



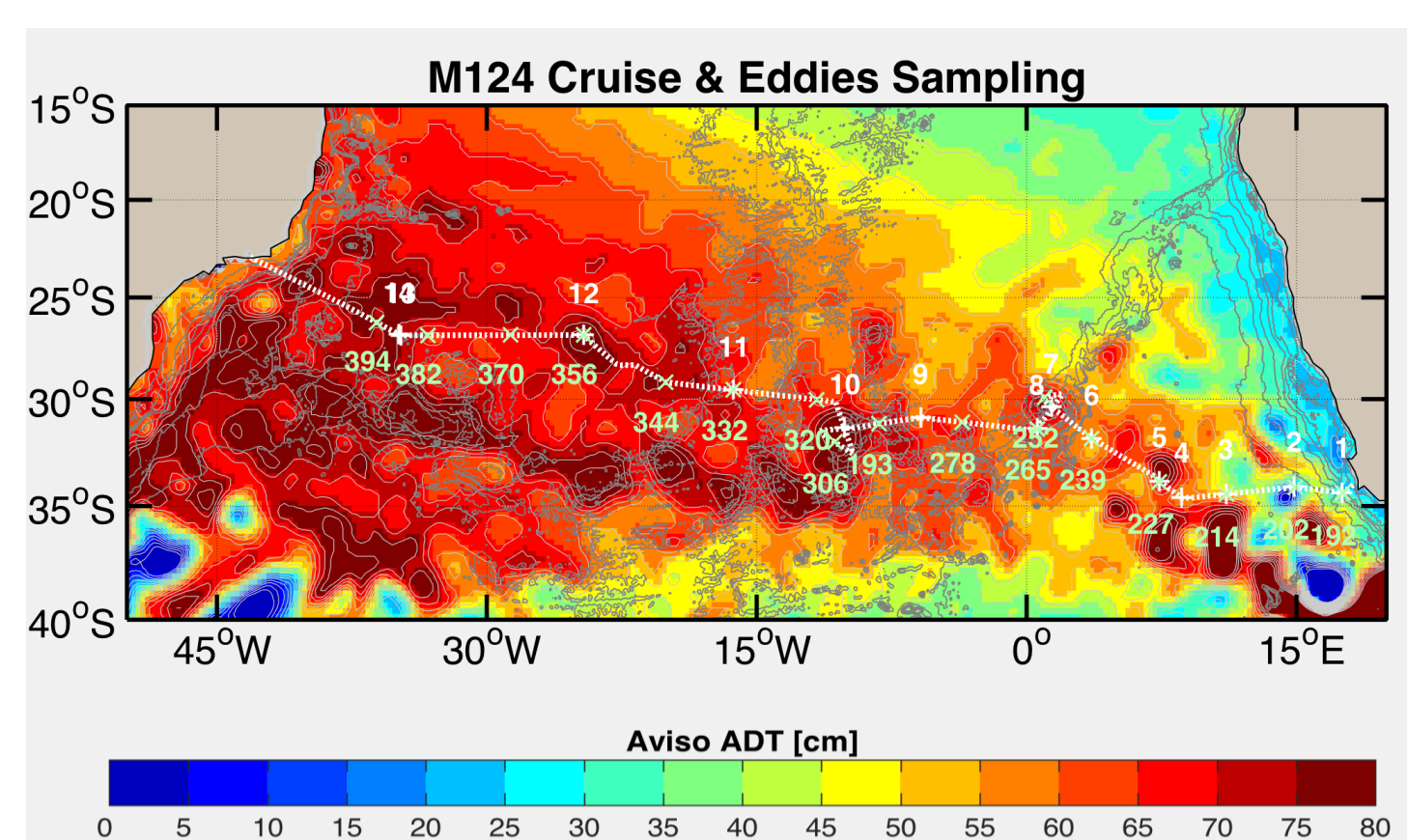
Introduction

Planktonic Foraminifera (PF) are one of the most studied groups of pelagic organisms. Constraining the impact of physical factor onto the PF community composition during their transport is crucial to understand how it impacts their biography and ecology. During the M124 cruise, 16 Multinet cast have been performed to characterize the vertical and horizontal distribution of PF community and link it to the oceanic circulation of the South Atlantic.

