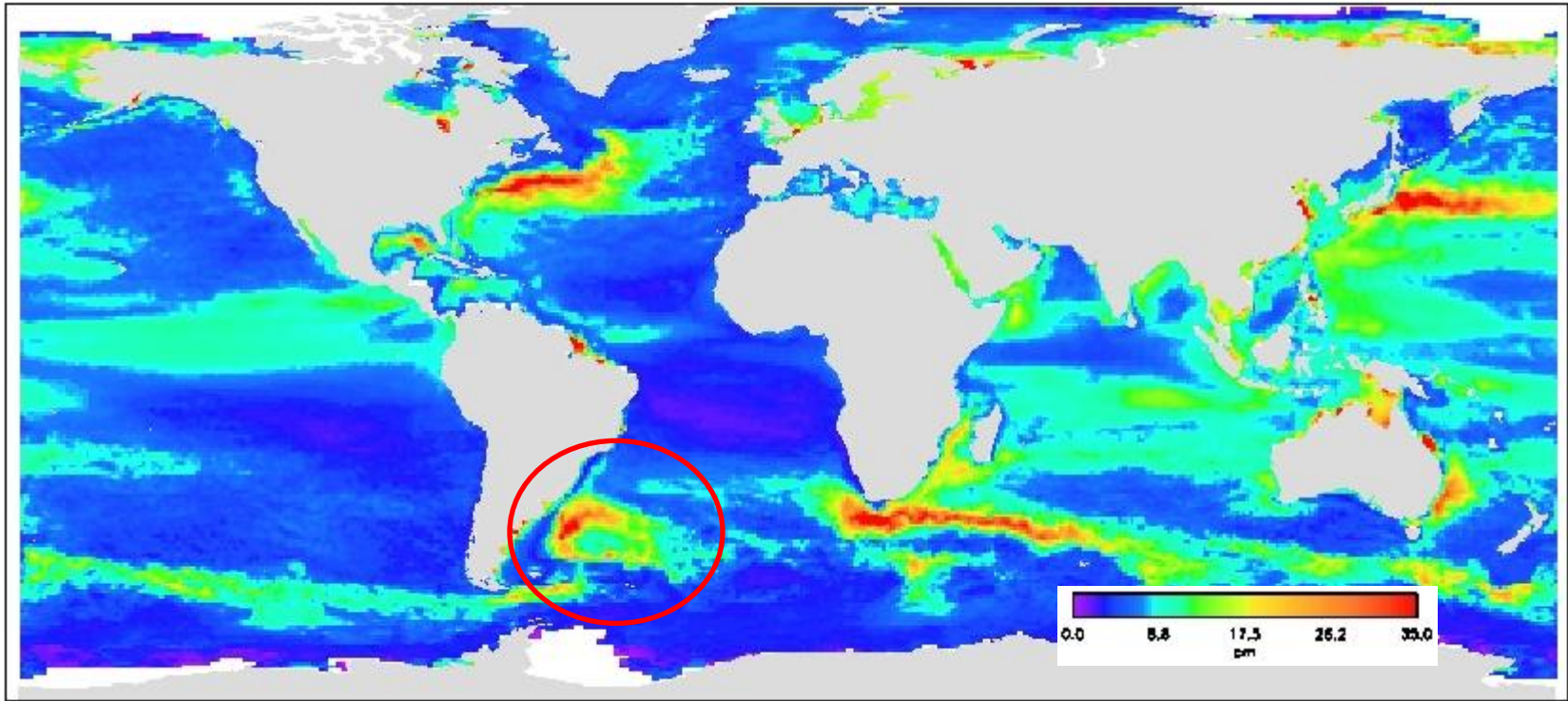


Tema de tesis de licenciatura - DCAO

Circulación alrededor de la elevación de Zapiola



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11 de agosto 2017

October

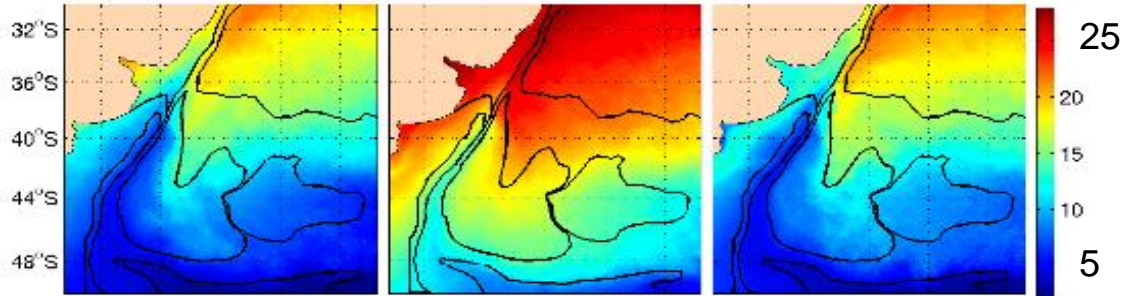
February

June

Monthly climatologies of satellite derived observations:

