

Where do the olives go after nesting in Brazil? Implications for conservation.

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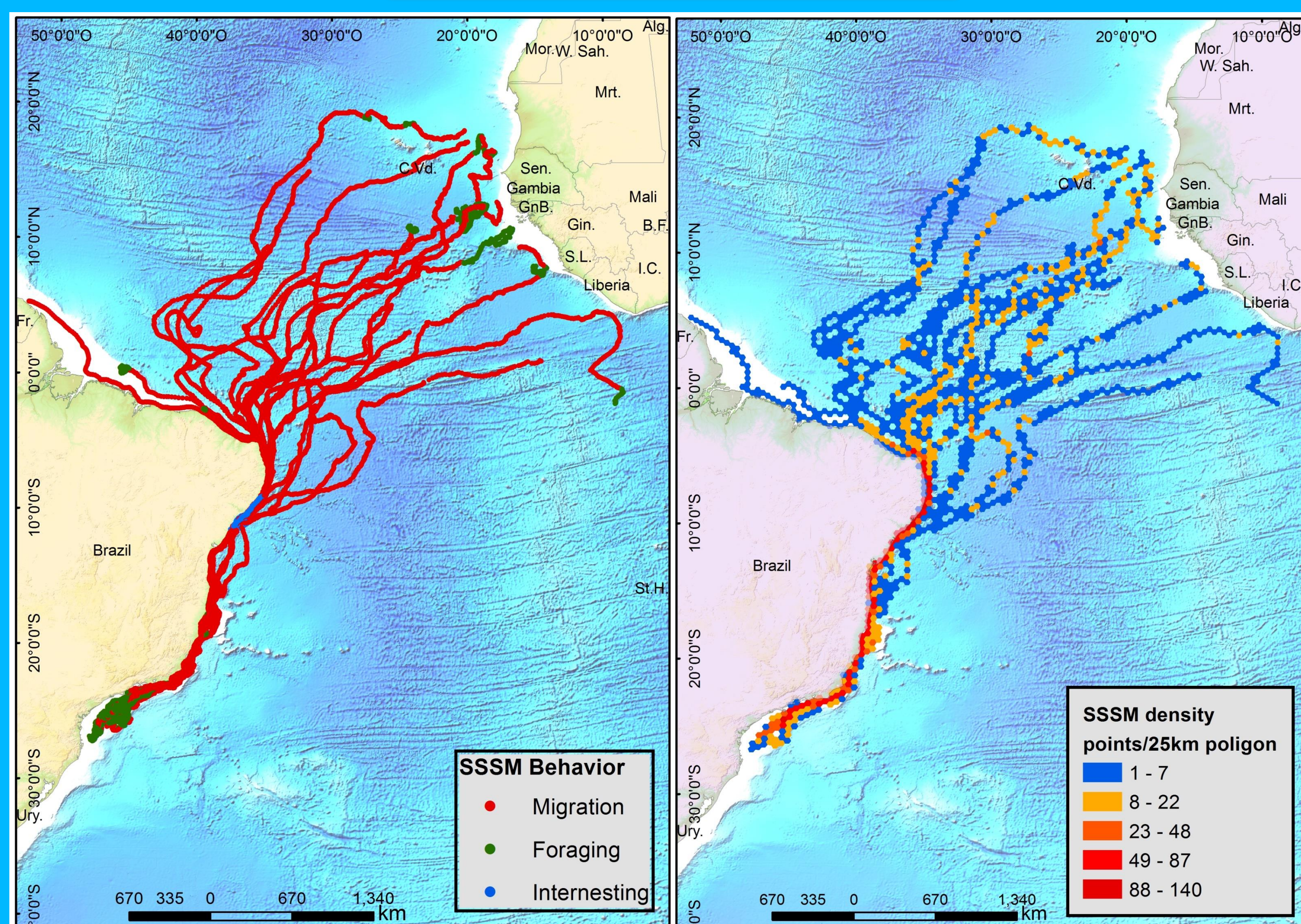


STUDY SITE

- Sergipe state in Brazil
- This is the main olive ridley nesting area in Brazil
- Steady increase in the number of nests since 2001 (Silva *et al.*, 2007).
- Narrow continental shelf and shrimp fishing area (bottom trawling on mud banks).

