

How is the Integrated Marine Observing System responding to the heatwave?

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On behalf of the IMOS Event based sub-facility

Coastal Oceanography

11 / December / 2023

The Long Hot Summer:
Getting Ahead of the Heatwave

The Integrated Marine Observing System ++ AUSTRALIAN OCEAN DATA NETWORK

All data collected through IMOS is **FREE**

<https://portal.aodn.org.au/>



imos Integrated Marine Observing System in Tasmania

IMOS' SUSTAINED OCEAN OBSERVING INFRASTRUCTURE IN TASMANIA



THE TASMANIAN MARINE SCIENCE COMMUNITY HAS USED IMOS OBSERVATIONS TO PRODUCE:

191 JOURNAL ARTICLES **81** REPORTS **73** PROJECTS **35** DATA PRODUCTS **49** POSTGRADUATE PROJECTS

TASMANIAN INSTITUTIONAL USERS OF IMOS OBSERVATIONS:



IMOS OFFICE AND AUSTRALIAN OCEAN DATA NETWORK (AODN)

Based at the University of Tasmania, the IMOS Office manages and coordinates the IMOS Facilities spread around the country. The Australian Ocean Data Network makes all data collected by the IMOS Facilities openly available. These jobs represent a highly skilled workforce of software developers and data scientists.

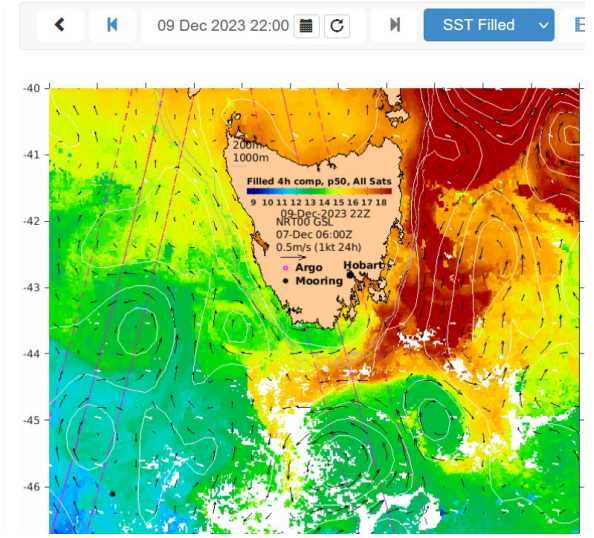
CSIRO Oceans and Atmosphere's proximity to the IMOS Office and their key place in the partnership further enriches the collaboration.

Select region

- Snapshot SST
- Four hour SST
- 6-Day SST & Centiles
- Climatology
- SST Anom vs Time
- Snapshot Chlorophyll-a
- Adj. Sea Level Anom.
- Non-Tidal Sea Level Anom.

Legend

- Argo
- ◆ Glider
- ⇒ Radar
- Drifter
- Ship



imos Integrated Marine Observing System

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IMOS Ocean Gliders is a facility of Australia's Integrated Marine Observing System (IMOS) and is responsible for the operation and maintenance of the ocean glider fleet. IMOS Ocean Gliders is operated by the University of Western Australia.

Active Gliders 🚀

- unit286 (TasEastCoast-07Dec23)
- unit287 (Forster-10Oct23)

