



# ships4sst

shipborne radiometers for sea surface temperature

## SISTeR Data Collection

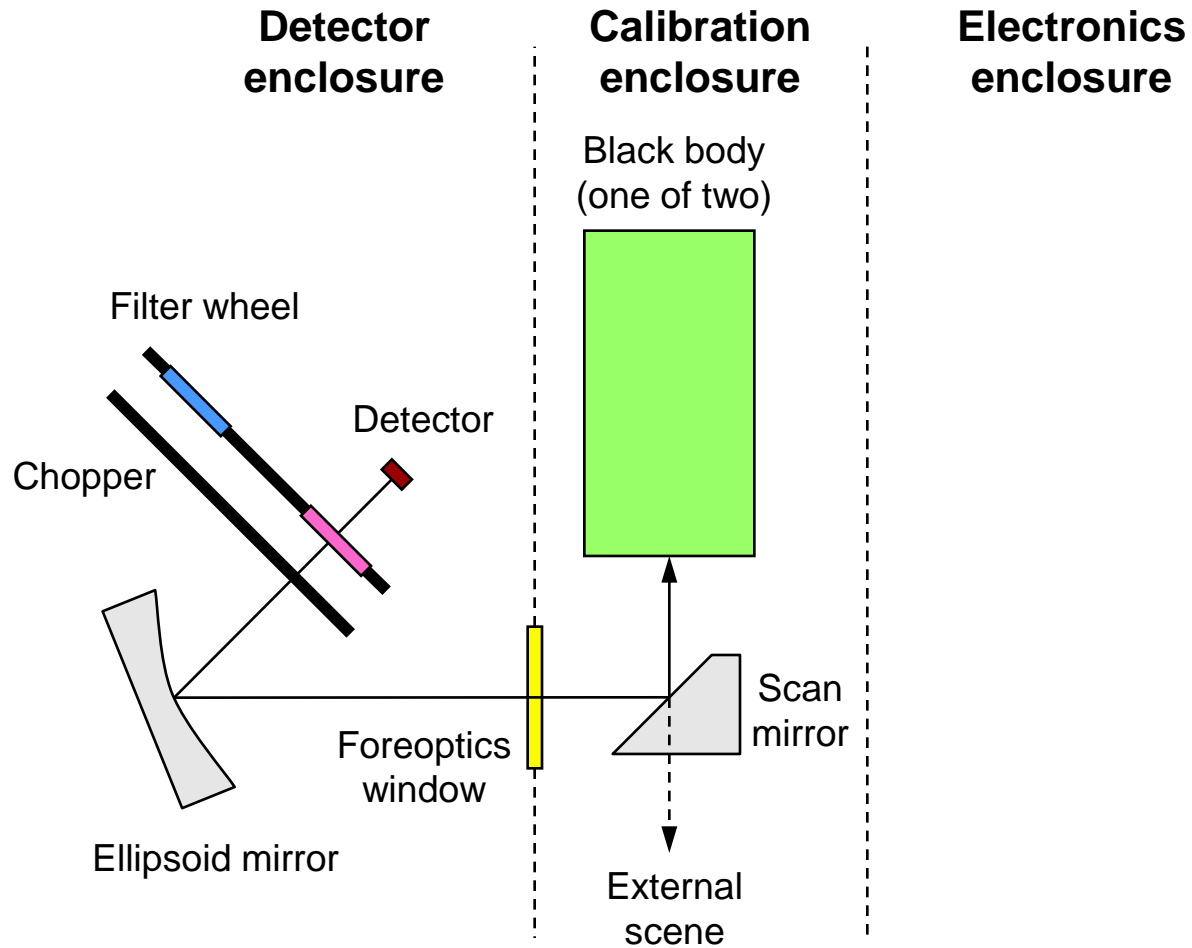
ISFRN Workshop  
4 April 2025

Tim Nightingale and Arrow Lee

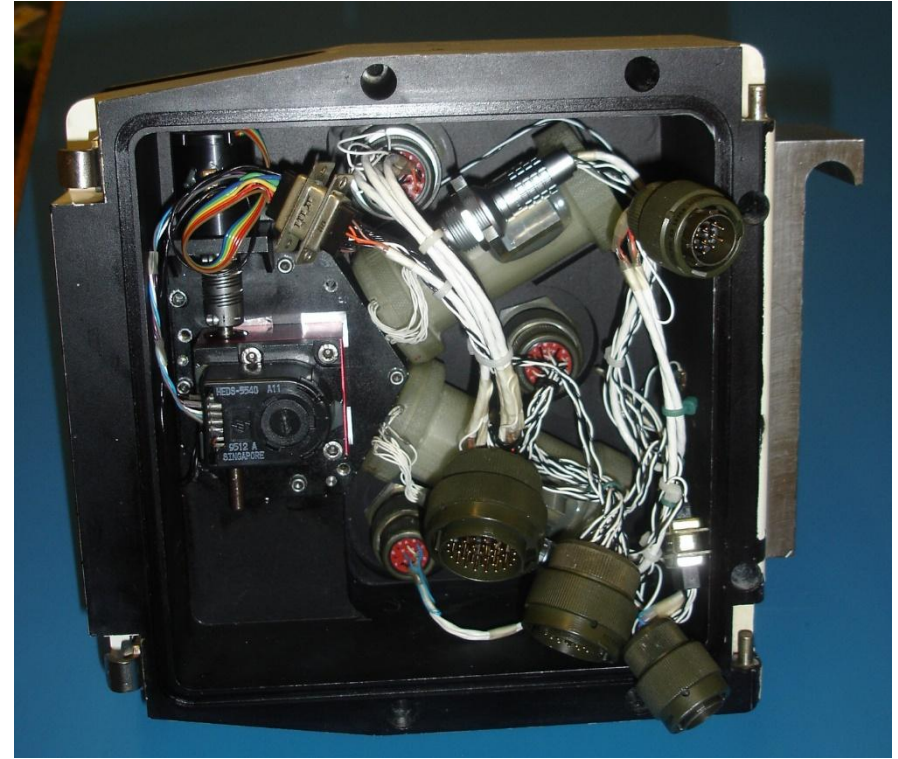
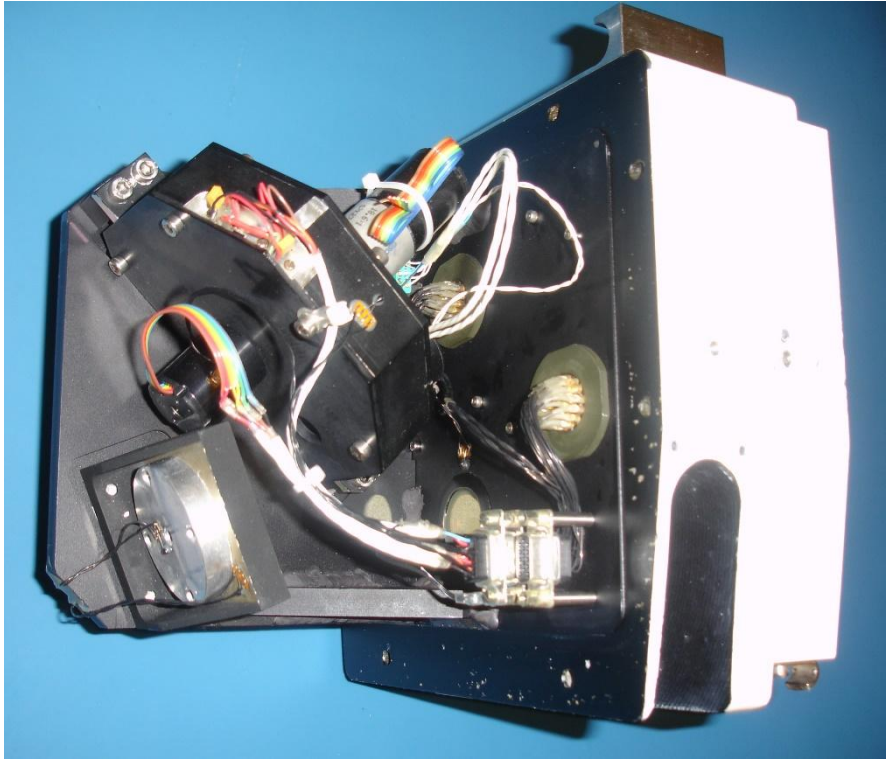
# The SISTeR instrument



# SISTeR layout



# SISTeR undressed



# SISTeR black bodies



# SISTeR on the Queen Mary 2

- SISTeR has been deployed since 2010 on the Cunard Line *Queen Mary 2* liner
- Mounted on a dedicated platform above the starboard bridge wing
- Support equipment (UPS, power supplies, data logger, USB and serial repeaters) installed in an internal cabinet and an external weatherproof box
- Data logger laptop connected to ship's Ethernet network. Emails daily level 0 products back to the UK.
- The QM2 operates a regular service between Southampton and New York, with side-trips to Canada, the Caribbean, and Europe
- Has made an annual round-the-world cruise from January to April/May each year until 2024
- Currently on its 30th cruise

