

Norwegian Coastal Administration
Emergency response

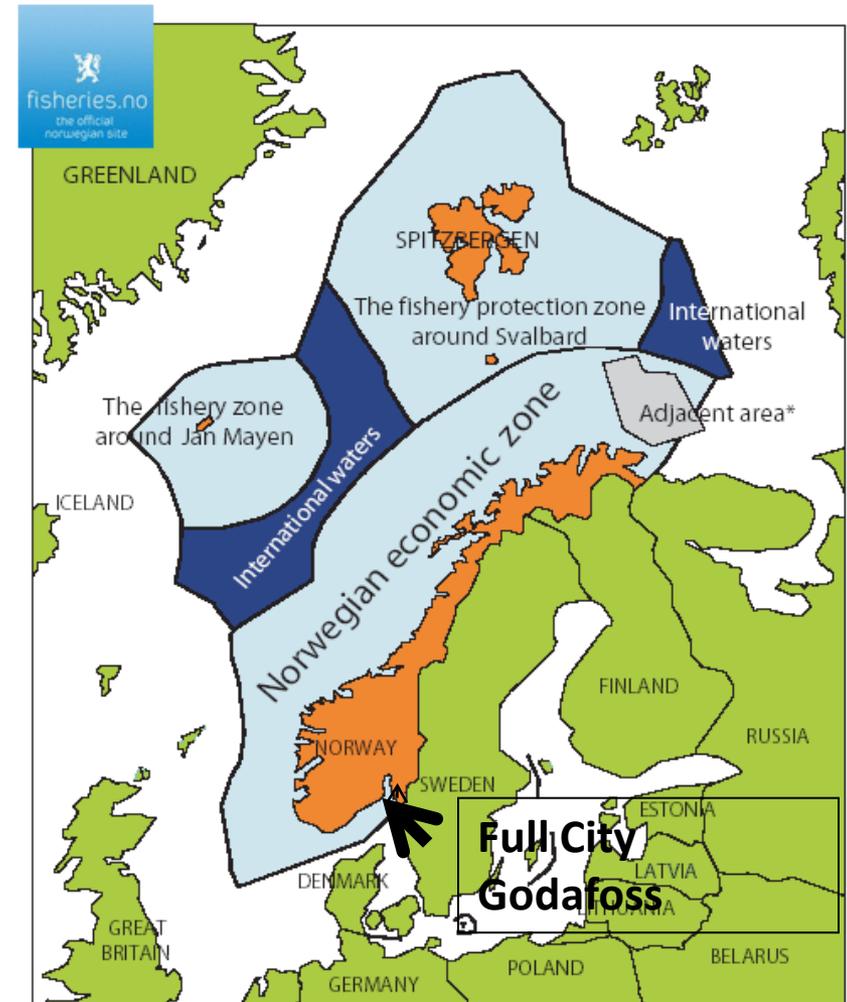


KYSTVERKET

The Full City accident- Langesund, July 2009, and
Godafoss February 2011 Hvaler
Lessons learned
Rune Bergstrøm

Norway, NCA, response area

- Geographical features:
 - North - South: 1752 km
 - Coastline: 80 000 km
 - Climatic variations from arctic in the north to coastal in the south.
 - EEZ approx 2 mill. km²
- Petroleum industry:
 - Production 3 mill. bbl./day
 - 90 % is exported, 3rd largest exporting country
 - Exploration and production starting in the Barents Sea.
- Large shipping industry
 - And Increasing traffic off the Norwegian coast

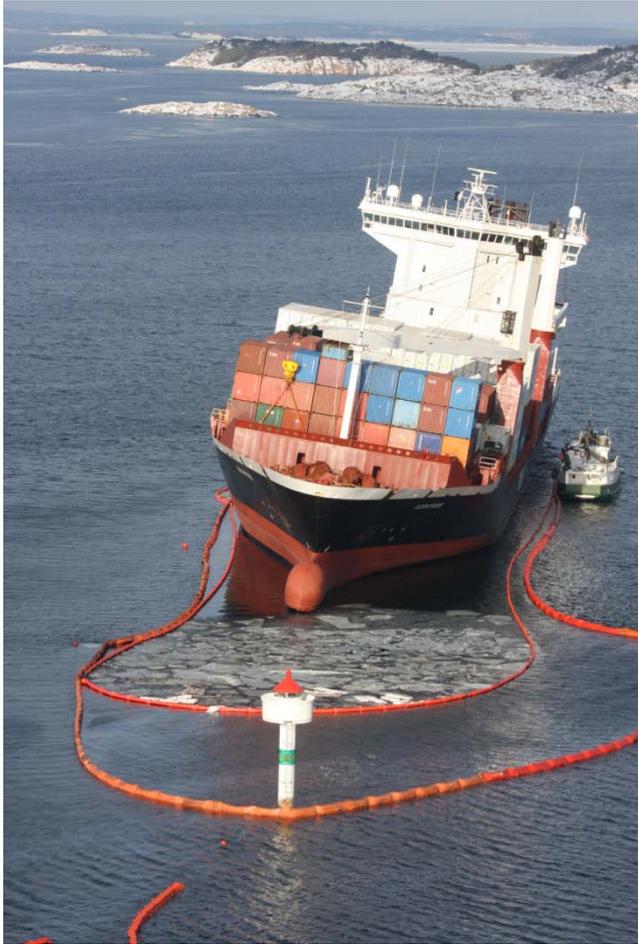




Full city



GODAFOSS





Time:

31.07.2009, ca kl 00.50 –Relay from Brevik VTS

From logbook NCS:

"Full City" CS 3FRQ4 – grounded at Såstein outside Langesund. 15 878 brt. Rough weather, water leaking into the machine room. KG "Nornen" on site+ 1 TB . NRS leads rescue operation. 23 men onboard.

1000 m3 IF 180, 130 MD (?).Ship without cargo.



