

SERIES

Coastal Observing Systems

Setting-up, facilitation and sustainability

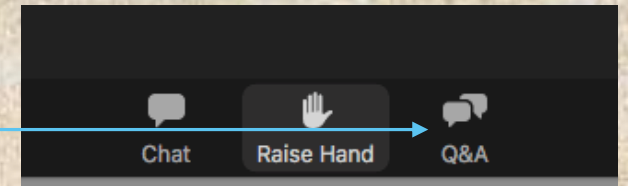


How to use the platform



❖ PARTICIPANTS

You can ask questions using the « question box ». The speakers will answer during the Q&R sessions.



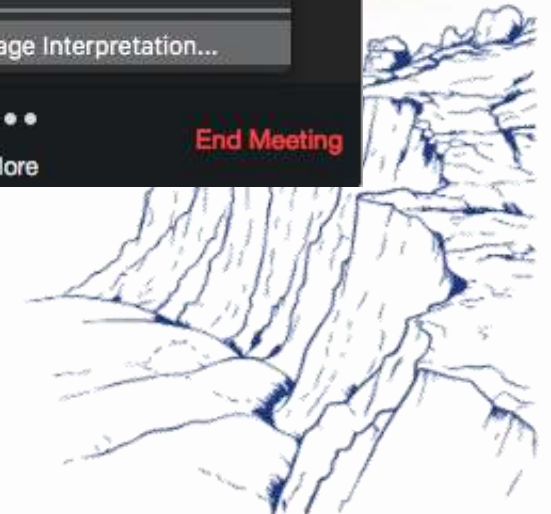
❖ TRANSLATION

If you need interpretation in french or in english, please choose the channel below...



❖ SPEAKERS

Remember that everyone can see and hear you...and that you are being recorded for future broadcasts! Please turn off your microphones when you are not speaking.



Context & objectives



ICO SOLUTIONS

Islands, Coasts, Oceans Solutions : Identify and share good initiatives and practices all around the world with our partners



French public institution: acquire parcels of coastline in order to turn them into restored, developed and welcoming sites that respect the natural balance. The Europe & International Delegation works in cooperation projects, mostly in the Mediterranean, West African and Indian Ocean regions, to support local NGOs and institution in the management of coastal and island areas.

Context & objectives



RECOS

Co-funded by AFD and FFEM, RECOS is a project implemented by IOC. Its objective is to strengthen the resilience of coastal populations to the effects of climate change by restoring coastal ecosystem services.



COI

Only intergovernmental organization composed exclusively of islands in Africa, IOC comprises five member States: Union of Comoros, France/La Réunion, Madagascar, Mauritius, and Seychelles. It promotes regional solidarity through cooperation projects covering a wide range of sectors: preservation of ecosystems, sustainable management of natural resources, maritime safety, entrepreneurship, public health, renewable energy, and culture.

SERIES

Coastal Observing Systems

Observing coastal ecosystems, from all perspectives

2:00 - 3:00
PM
UTC +2

Ep. 1
June, 6th
Setting-up, facilitation
and sustainability of an
observing system

Ep. 2
June, 10th
Focus on coastal erosion
and climate change

Ep. 3
June, 20th
Focus on biodiversity and
coastal ecosystems

Ep. 4
June, 27th
Focus on coastal socio-
economic dynamics

Organizing team



Fabrice Bernard
Moderator
**Europe & International
Head-Officer**
Conservatoire du littoral



Victor Heyberger
Organization / Question box
**Europe & International
Project officer Conservatoire
du littoral**



Anne Lemahieu
Organization / Back Office
RECOS Project MEL Officer



**Bellarmin
Rakotonirina**
Interpreter

Program Episode 1

- ❖ **Introduction** – Creation and animation of observing systems – 10'
 - ❖ Session of **Q&A** (5')
- ❖ **Round table**
 - ❖ **Creation** of an observing system (7') and **Q&A** (5')
 - ❖ **Functioning** of an observing system (7') and **Q&A** (5')
 - ❖ **Sustainability** of an observing system (7') and **Q&A** (5')
- ❖ **Closing**

Speakers



Nicolas le Dantec

Observatoire intégré des Risques Côtiers en Bretagne, partenariat Litto'risques



Moussa Sall

Observatoire Régional du Littoral Ouest Africain



Julie Pagny

GIP Réseau d'observation du Littoral de Normandie et des Hauts-de-France



Aina le Don NOMINESOA

Madagascar Oceanographic Data Center



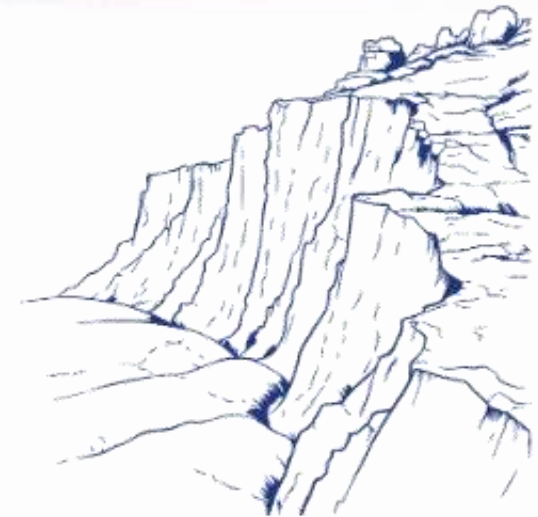
Speakers



Moussa SALL

Observatoire Régional du Littoral Ouest Africain

Coordinator of the regional unit



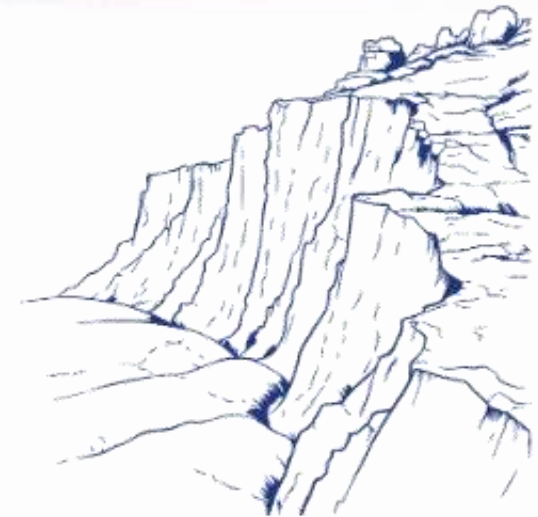
Speakers



Julie PAGNY

GIP Réseau d'Observation
Littorale de Normandie et
des Hauts-de-France

Head



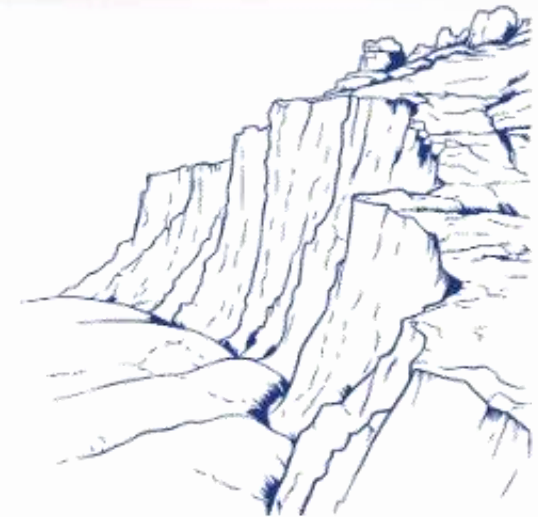
Speakers



Aina Le Don NOMENISOA

Madagascar Oceanographic
Data Center (MD-NODC)

Head

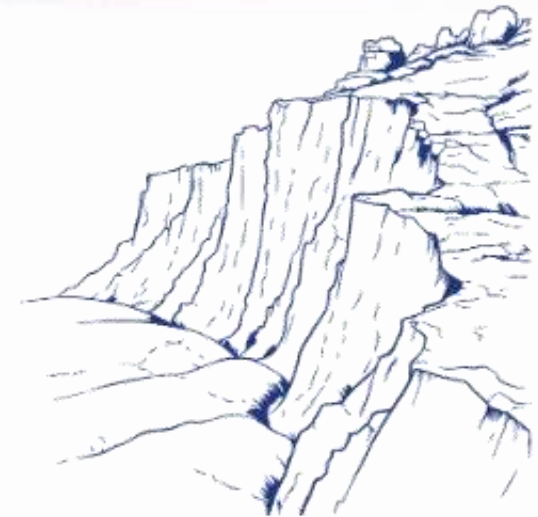


Speakers



Nicolas LE DANTEC

Observatoire intégré des
risques côtiers en Bretagne
OSIRISC, partenariat
Litto'Risques



