MARITIME NAVIGATION INNOVATION WEBINAR WEEK

WEBINAR

MONDAY 24 NOVEMBER
11:30-12:30 GMT

Mastering voyage planning in turbulent times

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MARITIME
OPTIMISATION
& COMMUNICATIONS

MARITIME NAVIGATION INNOVATION WEBINAR WEEK

PANELLISTS

Dr Adan Lopez-Santander
Lecturer in Navigation and Maritime Science
University of Plymouth

Michael O'Brien
Chief Operations Officer
StormGeo

Michael Greavette
Head of Commercial, Vessel and Voyage Performance
ABB Marine & Ports

Fikret Ekdi
Marine Manager
V.Ships UK Limited

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UNIVERSITY OF PLYMOUTH

MARITIME SIMULATION LAB MSL

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ADVANCING OPERATIONS THROUGH DIGITALIZATION

APPLICATION OF AI & DIGITALIZATION TO IMPROVE MARITME OPERATIONS

Adan Lopez-Santander

Cornwall FLOW Accelerator

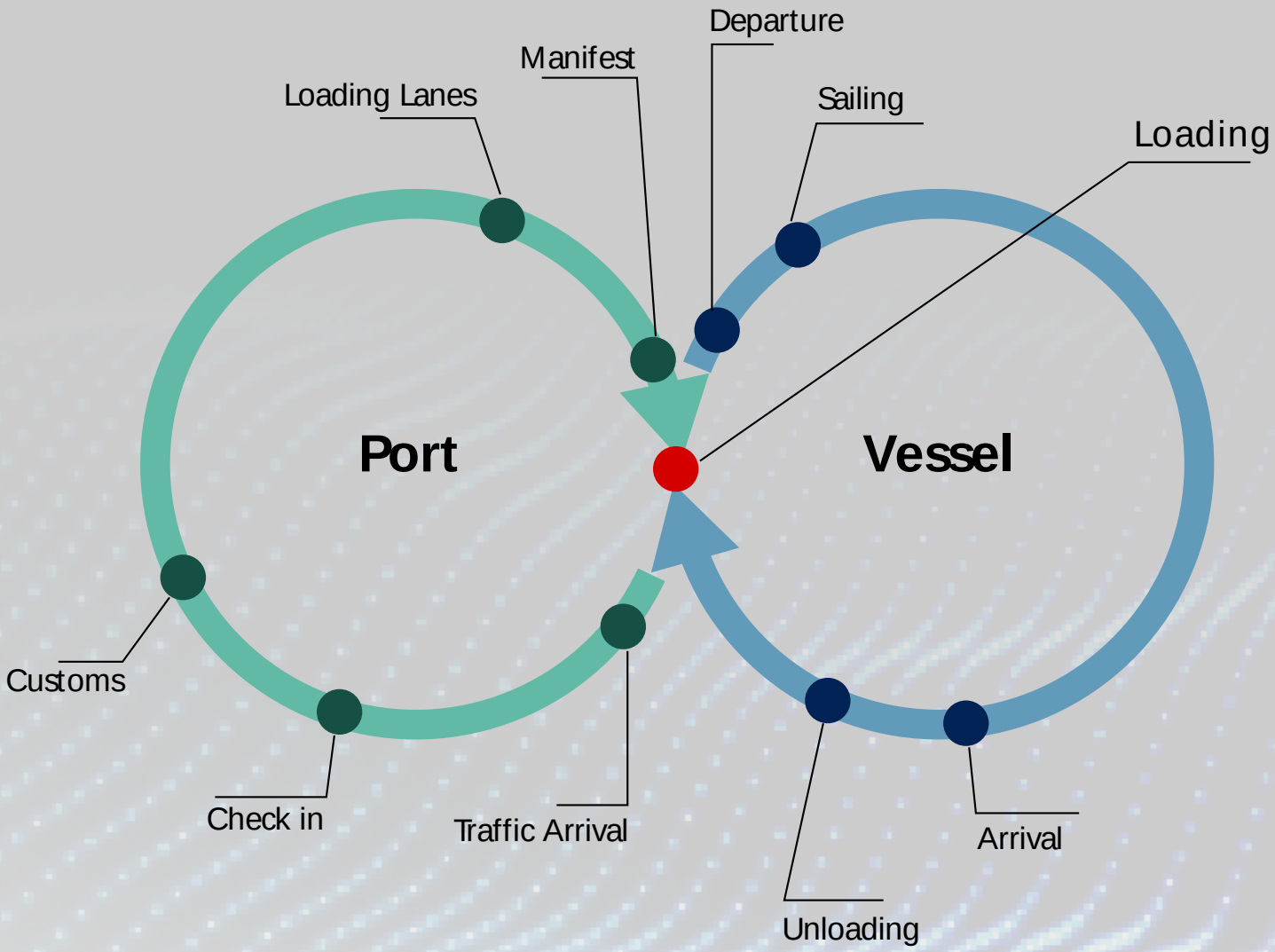
HM Government

European Union
European Regional
Development Fund

Optimizing Dynamic Scheduling

Optimizing Scheduling of Ferries to reduce emissions
using **Simulation, digital-twining, and Artificial Intelligence**

