Climate adaptation and mitigation in Pays de la Loire region : Regional Observatory for Coastal Risks (OR2C)

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Nantes Université

UMR 6554 CNRS
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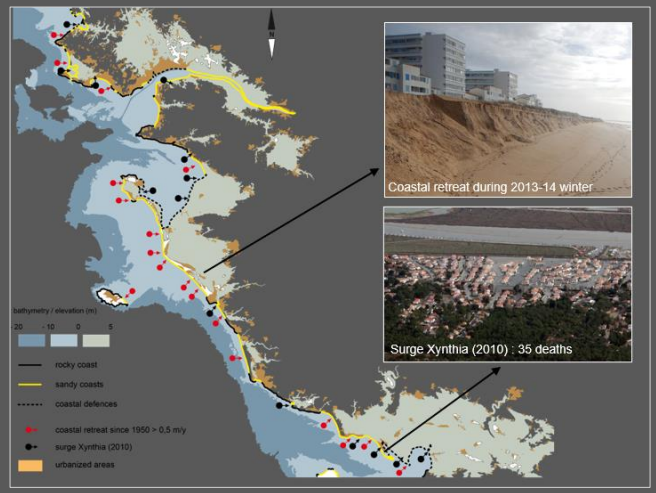
Observatoire Régional des Risques Côtiers en Pays de la Loire (OR2C)
REGIONAL OBSERVATORY OF COASTAL RISKS : WHY ?

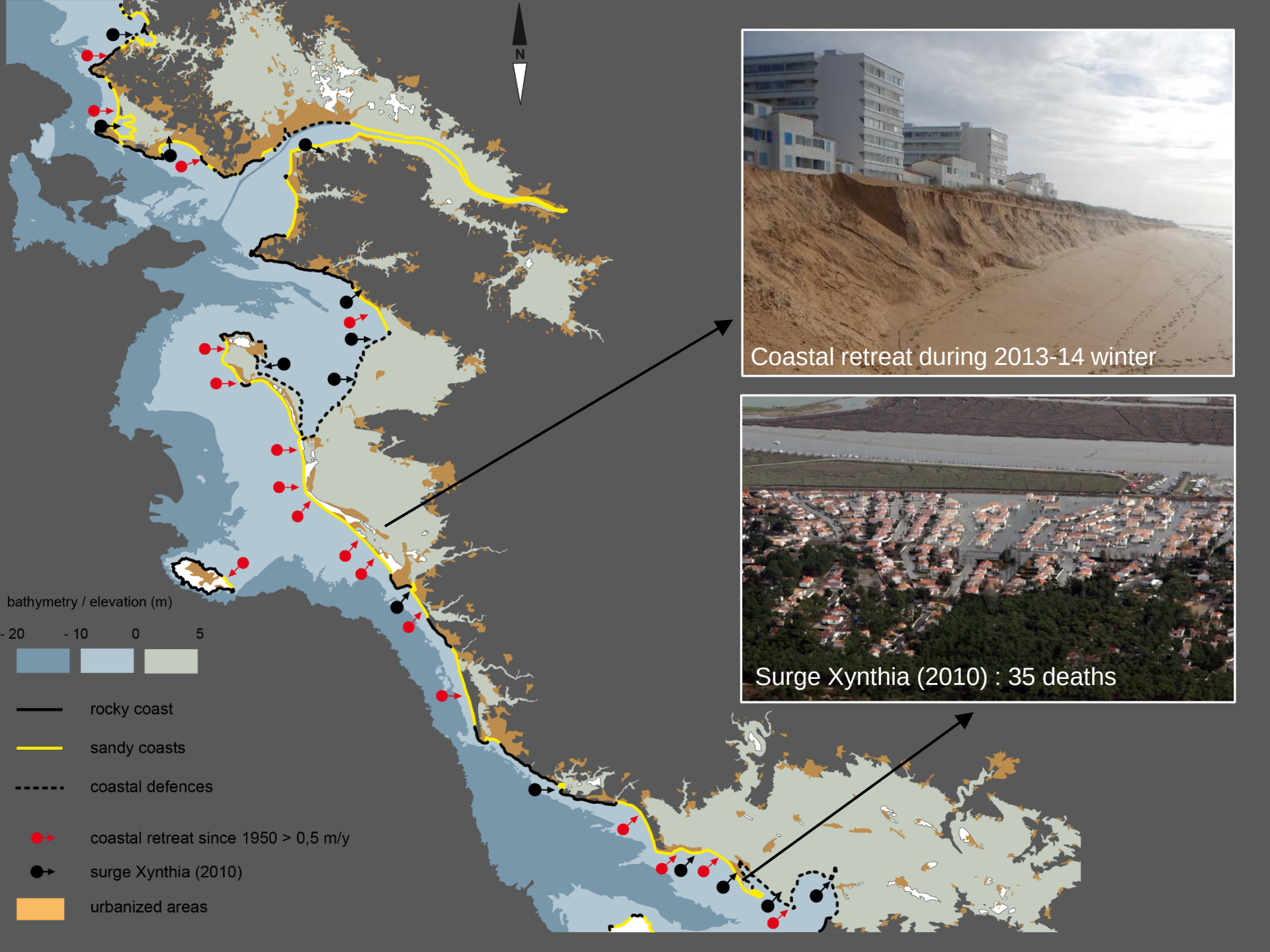
GEOGRAPHICAL CONTEXT : A territory at risk

