



# FAMOS

FINALISING SURVEYS FOR THE BALTIC MOTORWAYS OF THE SEA

**Safety**  
**Efficiency**  
**Accuracy**

**in the Baltic Sea and Beyond**



SWEDISH MARITIME  
ADMINISTRATION

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Produktionschef, Affärsområde Sjögeografi



Co-financed by the European Union  
Connecting Europe Facility

# What is a Motorway at Sea?



**Yesterday: Paper Charts**

**Today: Electronic Navigational Systems**

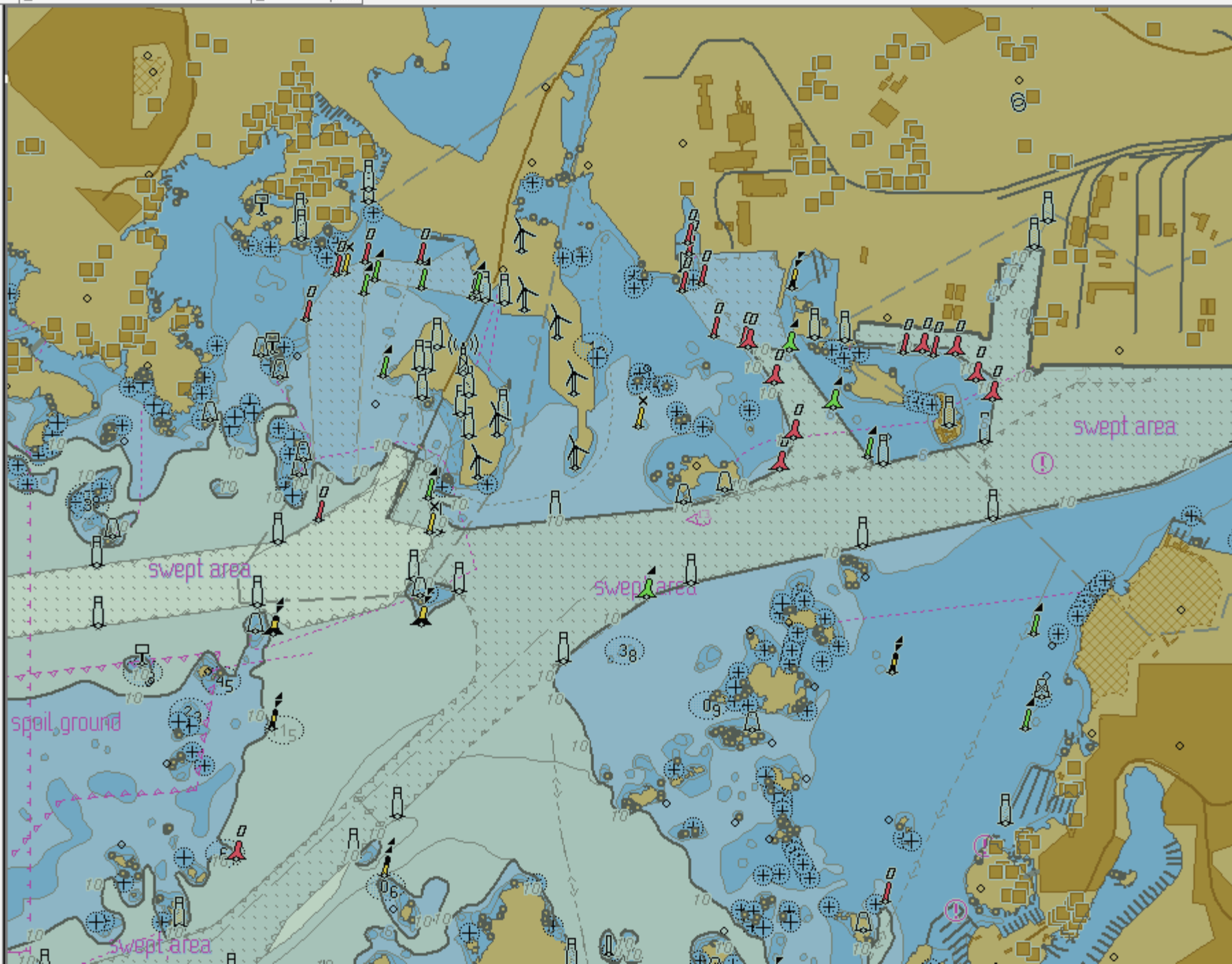
**ENC**

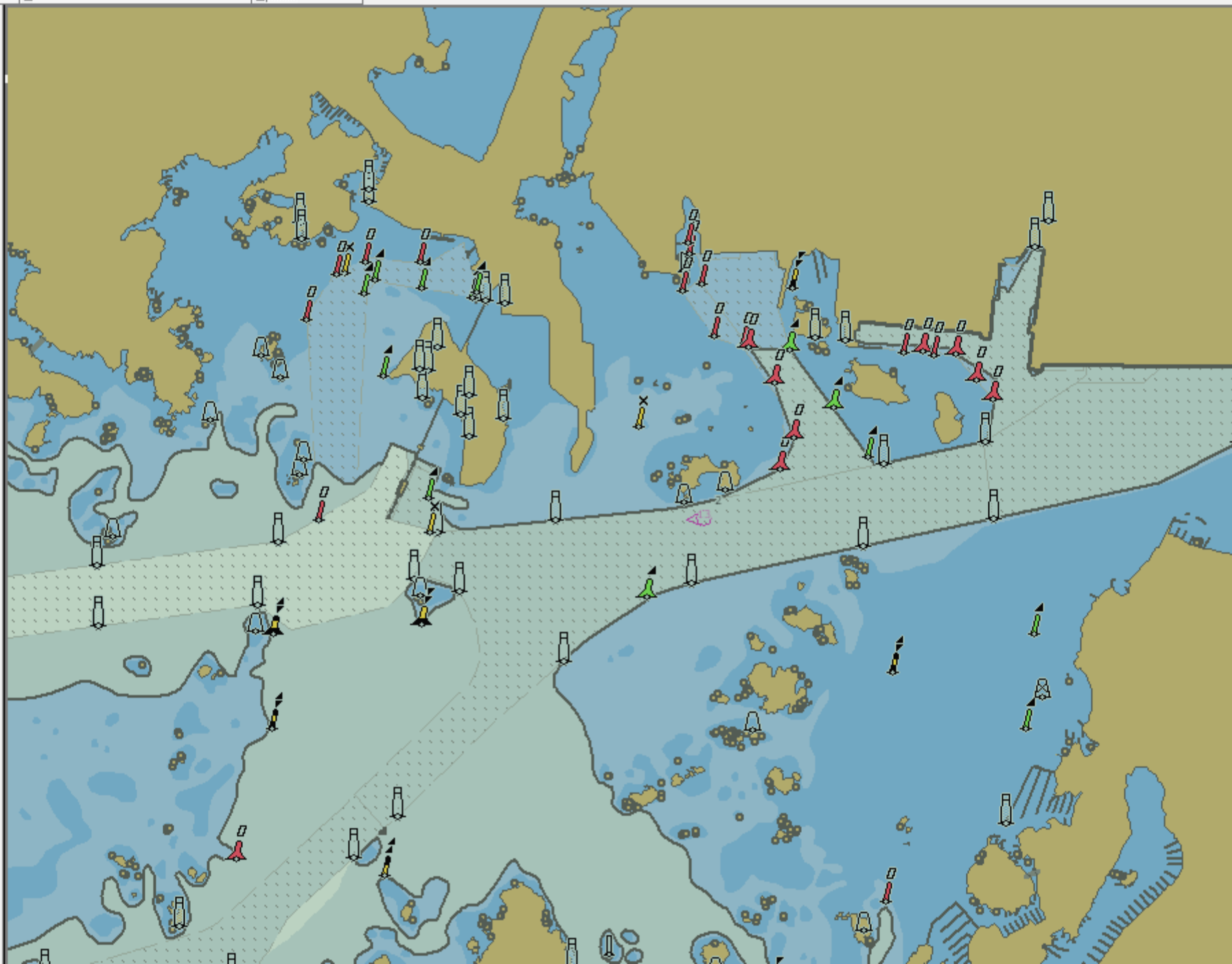
*Electronic Navigational Charts –  
from Hydrographic Offices*

