Foraging areas of female Southern Sea Lions in La Plata River Estuary (Argentina-Uruguay)

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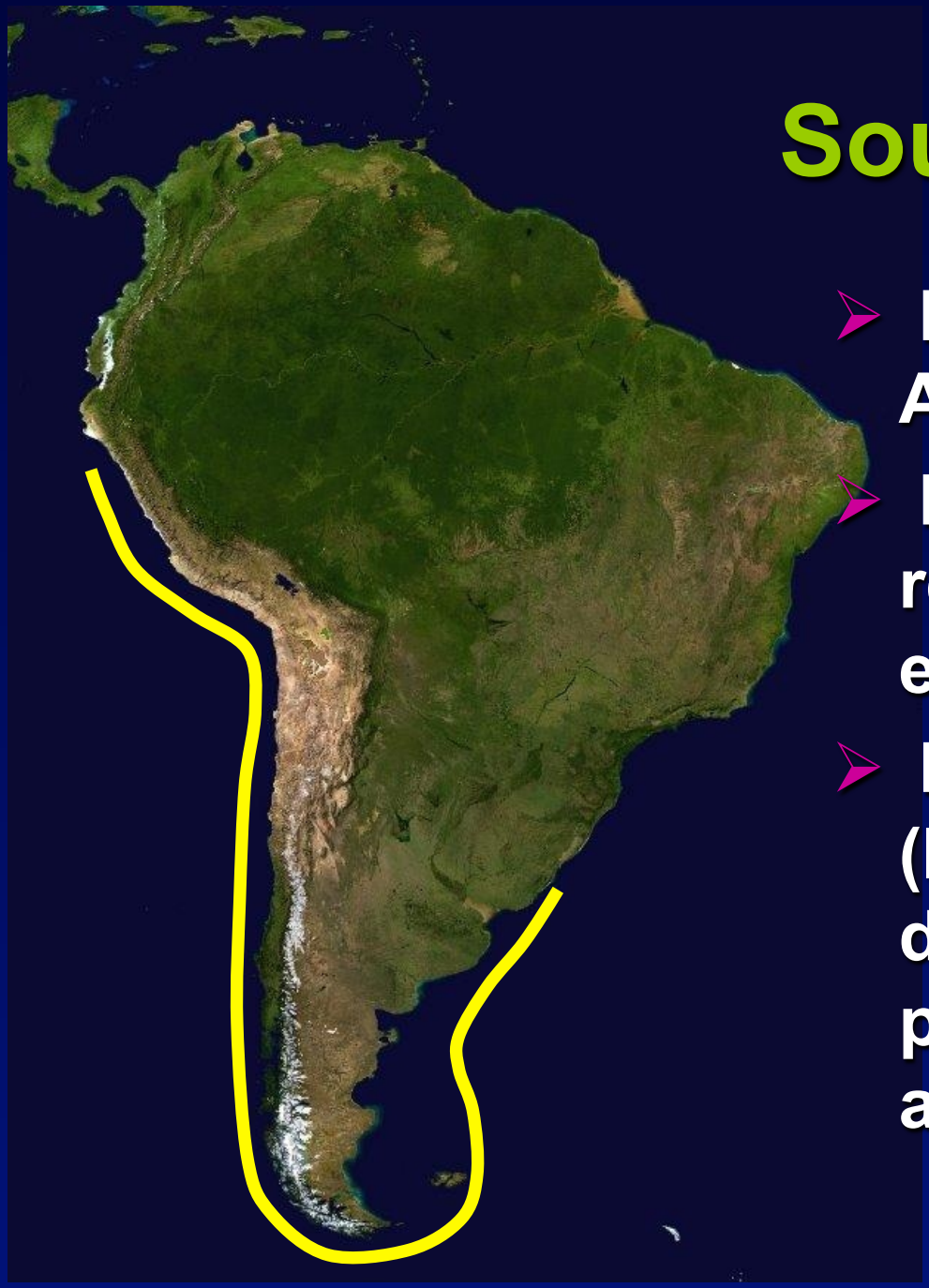


Southern Sea Lions

- Endemic to South America
- Population levels reduced after exploitation
- Least Concern species (IUCN, 2008), but with differences in regional population abundance and trends

