



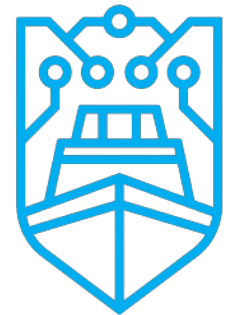
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AIS Data Analysis: Reality in the Sea of Echos

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MariCybERA

AIS Data Analysis: Reality in the Sea of Echos

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Agenda

Motivation

Methods

Results



Motivation

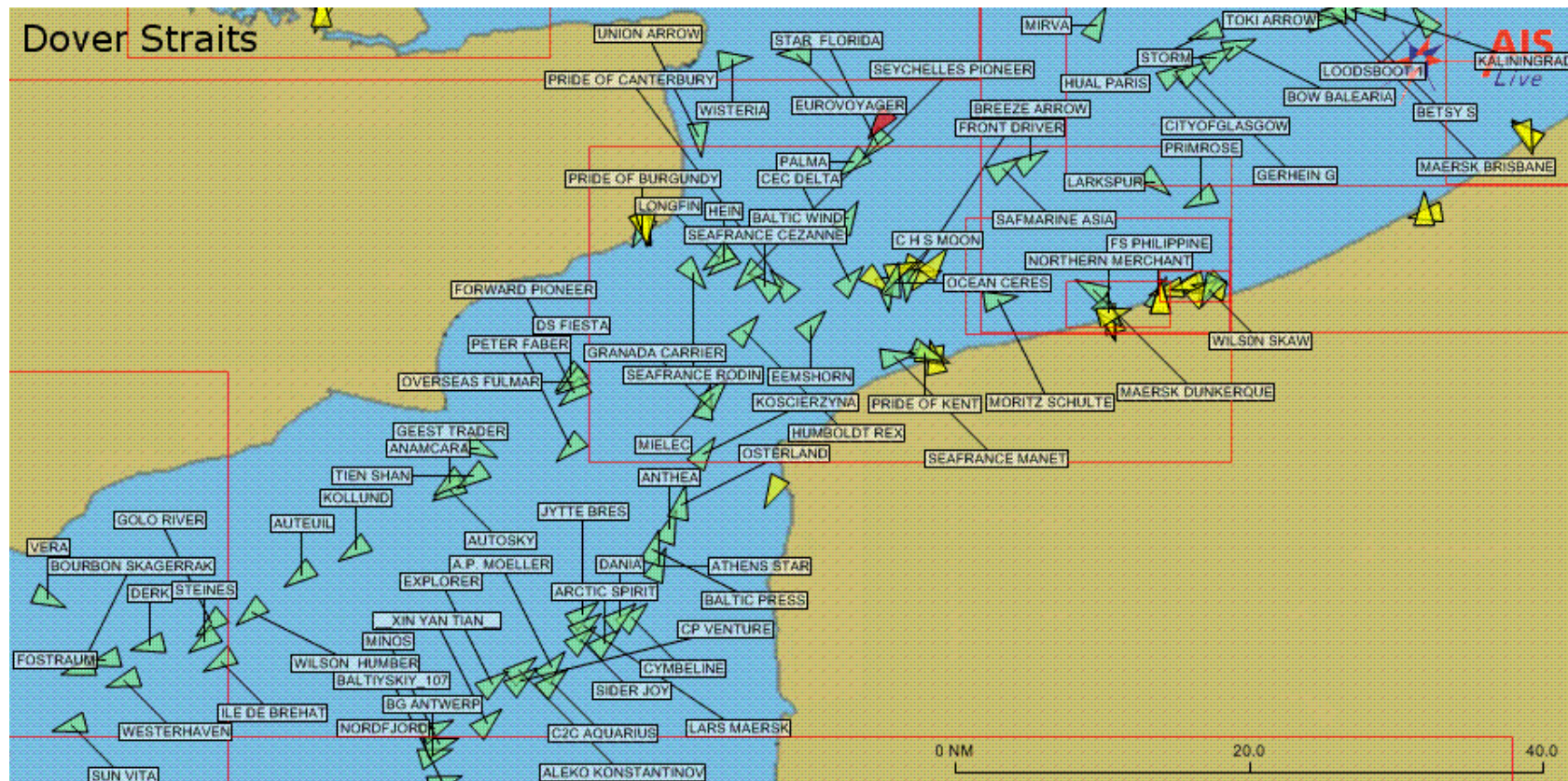
There is room for improvement in the maritime sector regarding cyber security.