RESULTS

Displacements



METHODOLOGY

Installation

Platform transmitter terminals (PTT)
- installed in 40 nesting olive ridleys;

Wildlife computer models

23 SPLASH10-F-296A 17 SPOT-293A
January/2014 to January/2015



Data Processing

1

Argos and GPS locations were filtered for realistic turn angles and speed

2

Points on land were removed, as well as the first 48 hours of data to account for behavioral changes associated with tagging

3

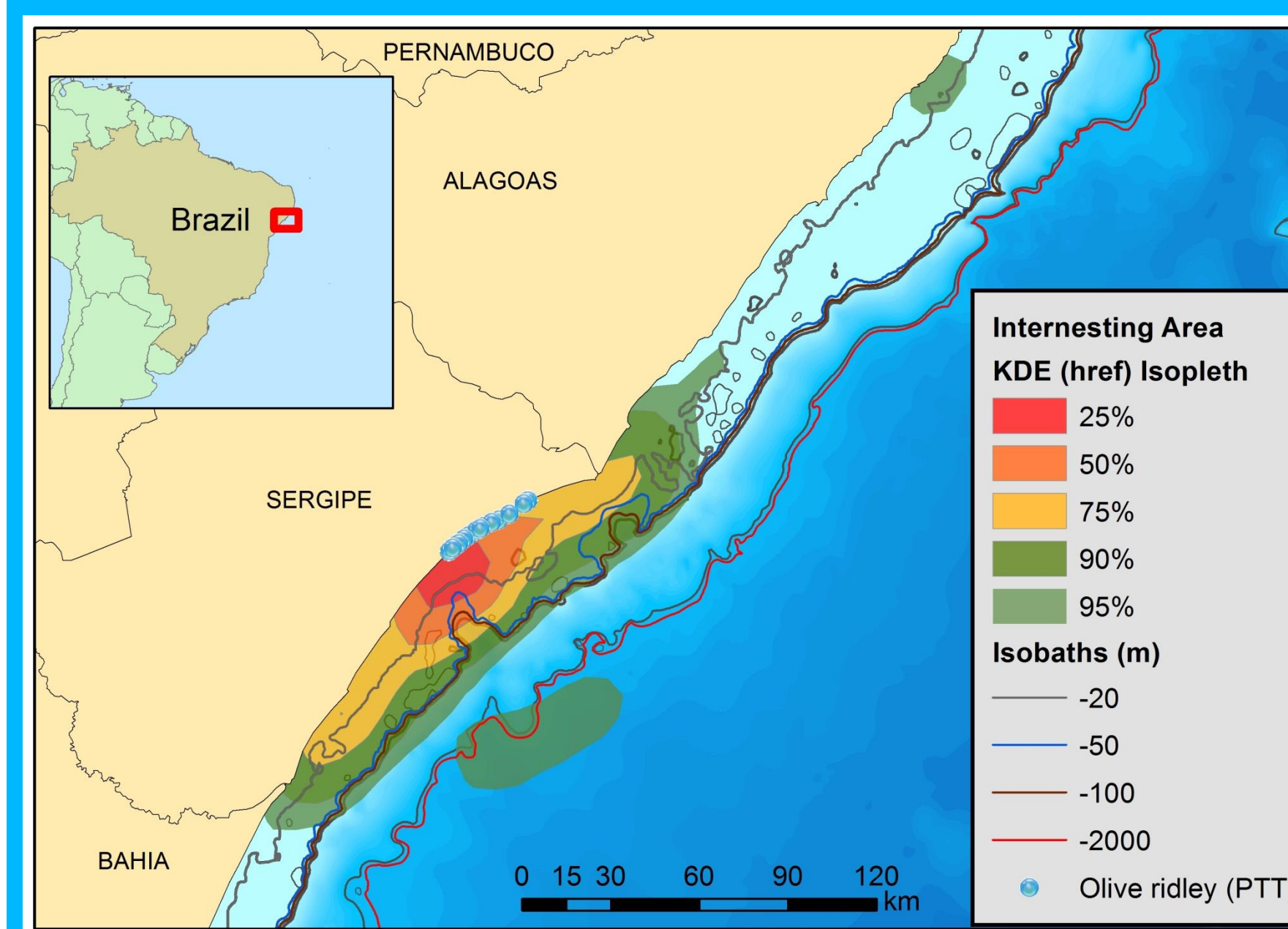
The resulting data set was run through a State Space Switching Model (SSSM) to determine migration versus foraging/interesting areas

