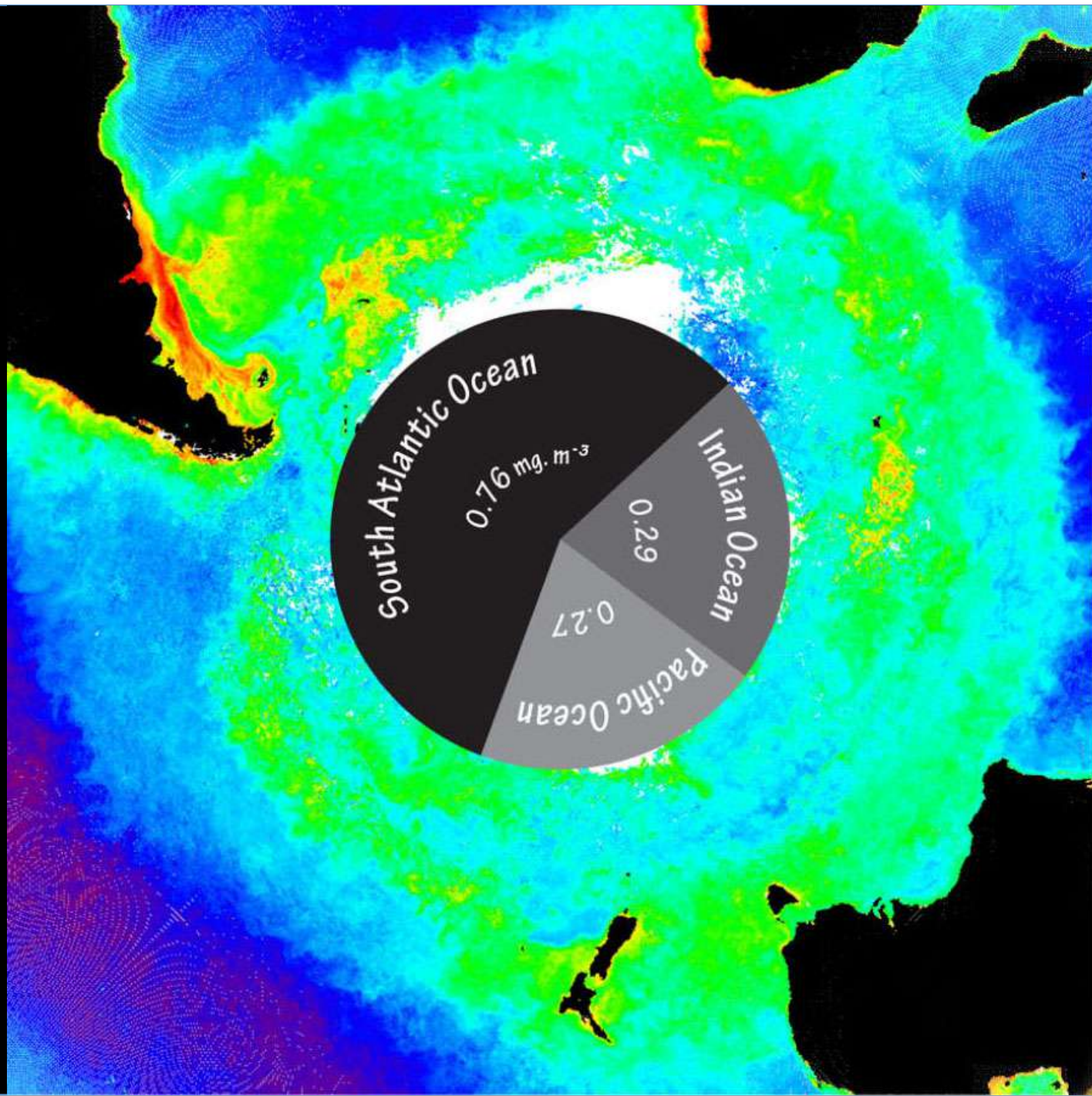
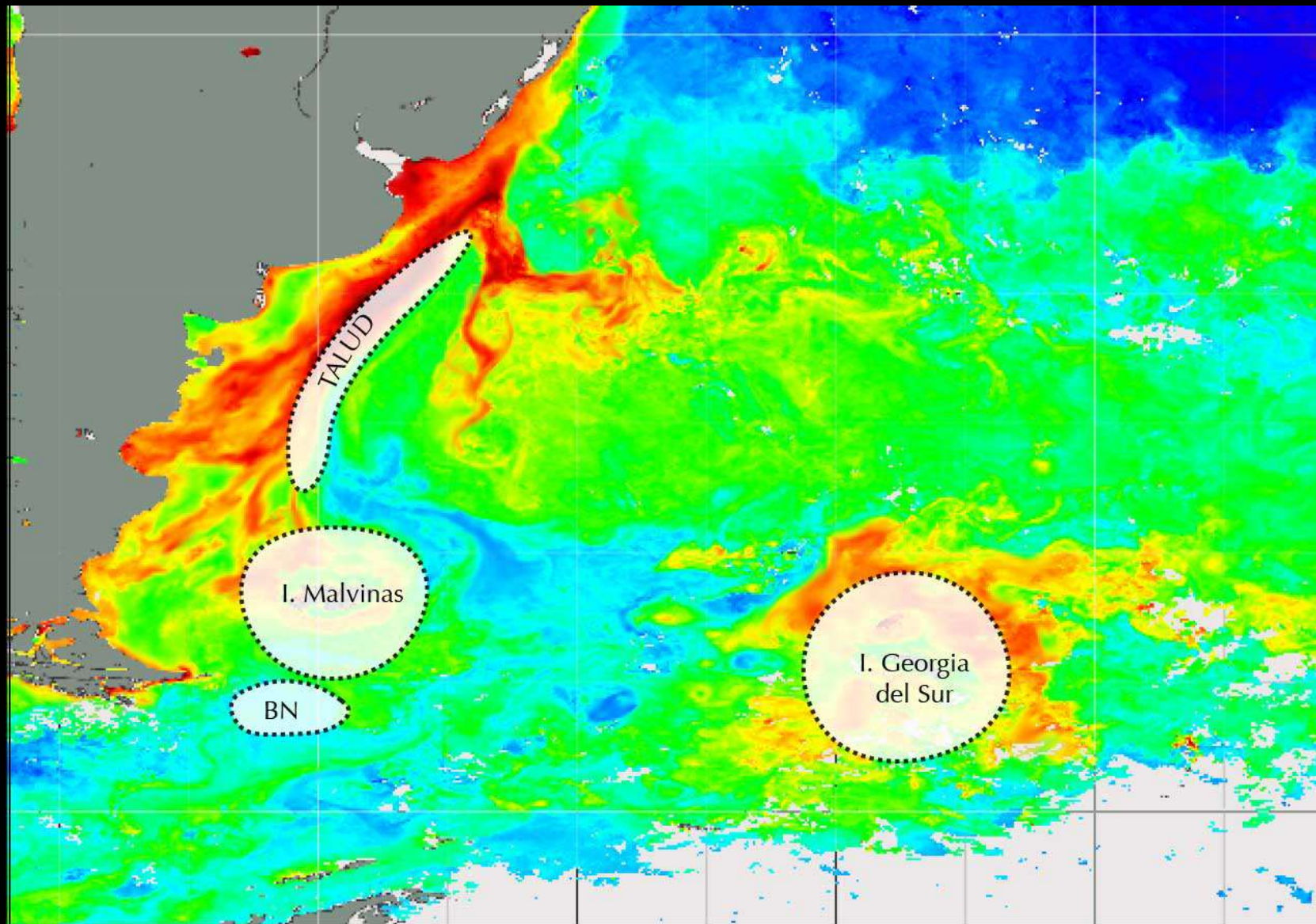




Sistemas de Surgencia de la “Patagonia Grande”

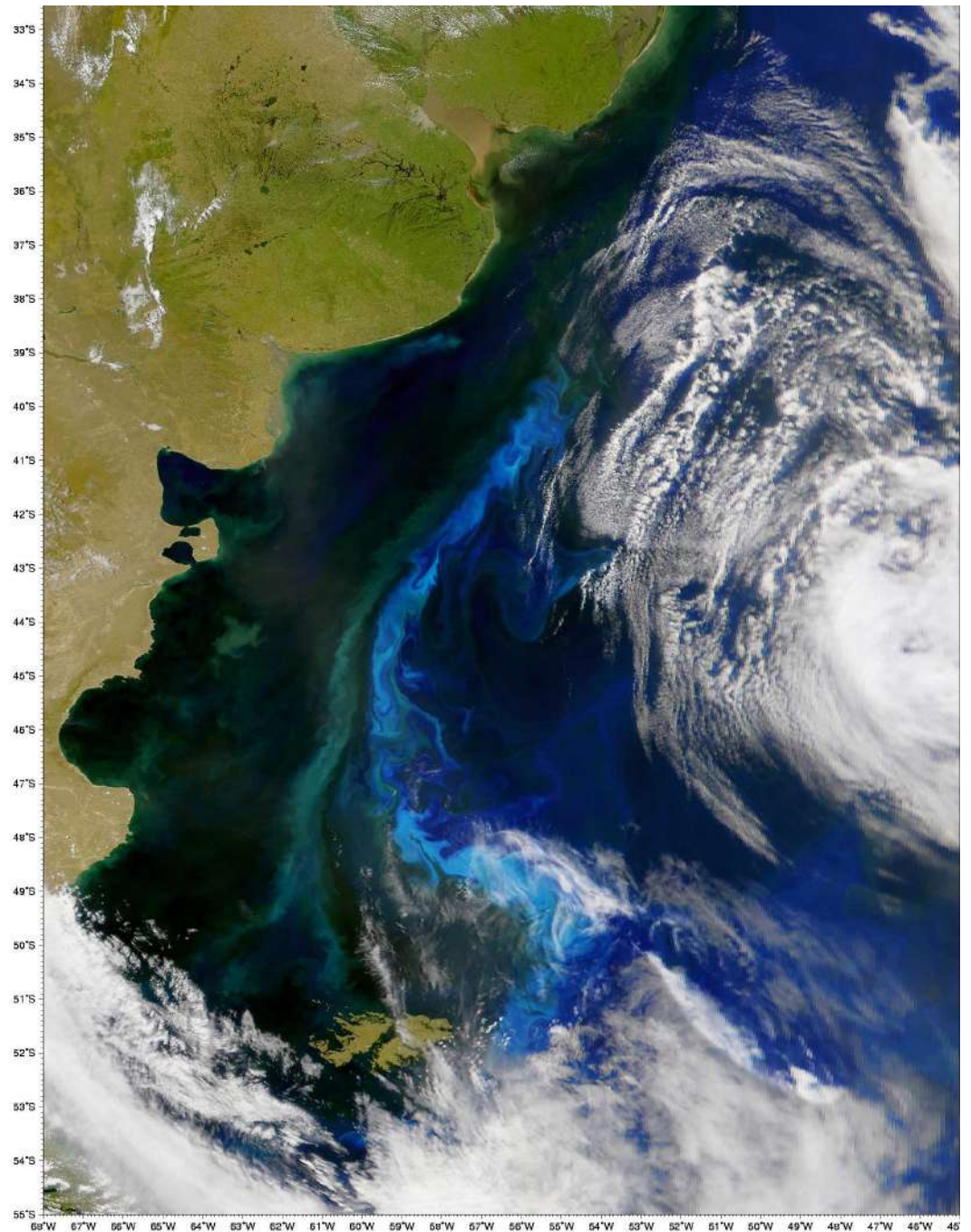
Ricardo P. Matano, Elbio D. Palma, Vincent Combes

CEOAS, Oregon State University, USA — Universidad Nacional del Sur & IADO/CONICET



Frente de Talud

*Cuales son las fuentes de
nutrientes del frente de talud?*



Procesos locales: surgencia

- Fricción de fondo

Matano & Palma, 2008, J. Phys. Oceanogr.

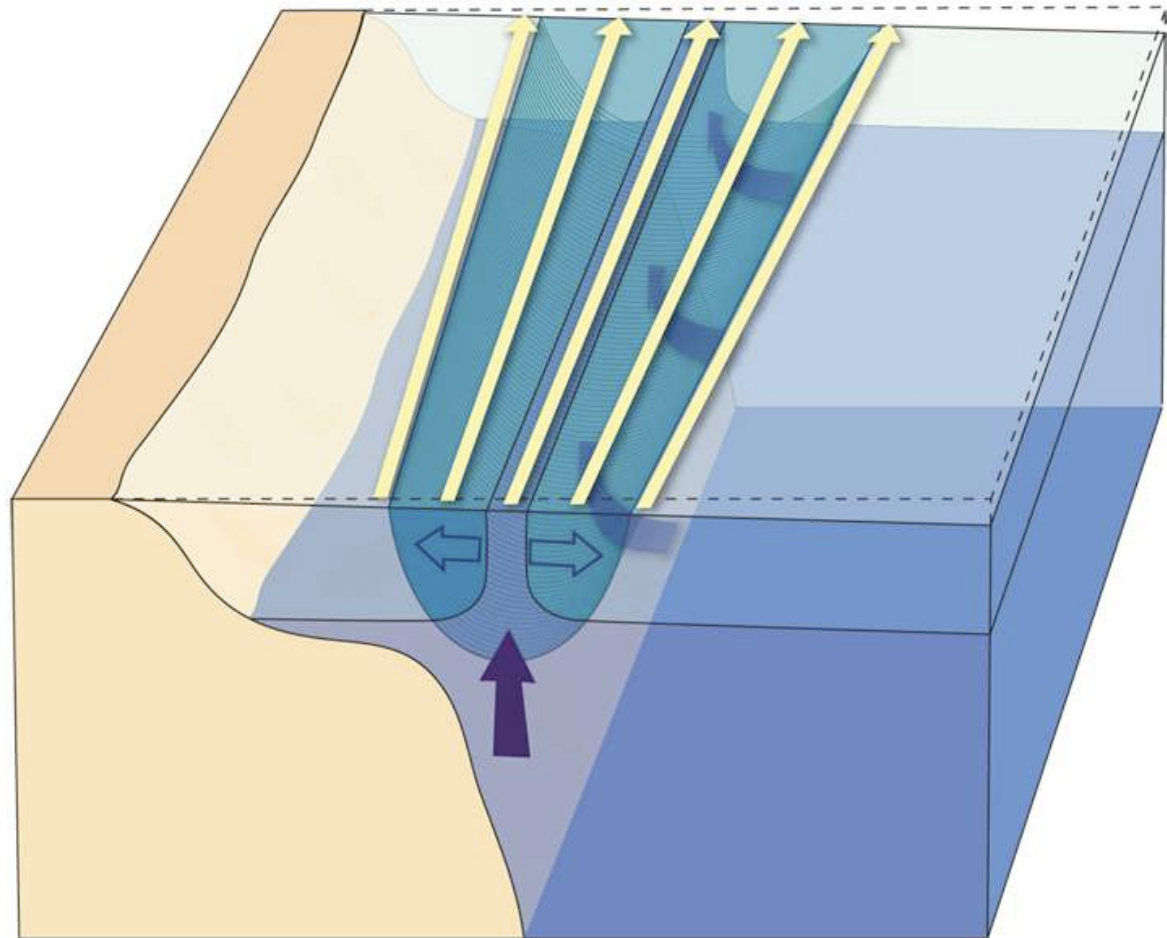
Miller et al., 2010, J. Fluid Mech.

- Rotor del viento

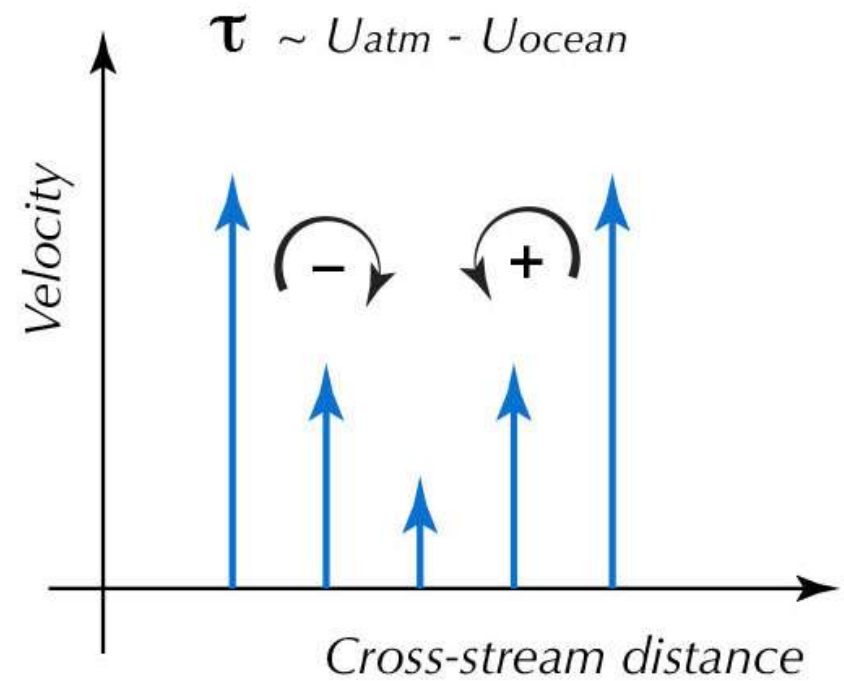
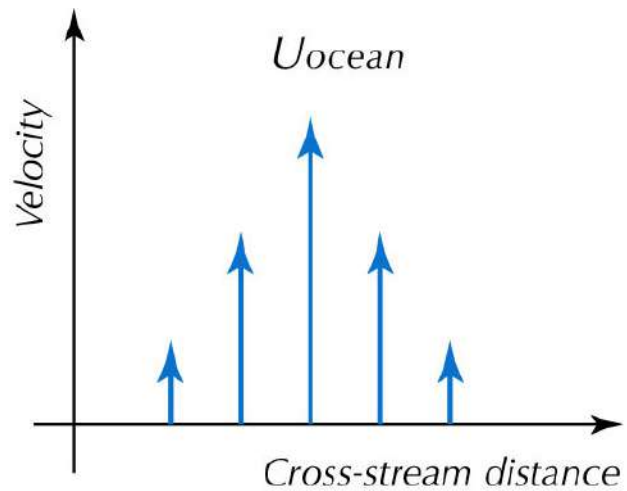
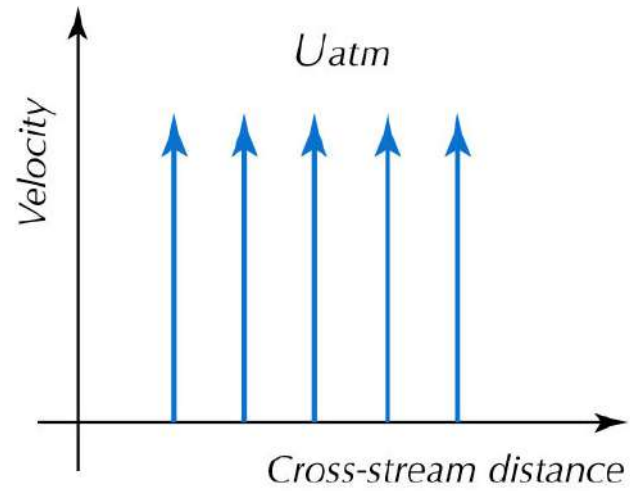
Saraceno et al., 2005, J. Geophys. Res.

Carranza et al., 2015, J. Geophys. Res.

