

# Northern Australia SWOT Rapid Phase *in situ* campaign

## Main Objective:

Provide *in situ* measurements to interpret the SWOT rapid phase sea surface height measurements

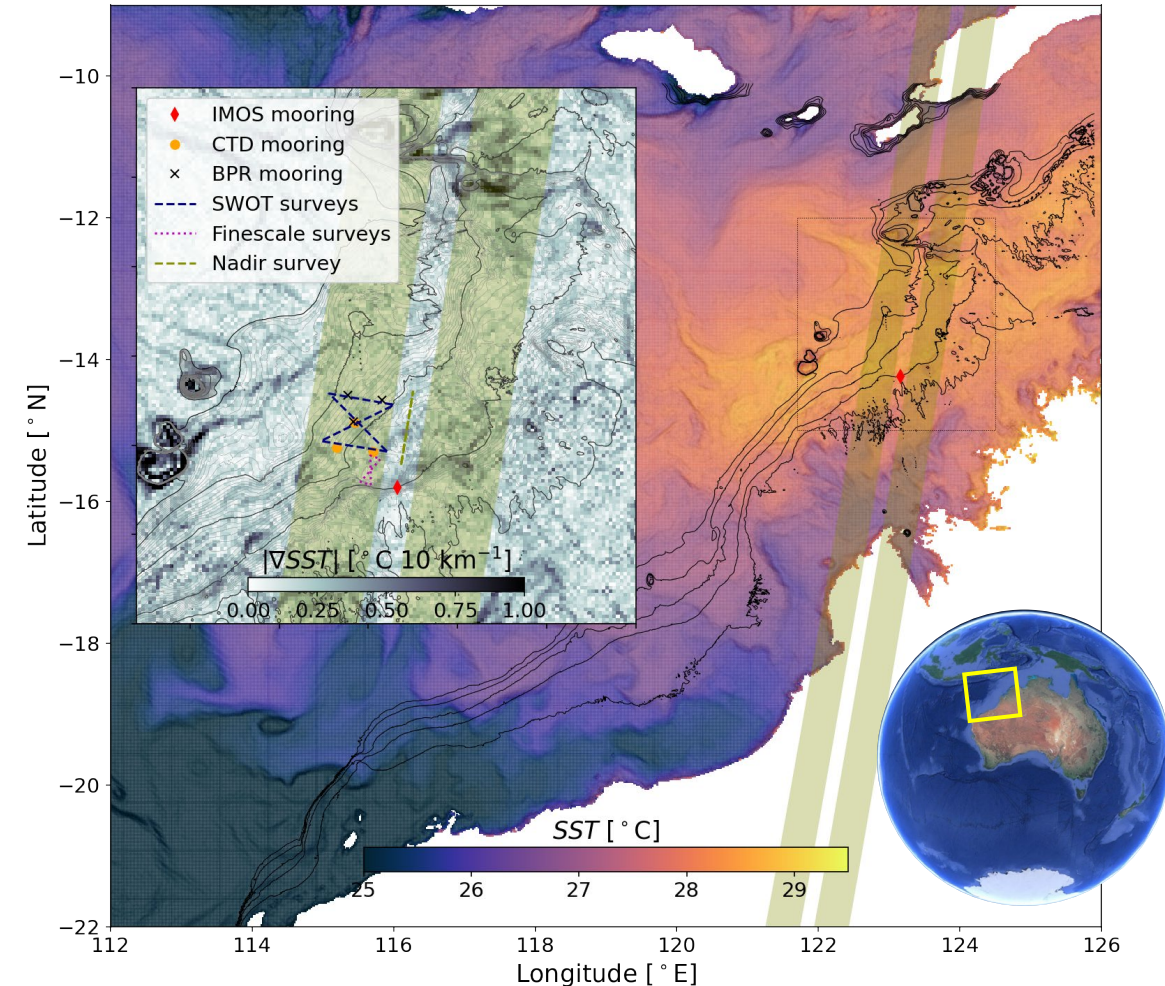
## Who:

- Prof. Nicole Jones, Dr. Matt Rayson, Emeritus Prof. Greg Ivey, Dr. Jen-Ping Peng, Rick de Kreij – *University of Western Australia*
- Dr. Shane Keating – *University of New South Wales*
- Dr. Aurélien Ponte – *IFREMER*
- Dr. Callum Shakespeare – *Australian National University*
- Dr. Jessica Benthuisen – *Australian Institute of Marine Science*

## Science Questions:

- Internal wave-eddy disentanglement
- Topographic eddy generation (surface and subsurface)
- Lateral transport rates

## Where:



# Sampling program on the RV Solander



## Deployed moorings in 20 April 2023 – 2<sup>nd</sup> June 2023

### 10 days of intensive ship-based sampling:

- Vessel has 150 kHz ADCP and surface thermo-salinograph (TSG)
- CTD and vertical microstructure profiling (VMP) at stations

### 3x through-water column CTD + ADCP moorings:

- TWC T, u, v (some S)
- 2x Near surface 1000 MHz Nortek signature (upper 20 m)

### 3x bottom pressure recorders (BPR):

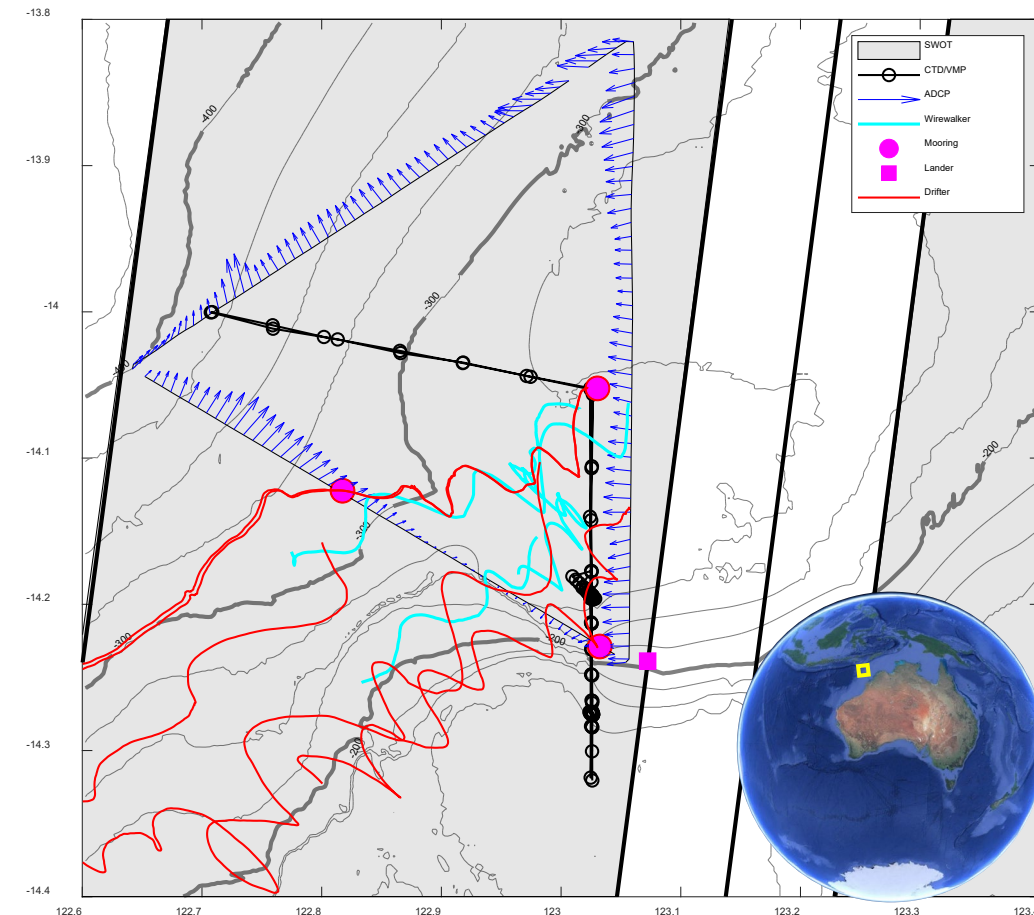
- 25 km ~ 0.5 mode-1 internal wavelength (50 – 60 km)
- RBR Quartz 16 Hz