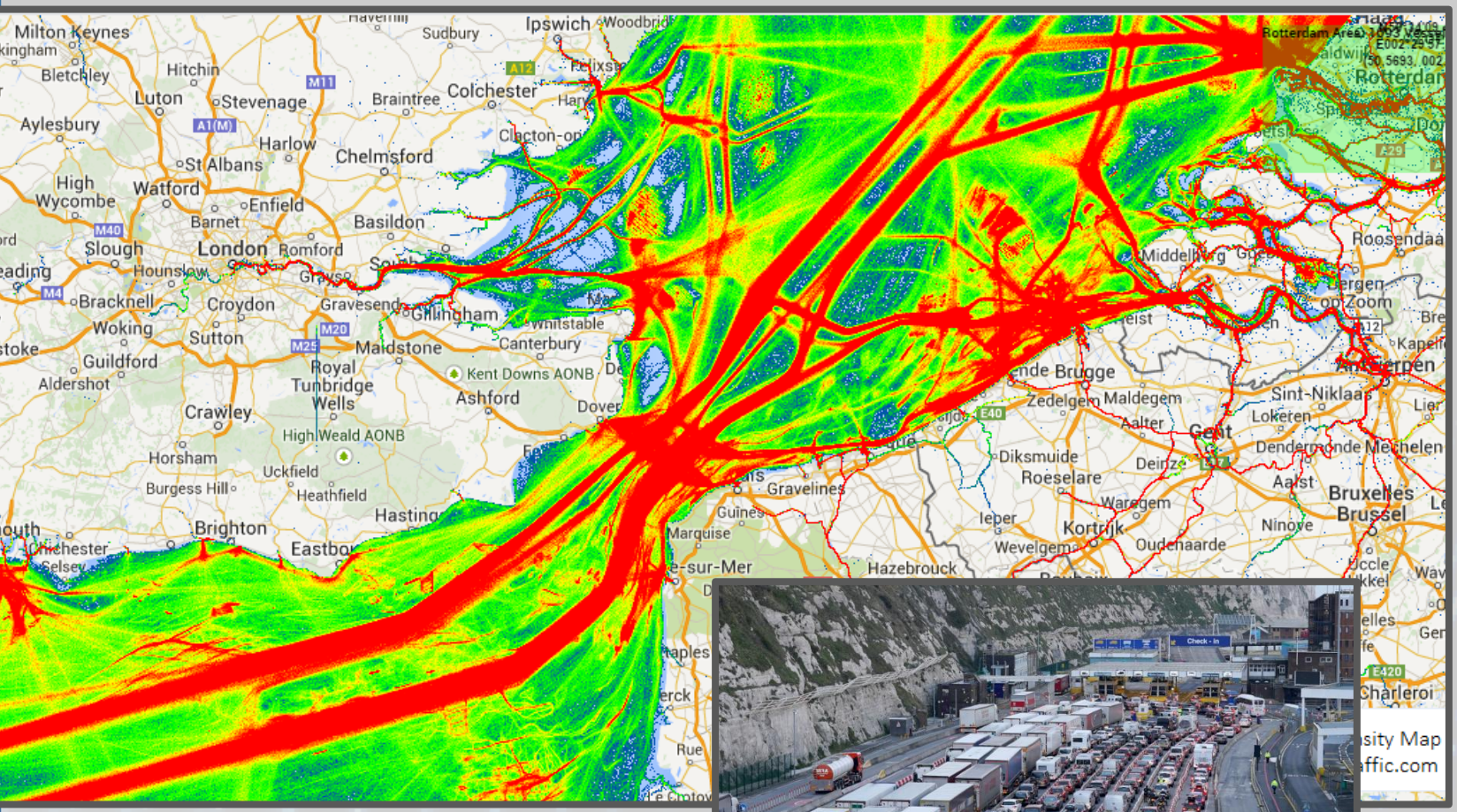
Every Minute Counts



How do we **optimize onshore cycle and unload/loading** to **minimize time at the berth** and **maximize crossing time**?

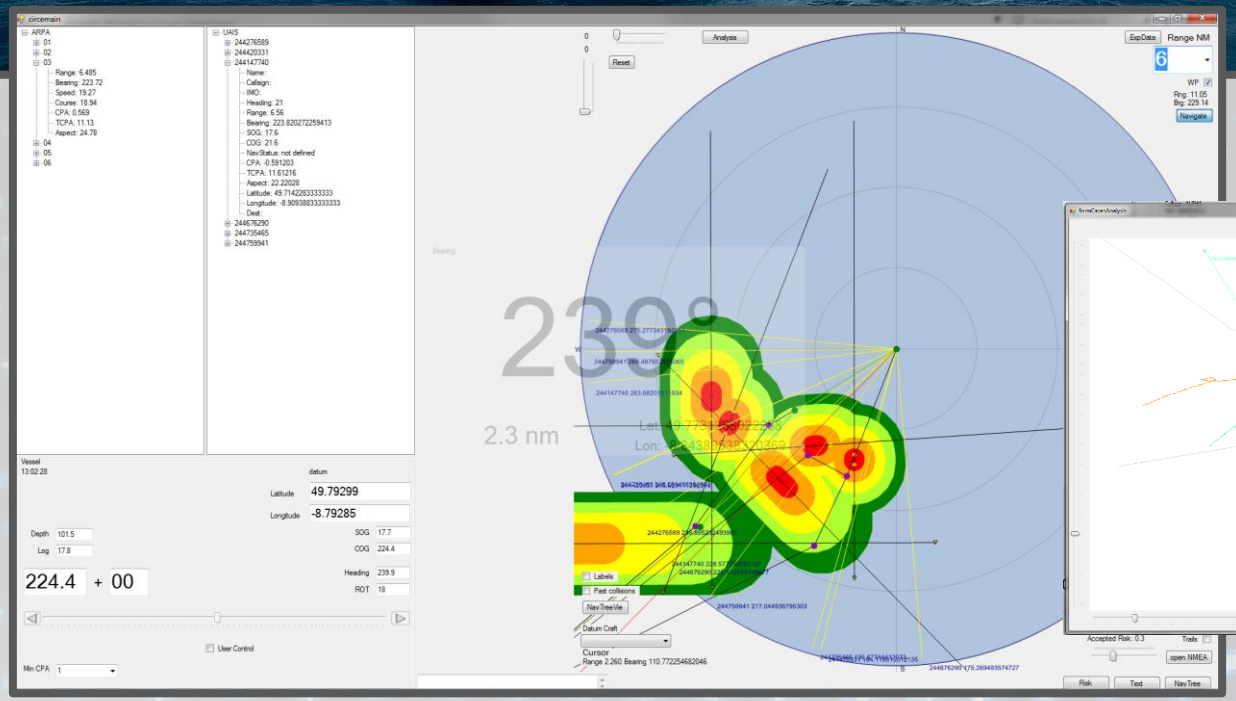
And what is the **best time for departure** given the traffic, weather conditions, currents, and operations at the destination port for **just-in-time arrival**?