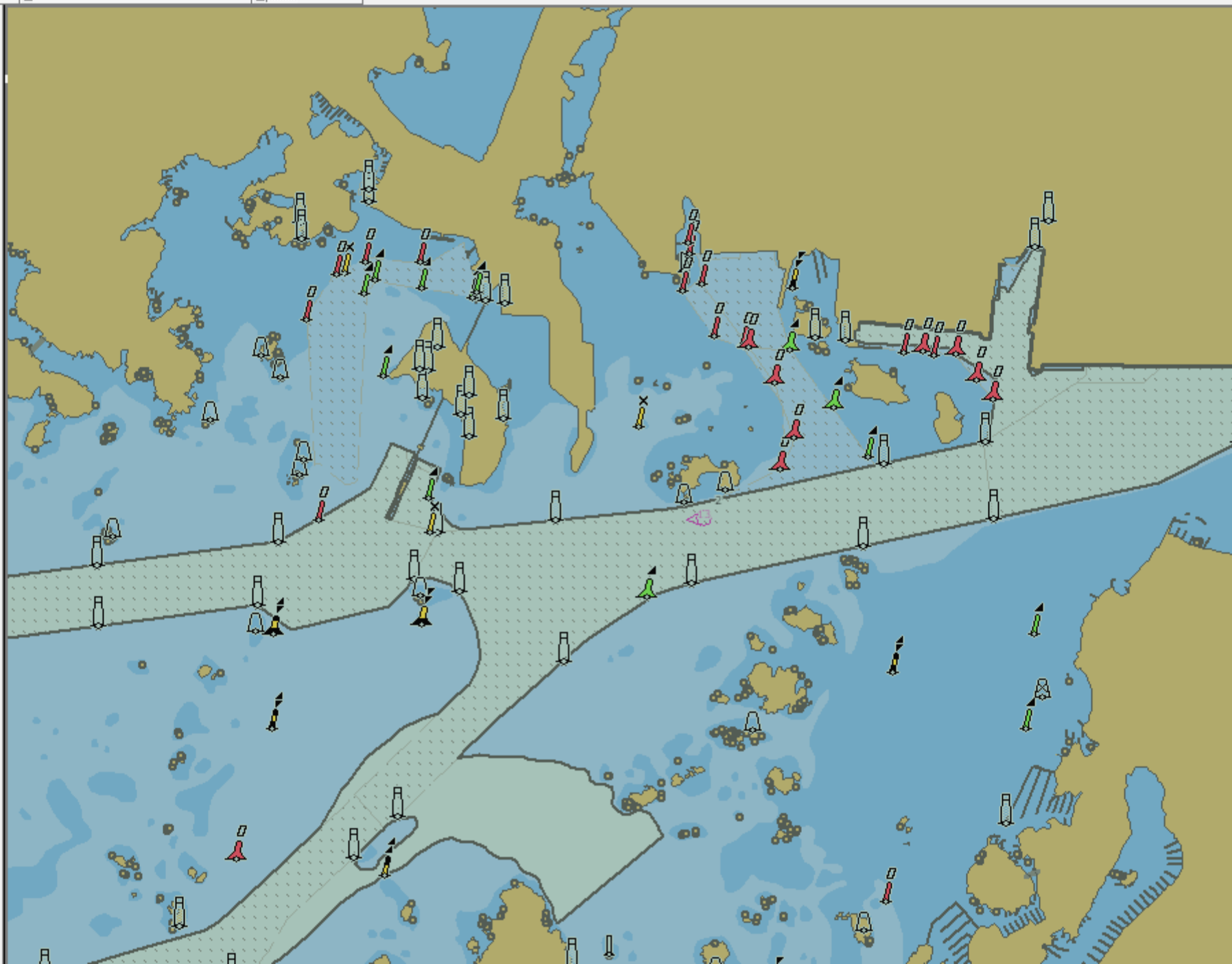


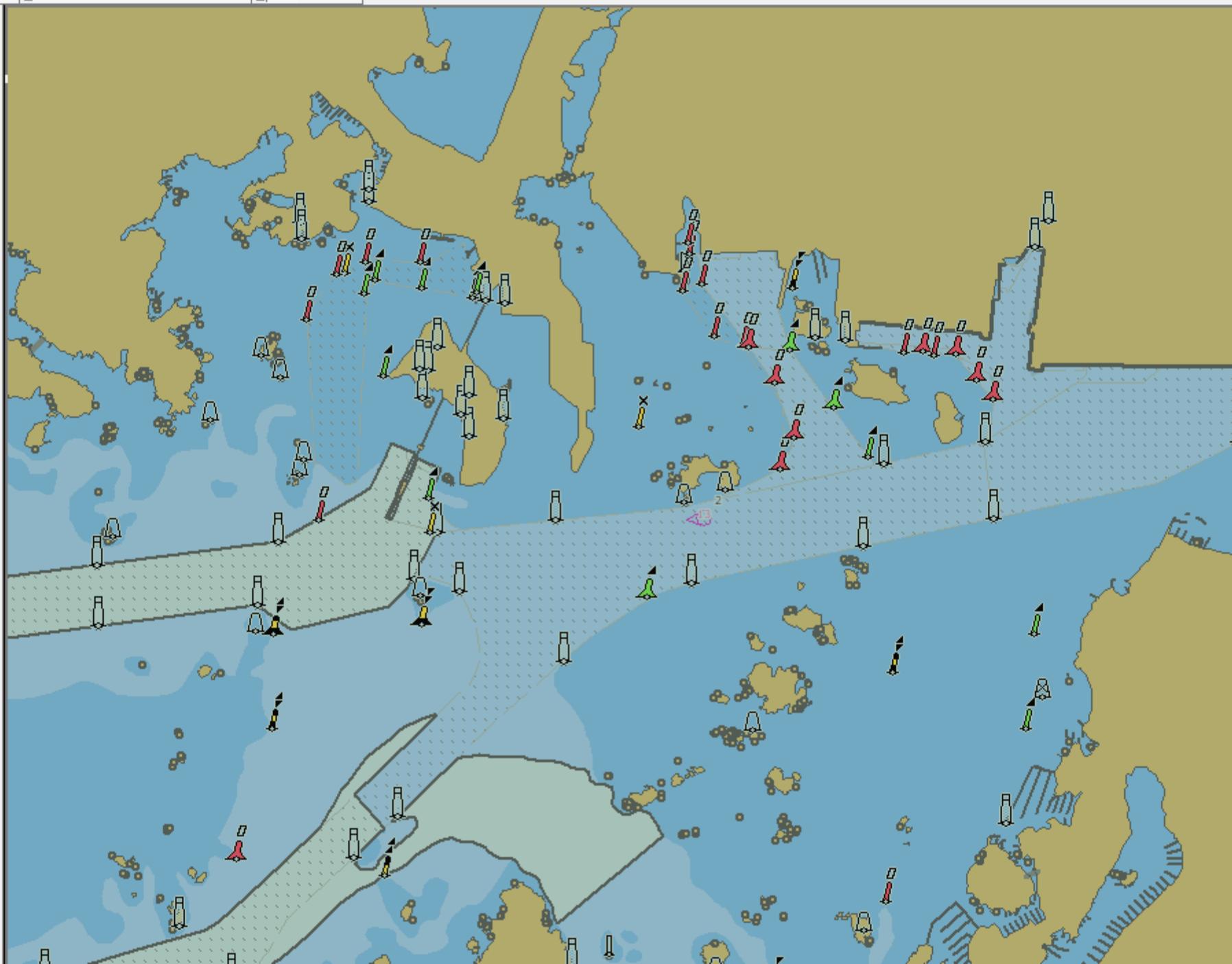
**ECDIS**

*Electronic Chart Display and Information  
System*

