

Belgian marine science policy: an interdisciplinary approach in an international context

Workshop on Transforming Science
Ghent, 26 April 2024

dr. Koen Lefever
<https://lefever.space/>

Programme manager
Belgian Science Policy Office

Research affiliate
Centre for Logic and Philosophy of Science
Center Leo Apostel
Vrije Universiteit Brussel



CLPS CENTRE FOR LOGIC &
PHILOSOPHY OF SCIENCE
RESEARCH GROUP



A brief history of Belgian (Marine) Science Policy

Belgian Federal Science Policy since 1895

- **1895:** Frans Schollaert becomes the first Minister for Home Affairs and Sciences & Arts
- **1959:** Creation of the structures for the political and administrative coordination of science policy, including the Interministerial Commission for Science Policy and the National Council for Science Policy.
- **1968:** Creation of the post of Minister for Science Policy (Théo Lefèvre). The Belgian Science Policy Office is established as a State administration.

Federal Scientific Institutions

Fully funded by Belspo

- Royal Belgian Institute of Natural Sciences
- Royal Meteorological Institute
- Royal Belgian Institute for Space Aeronomy
- Royal Observatory of Belgium & Planetarium
- Royal Museum for Central Africa
- Royal Institute for Cultural Heritage
- Royal Museums for Art and History
- Royal Museums of Fine Arts of Belgium
- Royal Library of Belgium
- State Archive

Other research institutions

- Federal
 - Sciensano (Ministry of Health)
 - War Heritage Institute (Ministry of Defense)
 - Nationaal Instituut voor Criminalistiek en Criminologie (Ministry of Justice)
 - Etc...
- Flanders
 - Universities
 - VLIZ: Flemish Marine Institute
 - ILVO: Institute for Farming, Fisheries and Food Research
 - Etc...
- Wallonia
 - Universities
 - Etc...

Belgian Federal Marine Science Policy since 1970

- **1970-1976: Phase I: Project Sea**
 - "assemble a reliable scientific basis and develop modelling techniques to permit both qualitative and quantitative simulation of the impact of natural phenomena or anthropic effects"
 - Budget: 4,4M€
- **1976: Management Unit of the Mathematical Model of the North Sea (MUMM)**
 - Became part of Royal Belgian Institute of Natural Sciences (RBINS) in 1997
- **1977-2010: North Sea Programme Phase II to Phase VII** https://www.belspo.be/belspo/NorthSea/index_en.stm

Belgian Marine Science Policy since 1970 (cont.)

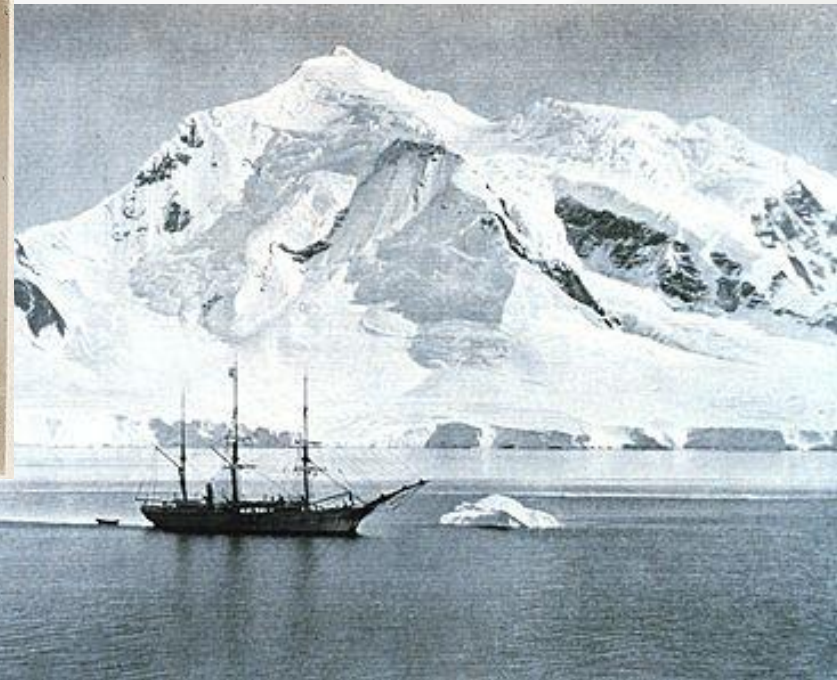
- **2012-2017: Phase VIII**
 - Embedded in the BRAIN-be programme: Belgian Research Action through Interdisciplinary Networks
- **2018-2023: BRAIN-be 2**
- **2024: new research programmes**
 - Policy for Science
 - Science for Policy



