

# **A Collaboratively Developed Vessel Traffic Simulation for the Boundary Waters between Washington State and British Columbia**

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# About PSP and Makah

The **Puget Sound Partnership** is a small WA State agency with legislative mandate to recover the health of Puget Sound by 2020

- Also: “independently assess and advise Washington State’s oil spill programs”
- Consensus from PSP Oil Spill Work Group to use maritime risk assessments and develop/apply risk reduction measures

The **Makah Tribe**, based on the NW corner of WA State, signed a treaty with the US government in 1855. The Treaty of Neah Bay reserved the right for the Tribe to access marine resources in an area extending 40 miles offshore

- Makah Tribal Council is the governing body of the Makah Tribe, composed of 5 elected officials
- In 2008, the Makah Tribe created the Office of Marine Affairs to develop a tribal spill response program

# Funding for Vessel Traffic Risk Assessment...

## –US Environmental Protection Agency

- Approved Makah Tribe's proposal to update VTOSS data for VTRA
- \$200K to PSP to advance risk assessment and update VTRA

# Past & Present VTRA collaboration...

## Puget Sound Harbor Safety Committee (HSC)

contributed judgment by expert mariners for the BP-Cherry Point VTRA study completed by GWU et al. in 2008...study released and presented to HSC in April 2012

Makah Tribal Council retained GWU via late-summer grant to researchers; updating the VTRA baseline traffic scenario from 2005 to 2010 and extending offshore

# PSP Oil Spill Work Group & HSC overlap considerably; **formed VTRA Steering Committee** in Fall 2012

- Integrating State and Federal regulatory agencies, Tribes, Industries and Stakeholders into a VTRA update **process**
- Agreed that GWU VTRA is the common language by which region evaluates relative maritime traffic risk systemwide

# Others involved...

**PSP and PSHSC** co chair the Steering Committee

**USCG, Ecology and Makah** are the agency leads,  
guiding the update process

## **Puget Sound Partnership VTRA Steering Committee**

### **Co-Chairs:**

- Todd Hass, Puget Sound Partnership
- John Veentjer, Puget Sound Harbor Safety Committee

### **Federal, State and Tribal Leads [representing]:**

- Chip Boothe (alternate Jon Neel), Washington State [Department of Ecology]
- Kiley Ross and R.E. McFarland, US Coast Guard [Sector Puget Sound and District 13, respectively]
- Chad Bowechop (alternate Fred Felleman), Makah Nation [native American Tribes]

### **Core Steering Committee Members:**

- Mark Homeyer, Crowley Maritime [tug and barge]
- Del Mackenzie, Puget Sound Pilots [pilots]
- Mike Moore, Pacific Merchant Shipping Association [shipping/steamship lines]
- Vince O'Halloran, Washington State Labor Council (alternate Lori Provinci) [labor]
- Mike Doherty, Clallam County [Washington Association of Counties]
- Jeff Shaw, Polar Tankers (alternate Frank Holmes, Western States Petroleum Association) [petroleum industry]

# About the model:

## (1) Collaborative vs adversarial analysis in environmental policy

Busenberg (1999) compared approaches to two technically intensive maritime oil trade policy disputes

- Adversarial (debate) approach led to “distorted communication” and ***stalemate***
- Collaborative approach gave all stakeholders oversight of joint research team—promoting mutually credible results and ***resolution***



# About the model:

(2) Past VTRA (van Dorp and Merrick 2009) quantified contribution of different **interventions** on reducing spill risk (oil outflow)

## Risk reduction measures

Tug escort = ↓61.7%

Double hull = ↓23.6%

1-way zone = ↓6.3%

In: Annals of Operations Research, published online before print December 12, DOI: 10.1007/s10479-009-0678-1

### On a Risk Management Analysis of Oil Spill Risk using Maritime Transportation System Simulation

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<sup>a</sup>*Department of Engineering Management and Systems Engineering, The George Washington University*

<sup>b</sup>*Department of Statistical Sciences & Operations Research, Virginia Commonwealth University*

