



GWFF

GEOSPATIAL WORLD FORUM

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Geospatial World Forum

Infrastructure for Enabling an Integrated Blue Economy

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Director of Technology



IHO

International
Hydrographic
Organization

WHAT WE DO



COORDINATE
activities among national
hydrographic offices



MAINTAIN
uniformity in nautical
charts and documents



ADOPT
effective methods of
collecting and sharing
hydrographic data

DEVELOP & PROMOTE
the field of hydrography
and related technologies

MEMBER STATES

99 

HEADQUARTERS



MONACO

At the invitation of H.S.H.
Prince Albert I of Monaco

ESTABLISHED

1921

Following the first
international
conference in 1919



LEADERSHIP

1 Secretary General

2 Directors

Elected every three years



HYDROGRAPHY

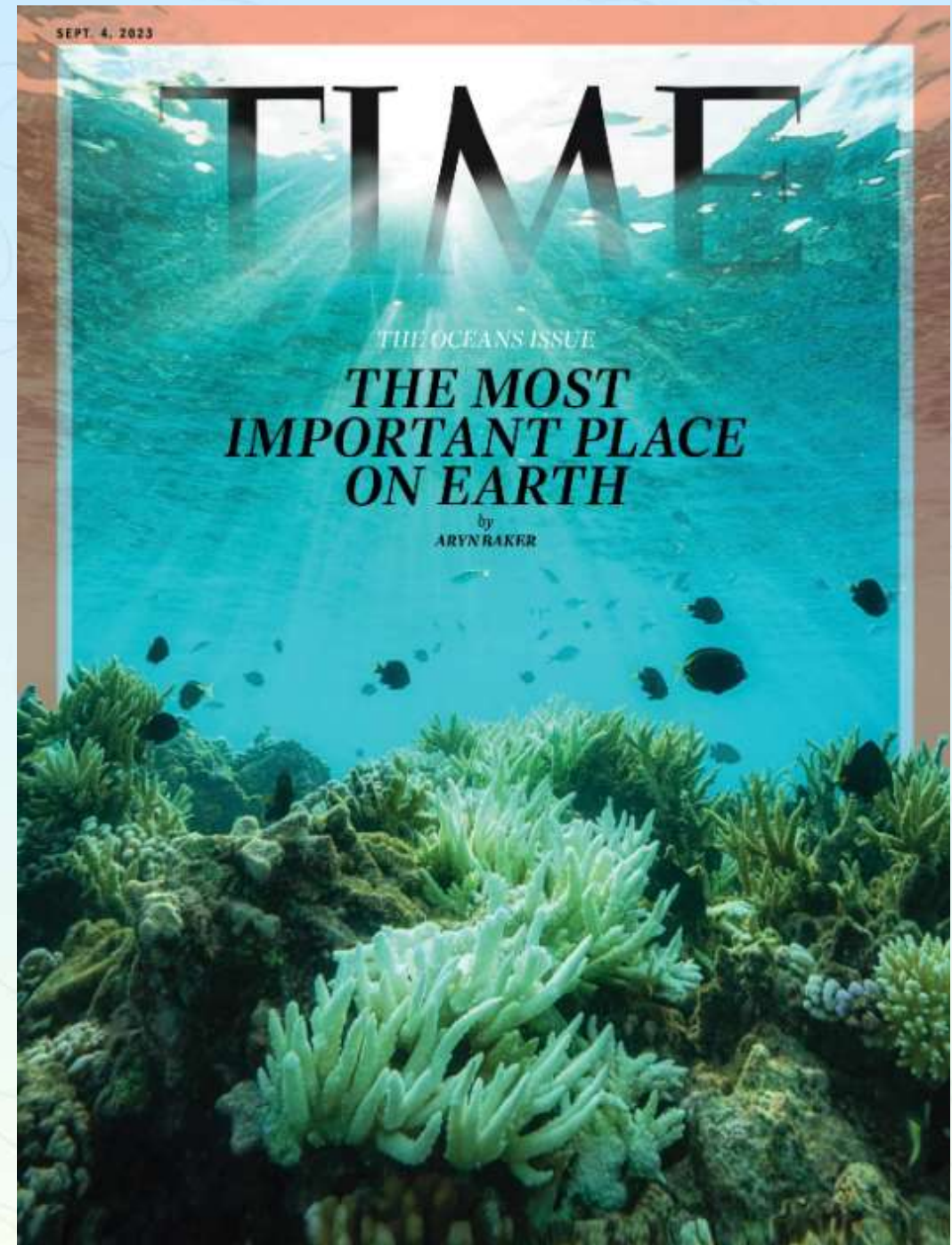
By mapping water depth, the shape of the seafloor and coastline, and the location of possible obstructions, hydrography helps maintain safe navigation and supports all other marine activities.