Policy
4 Science

Science
4 Policy

RV Belgica 1896-1916



Adrien de Gerlache Antarctic Expedition 1897-1899

RV Belgica A962 1984-2021



Since 2021: RV Borys Aleksandrov, Odesa

RV Belgica 2022



Plane OO-MMM 1975

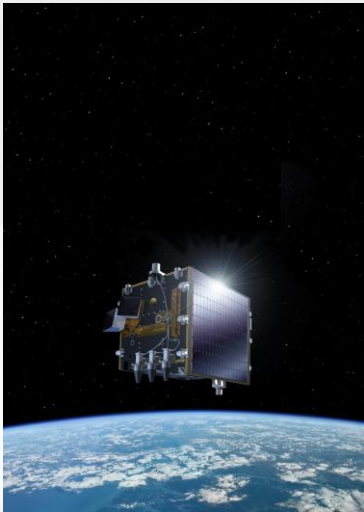


Britten-Norman BN-2A-21 Islander

Earth observation from space



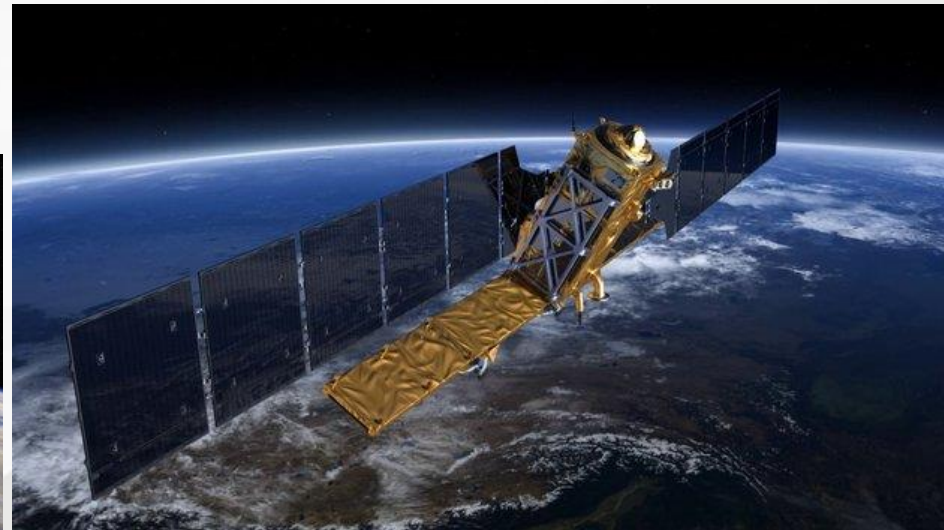
SPOT 4 Satellite



PROBA V Satellite



Ariane 6 launch vehicle



Sentinel 1 Satellite

images by ESA

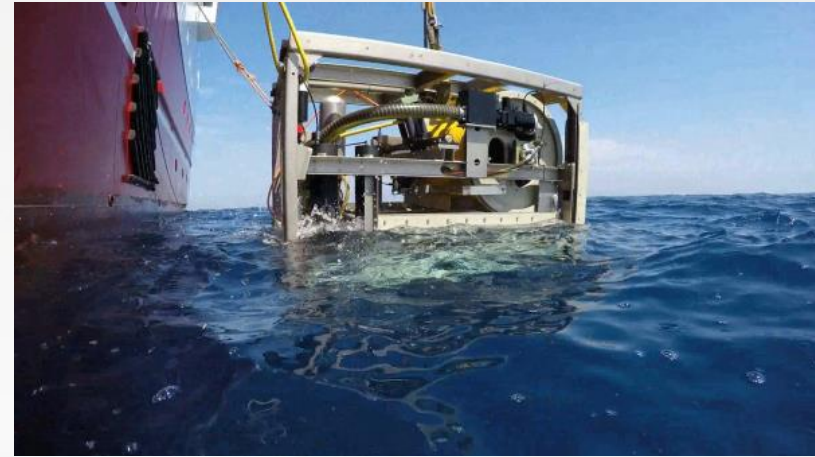
TELSAT I	1985 - 1989
TELSAT II	1989 - 1993
TELSAT III	1993 - 1996
TELSAT IV	1996 - 2000
STEREO I	2001 - 2006
STEREO II	2007 - 2013
STEREO III	2014 - 2022
STEREO IV	2022 - 2029



