When efficiency meets volatility

by Craig West, *CEO Europe, Weathernews*

The shipping industry is experiencing a historic period of investment in vessel efficiency. Hull coatings, engine optimisation, alternative fuels, and voyage analytics have all delivered measurable gains. On paper, the modern fleet is becoming leaner, cleaner, and better monitored than at any previous point in the industry's history. Yet, for operators trading through Europe, North and South alike, recent winters have exposed an uncomfortable reality: despite all this investment, external factors are making the outcomes of a voyage harder to control.

Vessel efficiency is ultimately a static quality. Weather, geopolitics, congestion, and regulatory disruption are not. As volatility intensifies, gains achieved through improved engineering, new technologies, and voyage optimisation are increasingly being eroded in real time by wider conditions.

Shipping is therefore entering an era of adaptation, where competitive advantage depends less on achieving ideal efficiency and more on preserving operational and commercial performance when conditions deteriorate.

Not a commercially meaningful term

This tension is becoming particularly visible across key trade corridors, where weather systems, congested ports, and compressed schedules now interact continuously. Recent North Atlantic conditions clearly illustrate the shift. Weathernews' analysis of winter 2025-26 identified conditions across the English Channel and the Bay of Biscay comparable to the severe winter of 2013-14, one of the most disruptive periods in recent decades. Persistent low-pressure weather systems concentrated around critical transit corridors created prolonged operational bottlenecks, leaving vessels with only narrow, unreliable recovery windows between successive weather systems. What proved operationally disruptive was not simply severity but the persistence and concentration of this weather around those commercially critical routes.

Analysis of three winter periods across the Bay of Biscay demonstrates what this means in practice. The winter of 2011-12 recorded three storm events, with the region in storm conditions for approximately 10% of the season. Eight events were recorded during the winter of 2013-14, with nearly half the season spent under storm conditions, including a single event lasting over 20 consecutive days. The winter of 2025-26 recorded 12 separate events, individually shorter but significantly more frequent, with the region experiencing storm conditions for more than a quarter of the season.

All three winters could easily appear in operational reporting under the same description: heavy weather. But "heavy weather" is not a commercially meaningful term. It obscures operational differences that materially affect schedule reliability, fuel performance, and downstream logistics. The persistence of disruption, including how long conditions remain above operational thresholds, can be as commercially significant as peak severity itself. Yet current industry vocabulary still gives operators no consistent basis for measuring, reporting, or benchmarking the difference.

For maritime supply chains, those differences can carry direct commercial consequences. In January 2026, Hapag-Lloyd confirmed a network-wide disruption across Northern Europe, including reduced terminal productivity at Antwerp, Hamburg, and Rotterdam, vessels waiting at anchorage, and inland transport delays, with associated costs passed through to cargo. The result was a direct transfer of weather disruption into inland logistics delays, cargo costs, and schedule instability across connected supply chains.

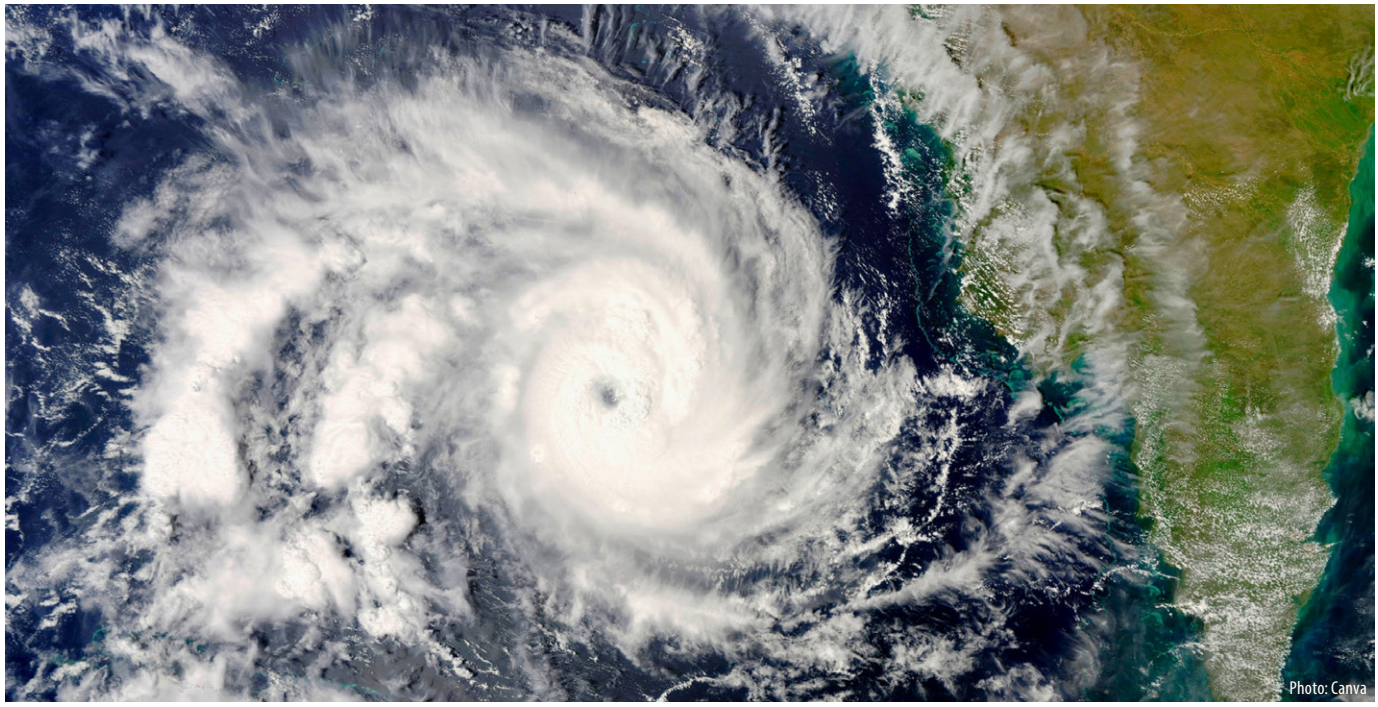
All of this means that a technically efficient vessel can still miss fuel targets, emissions expectations, or schedule commitments if voyages become dominated by rerouting, prolonged waiting periods, or repeated speed adjustments. In one Weathernews case study involving a vessel travelling from the UK to the Gulf of Mexico, the ship drifted for four days because no routing option could maintain schedule without exposing the vessel to materially greater weather risk.