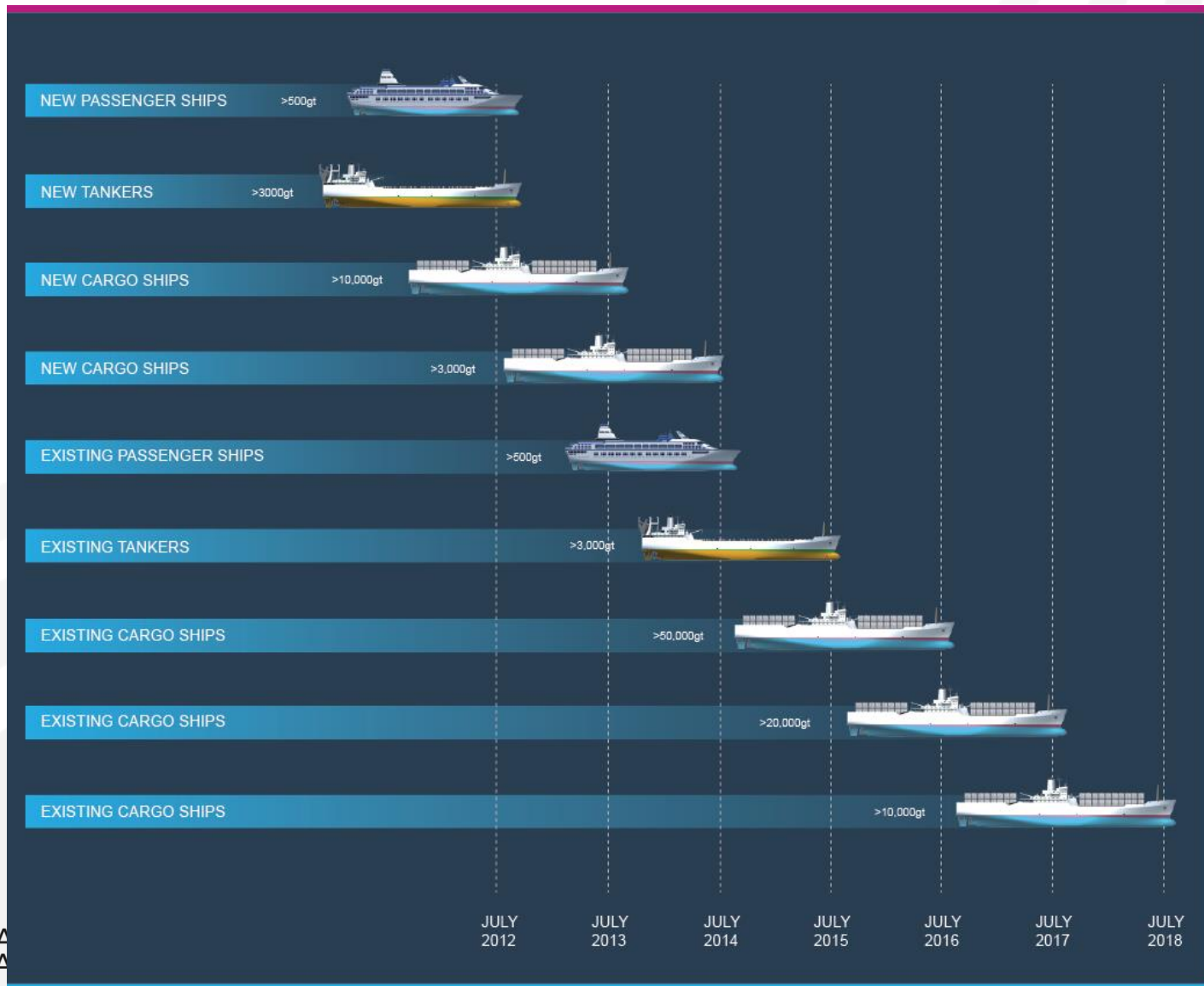






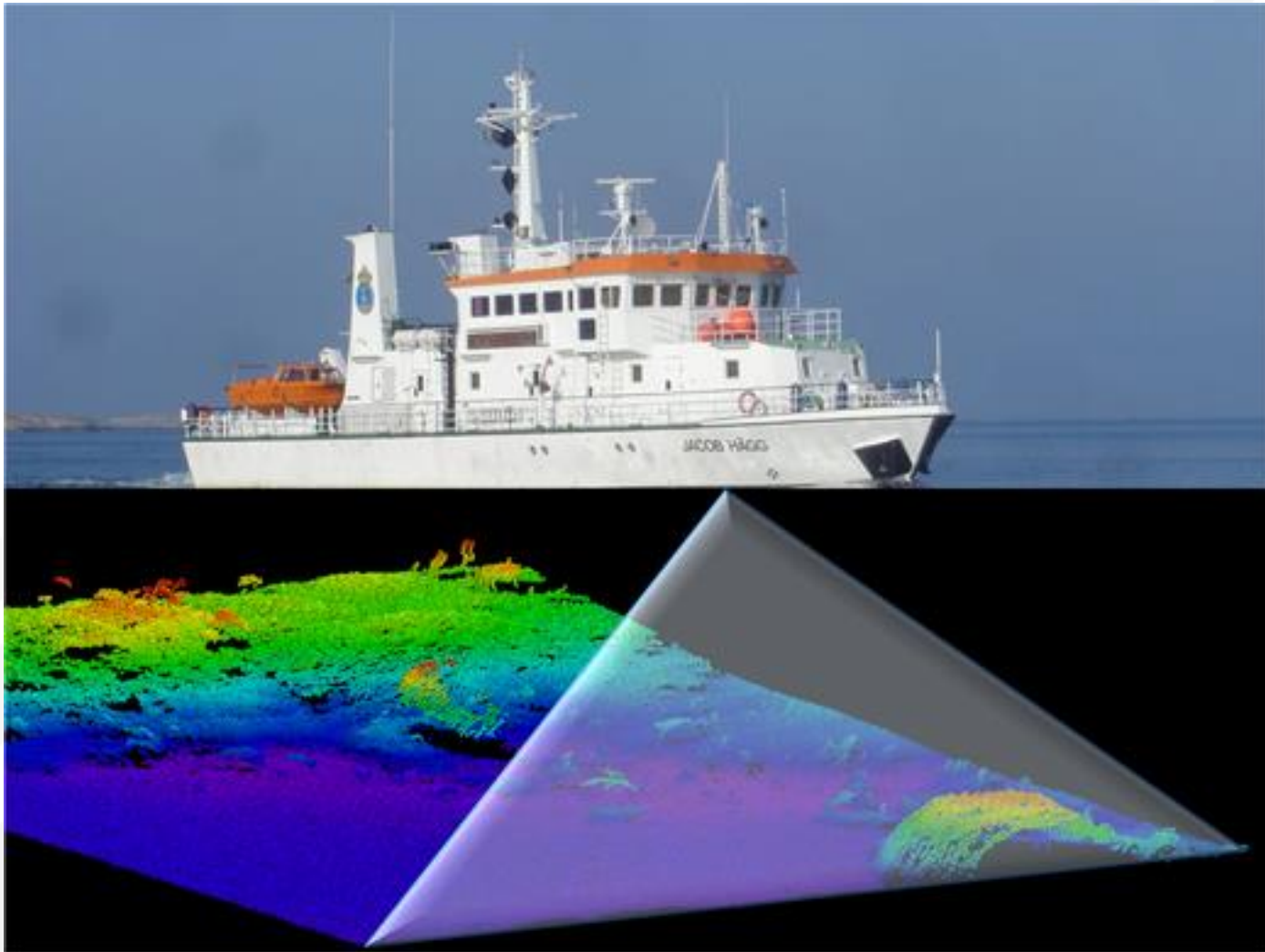


# Carriage Requirements for ECDIS

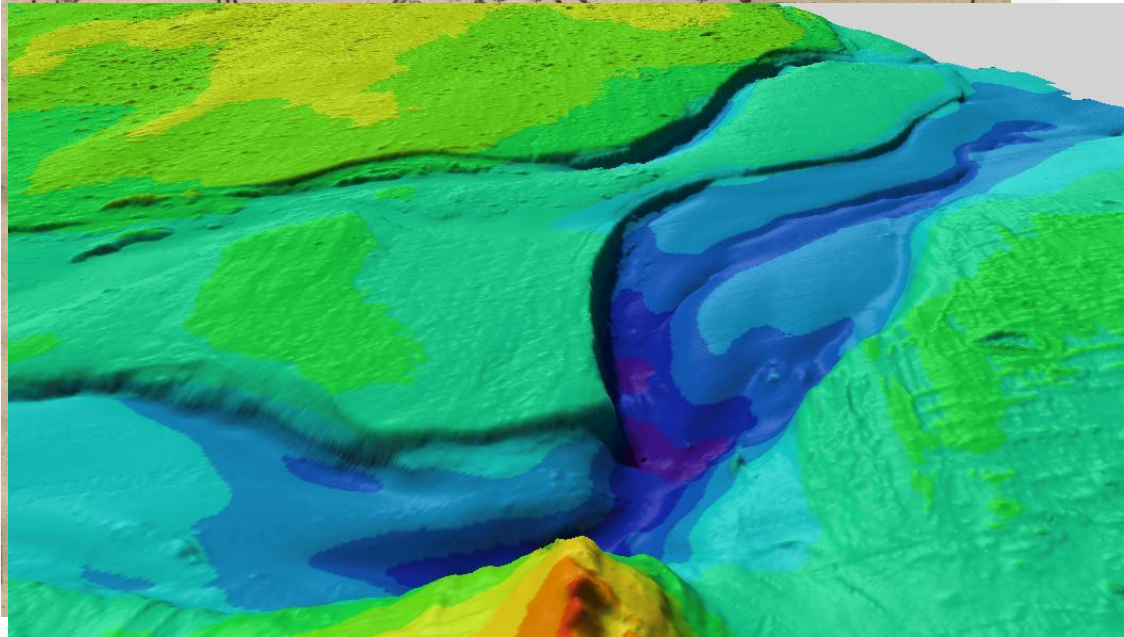
