



EUSBSR EU STRATEGY FOR THE BALTIC SEA REGION

Co-existence of off shore wind energy and winter navigation

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Interreg
Baltic Sea Region



Co-funded by
the European Union

**Through cooperation and coordinated actions,
we protect and preserve the Baltic Sea and
jointly build a well-connected and prosperous region.**



Swedish Maritime Administration

- Infrastructure
- Icebreaking
- Search and Rescue
- Pilotage
- Hydrography
- Vessel Traffic Services

Maritime perspectives on offshore wind energy

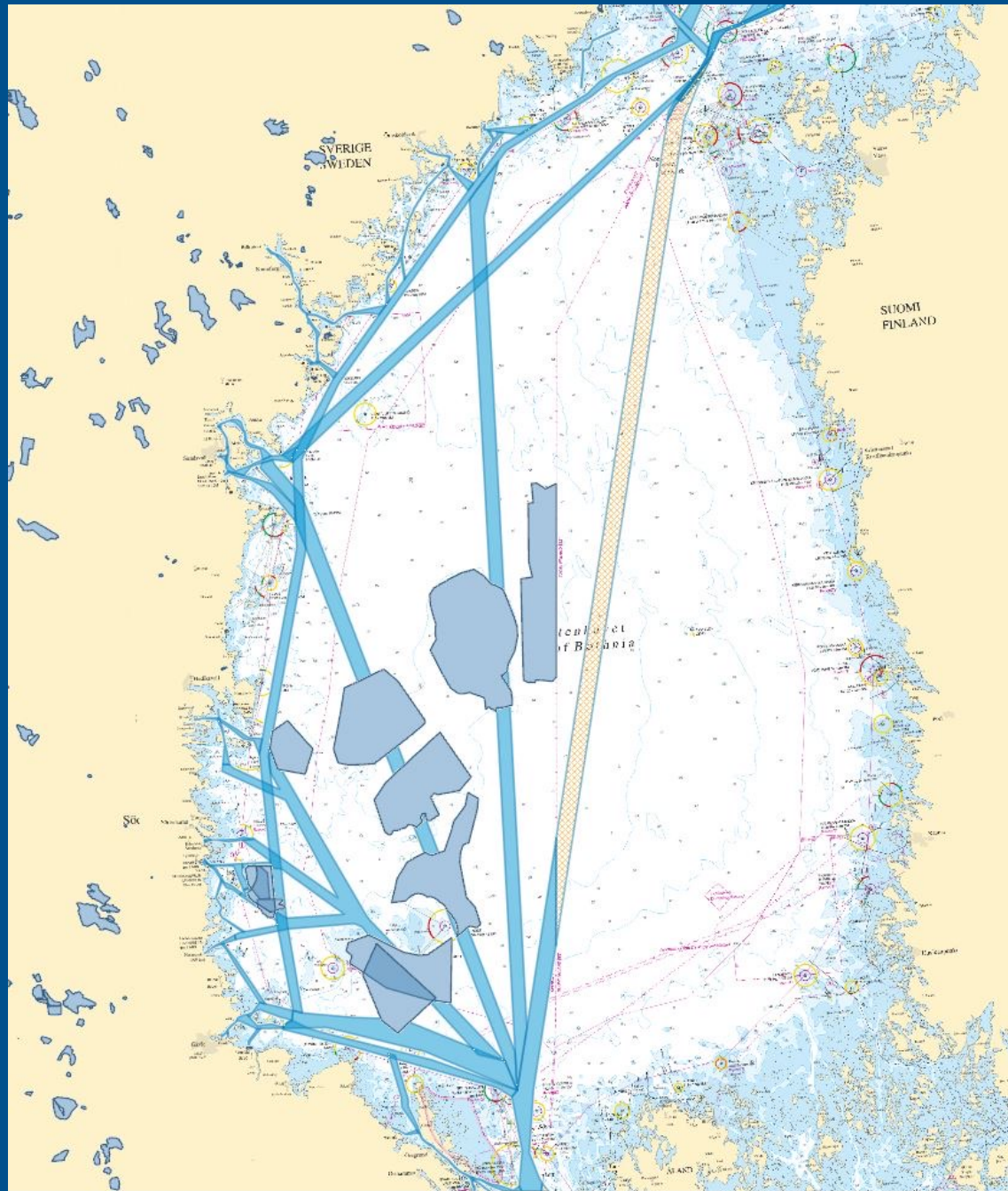
- General perspective
- Winter navigation





