Ship Energy Performance Framework

Case Study: Advanced Operational Profile

Tier 2: Performance Health Check

CASE

Multiple shipowners have requested insights into vessel operations, utilizing Automatic Identification System (AIS) and Hindcast Metocean Data.

METHODOLOGY

For the period under consideration, AIS with ERA5 Hindcast Metocean Data is combined. Using the augmented dataset, various plots and statistics are created.

DELIVERABLES

Graphs include distributions and scatter plots for draft, speed and weather quantities.

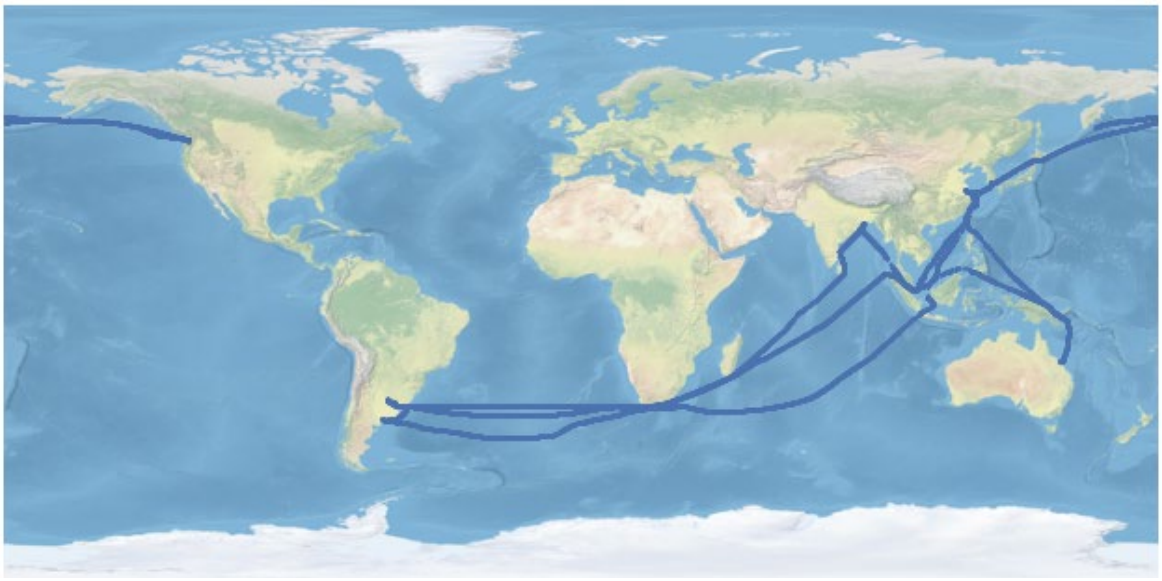

Figure 1: Vessel locations through AIS.

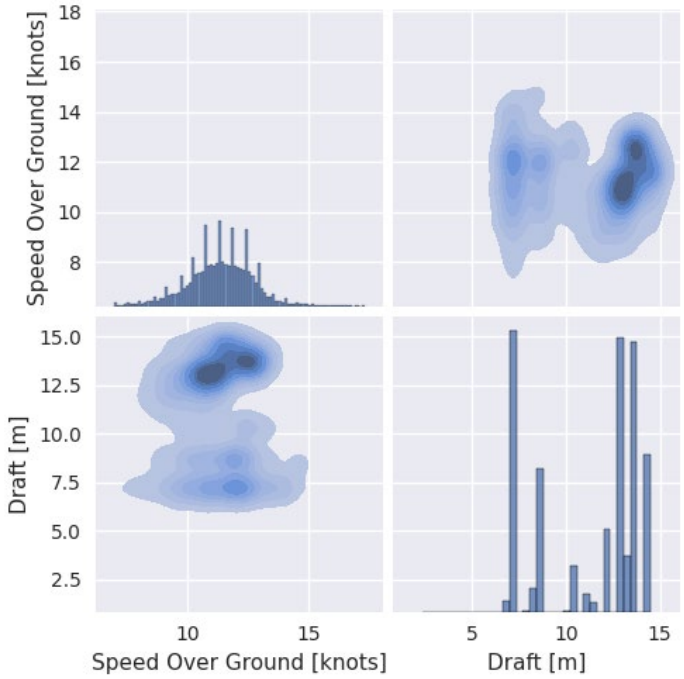

Figure 2: Distribution of speed and draft through analysis of AIS data.