Surgencia por fricción de fondo

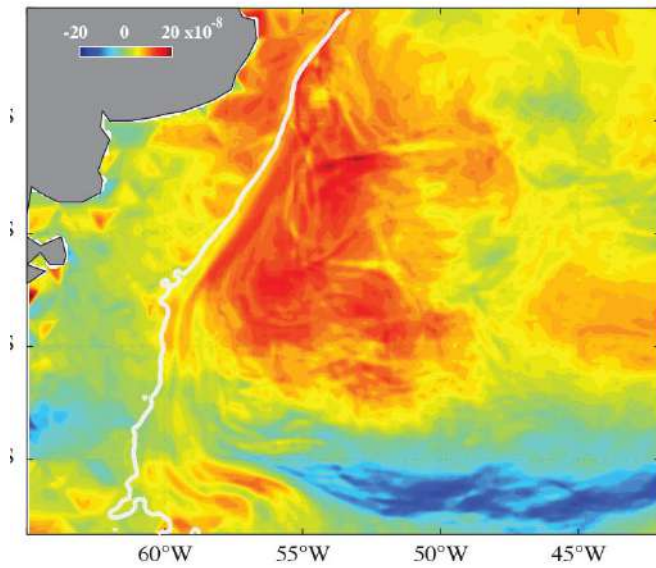


Rotor del viento

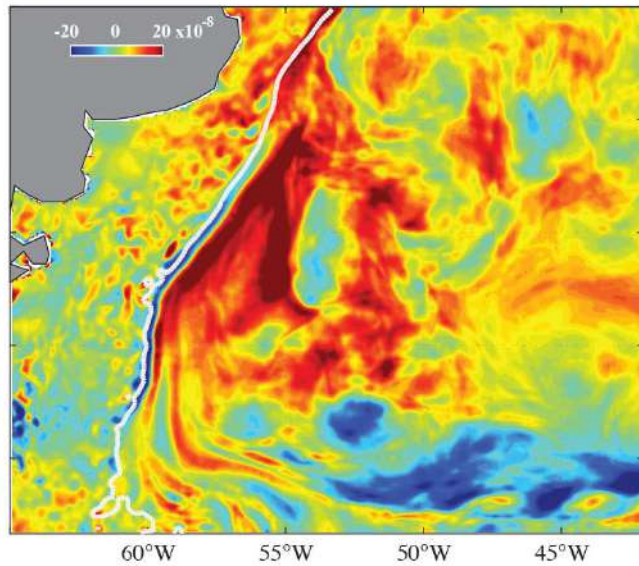


Surgencia de talud: evaluación de mecanismos

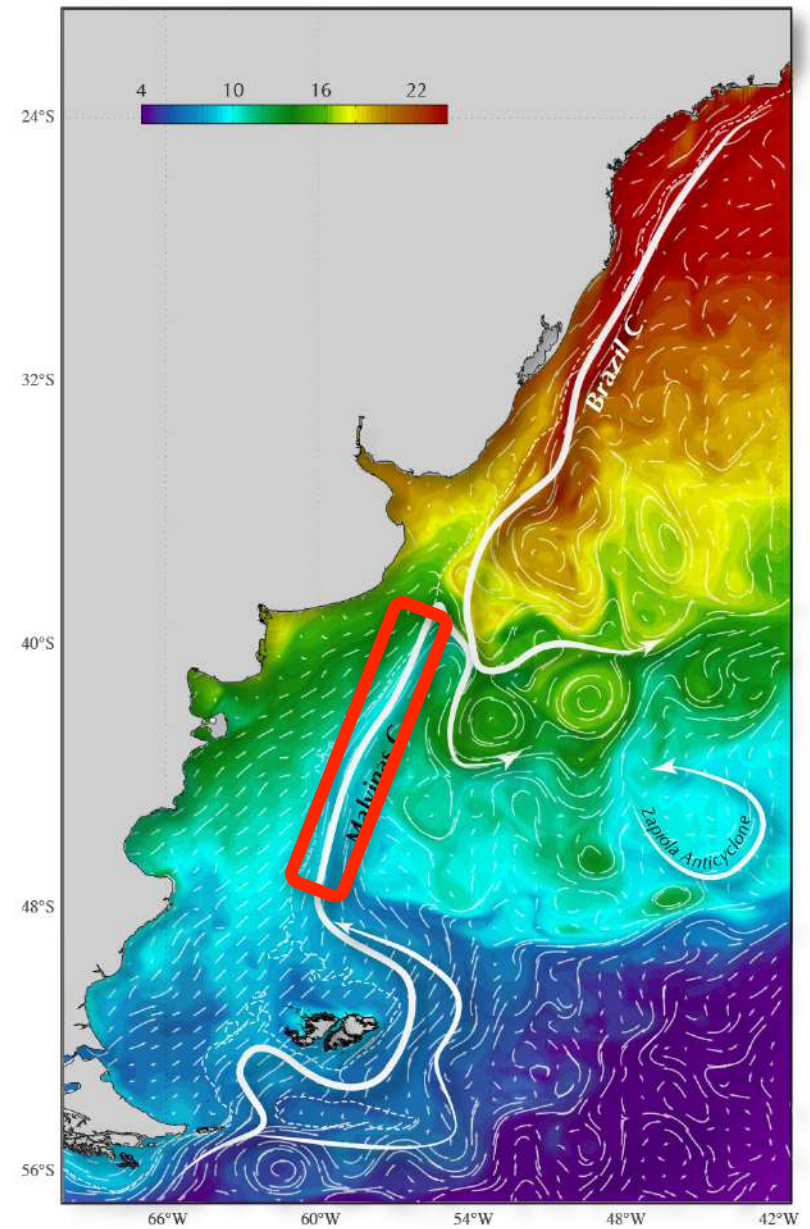
Curl (τ)



NO
Feedback



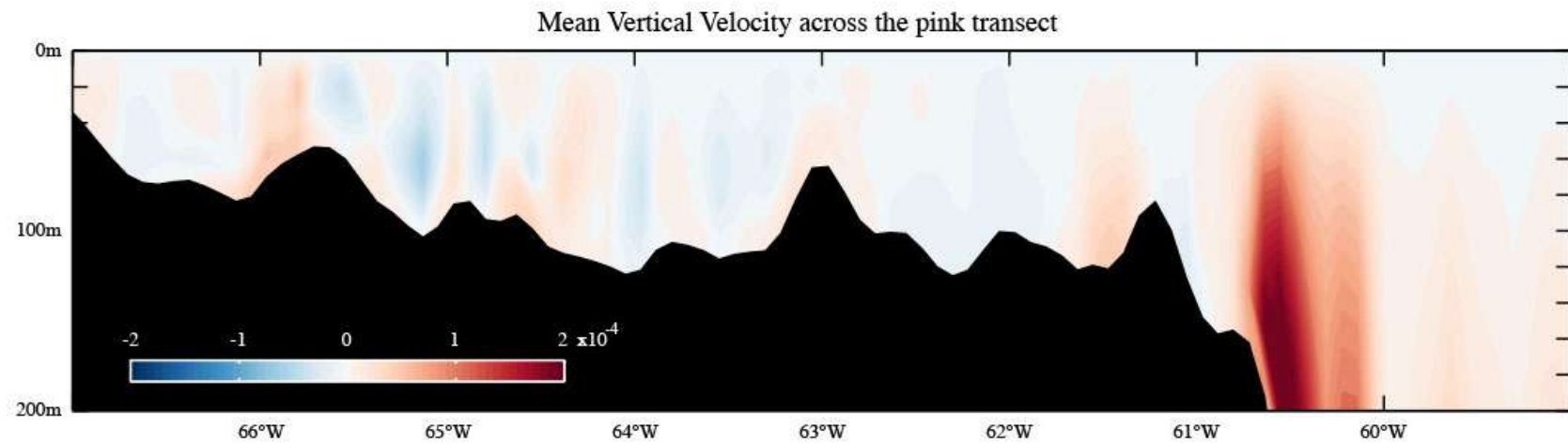
Feedback



Surgencia de talud: evaluación de mecanismos

Frictional Effects $\longrightarrow$ $W \sim O[10 \text{ m/day}]$

Wind Stress Curl $\longrightarrow$ $W \sim O[10 \text{ cm/day}]$



Surgencia de talud: evaluación de mecanismos

Correlation between
 W and MC Transp.

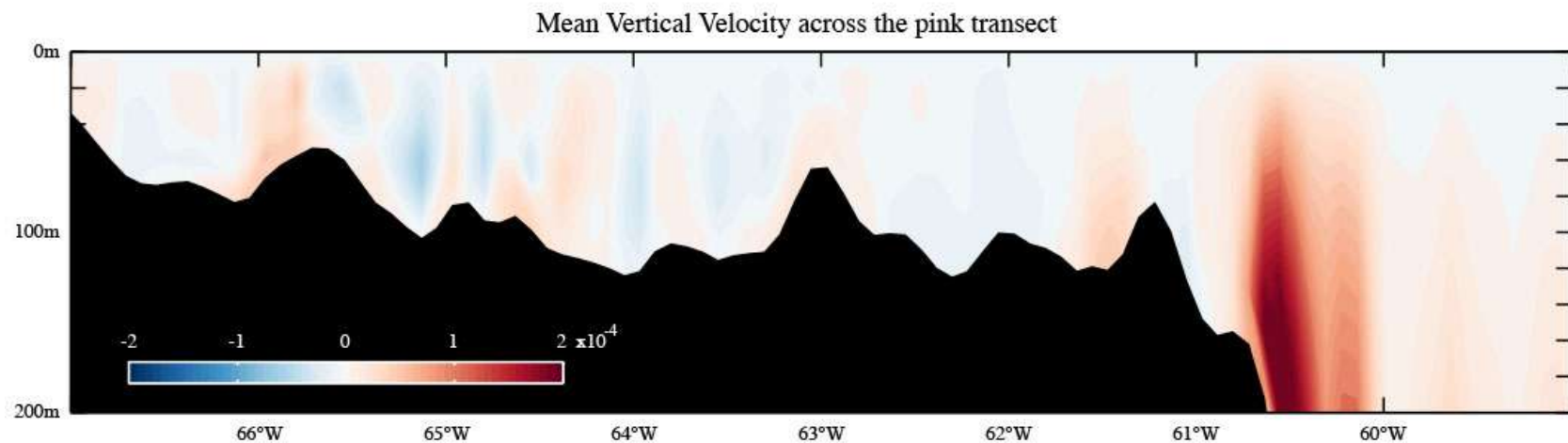
$R = 0.36$ for unfiltered data

$R = 0.68$ for $T > 1$ month

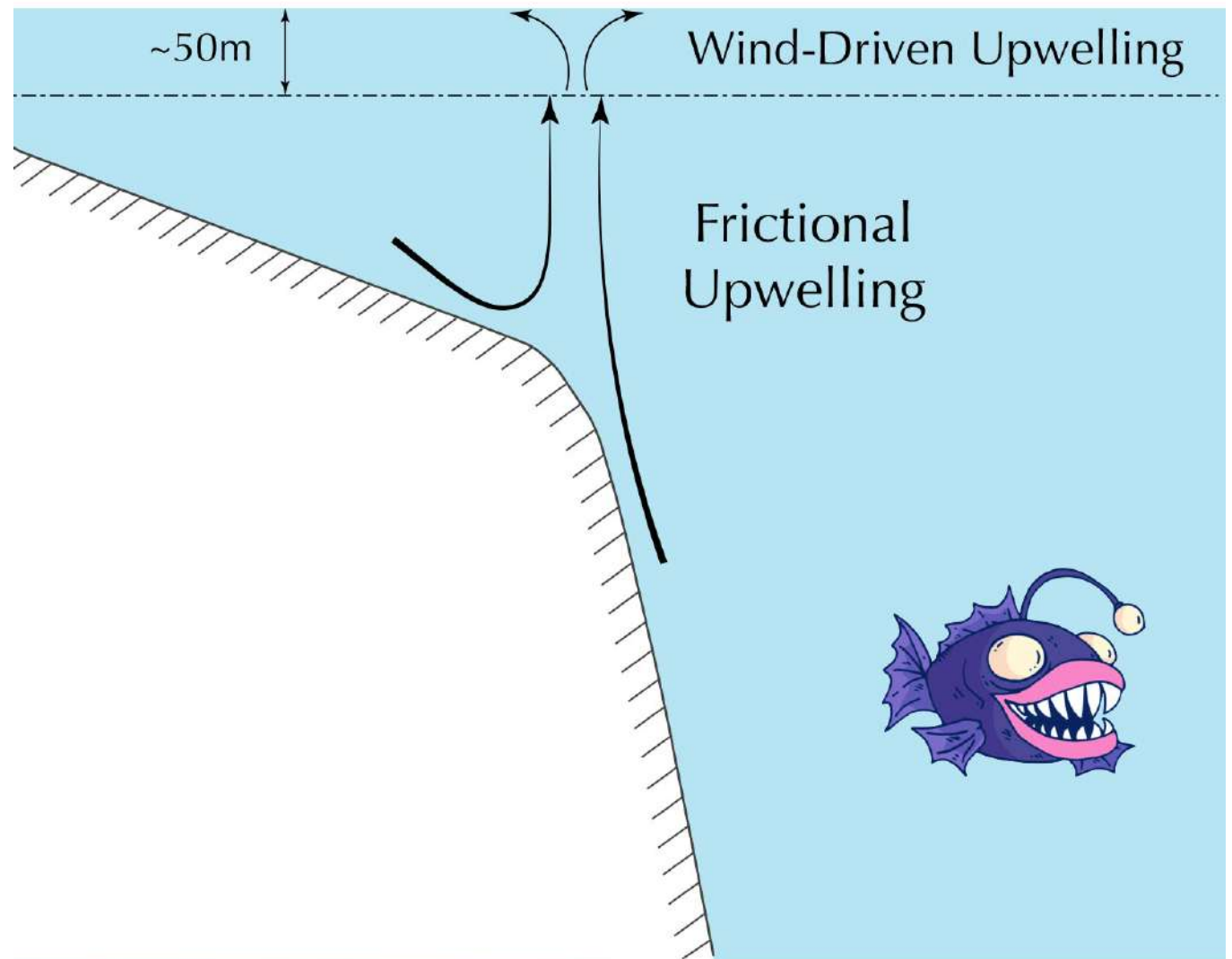
Correlation between
 W and $\text{Curl}(\tau)$

$R = 0.63$ for unfiltered data

$R = 0.33$ for $T > 3$ month

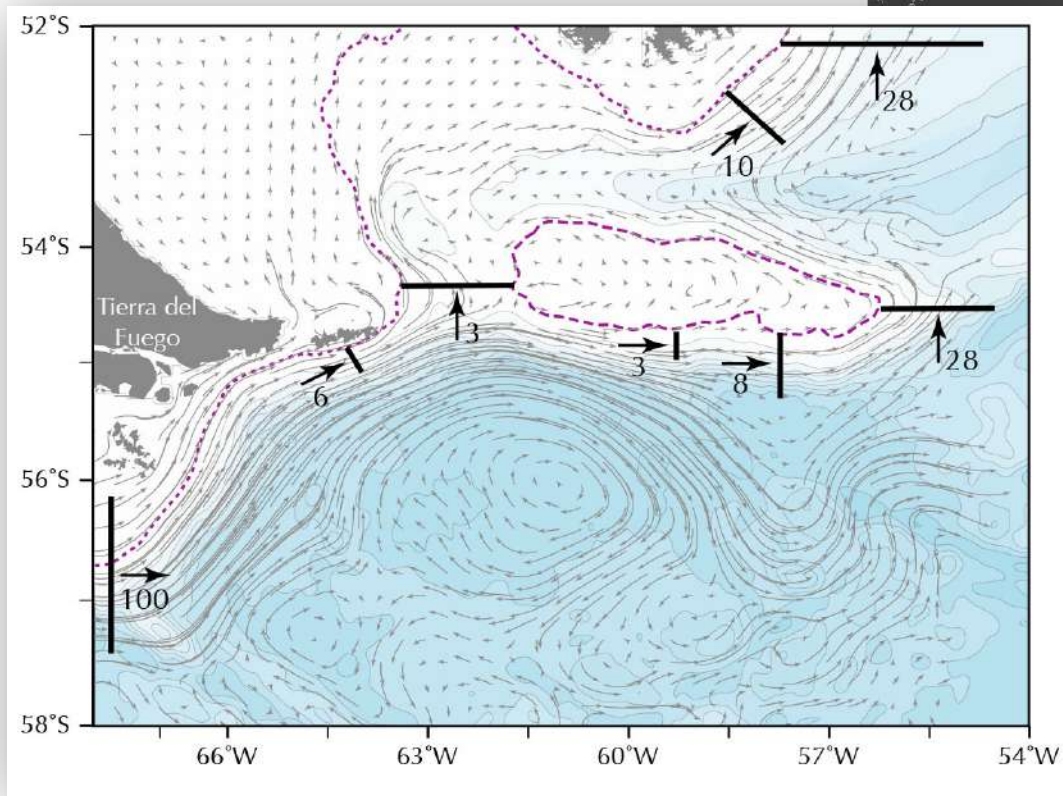
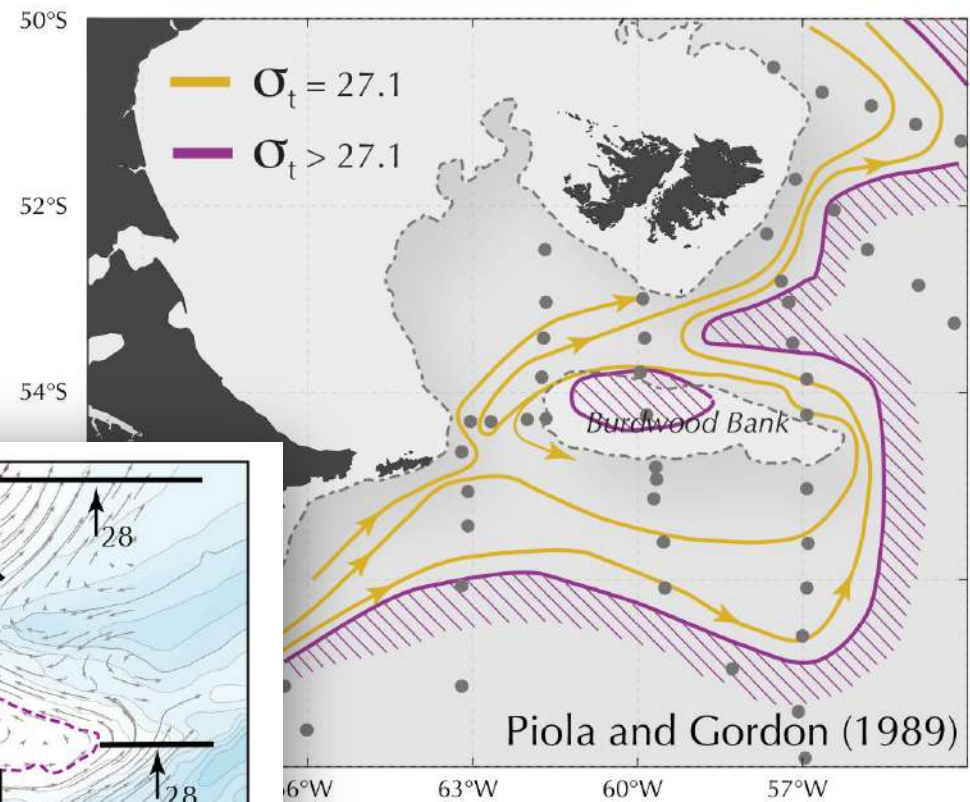