4

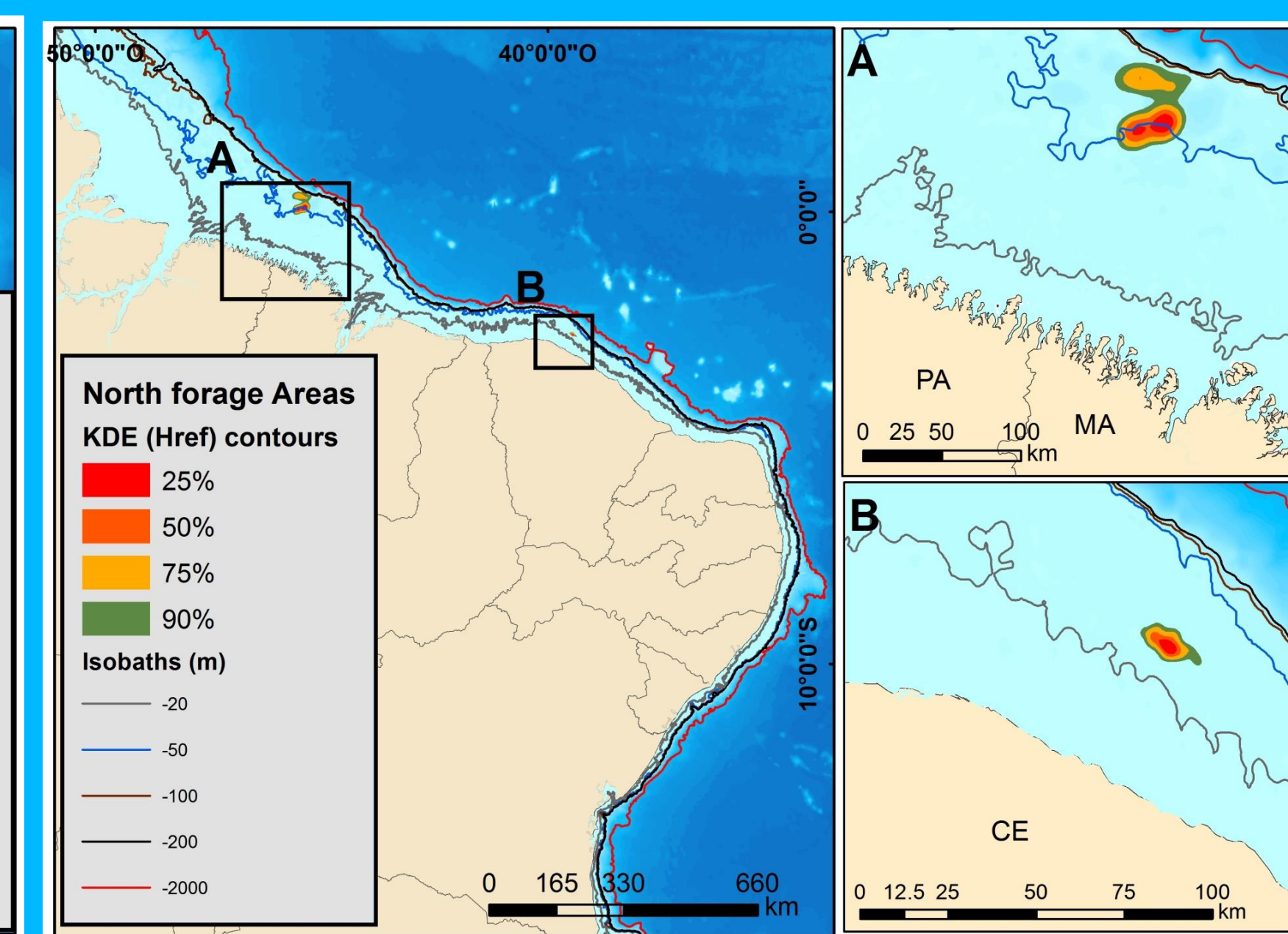
The model: modification of the SSSM presented in Jonsen *et al.* (2005) and Breed *et al.* (2009); incorporating GPS data and the associated circular error.

6 hour time steps were selected as a compromise between processing time and detecting fine scale behavior.