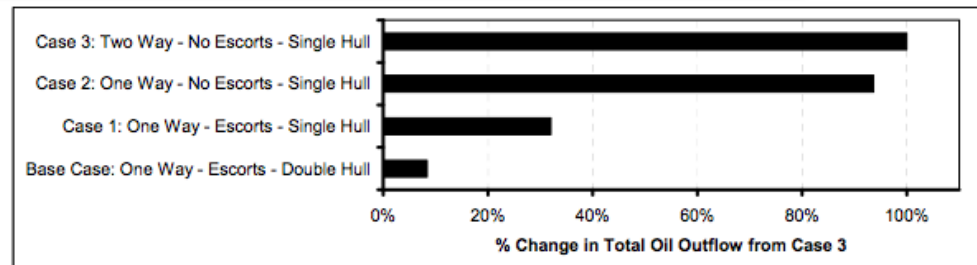
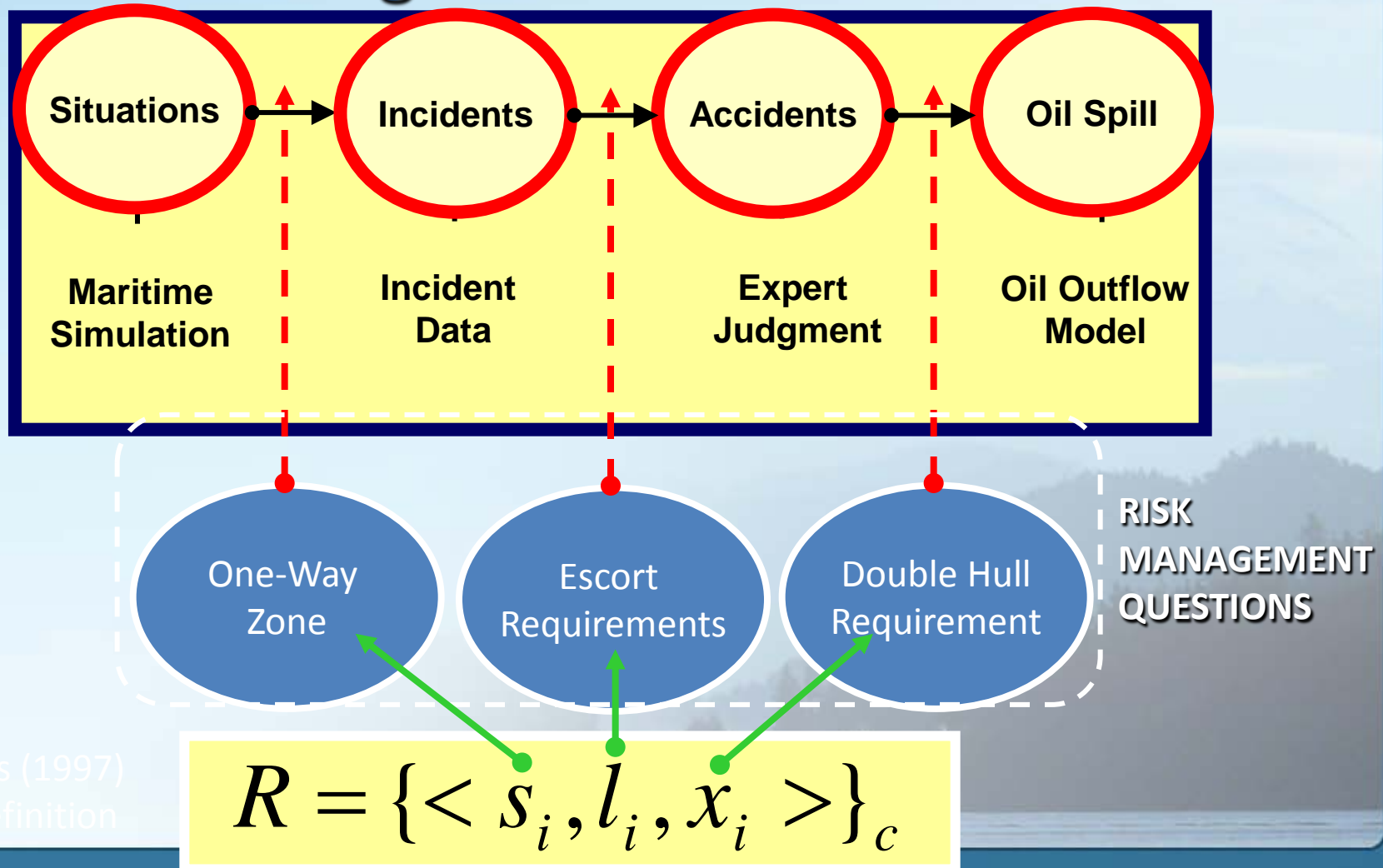


