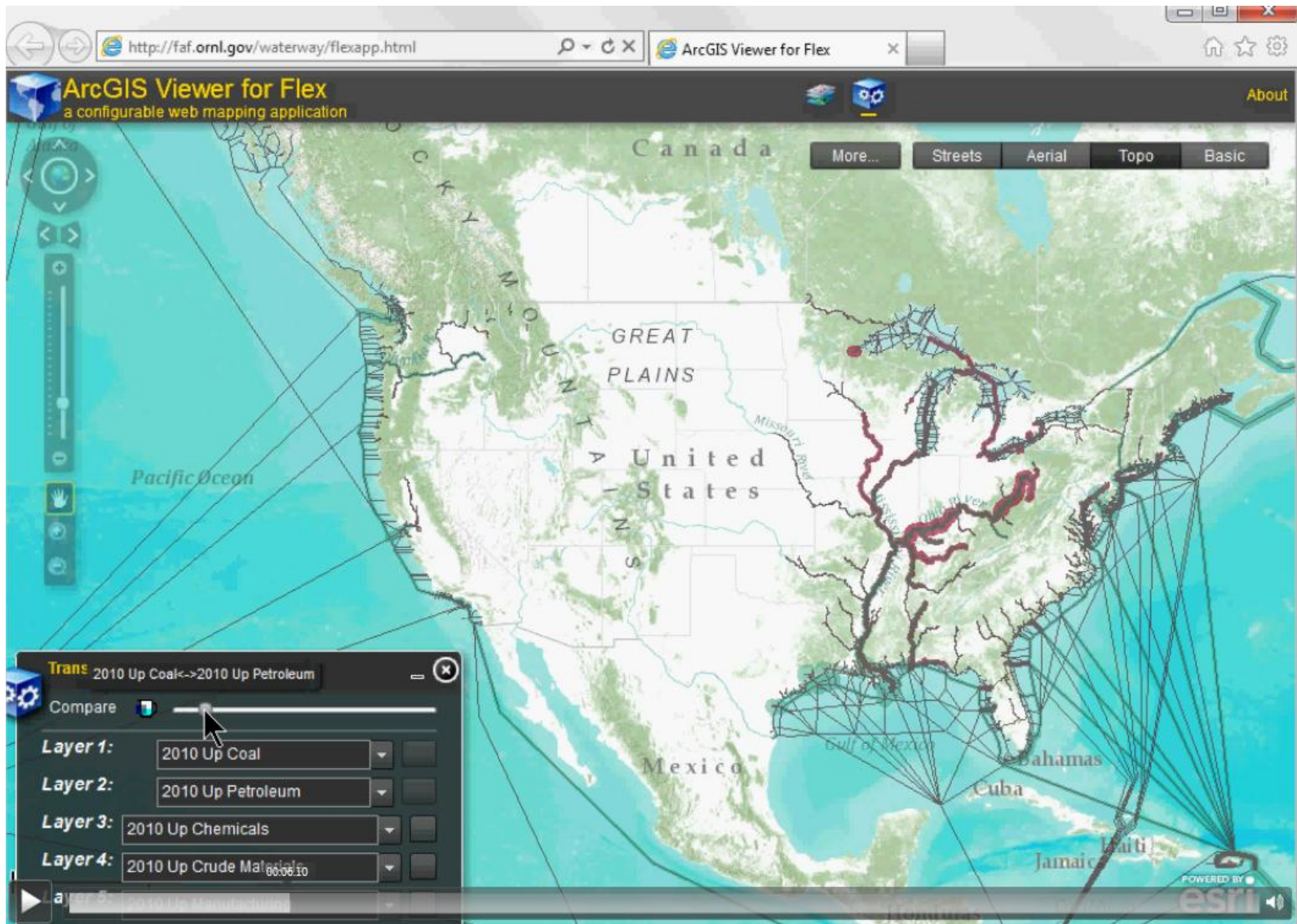
Fade In & Fade Out



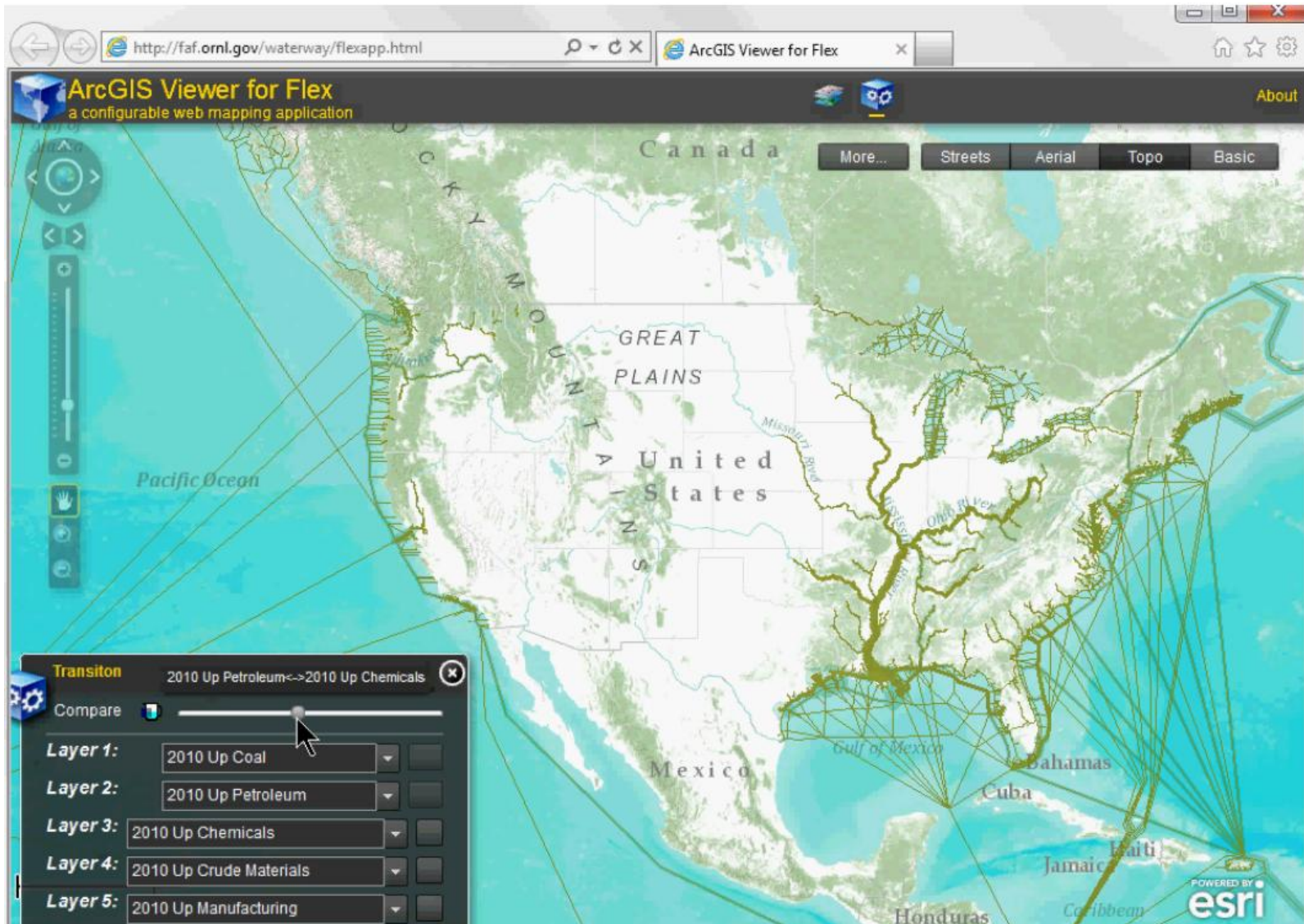
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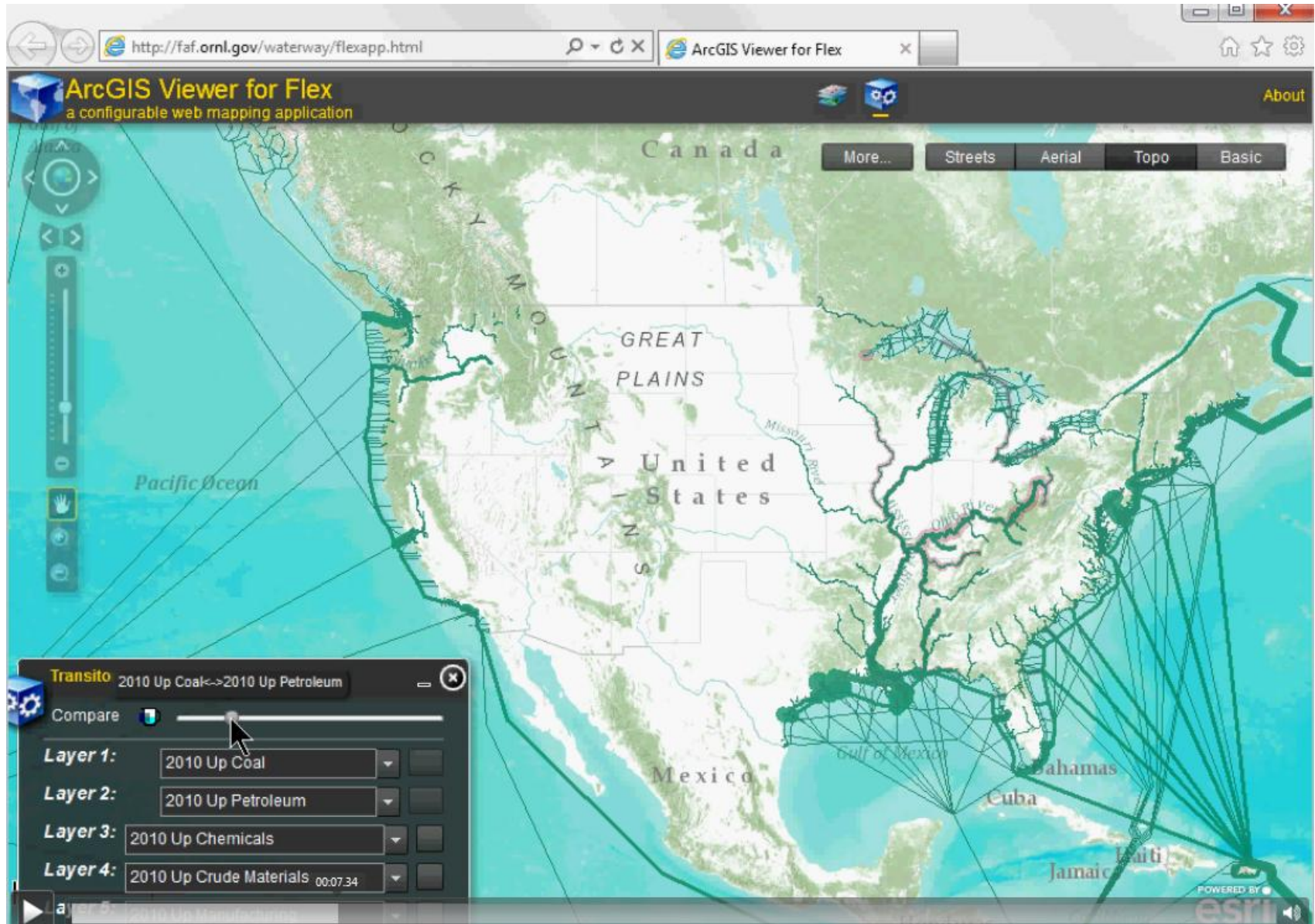
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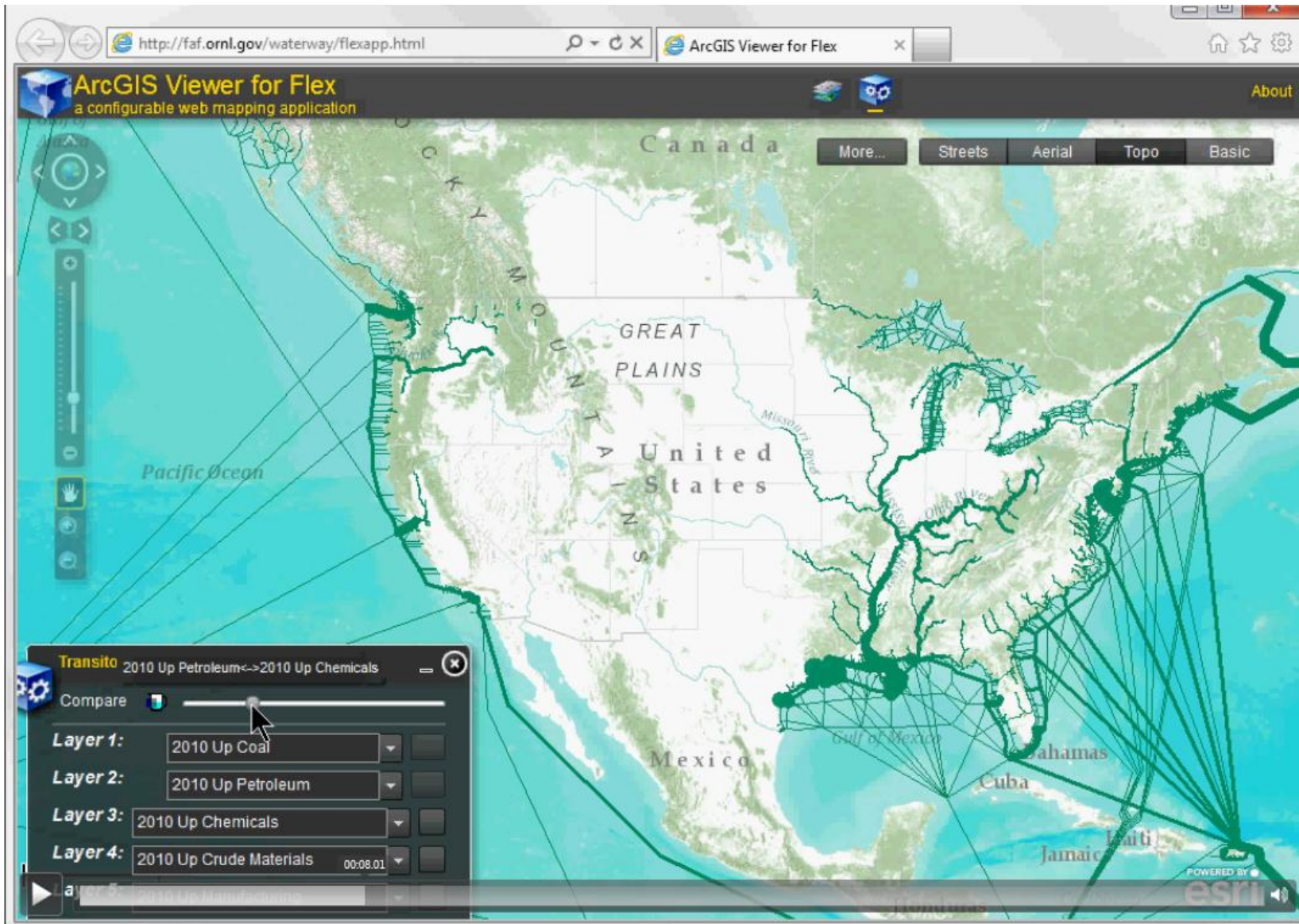
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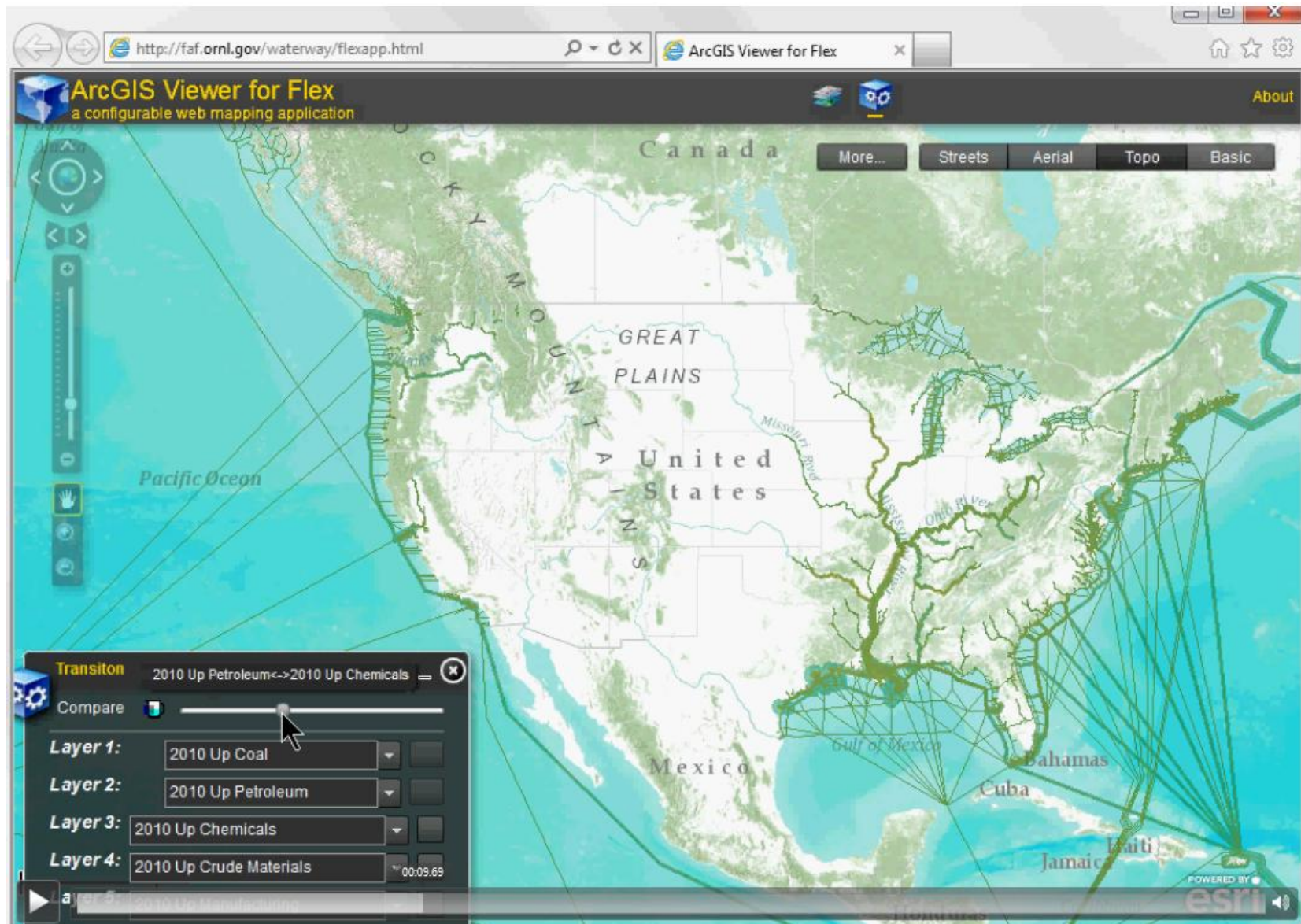
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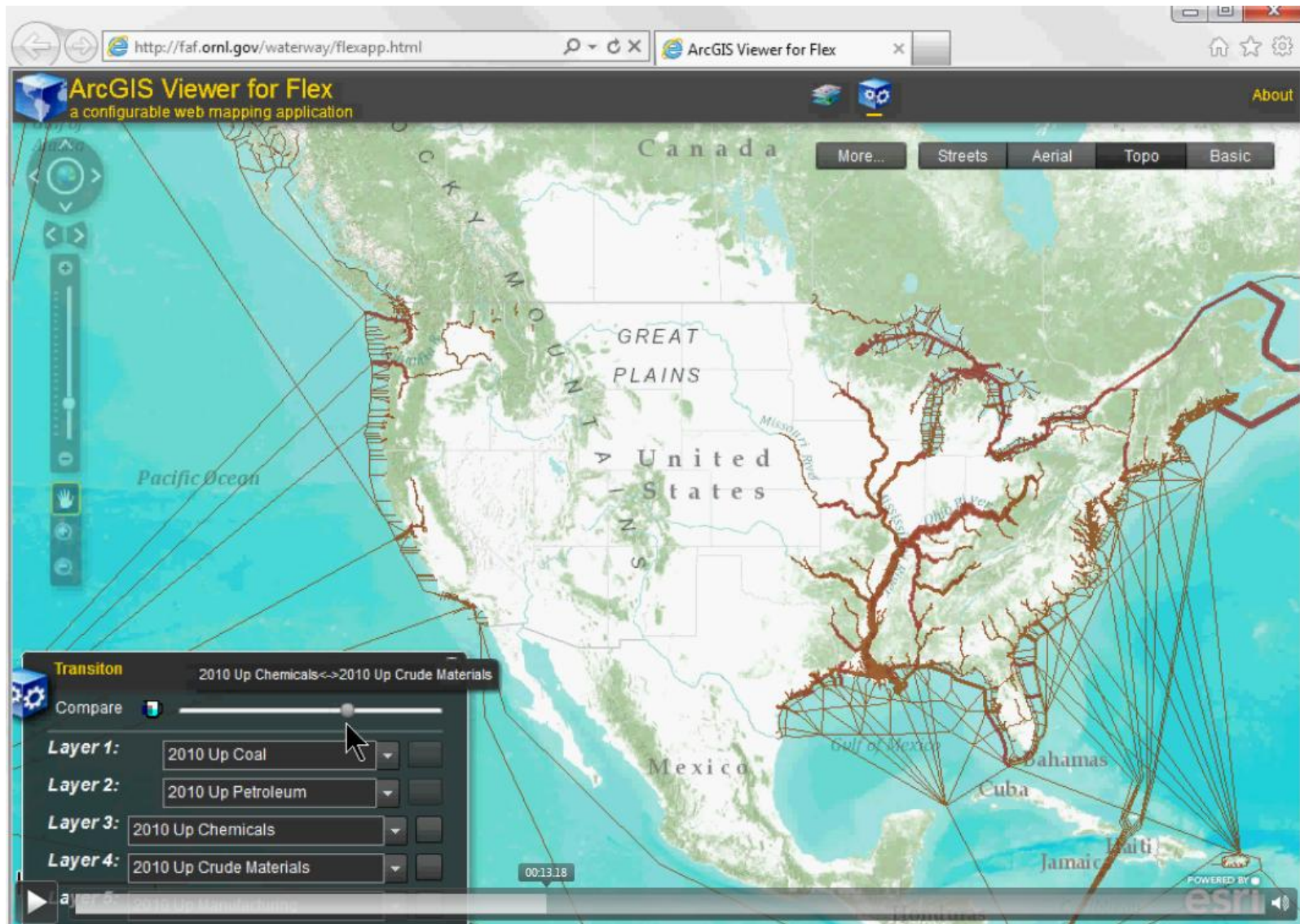
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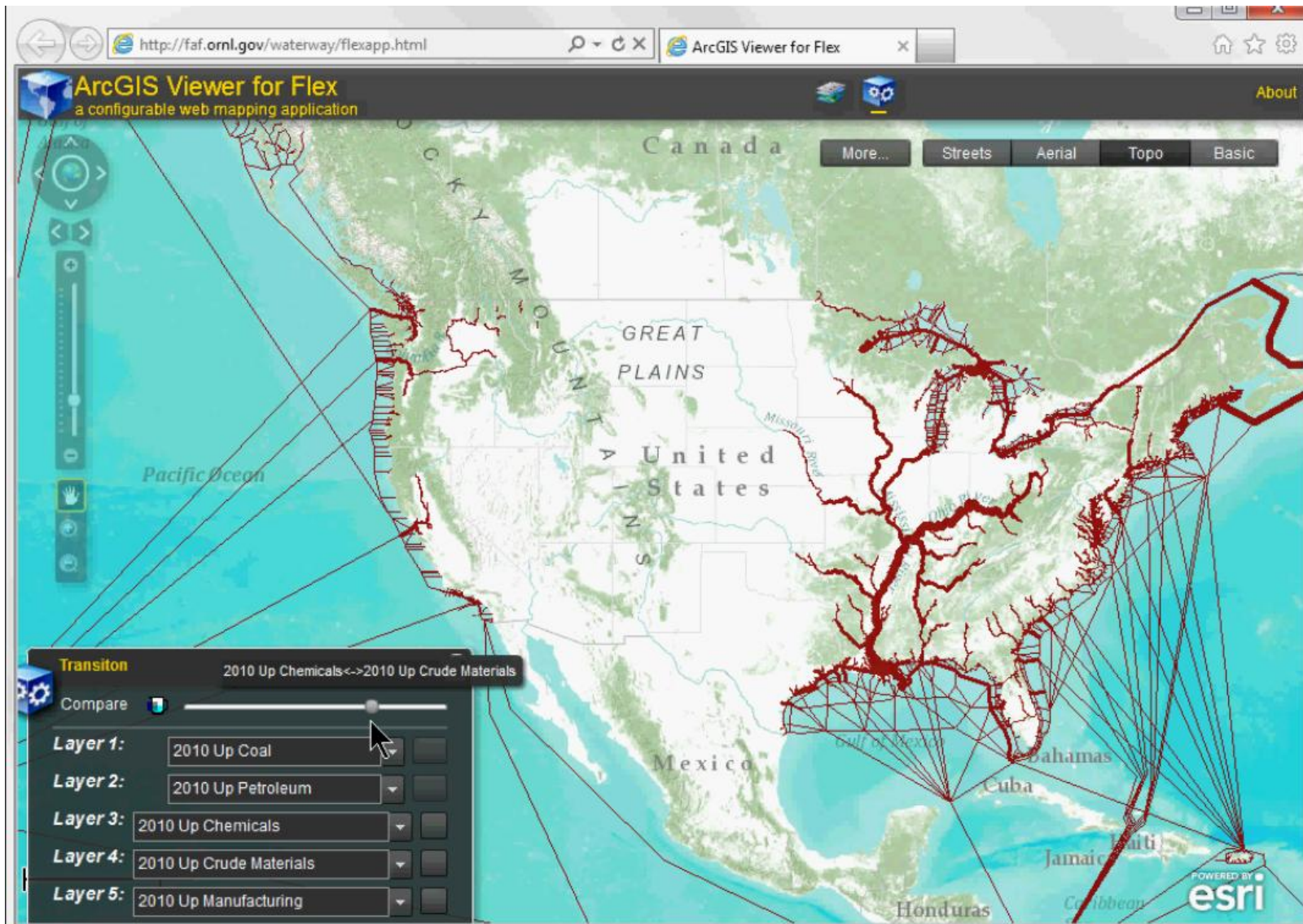
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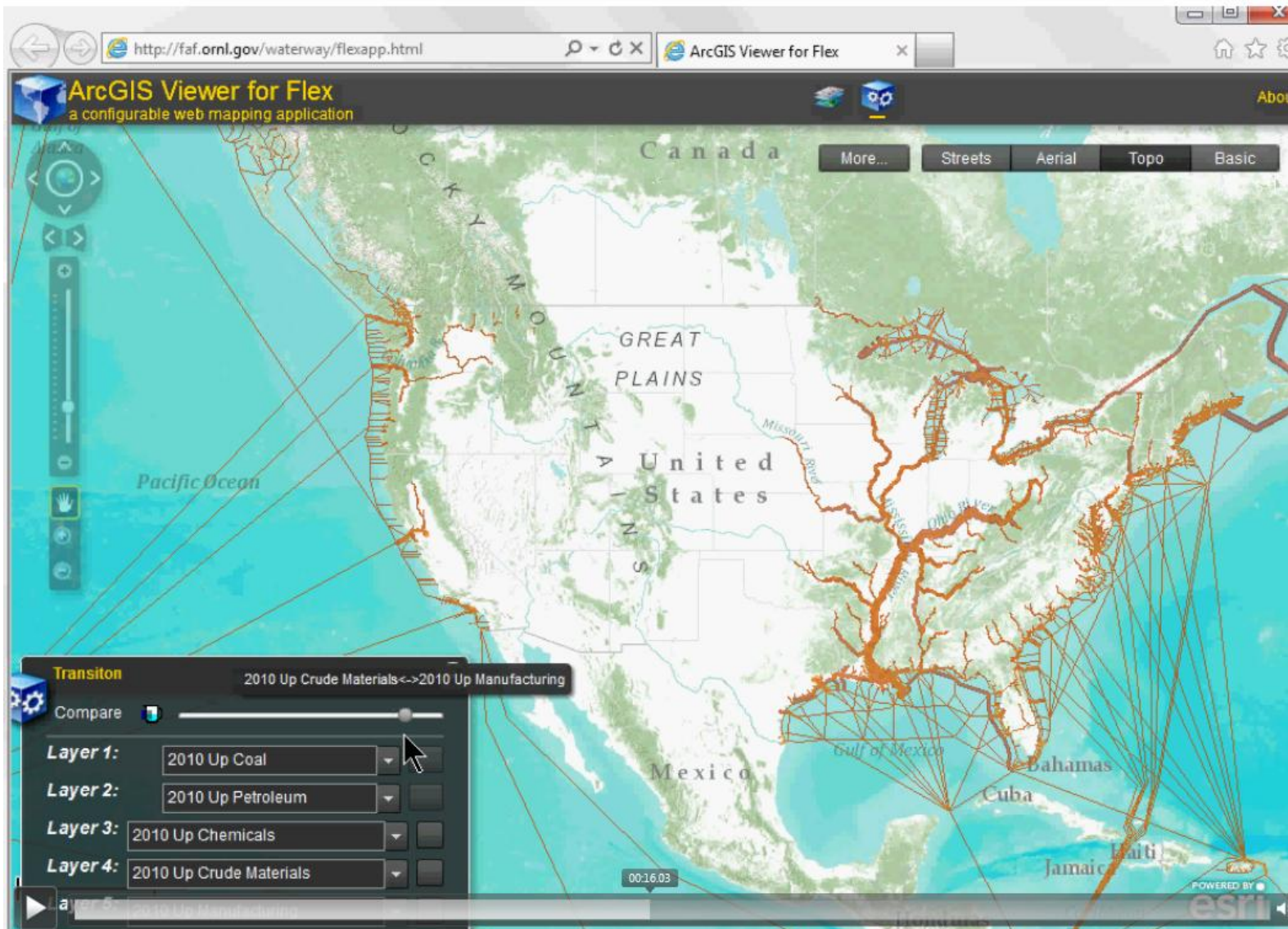
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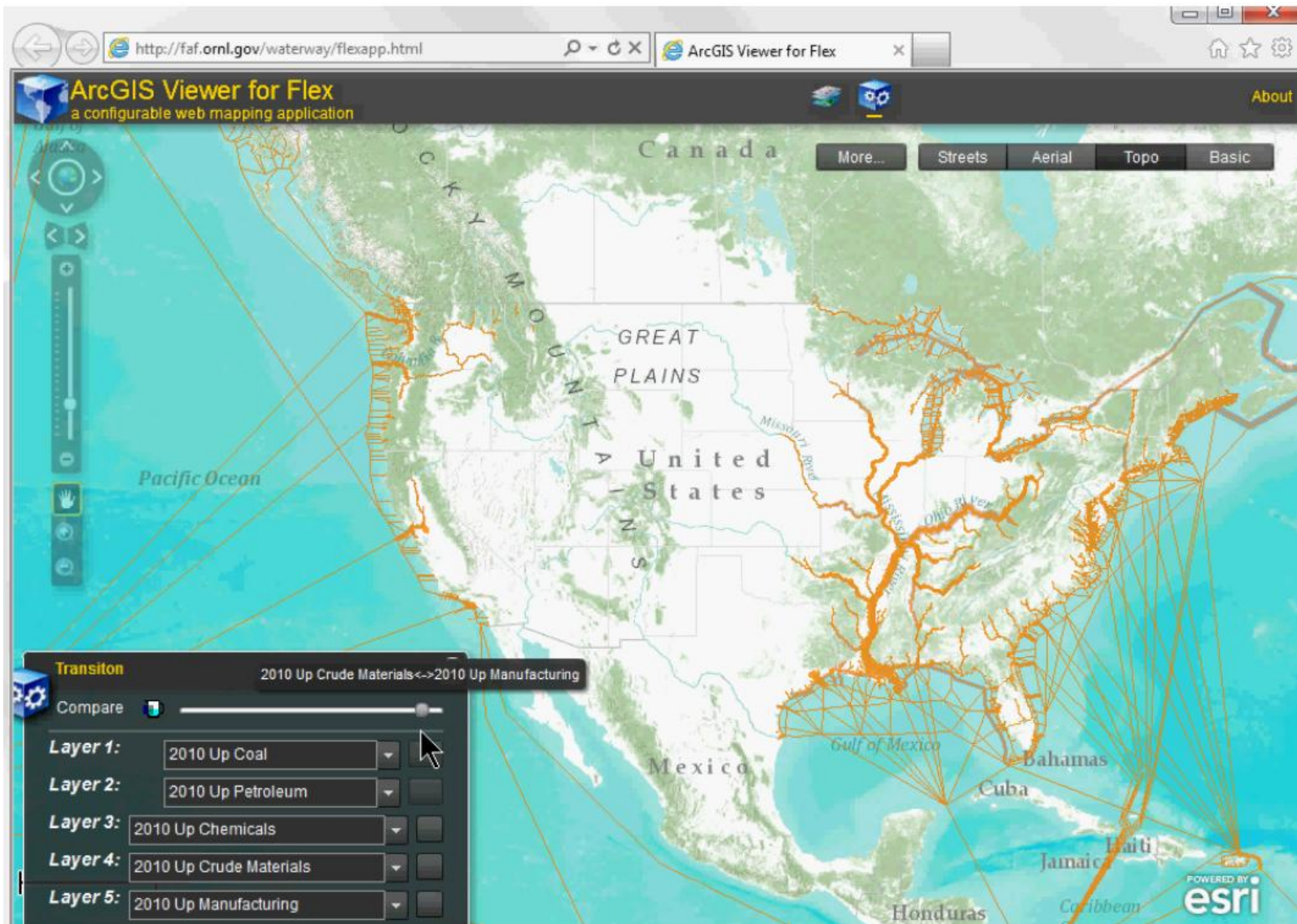
