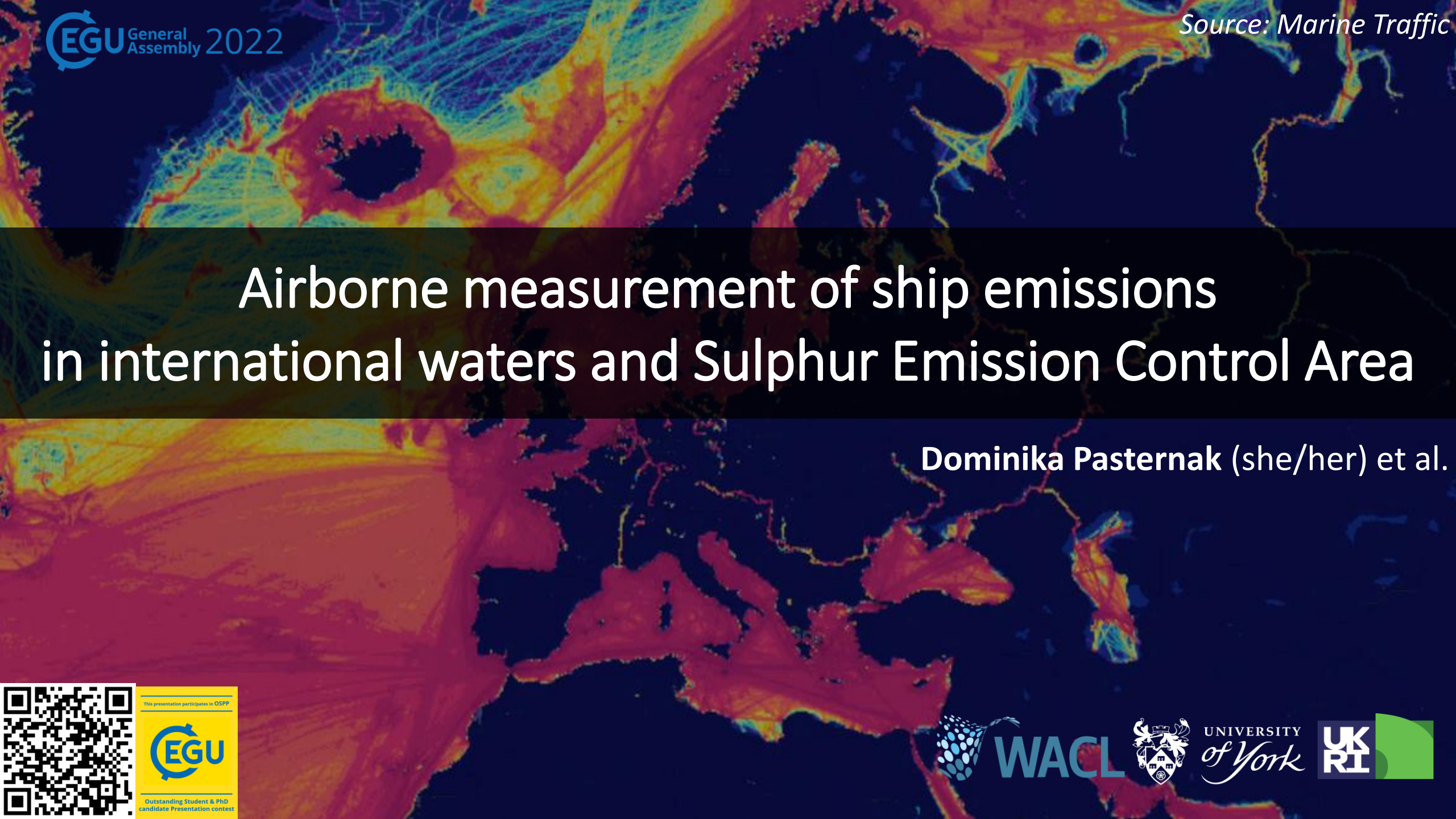


EGU General Assembly 2022

Airborne measurement of ship emissions in international waters and Sulphur Emission Control Area

Dominika Pasternak (she/her) et al.