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An Exciting Time for Hydrography

- A call to Action
- Series of Commitments
- Focused Investment and Collaboration
- Coordinated Geospatial World
- Advanced Technology and Modern Data Standards for Diverse Applications





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NOW EXHIBITING
AT CDL GREEN GALLERY

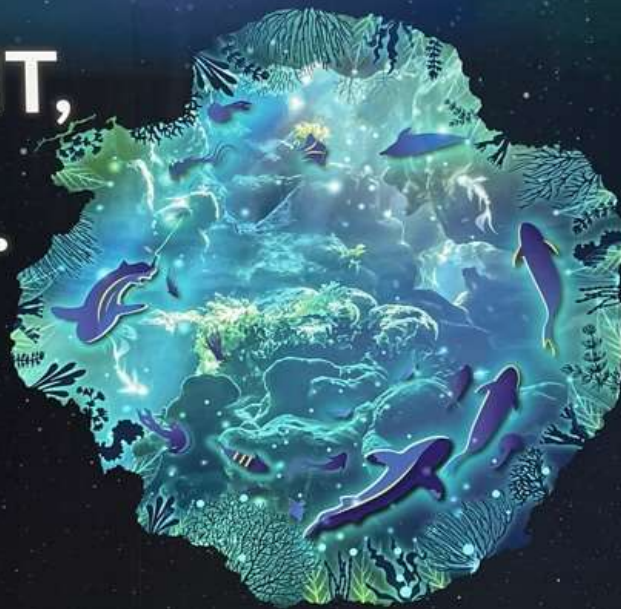
A Climate Action Exhibition Jointly Presented By:



CHANGE THE
PRESENT,
SAVE THE
OCEAN.

CLIMATE CRISIS IS AN
OCEAN CRISIS

FREE ADMISSION
Open Daily* | 9am to 6pm
*Closed every last Tuesday of the month



1 NO POVERTY 	2 ZERO HUNGER 	3 GOOD HEALTH AND WELL-BEING 	 SUSTAINABLE DEVELOPMENT GOALS
4 QUALITY EDUCATION 	5 GENDER EQUALITY 		
6 CLEAN WATER AND SANITATION 	7 AFFORDABLE AND CLEAN ENERGY 	8 DECENT WORK AND ECONOMIC GROWTH 	9 INDUSTRY, INNOVATION AND INFRASTRUCTURE
10 REDUCED INEQUALITIES 	11 SUSTAINABLE CITIES AND COMMUNITIES 	12 RESPONSIBLE CONSUMPTION AND PRODUCTION 	13 CLIMATE ACTION
14 LIFE BELOW WATER 	15 LIFE ON LAND 	16 PEACE, JUSTICE AND STRONG INSTITUTIONS 	17 PARTNERSHIPS FOR THE GOALS

