


FÉDÉRATION DE RECHERCHE ENVIRONNEMENT ET SOCIÉTÉ  
**INTERDISCIPLINARY SYMPOSIUM**



**cnrs** **Inserm** **INRA**  
Institut national de la recherche médicale  
SCIENCE & IMPACT

5, 6, 7 July 2017 – Università di Corsica, Corti

Fédération Recherche Environnement & Société



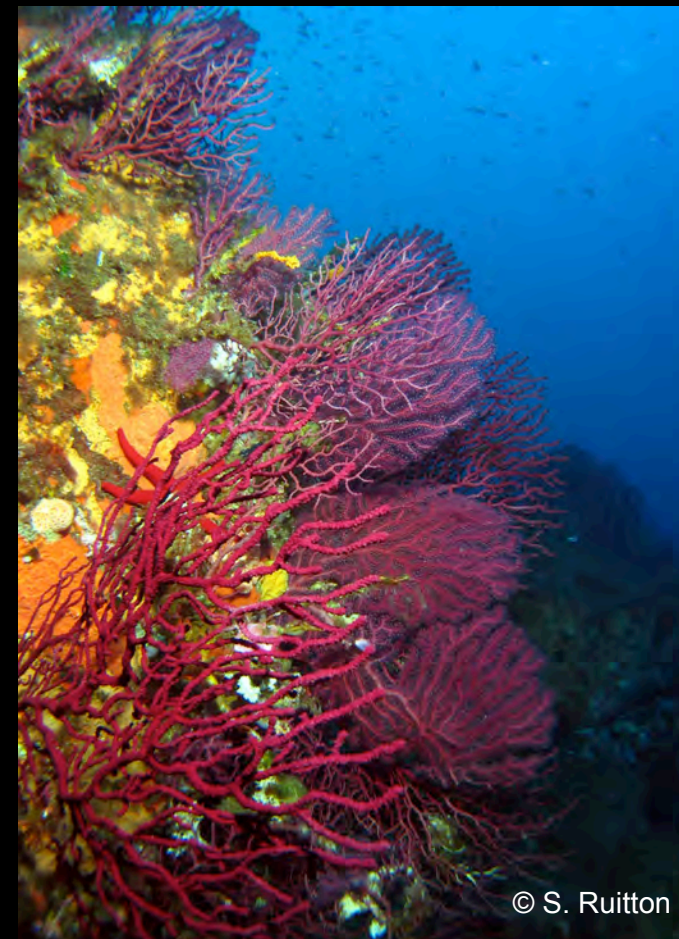
# Extent of the surface area of coastal carbon sinks: Example of the Corsican littoral

