

Spatial distribution assessment of small scale fishing activity from fishermen surveys : the Case Study of the Banc d'Arguin National Park (Mauritania)

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Outline

- Introduction
- Case study presentation
- Data and method
- Some illustrative results
- Discussion

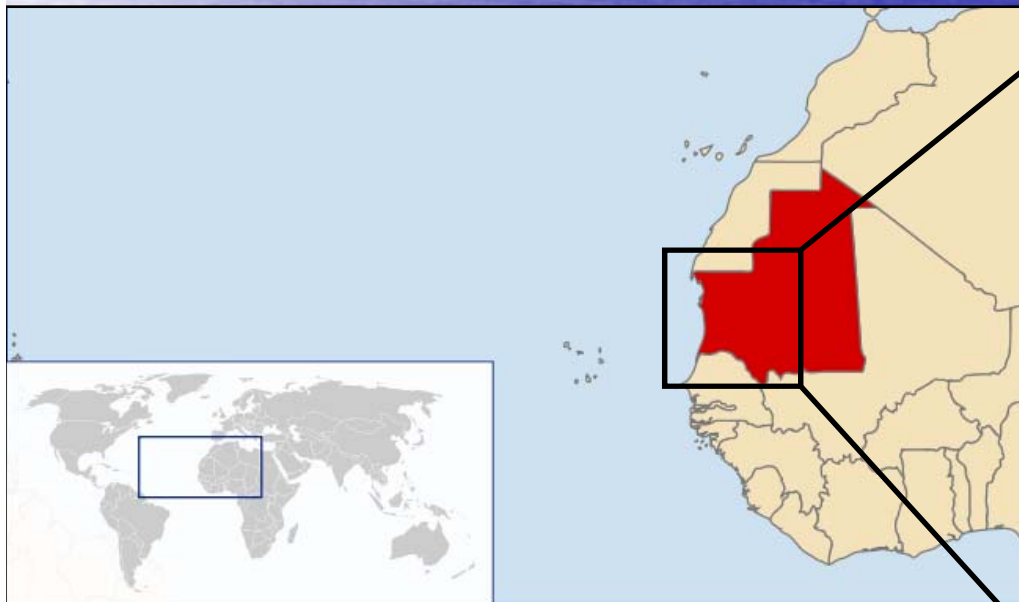


Introduction

- The marine conservation policy starts in West Africa
- Presence of legal or illegal artisanal fisheries around and inside the MPAs
- The challenge of artisanal fisheries spatialisation, without VMS neither GPS recordings

Case study presentation (1)

- The region of the case study : Mauritania



Case study presentation (2)

- The Banc d'Arguin National Park (PNBA)
 - 1976 : Fauna and Flora conservation
 - 1993 : socio-economic development
 - Development of the fishing activity
 - Vessels

Case study presentation (3)

- The two fleets fishing in and around the PNBA
 - The sailing lanches in the PNBA
 - The motor canoes around the PNBA



Data and method (2)

