FRESHWATER CENTRE

WINOIL

Риски морских перевозок – опыт субарктических акваторий Балтийского моря

Международная конференция
"The Issues of Emergency Management in the Arctic"
Нарьян Мар, Россия
20-22 августа 2013

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SYKE ENPI

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Содержание

- Baltic Sea Traffic
- Oil transportations
- Accidents
- Risk approaches
- Studies made
- Case studies -RCO development
- Winter navigation
- IB assistance
- Gulf of Finland – accident scenarios
- Conclusions

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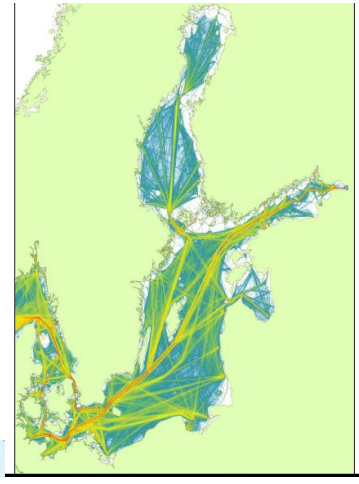
BRISK-анализ рисков

BRISK

Ship Traffic

- Baltic Sea is one of the heavily trafficked seas in the world
- Around 2,000 ships at sea at any given time
- High traffic intensity in the Gulf of Finland and on the main route towards the North Sea
- AIS information 2008 - 2009

PART FINANCED BY THE EUROPEAN UNION (EUROPEAN REGIONAL DEVELOPMENT FUND)



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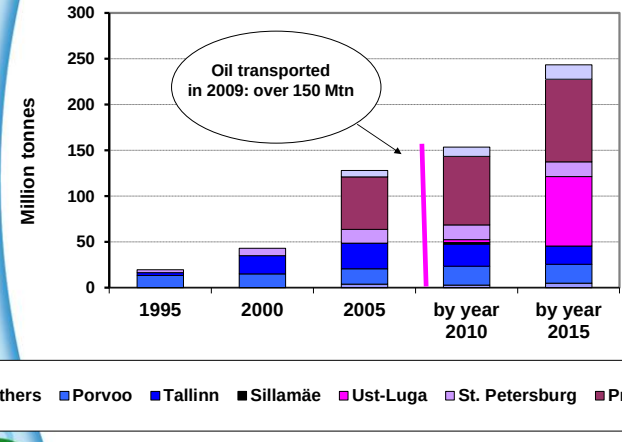
Нефтеперевозки в Финском заливе через основные порты в 1995-2009 гг и прогноз до 2015 г

10th May 2010

OIL TRANSPORTATION IN THE GULF OF FINLAND THROUGH MAIN OIL PORTS
Oil transportation in years 1995-2009 and estimated development by year 2015