Surgencia de talud: resumen

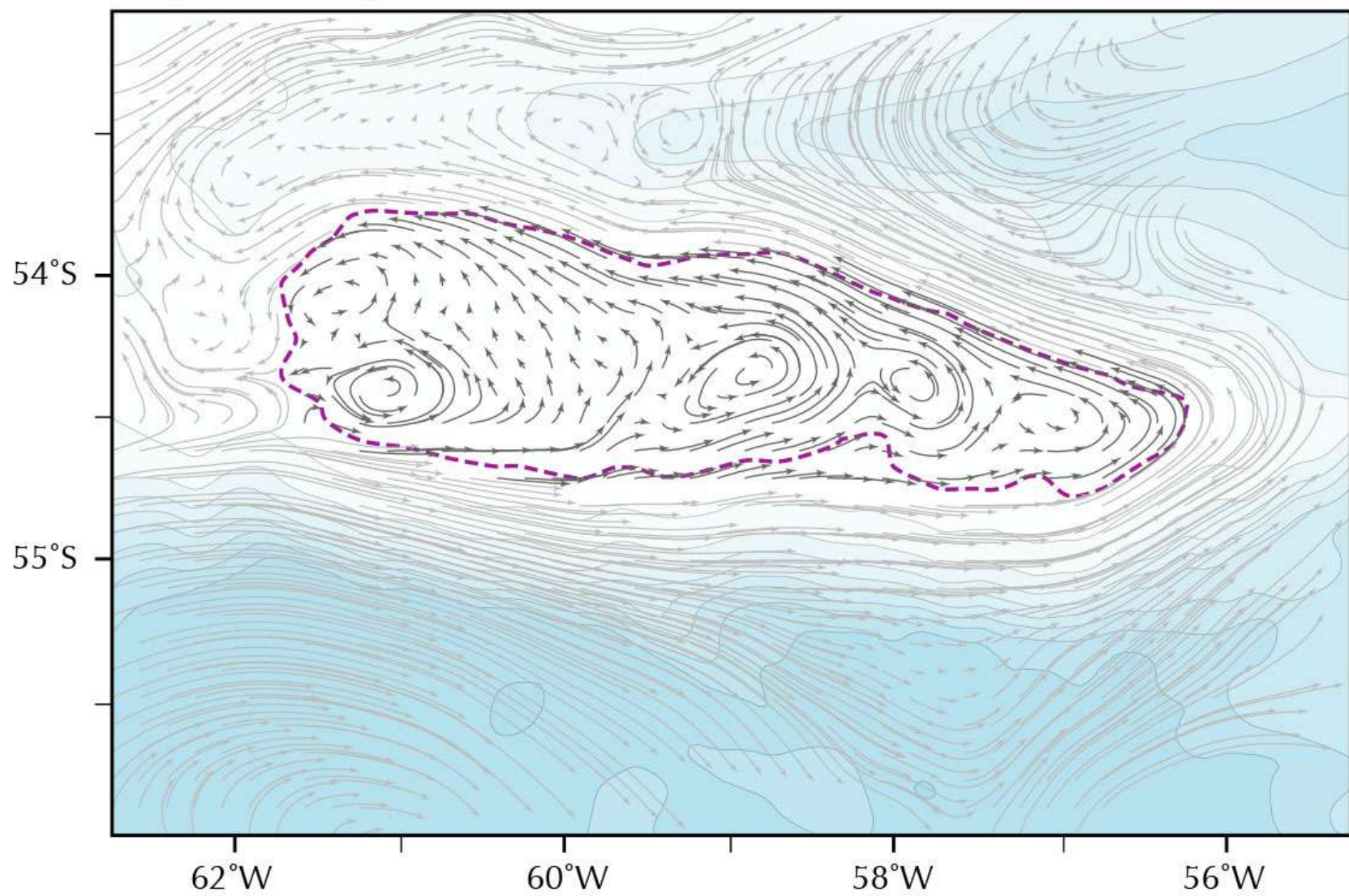


Banco Namuncurá

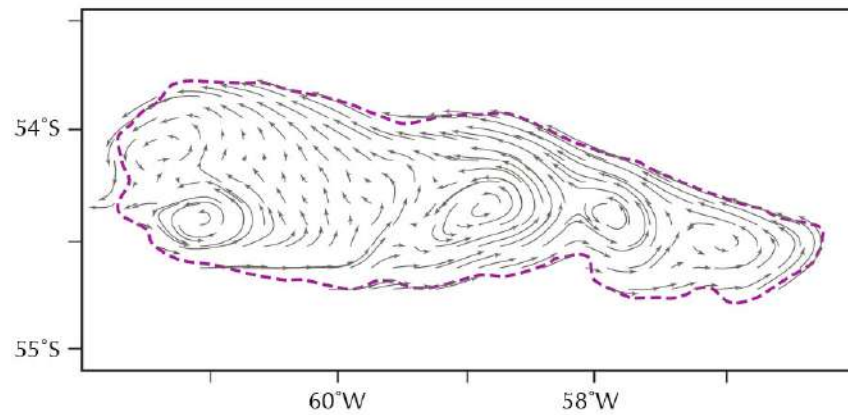
Observations



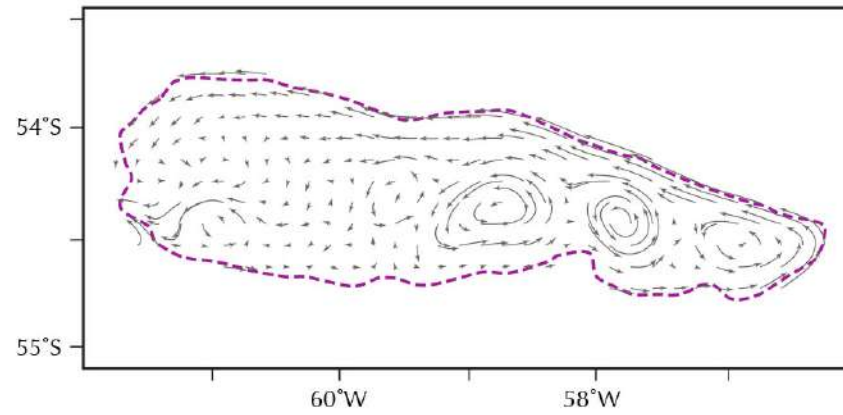
Depth-averaged velocities



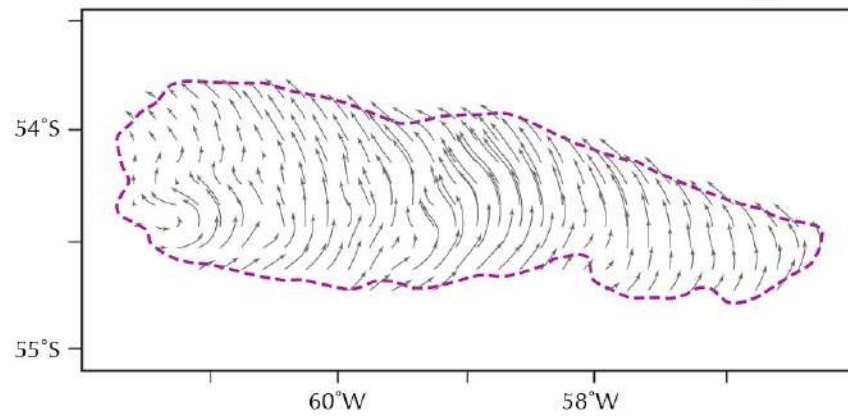
BENCH



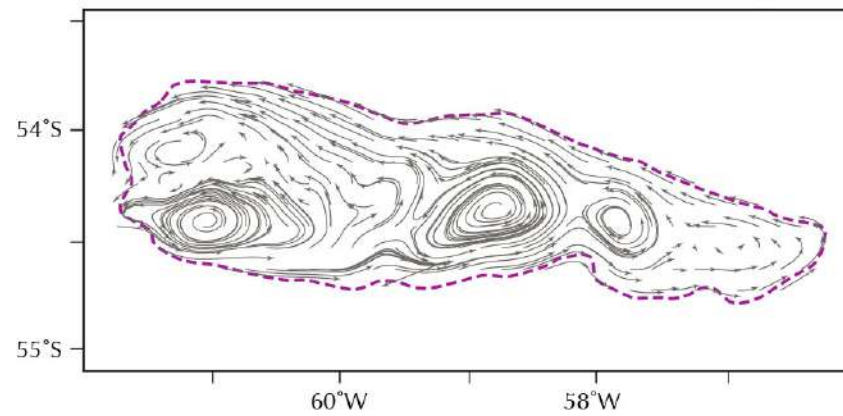
ACC_ONLY



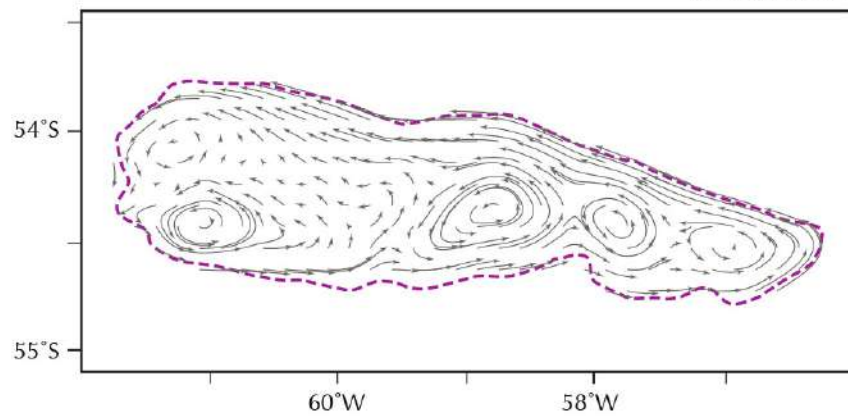
WIND_ONLY



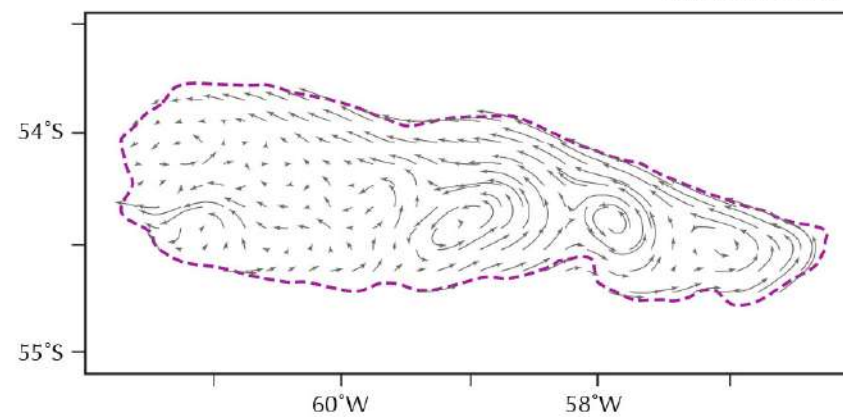
TIDES_ONLY



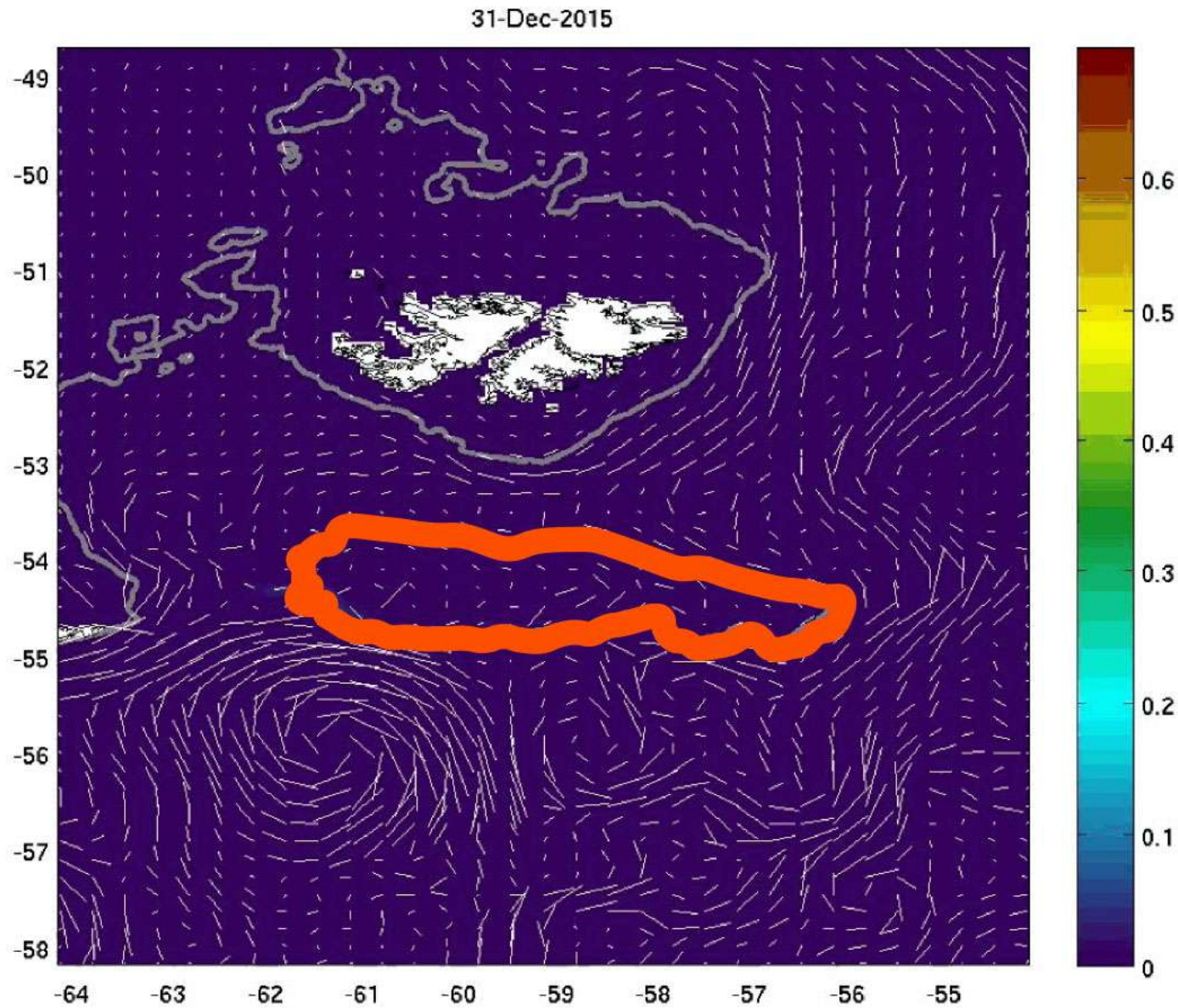
ACC&TIDES



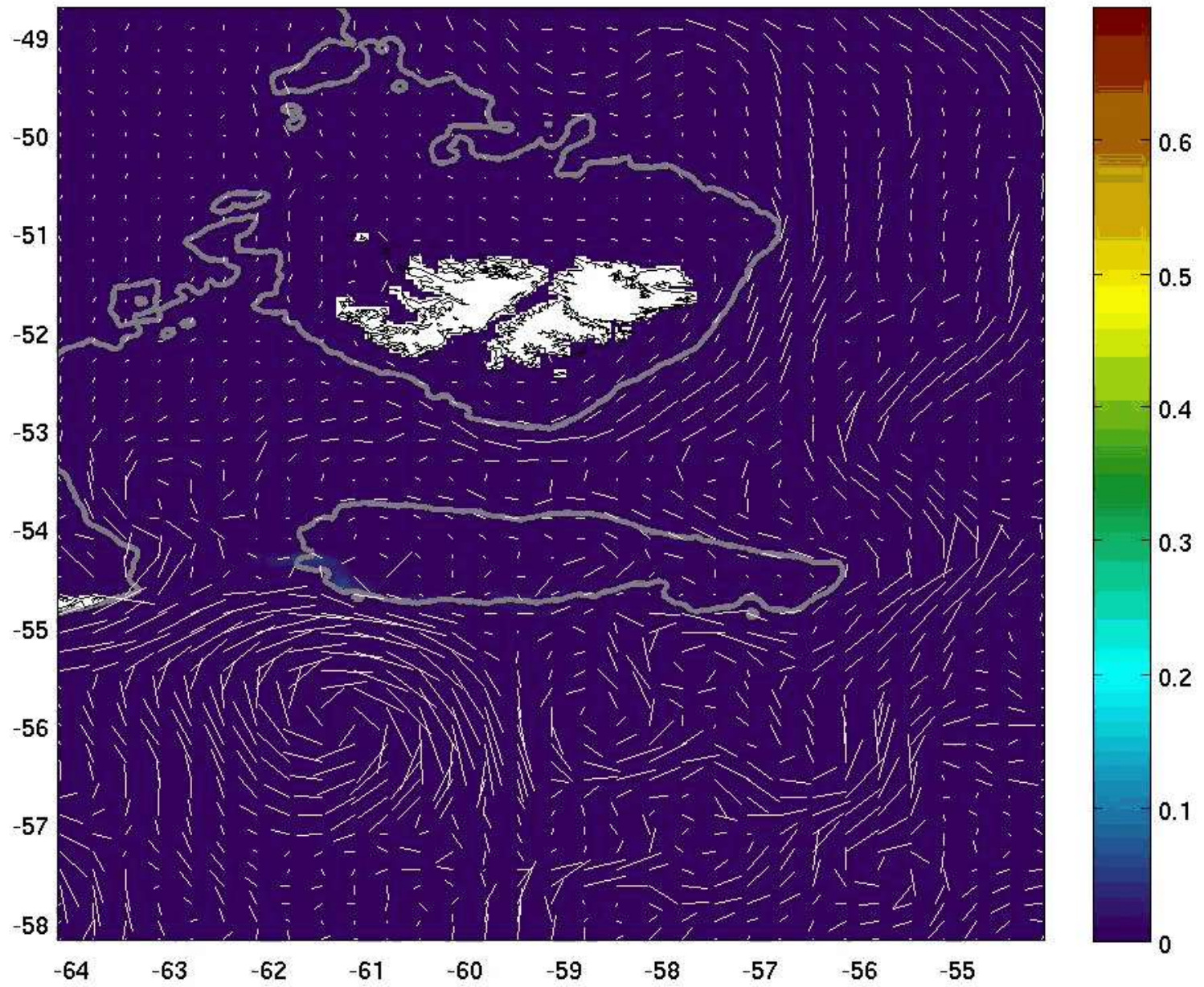
ACC&WINDS



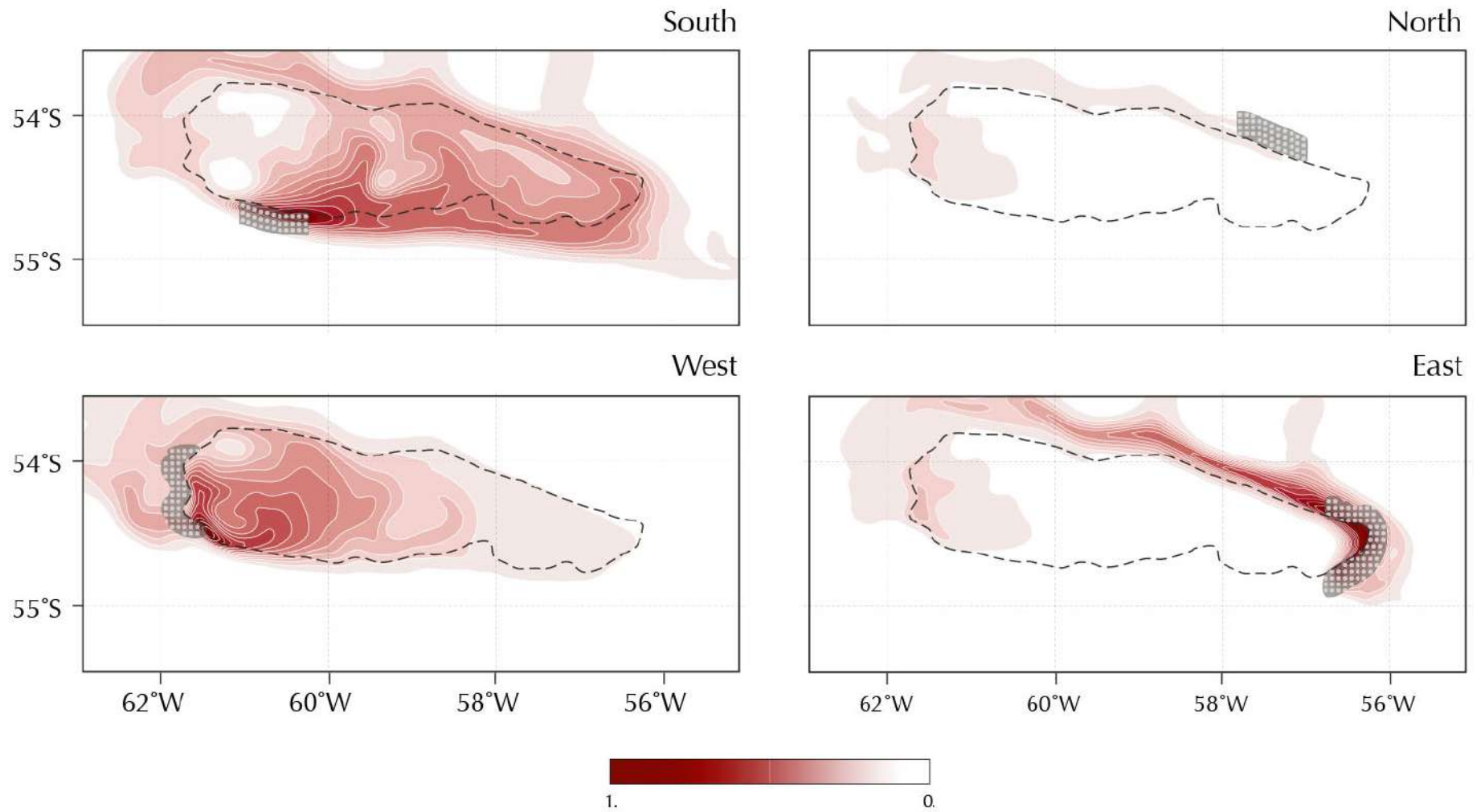
Trazadores injectados a profundidades mayores de 200m
[200m < z < 500m]