Methods

Study area

The Agulhas system around southern Africa forms a key component of the global ocean circulation. This system feeds the upper arm of the Atlantic meridional overturning circulation (AMOC) through the leakage of warm, saline waters from the Indian Ocean to the Atlantic¹.

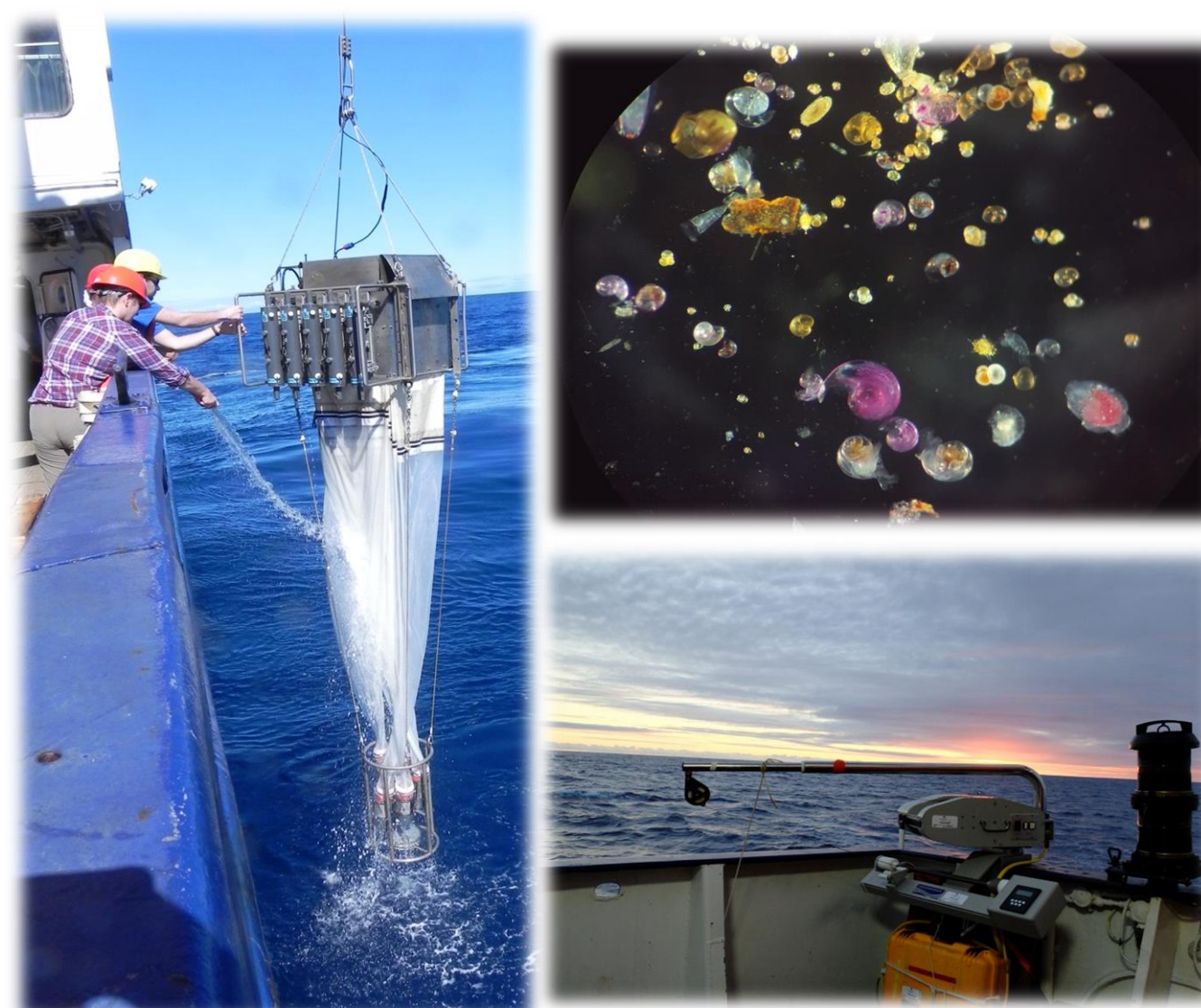


Data

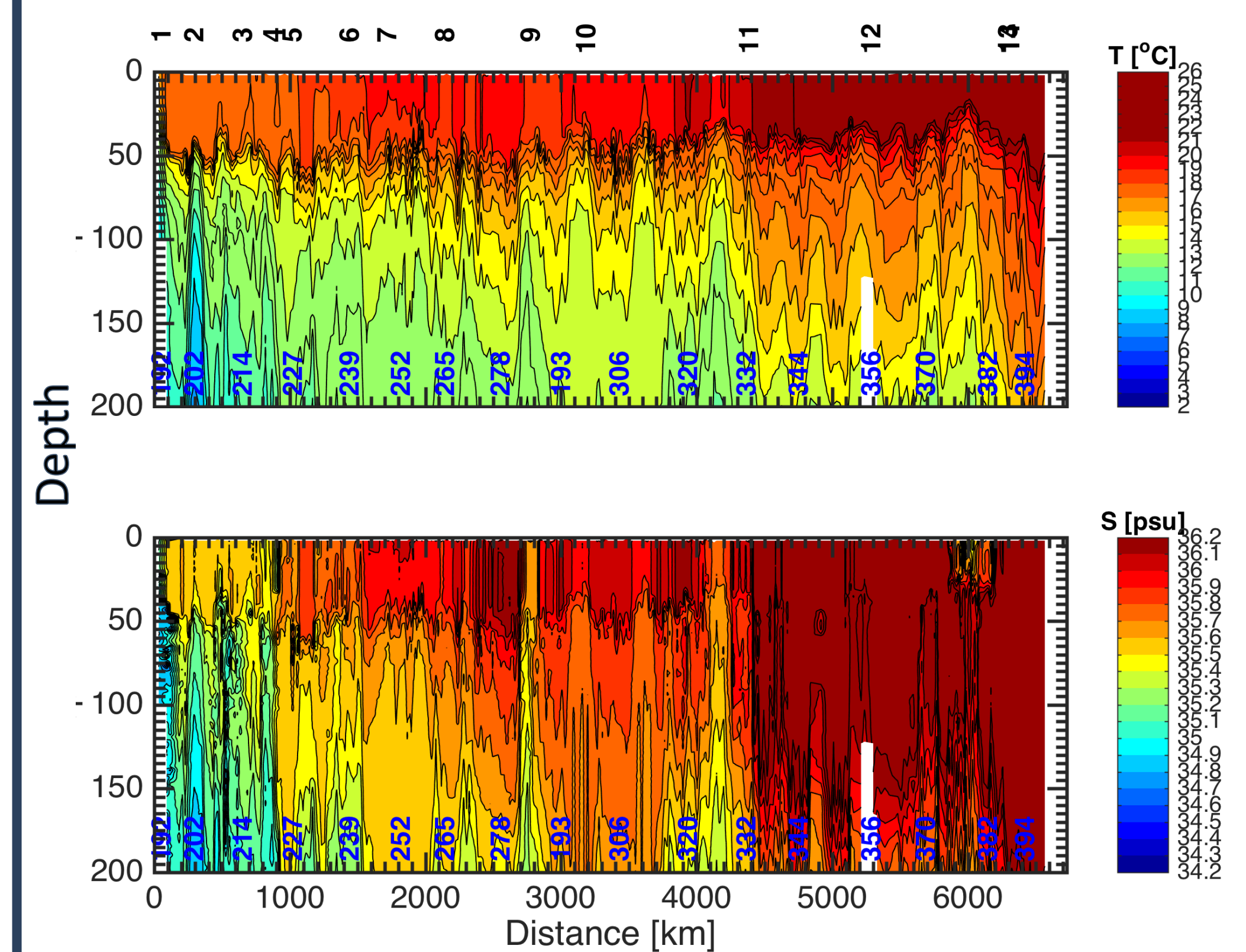