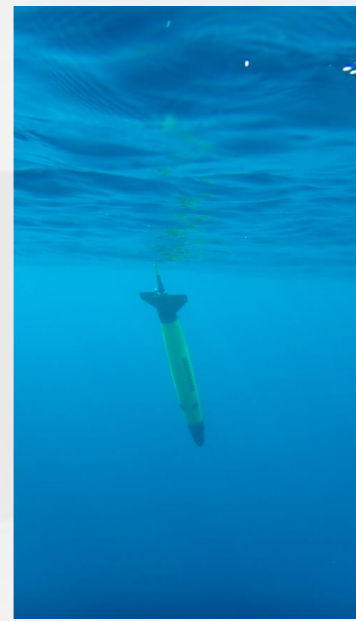
BELGIAN EARTH
OBSERVATION



Flanders: RV Simon Stevin & Robotics



images by VLIZ / VLOOT



National context of Belgian Marine Science Policy

Marine Governance

- The North Sea is a federal responsibility
 - Minister of the North Sea
 - FPS Public Health, Food Chain Safety and Environment
 - FPS Mobility and Transport
 - FPS Economy, SMEs, Self-Employed and Energy
 - FPS Finance: Customs
 - FPS Interior
 - FPS Foreign Affairs
 - Ministry of Defense
 - BELSPO
 - Etc...

Marine Governance (Cont.)

- The coast and inland waters are regional responsibilities
 - Flanders
 - Department of Economy, Science & Innovation (EWI)
 - Flemish Ministry of Mobility and Public Works: Agency for Maritime and Coastal Services, VLOOT
 - De Vlaamse Waterweg NV
 - Etc...
 - Wallonia & French Community
 - Direction générale opérationnelle de la Mobilité et des Voies hydrauliques
 - PSW economy, employment and research
 - Etc...
- Province of West Flanders
- Coastal towns
- Cities with ports:
 - Ostend, Bruges, Nieuwpoort, Antwerp, Ghent

Belgian Research Funders

- Federal:
 - Belpo
- Flanders:
 - Fonds voor Wetenschappelijk Onderzoek (FWO)
 - Vlaamse Agentschap Innoveren en Ondernemen (VLAIO)
 - Department of Economy, Science and Innovation (EWI)
- Wallonia:
 - Fonds de la Recherche Scientifique (FRS–FNRS)
 - Service Public de Wallonie - Department of Research Programmes
- Brussels:
 - Innoviris

innoviris.brussels 
empowering research



DEPARTEMENT
ECONOMIE
WETENSCHAP &
INNOVATIE

VLAIO

fwo Research Foundation
Flanders
Opening new horizons



Belgian Marine Research

- Federal Research Institutes:
 - Royal Belgian Institute for Natural Sciences (RBINS)
 - Royal Belgian Meteorological Institute (RMI)
 - Royal Belgian Institute for Space Aeronomy (BISA)
- Flemish Research Institutes:
 - Flemish Marine Institute (VLIZ: Vlaams Instituut voor de Zee)
 - Flanders Research Institute for Agriculture, Fisheries and Food (ILVO: Instituut voor Landbouw en Visserij- en Voedingsonderzoek)
- Flemish and Walloon Universities