A. Valette-Sansevin, G. Pergent, P Clabaut &  
C. Pergent-Martini

# General context



**COP21 Paris agreement 2015**



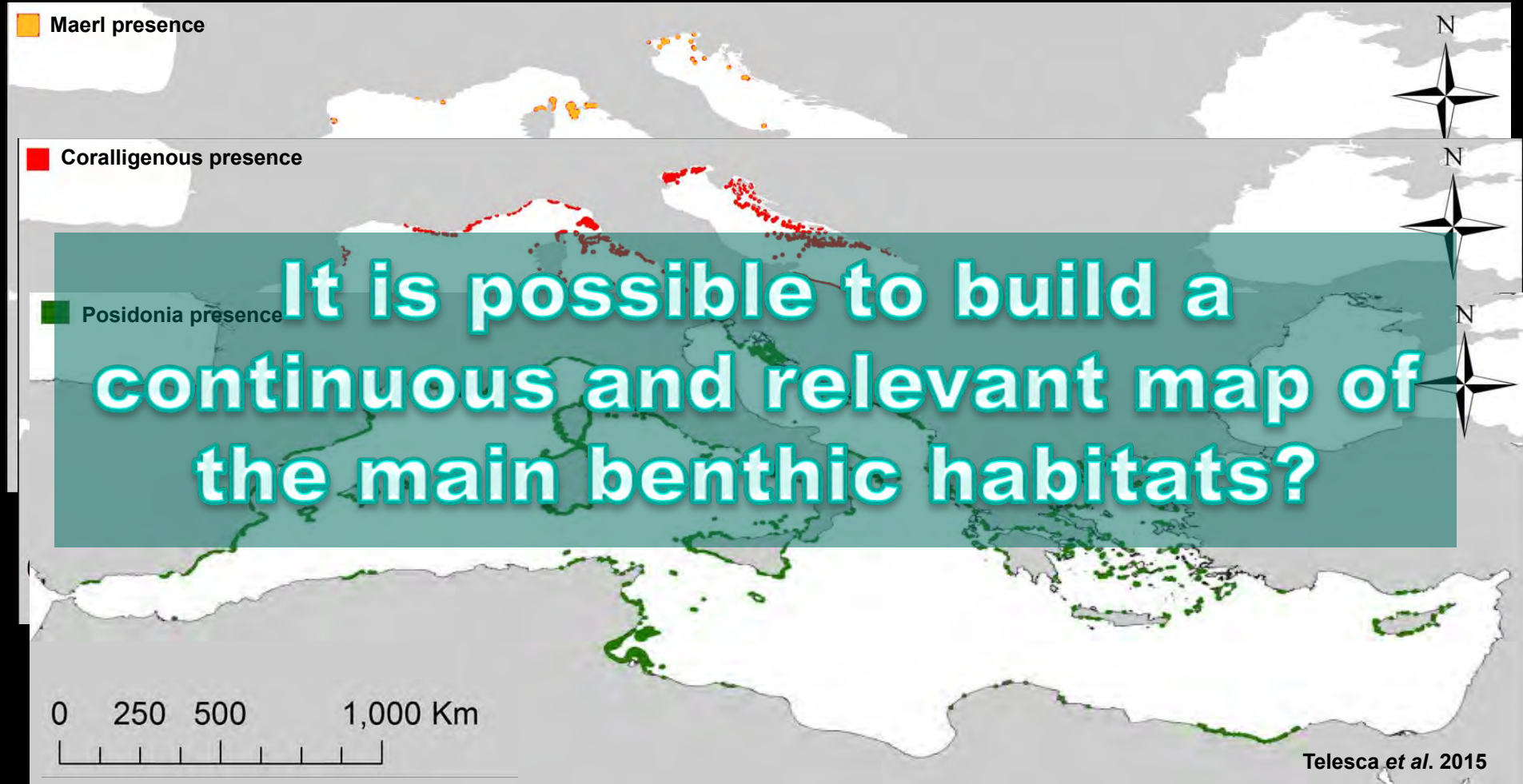
**EU Marine strategy**  
Spatial planning



# General context



**Few data on habitat distribution**



unpublished data & “grey” literature

# Adopted approach

## Case study : Corsica island

### ➔ Identification of available data

Source ➔

Location ➔

Date ➔

Method ➔

Scale & accuracy ➔

Digitalization

**Fiche Carte FR.DIAN.001**

Référence document source	Carte
<p>PERGENT-MARTINI C., FERNANDEZ C., PASQUALINI V., PERGENT G., SEGUI C., TOMASZEWSKI J.E., 2000. Les étangs littoraux de Corse : Cartographie des peuplements et types de fonds. Contrat Ecosystèmes Littoraux - Université de Corse &amp; IFREMER, N° 99 3 514004 : 1-33</p>	
Localisation	
<p>France, Corse, côte Est, lagune de Diana</p> <p>Coordonnées GPS : N 42°04'52.78" E 09°32'11.13"</p>	
Date de réalisation	
<p>Juin 1999 et Juin 2000</p>	
Méthodes	
<p>Photo-interprétation à partir de photographies aériennes Données – terrain (plongée en scaphandre autonome et observations depuis la surface grâce à un seau de Calfat)</p>	
Taille et précision	
<p>Photographie aérienne en couleurs, à l'échelle 1/10 000 et datant de juin 1999 Scan des photographies avec un pixel de 2 m</p>	
Copyright	

# Adopted approach

➔ Acquisition of new data

Remote sensing

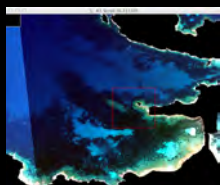
(BD Ortho® 2011 or 2007 / 0-15m / ENVI4®)