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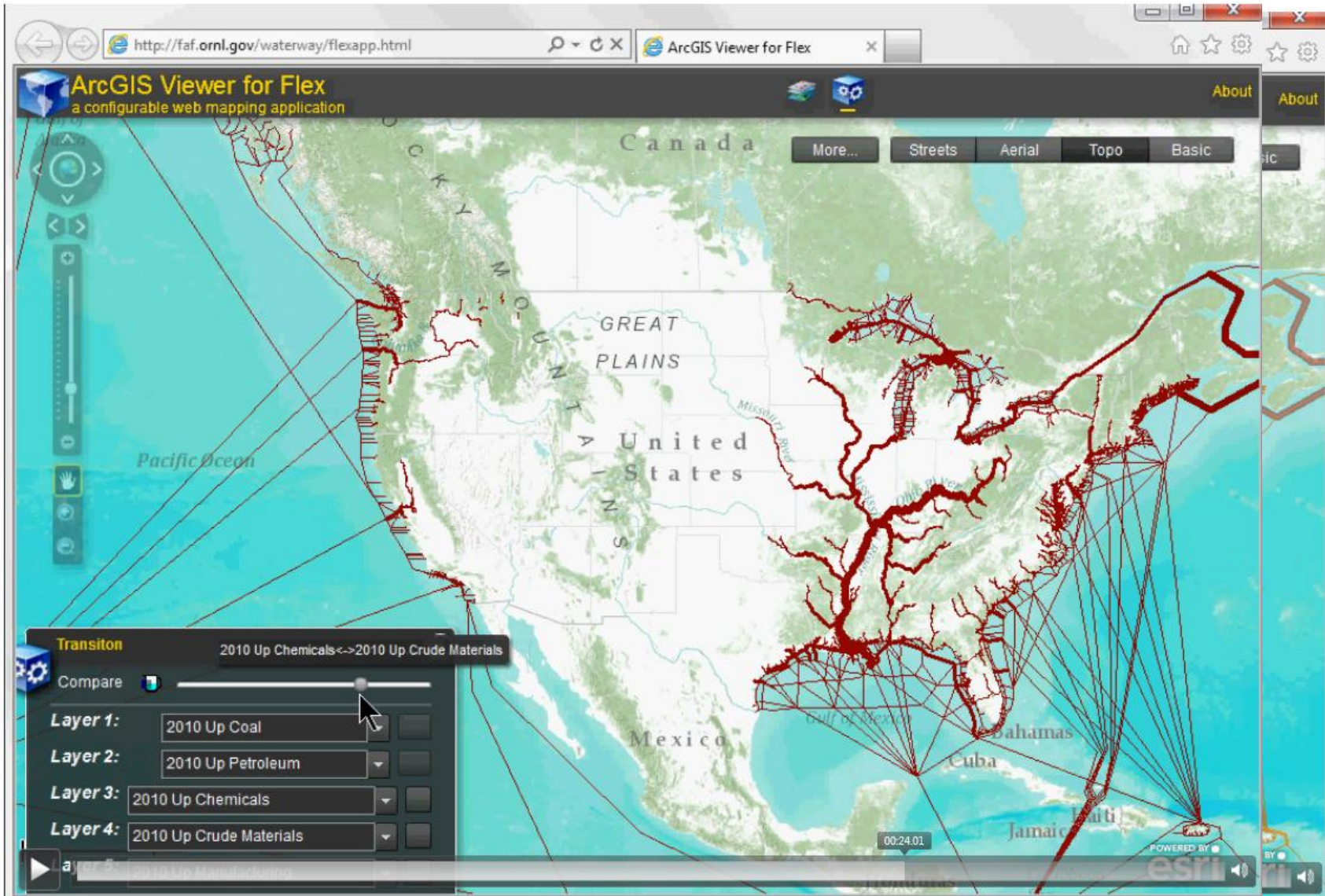
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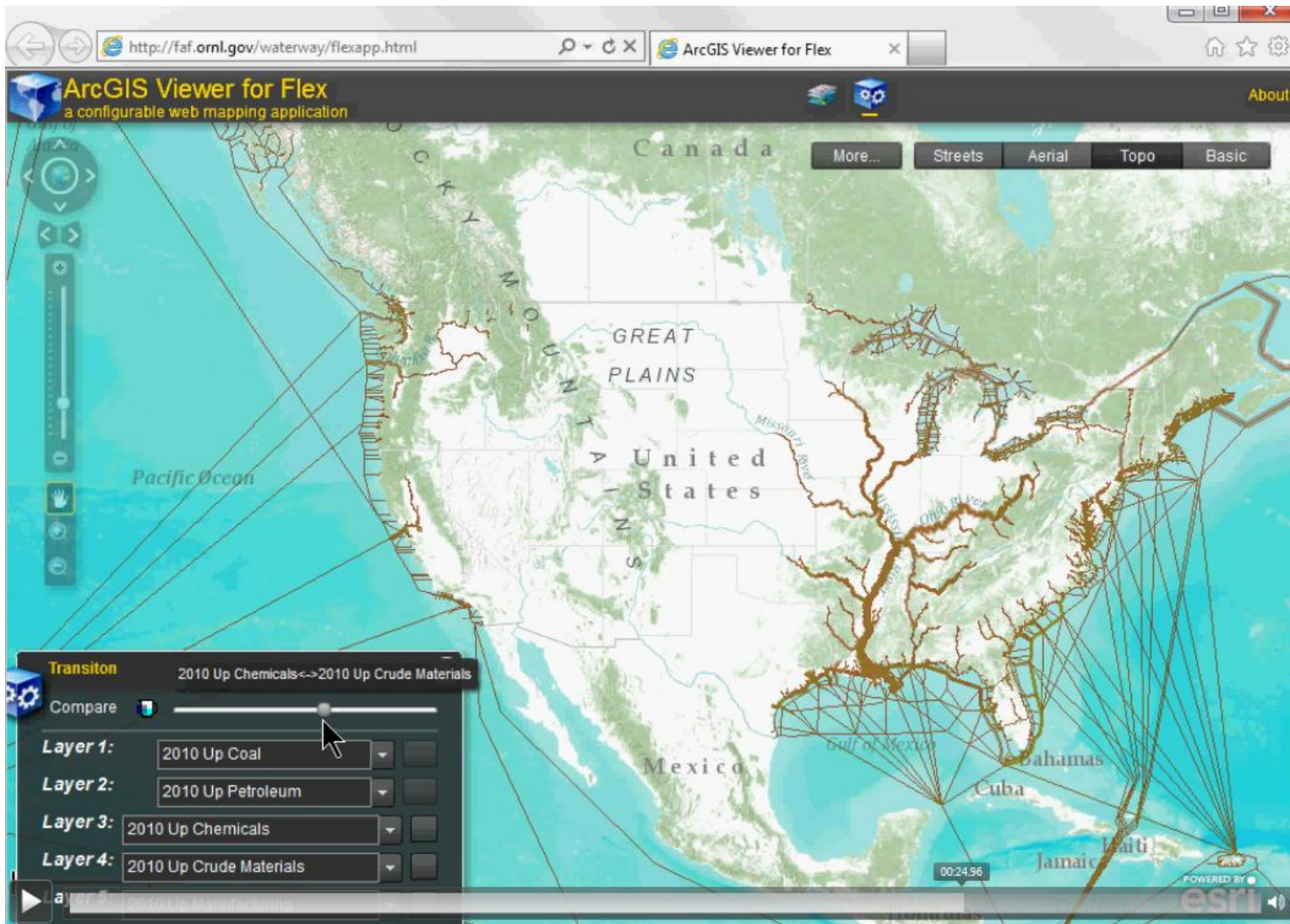
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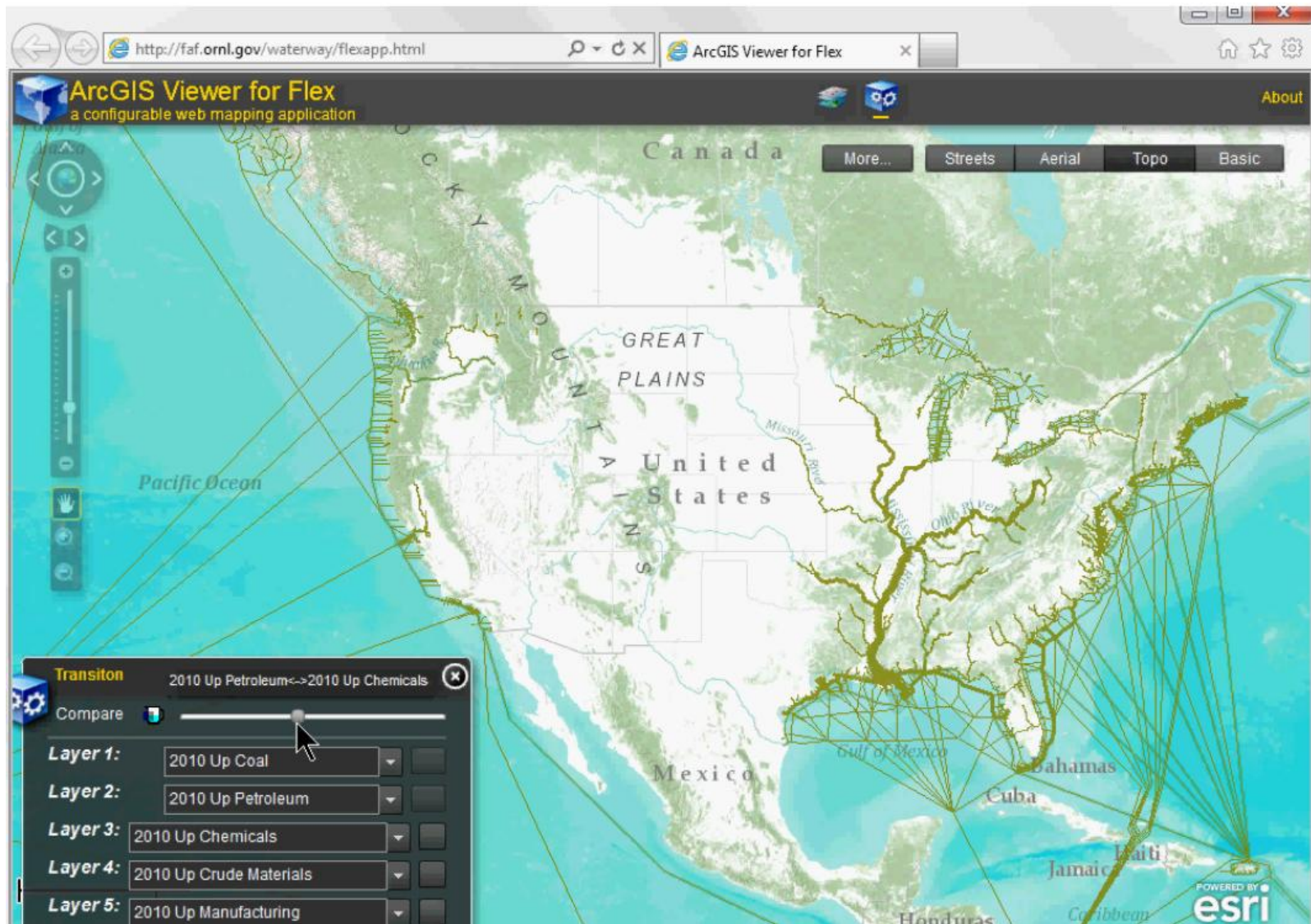
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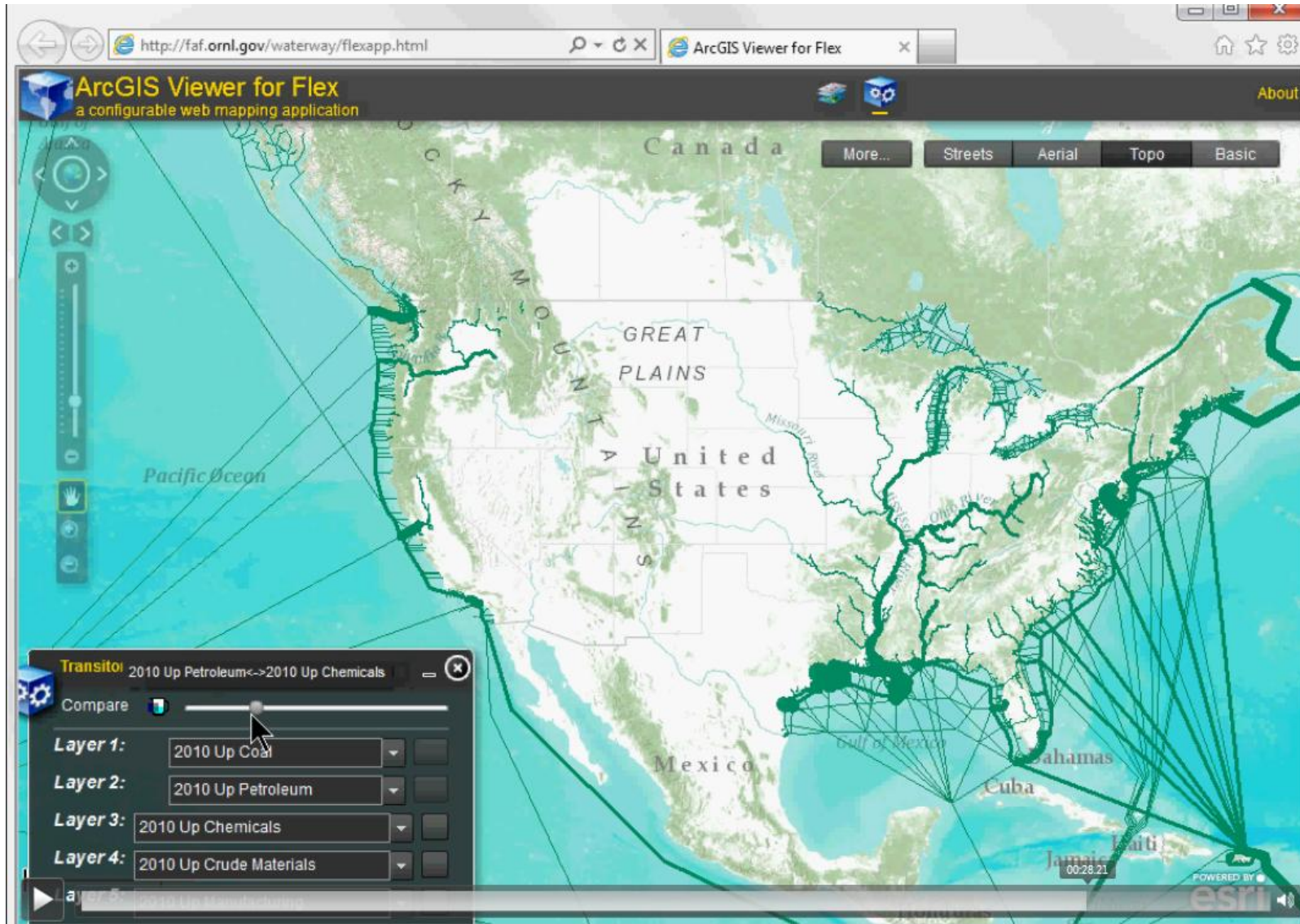
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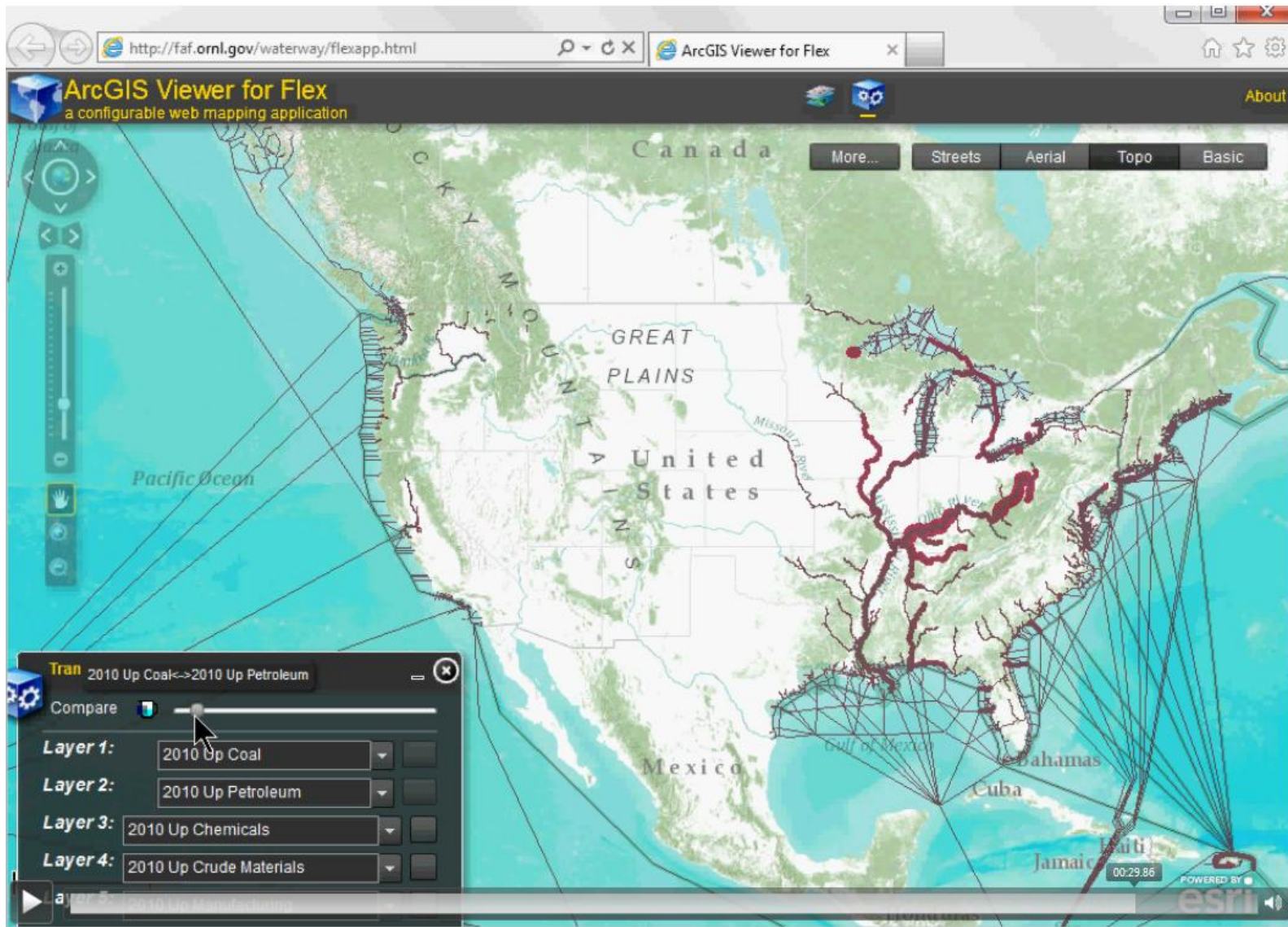
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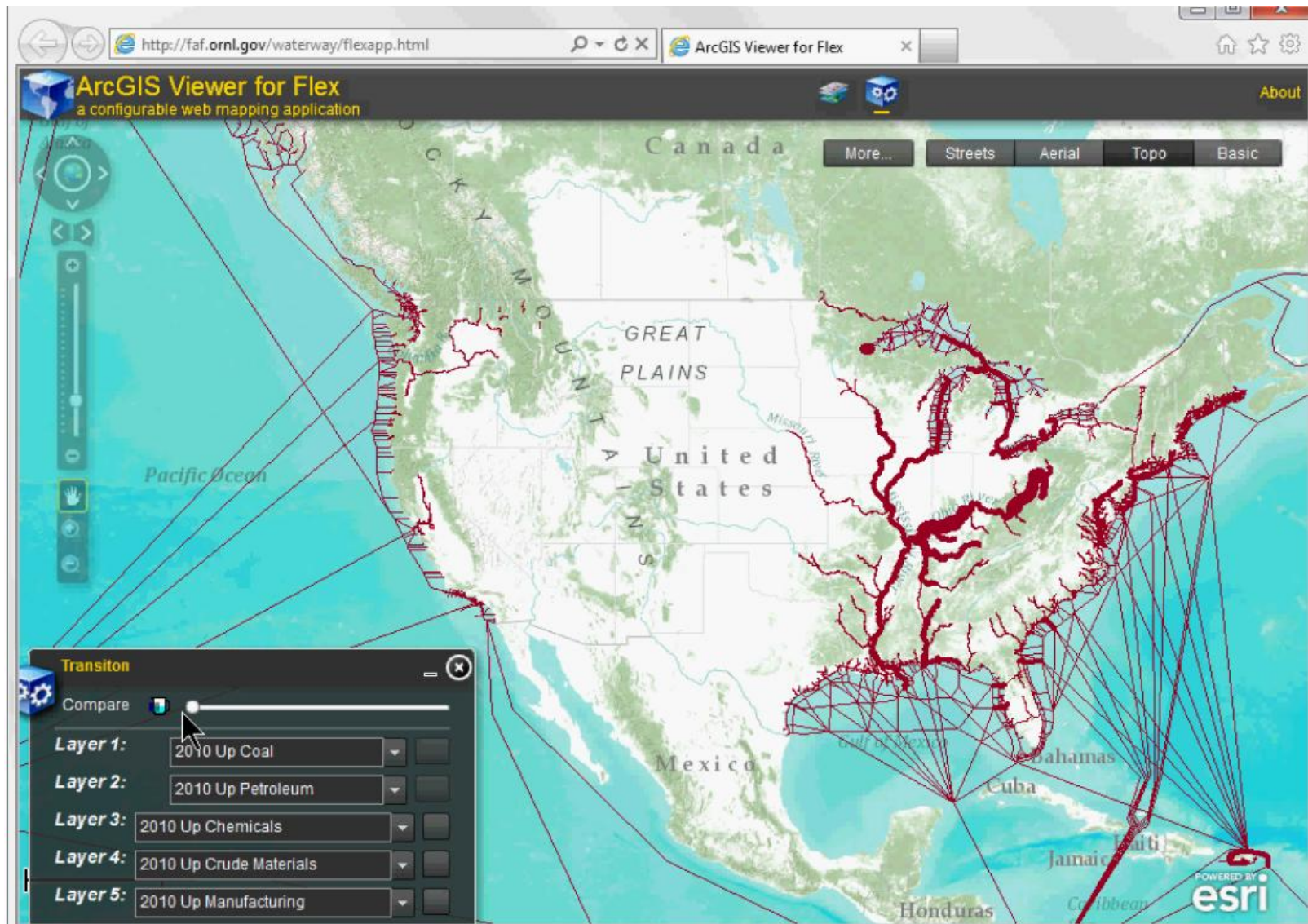
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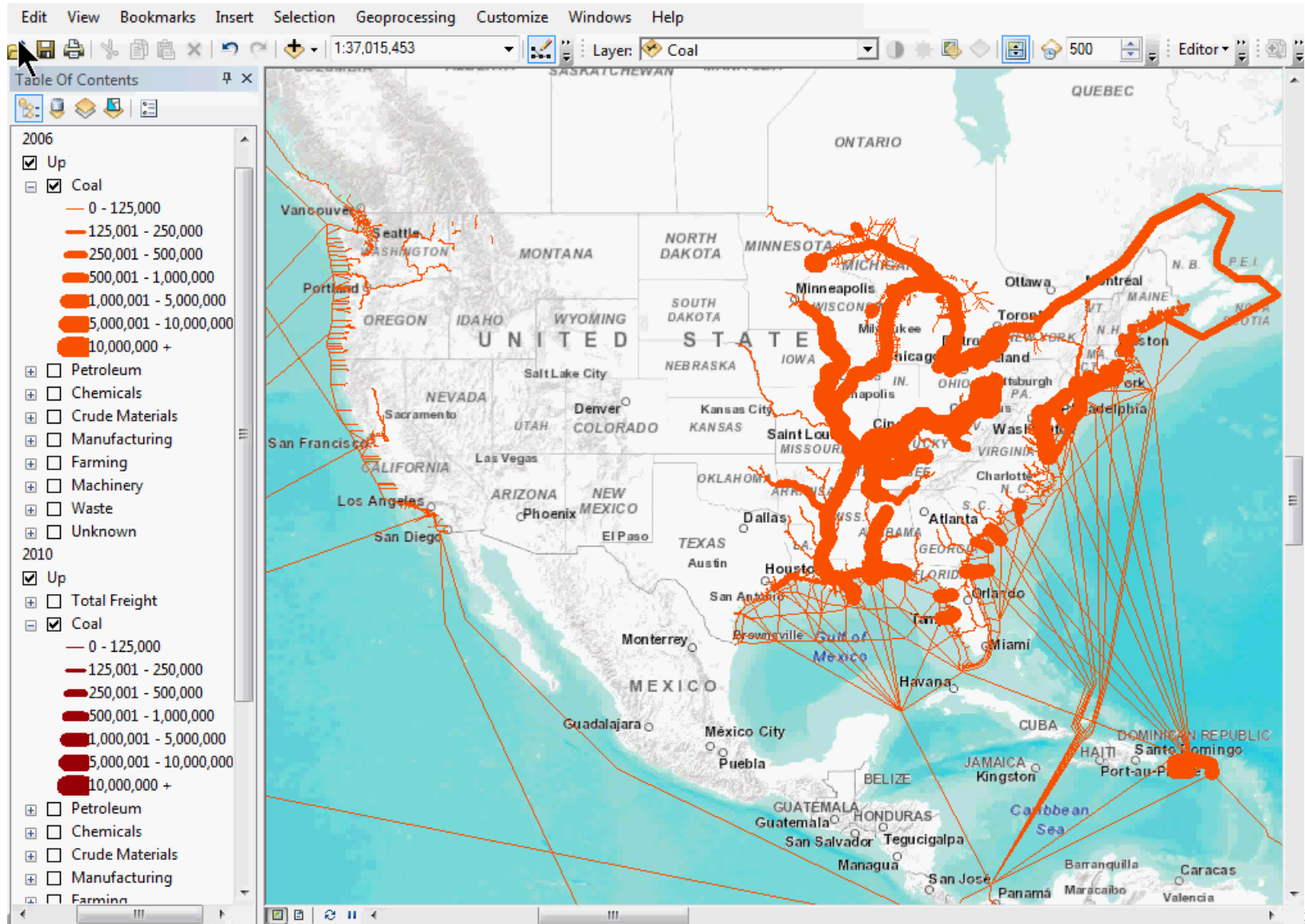
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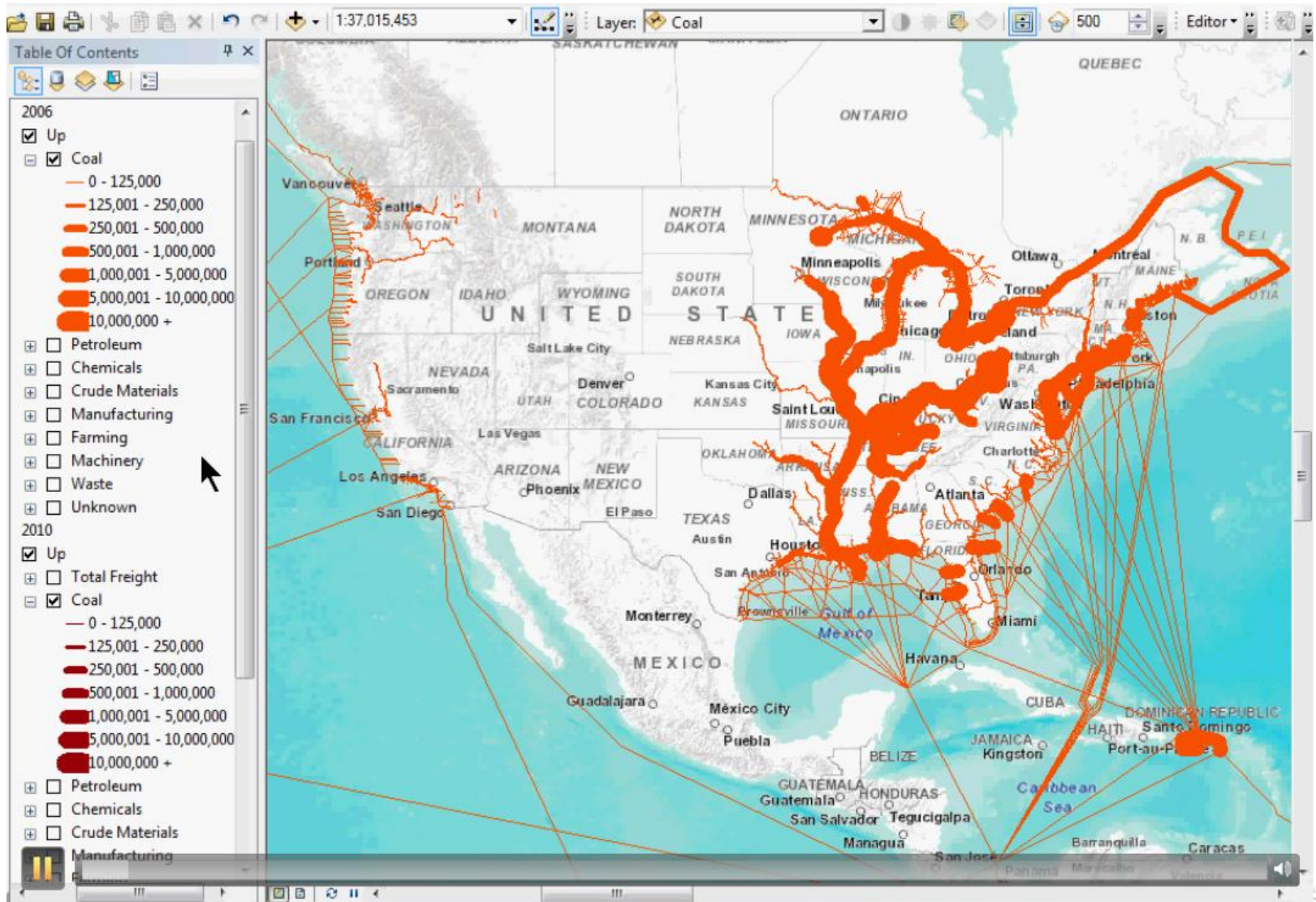
