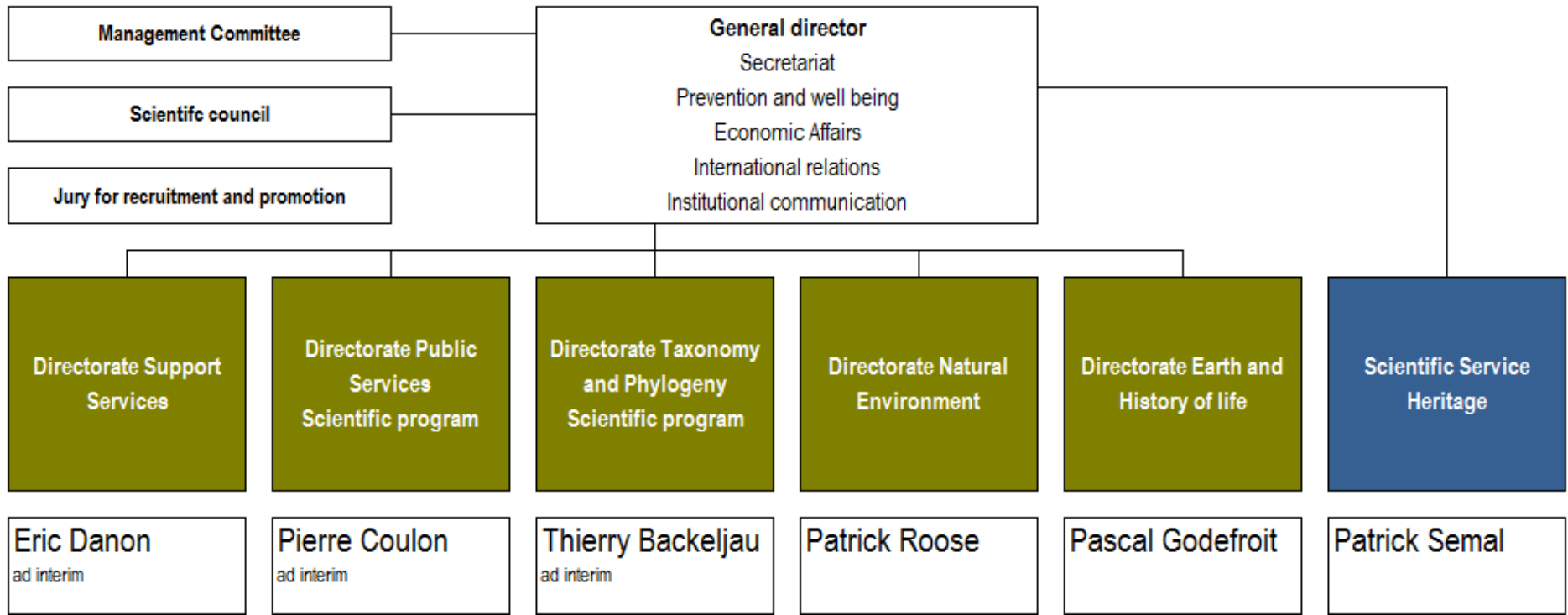
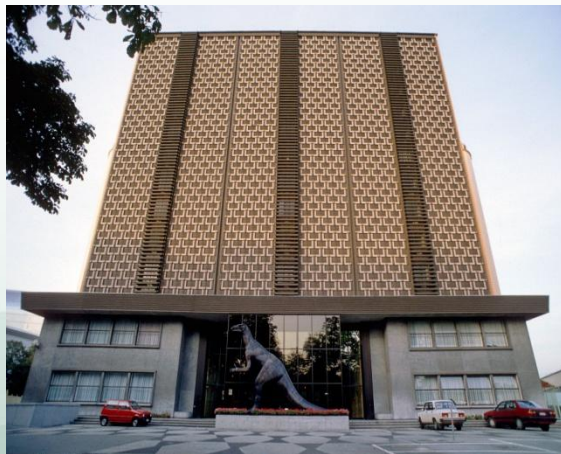


museum 
Operational Directorate Natural Environment
OD Nature | OD Natuur | DO Nature



Who are we?

- About 100 people
- Large and diverse expertise
- Strong reputation in the respective fields
- Spread over 3 locations



Brussels



Woluwe



Oostende

We have expertise in

- Ecology
- Molecular biology
- Nature conservation and protection
- Biodiversity
- Chemistry
- Hydrodynamics
- Modeling
- Databases
- Image processing

We cover

- The terrestrial environment
- The freshwater environment
- The marine environment
- Worldwide



Mission

- The study of the biotic and abiotic components of the natural environment and the interactions of the systems that form part of it.
- Providing scientific expertise within the domains of competence including running a permanent monitoring program for the North Sea and capacity building in the field of biodiversity in developing countries.
- Representing the Federal state in diverse international bodies and instruments.
- The management and improvement of databases and major scientific instruments such as the RV Belgica.

VISION

“To be a Centre of excellence in fundamental and applied research of biodiversity and ecosystems in support of the protection and sustainable management of natural environments.”

