DEPARTMENT OF
ECOLOGY
State of Washington

Developing the Vessel Movement Module:
Factors associated with track selection

More information

[Visit our webpage](#)

How you can help:

We are looking for feedback on factors that affect vessel tracks within our model area. Potential factors include:

- Vessel types
- Environmental conditions

Contact information
JD Ross Leahy
425-410-9806
jd.leahy@ecy.wa.gov

Special accommodations

To request ADA accommodation including materials in a format for the visually impaired, call Ecology at 360-407-7668 or visit http://ecology.wa.gov/accessibility. People with impaired hearing may call Washington Relay Service at 711. People with speech disability may call TTY at 877-833-6341.

Introduction

We have created this document to help support robust discussion around track selection factors, an important component of the first module we are developing as part of our Oil Spill Risk Model Development Project.

To learn more about the model we are building, and how track selection factors relate to the Vessel Movement Module (VMM) please review our [Modeling Approach Focus Sheet](#).

Input on Track Selection Factors

We need your input on factors that influence the tracks vessels follow within the model area. A track is a series of sequential AIS messages with a start and end point, which represents the path that a vessel navigates. You can provide feedback by providing comments through our [eComment system](#). We are also hosting a [technical discussion of track selection factors October 21, 2020.](#)

The VMM will generate simulated vessel data based on historical Automatic Identification System (AIS) data. We know vessel tracks vary – vessels do not always follow identical paths from an origin to a destination. We want to understand the factors that we can model that are important to this variation in tracks.

Factors that could influence track selection include the types of vessels, and other conditions such as wind, tide, current, and visibility.

Draft list of vessel types for VMM:

- Assist/Escort Tug
- ATB (Articulated Tug and Barge)
- Bulk Carrier
- Car Ferries
- Container Ship
- Crude Tanker
- Cruise Ships
- Fast Passenger Ferries
- Fishing Vessel (<40m)
- General/Other Cargo Ship
- General/Other Cargo Vessel (<40m)
- Large Fishing Vessel (>40m)
- Large Rec. Vessel/Yacht (>40m)
- Liquefied Gas Tanker
- Mono-hull Passenger Ferries
- Other/Unassigned
- Other tugboats and workboats
- Pilot Boat
- Pocket Cruise Ship (>40m <2000 ITC)
- Product Tanker
- Product Tanker – Bunkering
- Rec. Vessel/ Yacht (<40m)
- Research Vessel
- Search & Rescue/Mil/USCG (<40m)
- Smaller Harbor Tug
- Tanker/Chemical Tanker
- Tour Vessel
- Towing Vessel (Non-Oil)
- Towing Vessel (Oil)
- Towing Vessel (Oil) – Bunkering
- Military/USCG Vessels (>40m)
- Vehicle Carrier

Draft list of other factors:

- Current/tide
- Wind
- Sea state
- Time of day
- Visibility

Vessel type as a factor in track selection

AIS data includes a two-digit code specifying the type of vessel. This information is not specific enough to identify how vessel type influences track selection within our model area. For instance, vessels with the AIS type of "cargo" range in size from deep draft container ships to small inter-island landing craft. These different types of cargo ships operate in different ways in the Salish Sea.

Our goal in defining the list of vessel types is to ensure that our simulation of vessel traffic represents feasible situations. When we simulate vessel traffic, we will draw from vessels within a given type, and distribute those vessels along the tracks associated with that vessel type. We will be unable to represent situations where only some vessels within a given type travel on specific tracks. For example, if we combined container ships and landing craft into a "cargo" vessel type, our simulation could result in landing craft sometimes calling on container terminals, and container ships sometimes visiting Lopez Island.

Based on an initial analysis of AIS data, we developed a draft list of vessel types, shown in the callout box on the left margin of this document. We welcome your input on our draft list.

Other factors in track selection

A number of researchers have examined a variety of potentially meaningful factors in the past, and based on experience, we might expect visibility or weather to influence track selection. But it's also possible that we find correlations between other factors and track selection – like tides, presence of a tug escort, day of the week, or others.

How to provide input on track selection factors?

We welcome feedback and input on this topic at our upcoming technical discussion session as well as in writing, using our eComment tool. You may find the following questions helpful in guiding your comments:

- What comments do you have on our draft list of vessel types?

- Which vessel types do you think are too narrow, or too broad?

- What strategies would you suggest for determining vessels types for vessels with a general AIS type classification like "tug" or "other"?

- What weather factors do you think have the largest effect on vessel track selection?

- What non-weather factors do you think have the largest effect on vessel track selection?

- What track selection factors would you like us to consider as potentially meaningful?

Register for our October 21st, 2020 Discussion Session

Provide written feedback via eComment