

Tropical Tuna Fisheries

From data to management measures, a challenge for sustainable exploitation

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Introduction

What is the Exploited Tropical Pelagic Ecosystems Observatory? (Ob7)

What is it?



https://ob7-ird.github.io/training_aerme/

What is it?



The Observatory:

- is a **set of resources** (human and material) under the umbrella of the **French National Research Institute for Sustainable Development** (IRD),
- under the responsibility of **Julien Lebranchu** (julien.lebranchu@ird.fr).

What is it?



of exploited ressources

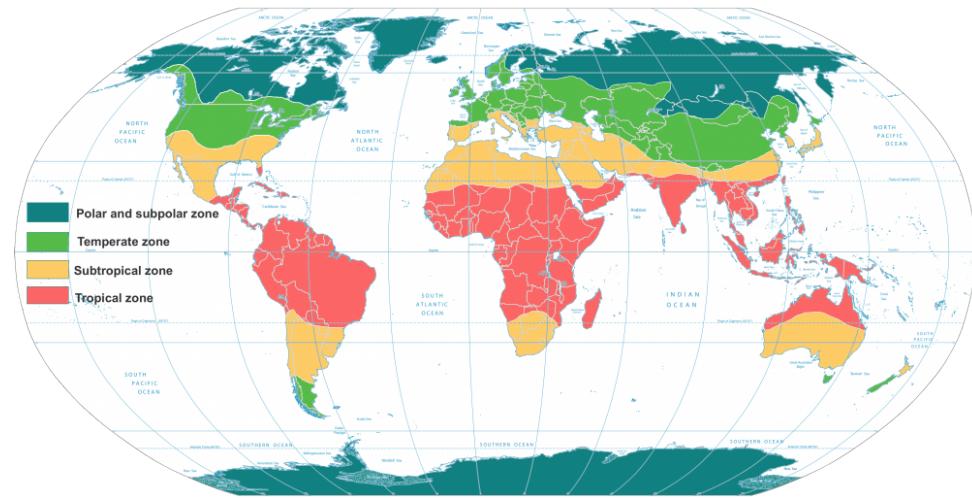


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What is it?



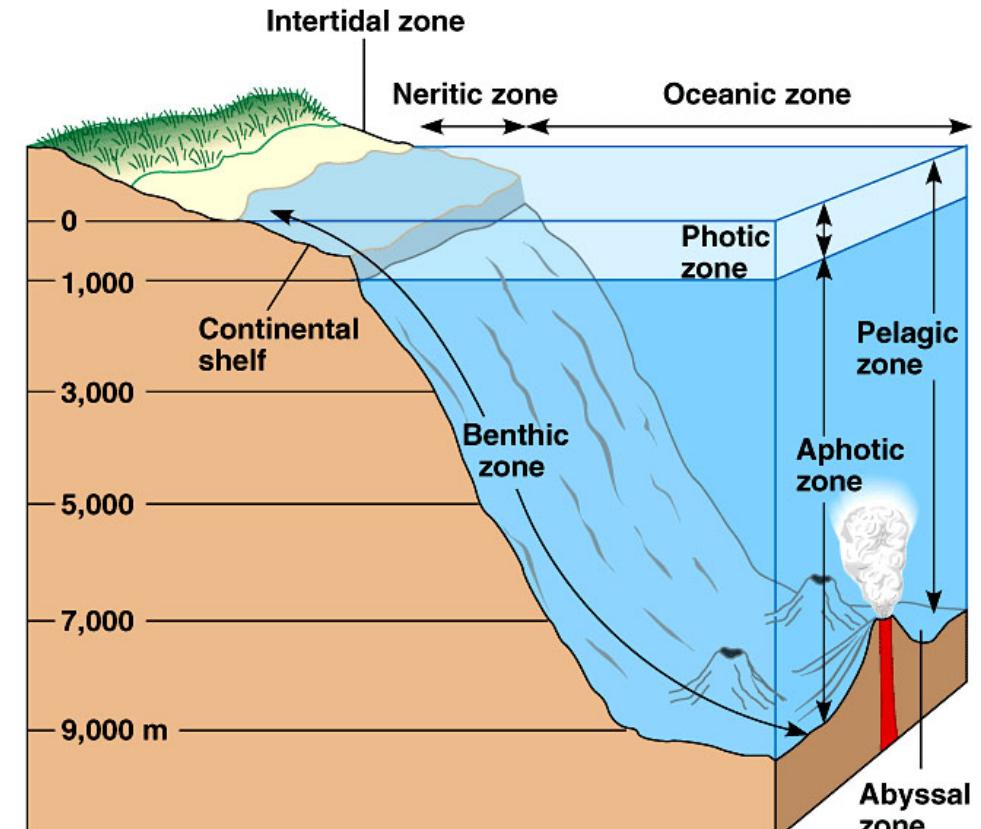
focused on a **tropical**



What is it?

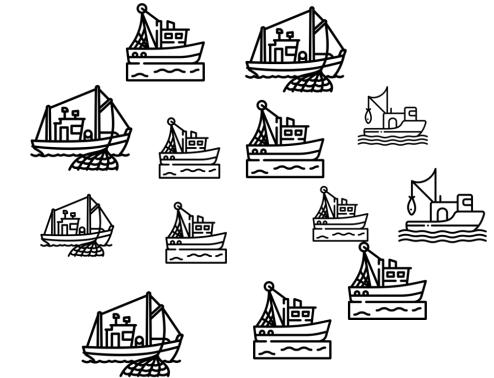


and **pelagic** area



Why do we need this kind of structure?

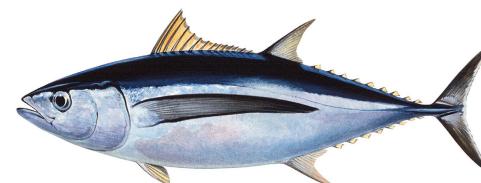
- Each country exploiting fisheries resources must declare its activities (**transversal variables** like capacity, effort and capture)
- To whom and why?
 - **European Commission**, if EU member, used for example regarding **fisheries agreements**
 - **RFMOs (Regional Fisheries Management Organisations)** to manage **population dynamics**



What are we focusing on?

Target species and bycatch

- Major tunas
 - Yellowfin tuna (YFT, *Thunnus albacares*)
 - Bigeye tuna (BET, *Thunnus obesus*)
 - Skipjack tuna (SKJ, *Katsuwonus pelamis*)
 - Albacore tuna (ALB, *Thunnus alalunga*)



What are we focusing on?

Target species and bycatch

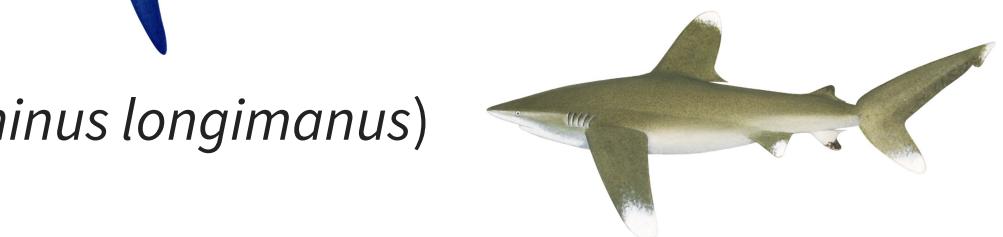
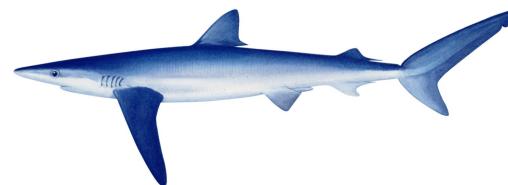
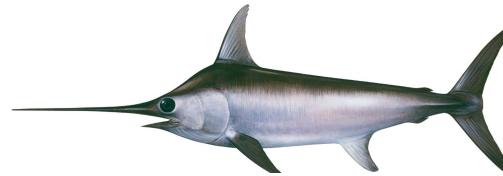
- Neritic tunas
 - Bullet tuna (BLT, *Auxis rochei*)
 - Frigate tuna (FRI, *Auxis thazard*)
 - Kawakawa (KAW, *Euthynnus affinis*)
 - Atlantic bonito (BON, *Sarda sarda*)



What are we focusing on?