The research community lacks openly available real-life AIS data.

We were interested in the details of the collected data.



Automatic Identification System (AIS)

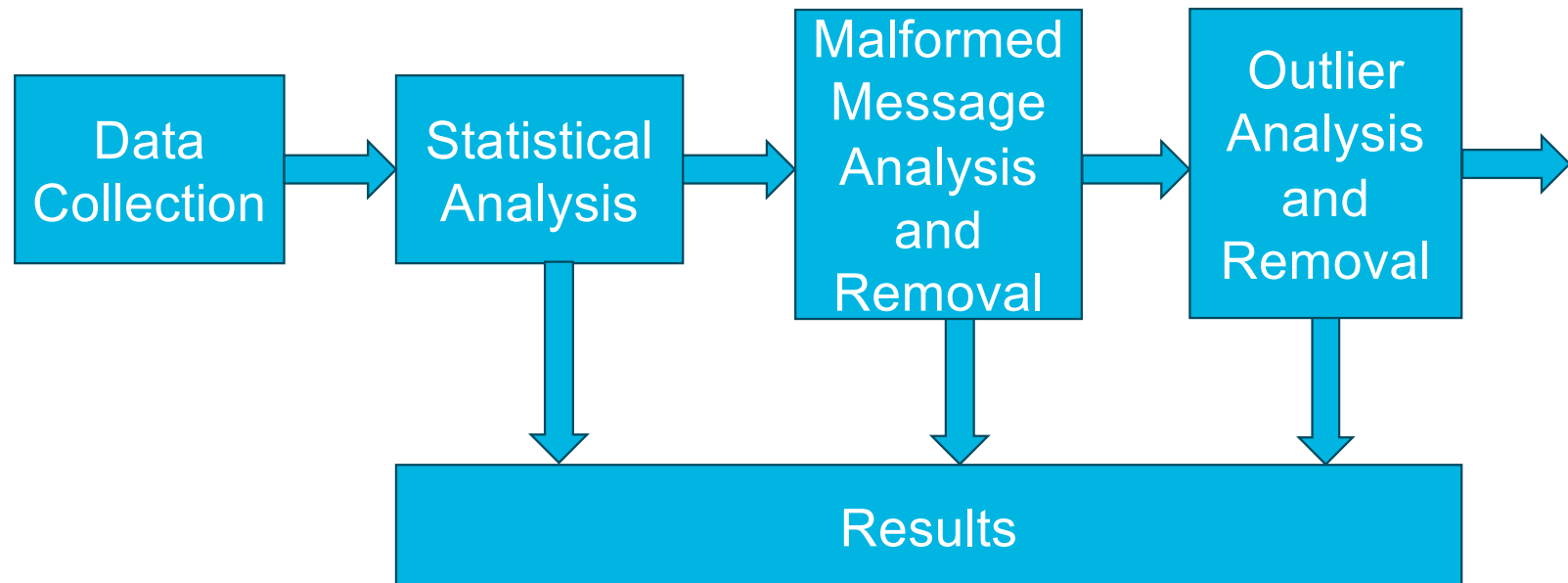