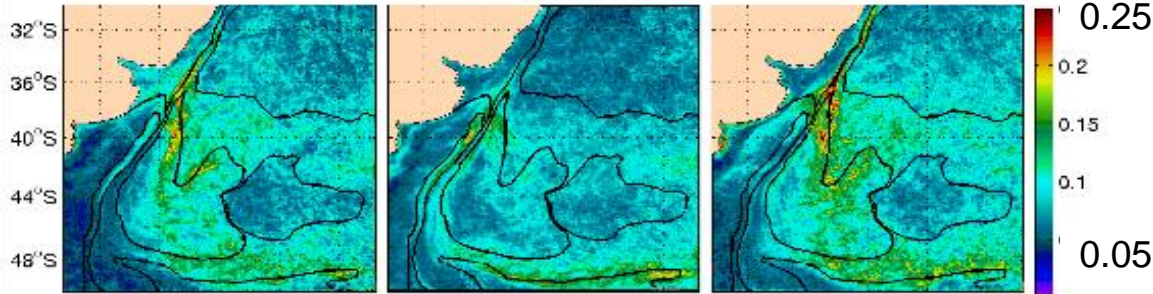
Sea Surface Temperature (SST, ° C)

No signature



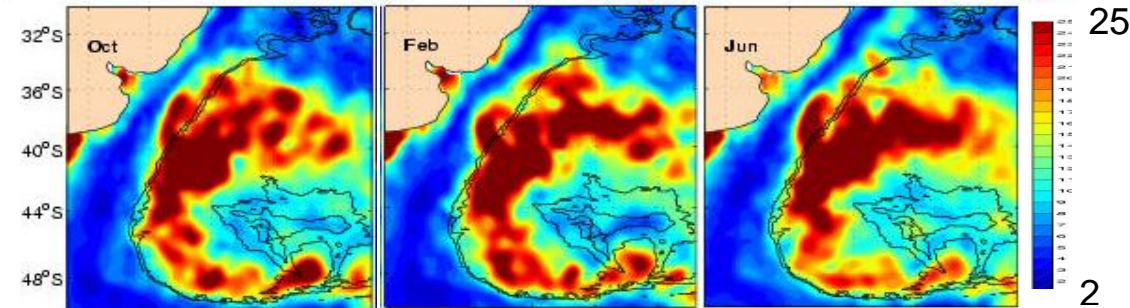
SST gradient modulus (° C/km)

Local minimum (constant)



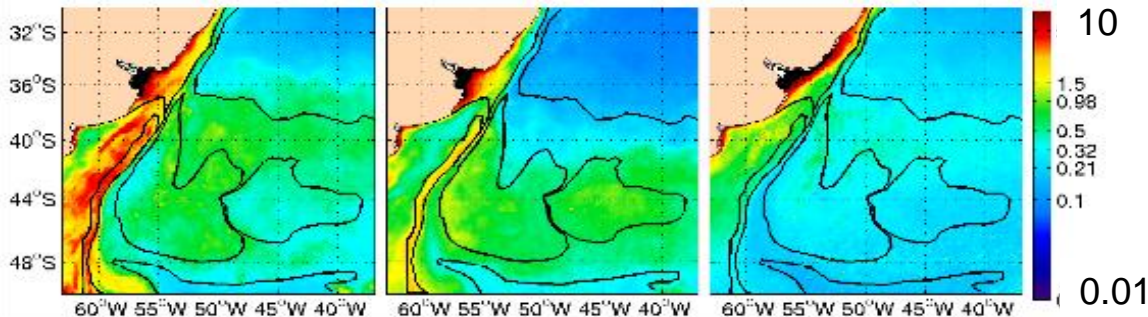
Standard deviation of Sea Level Anomaly (SLA, cm)