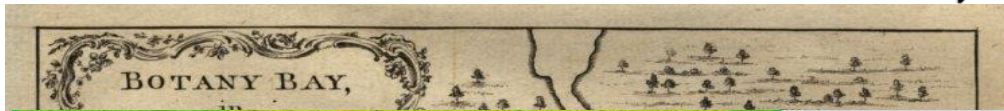
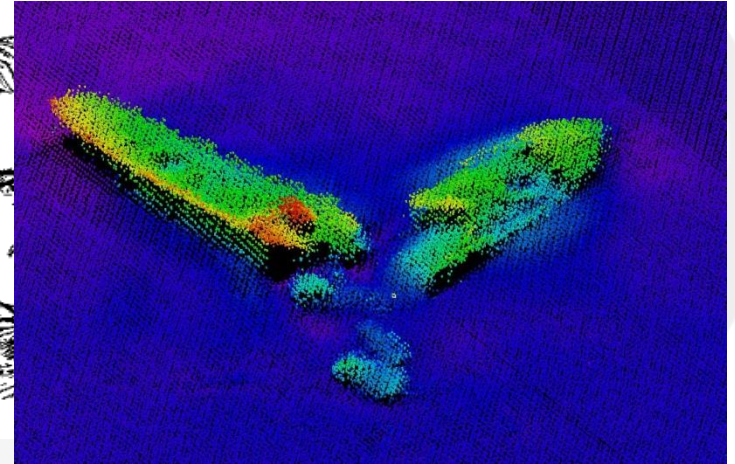
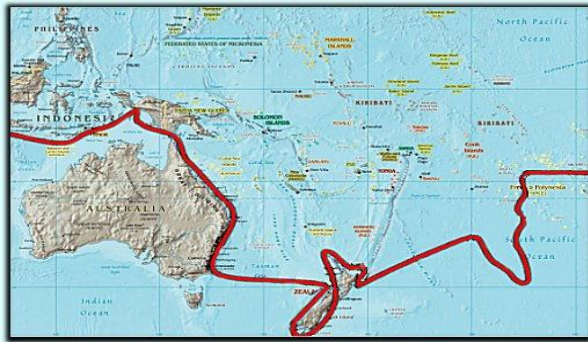


