



# To coordinate and reinforce the biodiversity research observatories



ALCUENET – 27.11.2014  
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## 1. ECOSCOPE # Why ?

Global & national context and issues

## 2. ECOSCOPE # What ?

Goal, status (SOERE), conceptual framework, network

## 3. ECOSCOPE # How ?

Implementation, link with existing initiatives, work program 2015

# CONTEXT, ISSUES (1)

WHY ?

## ■ CONTEXT

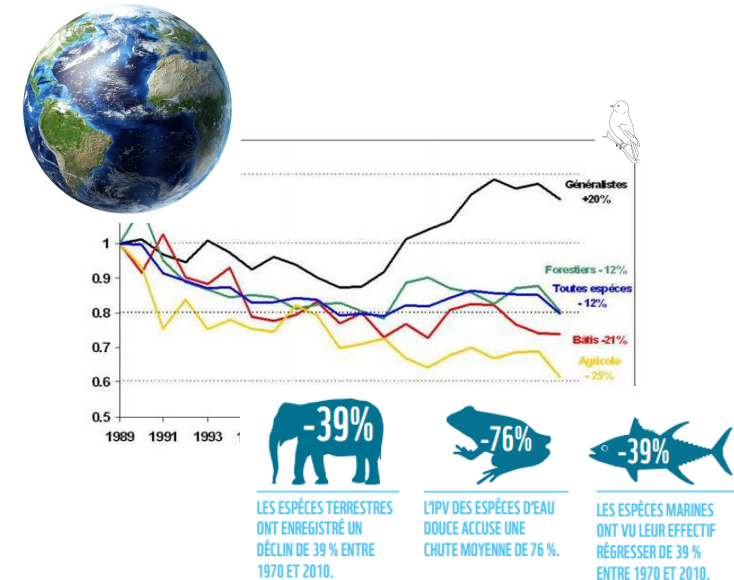
- o Global trend : biodiversity loss

## ■ ISSUES

- o Maintaining human well-being + ethical question
- o Limiting biodiversity decline by 2050
- o Preserving ecosystem services

## ■ QUESTIONS

- o To measure the extent ?
- o To decrease speed ?



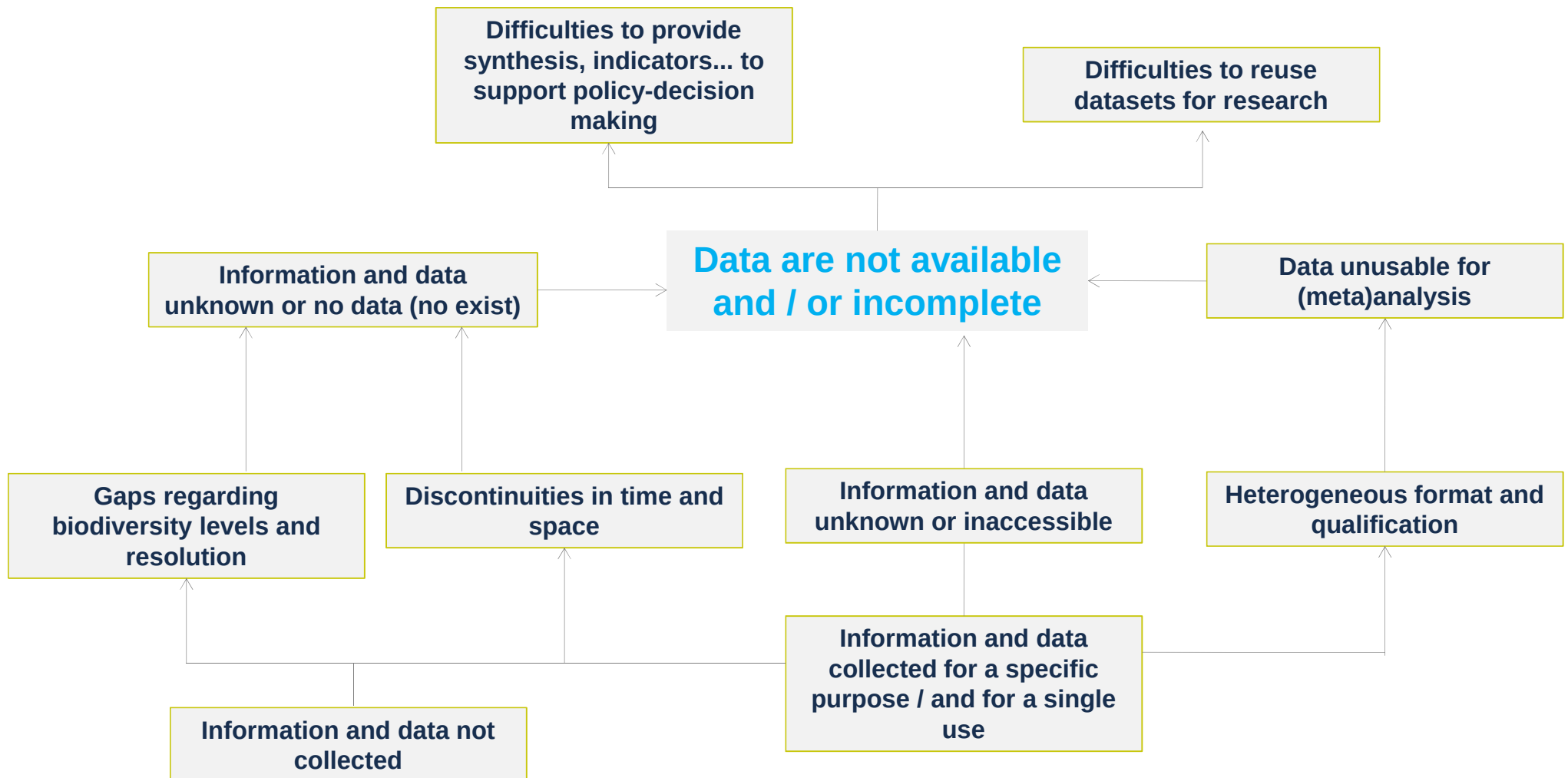
To understand status and anticipate changes in biodiversity and ecos. services