Southern Sea Lions

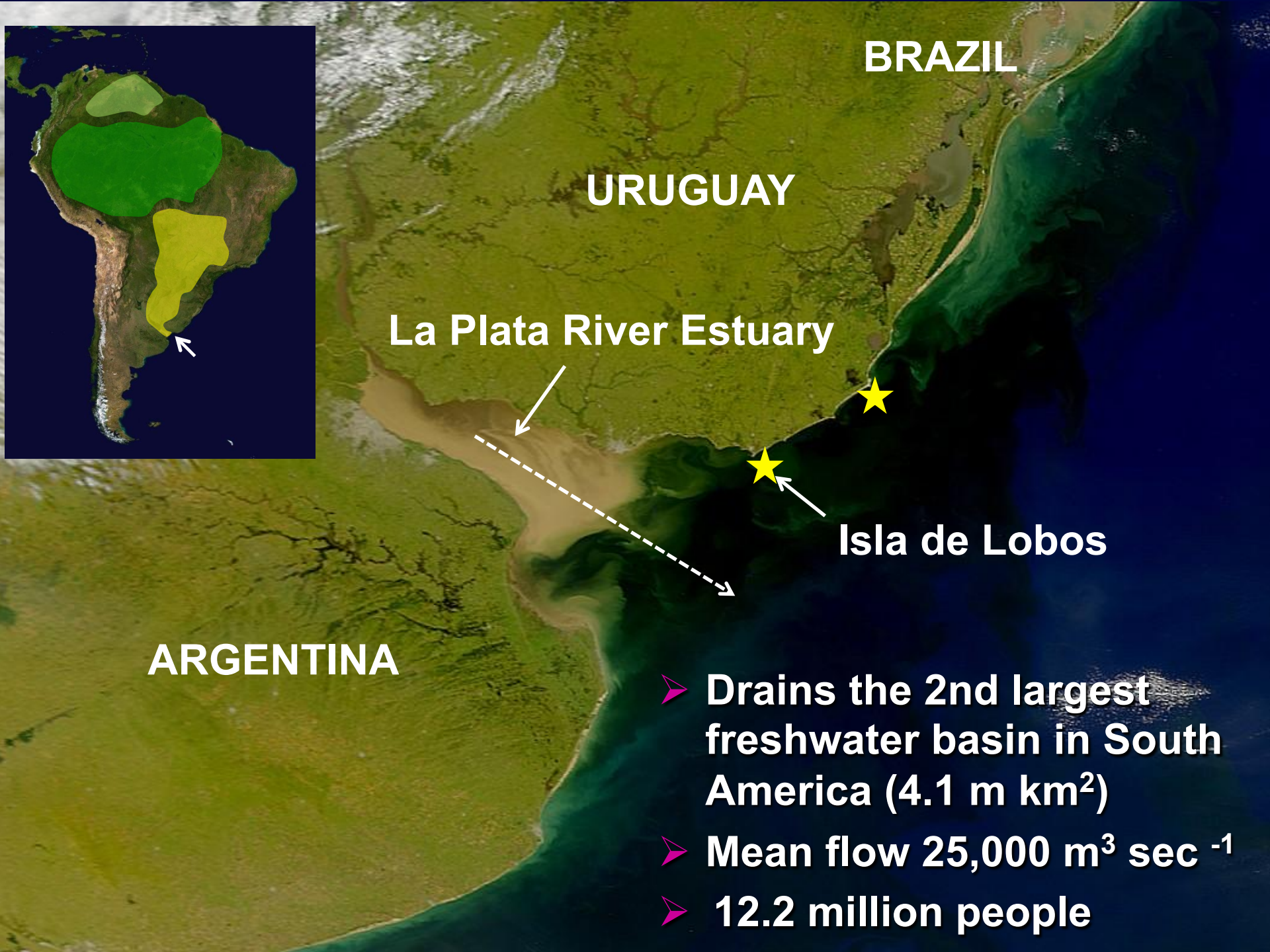
Area	*Year*	*Total*	*%*	*Colonies (B)*	*%*	*Trends*
Perú	2006	118,000	29.7	71	15.8	High fluctuations with EN
Chile	2007	137,000	34.4	121	26.9	Stable – Increasing
Argentina (continental)	2008	123,000	31.0	120	26.7	Stable – Increasing
Malvinas (Falkland) Is.	2005	7,500	1.9	136	30.2	Stable – increasing
Uruguay	2003	12,000	3.0	2	0.4	Decreasing - 4.5% pups
Total		**397,500**		450	100	

Thompson et al., 2005; Crespo et al., in prep.

Southern Sea Lions

- Conservation concerns of Uruguayan population
  - Unique female genetic stock, with little flow with other stocks.
  - Co-ocurrence with increasing South American fur seal population (+ 3% annual; ca 250,000).
  - Prey overlapping and operational interactions with artisanal and industrial fisheries (demersal fish)

Lima & Páez, 1997; Túnez et al., 2007



- Drains the 2nd largest freshwater basin in South America (4.1 m km^2)
- Mean flow 25,000 m^3 sec^{-1}
- 12.2 million people


BRAZIL
URUGUAY
Bottom Salinity Front
Isla de Lobos
Surface Salinity Front
ARGENTINA
Area of joint fisheries management between Argentina and Uruguay

Objectives

- Identify the foraging areas of SSL in La Plata River Estuary
- Characterize the foraging movements of females of different reproductive condition
- Determine the use of different zones in relation with regional management areas