OSIRISC-Litto'Risques



Co-design of an integrated observatory
for long-term monitoring of
vulnerability to coastal risks of erosion
and marine flooding

Nicolas LE DANTEC, Alain HENAFF & OSIRISC team

Coastal areas : duality between attractivity and amenities



... in a dynamic, unstable environment

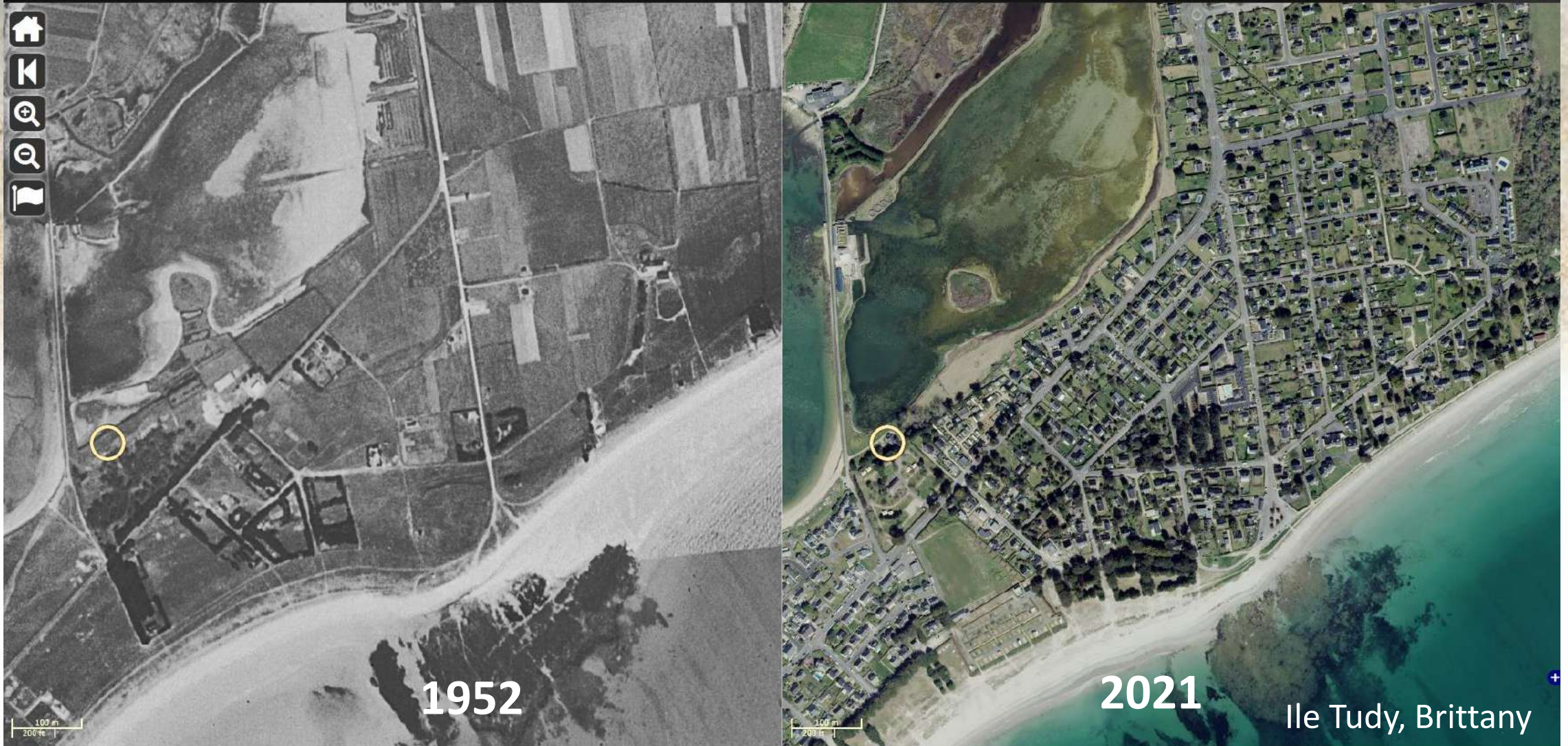
M. Philippe



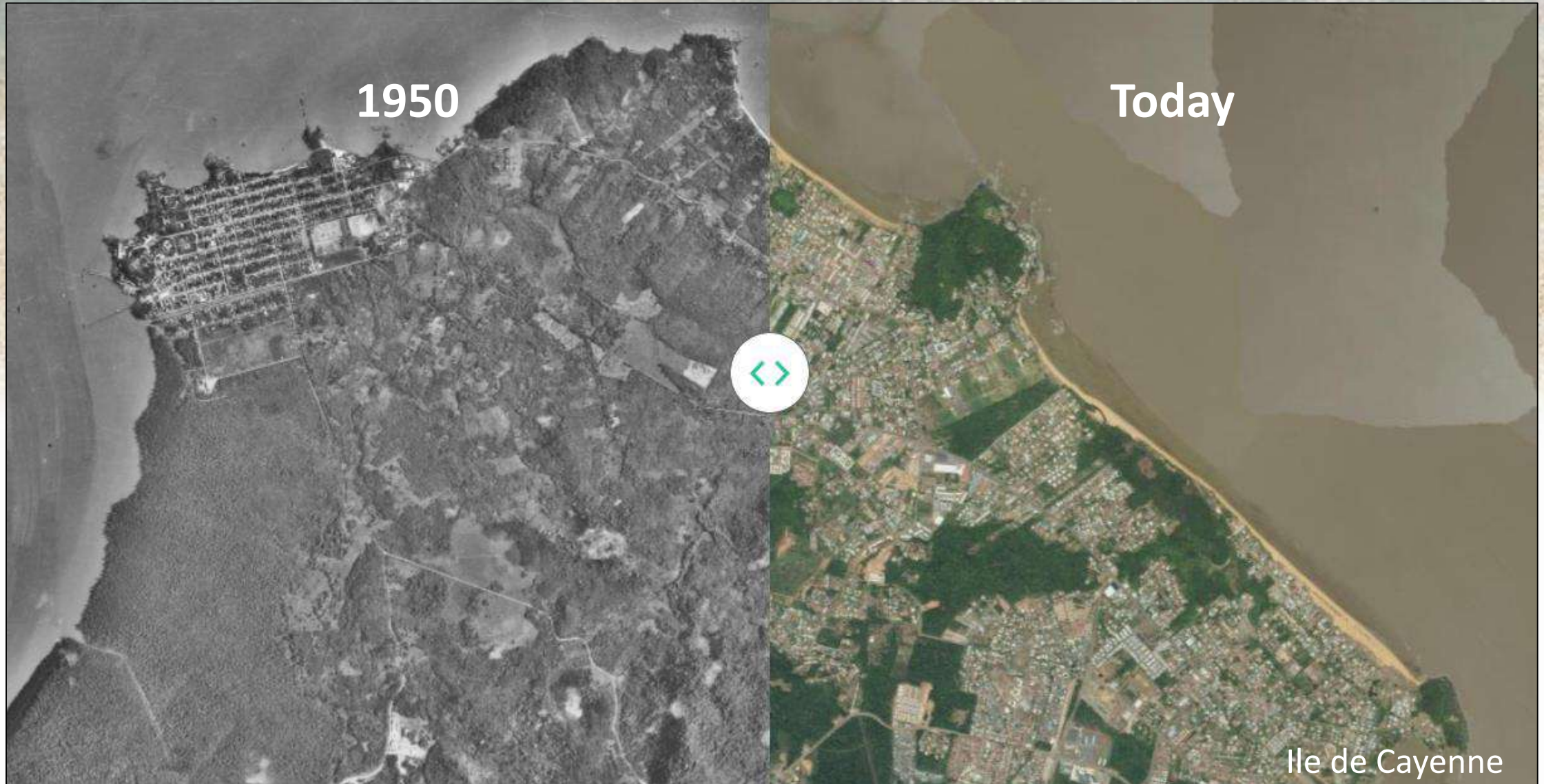
A. Hénaff

Facing the consequences of urbanisation of the coastal zone

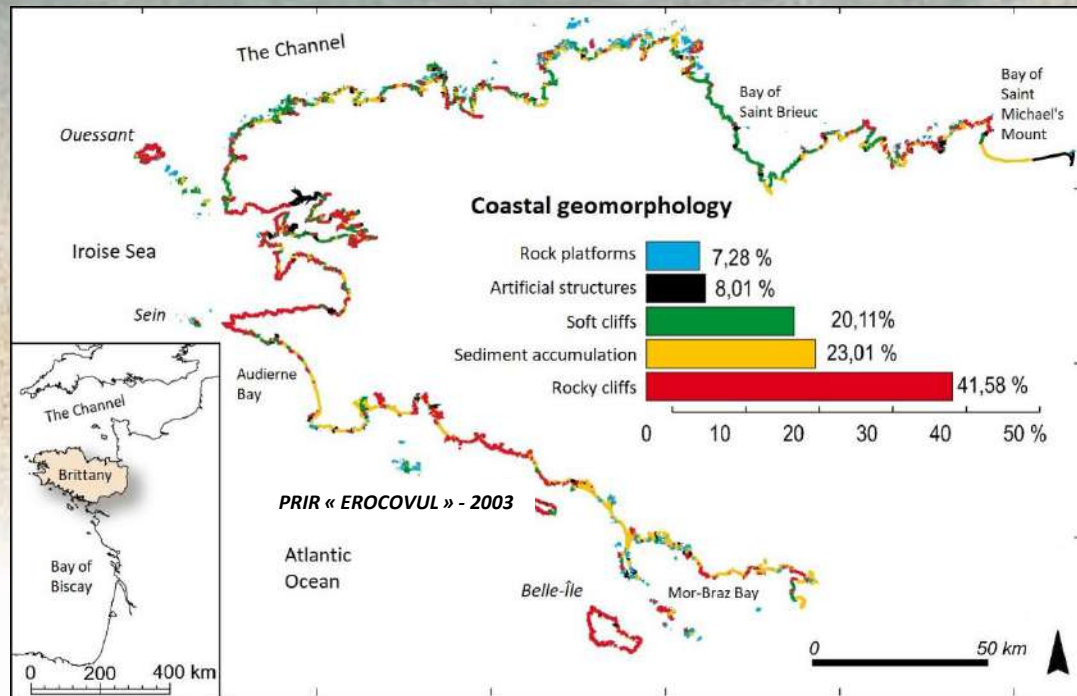
Bretagne, de 1950 à nos jours



Risk is the combined result of natural AND anthropogenic processes

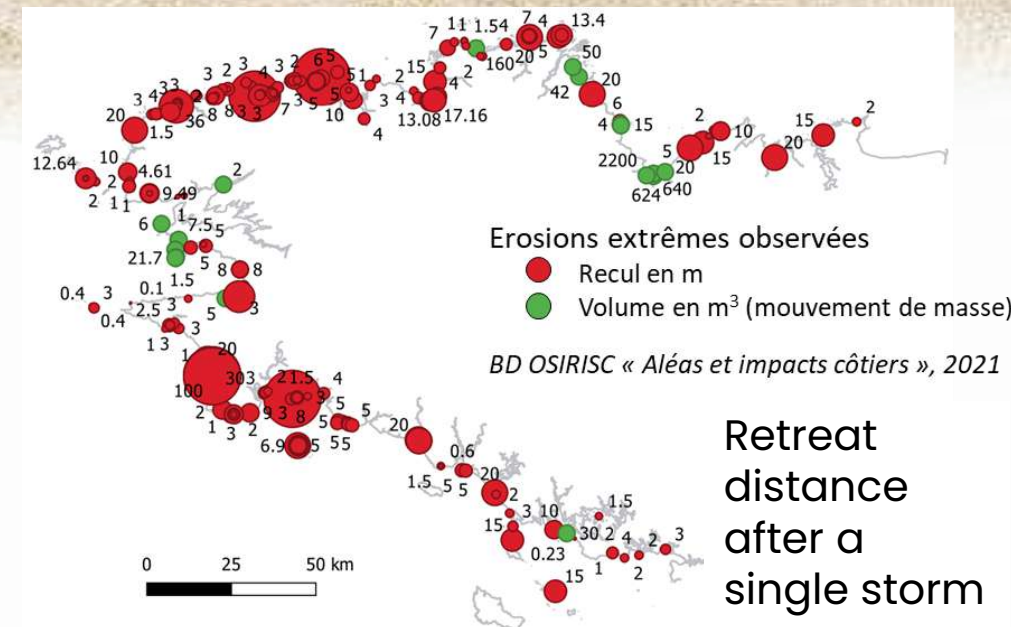
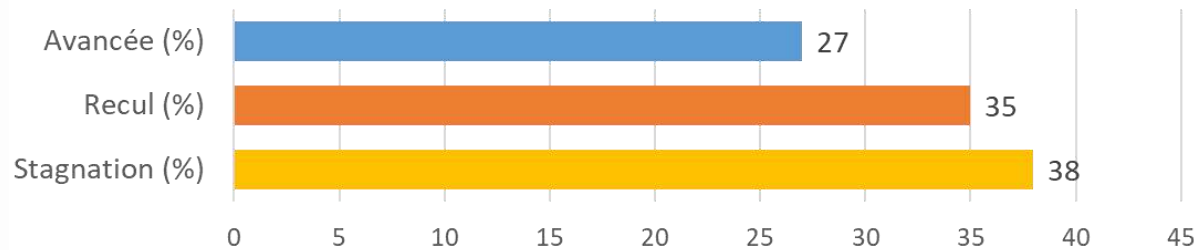


Geomorphology and coastline evolution in Brittany



- Very long coastline 4 324 km (including islands and estuaries)
 - 3 major provinces with different configurations: topography, tidal range, swell, fetch, sediment cover
 - Diversity of coastline types : low-lying coasts with beaches and coastal dunes, rocky shores, soft cliffs, estuaries
- Segmentation in multiples hydro-sedimentary cells

Analysis of 335 km of natural beaches (sandy and gravel) between 1950 and 2010
Stéphan et al., 2019



A range of management solutions ...

<p>Maintenir la ligne</p> 	<p>Protéger à tout prix : fixation du trait de côte</p>	<p>S'opposer massivement aux forces naturelles quand les enjeux collectifs et la sécurité le nécessitent.</p>	<p>Intégrée à la SNGITC</p>	