To inform policy & social decision

Can't be achieved by a single organisation

Requires a comprehensive approach from local to global level

# CONTEXT, ISSUES - DATA (2)



# CONTEXT, ISSUES - OBSERVATORIES (3)

WHY?

- **SCIENTIFIC COMMITTEE FRB 2009**

- **NEEDS**

- To have and gather long time series of data
- To cover all levels of biodiversity

- **OVERVIEW**

- Many observatories (metropolitan and overseas)
- Operational for years, data collection for a long time, lots of data
- Address various aspects of biodiversity
- Landscape : heterogeneous & data not sufficiently visible



**To improve coordination of research observatories**

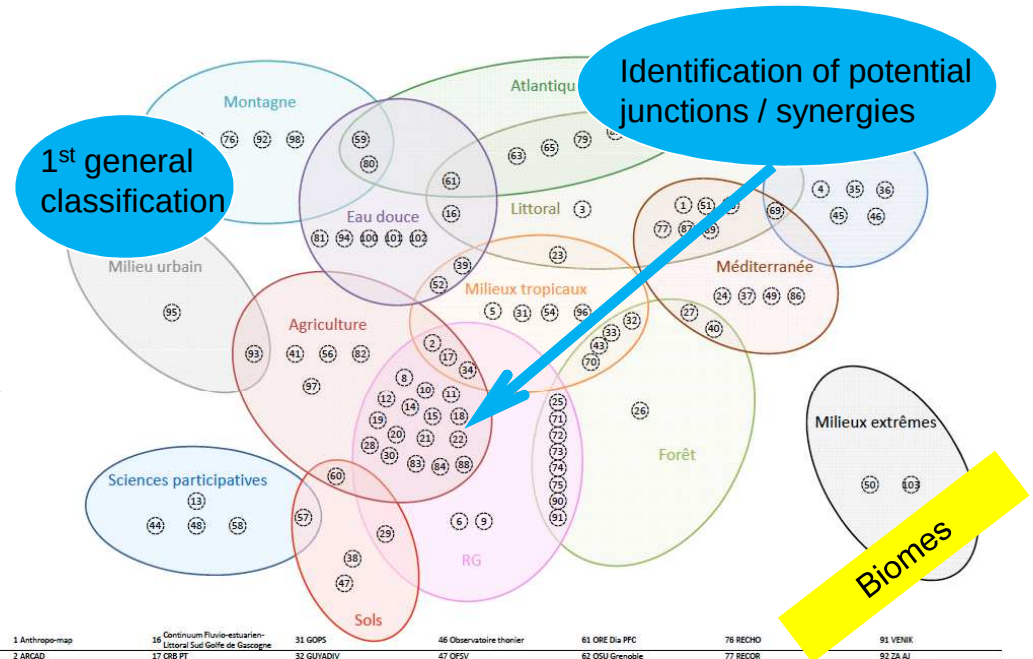
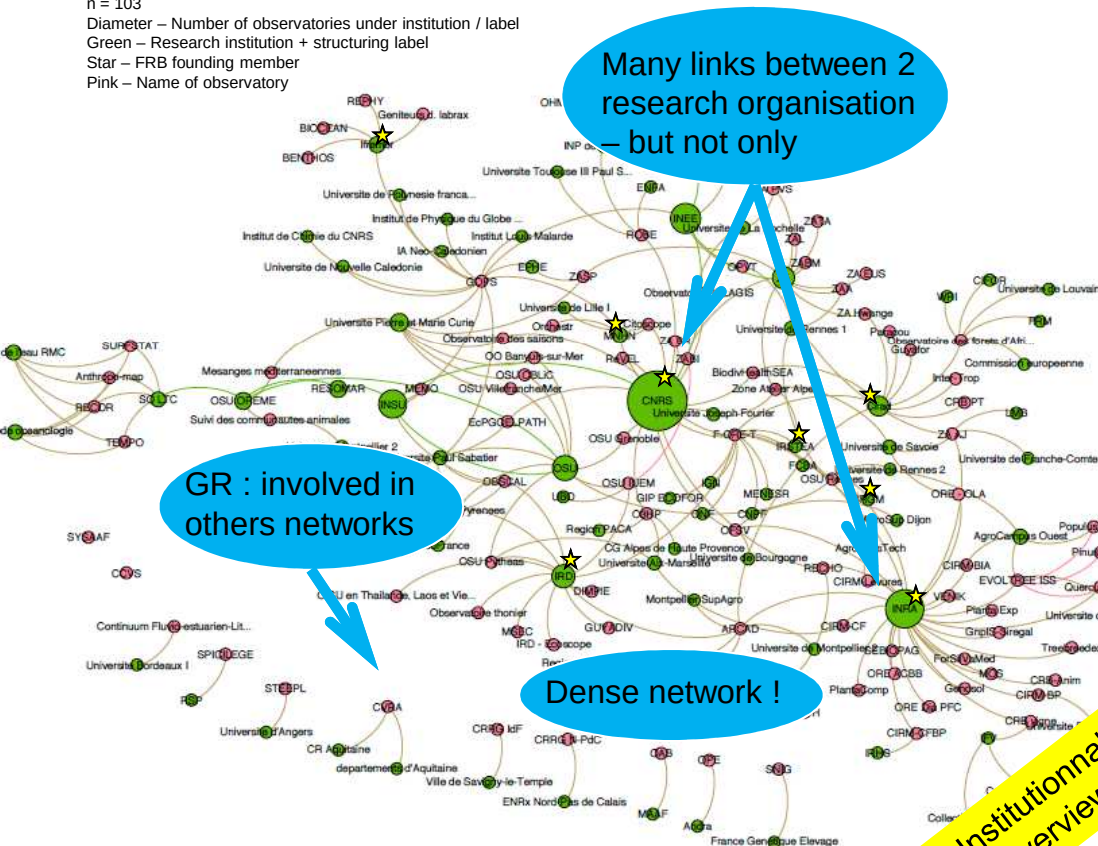
**To harmonizes methods & IS > to valuate data**