Foto: Svein D
regiongeolo

Oil in ice, approx: 1 liter pr. 1000 sq.m



Full City – some numbers..

- Cost- approx. 332 mill Nkr in 2009 and 2010
- Work cleaning beaches: approx. 18 000 work days
- Will not be totally clean but no damage to the environment
- Environmental damage monitoring; 22 mill Nkr.



Arial surveillance GIS .

The screenshot displays a web-based GIS application interface. At the top, the browser title is "Asplan Viak Internet AS - Adaptive - 1.7.0.1053 - Microsoft Internet Explorer provided by Kystverket". The address bar shows a URL: http://kart.kystverket.no/advanced_default.aspx?minX=996758;minY=65003458;maxX=2775248;maxY=6599102&mapService=0. The main content area is divided into several sections:

- Left Panel:** A search menu titled "Gå til enkelt kart" with various filters. The "Foreslåtte lokaliteter for nædhavner i region sørøst" is selected. Other filters include "Foreslåtte lokaliteter for nædhavner i region Midt-Norge", "Foreslåtte lokaliteter for nædhavner i region Troms og Finnmark", "Havbruksdatabasen", "Havneterminaler ISPS - Vest", "IJA", "NOFO depoter", "Nædhavn - Hæringsforslag", and "Tettsteder (SSB)".
- Top Panel:** A search bar with the text "http://kart.kystverket.no/custom/taggedImageUpload/18353822/IMG_276...".
- Main Map Area:** A large aerial photograph showing a coastal area with a large ship in the water. The map is overlaid with a red boundary. Below the map, the coordinates are displayed: "05.08.2009 12:43:12 (+0,0 hrs) Dir=345 Lat=N68 55' 34,59" Lon=E009 42' 31,13" Alt=1341ft MSL WGS 1984".
- Right Panel:** A search menu titled "Full City" with various filters. The "Full City - Overvåkningsbilder" is selected. Other filters include "Full City - Registrering av påslag", "Full City - Registrering av utlagte lenser", "Full City - Sektorinndeling", and "Full City - Strandpåslagsbilder".
- Bottom Panel:** A search menu titled "Full City - Utstyrsdepot" with various filters. The "Full City - Utstyrsdepot" is selected. Other filters include "Full City - Utstyrsdepot", "Høring forskrift Havne og farvannsløven", and "Høring havne og".

The interface also includes a search bar at the top left, a search bar at the top right, and a search bar at the bottom left. The search results on the right side of the map show a list of "Foreslåtte lokaliteter for nædhavner i region sørøst" with the following entries:

- MRDB MOB C Sommer: Ingen treff
- MRDB MOB A Sommer: Ingen treff
- MRDB MOB B Sommer: Ingen treff
- Foreslåtte lokaliteter for nædhavner i region sørøst: Ingen treff
- Full City - Overvåkningsbilder (2 treff):
 - Helikopter 050809: IMG_2763-1600.jpg
 - Helikopter 050809: IMG_2764-1600.jpg

Primærfly LN-KYV



Beechcraft King Air 350ER 2011 mod

- endurance 12 hours
- Max: 2200nm
- Surveillance (Low level) 1300 nm

April 2011

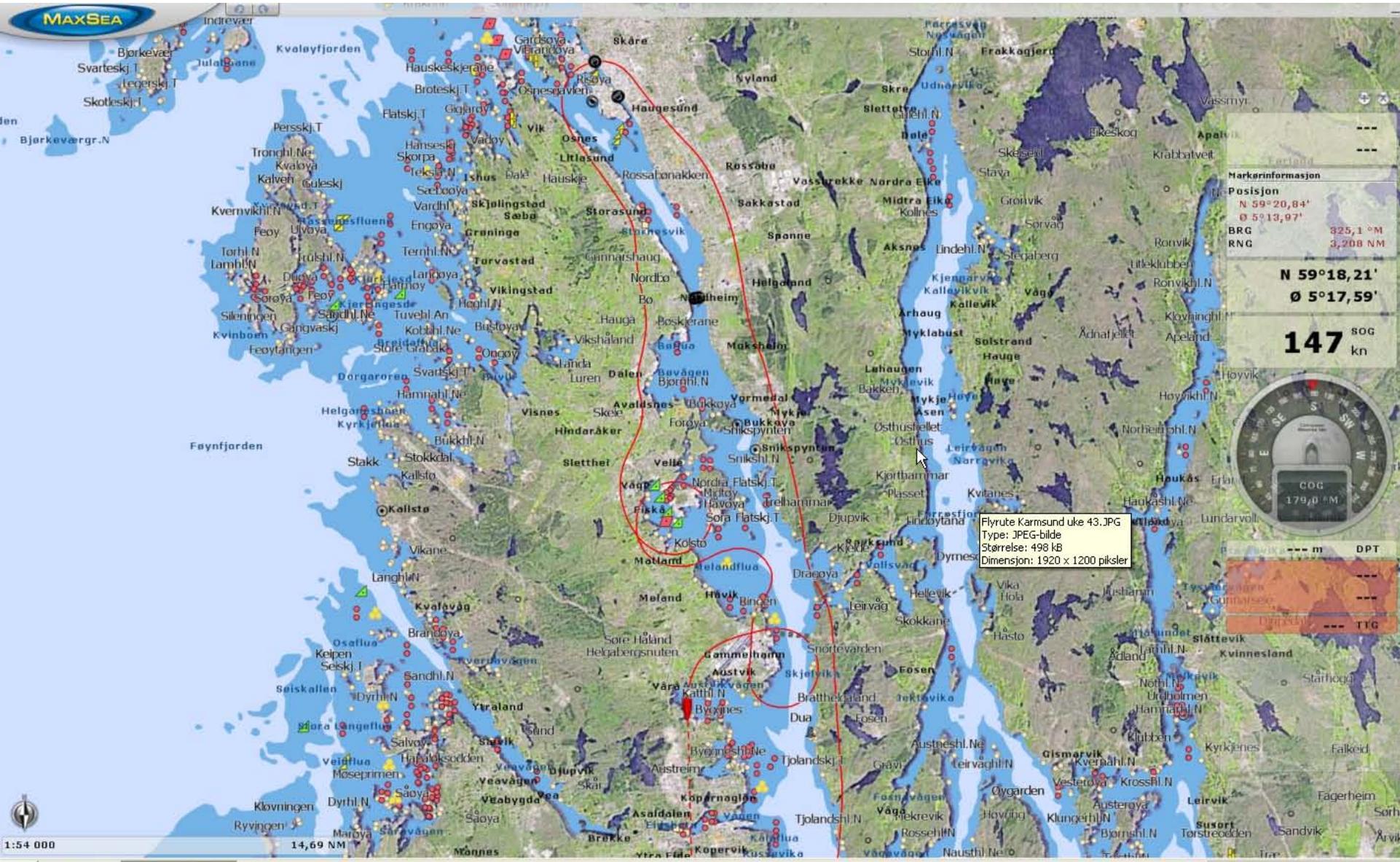
- 5-6 months. sensor installations etc
- In operation cot 2011