- Coastal lenght: 386 km (8 % of french coasts)
- High vulnerability to coastal retreat and storms surges (197 000 ha of lowlands)
- 310 500 residents in coastal zones
- Tourism: more than 19 M visitors / year

HISTORICAL CONTEXT : storm Xynthia (2010)

- 69 deaths in Europe, (35 in Pays de la Loire)
- Underlined the **necessity** of an observatory

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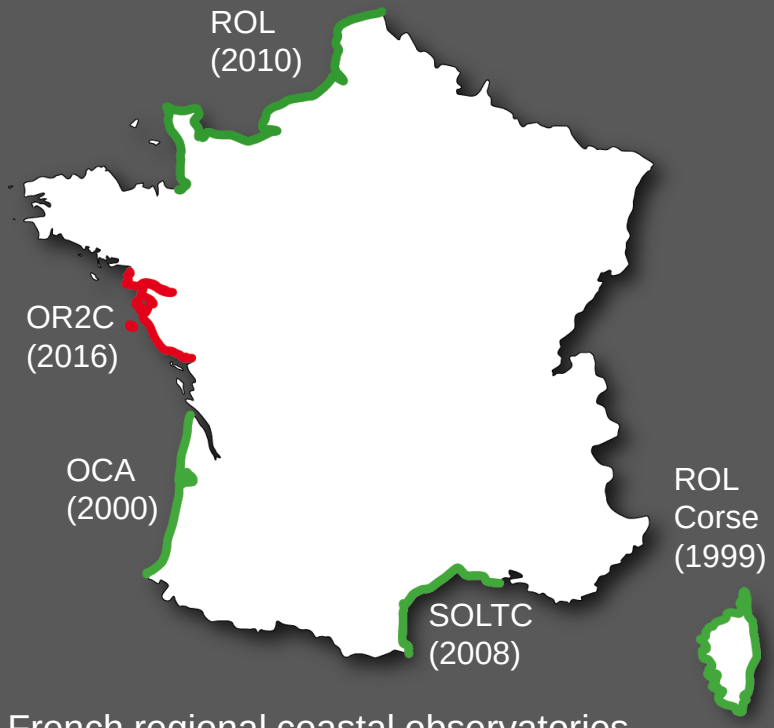
Coastal retreat during 2013-14 winter
Surge Xynthia (2010) : 35 deaths
bathymetry / elevation (m)
- 20
- 10
0
5
rocky coast
sandy coasts
coastal defences
coastal retreat since 1950 > 0,5 m/y
surge Xynthia (2010)
urbanized areas

REGIONAL OBSERVATORY OF COASTAL RISKS : WHY ?

INSTITUTIONAL BACKGROUND:

- 2012 and the French National Strategy for Integrated Coastline Management
  - For better anticipation of coastline changes
  - Support of French Regions in their adaptation strategies and spatial reorganisation

- Promotes Regional Observatories:
  - To increase the knowledge, develop tools
  - To regionalize strategies in order to reduce the risk



French regional coastal observatories

OR2C GOVERNANCE : From national to local level

OR2C: partnership of 35 members since 2016

- French State authorities
- Region and departments authorities
- Institutional establishments
- Operational bodies

OR2C: Only french regional observatory coordinated by a University !

- Nantes University (5 engineers and 8 professors)
- Scientific guarantee (more than 20 international papers)
- Constant collaboration between scientifics and operationals

SCIENTIFIC REPORTS

nature research

Climatological influences on major storm events during the last millennium along the Atlantic coast of France