<p>Avancer la ligne</p> 	<p>Protéger par la création d'espaces côtiers sur l'avant-côte</p>	<p>Eloigner le trait de côte en créant des espaces de dissipation d'énergie des processus naturels quand les contraintes économiques et démographiques le justifient</p>	<p>X</p>	
<p>Adapter</p> 	<p>S'adapter aux nouvelles conditions</p>	<p>Quand les enjeux le justifient et le contexte dynamique le permet, adapter le bâti et les infrastructures</p>	<p>Intégrée à la SNGITC</p>	
<p>Gérer le retrait</p> 	<p>Accompagner le retrait : adopter des méthodes flexibles et gérer le recul stratégique</p>	<p>Modérer tant que possible les évolutions en rééquilibrant artificiellement les bilans sédimentaires ; préparer le repli des enjeux</p>	<p>Intégrée à la SNGITC</p>	
<p>«Laisser-faire»</p> 	<p>Evolutions libres dans l'espace d'accommodation du rivage</p>	<p>Laisser reculer le rivage : espaces de nature</p>	<p>Intégrée à la SNGITC</p>	

Needs to stem from local data

Timeline to align with increasing hazards

... but many barriers prevent their application



Emergency responses (historical reaction to crises): « defense against the sea »

Opposition of inhabitants who have settled there



Short-term strategies, lack of risk awareness, blind trust in technology and public authorities, profit-driven

Addressing the challenge of environmental transition for coastal zone facing urbanisation and climate change-induced risks

... requires a change of paradigm

- From coastal defense to nature-based solutions, and toward rethinking spatial planning
- From hazard-centered observation to monitoring of trajectories of vulnerability to coastal risks
- Local capacity-building for long-term observation

