

Sustainable Sea Transport Talanoa, 14th–18th July

Applications of AIS data and its analysis for
quantifying the impact of shipping in the
South Pacific

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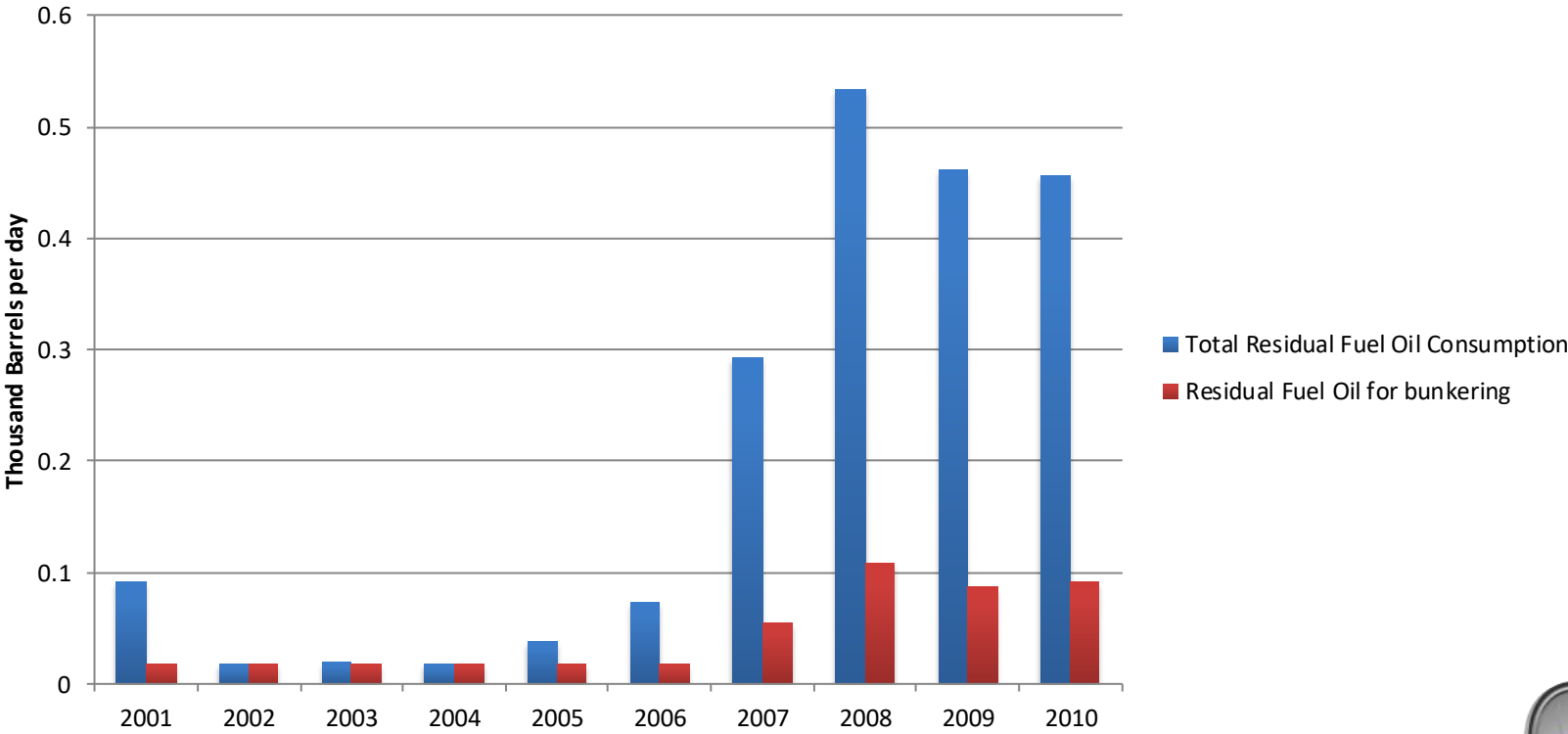
Analysis/models to understand shipping's energy demand and environmental impact

- Top-down
 - e.g. examining aggregate fuel sales data
- Bottom-up
 - e.g. examining individual ship's activity/energy demand



Top-down example

Fiji



Top-down shortcomings:

- Unknowns associated with data collection/quality
- Inability to understand detailed drivers and explain trends
- Inability to understand differences between shipping sectors
- Ships don't buy fuel on a voyage-by-voyage basis



Bottom-up

- Needs more data:

- Obtain information from individual ships/boat's crews



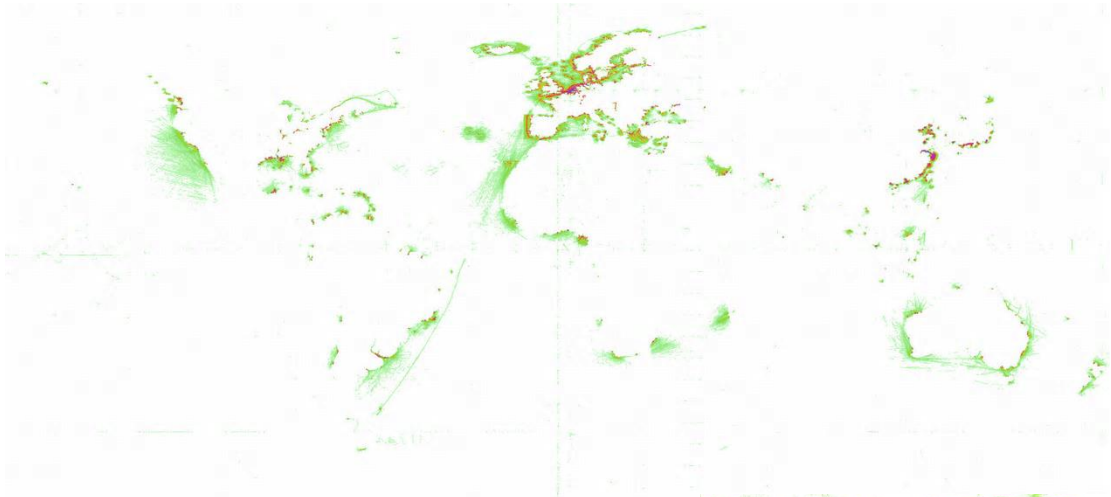
Labour intensive, sometimes information is commercially sensitive (unavailable)

- Estimate from third-party (public/private) data sources



Limitation of what data is available. Difficult to establish whether the estimate is meaningful.