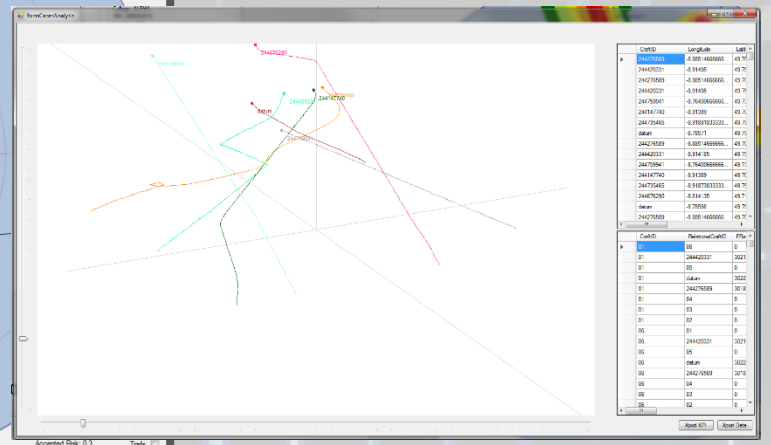
Model and subrogate the process



Digitally Twinning the process allow us to determine a distribution of **optimal times for departure** using **Artificial Intelligence** algorithms that **consider** the dynamic **state of the system**, including traffic in the channel, berth availability at destination, currents, etc.

Optimize sailing





Real time optimization of **vessel state** during transit, including engine order, heading, trim, PTO use, generator use.

Minimizing fuel consumption and emissions, maximizing comfort, and arriving just in time to berth availability.

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Thank you!

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Mastering Voyage Planning

Capt. Fikret Ekdi
Marine Manager – V. Ships UK Ltd.

24 November 2025

V. Operating Model

Client

Fleet Cells

Customer centric

Responsible for Flawless Service Delivery
Comprehensive, multi-disciplinary and dedicated team
Autonomous, accountable and empowered
Local market knowledge and Technical expertise

Safety first

Vessel

Centres of Expertise

- Support the fleet cells
- Own and develop best practices
- Own the systems
- Benchmark and analyse trends
- Ensure compliance

V.SHIPS — Global Crew Sourcing and Management

44,000 International Seafarers

ShipSure — Global Ship Management Platform

The marine digital platform

Provides transparency
Ensures consistent service delivery
Enables data mining
Facilitates best practice & knowledge sharing

HSSEQ management
Asset management
Crew management
Opex management

Vessel performance
Custom dashboards

60 Local Offices

30 Countries

SeaTec — Part of V.

Technical Services

Your partner for technical services

Marcas — Part of V.

Supply Chain

Leveraging scale to reduce procurement costs

V.Scope — Part of V.

Insurance

Cover for all circumstances

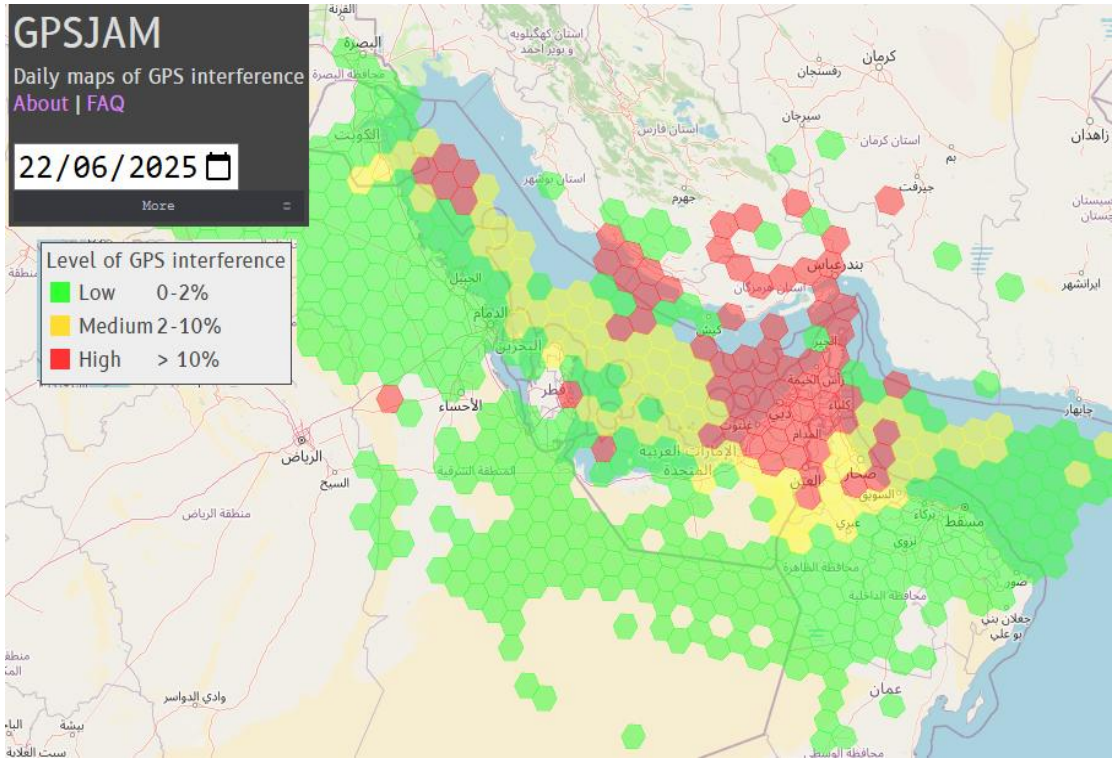
GMT Global Marine Travel / Oceanic

Crew Services

Travel, Training, Catering and Wellbeing for your Crews

Impacts of Unpredictable Geopolitical Shifts

- **Sudden closure** of key channels, chokepoints, or strategic straits
- Risk of vessels becoming caught in **active conflict or hostile fire**
- **Loss of communication** due to jamming, cyber disruption, or damaged infrastructure
- **Interference with navigational systems** (e.g., GPS spoofing/jamming)
- Increased **navigational risks** in narrow or constrained routing alternatives