Legal framework for coastal risks management in France

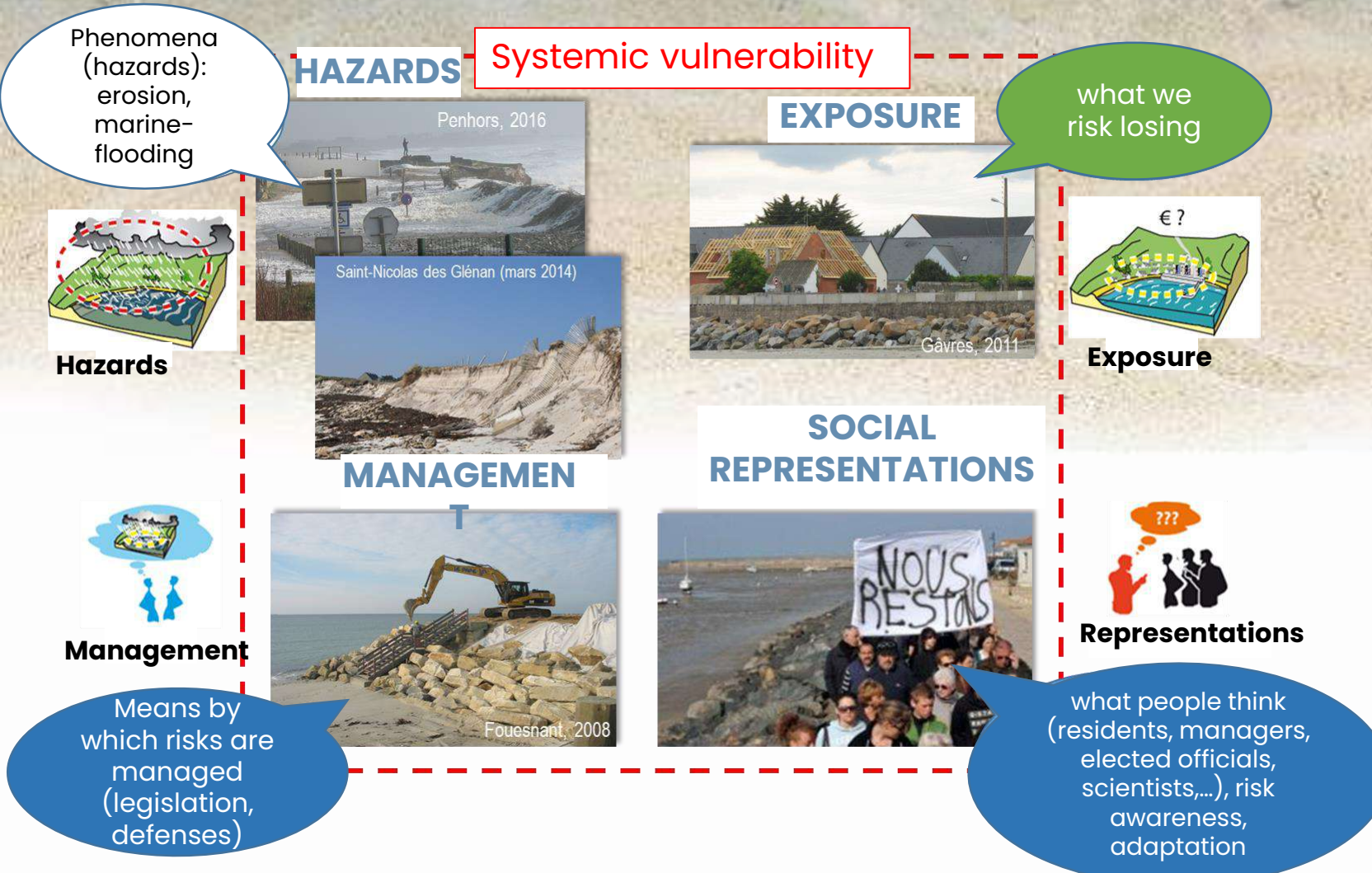
General context of transfer of responsibilities from National government to local authorities

- **Co-design between scientists and local practitioners**
- **Combined objectives**
 - ✓ **Knowledge**
 - ✓ **Decision-aid**

➤ 1. vulnerability: ability of society to respond to potential crises (adaptation, resilience)

Integrates natural phenomena (hazard) and structural (socio-economic, cultural, functional, institutional) factors

[R. D'Ercole, 1994]



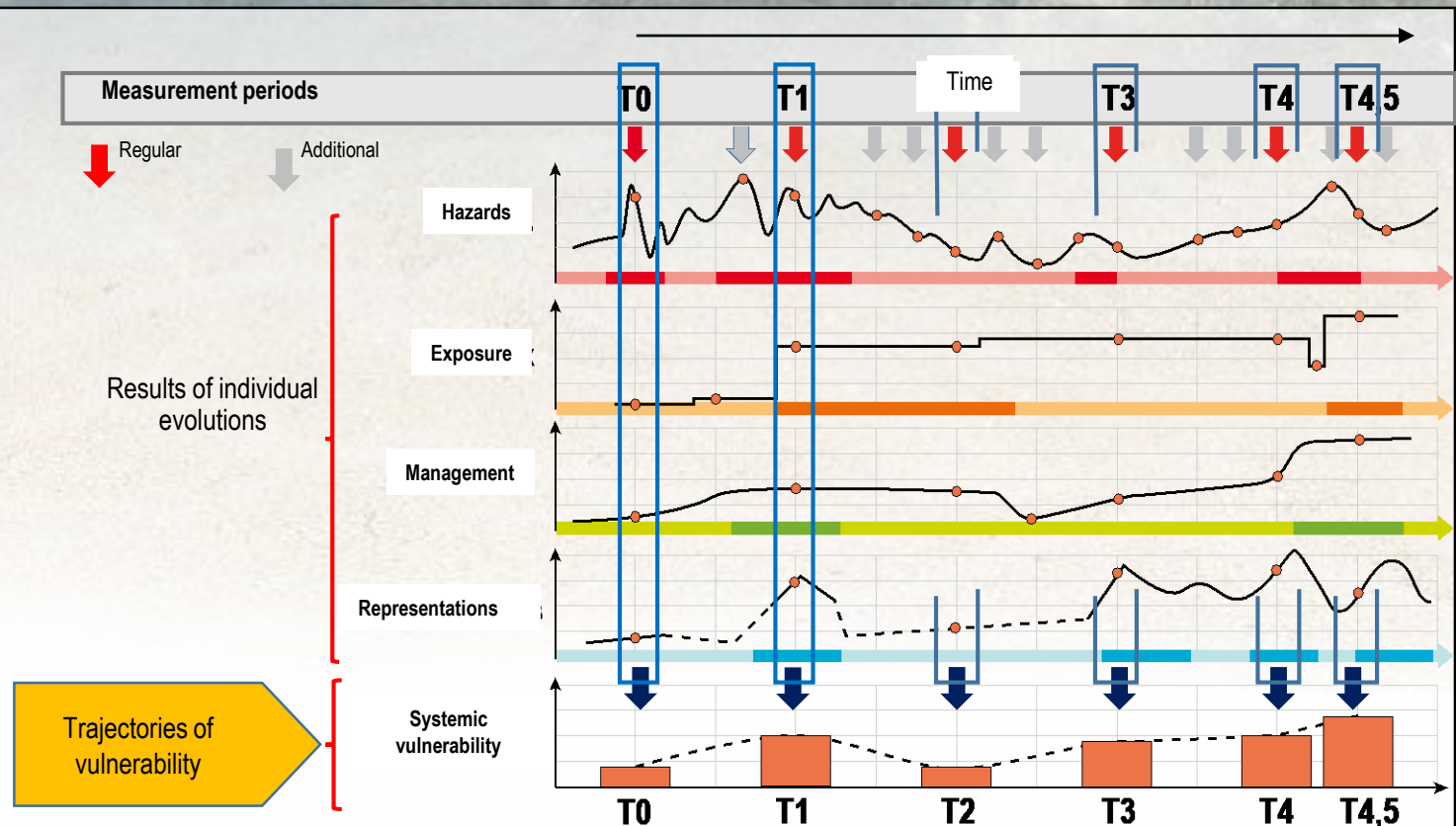
➤ Identify **levers for action** to reduce vulnerability



➤ **Interdisciplinary approach**



Monitoring trajectories of vulnerability through long-term observation

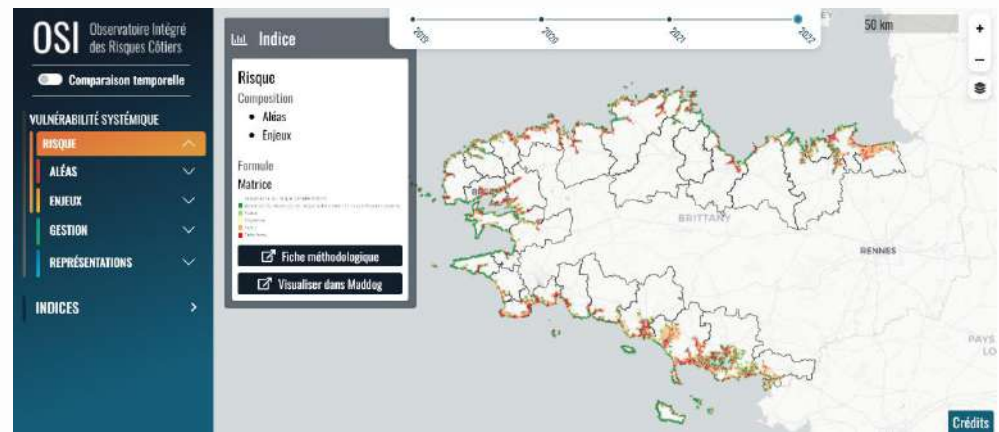


What we are going to measure ?