Target species and bycatch

- Billfish and pelagic sharks species
 - Swordfish (SWO, *Xiphias gladius*)
 - Sailfish (SAI, *Istiophorus albicans*)
 - Blue marlin (BUM, *Makaira nigricans*)
 - Blue shark (BSH, *Prionace glauca*)
 - Oceanic whitetip shark (OCS, *Carcharhinus longimanus*)



What are we focusing on?

Fishing gears

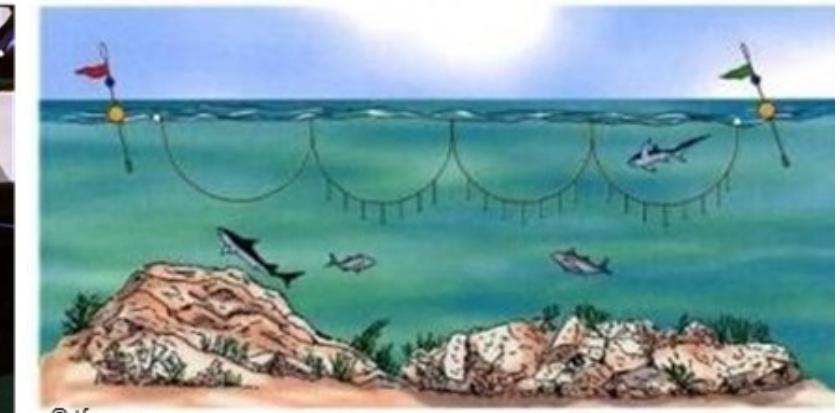
- Bait boats



What are we focusing on?

Fishing gears

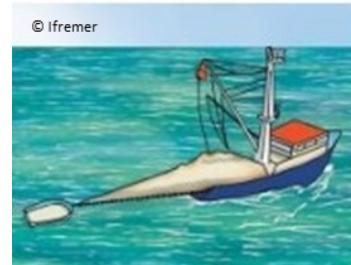
- Longlines



What are we focusing on?

Fishing gears

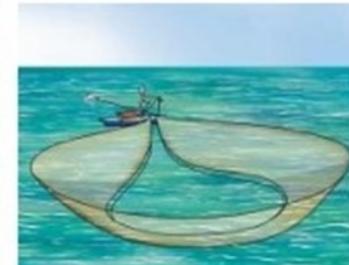
- Purse seiners



Début de filage



Encerclement du banc de poissons



Coulissage ou boursage



Virage du filet



© A. Denoize

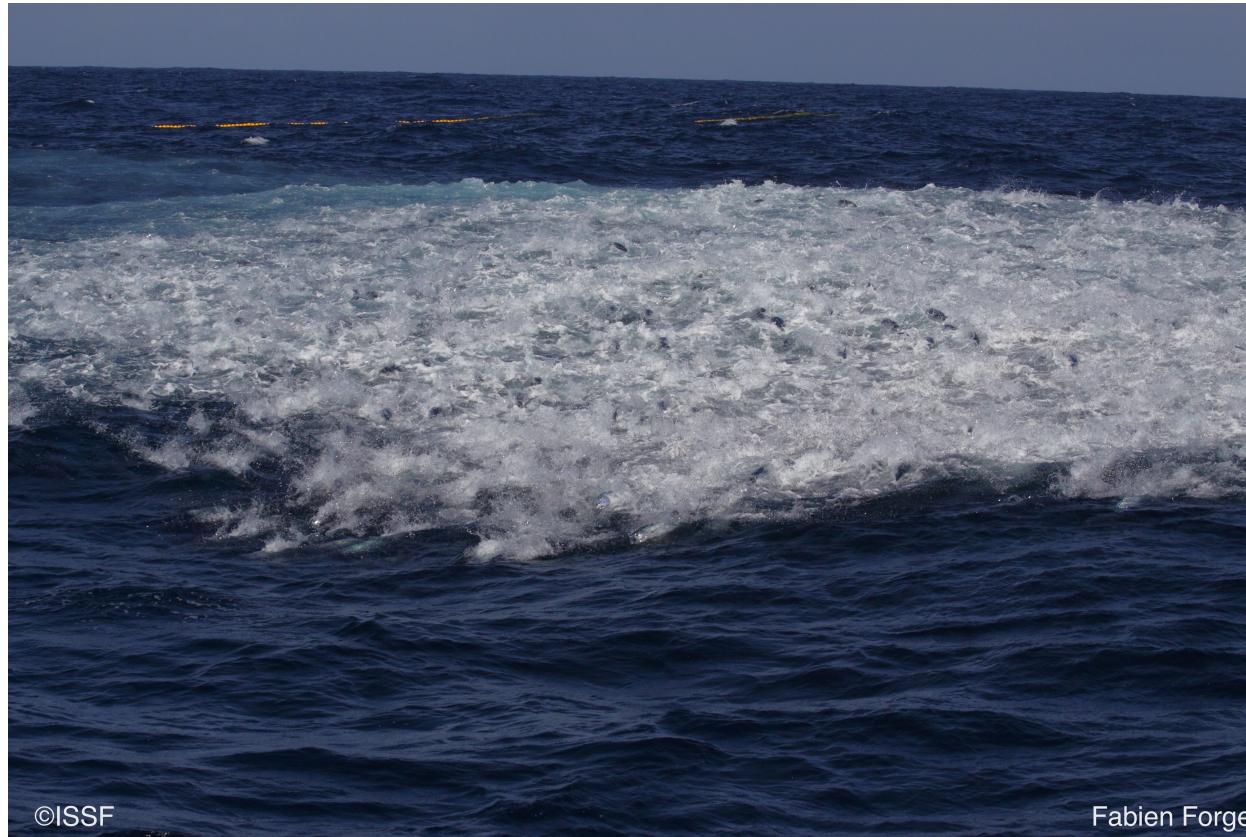


© A. Denoize

What are we focusing on?

Purse seiner school type

- Free school



©ISSF

Fabien Forget

What are we focusing on?

Purse seiner school type

- FOBs: Floating OBjects
natural



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artificial



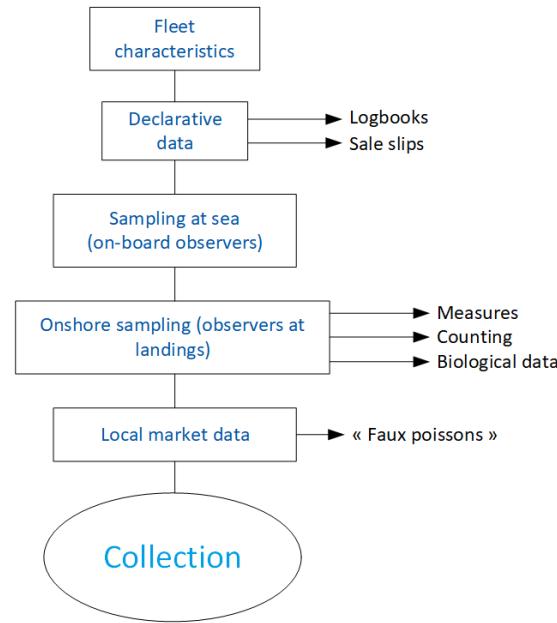
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The information system

Around 4 axes

The information system

Collection: recovery of declarative data (logbook for example), sampling, fleet characteristics, etc.

