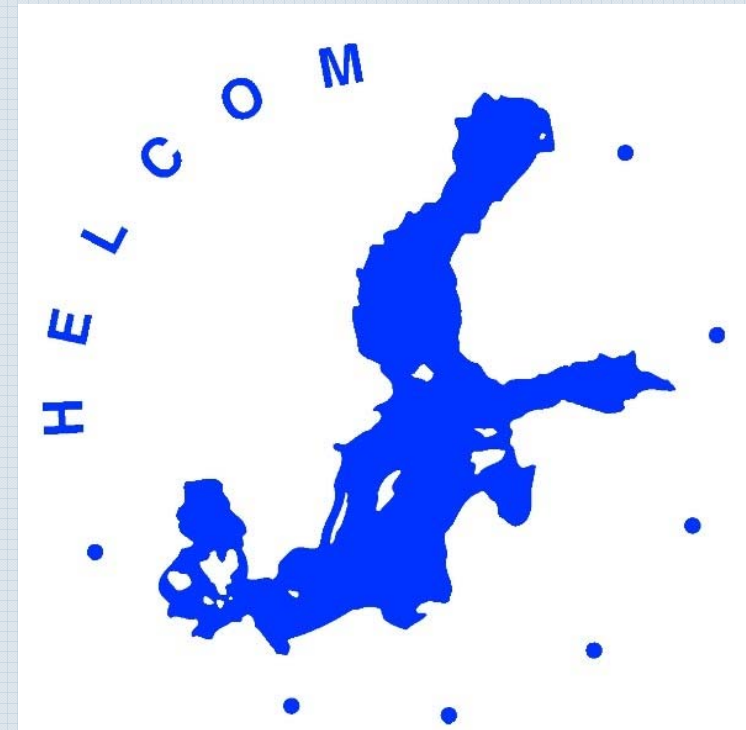


Seatrack Web – the Oil spill information system and extension to the Arctic

- Web based operational service
 - Forecasting oil drift
 - Finding illegal polluters
(evidence to court)
-
- AIS (Automatic Identification System)
 - Use of SAR satellite data of oil spill
detection



Cecilia Ambjörn, SMHI

Oil on the Swedish coast, Fu Shan Hai 2003



Full City outside Norway 2 August 2009 (photo Kystverket, Norway)

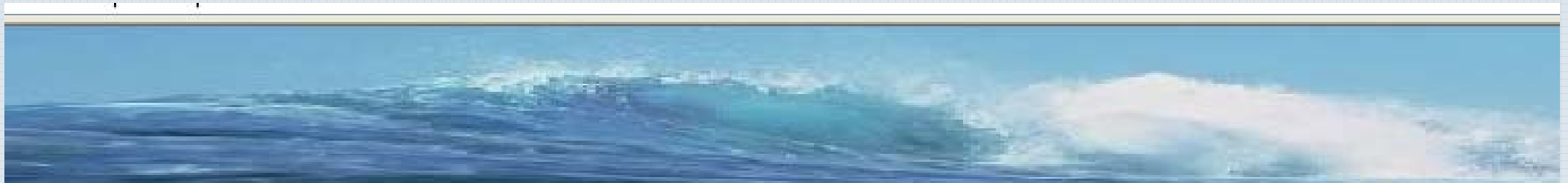


02.08.2009 11:41:05 (+0.0 hrs) Dir=279 Lat=N58 57' 56,52" Lon=E009 51' 16,55" Alt=367ft MSL WGS 1984

Full City outside Norway 2 August 2009 (photo Kystverket, Norway)