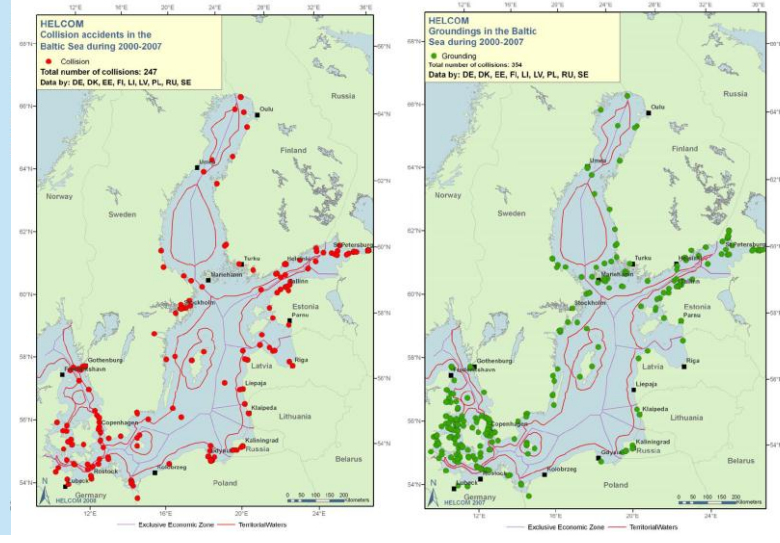
VTT SYKE

Самые крупные нефтеразливы в Балтийском море в 1980 – 2001 гг

8/18/2013

Year	Name of ship	Quantity of Oil Spilled (tons)	Place of Incident
1980	Furenas	200	The Sound, Sweden
1980	Eva Oden	250	Gothenburg, Sweden
1980	Furenäs/Karnen	200	The Sound, Denmark
1980	Lloyd Bage	130	Helsinki, Finland
1981	Jose Marti	1000	Dalarö, Sweden
1981	Serif	375	Öland, Sweden
1981	Globe Asimi	16000	Klaipeda, Lithuania
1982	Sivona	800	The Sound, Sweden
1984	Eira	200	Vaasa, Finland
1984	Ibn Roch	300	Great Belt North, Denmark
1985	Sotka	350	Åland Sea, Sweden
1986	Thuntank 5	150-200	Gävle, Sweden
1986	Jan	320	Aalborg Bight, Denmark
1987	Antonio Gramsci	580	Porvoo, Finland
1987	Okba Bnou Nafia	120	Malmö, Sweden
1987	Tolmiros	250	West Coast, Sweden
1990	Volgoneft	1000	Karlskrona, Sweden
1995	Hual Trooper	180	The Sound, Sweden
1998	Nunki	100 m³	Kalundborg Fjord, Denmark
2001	Baltic Carrier	2700	Kadetrenden, Denmark

Столкновения (слева) и посадки на мель (справа) в 2000 – 2007 гг, по данным HELCOM



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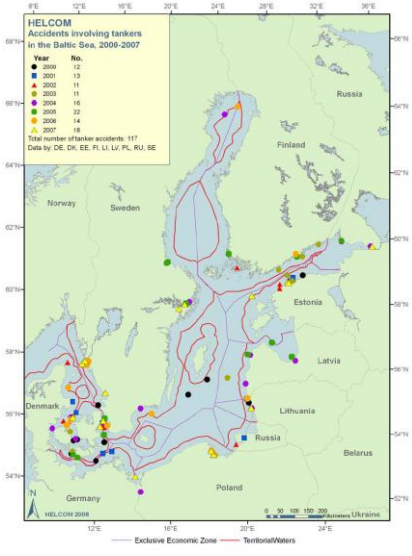
Аварии танкеров в 2000 – 2007 гг



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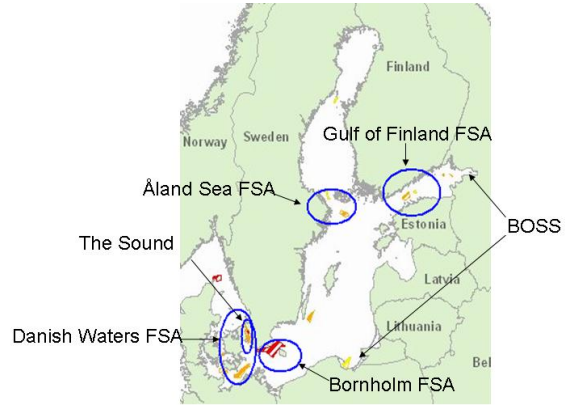
FSA анализ рисков для акватории Балтийского моря



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Примеры других оценок и анализов рисков Балтийского моря

- Gulf of Finland risk assessment– preliminary survey, VTT, TKK, 2002
- Risks related to fairway vertical dimensioning, VTT, 2003
- Risk analyses for ROPAX-vessel in grounding mode, TKK, 2003
- A preliminary risk analysis of winter navigation in the Baltic Sea, TKK, 2005
- Modelling collision and grounding risks, TKK, 2007
- Safety of vessels´ traffic bound to Polish ports, Maritime University of Szczecin, Poland, 2007
- Collision and grounding frequency analyses in the Gulf of Finland, VTT, 2009
- Analysis of the marine traffic safety in the GoF, TKK, 2009
- BaSSy Tool Analysis of the Swedish South-East Coast, SSPA, 2009
- Accident Probablities in selected areas of the Gulf of Finland, SAFGOF/TKK 2009
- Modelling Marine Accident Frequency, TKK, 2010
- BRISK 2011 by Helcom
- Gulf of Bothnia risk analyses finalized in 2012
- Gulf of Finland winter traffic risk analyses - ongoing