General shipping perspective

- Availability
- Maritime Safety
- Radar detection
- Anchorage, weather sheltered areas, alt. route
- Search and rescue
- Radio communication disturbance
- Cable laying



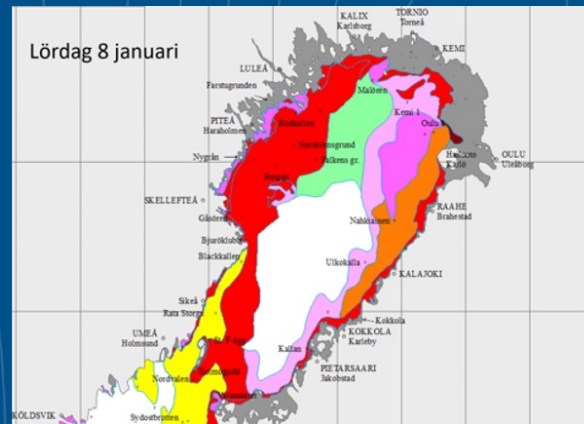
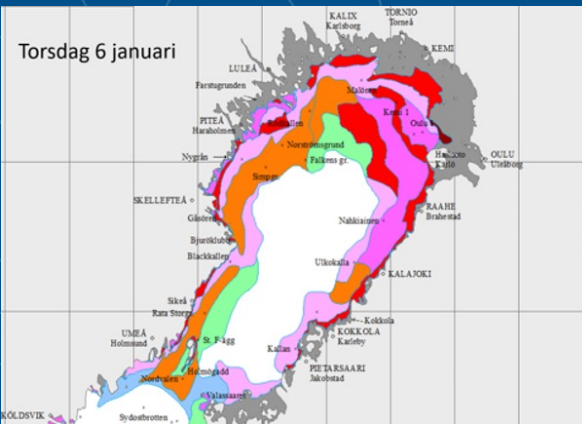


Winter navigation and the needs for transport and energy in the Gulf of Bothnia

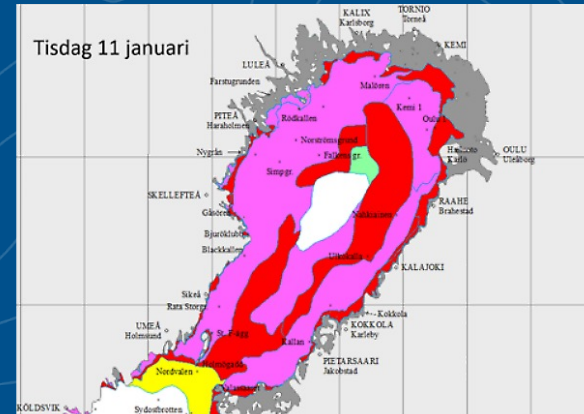
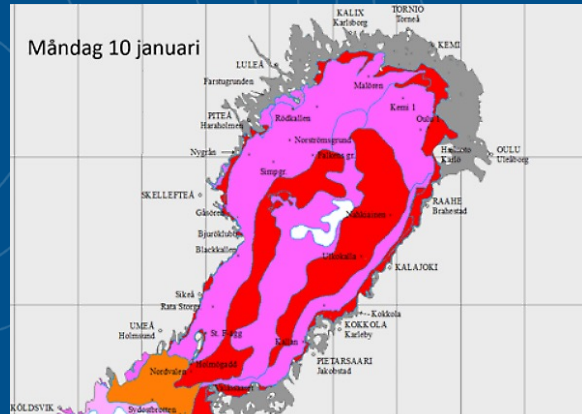


