ships4sst

shipborne radiometers for sea surface temperature

Experiences : ISAR - UoS

Werenfrid Wimmer

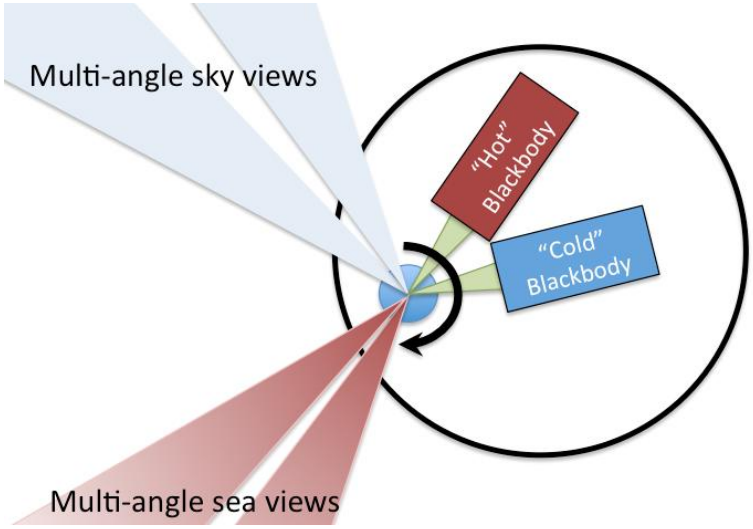
Raymond Holmes, Ian Robinson, Craig Donlon, Gary Fisher, Kelvin Aylett, Ray Collins, ..

Overview

- The ISAR
- Bay of Biscay and English Channel deployments
- Other deployments and projects
- Summary

ISAR

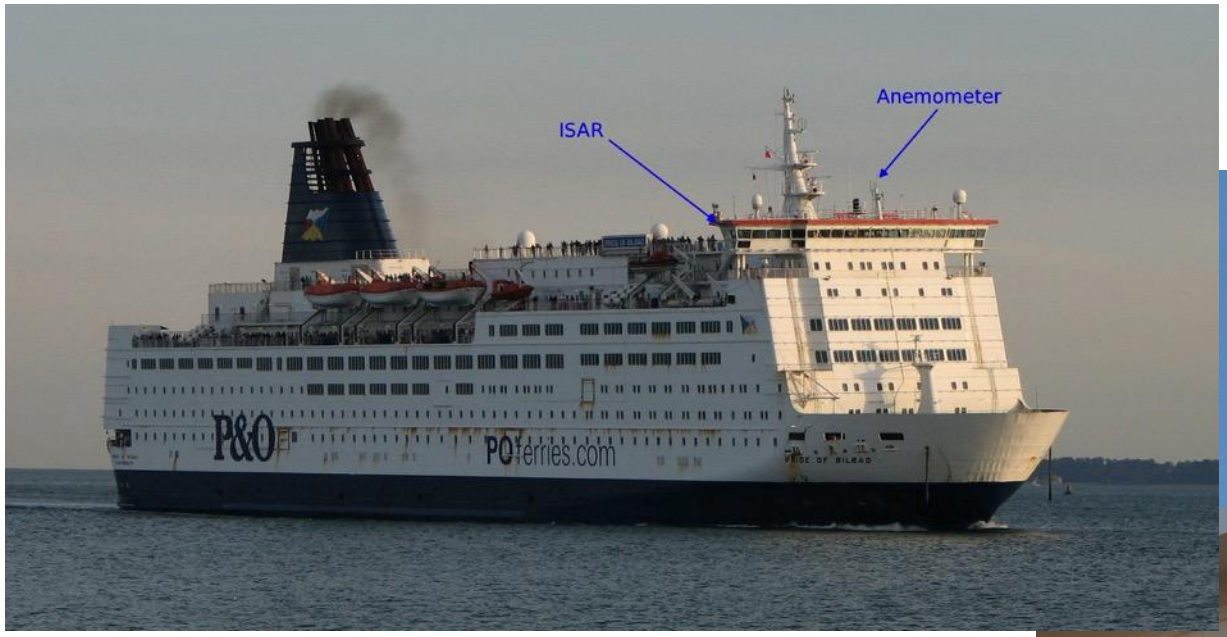
- Infrared Sea surface temperature Autonomous Radiometer



Donlon, C., Robinson, I., Reynolds, M., Wimmer, W., Fisher, G., Edwards, R. and Nightingale, T. (2008), ***'An infrared sea surface temperature autonomous radiometer (ISAR) for deployment aboard volunteer observing ships (VOS)'***, *J. Atmos. Oceanic Technol.* 25, 93–113.

