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**COMparative study of the problematic of the  
PORTuarine DRedging in the North and South of the  
Mediterranean: regulation, methodology, perception of  
the socio-economic actors and study of the resuspension  
of contaminants ECODRAPOMED**

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**CONTEXT** : Port areas are coastal socio-ecosystems, located at the land-sea interface, subject to both autochthonous sources of pollution and receiving terrigenous inputs from watersheds. In order to maintain good navigability conditions, ports have to carry out **dredging works** which are regulated. These works must allow the maintenance of port activities while not disturbing the ecosystems. Depending on the nature and the levels of contamination of the dredged sediments, their management is also a step to be managed upstream based either on a reuse in maritime works, beach nourishment, treatment or waste disposal when land disposal is not possible, generating important and recurrent costs.

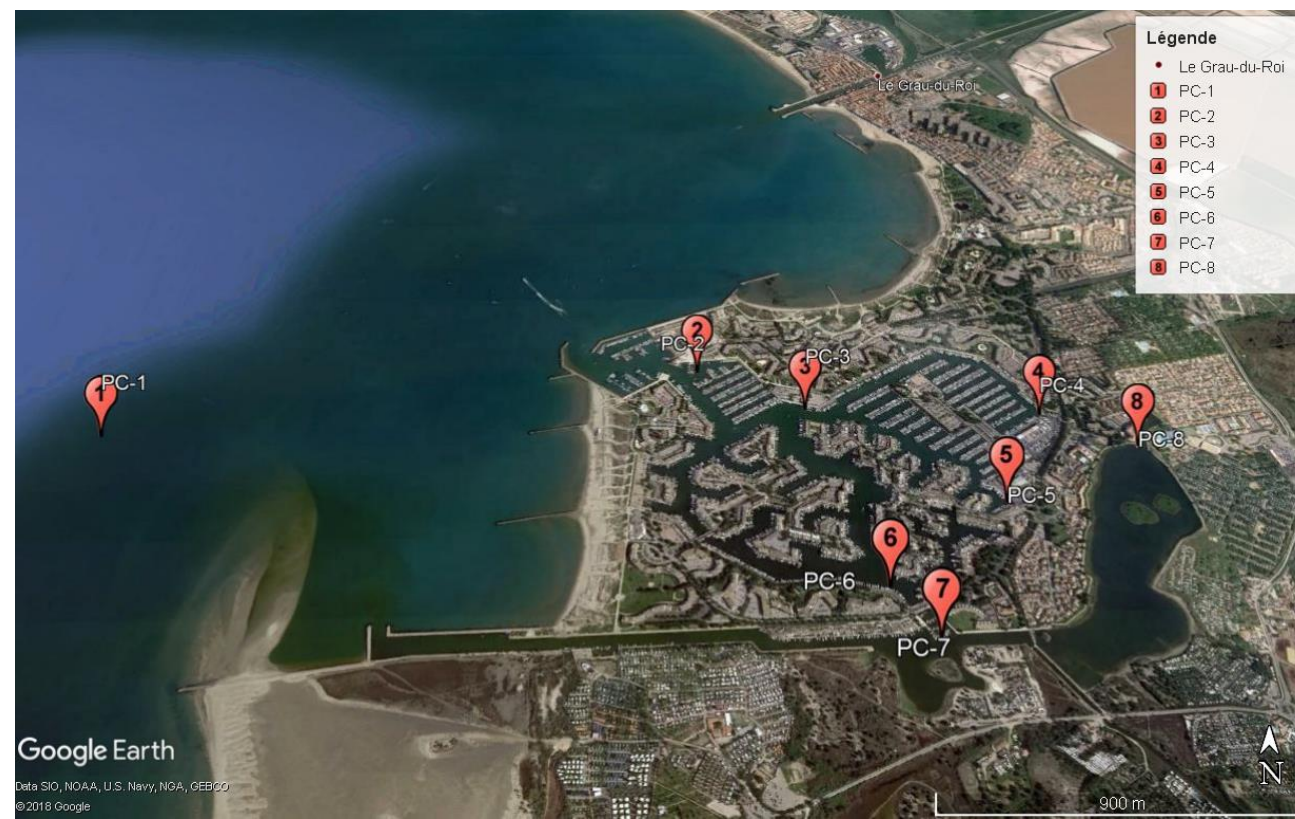


Study sites of the OHM Littoral Méditerranéen : port areas of the Gulf of Aigues Mortes: marina and fishing ports with the supports of the captaincies