OD Natural Environment: output

Policy support

Marine Policy Support an monitoring

Biodiversity Policy Support

Nature conservation Support

Capacity building

Services

Management Belgica

Operational measurements

Chemical analyses

Management and development of scientific databases and websites

Biochemical analyses

Operational Models

Bird ringing

Research

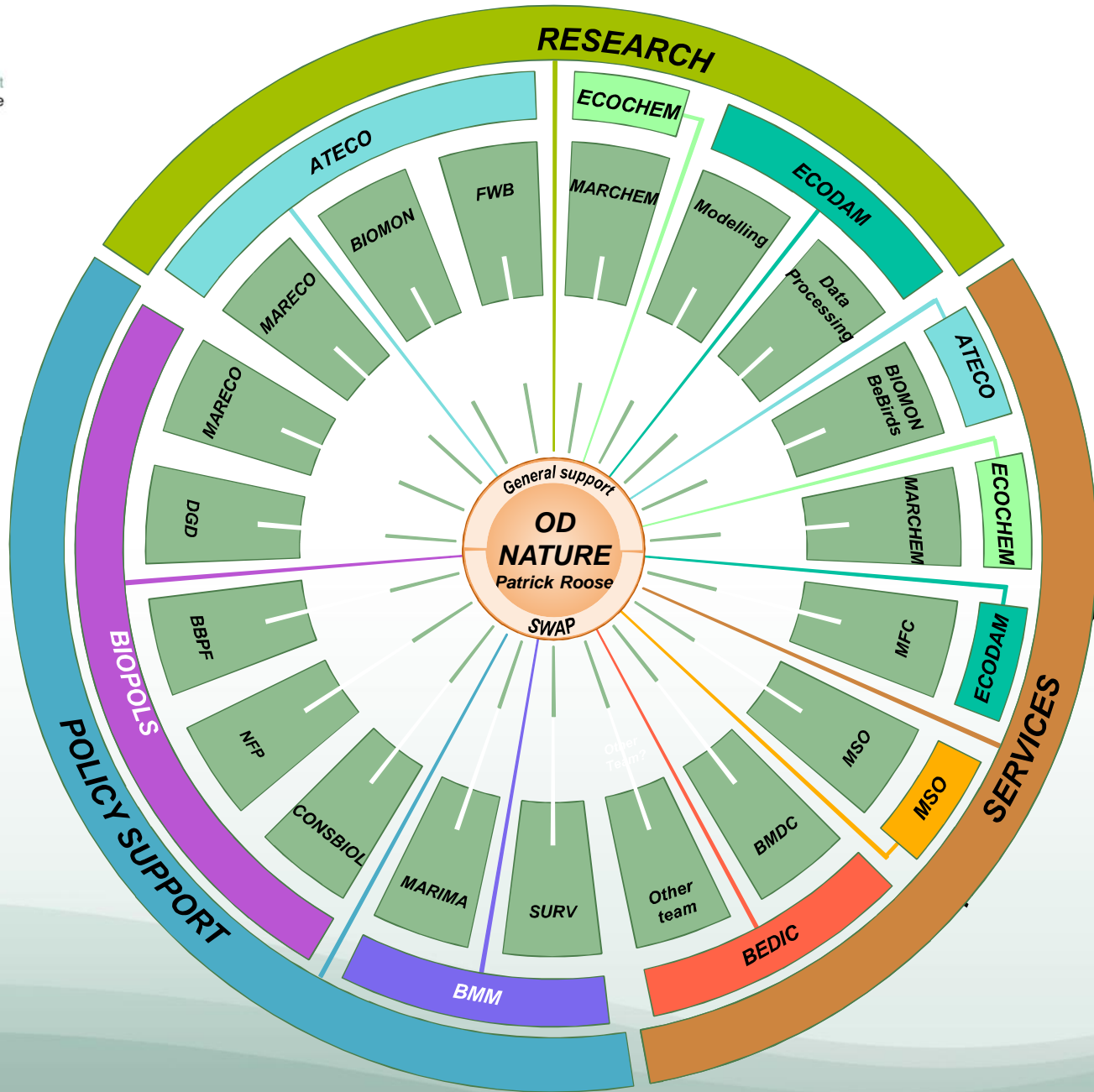
Scientific research ss. on the fundamental study and assessment of ecosystems and their evolution in function of their protection and management

Development of scientific tools

Providing scientific expertise e.g. environmental impact assessments

Operational Directorate Natural Environment / Operationele Directie Natuurlijk Milieu / Direction Opérationnelle Milieux Naturels