Ice in the north and the needs of icebreaking services

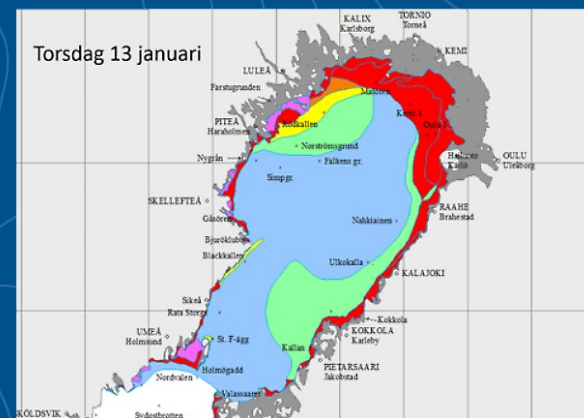
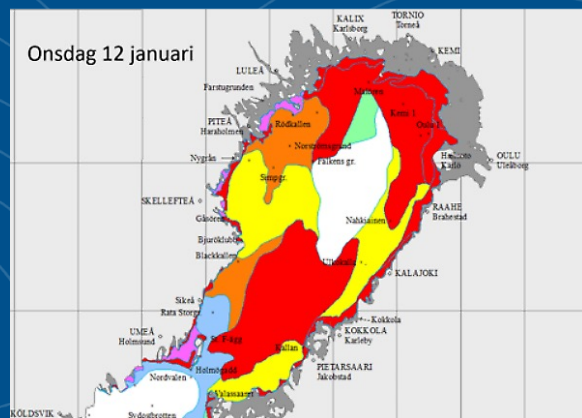




6-10 Jan 2022 cold brought rapid freezing



















































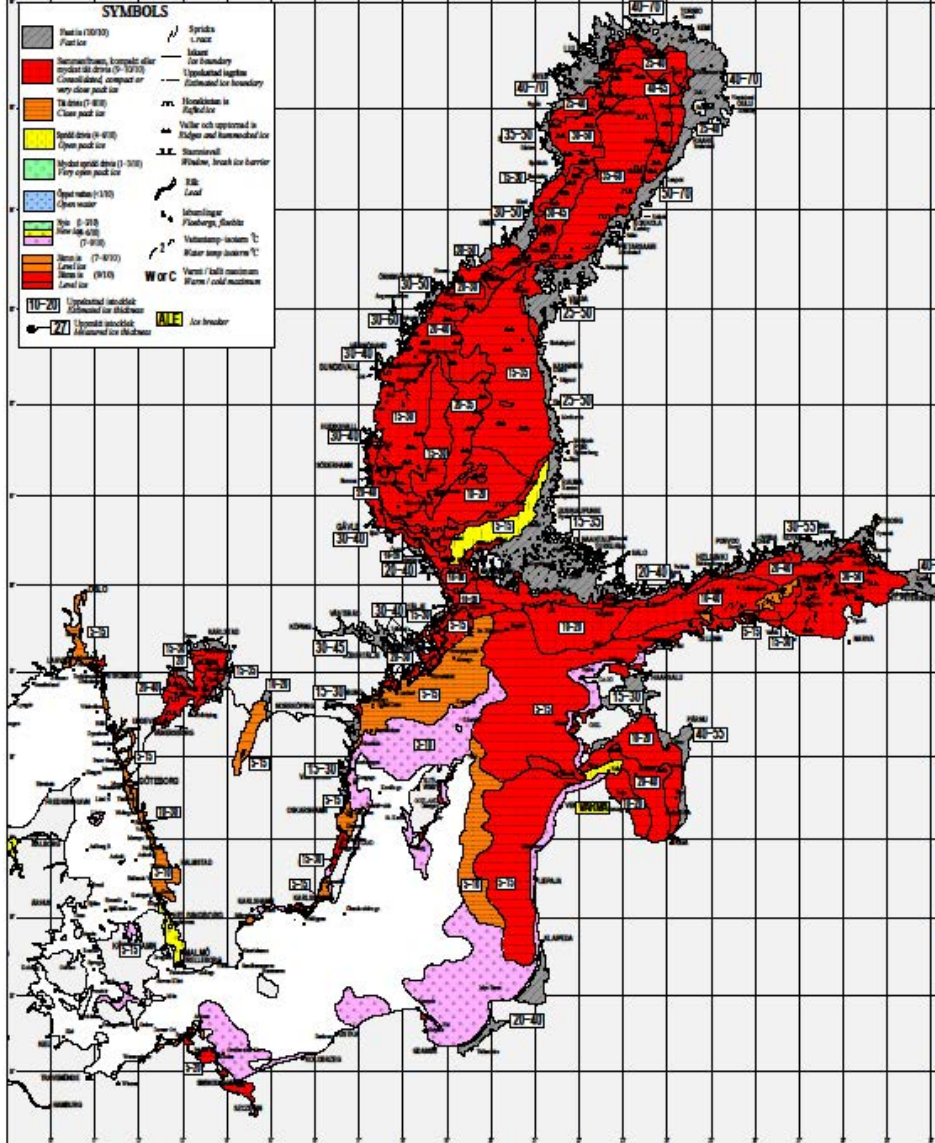
In eight days, the Gulf of Bothnia went first to completely ice-covered, and then quickly to almost completely uncovered.