- FLIR SYSTEMS STAR HD, With all optics, including laser
- 20kw SLAR antenna
- Live AIS in GIS – Datastream to shore
- Downlink (Live video/data to OSC vessel/other vessels)
- Drop Tube
- Sensors displayed on plug in Touch screen for additional observer + display in cockpit
- VHF Direction Finder, SAR Direction Finder
- SATCOM – With data communication (332kb/s)
- Air to shore data communication (450 MHz)
- Communication: MF/HF, Duplex VHF/FM/AM, Intercom, Voice recorder on all communication, satellite phone,
- Radiac , Sensor for Radioactive substances
- HD Video/photo, all with lat, long, time, date, heading and altitude in image

Info from the plane



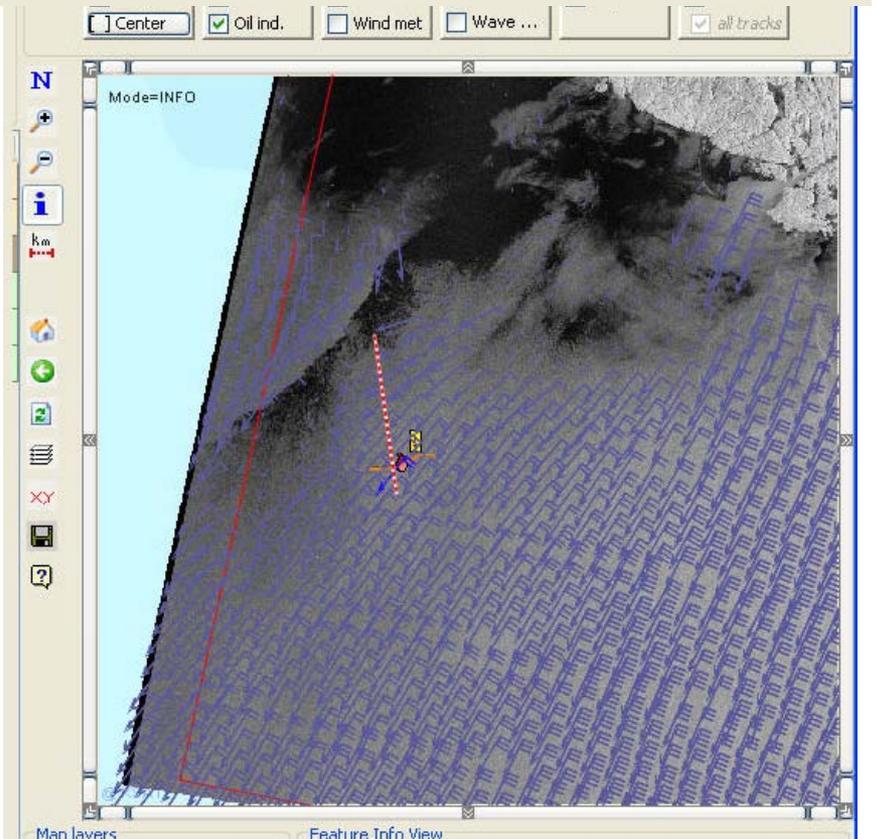
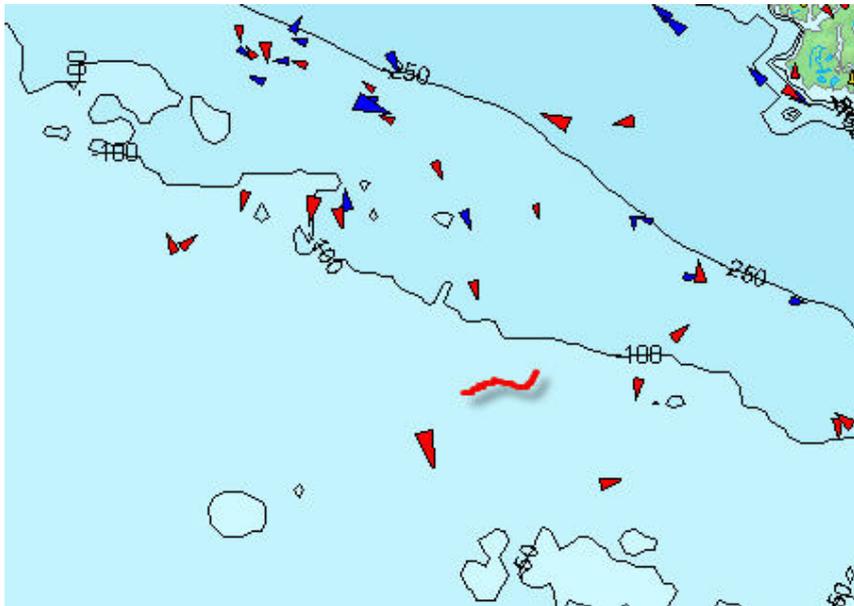
SECURUS