Undermined – operationally, analytically, and commercially

At that point, shipping's challenge becomes broader than weather routing alone. In today's operating environment, risk increasingly behaves like a chain reaction rather than a discrete event. A weather deviation adds time. Time increases bunker consumption. Higher fuel burn increases emissions exposure and operating costs. Delays trigger schedule recovery measures, which affect Carbon Intensity Indicator (CII) performance. Weaker CII ratings can influence charter attractiveness and future commercial positioning.

Events of this kind also expose a growing weakness in how efficiency itself is measured. Charter party frameworks have traditionally excluded periods of severe weather from performance warranties on the reasonable assumption that such conditions are exceptional. But as vessels encounter prolonged disruption more frequently, a larger share of voyages increasingly falls outside the performance measurement window altogether.

For operators investing heavily in efficiency technologies, this creates a significant commercial problem. Performance may be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as designed, but if it cannot be measured consistently under real operating conditions, proving return on investment becomes harder. Volatility, therefore, risks undermining efficiency gains not only operationally but analytically and commercially as well.

When operators try to manage those consequences through performance claims or weather clauses, they end up relying on language that arbitrators already consider inadequate. Specialist arbitrators have noted cases in which deck logs and weather-routing analyses diverge by at least one Beaufort force over most of a voyage, forcing resolution based on competing narratives rather than a common benchmark.

The challenge intensifies further as geopolitical disruptions reshape global trade patterns. Recent rerouting around the Cape of Good Hope, characterised by some of the most challenging wave conditions in the world, illustrates how geopolitical disruption can rapidly alter weather exposure and operational risk simultaneously. Weathernews analysis of accumulated wave energy off South Africa across the June-to-August period since 1986 shows variation of more than 60% between the mildest and most severe seasons on record. Thousands of tankers are now regularly transiting that route, many with limited historical exposure to it, all operating within a market that still lacks a shared framework for understanding the severity of what they are likely to encounter.

This is the gap that objective severity measurement begins to address. The Accumulated Wave Energy Index, developed by Weathernews, measures both the intensity and persistence of ocean conditions over time, benchmarked against historical data back to 1979. The principle is analogous to hurricane severity scales that transformed decision-making around tropical cyclones: by creating a consistent reference point, the conversation moves from subjective description to quantified comparison.

Applied to the Bay of Biscay data, it makes immediately visible what voyage language conceals: those three winters, though all described as heavy weather, were operationally very different. Applied to South African waters, it gives operators transiting the Cape a defensible basis for contextualising seasonal variability before committing to a route, rather than discovering its significance during disputes.

Only as durable as the operating environment

But measurement alone is not enough. The next operational challenge is integration. Across much of the industry, weather analysis, route optimisation, emissions monitoring, and vessel performance assessment are still managed separately, often by different teams working from different assumptions and data sets. If adaptation is now the goal, fragmentation increasingly becomes the barrier.

The challenge is no longer simply forecasting disruption more accurately but understanding how environmental conditions continuously interact with vessel performance, fuel consumption, emissions exposure, and commercial obligations throughout the voyage itself. That requires operational systems capable of connecting those variables in real time rather than managing them separately. The operators most capable of protecting performance in volatile conditions are likely to be those able to connect those decision layers earlier and more consistently.

For decades, shipping sought to optimise performance around expected conditions. Increasingly, the challenge is preserving operational and commercial reliability despite unstable conditions. For operators across various regions, including the Baltic, where supply chains are tightly integrated and schedule reliability is commercially critical, these concerns are already visible in congestion, cargo cost adjustments, and charter disputes.

Efficiency gains are only as durable as the operating environment they are achieved in. The industry has spent a decade optimising for ideal conditions. The next decade will be defined by those who can perform, and prove it, when conditions are anything but. ■