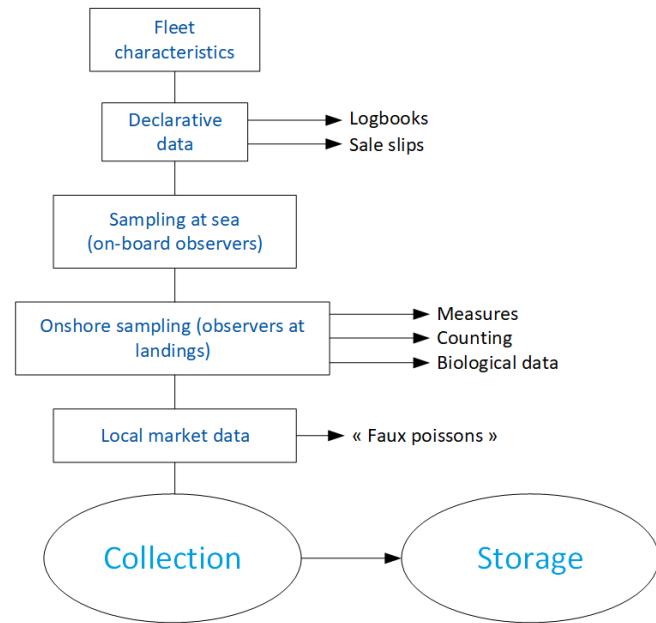


The Information System of the
Observatory of Exploited Tropical
Pelagic Ecosystems

© Mathieu Depetris

The information system

Storage: management, administration of databases to store all these kinds of data and ensure long-term preservation.

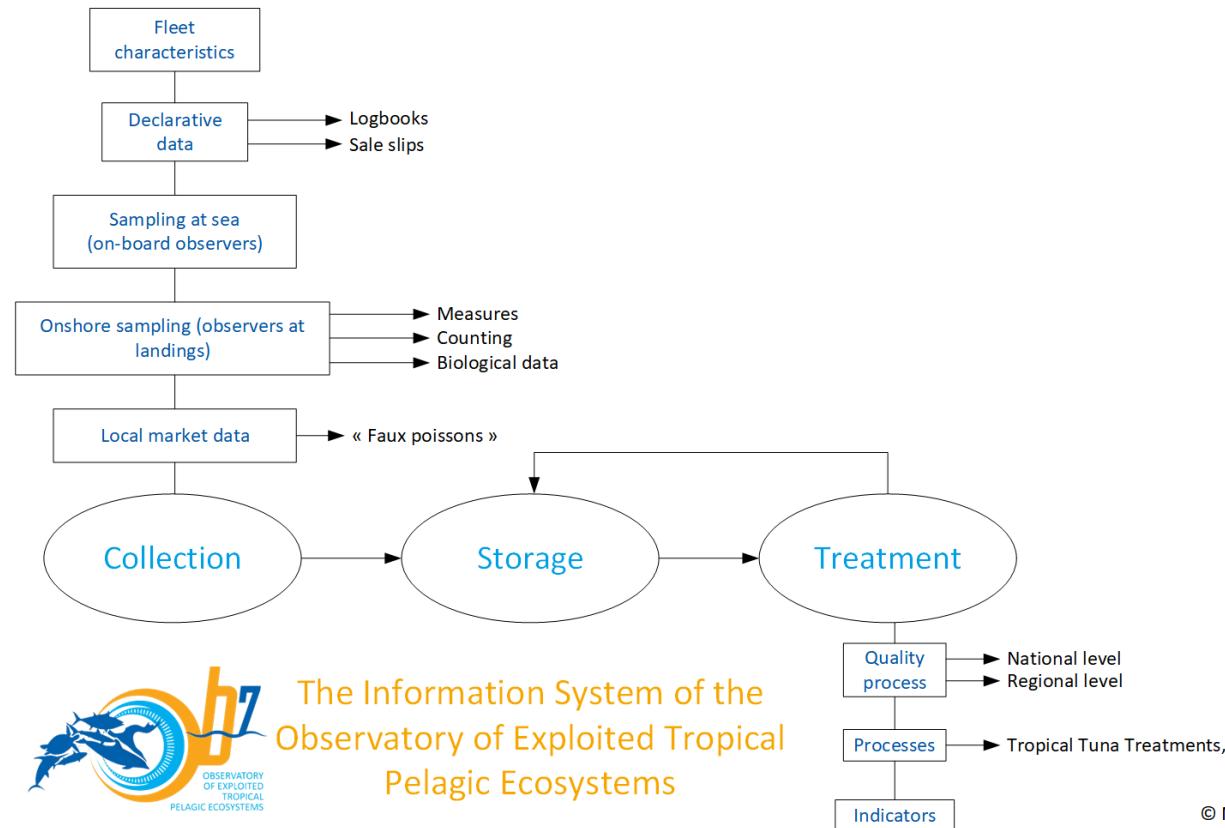


The Information System of the
Observatory of Exploited Tropical
Pelagic Ecosystems

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The information system

Treatment: processes of checking/correcting data to ensure quality data with the least possible bias or specific exploitation.

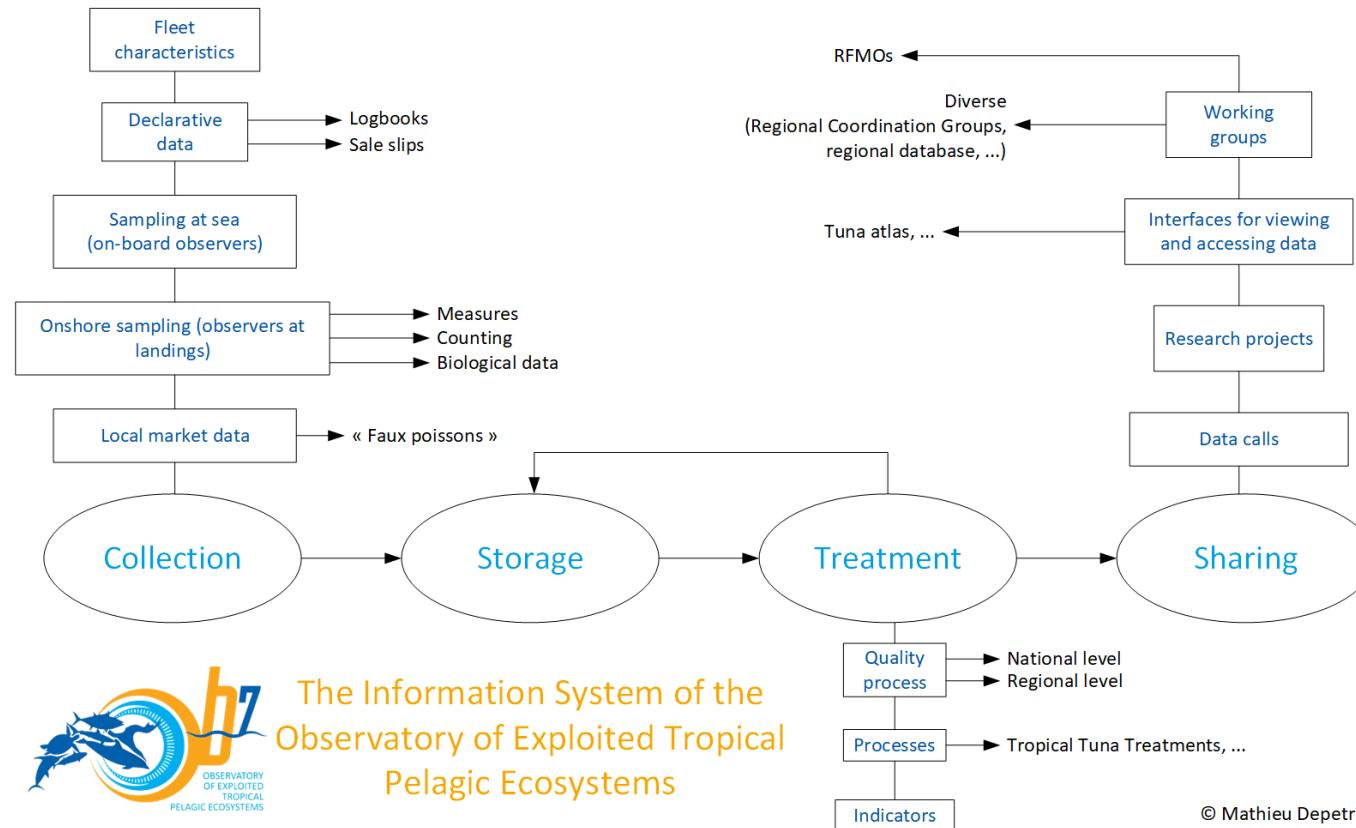


The Information System of the
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The information system

Sharing: expertise and coordination at several levels, for research projects, in support of stock assessments, data delivery, etc.