Figure 14. Total overage annual oil outflow (in m<sup>3</sup>) separated by persistent oil (PO) and non-persistent oil (NPO) by VOI's, IV's and scenarios.



## About the model: (2) continued...

# Risk Management of a Causal Chain



# VTRA “2010” – Status

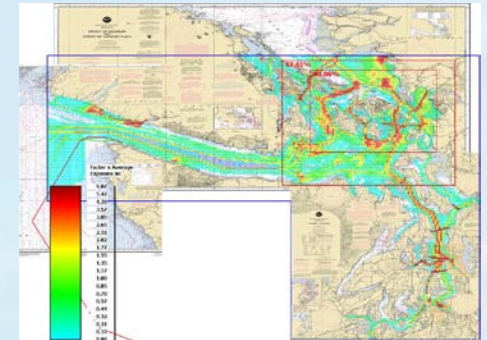


- Makah phase ending: GWU delivered draft report/analysis with VTOSS 2010 data
- PSP phase starting, modeling (3\*) future projects
- VTRA SC directed researchers to simulate the projected traffic from the following potential projects:
  - Kinder Morgan pipeline expansion in B.C.
  - SSA Marine Gateway Pacific Terminal near Cherry Point, WA
  - Delta Port expansion in B.C.

# VTRA Next Steps

Now (winter/spring):

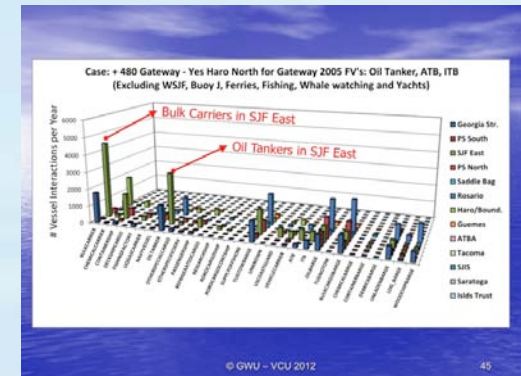
- Researchers expanding classes of Focus Vessels with 1000s of routes/segments and cleaning VTOSS data
- VTRA SC obtains/shares the best available data projections on projects to be simulated



# VTRA Next Steps

Soon (spring/summer):

- Researchers simulate projected changes in traffic & note changes in ship interactions
- VTRA SC proposes mitigation measures to be simulated in model
- Researchers produce report on results with review by VTRA SC