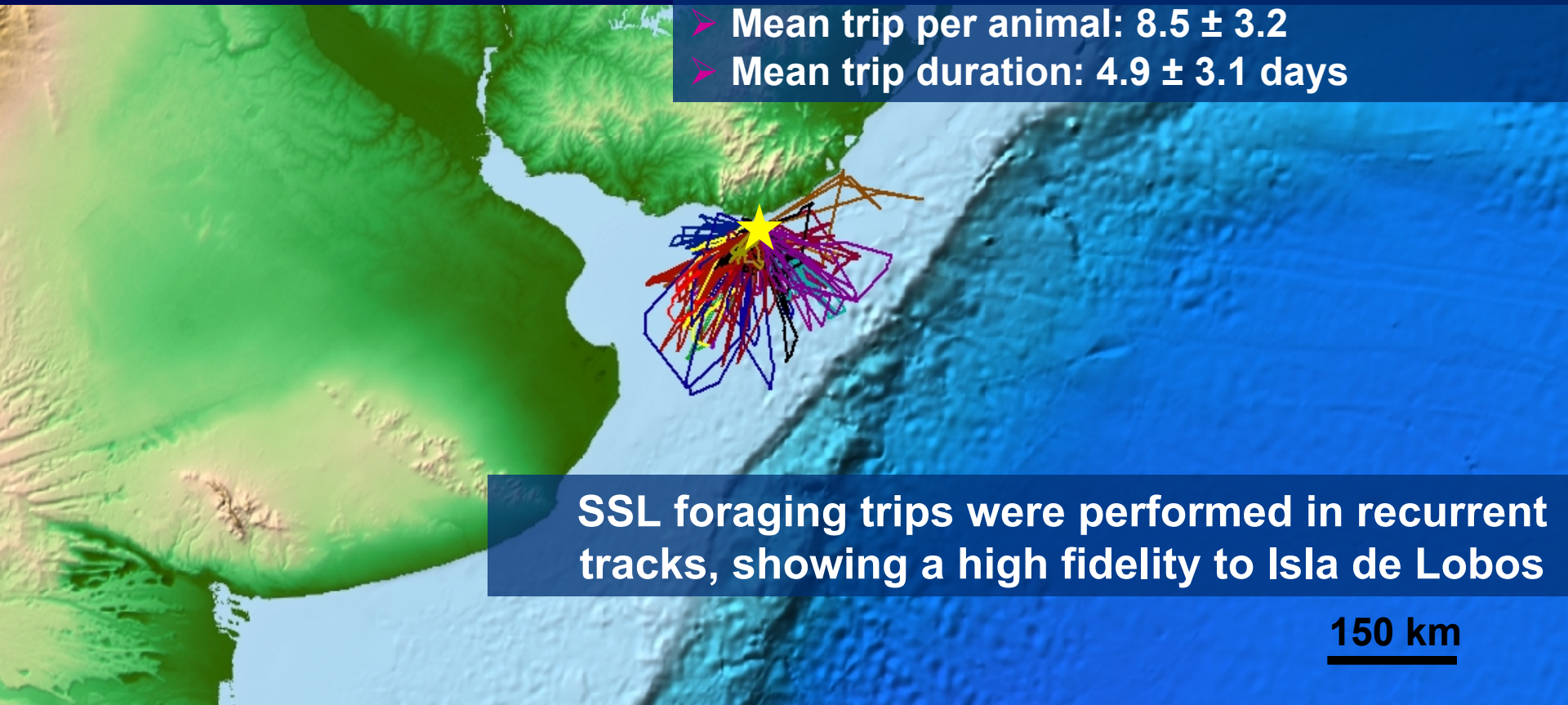
Methods

- 22 instrumented animals:
  - May – July 2007 (n=12)
  - May – October 2010 (n=10)
    - Juveniles (n=6)
    - Subadults (n=12)
    - Adults (n=4)
  - SPOTs (4/5) : 16
  - STDRs : 6

Results

- SSL have an extensive foraging area within the LPRE and the nearby continental shelf

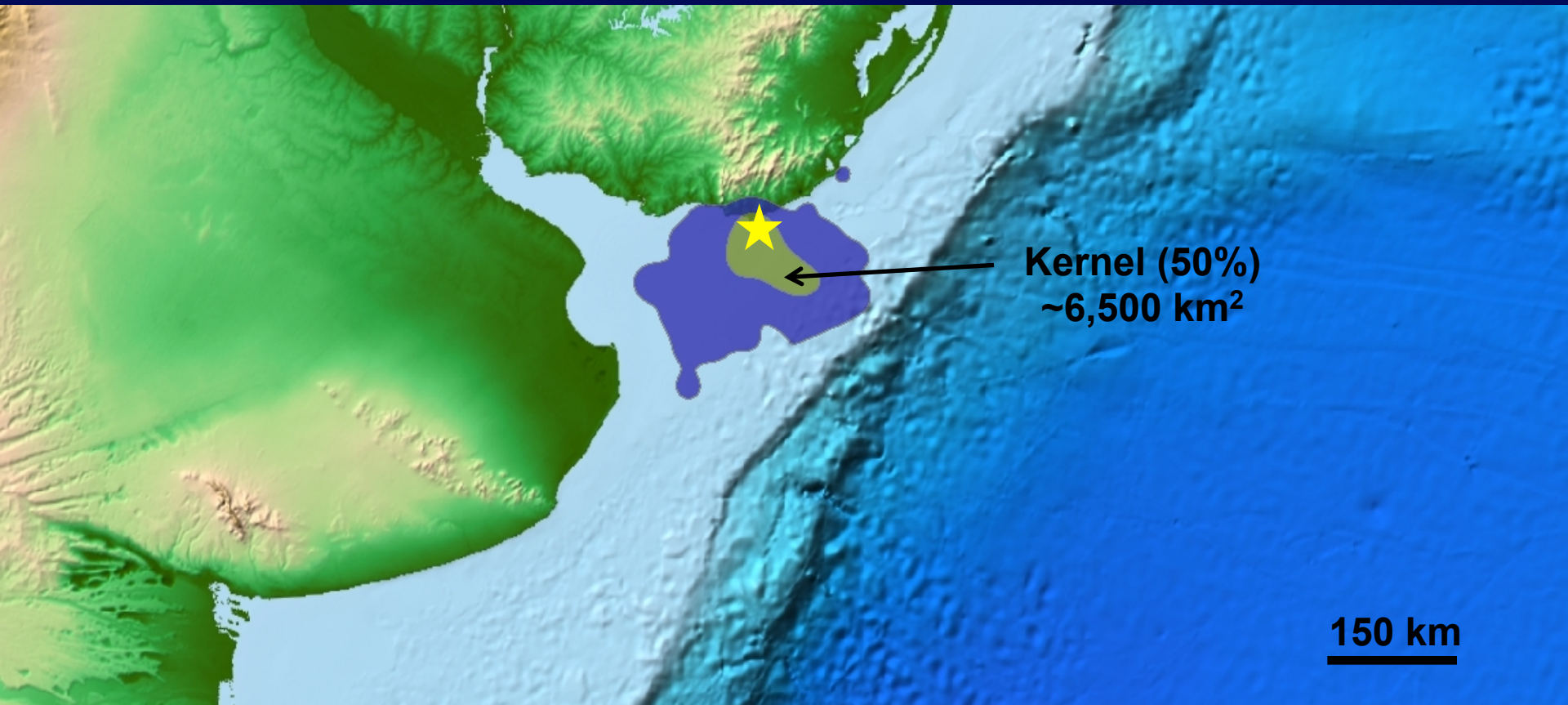
- Distance covered per trip: 147.9 ± 76.6 km
- Mean trip per animal: 8.5 ± 3.2
- Mean trip duration: 4.9 ± 3.1 days



SSL foraging trips were performed in recurrent tracks, showing a high fidelity to Isla de Lobos