ISAR installed on *Pride of Bilbao*

- 2004 - 2010



- Ancillary instrumentation;
  - Anemometer
  - Short- /Long wave Radiation
  - Hull temperature (5m)
  - Air temperature, Humidity
  - FerryBox, CPR

ISAR installed on *Cap Finistere*

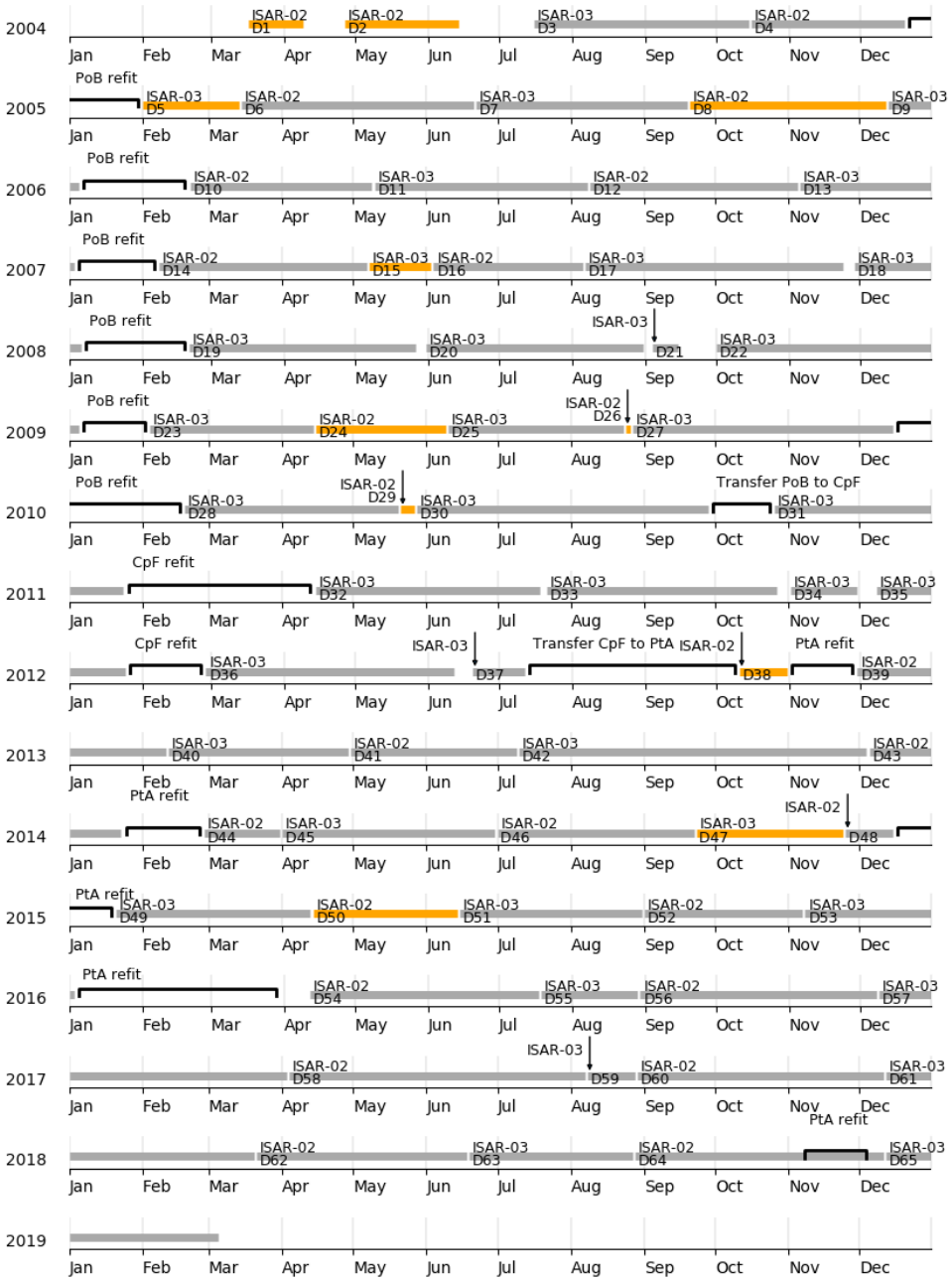
- 2010 - 2012

ISAR installed on *Cap Finistere*

- 2012 - ongoing

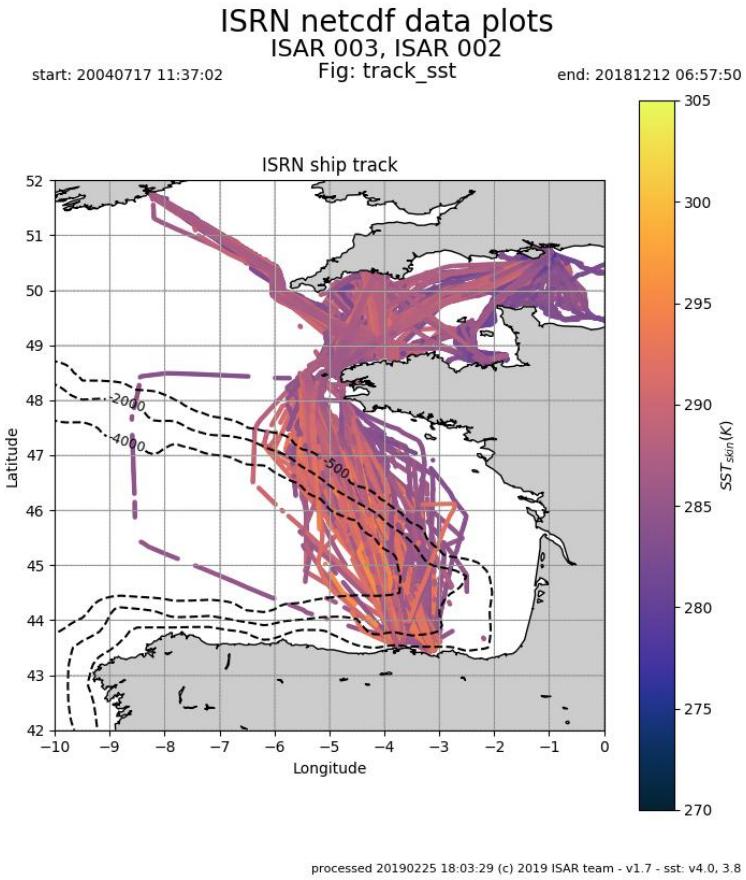
ISAR deployments