https://upload.wikimedia.org/wikipedia/commons/d/d4/AIS_Manche_Est.png

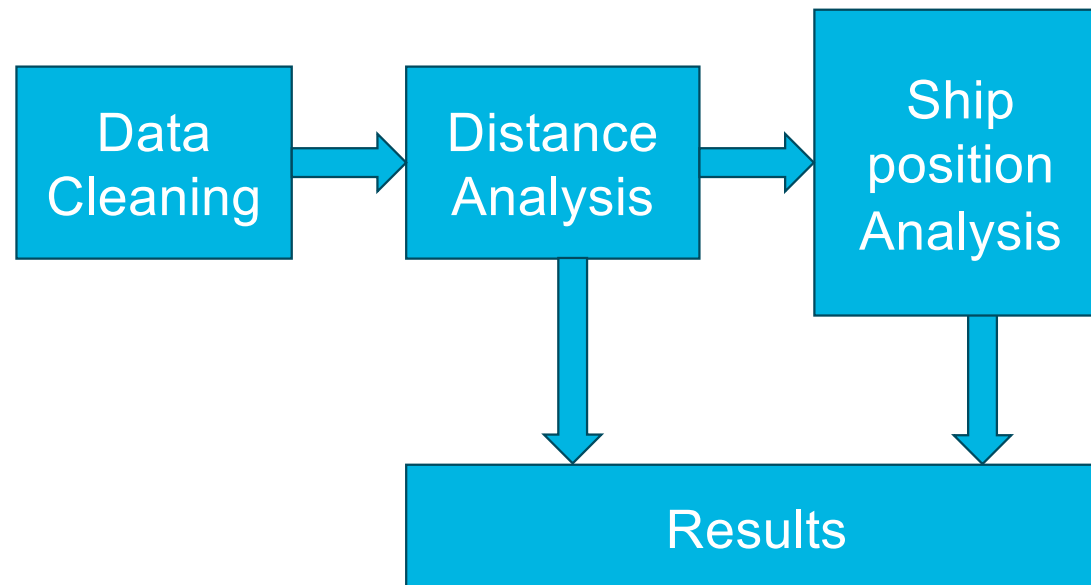
Method - Data Collection



Method - Data Processing



Method - Data Analysis



Results – Overall analysis

