



Norwegian Satellite AIS for ship monitoring in the Arctic

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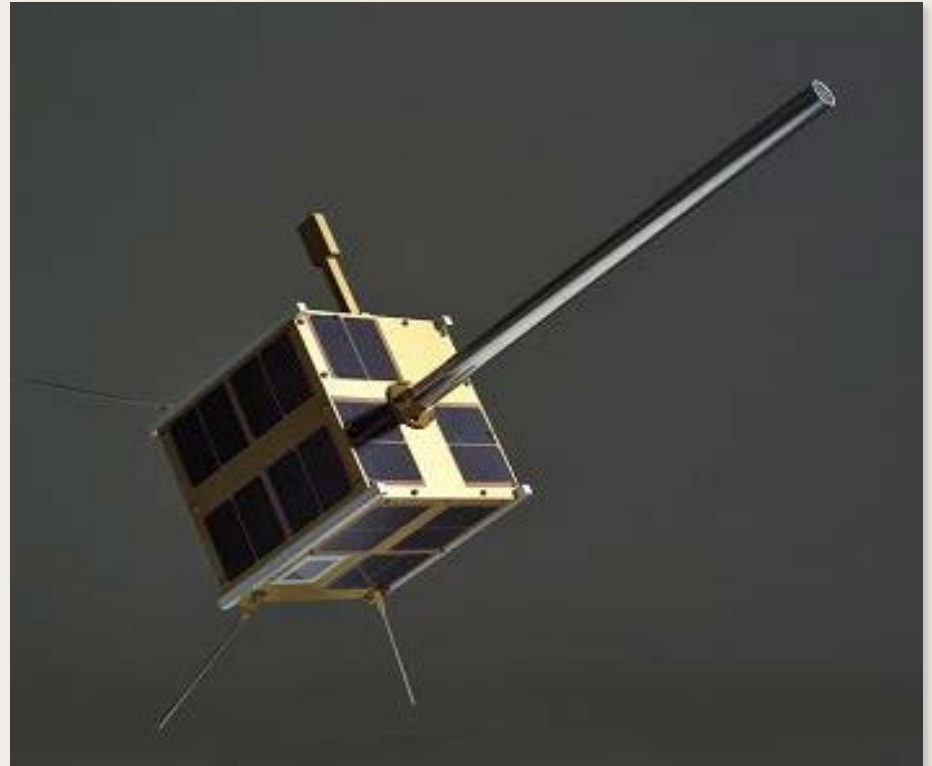
The norwegian area...

- 🦁 Mainland of Norway like Alaska in latitude
- 🦁 Total area of land and sea only surpassed by Russia in Europe
- 🦁 Large distances, little infrastructure
- 🦁 Strategic position
- 🦁 Management of fisheries
- 🦁 Transport along coast
- 🦁 Both safety and security
- 🦁 Boundary of Schengen
- 🦁 Global use of Northern Sea Route through Norwegian waters