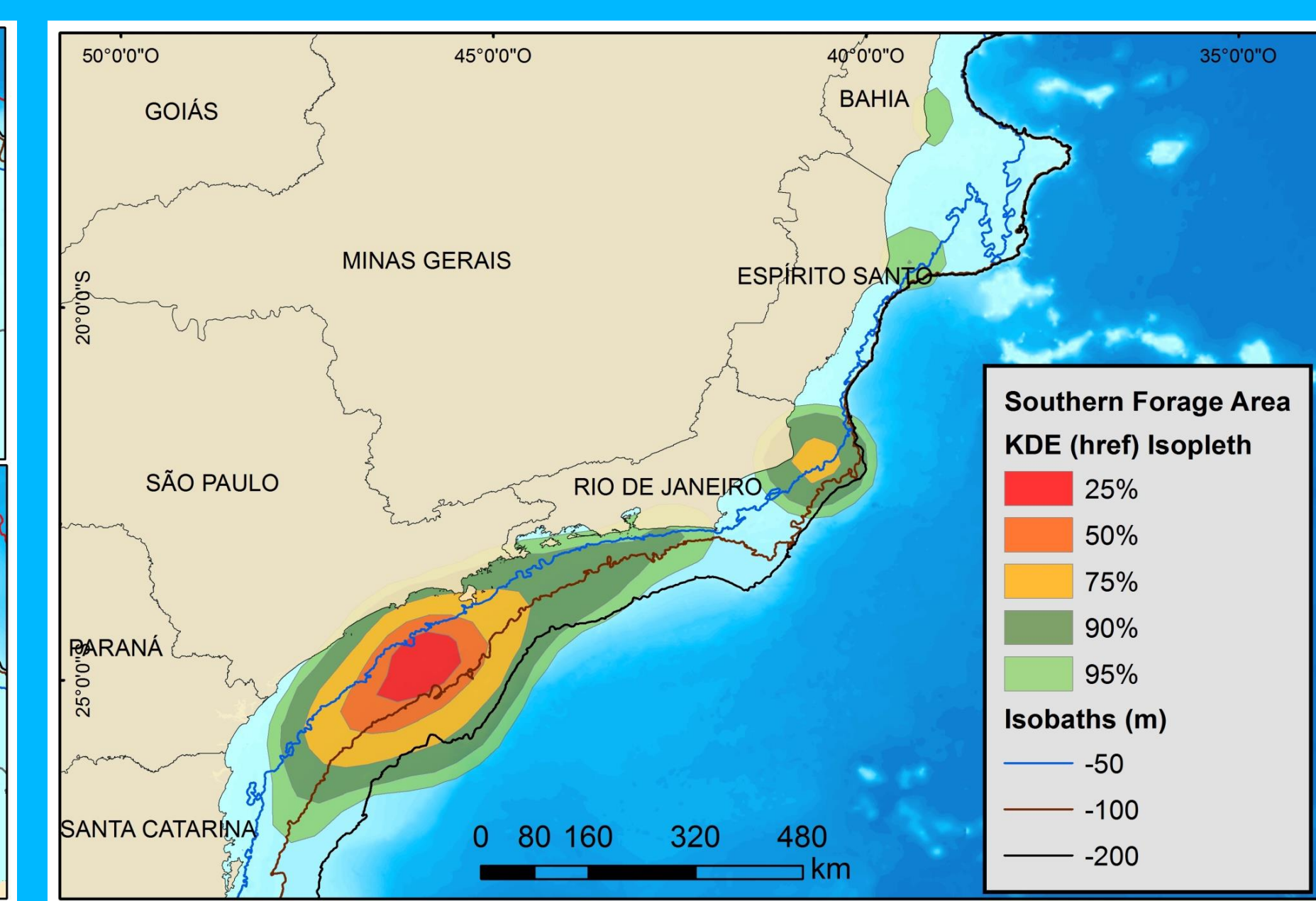
Interesting area



Foraging areas