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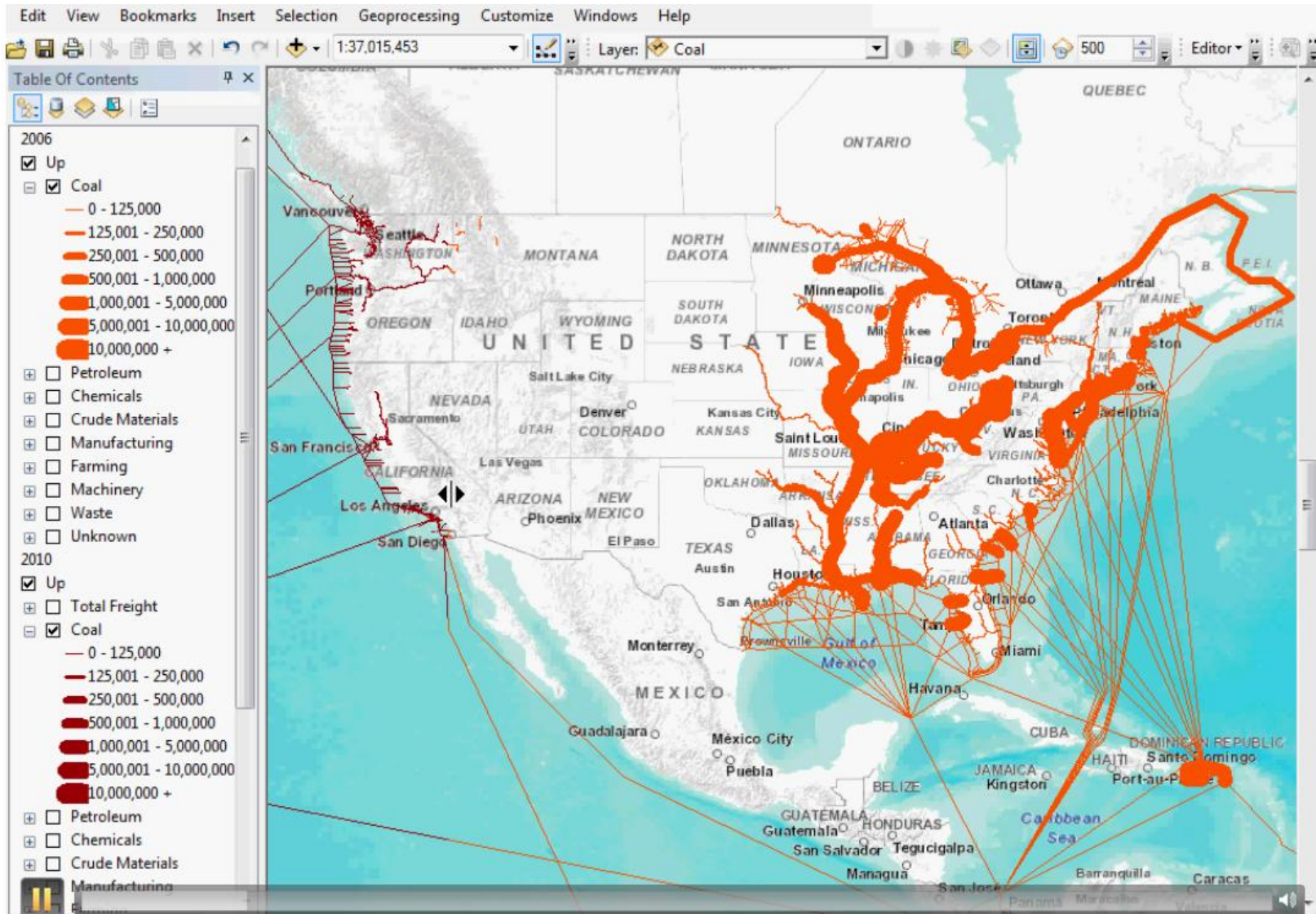
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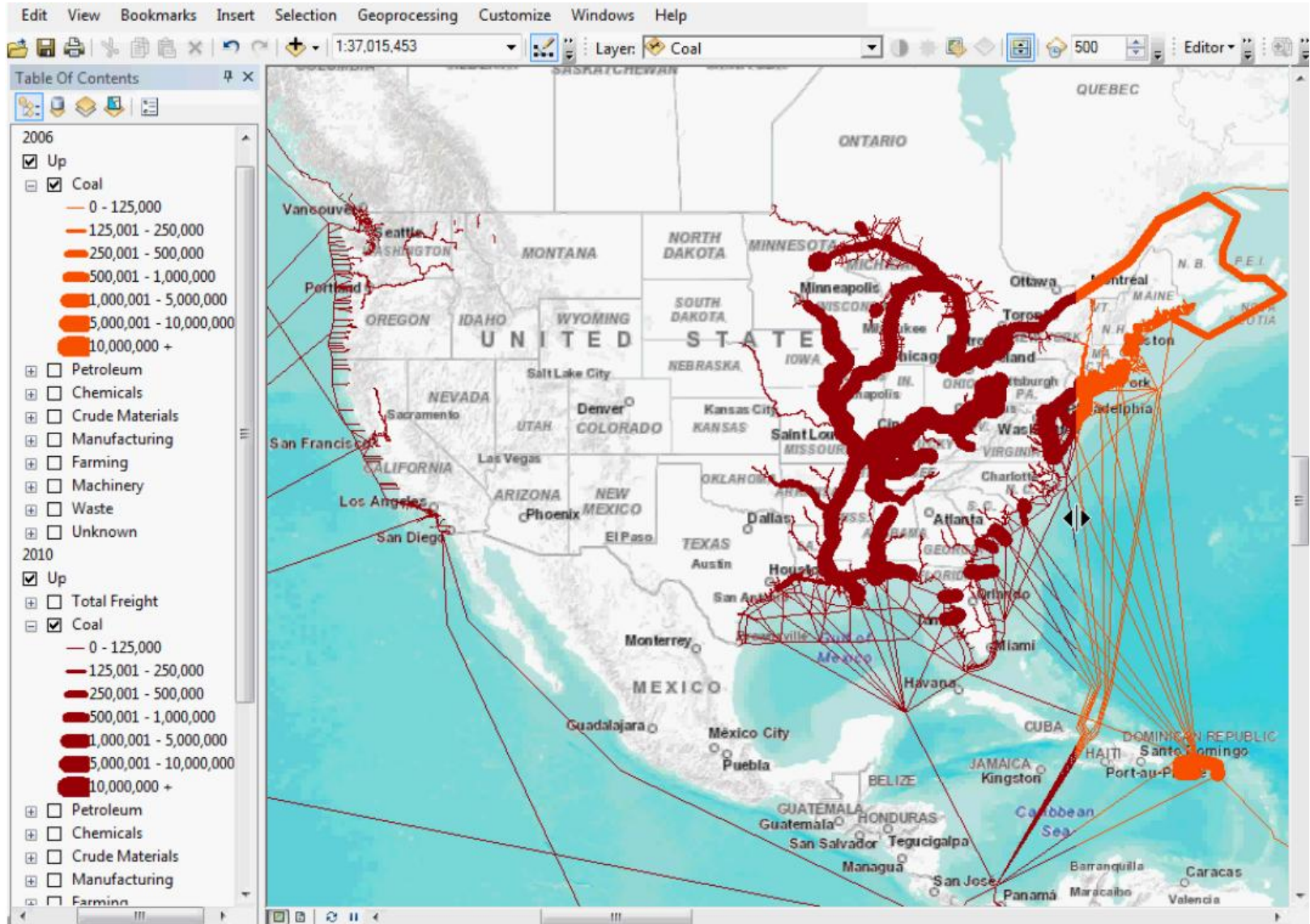
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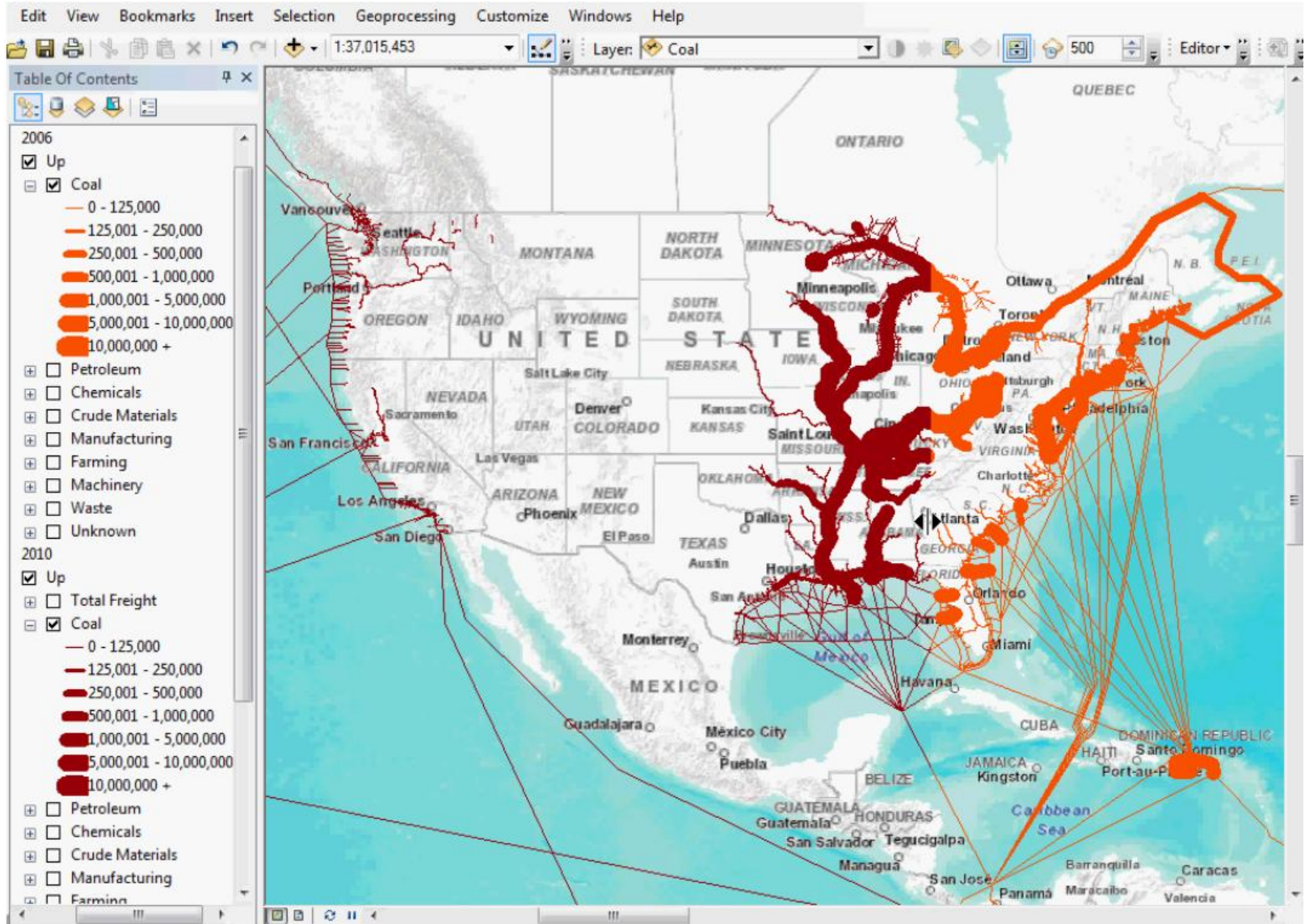
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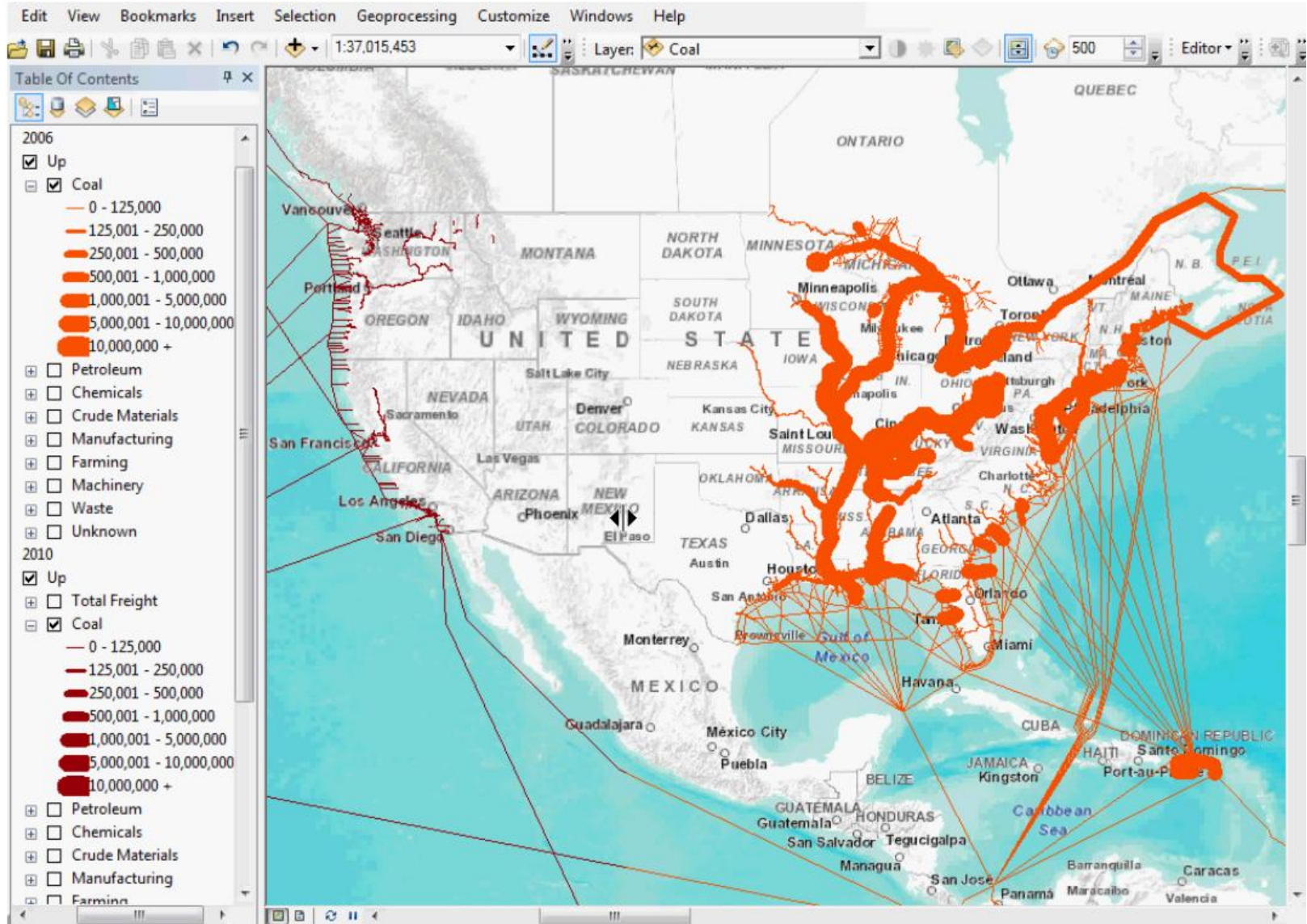
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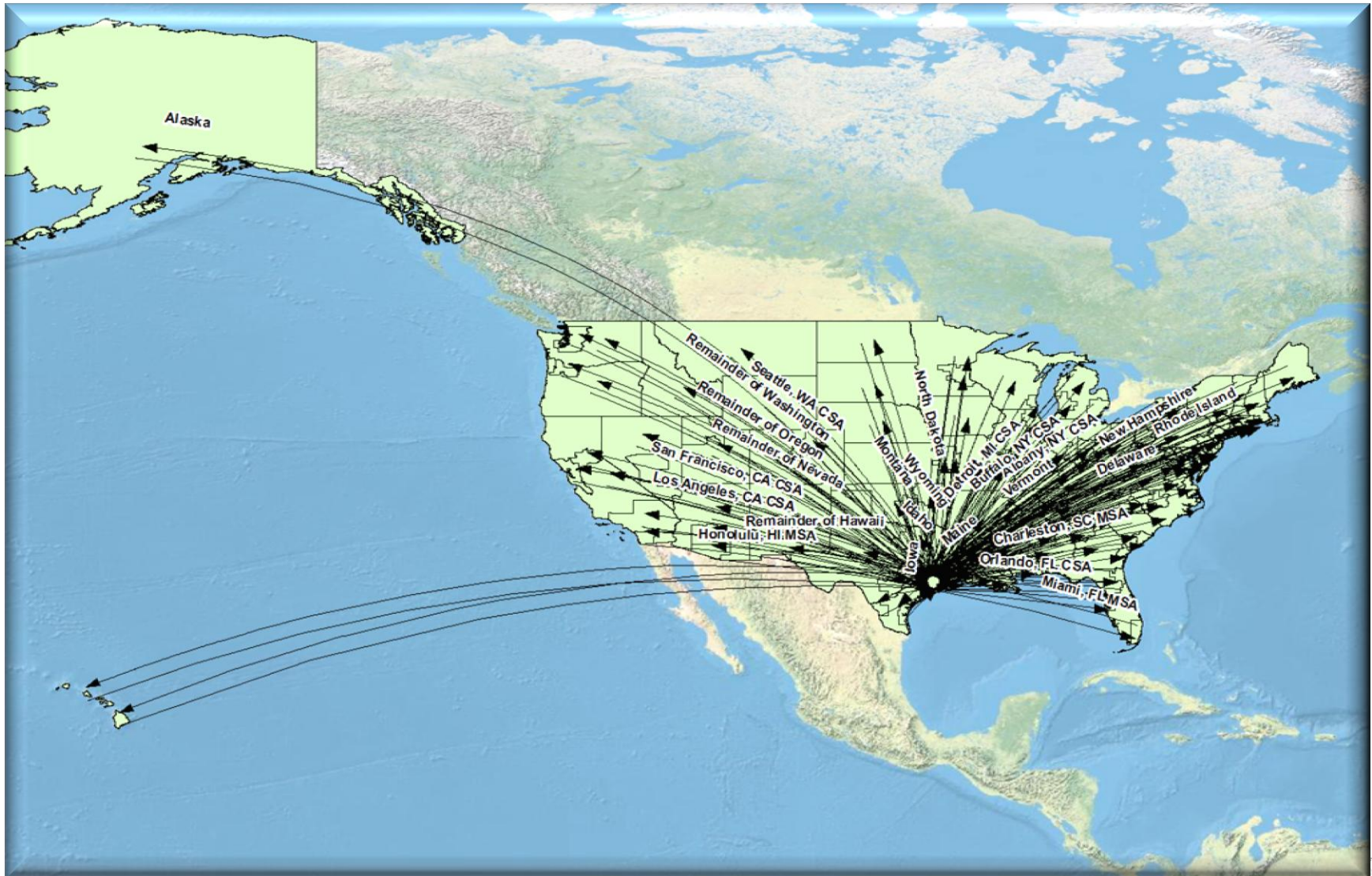
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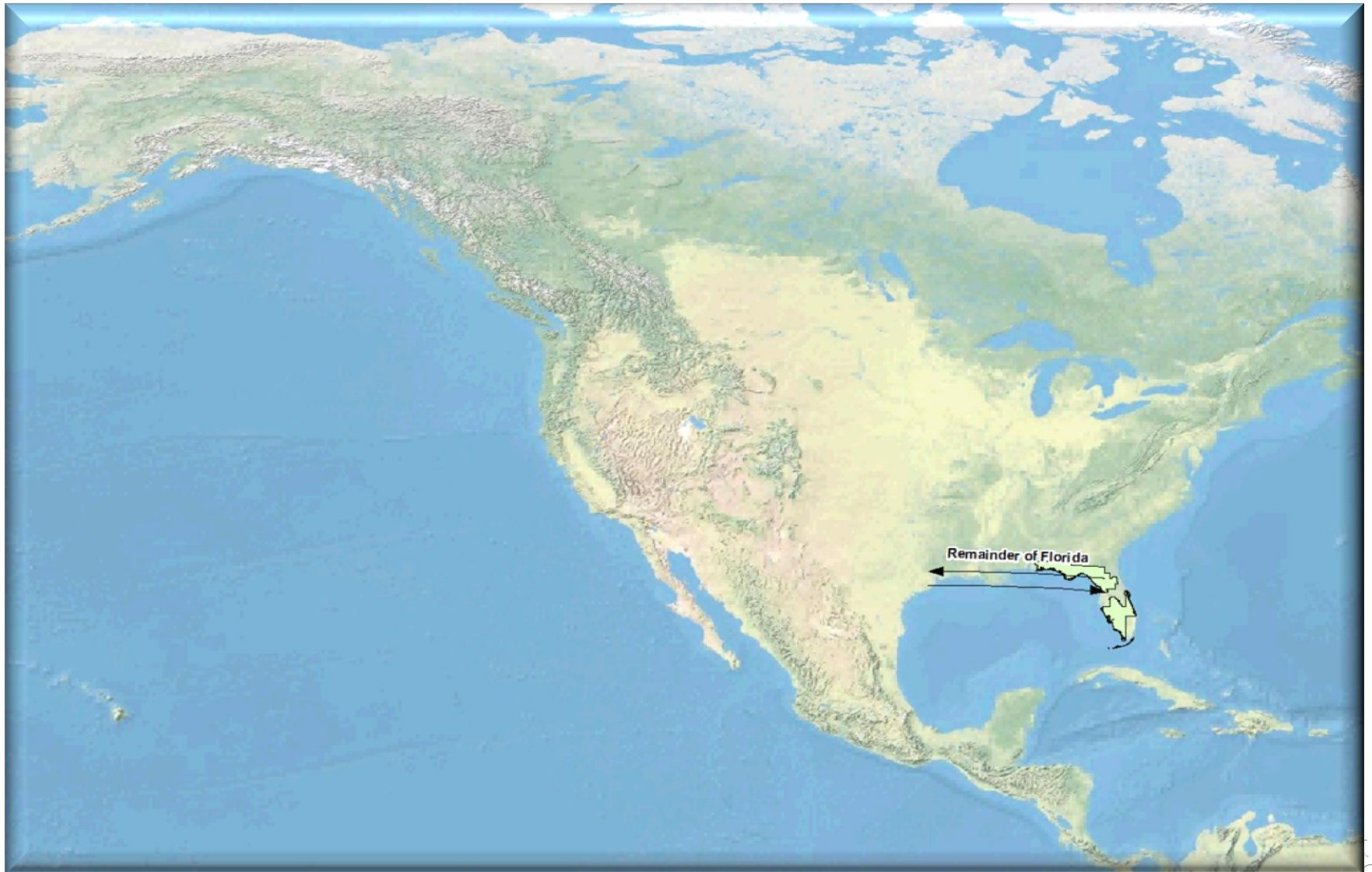
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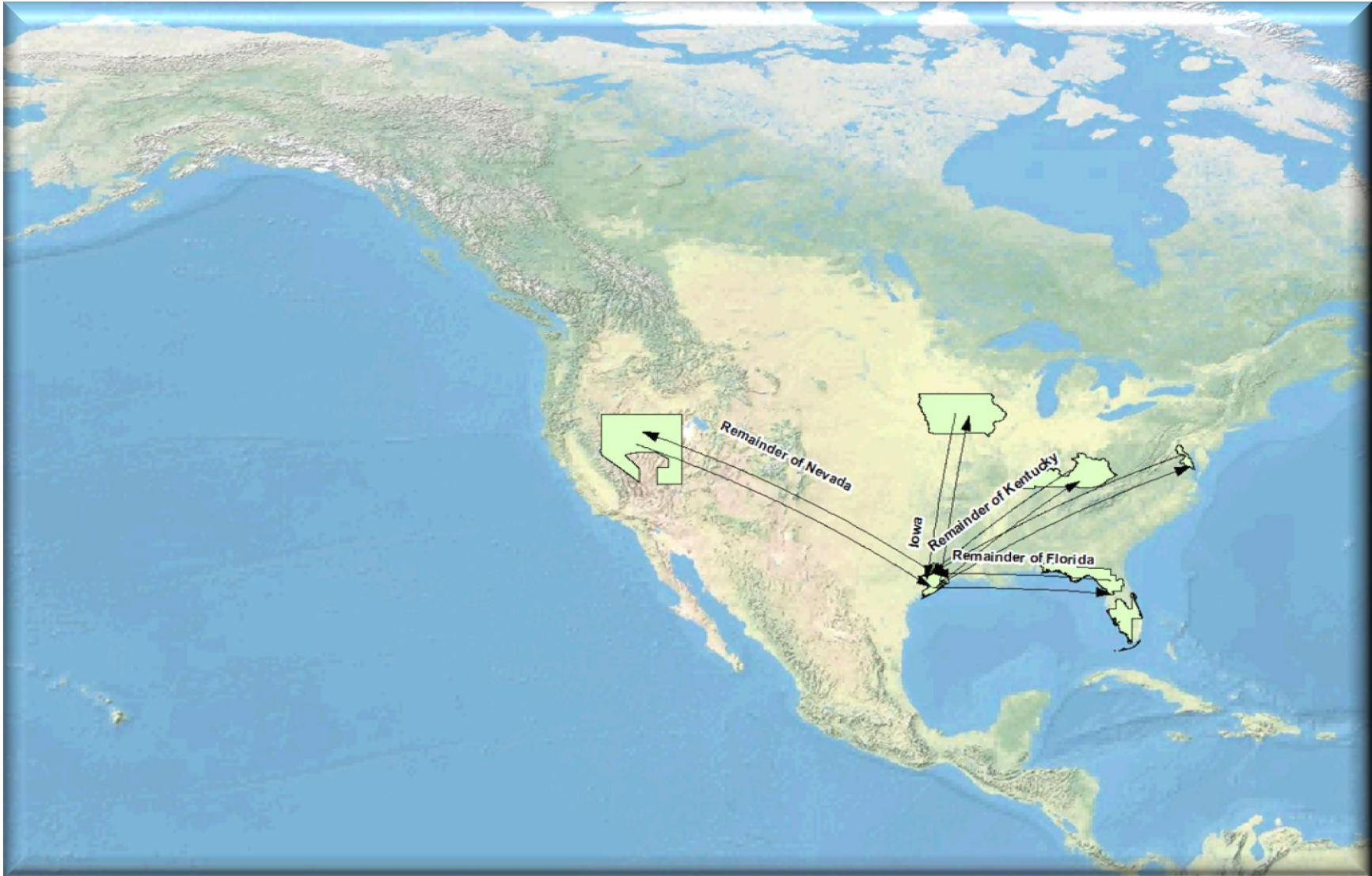
Freight flow between Houston & 123 FAF regions