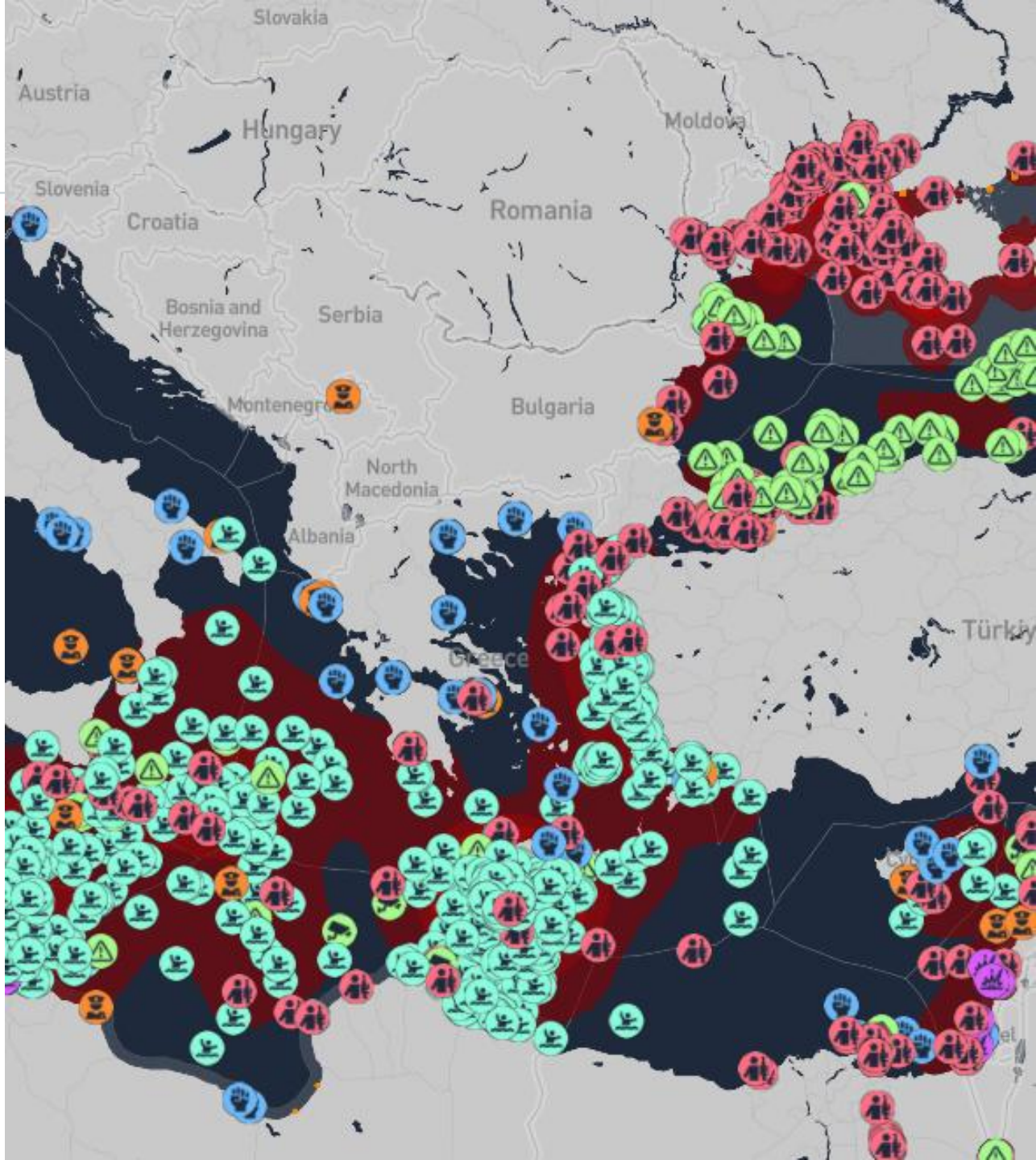


Impacts of Unpredictable Geopolitical Shifts

- **Port closures** affecting crew changes, bunkering, supplies, and technical services
- **Voyage disruptions**, delays, cancellations, and financial losses
- Elevated **exposure to cyber threats** targeting ship systems and company networks
- Rapidly changing **sanctions and regulatory requirements**
- Crew **safety concerns**, stress, and **welfare issues**
- Wider **supply chain disruptions** impacting cargo delivery

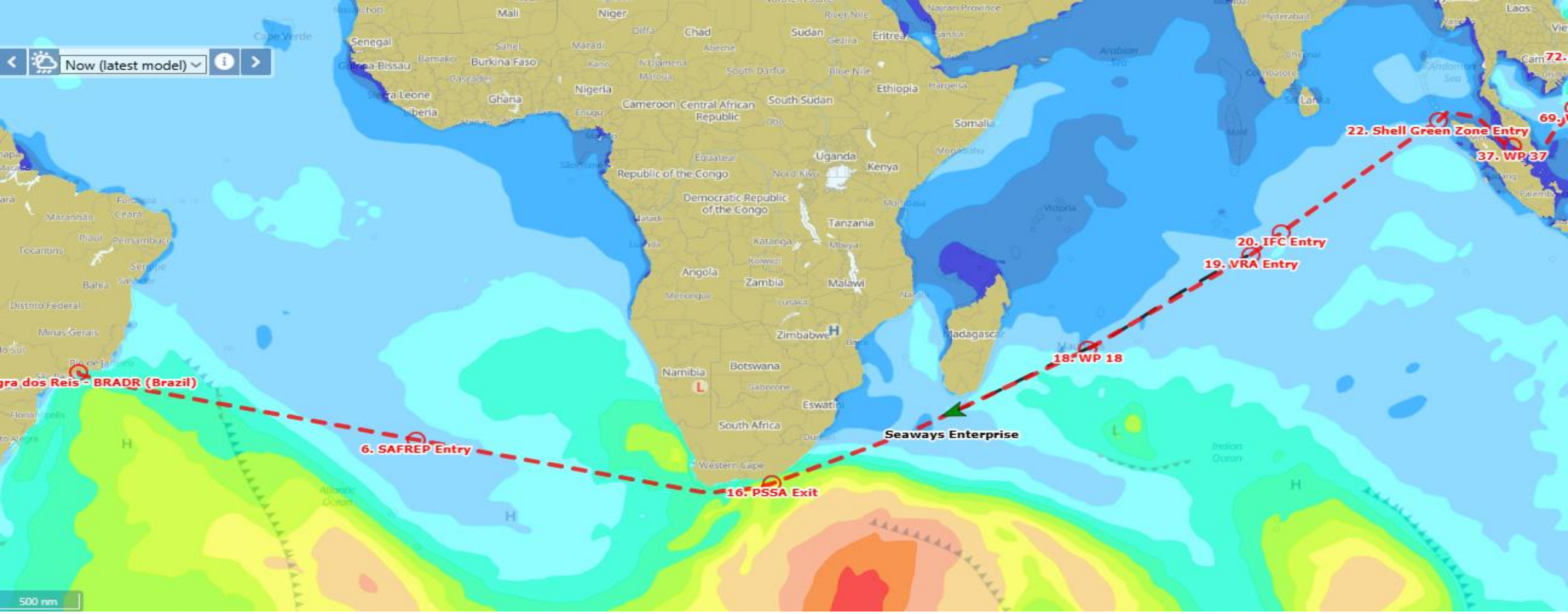
Importance of AI based Sentinel – Automated Alert systems