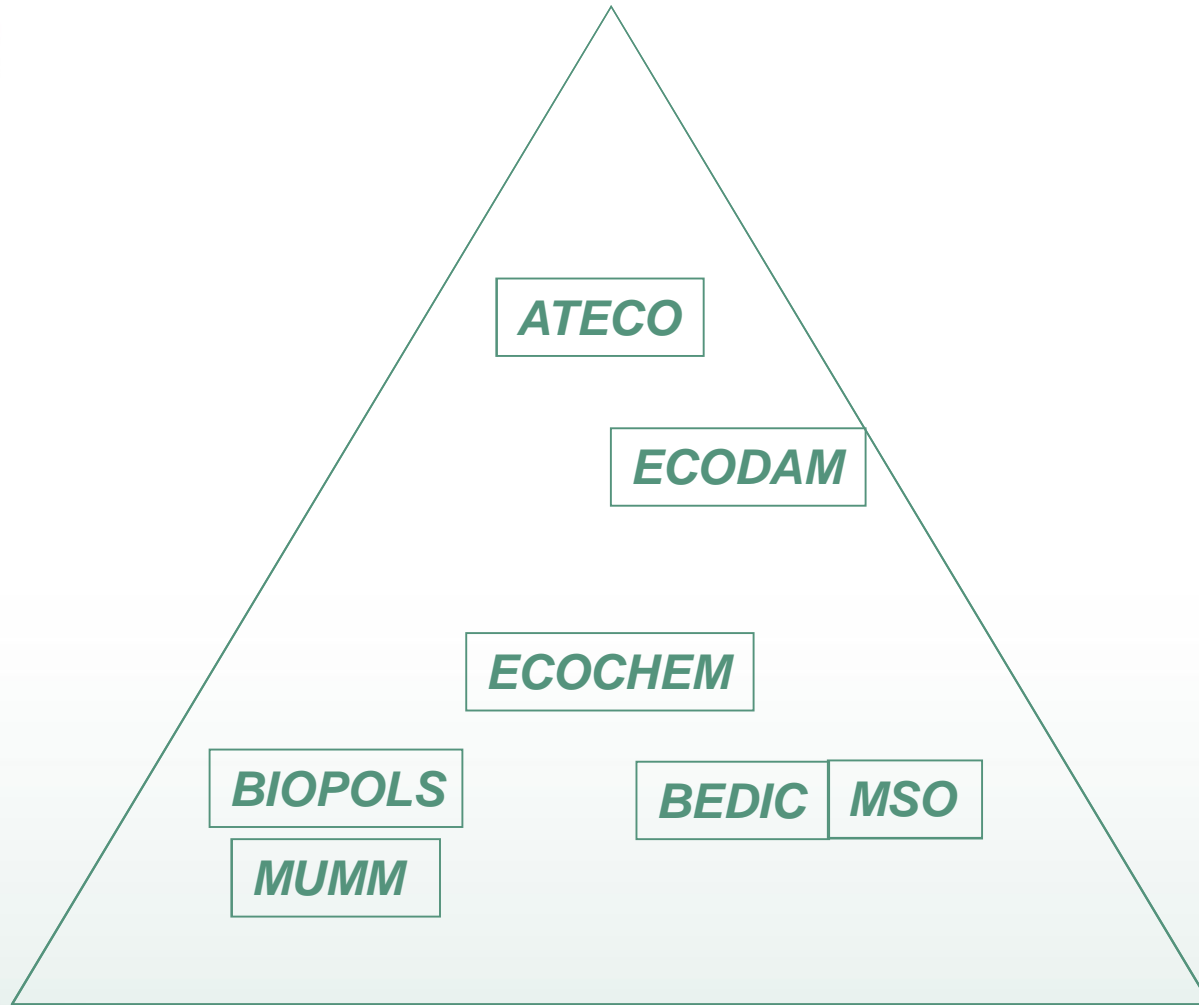
- Aquatic & Terrestrial Ecology (**ATECO**) / Aquatische en Terrestrische Ecologie / Ecologie Aquatique et Terrestre
- Ecosystems Physico-Chemistry (**ECO-CHEM**) / Fysico-Chemie van Ecosystemen / Physico-chimie des Ecosystèmes
- Ecosystems data processing and modelling (**ECODAM**) / Dataverwerking en modellering van ecosystemen / Traitement des données et modélisation des écosystèmes
- Belgica & Measurement Services Oostende (**MSO**) / Belgica en Meetdienst Oostende / Belgica et Service de mesures Ostende
- Biodiversity & Ecosystems Data & Information centre (**BEDIC**) / Data en informatiecentrum voor biodiversiteit en ecosystemen / Centre de données et d'informations pour la biodiversité et les écosystèmes
- Management Unit of the North Sea Mathematical Models (Sc. Service **MUMM**) / Beheerseenheid van het Mathematisch Model van de Noordzee / Unité de Gestion du Modèle Mathématique de la Mer du Nord
- Belgian Biodiversity Policy Support Group (**BIOPOLS**) / (Belgische) Beleidsondersteuningsgroep voor biodiversiteit / Groupe (belge) d'appui aux politiques de biodiversité



Thank You!



Research



Policy support

Services

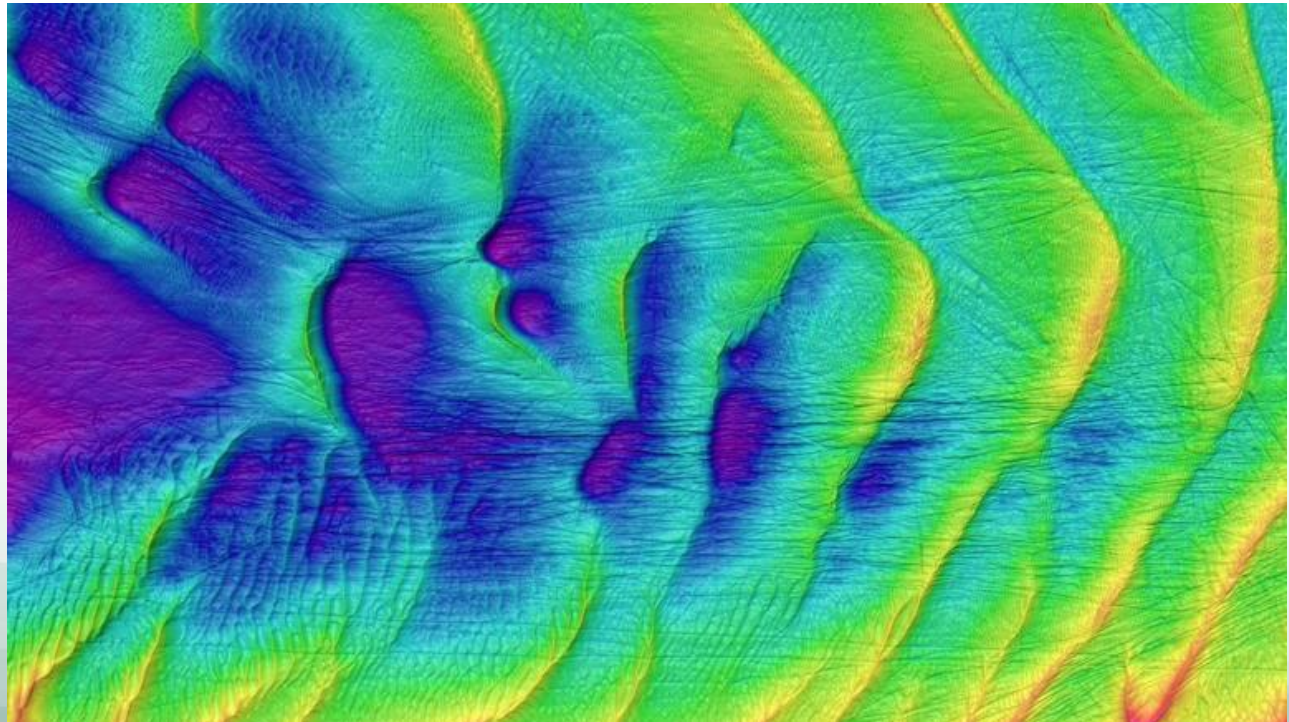
Measurement Service Oostende (MSO)

- RV Belgica
- Federal oceanographic research vessel (1984) (FPS Science Policy)
- Federal and Flemish institutes, Belgian and foreign universities, Belgian Defense
- monitoring, fisheries, geology, biology, **MWDC**, rapid response, education etc.
- 180 days per year at sea



Measurement Service Oostende (MSO)

- Scientific instrumentation
- Data processing
- ZAGRI – BBOX: Control of the bathymetric variation: RV Belgica EM3002 multibeam system



Belgica II?