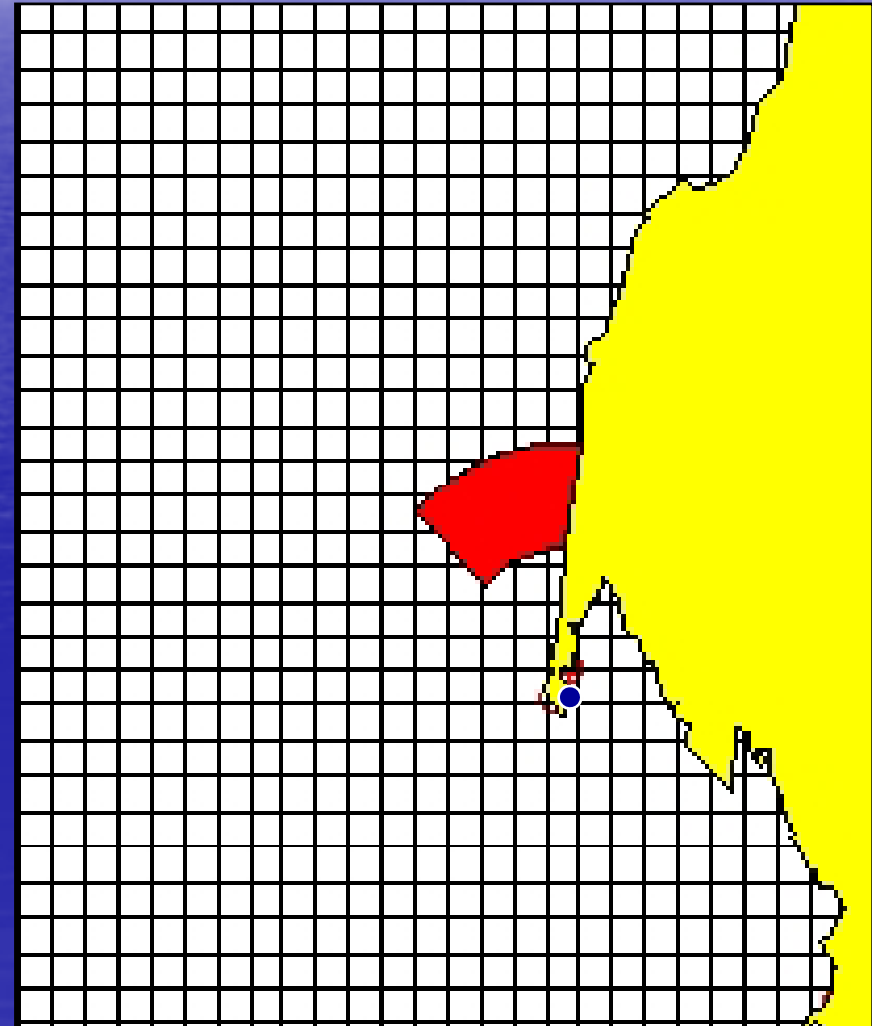
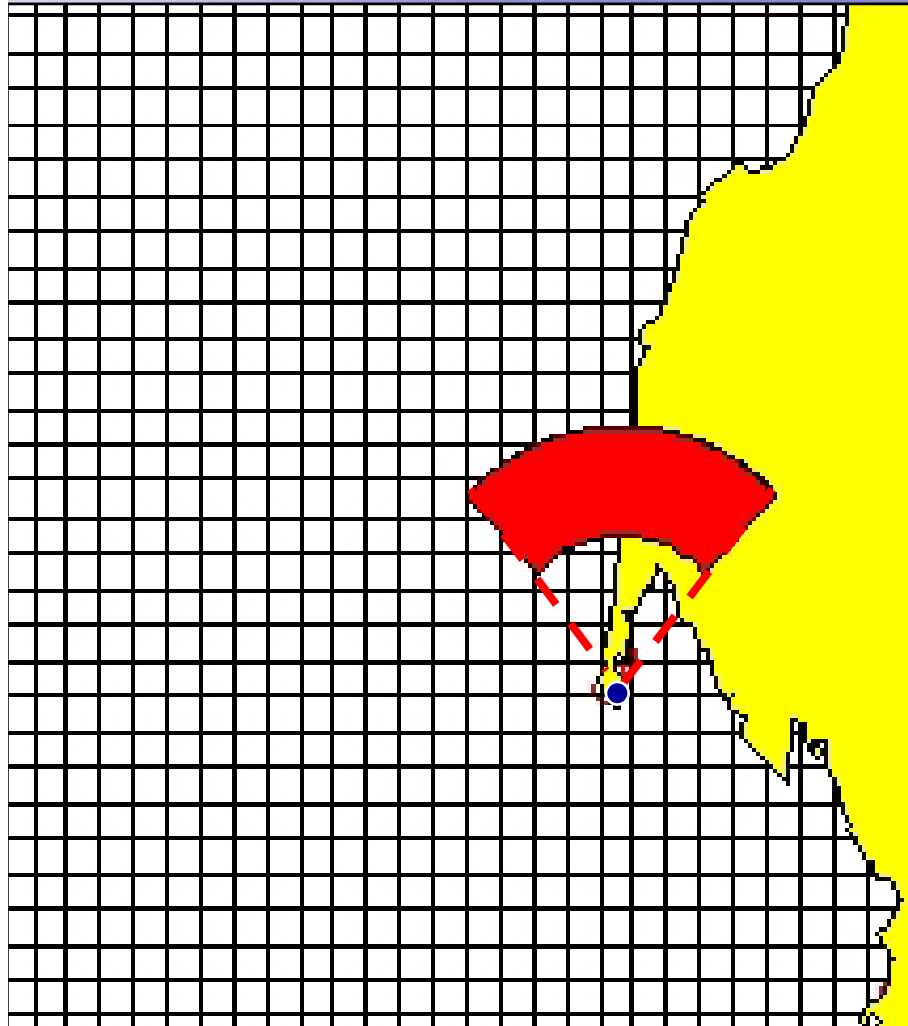
- The method relies on broadly available data
 - Geographical coordinates of the landing site
 - Coast proximity of the fishing zone (+/- 5 nautical milles)
 - The head of the travel between the last fishing zone and the landing site (N, S, E and W)
 - Duration of the come back travel
- We use a speed factor to compute the distance
- To obtain this speed factor we use the subset of data collected on the fishing trip equipped with GPS