# SISTeR on the Queen Mary 2



# SISTeR on the Queen Mary 2





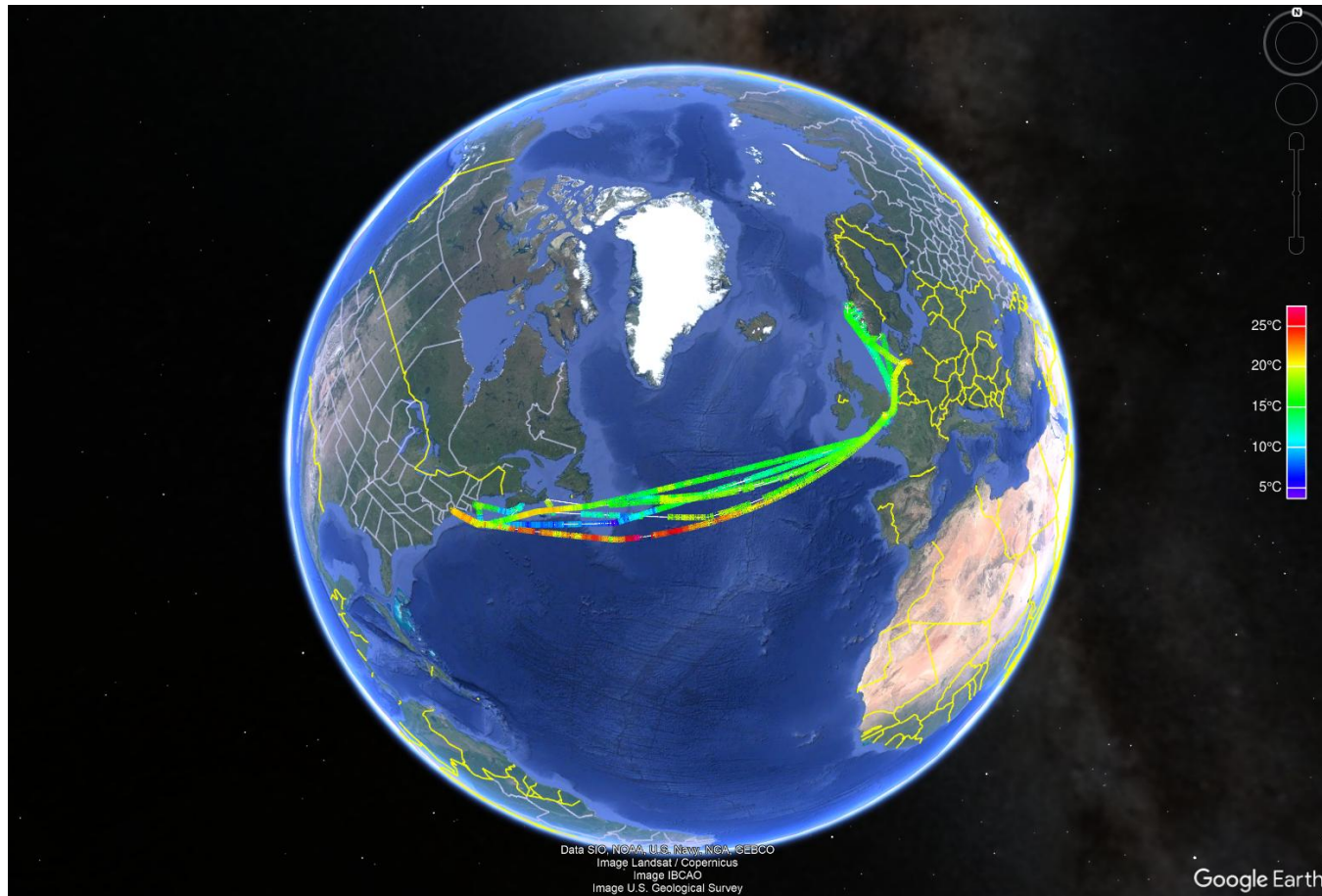
# Deployment Summary

Cruise number	Deployment	Retrieval	Days	Route
25	11 January 2023	23 April 2023	103	World cruise
26	19 November 2023	15 December 2023	27	USA / Caribbean
27	11 January 2024	28 April 2024	109	(Final) World Cruise
28	16 May 2024	30 August 2024	106	USA / Norway
29	17 October 2024	11 January 2025	86	USA / Canada / Norway / Caribbean
30	15 February 2025	16 May 2025*	90	USA/Europe

