

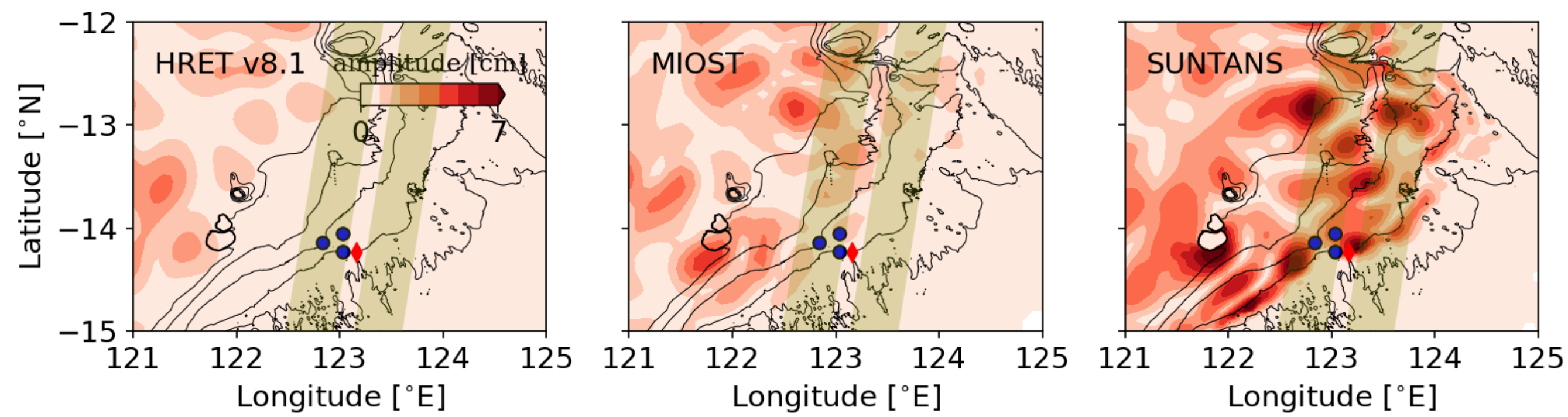
North West Australian Shelf Topographic Internal Tide and Eddy Measurement Program

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Introduction

In situ data collected during SWOT rapid phase in region with:

1. Large-amplitude internal tides
2. Topographically-generated eddies
3. Non-linear and breaking internal waves



SWOT campaign on the Australian Northwest shelf

Dates:

- Leg 1: 18 April – 5 May
- Leg 2: 30 May – 6 June
- 3 Moorings Deployed (22 April – 1 June 2023)

Objectives:

- Measure hydrography, bottom pressure and velocity during SWOT rapid sampling phase (...as much as possible!)
- Collect spatial and temporal data sets for stochastic model development
- Strong focus on near-surface velocity data collection
- Turbulent observations (near-surface and near-seabed) for heat and momentum flux estimates