Data and method (3)

- Speed assessment :
 - Lanches : $3.5 < \text{speed} < 5$ knots, $n=750$
 - Canoes : $5 < \text{speed} < 9$ knots, $n=200$
- We spread off the values onto a grid with cells size of :
 - 0.1 degrees for outboard motor canoes
 - 0.05 degrees for sailing lanches

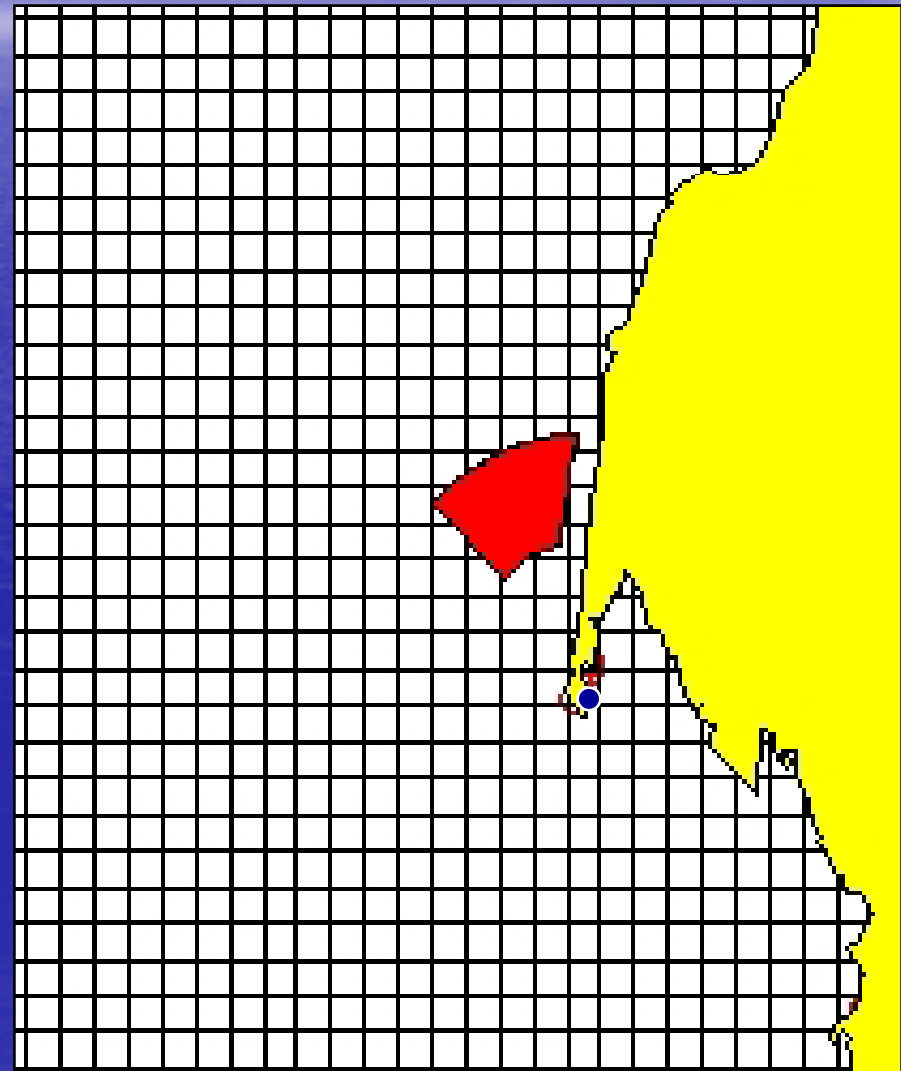
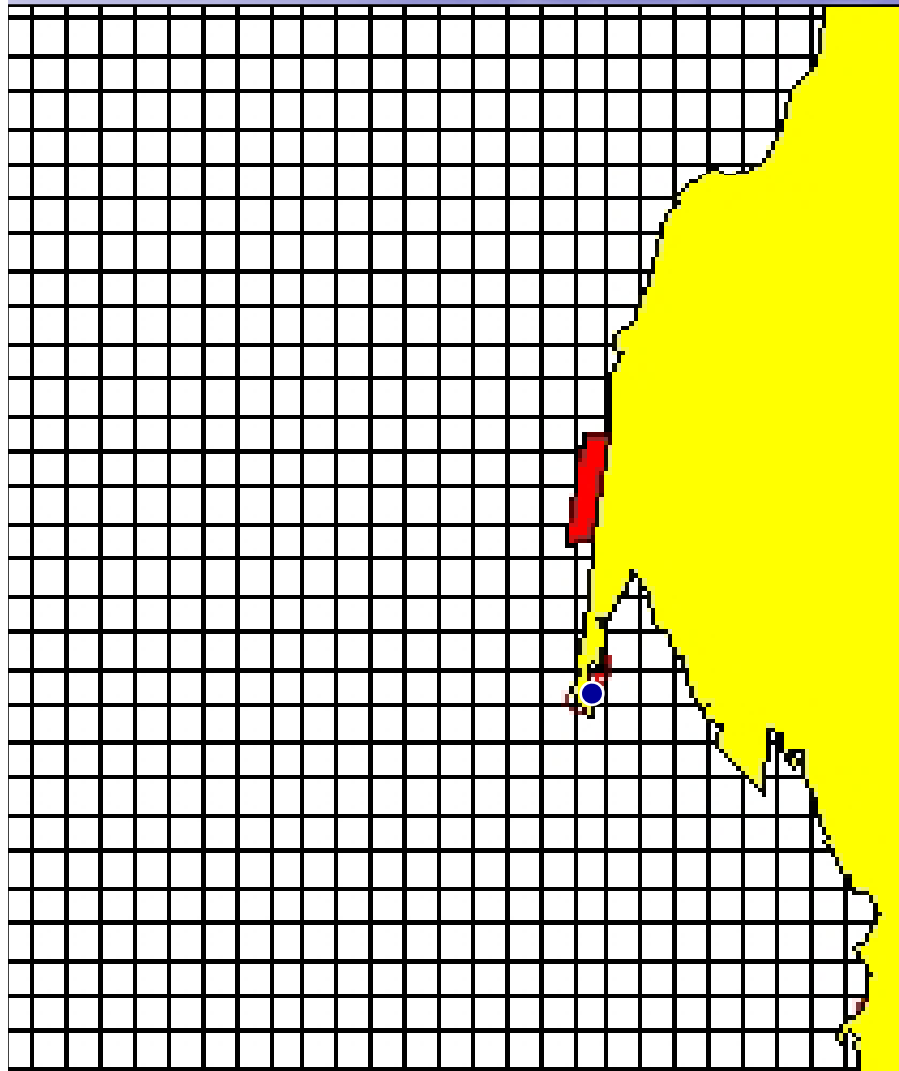
Data and method (4)