Houston ↔ 123 FAF Regions



Other way of presenting the same flows

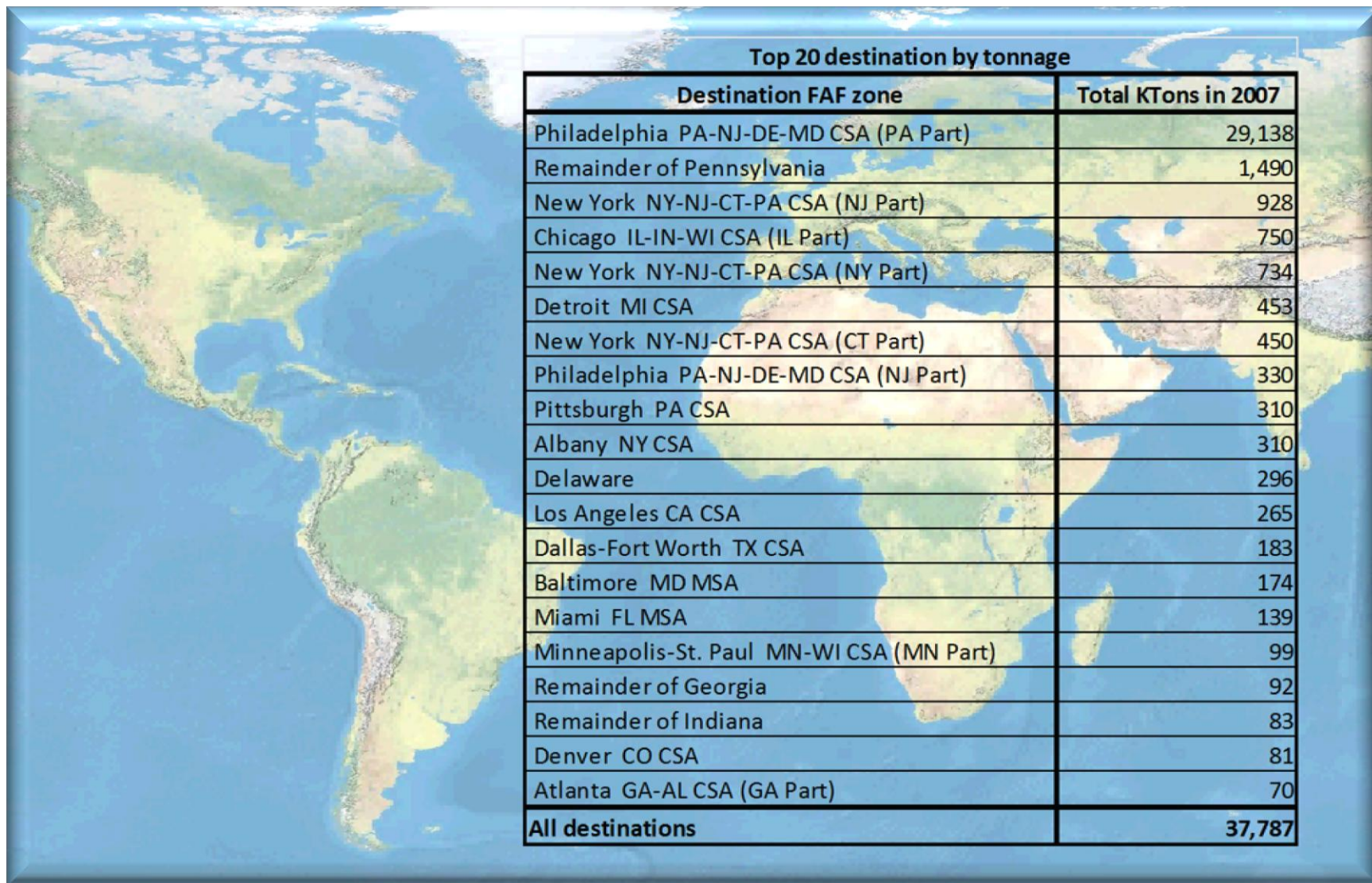


Global View Example

Houston ↔ 123 FAF Zones



Superimposed with Statistics



MarineTraffic.Com

The screenshot shows the MarineTraffic.com website interface. At the top, there's a navigation bar with tabs for 'Live Map', 'Vessels', 'Ports', and 'Gallery'. Below this is a search bar and a 'Map' button. The main content area is a world map with numerous green icons representing ships, each with a number. The map is overlaid with a grid and includes a scale bar at the bottom left. On the left side, there are several panels: 'Ships Map' with search filters, 'Notation & Display options' with checkboxes for various ship types, and 'Quick Links' for AIS receiver information. At the bottom, there are social media links, a 'Refresh' button, and a 'Keller Energy University' logo.

Info Used by gCaptain

The screenshot displays the gCaptain website in a browser window. The address bar shows the URL <http://gcaptain.com/tools/>. The browser's menu bar includes File, Edit, View, Favorites, Tools, and Help. The website header features the gCaptain logo, the tagline "The World Leader In Maritime & Offshore News", and a Facebook social media link. A navigation menu contains links for HOME, NEWS, FORUM, JOBS, EVENTS, REGISTER, ADVERTISE, and MORE. Below this is a secondary menu with categories: Tools, GMDSS, Pubs, Nav, Electronic Nav, Weather, Blogs, Links, and AIS. The main content area is dominated by a world map with a grid of green squares overlaid on it, indicating vessel tracking data. The map includes labels for continents (ASIA, NORTH AMERICA, SOUTH AMERICA, AFRICA, EUROPE) and oceans (Atlantic Ocean, Pacific Ocean, Indian Ocean). A scale bar at the bottom left shows 5000 km and 2000 mi. A coordinate box displays $N35^{\circ}45'09.61''$ and $W122^{\circ}00'23.13''$ (35.7527, -122.0064). A "Download Google Chrome" advertisement is visible in the bottom right corner of the map area. The footer of the map section includes "© MarineTraffic.com (Terms of Use) Refresh in: " and "Vessels in Range: 44622, Displayed:". The browser's status bar at the bottom right shows a 100% zoom level.

Also on gCaptain

The screenshot shows the gCaptain website interface. At the top, there is a navigation bar with the gCaptain logo and links for DAILY BLOG, FORUMS, TOOLS, and JOBS. Below this is a banner for Hertz Gold Plus Rewards. The main content area is titled "AIS - GLOBAL SHIP TRACKING" and features a "Ships Map" section. The map displays the Mediterranean Sea and surrounding regions, including Serbia, Kosovo, Bulgaria, Greece, and Albania. A legend on the left side of the map lists various ship types and their corresponding icons: Passenger Vessels (blue), Cargo Vessels (green), Tankers (red), High Speed Craft (yellow), Tug, Pilot, etc (cyan), Yachts & Others (magenta), Fishing (orange), Navigation Aids (red diamond), Unspecified Ships (grey), Ships Underway (black), and Anchored/Moored (black diamond). The map also includes a search bar, a scale bar, and a refresh button. On the right side of the map, there is an advertisement for "THAT'S NOT COOL.COM" featuring a cartoon character and the text "CREATE YOUR AVATAR AND HAVE".

TRANSMAR SHIPPING

The screenshot shows the website for Transmar Shipping Agency, a member of the Ship Agents Union in Piraeus. The page features a navigation menu with links to Home, Who We Are, What We Do, Ports, Why Us, News, Contact Us, and Advance Cargo Declaration. A large banner image depicts a port scene with several ships docked. Below the banner is a 'Live Ship AIS' section containing a map of Greece with a grid overlay. The map displays vessel counts in various grid cells across the country. To the right of the map is a 'Latest Port / Shipping News' section with two articles: 'Posidonia: 'best and biggest ever'' and 'European delegates hear about Piraeus project'. A search bar is located in the top right corner of the page.

TRANSMAR SHIPPING AGENCY
MEMBERS OF SHIP AGENTS UNION - PIRAEUS

Search

Home Who We Are What We Do Ports Why Us News Contact Us Advance Cargo Declaration

Live Ship AIS

Grid Cell	Vessel Count
24	17
27	44
21	183
133	47
11	42
55	141
13	17
19	25
6	14
19	8
5	9
12	

© MarineTraffic.com (Terms of Use) Refresh in: " Vessels in Range: 44493, Displayed:

Latest Port / Shipping News

Posidonia: 'best and biggest ever'

This year's Posidonia Exhibition was the 'best and biggest ever', with more than 1,800 exhibitors from almost 90 countries.

The world's largest shipping trade event, held in Athens, once again attracted huge numbers of visitors from the global marine community.

"The event's ...

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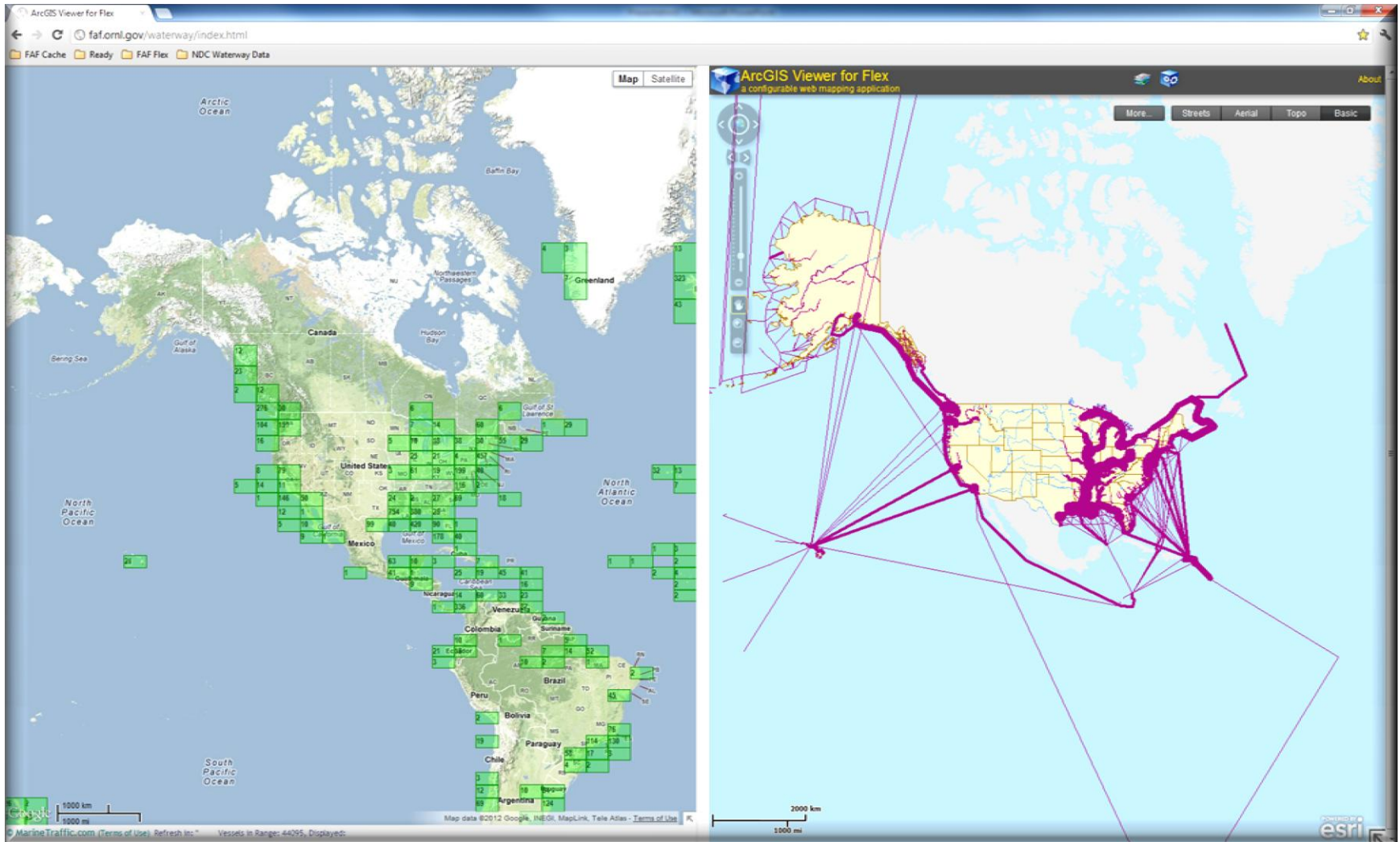
European delegates hear about Piraeus project

A project to set up two prototypes for the creation of a Port Community System at the Port of Piraeus was outlined at the European Maritime Day conference held in Gothenburg.

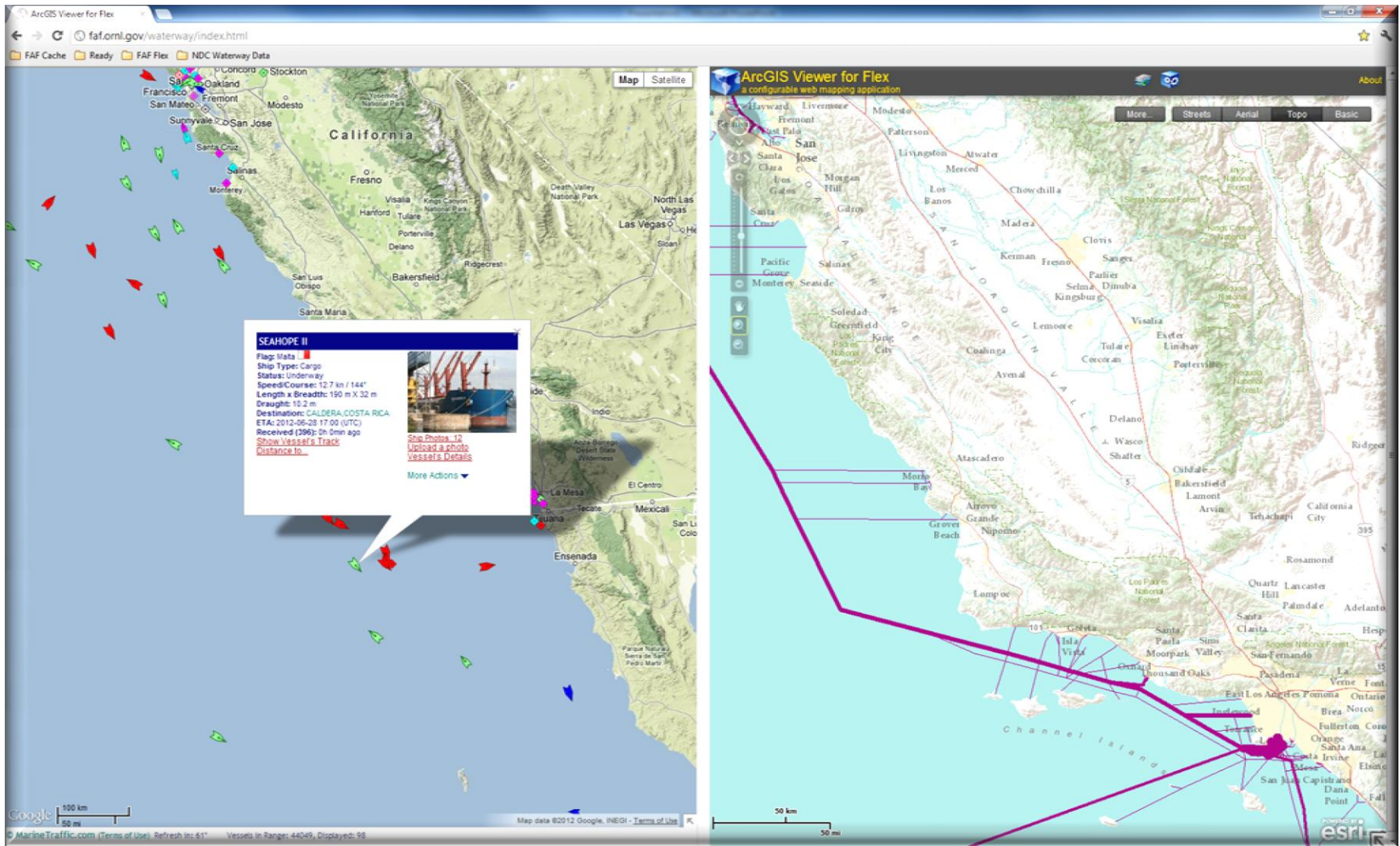
During a workshop session entitled 'Connectivity for Blue Growth', Ioannis ...

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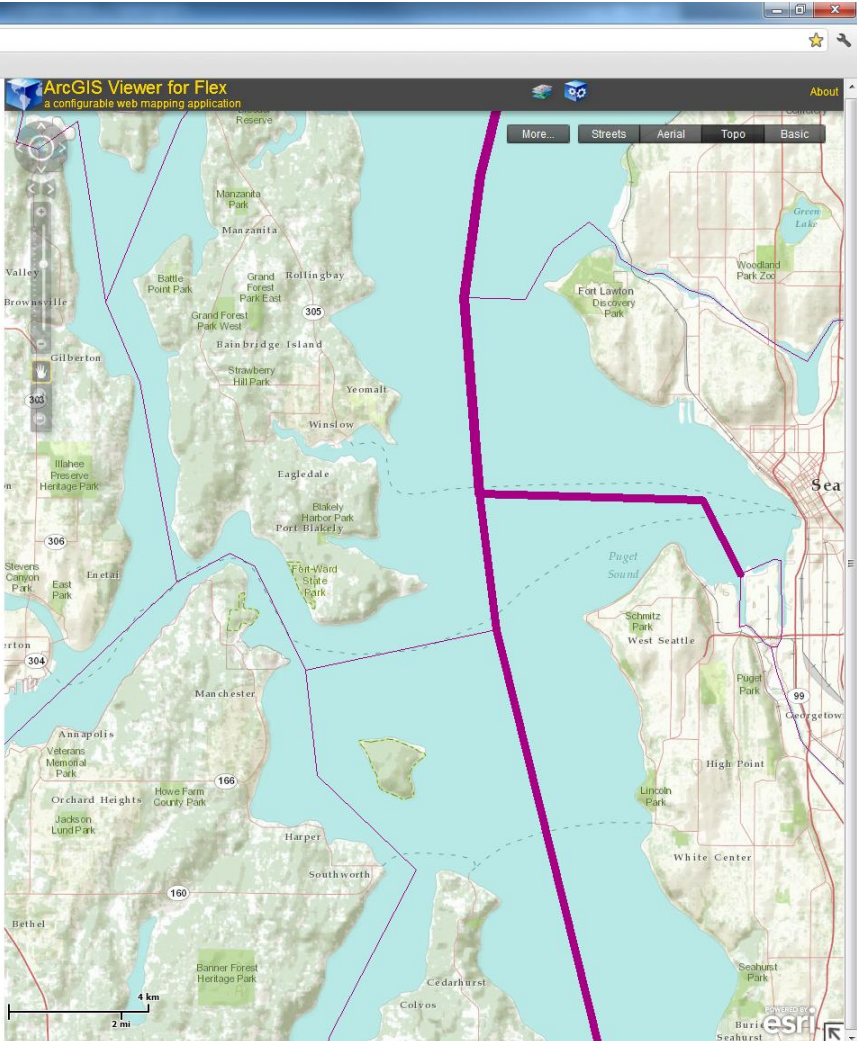
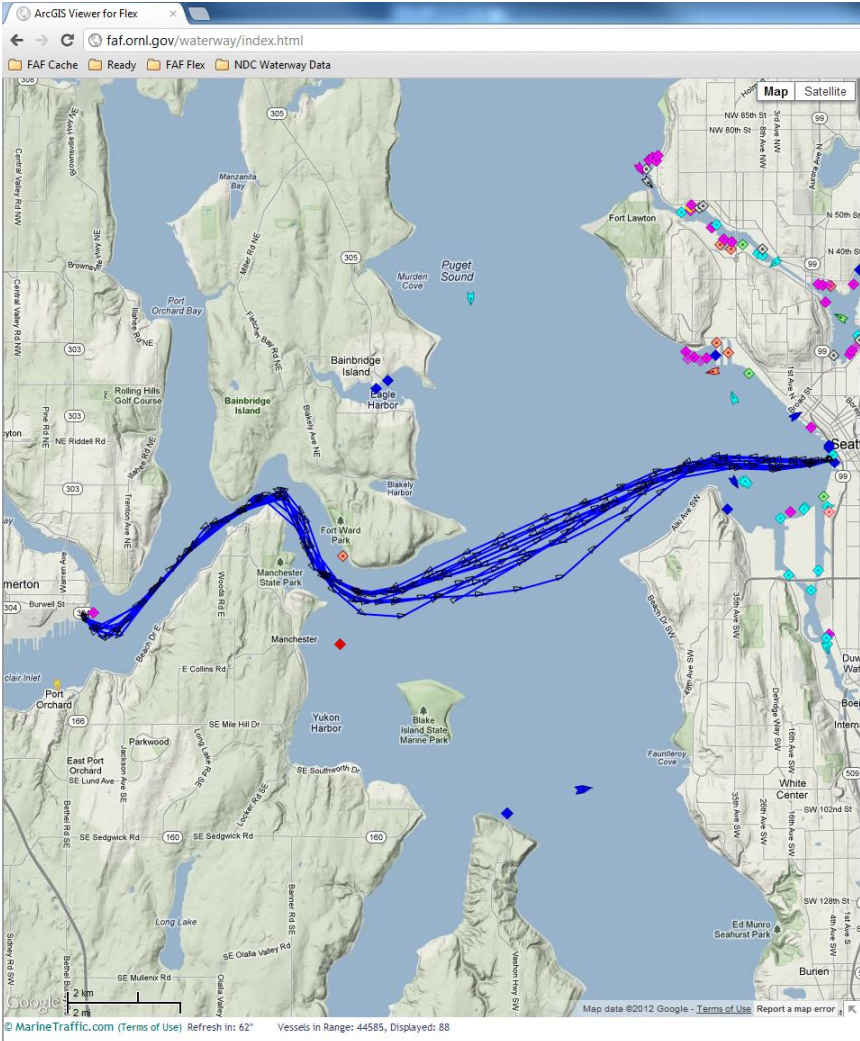
An Integrated View in CTA Web App



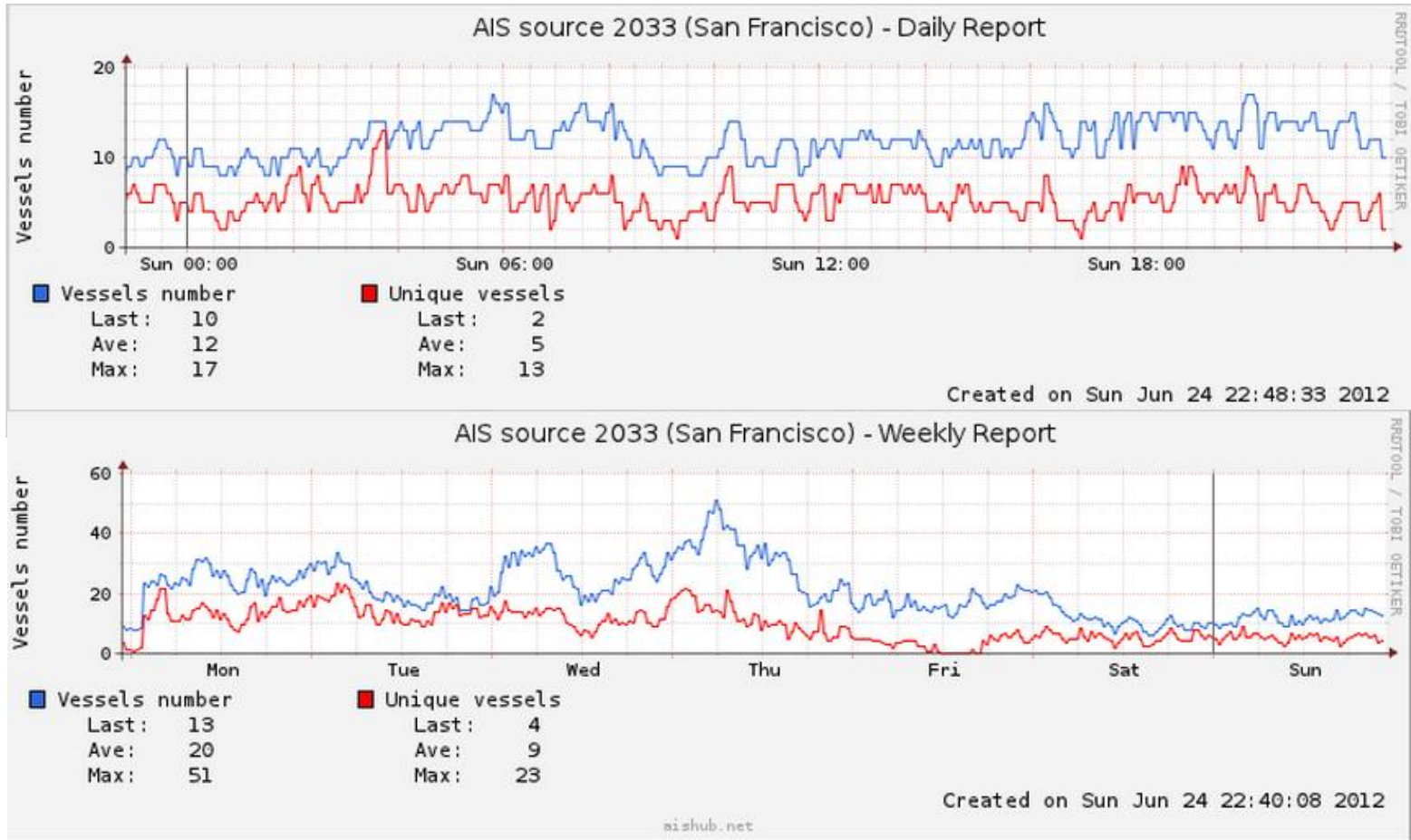
Examples of Integrated View



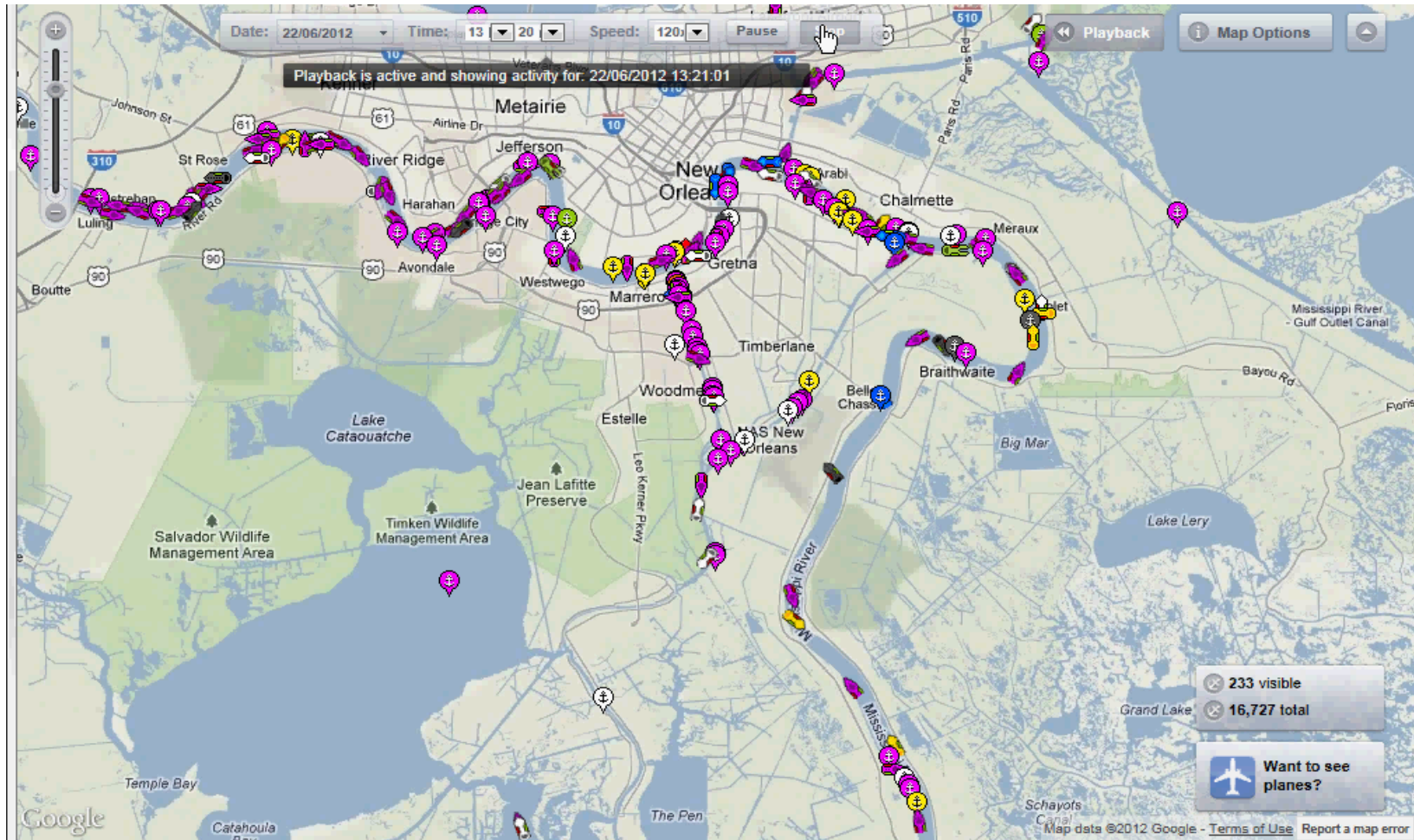
Examples of Integrated View (cont.)