Local minimum (constant)

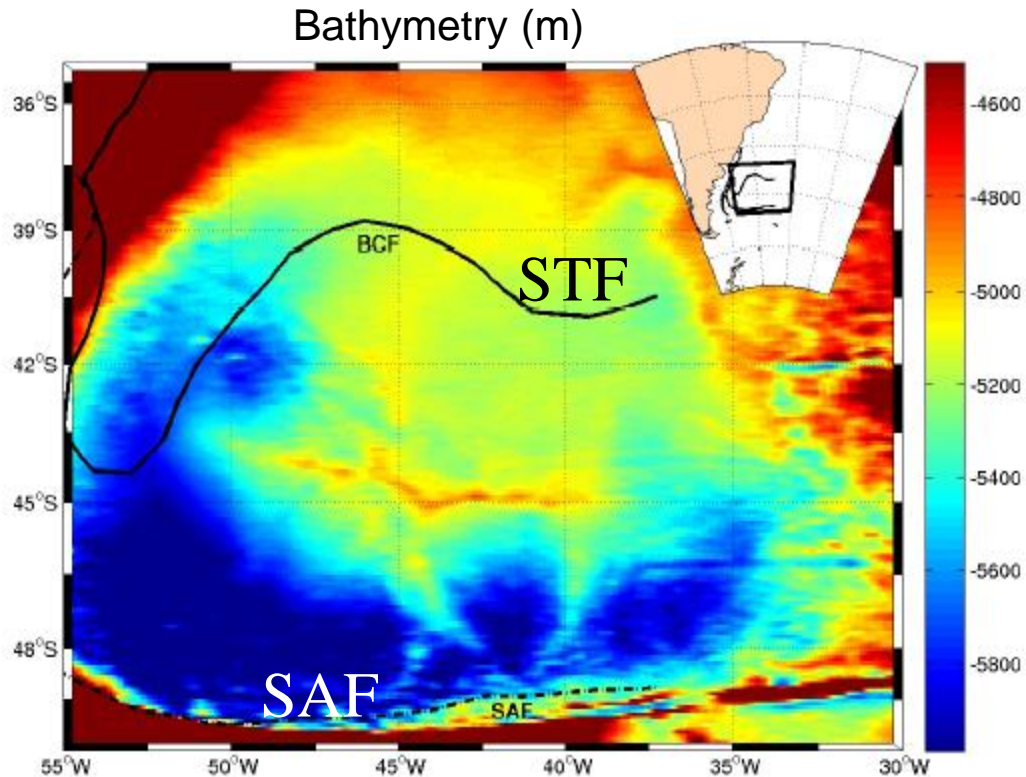


Chlorophyll-a (mg/m³)

local minimum in October
local maximum in February



Zapiola Rise (or *drift*)



The Zapiola Rise (ZR) is a sedimentary deposit located in the Argentine abyssal plain. It has a maximum height of 1200m near [45° S , 45° W] and covers approximately 1000 km in the zonal direction.

Located near the confluence of the Brazil and Malvinas currents, between the subtropical front (STF) and the subantarctic front (SAF), the ZR is in an area of critical climatic and ecological importance (the Confluence is a region of high air-sea interactions and primary productivity).

In-situ observations and potential vorticity contours

The ZR is contoured by several potential vorticity (f/h) isolines which range between $1.92 \times 10^{-8} \text{ m}^{-1} \text{ s}^{-1}$ and $2.1 \times 10^{-8} \text{ m}^{-1} \text{ s}^{-1}$.

