



# Investigating the influence of oceanographic processes on common dolphins bycatch in the Bay of Biscay

## Context

- Possible link between bycatch and dolphin feeding

## Hypothesis

- **Oceanographic process** may create **areas** where prey aggregate, **prone** to **negative interactions** between dolphins and fisheries

## Data



2012 - 2019

- **Mortality Index** inferred from strandings (Atlantic French Coast)
- Modelled **Essential Oceanographic Variables** (EOVs)

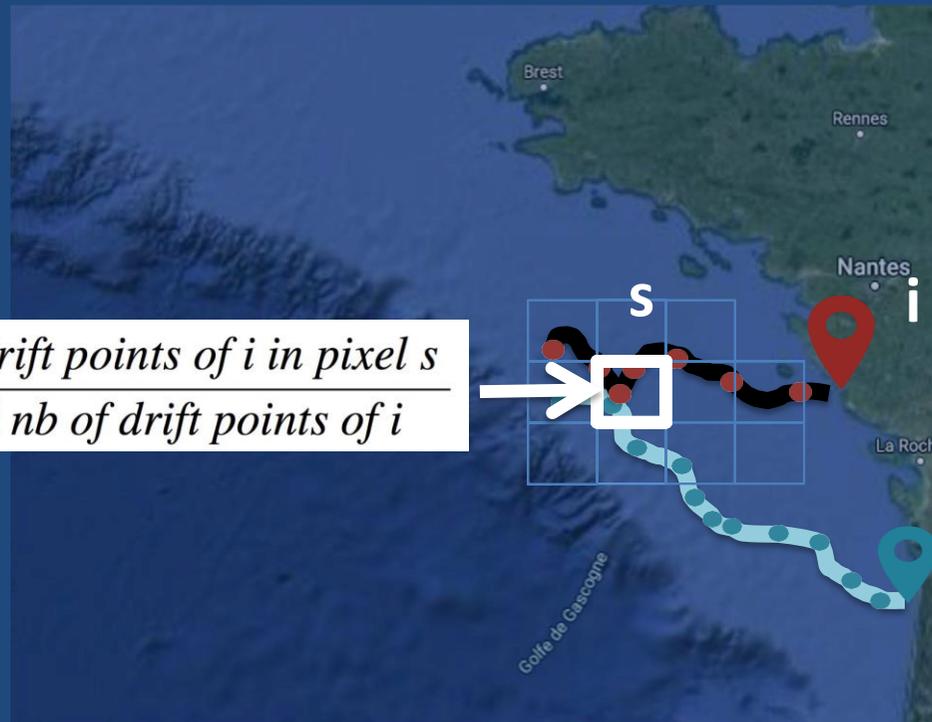
## Material : **Mortality Index (MI)** inferred from strandings

- Allows to **locate** potential **mortality areas** and to **quantify** the **intensity of mortality events**

$$\sum_d$$

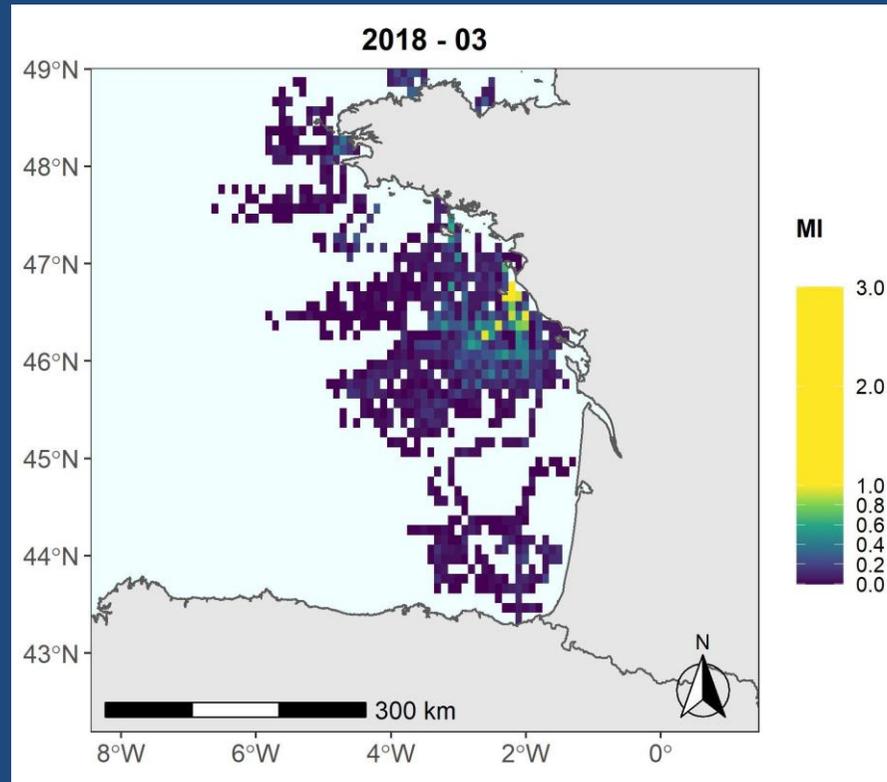
$$\sum_i$$

*Nb of drift points of  $i$  in pixel  $s$*   
*Total nb of drift points of  $i$*



## Material : **Mortality Index (MI)** inferred from strandings

- Allows to **locate** potential **mortality areas** and to **quantify** the **intensity of mortality events**





# Investigating the influence of oceanographic processes on common dolphins bycatch in the Bay of Biscay

## Method

Sea surface temperature (sst)

MI  Mean sst gradient  $\rightarrow$  thermal fronts

Eddy kinetic energy  $\rightarrow$  eddies & turbulence



Spatio-temporal effects

- Temporal resolution : **month**, from January to December



2012 - 2019

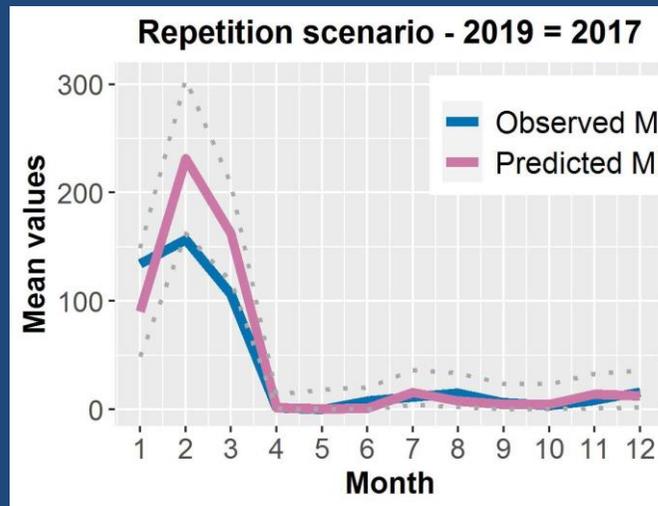
- Model selection based on **WAIC**

# Investigating the influence of oceanographic processes on common dolphins bycatch in the Bay of Biscay

## Results

- Effects of oceanographic covariates more pronounced during the **high mortality season** (January to March)
- Good model fit → one-step-ahead prediction for 2019 based on 2012-2018 data

- **Good prediction** when 2019 considered as repetition of 2017:



→ At least a part of the phenomenon is predictable



# Investigating the influence of oceanographic processes on common dolphins bycatch in the Bay of Biscay

## TAKE HOME MESSAGE

- There is a **dynamic influence** of oceanographic processes on bycatch events
- Increased mortality in 2019 was somewhat **predictable**

## PERSPECTIVES

- Further investigation : shorter time scale, different EOVs