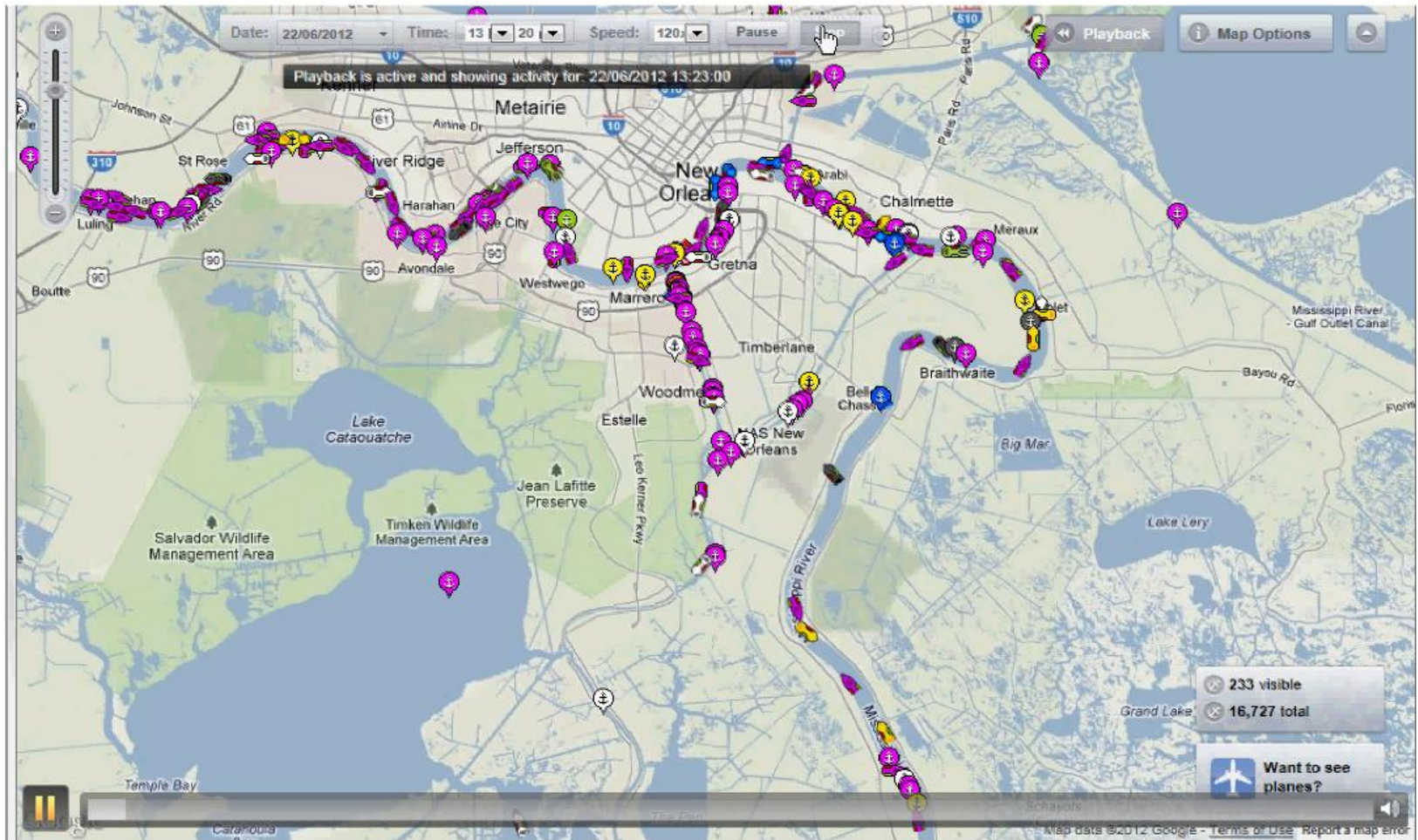
AIS Statistics – San Francisco



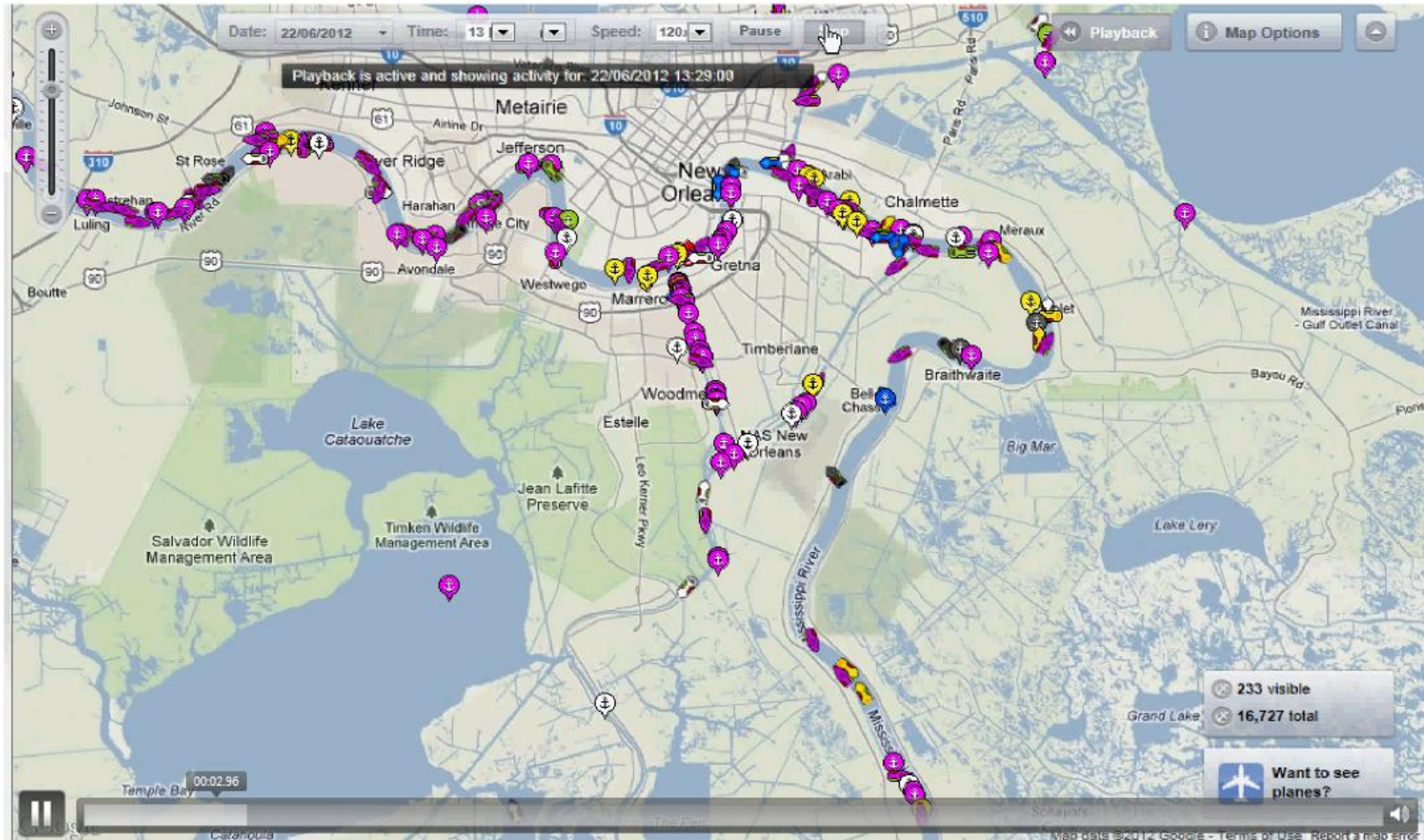
AIS Animation - New Orleans



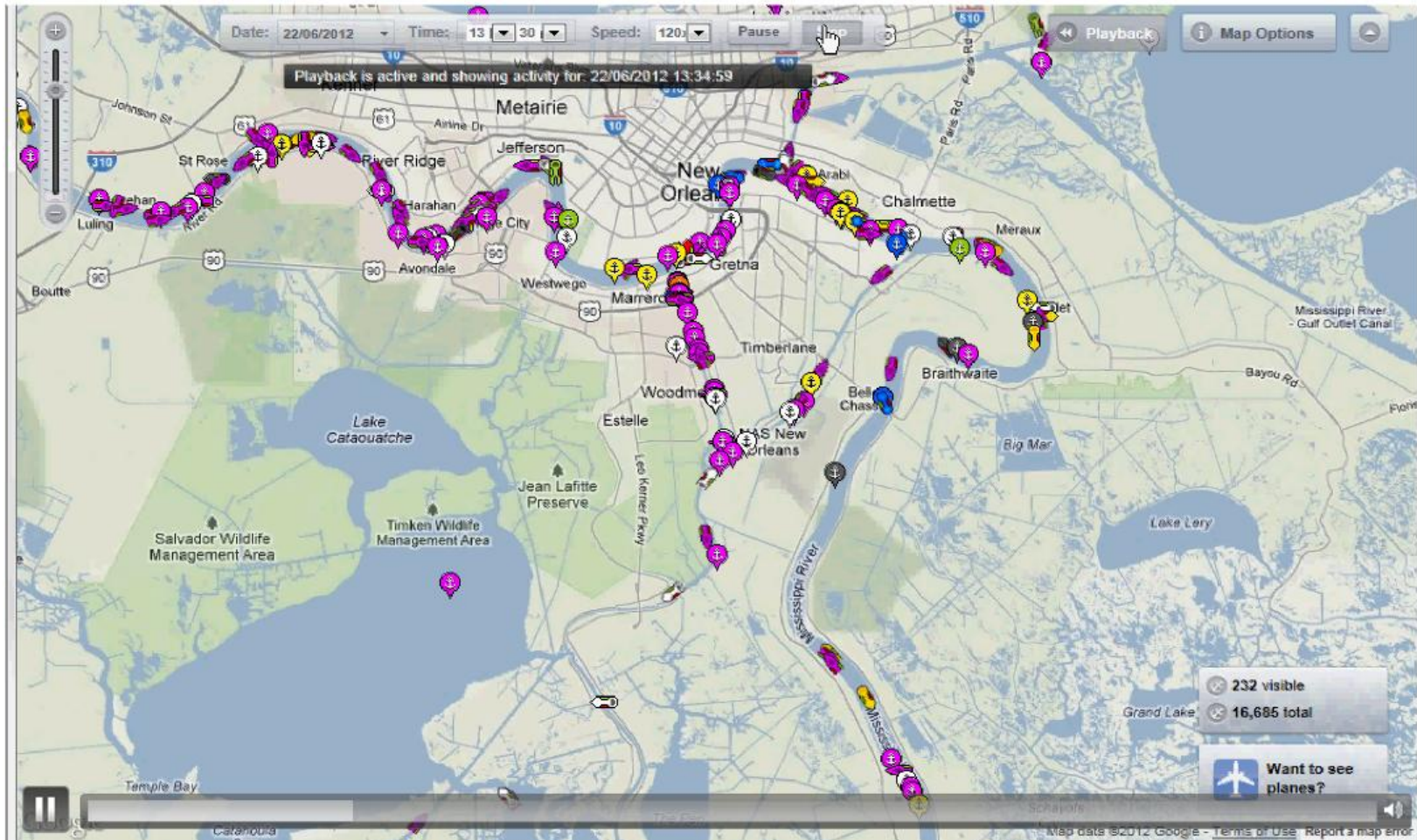
AIS Animation – New Orleans



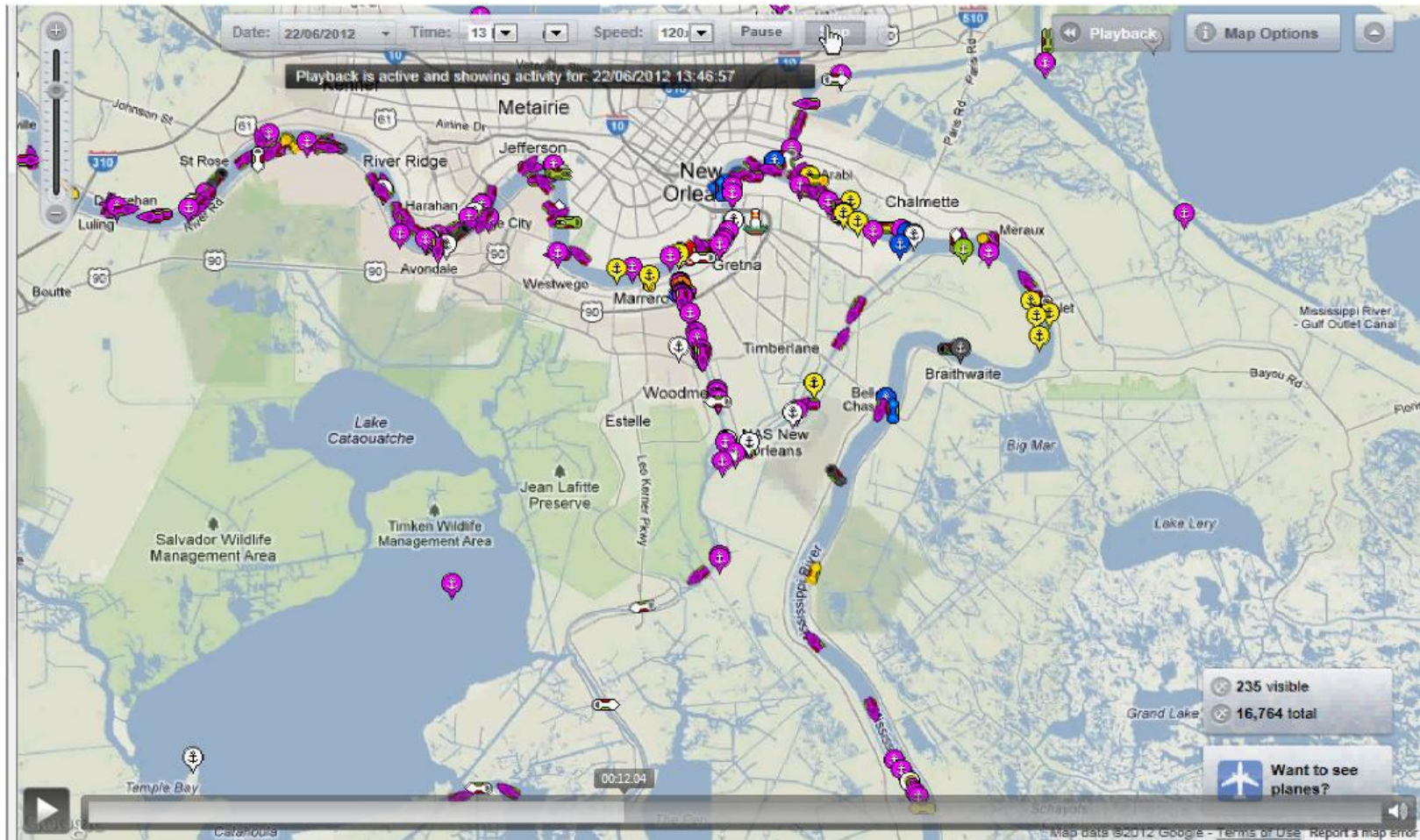
AIS Animation – New Orleans



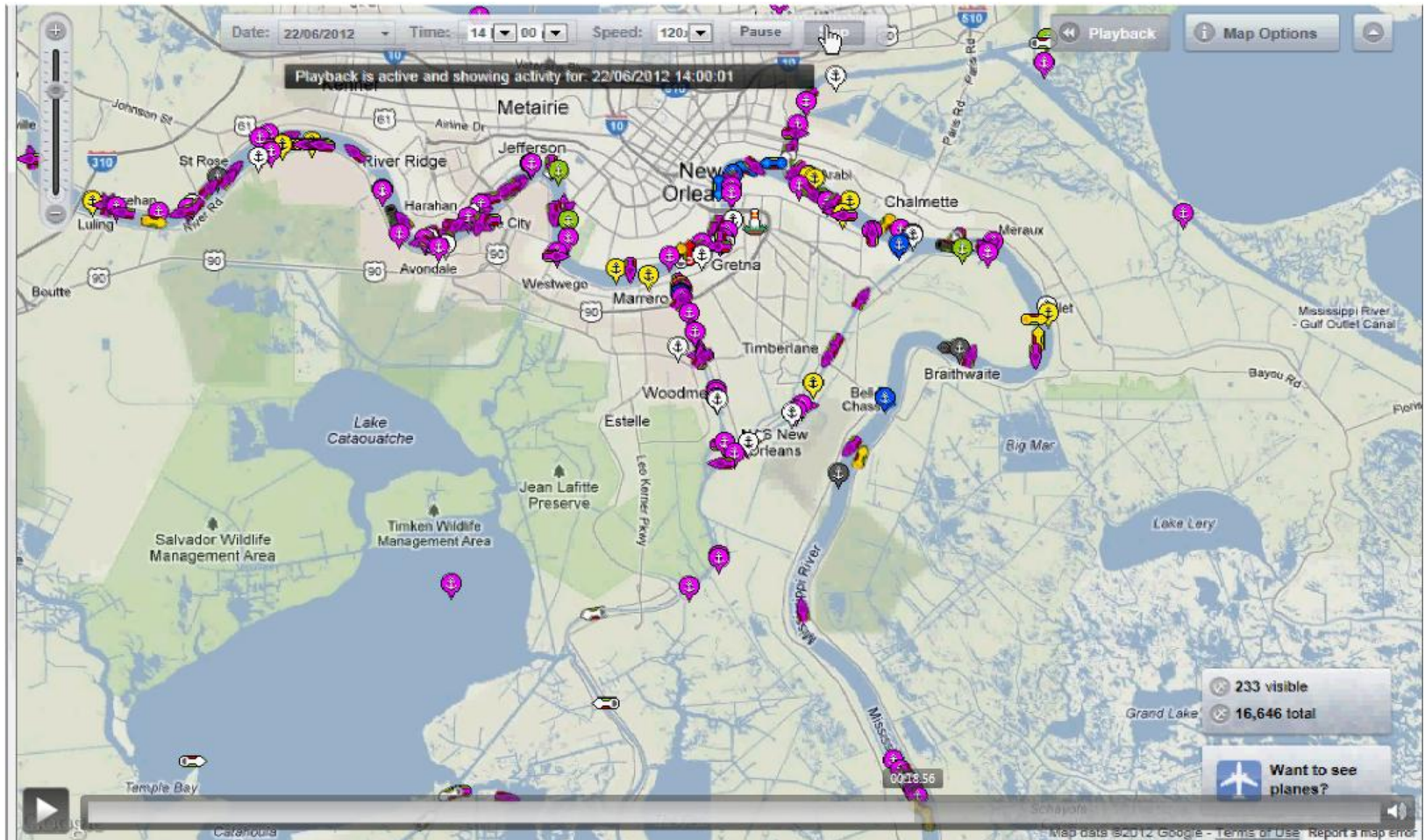
AIS Animation – New Orleans



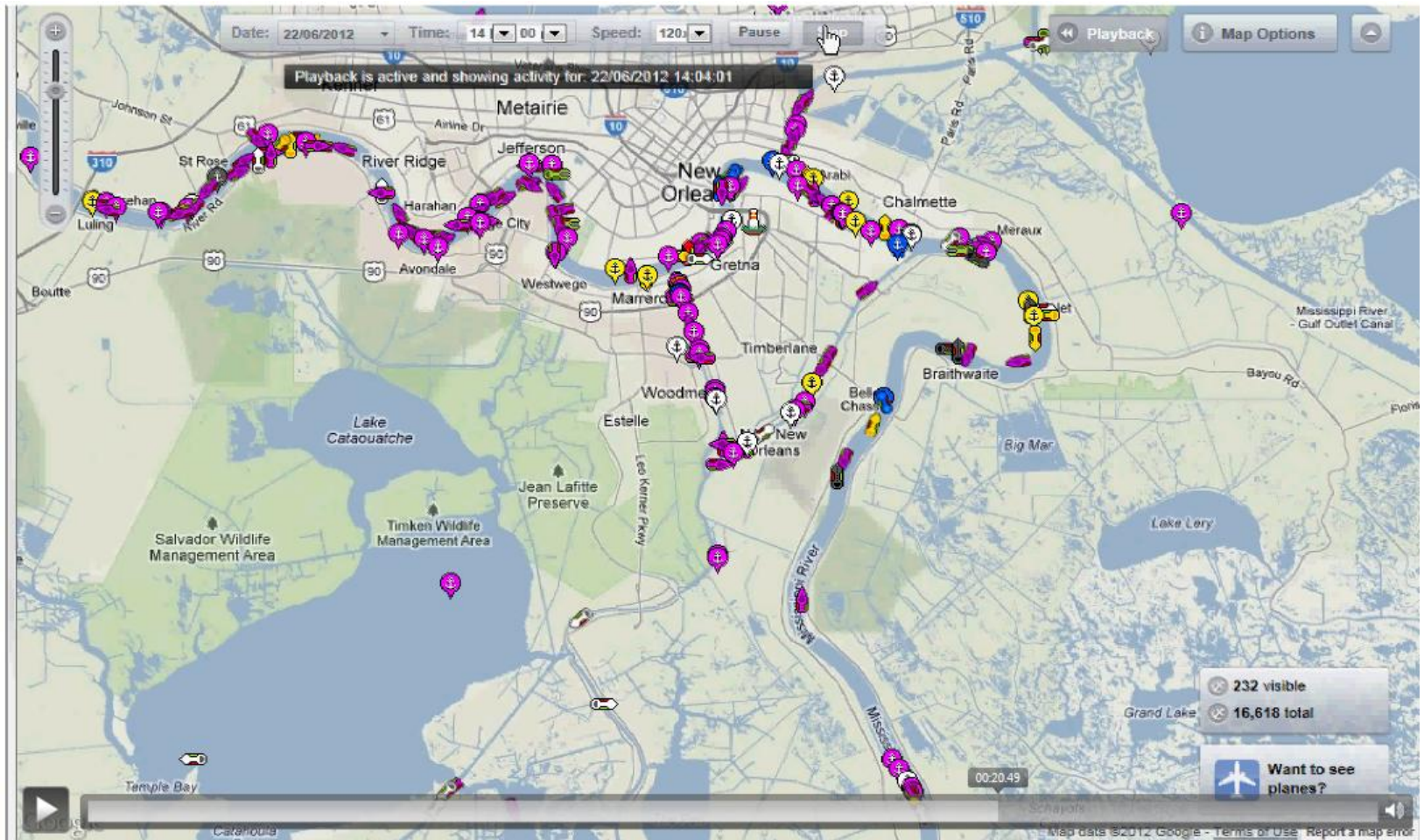
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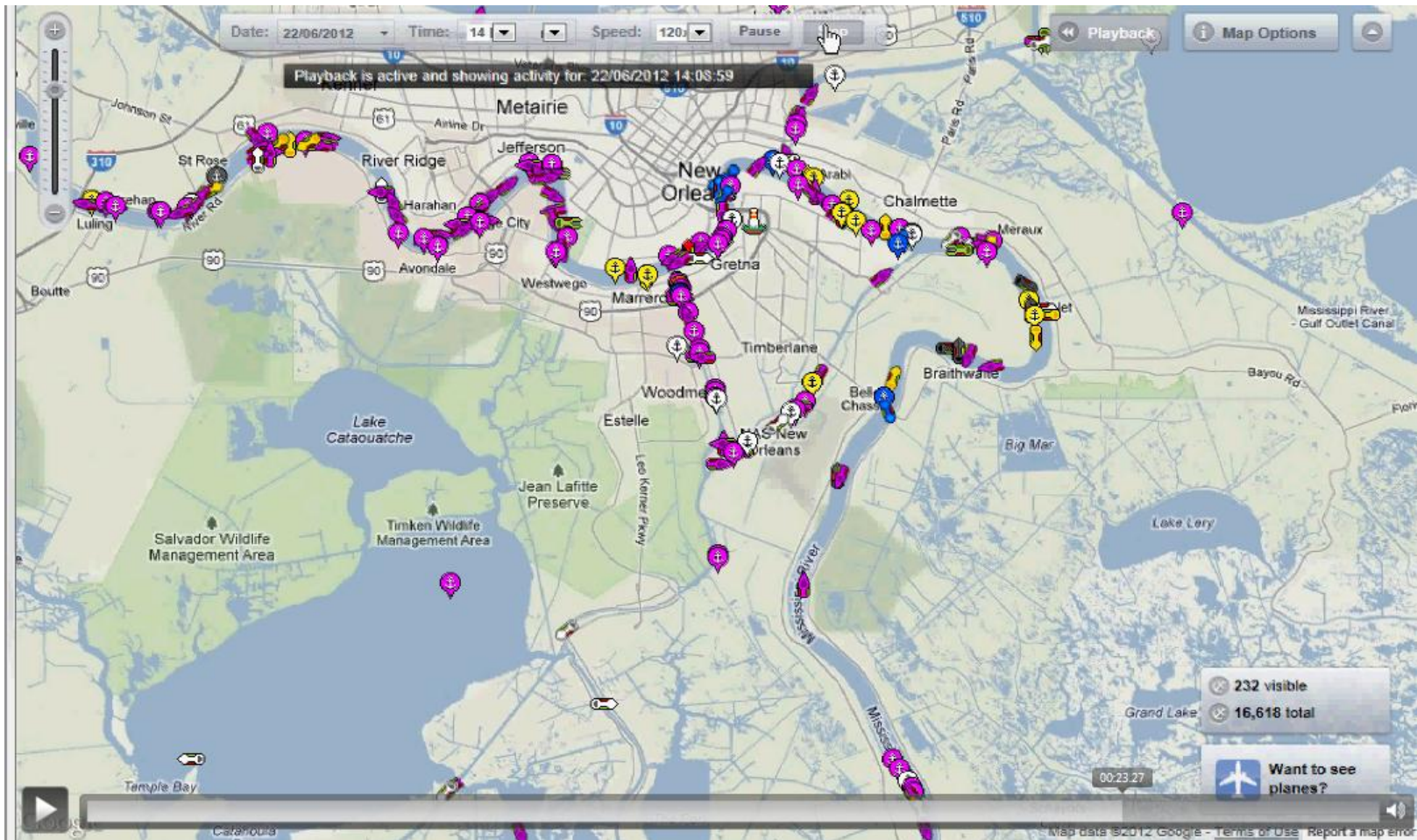
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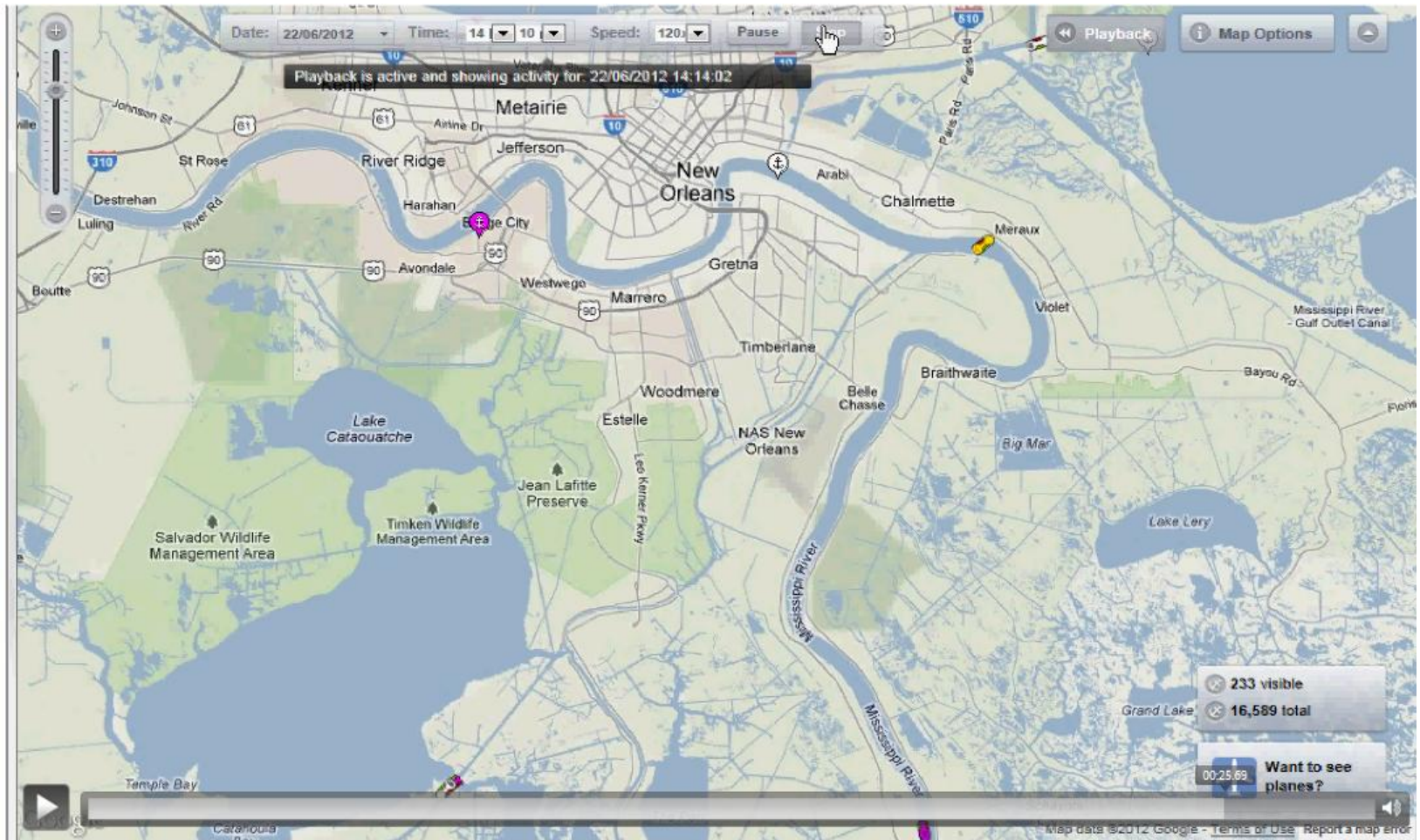
AIS Animation – New Orleans



