Riding the Waves: Evaluating wind estimates from a low-cost wave buoy in the Mississippi Bight

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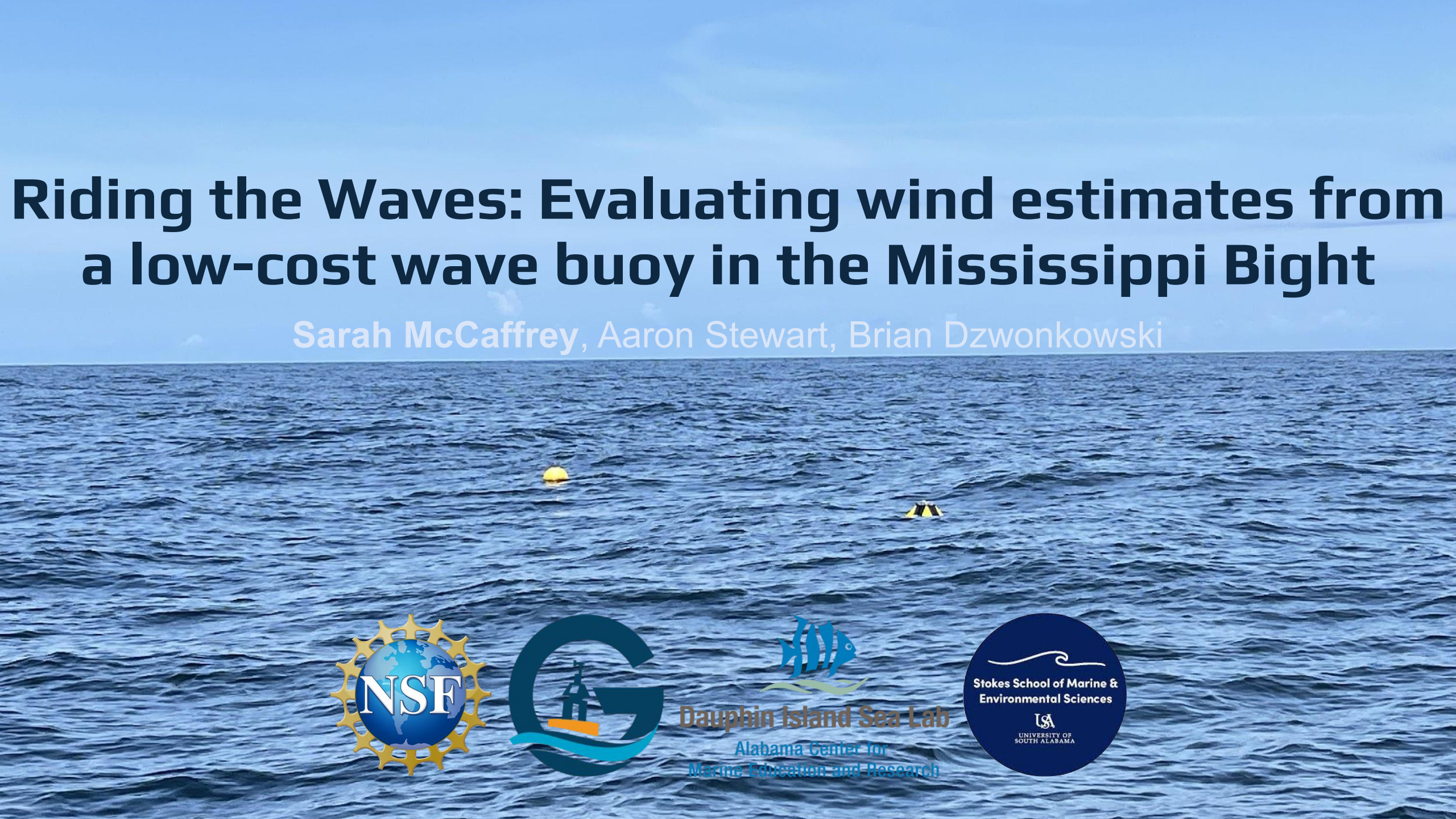
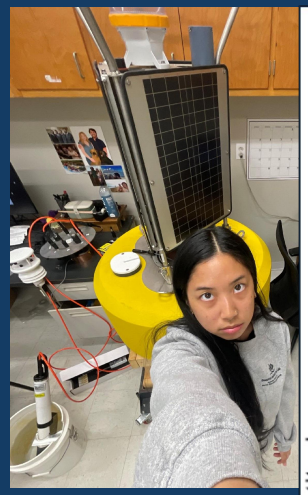