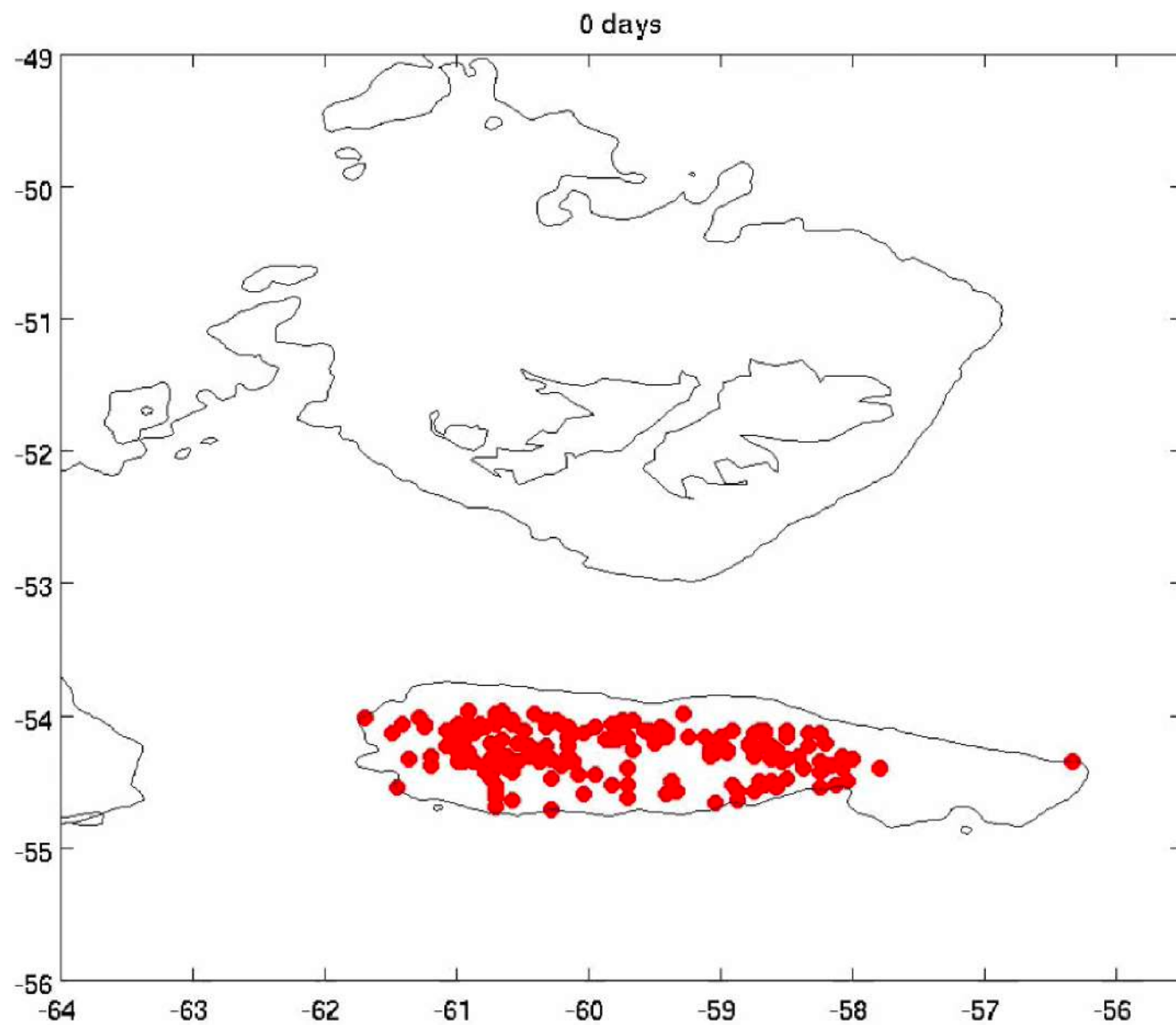
31-Dec-2015

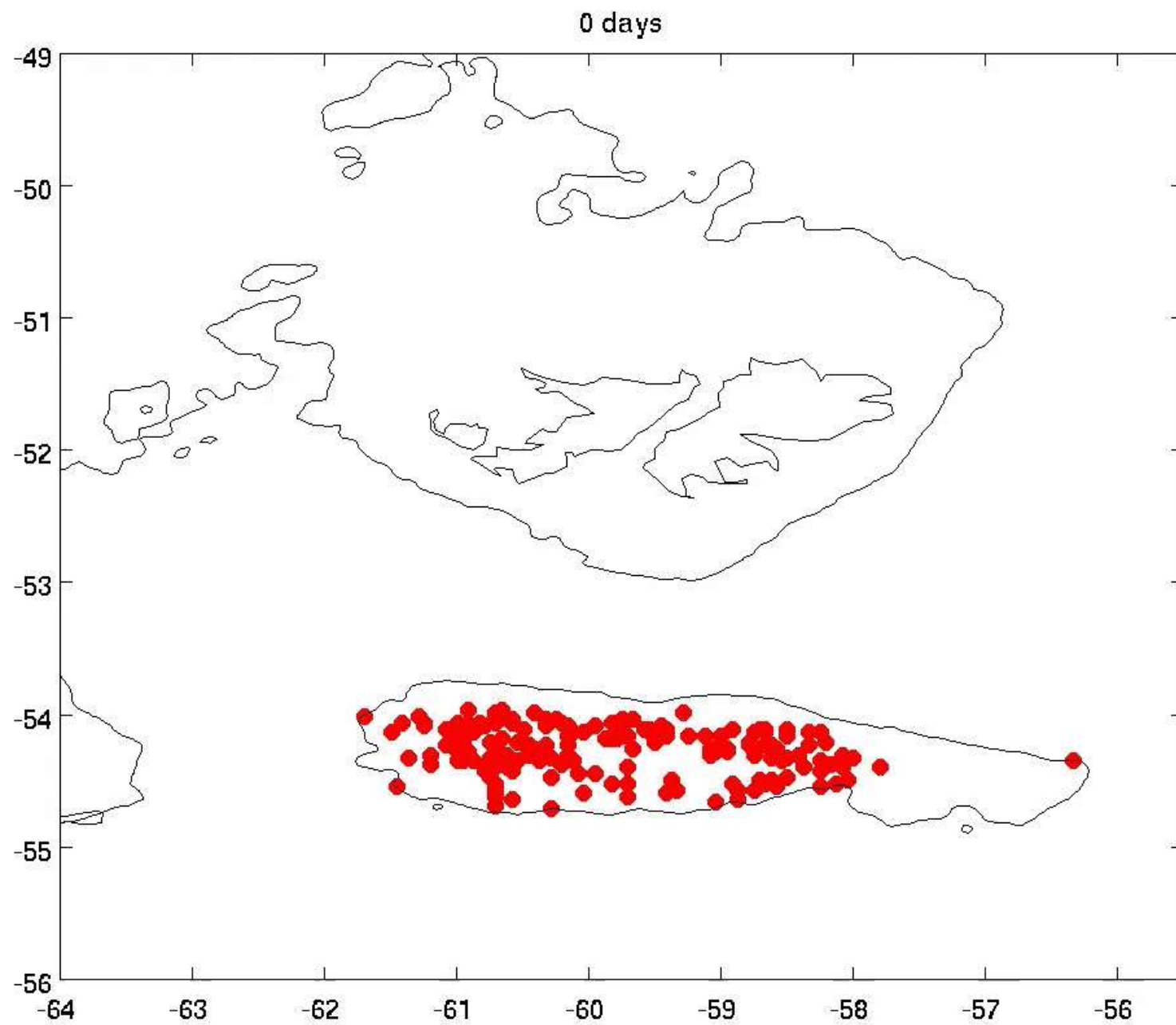


Centros de Surgencia

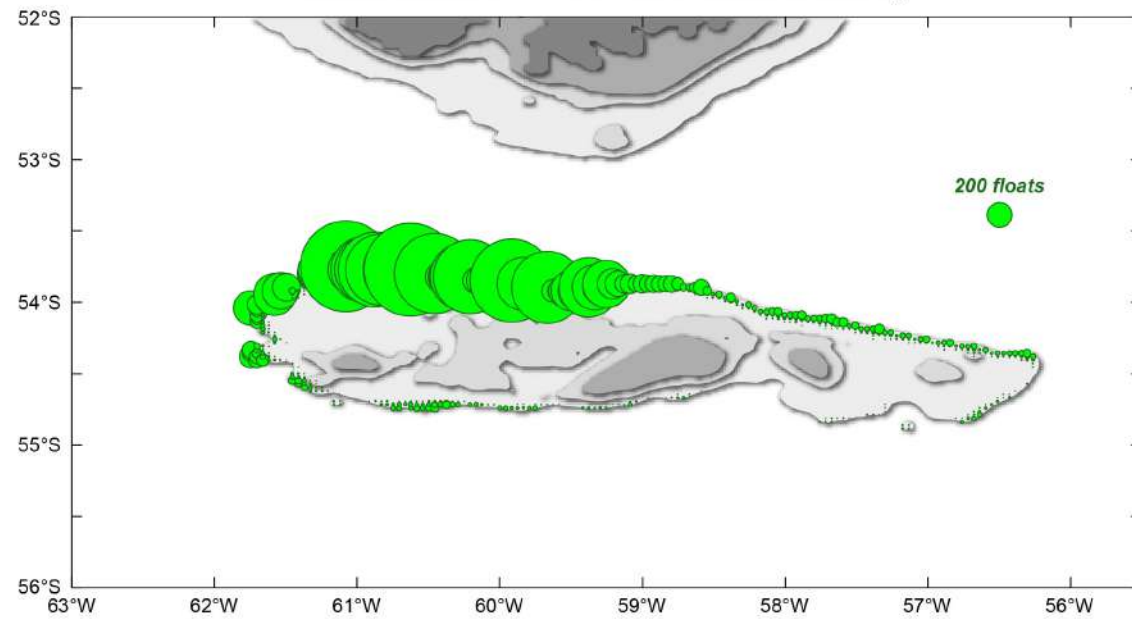


Trayectorias de Particulas

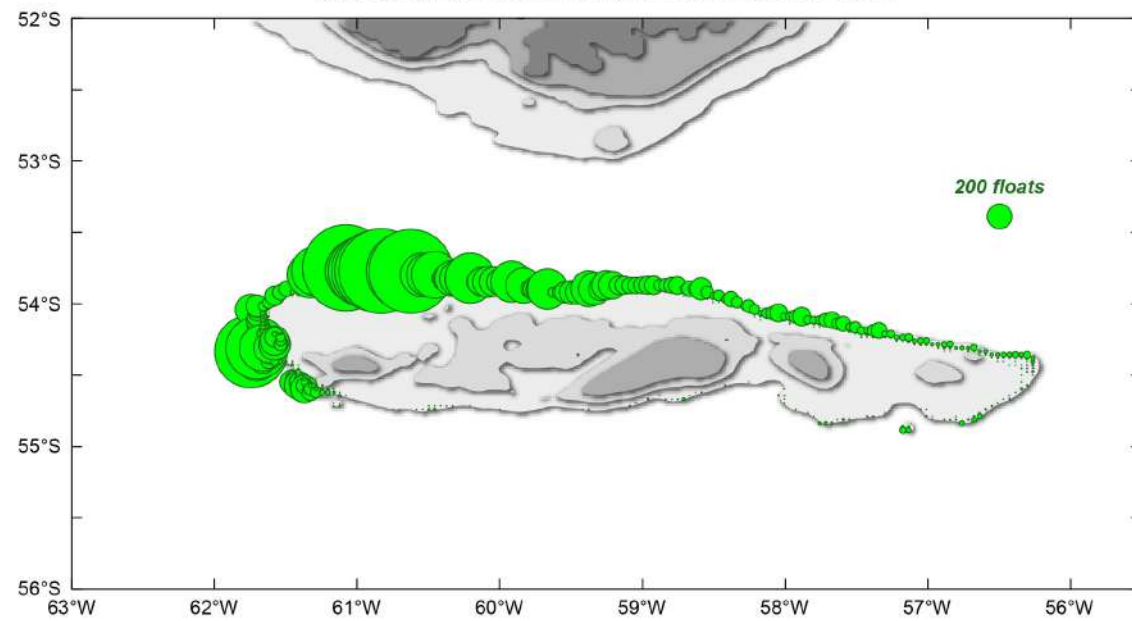




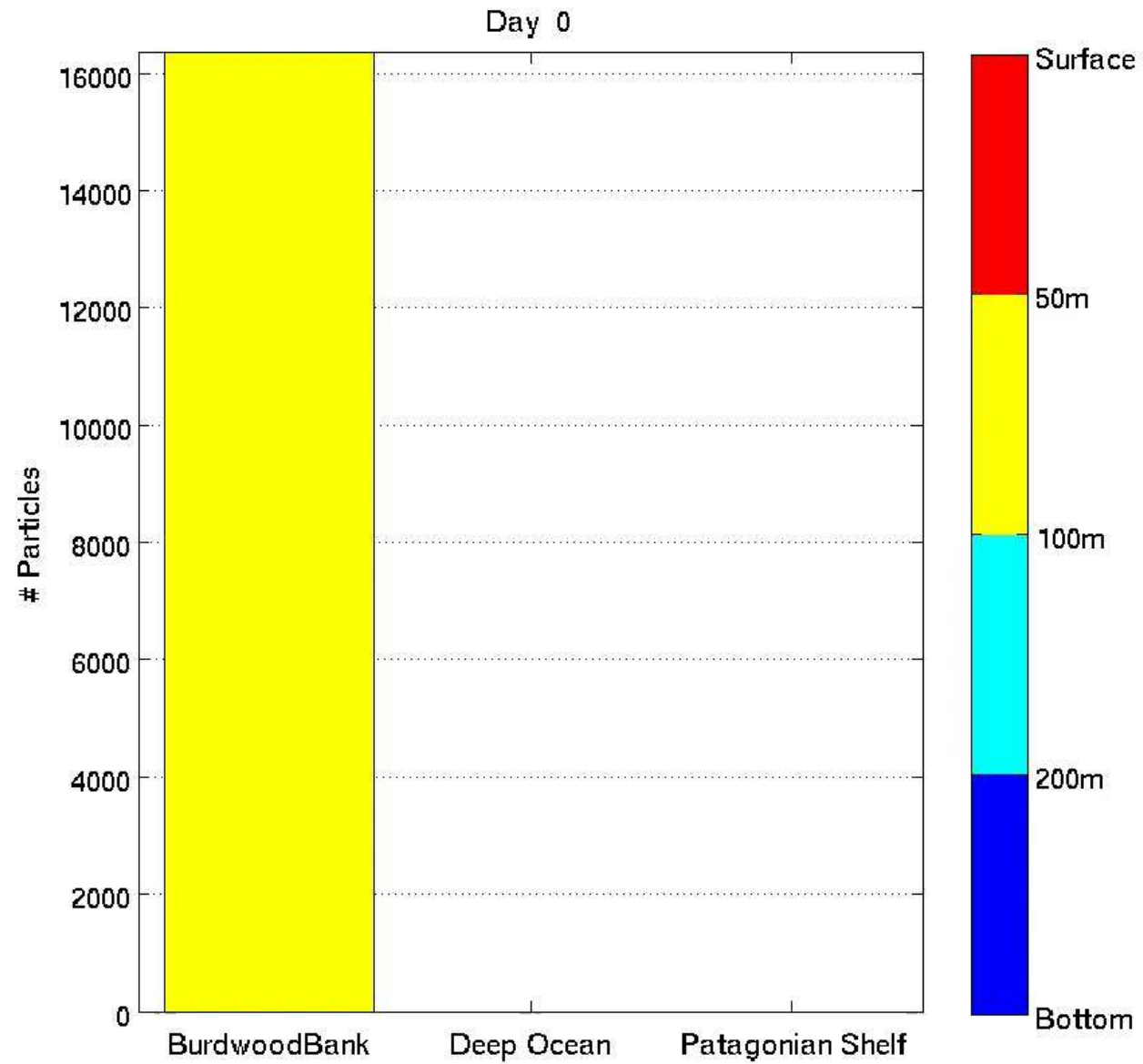
Offshelf location from **42721 floats** released in **January**

