Determining the Real Measurement Uncertainty of Floating LiDAR

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Intro

A major challenge to effectively using FLS, specifically related to the cost of finance, is the determination of a reasonable and representative measurement uncertainty.

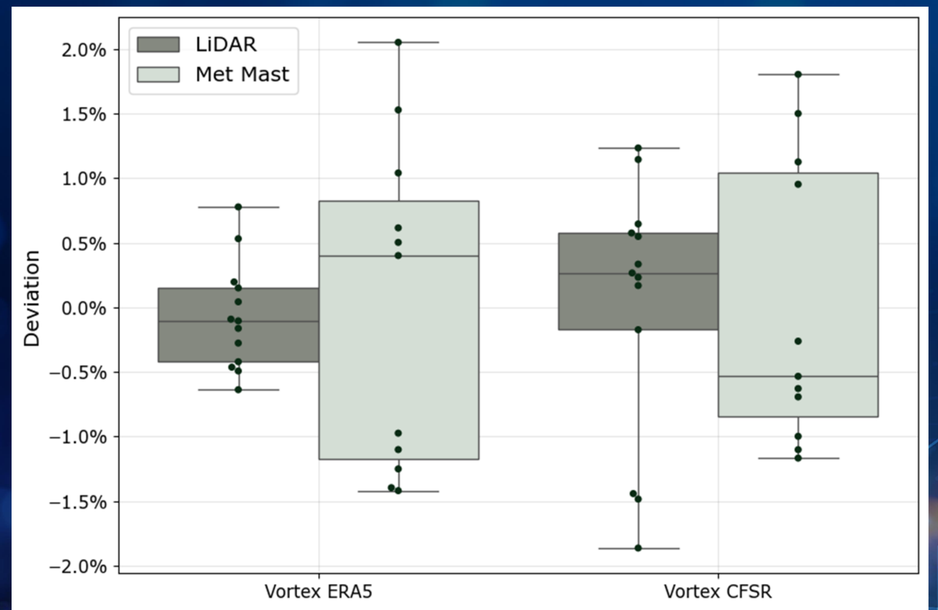
Objective

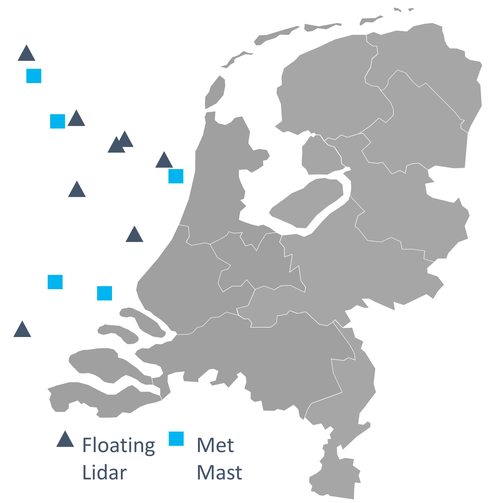
Our objective is to demonstrate the reliability of FLS measurements compared to mast measurements by analyzing relative deviations from mesoscale maps for both FLS and masts through a Joint Industry Project.

Method

- Publicly available data and energy yield assessments.
- The variation datum is adjusted such that the average is zero.
- Standard deviation of the variation is calculated for each measurement type.
- Mast dataset standard deviation used to normalize the LiDAR output.

Deviation between measurements and mesoscale maps is identified to be more consistent for FLS than for met mast datasets.





Mast normalized relative deviation of measurements from mesoscale map			
Technology	No. Data Sets	Deviation (Vortex ERA5)	Deviation (Vortex CFSR)
FLS	11	**0.31**	**0.80**
All Masts	11	1.00	1.00
FLS	11	**0.33**	**0.54**
Masts >50m	6	1.00	1.00

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