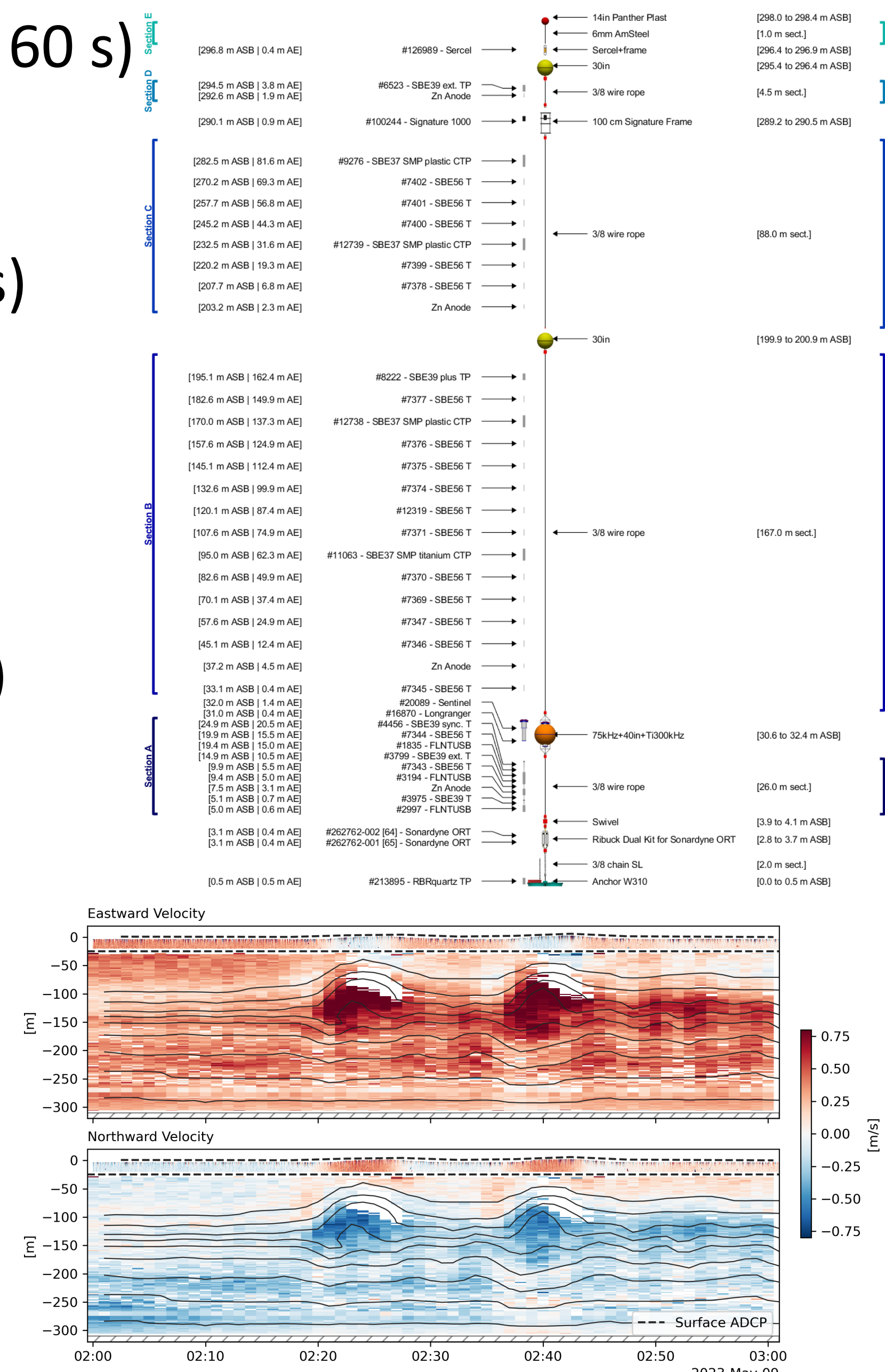