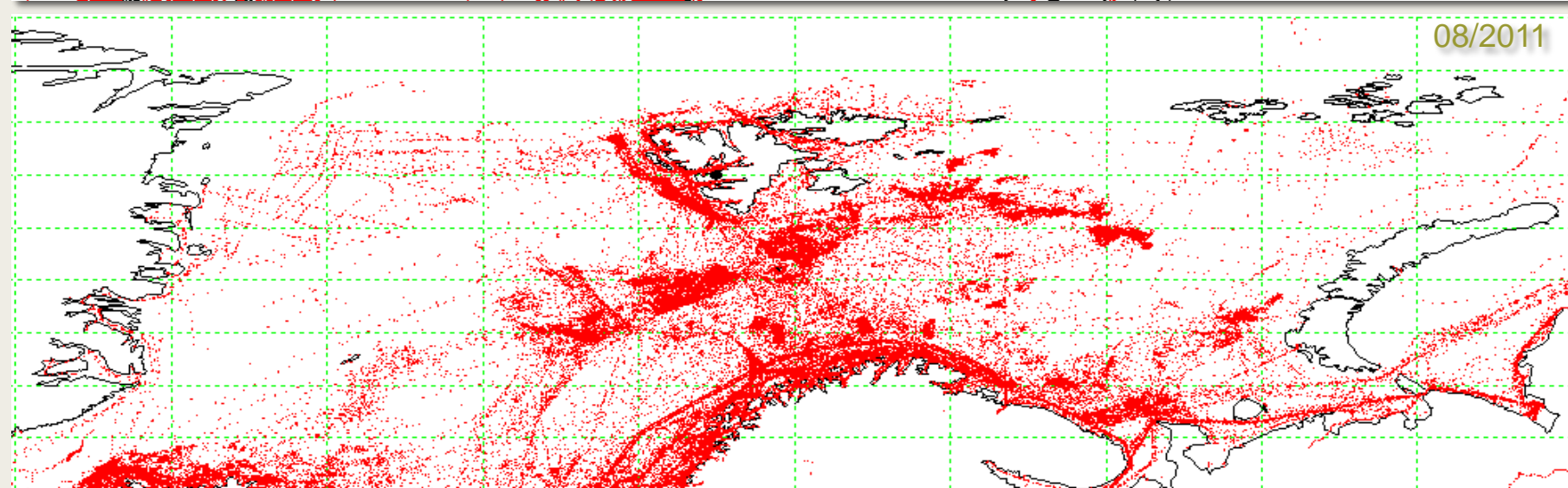
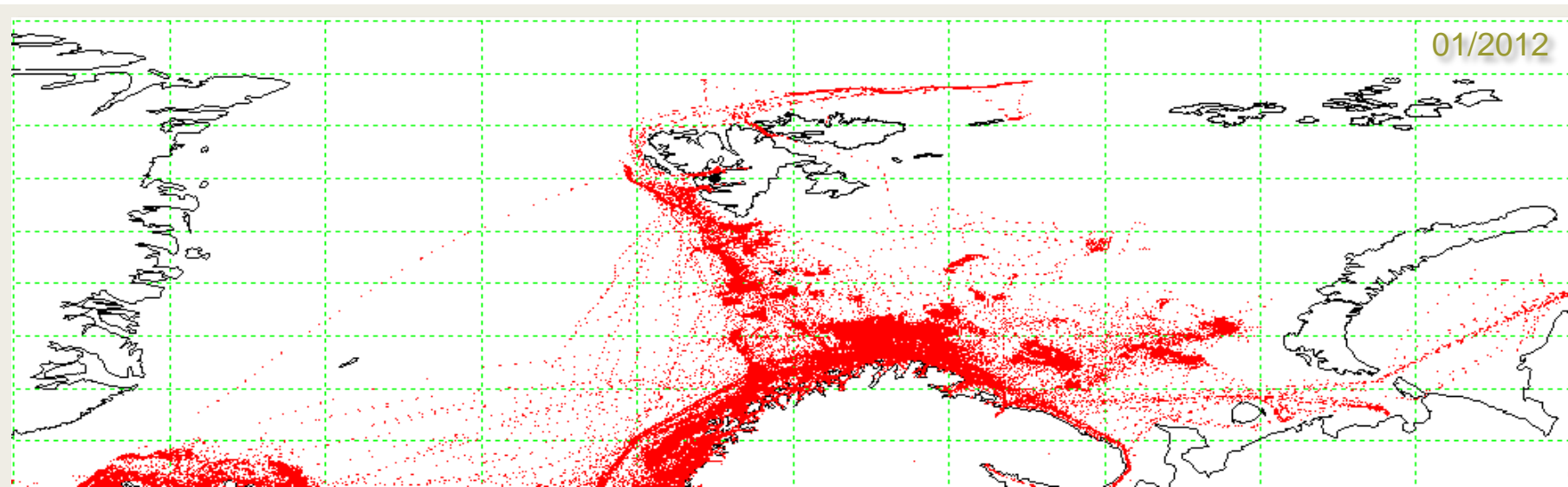


The norwegian satellite...

- 🚀 AISSat-1
- 🚀 UTIAS GNB
- 🚀 KSeatex AIS Rx
- 🚀 6 kg, 20x20x20 cm
- 🚀 ISRO PSLV, 12 July 2010
- 🚀 Polar orbit, 630 km
- 🚀 KSAT Svalsat, Svalbard
- 🚀 Cost approx. 4 M€