Seatrack Web **always on-line**

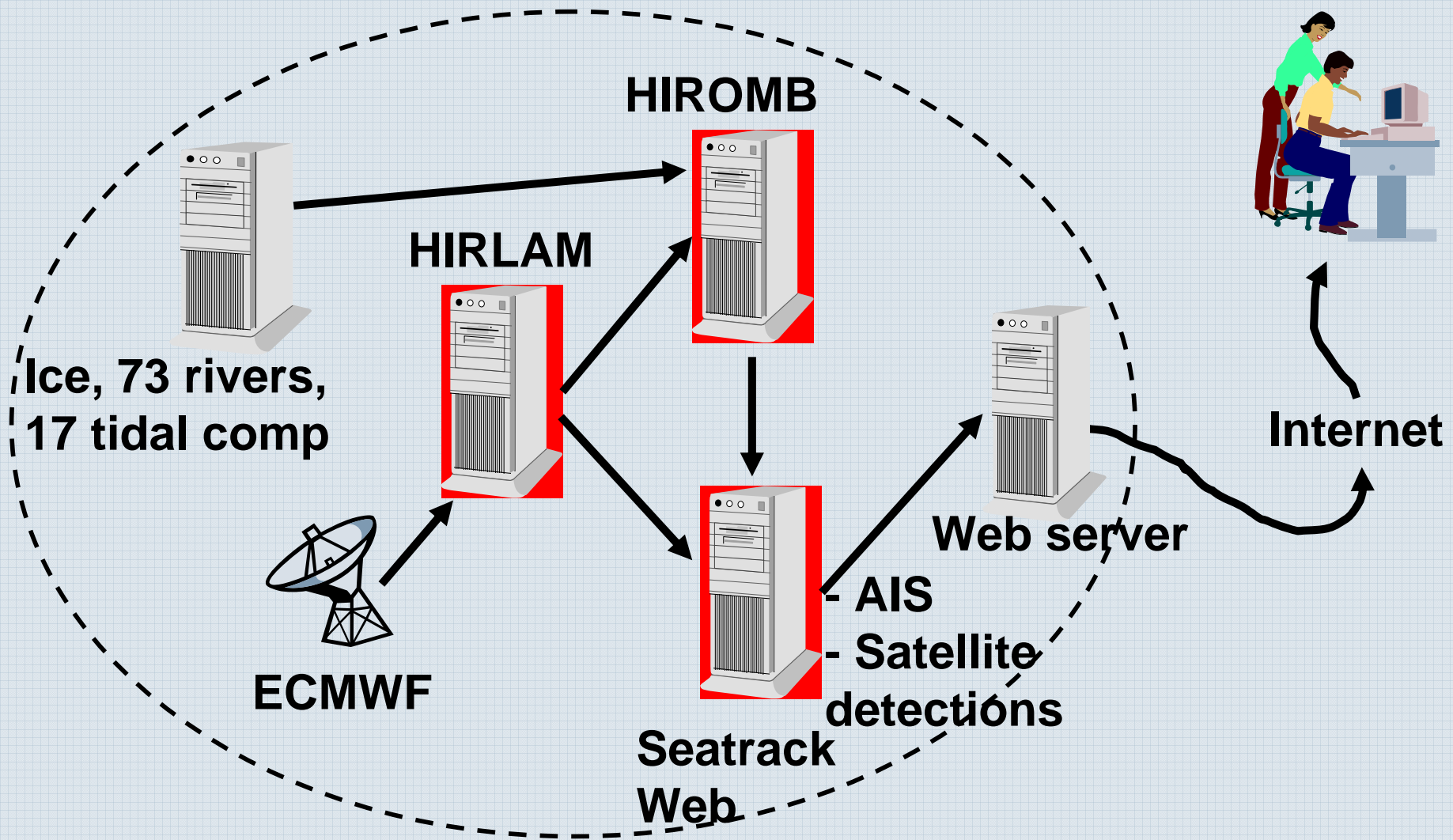


Seatrack Web

Official HELCOM oil drift forecasting system
developed and administrated by SMHI and DAMSA
with SINTEF oil weathering technology included



Seatrack Web – driving forces and data



Importance of oil drift forecasting

- **Plan the most efficient measures**
- **Reduce impact on the environment**
- **Reduce economic and social effects**
- **Accidents will continue to occur**
- **Illegal spills are still quite frequent**
- **Awareness and consciousness have increased concerning safety and environment**

STW is open for all responsible authorities

- about 150 users today**

- Needs from society have created and funded the system**
- Intensive development, because new requirements and possibilities emerge all the time**
- Joint development: Denmark, Sweden and Germany**

The applications increase.....

- **Drift of fish larvae**
- **New marine reserves**
- **Chemicals, objects**
- **Environmental Impact Assessments, EIA**
- **Risk scenarios**
- **Longterm effects on sea bed**
- **Harmful algae blooms threatening shorelines**