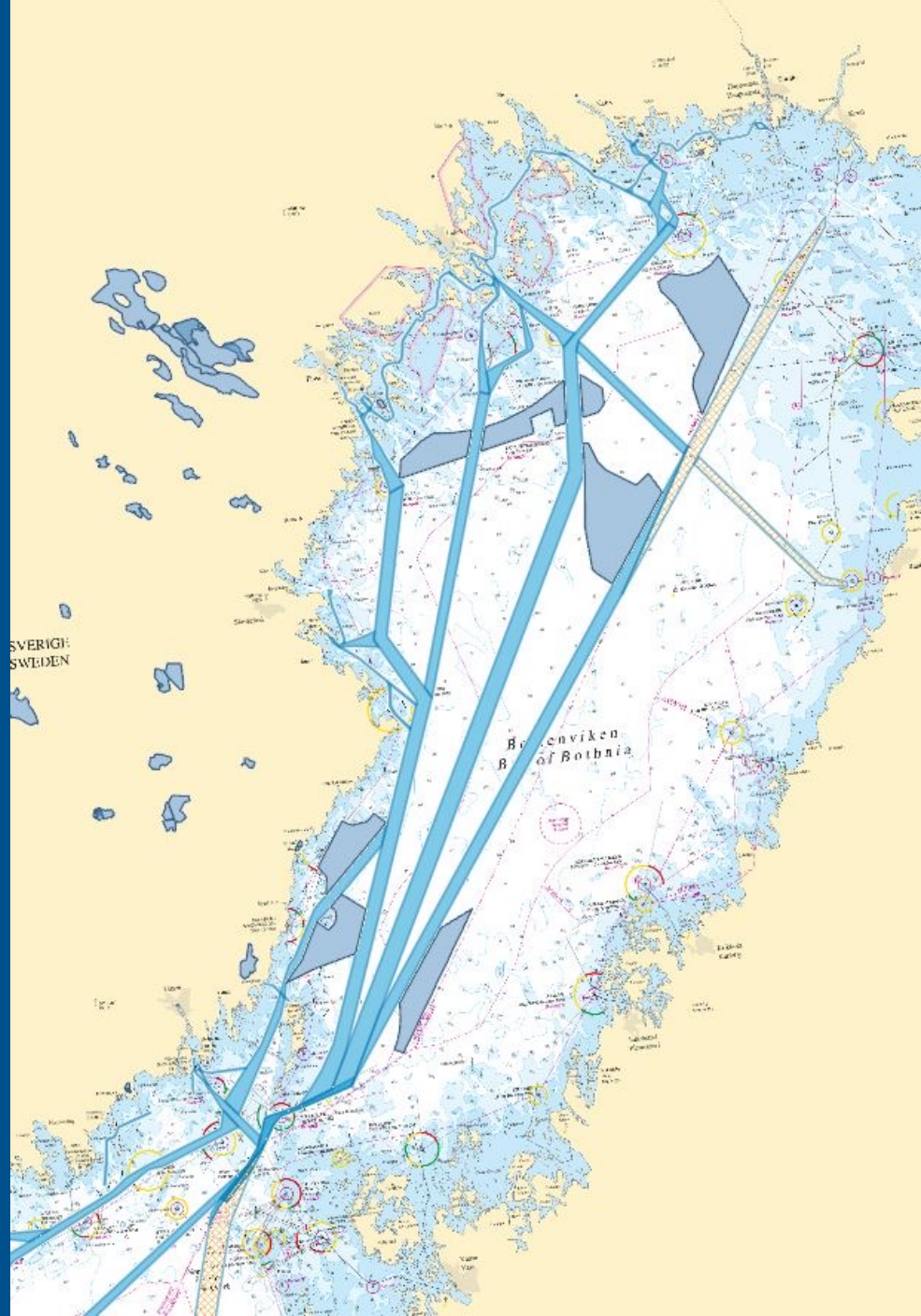


Maximal isutbredning
Maximum ice extent
2011-02-25
Svår isvinter
Severe ice winter

