Weather Window Planning and Analysis

Metocean Decision Making and Forecast Warranty System - Execute with Confidence

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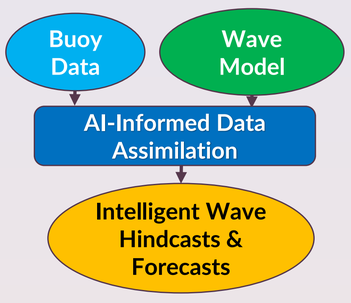
- Offshore planning with confidence
- Operational weather window prediction
- Exclusive warranty products for missed days
- Increased safety for coastal and offshore activities
- Better data lowers risk and saves money



A new modeling approach:

- Ingest operational forecasts
- AI-driven data assimilation and historical bias correction
- Significant gains in accuracy and run efficiency

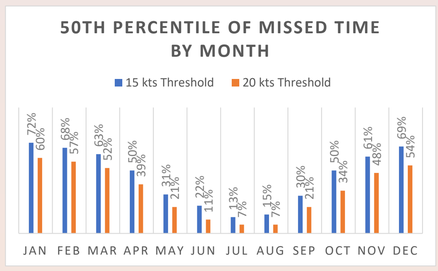
Weather Window Analysis

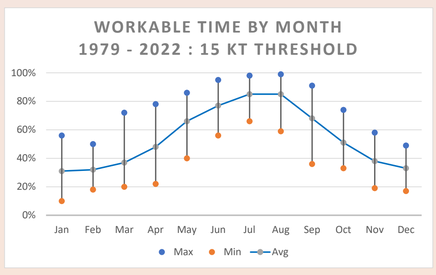
Weather Window evaluates the percent workable (or missed) time for a given period. Available parameters include:

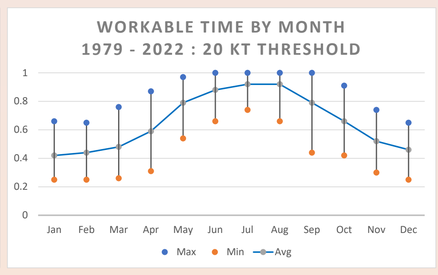
- Multiple wind speed and wave height thresholds
- X-hour persistence
- Percentile distribution for results

Output includes:

- Annual, monthly, weekly or daily analyses
- Tabular and plotted statistics
- Areal statistics on the map







Weather Window Parametric Insurance

Fast access to cash when adverse marine conditions cause project delays and financial losses during your planned operational window.

Developed with marine engineers, weather forecasting and specialty insurance experts, to provide a solution to risks currently unprotected.

How it Works

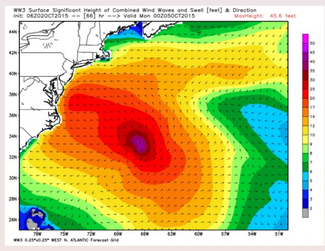
A pre-agreement to make a defined payment upon the occurrence of a triggering event rather than indemnifying the pure loss.

1. Agree on index to cover your location and which wind and wave critical thresholds to define an operational window
2. We monitor the parametric index using the wave and wind published data
3. When the index is triggered, you receive a **Pay-out in Days**

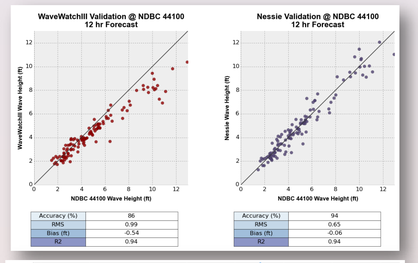
Wave Modeling Re-invented

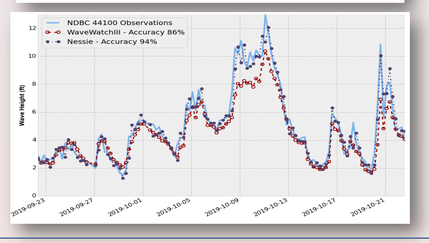
Standard Wave Models magnify and propagate wind forecast errors through the sea and swell wave systems

- We have learned how to correct wave system errors through Data Assimilation
- Now using Machine Learning to identify and correct for weather system modeling error



12-h Forecast Validation

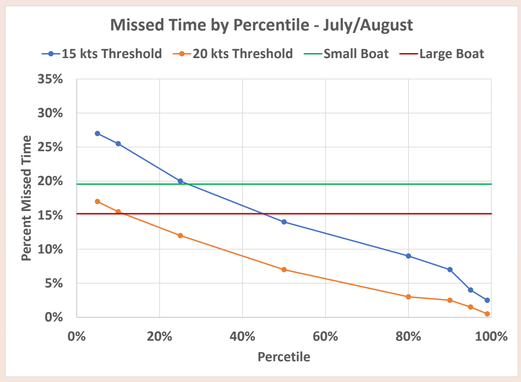




Example Application

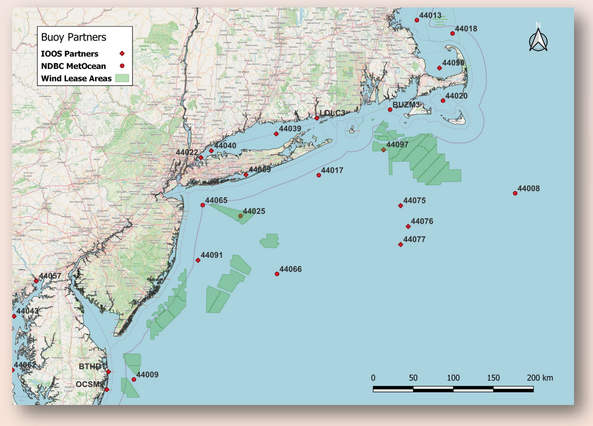
- Approximate 2-month offshore hydrographic survey in the northeast
- 1 large and 2 small boats performing the survey
- Used 20 kts and 15 kts, respectively for go/nogo criteria
- Performed Weather Window analysis using survey criteria
- 1.5 m wave height threshold