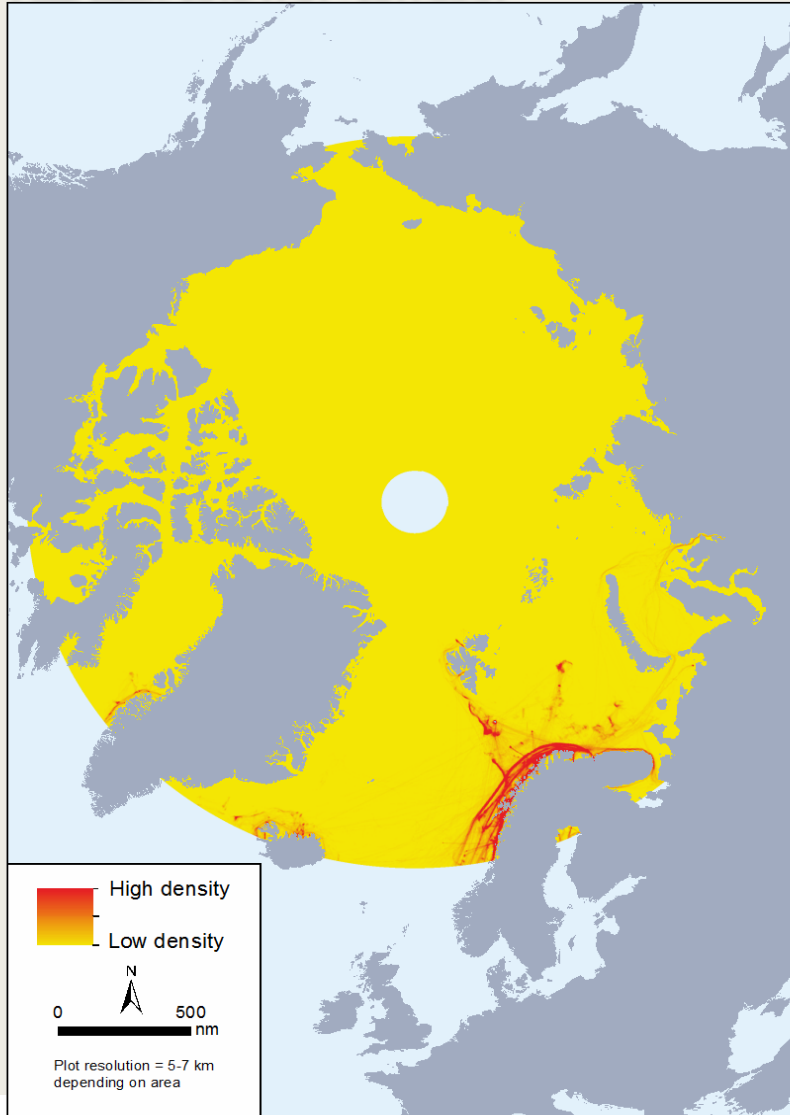


The results...

