

Case Study 7: The French Central Atlantic coast (Charente-Maritime)

On the French Atlantic coast, the department of Charente-Maritime (644 353 inhabitants in 2014, 463 km of coastline, see Fig. 1) is highly vulnerable to extreme climate events, as highlighted by the recent Xynthia storm (Feb. 2010), which killed 47 people and generated major damage (6 000 houses affected, 2.5 billion € damages) as a result of rapid and extended marine inundation. The high vulnerability of this area to climate-related stressors, including climate change impacts (notably sea-level rise) is due to numerous factors: its geomorphological characteristics (large extension of reclaimed areas lying below high water levels); accelerated coastal erosion (e.g., up to -25 m/y^{-1} on Oléron Island) and degradation of sand dunes (dune breaching becoming a key concern in some urbanized areas); major changes in land management (abandonment of the traditional maintenance of drainage systems and dikes as a result of agricultural recession); recent changes in land use practices (population boom and tourism development leading to the settlement of highly exposed areas by non-informed people); and changes in coastal management (decentralization of key competences, such as coastal protection management, to local authorities).

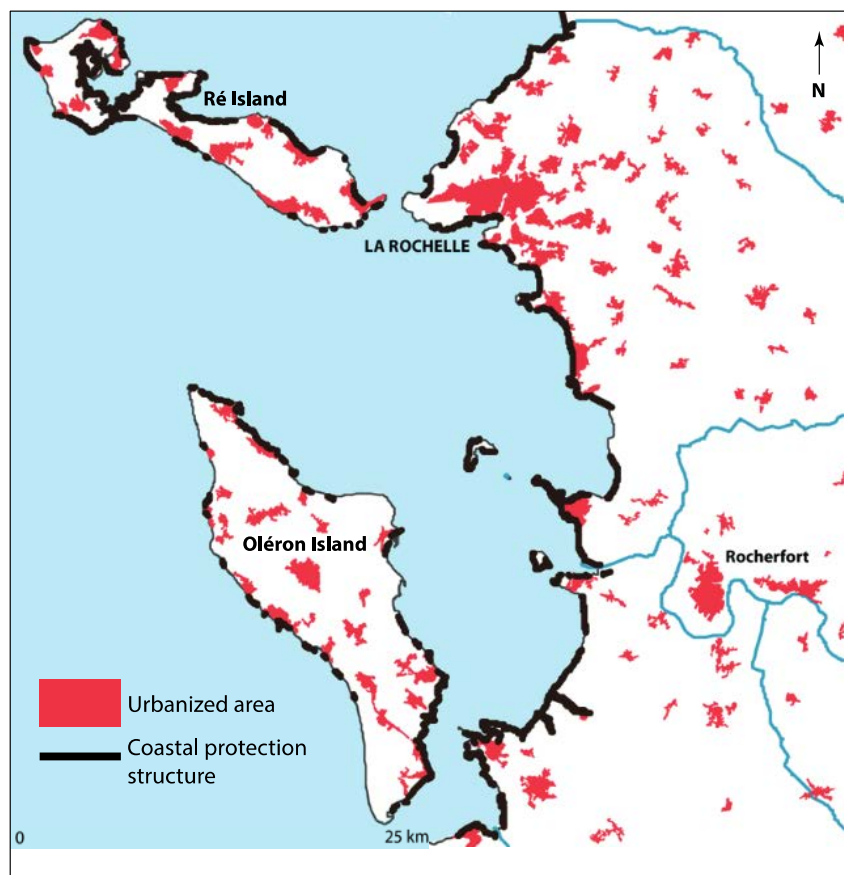


Figure 1. Map of Charente-Maritime showing extended coastal urbanization and protection.

Half a century after the preceding major flood event, the Xynthia storm has revealed the key role of

recent environmental and socio-economic changes, notably rapid urbanization and its detrimental impacts on coastal ecosystems, together with institutional factors (decrease in public funding, weakness of public institutions in the front of coastal developers, lack of institutional coordination and integration, etc.), in the occurrence of a climate disaster (Chauveau et al., 2011; Vinet et al., 2012; Cour des Comptes, 2012; Duvat et Magnan, 2014). As a consequence, this storm has led to the design of a national plan aimed to reduce current and future flood risk through a large set of measures.

In this context, three complementary responses to climate-related stressors that are currently being implemented in Charente-Maritime will be investigated in this project: (1) the strengthening and raise of coastal engineering structures, which is occurring where public authorities have decided to protect threatened human assets from sea destruction at all costs; (2) the relocation of those human assets that have been seriously damaged or that are considered as being located in “dangerous areas”; (3) the promotion of the role of sand dunes as natural buffers in the face of storms and sea-level rise (i.e., dune restoration and improvement of environmental management to reduce risks and adapt to climate change).

We will determine first, the barriers and levers to the implementation of these three complementary strategies, and second to what extent they can be considered as adaptive or maladaptive.

References

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