This presentation participates in OSPP

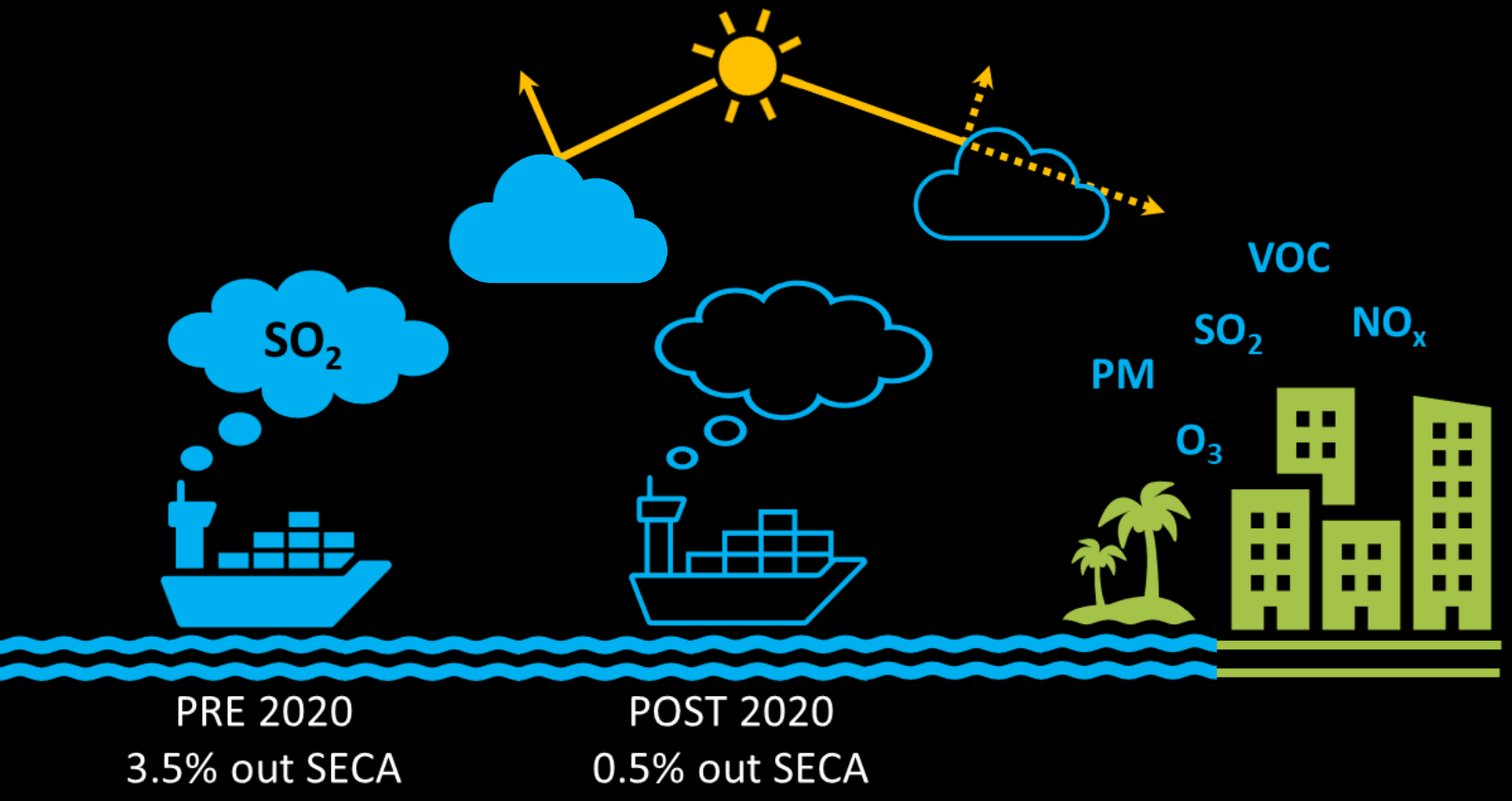
Outstanding Student & PhD candidate Presentation contest

WACL

University of York

UKRI

Atmospheric Composition and Radiative Forcing Changes due to UN International Ship Emissions Regulations



Thursday, 13:20–13:30, AS3.2
Insights from ACRUISE from aircraft, modelling, and satellite perspectives by Mingxi Yang et al.