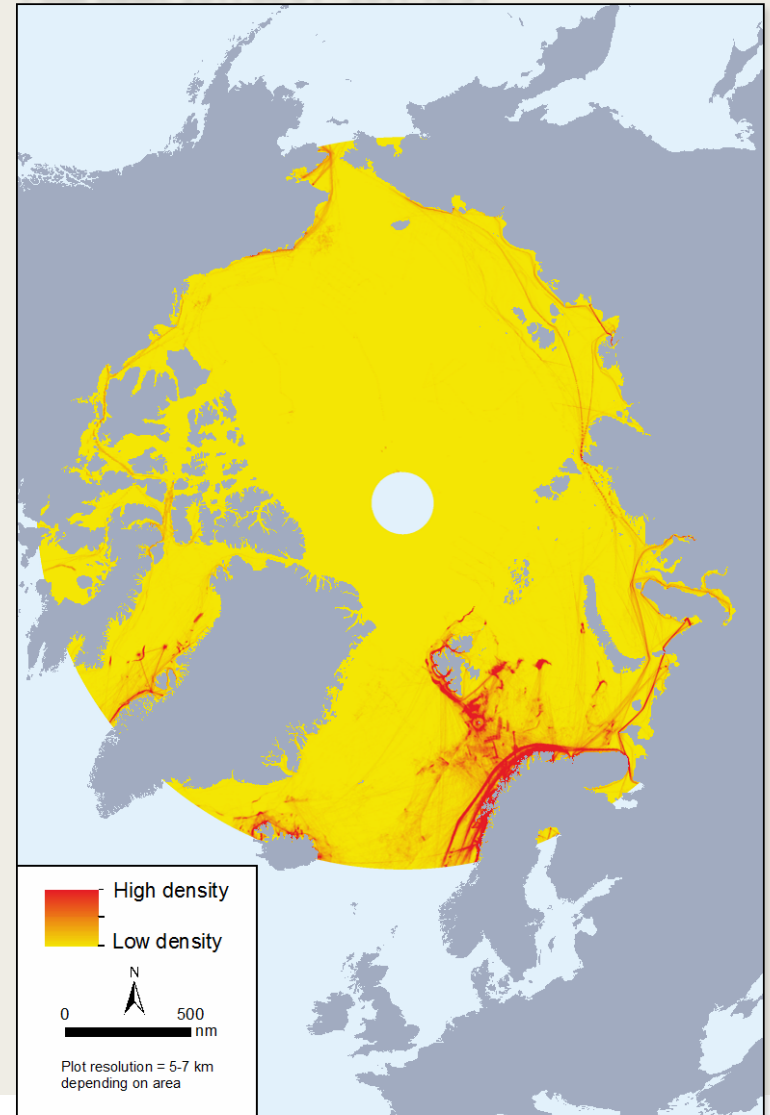


Traffic Density – Norwegian Waters Dominate

Polar basin: 2010.11.01 - 2011.05.31

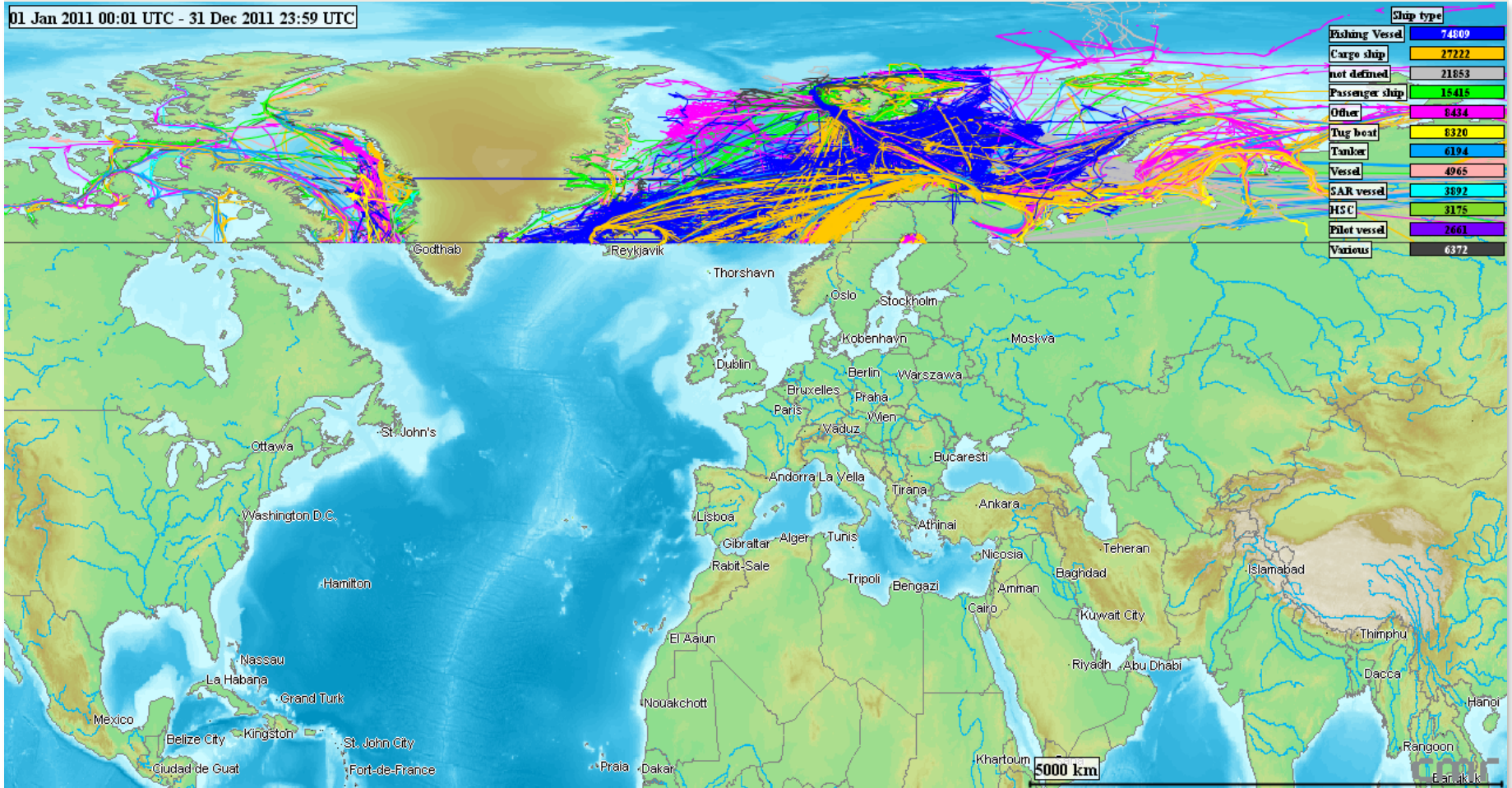


Polar basin: 2011.06.01 - 2011.10.31



The Arctic - a crowded place in 2011?