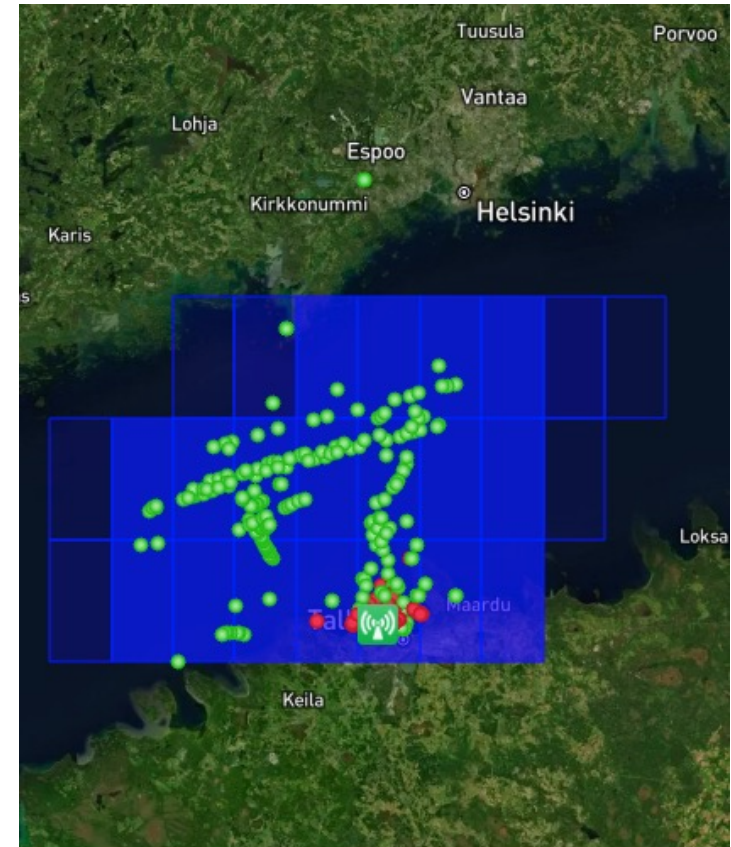
181 Day long openly available data

71,251,552 AIS Messages

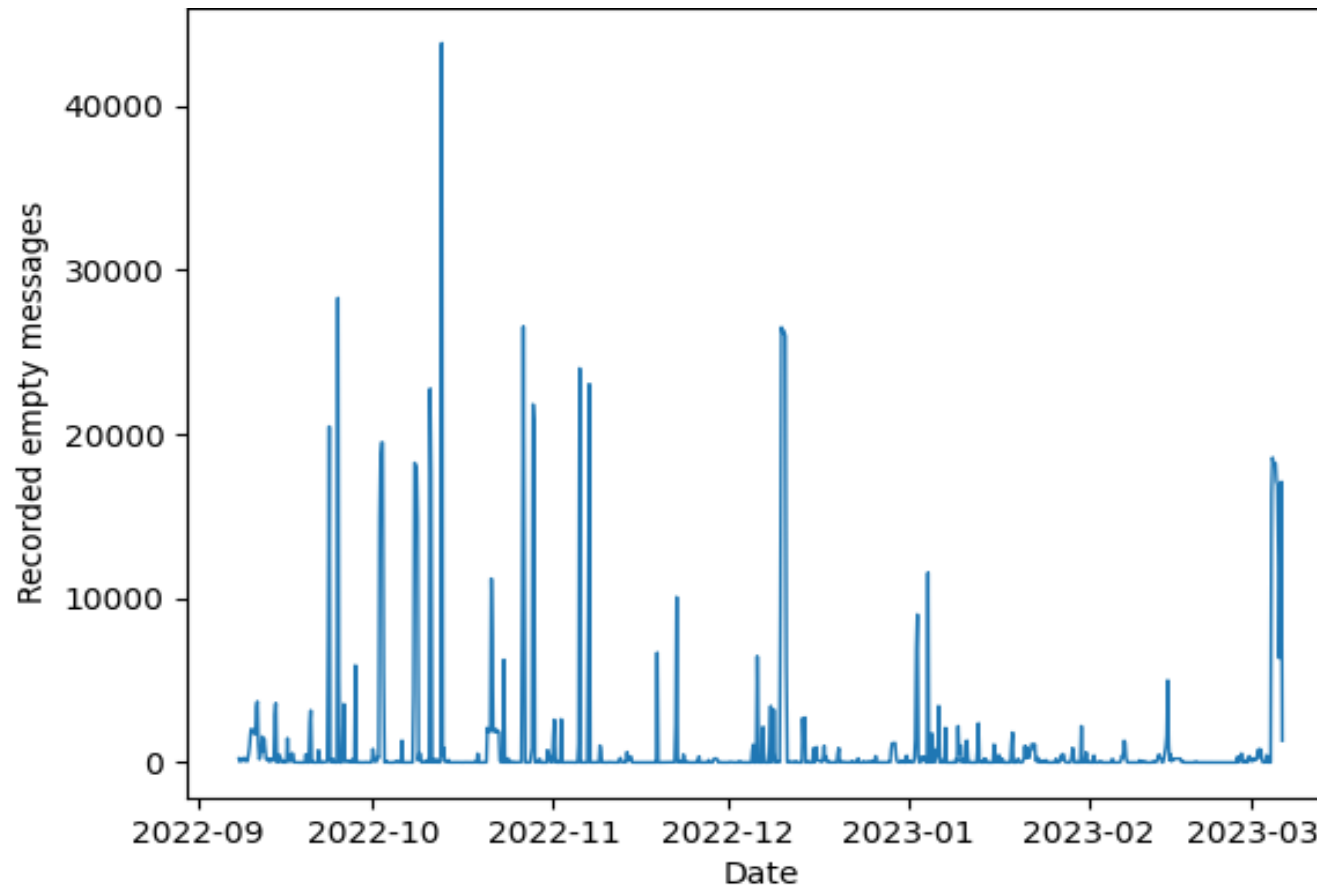
1,058,784 Malformed message

342,301 Out of scope (Error message)