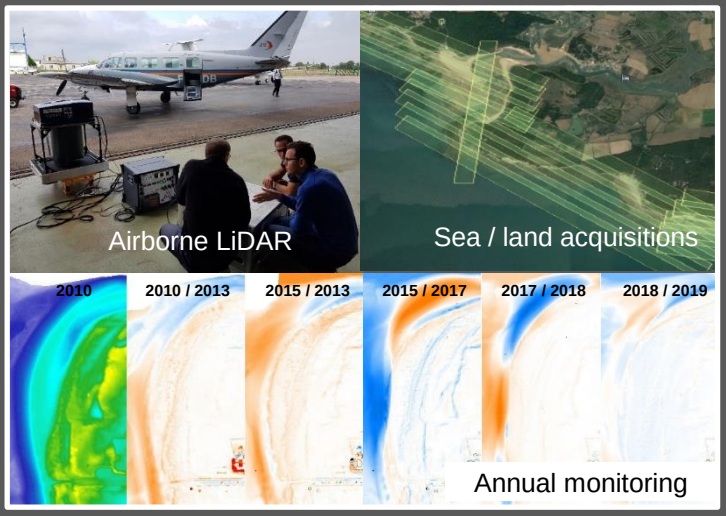
Pierre Pouzet & Mohamed Maanan

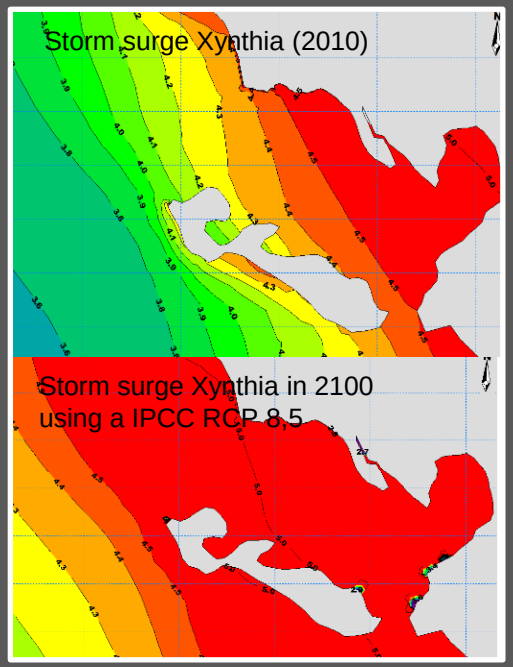
This paper reviews the climatological influences on major past storm events in the North-east Atlantic. Analyses are based on a millenary record of sedimentological and historical impacts affecting coastal societies. The effects of 20 past storms have been found from sedimentary deposits from the last 1,000 years. Historical archives confirmed these events. This paper highlights five major storms that have markedly impacted coastal populations. They date back to 1351–1352, 1469, 1645, 1711 and 1751 AD. The 1351–1352 AD event is defined as a millennium storm that was "likely apocalyptical", provoking serious damage and long-lasting floods on much of the European coast. Major storm impacts have mostly been recorded during positive North Atlantic Oscillation phases. Four decreasing temperature phases are concomitant with 1300–1355, 1420–1470, 1560–1590 and 1690–1715 AD periods, during which much of the northern Atlantic coast of France underwent severe storm damages.

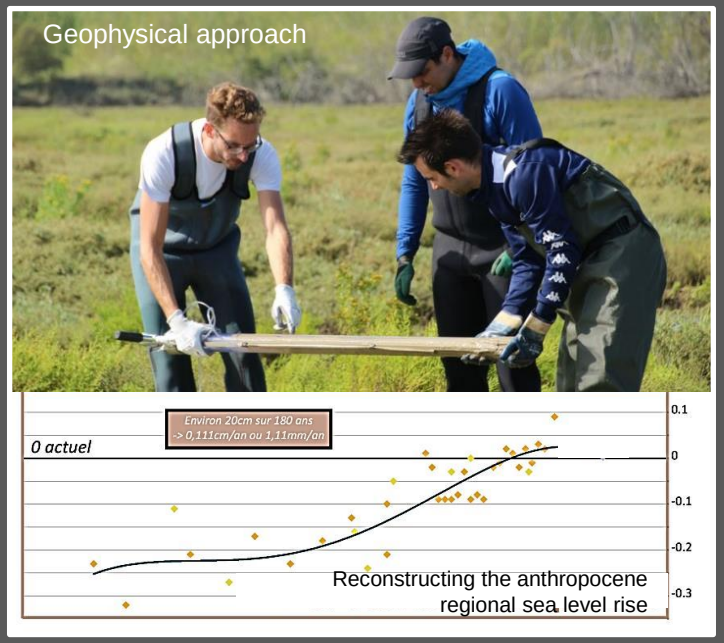
OR2C : 4 MISSIONS

1 First mission: Strengthen scientific knowledge

- Annual coastal observations (airborne LiDAR)
- Scientific research (ex : history of storm events)
- Hydro-sedimentary modelling