### Bottom lander:

- Near-bed turbulence (ADV) and velocity profiles

### Other instruments:

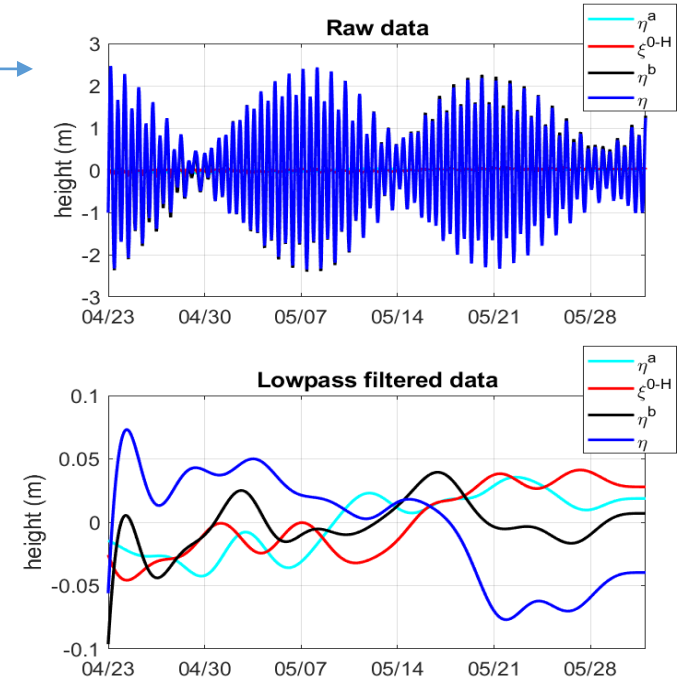
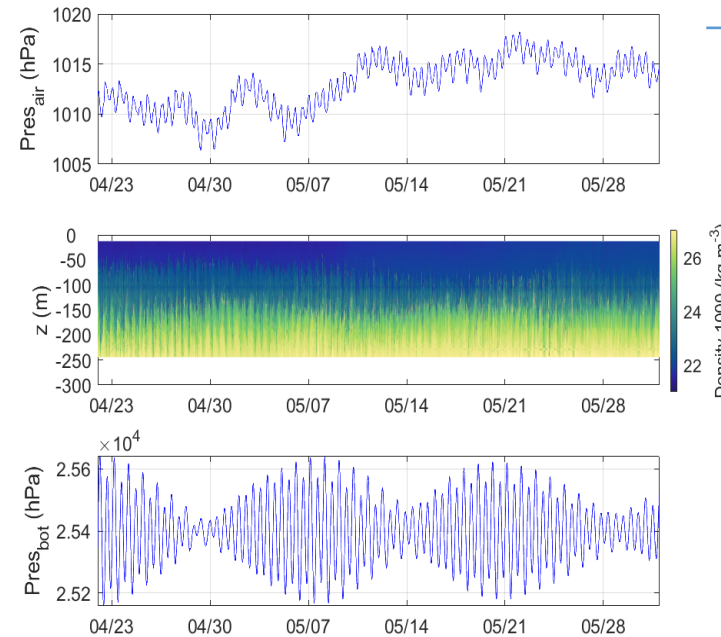
- Drifting wirewalker (continuous upper ocean turbulent quantities)
- Satellite-tracked drifters (10 Pacific Gyre)
- 8 slocum gliders (out of 10 planned)



# Mooring SSH budget (preliminary)

SSH budget

- $\frac{P_a}{\rho_0 g}$ : the air pressure
- $\int_{-H}^0 \frac{\rho'}{\rho_0} dz$ : the steric height
- $\frac{P'_b}{\rho_0 g}$ : the bottom pressure



Low-pass filtered data  
(The filtering is 4th order  
butterworth with a 60 hour  
cutoff)

Initial result: Low-frequency SSH gradient of 2 cm / 10 km observed between two sites