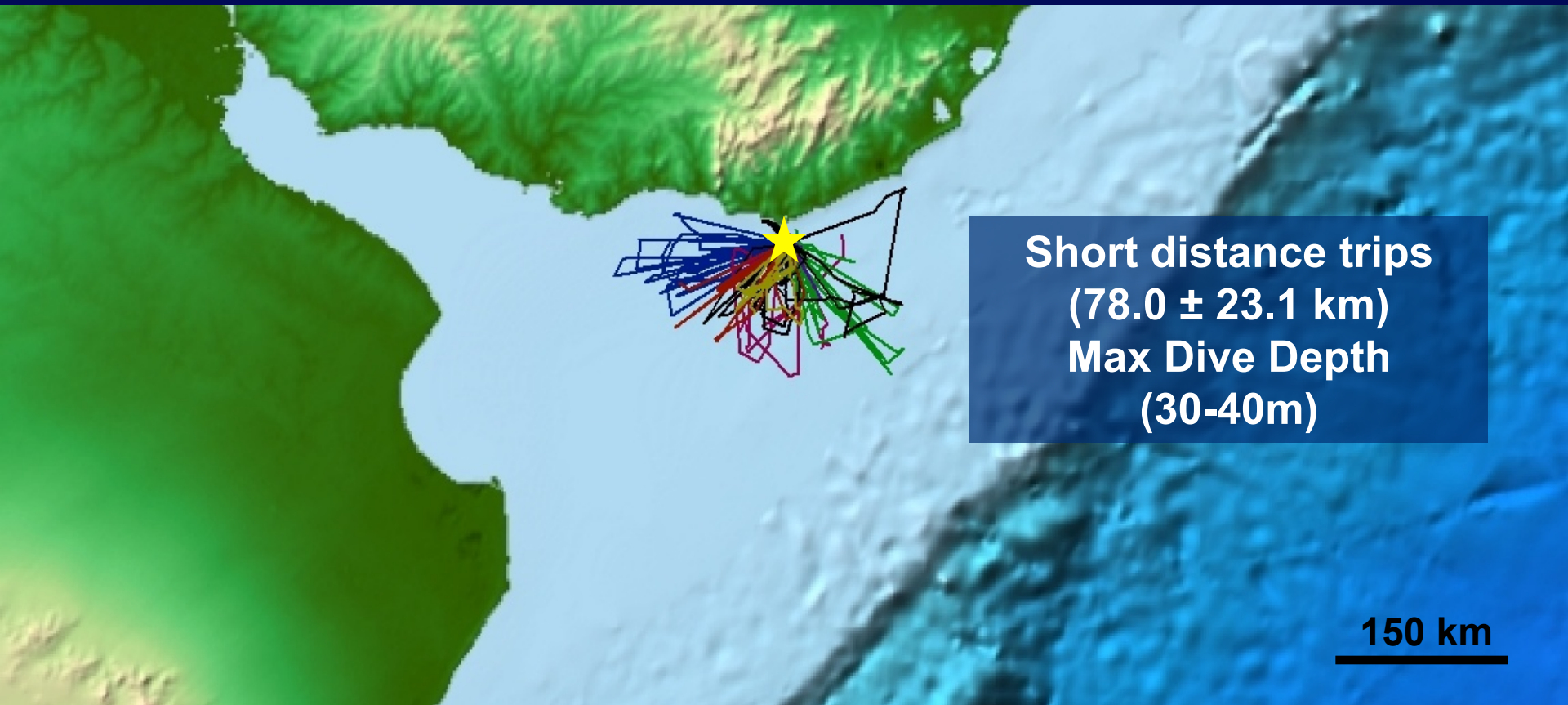
Results

- SSL have an extensive foraging area within the LPRE and the nearby continental shelf
  - Kernel (95%) ~ 41,000 km^2



Results

- SSL present two types of foraging trip distribution, regardless the reproductive conditions