Cruise M124

29/02/2016-14/03/2016

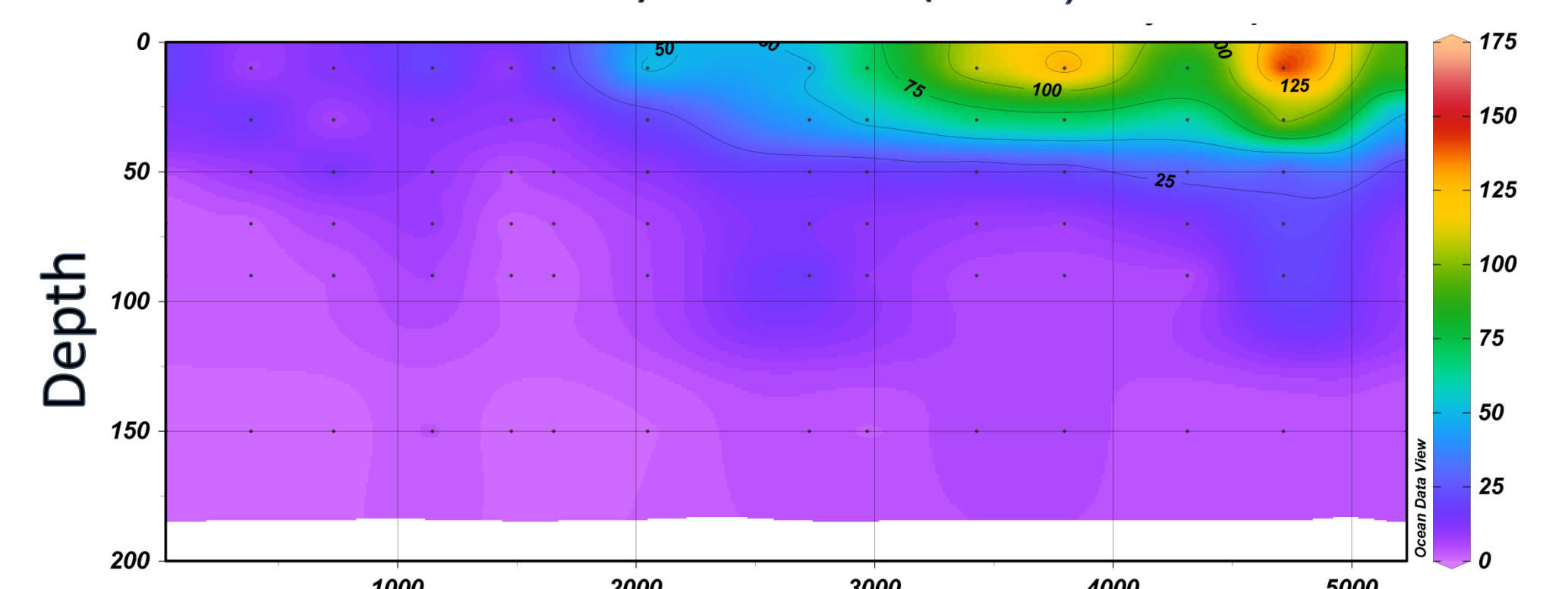
- 16 Multinet vertical cast (700 m depth)
- 288 underway CTD profiles
- In situ Database Foraminifera