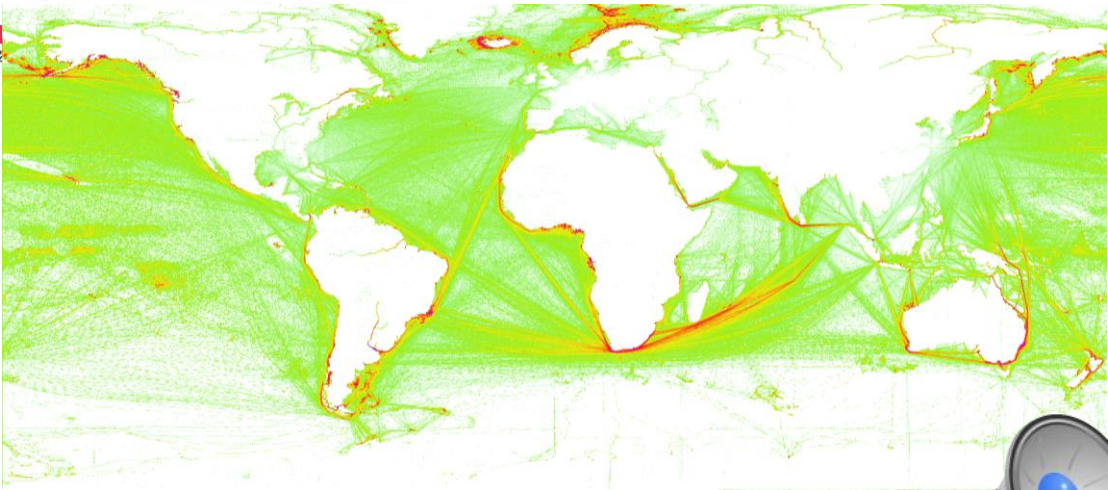




Terrestrial AIS data



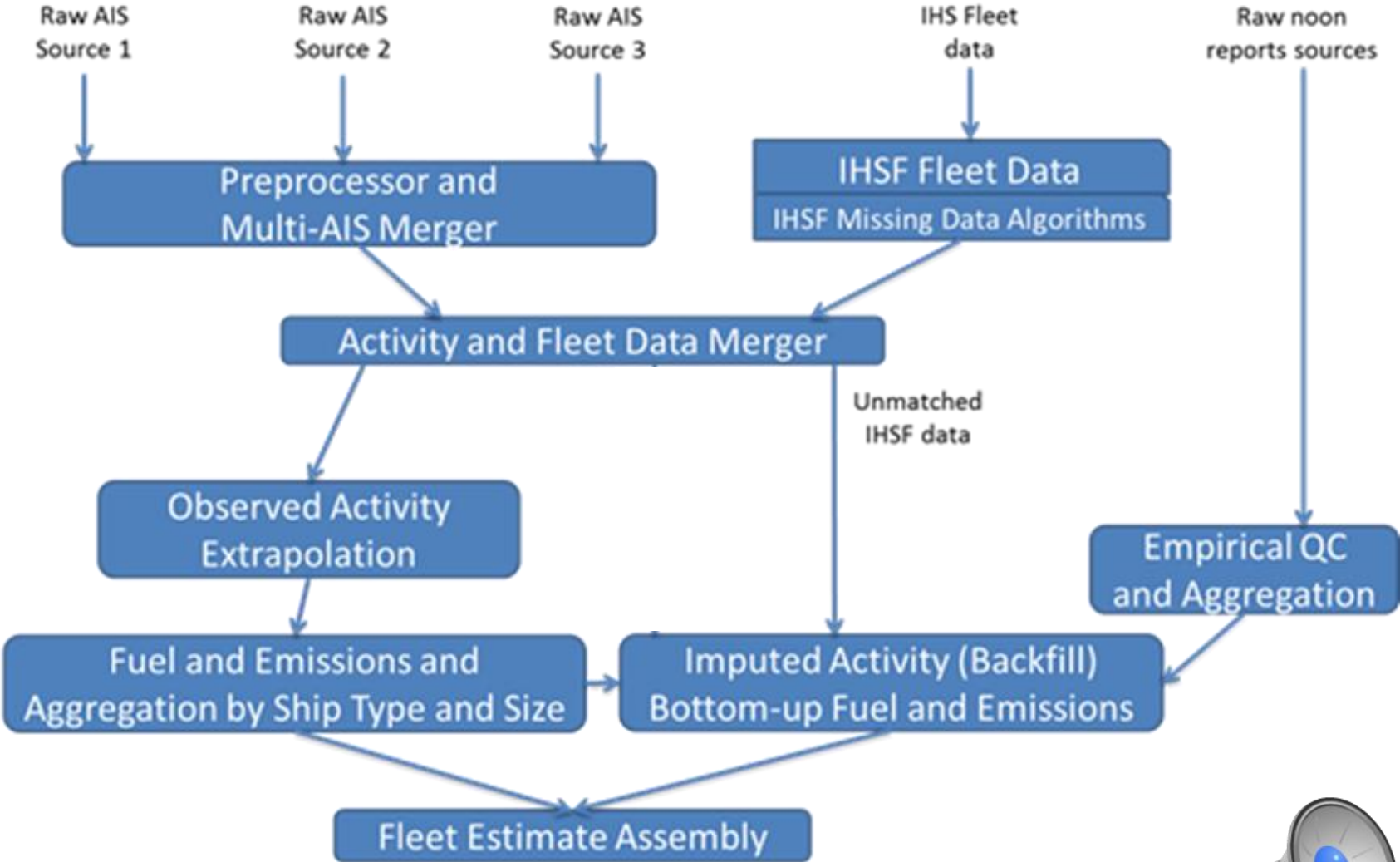
Satellite AIS data



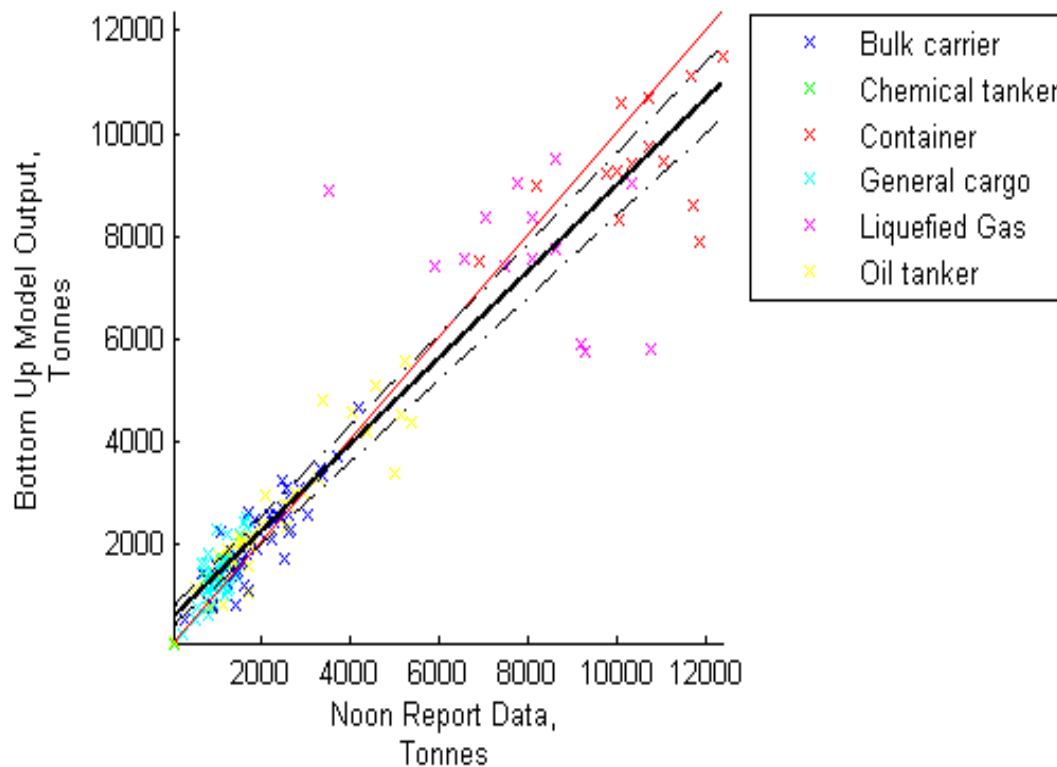
Example 1

IMO 3rd GHG Study





- Main engine, quarter annual total fuel consumption (coverage > 75%)