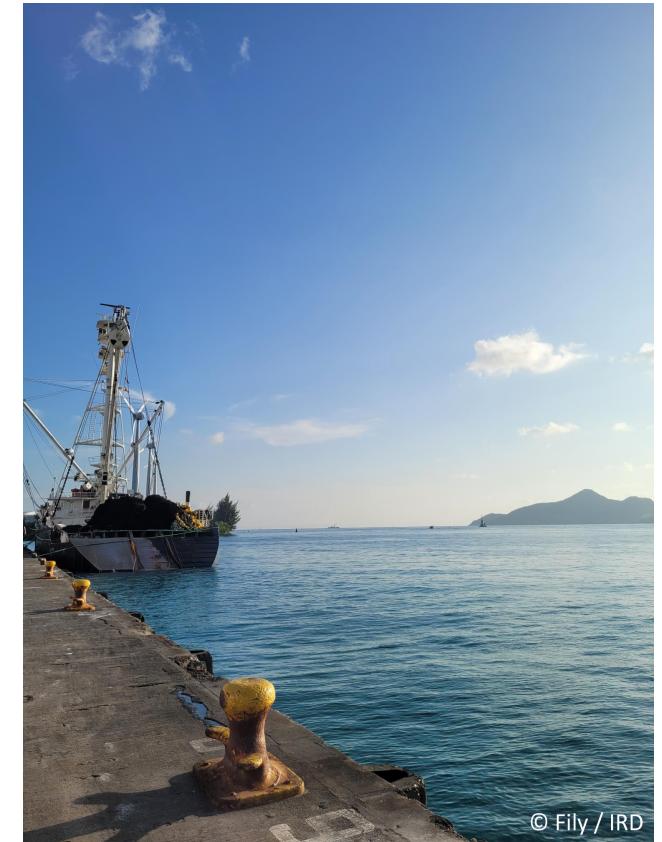
Data collection

On board and on shore sampling

Data collection

Why do we need to collect these data?

- **Compliance** : Regulations from the RFMOs
- **Scientific purpose** : Stock assessment (catches and biological parameters)
- **Provide quality data :**
 - Data independence: limiting conflict of interest between fishing business and regulation
 - Minimize biases: crew estimations reported in logbook

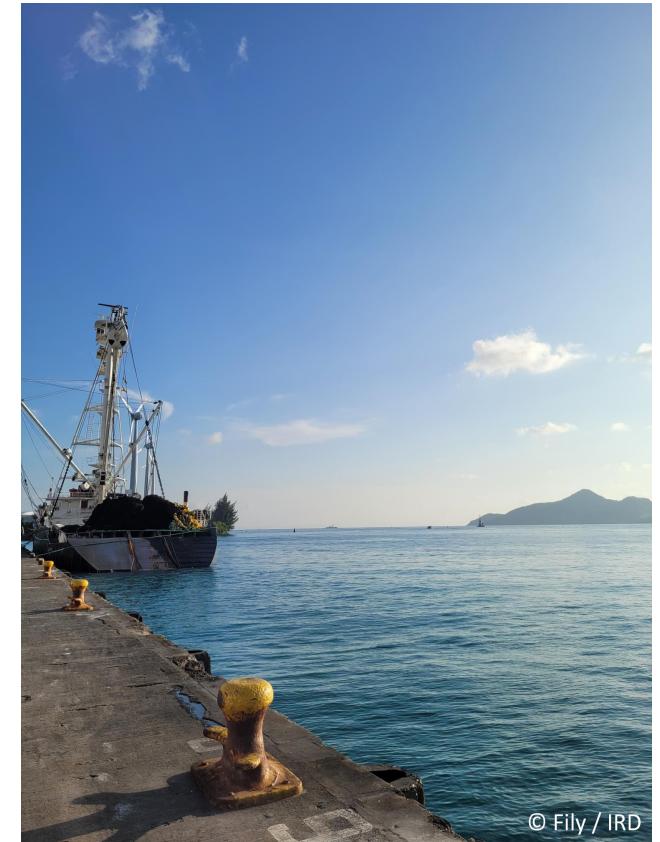


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Data collection

What do we need to collect ?

- **Estimation catch characteristics** of the purse seine fisheries (catch and effort by species, size distribution of the catch)
- **Region:** Atlantic and Indian ocean
- **Sample area:** ICCAT and IOTC fishing ground
- Only **main ports** are covered (Abidjan, Dakar and Victoria)
- **Primary sample unit:** landing



© Fily / IRD

Data collection - On shore

Sampling at port

- Technicians during **landings** at ports
- Individuals **measurement** and **counting**



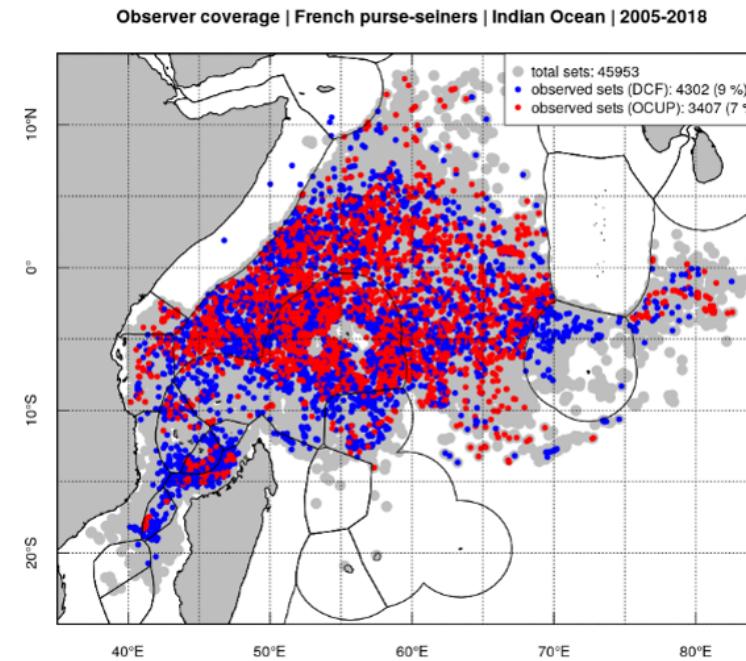
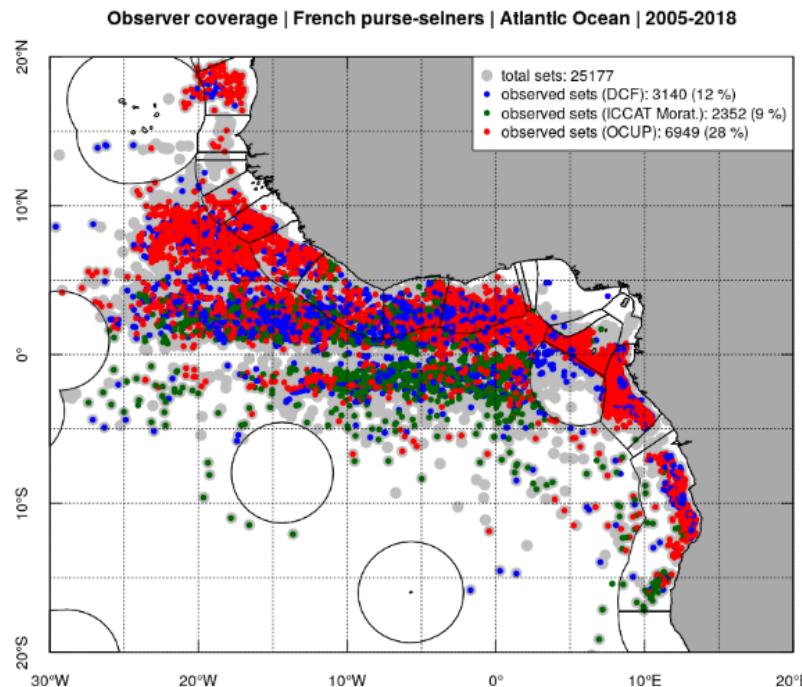
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https://ob7-ird.github.io/training_aerme/