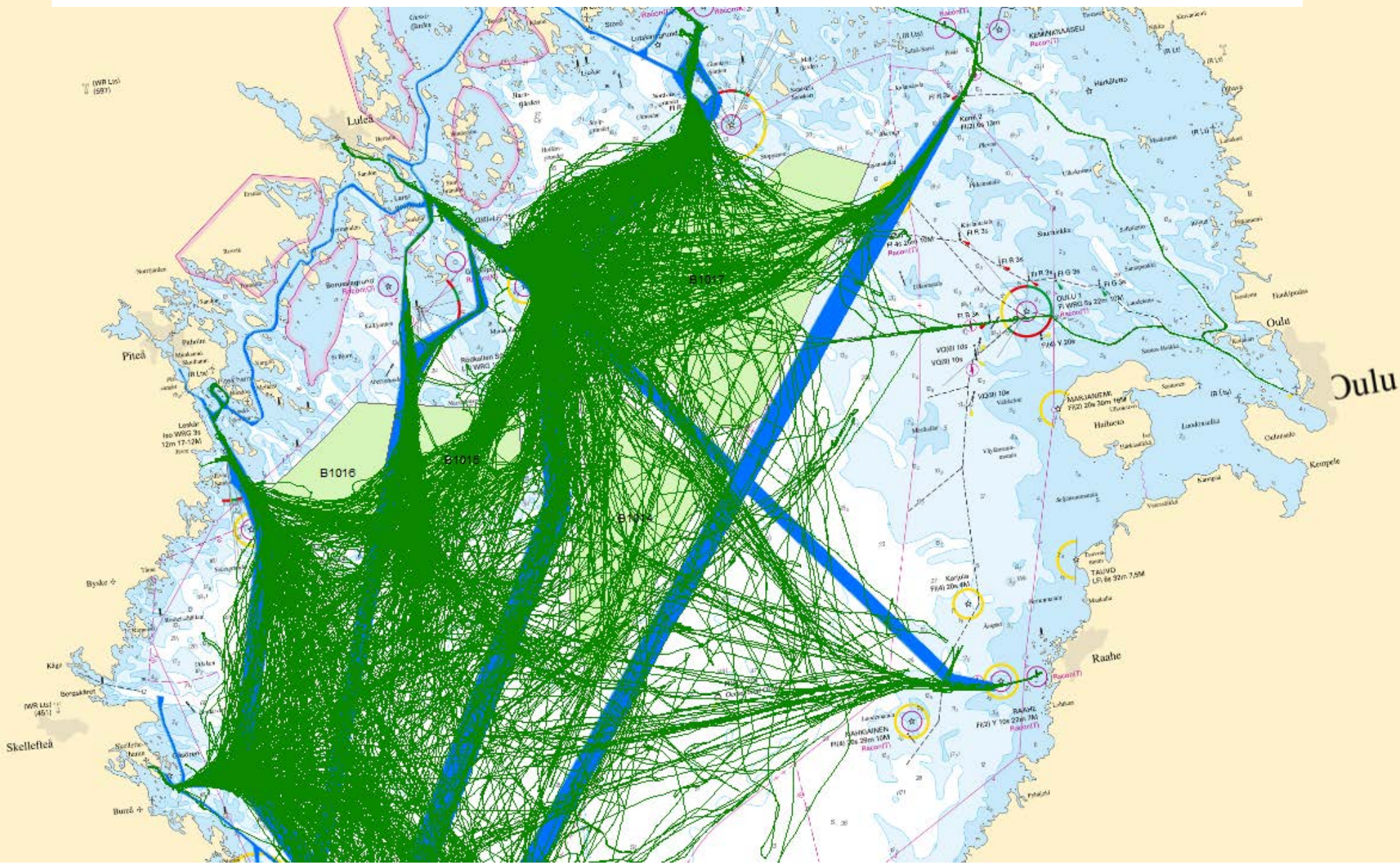
SYMBOLS

	Fäst is (50/30) Fast ice		Spridningsgräns Ice limit
	Stagnationsis, kompakt eller tvärdröjt dröjt is (7-12)		Isgräns Ice boundary
	Tvådröjt (7-10)		Uppräddad isgräns Disturbed ice boundary
	Eneldröjt (6-7)		Horisontell isgräns Horizontal ice boundary
	Öppnad dröjt (4-6)		Väder och upprymd is Edges and hummocked ice
	Öppent dröjt (1-3)		Större isblock Shoals, break ice barrier
	Öppet vatten (1/0)		Isblock Lead