A call to Action



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A Collaborative System

- Coordination
- Standards
- Regulation
- Technology, Industry, and Innovation





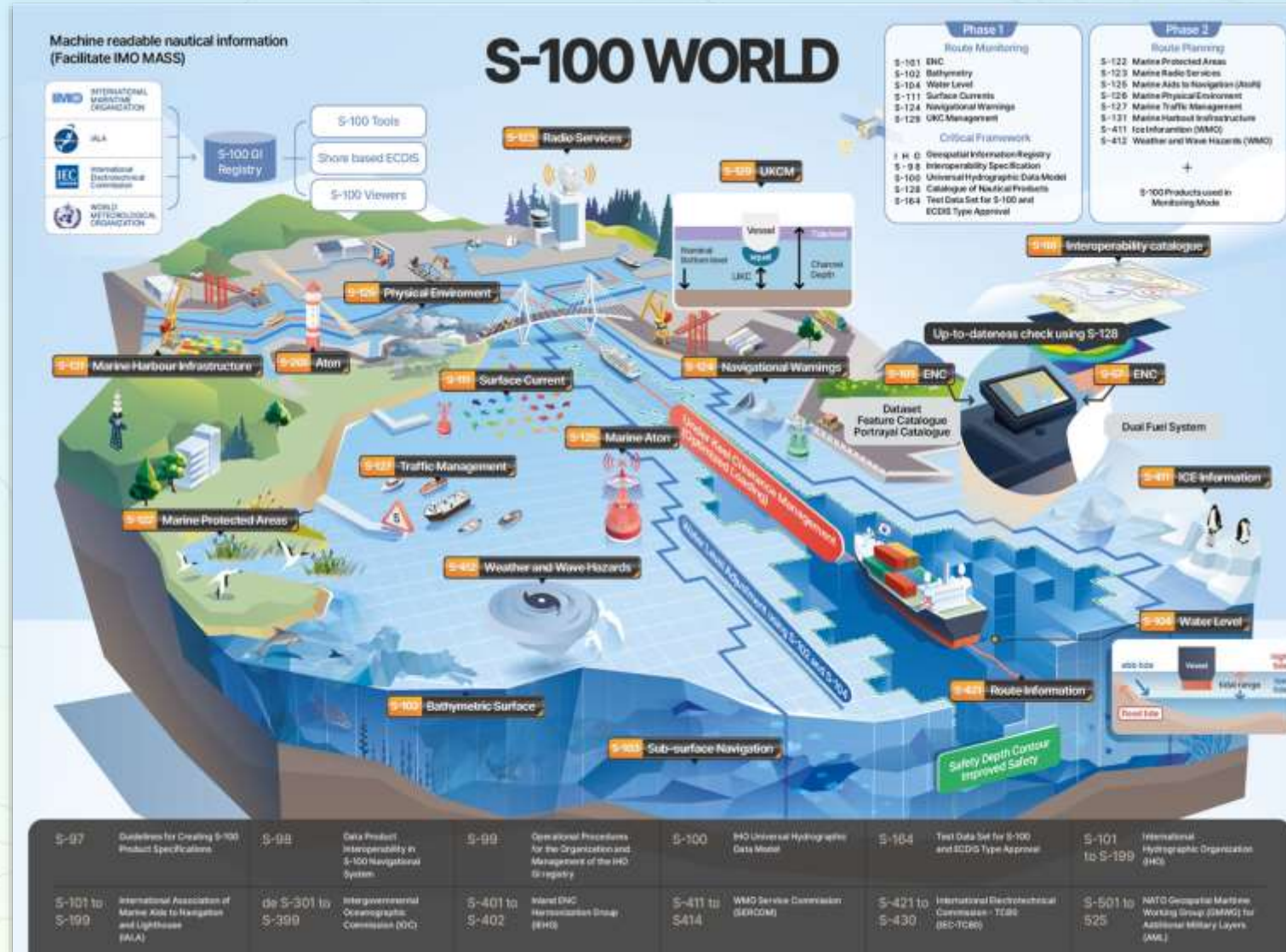
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IHO S-100 Data Framework

International Hydrographic Organization

S-100 Data Products

- S-101: Electronic Navigational Charts (ENC)
- S-102: Bathymetric Surface
- S-104: Water Level Information
- S-111: Surface Currents
- S-121: Navigation Warnings
- S-41X: Weather Overlays





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IHO S-100 Data Framework - Live