## 2018-19 : POTRACONS Projects

Sources and transfer of contaminants in a port ecosystem: the case of the marina of **Port-Camargue**

Determination of the origin of the contamination of the waters of **Port Camargue**: help for the management of the contamination

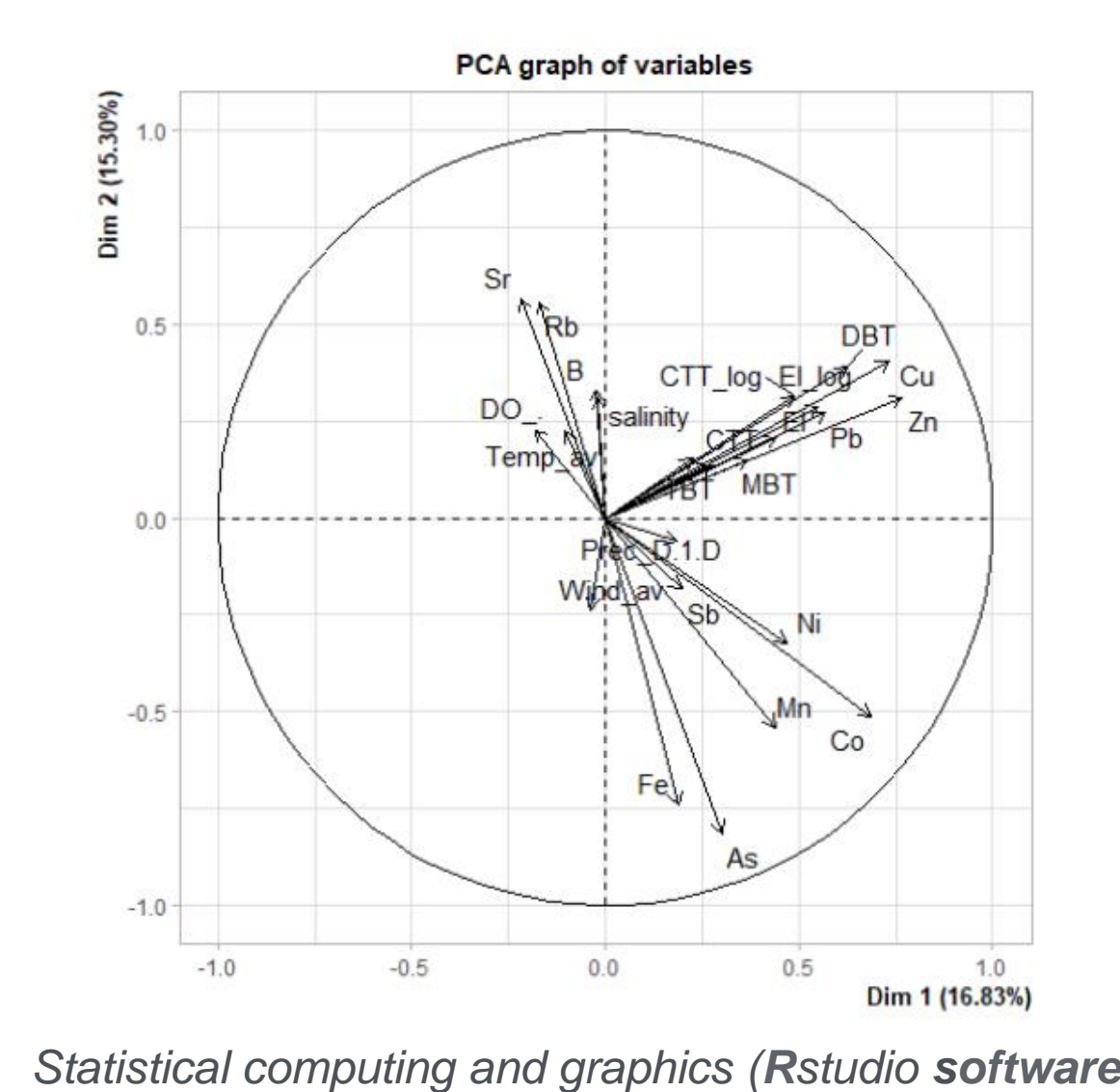
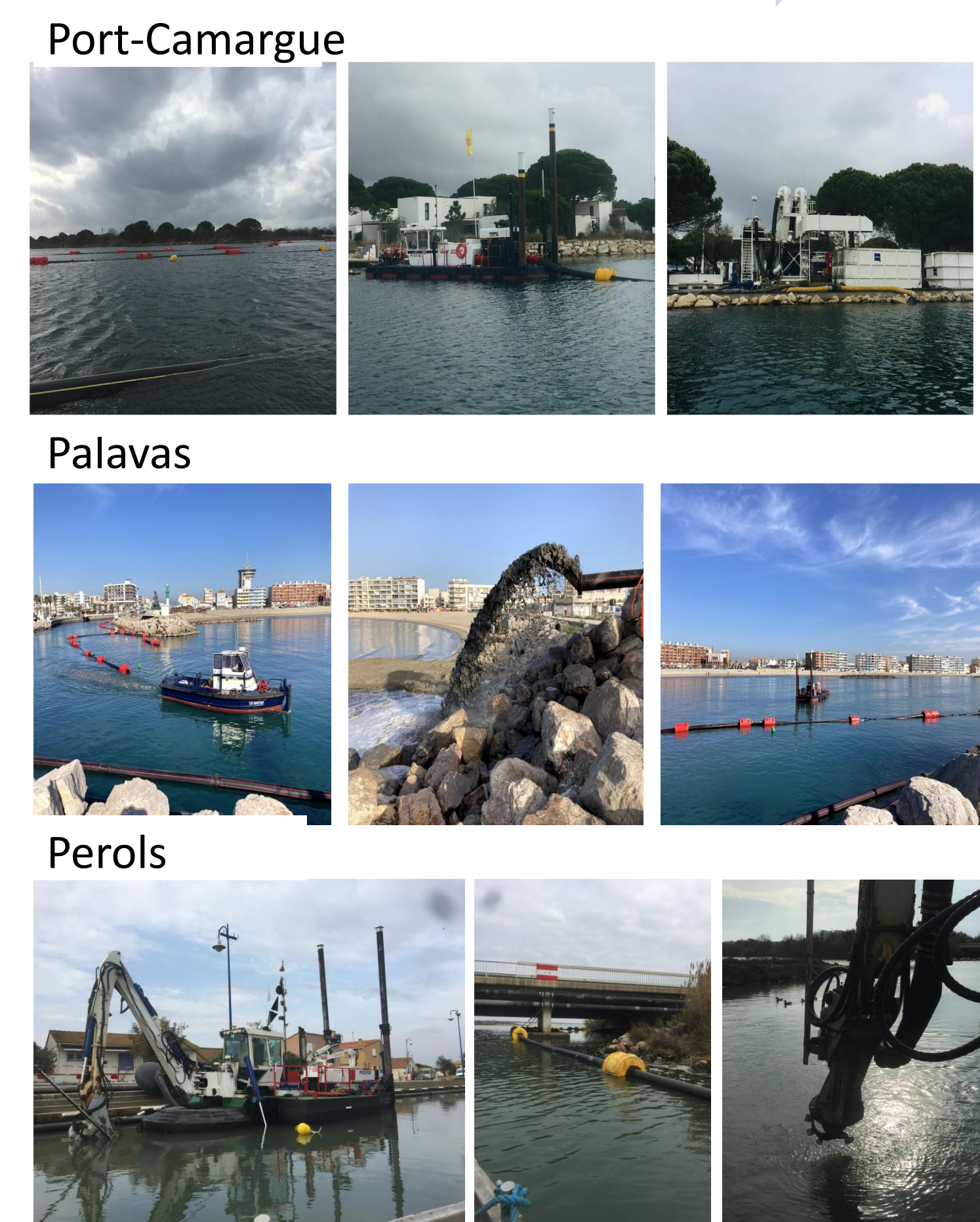
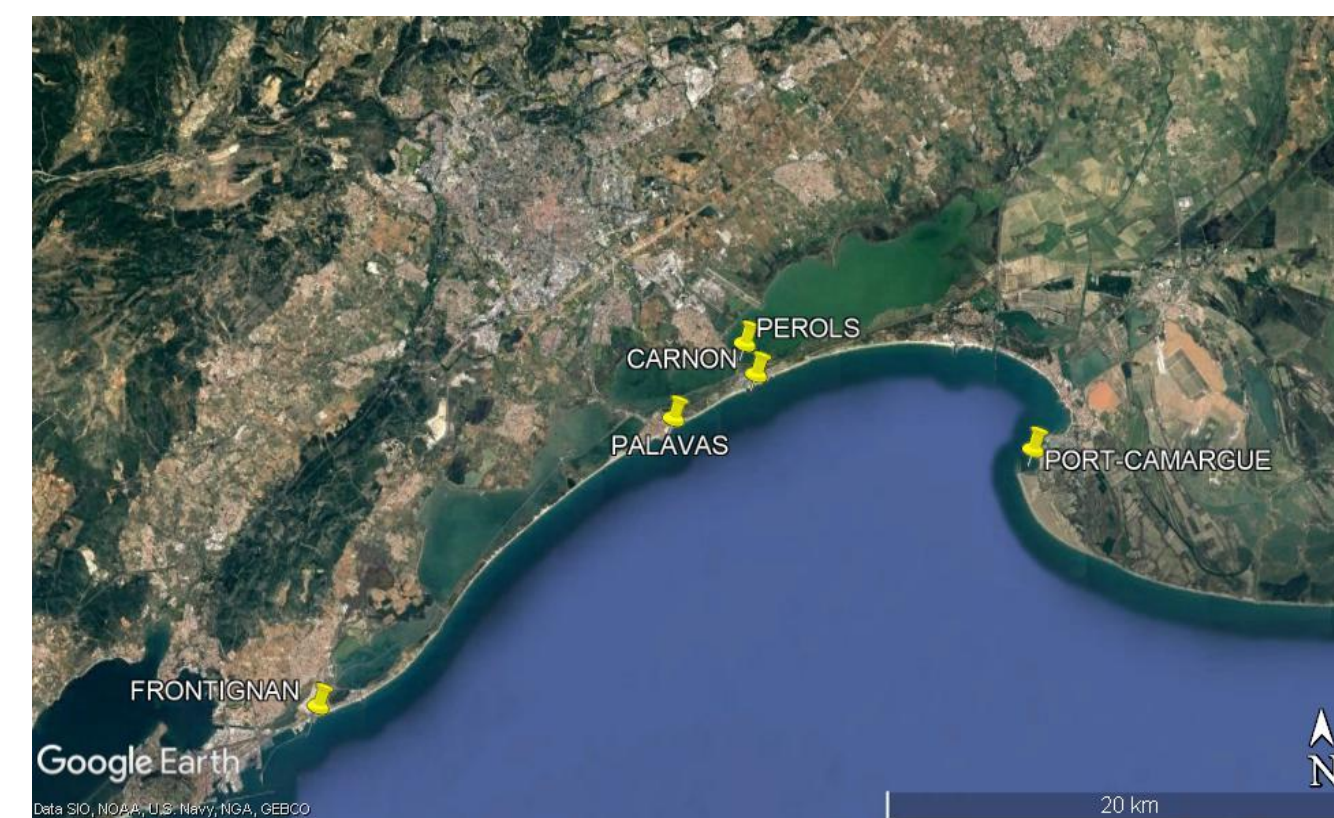