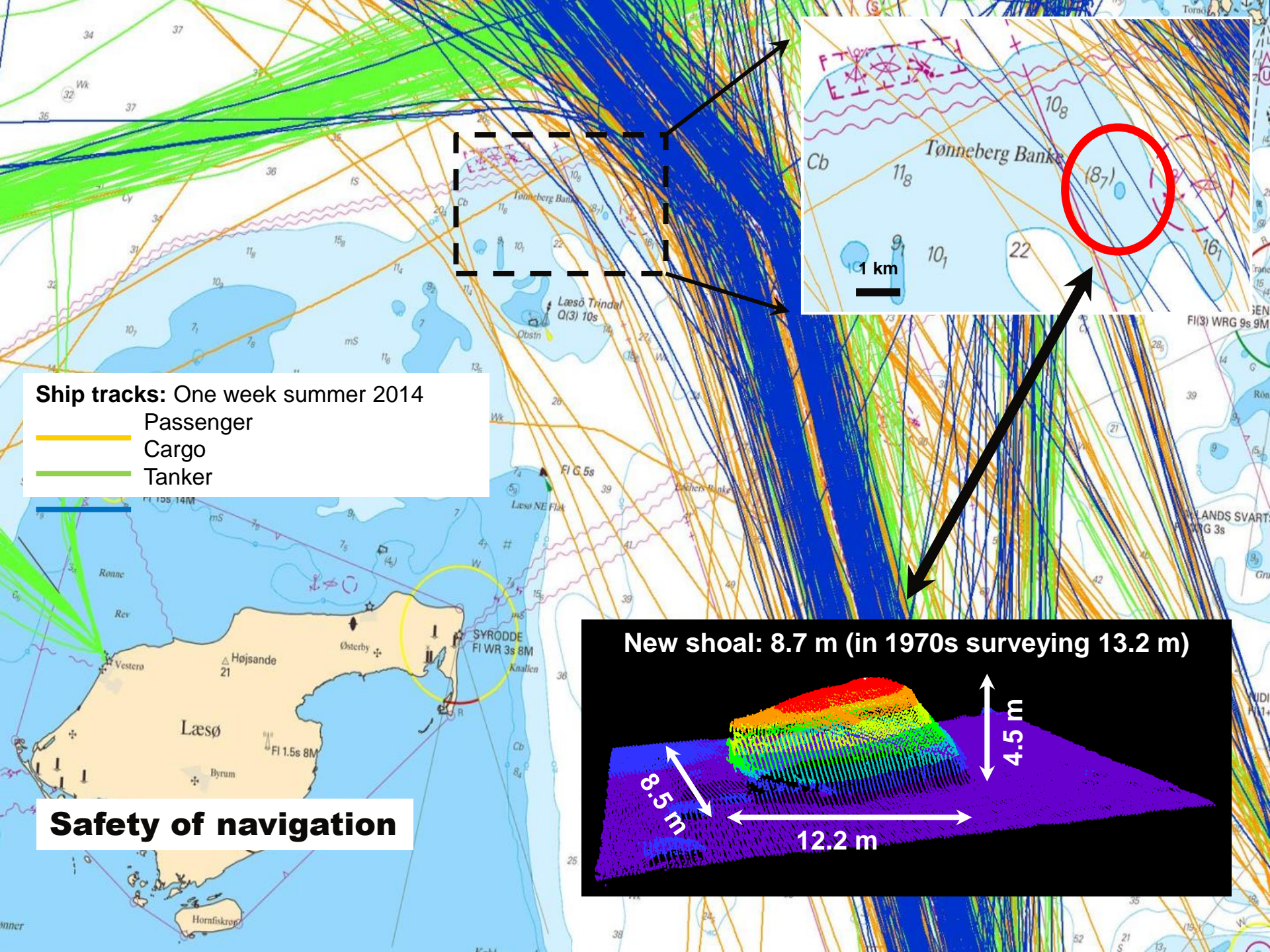


# Demands for High Resolution Bathymetry



# Are we these days Captain Cook ?



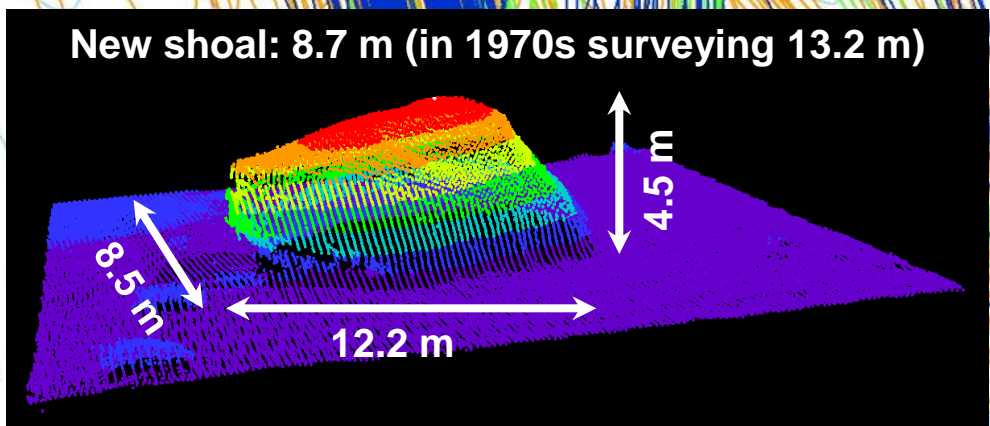


Ship tracks: One week summer 2014

- Passenger
- Cargo
- Tanker

Safety of navigation

New shoal: 8.7 m (in 1970s surveying 13.2 m)