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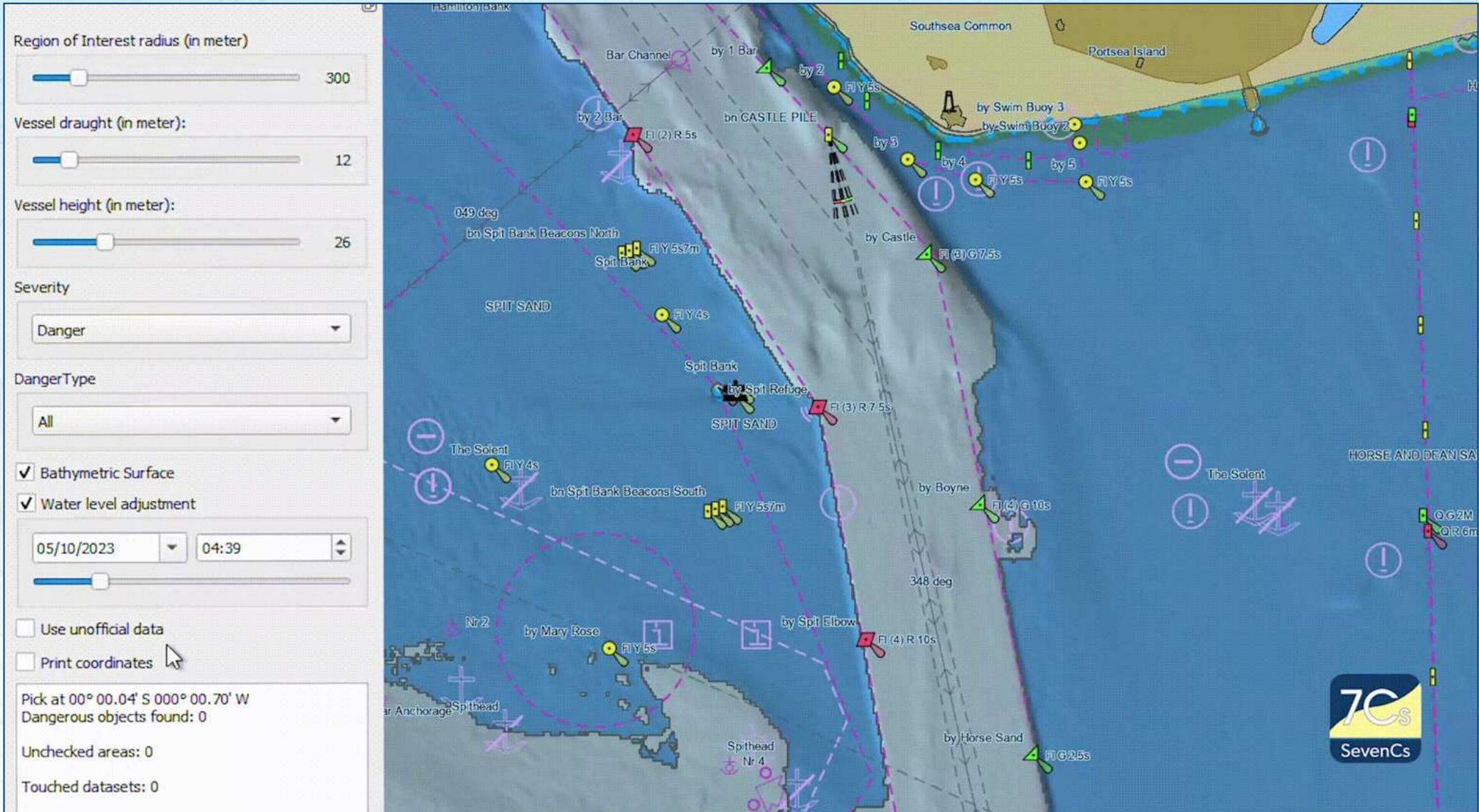




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Integrated Water Level and Bathymetry

International Hydrographic Organization





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Integrated Water Level and Bathymetry

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Combining S-102 bathymetry and a Water Level Adjustment (WLA) from S-104 water levels, dynamic safety contours can be created.