Conditions for a successful performance

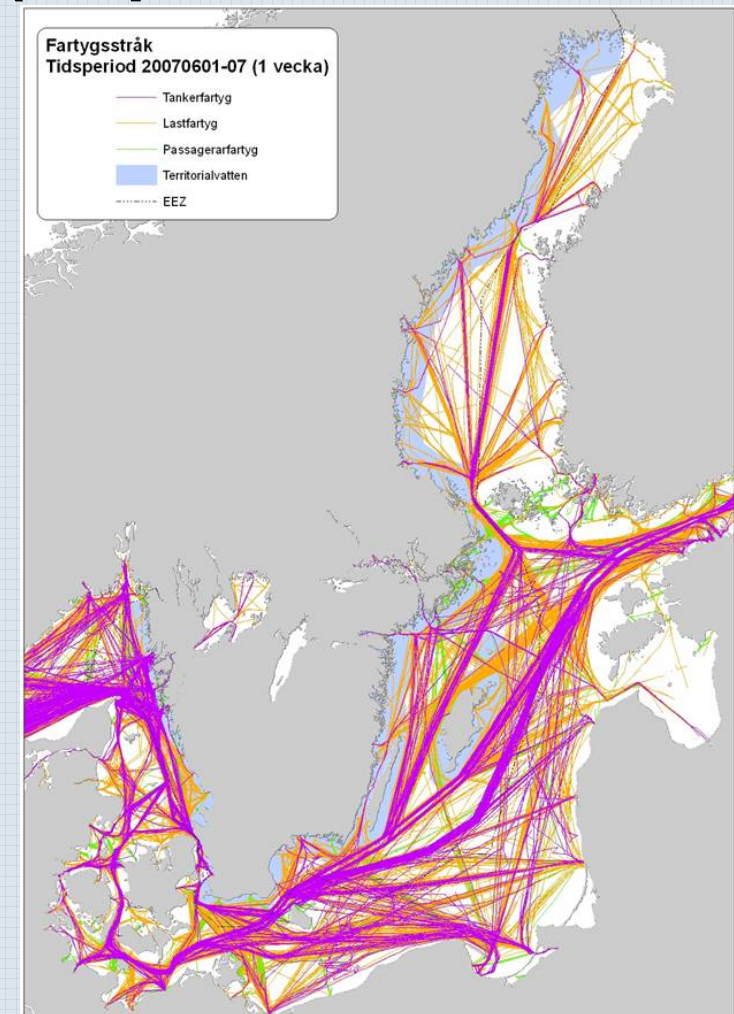
- Fully operational, highest level of supervision
- Fast, a few minutes
- User-friendly
- Skilled team, partners and users
- State-of-the-art forecasting systems
- Can be reached from any place
- Feedback from users
- Updated information, new forecasts
- Easy to evaluate results

Why via the Internet?

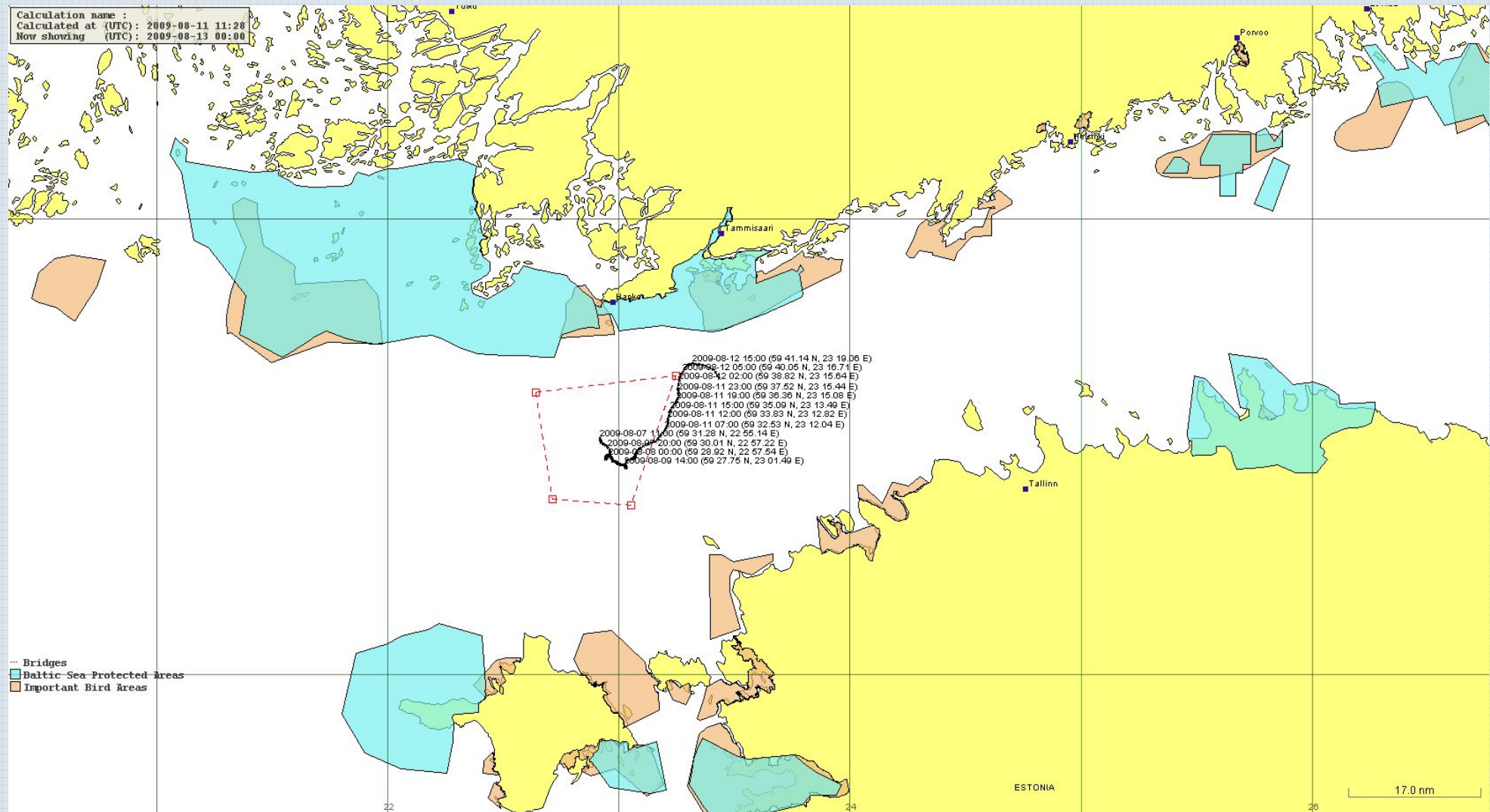
- **Immediate access to the latest forecasts**
- **New users are easily incorporated**
- **The forecasts are made by the experts on oil combating**
- **The system is supervised in all technical aspects, 7/24**