North/Northeastern Brazil



Foraging areas South/Southeastern Brazil

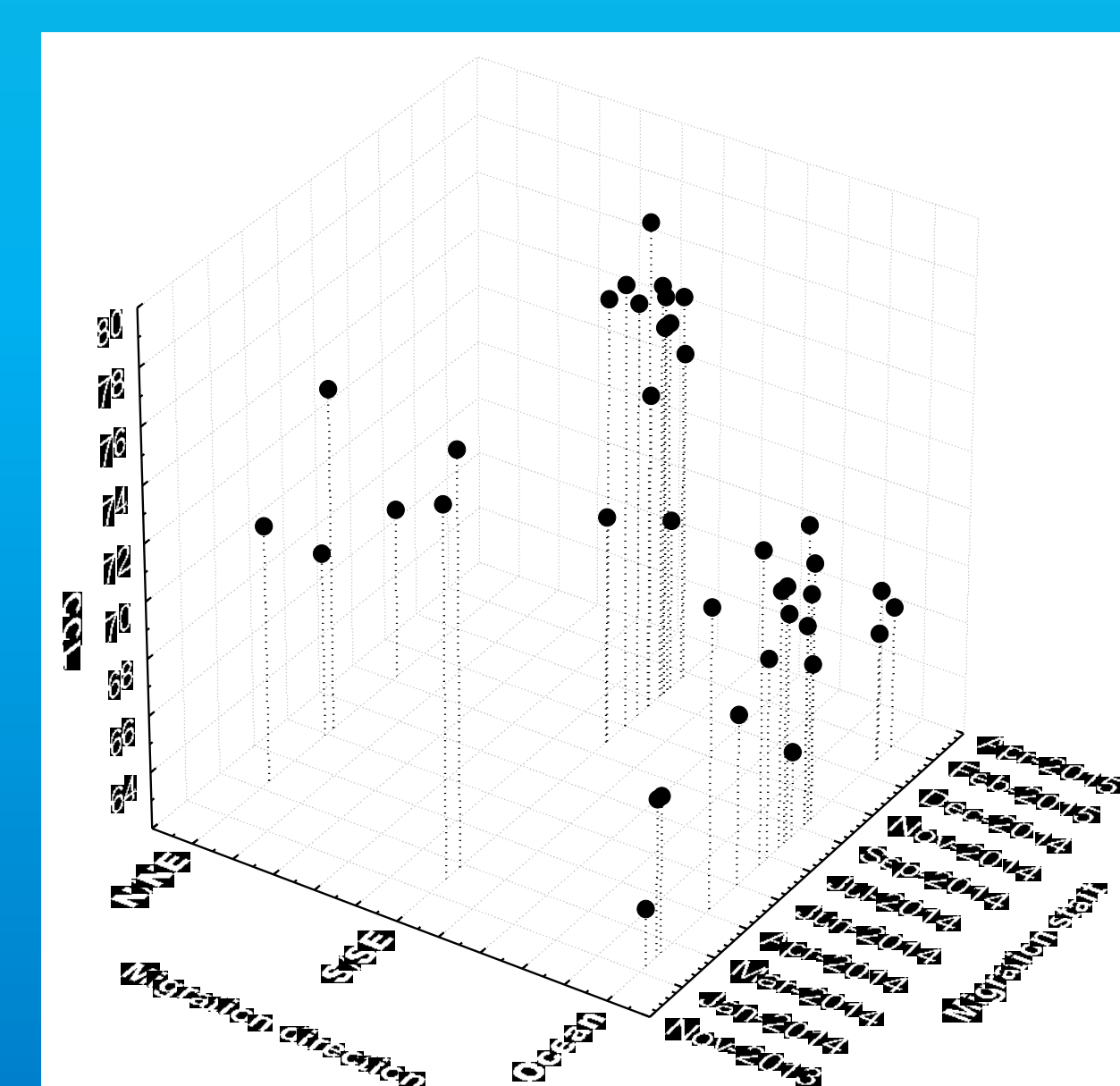
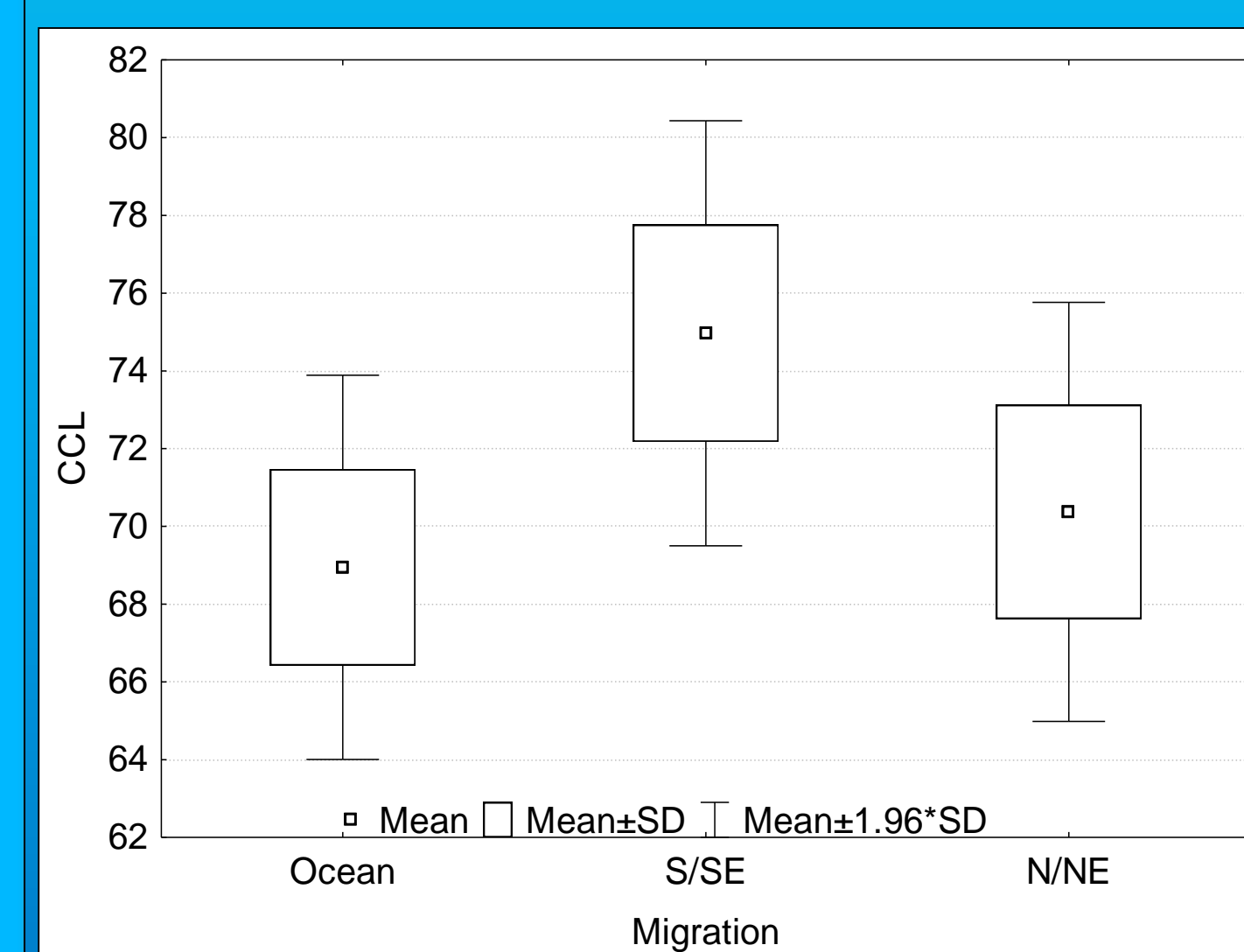