**Lauching of ECOSCOPE in 2011 + start in 2012**

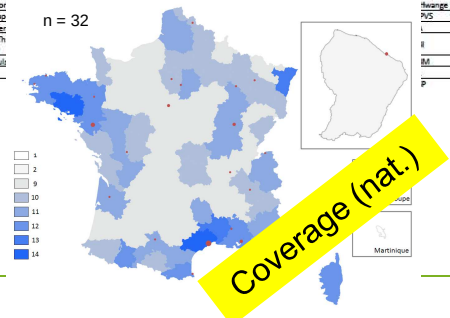
# CURRENT (1)

WHY?

n = 103  
Diameter – Number of observatories under institution / label  
Green – Research institution + structuring label  
Star – FRB founding member  
Pink – Name of observatory



|                   |                                                                |                              |                         |                      |           |                 |
|-------------------|----------------------------------------------------------------|------------------------------|-------------------------|----------------------|-----------|-----------------|
| 1 Anthropo-map    | 16 Continuum Fluvio-estuarien- Littoral Sud Grolle de Gascogne | 31 GORP                      | 46 Observatoire thorion | 61 ORE Dia PFC       | 76 RECHO  | 91 VENIK        |
| 2 ARCAD           | 17 ORB PT                                                      | 32 GUYADIV                   | 47 OFSV                 | 62 OSU Grenoble      | 77 RECOR  | 92 ZA AJ        |
| 3 BENTHOS         | 18 ORB vigne                                                   | 33 Guyard                    | 48 Vigne Nature         | 63 OSU LUEM          | 78 RENSEE | 93 ZA Armerique |
| 4 BIOCEAN         | 19 ORB-Arim                                                    | 34 Inter-Trop                | 49 ORB BNP              | 64 OSU Midi-Pyrenees | 79 REPHY  | 94 ZA BR        |
| 5 Biodi-HealthSEA | 20 ORB Liff                                                    | 35 BIP- Ecoscope             | 50 ORB GUY              | 65 OSU OBLIC         | 80 BeVEL  | 95 ZA BP        |
| 6 CCVS            | 21 ORB N-Ric                                                   | 36 MEMO                      | 51 ORB Littor           |                      |           |                 |
| 7 CEMEB           | 22 OVR                                                         | 37 Mesanges mediterraneennes | 52 ORB Olyp             |                      |           |                 |
| 8 ORB-Ba          | 23 ORBIE                                                       | 38 MOS                       | 53 ORB Punt             |                      |           |                 |
| 9 ORB-BP          | 24 EupGOELPATH                                                 | 39 MSEC                      | 54 OSU en Th Vietnam    |                      |           |                 |
| 10 ORB-CF         | 25 EVOLUTHEE ISS                                               | 40 O3HP                      | 55 OO Banyoli           |                      |           |                 |
| 11 ORB-CBP        | 26 FONG-T                                                      | 41 OAB                       | 56 OPE                  |                      |           |                 |
| 12 ORB-Leuxes     | 27 ForSiVaMed                                                  | 42 ORSCAL                    | 57 OPVT                 |                      |           |                 |