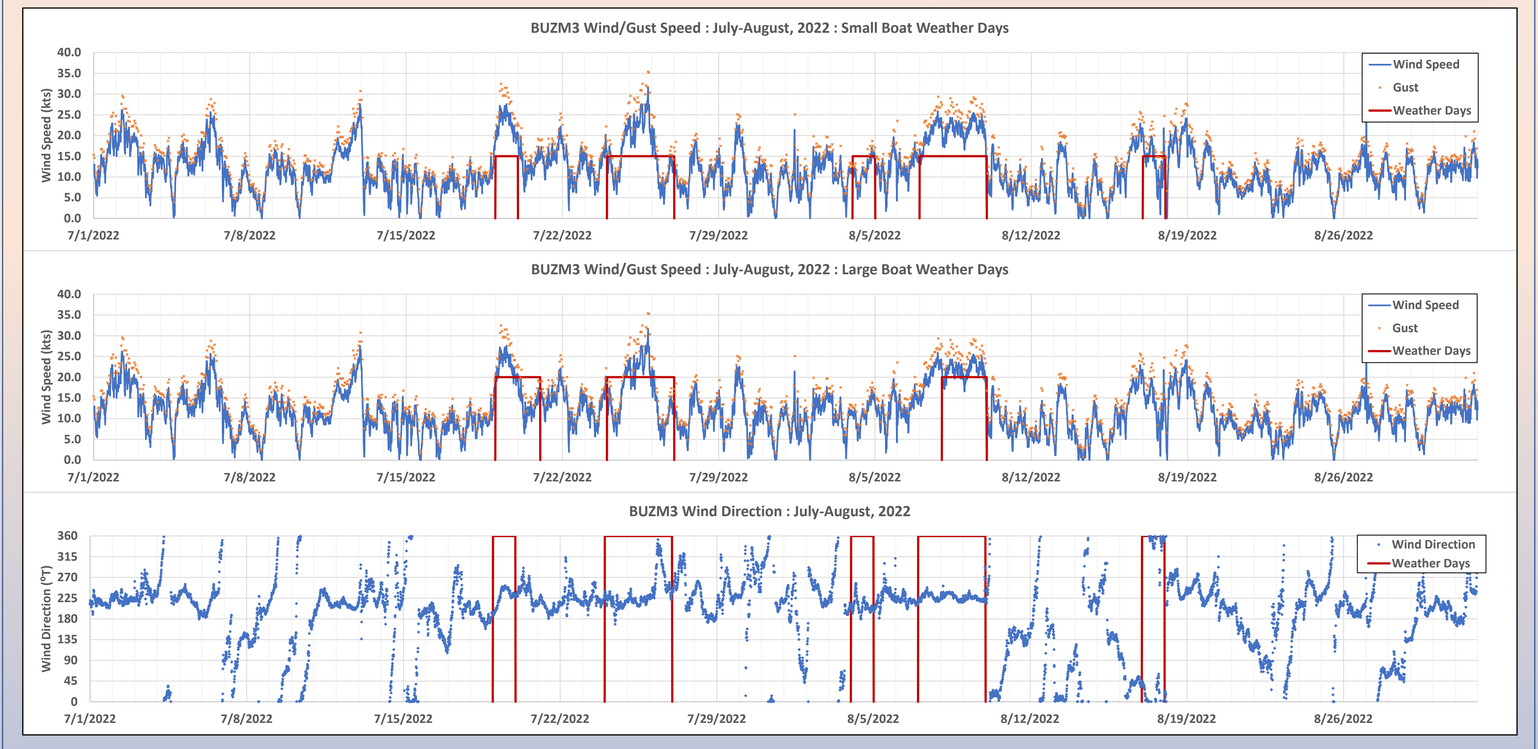
Weather Days			
Date	Small Boat 1	Small Boat 2	Large Boat
7/19/2022	X	X	X
7/20/2022			X
7/24/2022	X	X	X
7/25/2022	X	X	X
7/26/2022	X	X	X
8/4/2022	X	X	
8/7/2022	X	X	
8/8/2022	X	X	X
8/9/2022	X	X	X
8/17/2022	X		



Results

- Criteria assessed at 50th percentile
- Model predicted 8 and 11 missed days for large boat and small boats respectively
- Actual missed days were 7 and 9 for the two boat lengths





Discussion

- Analysis used 3-hour persistence for 15 and 20 kts thresholds
- July and August 2022 appear to be consistent with statistical norm
- The number of missed days did not exceed statistical norm at 50th percentile
- Comparison of the predictions to the actual missed days indicate analysis is robust

Application Results		
Description	Small Boat	Large Boat
Actual Missed Days	9	7
Total Program Days	46	46
% missed	20%	15%
WW est. % missed	23%	17%
Est. missed days	11	8

1 IES Innovative Environmental Science
An Ocean and Coastal Environmental Engineering and Metocean Consulting Firm

2 WaveForce technologies
Introducing a New Paradigm in Metocean Modeling: Intelligent Hindcasts and Forecasts

3 SKYLINE PARTNERS
Forecast Accuracy Parametric Insurance: Immediate Pay-Out for Missed Operational Days

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