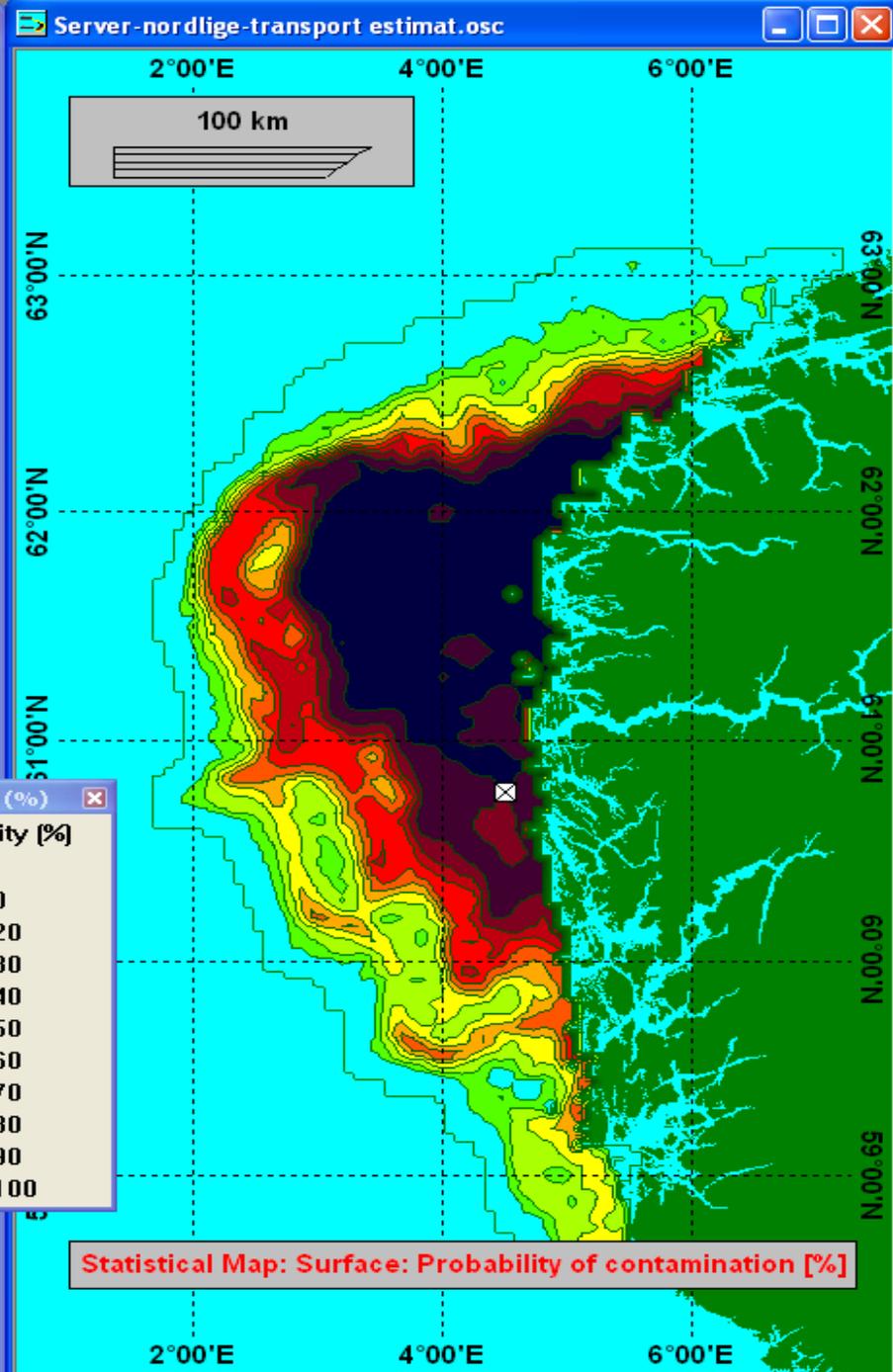
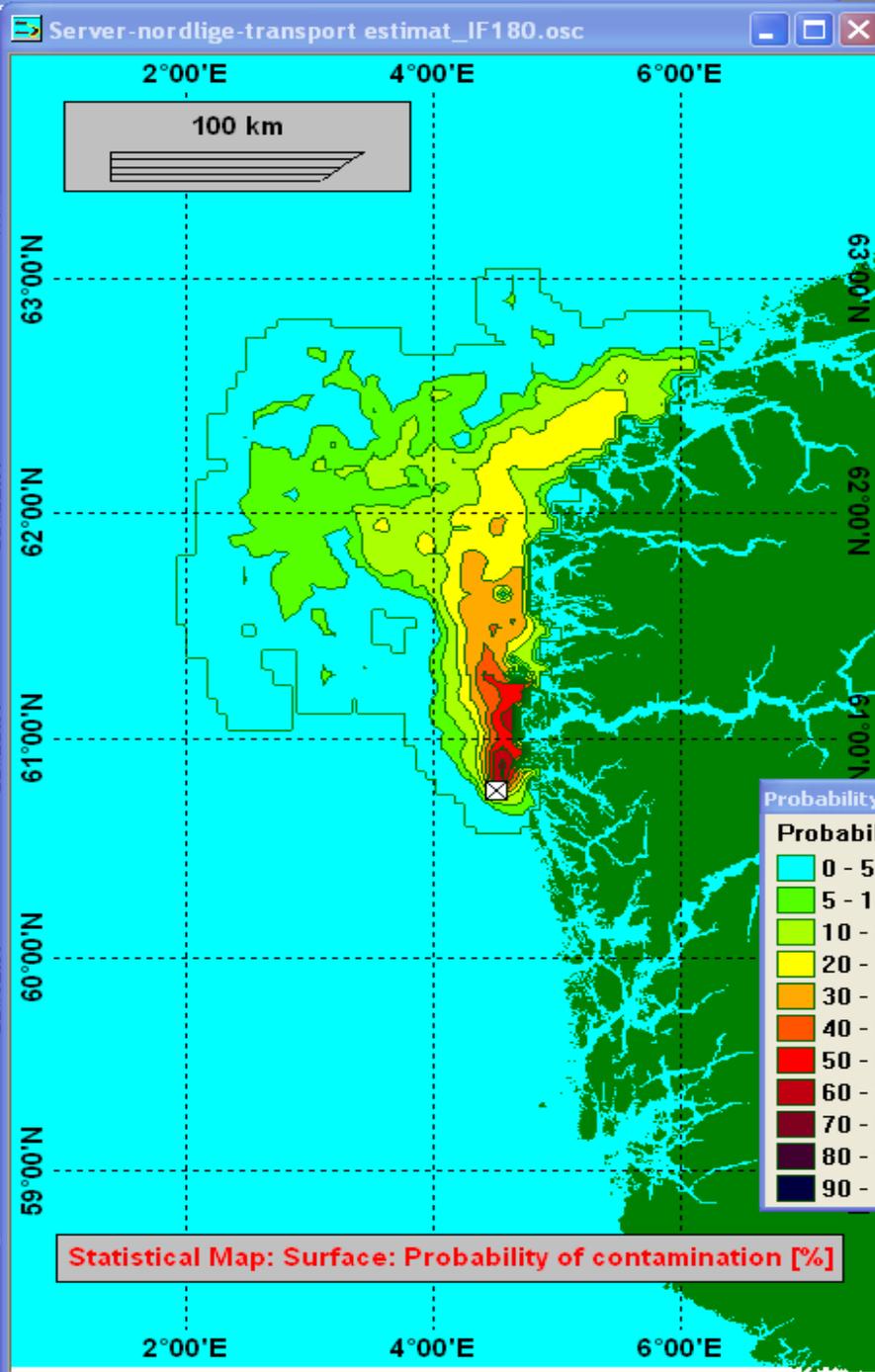
- "Sees" thickness of oil slick in all light conditions
- True time transmitting of, video, radar information to on scene commander and to all others. Directly integrated to the map screens
- Can be integrated with all other geographical information (same scale), from radar, satellite scenes etc.