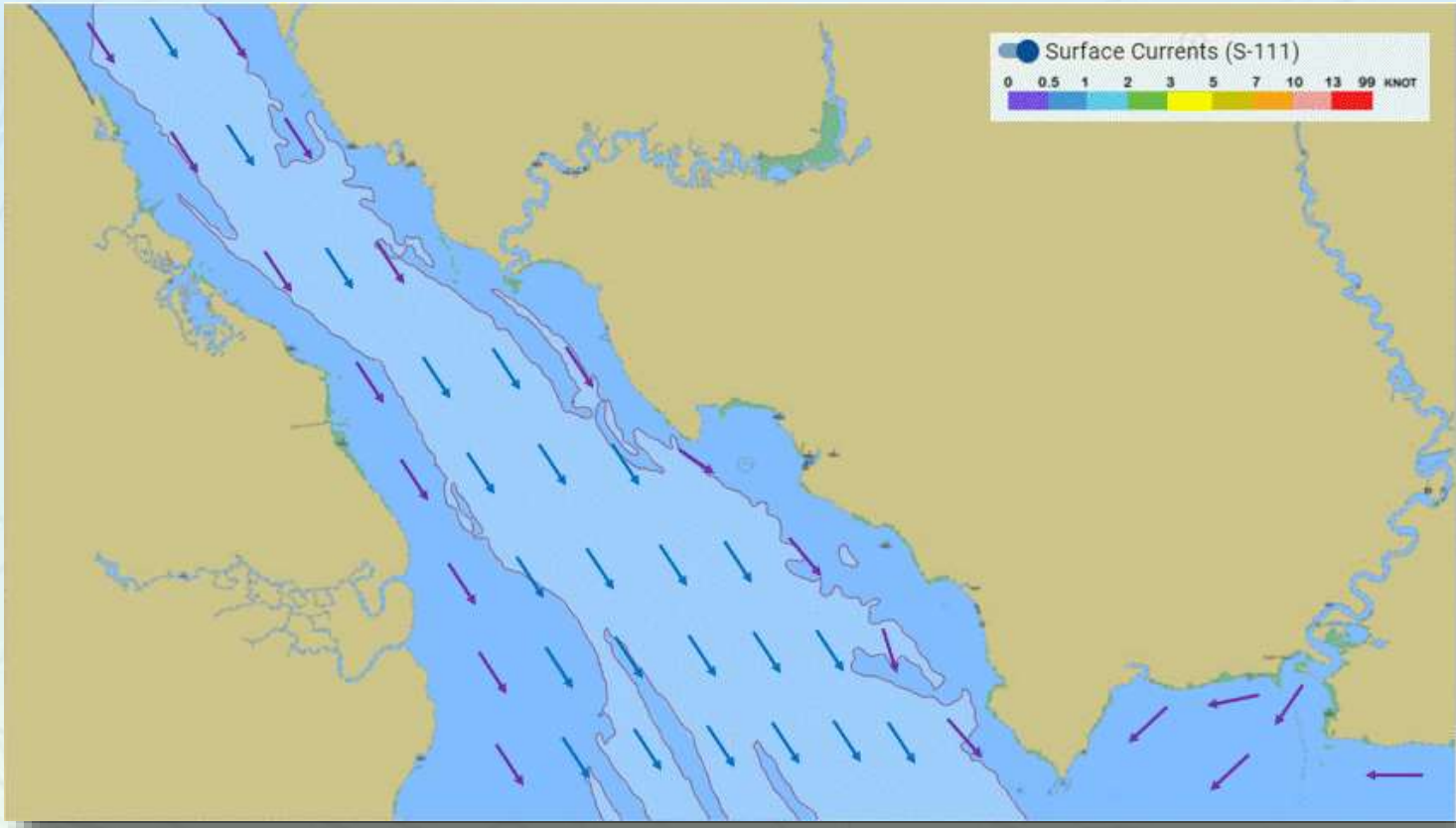
This image shows a red safety contour over a period of 12 hours for a specific vessels draft.



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Integrated Surface Currents

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Combining S-102 bathymetry, Water Level Adjustment (S-104) and surface currents (S-111) gives a more complete picture of the environmental conditions.