Hydrographic data (from uCDT) and vertical density of PF

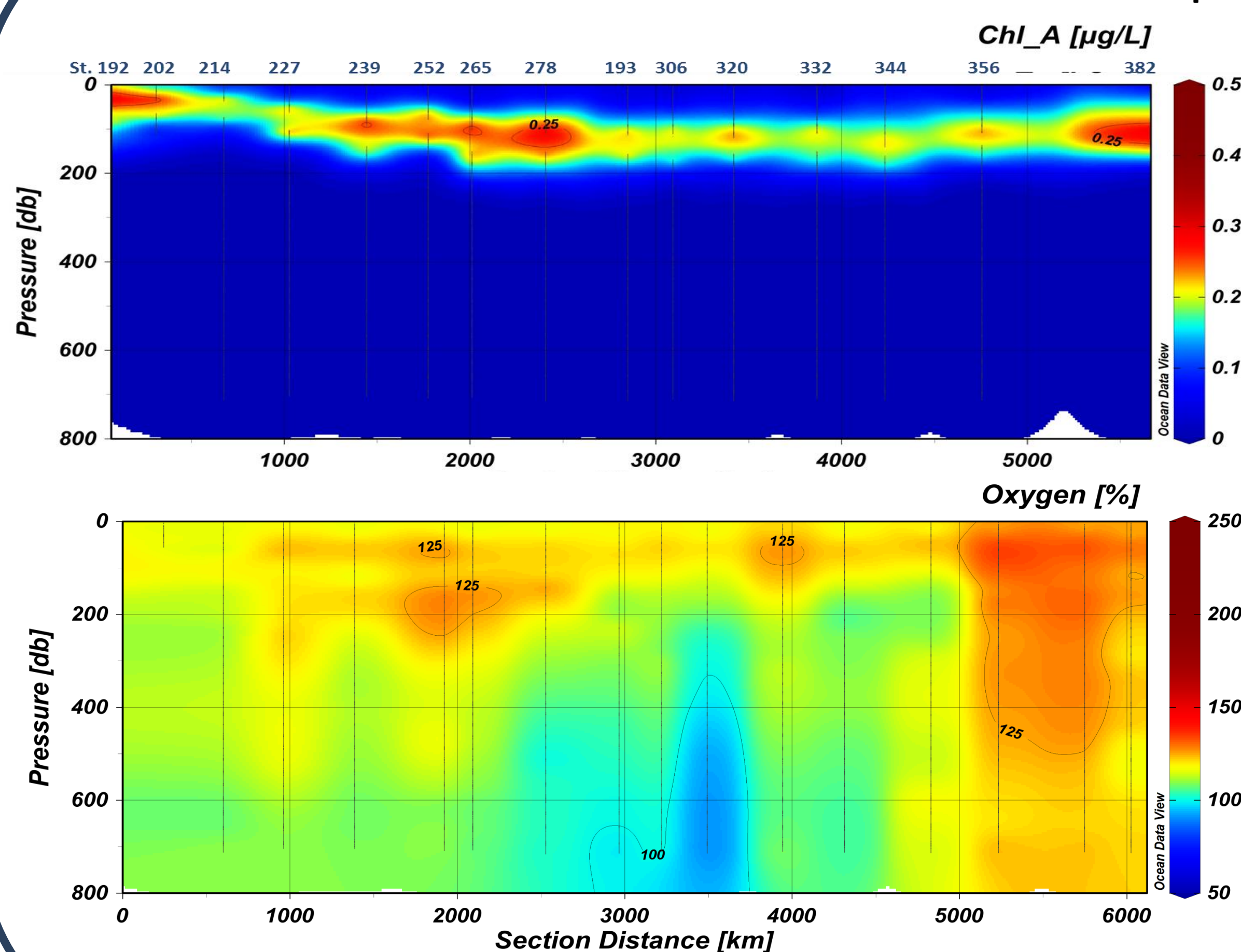


Density foraminifera (ind.m³)



The changing density of PF response to different hydrographic regimes. Highest abundance have been observed in the warmest water in a the frontal zone (station 344) and in a strong anticyclone (station 356) rather than in the centre of a ring.

Environmental factors: chlorophyll and Oxygen



The **Deep Chlorophyll Maximum (DCM)** was at the subsurface near to the coast of Cape Town (station 192) and deepened later in the cruise, with decreasing values. The DCM represents a compromise between the availability of nutrients and light.

The vertical distribution of **oxygen** showed the maximum (>125%, upper 80m) in stations 252 and 332. The maximum values were encountered into the frontal zones of eddies.

Conclusion

- Vertically stratified density of PF from the hydrographic conditions provide a basis for understanding which environmental properties are most important in determining habitat depths of Planktonic Foraminifera^{2,3}.
- The highest values of density of specimens appear associated with frontal zones; when Atlantic and Agulhas waters mix and upwelling of deeper waters may occur.

References:

¹Beal L., et al., 2011. On the role of the Agulhas system in ocean circulation and climate. Vol 474, Nature.

²Field D., 2014. Variability in vertical distributions of planktonic foraminifera in the California Current: Relationships to vertical ocean structure. Paleoclimatology, Vol. 19.

³Jonkers L., et al., 2015. Global analysis of seasonality in the shell flux of extant planktonic Foraminifera. Biogeosciences, 12, 2207–2226.