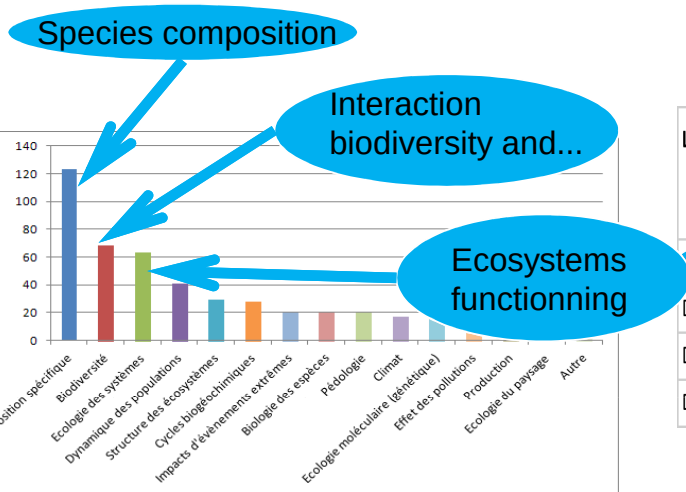
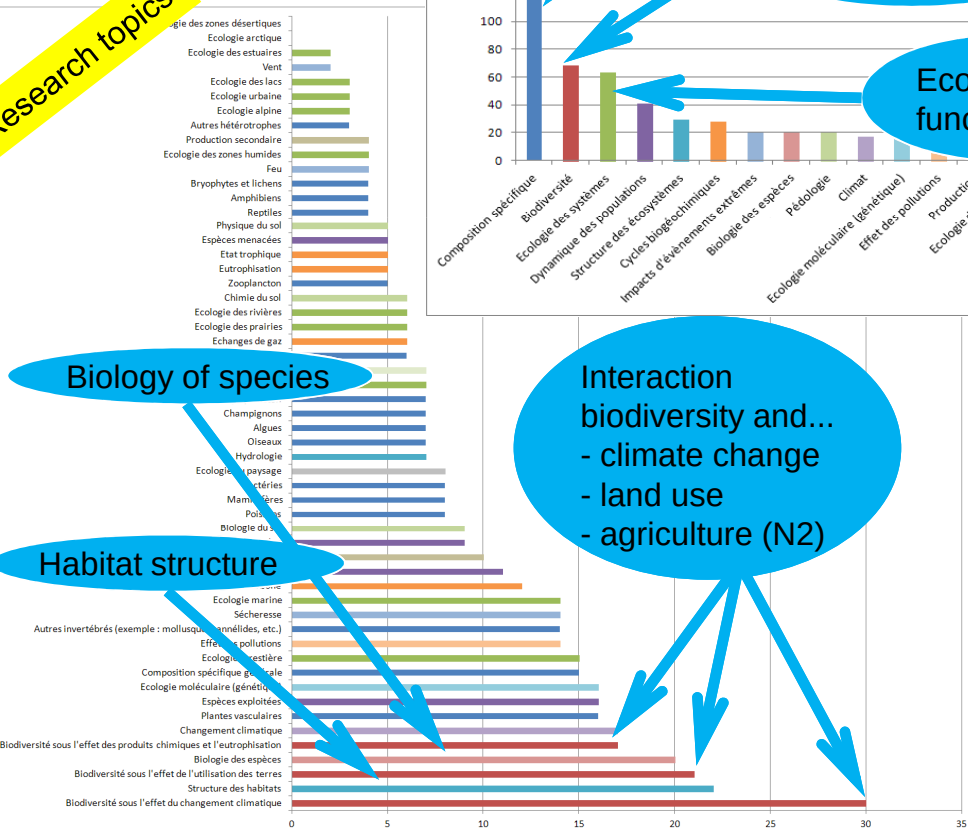
« Institutionnal » overview

# CURRENT (2)

WHY?

n = 57  
Themes : LTER classification  
Threats : IUCN classification  
Several answers possible

Research topics



**Liens entre objectifs principaux et niveaux d'organisation suivis au sein des dispositifs**

|                                   | +                                                       | +                                               | -                             | -                                          | -     |
|-----------------------------------|---------------------------------------------------------|-------------------------------------------------|-------------------------------|--------------------------------------------|-------|
|                                   | Conservation ou conservation des ressources domestiques | Services écologiques permis par la biodiversité | Protection de la biodiversité | Valeurs de la biodiversité et des services |       |
| <b>Species</b>                    | 86,0%                                                   | 63,6%                                           | 90,5%                         | 86,7%                                      | 83,3% |
| Diversité des communautés         | 65,1%                                                   | 22,7%                                           | 61,9%                         | 53,3%                                      |       |
| Diversité infra-spécifique        | 41,9%                                                   | 77,3%                                           | 28,6%                         | 40,0%                                      |       |
| Diversité des traits fonctionnels | 39,5%                                                   | 40,9%                                           | 61,9%                         |                                            |       |