Evelyn Maersk, container ship

Facility for Atmospheric Airborne Measurements

BAe-146-301 large research aircraft

based in Cranfield, owned by NERC

altitude range 50 – 35 000 ft

5 h long flights

4 t of scientific equipment

18 scientists on board

Azores, Portugal

ACRUISE campaigns

ACRUISE-1

July 2019, Porto (Portugal)

13 flights

100+ ships

60 whole air samples

ACRUISE-2

October 2021, Exeter (UK)

13 flights

160+ identified ships

140 whole air samples

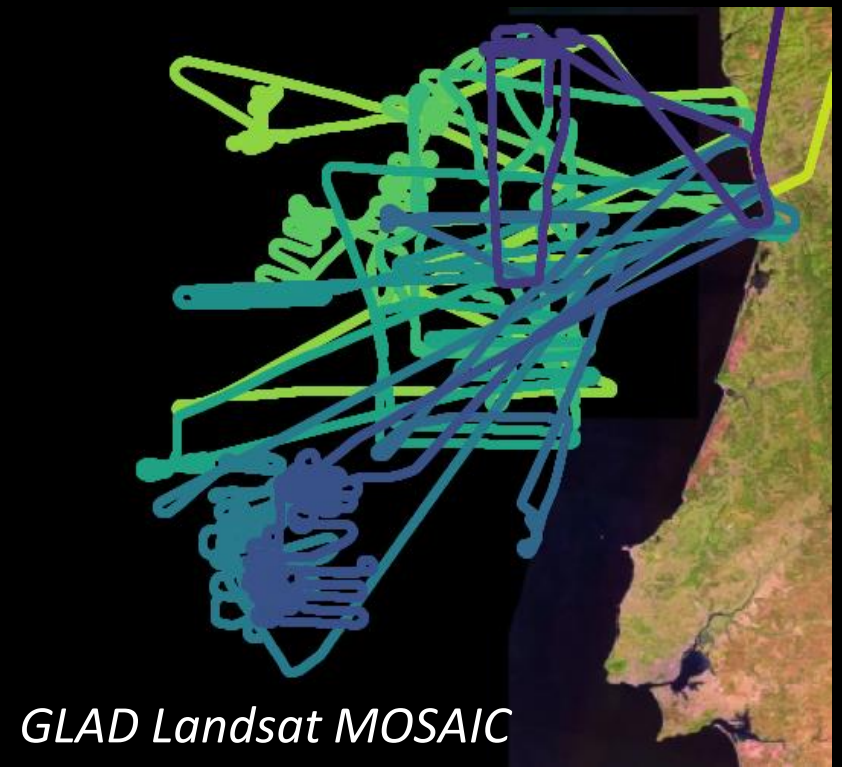
ACRUISE-3

May 2022, Exeter (UK)