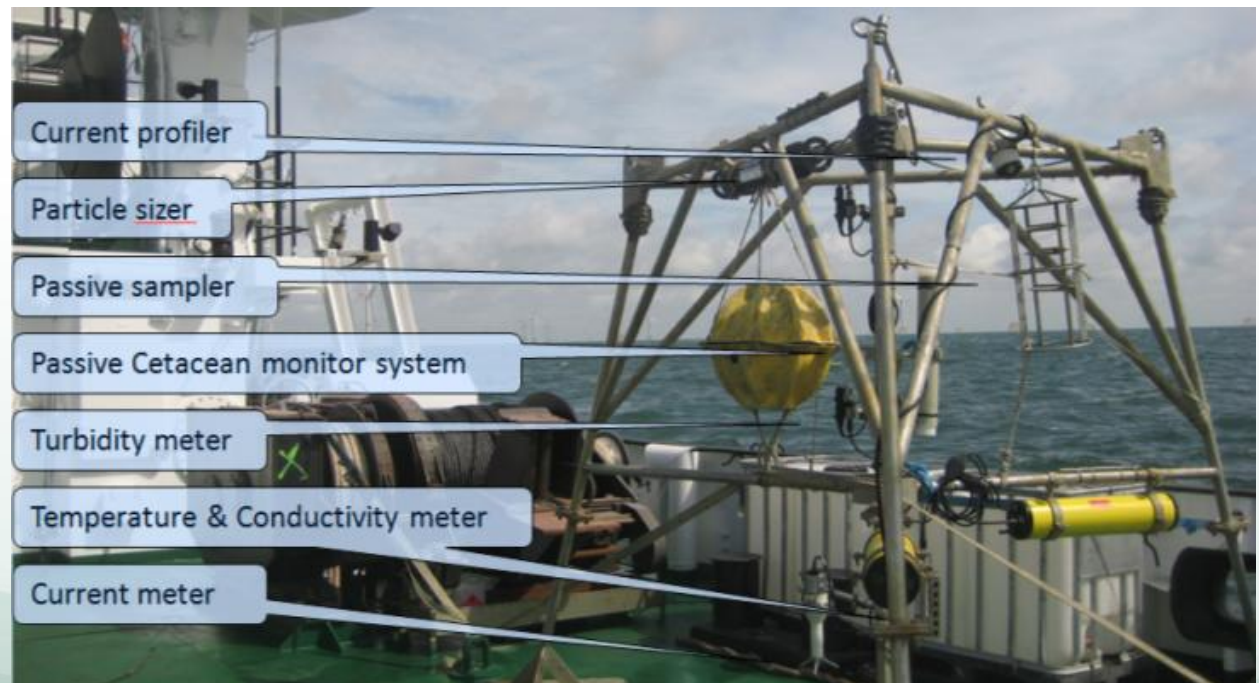
Belgian Marine Data Center (BMDC)

- In situ measurements of RV Belgica
- All data from Belgian research programmes



Suspended matter modelling (SUMO)

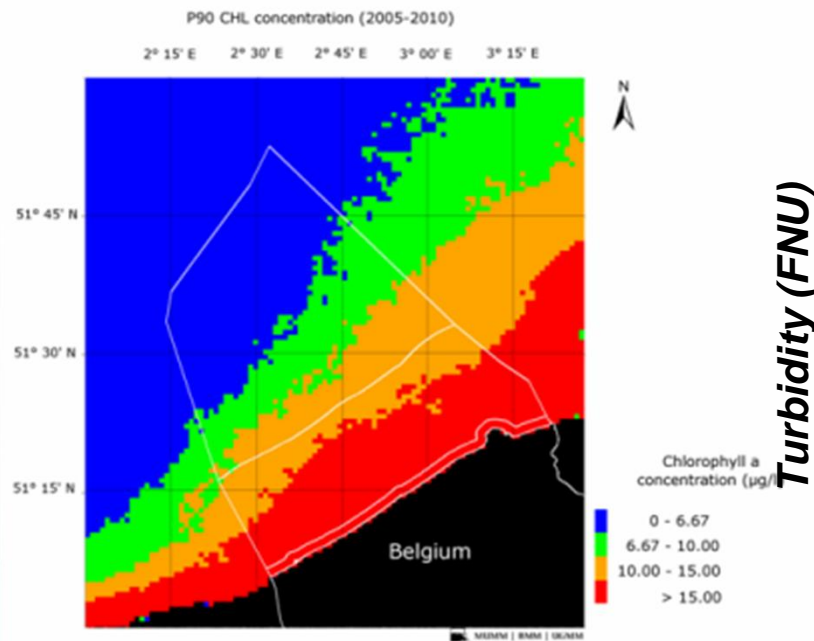
- In situ measurements
- 2 coastal observatories (continuous mooring of tripods)



Remote sensing (REMSEM)

Monitoring of eutrophication (OSPAR, EU/WFD...MSFD)