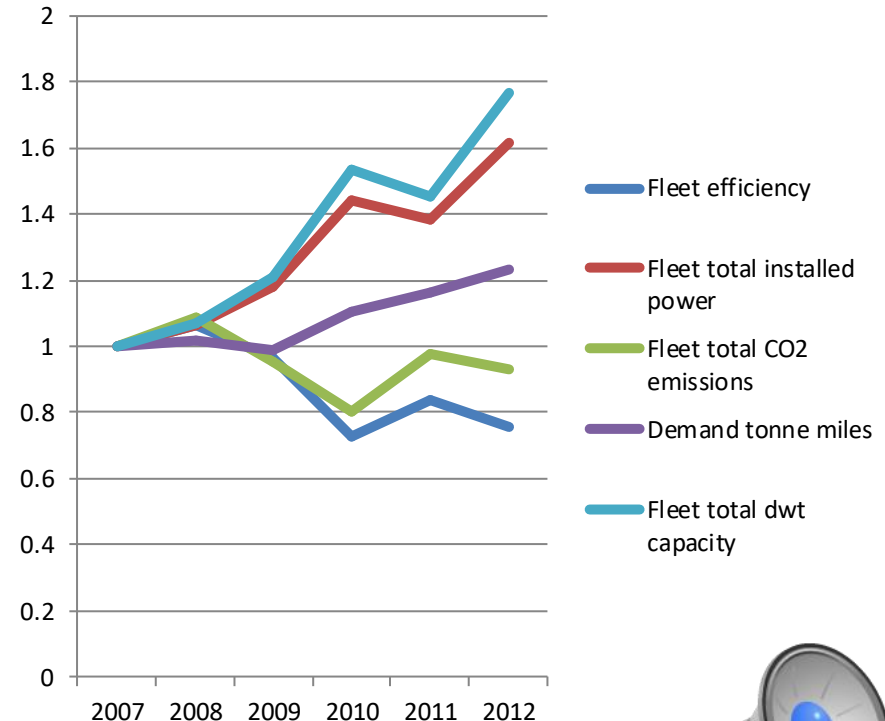
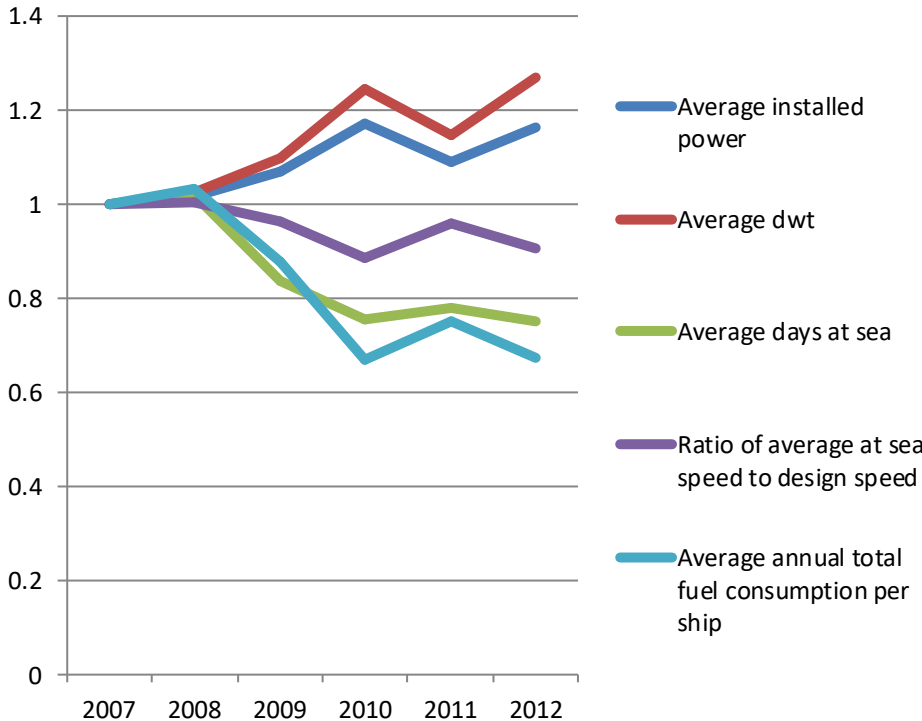


- You cannot accurately 'monitor' fuel consumption of individual ships using AIS
- You can obtain a good estimate, and you can obtain very good estimates of fleet statistics/trends