- AI based **dynamic Security Threat Analysis** and revised Route options
- Full time coverage via online **live monitoring** services
- **Route** Alerts
- **Proximity** Alerts
- **Direct connection** with the vessel and the office
- **Integrated** Security Alert systems

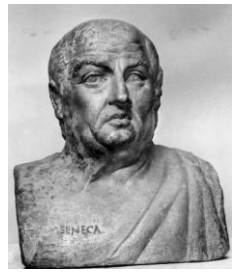


AI & Automation Readiness in Turbulent Voyage Planning

- AI-powered routing tools are now **mission-critical** in extreme weather & geopolitical volatility.
- Faster decisions, **predictive risk alerts**, lower workload
- Crew readiness is the limiting factor in fully leveraging emerging tools
- Over-reliance, skill fade, inconsistent adoption.
- Tech is advancing faster than crew competency frameworks
- **Essentials**: Training, familiarization, and transparent AI-human interaction



"If a man knows not which port he sails, no wind is favorable..."
Seneca the Younger



Thank you.

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NAVIGATING THE VOLATILE VOYAGE PLANNING LANDSCAPE

A Roadmap to Digital Resilience

Michael Greavette

Head of Commercial, Vessel & Voyage Performance

ABB Marine & Ports

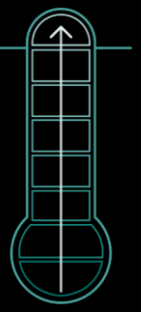
ENGINEERED TO OUTRUN

Weather Impacts for Shipping are Intensifying

Navigating Rising Risks in Maritime Operations

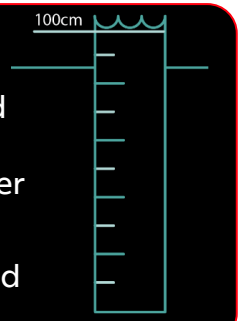
Sea Surface Temperatures…

- are rising at an average rate of 0.14 degrees Fahrenheit per decade
- This is a catalyst for more extreme weather events



Sea Levels…

- are rising up to 100cm, and may change tidal circulations in shallow water
- Port and terminal accessibility will be affected



Ocean Energy…

- is increasing, resulting in rougher conditions
- Expect more powerful winds, increased wave heights, and stronger wave periods

Tropical Cyclones…

- that develop into major hurricanes or typhoons will become even stronger
- Some may survive mid-latitudes, regaining intensity

Precipitation…

- is intensifying due to higher moisture in the warming atmosphere
- This impacts shipping and port operations

Arctic Ice Cover…

- is decreasing even further in summer and autumn
- More reliable shipping routes, such as the Northwest Passage and the Northern Sea Route are becoming available

Sources:

- *Digitalization in Shipping Research - DTN 2022*
- *EPA, Climate Change Indicators: Sea Surface Temperature*
- *Intergovernmental Panel on Climate Change, Climate Change 2021*
- *University of Melbourne, Ocean Waves and Winds Are Getting Higher and Stronger*

From Weather Volatility to Data-Driven Advantage

Data Transparency: The New Goldmine of Maritime Operations

1. **If Weather Is the Challenge, Data Is the Control System**
   Volatile conditions can't be eliminated—but they can be anticipated, modeled, and optimized using real-time data streams.

2. **Data Is Now a Strategic Asset, Not a Byproduct**
   Vessel performance, fuel usage, port congestion, and traffic data are being transformed into competitive intelligence.

3. **Transparency Unlocks Efficiency Across the Value Chain**
   When stakeholders share data, ships sail smarter: reducing fuel consumption, delays, emissions, and operational risk.

4. **High-Resolution Weather = Smarter Route Optimization**
   Moving from coarse forecasts to high-resolution predictions enables dynamic routing, avoiding storms, exploiting currents, and lowering fuel consumption.

5. **Advanced Analytics Turns Visibility into Action**
   AI-driven models convert raw data into decisions: predictive maintenance, ETA accuracy, and optimal speed planning.

Geopolitical Impacts on Voyage Planning

Turning Disruption into Advantage

1. **Route Disruptions & Chokepoint Risks**
   Conflicts, sanctions, and blockades can force sudden rerouting, increasing transit time, fuel costs, and insurance premiums.

2. **Regulatory & Sanctions Compliance**
   Changing trade policies and restricted zones require dynamic compliance checks to avoid fines, detentions, or reputational risk.

3. **Fuel, Cost, and Schedule Volatility**
   Longer routes and congestion lead to unpredictable schedules and higher operational costs, impacting supply chain reliability.

4. **How Advanced Routing & Voyage Planning Tools Can Assist**
   Real-time risk mapping integrates geopolitical alerts, port restrictions, and naval advisories to recommend safer, compliant routes.

Evolution of Weather-Optimized Routing in the Maritime Sector

From Manual Decisions → Digital Intelligence → Human + AI Hybrid

1. Traditional Approaches (Past)

Manual | Static | Reactive

- Route planning based on experience & basic forecasts
- Limited data sources
- Decisions made after weather events occur
- High dependency on individual expertise
- Inconsistent outcomes across fleets
- **Limitations:** Slow, reactive, hard to scale in volatile weather

2. Fully Digital Models (Transition)

Automated | Dynamic | Predictive

- Algorithm-driven auto-routing
- Real-time weather data & satellite inputs
- Continuous route optimization
- Predictive weather modeling
- Faster decision-making at scale
- **Limitations:** Low trust, black-box risk, resistance to full automation

3. Hybrid Model (Best Practice)

AI/Automation + Human Expertise

- Algorithms generate optimal route recommendations
- Human analysts validate & refine decisions
- Combines big data with maritime domain expertise
- Builds trust, reduces risk, increases adoption
- **Role:** Enables smooth digital transformation while managing weather risk

The Hybrid Model is the industry's optimal path forward — combining the speed of AI with the trust, control, and expertise of human decision-makers to navigate increasing weather volatility.