Seatrack Web includes

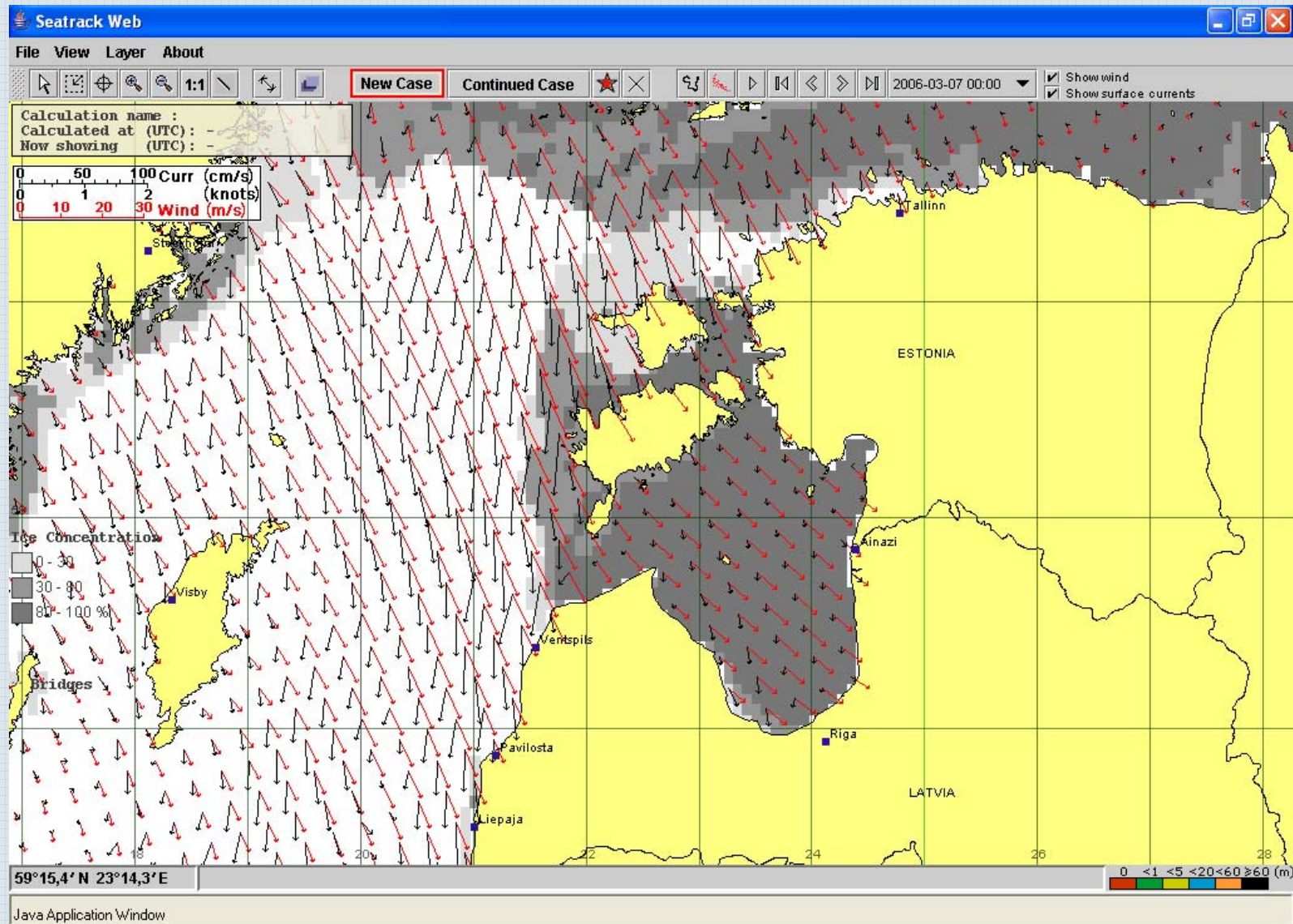
- AIS, Automatic Identification System (ship name, position, track, destination,.....)
- 5 day forecast, 30 days backtracking
- Scenarios
- Radarsat and Envisat oil detections (Confidence, time, size,.....)