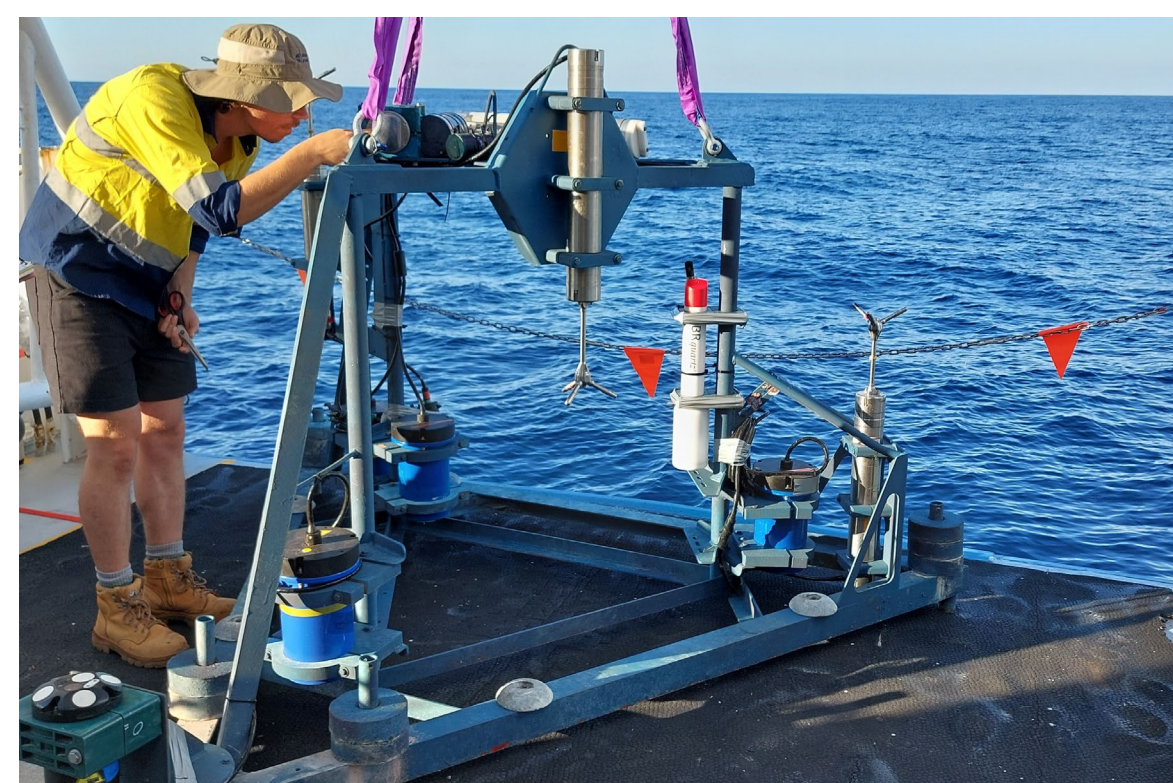
Moored Data Overview