BRAIN-be & BRAIN-be 2

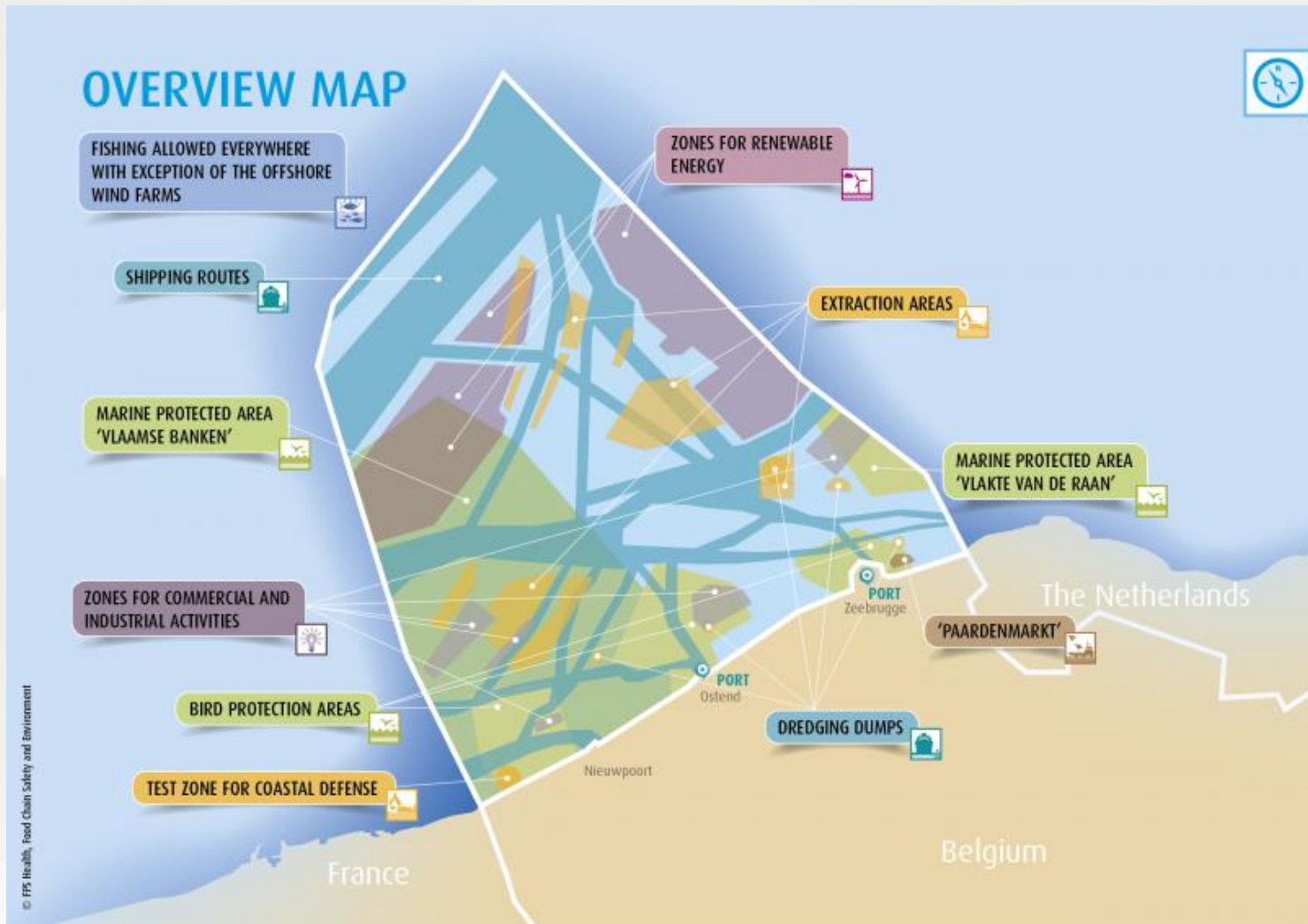
- **INDI67:** Developments of methods to improve the monitoring of MSFD indicators 6 and 7
- **NEWSTHEPS:** New Sampling Tools for Heritage & Emerging Pollutants to facilitate GES assessment in the Marine Environment
- **FACE-It:** New Sampling Tools for Heritage & Emerging Pollutants to facilitate GES assessment in the Marine Environment
- **PERSUADE:** ExPERimental approaches towards Future Sustainable Use of North Sea Artificial HarD SubstratEs
- **CHICXULUB:** Chicxulub 2016 IODP-ICDP deep drilling: from cratering to mass extinction



Policy Making in Belgium

- Advisory committee Sand Extraction
- Advisory Committee Windmill Parks in the North Sea
- Advisory Committee Commercial and Industrial Activities on the North Sea
- Consultative Body Coast Guard
- Belgian Working Group Scientific Diving
 - Certificates:
 - (Advanced) Belgian Scientific Diver
 - North Sea Training
 - Training:
 - Practical: RBINS & VLIZ
 - Theory: inter-university master programme “Oceans & Lakes” (VUB, UA, UGent)
- Advisory committee Marine Spatial Planning
 - Masterplan North Sea 2003
 - On the EU political agenda since 2006
- Etc...