\*Provisional date

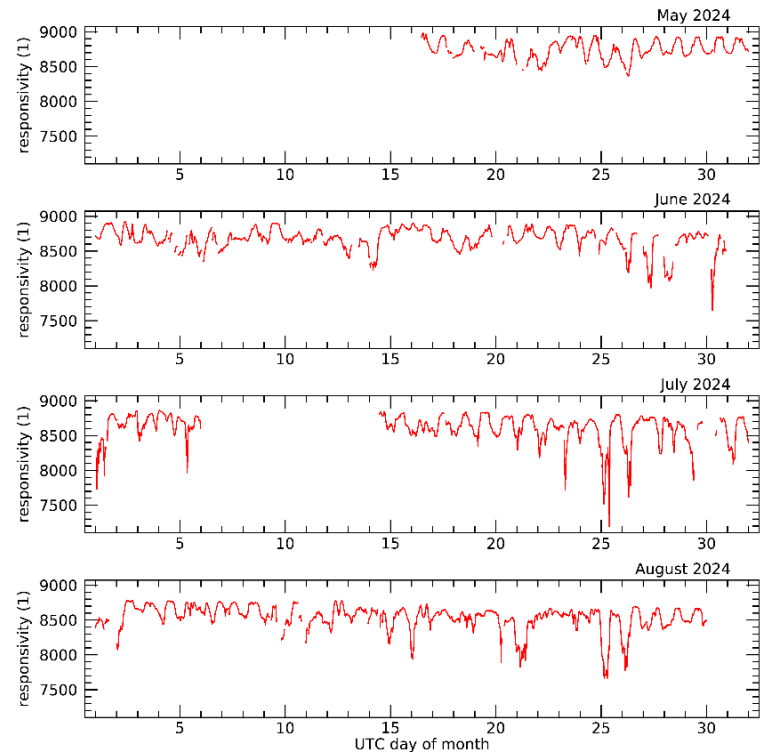
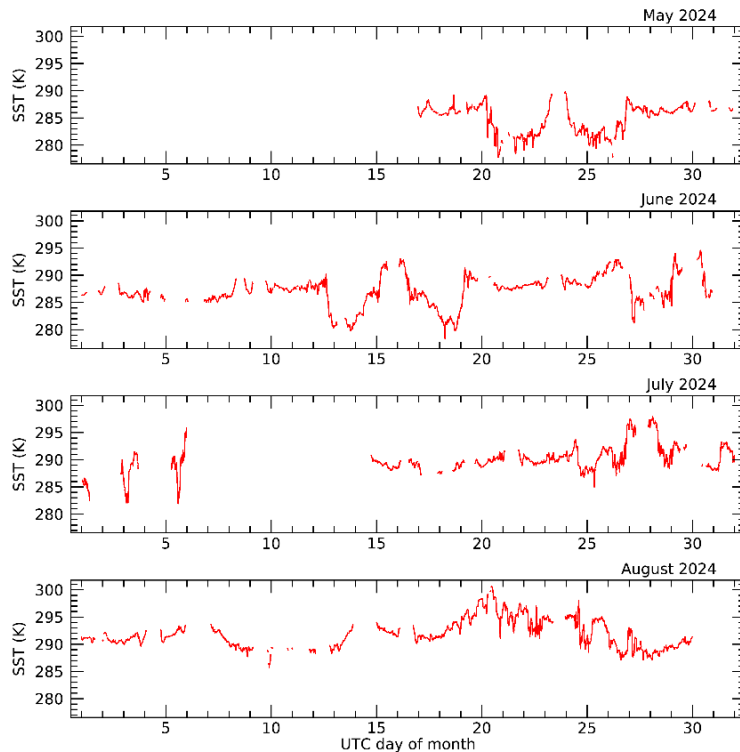
# Cruise 28

- Mainly North Atlantic crossings, as well as Norway



# Cruise 28

- Data appear to be good quality, but post cruise calibration slightly degraded
- 8-day gap in the data when the instrument failed to reboot correctly when disconnected from shore power (UPS connected but may have encountered problems). Manually restarted at the next opportunity.