# FAMOS Deliverable 1 – Safety and Sustainable Environment in the Baltic Sea



 **FAMOS**  
1) Enables Safe Shipping



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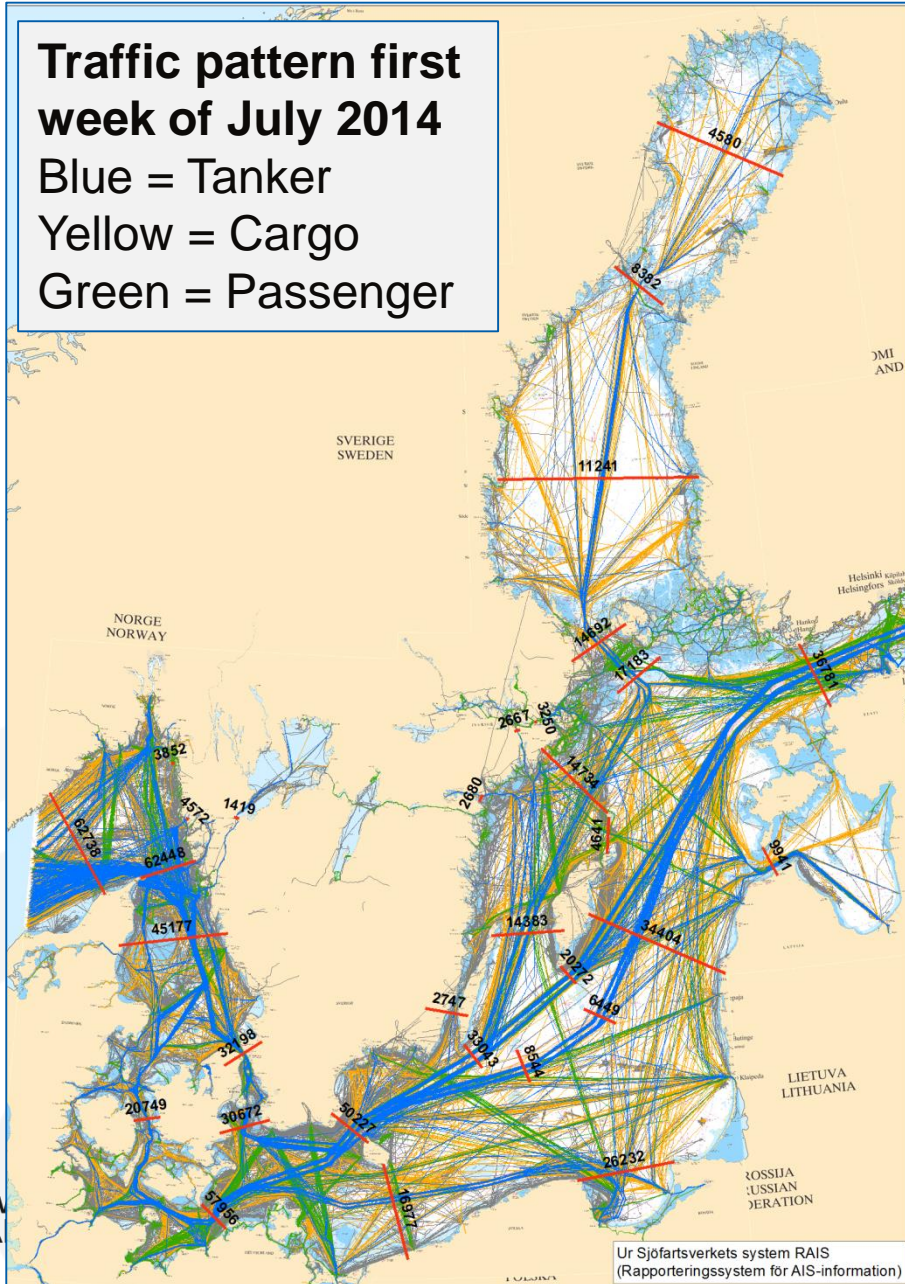
# FAMOS Deliverable 2) – Route Efficiency in the Baltic Sea

Traffic pattern first week of July 2014

Blue = Tanker

Yellow = Cargo

Green = Passenger



**FAMOS**  
2) Enables Efficient Shipping



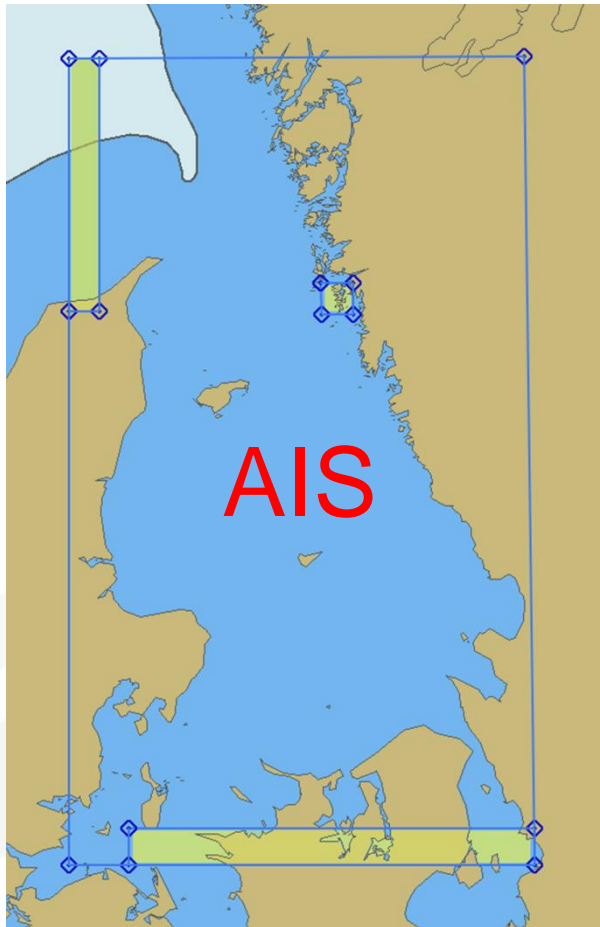
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Ur Sjöfartsverkets system RAIS  
(Rapporteringssystem för AIS-information)

## Minimum consumption for specific ETA



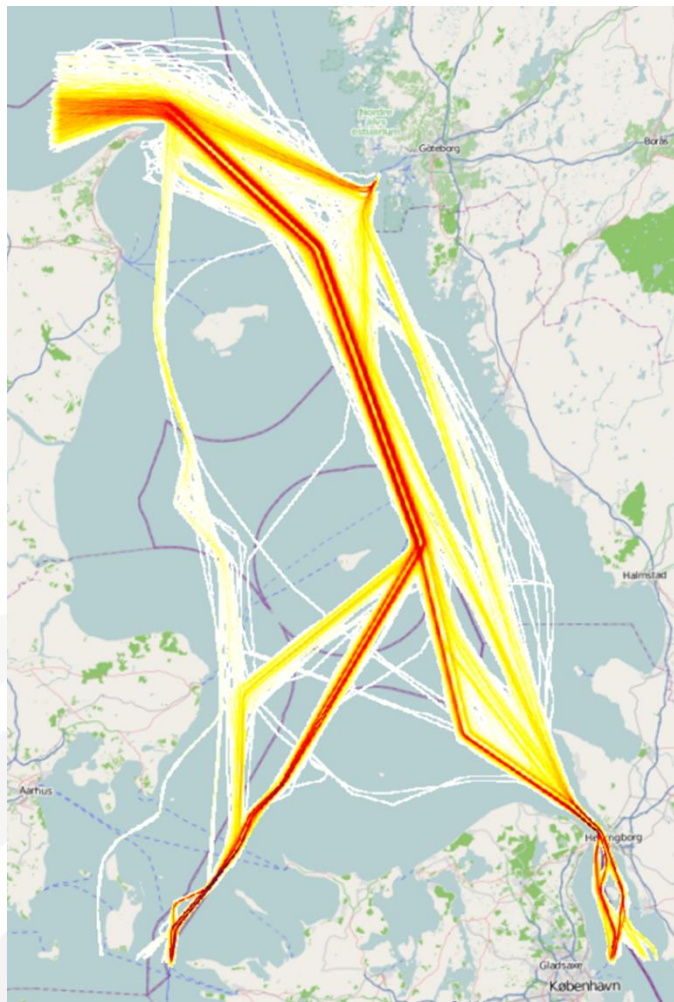
## Route with waypoints and speed on each leg