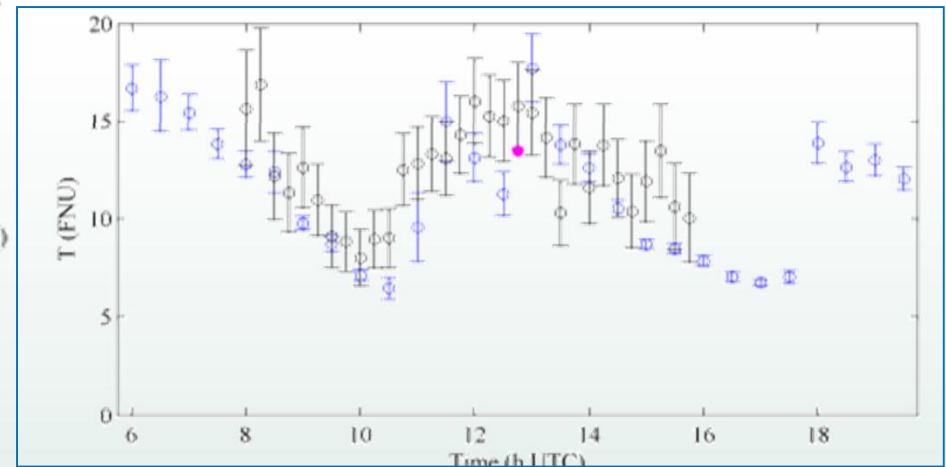
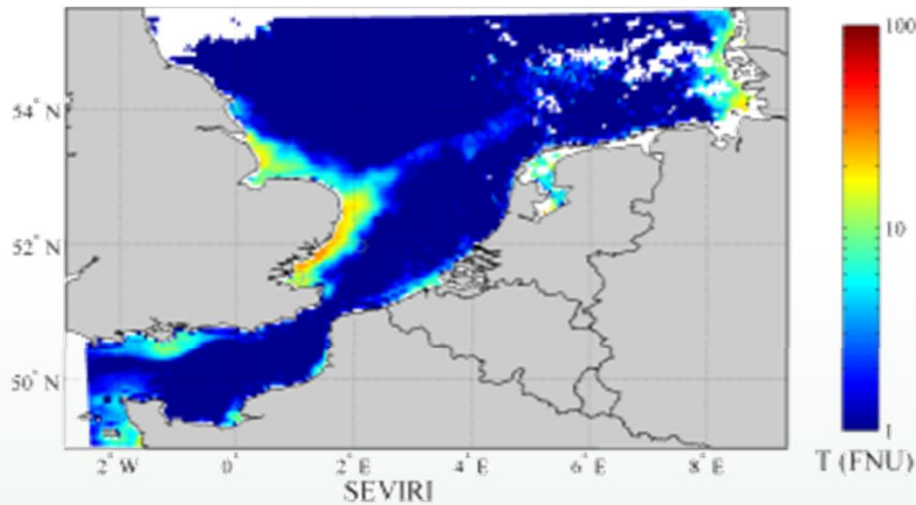
Belgian CHLa 90% Mar-Oct 2005-2010, Water Framework Directive product [L3 processing: D. Vanderzande, RBINS]



[L2 data:
ESA/ACRI-ST]

Remote sensing (REMSEM)

Research to develop next generation satellite sensors
(geostationary ocean colour)

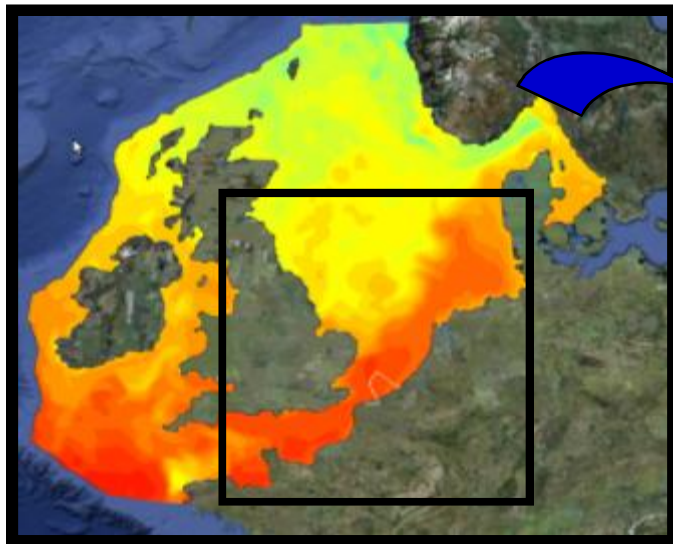


Time in day (UTC)

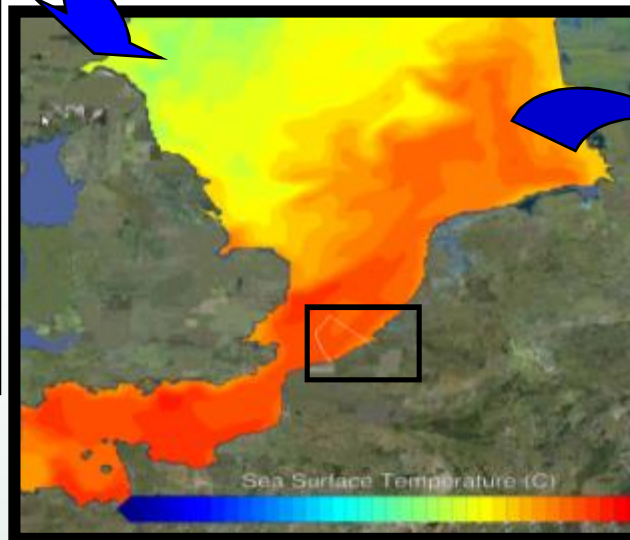
[Neukermans et al, 2012; Neukermans, 2012]

Operational Oceanography (OPTOS)