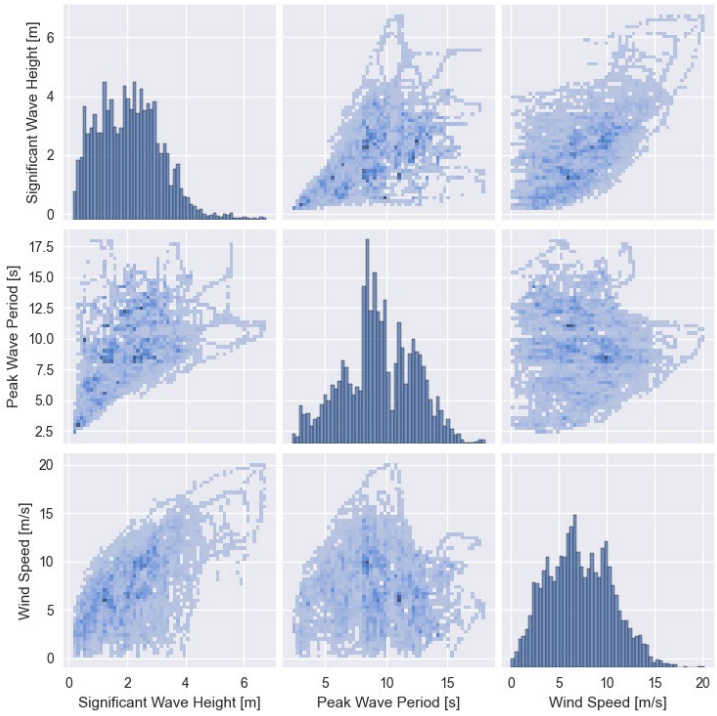

Figure 3: Information on encountered weather conditions during a set period.