3x through-water-column moorings

- Long-range ADCPs (5 m, 60 s)
- T @ 2 Hz every 10 m
- S, P (knockdown)
- Surface ADCP (0.1 m, 3 s)
- Bottom pressure (16 Hz)
- 1x turbulent flux pack

1x bottom lander

- 3x ADV (BBL turbulence)
- 1x 1000 kHz ADCP
- Bottom pressure



Ship and Lagrangian Data Overview

Vessel-based sampling

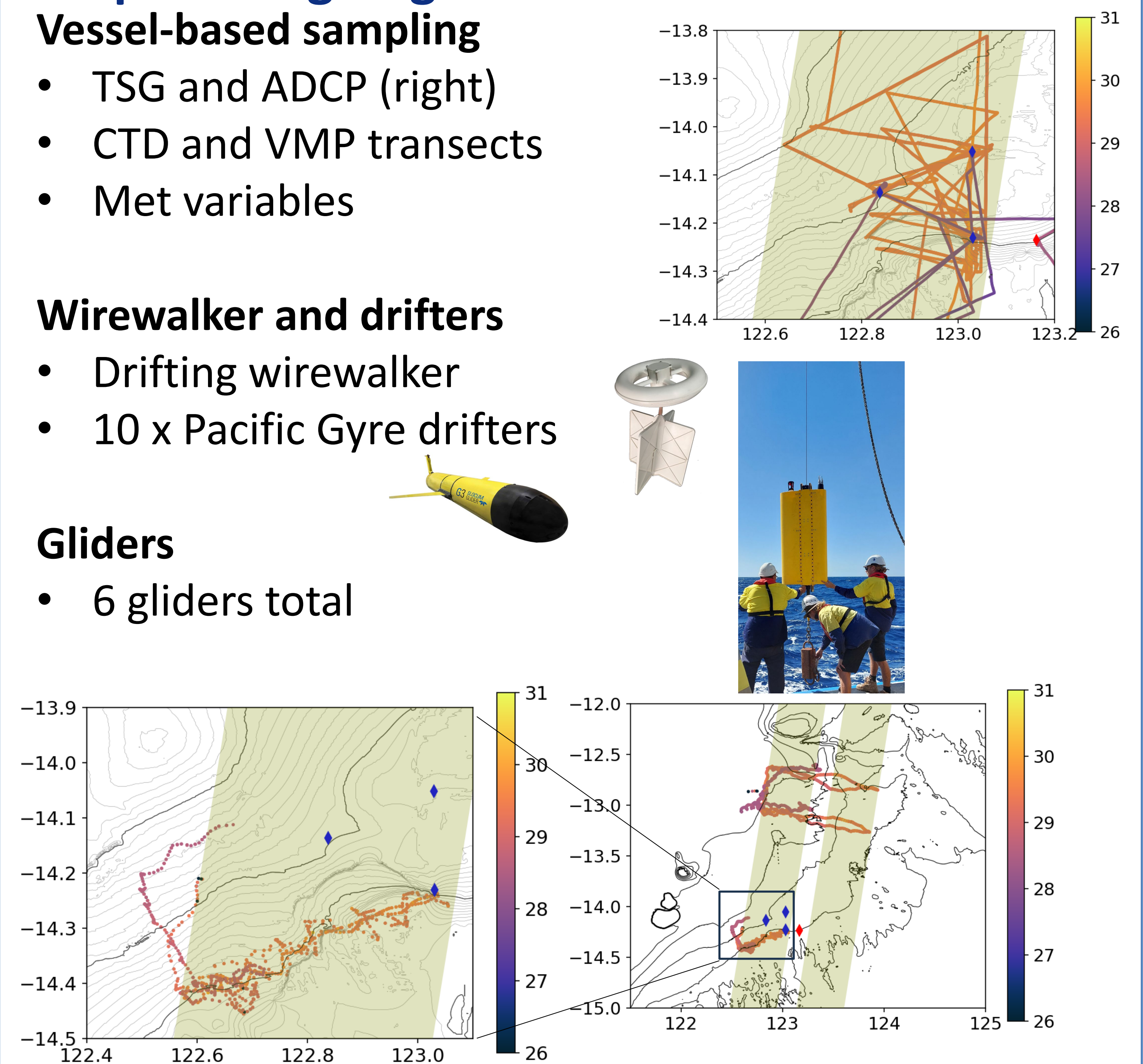
- TSG and ADCP (right)
- CTD and VMP transects
- Met variables