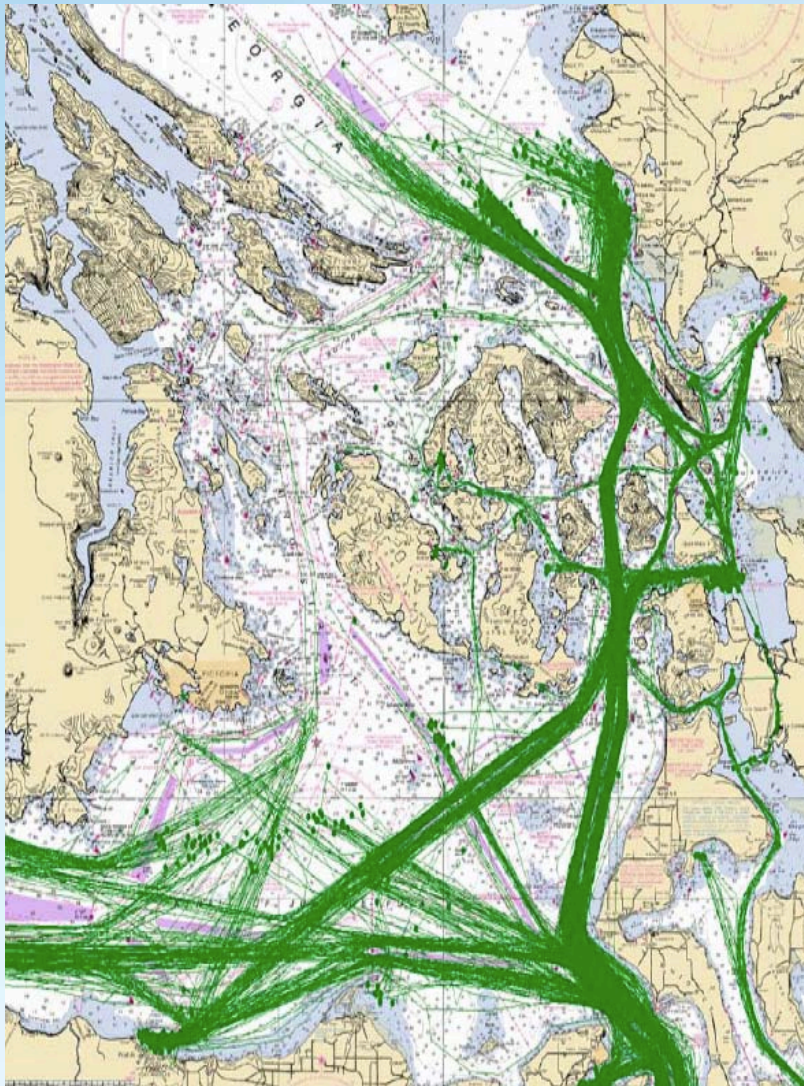


# VTRA Next Steps

Long term (**fall**):

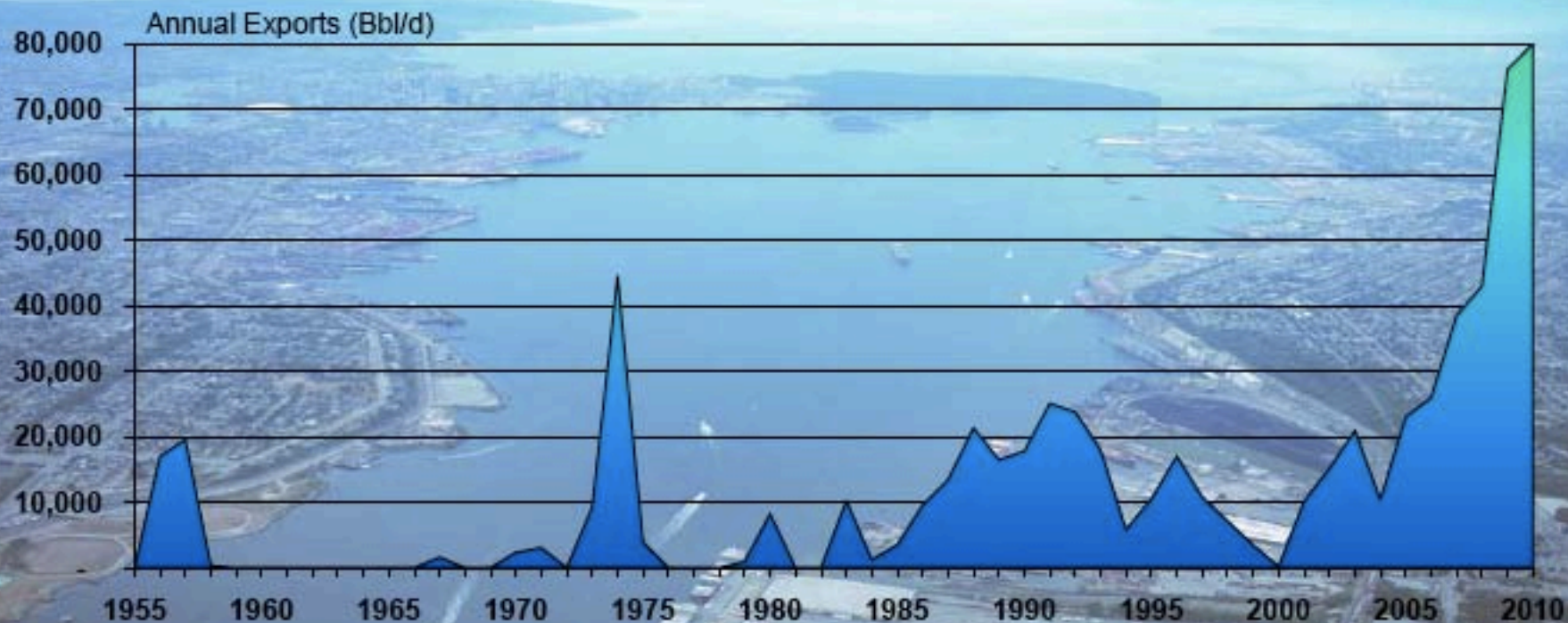
- Report/results used in revised **Risk Management Strategy** for Puget Sound
  - Changes to Harbor Safety Plan, SOCs, BMPs, etc.
  - Regulatory changes considered by USCG, ECY (note that 2012 USCG Authorization Act calls for study of Canadian oil sands risks by June 2013)
  - Northwest Area Committee and its “2013-Emerging Risks Task Force” translate and use findings for contingency planning, GRPs, etc.