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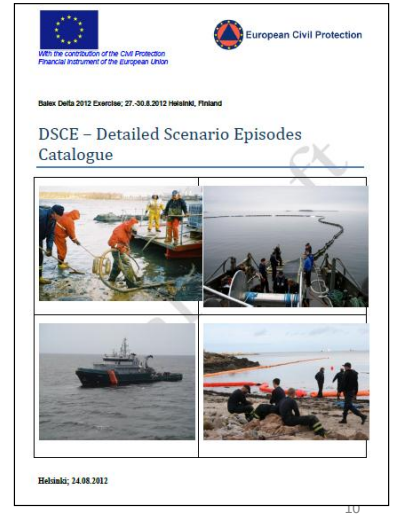
MARINE RESEARCH CENTRE Jorma Kuylenen / SYKE

Balex Delta 2012 Exercise; August 27-30

- Day 1, Accident; alerts
  - Polrep, MIC,CECIS,
- Day 2, National Exercise
  - both onshore and offshore operations
- Day 3, International HELCOM Exercise
  - Both onshore and international offshore operations
- Day4, International Seminar
  - Onshore training and equipment storaging & dismantling. Seminar Day & Open Door event.

European Civil Protection



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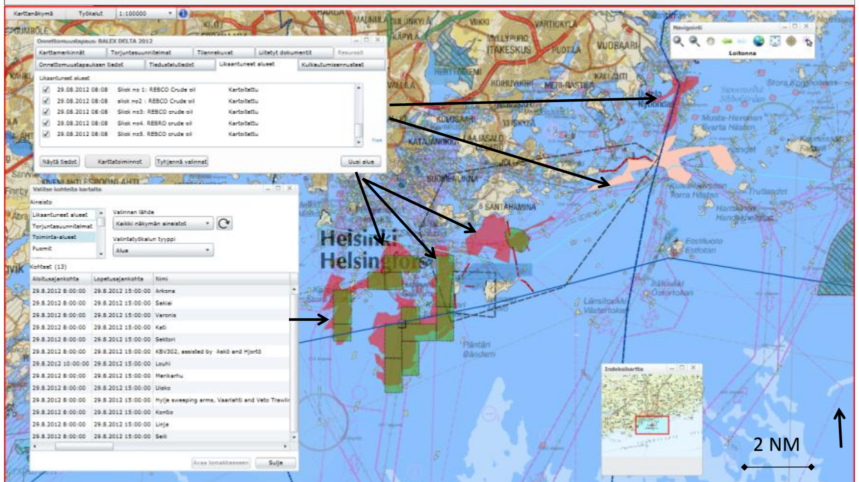
BALEX DELTA Exercise 2012 . Helsinki.

BORIS2 Report 5. Slide 2/2 Latest Oil slick observations and forecasts (red/pink) **and response plan for the HELCOM fleet** (green)

Local Time 29.08. 08:00
UTC 29.08. 05:00



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European Civil Protection

Situational Awareness System
BORIS2 /5.Demo
Additional information inc. sources of data:
www.ymparisto.fi/syke/boris2

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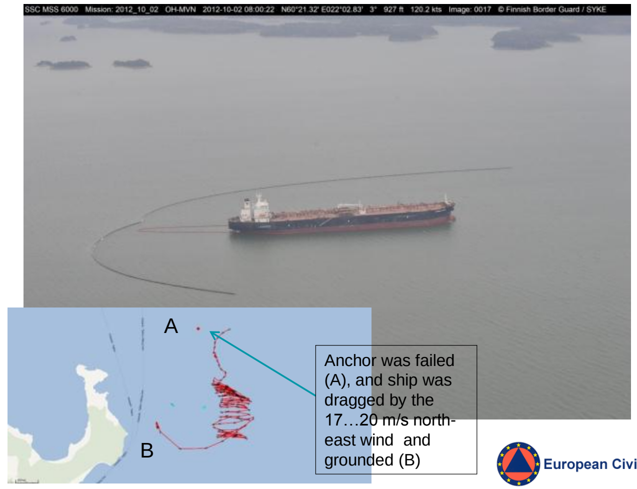
Less than two months after the Exersice – a near miss situation for a huge oil accident took place – MT Kyeema Spirit grounding, Monday 8 October at 6.55am close to Muuga Port, Estonia



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European Civil Protection

HELCOM RESPONSE 16/2012
20-22.11.2012 Copenhagen

November 7, 2012 – Maersk Hakone arrived to Muuga Port – 330 x 60 m VLCC carrier – was idling a couple of days due to the hard wind – 12th November in port - loading (??)