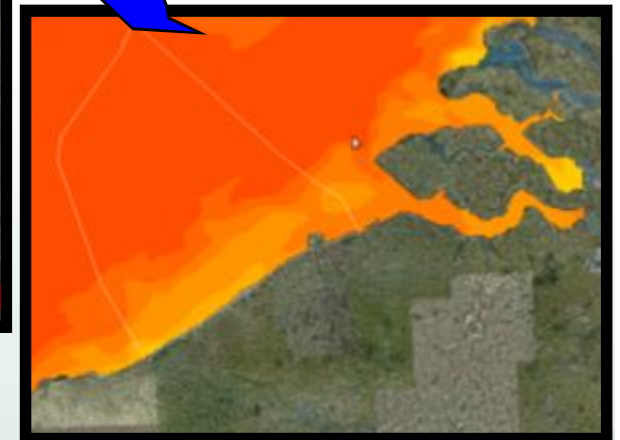
Operational modelling: 5 days ahead forecast operated twice a day:
waves , sea elevation and surges, currents, temperature, salinity, Oil spill drift



2D storm surges (~5km)



3D baroclinic regional model
(~5km, 20 sigma layers)

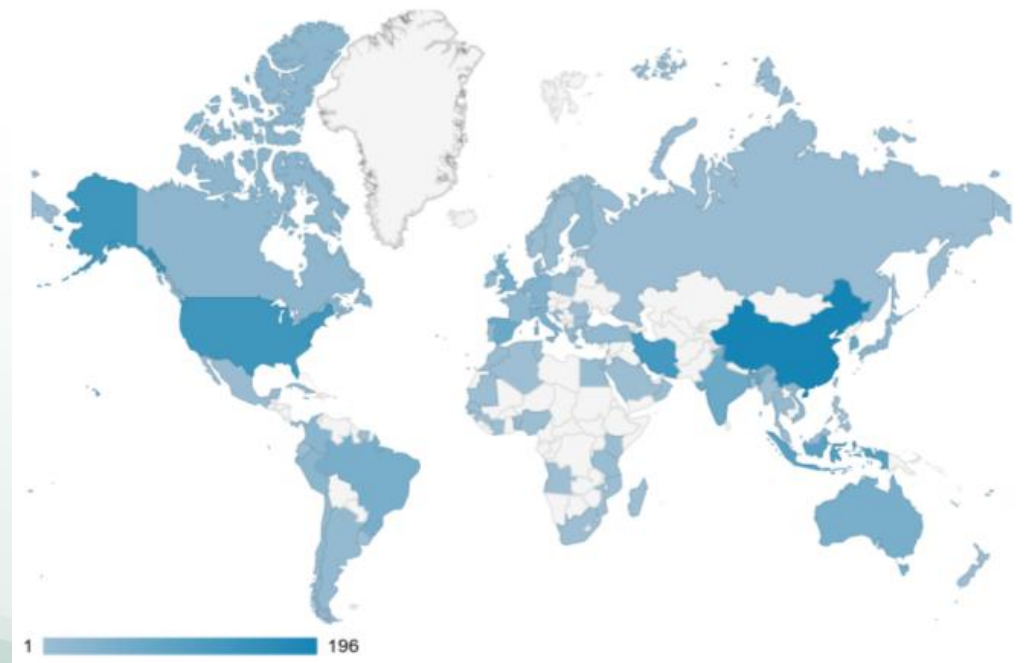


3D baroclinic national model
(~800m, 10 sigma layers)

Operational Oceanography (OPTOS)

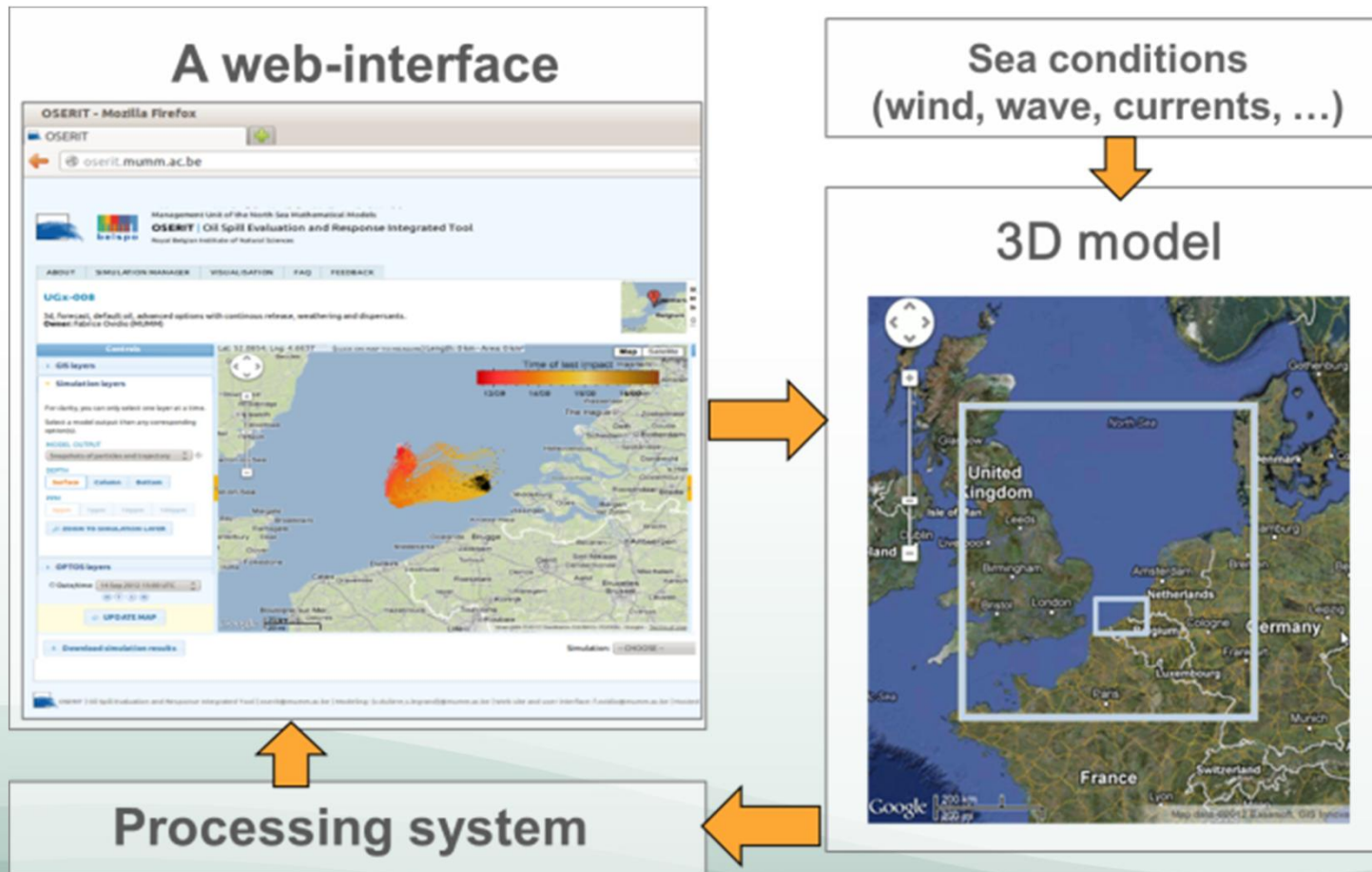
COHERENS: COupled Hydrodynamical Ecological model for REgioNal Shelf seas: 3D multipurpose integrated model for shallow waters (Coastal and shelf seas, estuaries, lagoons, great lakes and reservoirs).