01 Jan 2011 00:01 UTC - 31 Dec 2011 23:59 UTC

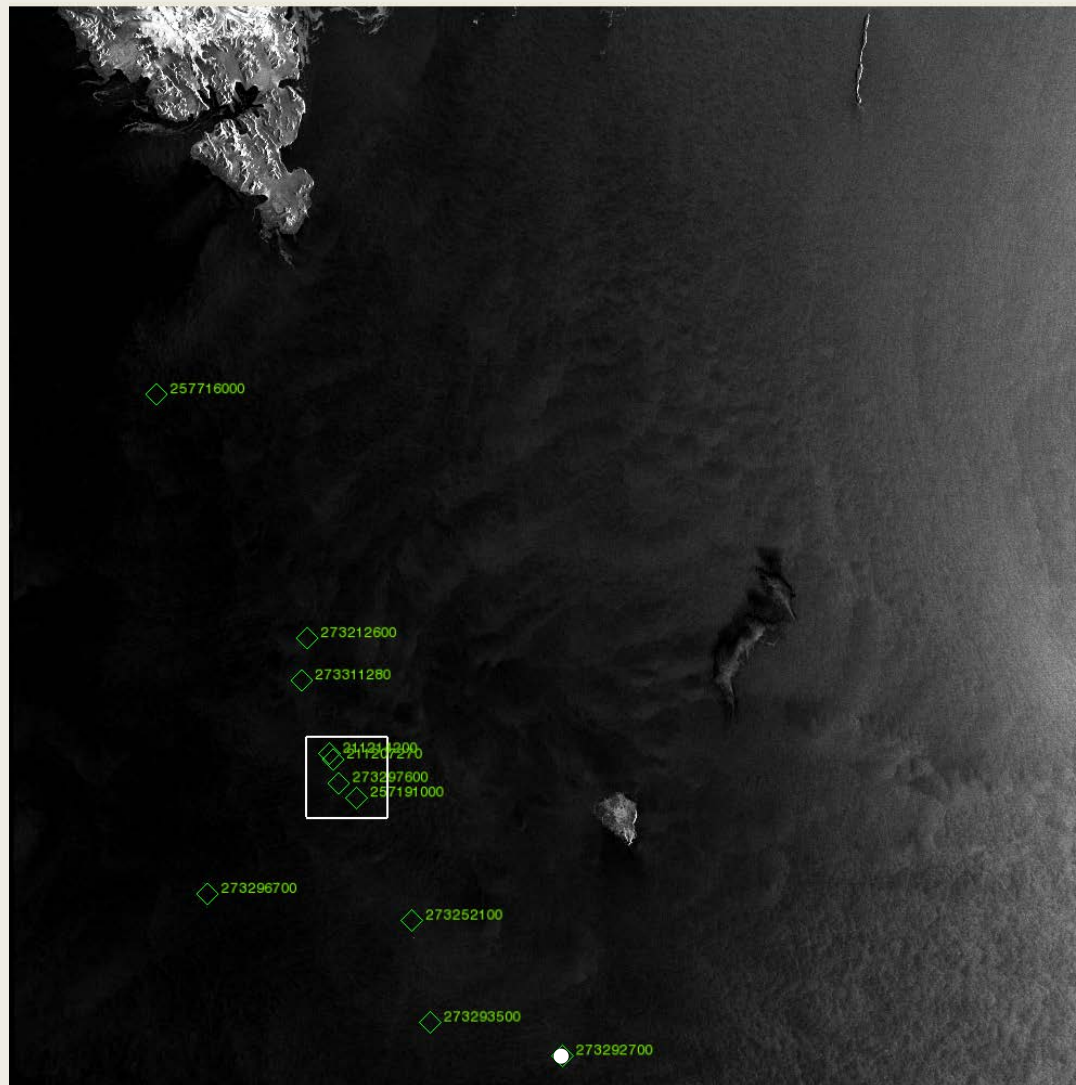


The naked facts 2011- unique MMSI

Ship type	Unique MMSI	% of total
Cargo ship	1233	24,7 %
Fishing Vessel	1765	35,3 %
HSC	18	0,4 %
Law enforcemen	25	0,5 %
Local assigned	4	0,1 %
Medical transp	4	0,1 %
Other	196	3,9 %
Passenger ship	176	3,5 %
Pilot vessel	24	0,5 %
Pleasure craft	75	1,5 %
Port tender	3	0,1 %
Sailing Vessel	30	0,6 %
SAR Aircraft	8	0,2 %
SAR vessel	51	1,0 %
Ship and aircraft	2	0,0 %
Tanker	336	6,7 %
Tug boat	147	2,9 %
Unknown type	701	14,0 %
Unused	13	0,3 %
Vessel	162	3,2 %
WIG	28	0,6 %
Total	5001	100 %