cone creation



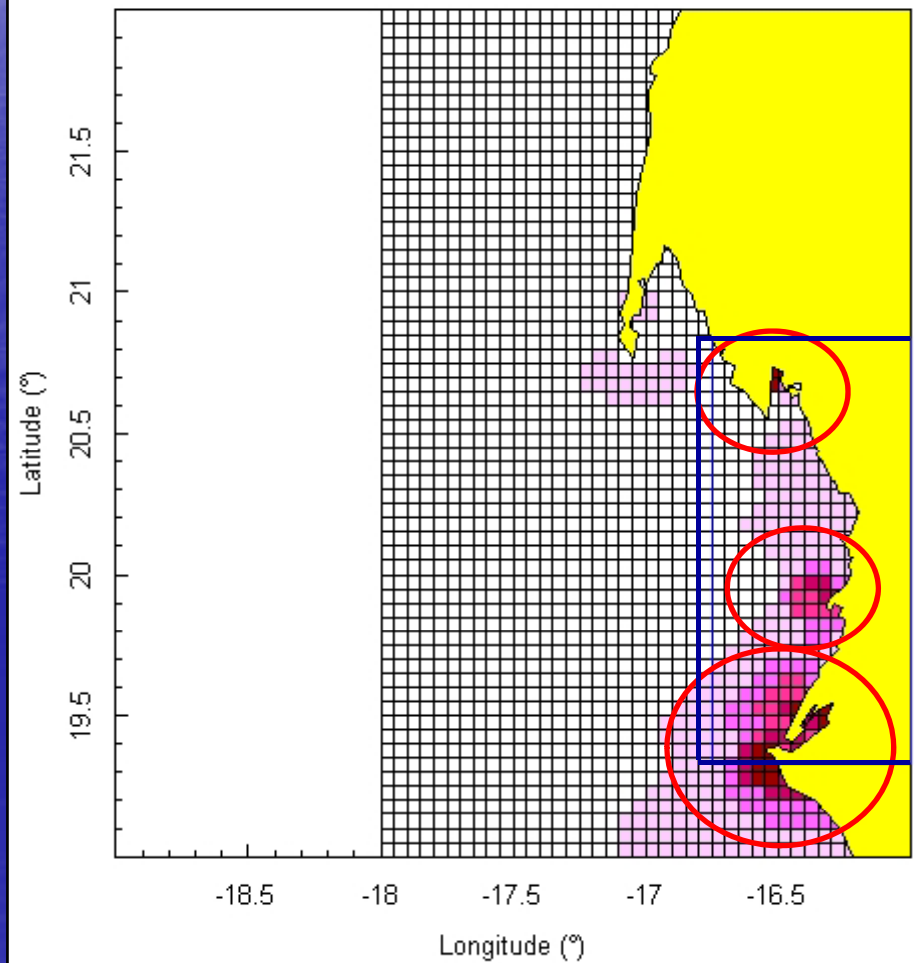
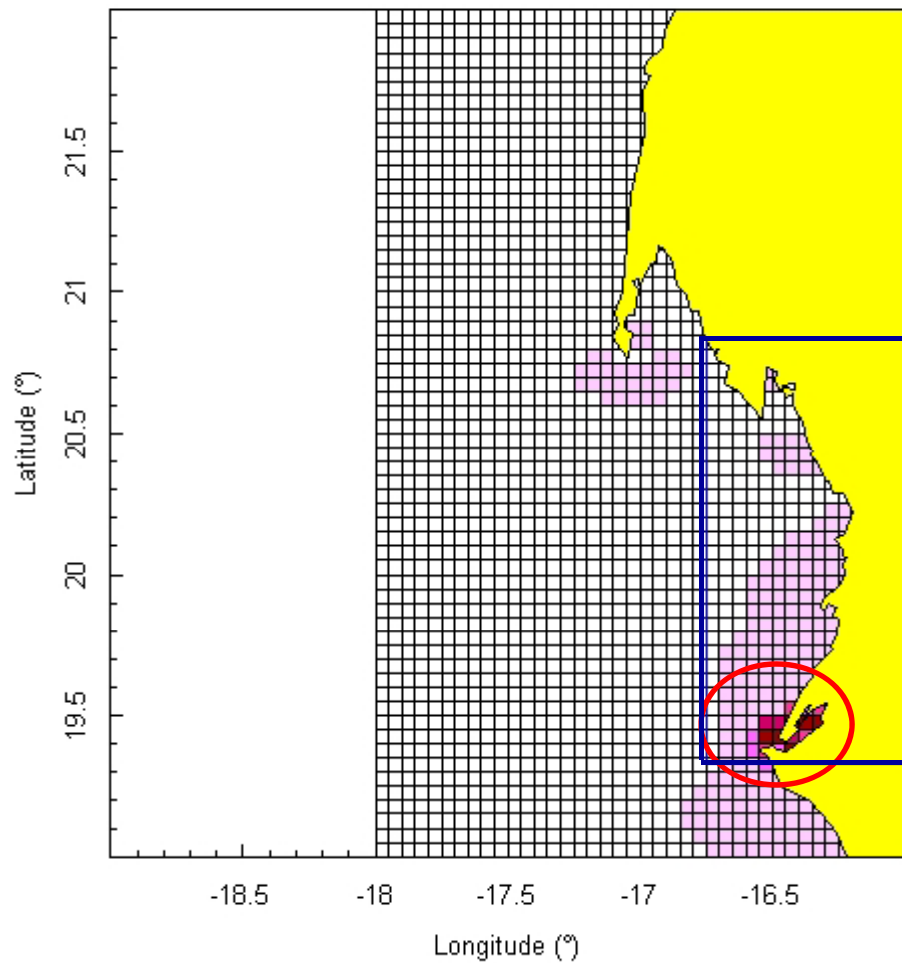
Data and method (5)