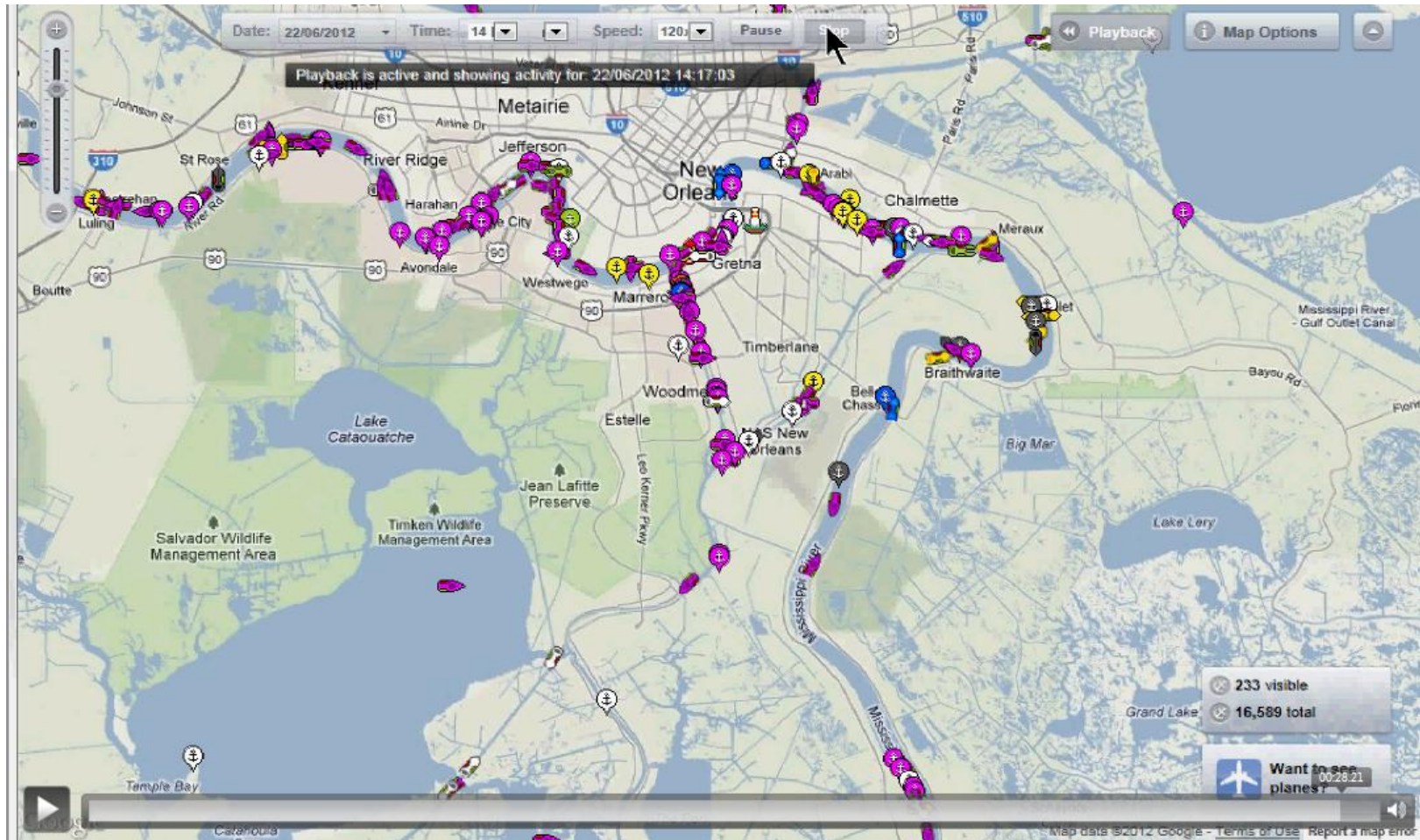
AIS Animation – New Orleans



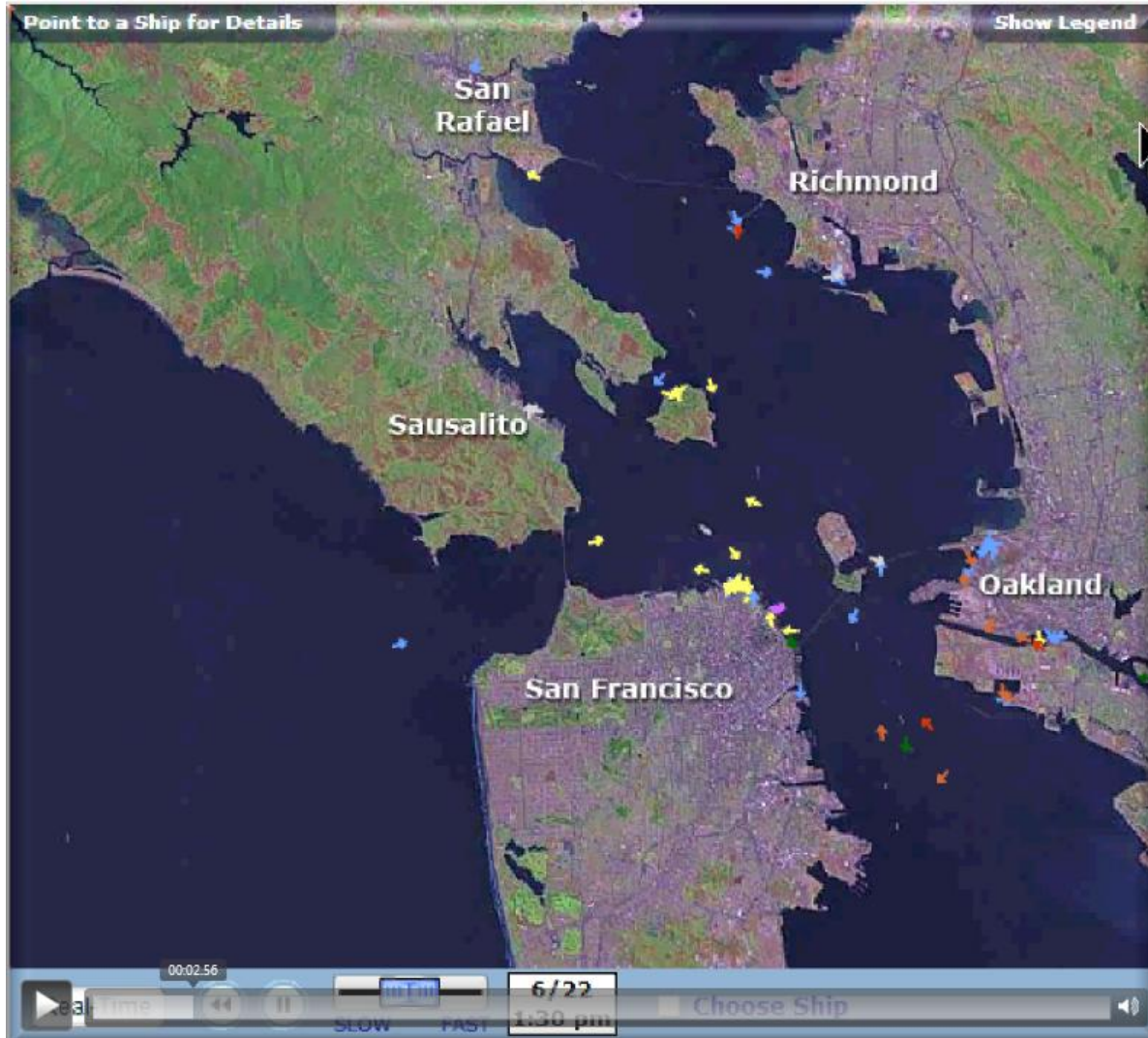
AIS Animation - New Orleans



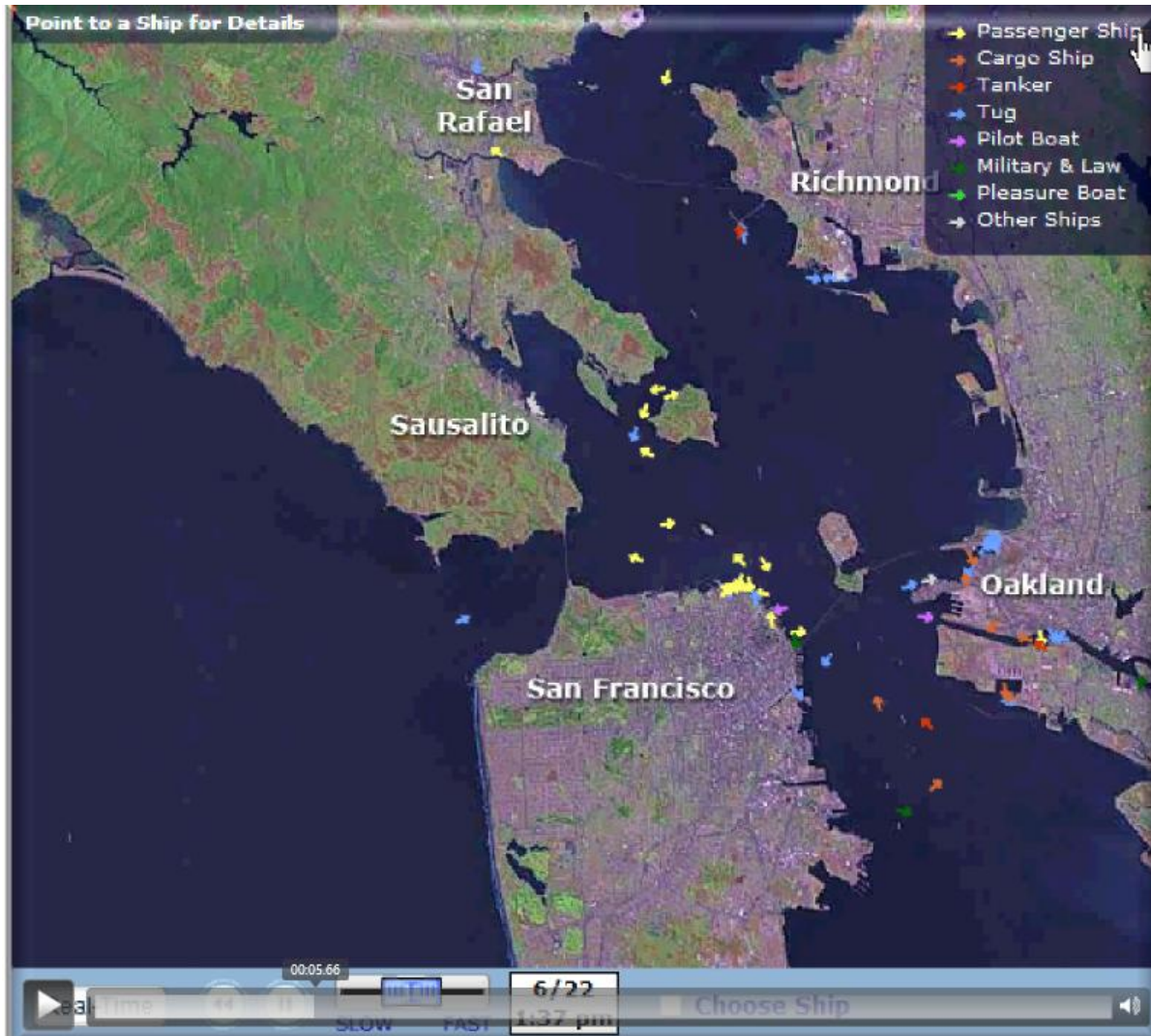
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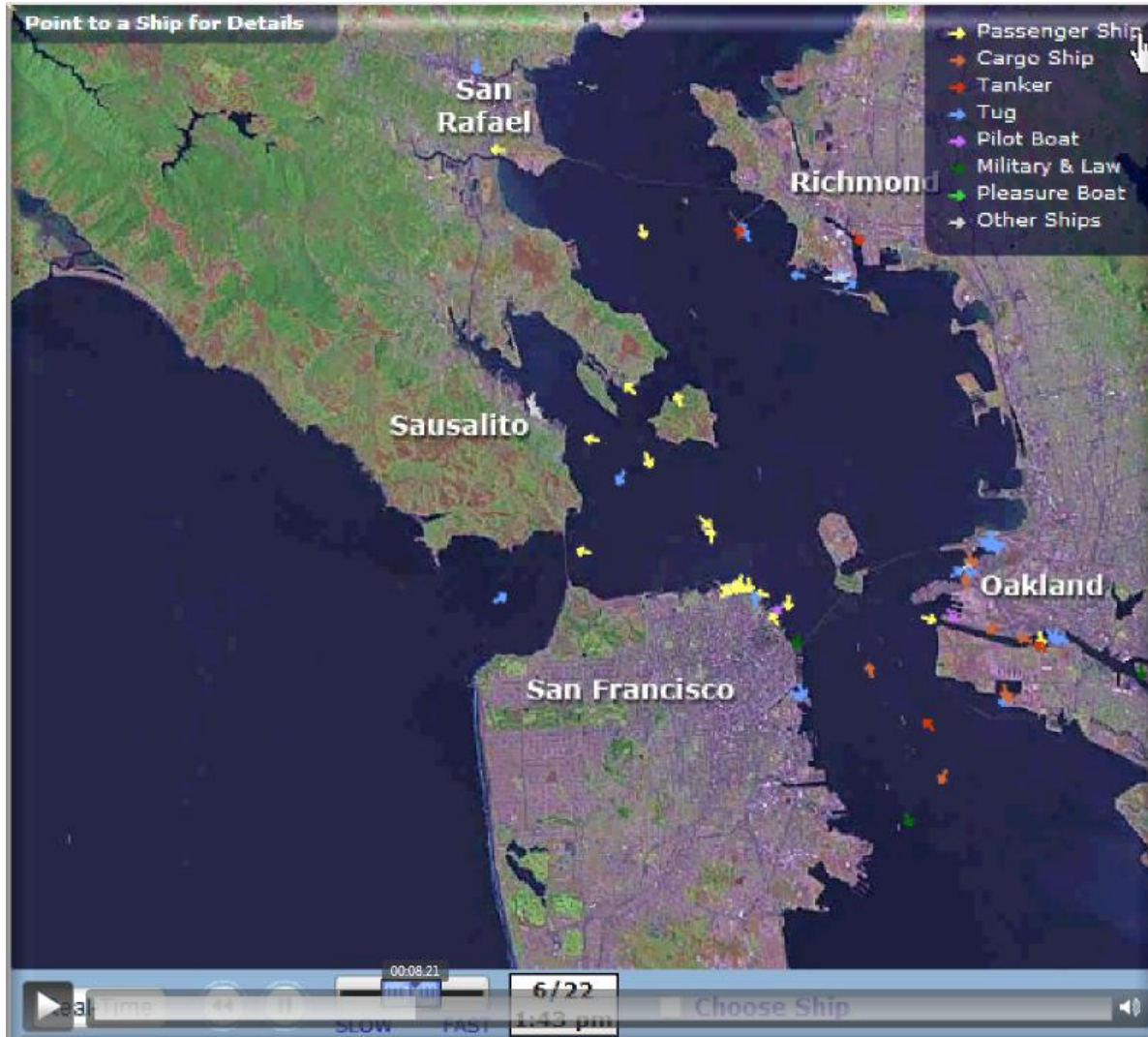
AIS Animation- San Francisco