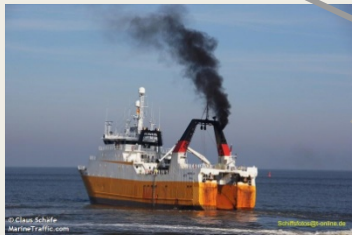
Combining AIS and other data

The classic – SAR and AIS



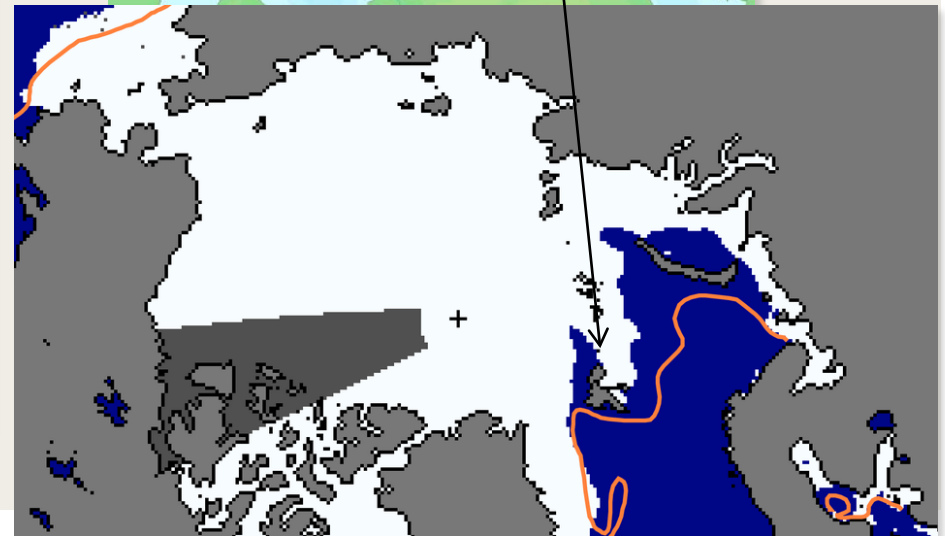
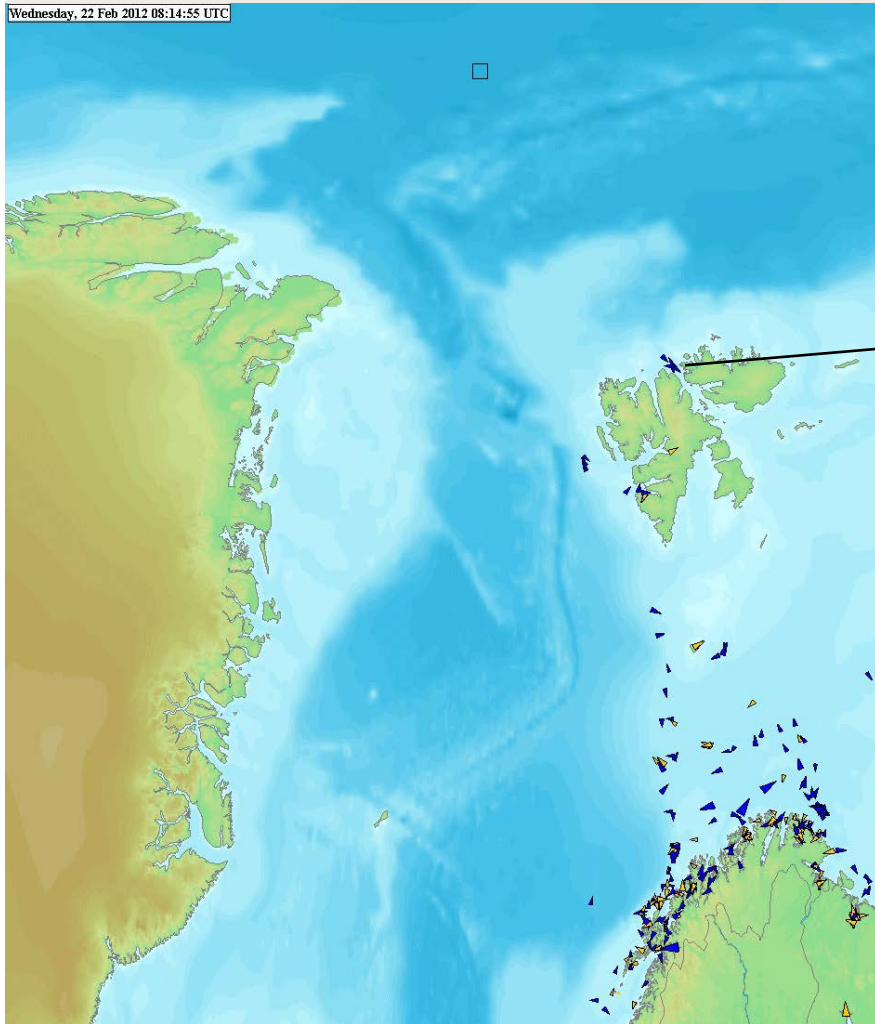
Radarsat 2 + AISSat-1
14.2.2012

The classic – SAR and AIS



Compilation NDRE (images from MarineTraffic.com)

AIS and ice information – Could be useful...!