Bottom-up results reveal recent-year trends in and key drivers of emissions

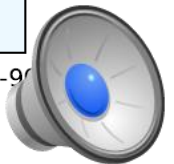
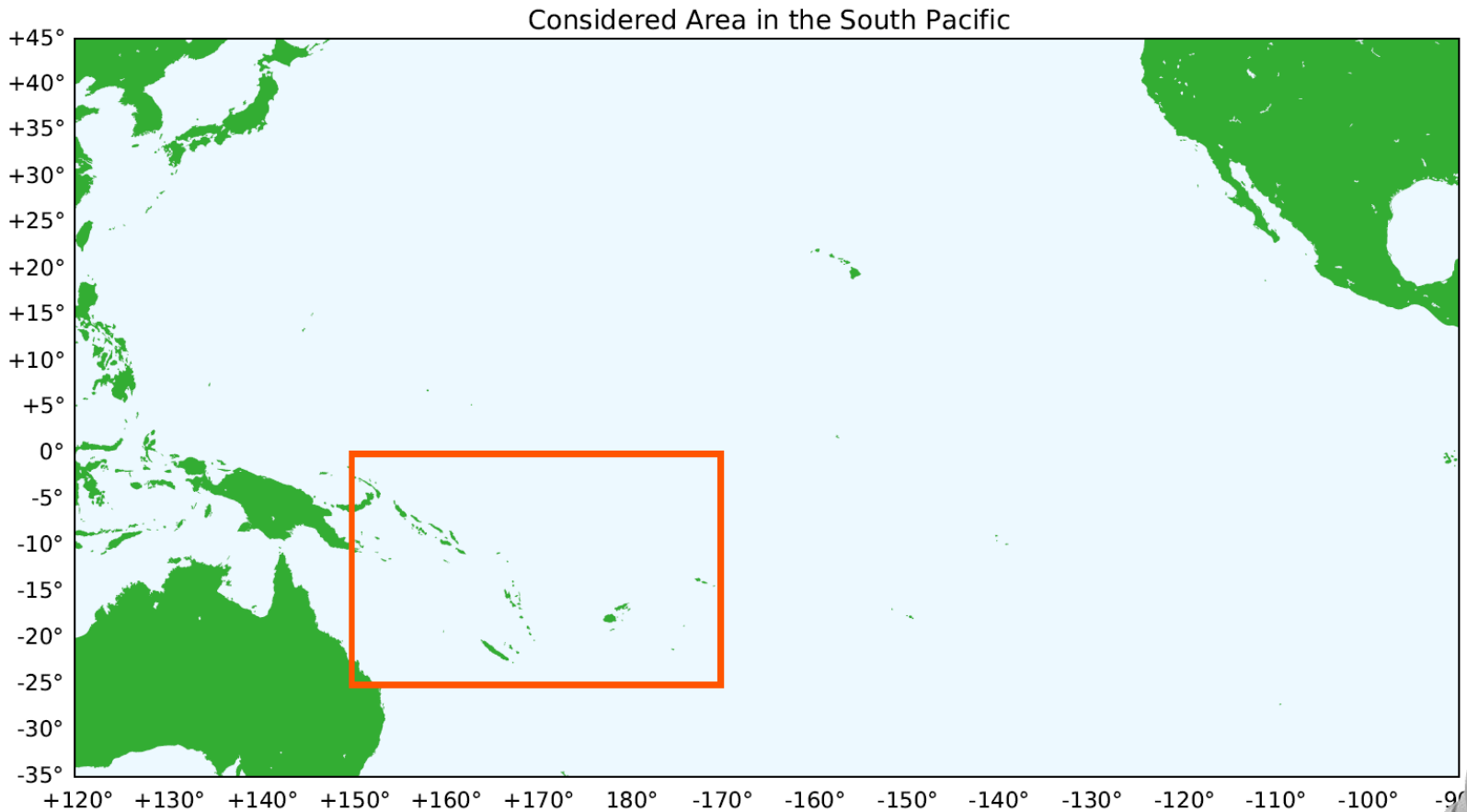
Bulk carriers



Trends in emissions and emissions drivers, 2007-2012 (indexed to 2007)