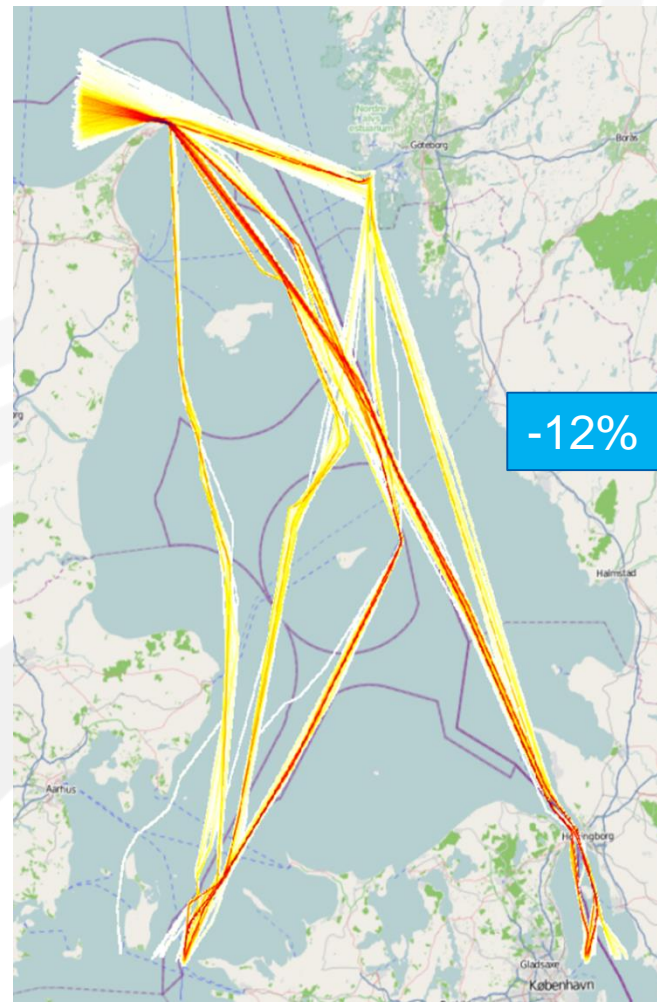
- AIS data for one month of transiting traffic i Kattegat, 1700 ship movements.
- Passenger, cargo and tankers.
- Voyages between Skaw, Gothenburg, Great Belt or the Sound.
- Typical weather conditions.