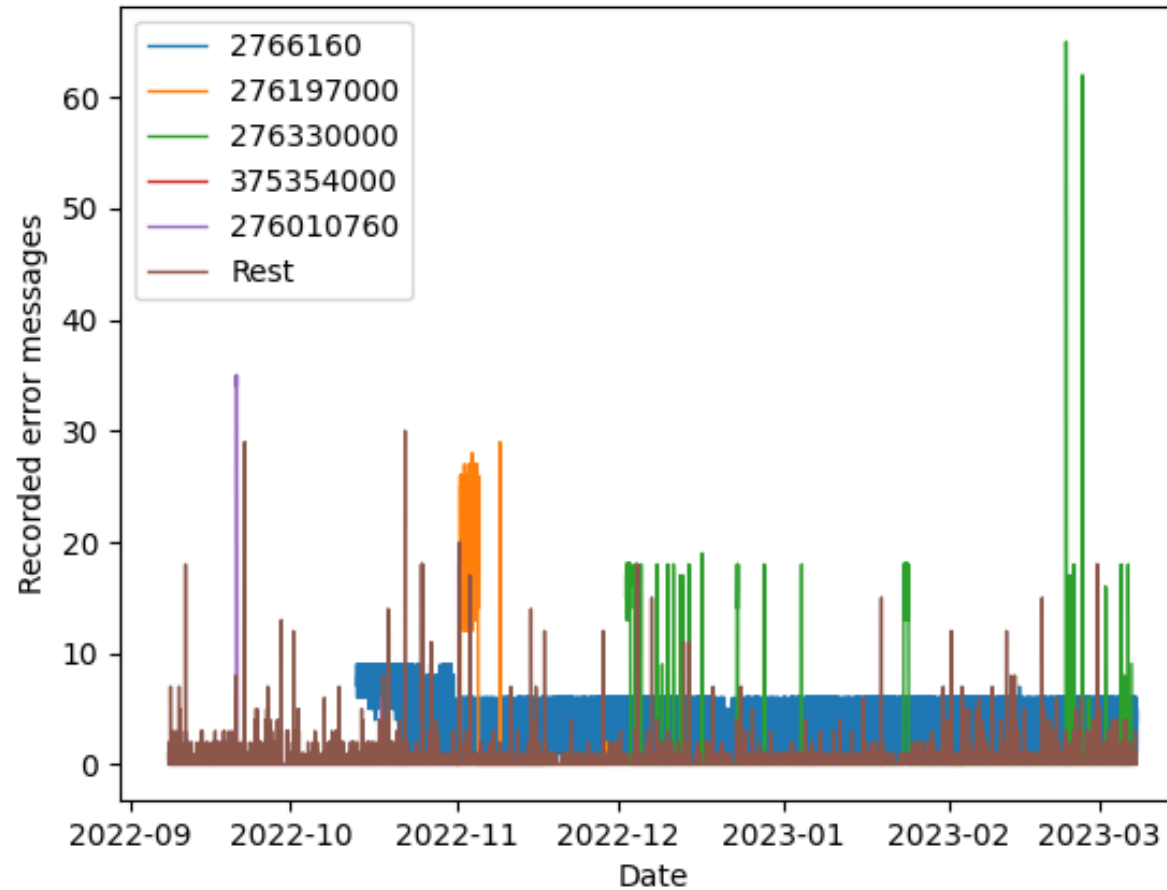
3,779 unique MMSI numbers



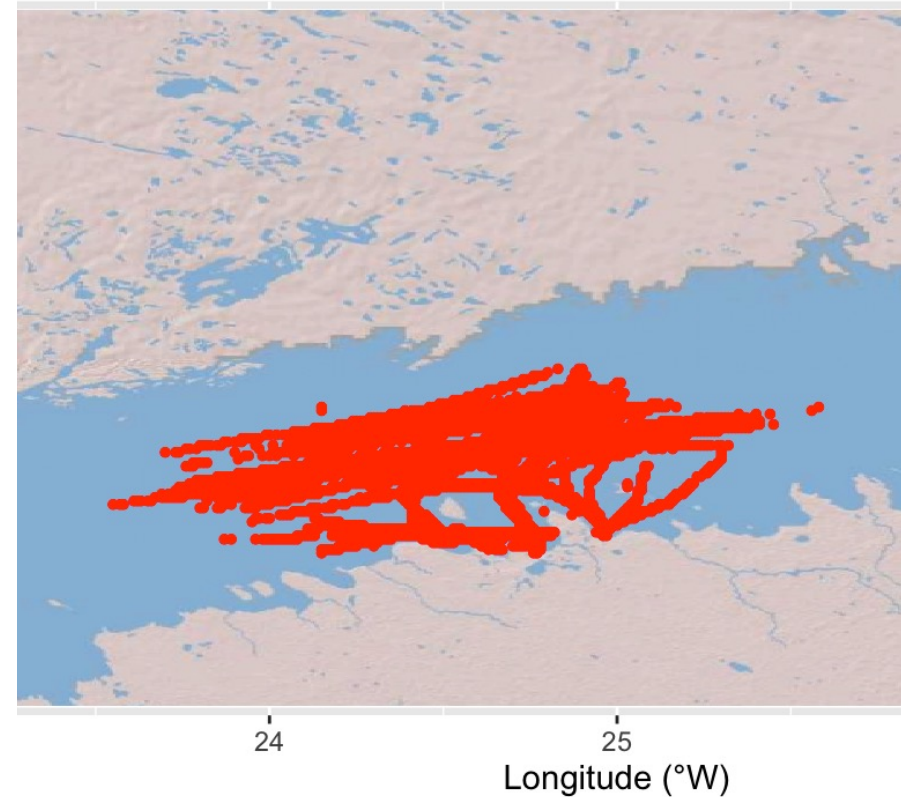