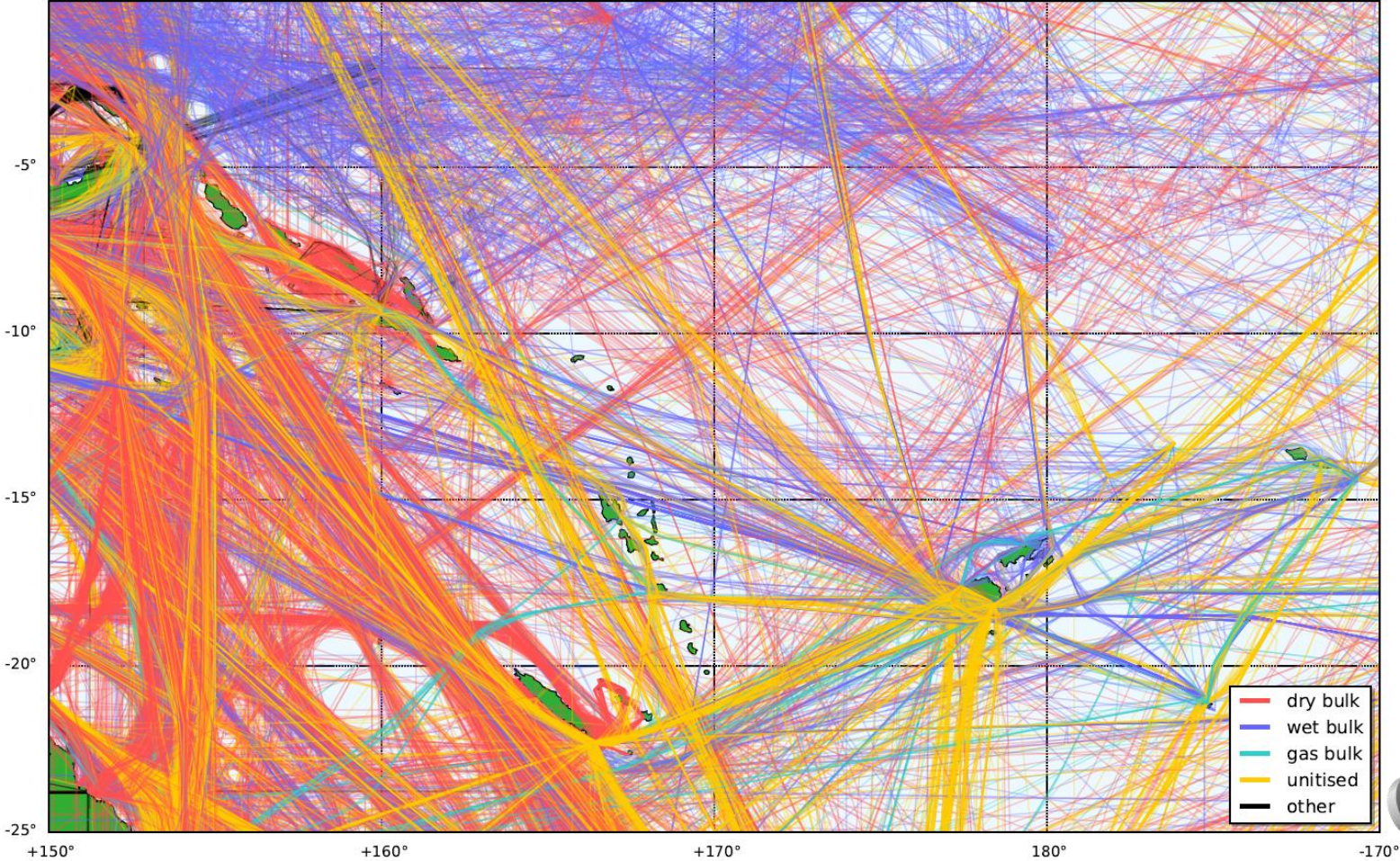


What details can AIS reveal



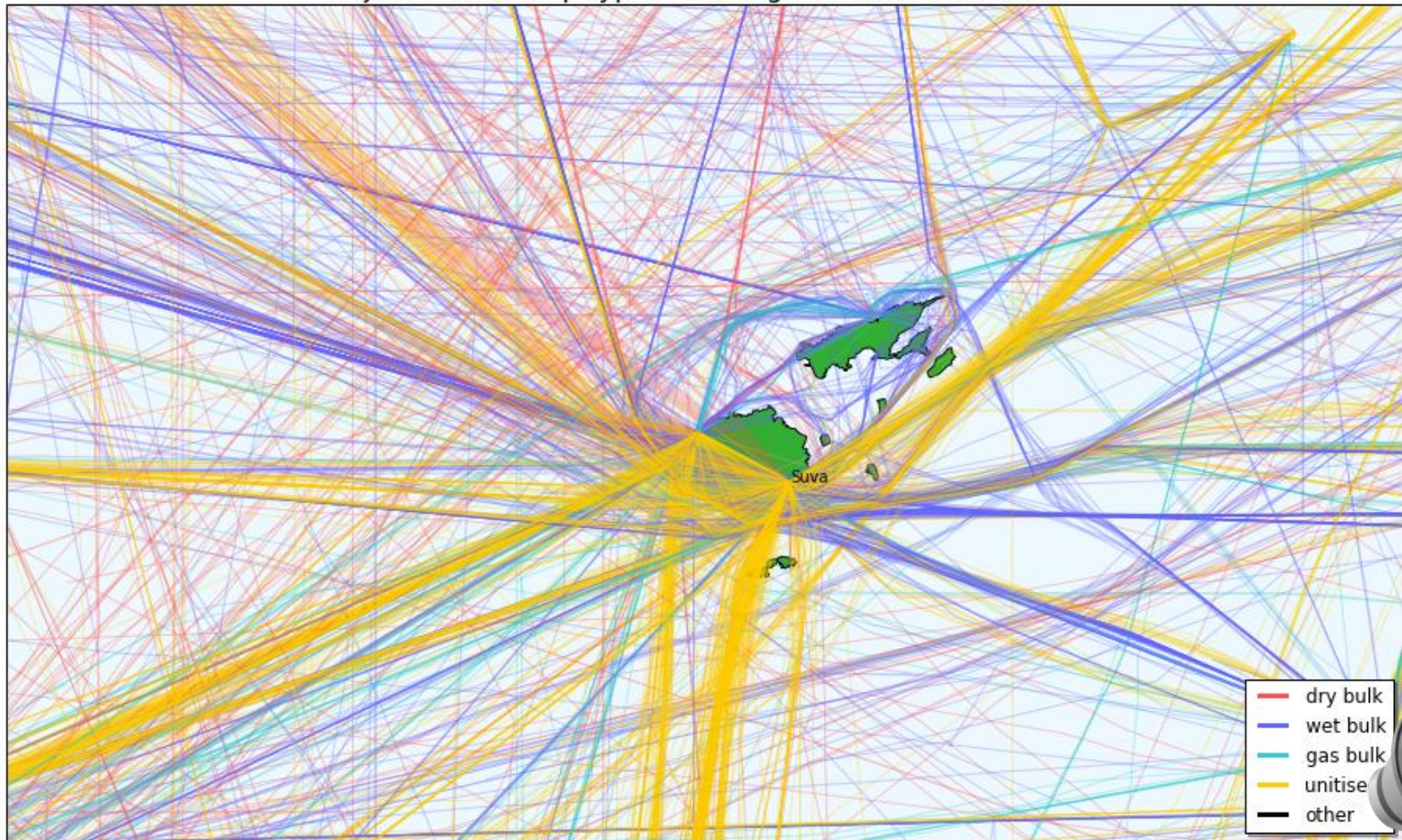
All Trajectories by Ship type

Trajectories of ship types crossing the South Pacific area



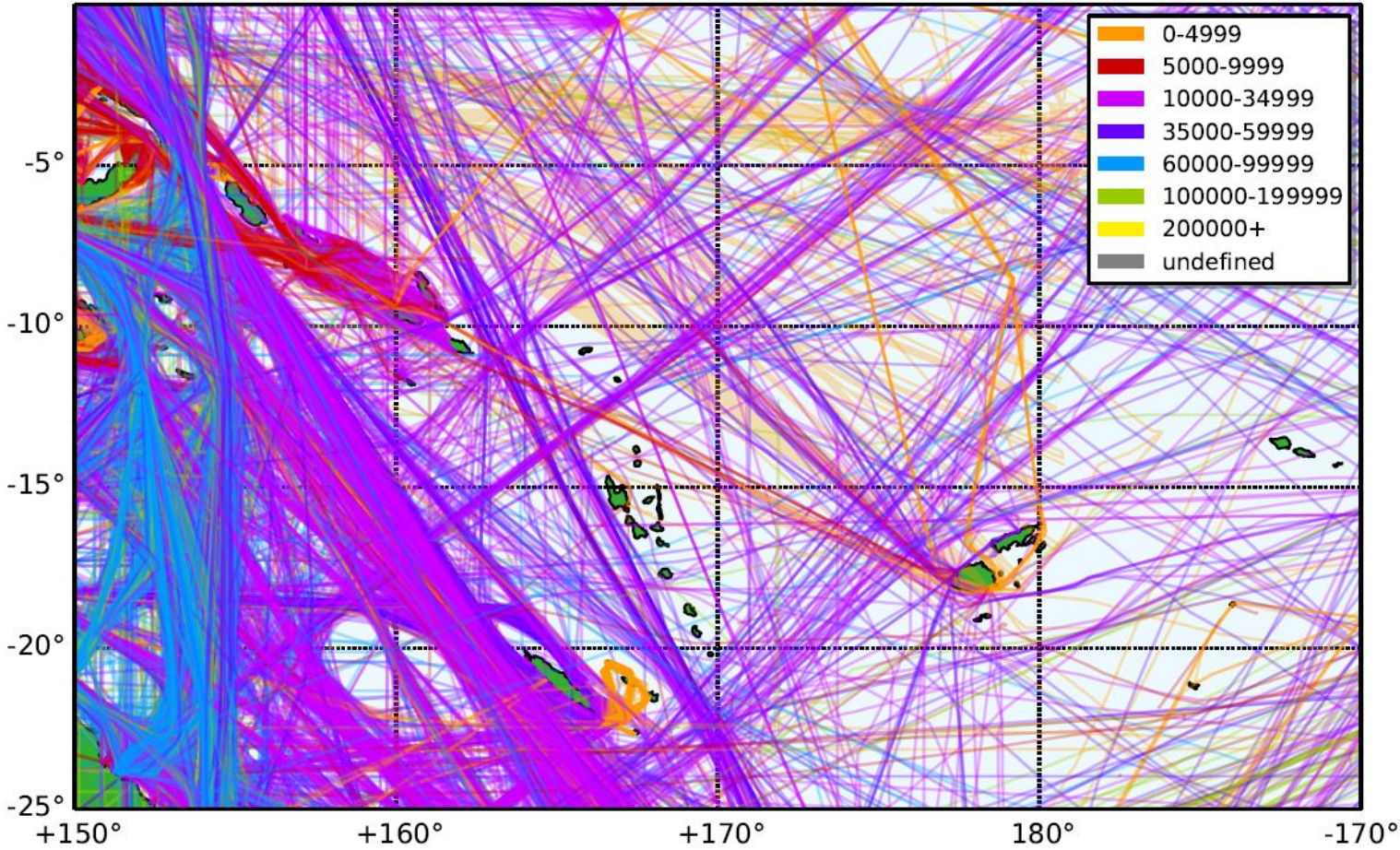
All Trajectories by Ship type: Fiji Islands