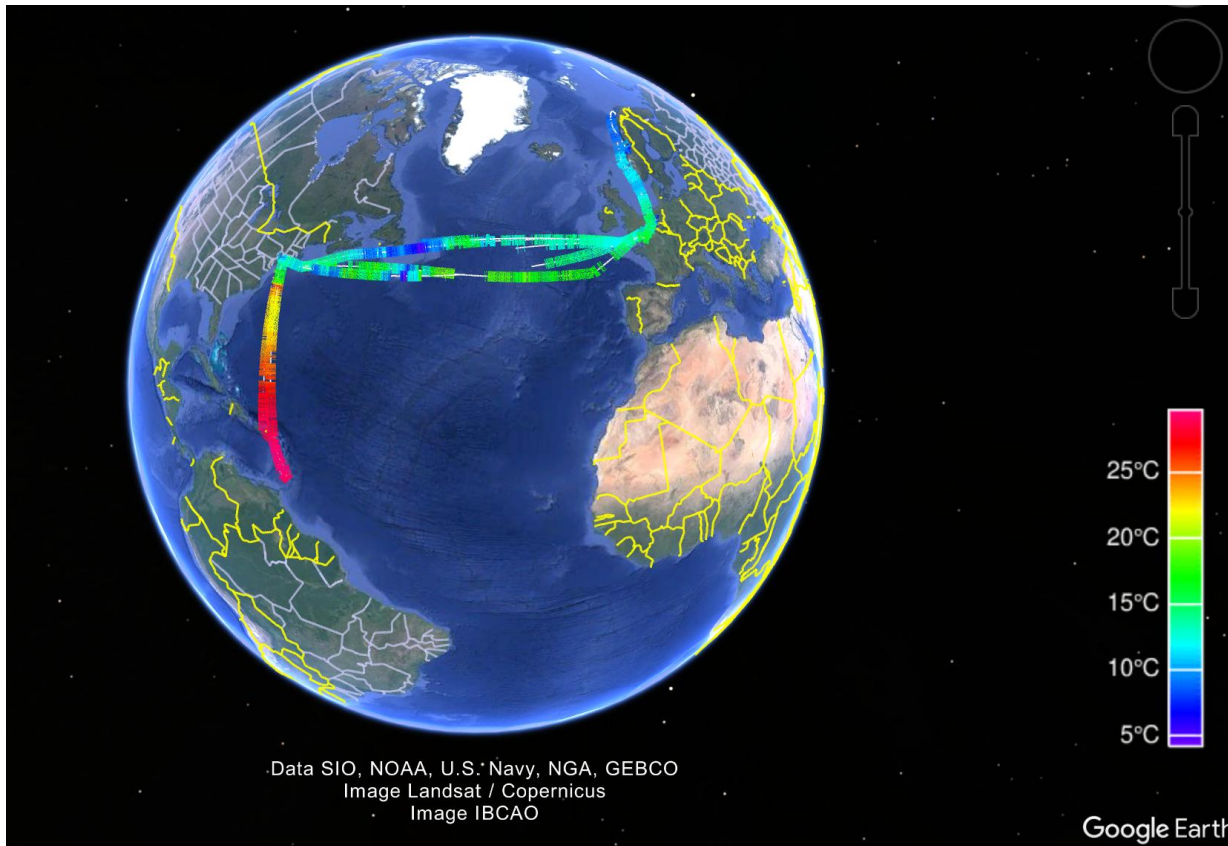


# Post cruise 28 calibration issues

- Initially there were unexplained issues with error flags, higher noise levels than expected and black body connections, all of which have appeared only since returning to the lab
- Repeated calibration attempts multiple times
- After multiple investigations, the chopper motor was replaced
- Moderate quality and valid post cruise calibration for cruise 28
- Investigations into the condition of the scan mirror indicate there were some adhesion issues, likely to do with contamination or cleaning during the gold coating process.
  - Future batches will be tested more thoroughly after coating.
  - The rest of this batch currently show no concerns, but more testing will be done after the current cruise and more spares made.