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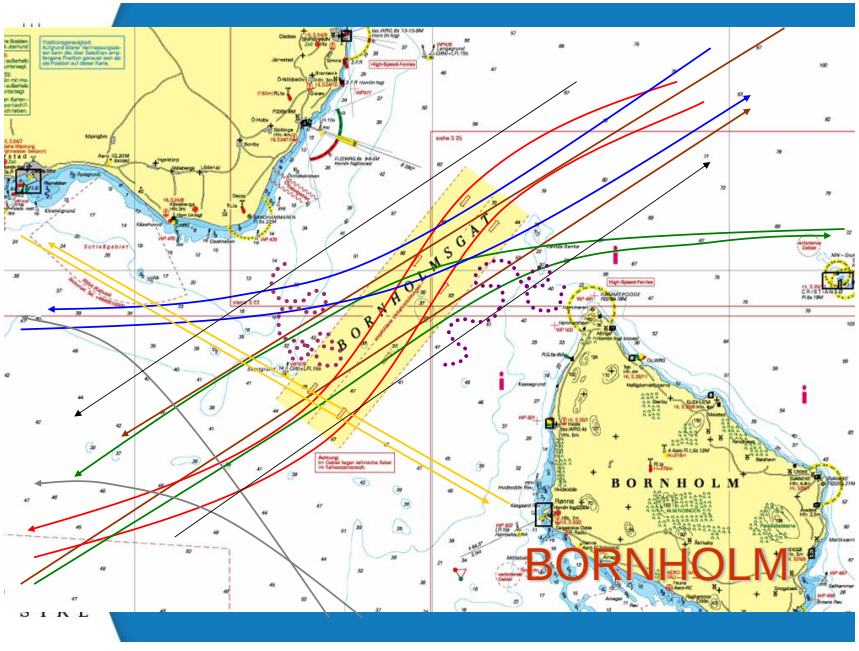

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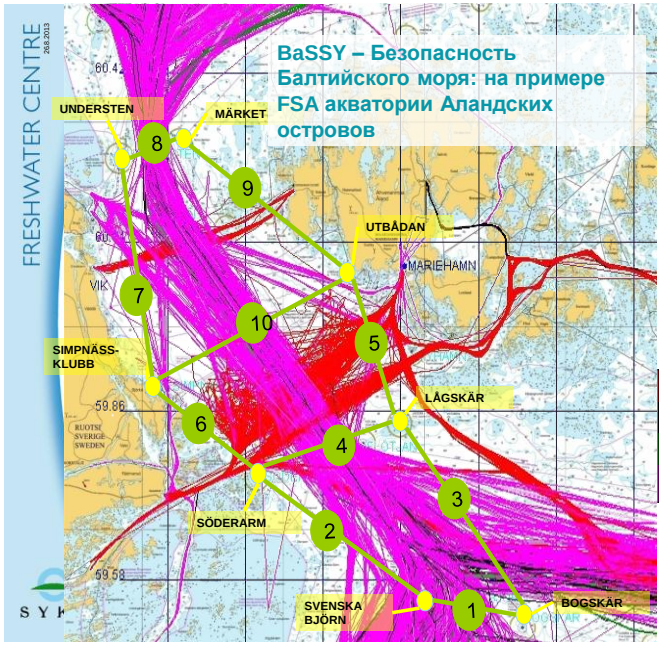

Анализ трафика для FSA оценки рисков по данным системы наблюдений AIS

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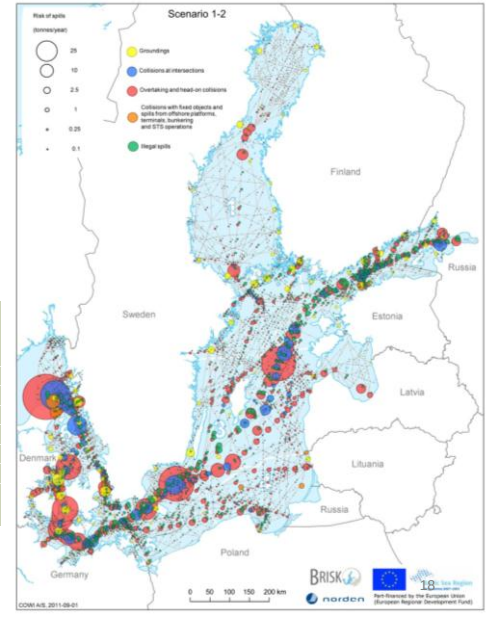
Результаты для различных сценариев