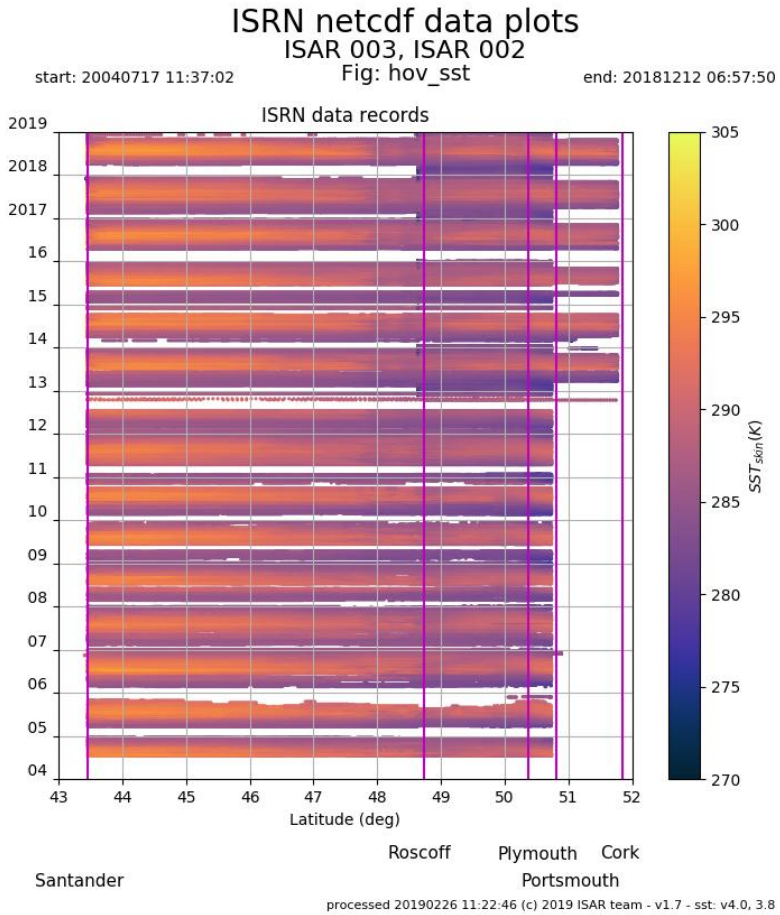
- Bay of Biscay and English Channel
  - 65 deployments
  - ~ 4600 days at sea
  - ~ 905000 SST measurements
  - ~ 200 SST /day
  - 11 failures:
    - 6 electronics issues,
      - 3 related to new electronics trails, 1 thermistors
    - 4 shutter failures
      - 3



ISAR deployments

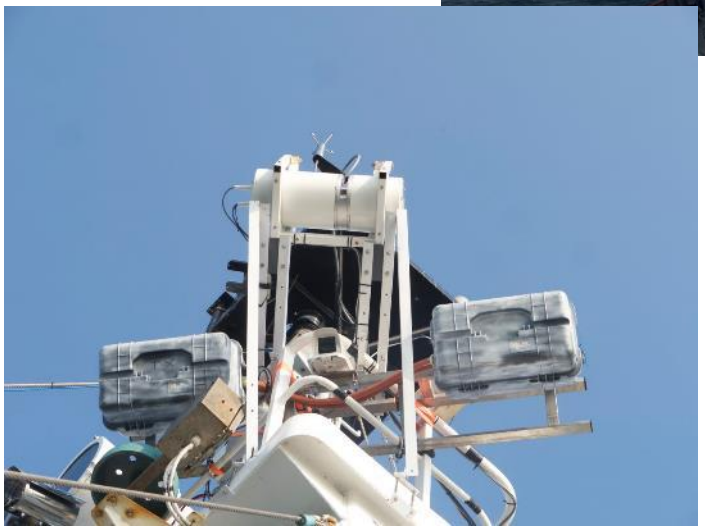
- Bay of Biscay and English Channel data