Map ▾

NEW SOUTH WALES Sydney

Adelaide Canberra ACT

VICTORIA Melbourne

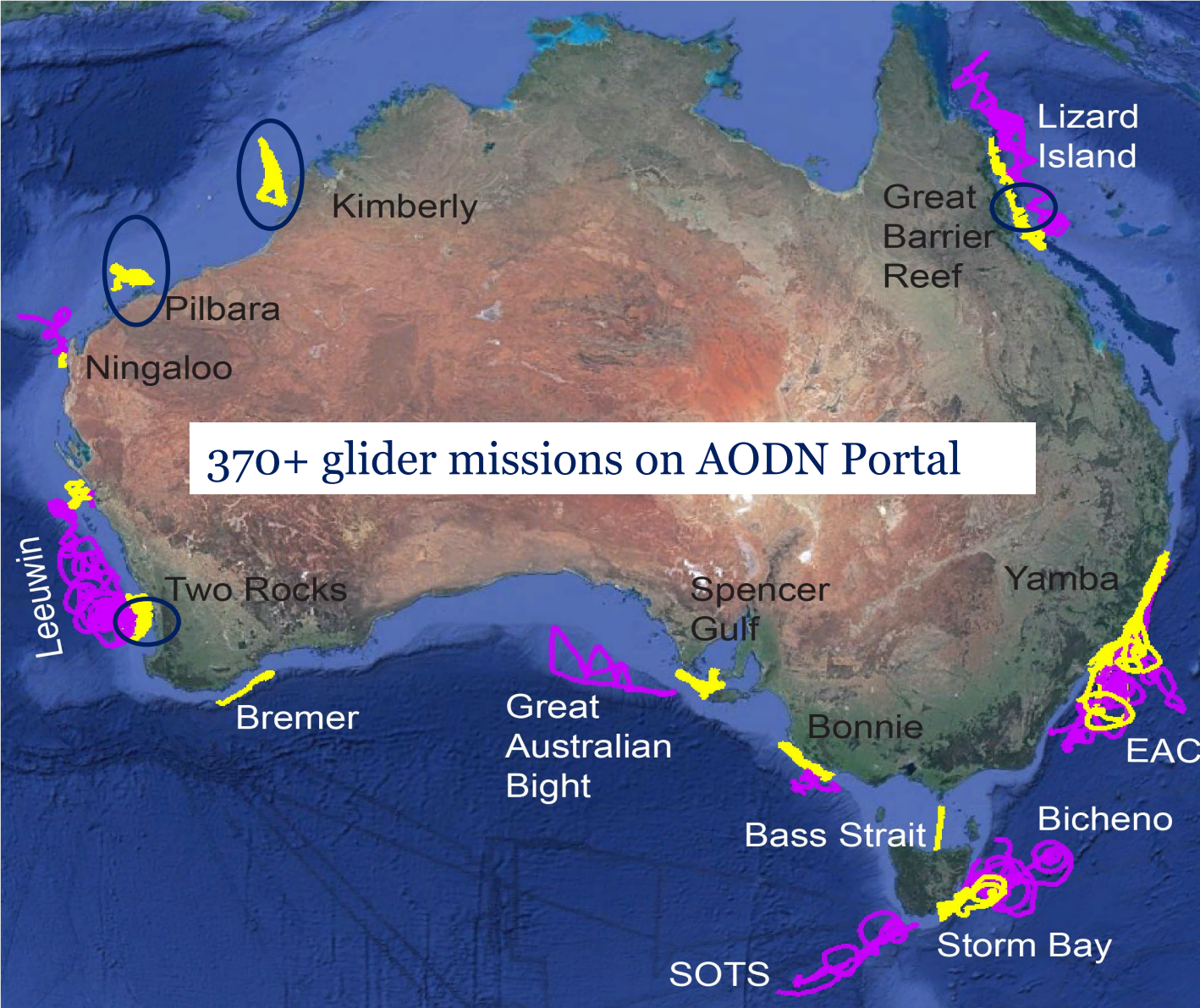
TASMANIA Hobart

Tasman Sea

Google

Ocean Glider deployments





2009-2023

9050 glider days
(> 25 years)

213695 km

IMOS Event Based Sampling

- We have developed strategies for sampling marine heatwaves with ocean gliders and engaged with potential data users (fisheries, aquaculture industries, ecologists, marine managers).
- Two **Event Based Sampling** gliders off Tasmania during the **2019 Tasman Sea marine heatwave**.
- Regularly scheduled Two Rocks glider sampled the **2019 WA marine heatwave** (development).
- Regularly scheduled Central GBR glider sampled the **2020 GBR marine heatwave** (development).
- **Event Based Sampling** gliders deployed in the **Central GBR** and **Southern GBR**.
- **Event Based Sampling** during the **2020 North West Shelf marine heatwave** (cooling phase).
- **Event Based Sampling gliders** sampled warm waters off **Tasmania** in autumn 2021.
- **Event Based Sampling glider** sampled the **2021 WA marine heatwave** (cooling phase).