Data collection - On board

Sampling at sea

- **On board observers**
- Priority : collection of information on **discards** and **bycatch species**



Data collection - On board

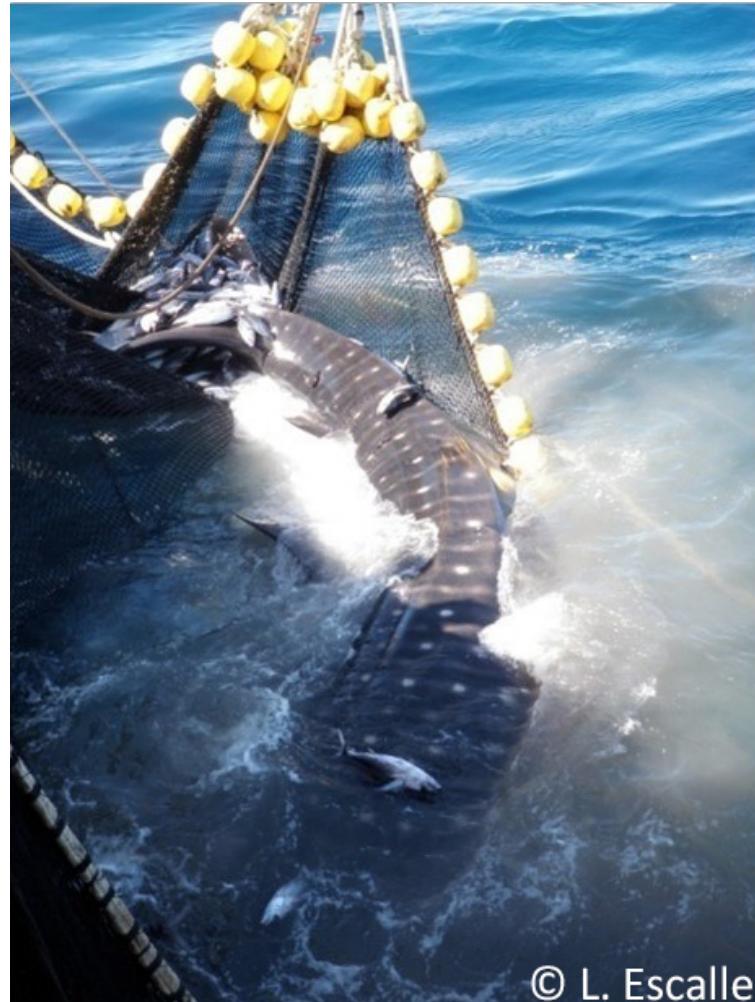
Example of bycatch



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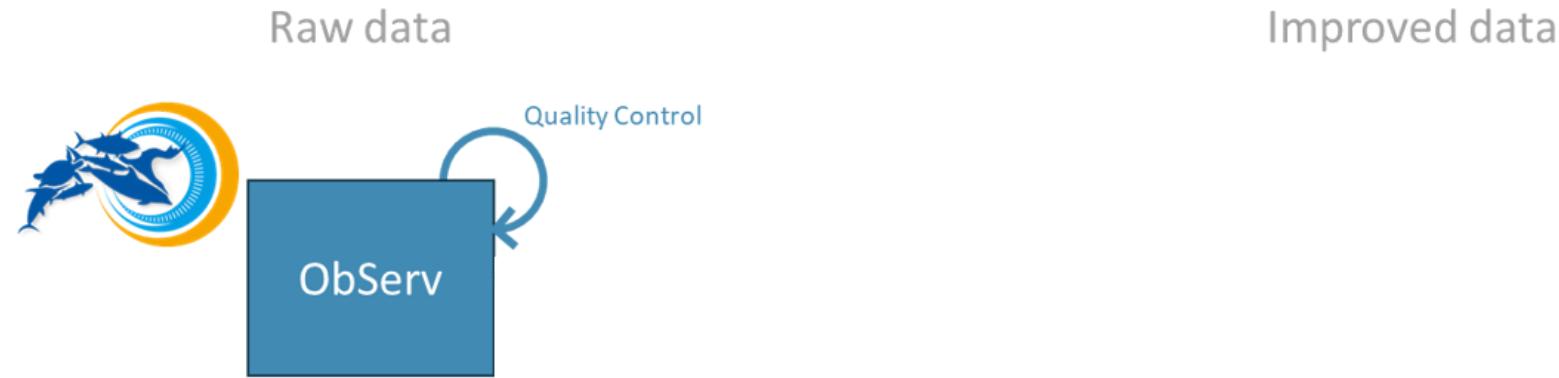


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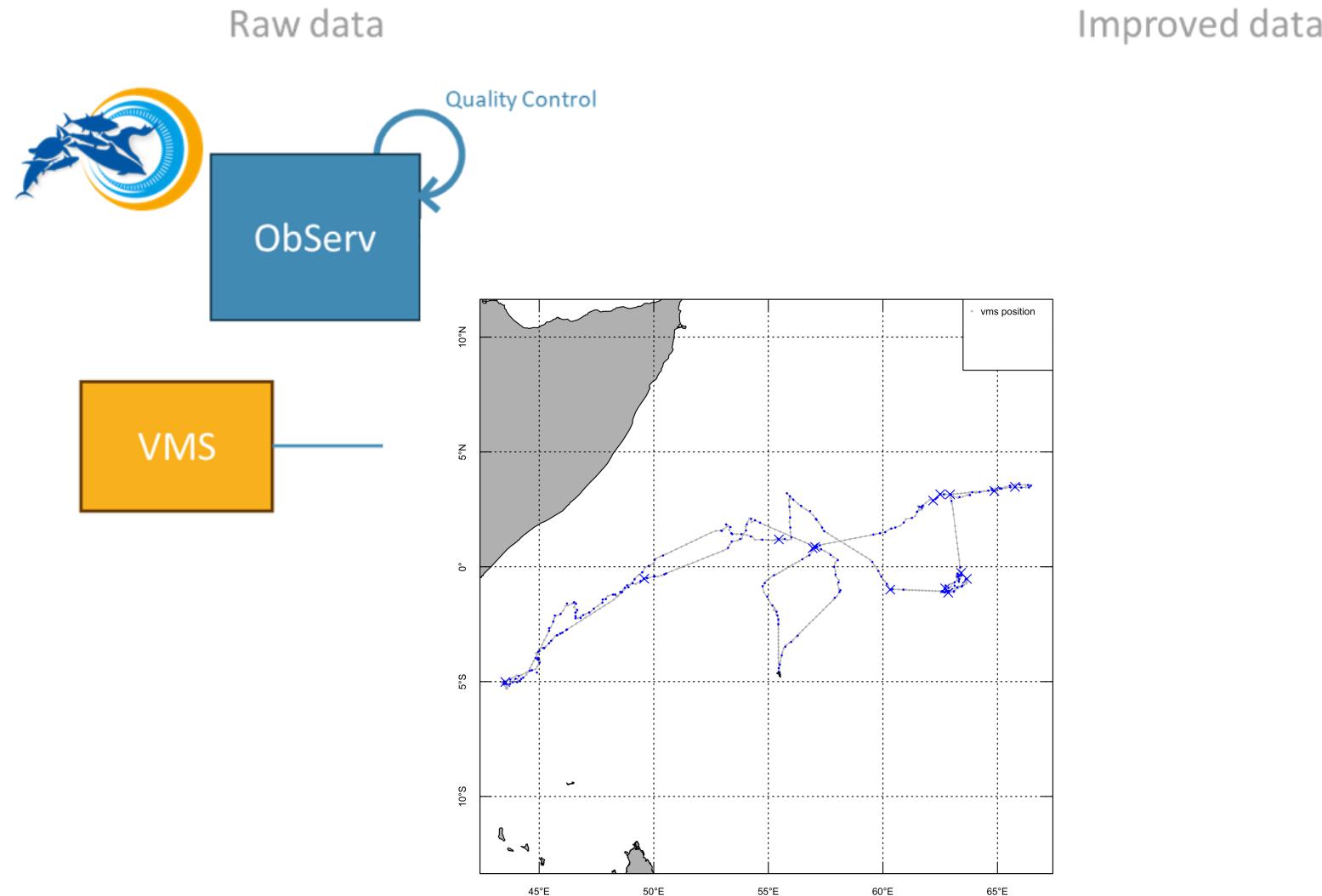
Data storage