4 flights

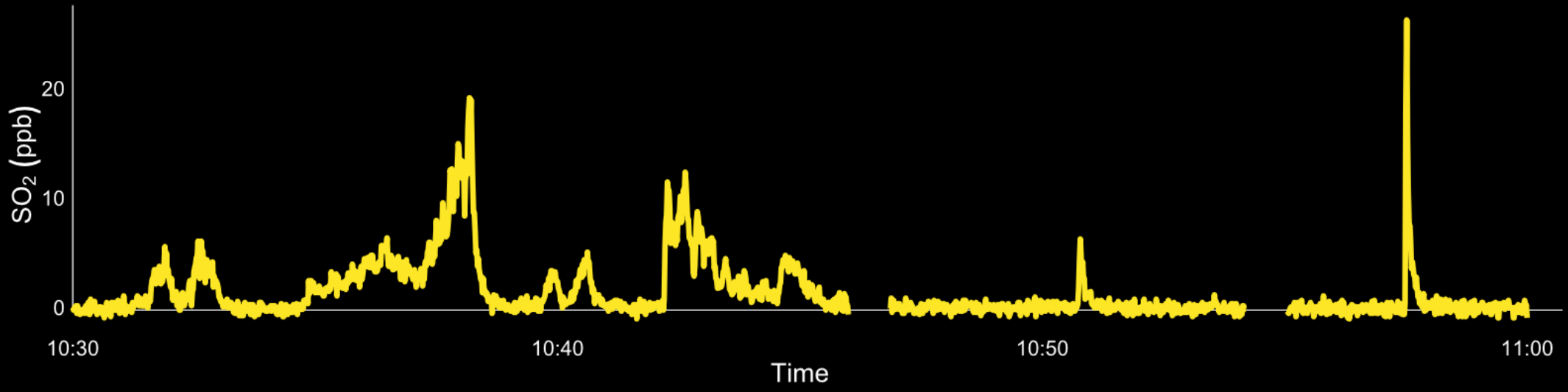
30+ identified ships

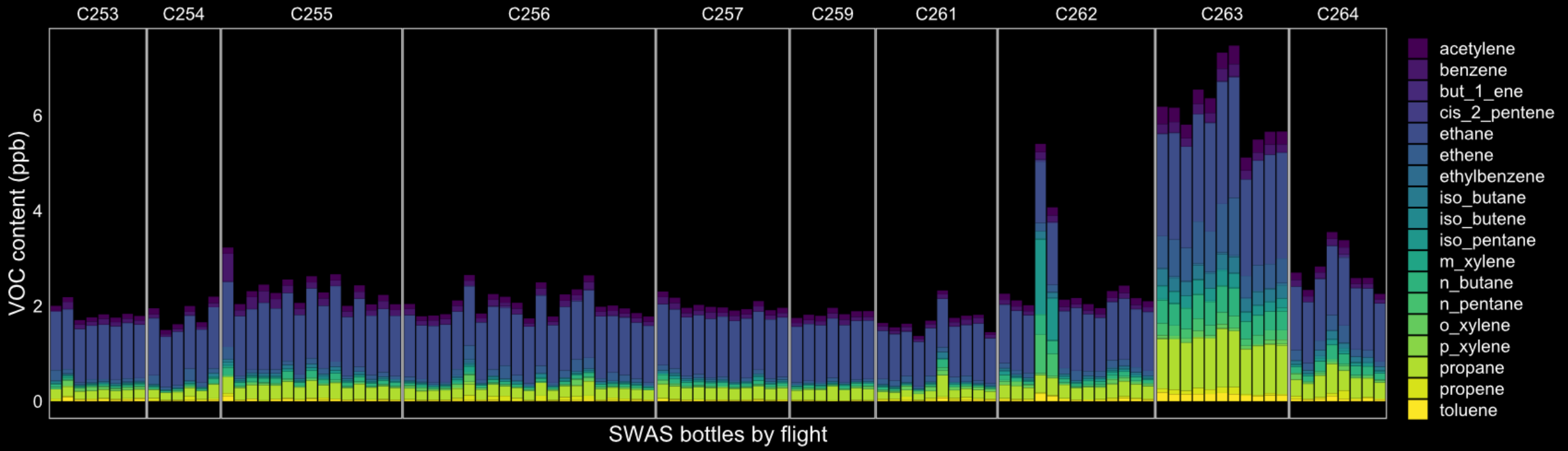
100 whole air samples



GLAD Landsat MOSAIC

Preliminary data examples





Preliminary data examples

Ship	SFC (%)*
1	0.28 ± 0.14
	0.33 ± 0.08
2	0.40 ± 0.03
	0.34 ± 0.01
	0.42 ± 0.01
3	2.57 ± 0.03
	2.15 ± 0.01
4	1.70 ± 0.04
	1.31 ± 0.02
	0.20 ± 0.03

Credit: Steph Batten

*SFC = apparent Sulphur Fuel Content,
Kattner, L., et al. *Atmospheric chemistry and physics* (2015)

Nikolay Yevgenov, LNG tanker

Acknowledgements

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Thank you to FAAM, Avalon and Airtask teams and everyone else involved in the ACRUISE campaigns for your hard work

200 ft over sea