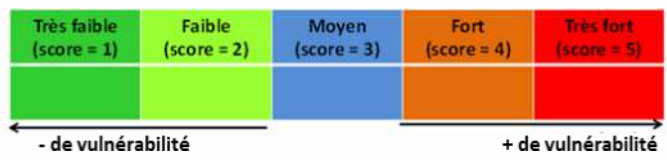
- « Metrics » :
- Quantitative measurements
 - Qualitative information
- ⇒ **Component indices**
- ⇒ **Indicators**
- ⇒ **Global vulnerability index**

Web-GIS platform OSI

<https://osi.univ-brest.fr/>



Cotation from 1 to 5



Combination of indicators into indices

- ☐ **Exploring vulnerability**
 - Unraveling the causes
 - Identify hotspots
 - Action levers

Mapped on adaptative 50 m to 800 m grid

➤ 2. Institutionnal framework of Litto'Risques partnership



May 23rd, 2019 : Signature partnership agreement for Litto'Risques (CD29 – UBO – Cerema)



Goals

- Coastline observation, and all 4 components of vulnerability
- Technical support for local authorities on risk management (erosion and marine flooding)
- Awareness-raising (stakeholders), community-building

- Sharing expertise
- Capacity-building of local risk managers
- Dissemination of observation among elected representatives
- Long-term observations



Member of RNOTC

1

Membership agreement



Data collection



Hazards, exposure



Data cycle

- Collection
- Validation
- Storage
- Analysis
- Dissemination

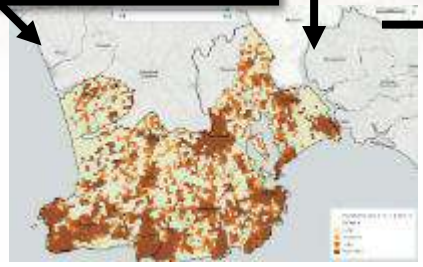
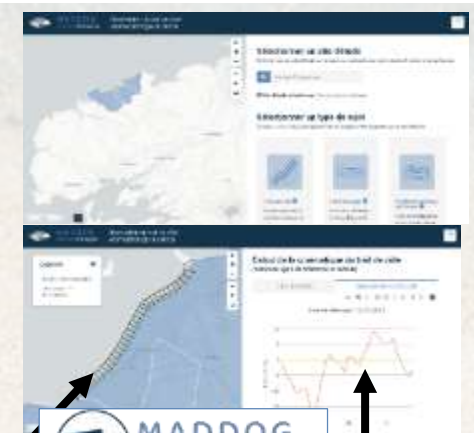


Database storage



4

Data analysis software



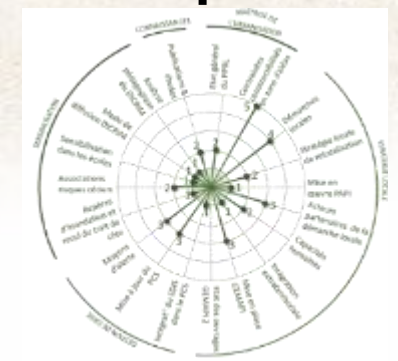
Global vulnerability assessment

5

Local authorities apply measures to reduce vulnerability



7



Definition of a pathway to reduce vulnerability

6

2

- ✓ Definition of protocols
- ✓ Selection of sites
- ✓ Training on monitoring tools and methods

Management, exposure



Social representations

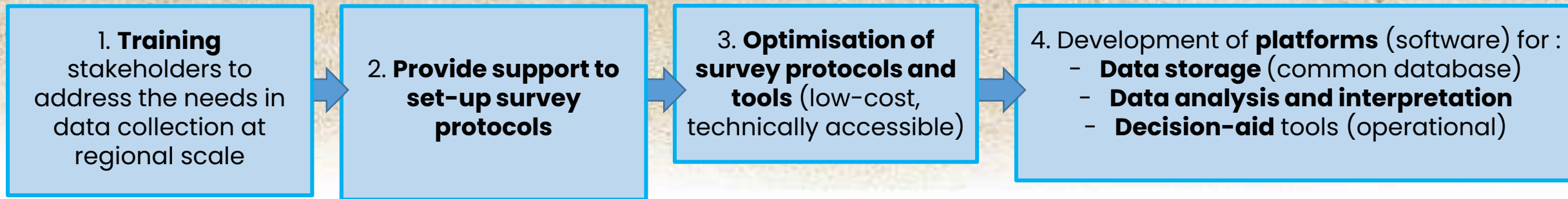
3

How does it work in practice ?

➤ 3. Steps to set-up collaborative observation

Research and observation with practitioners, and for practitioners

- Produce scientific knowledge
- Capacity-building



- Expertise throughout the data cycle :
collection, processing, archiving, interpretation

✓ « scientific guarantee »



Training to respond specifically to capacity-building for regional observation



- **Training days**



- **Methodological guide on coastline management**



General knowledge

Methodology

Feedbacks

- **SPOC**

- **Documentary series**



- **Field workshops (elected officials, managers, scientists)**



- **Student workshops in the territories**



- **Educational resources**



Developing local observation

Support local authorities in setting-up their long-term coastline surveys :

homogeneous protocols, adapted according to the priorities and constraints of the municipalities

➤ Support to set-up the surveys

- Data collected by the municipality (ex.: CLCL)
- Data collected by contracting company (ex.: TRI Sud-Finistère)

➤ Optimized tools and accessible protocols : GNSS and distancemeter

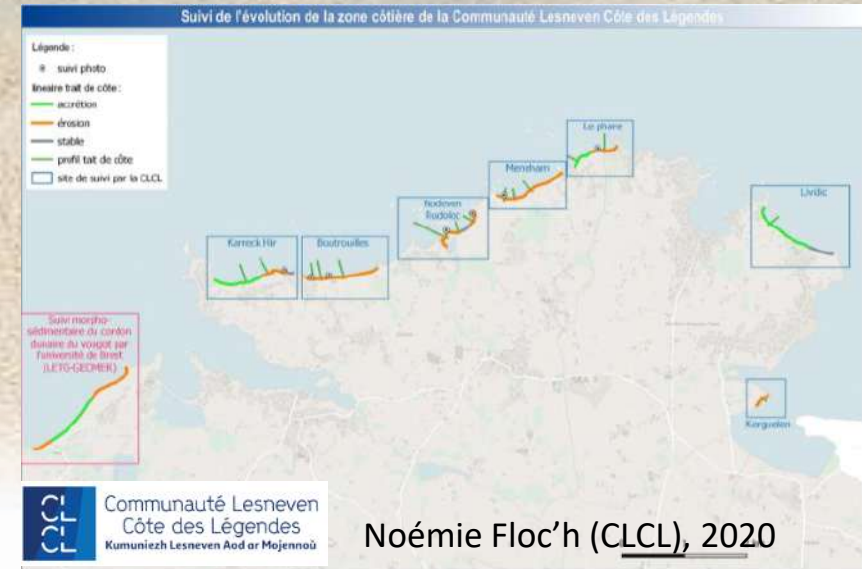
- Deployment of collaborative GNSS network Centipède