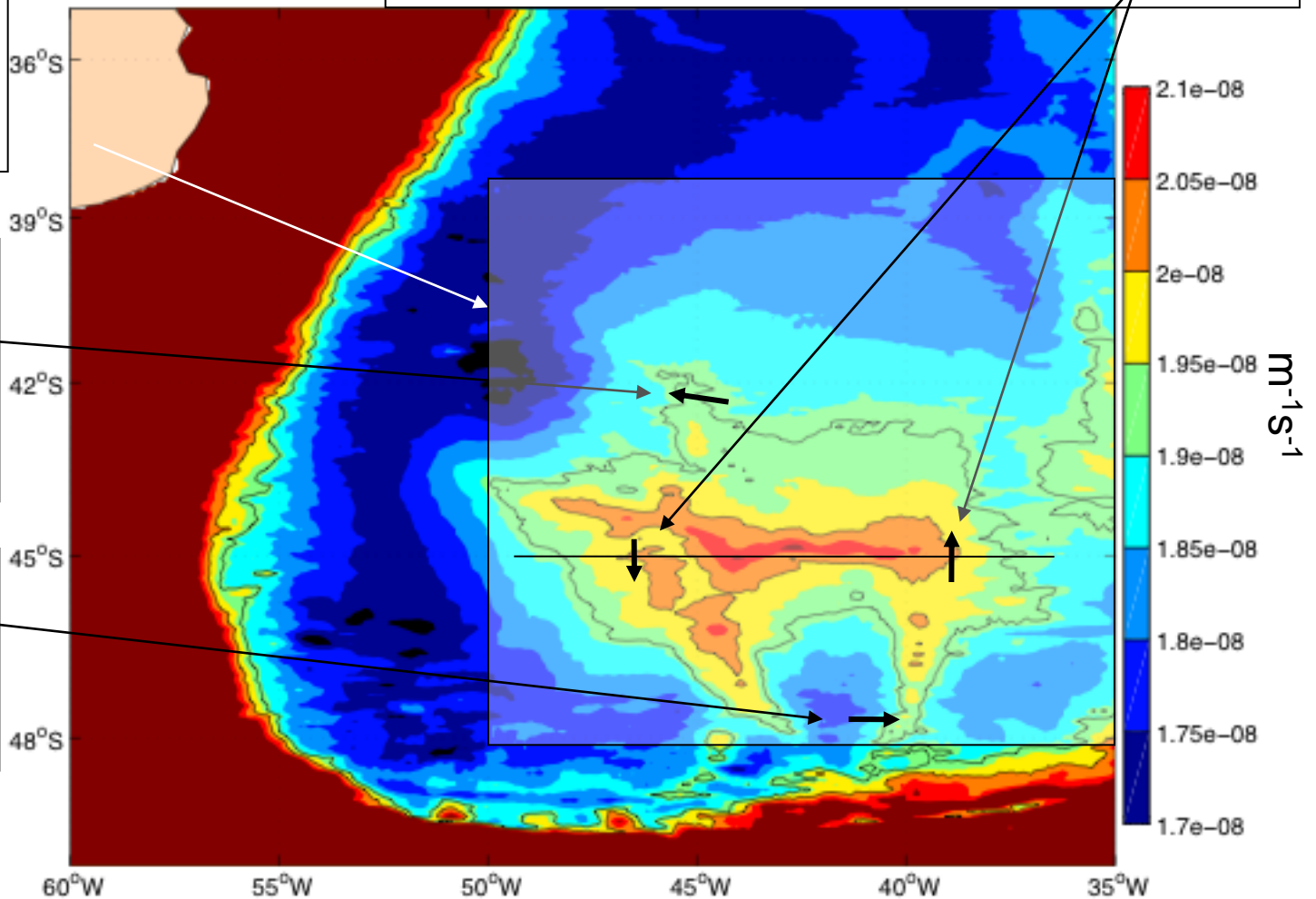
Several observations suggest the presence of a strong anticyclonic current around these contours:

WOCE A11 section: $\langle v \rangle$ near the bottom was 8 cm/s northward (west of the ZR) and 13 cm/s southward (east of the ZR) [Saunders and King, 1995]