Background

- The wave buoy (Spotter Buoy) is low-cost and easy-to-deploy
- It captures real-time data: wave spectra, wind speed and direction (estimates), sea surface temperature, and barometric pressure
- No previous comparisons done in the Gulf
- We are interested in seeing how accurate its wind estimates are in comparison to a NexSens CB-650 data buoy (WE-CP buoy) equipped with an anemometer

Methods

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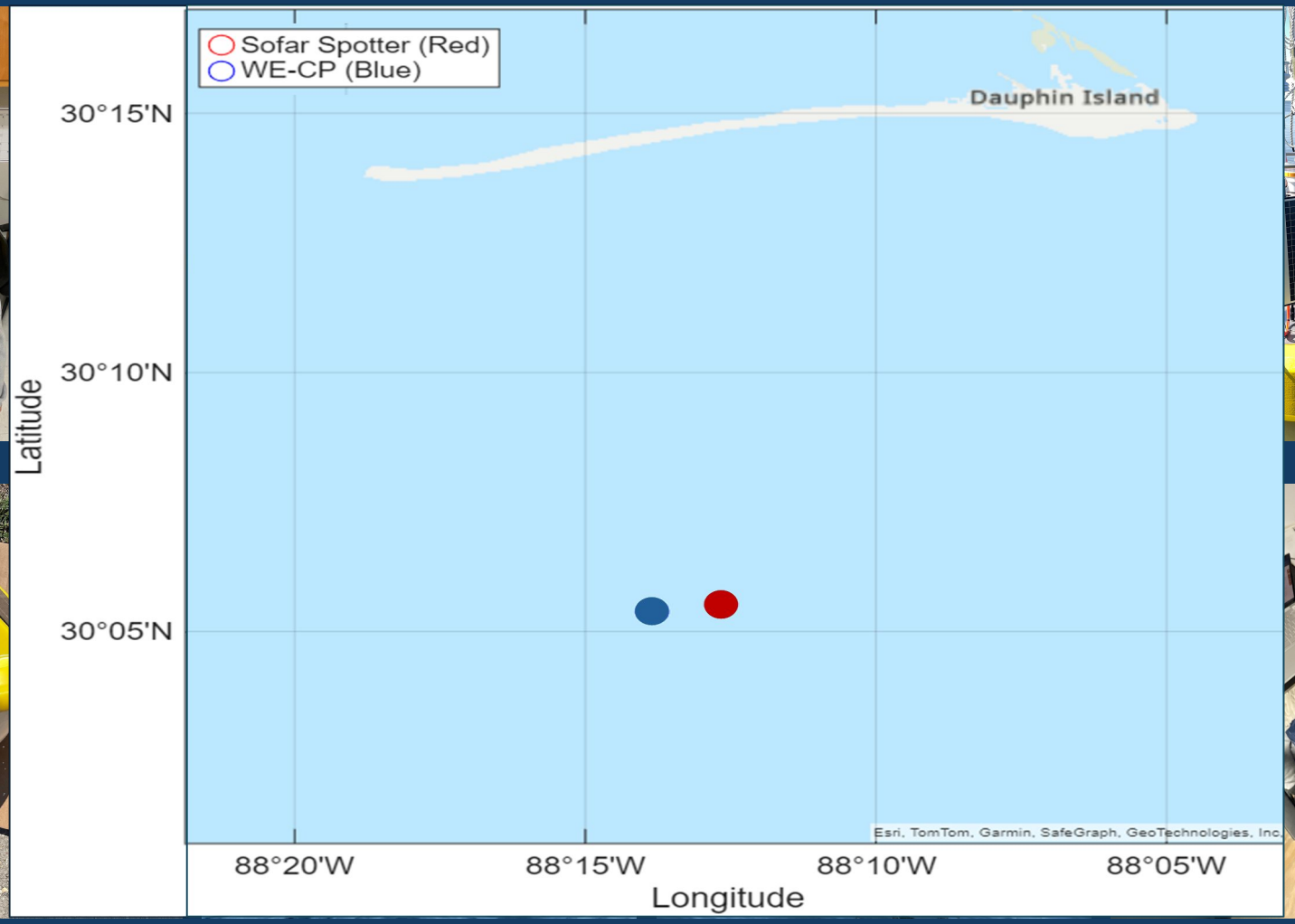
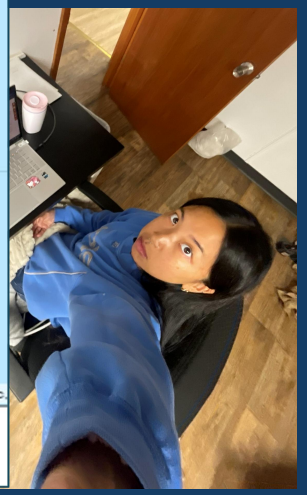
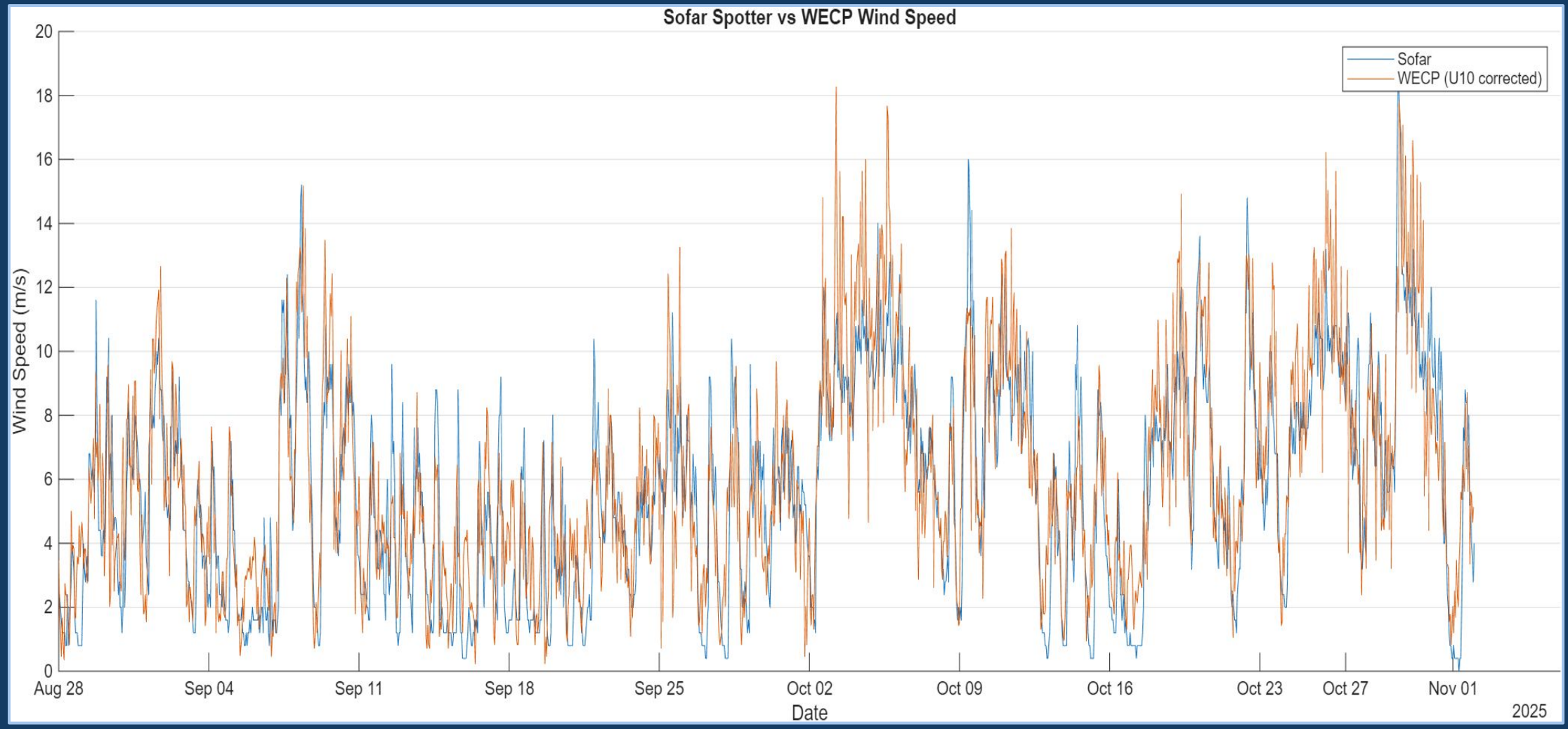