Information System

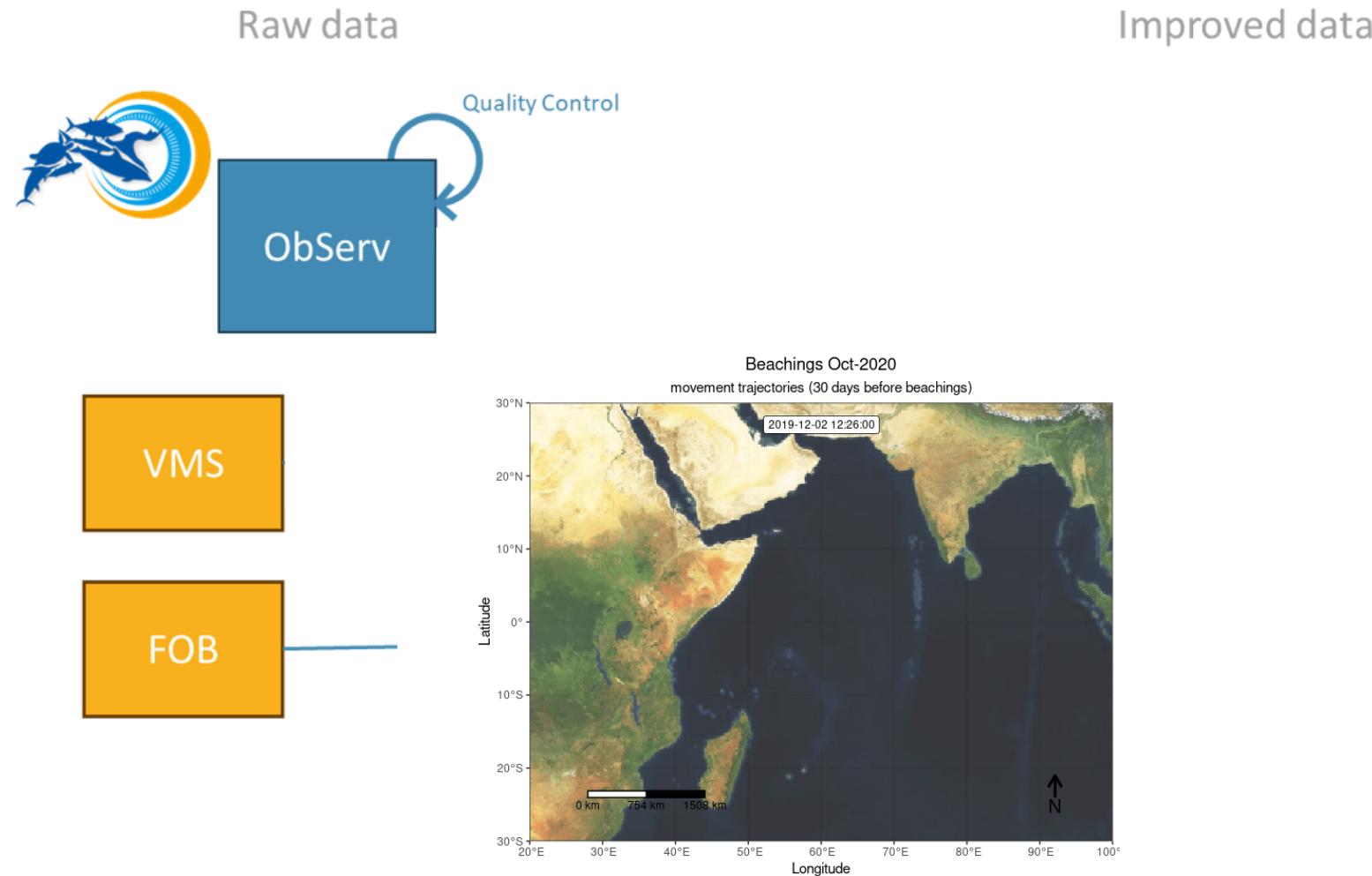
Data storage



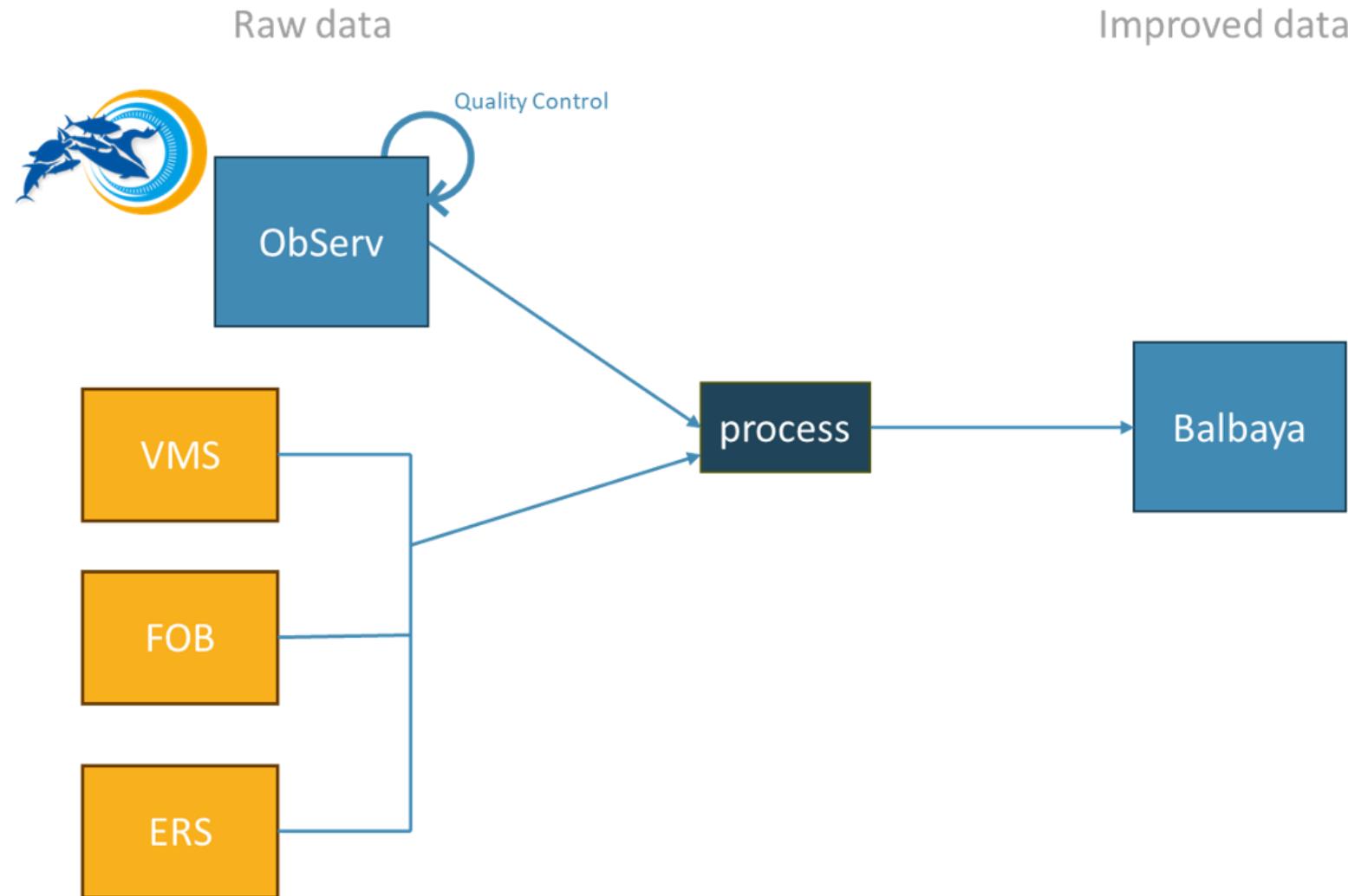
Data storage



Data storage



Data storage



Data treatment

What do we do after that ?