cone creation



Illustrative results (1)

No trade wind season VS upwelling season



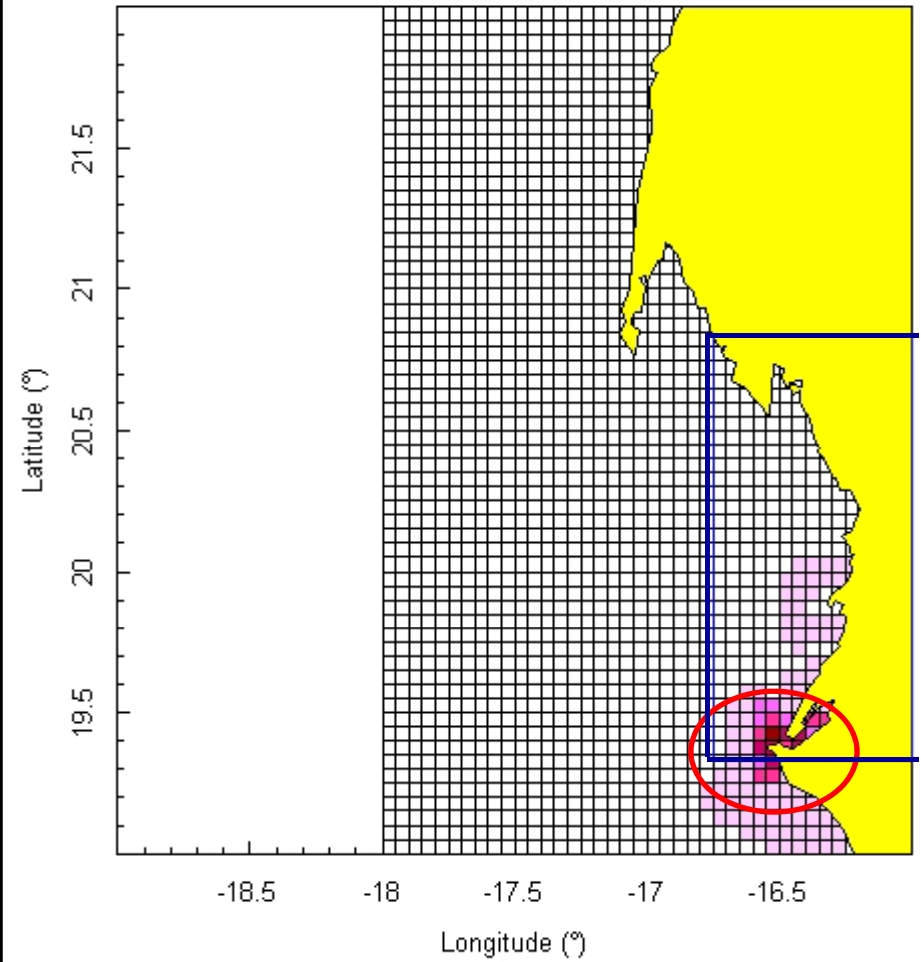
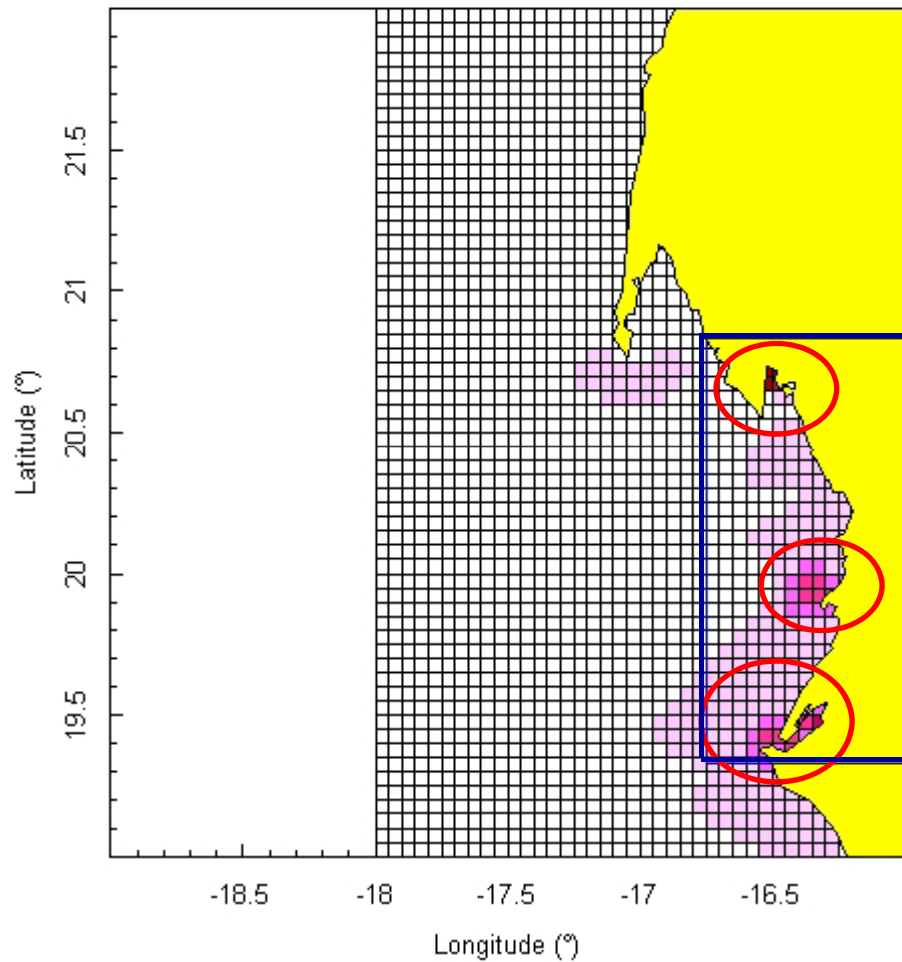
Illustrative results (2)