*Historical routes from AIS was replaced by simulated optimised routes.*

## Actual AIS tracks



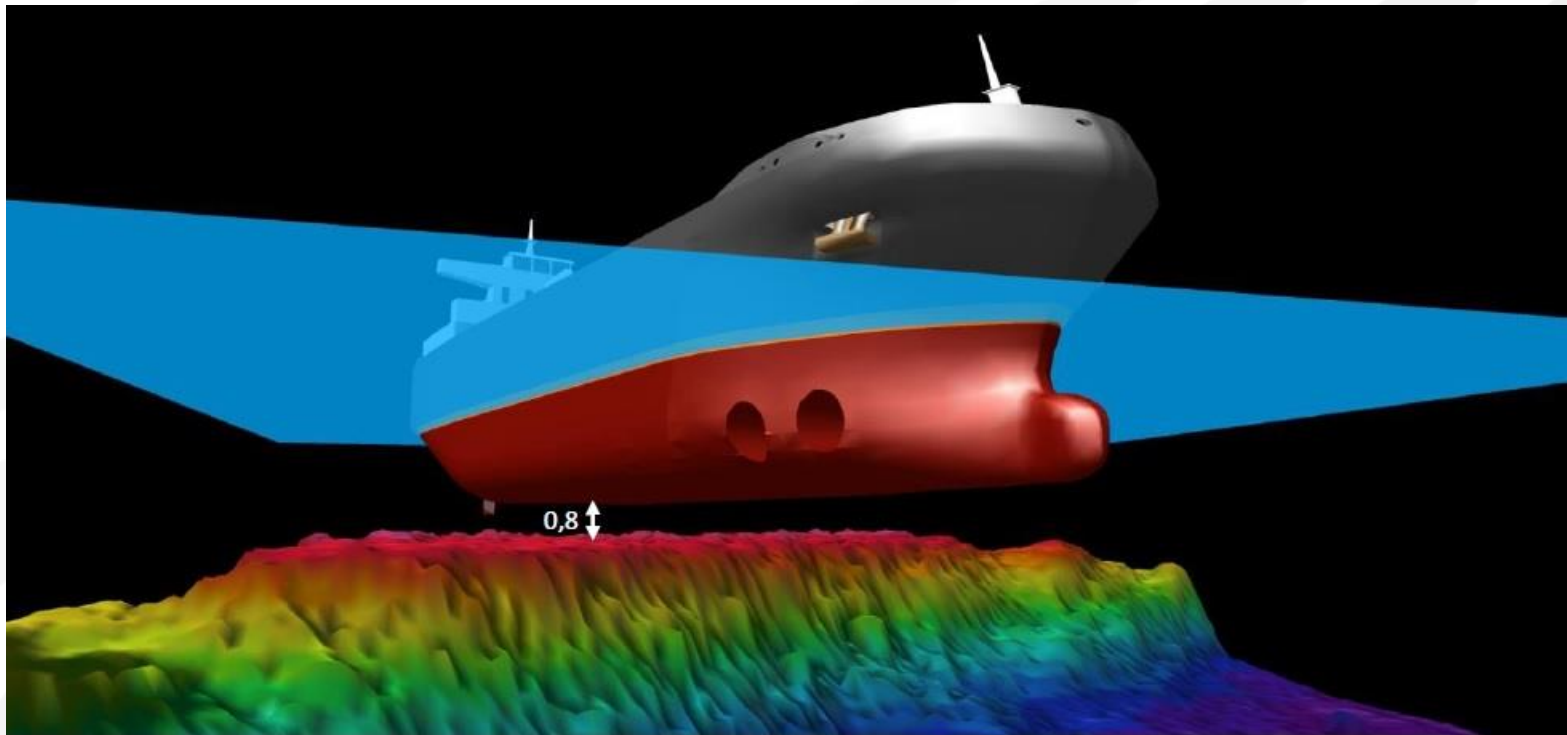
## Optimised routes

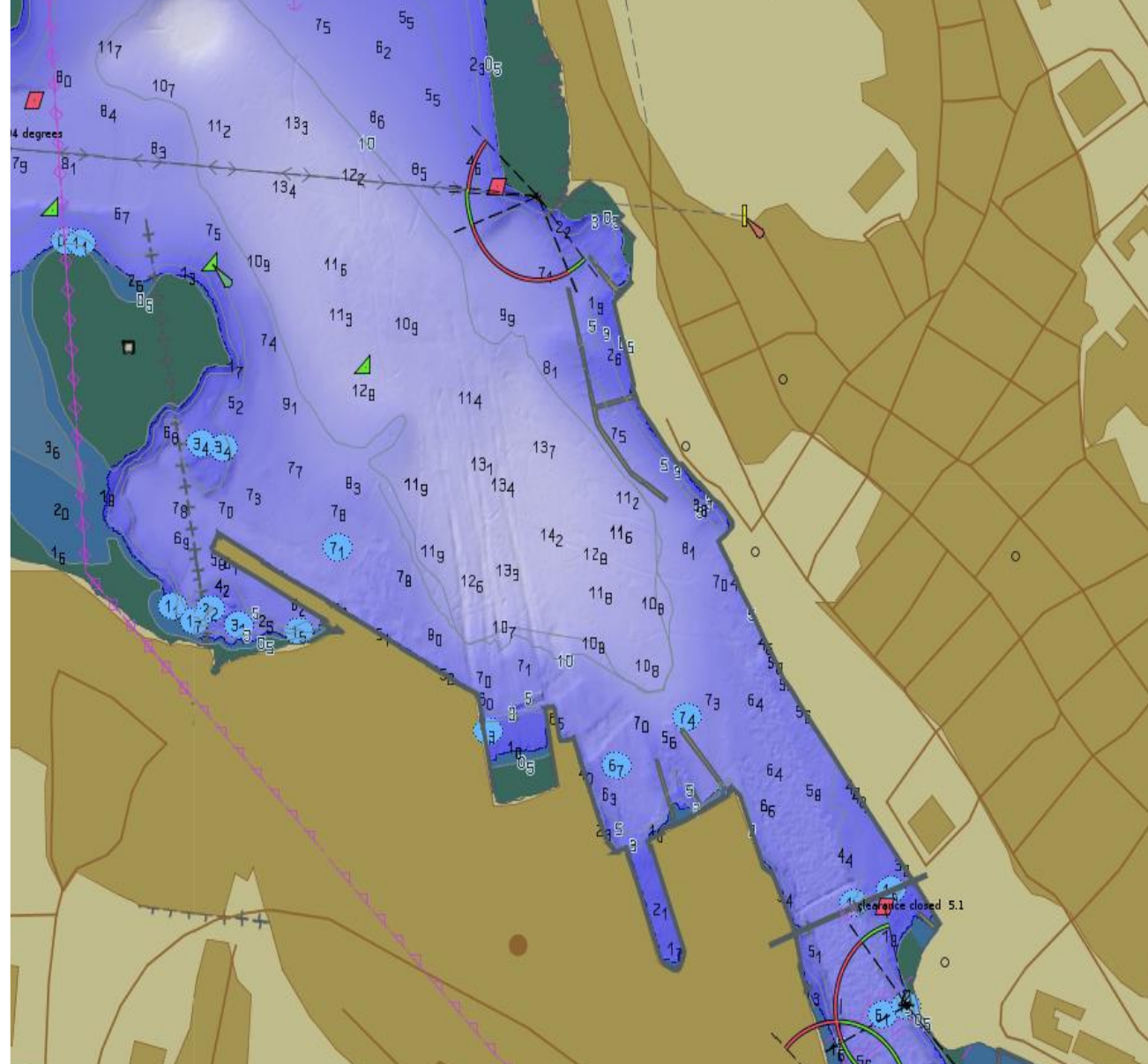




# Deliverable 3) – Optimized loading Monitored and Predicted Under Keel Clearance

## FAMOS 3) Enables Future Navigation

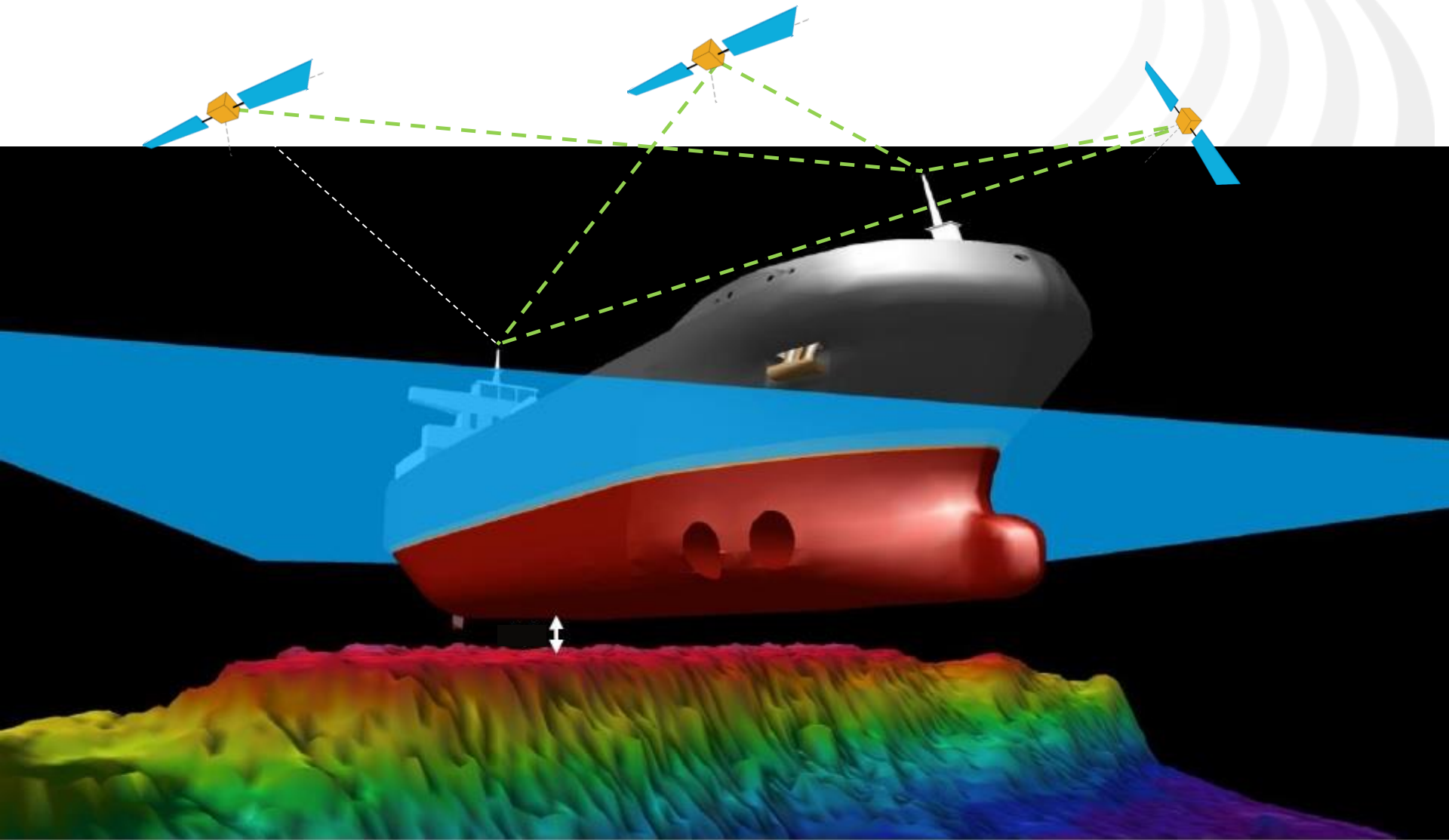




**Next generation ECDIS: S-102 depth models**



# Under Keel Clearance aware navigation





## **Digital infrastructure:**

Where am I, and how much water is underneath my ship?

A map of Sweden is shown with several irregularly shaped areas highlighted in light blue. These areas represent surveyed regions. The rest of the landmass is in black, and the surrounding water is white. The map is set against a background of light blue and white wavy lines.

**Before FAMOS:**

About 50%  
surveyed to  
modern standards

**After FAMOS:**  
100 000 km<sup>2</sup> more  
(area of Portugal)

# Partners

## Sjöfartsverket – Lead partner



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