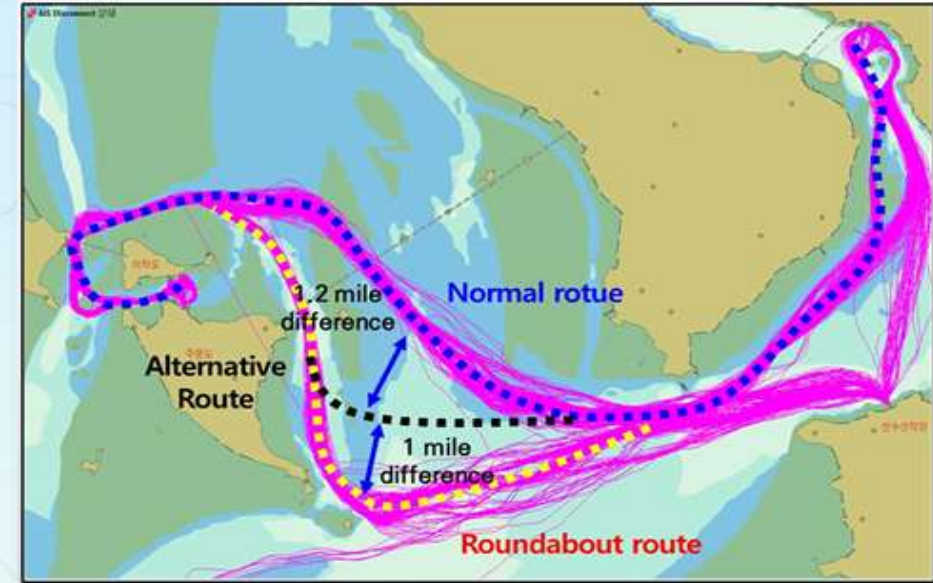


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Economic Efficiencies

International Hydrographic Organization

- Korea Hydrographic and Oceanographic Agency reported “Evaluation of the economic feasibility with S-10X data” at the IHO 6th Council (October 2022) with 2 topics (Economic, Usability)
- Using S-102/104 data, a new alternative route for passenger ship was produced as a part of economic study
- Alternative route was 55% shorter than the roundabout route resulting in a 45.5% fuel consumption reduction and a savings of **\$124,186 USD** annually.



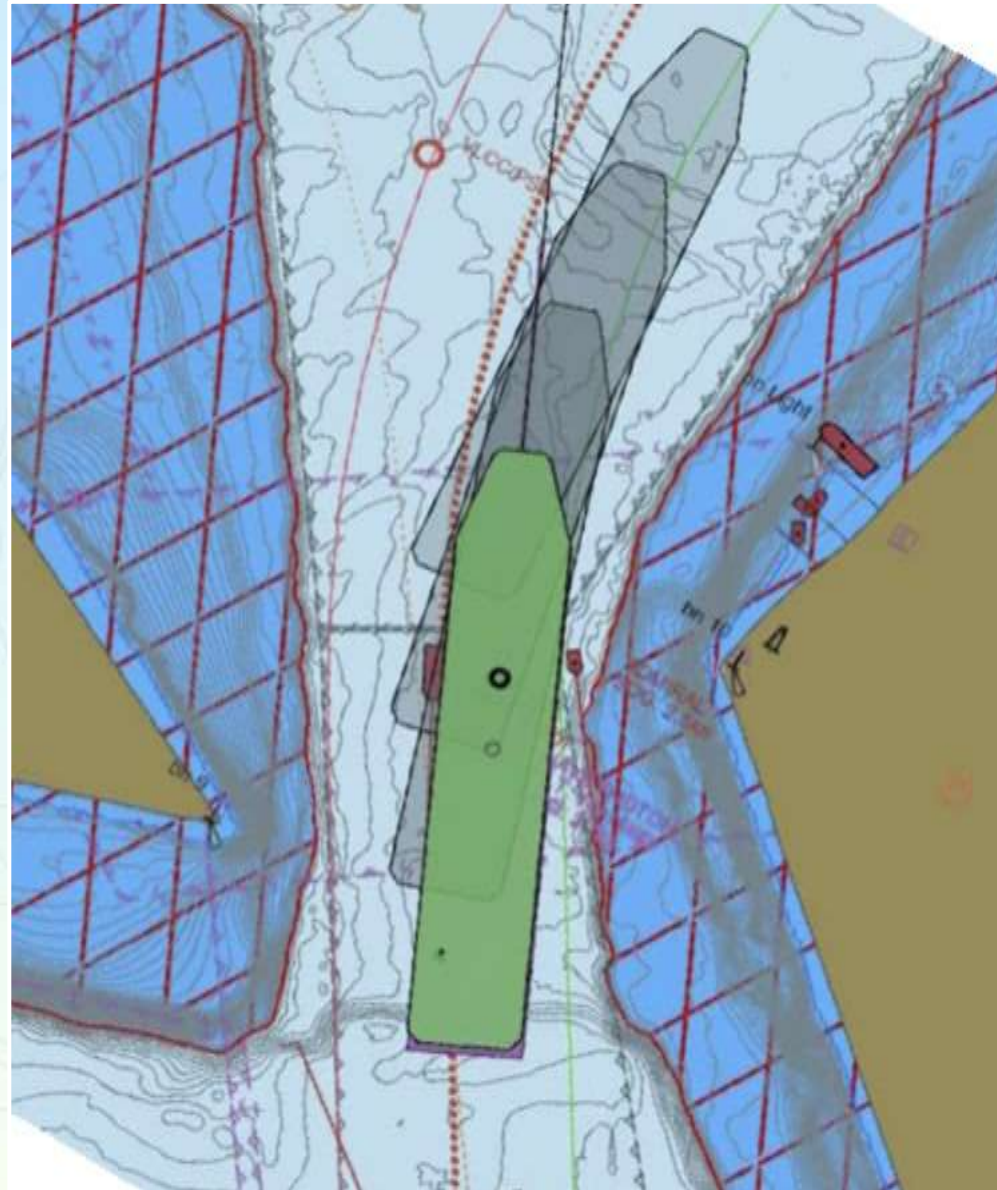
Passenger ship Route	Roundabout route	Alternative route explored using S-100 data service
Estimated distance (m)	4,157	2,306
Distance difference between normal and roundabout/alternative(NM)	2.2	1.2
Total number of navigation	2,190 rounds	
Expected number of roundabout/alternative route	1,196 rounds	
Fuel consumption per hour	1,000 liters	
Fuel cost per liter	\$1.25 per liter (include 0.01% MGO tax)	
Economics analysis of coastal passenger ships	(Route distance) X (Numbers of Roundabout/Alternative route navigation) / (Vessel speed – 12kn) X (Fuel consumption per hour) X (Fuel cost per liter)	
	(A) \$273,209	(B) \$149,023
	(A) - (B) = \$124,186 (45.5% savings) Total annual cost savings of \$124,186 (45.5% savings) would occur when the alternative route was used	