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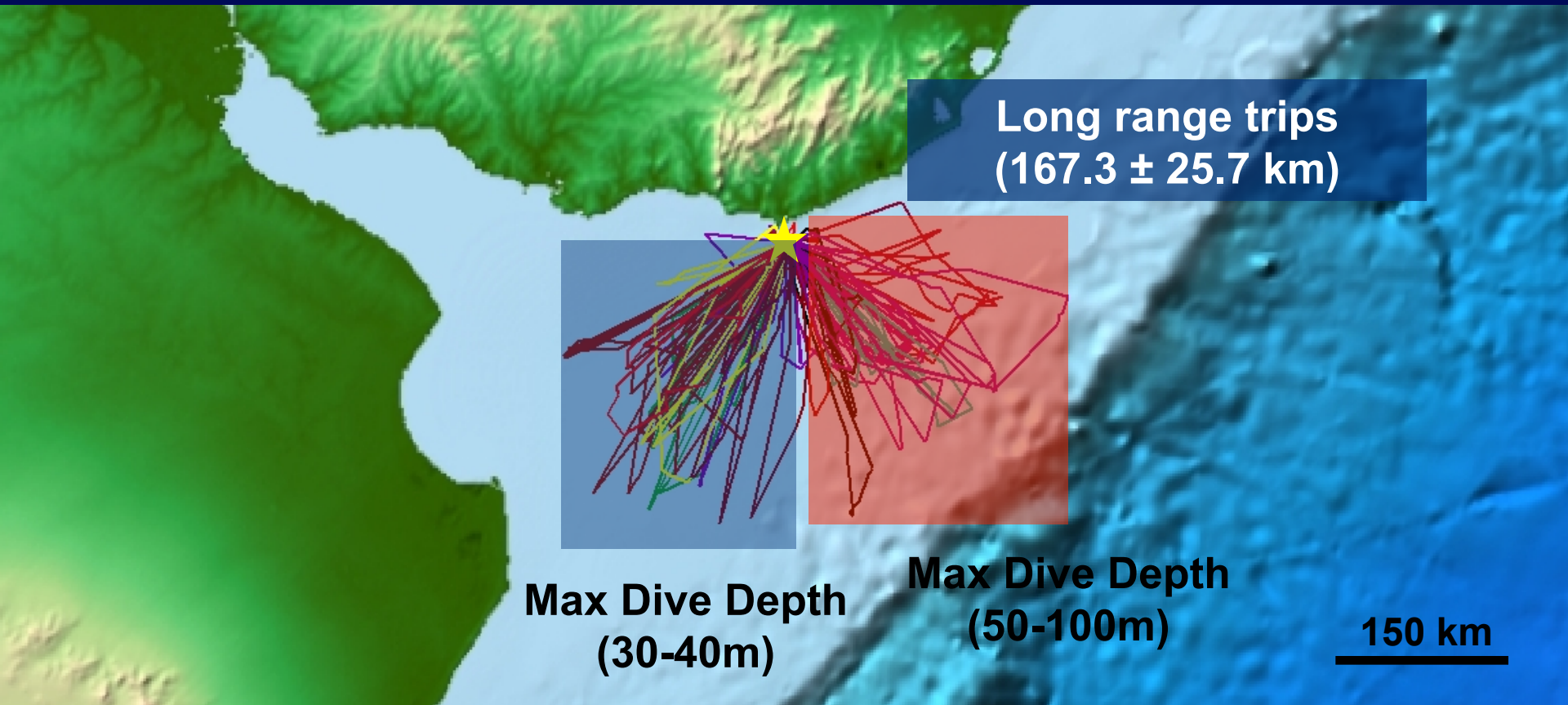
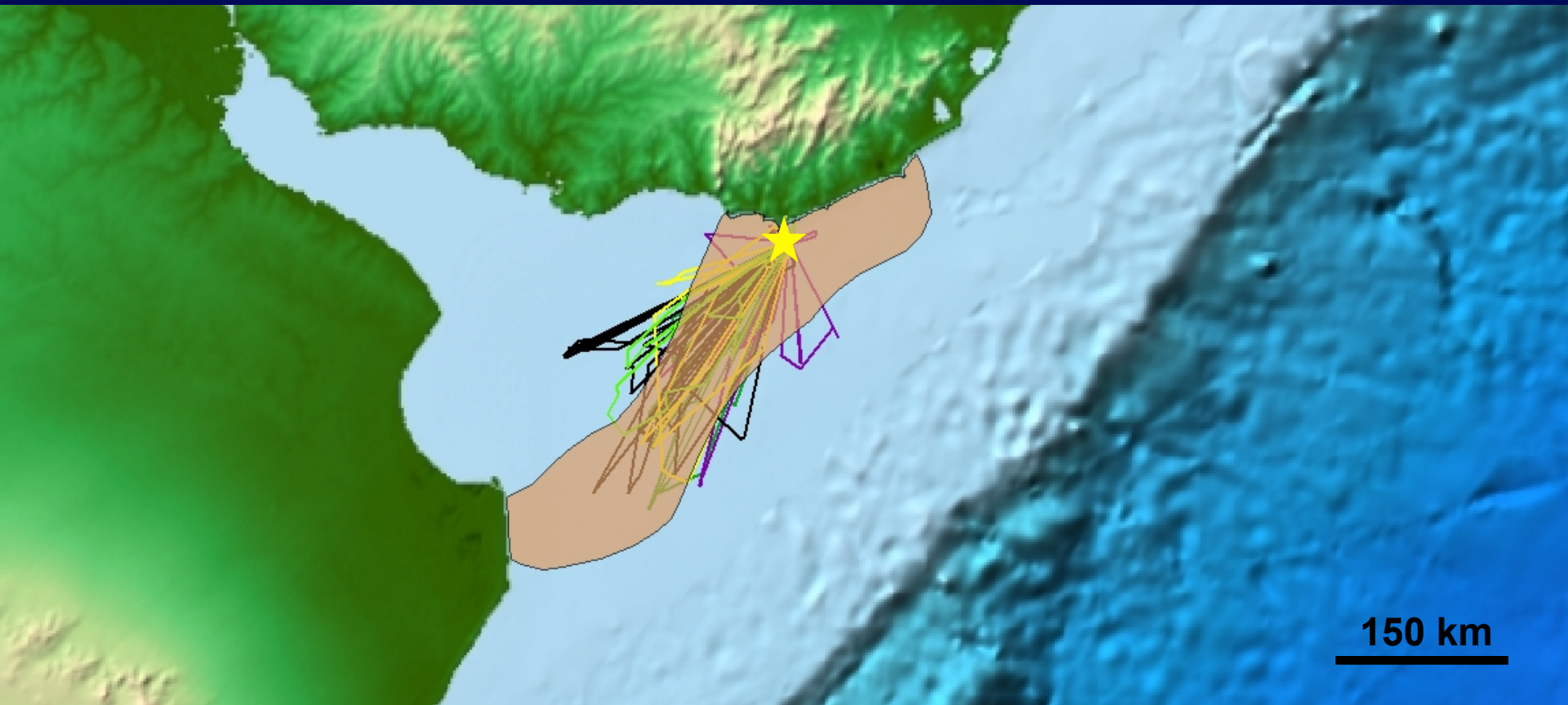