Trajectories of ship types crossing the South Pacific area



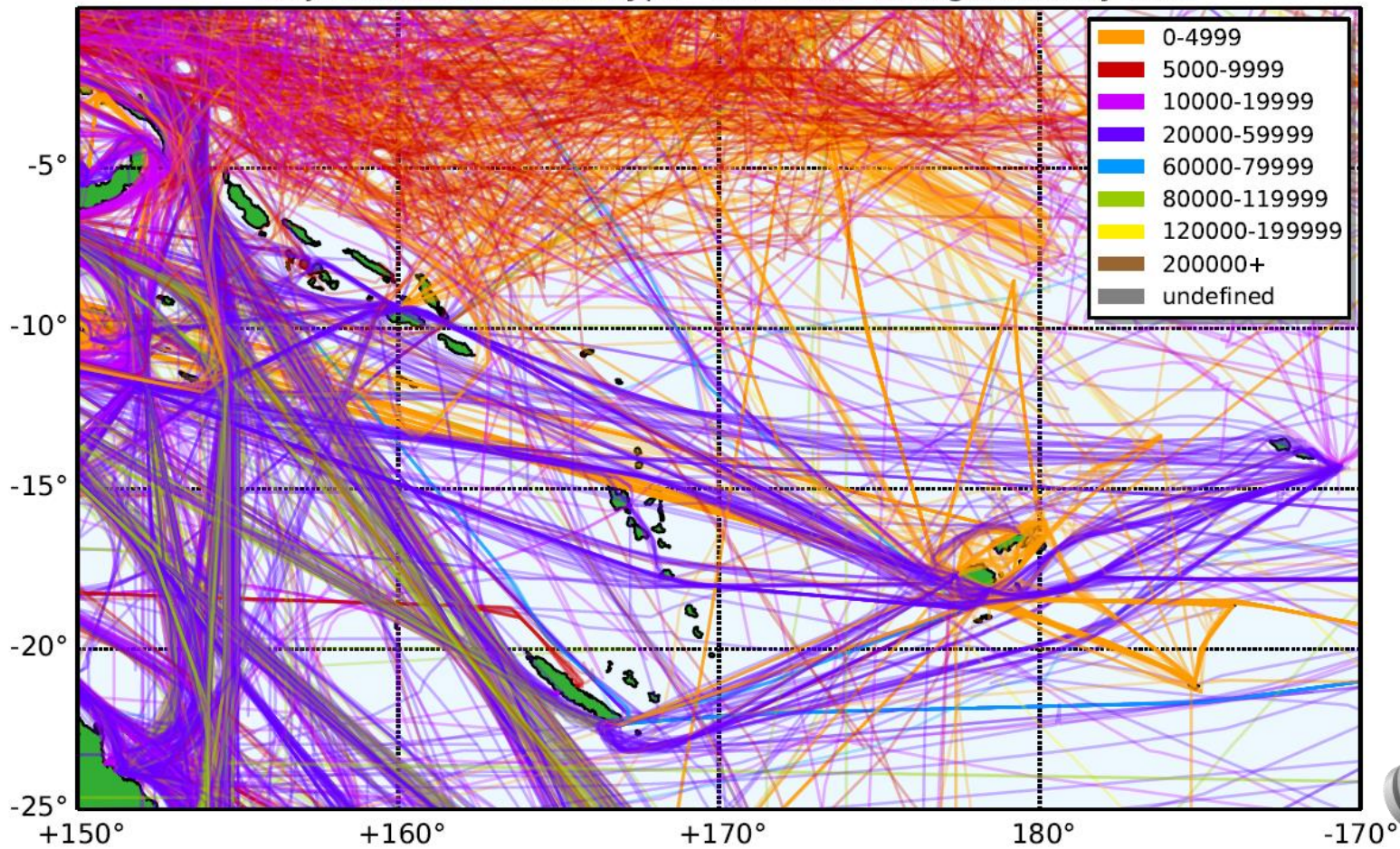
Dry bulk vessels by dwt size

Trajectories of vessel type "dry bulk" categorised by dwt



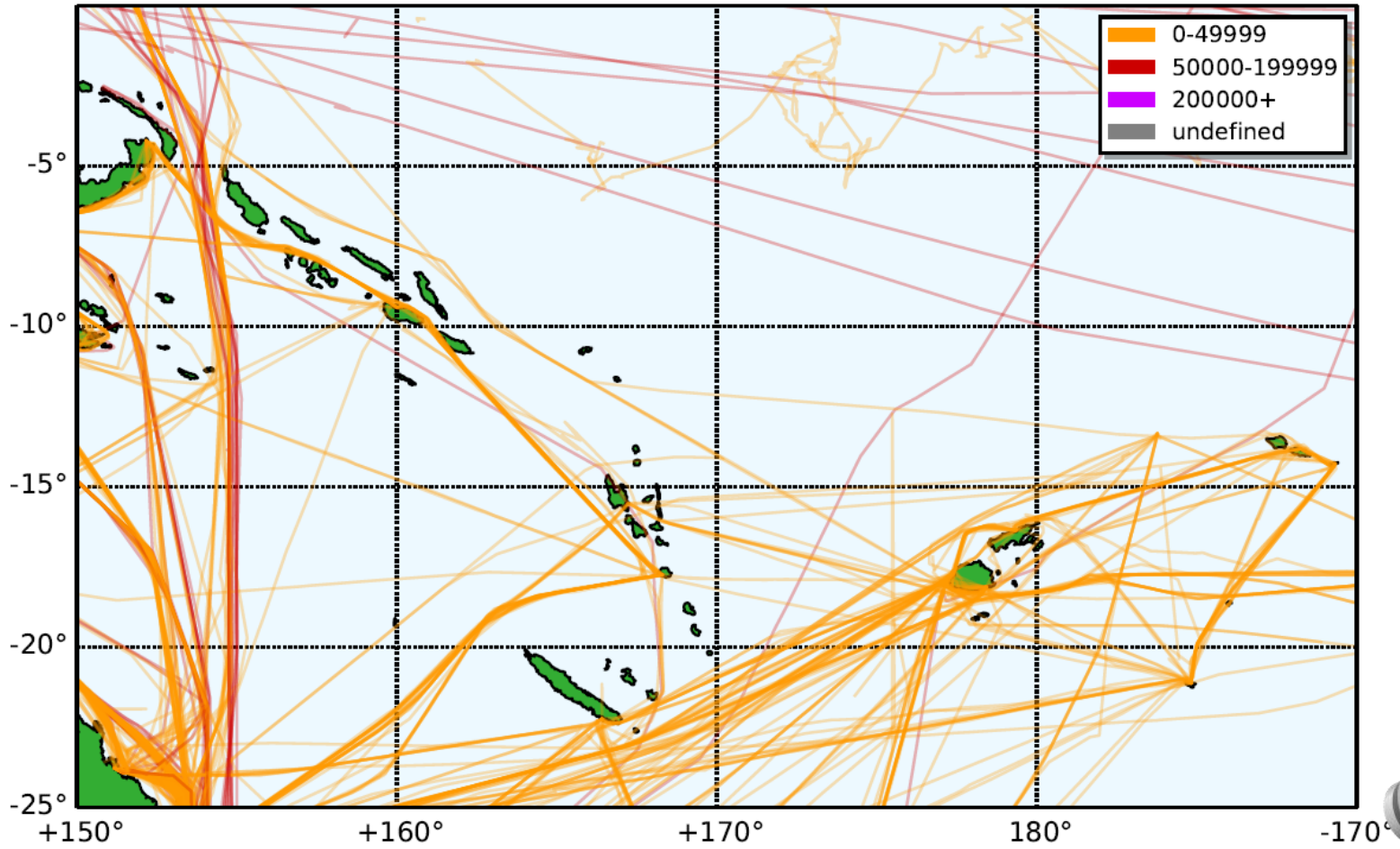
Wet bulk vessels by dwt size

Trajectories of vessel type "wet bulk" categorised by dwt



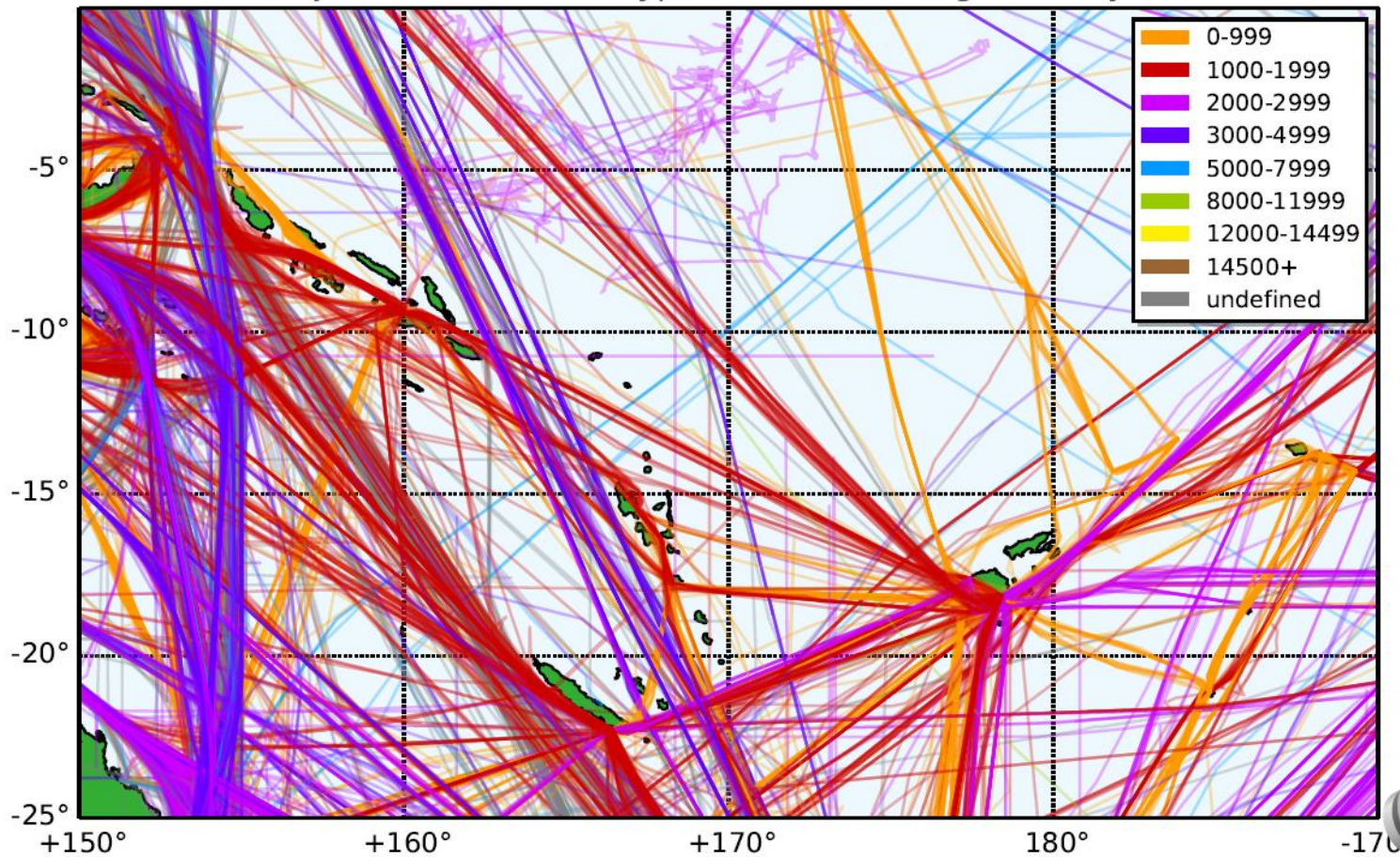
Gas bulk vessels by capacity category