No trade wind season VS upwelling season

- The spread off increases when the upwelling index is at the maximum
- Three fishing zones during the upwelling season : Agadir, Iwik and Mamkhar

Illustrative results (3)

Courbine Net VS Mullet Net



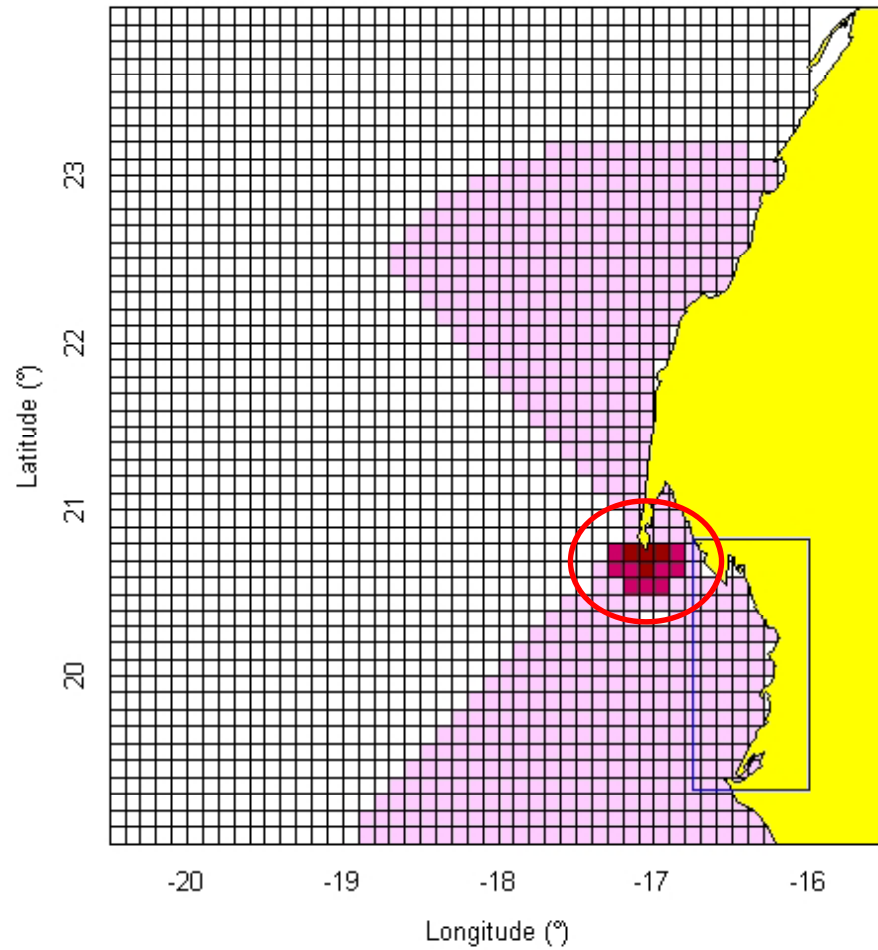
Illustrative results (4)

Courbine Net VS Mullet Net

- Courbine
 - Three main fishing zones : Agadir, Iwik and Mamkhar
 - The main activity is in the Agadir bay
- Mullet
 - Only one fishing zone : Mamkhar

Illustrative results (5)

Distribution of the motor canoes



Discussion (1)

- The limits of the method
 - The head of the travel is not accurate enough for the moment but it will be improved
 - The accuracy of the speeds can be optimized by field work
 - Difficulties of the time assessment by the imraguen fishermen

Discussion (2)

- Other kind of information can be used
 - The bathymetry and the sediment type
(Belkhaouad, Taconnet and Bahadda, 1995)
 - The sea marks on the shore
 - The toponymy and the cartography of fishing zones

Thank you for your attention



Obrigado

Acknowledgements

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- **PBSMapping** Library in **R** statistical software

