A Geographical Information System-Based Decision Support Tool: *GeoFreight*

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A geographical information system (GIS) based decision support tool that enables transportation planners to carry out activities in intermodal freight planning and policymaking. It is an enhanced version of the original Intermodal Bottleneck Evaluation Tool (IBET), developed by ORNL for the U.S. Department of Transportation (USDOT) in 2001.

of Transportation Statistics (BTS), USDOT, under a partnership with the Office of Intermodalism in the Office of the Secretary of Transportation and the Office of Freight Management and Operations in the Federal Highway Administration (FHWA).

*The **Thematic Map** function of the GeoFreight system allows the user to create maps that show one or more features of freight movements.*
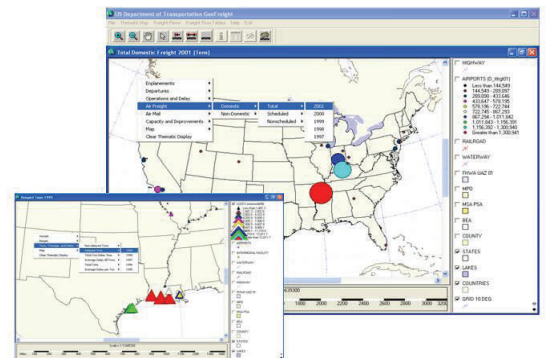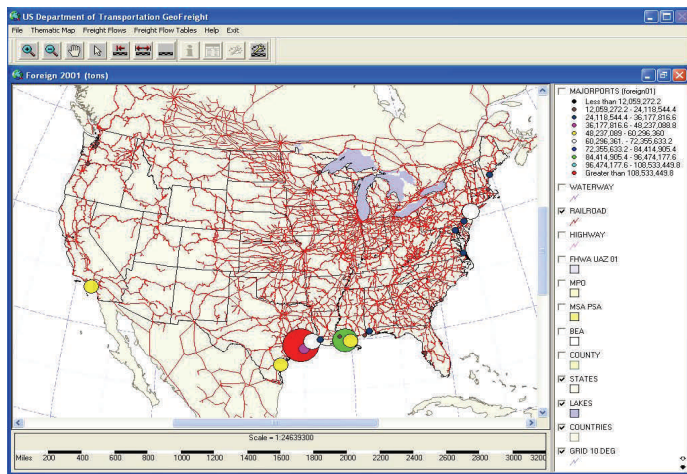
The GIS Tool

GeoFreight uses a routing model to assign data on freight flows to various components of the transportation network. The tool allows the freight policymakers and planners to display geographic relationships between freight movements and infrastructure. It also assists them in identifying the flows of domestic and international freight across the nation and in assessing current and potential major freight bottlenecks in the U.S. transportation system.

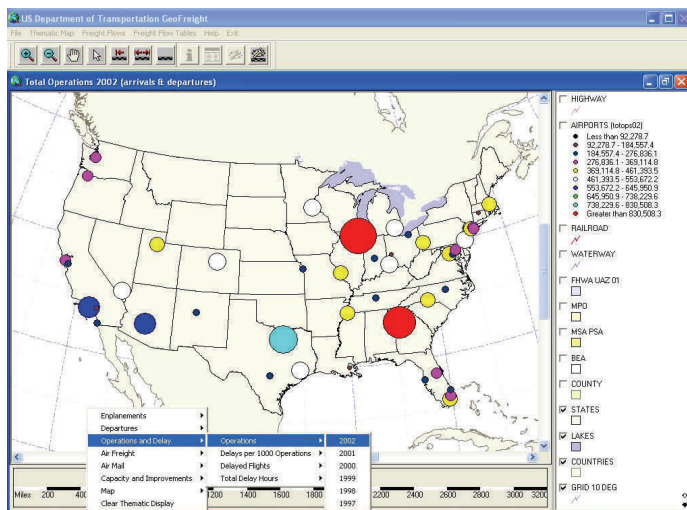GeoFreight was developed by ORNL with funding provided by the Bureau

Capabilities of the Tool

The system provides tools for freight policymakers and planners to:
- Identify potential bottlenecks,
- Measure facilities' intensity of use,
- Compare facilities,
- Describe national importance of these facilities,
- Examine domestic and international flows, and
- Evaluate potential vulnerability of transportation systems

*The **Port Statistics** menu, accessed from the Major Ports map, allows the user to examine the function of numerous major ports.*

***Airport Operation Statistics** map. A series of choices are provided allowing the user to obtain statistics on various characteristics of air freight.*
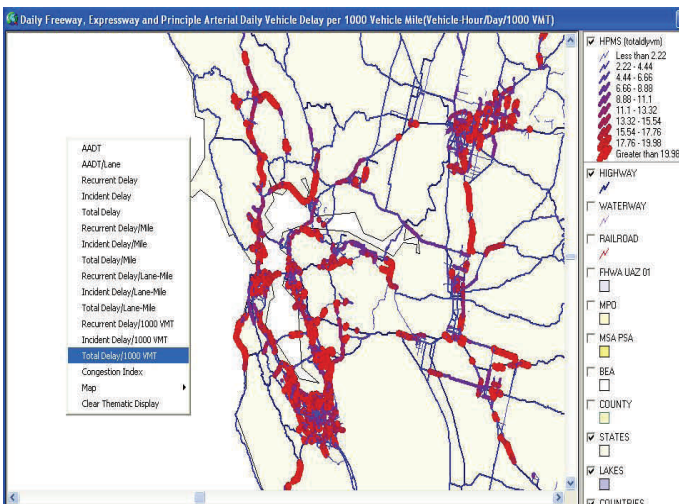
Sample Questions the Tool Can Help Answer

- Which facilities' infrastructure is used most intensively?
- Which facilities experience the greatest "land-side" congestion?
- What is a facility's national importance in terms of total freight tons and value?
- Which facilities handle the most international trade in value and tons?
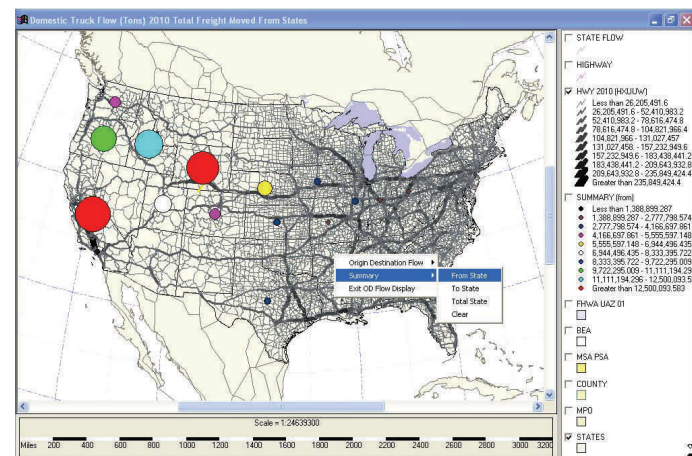
Special Features

One of the most innovative features of the GeoFreight system is the *Combine Views*

mode. Using this mode, the user is able to take one map from each of the three transportation modes (highway, waterway, and rail) and combine them to create a personalized map.

*The **Highway Congestion Display Tool** allows users to displays statistics such as AADT and delays on the HPMS map.*

Another unique feature in the system (both GeoFreight and IBET) is the *Origin Destination Flow* function. This feature allows users to display the origins and destinations, and associated statistics, of freight traveling through a user-specified segment on the route.

***Origin Destination Flows** map. The user is able to examine the tons of freight that pass through the selected area from all states that use the impacted route.*