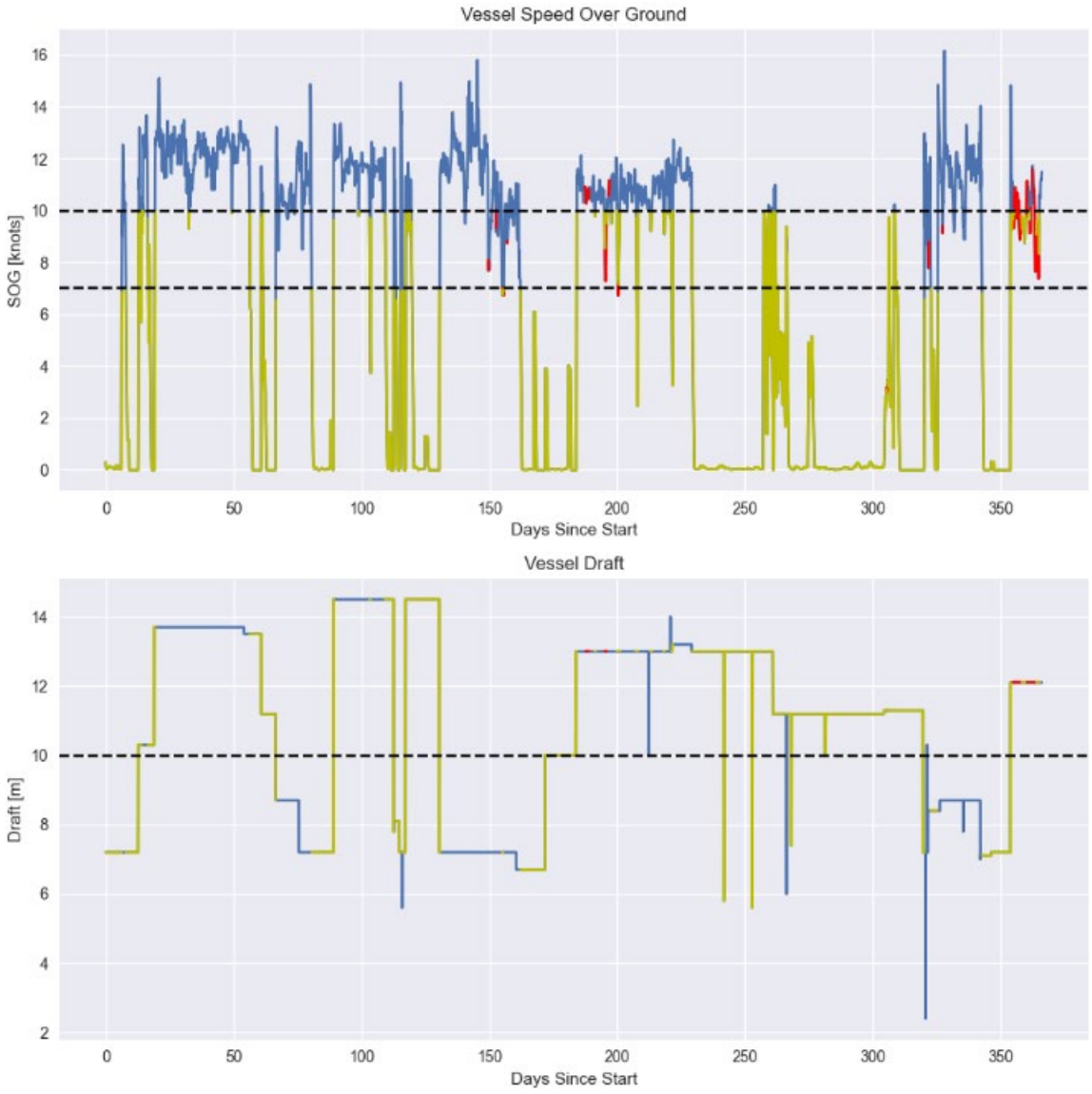

Figure 4: Time series visualization.

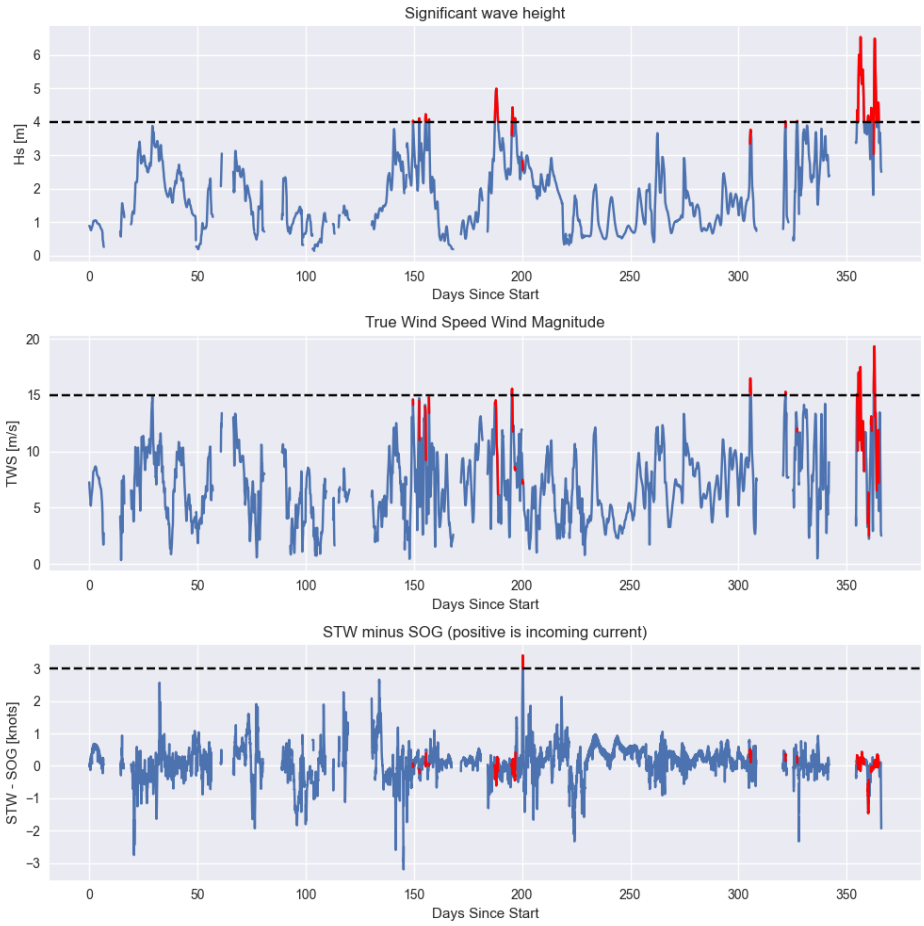

Figure 5: Time series visualization.

CONCLUSION AND RECOMMENDATIONS

- The AIS alone shows what the vessel did. Weather data shows what it encountered. When fused, they can create a high-resolution picture of real-world performance that is almost impossible to achieve with onboard sensors alone — especially across large fleets.
- Operational profiles can provide objective evidence for recognizing operations outside the optimum design range and charter party conditions. Improved transparency helps reduce disputes and can strengthen relationships with charterers and partners.
- Understanding a vessel's operational profile can provide a powerful foundation for improving commercial performance, safety and environmental compliance. This supports more informed decision-making across technical, operational and strategic domains.
- For this reason, it is recommended to be systematically adopted by all companies needing periodic decision reviews to stay competitive.

WORLD HEADQUARTERS
1701 City Plaza Drive | Spring, TX 77389 USA
P 1-281-877-6000
ABS-WorldHQ@eagle.org
www.eagle.org