Near real time data streams: <http://anfog.ecm.uwa.edu.au/>

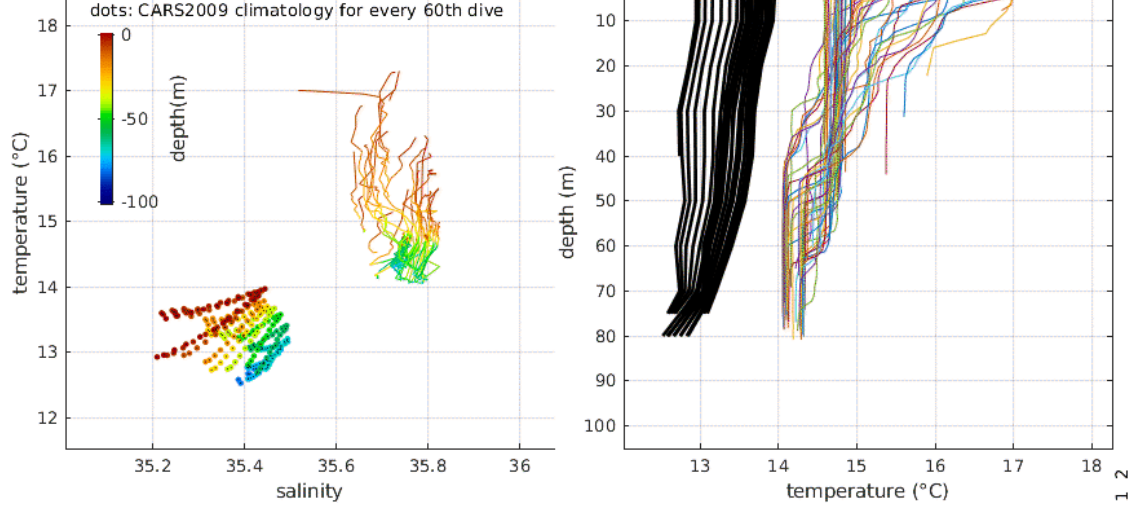
All past glider missions: <http://oceancurrent.imos.org.au/gliders/index.php>

For more information: <https://imos.org.au/facilities/oceangliders/event-based-sampling>

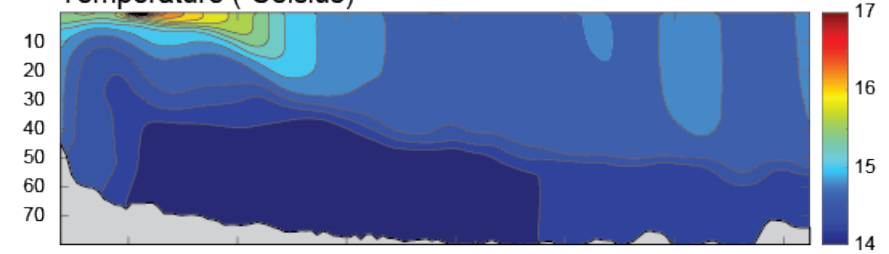
Bass Strait: Nov 2023

IMOS slocum_glider SL286 BassStrait20231109 147 147 -41 -40

lines: glider T&S (every 30th dive)
dots: CARS2009 climatology for every 60th dive



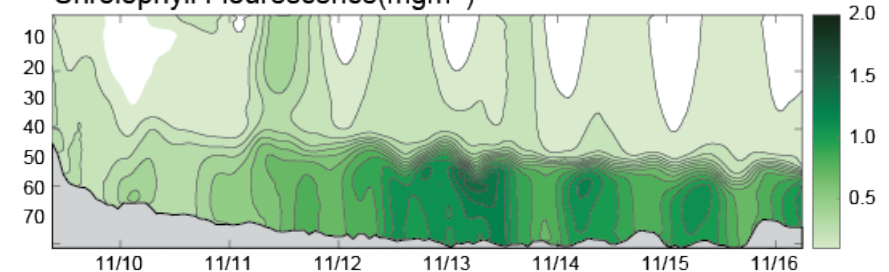
Temperature (°Celsius)