Trajectories of vessel type "gas bulk" categorised by capacity



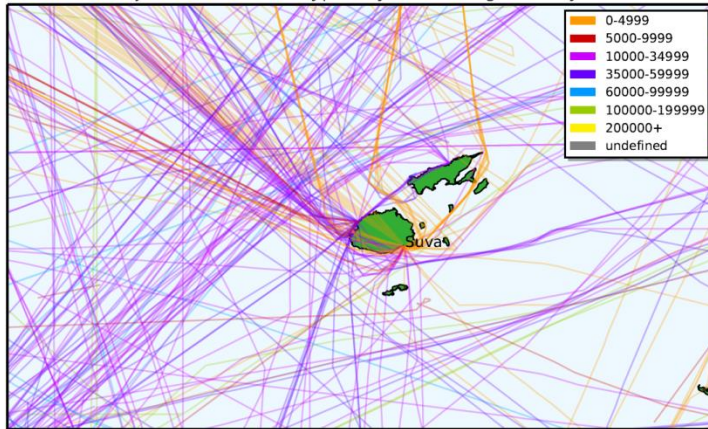
Containerised vessels by TEU category

Trajectories of vessel type "unitised" categorised by TEU

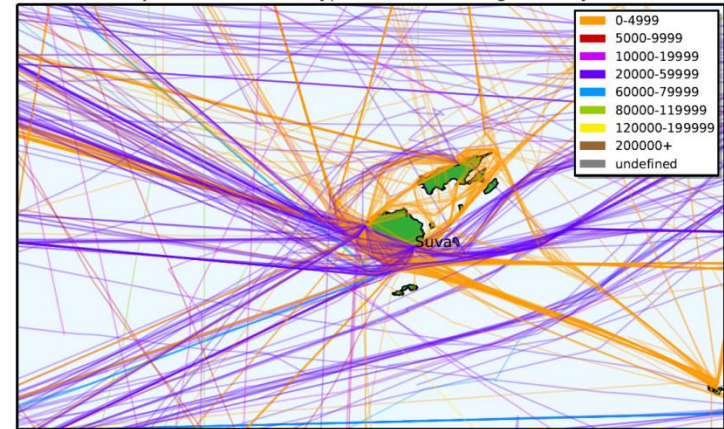


Vessels by size category: Fiji

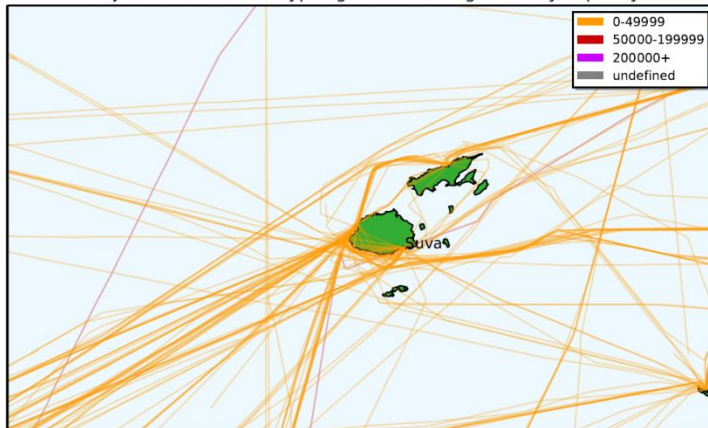
Trajectories of vessel type "dry bulk" categorised by dwt



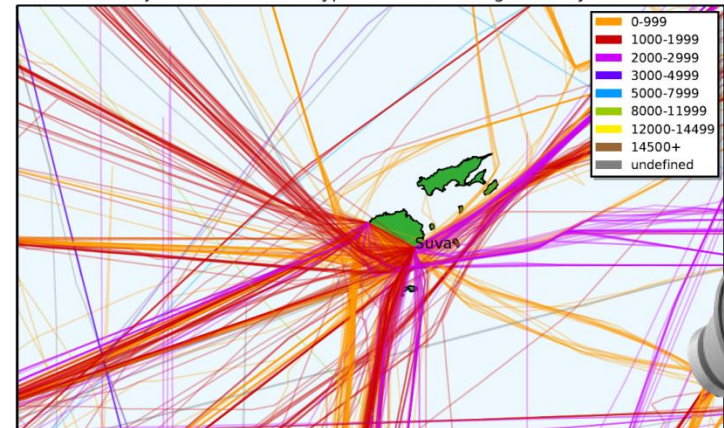
Trajectories of vessel type "wet bulk" categorised by dwt