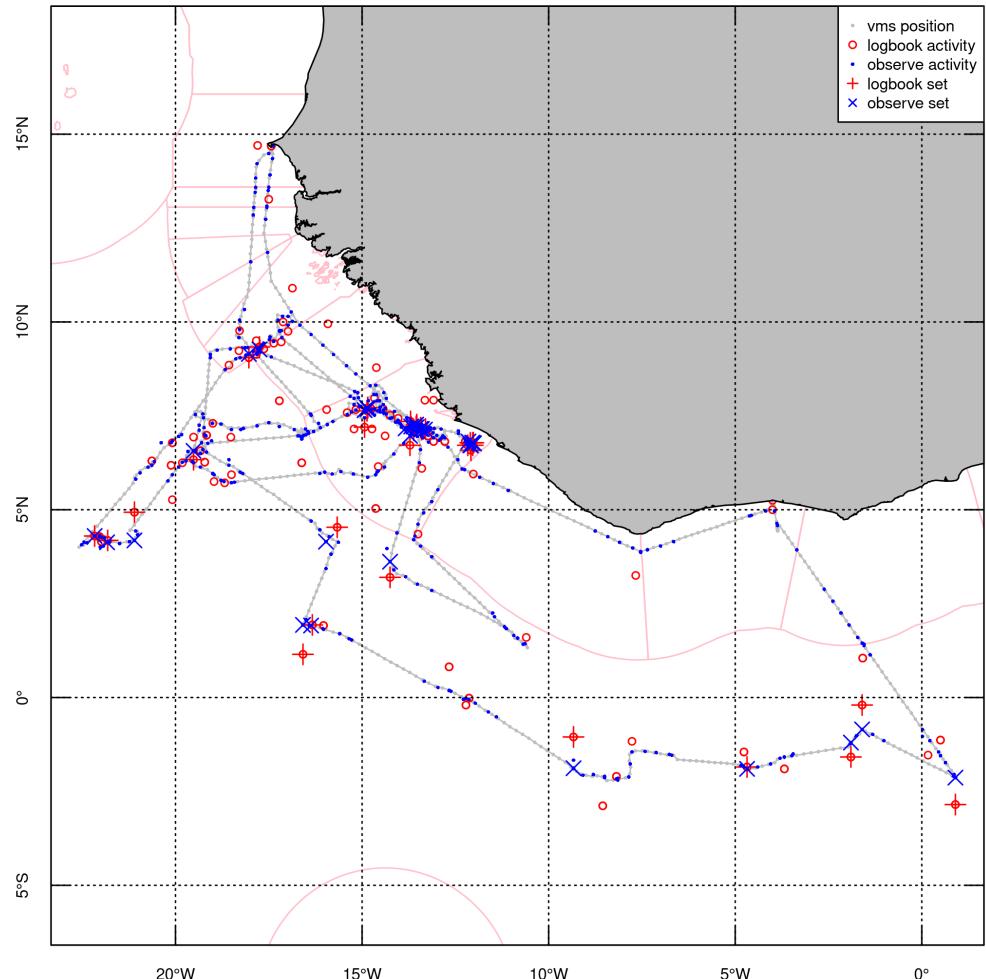
Data treatment

Databases corrections

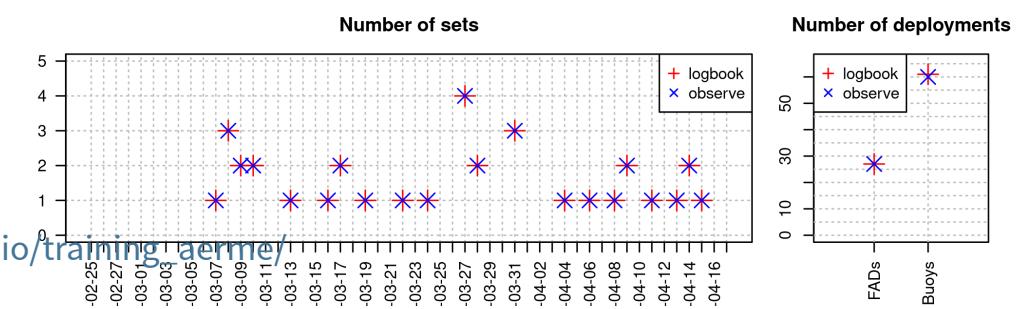
Errors may occur, when:

- The Excel logbook file is written by the partners, **declarative issues**
- Copying this file into the database, **entry issues**

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<https://ob7-ird.github.io/training-aerme/>



Data treatment

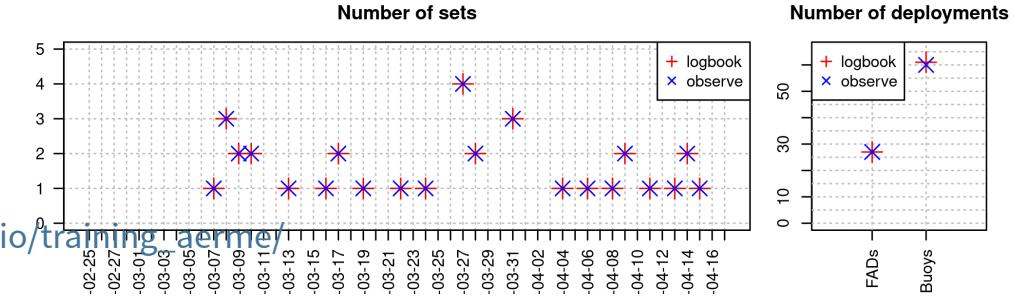
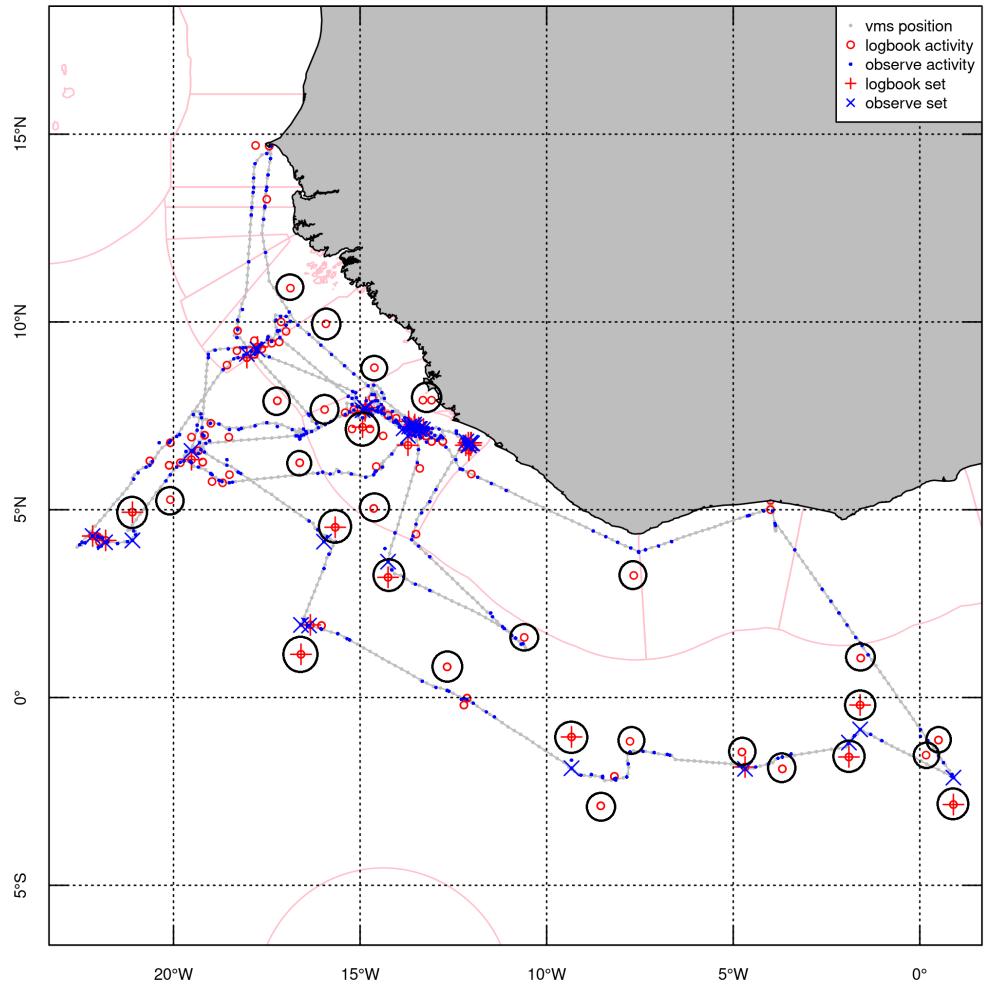
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Tools then **performs checks to highlight errors** so that they can be checked and corrected if necessary.