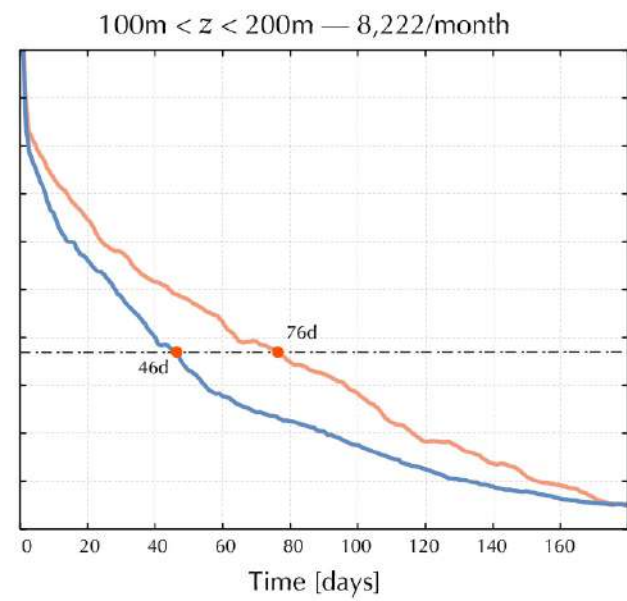
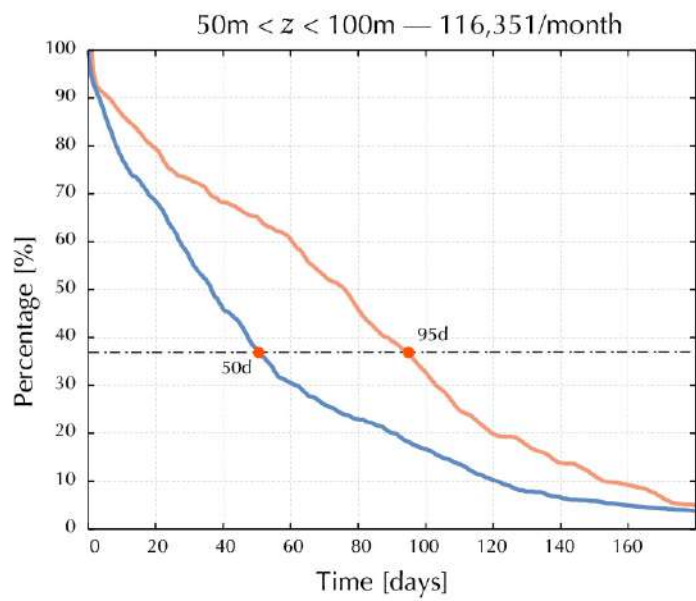
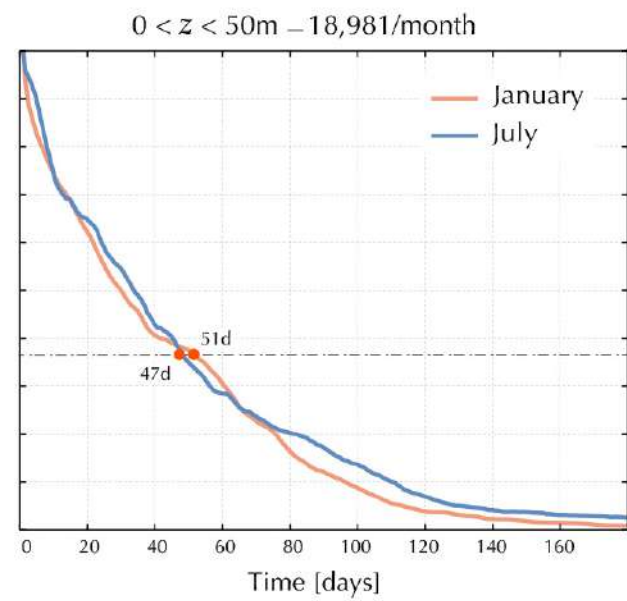
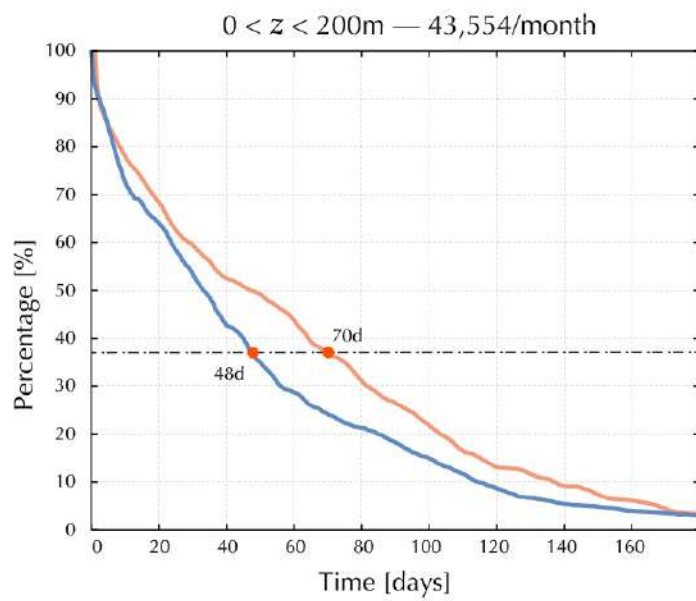