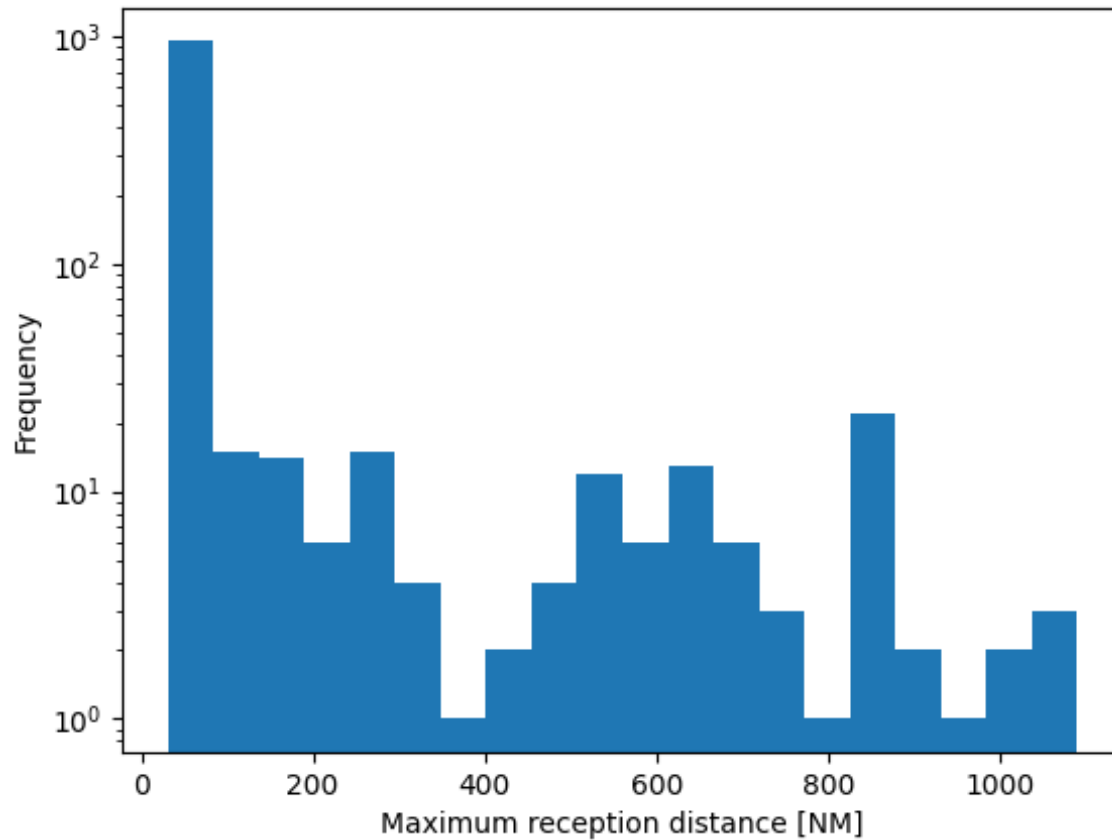
Number of malformed packets - 4 hours