Examples of sensitive areas in the Gulf of Finland



Ice, winds and currents



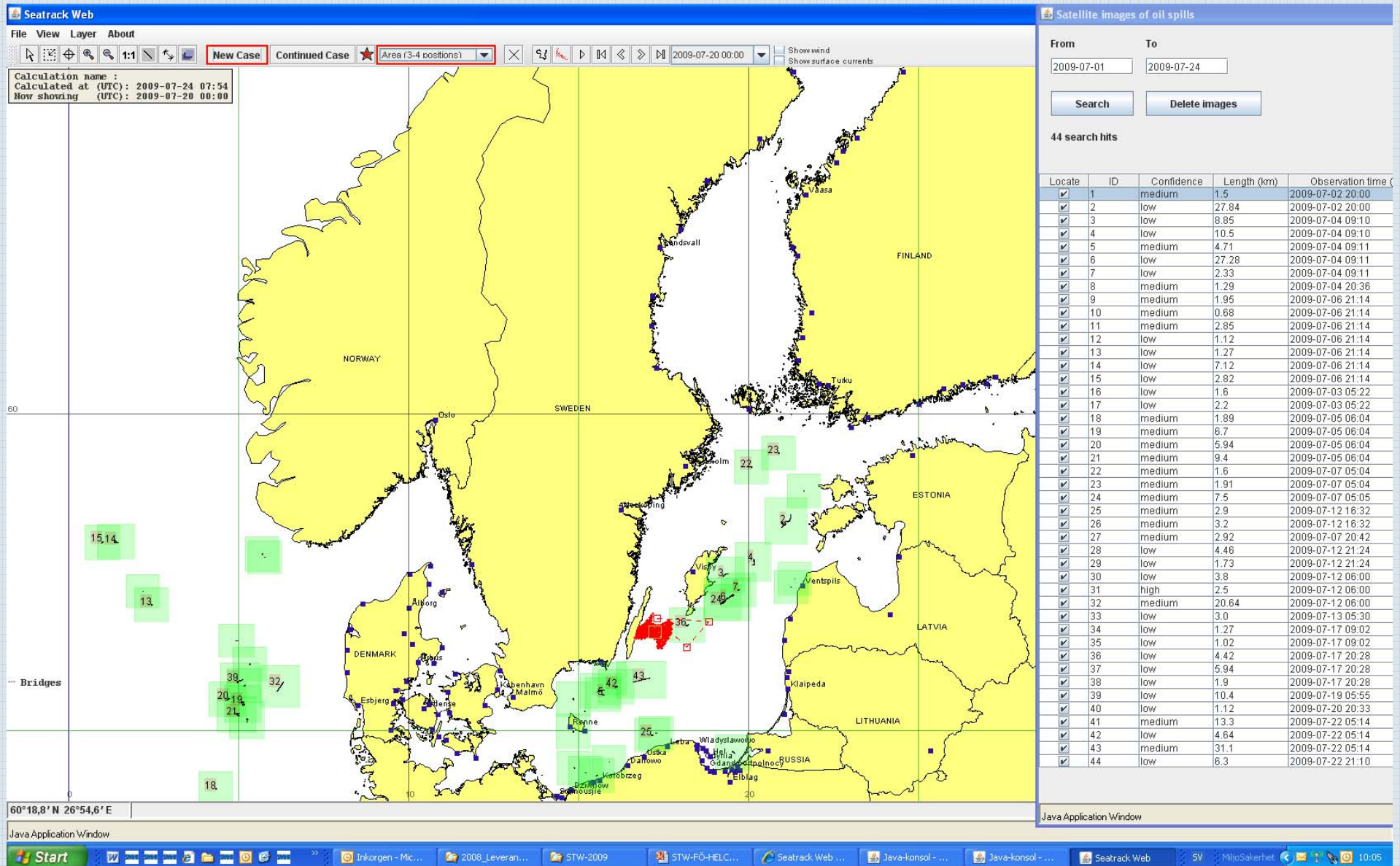
Seatrack Web

evidence to court, illegal spills



- Calculation backward from an identified spill
- Follow that trajectory and plot every ship in the vicinity of the oil during the hindcasted period
- Check every ship and analyse the oil
- Compare with existing satellite data

Satellite detections from Clean Sea Net

Spills during 1-24 July 2009