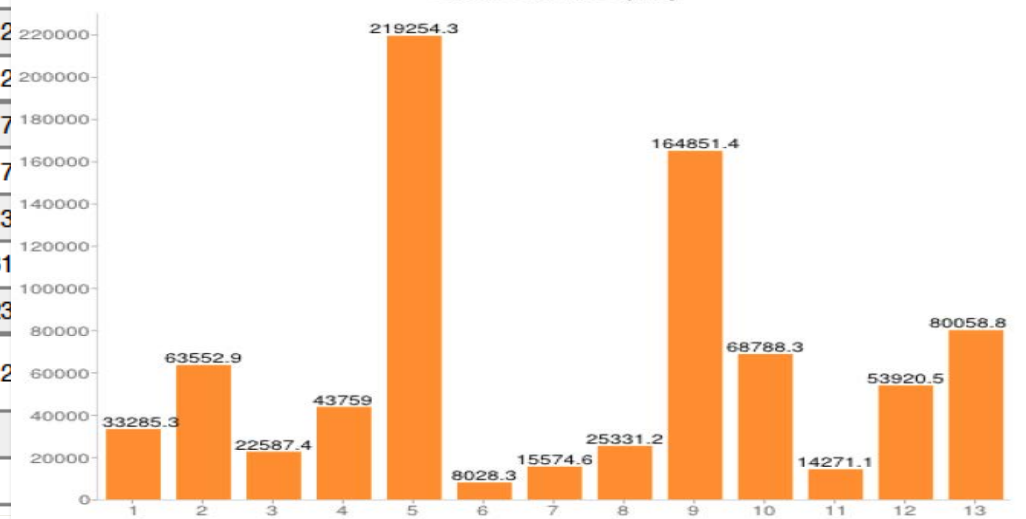
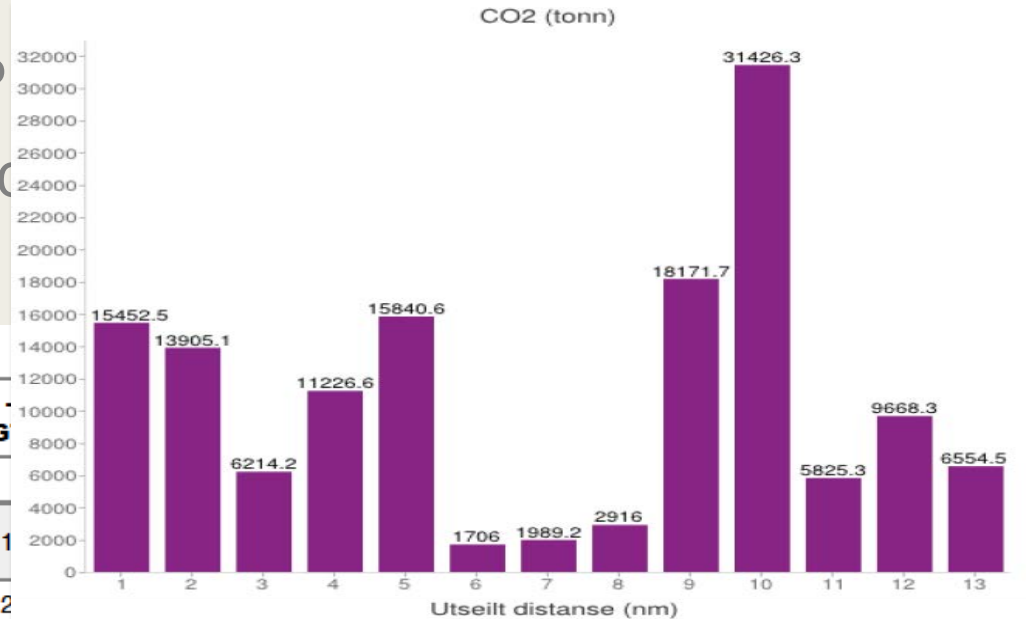


NCA application - Environmental pollution

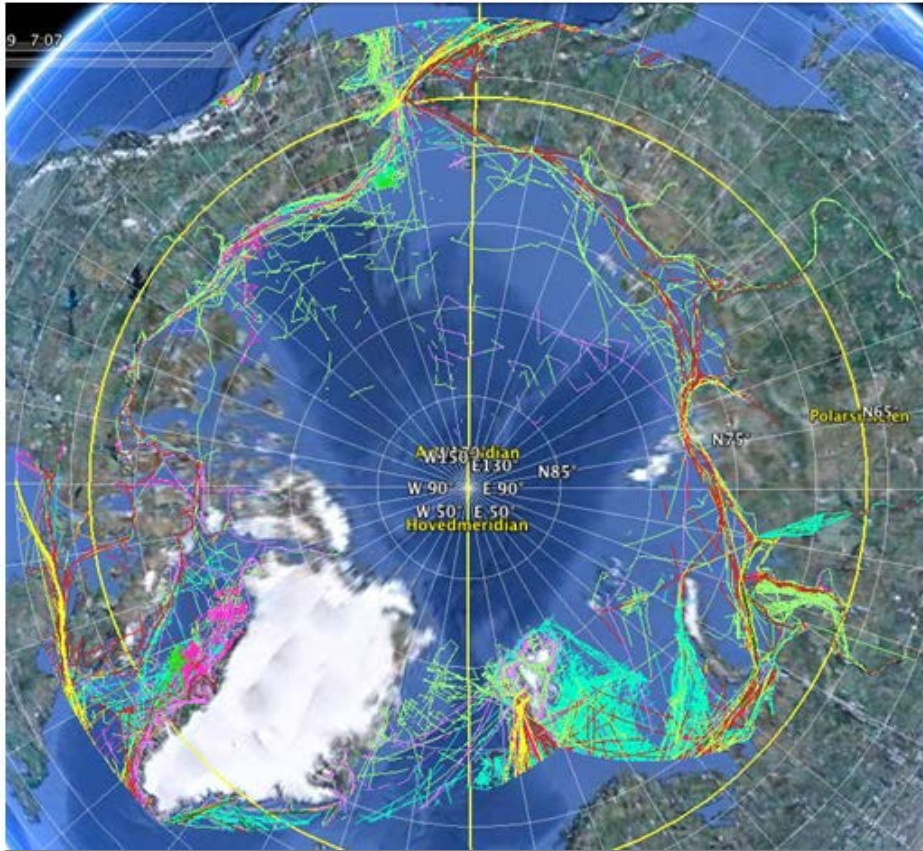
- CO2, CO, NOx, SO2, P
- AIS + Lloyds and DNV