- Low-cost

- ✓ Operational, used by municipalities

➤ Capacity-building



Collaborative observation ➤ Co-design of analysis and decision-aid tools

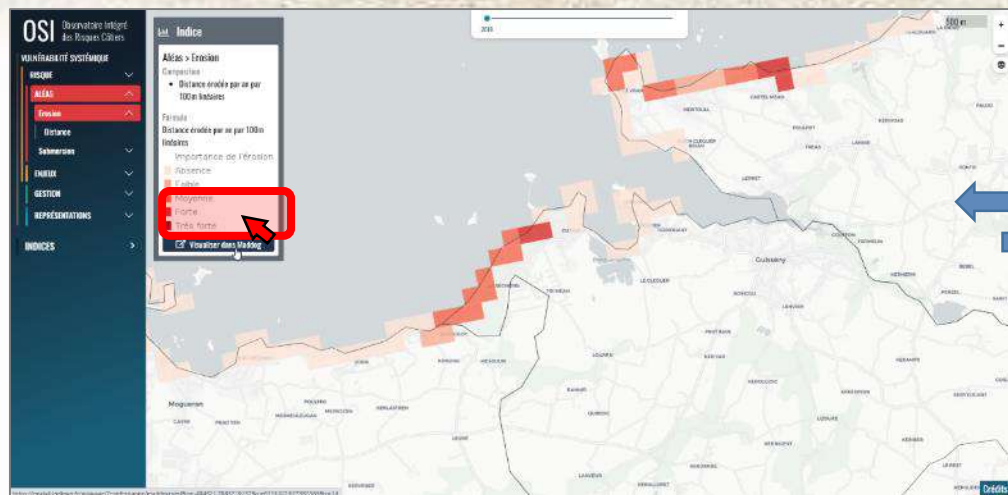
- Common tools for data archiving, diffusion, interpretation and decision-aid
 - For data collected by scientists and other stakeholders

OSI Observatoire Intégré
des Risques Côtiers

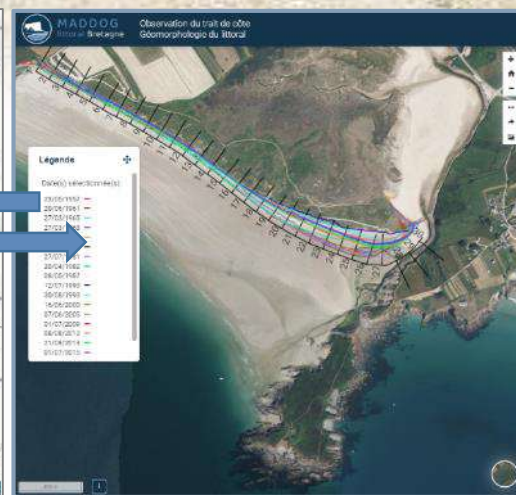
**Integrated monitoring, trajectories
of vulnerability to coastal risks**

MADDOG
littoral Bretagne
Observation du trait de côte
Géomorphologie du littoral

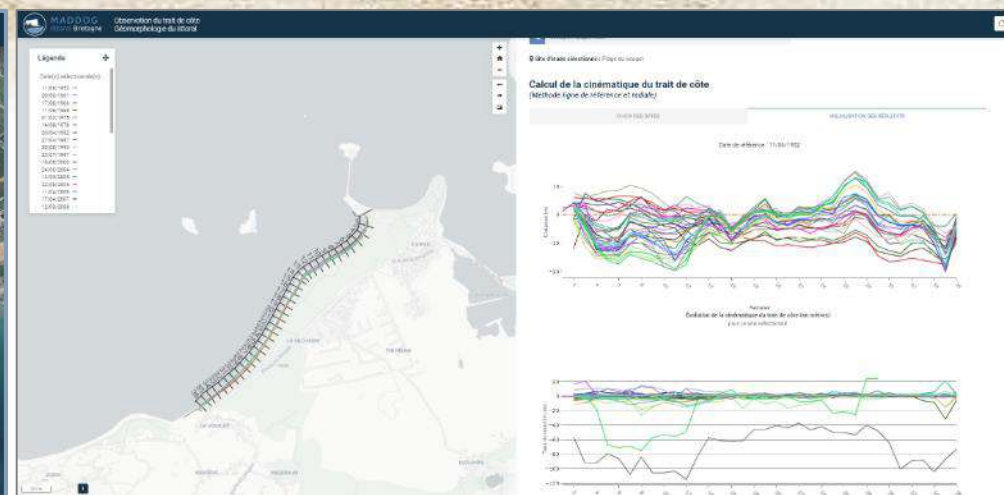
**Visualisation and processing of coastal
topography surveys**



<https://osi.univ-brest.fr/>



<https://portail.indigeo.fr/mviewer/?config=apps/maddog.xml#>

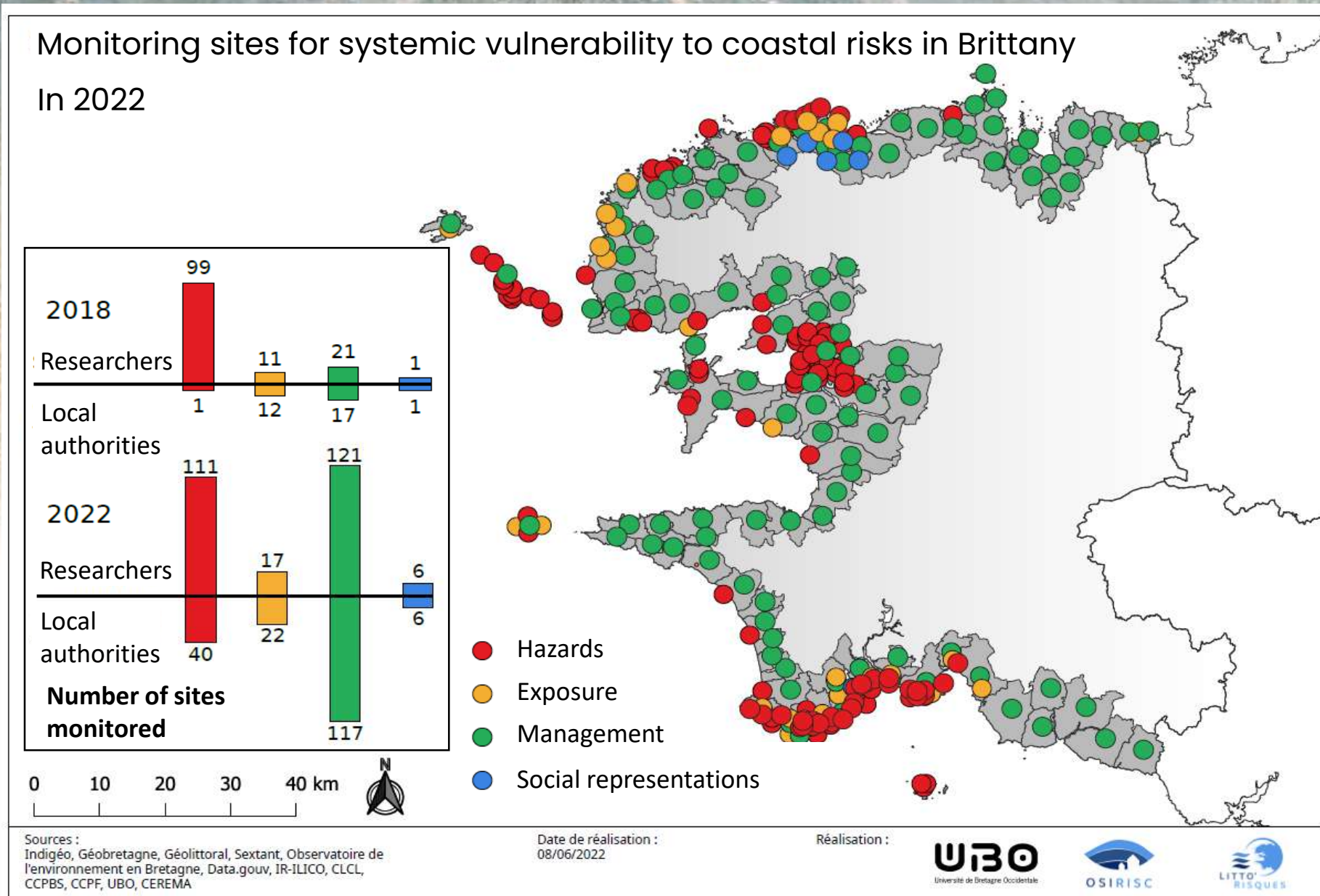


Deployment progress

✓ **Over 50 additional sites of coastline monitoring**

Litto'Risques :

- on-the-field training,
- survey protocols,
- data management,
- data analysis,
- expertise