PTT duration: Mean 157 Days (\pm 80 Std.Dev); Range: 44 – 337 days
1 PTT excluded (14 days duration).

3 distinct migratory strategies

- A) Neritic North/Northeastern Brazil to French Guiana: (N=4);
- B) Neritic South/Southeastern Brazil (N=16);
- C) Oceanic waters from northern Brazil to northwestern Africa (N=19).

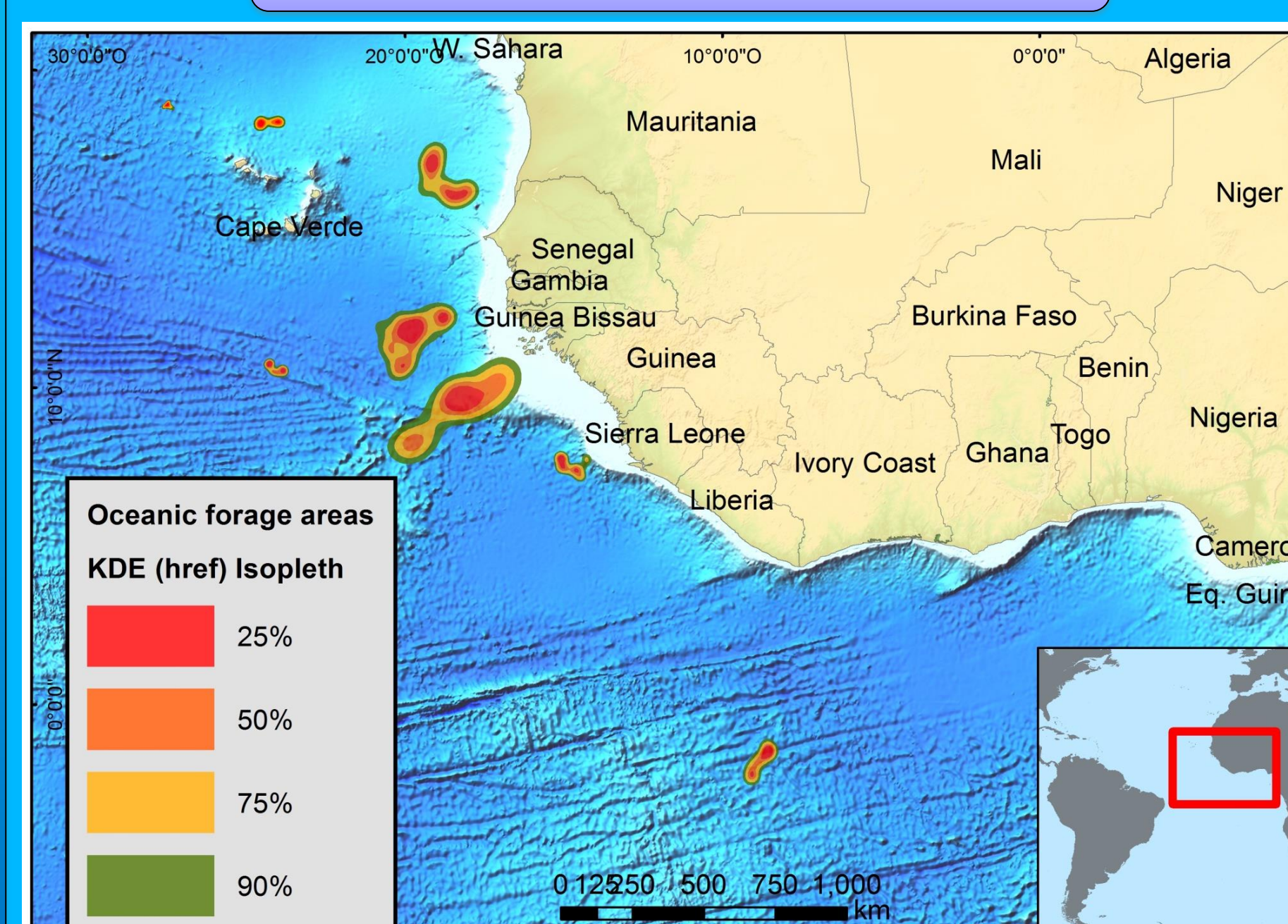
Main migratory corridor along the Brazilian continental shelf;
Migration strategy was closely associated with turtle size (CCL- curved carapace length).



Defined for 29 olive ridleys
mean residence: 20 days (\pm 7.87 Std.Dev)
Range: 7 - 34 days.

Main area in the continental shelf (depths lower than 50 m) and in front of nesting beaches. A secondary area in oceanic waters, 60 km off Sergipe state shores.

Oceanic foraging areas



2 Foraging areas:
Continental shelf off Ceará state;
Located 37 km from shore, between the 20 - 50 m isobaths.

Continental shelf border off of Para / Maranhão states;
Located 120 km from shore and between the 50 - 100 m isobaths.

7 Oceanic foraging grounds were found mainly 100-200 km off Northwestern Africa.

10 olive ridleys stopped transmitting during their oceanic migration across the Atlantic.

The foraging areas overlap the high longline fishing effort areas as identified by Fossette *et al.* (2014).

CONCLUSIONS

The Brazilian Olive ridleys exhibited considerable variation in the post-nesting behavior.

In Brazil the management measures and protection of sea turtles apply mainly at reproductive areas. This study highlights the importance of migration corridors and feeding areas and highlights the need for additional protection measures in these regions.

Acknowledgment:
We thank TAMAR's field staff who made this project viable. We are also thankful for the travel support provided by International Sea Turtle Society – (ISTS travel grants). These analyses were carried out using telemetry data from impact assessment studies required by the Oil and Gas General Coordination (CGPEG/IBAMA) for the seismic companies Petroleum Geo-Services (PGS) and Spectrum Geo Brazil. Data analysis was performed by TAMAR, EN GEO and CheloniData LLC.

Literature cited:
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Jonsen, I., Flemming, J. & Myers, R. Robust State-Space Modeling Of Animal Movement Data. *Ecology* (2005).