Satellite scenes

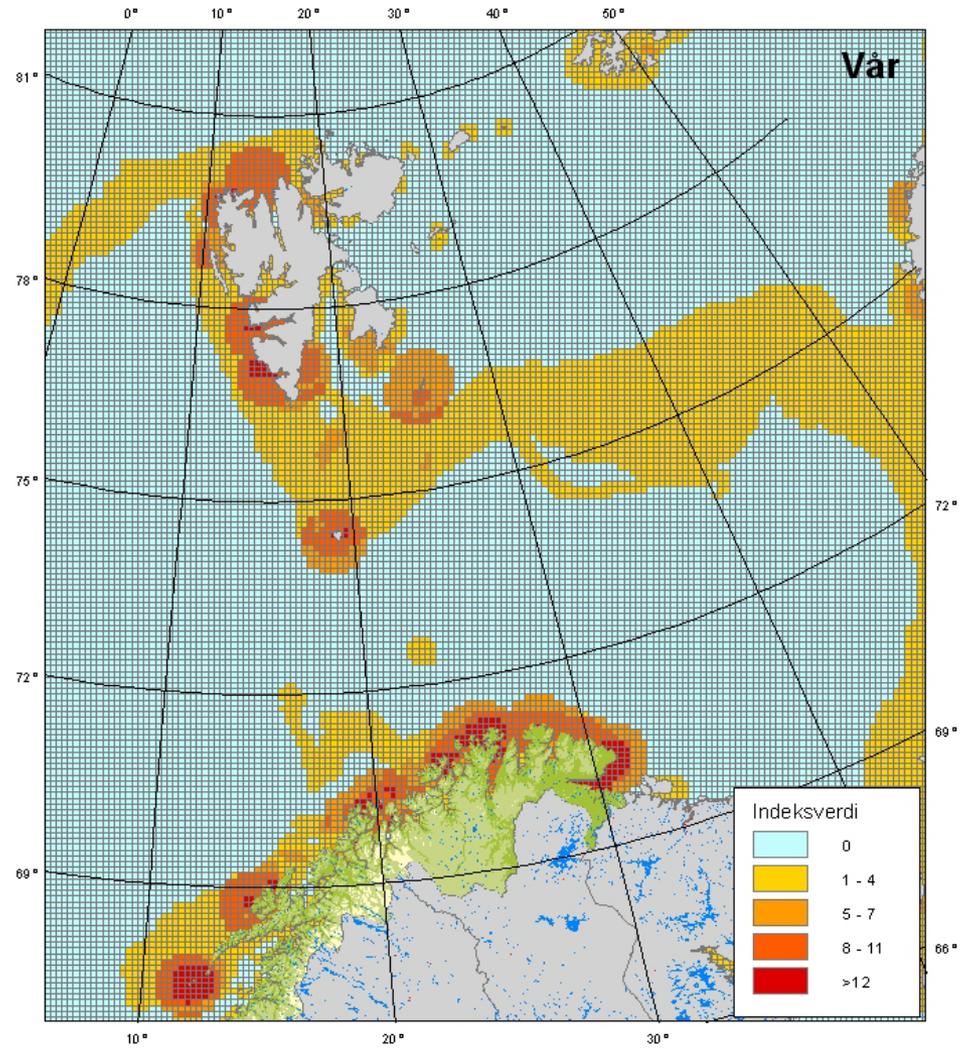
Date	Time	Sat	Customer	CS coverage/response	Status	Files	Feedback	Quality
2010-02-11	05:13:35	RS2	KYSTVERKET	NO	No slicks	5:   	Add	Quality
2010-02-12	04:44:15	RS2	KYSTVERKET	NO	No slicks	5:   	Add	Quality
2010-02-13	05:59:29	RS2	KYSTVERKET	NO		3:   	Add	Quality
2010-02-14	05:26:14	RS2	KYSTVERKET	NO	Ordered	N/A	N/A	
2010-02-16	06:10:04	RS2	KYSTVERKET	NO	Ordered	N/A	N/A	
2010-02-16	06:11:20	RS2	KYSTVERKET	NO	Ordered	N/A	N/A	