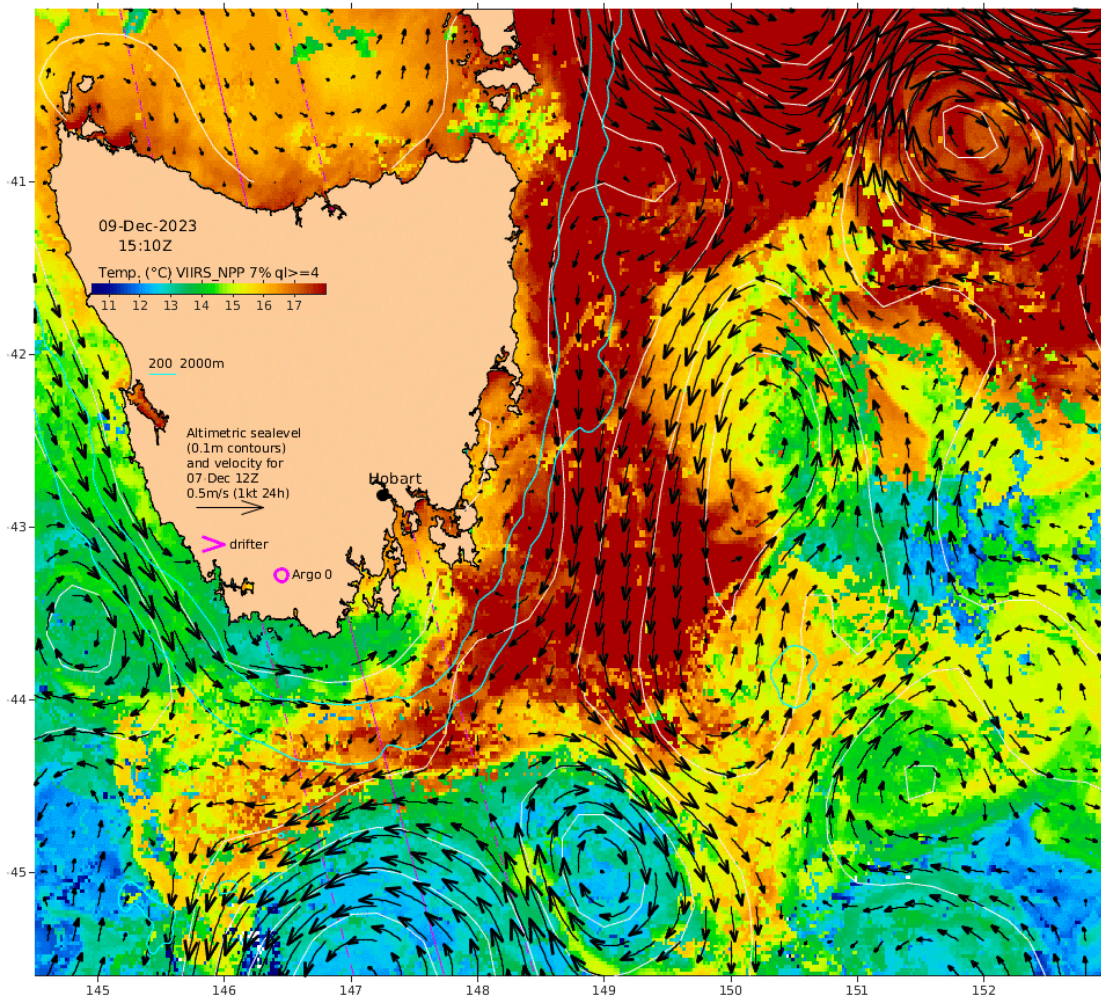
Salinity



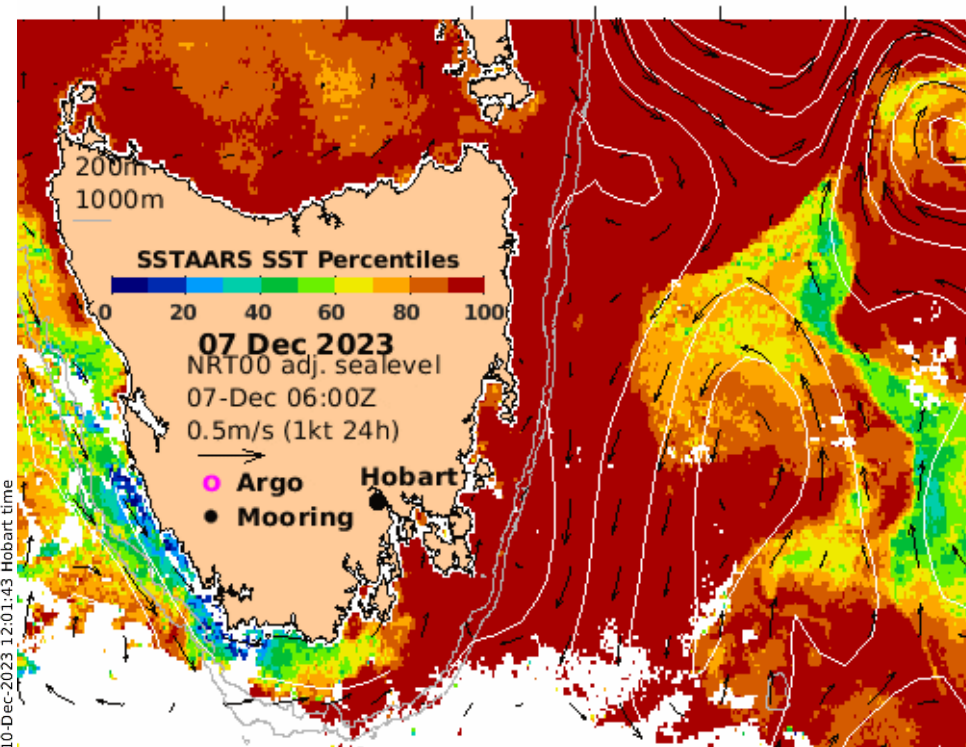
Chlorophyll Fluorescence (mgm⁻³)