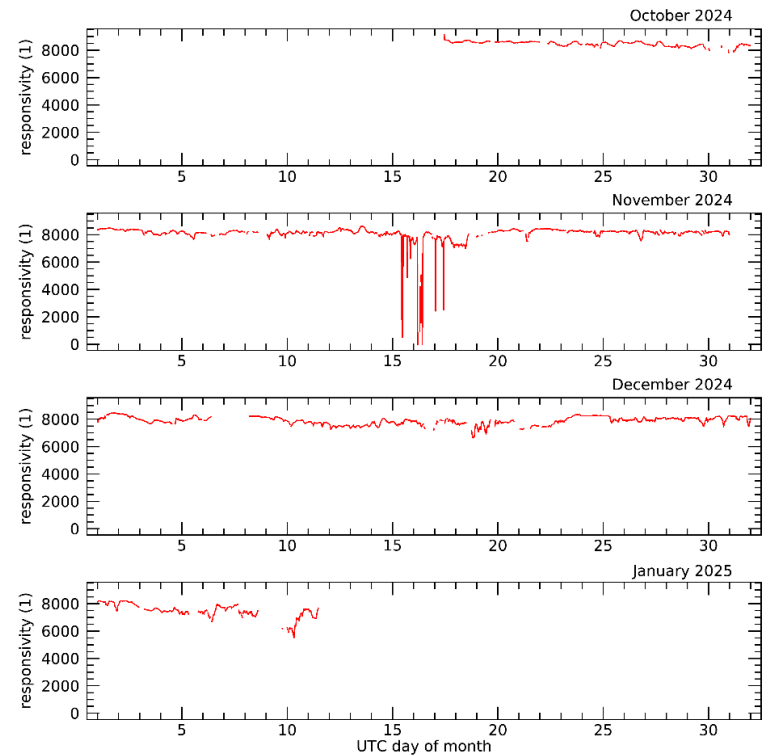
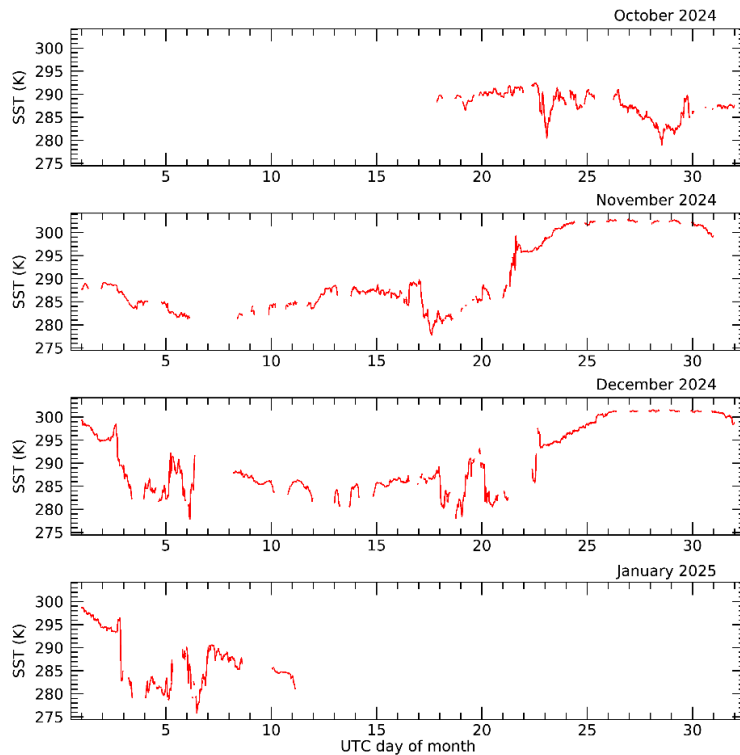
# Cruise 29