Specially vulnerable areas

- Important ice front, cold water front area with high production (fish og fish eggs, seabirds, sea mammals).
- Need better information about open sea resources (pelagic and sea bottom resources)

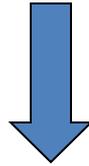


Response strategy

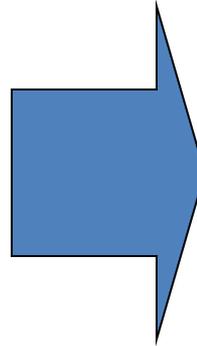
At the source



Prevent drift/spreading

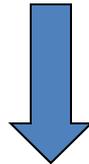


Along drift trajectory

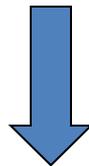


Priority:

- Life, health, safety >
- Environmental (MOB)>
- Economical interest



In littoral areas



On the beach



After recovery of free-floating oil and the situation at sea is stabilised.

Approx.. 75 km of beaches effected
by oil

200 locations

(from small spots to several km of oil
pollution on the beach



Personnel for beach clean-up

- Municipalities workers, all members of the IUA's
- **NGO's**
 - WWF
 - locals
- **Governmental resources**
 - Military
 - Civil defense
- Others (Unemployment etc..)
- Need of more efficient methods and light mobile equipment



Olympic Poseidon: chartered from NOFO



03.08.2009 12:32:20 (+0,0 hrs) Dir=329 Lat=N58 57' 40,00" Lon=E009 51' 48,14" Alt=212ft MSL WGS 1984



20/08/2009



Norwegian Coastal
Administration, Department
for Emergency Response

TV, Radio, newspapers, internet



Environmental impact survey

- Purpose: Find the extent of damage to the environment
- SINTEF, oil typing, oil behavior in the sea, dispersants etc.
- Uses Norwegian Institute of Marine Research (Bergen) as scientific coordinator

Looks at:

- Seabirds
- Sea mammals
- Fish, shrimps, oysters etc, **food safety**
- All other organisms on the seabed and in the water column
- Beach ecosystems
- **Outdoor activities**

Food safety and Outdoor recreation

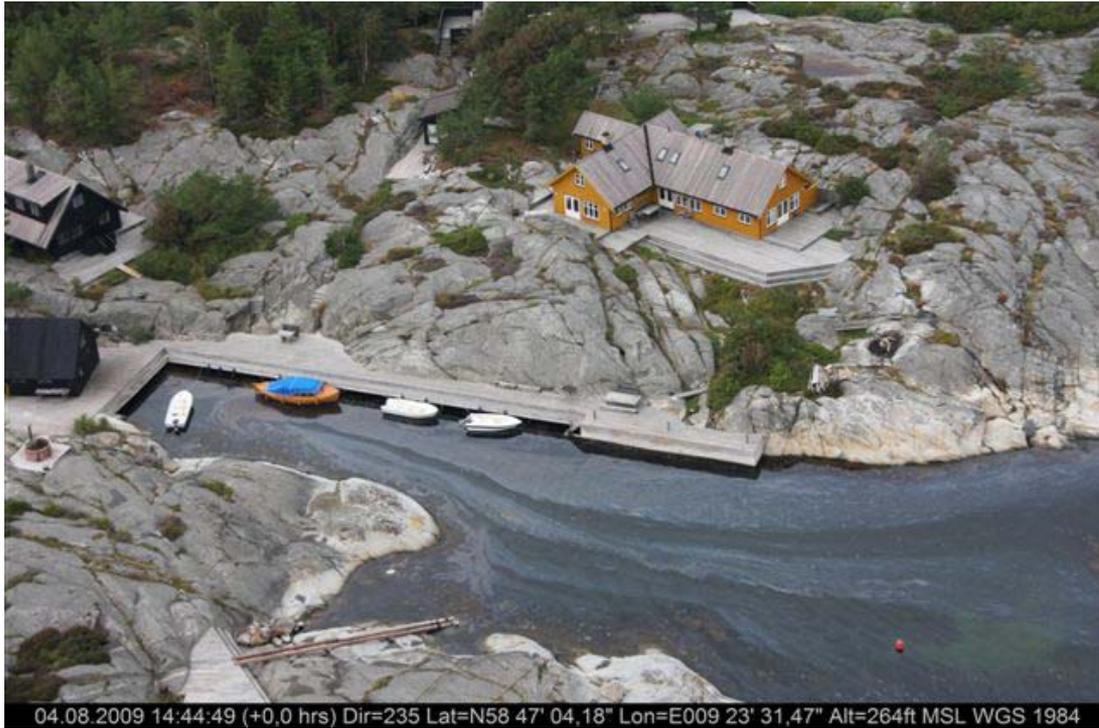
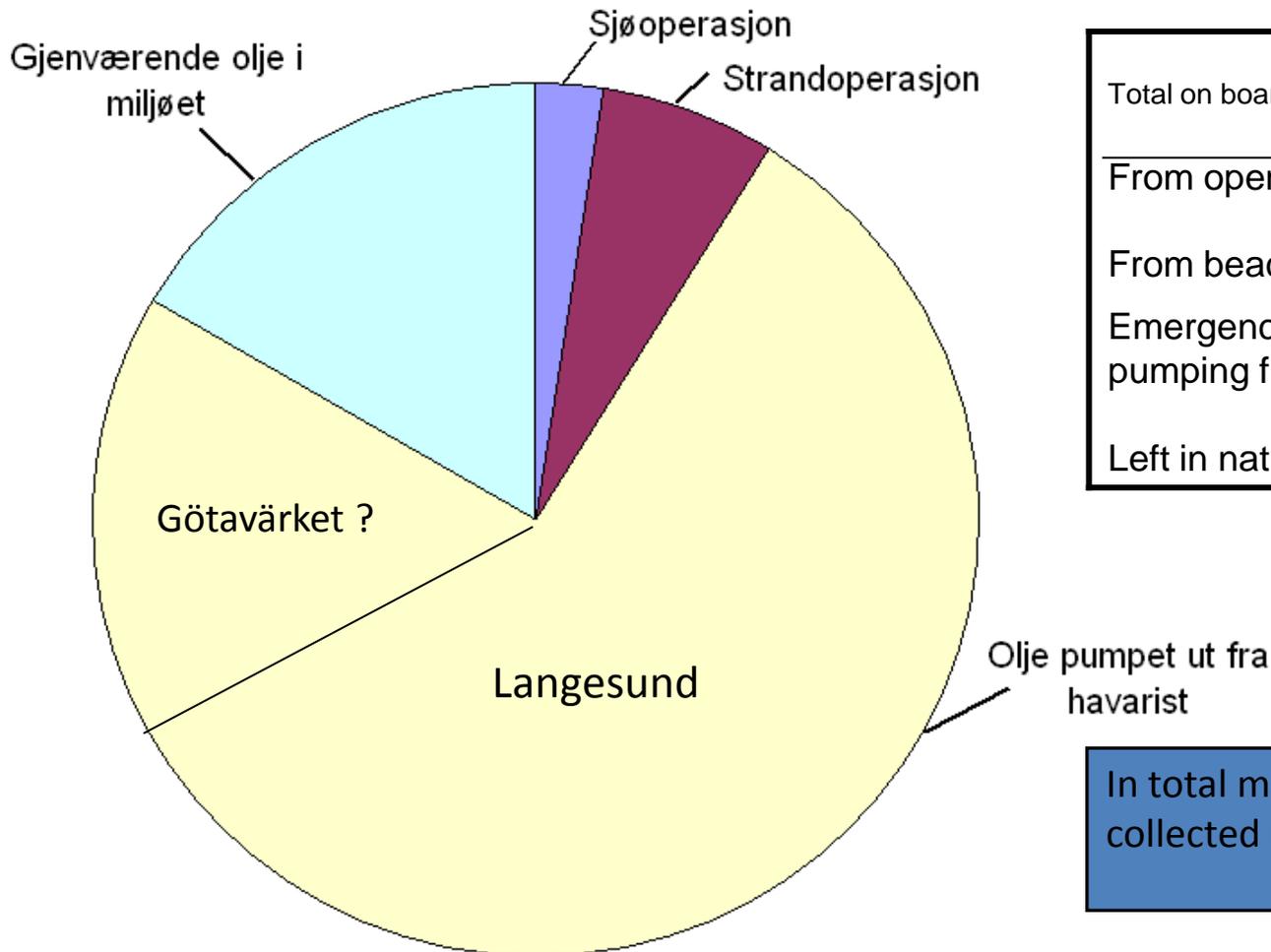