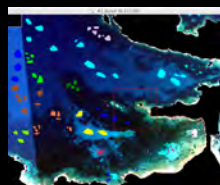
Aerial RVB photo  
0,5 m



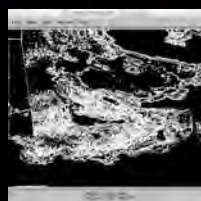
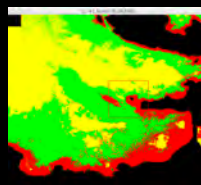
Mask  
application



« Learning  
phase »



Classification  
& filter



➔ Vectorisation

Acoustic data acquisition

(N/O Europe / Natura 2000 site / 2015 / CARAIBES 4.1 software)



Sidescan sonar /  
Multibeam &  
Manta EDO



Orthophotography : IGN 2011

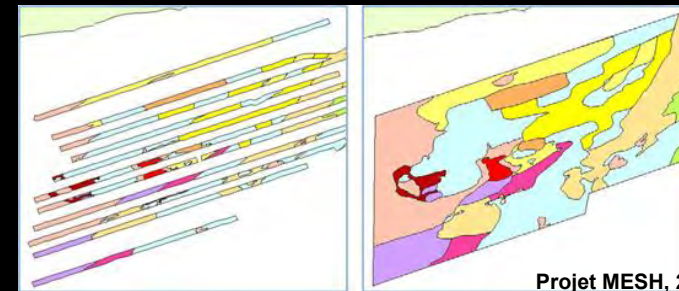


# Adopted approach



Assessment of the relevance

% of data acquisition



Criteria	3	2	1	0
Surface	100%	75-99%	50-74%	< 50%

Heterogeneity & complexity of the habitat

Soft bottom



Posidonia patches



Dead matte

Posidonia meadows

Soft bottom

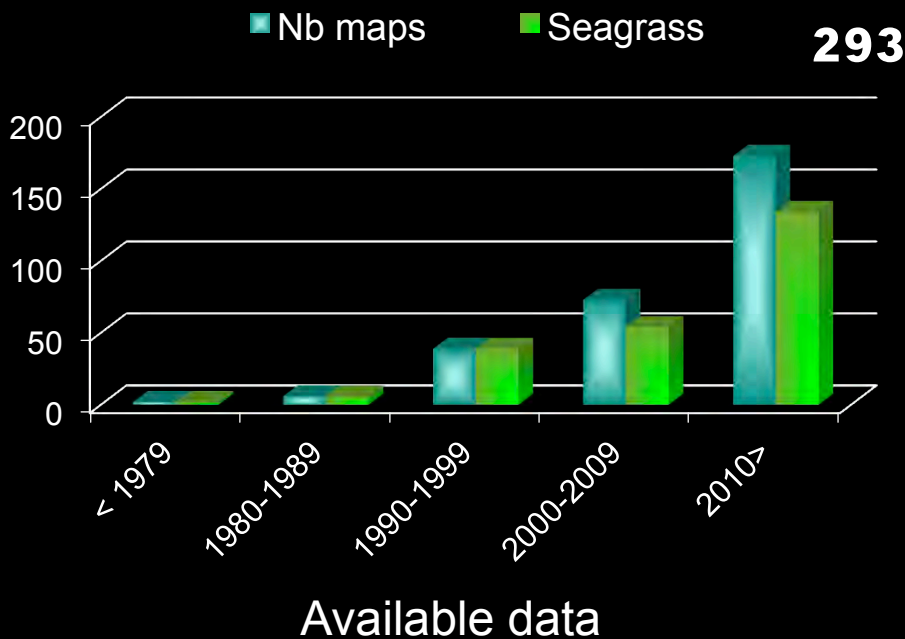
Hard bottom

Criteria	3	2	1	0
Habitats	Very $\neq$	$\neq$	close	Very similar

Scale on 12 parameters / Quality of data acquisition, ground truths & interpretation

