

How to improve mangrove restoration projects?



Lisa Macera – PhD. Student - lisa.macera@creocean.fr - 230 avenue de Rome, 83500, La Seyne-sur-Mer, France – +33 6 16 89 16 25

Title : Environmental governance of mangrove ecological restoration projects: definition of socio-ecosystemic efficiency indicators.

Thesis supervisors : Julien Andrieu (Université de la Côte d'Azur), Olivier Le Brun (Créocéan), Sylvain Pioch (Université Paul Valéry, EA LAGAM), Elina Delord (Créocéan)

1 MONITORING MANGROVES RESTORATION PROJECT USING REMOTE SENSING

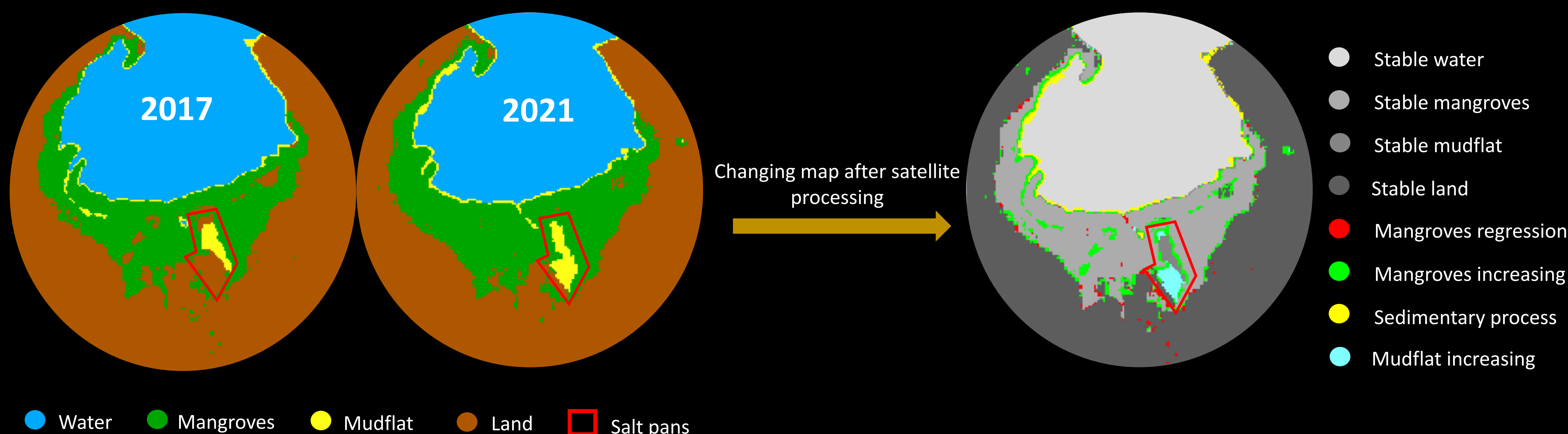
Objective : Map pre- and post-restoration sites to assess gains/losses associated with the mangrove restoration project.

Means : Use of free Landsat and Sentinel images. Processing of satellite images with TerrSet© software.

Location:
Cuajiniquíl, Costa-Rica

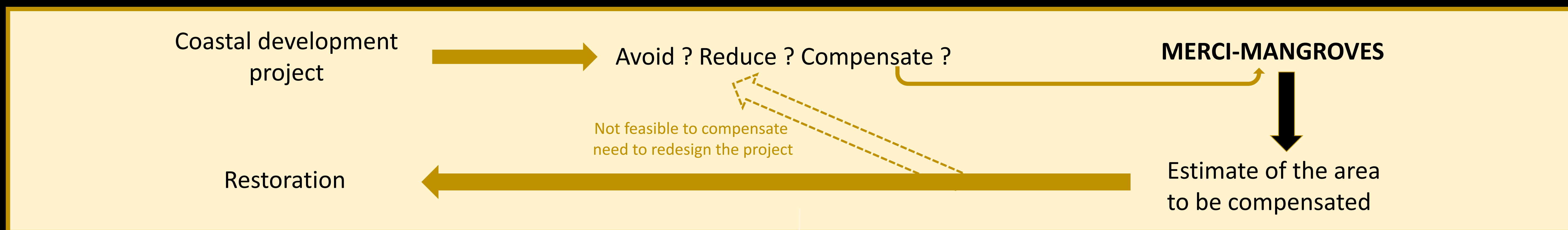
Project owner:
Fonds Français pour l'Environnement Mondial (FFEM)

Restoration techniques :
Restoration of hydraulic connections on old abandoned salt works (red on the map). Construction of channels and planting of *Avicennia germinans* along the channel.



2 MERCI-MANGROVES : METHOD TO AVOID, REDUCE AND COMPENSATE IMPACTS IN MANGROVE AREAS

Objective : Develop a Rapid Assessment Method (RAM) to calculate an adequate compensation area based on a minimum number of ecological, social and economic indicators describing the state of health of the ecosystem and the pressures on it.



$$\text{Compensation area} = \frac{\text{Impacted area} * \Delta \text{impact} * R * T}{\Delta \text{compensation}}$$

R = Risk that compensatory measures will not work
T = Time lag between the implementation of the measures and the effectiveness of the measures
 Δ compensation: estimated using a series of "state-pressure" type indicators

Example of indicators (parameters measured on the impacted area) :

- MANGROVE COVER RATE**
0. Between 0% and 25%.
 1. Between 25% and 50%.
 2. Between 50% and 75%.
 3. Between 75% and 100%.

SAMPLING PLAN
Remote sensing

Example of risks (parameters measured on the compensation area) :

- SOIL COMPOSITION**
1. Entirely or mostly of mud.
 2. Sand and mud in roughly equivalent proportions.
 3. Completely of sand

SAMPLING PLAN
Visual estimation