Foto: Kystverket

Norwegian Coastal
Administration, Department
for Emergency Response



OIL recovery budget– Full City



Total on board "Full City"	1154	m ³
From open sea	28	m ³
From beaches	74	m ³
Emergency pumping from ship	860	m ³
Left in nature	191	m ³

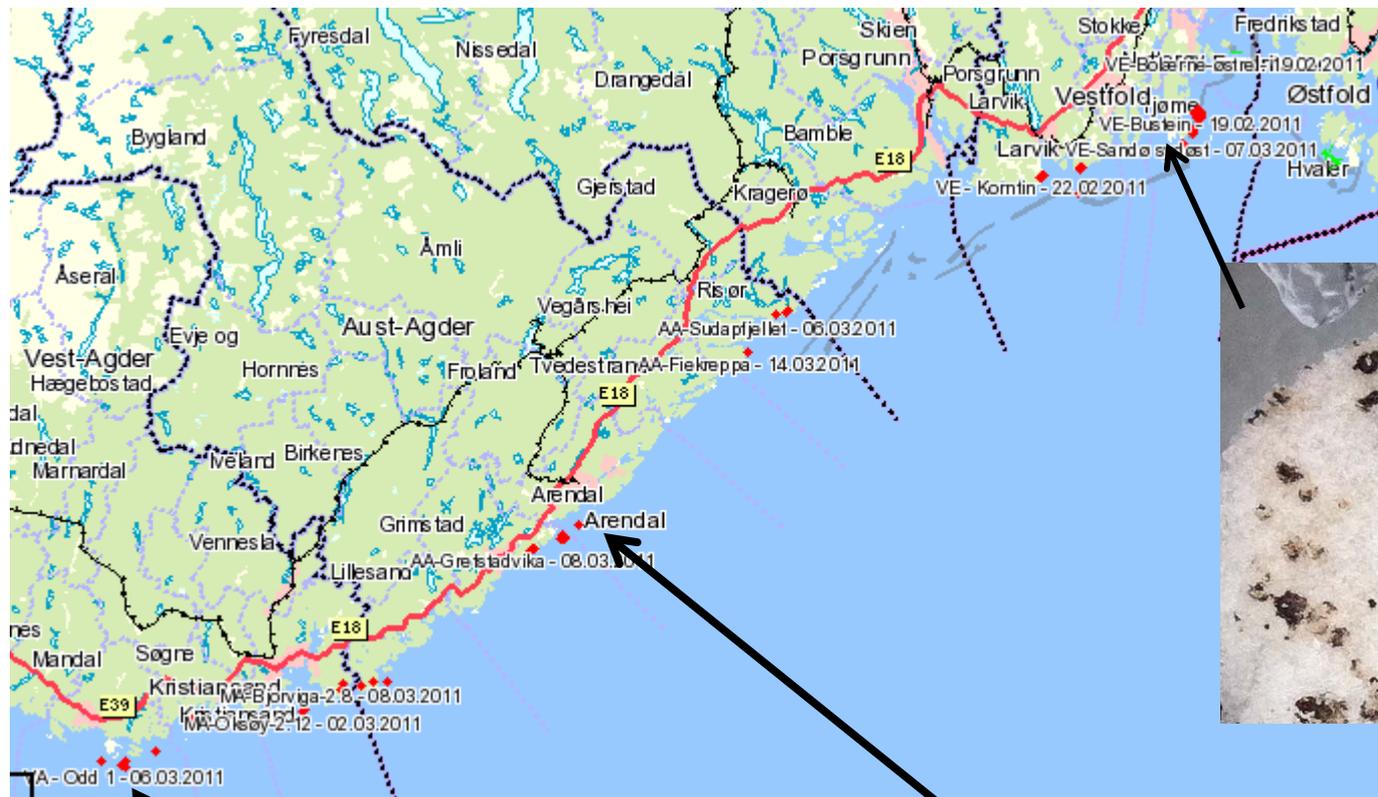
In total more than 2950 tons are collected (963 tons of oil)