Biodiversity level General aim

| TYPES DE PRESSIONS                                  | Nombre de dispositifs | Fréquence parmi 57 |
|-----------------------------------------------------|-----------------------|--------------------|
| <b>Climate change and severe wheather</b>           | 32                    | 56%                |
| <b>Agriculture and aquaculture</b>                  | 28                    | 49%                |
| <b>Modification des systemes naturels</b>           | 23                    | 40%                |
| <b>Utilisation des ressources biologiques</b>       | 22                    | 39%                |
| <b>Intrusions et perturbations anthropologiques</b> | 19                    | 33%                |
| <b>Pollution</b>                                    | 17                    | 30%                |
| <b>Urbanisation</b>                                 | 16                    | 28%                |
| <b>Espèces et gènes invasifs</b>                    | 9                     | 16%                |
| <b>Productions énergétiques et minières</b>         | 6                     | 11%                |
| <b>Infrastructures de transport et de services</b>  | 6                     | 11%                |
| <b>Événements géologiques</b>                       | 2                     | 4%                 |

Threats

# ECOSCOPE <sup>(1)</sup>

- **VISION & SCIENTIFIC CHALLENGE**

- **Complementarities between observations + Link data producers - users**

- **MAIN OBJECTIVE**

- **To coordinate observatories** (methods, information systems, measured variables) and to reinforce them in order to :
  - better organize data collection, management, diffusion and (re)use
  - enhance synergies and scientific cross-work

- **DELIVERABLES**

- **An integrated national network of biodiversity research observatories fully accessible to stakeholders**
- To have observation systems on all biodiversity organization levels



# ECOSCOPE - NETWORK (2)

## ▪ RESEARCH OBSERVATORIES NETWORK (23)



### RGscope

10 OS dedicated to  
domesticated  
genetic resources

Plants, Forests, Animals, MO

### Citoscope

3 OS based on  
citizen sciences and  
framed by research  
organisms

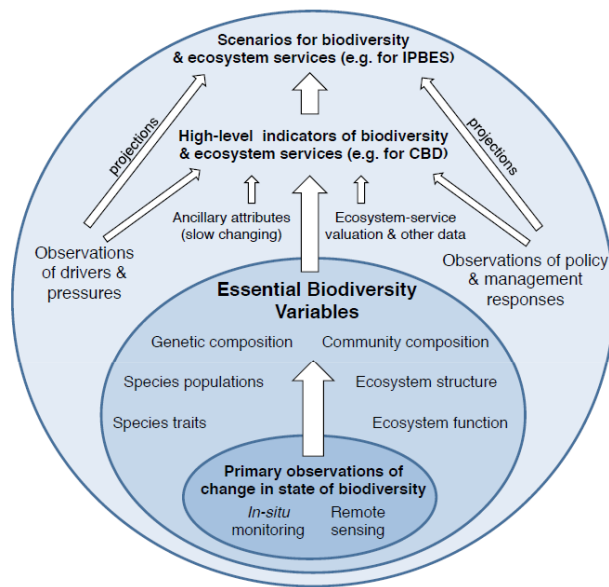
### Thematic

10 OS focusing on  
different  
ecosystems

+ others to be  
integrated

- o Multi-scales approach / all levels of biodiversity organization / different types of data
- o Several types of stakeholders (researchers, socio-economic players, citizens)
- o **Integrates the emerging concept of Essential Biodiversity Variables (EBVs)**