	Snö (0-20) Snow (up to 20)		Isövningar Floodings, Swells
	Snö (0-10) Snow (up to 10)		Västermyrk vintern Water very icy winter
	Isis (7-10/10)		Västermyrk vintern Water very icy winter
	Isis (0/10)		Västermyrk vintern Water very icy winter
	Isis (0/10)		Västermyrk vintern Water very icy winter
	W or C		Västermyrk vintern Water very icy winter
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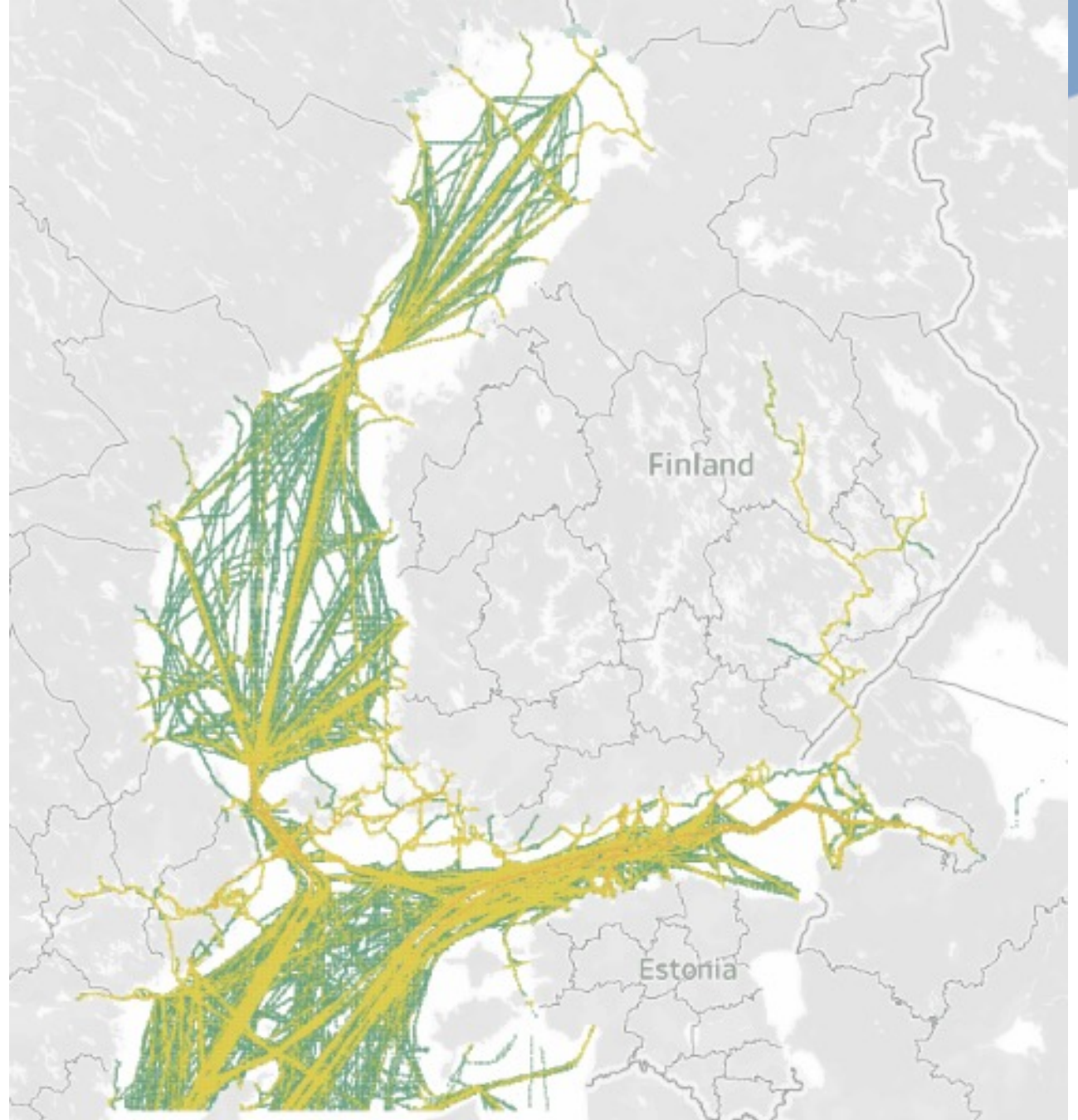