Expectations to the response teams and oil recovery equipment









Tjøme

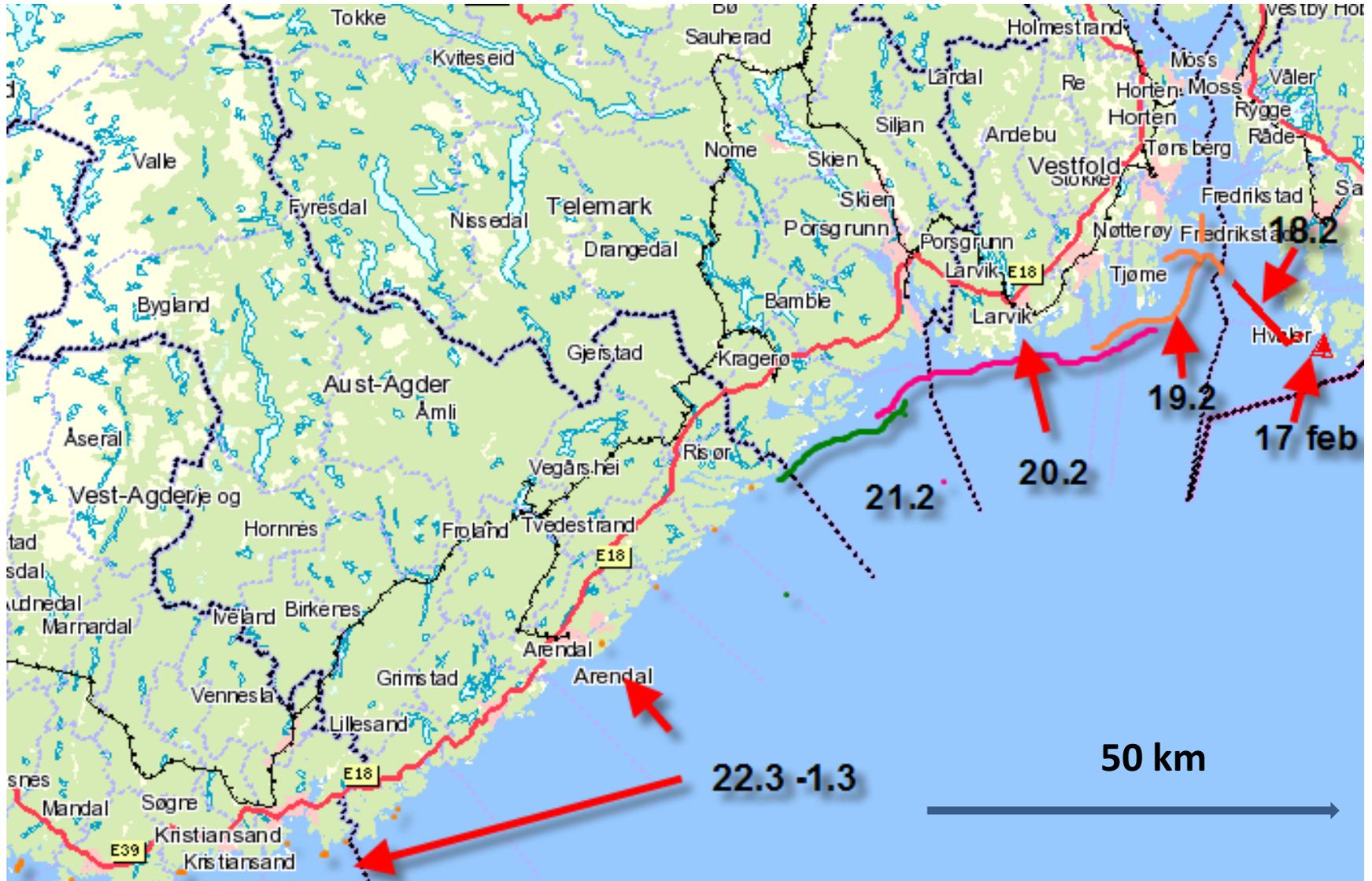


Ryvingen (5 m3)



Flødeviken (3m3)

OIL DRIFT - GODAFOSS



Lessons learned

- Need of competence- know how, all levels (often more important than equipment)
- Better planning, short and long term
- Focus on food security, human health, recreational use of the areas besides environmental impact monitoring
- Importance of one common understanding of the situation and the priorities done (all spills are local)
- Press – important to allocate enough resources to follow up the media
- New products, salespersons, take them seriously
- Give a realistic picture of the limitations of an oil recovery operation

A white Arctic fox cub is peering out from a wooden window frame. The cub is looking towards the camera with dark eyes. The background is a dark, rocky or pebbly surface. The window frame is made of weathered wood. In the foreground, there is a black metal railing and a yellow newspaper or magazine with some text and images.

We are curious !



KYSTVERKET



Thank you for your attention !