Marine Spatial Planning



International context of Belgian Marine Science Policy

International Marine Governance

- European Union
 - European Commission
 - DG MARE: Maritime Affairs & Fisheries
 - DG RTD: Research & Innovation
 - DG JRC: Joint Research Centre
 - Council of the European Union
 - European Council
 - European Parliament
- United Nations
 - UNCLOS: UN Convention on the Law of the Sea
 - ISA: International Seabed Authority
 - UNESCO
 - IOC: Intergovernmental Oceanographic Commission



MSFD: EU Marine Strategic Framework Directive

2008, 2017

1. Biological diversity 	2. Non-indigenous species 	3. Population of commercial fish/shellfish 	4. Elements of marine food webs 
5. Eutrophication 	6. Sea floor integrity 	7. Alteration of hydrographical conditions 	8. Concentrations of contaminants 
Good Environmental Status	9. Contaminants in fish/seafood for human consumption 	10. Marine litter 	11. Introduction of energy including underwater noise 

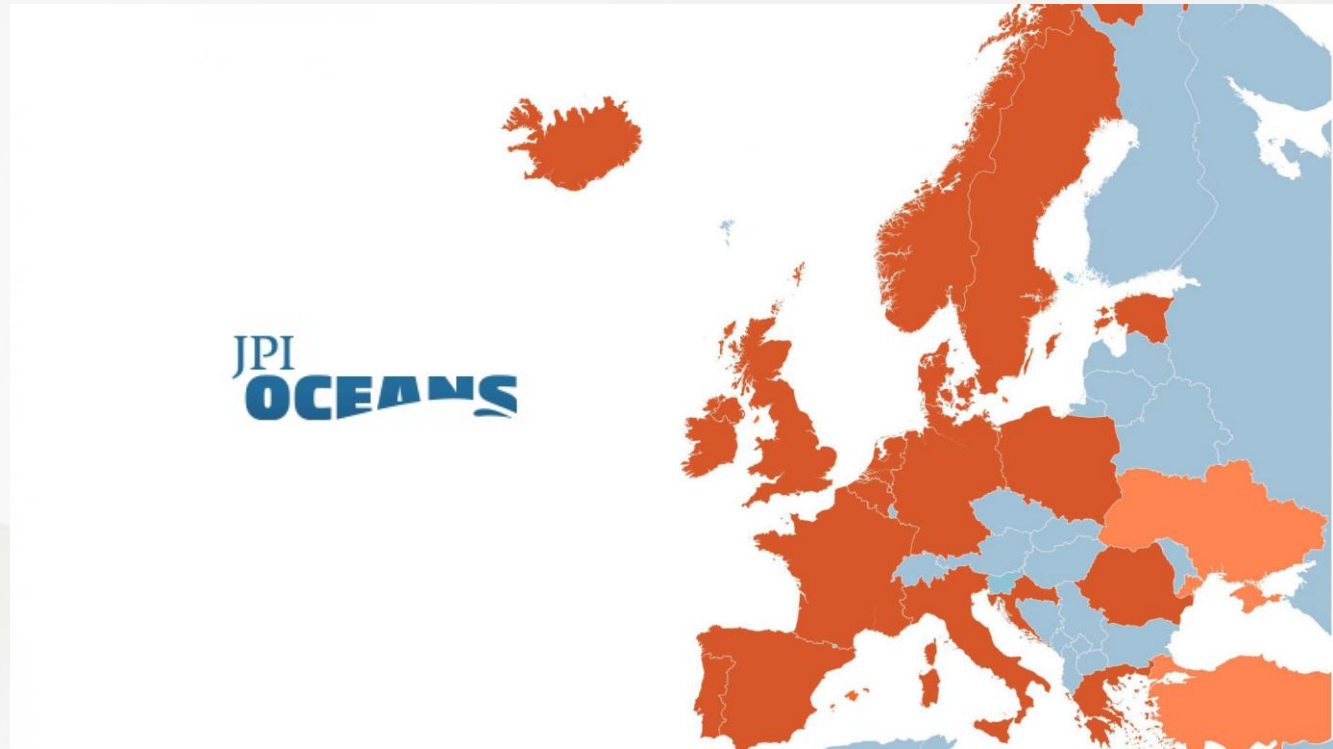
International Research Funding

- JPI Oceans AISBL: Joint Programming Initiative “Healthy and Productive Seas and Oceans”
- JPI Climate: Joint Programming Initiative “Connecting Climate Knowledge for Europe”
- Horizon Europe:
 - Sustainable Blue Economy Partnership
 - Mission Restore our Waters and Oceans