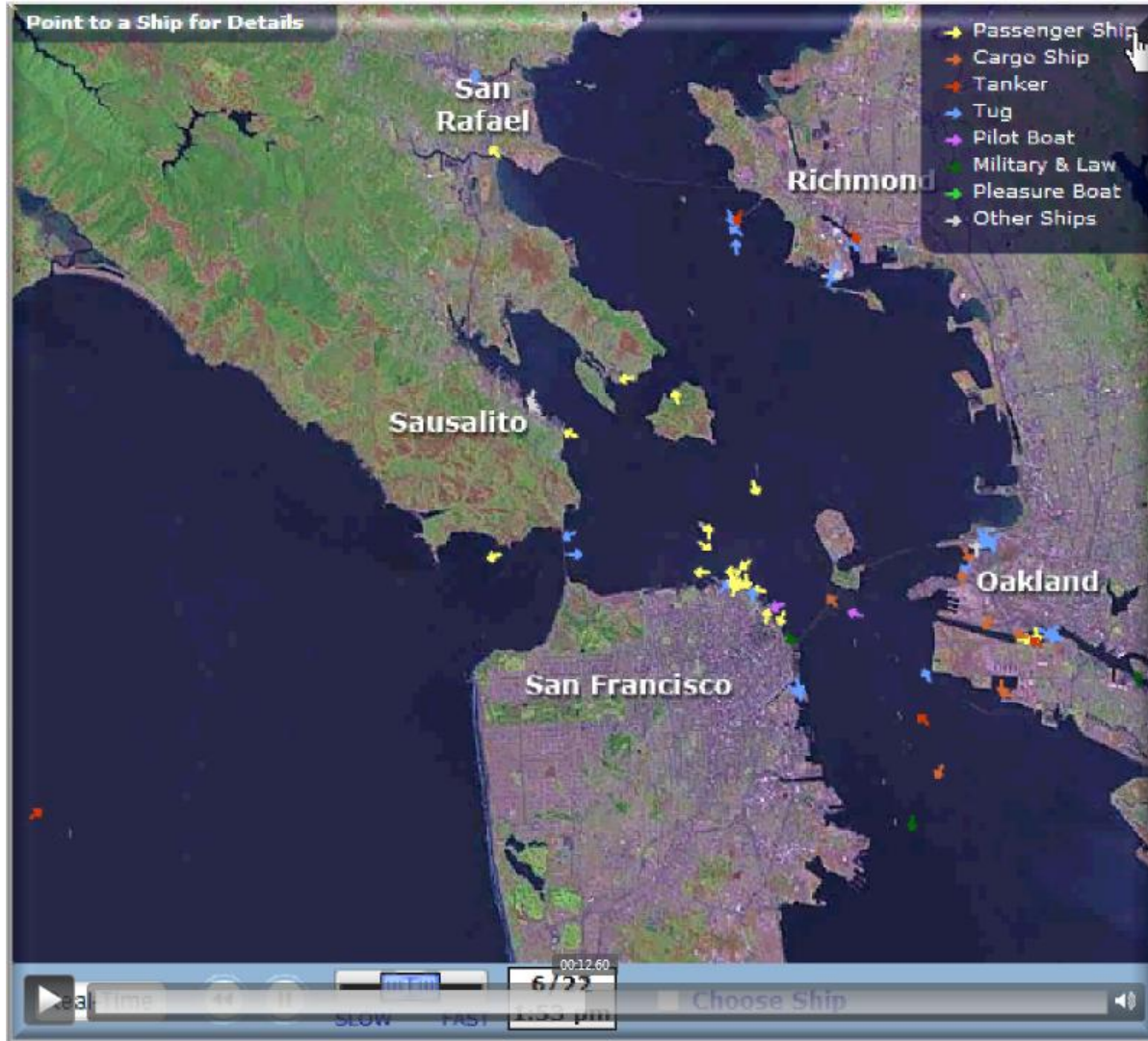
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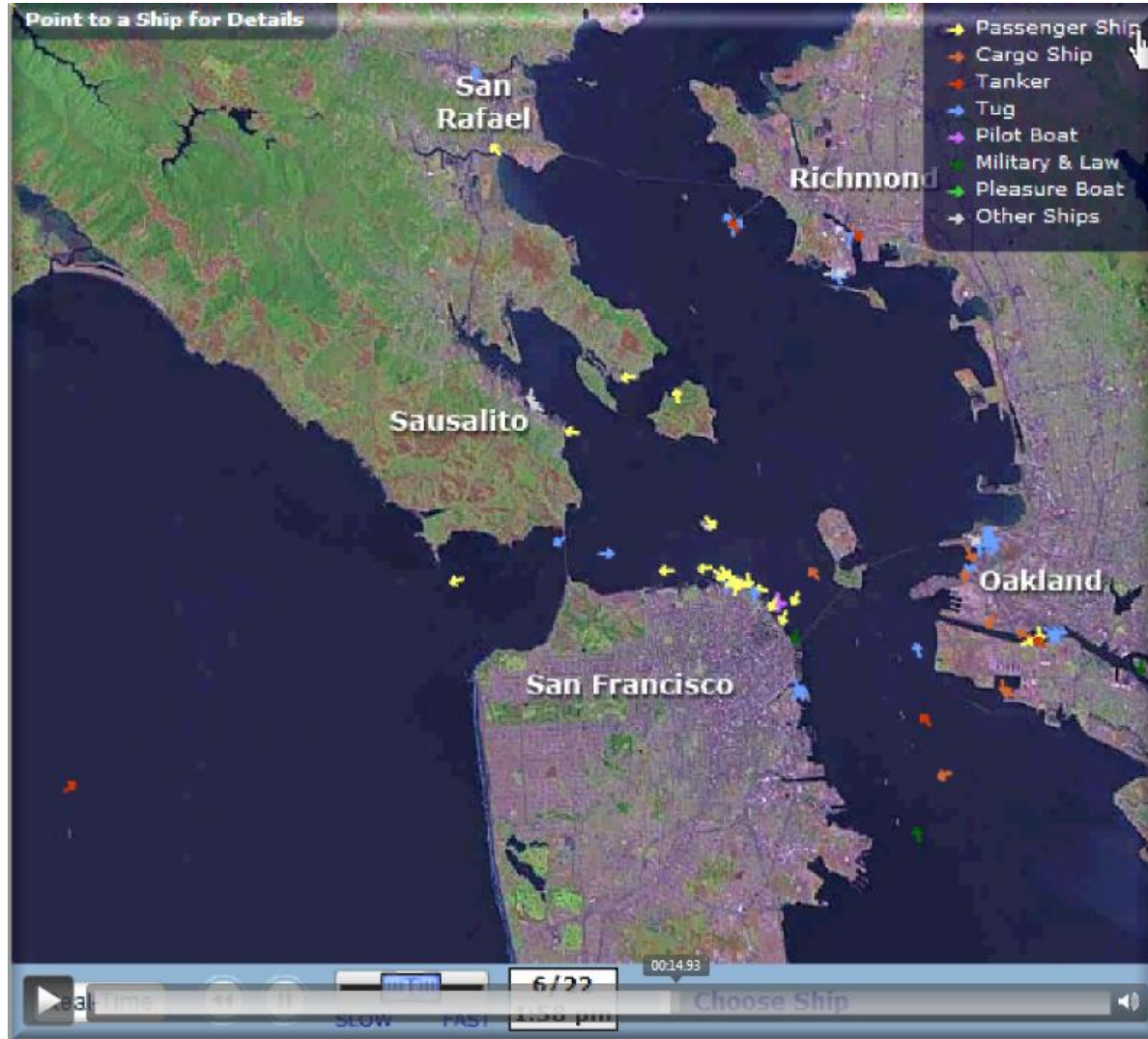
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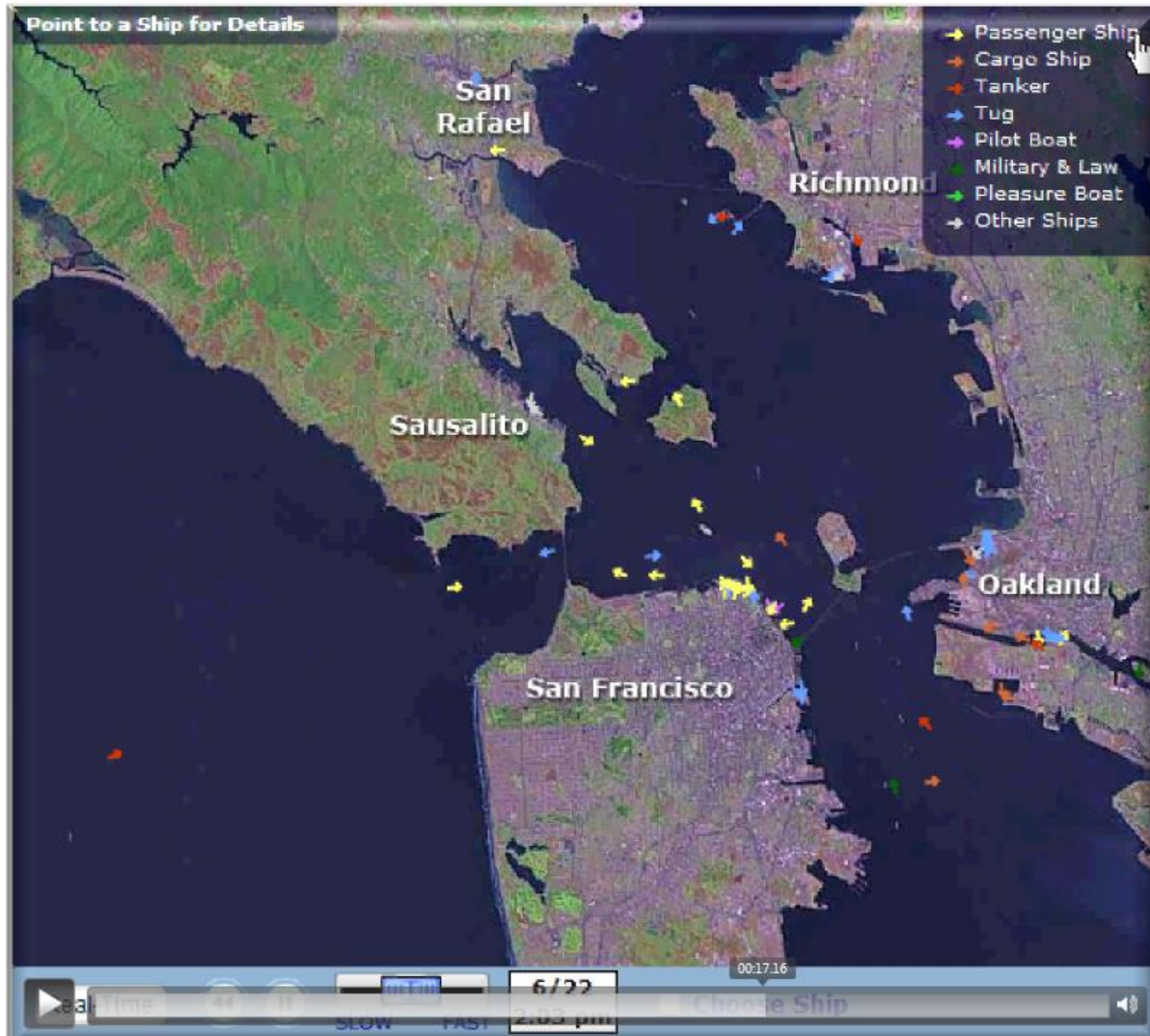
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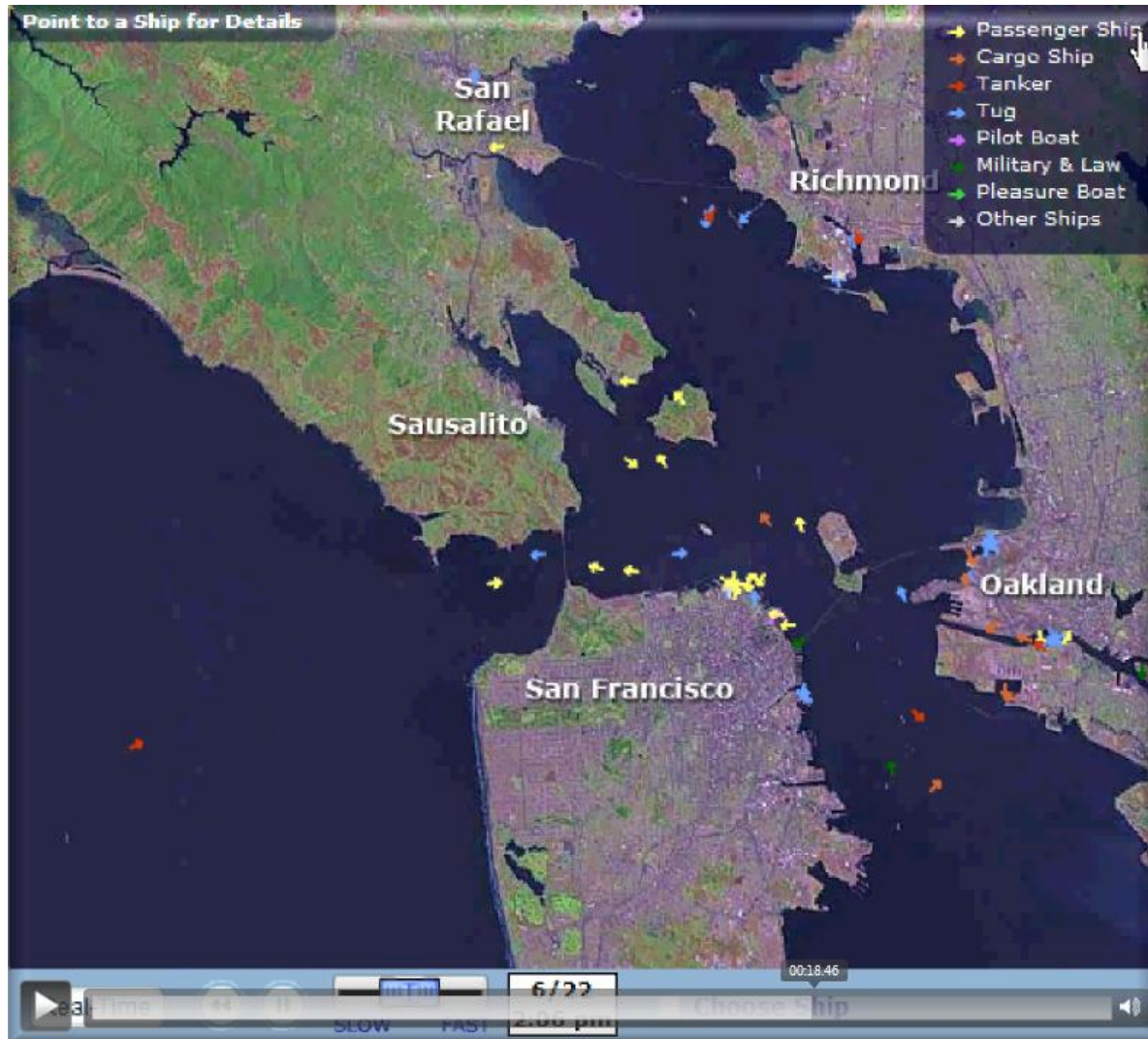
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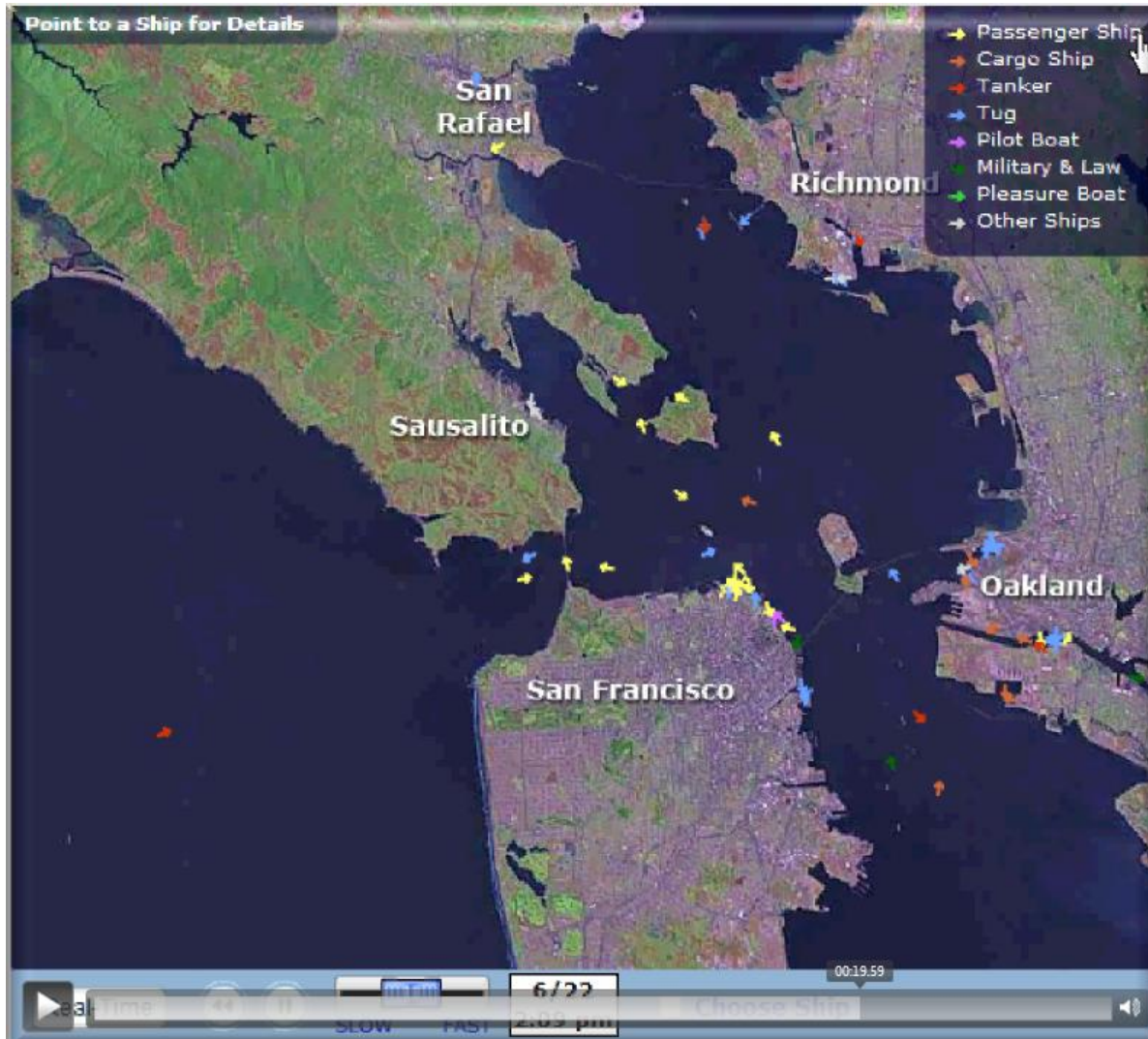
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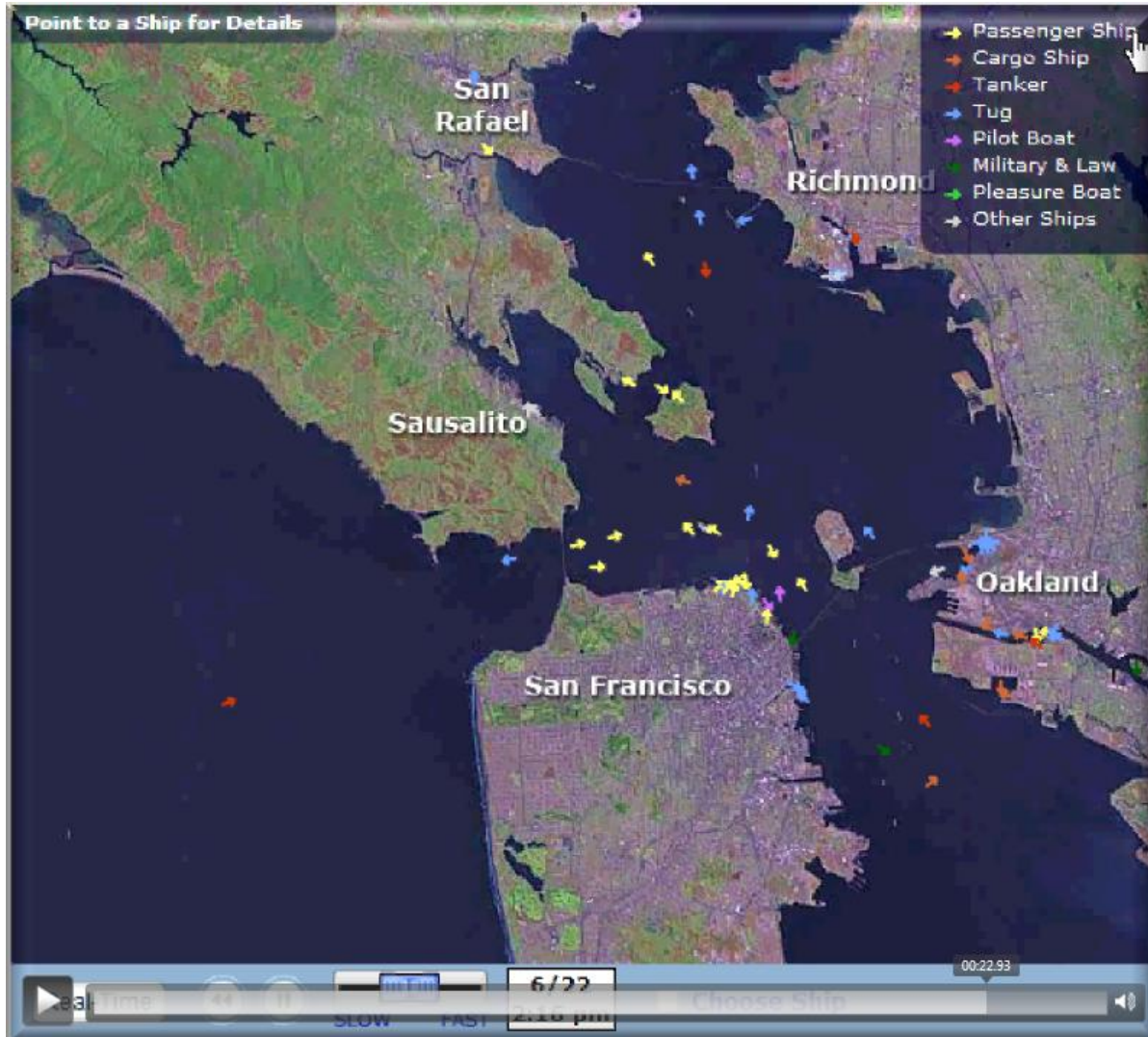
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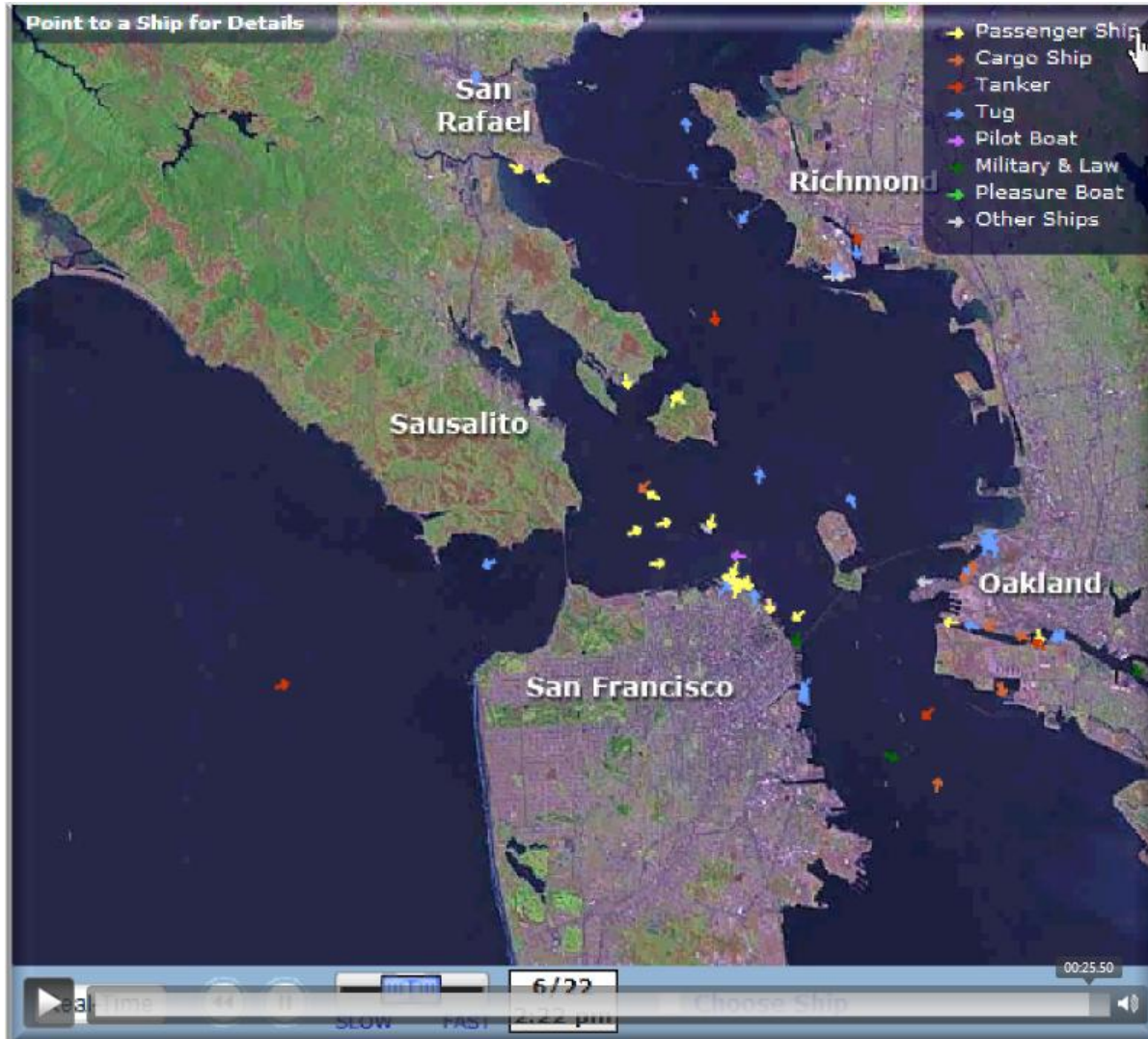
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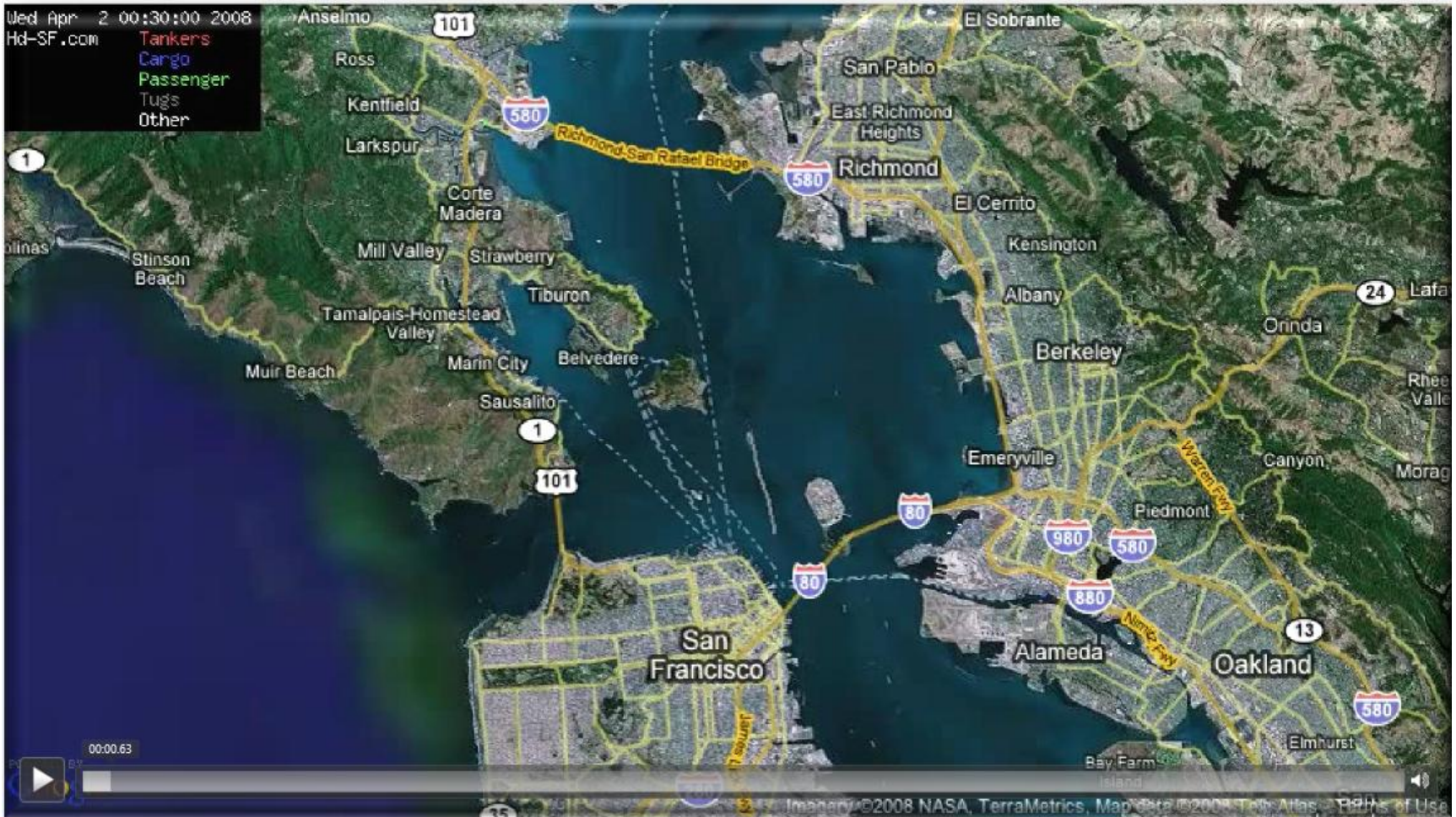
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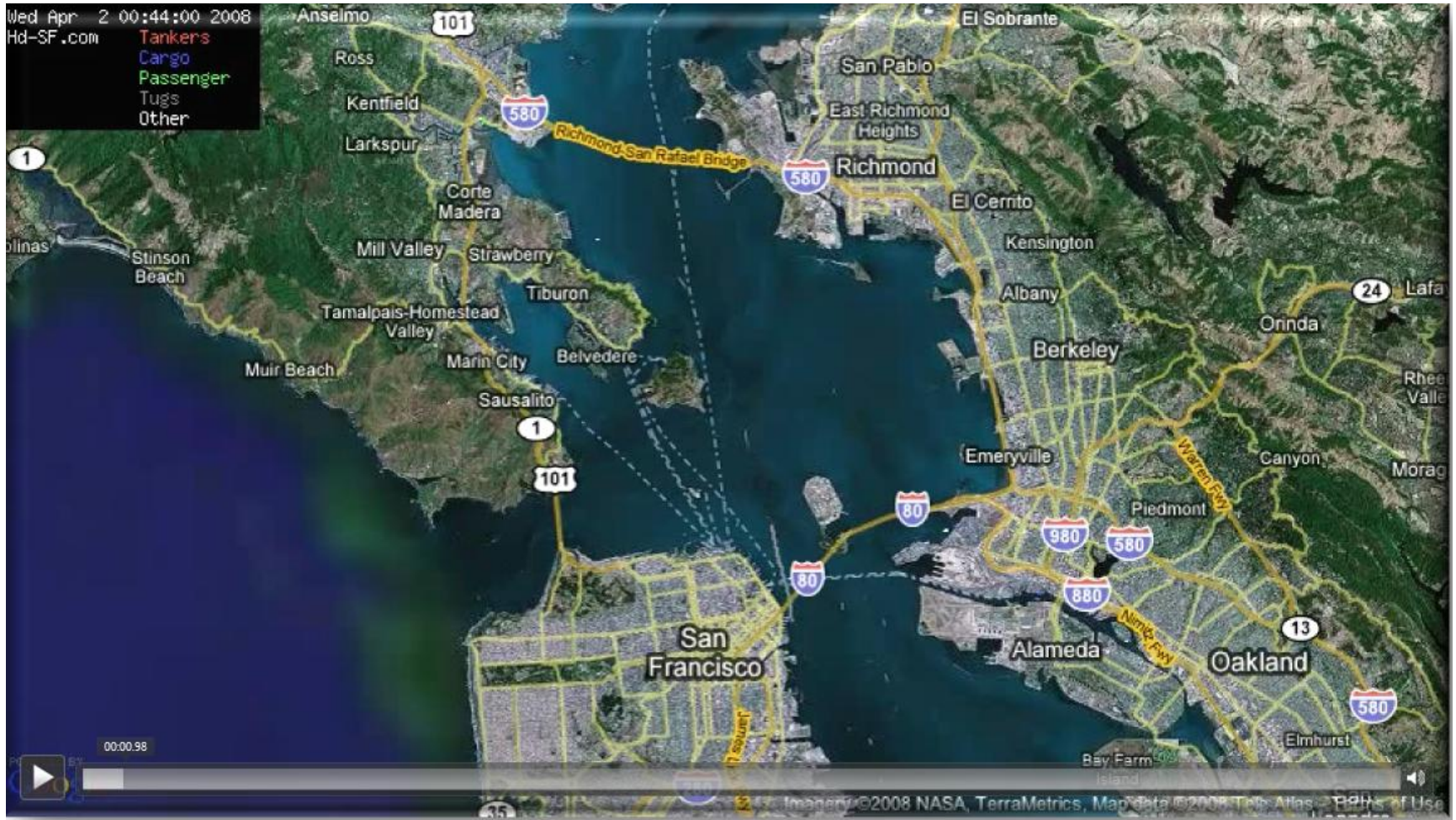
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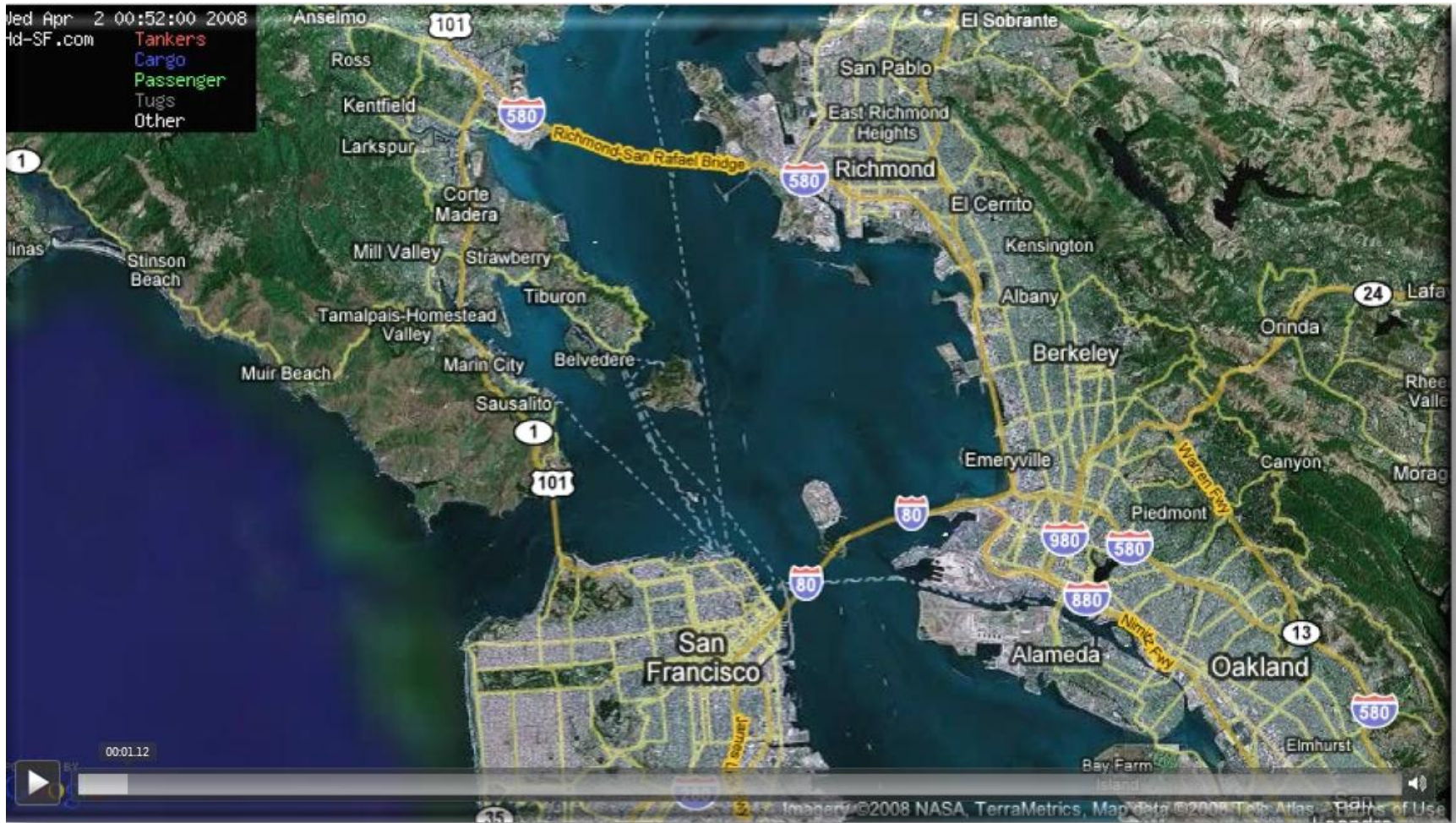
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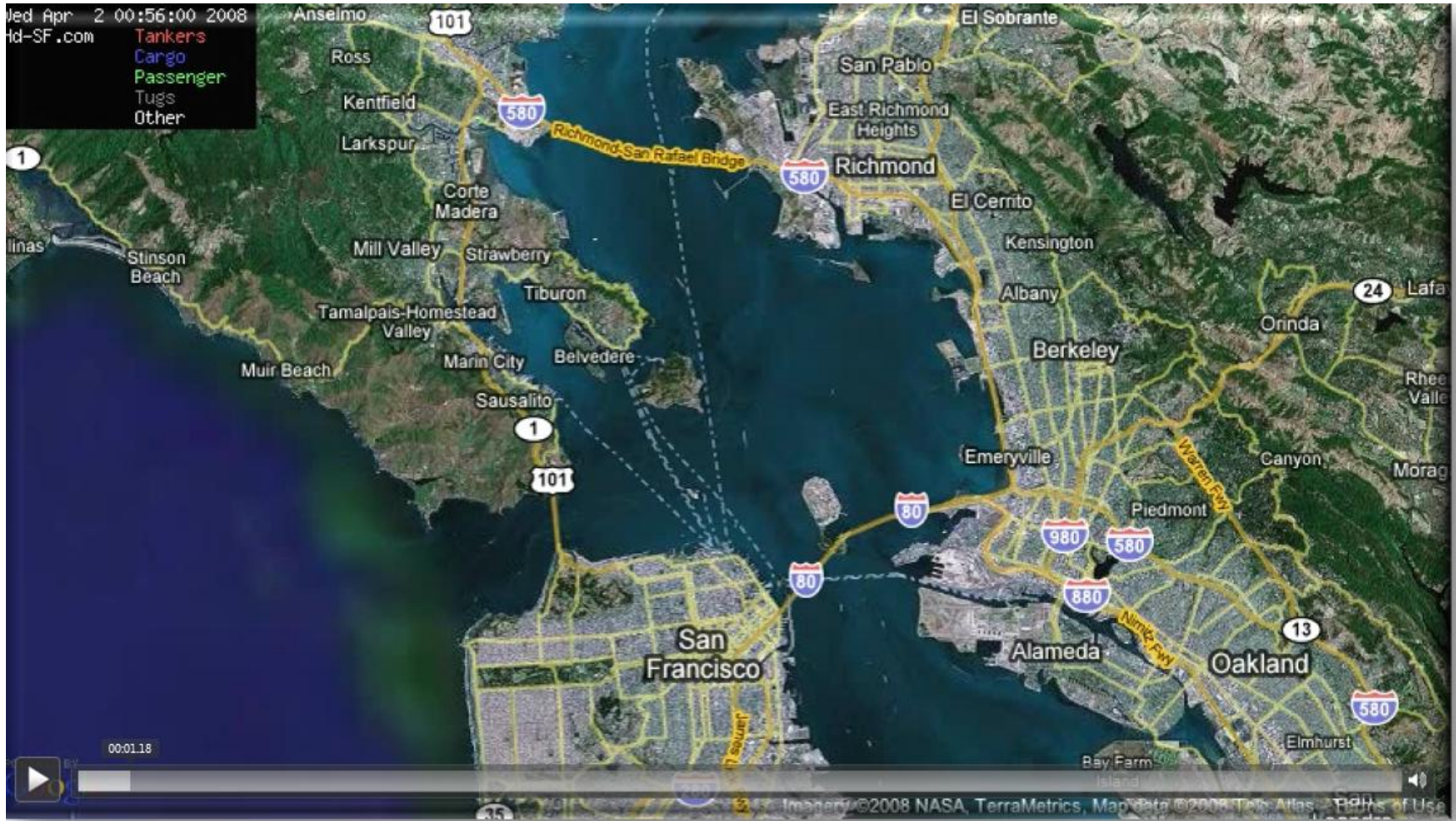
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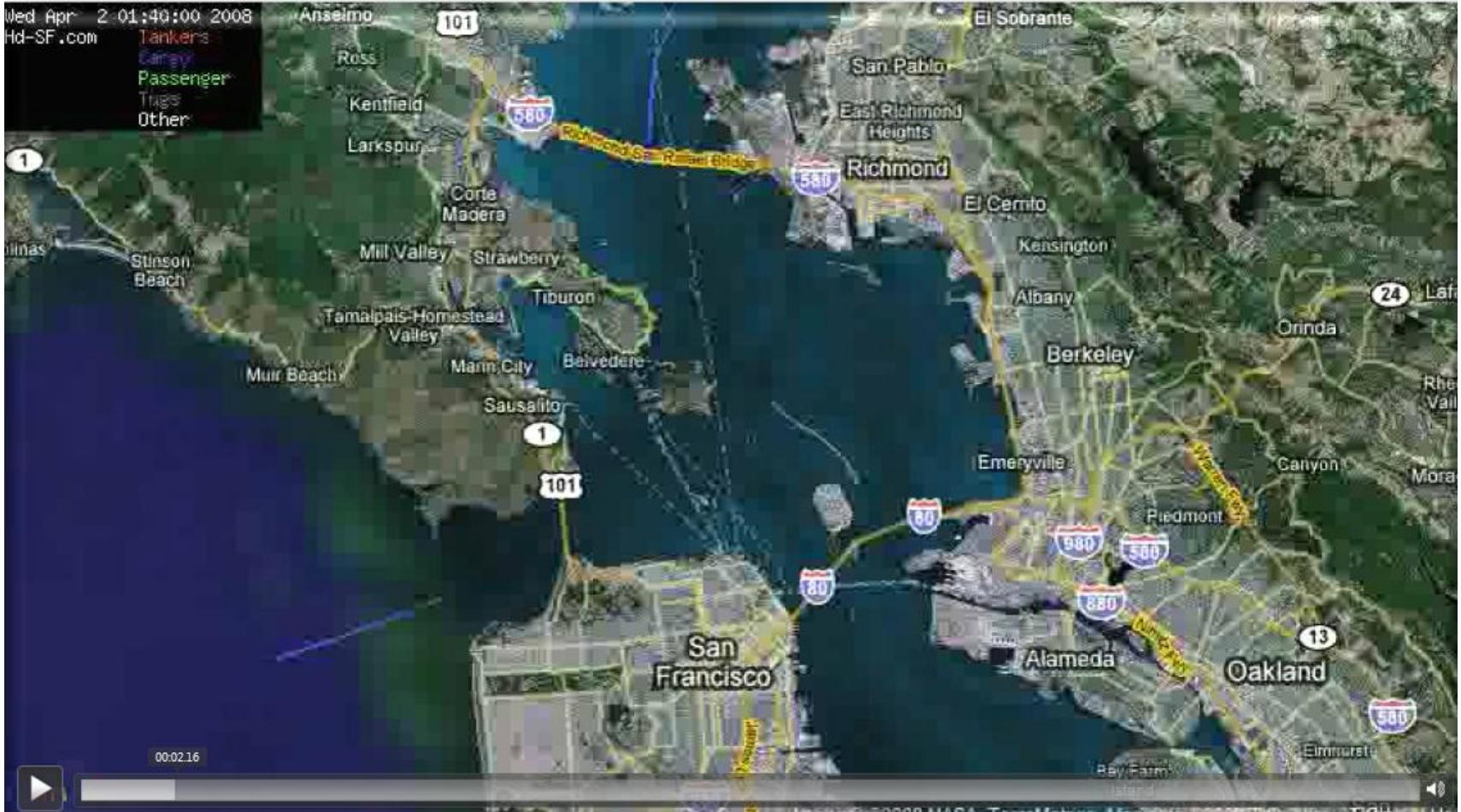
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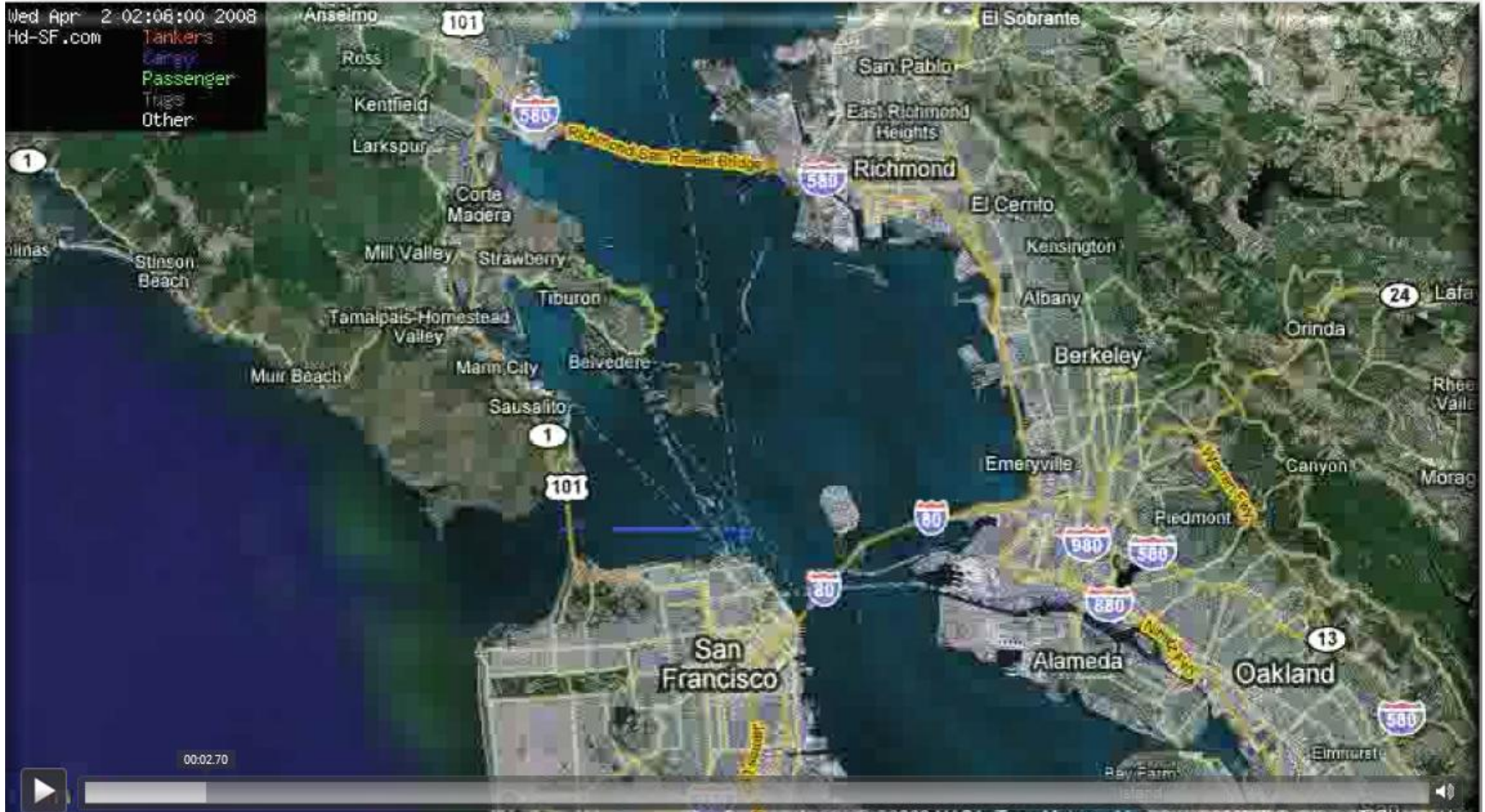
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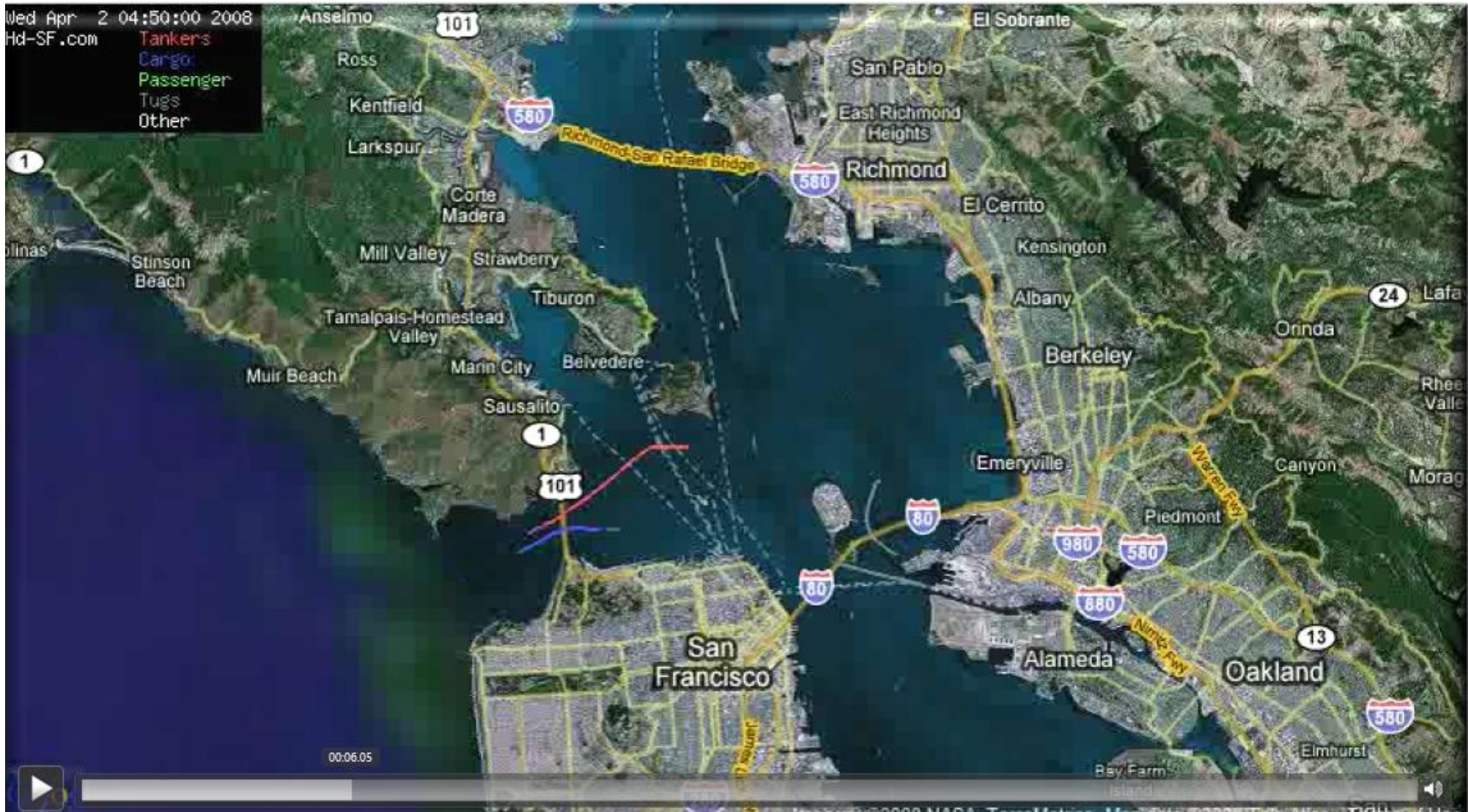