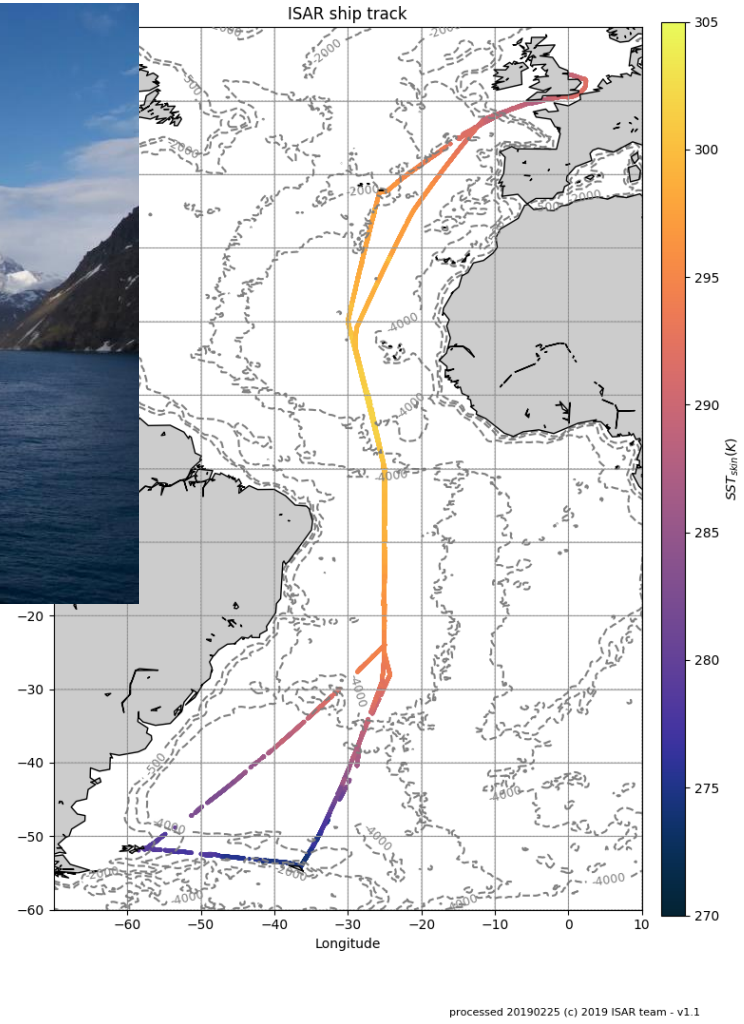




ISAR deployments

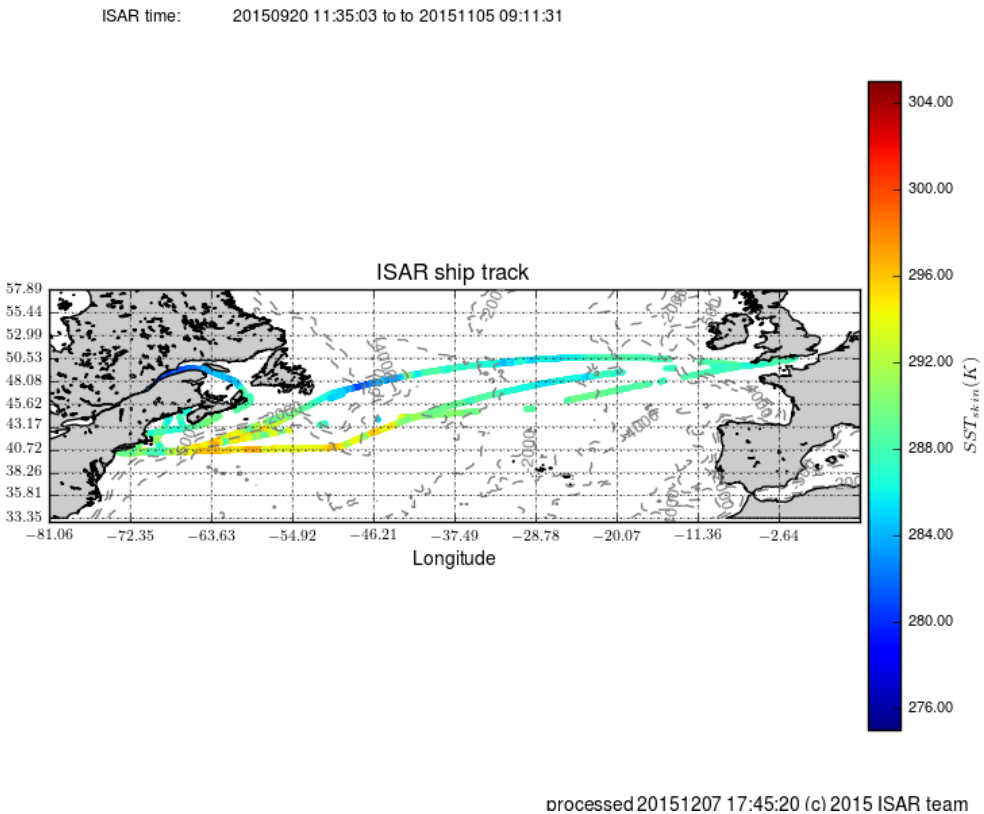
- AMT
  - 3 cruises
  - 124 days
  - ~ 30 000 SST
  - ~ 250 SST /day