Offshelf location from **43145 floats** released in **June**

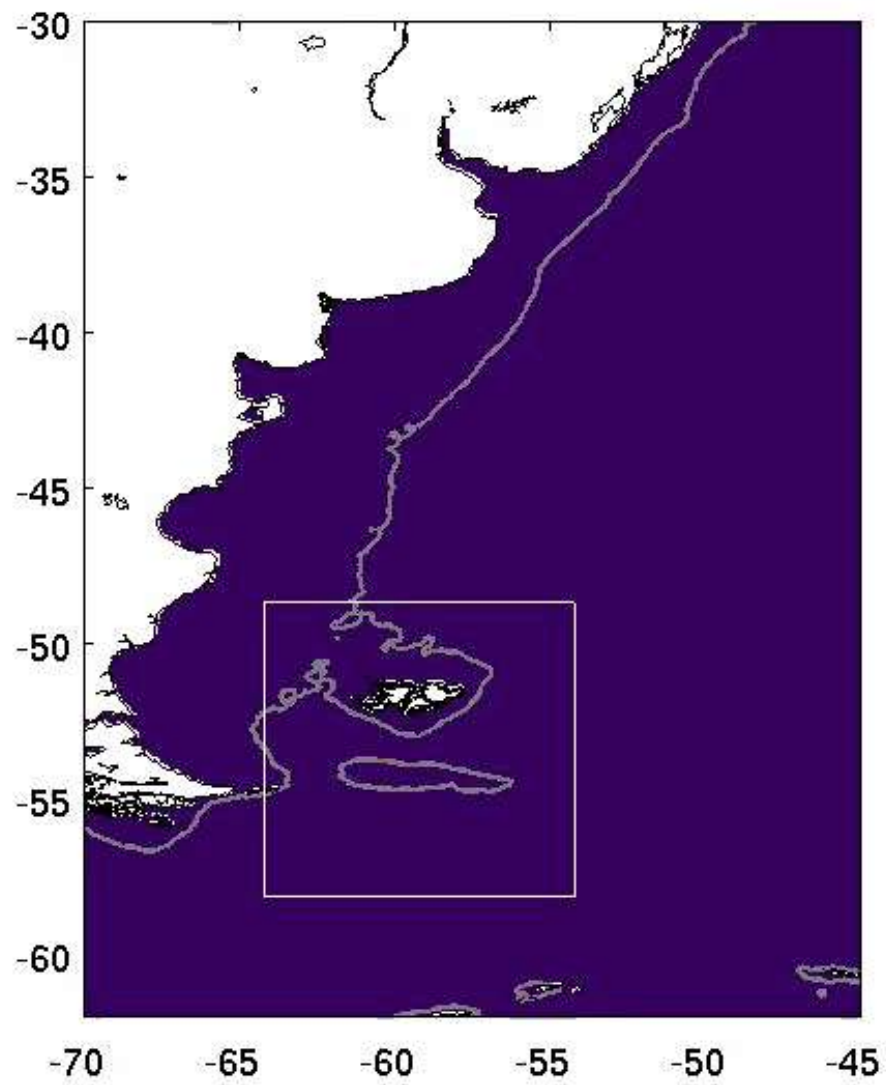


Tiempos de residencia: $50\text{m} < z < 100\text{m}$

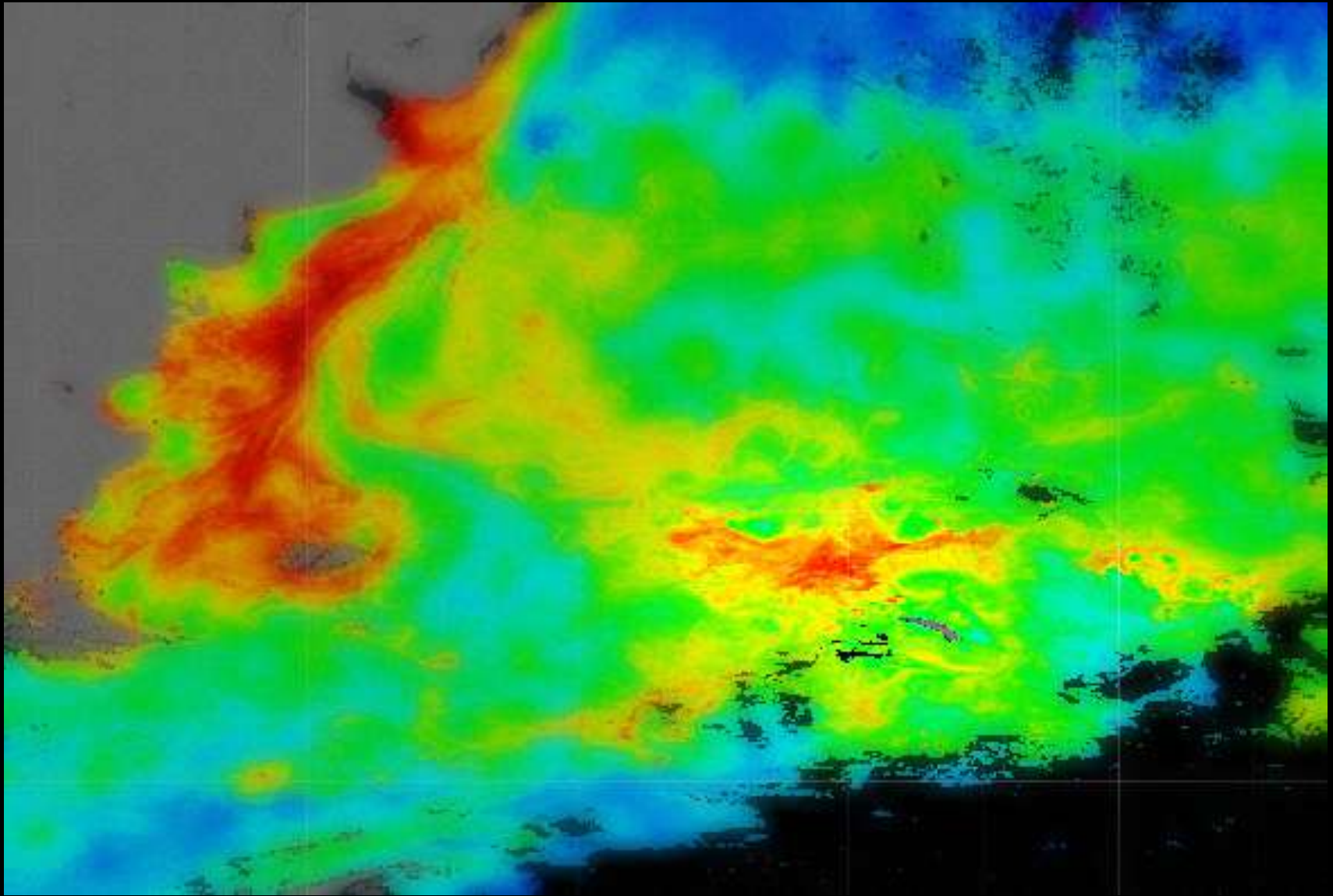




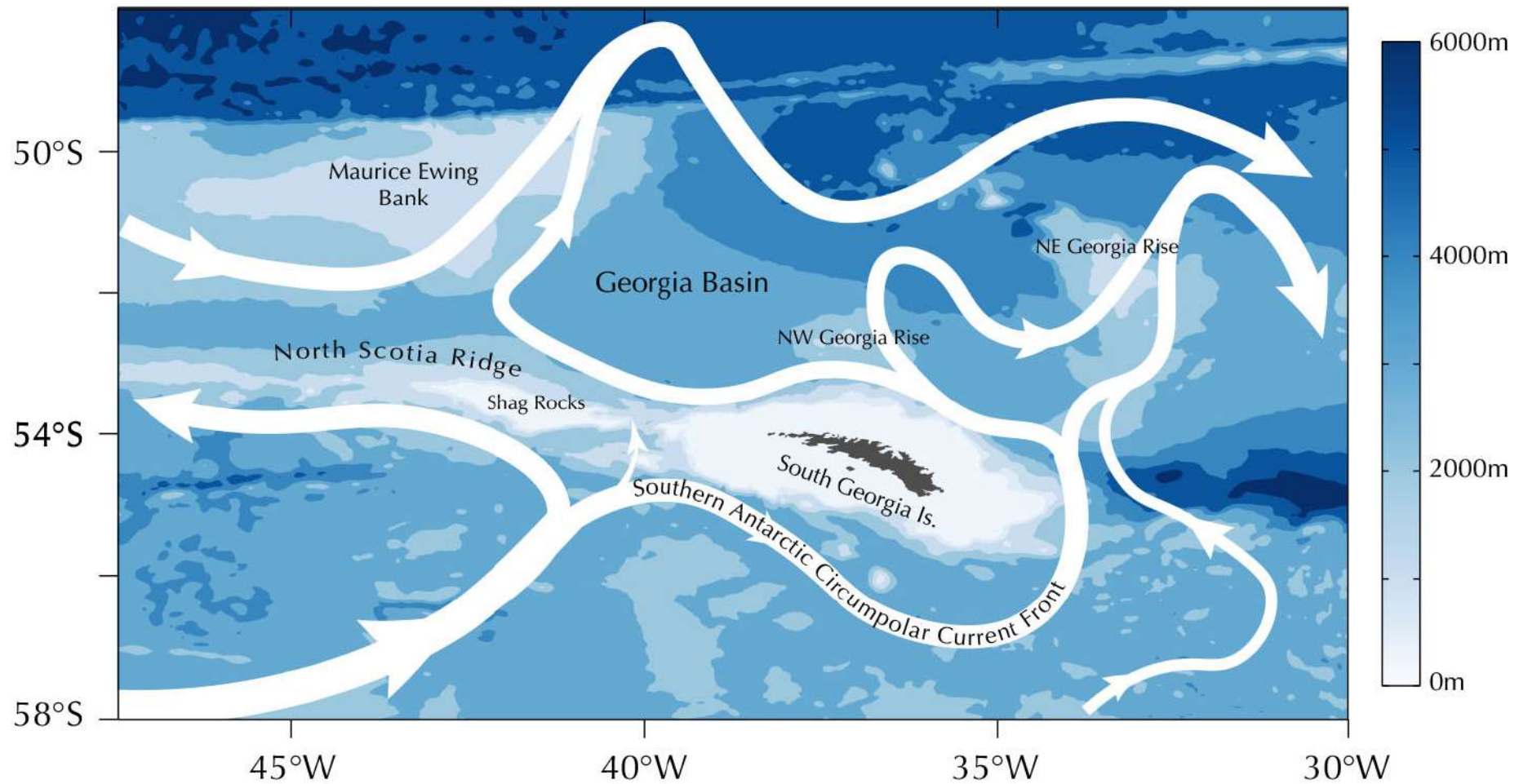
Tides 31-Dec-2015



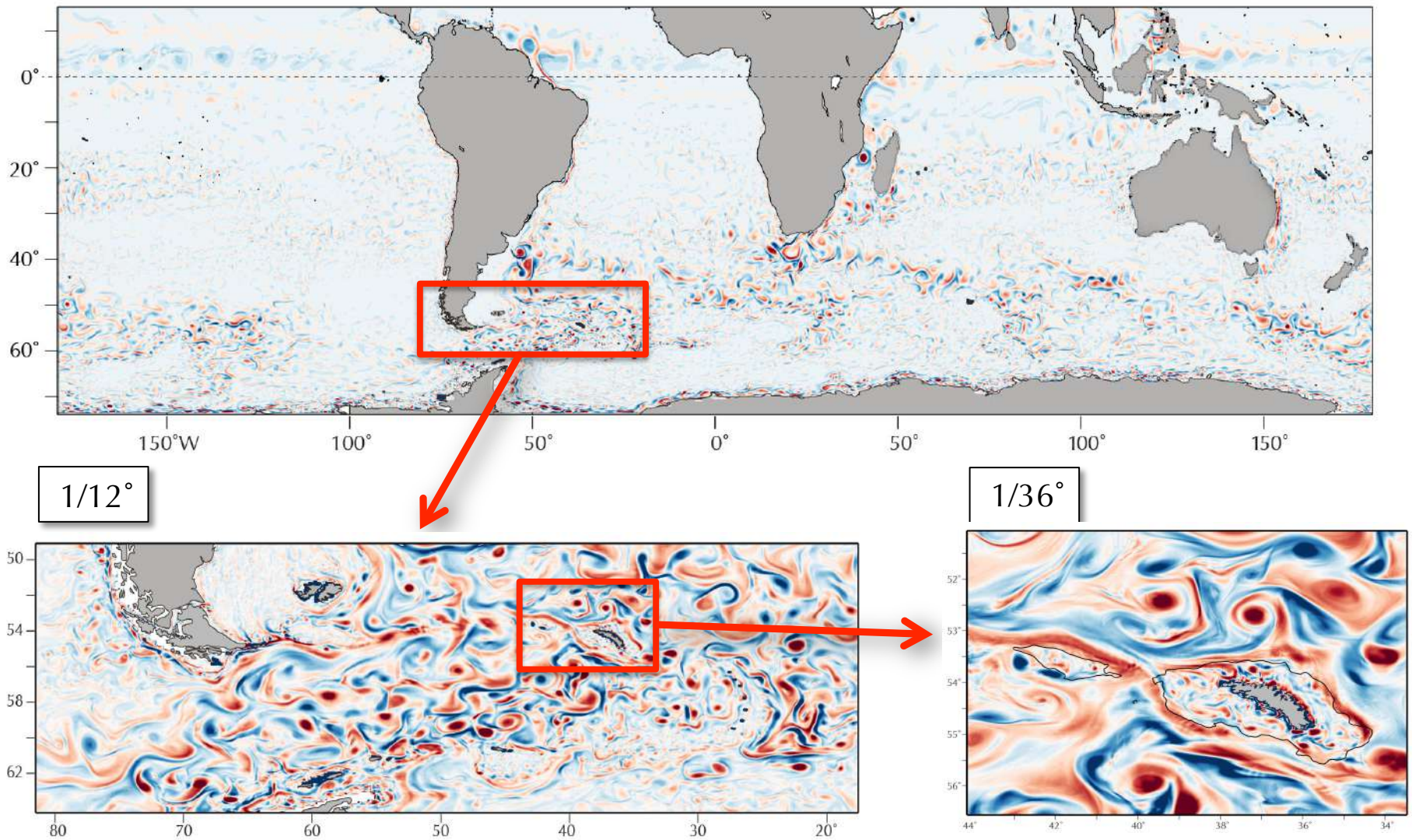
Georgia del Sur



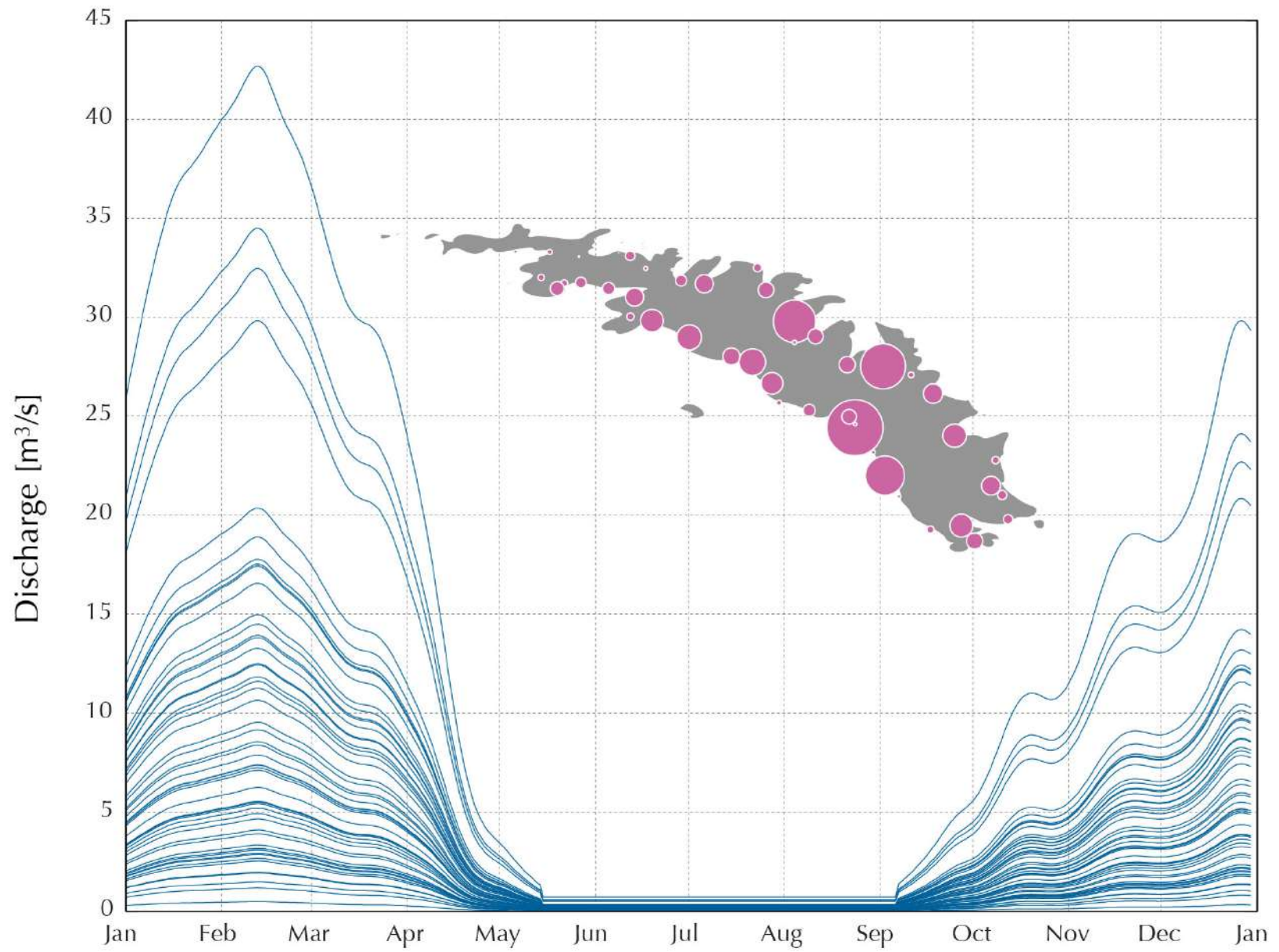
Circulación



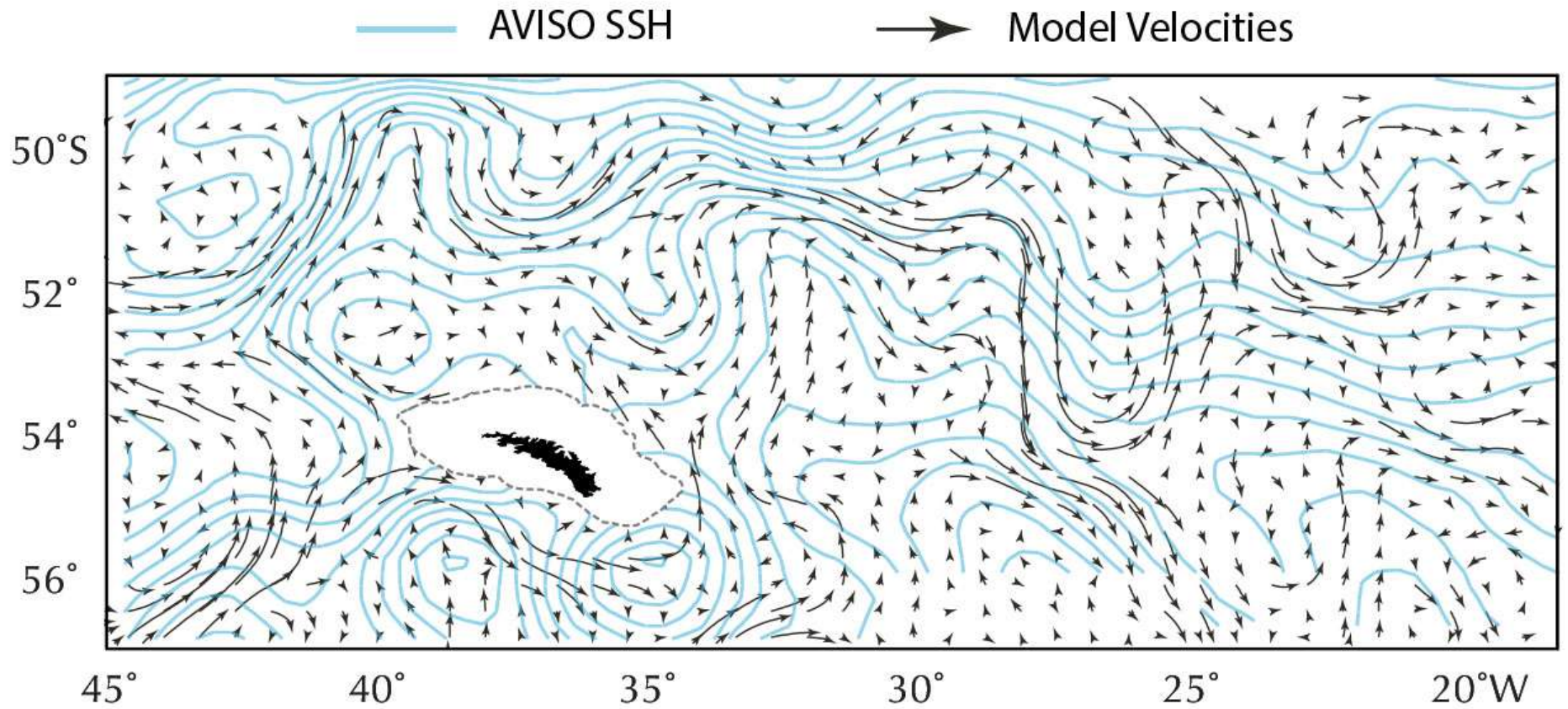
The model



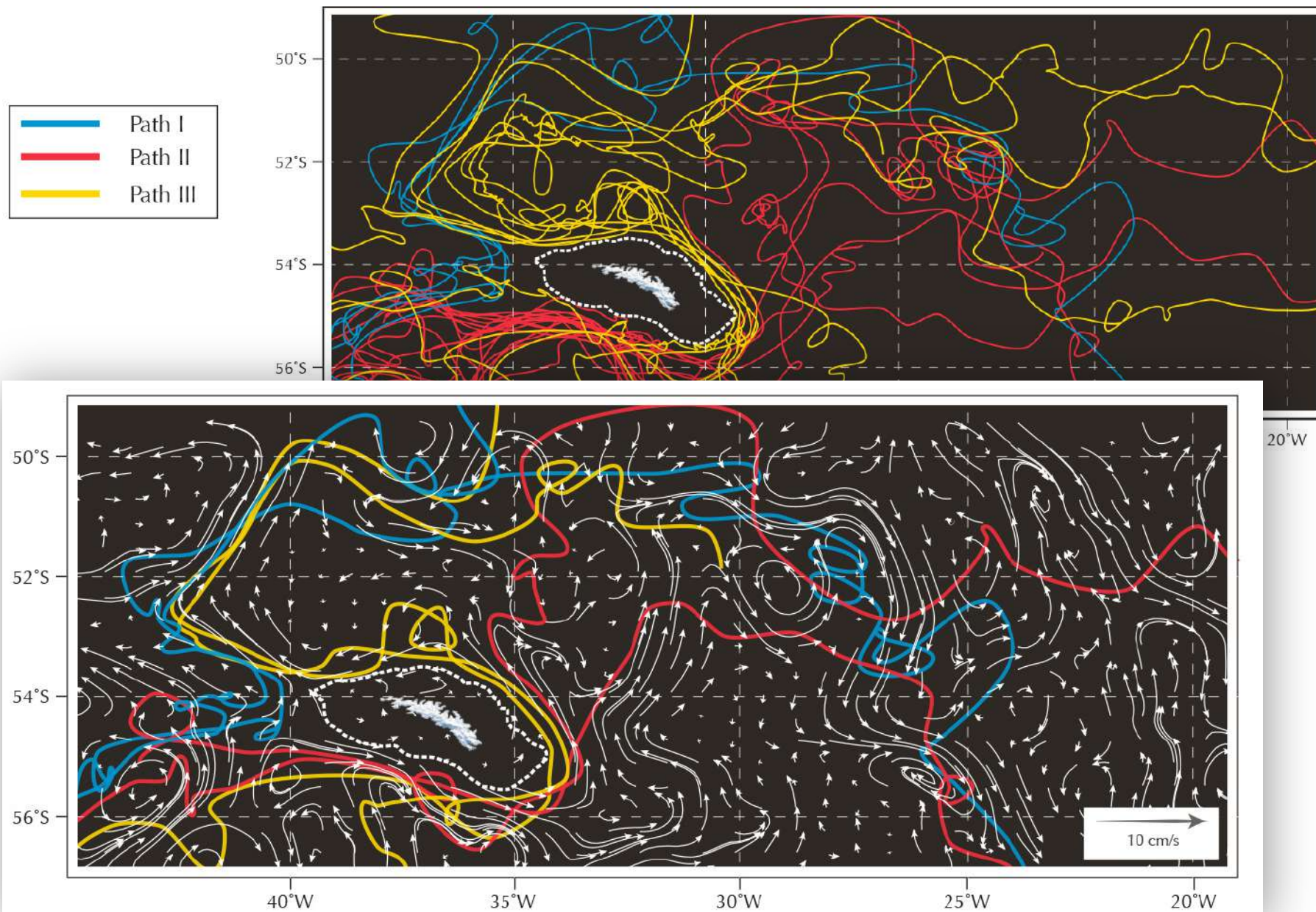
Descargas de Glaciares



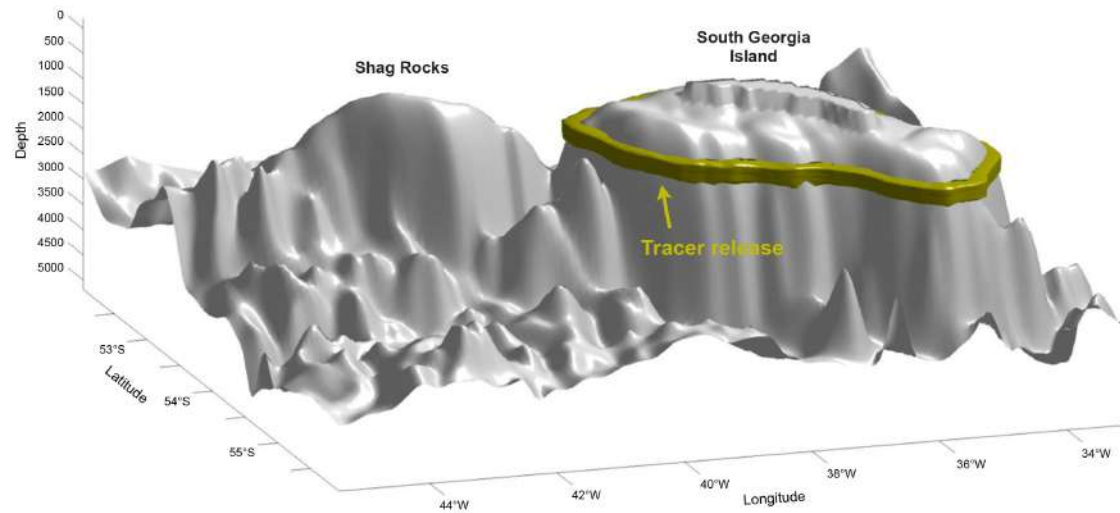
Model and Observations



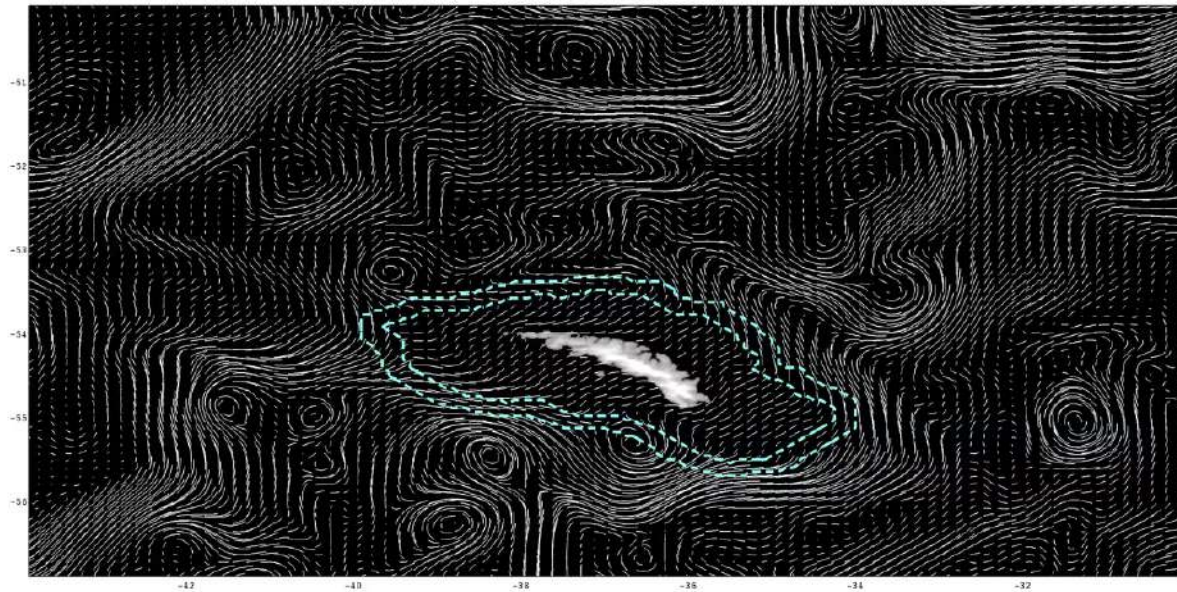
ARGO FLOATS



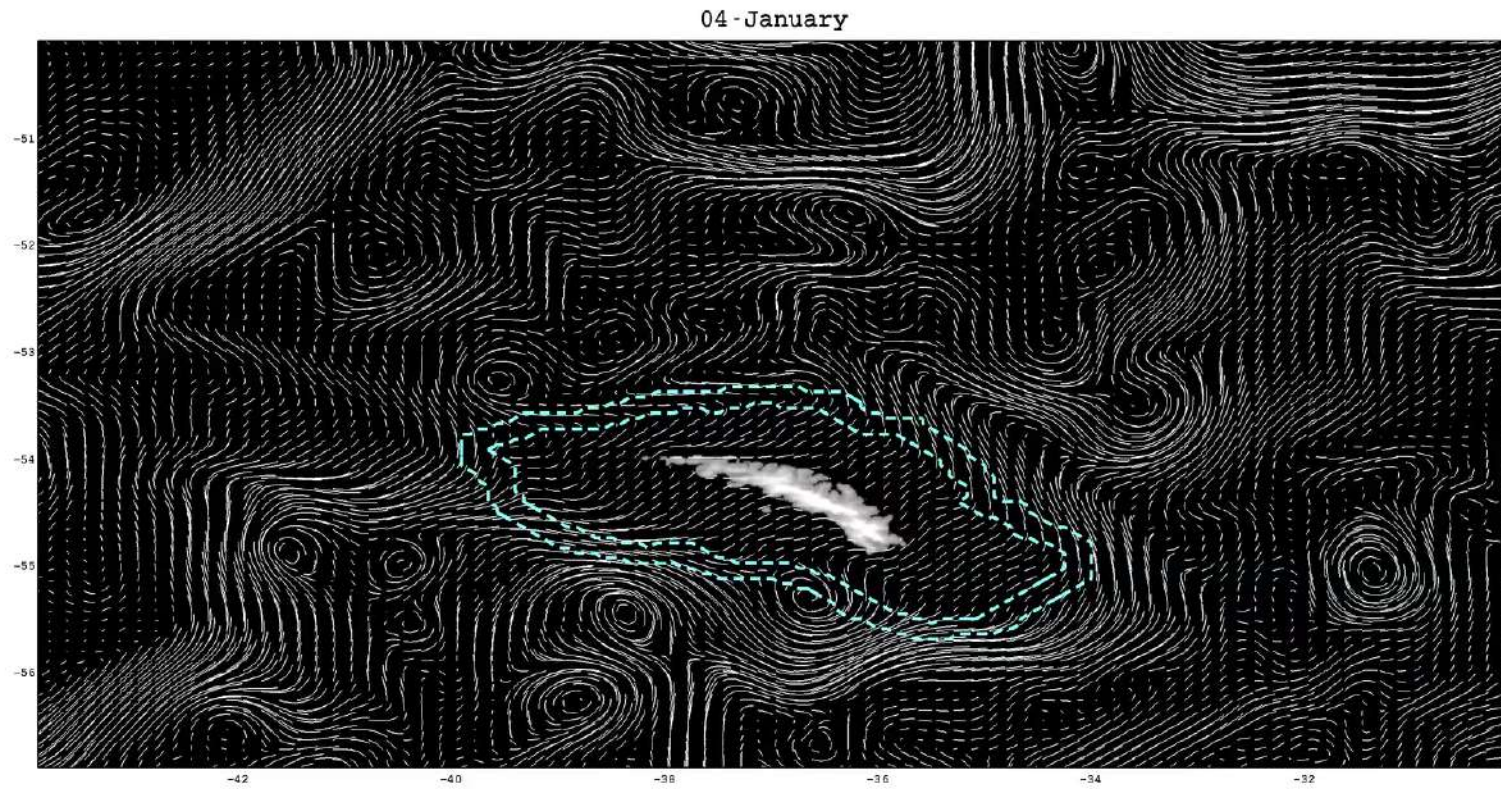
South Georgia Fertilization: Tracer Experiments