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Data treatment

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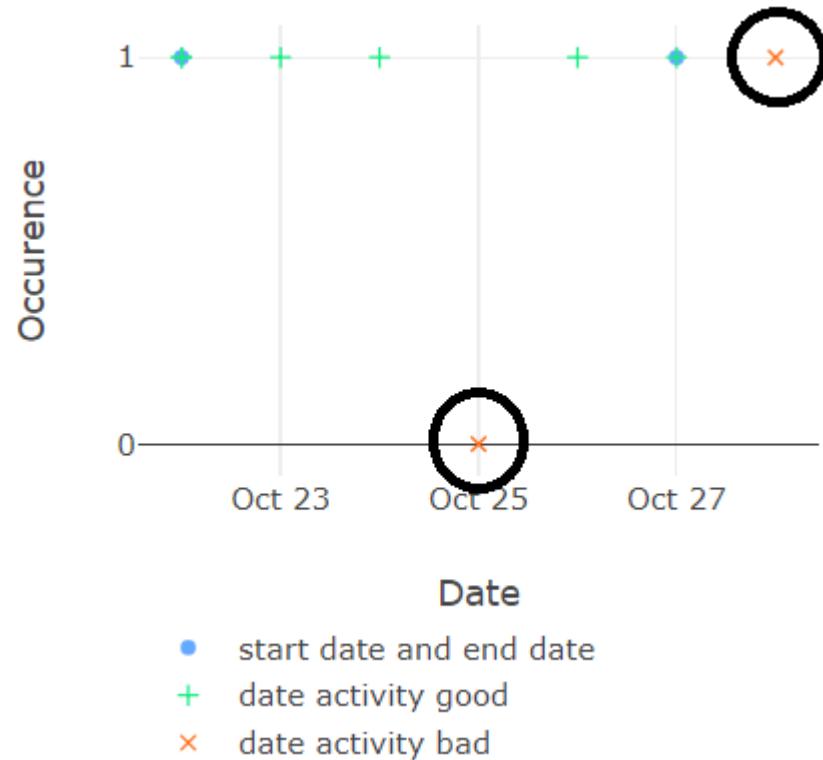
Data treatment

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Data treatment

Tropical Tuna Treatment (T3)



© Théotime Fily / IRD

Why we need this kind of treatment?

- Globally in the declarative data, **global weight** pretty well estimated but significant bias in **species composition**
- A lot of input data in **different unites or scales**

Data treatment

Tropical Tuna Treatment (T3)



A succession of processes for:

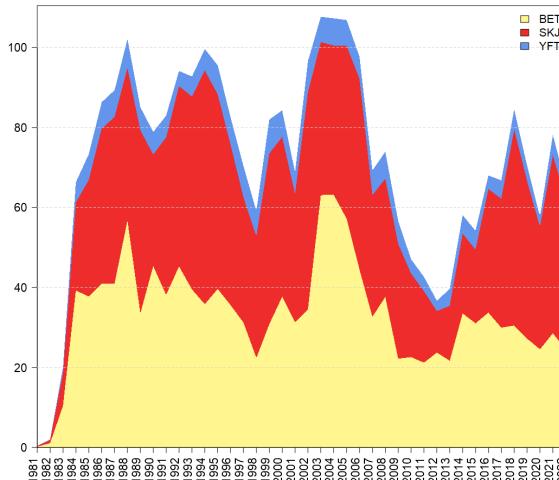
- standardise logbook data
- standardise sampling data
- re-assessment of catches (link to the landing data for example) and correction of the species composition

To go deeper: <https://ob7-ird.github.io/t3/>

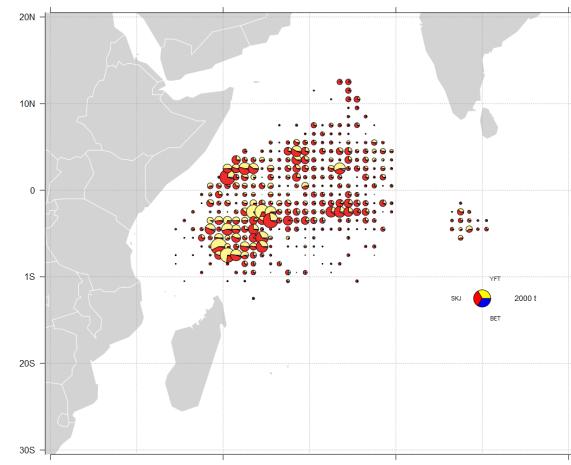
Data treatment

Indicators examples

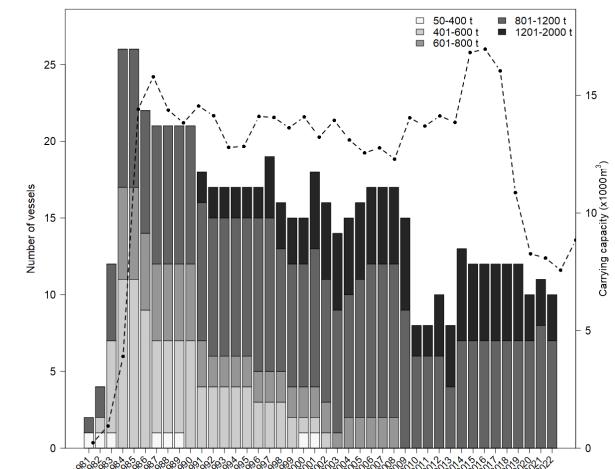
Estimated total catch



Estimated catch and effort



Fishing capacity



Data sharing

Coordination, expertise, and working groups

Data deliveries

Data calls

- For diverse purposes (research, internships, ...)
- For the **DGAMPA** (Direction Générale des Affaires Maritimes, de la Pêche et de l'Aquaculture)
 - For **France** (National Work Plan ...)
 - For the **European Union** (Fisheries Dependent Information, ...)
- For **RFMOs**
 - Delivery of **transversal variables**

Expertise

RFMO working groups

For large pelagics, 4 RFMOs



The International
Commission for the
Conservation of
Atlantic Tunas



The Indian Ocean
Tuna Commission



Inter-American
Tropical Tuna
Commission



The Western and
Central Pacific
Fisheries Commission

Expertise

RFMO working groups

To simplify, **3 levels of actions:**

- The Working Groups
- The Scientific Committee
- The Commission



They can produce **recommendation or resolution**

Coordination

At European Union scale



Regional Coordination Group
Large Pelagics

- **Regional Coordination Groups**
 - **Main hub** for regional coordination and cooperation
 - Composed of experts appointed by Member States
 - **Continuous** process
 - Ob7 is involved in the RCG Large Pelagics (<https://www.fisheries-rcg.eu/rcg-lp/>)
- Aim: to move from a “**national**” to a “**regional**” level.

One specific characteristic

Focus on the EU

- Normally, each entity negotiates **on its side** and is responsible for providing data
- In the case of the EU
 - **coordination** of all tasks (intermediary with RFMOs)
 - **guarantees** the monitoring of the fishing quota(s) by European fishermen
 - gives more **impact** on the international scene



Research support

Involving in projects

Project FISHN'CO, <https://www.fisheries-rcg.eu/fishnco/>



Project SECWEB, <https://www.fisheries-rcg.eu/secweb/>



Project CECOFAD et CECOFAD2



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Thank you for your attention, do you have any questions?



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