Satellite detection 2nd August at 20.25, no oil was detected 1st of August

 **Satellite detections of oil spills** 

From

2009-07-29

To

2009-08-04

Search

Delete detections from map

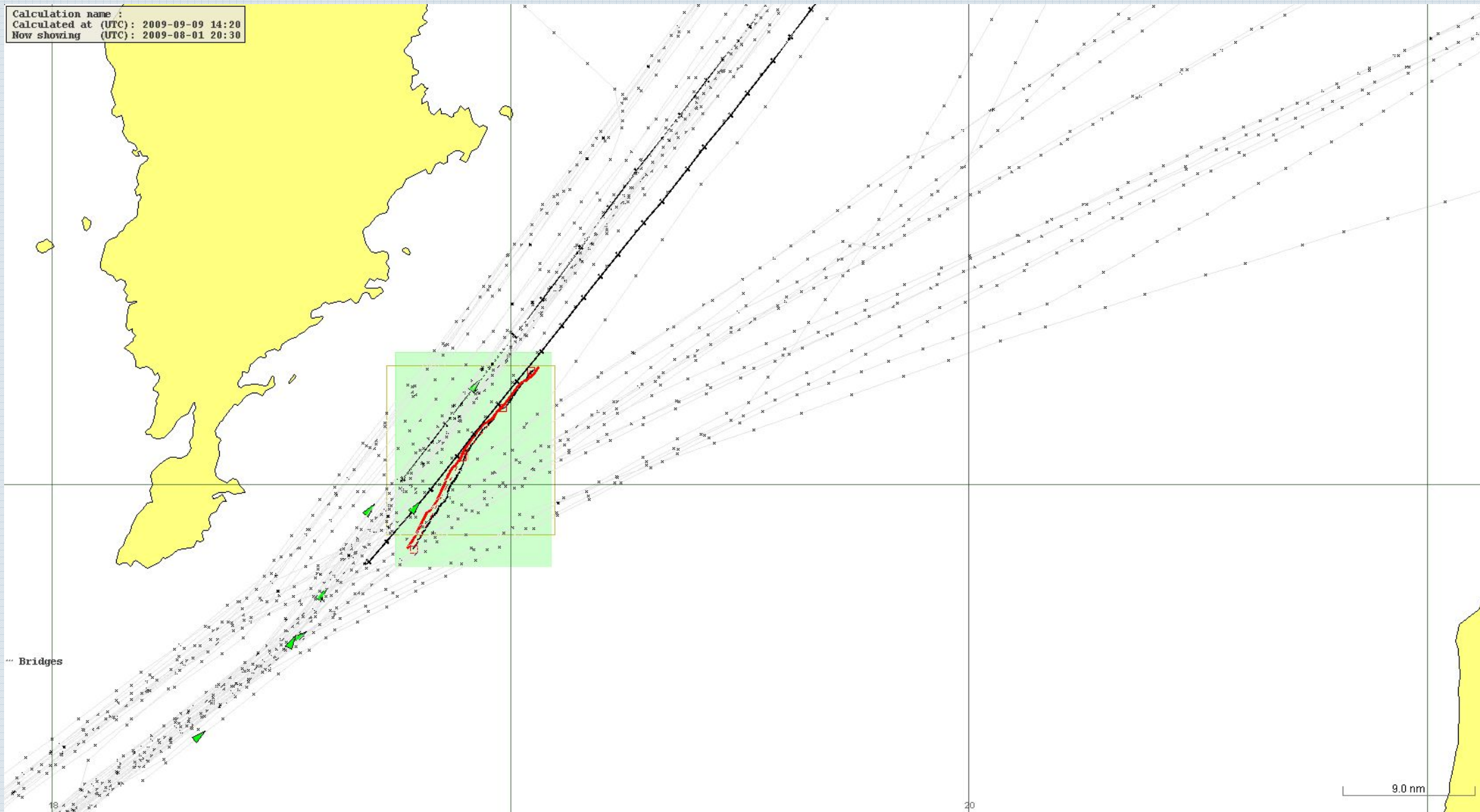
3 search hits

Locate	ID	Confidence	Length (km)	Observation time (UTC)
<input checked="" type="checkbox"/>	1	high	28.4	2009-08-02 20:25
<input type="checkbox"/>	2	low	0.8	2009-07-29 17:29
<input type="checkbox"/>	3	low	3.4	2009-07-29 17:29