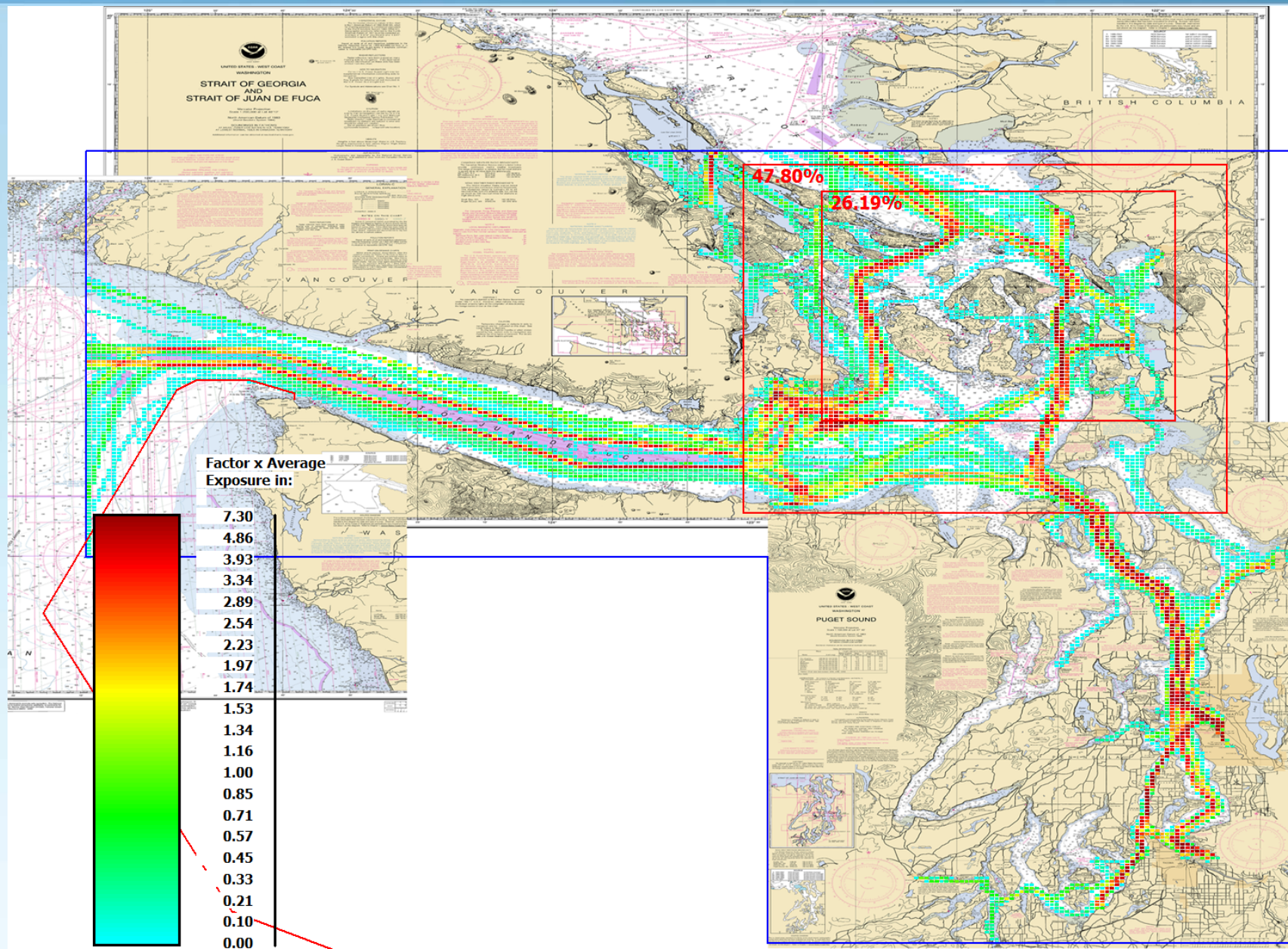
These data do not reflect the increase of Canadian tar sand exports: 34 tankers in 2007 to 104 tankers in 2010