Все разливы
- **Реальный трафик судов**
- **Имеющиеся ресурсы реагирования**
- **Имеющаяся навигационная поддержка**

ESTIMATES OF EXPECTED INTERVALS BETWEEN SPILL EVENTS

Sub-region	Large accidents: 300–5,000 tonnes spilt	Exceptional accidents: 5,000< tonnes spilt
1. Gulf of Bothnia	36 years	600 years
2. Gulf of Finland	39 years	255 years
3. Northern part of the Baltic Proper	30 years	175 years
4. South-eastern Baltic Proper	140 years	1,060 years
5. South-western Baltic Proper	17 years	97 years
6. Sound and Kattegat	11 years	65 years
Entire Baltic Sea	4 years	26 years



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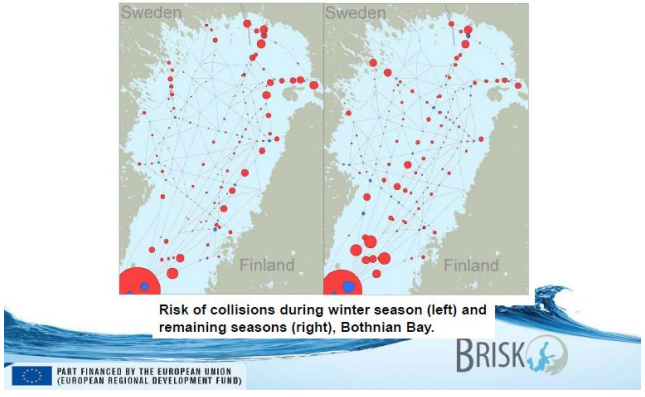
Brisk – сценарии аварий, Ботнический залив



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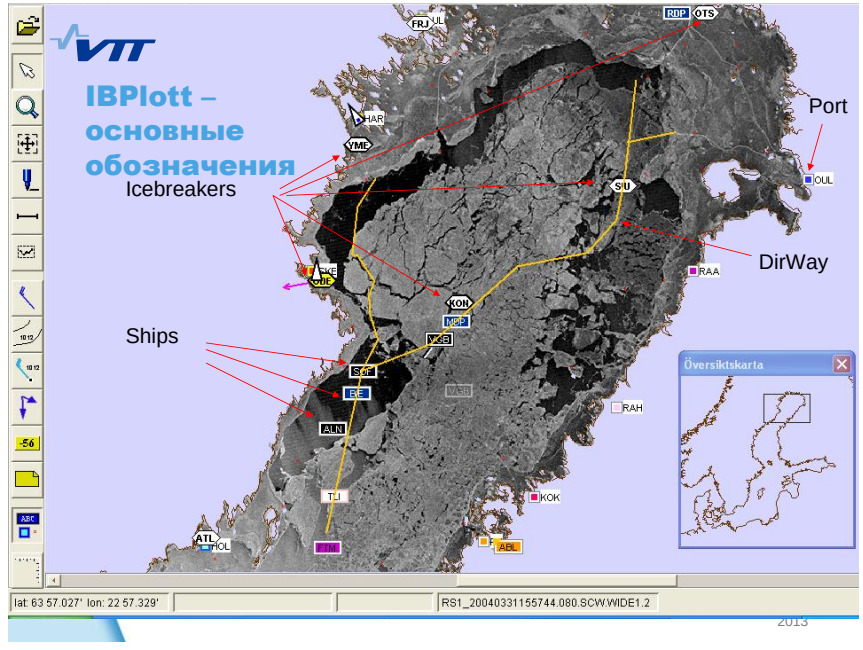
IBPlott – основные обозначения