Capitalizing on Digital Weather Intelligence for Commercial Shipping Success

From Forecast to Profit: Driving Efficiency Through Intelligence

1. **Efficiency Through Predictive Routing**
   Leverage hybrid AI-human models to minimize delays, reduce fuel consumption, and optimize speed planning.

2. **Risk Mitigation and Reliability**
   Anticipate extreme weather events using high-resolution forecasts and real-time data streams, ensuring safer voyages and fewer disruptions.

3. **Unlocking New Opportunities**
   Utilize emerging Arctic routes and dynamic routing to shorten transit times and expand market reach.

4. **Data Collaboration as a Competitive Edge**
   Share operational and weather data across the value chain to enhance transparency, reduce emissions, and improve profitability.

5. **Strategic Transformation**
   Move from reactive operations to proactive, digitally optimized strategies—turning volatility into a source of advantage.

The maritime sector is entering an era where resilience, sustainability, and intelligence converge.
By embracing digital transformation today, we unlock a safer, greener, and more profitable future.


ABB

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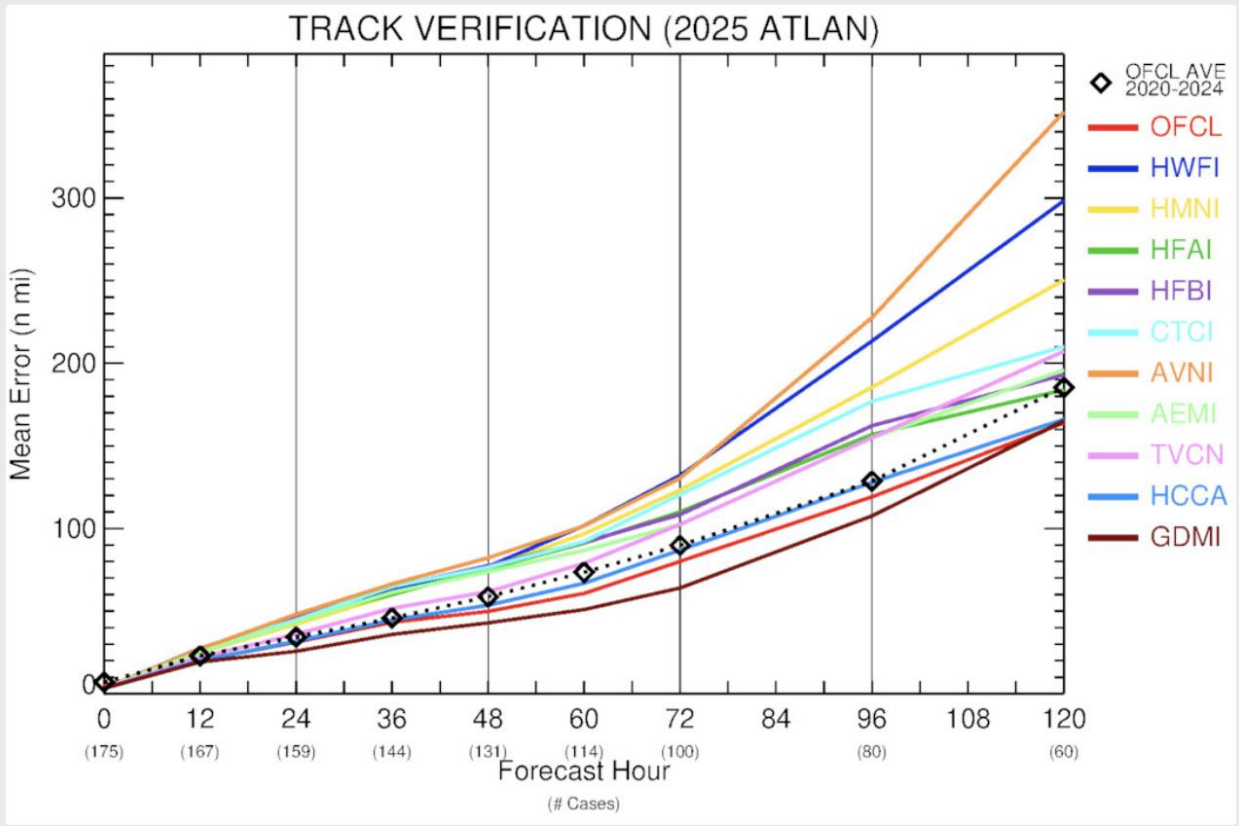
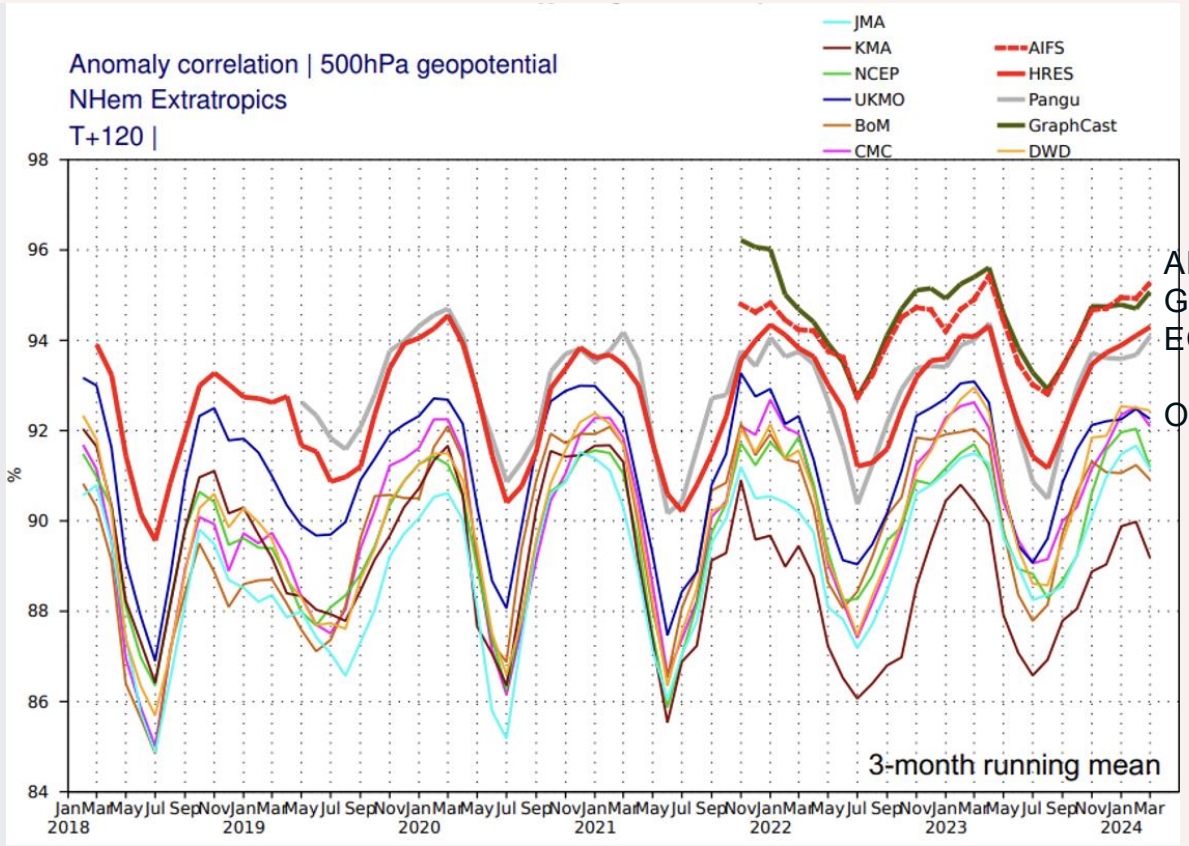
AI Driving Change in Weather Models