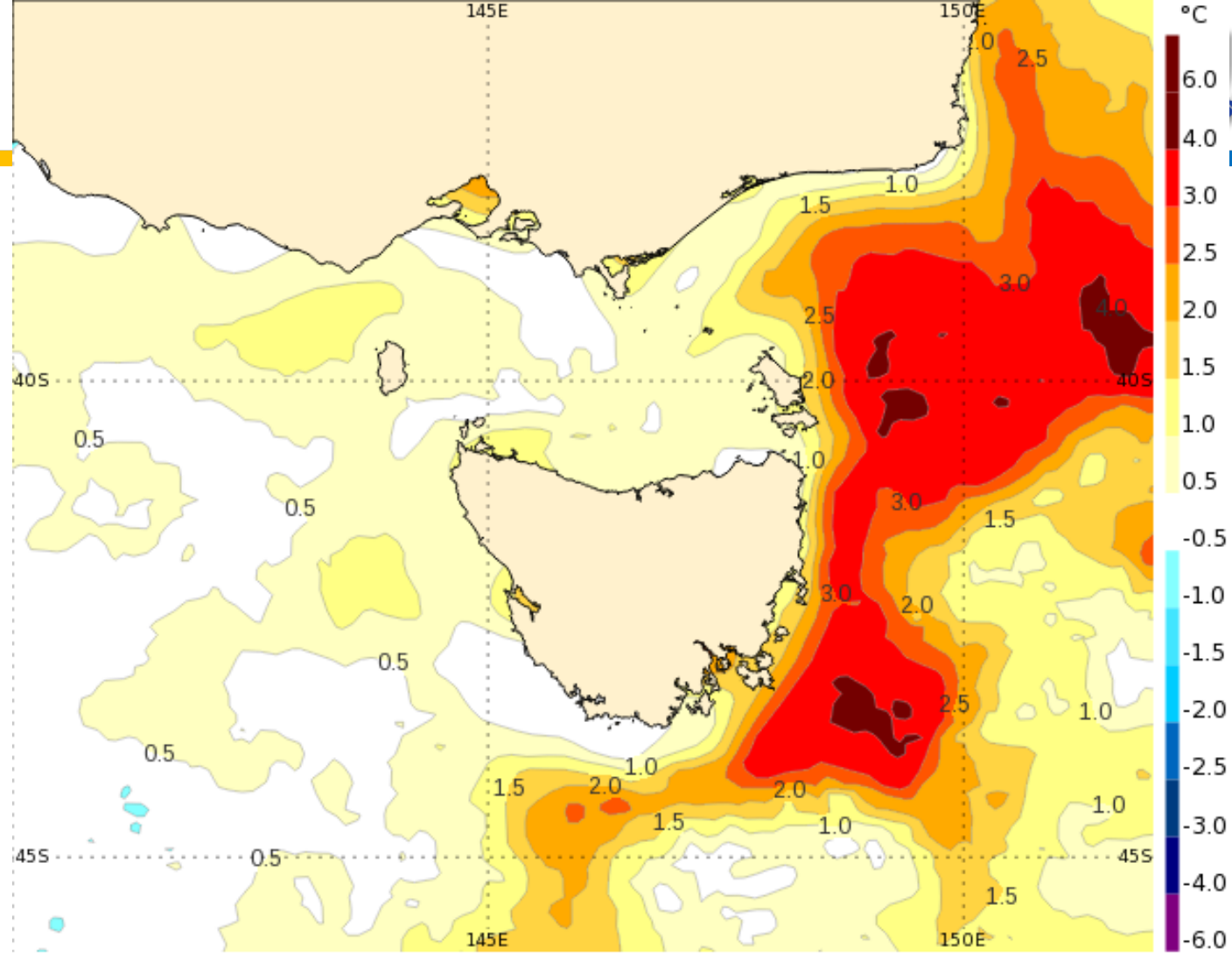


Time (UTC)