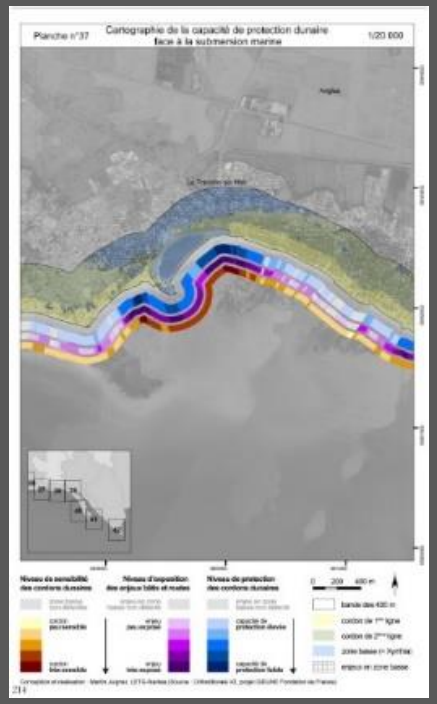




OR2C : 4 MISSIONS

2 Second mission: knowledge transfer and tool development

- Free available observation data (LiDAR)
- Numerical tools to manage the risk
- Scientific results



Majors tools :

- Atlas of coastal risks
- Toolbox MapRisc
- Processing coastal data
- Predicticting storms effects

See our website:
https://or2c.univ-nantes.fr

A detailed diagnosis of coastal risk with the « MapRisc » tool

OR2C : 4 MISSIONS

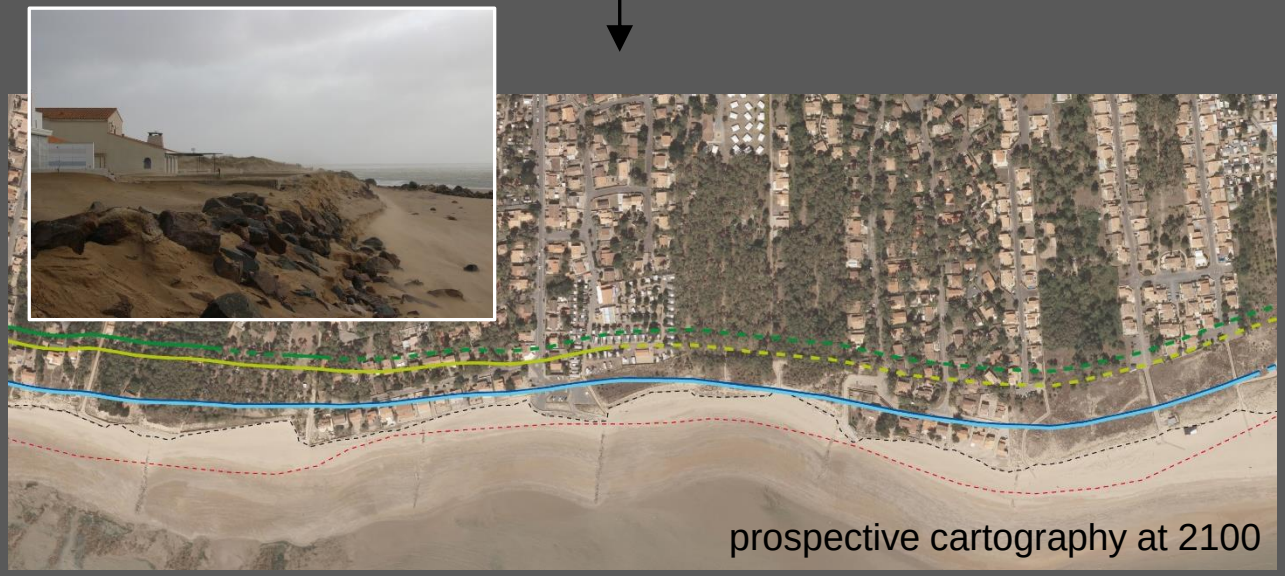
3 Third mission: to federate a regional dynamic to reduce coastal risk

- Technical committee
- Sharing knowledge (trainings)
- Awareness towards stakeholders and citizens (schools, citizen science)

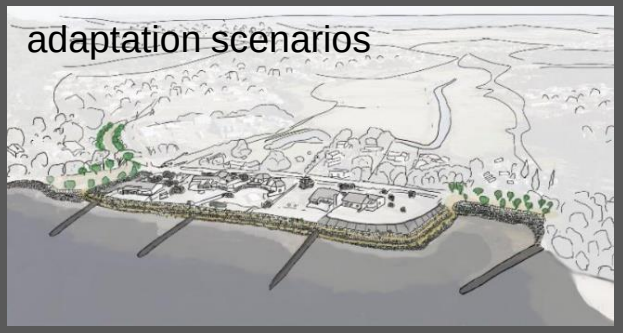
OR2C : 4 MISSIONS

4 Fourth mission: supporting territories in climate adaptation

- By studying the perception of risk
- By developing scenarios with stakeholders (especially coastal spatial retreat)



Eyetracking for perception of risk



Pays de la Loire in the EU

EU Mission for Adaptation to Climate Change

- Region Pays de la Loire **signatory** of the Charter
- MIP4ADAPT community
- Call and Cascade funding opportunities

CLIMAAX climate ready regions

P2R PATHWAYS2RESILIENCE

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