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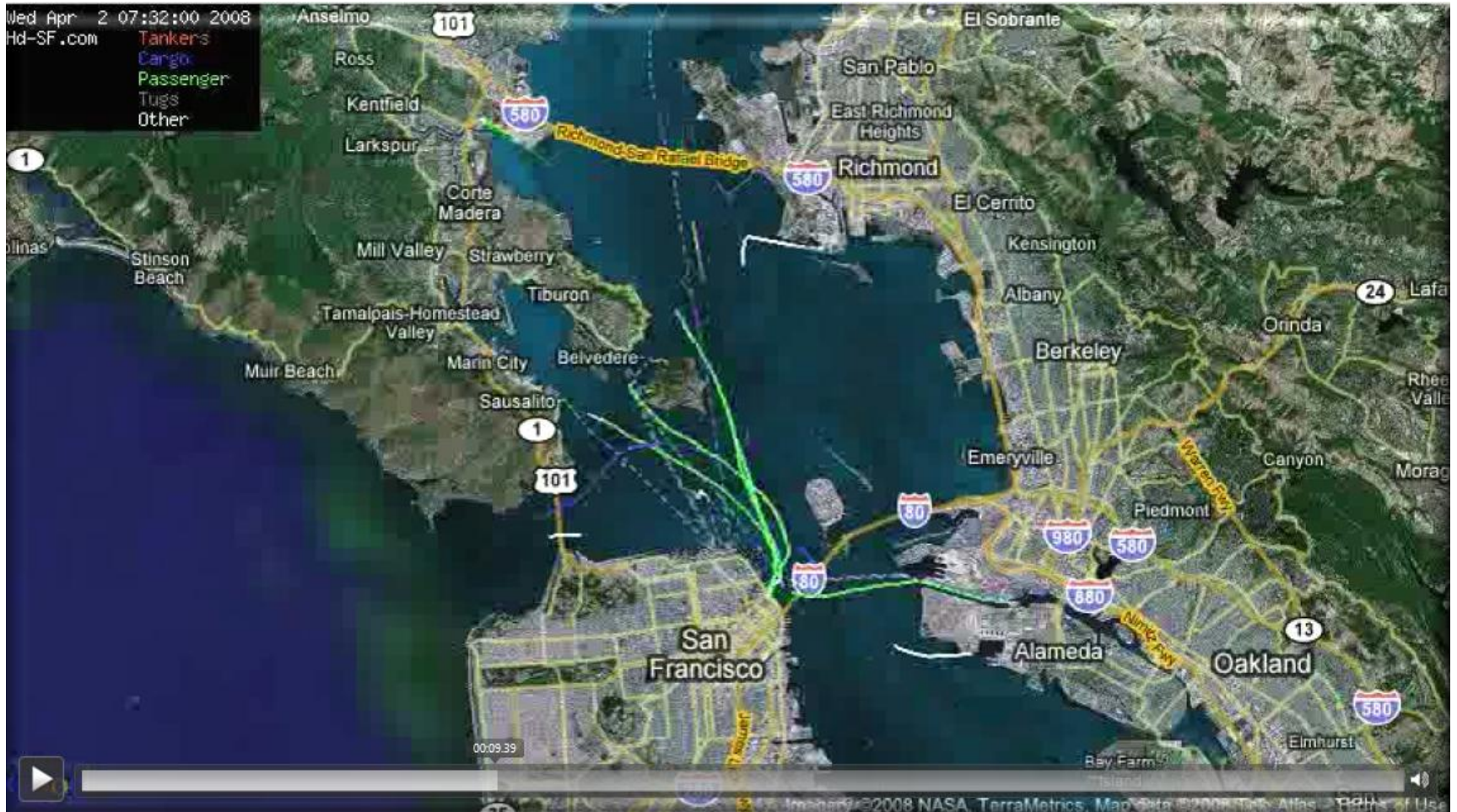
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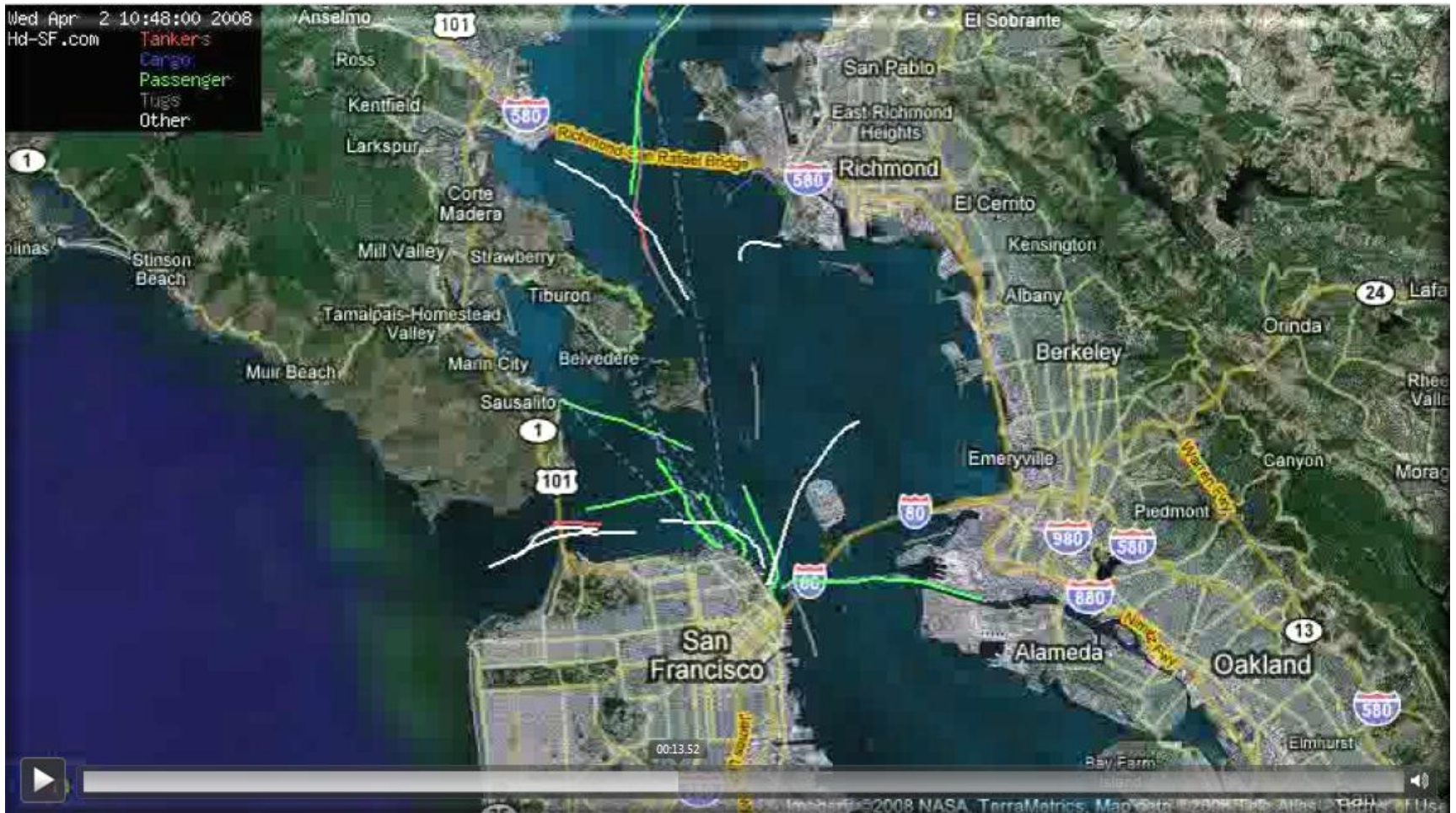
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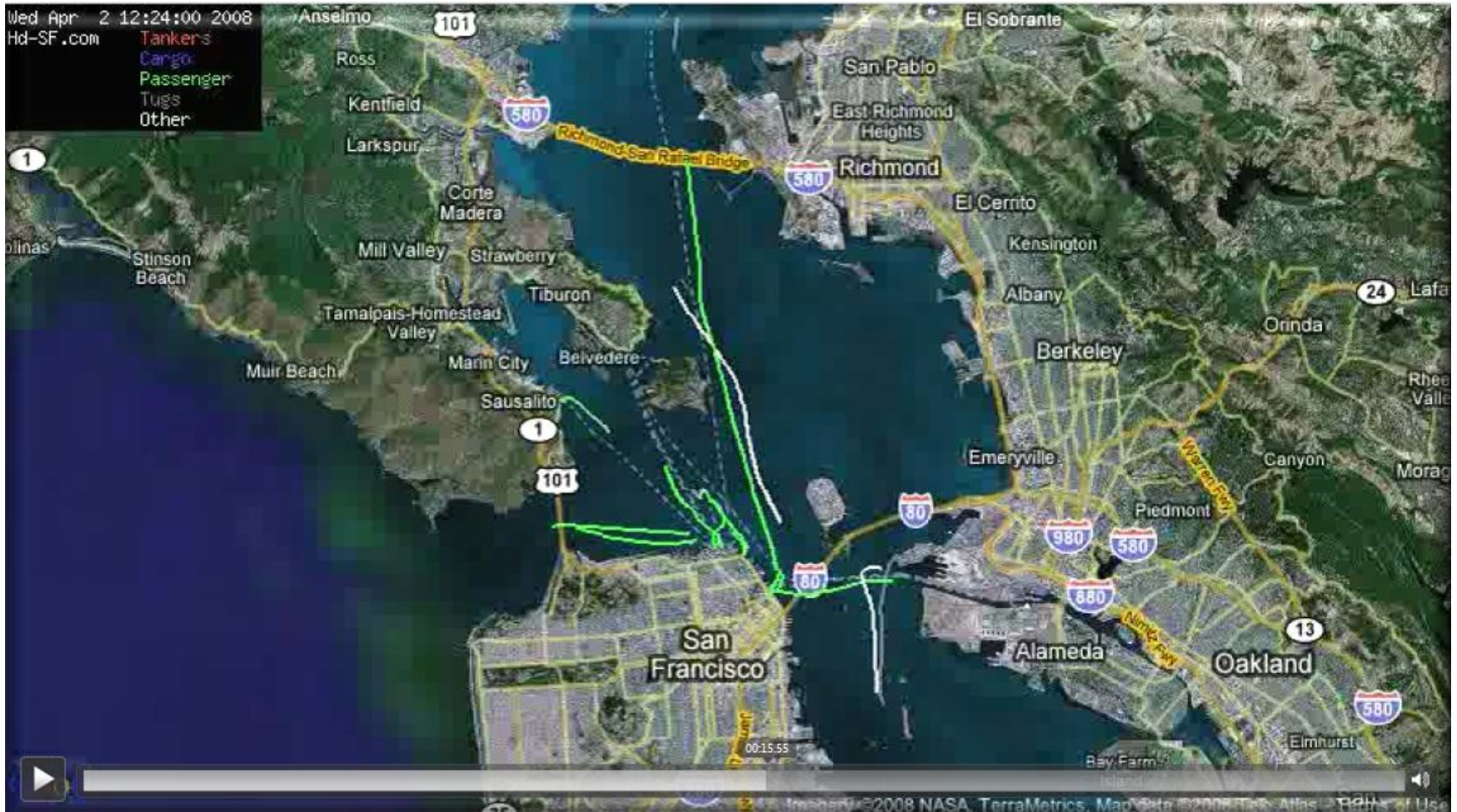
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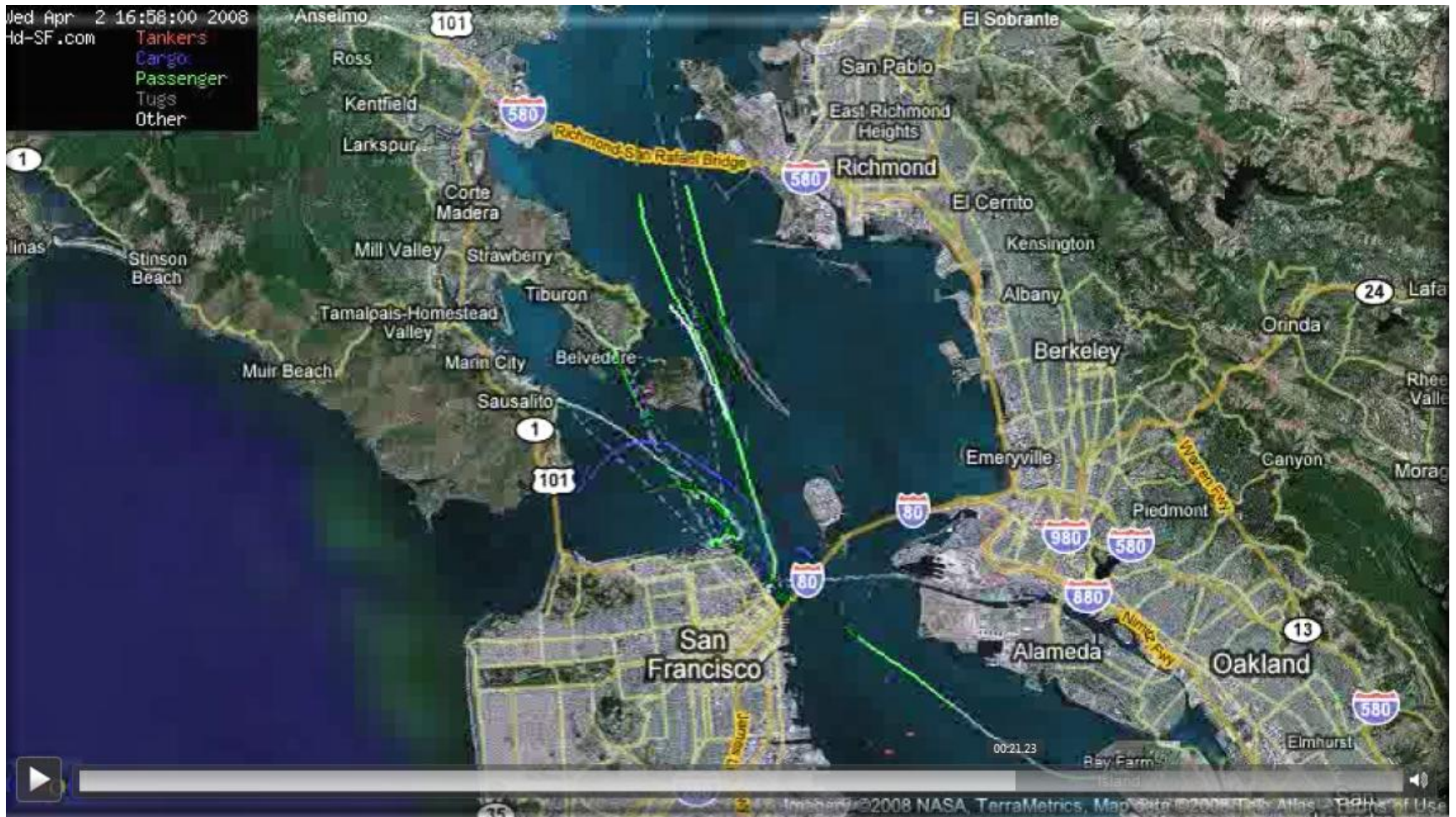
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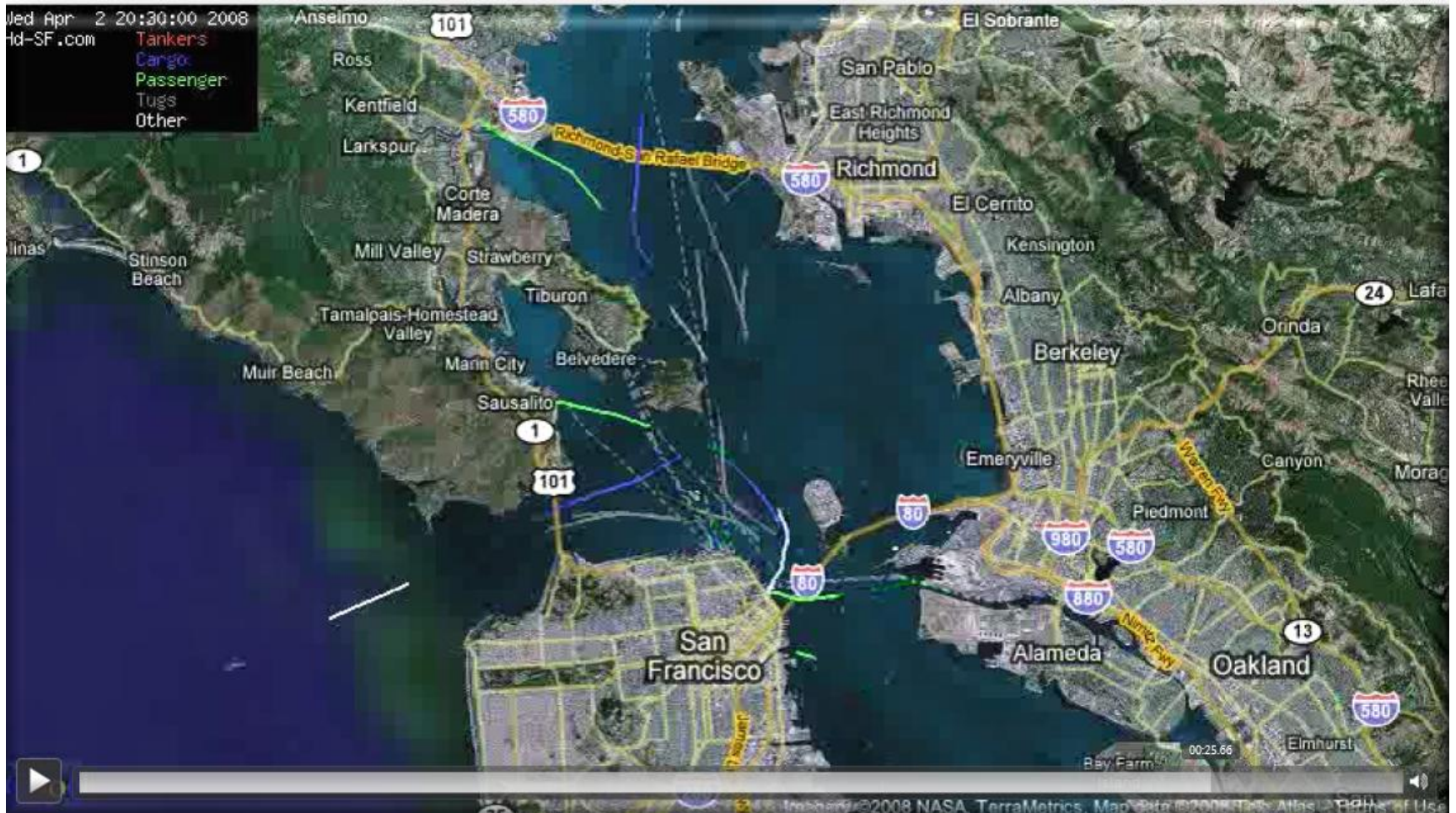
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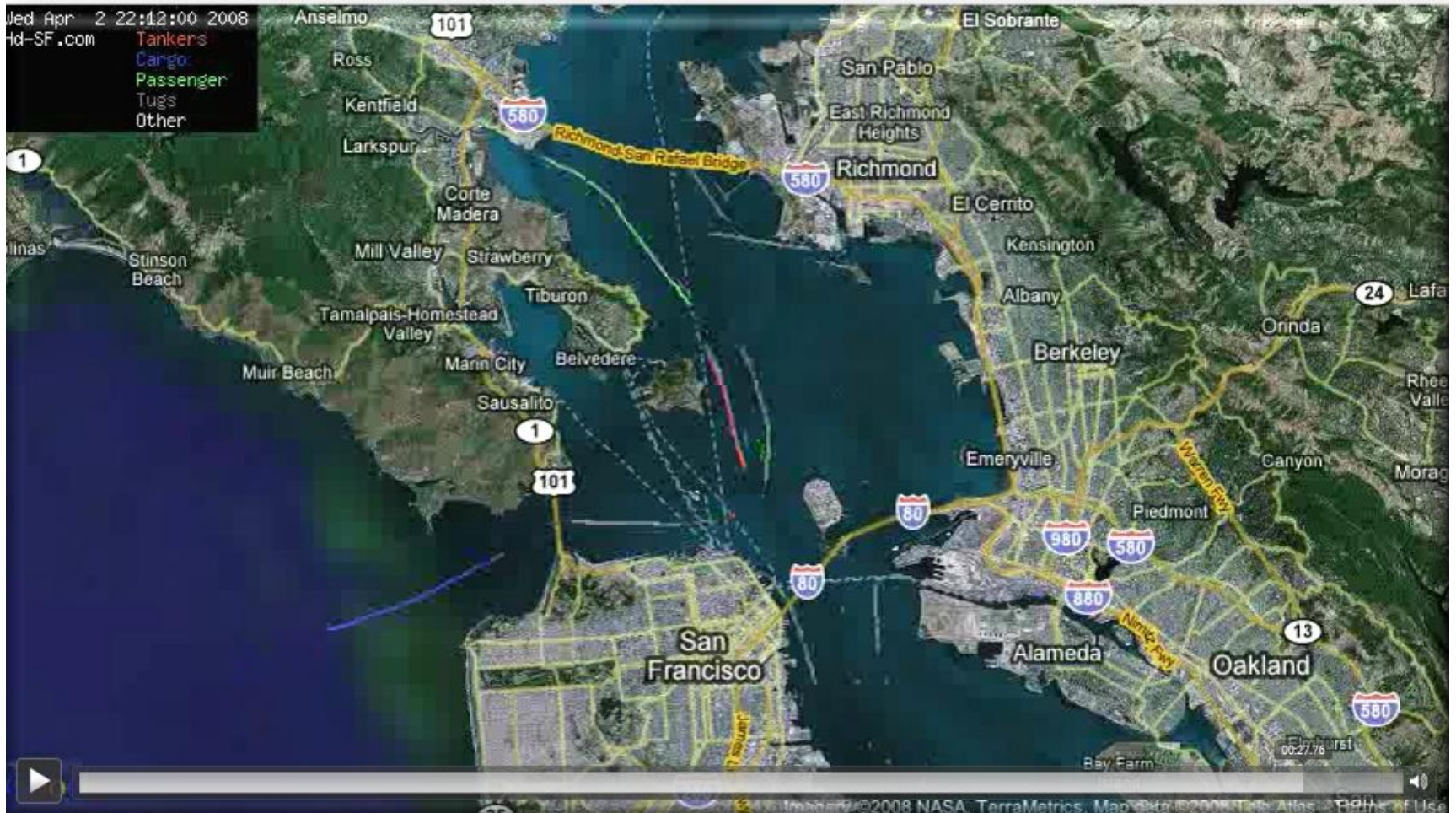
AIS Animation- San Francisco



AIS Animation- San Francisco



AIS Animation- San Francisco



The system can be updated to incorporate many features, for example

- Incorporate new geographic layers and attributes
 - e.g., lock locations with capacity information
- Allow interactive selections of geographic entities (link or node) and display of information
 - e.g., waterway corridors with flow in tonnage
- Visualize flows or performance measures between specific FAF O-D pairs
- Display measures of link/node importance
 - e.g., link share of a specific O-D flow, links and nodes with highest flow/capacity ratio