© IMOS 10-Dec-2023 12:01:43 Hobart time

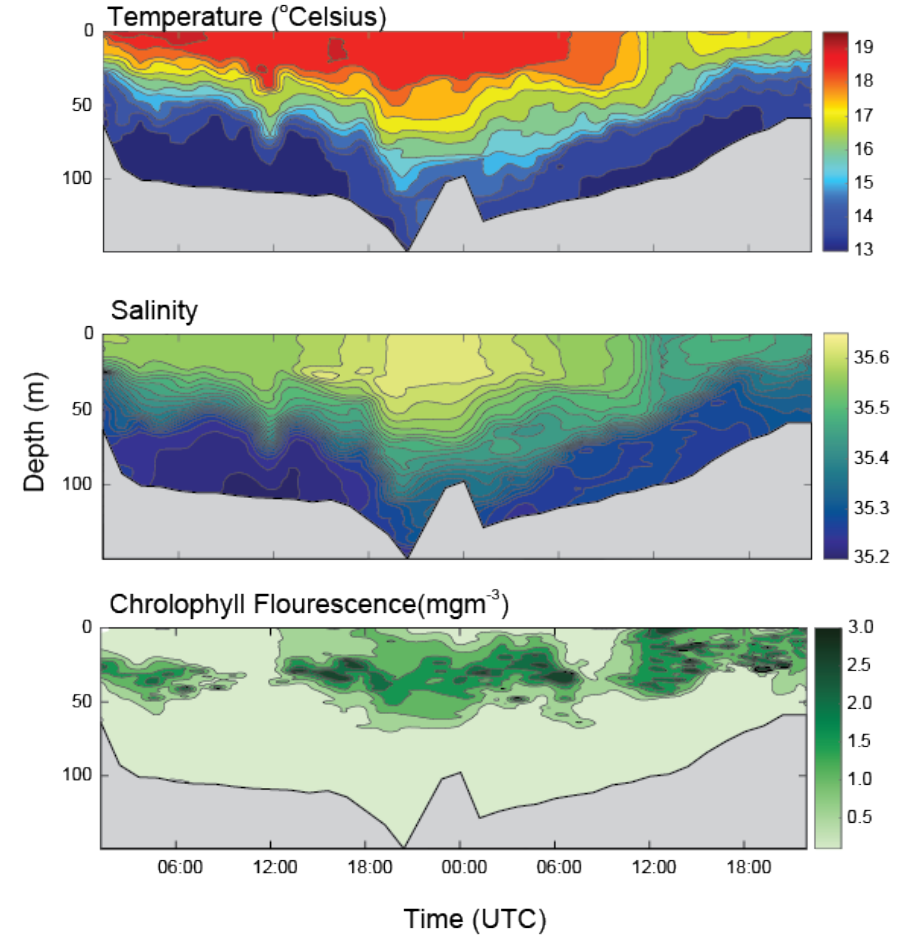
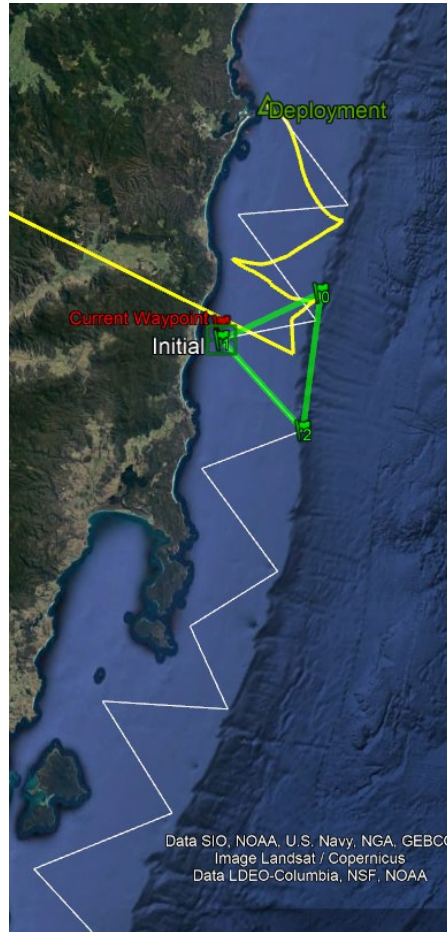