Wirewalker and drifters

- Drifting wirewalker
- 10 x Pacific Gyre drifters

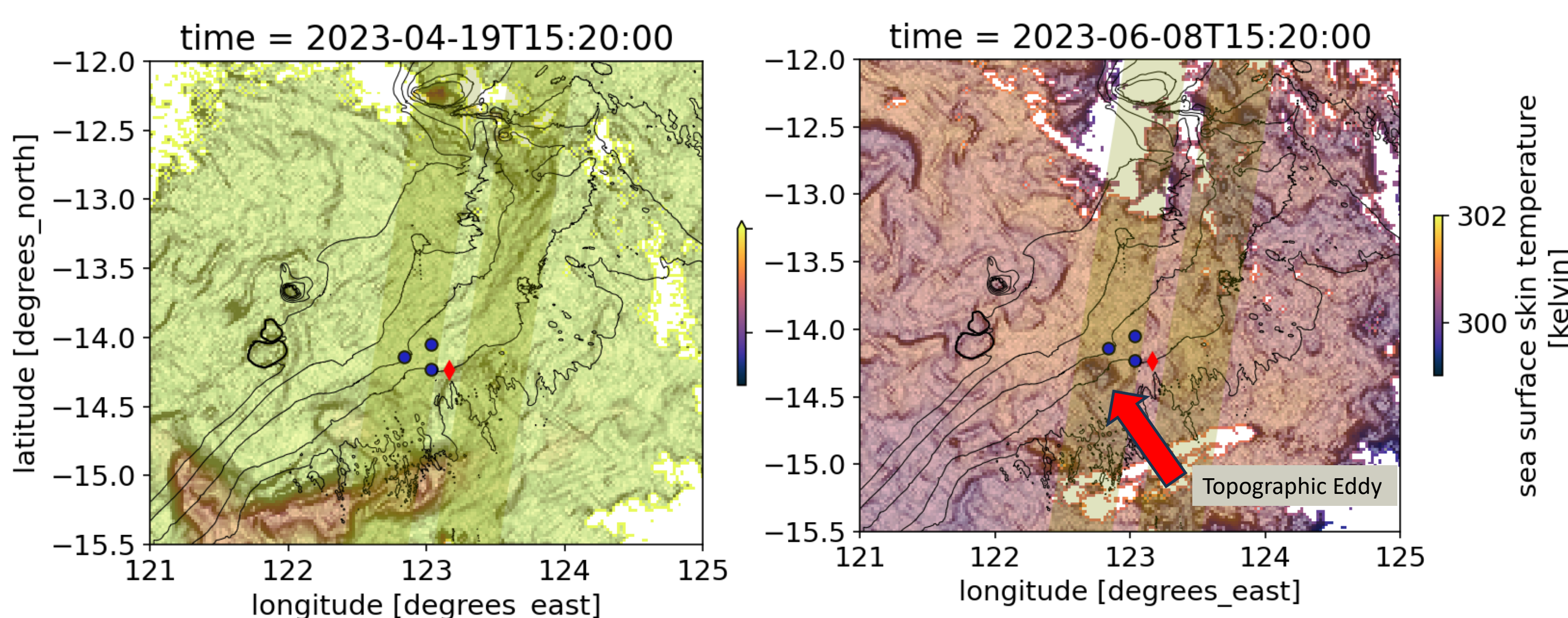
Gliders

- 6 gliders total

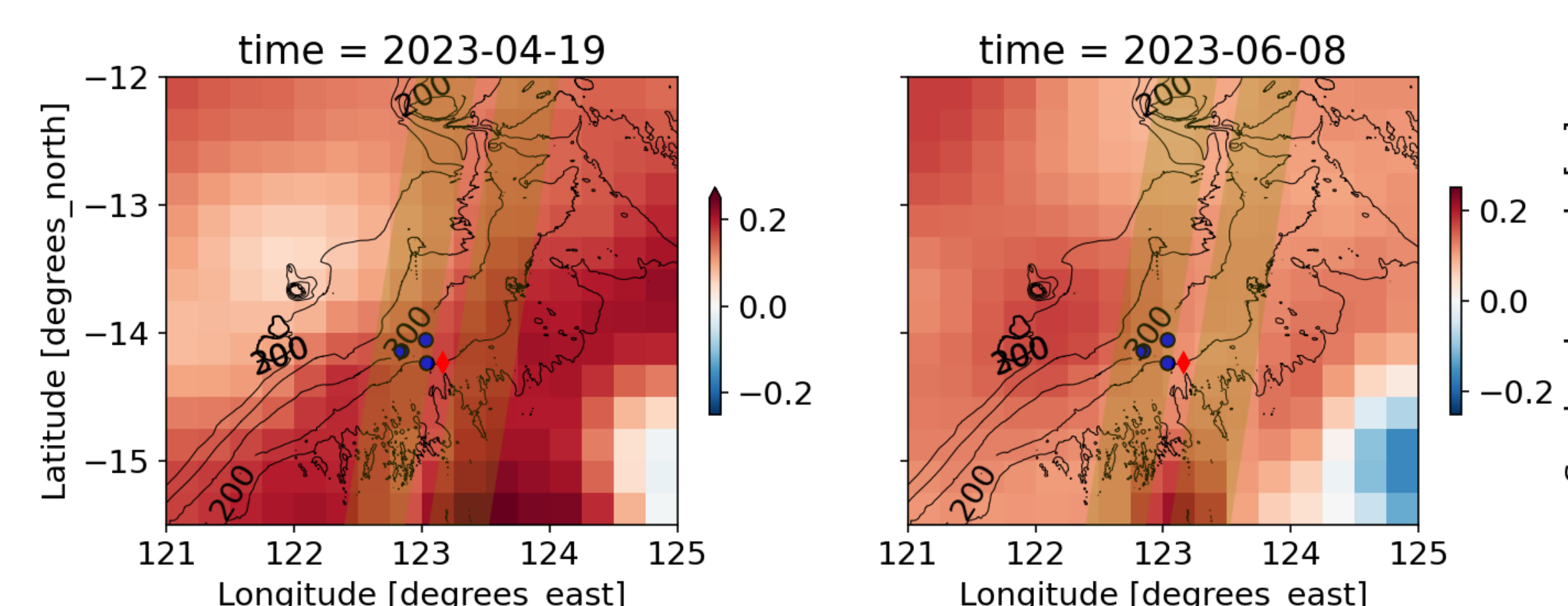


Overview of conditions during field campaign

GHRSSST L3 1 km Sea Surface Temperature

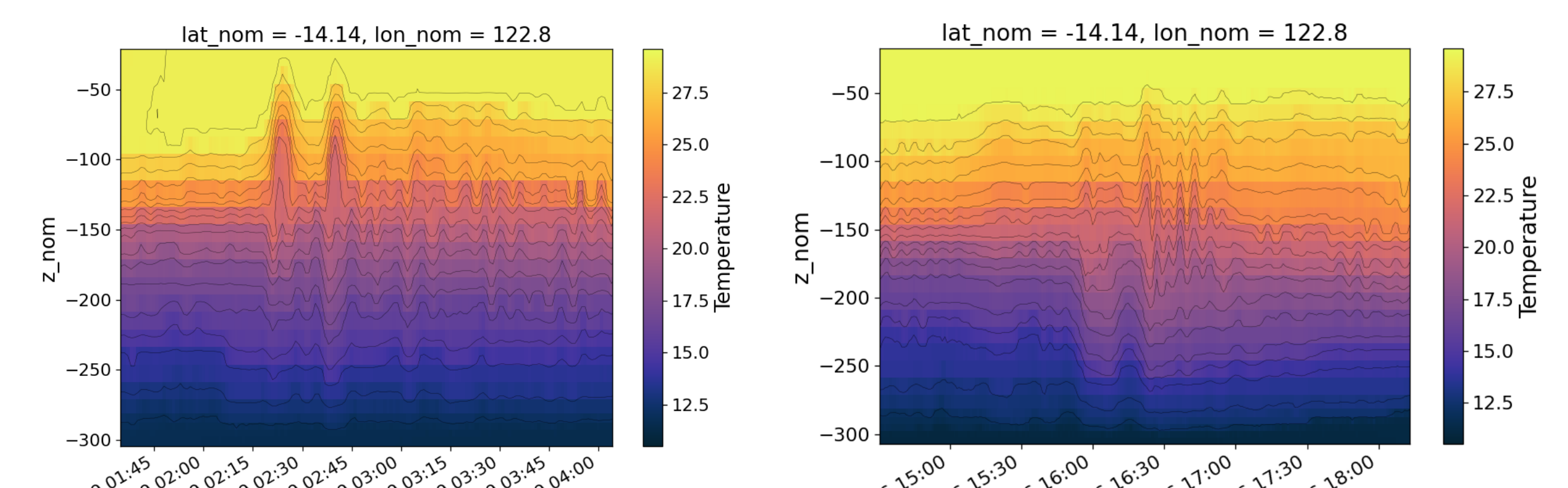


SSALTO-DUACS L4 Sea Surface Height



Early findings

- Topographic eddies formed near the end of the mooring deployment (early June).
- Low-frequency SSH fluctuations $\sim O(1)$ cm
- Internal tides and mode-2 non-linear internal waves caused similar magnitude steric height fluctuations



See our ECR poster by Jen-Ping Peng

Acknowledgements

This field work is supported by the ARC Industrial Transformation Research Hub for Transforming energy Infrastructure through Digital Engineering (TIDE, <http://TIDE.edu.au>) which is led by The University of Western Australia, delivered with The University of Wollongong, the Australian Institute of Marine Science, Bureau of Meteorology, and several International research partners. It is funded by the Australian Research Council, INPEX Operations Australia, Shell Australia, Woodside Energy, Fugro Australia Marine, Wood Group Kenny Australia, RPS Group, Bureau Veritas and Lloyd's Register Global Technology (Grant No. IH200100009). Jen-Ping Peng is supported by the Australian Research Council (ARC) Discovery Project (DP) DP210102745.