Participation of municipalities in OSIRISC–Litto’Risques observatory in Finistère

Plouguerneau

- 2020 : atelier d’étudiants & stage Litto’Risques SLGTC*

Pays d’Iroise Communauté

- 2021 : stage Litto’Risques SLGTC*
- 2021 : définition protocole de suivi du trait de côte
- 2022 : appui à la mise en œuvre des suivis

Plougastel

- 2021 : présentation du partenariat

CCPAM

- 2022 : appui à la mise en œuvre d’une SLGTC*

Plouhinec

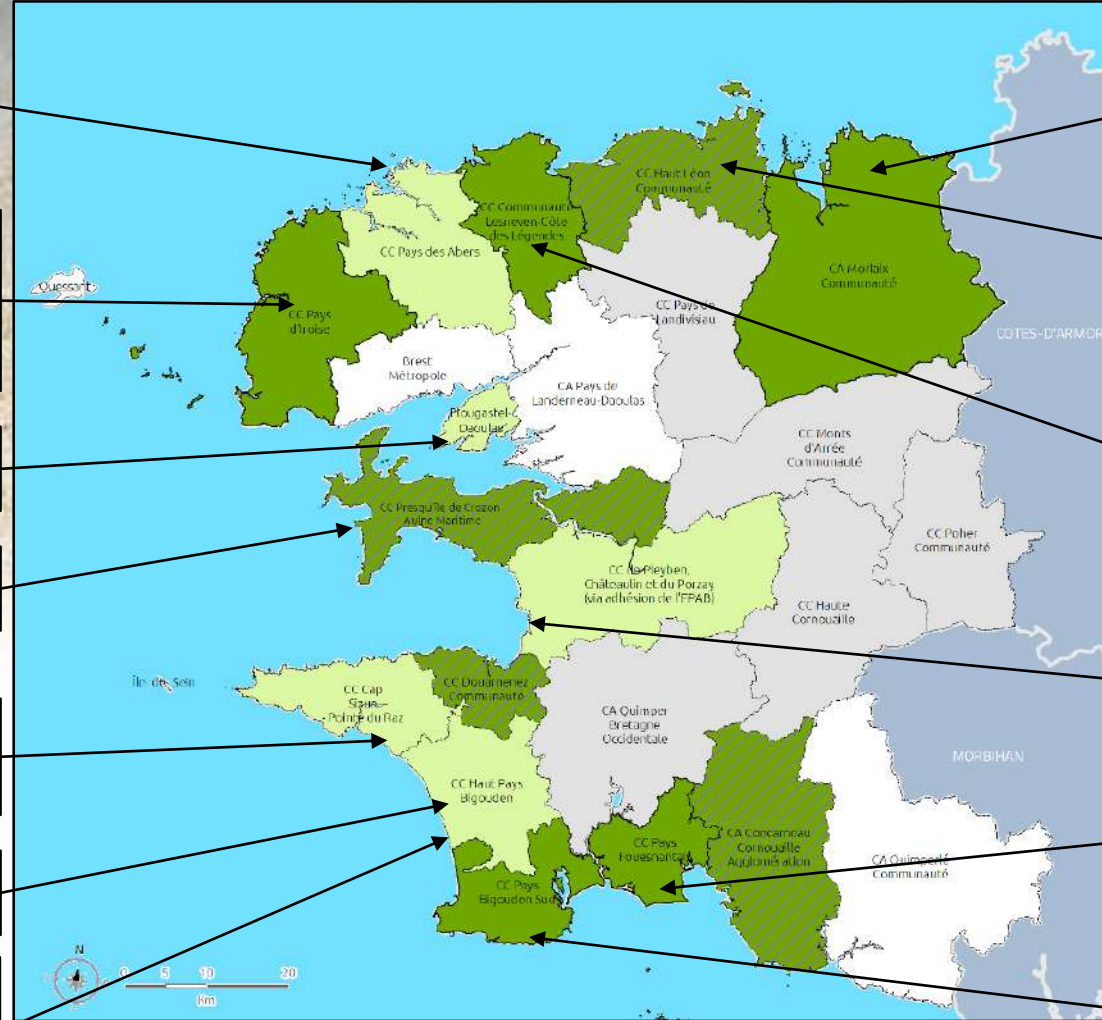
- 2019 : ateliers d’étudiants (Préfig. SLGTC*)
- 2020 : stage Litto’Risques SLGTC*

Pouldreuzic

- 2021 : appui étude SLGTC* (AP ANEL/Cerema)

CC Haut Pays Bigouden

- 2020 : définition protocole de suivi du trait de côte
- 2022 : suivi du cordon de galets de Lessunus



Morlaix Communauté

- 2019 : avis Etude de gestion du trait de côte
- 2021 : définition protocole de suivi du trait de côte
- 2022 : appui à la mise en œuvre des suivis

Haut Léon Communauté

- 2020 : avis CC Etude GTC
- 2021 : atelier d’étudiants / Etude Baie de Goulven

CC Lesneven Côtes des Légendes

- 2019 : définition protocole de suivi du trait de côte
- 2019 : appui à la mise en œuvre des suivis
- 2020 : stages Litto’Risques : Etude hydrosédimentaire de la baie de Goulven
- 2021 : atelier d’étudiants / hydrosédimentaire de la baie de Goulven
- 2020-2022 : suivi de l’AMI CRB/DREAL/Cerema

CC Pleyben - Châteaulin – Porzay

- 2022 : appui à la préfiguration d’une SLGTC*

CC Pays Fouesnantais

- 2019 : appui étude gestion Moustérlin
- 2019 - 2022 : analyse des résultats de suivi du trait de côte

CC Pays Bigouden Sud

- 2020 : appui étude protection Ile-Tudy
- 2021 : avis sur CC Etude protection Tréffiagat
- 2019 - 2022 : analyse des résultats de suivi du trait de côte

Local authorities having benefited from support of Litto’ Risques between 2019 and 2023

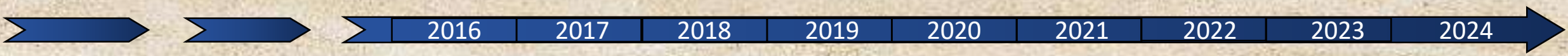
Summary and perspectives



Support for coastal risks management

- ✓ Promote long-term observation
- ✓ Integrated approach to coastal risks
- ✓ Co-design scientific communities – practitioners
- ✓ Capacity-building for local authorities

Science for society



Projects



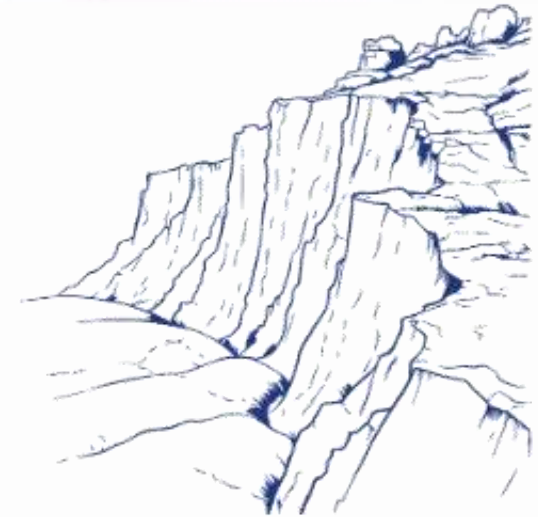
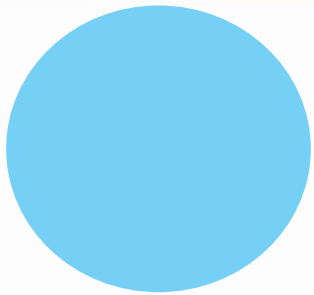
⇒ **Litto'Risques** : a relevant model for deployment of integrated coastal risks observatory

- Not only data collection : coherent framework of multiple support actions: observation, data dissemination, training, expertise
- Approach and tools transferable, adaptable to other territories



Introduction

Questions & answers



Observatoire Régional du Littoral Ouest Africain



Moussa SALL



Coordinator of the regional unit
Design and implementation of
ORLOA since 2018

Zone of study: West african Coastal Area : From Mauritanie to Bénin + Sao Tome & principe

Activities: Monitoring of coastal risk indicators at regional and national levels

History: Creation of MOLOA in 2013 then ORLOA in progress since 2018

Who implements the observing system: Ecological Monitoring Center, by delegation of WAEMU, in contact with correspondents in the country

