



Historical contribution to the LiCCo programme

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I. Commission objective

- **Study period: 1500-1940**

- **Provide a history of submersion risk management:**
 - The role of the State, associations, bridges and dykes, directors and investors in shouldering technical, financial and legislative risk of submersion and the anticipation of this risk

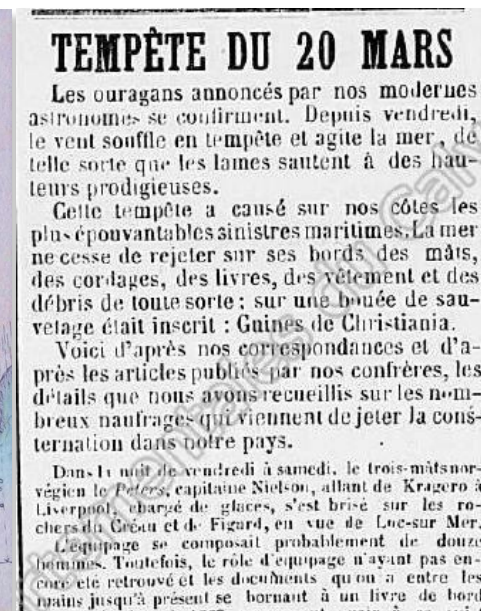
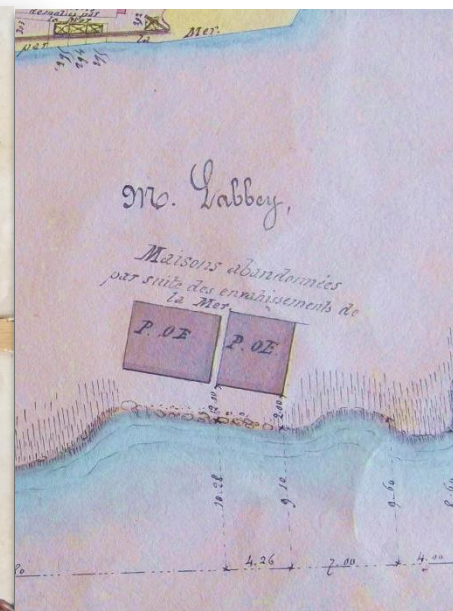
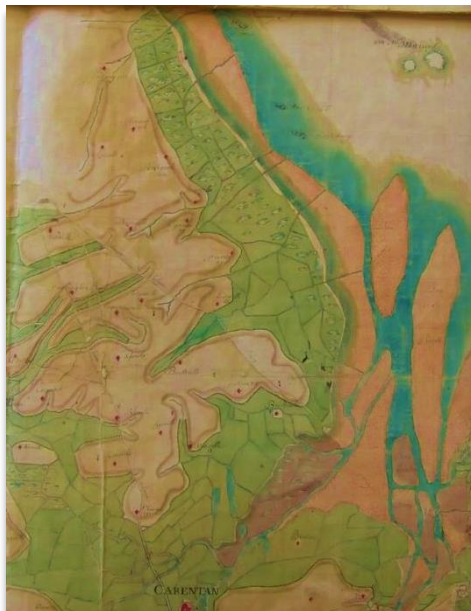
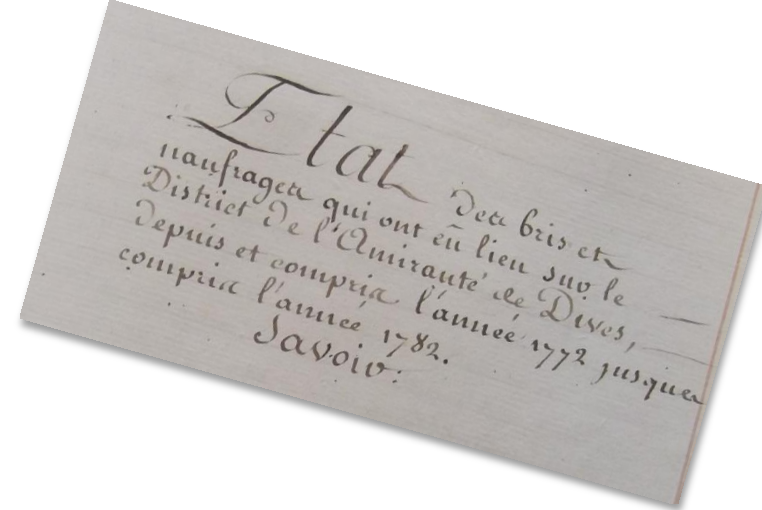
- **Rebuild a time-line of extreme events from 1650 to 1940**