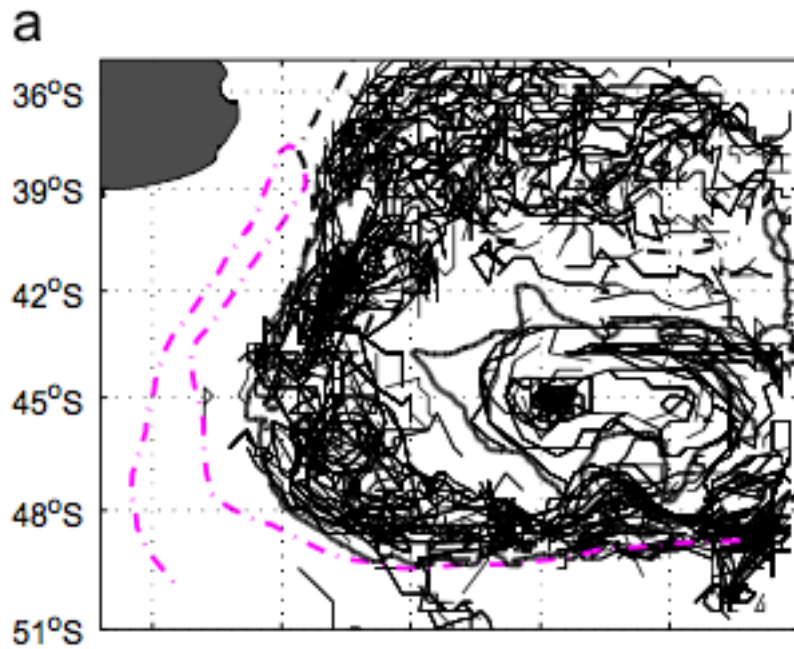
Flood and Shoor [1988] : field of mud waves of up to 100 m in amplitude

Bottom current meter measurements (1 year) : $\langle v \rangle = 10.5 \pm 5 \text{ cm/s}$, 284° [Weatherly, 1993]

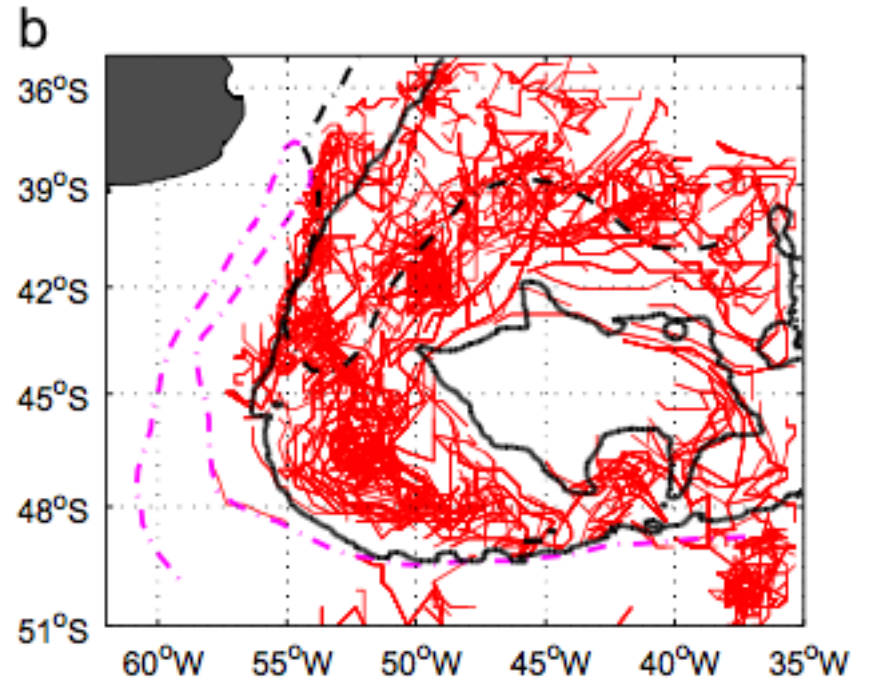
Bottom current meter (14 months) : $\langle v \rangle = 5 \text{ cm/s}$ East direction [Whitworth et al, 1991]