04-January

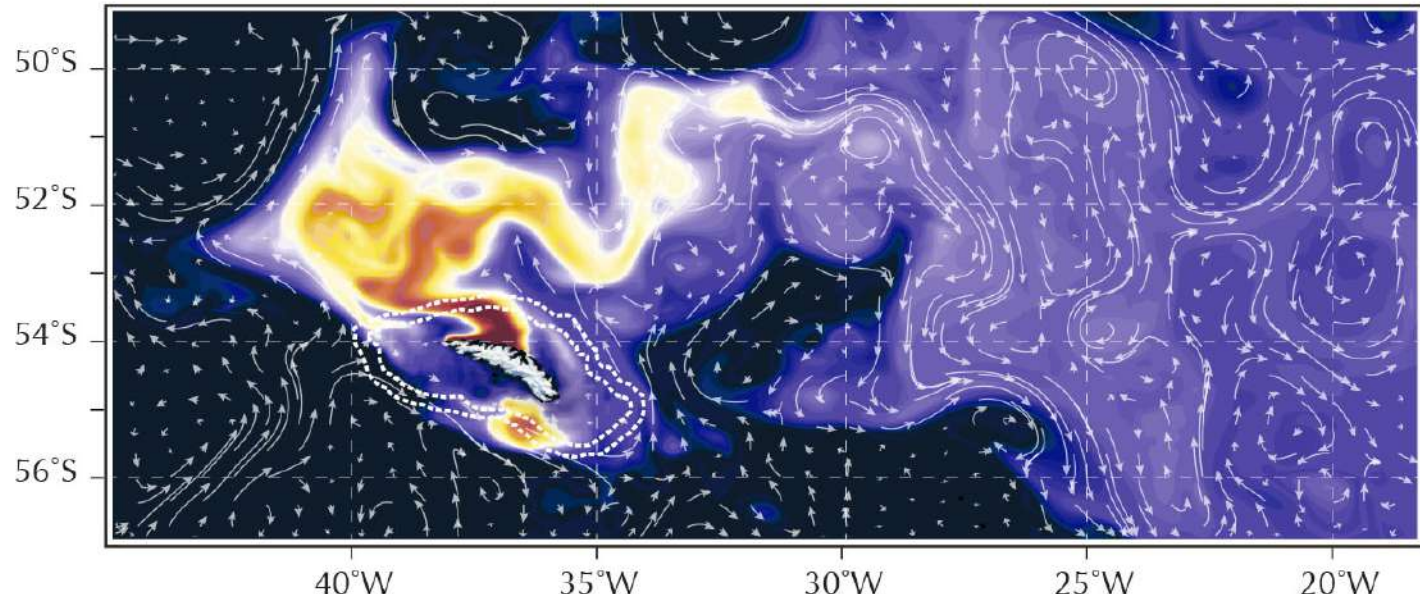


Tracer Experiments

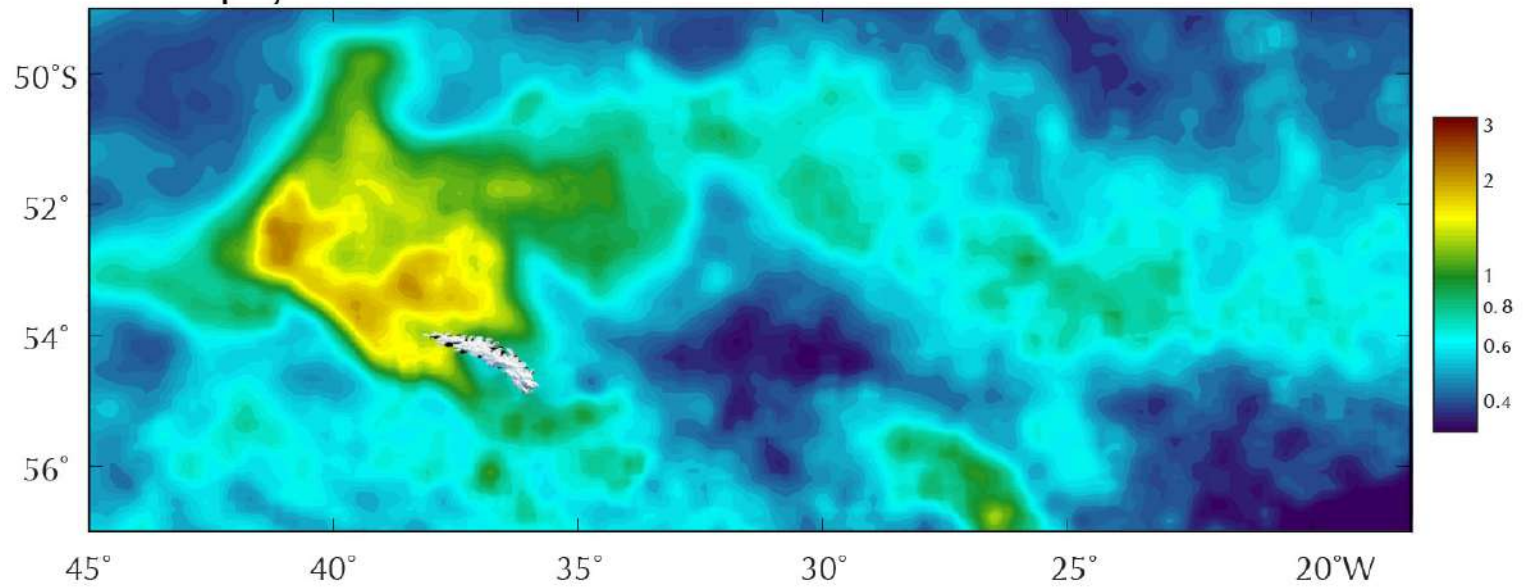


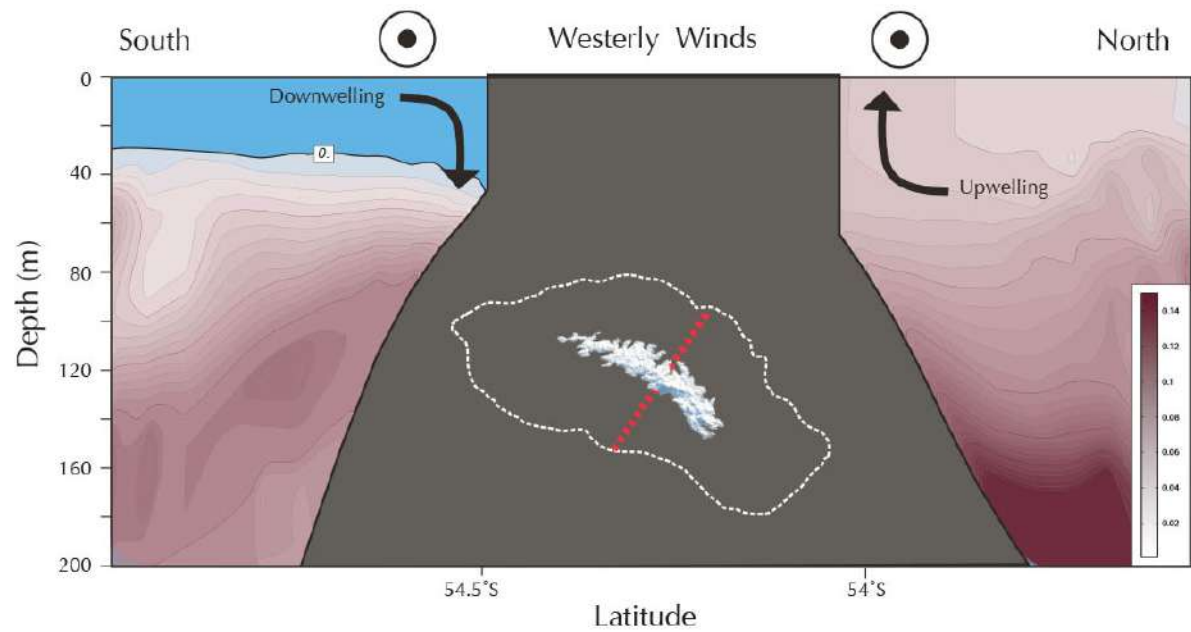
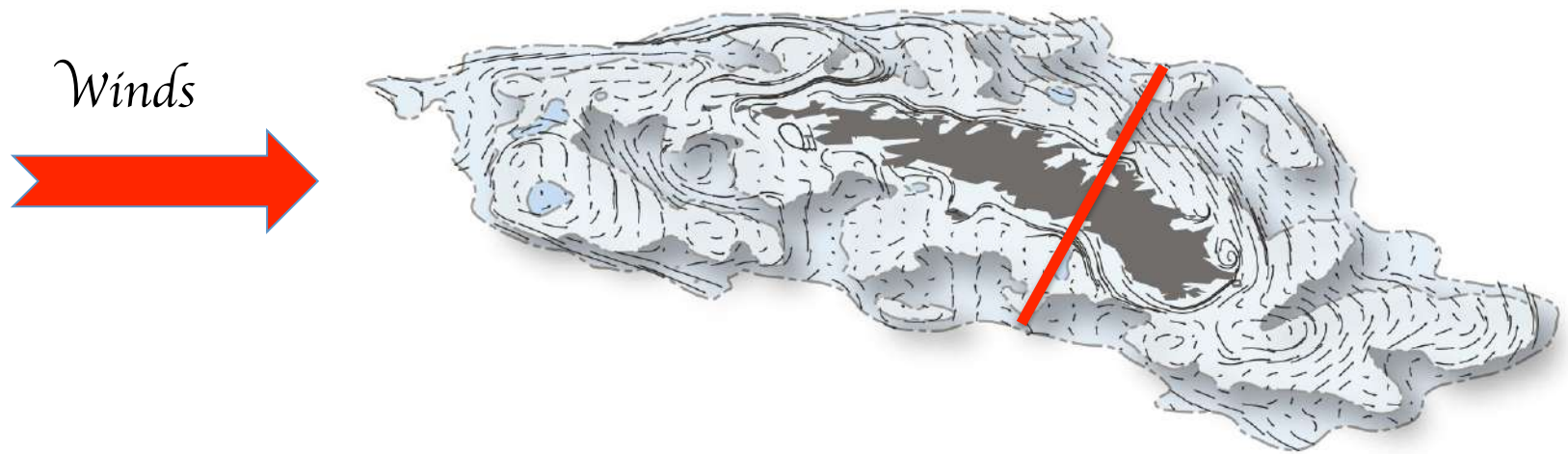
Model/Observations

Tracer: Surface Distribution

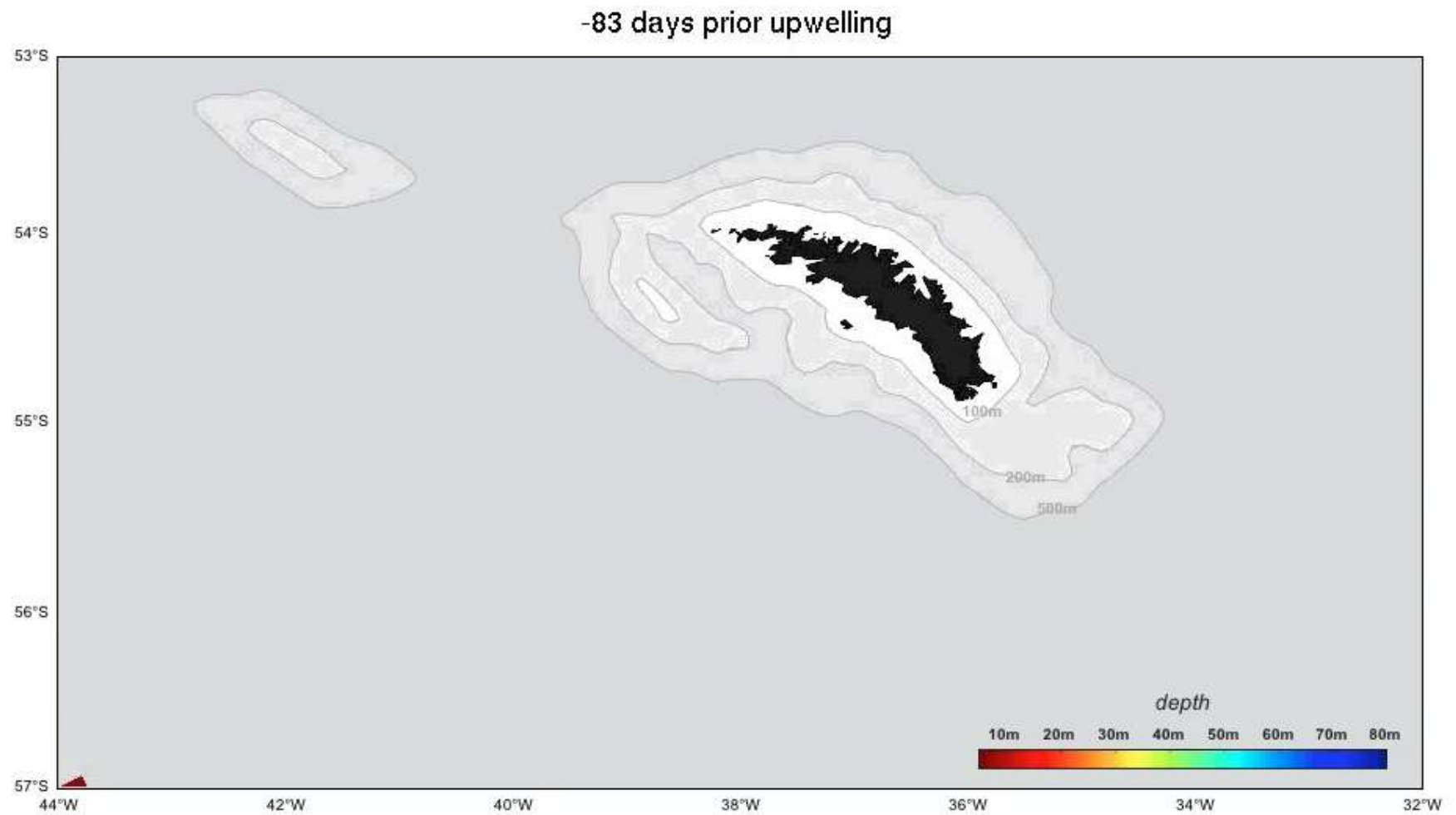


Chlorophyll-A

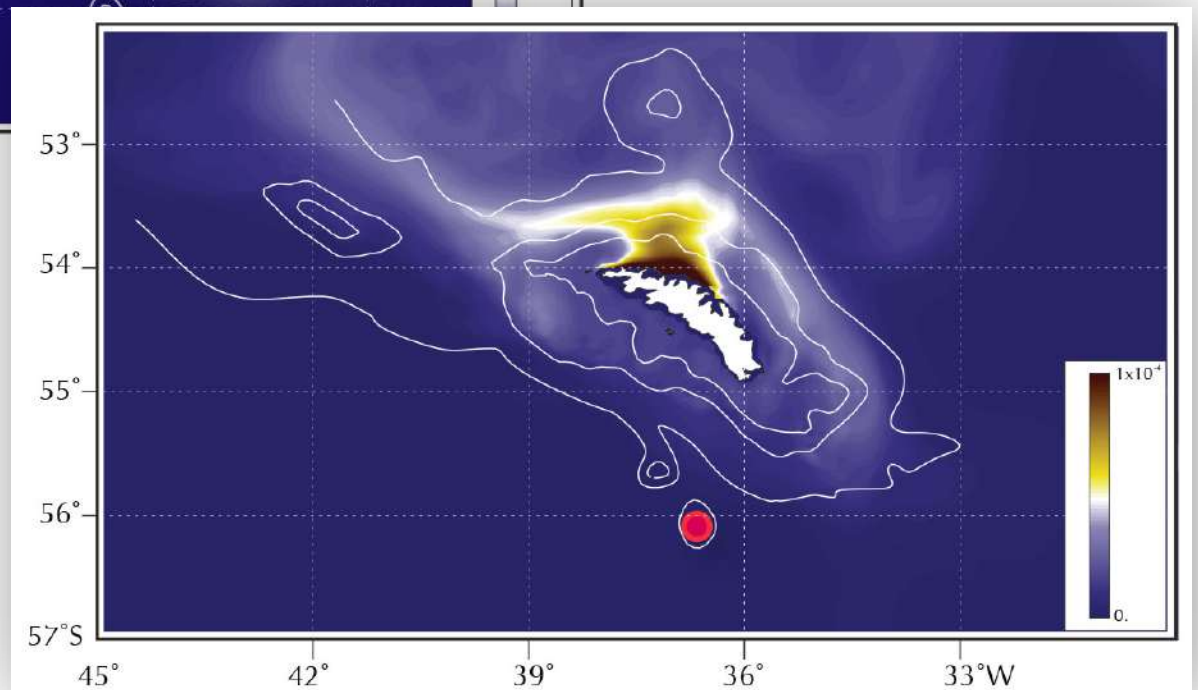
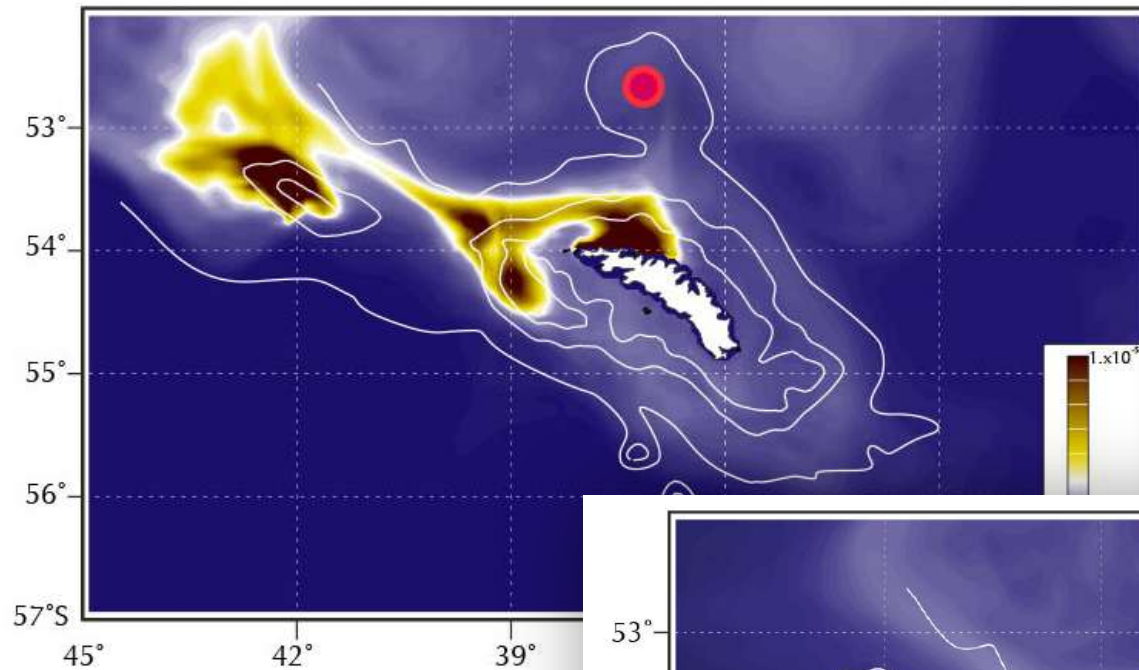