More than 1580 registered users from 87 countries (2013).
Community model, flexible, modular and open-source.



Operational Oceanography (OPTOS)

OSERIT: A "on demand" drift forecast service



Marine Chemistry laboratory (MARCHEM)



THE EXPERTISE



Physico-Chemical

- Salinity
- Temperature
- Pigments
- O₂ (% O₂-saturation)
- SPM
- TOC
- POC
- Grain size analysis

Nutrients

- N-NH₄
- N-NO₂
- N-NO₃
- P-PO₄
- Si-SiO₄
- Total N
- Total P

Organics

- KWS Fingerprinting
- PAHs
- Organotins
- PCBs
- Flame retardants
- OCPs
- Chlorinated Parafines
- ...

Marine ecology (MARECO)

- Technical fields of expertise: GIS mapping and analysis, Scientific diving
- Shared responsibilities and intertwined collaboration...

Hard substrate & invasive species



Underwater noise



Marine mammals

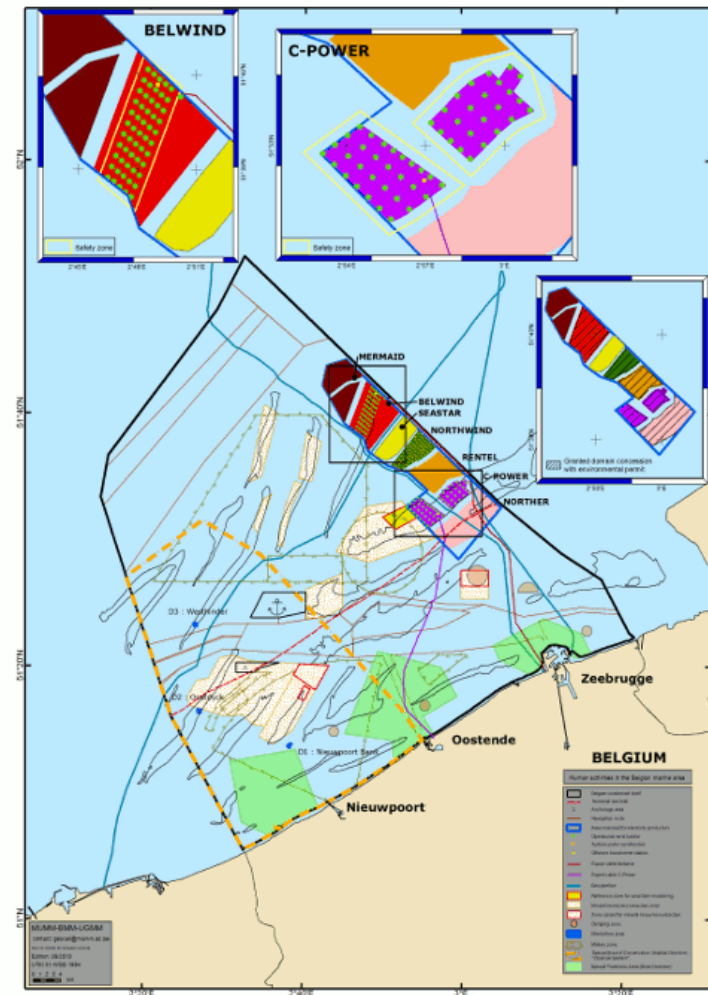


Seabirds



Scientific service MUMM

- All legal obligations
- Permits for activities at sea
- Aerial surveillance programme
- MARIMA and SURV



Marine Management: MARIMA

- Permits for activities at sea
- Wind farms
- Sand extraction
- Aquaculture
- ...



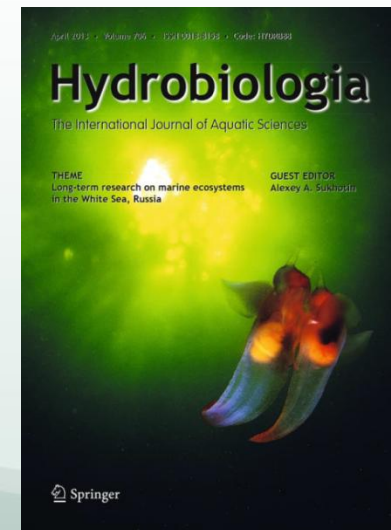
Aerial Surveillance: SURV

- Aircraft of RBINS: Britten Norman Islander
- Aerial observations since 1992
- Oil pollution
- Fisheries control
- Marine processes
- Marine mammals



Fresh Water Biology: FWB

- BIOFRESH: Status, Trends, Pressures, Conservation Priorities of Freshwater Ecosystems
- **FADA**
- Biodiversity in tropical phytothelmata
- Macroinvertebrates in Congo River
- Biodiversity of Belgian pools: Manscape and Pondscape
- Publication Unit RBINS EJT & BJZ