Utseilt distanse (nm)

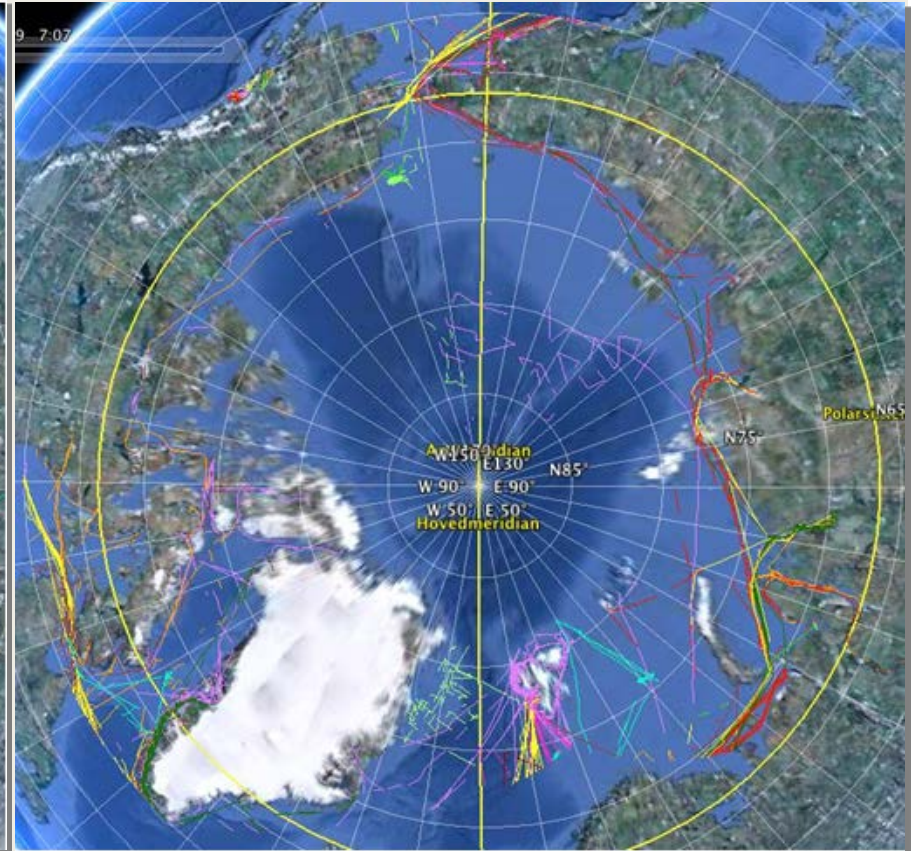
ID	Skipstype	< 1000 GT	1000 - 4999 GT	5000 - G
1	Oljetankere	2 127,90	4 705,41	
2	Kjemikalie-/produkttankere	2 648,38	24 763,75	11
3	Gasstankere	0,00	11 041,97	2
4	Bulkskip	2 500,44	6 867,28	2
5	Stykkgodsskip	17 306,32	187 493,67	12
6	Konteinerskip	0,00	0,00	7
7	Ro Ro last	1 359,72	6 562,77	7
8	Kjøle-/fryseskip	698,73	20 687,74	3
9	Passasjer	63 231,96	59 860,86	31
10	Offshore supply skip	1 483,40	44 085,35	23
11	Andre offshore service skip	2 614,57	3 451,82	2
12	Andre aktiviteter	33 186,10	19 125,50	
13	Fiskefartøy	53 938,12	26 120,72	



DNV application - HFO within the Arctic



All vessels



vessels burning HFO

What's coming up...

- 🚧 AISSat-2 under construction
 - 🚧 A third microsatellite is under planning
 - 🚧 Havbase – access to data
 - 🚧 Financing new ideas...
 - 🚧 BarentsWatch
 - 🚧 IAP-projects
- And much more....

Thank you for your attention!

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