Icebreakers

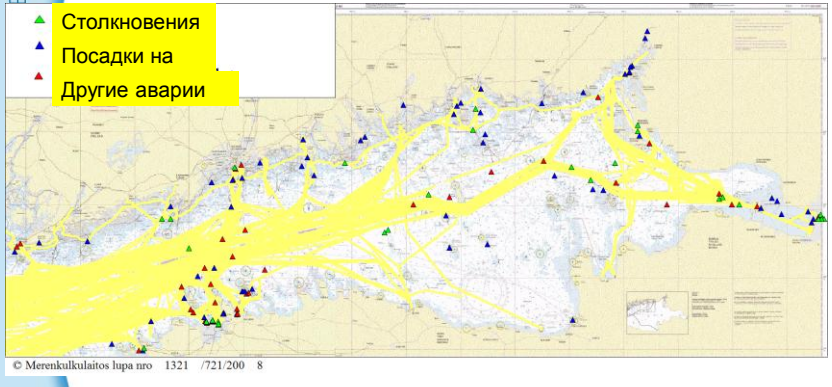
Ships

Port

DirWay

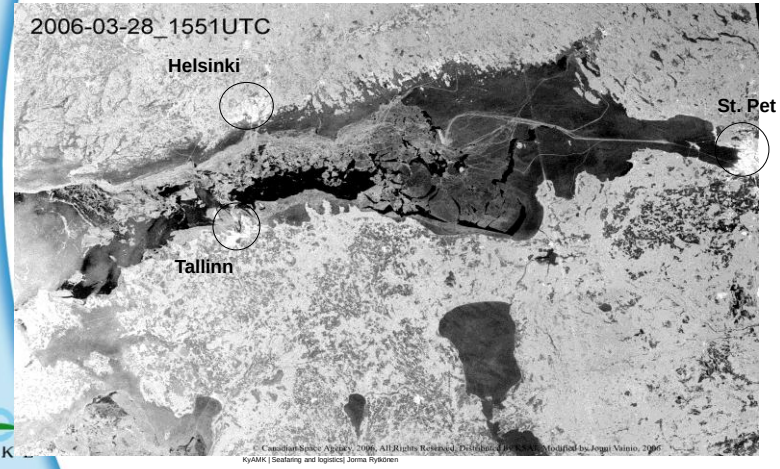


Места аварий в Финском заливе



Lähde: Kujala P, Hänninen M, Arola T, Ylitalo J. 2009. Analysis of the marine traffic safety in the Gulf of Finland. Reliability Engineering and System Safety 94(8): 1349-1357.

Ледовые условия Финского залива, по данным со спутника (source: www.Iceadvisors.fi/A. Uusiaho)



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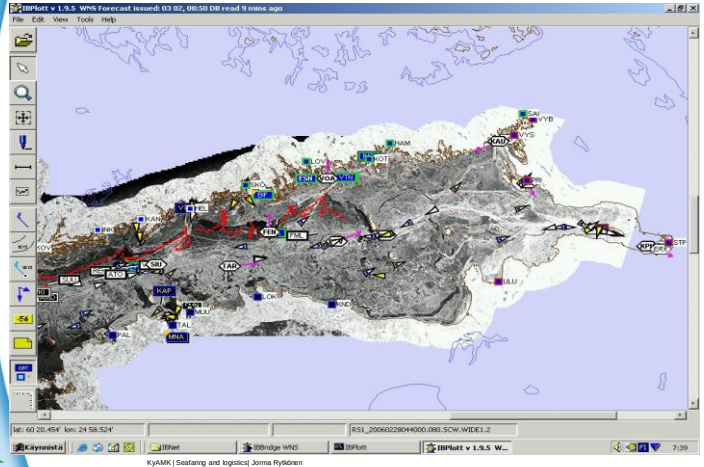

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Вероятности столкновений в Финском заливе в 2015 году

Port	Cargo (M tonnes) 2007	Cargo (M tonnes) 2015	Cargo multiplier
Helsinki	13	17.0	1.31
Vysotsk	4.3	4.8	1.12
St. Petersburg	44.8	61.4	1.37
Ust-Luga	7.1	86.8	12.23
Tallinn	13.2	24.2	1.84

Port	Oil (M tonnes) 2007	Oil (M tonnes) 2015	Oil multiplier
Sköldvik	19.1	21.0	1.10
Vysotsk	12.2	13.7	1.12
Primorsk	74.2	120	1.62
St. Petersburg	14.7	20.2	1.37
Ust-Luga	0	26.2	-
Tallinn	22.7	14.4	0.63

Growth scenario:
- dry gargo: 64 %
- oil transport: 50 %

Collision type	Change of collision probability from 2008
Overtaking	+182 %
Head-on	+69 %
Crossing	+264 %
Merging	+318 %
Bend	+178 %
Total	+189 %

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Выводы

- Объемы нефтяных и контейнерных морских перевозок в Финском заливе продолжают расти
- В перспективе ожидается рост перевозок сжиженного природного газа
- Проведены отдельные оценки рисков. Необходима общая многосторонняя концепция обеспечения безопасности
- Требуются новые решения для условий зимней навигации

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Louhi in Balex Delta 2011 /Bornholm

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