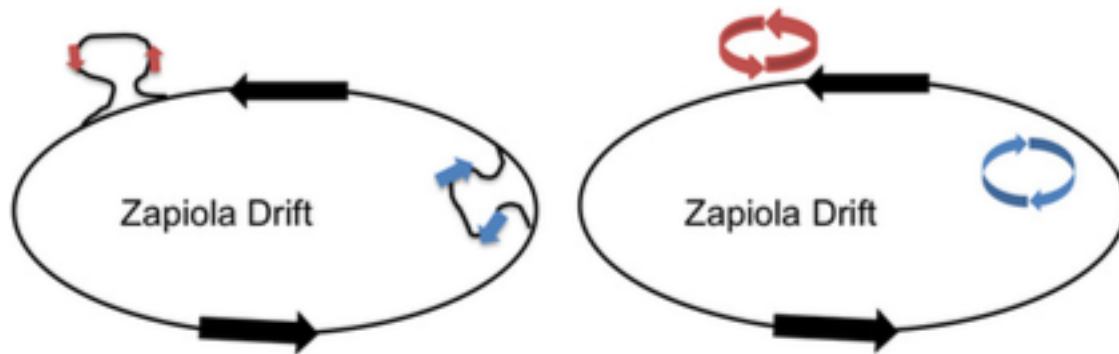
Trayectoria de remolinos (eddies)



ciclónicos

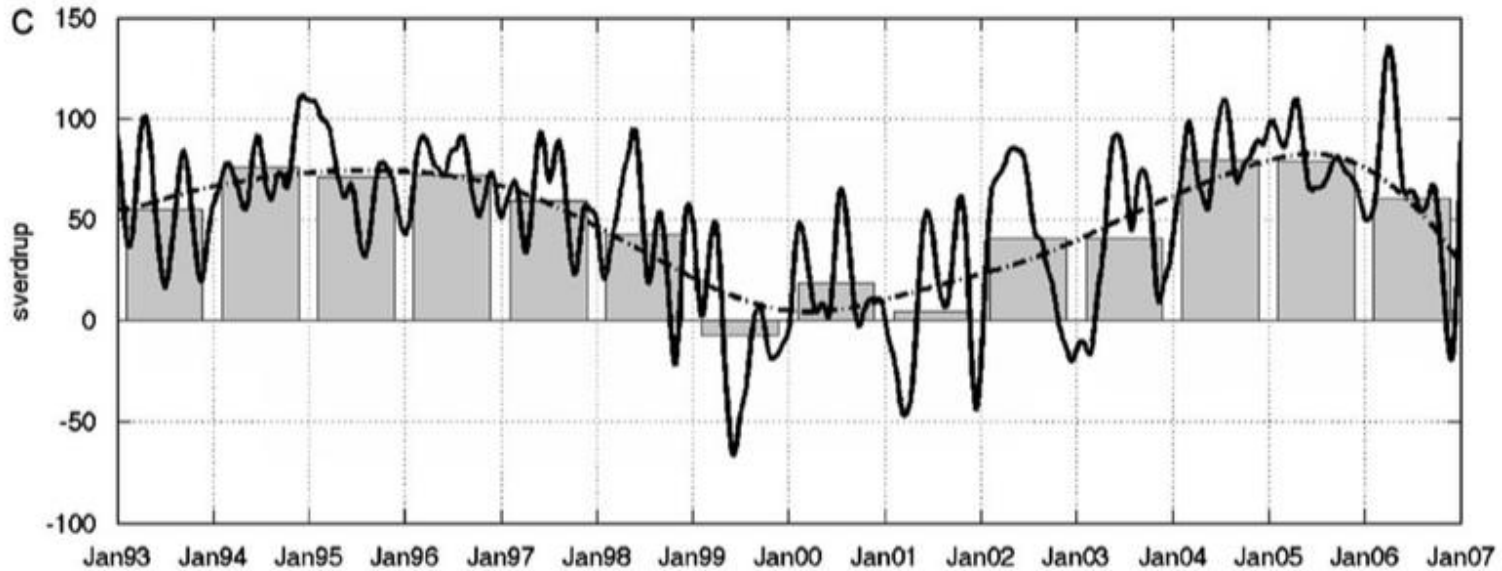
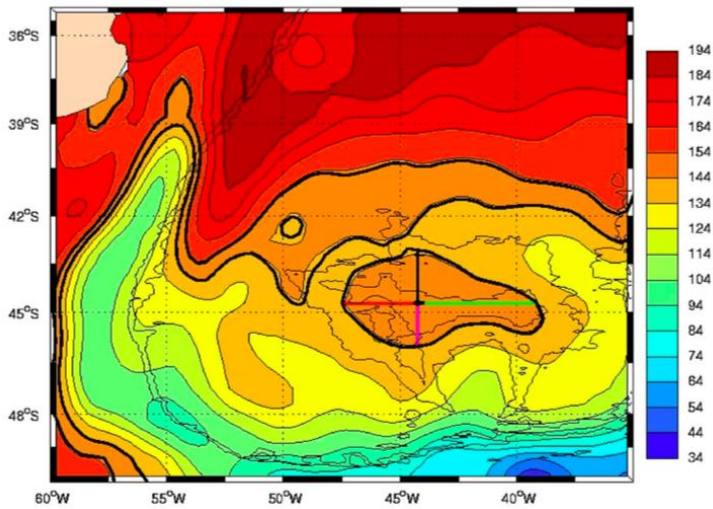