JPI Oceans – Member States

- Belgium
- Croatia
- Denmark
- Estonia
- France
- Germany
- Greece
- Iceland
- Ireland
- Italy
- Malta
- Netherlands
- Norway
- Poland
- Portugal
- Romania
- Spain
- United Kingdom
- Sweden



Founded in 2010 by Belgium, Spain and Norway

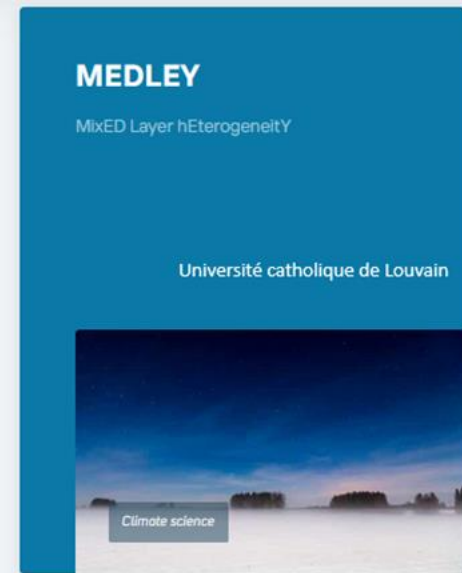
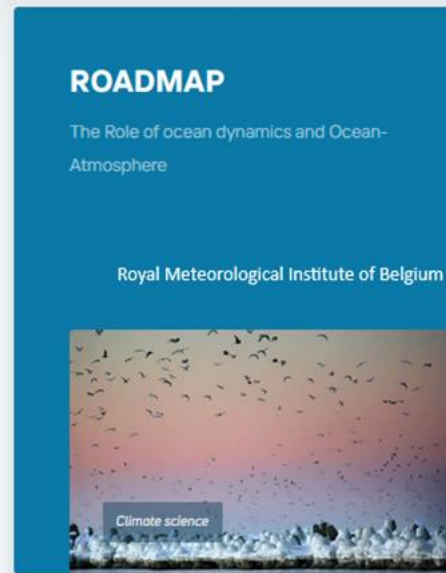
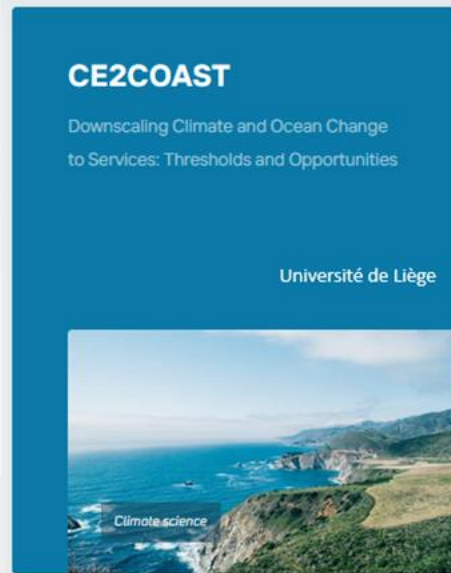
Belgian representation in JPI Oceans

- Since the North Sea is a federal competence, and since the coast is a Flemish competence, Belgium is represented in JPI Oceans by Belspo (federal) and by the Department of Economy, Science and Innovation (EWI, for the Flemish Community).
- Belgian partners are being funded by:
 - BELSPO (Federal)
 - FWO (Flanders)
 - FRS/FNRS (Francophone Belgium)



Joint Actions by JPI Oceans and JPI Climate

- Climate Science for Oceans call 2019-2024



- Knowledge Hub Sea Level Rise

<https://knowledgehubsealevelrise.org/>



Joint Action of JPI Oceans, Water JPI & JPIAMR (Antimicrobial Resistance)