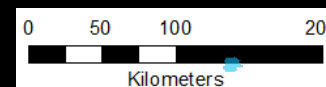
# Results

➔ 310 000 ha mapped

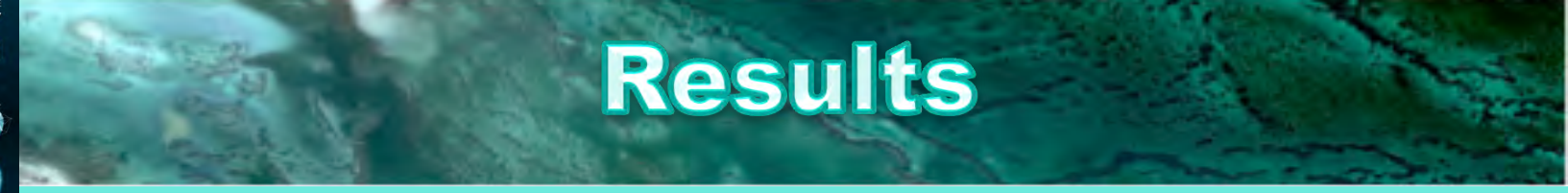


One of the largest continuous map at a national level

Coordinate system:  
RGF\_1993\_Lambert\_93  
SHOM/IGN 2009 Coastline  
(Histolitt)  
Source: Pasqualini V., 1997



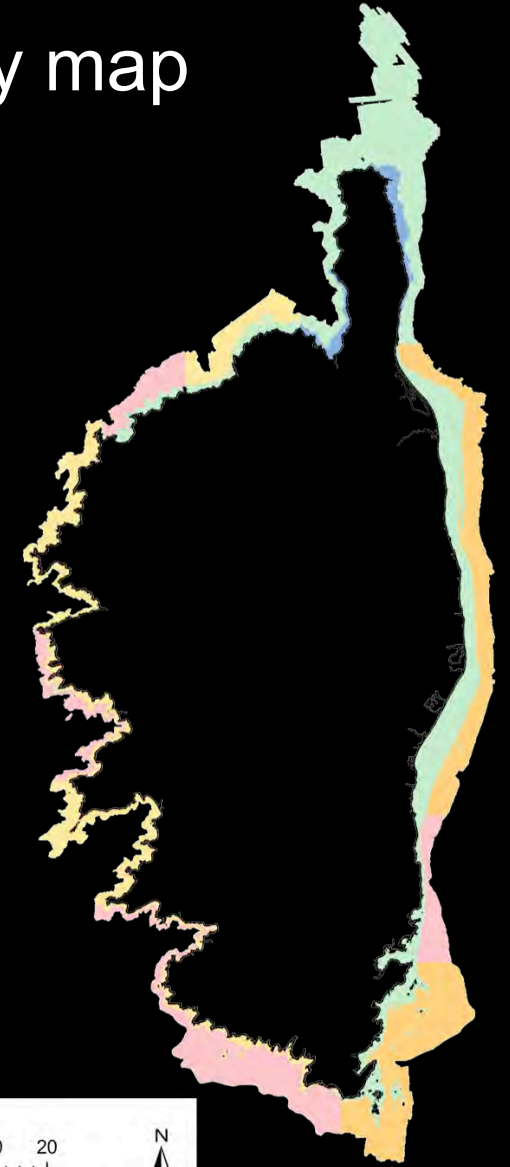
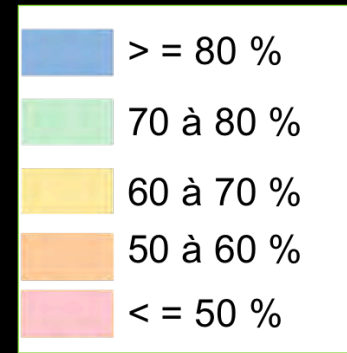




# Results



➡ A reliability map



# Results

➔ Surface of main habitats



53 460 ha  
59 % of infralittoral zone  
17,2 % of the total surface



2 054 ha  
< 1 % of the circalittoral zone



26 493 ha  
12 % of the circalittoral zone  
8,5 % of the total surface



84 182 ha  
> 1/4 Total

# On going research



Evaluation & modelisation of carbon fixation

Estimation of carbon and carbonate fixations

Infralittoral  
101 777 t.y<sup>-1</sup>

Circularittoral  
70 245 t.y<sup>-1</sup>

Surface covered

Measurements of primary productions

Bathymetric profiles



**Thank you for your attention**