anti-ciclónicos



Un mecanismo simple para explicar la presencia de remolinos ciclónicos en el interior de Zapiola

Variabilidad del transporte alrededor de la elevación de Zapiola



Datos in situ y de satélite sugieren la presencia de una corriente anticiclónica intensa alrededor de la elevación de Zapiola, pero:

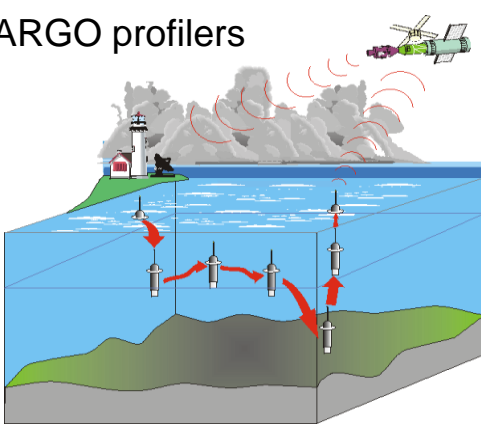
Que sabemos de su estructura vertical?

Cuales son los flujos meridionales de calor y de sal asociados a la variabilidad observada en el transporte?

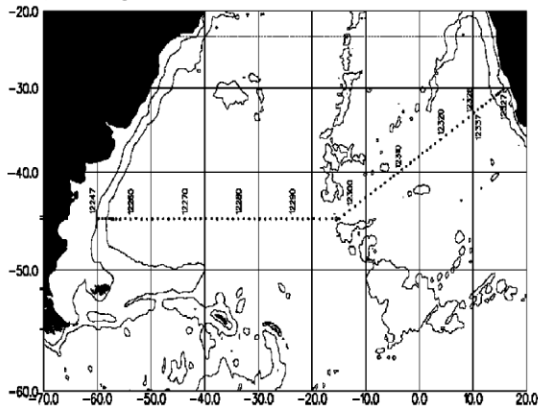
Como participa en la transformación de las masas de agua en el AS?