# ESSENTIAL BIODIVERSITY VARIABLES (1)



## 6 EBVs classes

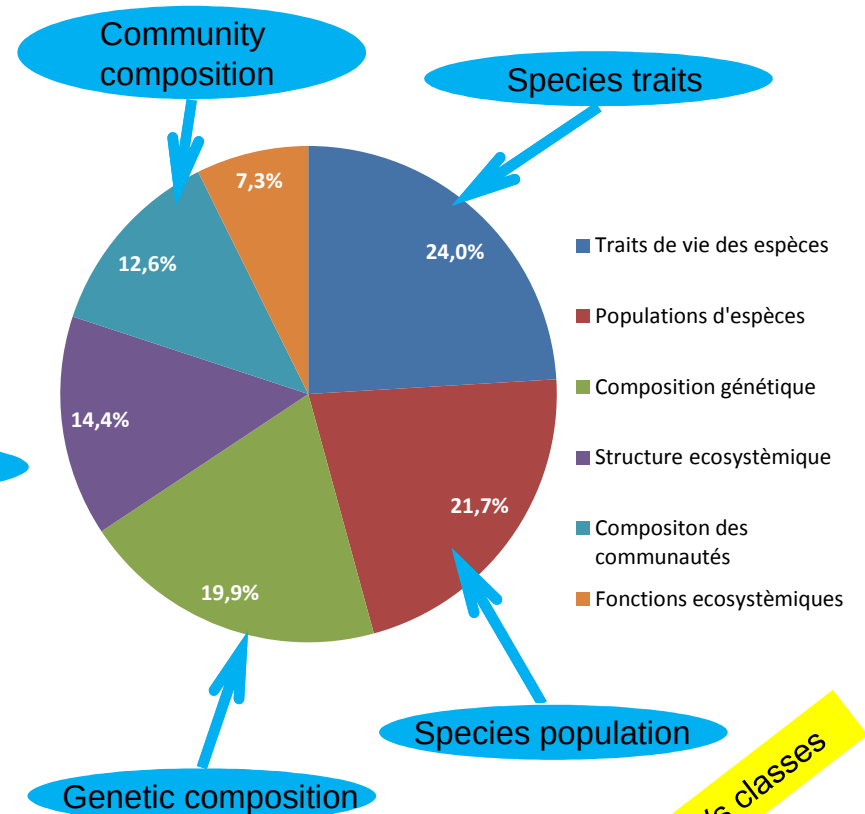
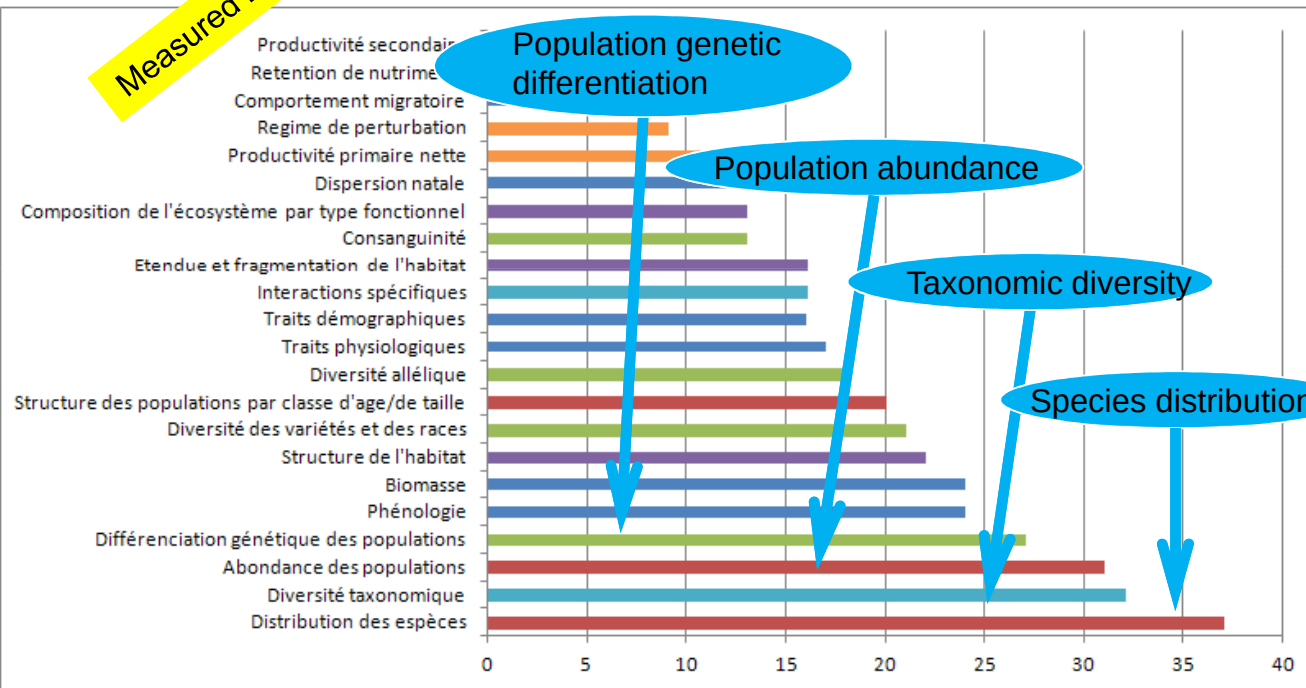
Genetic composition  
Species populations  
Species traits  
Community composition  
Ecosystem function  
Ecosystem structure

- ✓ Conceived by GEO BON collaborators (Pereira et al. (2013) « Essential Biodiversity Variables », Science, Vol. 339, 18 Jan. 2013)
- ✓ Inspired by the Essential Climate Variables (ECV) (GIEC)
- ✓ **Help observation communities to define (think about) a minimum set of essential measurements to capture major dimensions of biodiversity change**
- ✓ Help observation communities to harmonise monitoring, by identifying how variables should be sampled and measured
- ✓ **Facilitate data integration providing an intermediate abstraction layer between primary observations & indicators**
- ✓ Standardise an ontology for biodiversity and harmonise measurements, observations, and protocols
- ✓ Provide a framework to establish a Global Observation System
- ✓ Endorsed by the CBD & in line with the 2020 Aichi targets C

# ESSENTIAL BIODIVERSITY VARIABLES (2)

n = 57  
EBVs classification : GEO BON  
Several answers possible

Measured EBVs



EBVs classes

# ECOSCOPE - FRAMEWORK <sup>(3)</sup>

## ▪ INSTITUTIONAL SUPPORT AND RECOGNITION

- o **Inter-organisms** (CNRS, Ifremer, INRA,IRD, Irstea, MNHN)
- o Scientific coordination Denis Couvet (MNHN) – Operational coordination FRB
- o **SOERE** = Observation and Experimentation System for Environmental Research by the research organism's alliance (AllEnvi) <sup>(2011)</sup>
- o **National Research Infrastructure** <sup>(2012)</sup>