<p><b>Physicochemical parameters</b></p> <ul style="list-style-type: none"> <li>pH</li> <li>Temperature</li> <li>Dissolved O<sub>2</sub></li> <li>Salinity</li> <li>Turbidity</li> </ul> <p>Turbidity probe by nephelometry (infra optical technology) (Jynus 7)</p>	<p><b>Inorganic compounds</b></p> <ul style="list-style-type: none"> <li>Trace metals</li> <li>Rare earths</li> </ul> <p>Q-ICP-MS, ICAP-TQ, Thermo Scientific</p>	<p><b>Organic compounds</b></p> <ul style="list-style-type: none"> <li>Inorganic compounds</li> <li>Compounds used in antifouling paints = organotin TBT</li> </ul> <p>GC-Q-ICP-MS, ICAP Q, Thermo Scientific</p>	<p><b>Microbiological parameters</b></p> <ul style="list-style-type: none"> <li>Fecal Contamination Indicator Bacteria FCIB</li> <li>Thermo-tolerant coliforms including Escherichia coli</li> <li>Intestinal Enterococci</li> </ul> <p>Origin of fecal microbial contamination (gene quantification)</p> <table border="1"> <tr> <td>HUMAN</td> <td>DOG</td> </tr> <tr> <td>HORSE</td> <td>BIRD</td> </tr> </table>	HUMAN	DOG	HORSE	BIRD
HUMAN	DOG						
HORSE	BIRD						