ARGO profilers



Hydrographic section WOCE A11

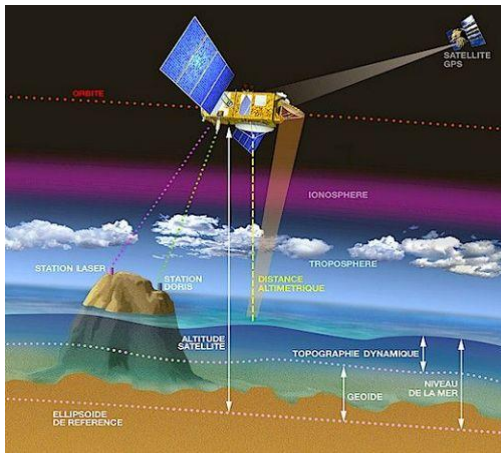


Datos propuestos a ser utilizados

The approach used in this work to address these questions was to use the information retrieved by:

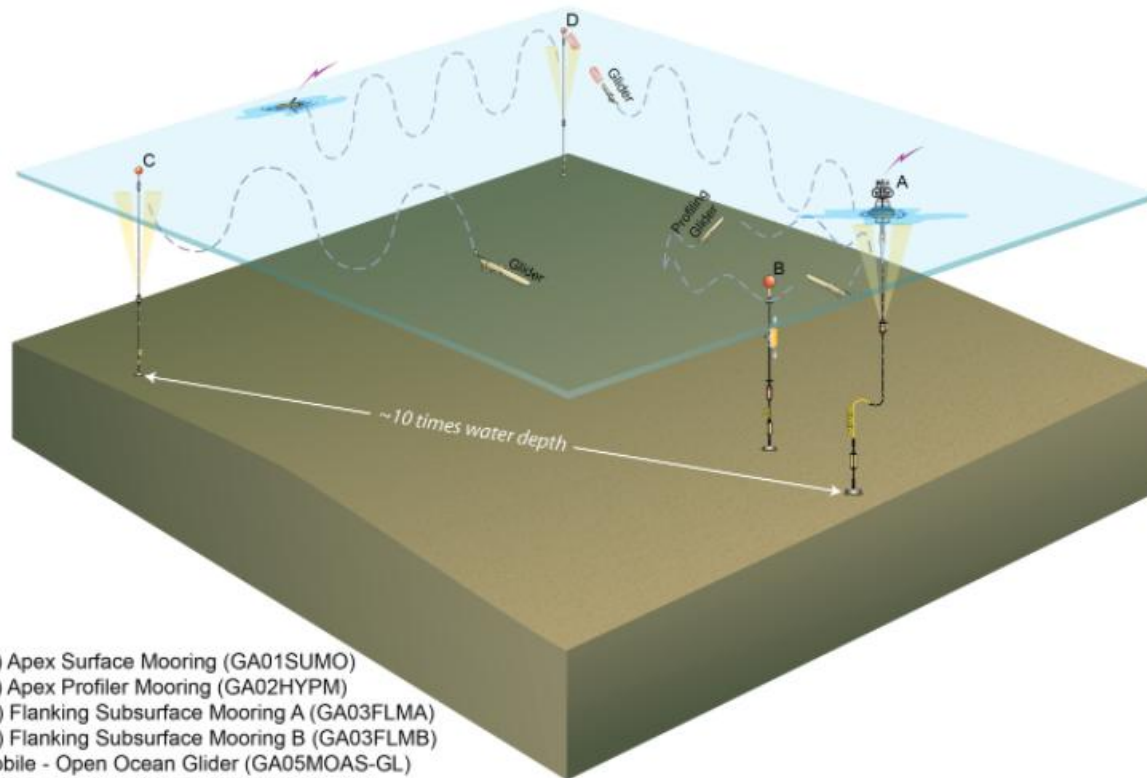
- ARGO profilers that were trapped by the anticyclonic current;
- the hydrographic section WOCE A11; and
- geostrophic velocities estimated from the combination of the SLA and a mean dynamic topography.
- OOI South Argentine Basin (42S 42W)
- Global Ocean models

Satellite retrieved SLA (AVISO-CLS)



Research Arrays > Global Argentine Basin

Global Argentine Basin



- (A) Apex Surface Mooring (GA01SUMO)
- (B) Apex Profiler Mooring (GA02HYPM)
- (C) Flanking Subsurface Mooring A (GA03FLMA)
- (D) Flanking Subsurface Mooring B (GA03FLMB)
- Mobile - Open Ocean Glider (GA05MOAS-GL)
- Mobile - Profiling Glider (GA05MOAS-PG)