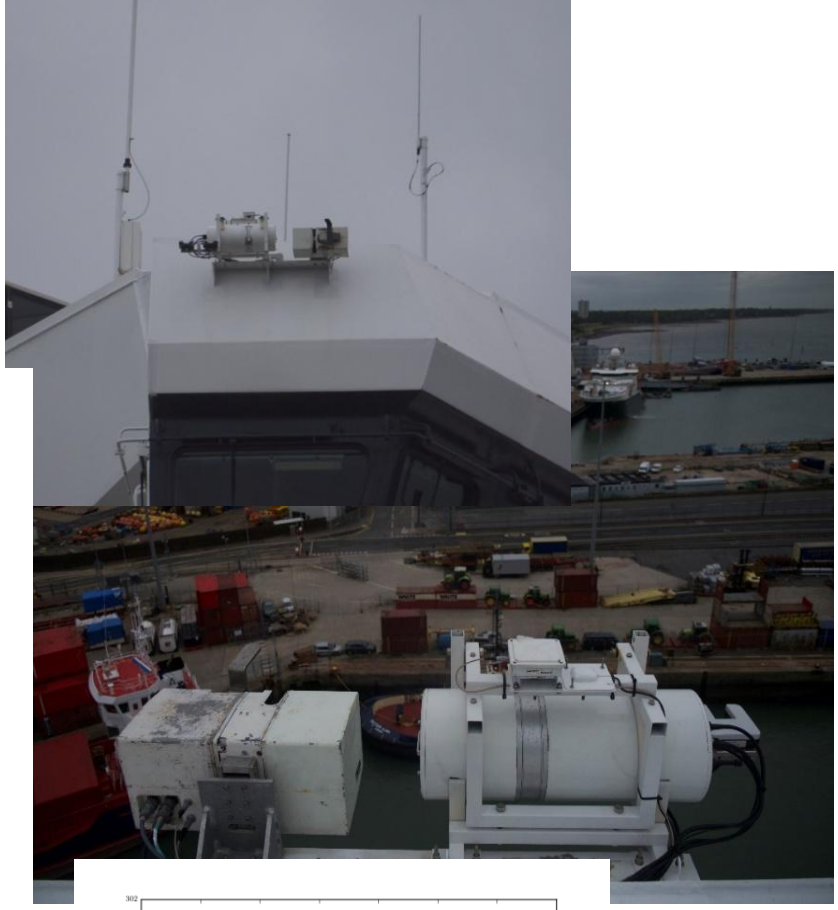


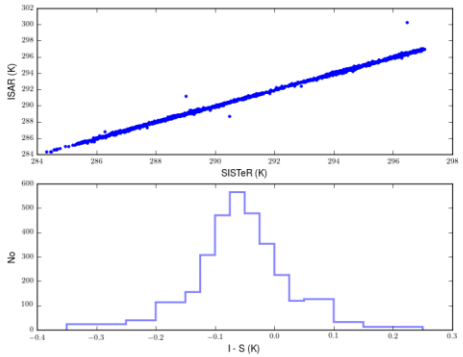


ISAR deployments

- QM2
  - ISAR – SISTeR side by side inter-comparison

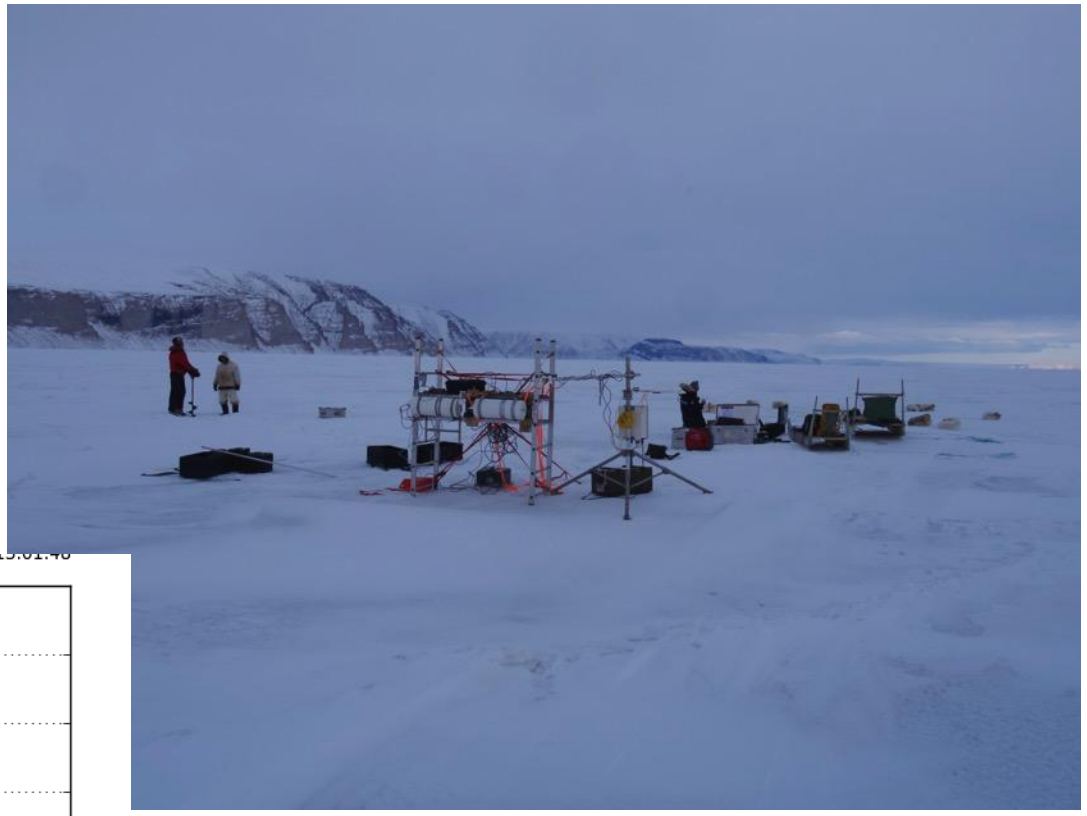


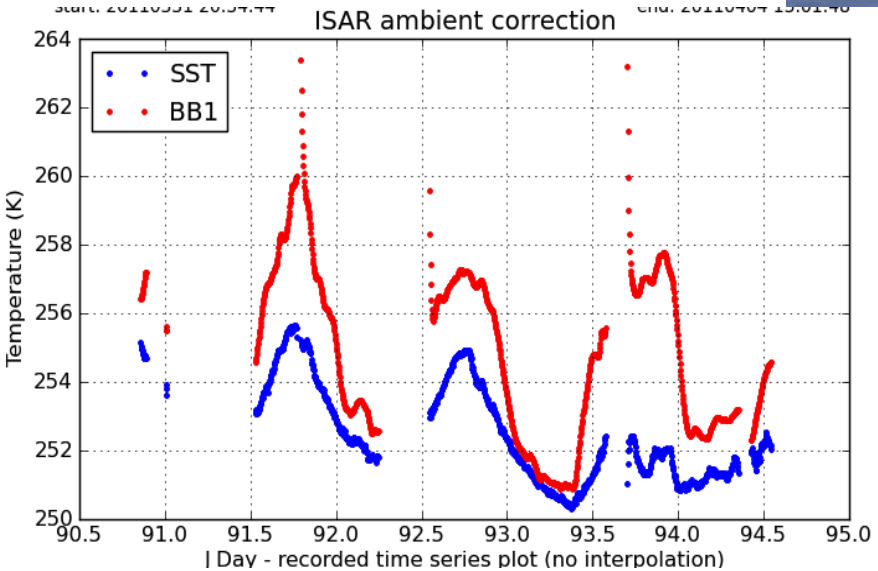




ISAR deployments

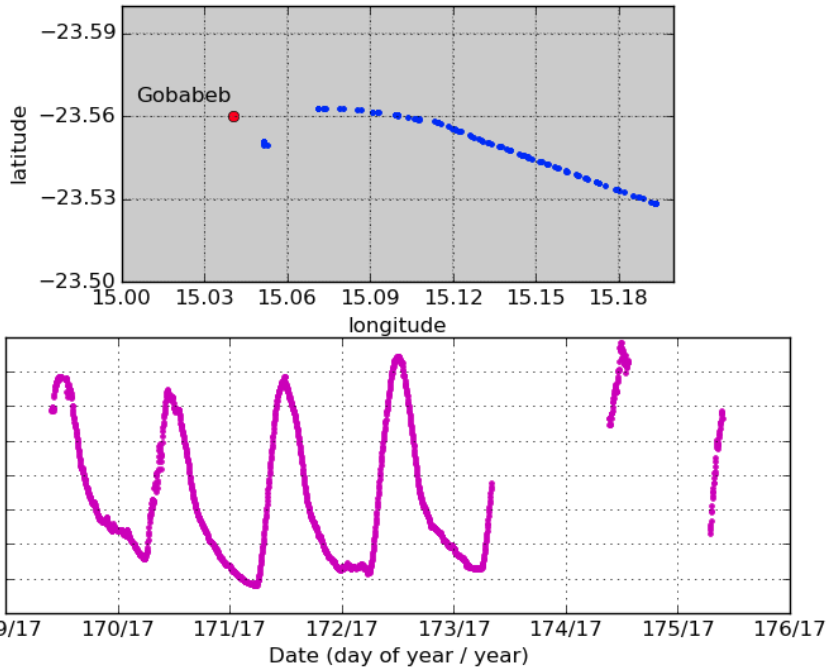
- FRM4STS - ICE