2025 Atlantic season hurricane model performance on track accuracy. Credit: Brian McNoldy



ARS Technica reports on 2025 Atlantic Hurricane Season

AI models outperforming traditional numerical models

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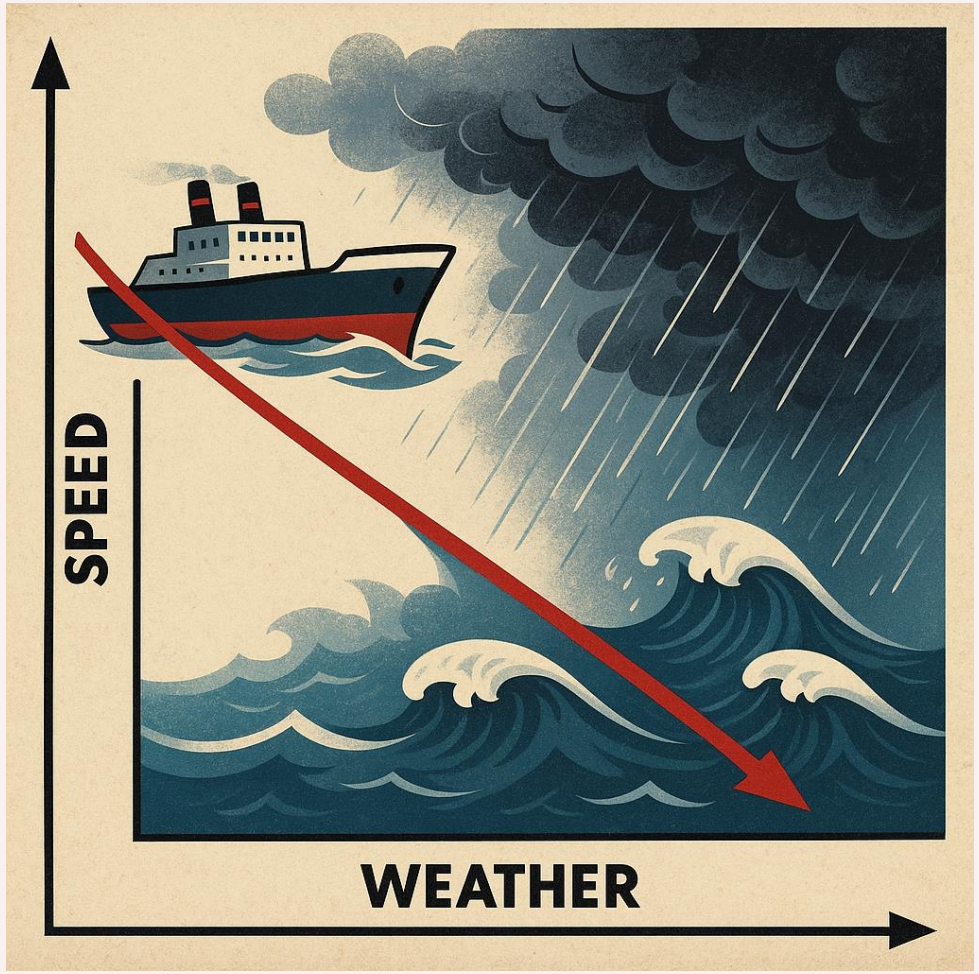
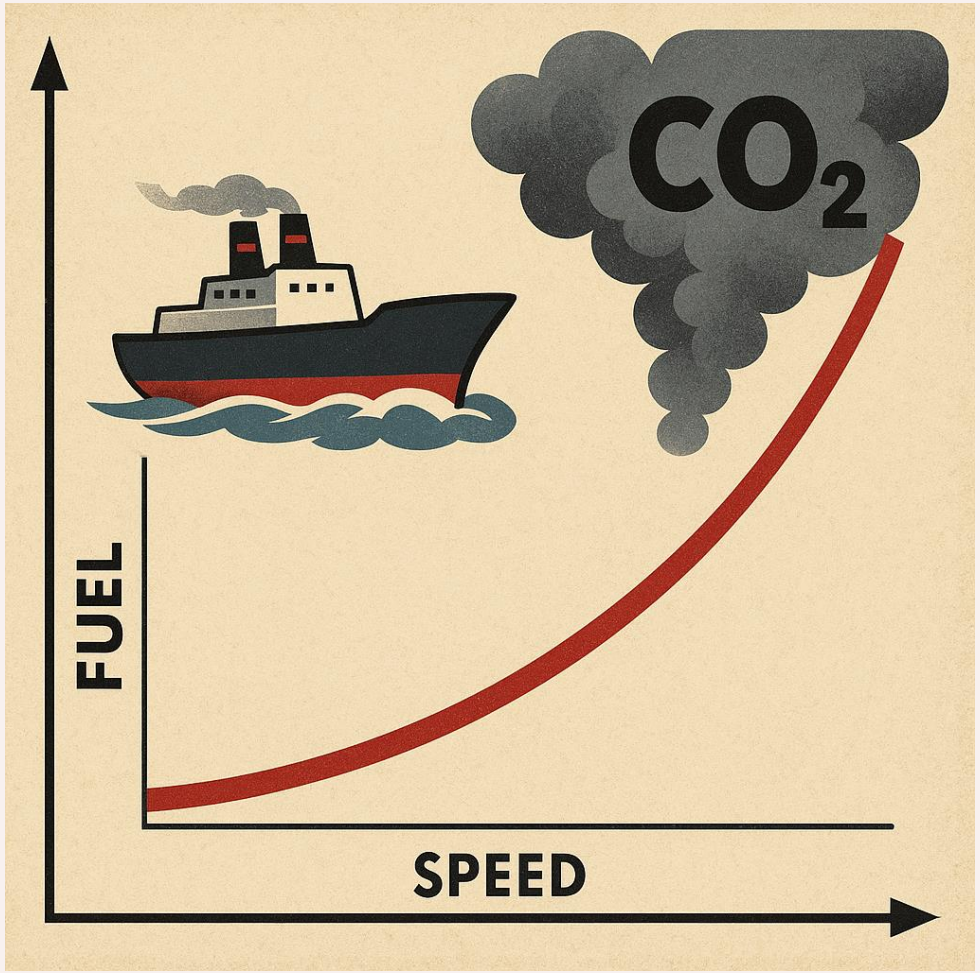
AI Impact on Vessel Models