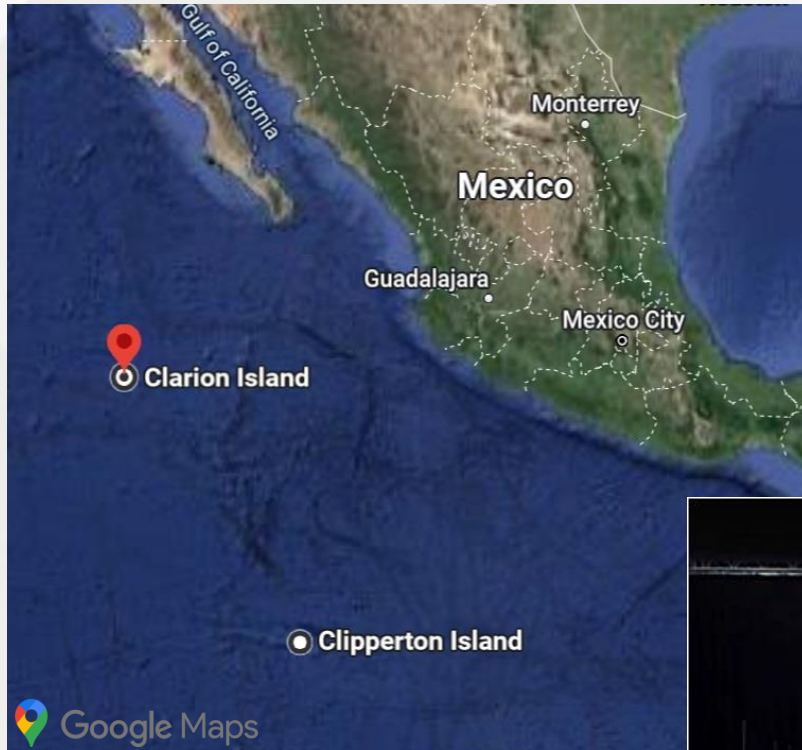
- Aquatic Pollutants call 2021-2024
 - Co-funded by the European Commission
 - PARRTAE: Probing Antibiotic Residues and Resistance Transfer in Aquatic Environments
 - ILVO: Flanders Research Institute for Agriculture, Fisheries and Food



Sampled locations in marine harbors of Oostende and Nieuwpoort



Ecological Impact of Deep-Sea Mining in the Clarion-Clipperton Fracture Zone



- MiningImpact 1: 2015-2017
 - RBINS & UGent
- MiningImpact 2: 2018-2022
 - RBINS & UGent
- Third call 2023 now in project selection phase, projects will start in 2025

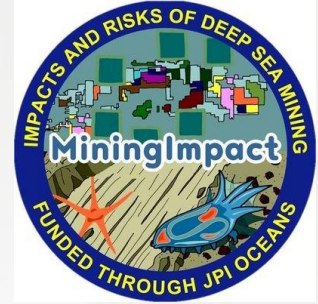


image by DEME/GSR

Global Sea Mineral Resources



JPI
OCEANS



Other recent JPI Oceans Joint Actions with Belspo participation

- Joint calls
 - Underwater Noise in the Marine Environment
 - PURE WIND: RBINS
 - ORCHESTRA: UGent
 - Ecological Aspects of Microplastics 1 & 2
 - EPHEMARE: UAntwerpen
 - WEATHER-MIC: KU Leuven
 - ANDROMEDA: VLIZ & ILVO
 - HOTMIC: UGent
 - RESPONSE: UAntwerpen
- Knowledge Hubs
 - S4GES: Science for Good Environmental Status
 - MSFD: EU Marine Strategy Framework Directive
 - RV Belgica North Sea Research Cruise 2022
 - RBINS
 - Cumulative Effects of Human Activities
 - RBINS