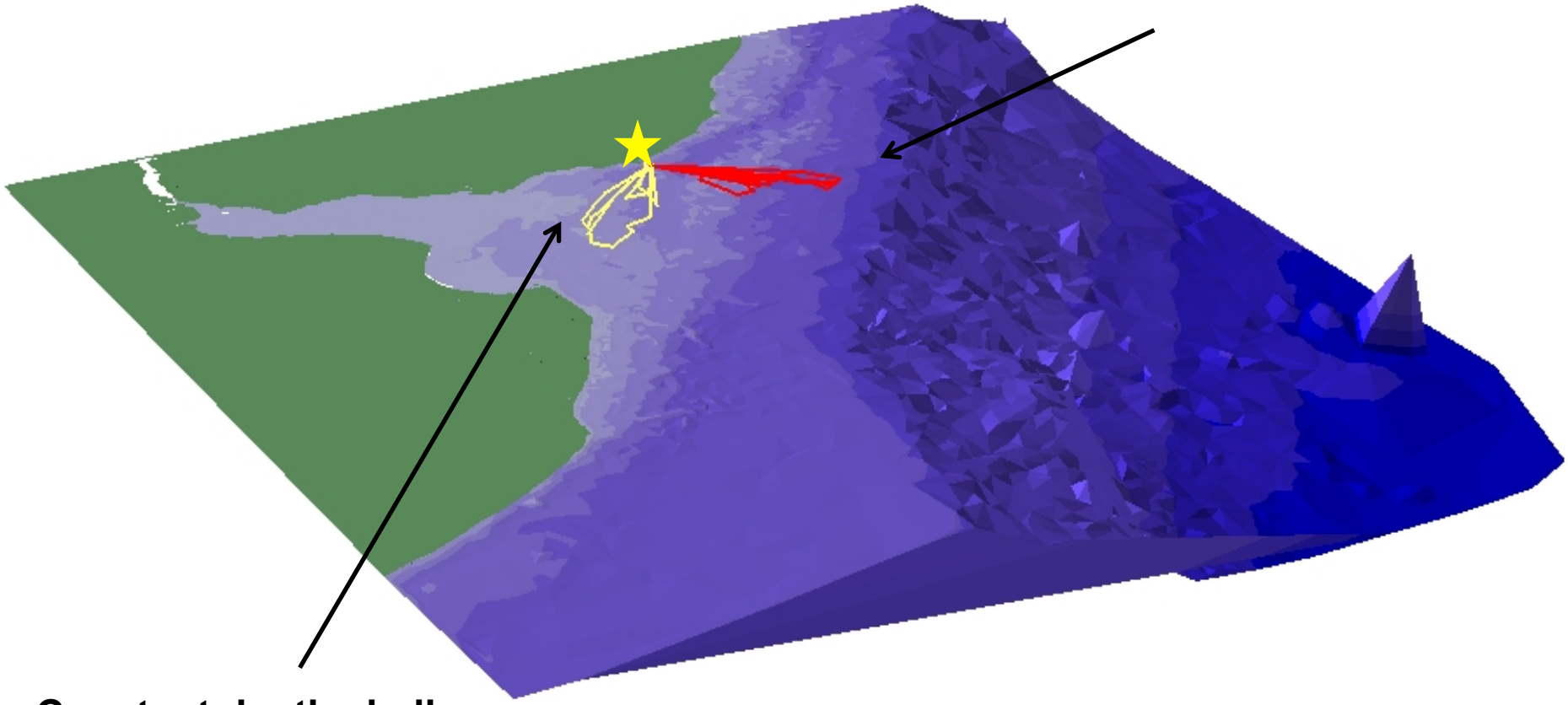
Results

- Some of the long range trips were clearly associated with the Surface Salinity Front



Results

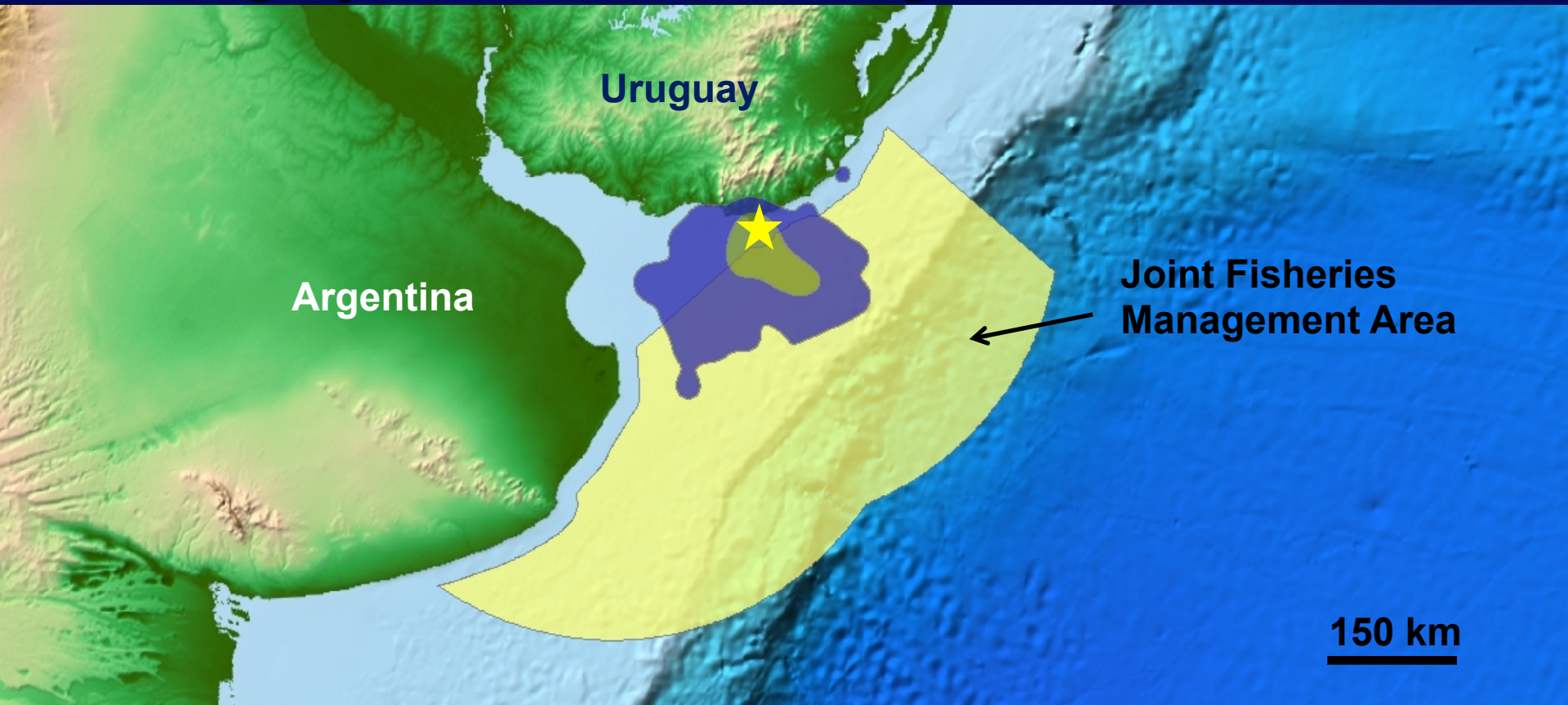
Increasingly deep area.
Tracks perpendicular to isobaths
100 m isobath limit?



Constant depth shallow area.
Tracks parallel to isobaths.
Salinity front limited?