# Port Metro Vancouver Tanker Movements

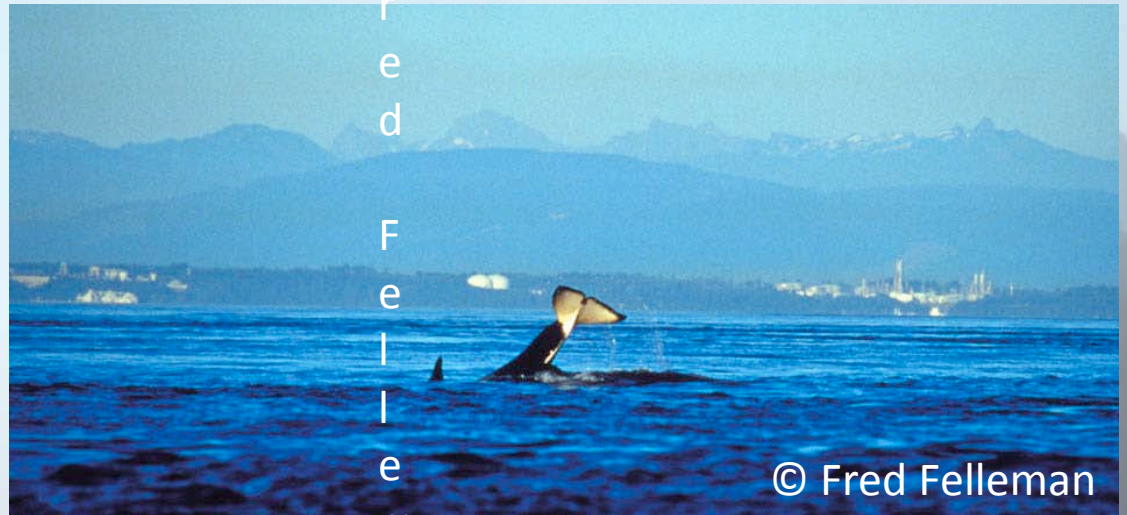


Historical Monthly Record, April 2010: 143,000 Bbl/d





# Thank you



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## More info:

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- [http://www.seas.gwu.edu/~dorpjr/tab4/publications\\_VTRA\\_Final\\_Report.html](http://www.seas.gwu.edu/~dorpjr/tab4/publications_VTRA_Final_Report.html)