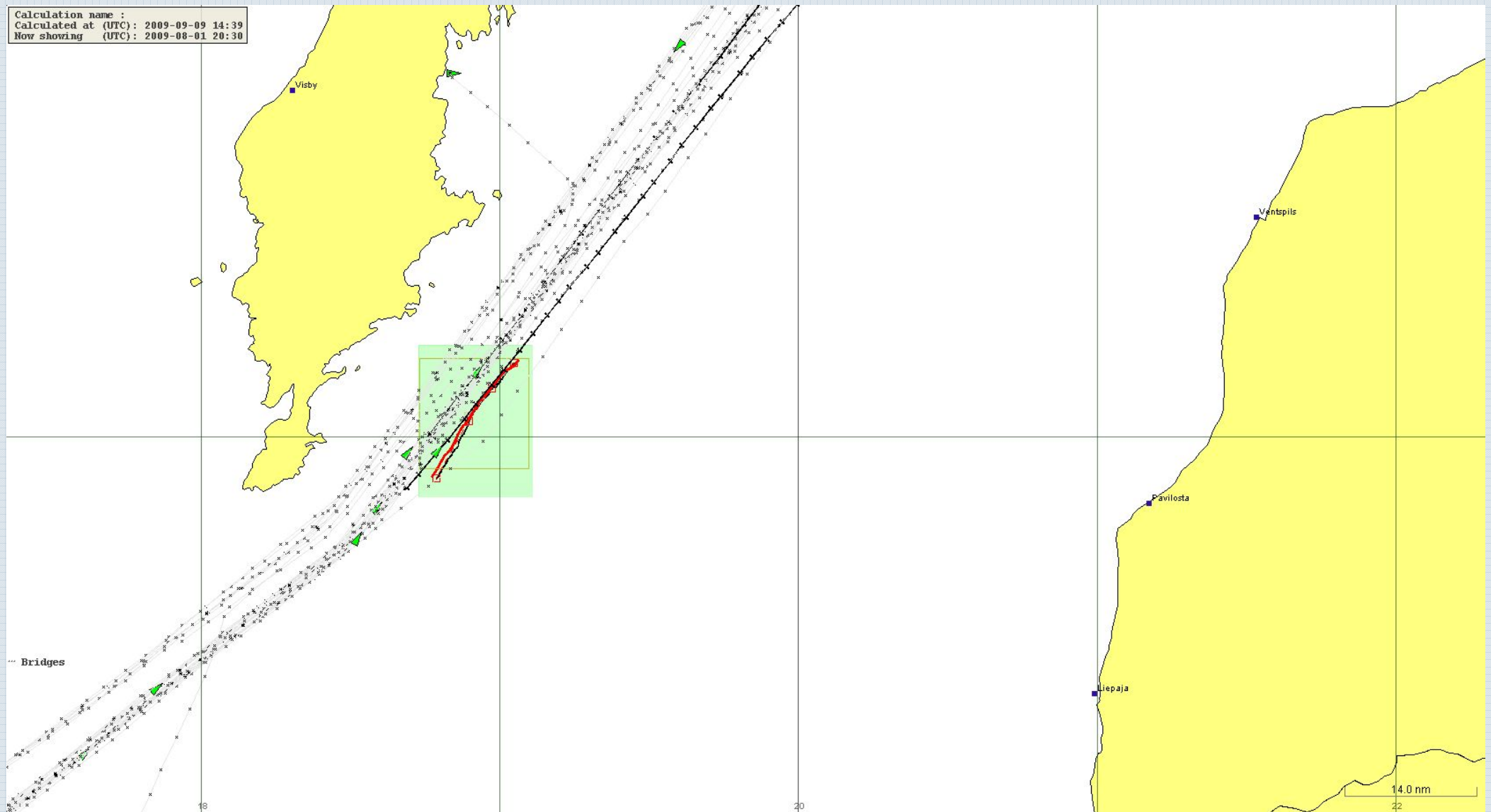
Close

52 AIS tracks

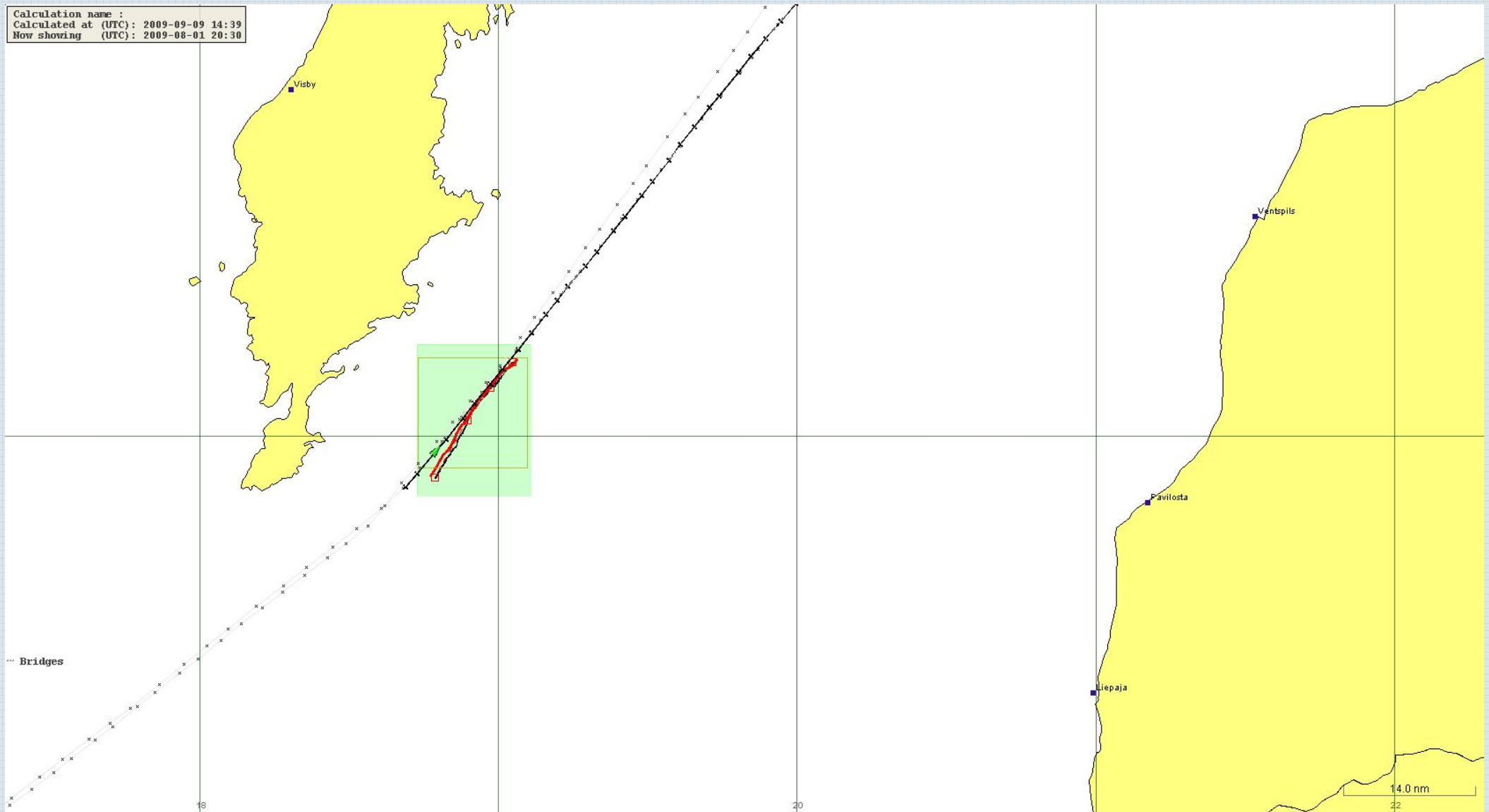
from 2nd August 20.25 and 24 H backwards



Ship tracks in one direction deleted



3 AIS tracks left



The Arctic Sea

Oil spill Information system

Driving forces needed in the Arctic Sea

- meteorological forecasts**
- oceanographic and sea ice forecasts**

On line web based system

- high supervision, never allowed to fail**
- open to all countries that need the information**

The Arctic Sea Infrastructure

- Information of all ship tracks, via satellites (AIS)
- SAR satellite detections of probable oil spills
- Validated models including tidal currents
- Network of observations
- Data assimilation for accurate short range forecasts

The Arctic Sea

Lesson to learn:

Without the Helcom Convention the Seatrack Web common oil spill service would not have come true