Implications for Conservation and Management

- The foraging area of the SSL stock that breeds in Isla de Lobos (Uruguay) is located in the **Argentina-Uruguay Joint Fisheries Management Area**



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- SSL foraging areas overlap with extensive bottom trawling operations, showing the potential direct competition for prey and habitat disturbance.

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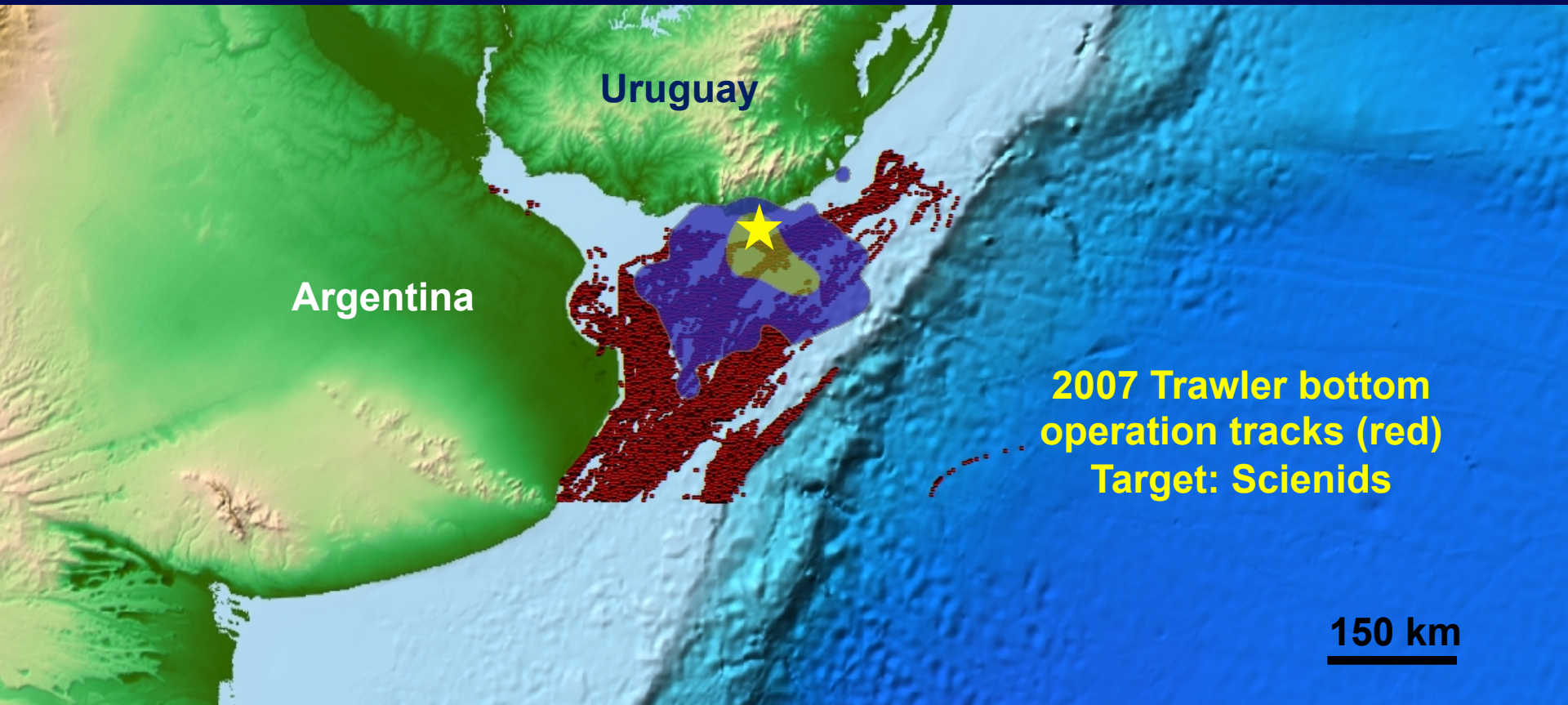

Implications for Conservation and Management

- The foraging area of this severely declining stock is mostly excluded from the Areas of Highest Priority for Conservation proposed for the LPRE