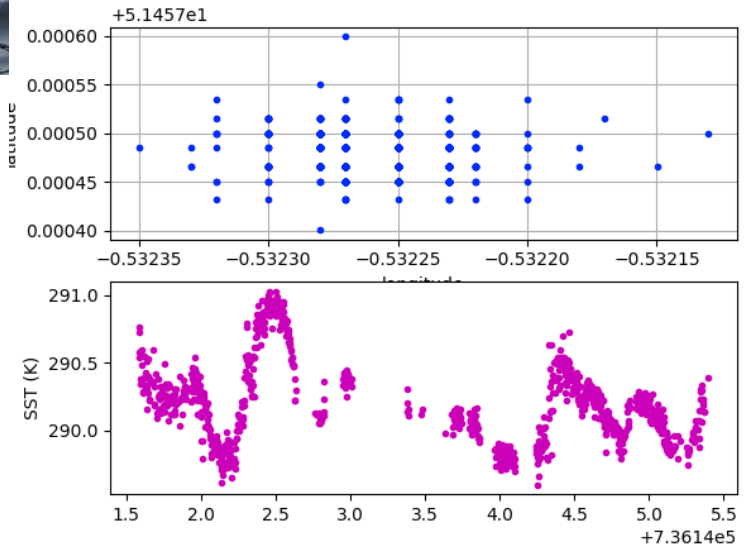
ISAR deployments

- FRM4STS - Land



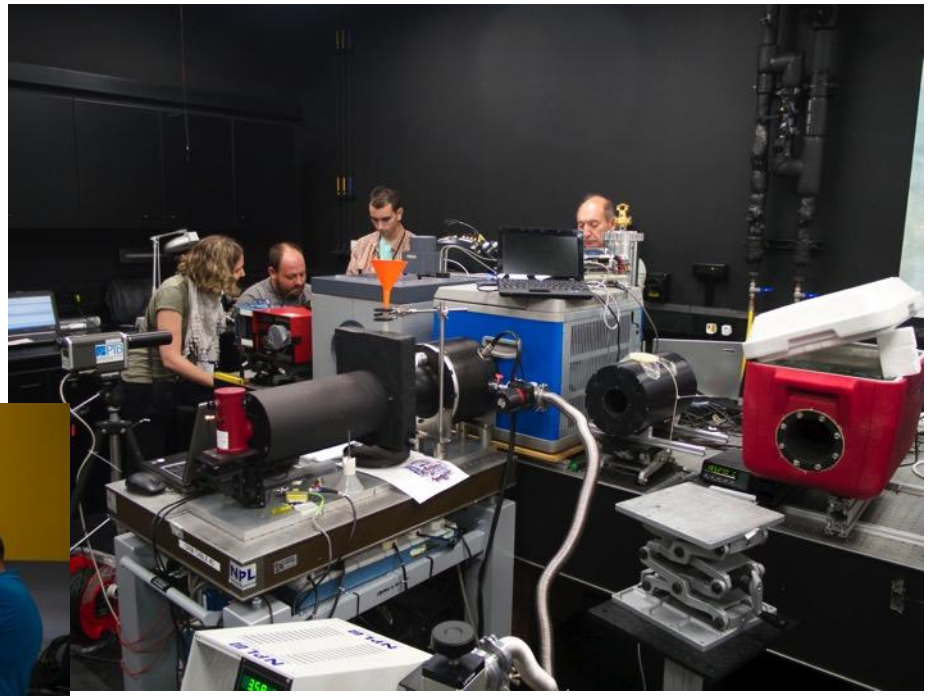
ISAR deployments

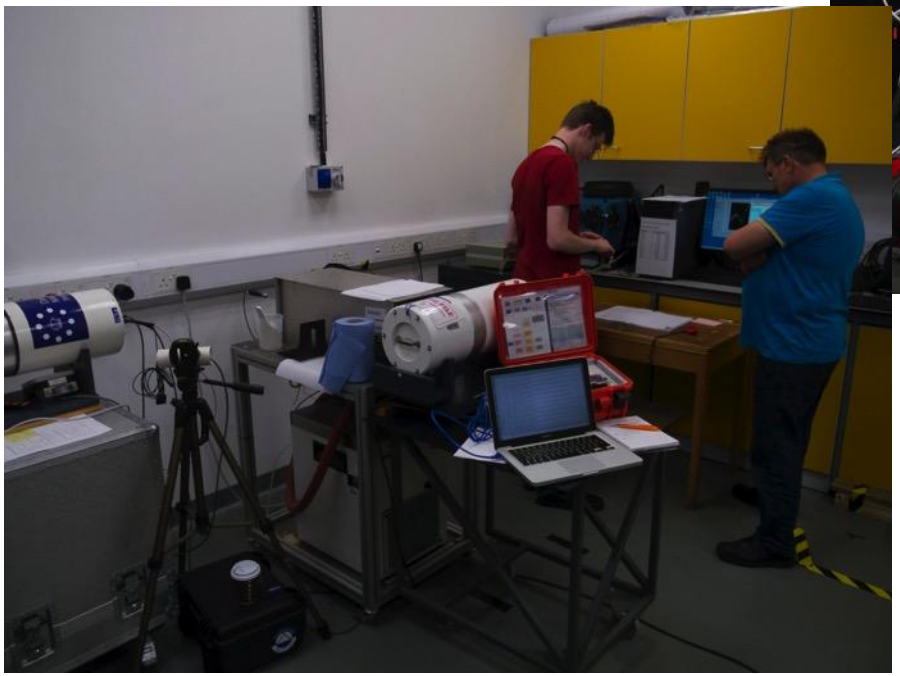
- FRM4STS - SST



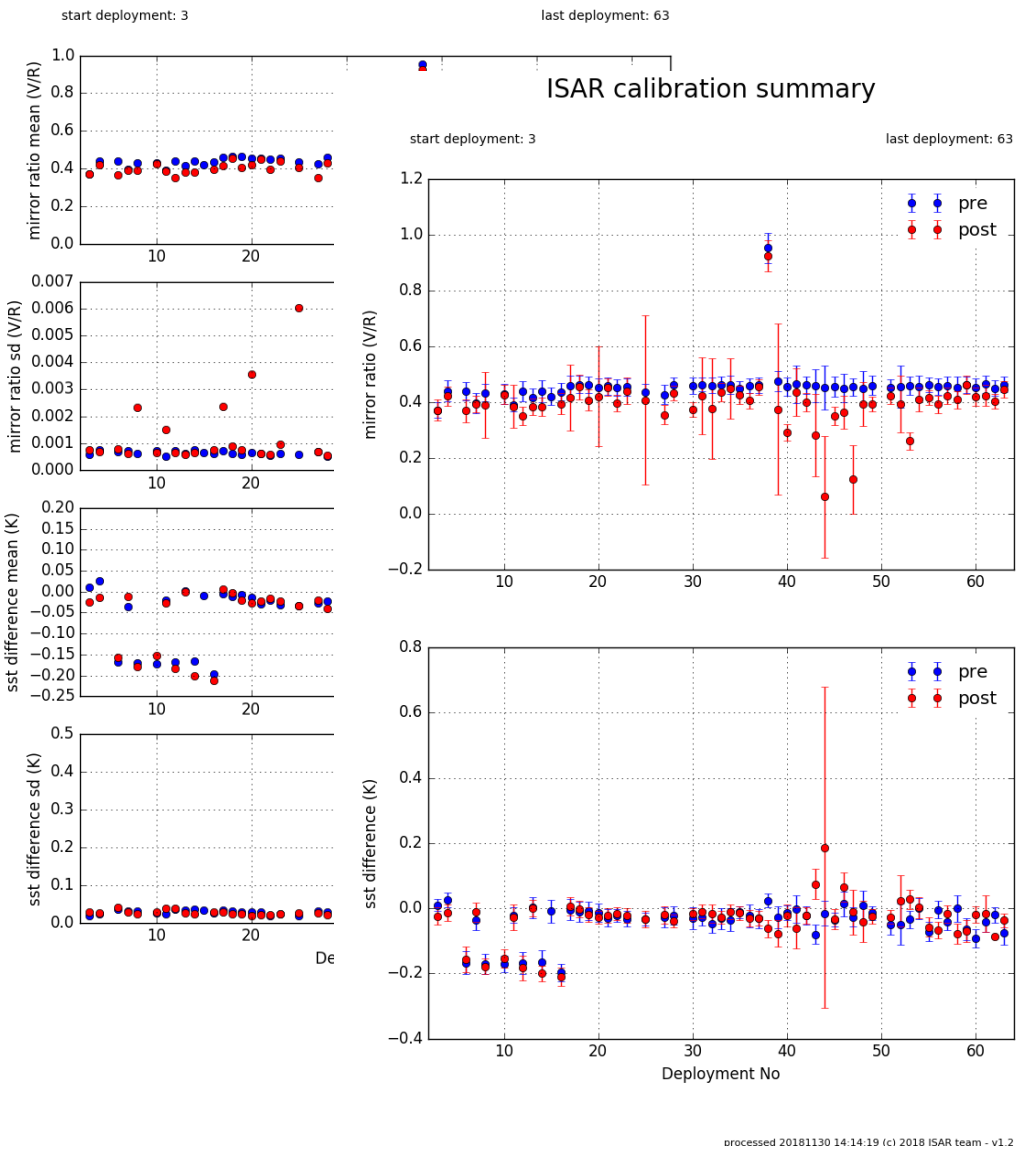
ISAR deployments

- FRM4STS - NPL





ISAR experience



ISAR experience

- 15 years of near continuous operations
  - English Channel and Bay of Biscay
- Lots of high quality data
- One of the longest SST skin data records
  - More than 1000000 SST measurements
- Autonomous instrument, works in most environments
  - However needs careful maintenance
- Expansion to other areas – AMT
- Protocols for installation
  - Instrumentation
  - Ship owners
- Failures
  - Design changes
  - Improved maintenance and pre-deployment checks

ISAR customers

- University of Miami
- Ocean University China
- JAXA
- Royal Navy
- Danish Metrological Institute
- WHOI
- CSIRO
- Seoul National University
- Vaisala (Australian Antarctic Division)
- National Ocean Technology Center of China
- (MetNo)