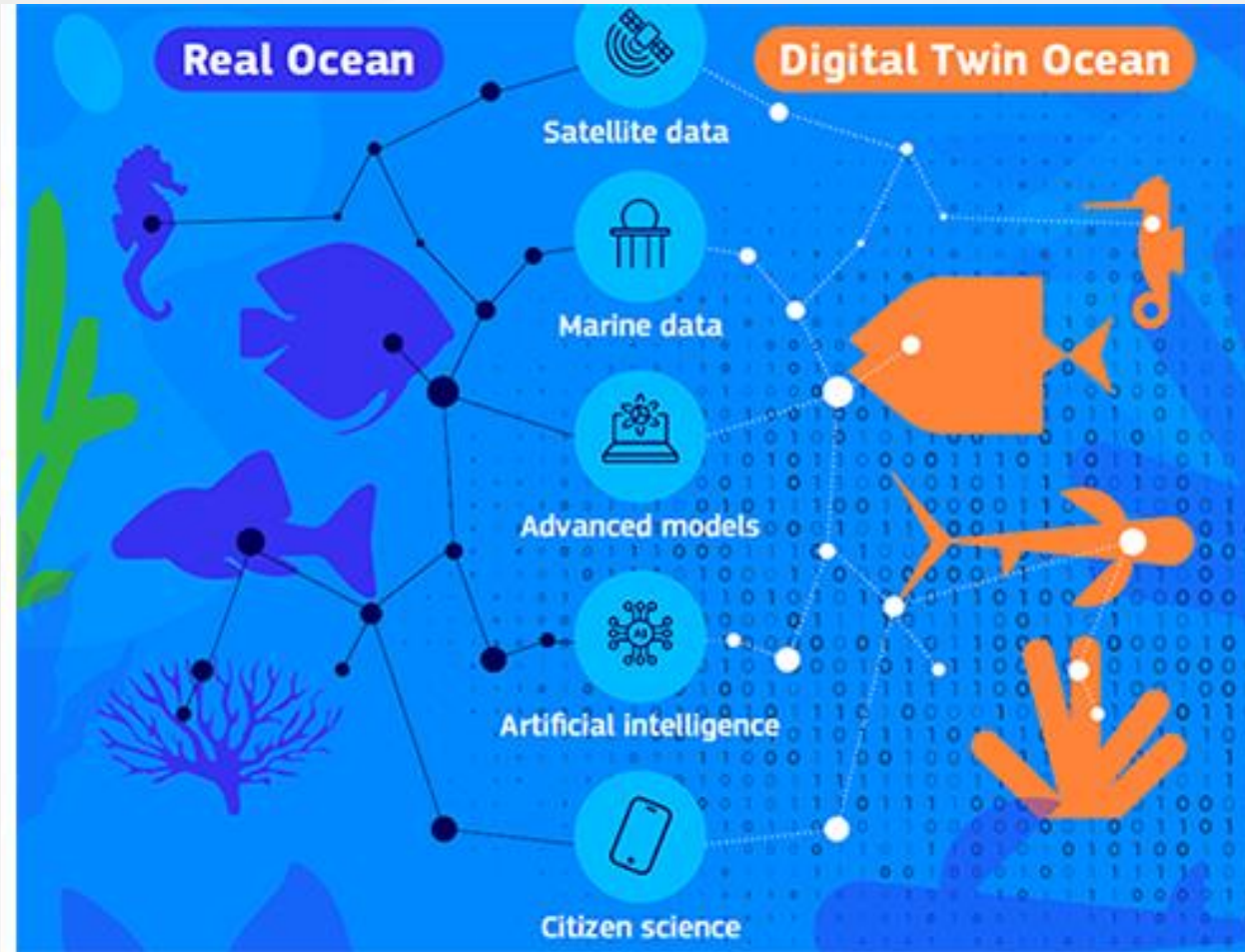
SBEP: Sustainable Blue Economy Partnership

- European Commission Co-Fund
- Belgian Funders:
 - Belspo
 - FWO, VLAIO
 - FNR/FNRS
- First call 2023
 - Funded by Belspo:
 - DTO-Track (Digital Twin of the Ocean: Animal Tracking)
 - VLIZ
 - BlueBioBoost (Boosting seaweed farming through better utilization of genetic resources)
 - ILVO

- Second call 2024



DTO: Digital Twin of the Ocean



European Commission, Directorate-General for Research and Innovation, *The digital twin ocean – An interactive replica of the ocean for better decision-making*, Publications Office of the European Union, 2022, <https://data.europa.eu/doi/10.2777/343496>

Research Infrastructure

EMBRC: European Marine Biological Resource Centre

- More than 70 marine stations in Belgium, Finland, France, Greece, Israel, Italy, Norway, Portugal, Spain, and Sweden
- EMBRC-BE: RBINS, UGent, KULeuven, UHasselt, VLIZ



EMBRC
EUROPEAN
MARINE
BIOLOGICAL
RESOURCE
CENTRE



Intergovernmental Oceanographic Commission (IOC/UNESCO)



2021 United Nations Decade
2030 of Ocean Science
for Sustainable Development



The United Nations
Decade of Ocean Science
for Sustainable Development
(2021-2030)



 SUSTAINABLE DEVELOPMENT GOALS