- **Find examples of occasions when societies have been unable to sufficiently adapt to the constraints of their environment:**
 - Find historical examples of societies adapting
 - Investigate economic, legislative, philosophical, geomorphological and other factors which influenced people's capacity to adapt.

II. Methodology

➤ Researching old sources:

- Private archives
- The Press
- Municipal, departmental and regional administrative archives
- Marine archives





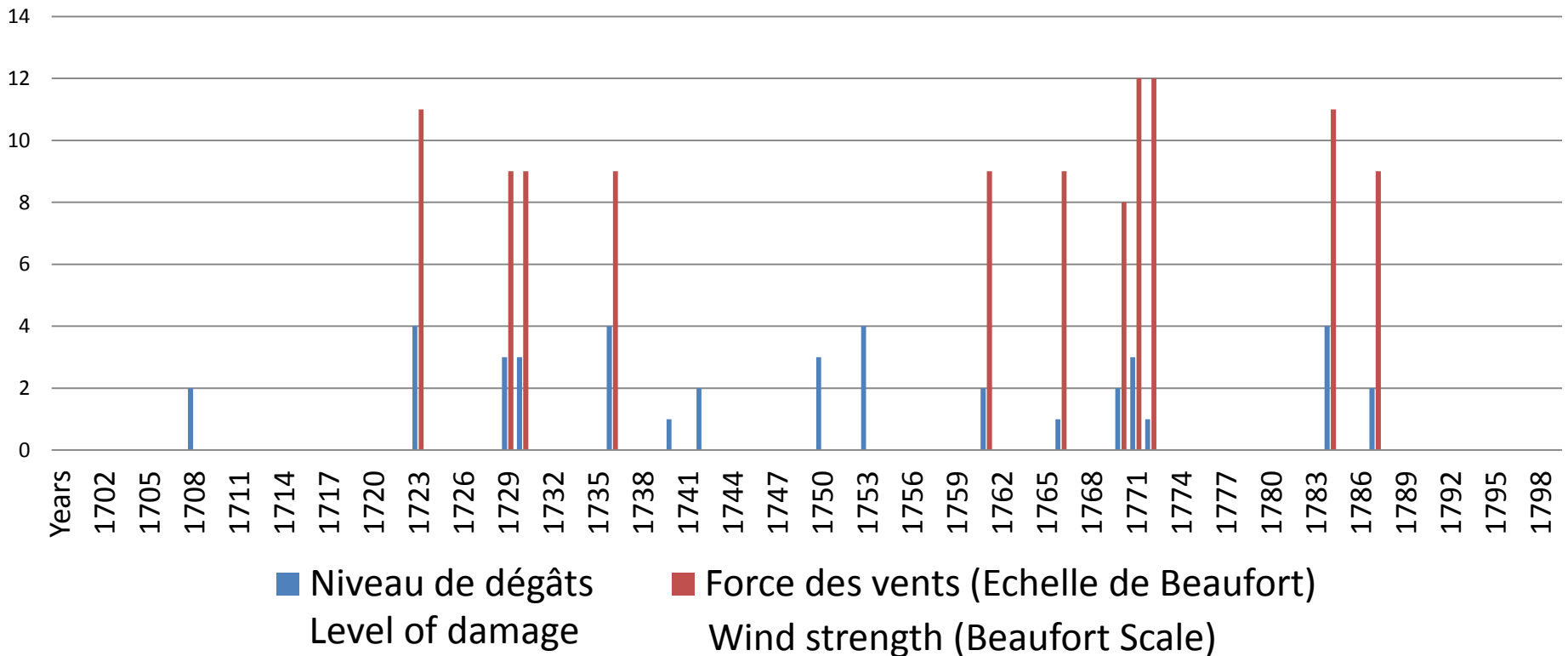
Use of a damage scale:

Index	Type of submersion	Magnitude of damage caused by the sea
-1	Mention	Mentioned in sources, no supplementary information
1	Weak	Slight encroachment of a dune belt, dyke or port. The dyke or dune belt are eroded or weakened and repair work is necessary.
2	Moderate	Waters encroach onto public roads, quays or lands which are closest to the coastline. The dyke or dune belt is not ruptured, but is damaged and requires urgent repairs which cost more than the usual maintenance.
3	High	Significant damage: the dyke or dune belt has been ruptured. Infrastructure for the draining of coastal wetlands may have been damaged. Heavy work is carried out to rebuild defensive infrastructure, which needs to be paid for over several years. Houses are flooded for a number of days. Damage to crops (submersion or encroachment over several hectares by marine sediments) harm that year's harvest.
4	Very high	The dyke or dune belt is ruptured and infrastructure for the draining of coastal wetlands is damaged. Heavy work is carried out to rebuild this infrastructure. Some houses have been knocked down by flood water, others are flooded for a number of days. Damage to crops extends beyond the first 500 metres inland. Vehicles and boats have been carried inland by flood waters. Animals have been killed. Crops located along the coastline are lost. Businesses located along the coastline are unable to function for a number of days. The area of coastline margin affected is on a departmental or regional scale.
5	Exceptional	An exceptional event due to its geographical, demographic and economic impact, human losses, disturbances, famine, loss of habitat, economic slow-down lasting for over a year.

I. Results

➤ Production of a time-line charting submersion damage

**Example for the east side of the Contentin peninsula
between 1700 and 1789**



➤ **A brief history of submersion risk management**

From the 16th to the 19th century, the coastline is seen as a reservoir from which multiple resources can be extracted. Fauna, flora, marine products and construction materials are subject to intense exploitation. The dune belt, the main obstacle to the “invasion of the sea”, is overwhelmed by numerous uses including grazing, storage and access to the shore.



CNUM (French National Digital Library): *Traité des pêches* (Pamphlet on fisheries) by Duhamel Du Monceau

1st major change: 1650-1730: End of multiple activities which characterised the exploitation of coastal wetlands

Implementation of legislation (from the 16th century) strongly encouraging the development of **unused land and wasteland** (dunes, marshes, pools, swamps, shorelines)

+

Specialised and intensified agricultural practices leading to drastic drying up of marshlands and creation of polders

+

Increased military infrastructure: redoubts and forts along the coastline

+

Intensive aggradation of waterways (and a slight decrease in the sea level during the Little Ice Age?)

+

A doubling of the coastal population between 1650 and 1850, increasing the

2nd major change: 1850-1914: 1st coastal tourism boom and large-scale creation of polders

Long-term consequences:

- Shrinking dunes and a significant reduction in the intertidal zone.
- Increased permanent infrastructure which is not compatible with winter-time reductions in the dune belt and encroachments from the sea.
- Advanced but incomplete legislation produced due to the significant economic concerns during these changing times.
- Hope of significant economic or financial returns encourages this concealment and delays any reflection on the movement of coastal areas.
- Development of a lexical and metaphorical field pertaining to the conquering and devastating sea:
 - which allows urgent decisions to be taken
 - which validates cases of force majeure
 - which justifies the sea defence policy carried out up to the present day.

Conclusion

The out-and-out sea defence policy and the creation of large polders has led to a number of crises over the last three centuries, due to damage caused by stormy decades as well as major economic and environmental setbacks.

The history of submersion risk management by the Royal and then Republican State is a relatively linear one, characterised by a strong motivation to organise bodies to implement sea defences which are strictly controlled by the Corps of Bridges, Waters and Forests.

It is also characterised by intentionally low budgetary interventionism despite exemptions granted due to pressure from lobby groups and vote-chasers. Until 1940, the State and local authorities considered sea defences a private matter, a choice made at their own “risks and perils”.