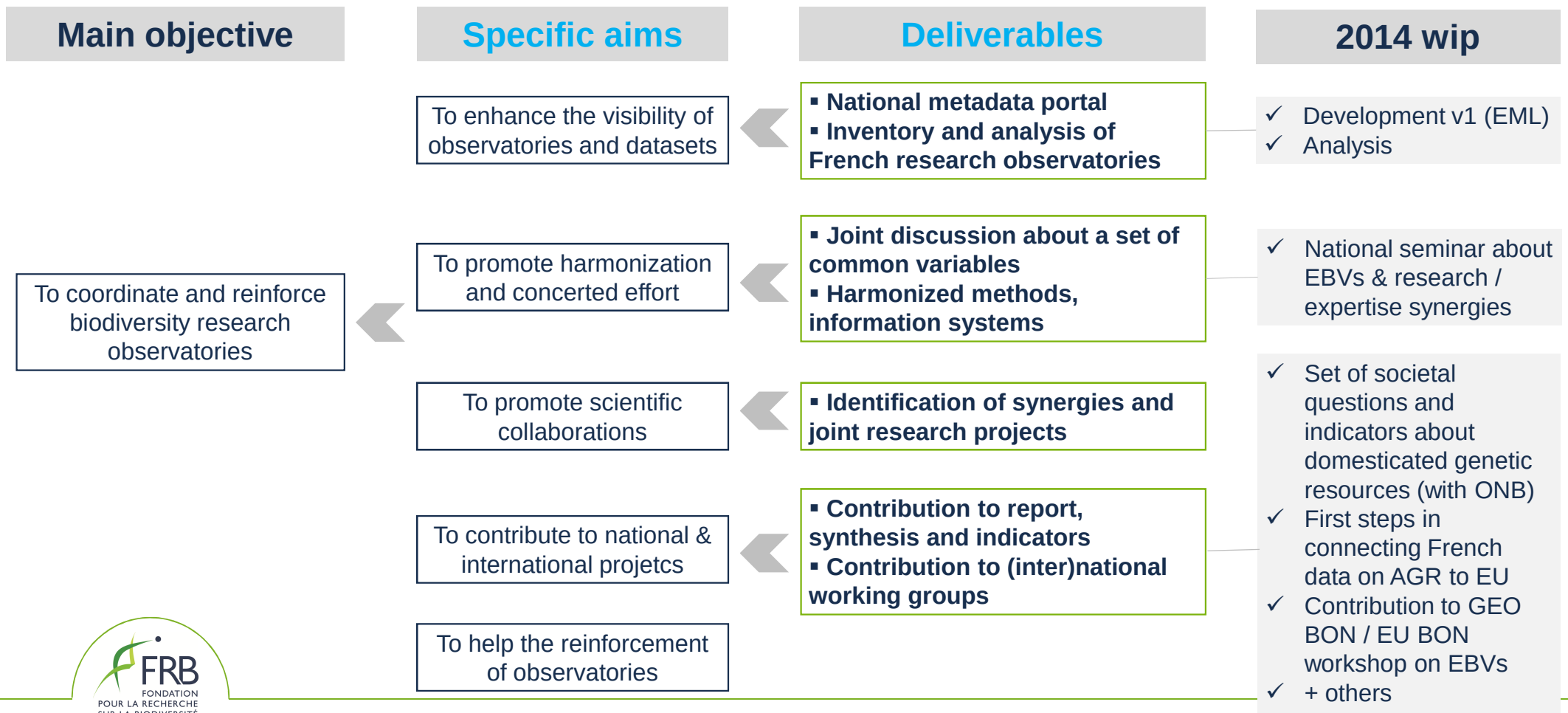
+

**BON** = National Biodiversity Observation Network by GEO BON <sup>(2012)</sup>

**Associated partner** to EU BON (2014)



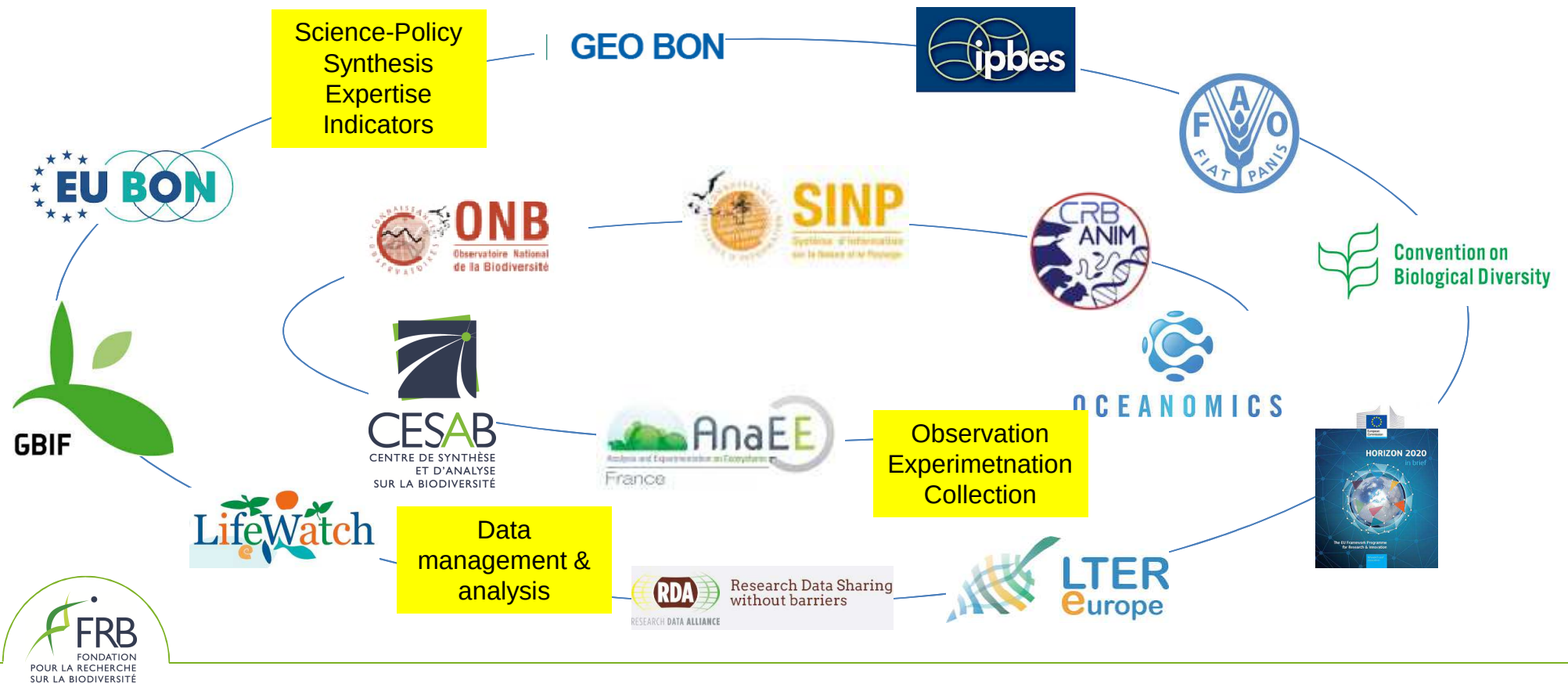
# IMPLEMENTATION <sup>(1)</sup>



# IMPLEMENTATION - COLLABORATION

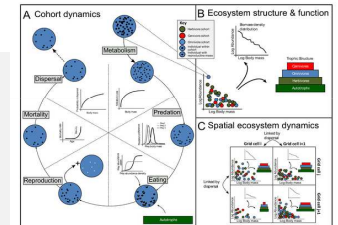
(2)

## ▪ To work together



# IMPLEMENTATION – WP 2015 (3)

| Deliverable                                                                                                                                                   | 2015                                                                                                                                                                                                                                                                                                          |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <ul style="list-style-type: none"> <li>▪ National metadata portal</li> <li>▪ Inventory and analysis of French research observatories</li> </ul>               | <ul style="list-style-type: none"> <li>✓ Implementation of the portal with described datasets</li> <li>✓ Analysis by the scientific and technical committee (synergies, gaps, actions)</li> </ul>                                                                                                             |