Swedish Icebreakers' AIS-tracks last year

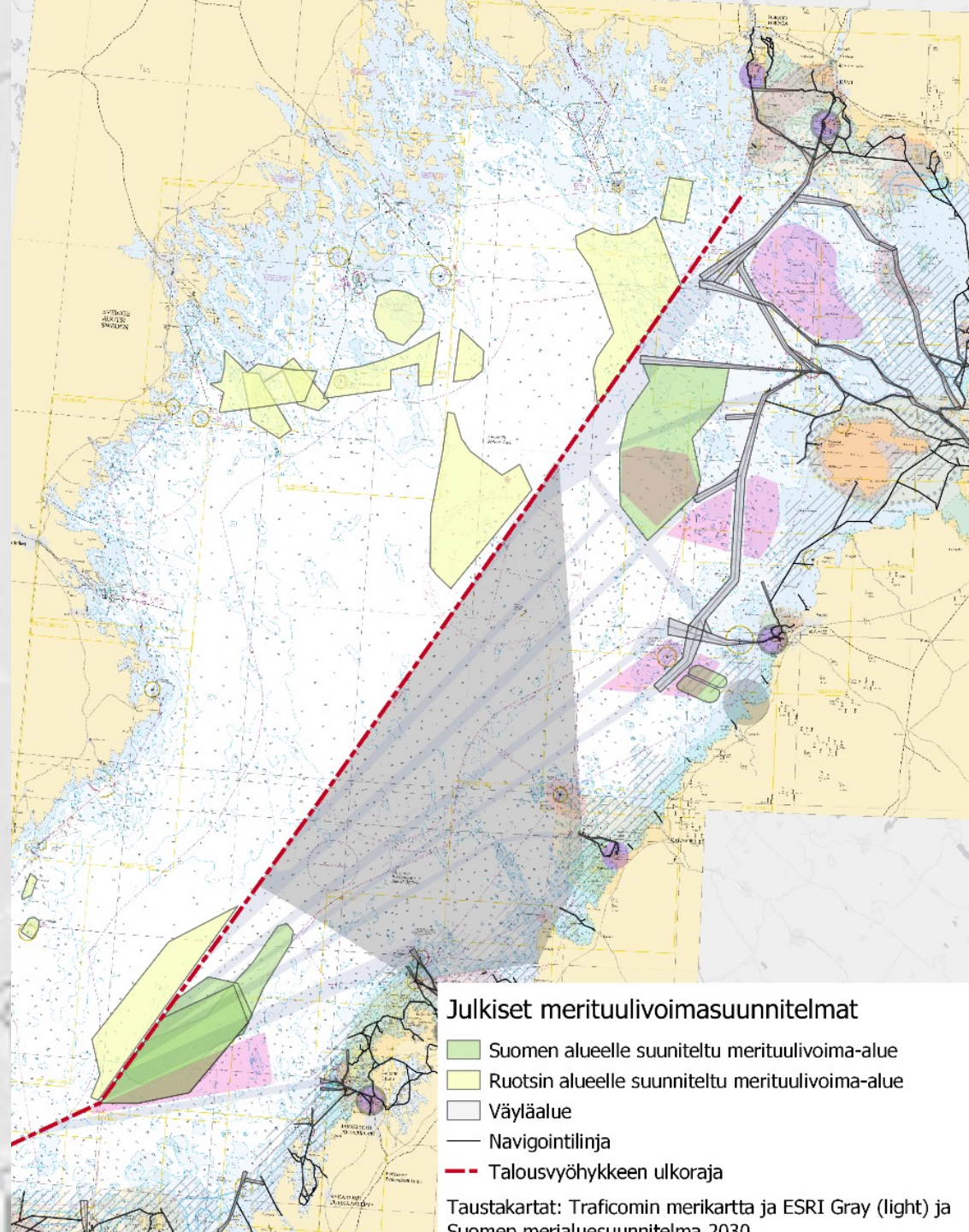


Merchant vessel tracks during an easy winter 2021-2022



**Animation of
merchant vessel
tracks during a
hard winter
2010-2011**



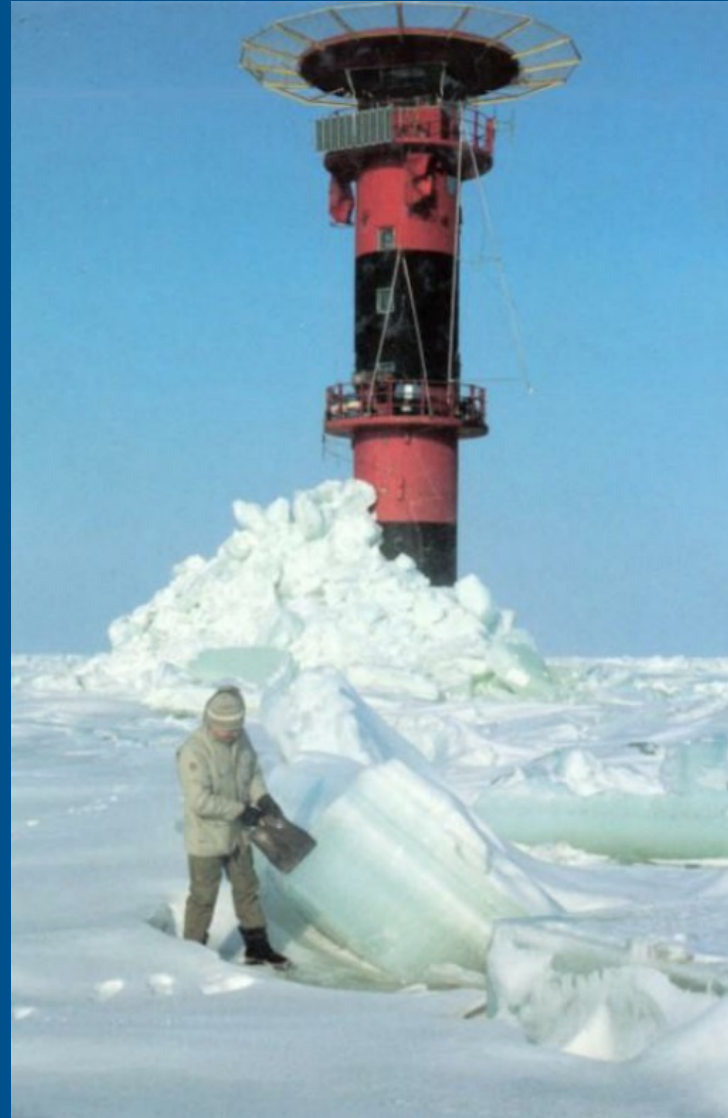


Julkiset merituulivoimasuunnitelmat

- Suomen alueelle suunniteltu merituulivoima-alue
- Ruotsin alueelle suunniteltu merituulivoima-alue
- Väyläalue
- Navigointilinja
- Talusvyöhykkeen ulkoraja

Taustakartat: Traficomien merikartta ja ESRI Gray (light) ja Suomen merialueuunnitelma 2030

The impact of wind parks on ice



The Kemi 1 lighthouse, equipped with a force-measuring test cone, was subjected to heavy ice conditions (photo: Enqvist and Eranti, 1990).



Learn more:

To better understand the problem and needs of shipping see:

https://www.sjofartsverket.se/globalassets/om-sjofartsverket/havsbaserad-vindkraft/kunskapsunderlag-havsbaserad-vindkraft-och-sjofart_sjofartsverket_ink_bilaga.pdf

Includes the attachment focusing on winter navigation

Recommendations for project planning and establishing of offshore wind energy, mentioning risk analysis, released by the Swedish Transport Agency and Swedish Maritime Administration

<https://www.sjofartsverket.se/globalassets/om-sjofartsverket/havsbaserad-vindkraft/sjofartsverkets-och-transportstyrelsens-rekommendationer-vid-projektering-och-etablering-av-havsbaserad-vindkraft-v.-1.0.pdf>





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FOR THE BALTIC
SEA REGION

POLICY AREA 'SAFE'

Thank you!

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