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S-102 Bathymetry Data

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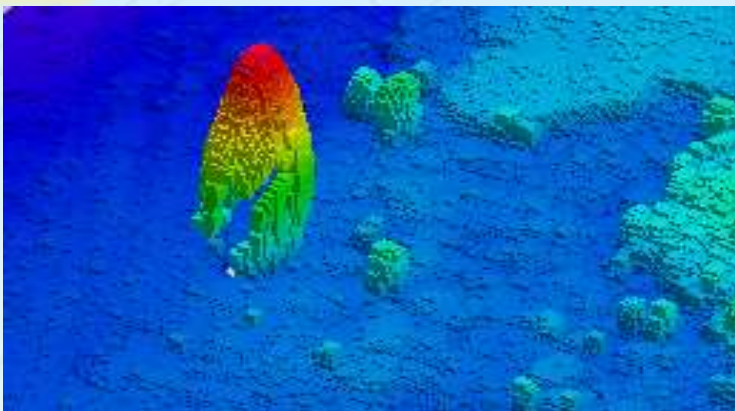




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Major Benefits with S-100

Improved Safety



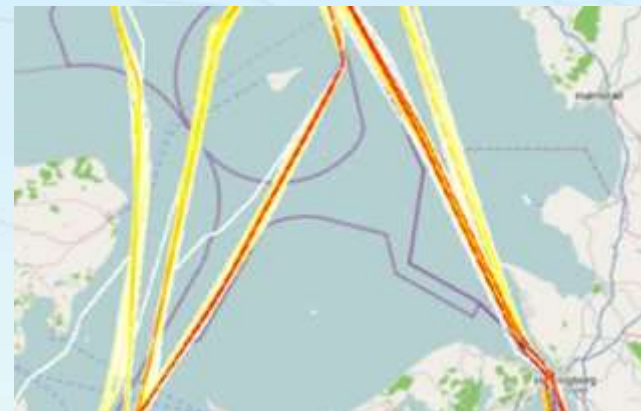
High resolution bathymetry in combination with other datasets.

Optimized Loading



Under Keel Clearance Management with S-100

Route Optimization and Just in Time Arrival



Decreased fuel consumption. Avoid squat, usage of tide, currents and weather information

Increased Safety, Efficiency and Reduced Environmental Impact



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Major Benefits with S-100

Maintainable and Cyber Secure



Updates of S-100 Product
Specifications can be managed in S-100
ECDIS and Cyber Security is improved.

**Cyber secure, optimal decision-aids, multiple usage beyond
safety of navigation, future proof and a first step towards MASS**

Automated Navigation



Machine readable nautical information
can facilitate IMO MASS – Maritime
Autonomous Surface Ships

Thank You Very Much

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