La Trayectoria de 1 (una) Particula

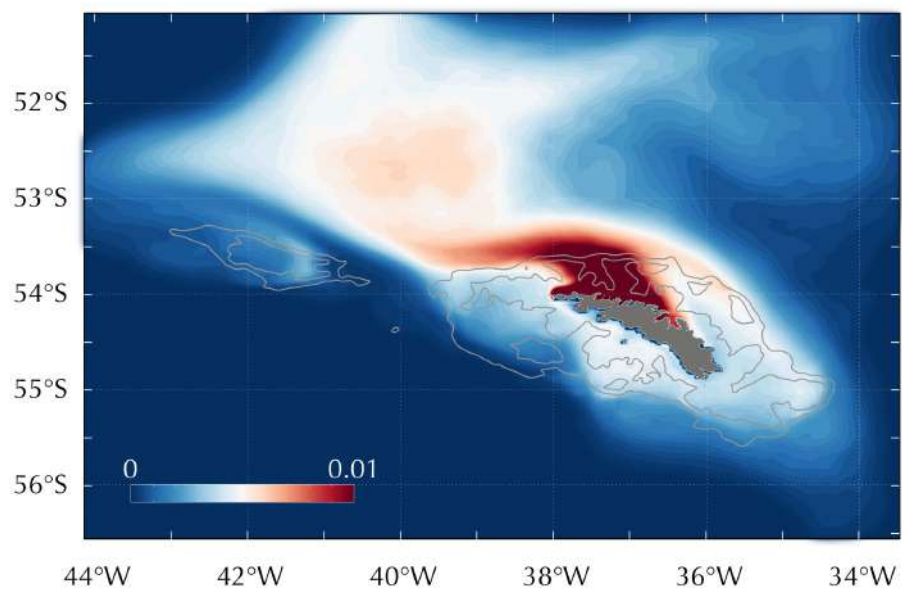


Fertilization from seamounts

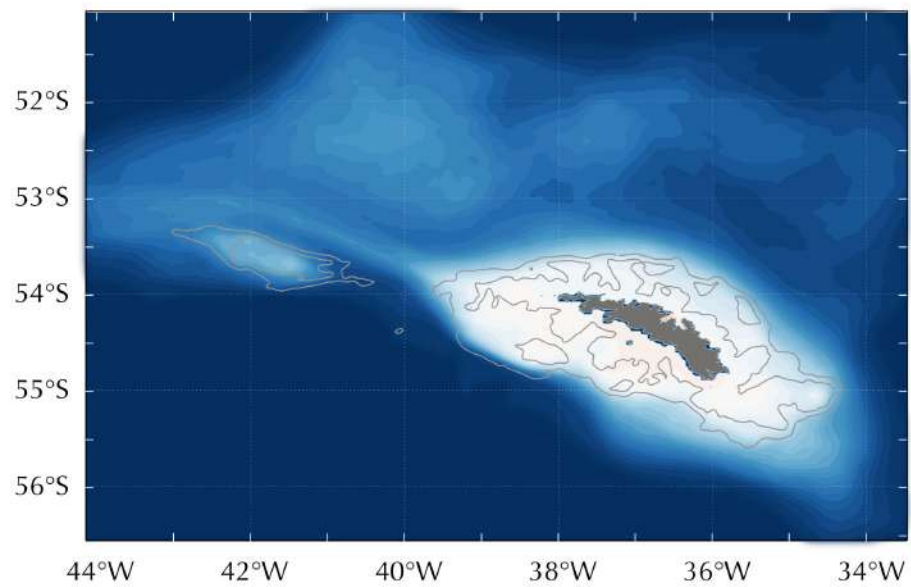


Estudio de Sensibilidad

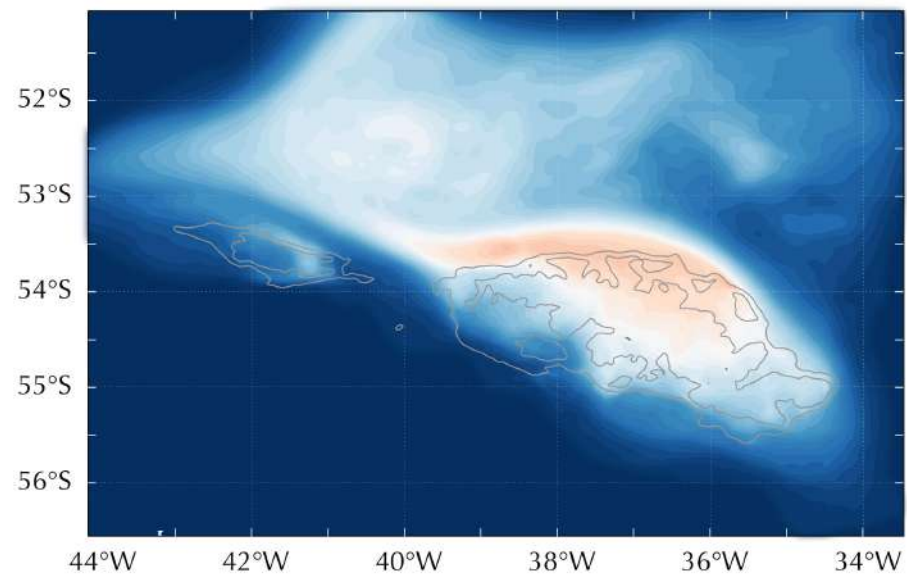
CONTROL



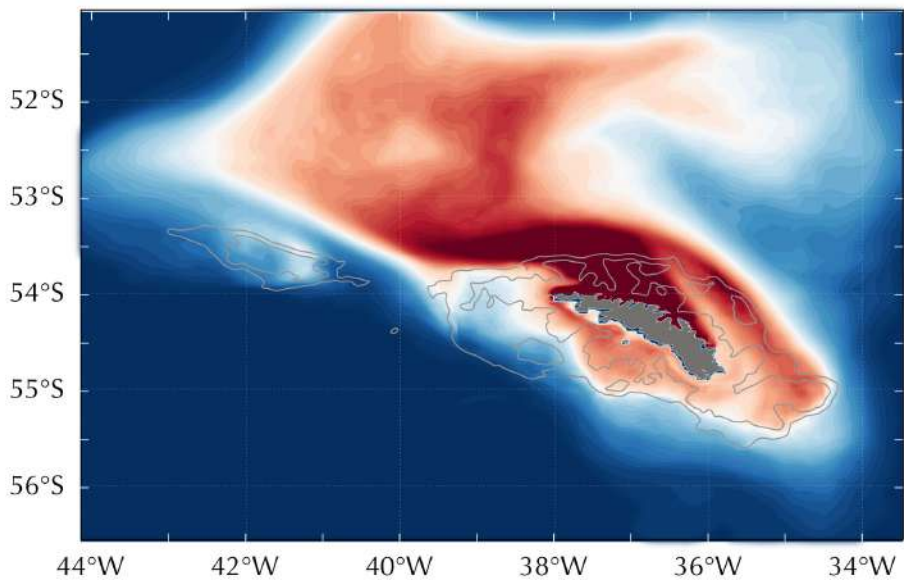
NO WIND

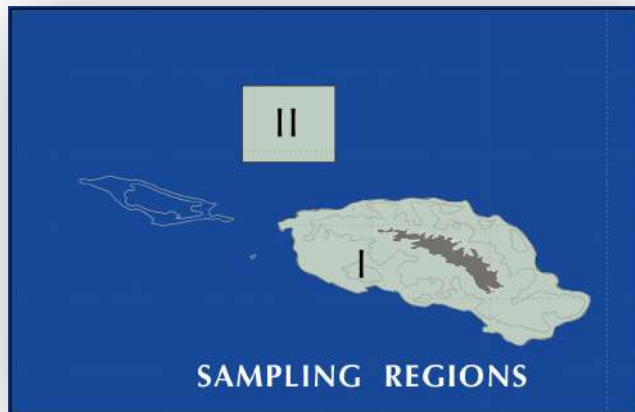


NO S. GEORGIA

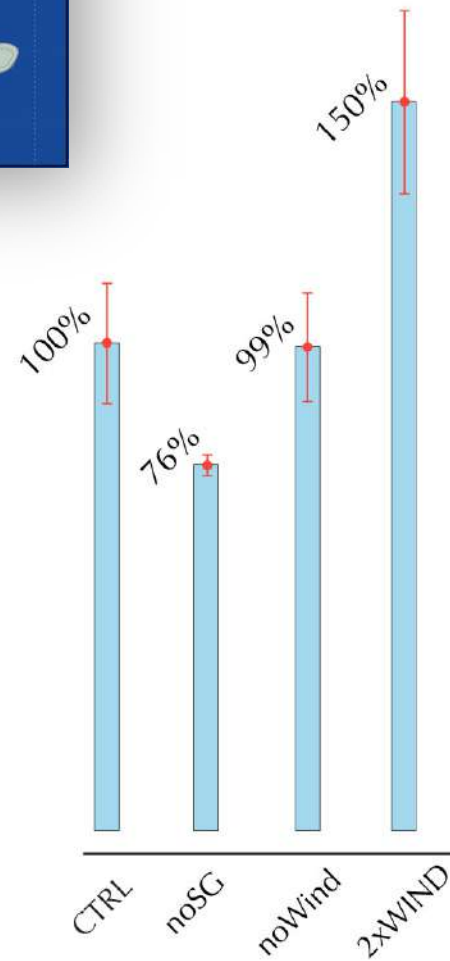


2*WIND

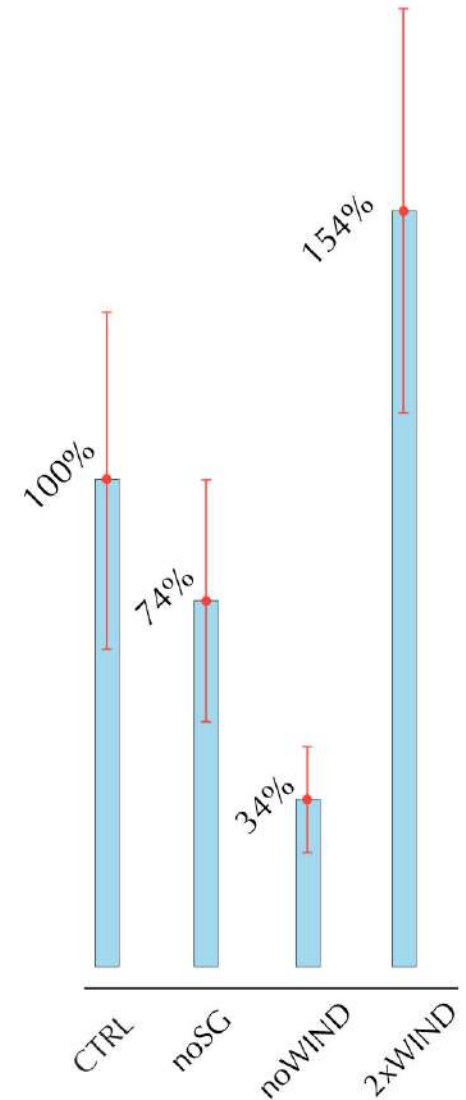




Sensitivity of South Georgia Fertilization Processes



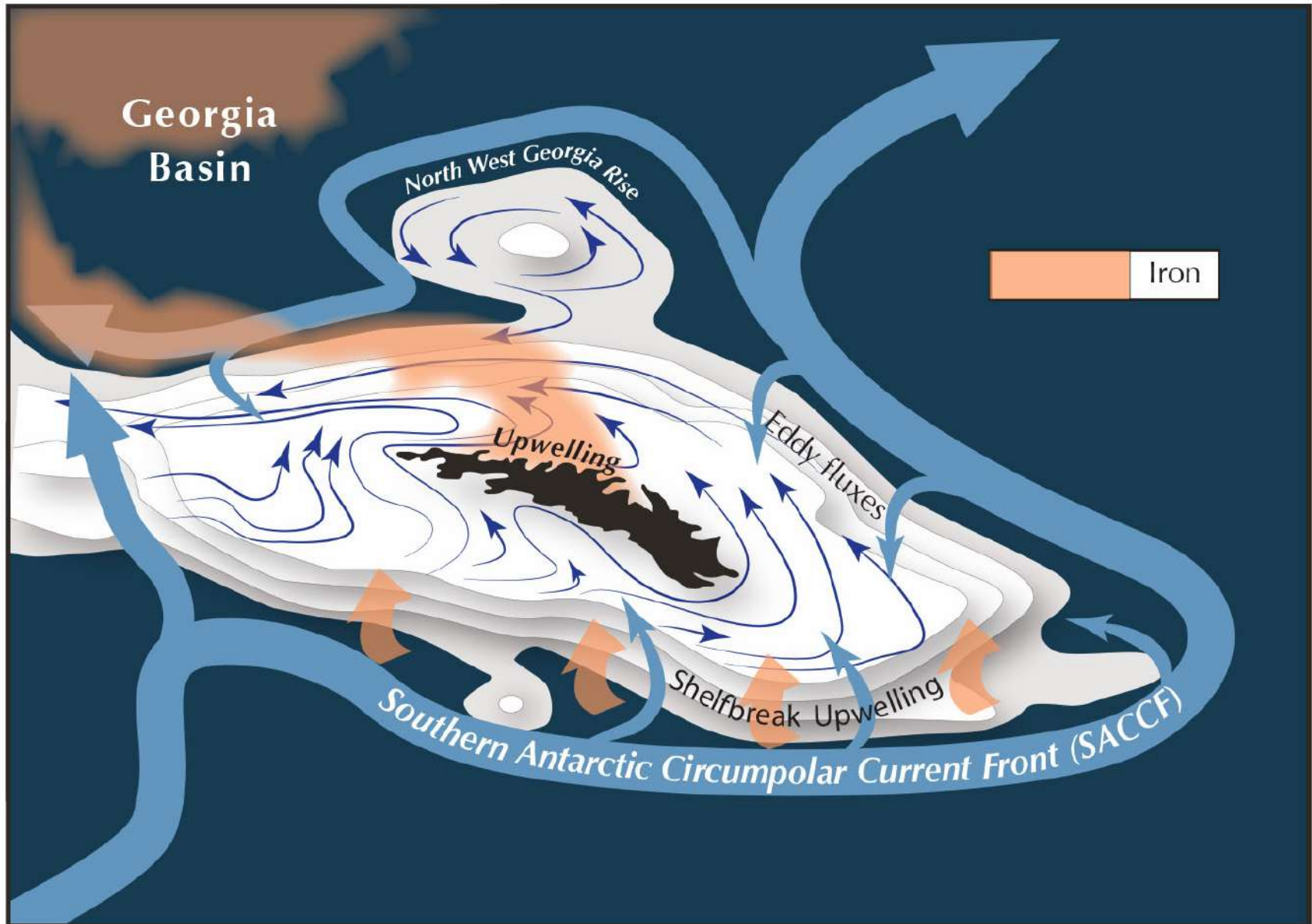
REGION I (Shelf)



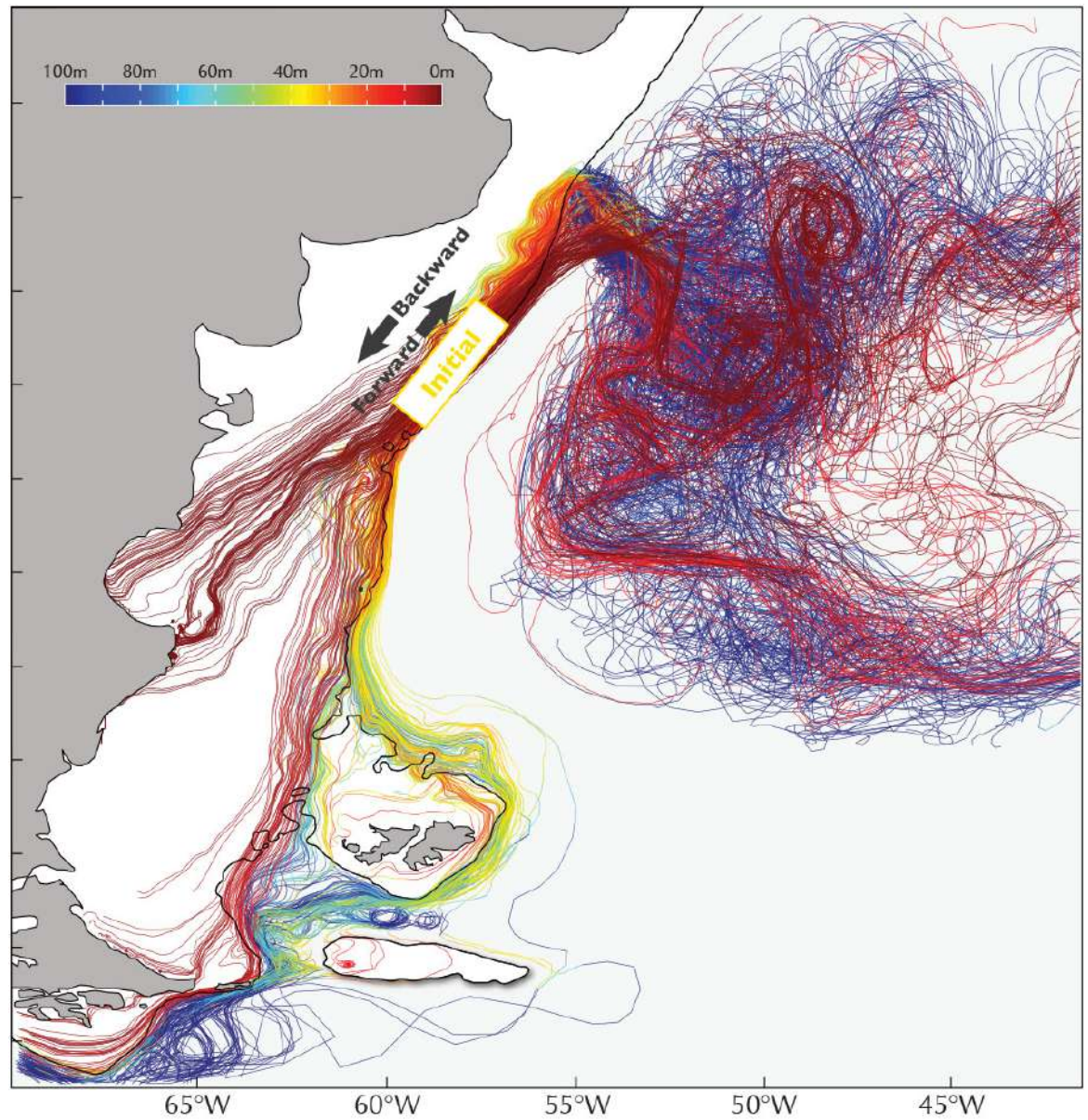
REGION II (Deep Ocean)

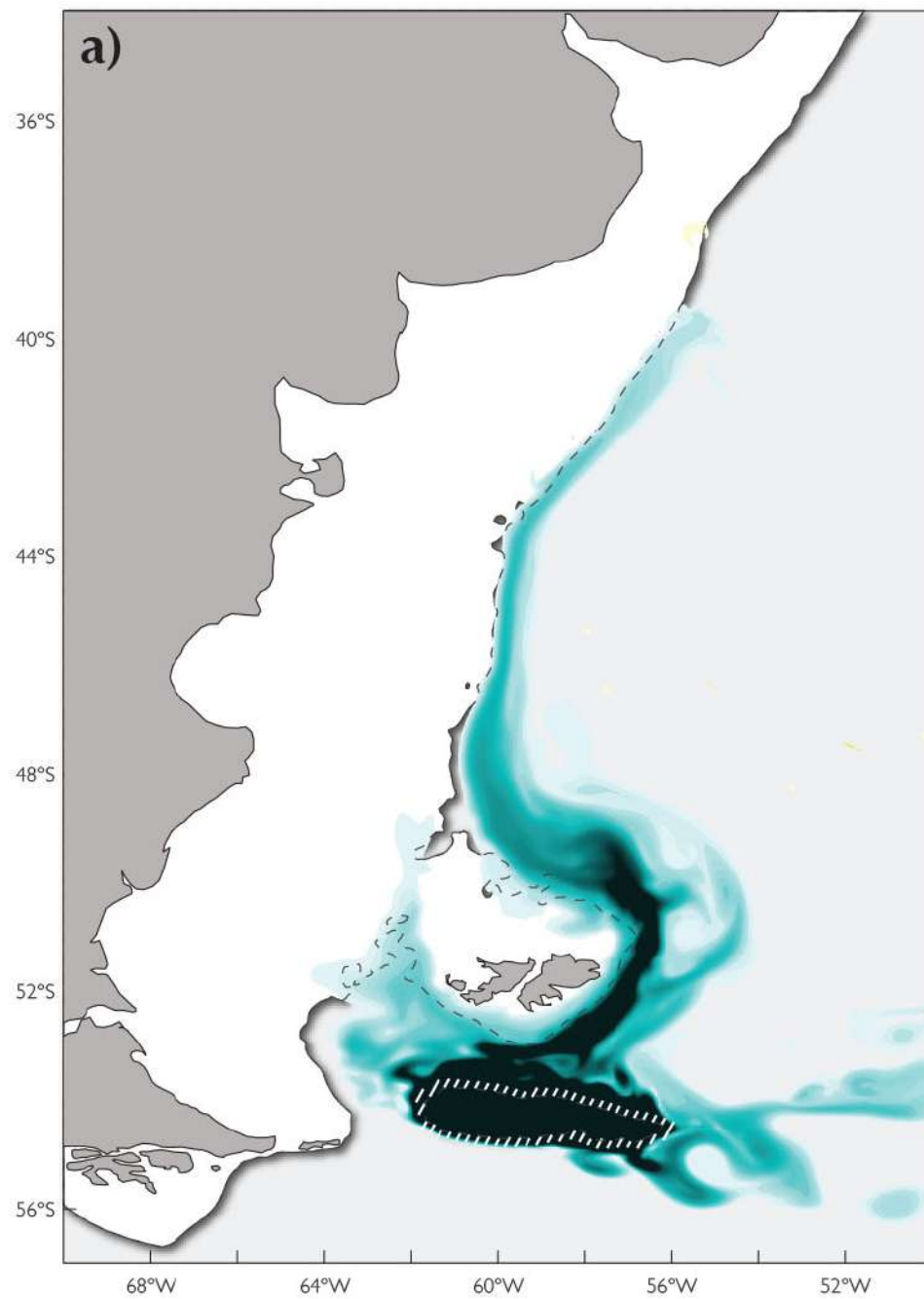
Comentarios Finales

Procesos de Fertilización



Surgencia de talud: origenes y destino





Circulación alrededor de Malvinas