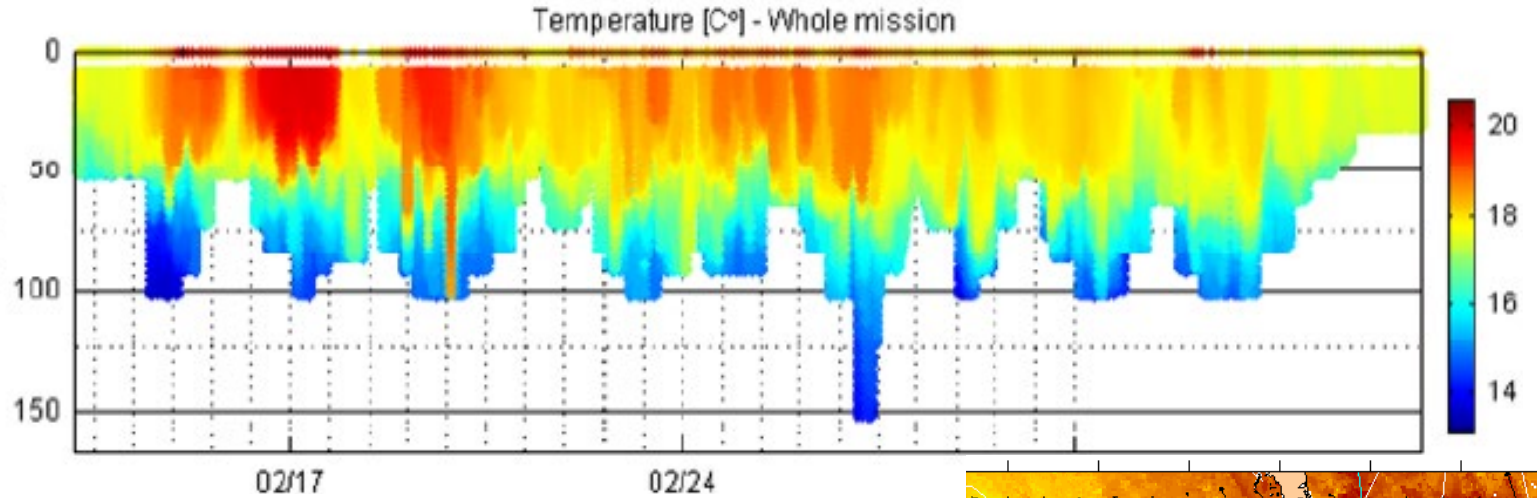
Sea surface temperature anomaly (deg C): Daily analysis for **Sat 9 Dec 2023**