- Mainly North Atlantic crossings, as well as Norway and Caribbean



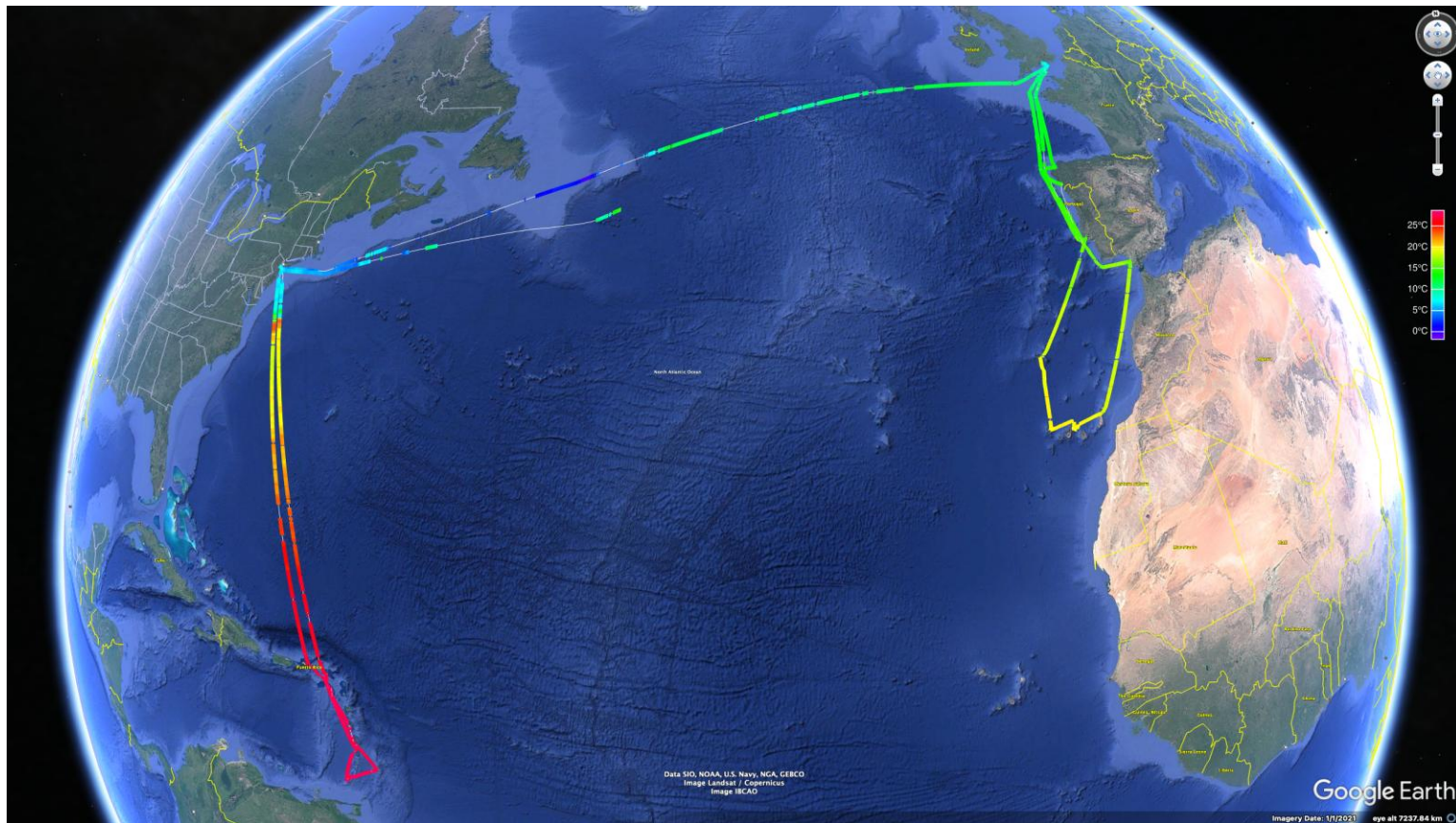
# Cruise 29

- Data generally appear to be good quality
- Unexplained hiccup in responsivity in mid-Atlantic, apparently totally resolved within 4 days.



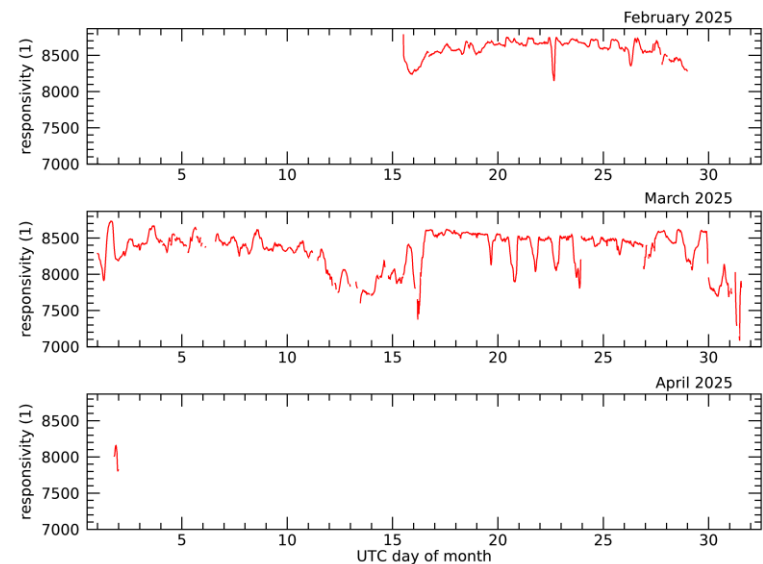
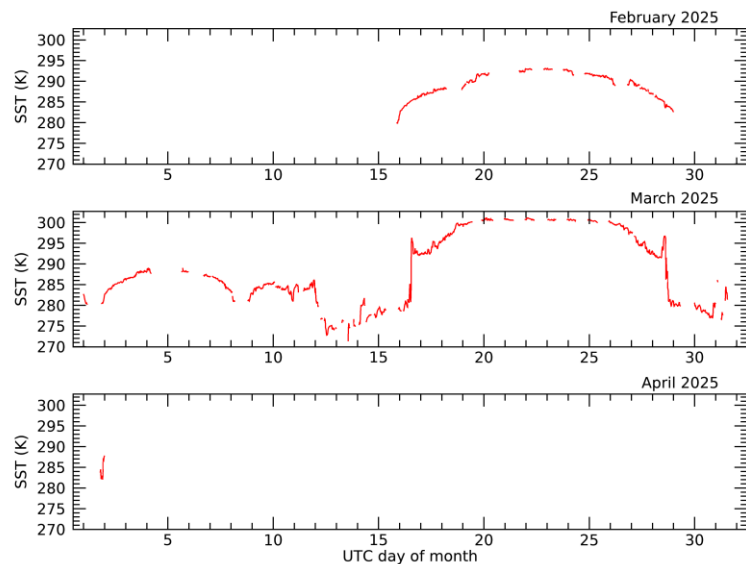
# Cruise 30

- Started 15 February, so far visited Iberia, Canary islands, north Atlantic and the Caribbean