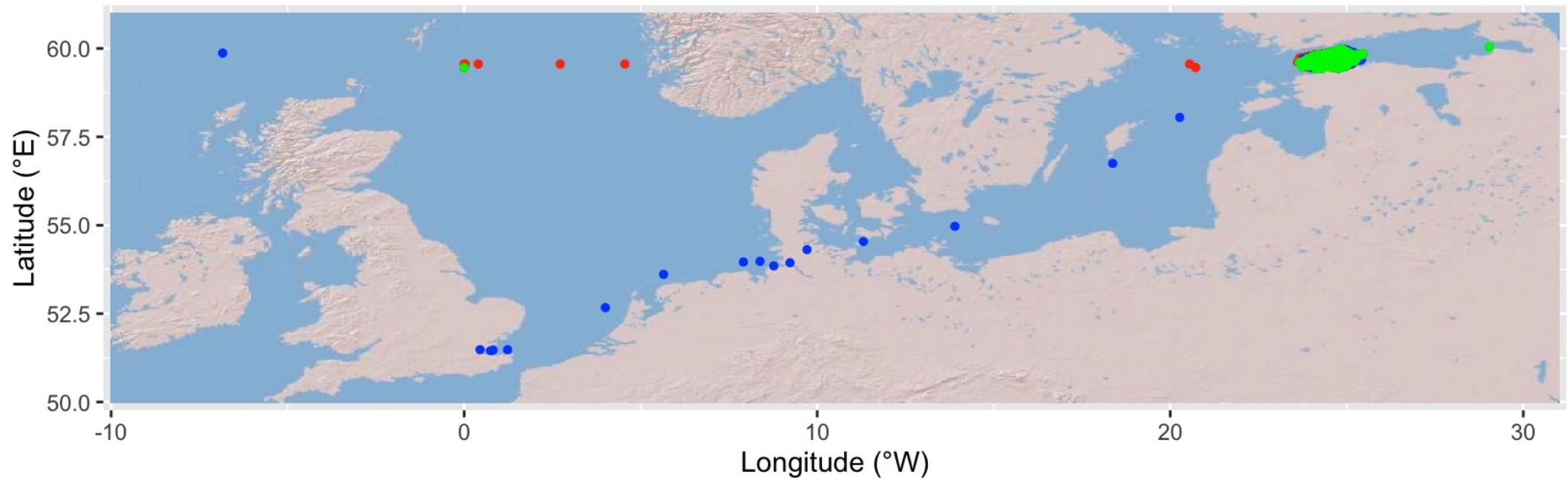
Number of outlier messages



Results – Distance Analysis



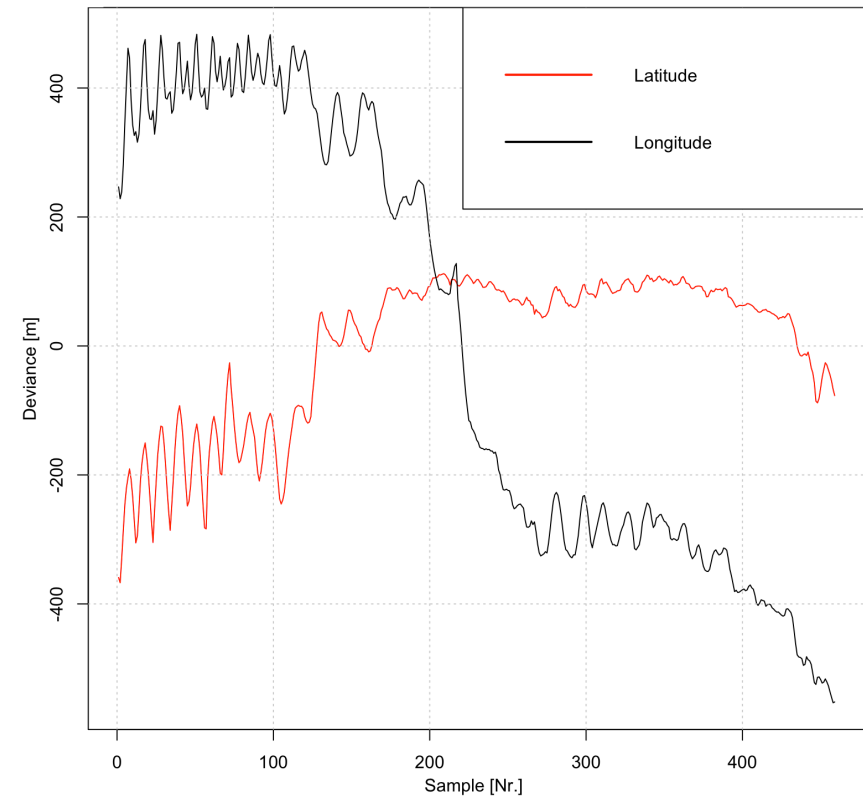
Results – Distance Analysis



Results – Ship behaviour analysis



Results – Ship behaviour analysis



Conclusion

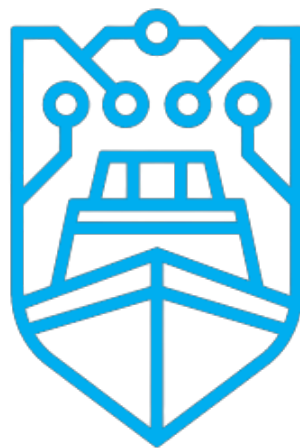
We recorded and published an openly available AIS dataset.

We analysed malformed and error messages.

We analysed the reception distance and found anomalies.

We analysed the ship's behaviour and found characteristics.





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Thanks for your attention!

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<https://maricybera.taltech.ee/>