(c) Copyright Australian Bureau of Meteorology | **RAMSSA** | Climatology 1961-1990

East Tasmania: Dec 2023

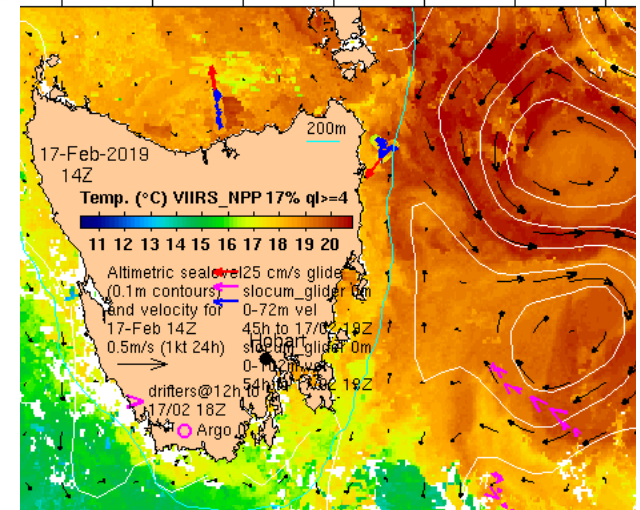
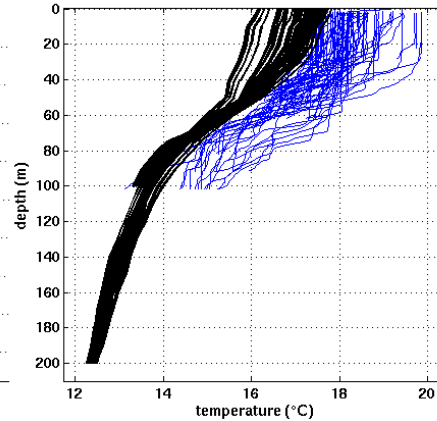
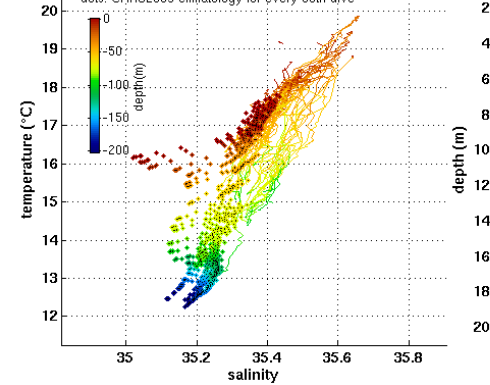


East Tasmania: Feb 2019



IMOS slocum_glider SL281 TasEastCoast20190213 148 149 -43 -41

lines: glider T&S (every 30th dive)
dots: CARS2009 climatology for every 60th dive



Outlook to June 2024

- IMOS ocean gliders will continue to monitor East Tasmania and Bass Strait
- Bass Strait – 3 deployments
- East Tasmania – 2 deployments (‘Step change’)
- East Tasmania – Event based sampling (5 deployments remain)