# Cruise 30

- Data generally appear to be good quality
- Retrieval date TBD





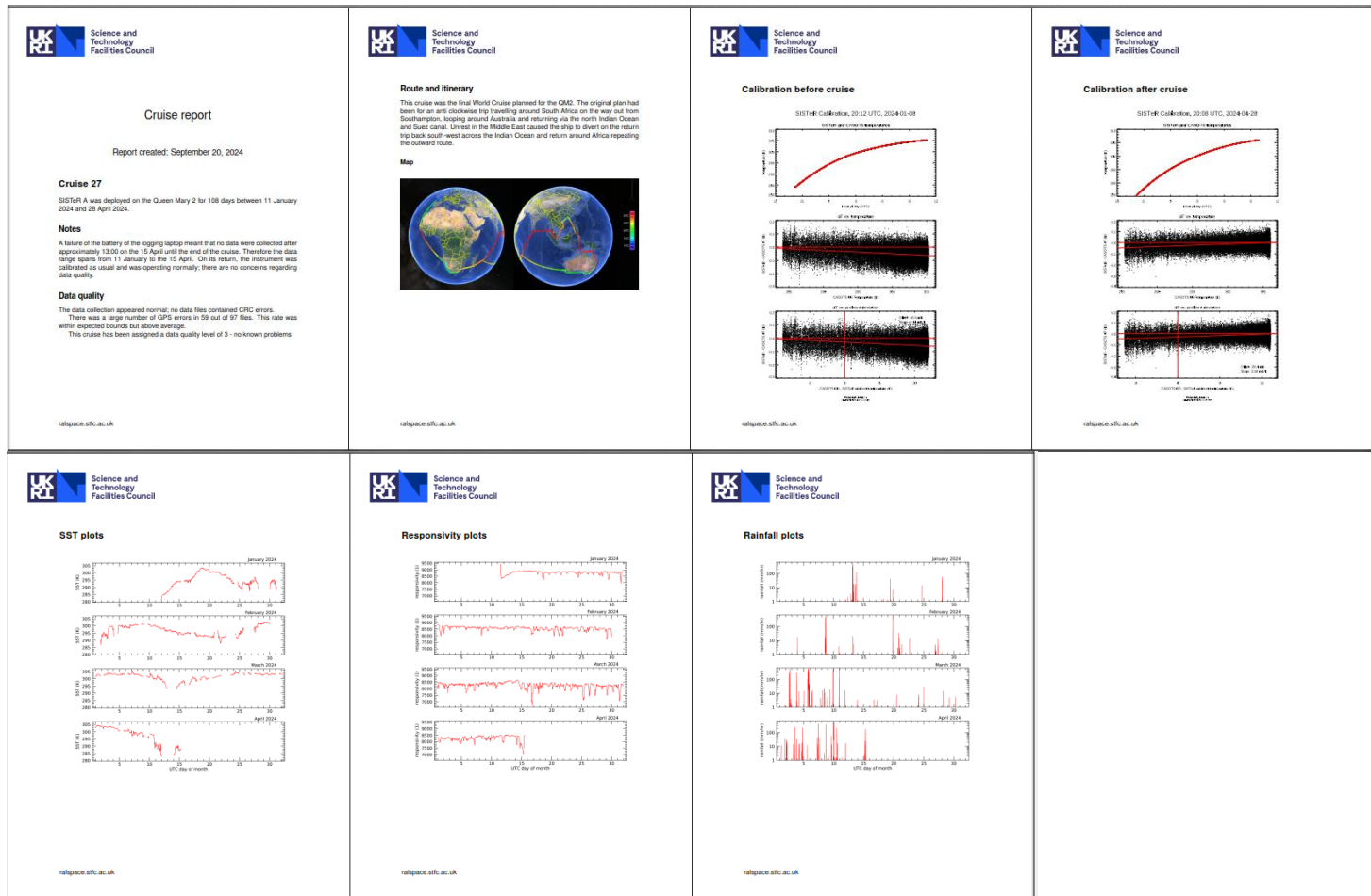
# Upgrades

- New internal black bodies have been manufactured: next steps are painting and assembly
- Calibration hardware has been machined and has now been anodised and assembled
- New batch of scan mirrors manufactured with additional cleaning steps

# Data processing

- Progress is being made to reprocess and prepare the SISTeR data archive with the most recent version of the processor.
- Data also include new Cruise Logs to provide a summary of each cruise and its data
  - Cruise logs completed for cruises 24, 25, 27 28 and 29.
  - This covers the available data from 2022 to 2024
  - Data for cruise 26 is unlikely to be made available due to quality concerns
- Data for these cruises are available through Ifremer and CEDA
- Cruise logs being made available through CEDA, and Ifremer soon
- Data processing and dissemination should speed up from April

# Cruise logs



# Future cruises

- The Queen Anne was launched in May 2024, and Cunard's current plans are to use the Queen Anne, Queen Elizabeth and Queen Victoria for future World Cruises
- The QM2 will focus on Transatlantic crossings and side trips
- In the short term we expect to have more revisit data from the North Atlantic, but may look at other routes in the future