AI trains on decades of data to understand
How ships behave in various weather conditions



AI trains on decades of data but fine-tuned basis
actual speed/consumption

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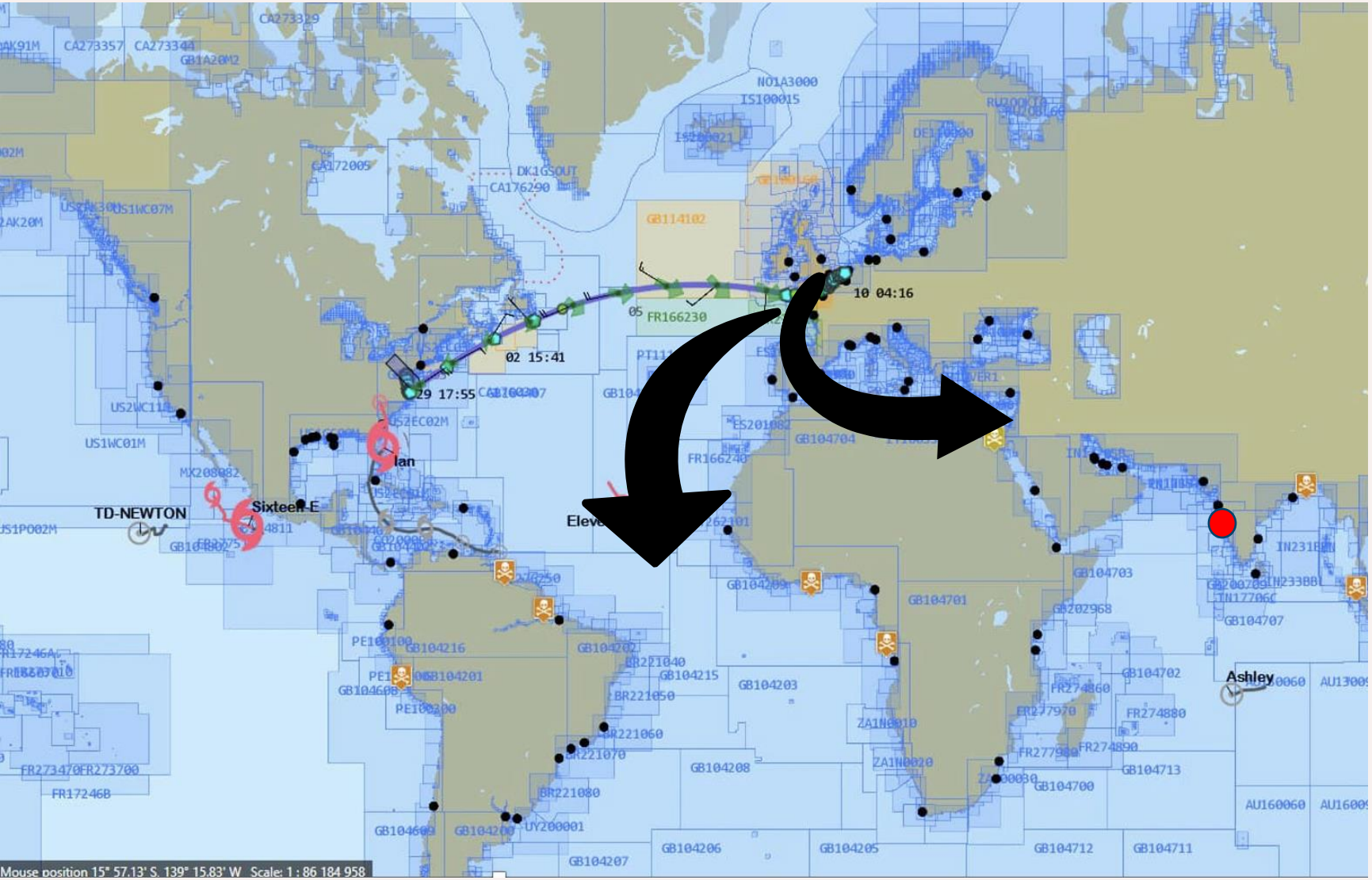
Multi Variable Optimization



- Marine warnings, piracy data ENC's and publications available in Realtime
- Risk evaluation and setting of 'NOGO' areas for AI guardrails
- Leverage world class weather and Ocean current data
- Arrive at a safe, compliant AI assisted voyage optimization
- Human in the loop 24/7

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UPCOMING EVENTS

4 DEC 2025 • ONLINE

Floating energy:
promise, peril, and what comes after

ENERGY MARITIME ASSOCIATES riviera

9-10 DEC 2025 • DUBAI

OFFSHORE SUPPORT JOURNAL CONFERENCE
MIDDLE EAST

osj offshore support journal

16 DEC 2025 • ONLINE

MARITIME REGULATIONS
WEBINAR WEEK

marine propulsion & auxiliary machinery

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