Who produces the data: The Ecological Monitoring Center (CSE) at the regional level and the national observatories

Who finances: Ultimately UEMOA (ORLOA) and countries (national observatories)

GIP Réseau d'Observation Littorale de Normandie et des Hauts-de-France

Julie PAGNY



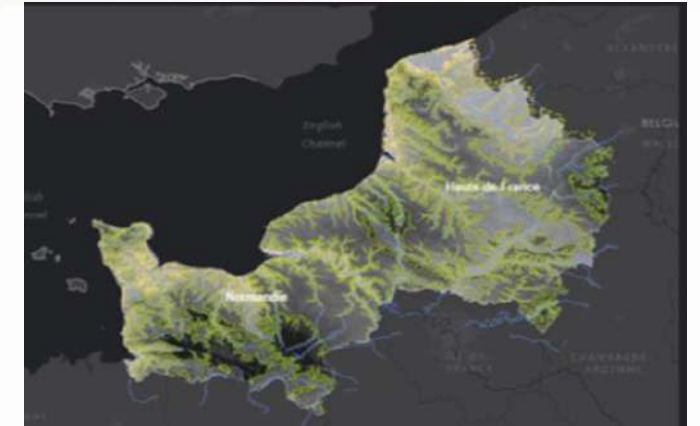
- A single interregional scale
- From a partnership project launched in 2010 to the creation of a GIP in March 2020
- A platform at the service of territories to enhance scientific and technical information
- A multidisciplinary: the COST
- Gather, communicate, accompany, risk culture

GIP ROLNHDF: a geographical approach



3 principal subjects:

- Mobility of the coastal strip
- Natural risks in coastal spaces
- Biodiversity as a marker of environmental dynamics

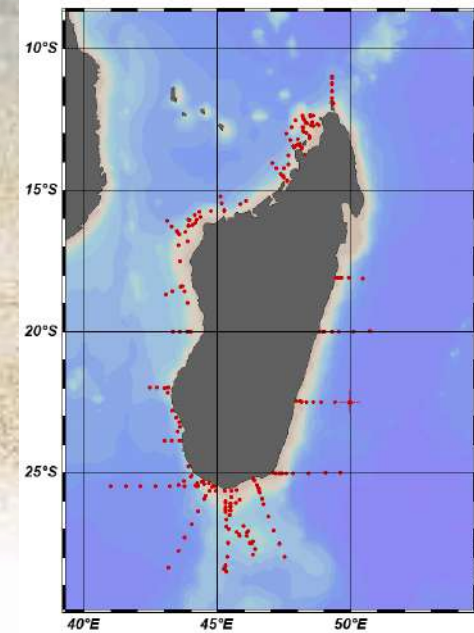


Madagascar-National Oceanographic Data Center (MD-NODC)

Aina Le Don NOMENISOA

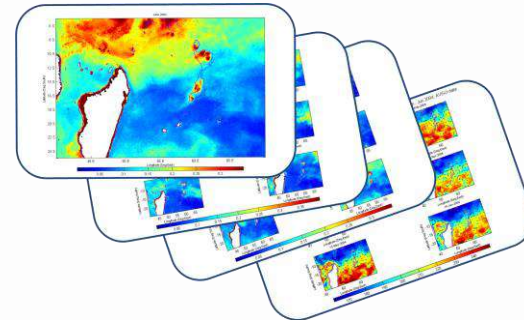


- **Date of creation:** 6 December 2000
- **Mission:** Collect, archive, quality control, disseminate oceanographic data and information in various format to users
- **Types of data:** Physical oceanography (from satellites, digital models, or research expeditions), coastal habitats, ocean parameters, marine biotechnology, fisheries and aquaculture, deep sea ecology



MarCOSIO

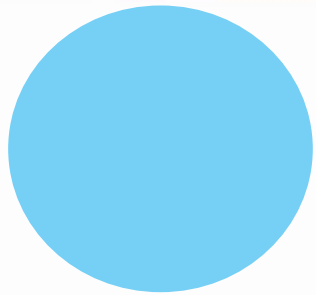
MARINE AND COASTAL OPERATIONS
FOR SOUTHERN AFRICA AND THE INDIAN OCEAN



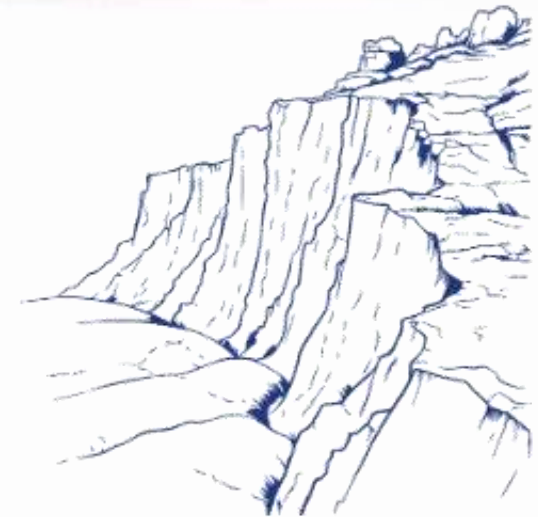
Round Table

First topic

Creation of an observing system



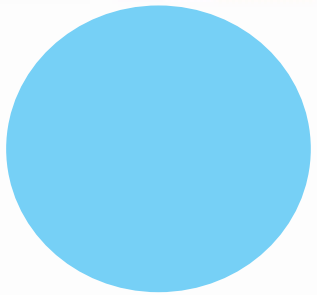
Actors involved ?
Original purposes ?
Difficulties encountered ?



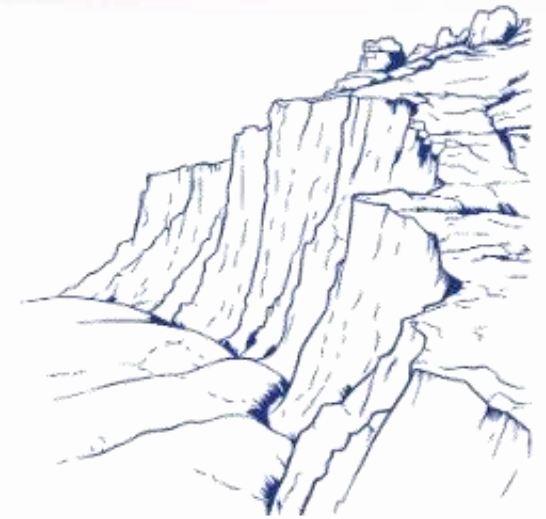
Round Table

Second topic

Functionning of an observing system



Partnership ?
Governance ?
Data collect ?



Round Table

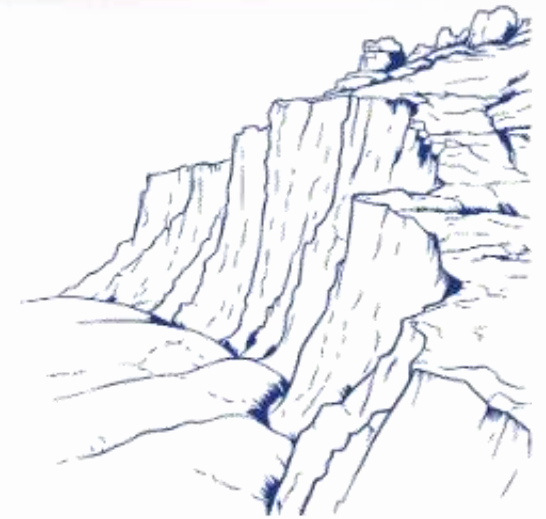
Third topic

Sustainability of an observing system

Succeeding in the transition to the long-term ?

Funding ?

Evolution perspectives ?



Last words



Nicolas le Dantec

Observatoire intégré des Risques Côtiers en Bretagne, partenariat Litto'risques



Moussa Sall

Observatoire Régional du Littoral Ouest Africain



Julie Pagny

GIP Réseau d'observation du Littoral de Normandie et des Hauts-de-France



Aina le Don NOMINESOA

Madagascar Oceanographic Data Center



**Thank you for your attention!
See you soon for the next episodes.**



Ep. 2
June, 10th
**Focus on coastal erosion
and climate change**

Ep. 3
June, 20th
**Focus on biodiversity and
coastal ecosystems**

Ep. 4
June, 27th
**Focus on coastal socio-
economic dynamics**

Contact us : icosolutions@conservatoire-du-littoral.fr

ICO Solutions Calendar : www.ico-solutions.eu