| <ul style="list-style-type: none"> <li>▪ Joint discussion about a set of common variables</li> <li>▪ Harmonized methods, information systems</li> </ul>       | <ul style="list-style-type: none"> <li>✓ <b>Workshop on Ecosystem (structure, function) EBVs classes</b></li> <li>✓ Workshop on Open data strategies, data management plan</li> <li>✓ Workshop on standards (with TDWG ?)</li> <li>✓ Workshop (?) on collections associated to observation systems</li> </ul> |
| <ul style="list-style-type: none"> <li>▪ Identification of synergies and joint research projects</li> </ul>                                                   | <ul style="list-style-type: none"> <li>✓ <b>Annual meeting “Biodiversity and Climate Change” (essential variables, general model of ecosystem, interaction with socio-economic research community)</b></li> </ul>                                                                                             |
| <ul style="list-style-type: none"> <li>▪ Contribution to report, synthesis and indicators</li> <li>▪ Contribution to (inter)national working group</li> </ul> | <ul style="list-style-type: none"> <li>✓ Continue actions on indicators and genetic resources (ONB, FAO, ministries)</li> <li>✓ Continue contribution to GEO BON / EU BON + others</li> </ul>                                                                                                                 |



Harfoot MBJ, Newbold T, Tittensor DP, Emmott S, et al. (2014) Emergent Global Patterns of Ecosystem Structure and Function from a Mechanistic General Ecosystem Model.

# THANK YOU

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Web development