Sofar Spotter (Red)
WE-CP (Blue)
Dauphin Island
30°15'N
30°10'N
30°05'N
Latitude
88°20'W
88°15'W
88°10'W
88°05'W
Longitude
Esri, TomTom, Garmin, SafeGraph, GeoTechnologies, Inc,



Results


Sofar Spotter vs WECP Wind Speed
Sofar
WECP (U10 corrected)
Wind Speed (m/s)
0
2
4
6
8
10
12
14
16
18
20
Aug 28
Sep 04
Sep 11
Sep 18
Sep 25
Oct 02
Oct 09
Oct 16
Oct 23
Oct 27
Nov 01
2025
Date

Conclusions

- So far, both datasets show strong overall agreement.
- Results suggest the Spotter could be a reliable platform for wind-speed measurements
- However, the limited dataset (late August–early November) restricts evaluation across seasons and extreme conditions.
- On-going deployment allows for more validation.
- Future work will include statistical analysis (e.g., correlation, RMSE, bias) to quantify performance differences.

Acknowledgements

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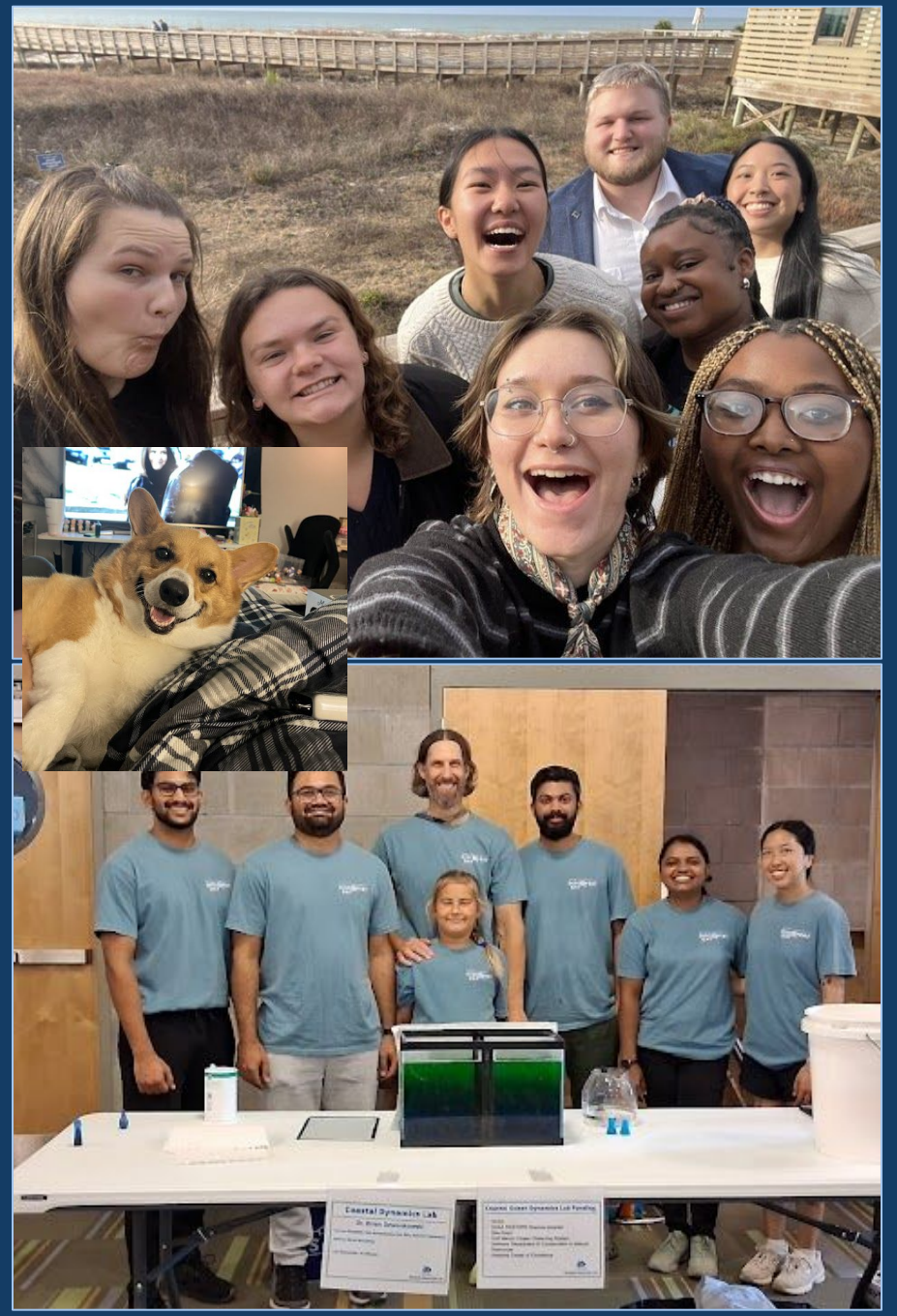

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