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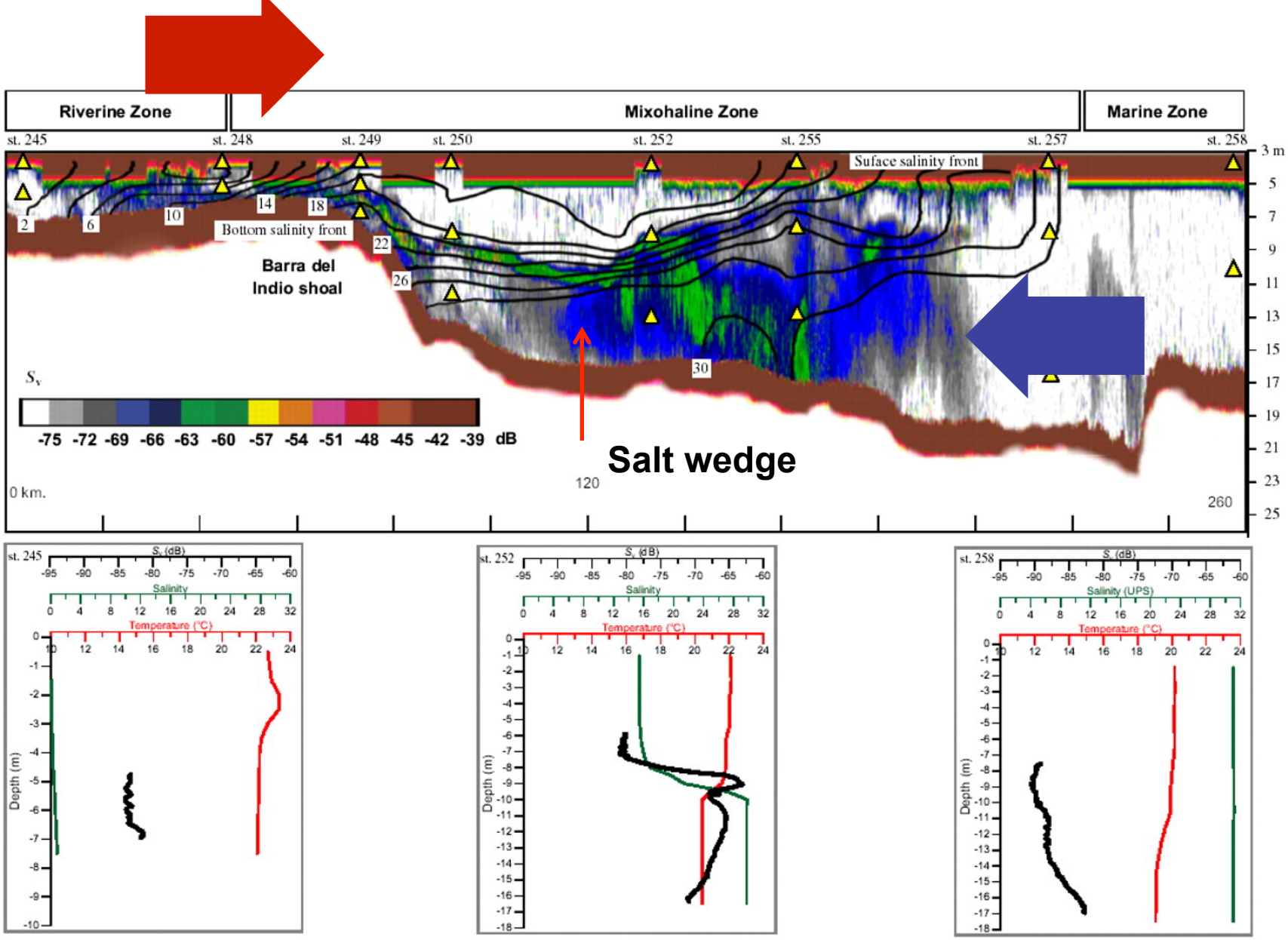
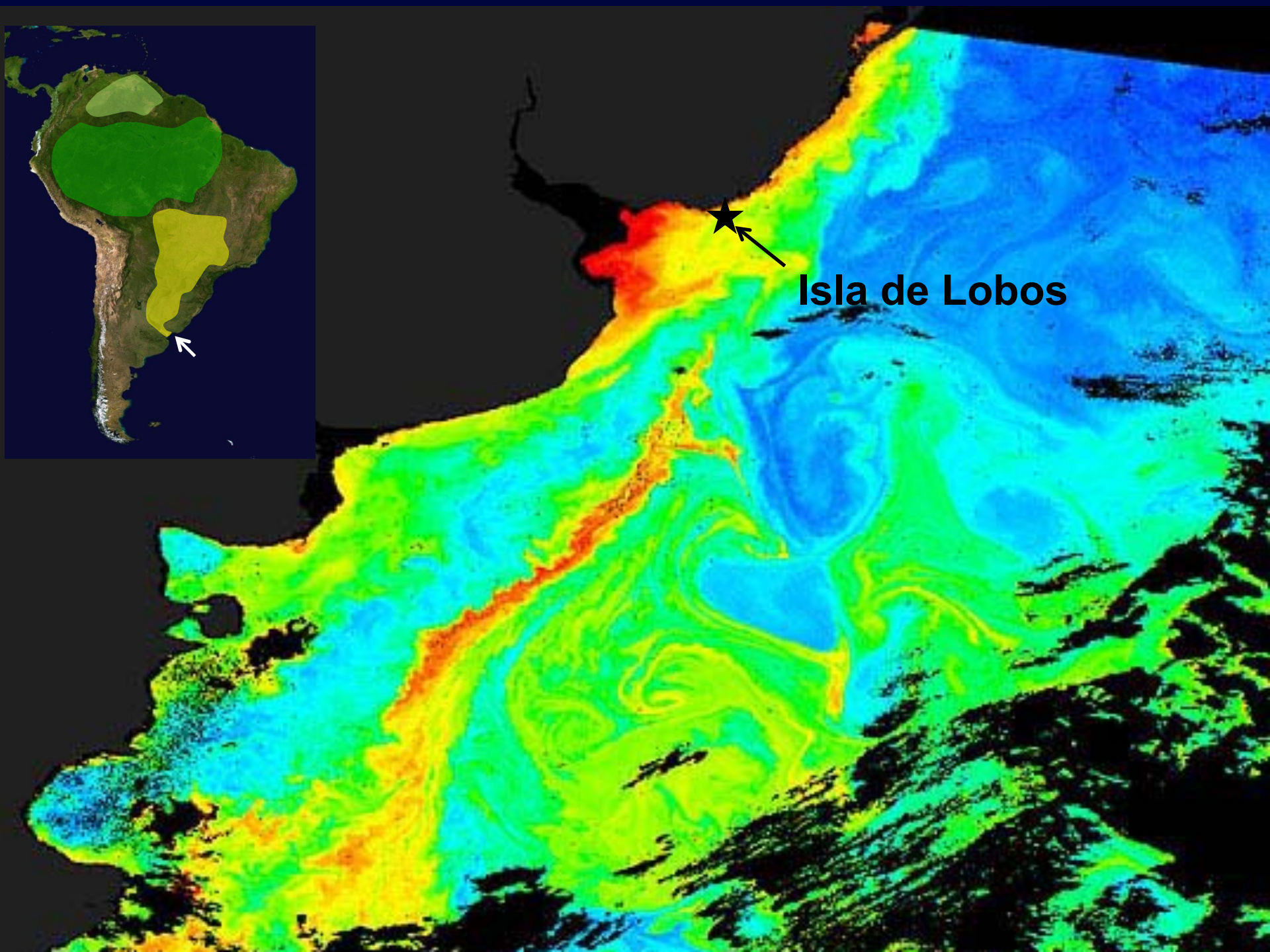


Cabreira et al. 2006. *ICES J. Mar. Sci.*, 63:1718-1725


Isla de Lobos