Monthly database for Port Camargue since March 2018

## 2020 : PORGAM project

The ports of the Gulf of Aigues Mortes from **Frontignan to Port Camargue**: State of water quality and impact of dredging activities



Statistical computing and graphics (Rstudio software)

## PRINCIPAL RESULTS

- [Cu] > Environmental Quality Standard EQS (Water Directive Framework) for all harbour waters
- [TBT] > EQS especially in the waters of the Technical Areas of the port
- FCIB : Harbour waters of good quality in general, BUT significant contamination at times mostly from animal's origin / Significant positive correlation of concentrations with rainfall (soil leaching) - Water quality is often insufficient compared to that of bathing waters
- Resuspension or re-adsorption of As, Cu, Zn and TBT from the beginning of the dredging operations varies according to the ports considered

## 2022 : ECODRAPOMED

COMparative study of the problematic of the PORTuarine DRedging in the North and South of the Mediterranean: regulation, methodology, perception of the socio-economic actors and study of the resuspension of contaminants

Study of dredging operations in port areas on both shores of the Mediterranean:

4 marinas and 1 fishing ports of the Gulf of Aigues Mortes (France) + 2 fishing ports: Ghar el Melah (Tunisia)



### CONTAMINATION MONITORING

- I. Initial state of water and sediment quality before the dredging operations:
  - CARNON : underway still Sept 2021
  - GHAR EL MELAH: sampling campaign in June 2022
- II. Monitoring during dredging operations in autumn 2022

### MANAGEMENT - REGLEMENTATION

- Bibliographic and comparative study on the two shores of the Mediterranean FRANCE and TUNISIA :
- Criteria for obtaining authorizations for the dredging operations
  - Management and fate of the dredged sediments: dumping, treatment, potential reuse for beach nourishment in erosion...

### PERCEPTION SURVEYS

- Perception surveys on environmental issues related to harbour dredging among users:
- managers, socio-economic actors
  - boaters
  - fishermen
  - tourists