Biodiversity platform

- A BelSPO initiative, based on a cooperation agreement between Fed & regions
- Started off as part of a EU network
- Implemented by RBINS, **DEMNA**, INBO, ULB (SIST)
- Decision-making involves BelSPO (**PO**), **BoD**, host institute directors, promoters and hierarchical superiors, **BBPf** coordination...
- ... within the context of the federal competences (exclusive, shared) related to biodiversity research

National Focal Point to the Convention on Biological Diversity (NFP - CBD)

D) Chairs and coordinates the work of the Steering Committee "Biodiversity Convention" and the Steering Committee on "Bees and Pollinators"
(support to political processes)

C) Enhances public awareness
(outreach)

B.3) Develops training sessions on biodiversity
(scientific and technical support)



A) Ensures an efficient flow of information from and to the CBD Secretariat
(logistical tasks)

B.2) Elaborates national syntheses of information on biodiversity
(scientific and technical support)

B.1) Helps establishing scientifically sound national and federal biodiversity policy
(scientific and technical support)

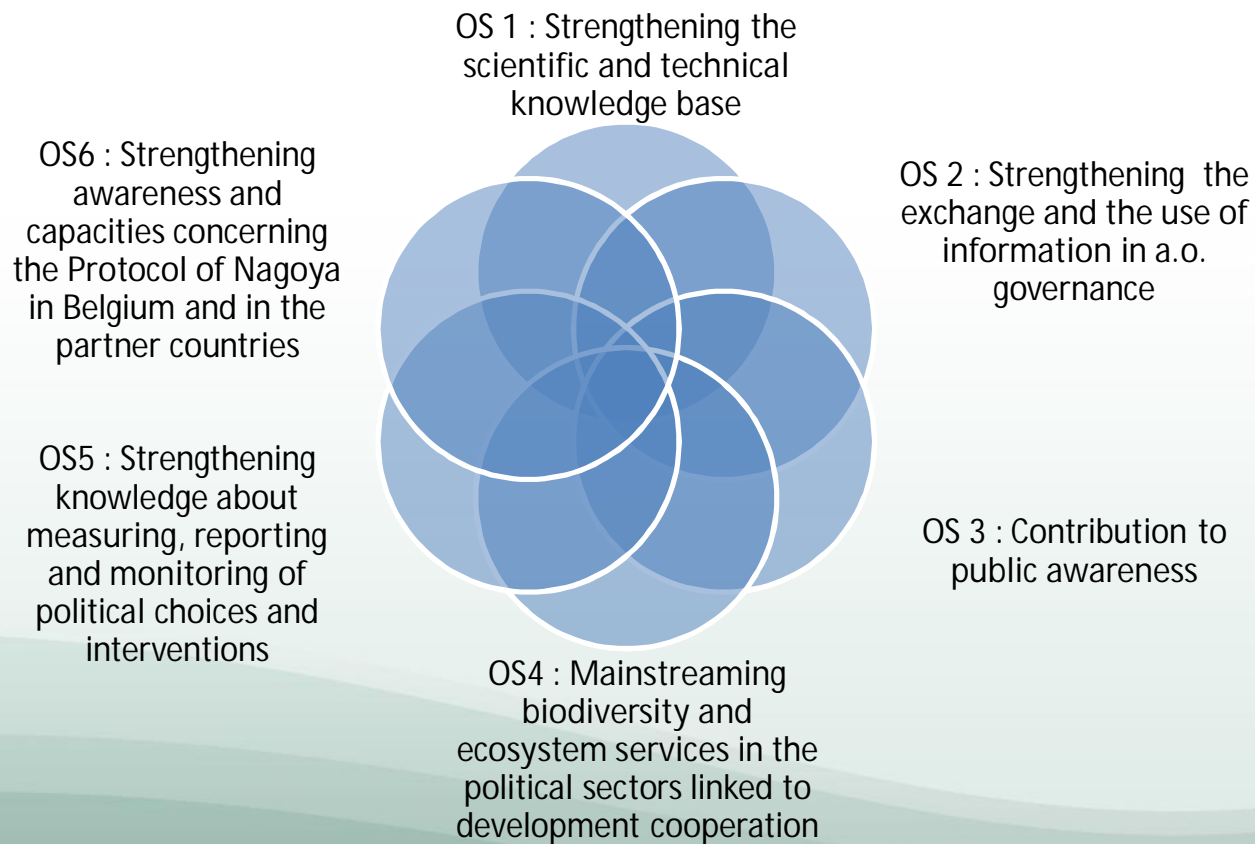
Promotion of the conservation and the sustainable use of biodiversity in and by Belgium.

PFN CDB - Point focal national pour la Convention sur la diversité biologique.

VBD-Nk - Nationaal knooppunt voor het Verdrag inzake biologische diversiteit.

Development cooperation and Biodiversity **CBD-DGD**

- The capacity building programme for biodiversity, sustainable development and eradication of poverty.



Biological evaluation

- Assessment of terrestrial biodiversity
- Ants, termites, wasps
- Large scale biotic inventories: IBISCA
- Large-scale biodiversity surveys: e.g. international expedition organized in Papua New Guinea: terrestrial and marine module, Canopy fauna & flora.



Nature conservation

- Relatively recent scientific discipline
- Central preoccupation is the current biodiversity crisis, in the context of global changes.
- Aridland faunas: the Sahelo-Saharan megafauna, the Central Asian aridland fauna....
- Large Primates, Antarctic and Arctic megafaunas, Southern Saharan large carnivores



Belgian Bird Ringing Center

- Mark and recapture of birds
- Population dynamics (since 1927)
- Tracking of bird migration by GPS transmitters
- Monitoring of invasive or fragile species
- Public health (e.g. avian influenza)



RBINS

www.naturalsciences.be