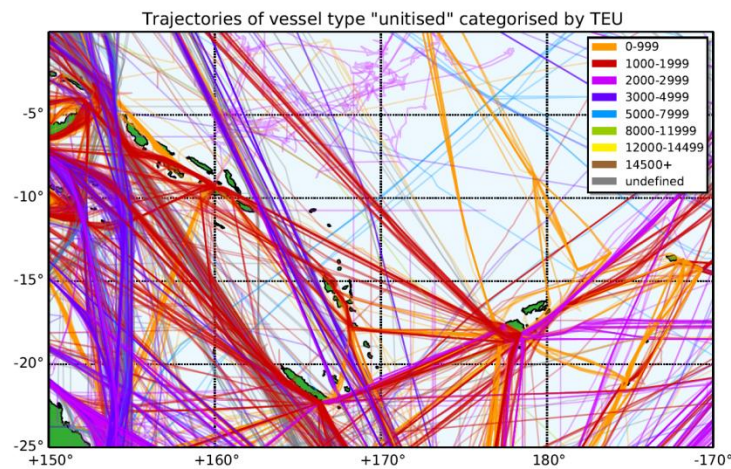
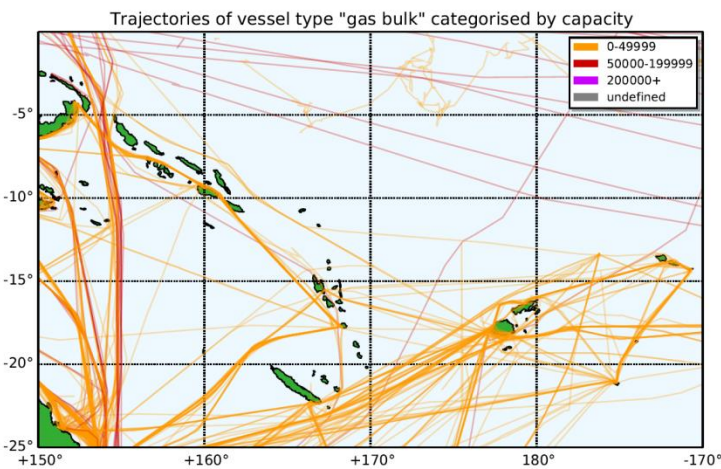
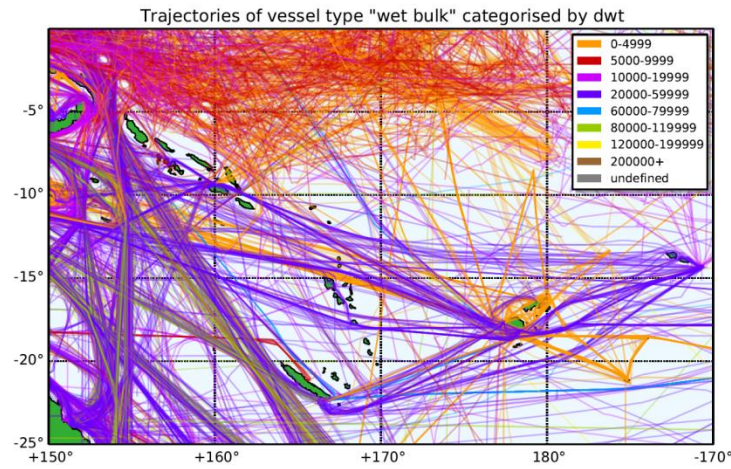
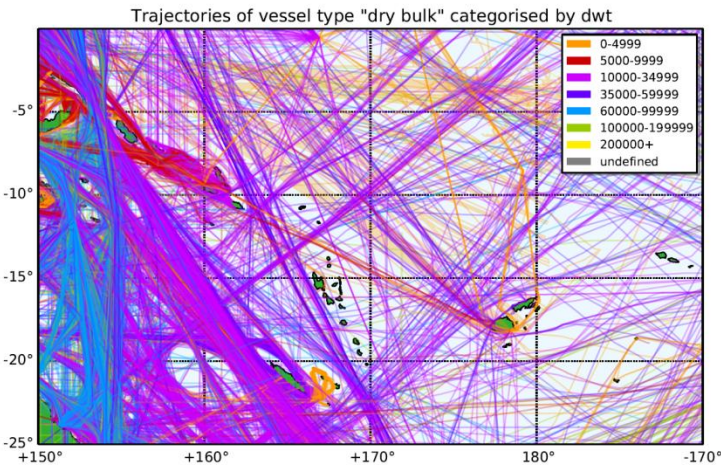
Trajectories of vessel type "gas bulk" categorised by capacity



Trajectories of vessel type "unitised" categorised by TEU



Attachment: area type + category



Acknowledgments and Conclusions

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