

TIDE GAUGE RECORDS ON THE CHARENTE-MARITIME FRENCH ATLANTIC COAST BACK TO THE MIDDLE OF THE 19th CENTURY



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Introduction

The tide gauge records contain climatic hints which it's today very interesting to study in the context of climate change. These hints are the variations of sea-level components. The aim of our research work is to study trends in sea-level components on the Charente-Maritime French Atlantic coast back to the middle of the 19th century. This poster present an overview of Charente-Maritime coasts data sets.

Data search and rescue



A systematic survey of sea-level records in the different French archives began in 2004 and many sea-level observations have been discovered (Pouvreau et al., 2006; Wöppelmann et al., 2006). Among those observations, there are historical sea-level measurements recorded on the Charente-Maritime coast.

Digitalization



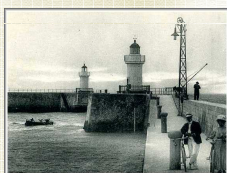
Two types of tide gauge records are available: tidal charts and/or tabulations. The digitalization of tabulations is performed manually. The digitalization of tidal charts is carried out with NUNIEAU software (Ullmann et al., 2005).



Data sets inventory on the Charente-Maritime coast

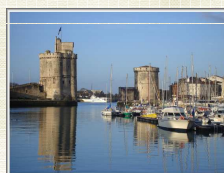
La Pallice's harbor

- 46°09'31" N and 1°13'15" W
- 53 years of records, from 1885 to the present
- Tide gauge + Tide staff
- Issues and specificities : some important gaps in data sets



La Rochelle

- 46°09'23" N and 1°09'06" W
- 20 years of records, from 1775 to 1892
- Tide gauge + Tide staff
- Issues and specificities : tide gauge records made at different places



Fort Boyard

- 46°00'00" N and 1°12'50" W
- 37 years of records, from 1873 to 1909
- Tide gauge + Tide staff
- Issues and specificities : very difficult living conditions for observers



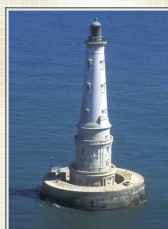
Aix Island

- 46°00'26" N and 1°10'27" W
- 6 years of records, from 1824 to 1974
- Tide gauge + Tide staff
- Issues and specificities : episodic records during hydrographic surveys



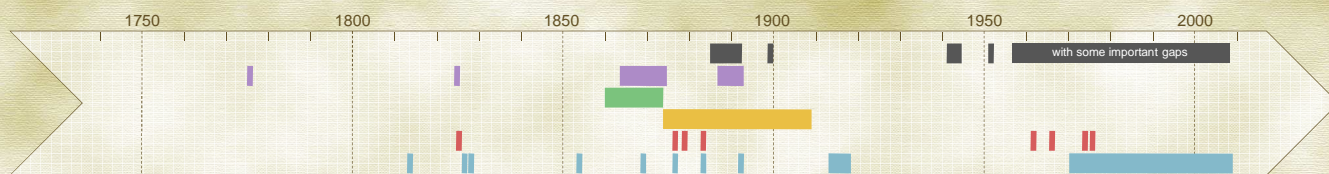
Cordouan lighthouse

- 45°35'11" N and 1°10'24" W
- 53 years of records, from 1812 to the present
- Tide gauge + Tide staff
- Issues and specificities : what's the influence of Gironde estuary on the sea-level records?



Fort Enet

- 46°00'13" N and 1°08'35" W
- 14 years of records, from 1859 to 1873
- Tide gauge + Tide staff
- Issues and specificities : frequent obstruction of stilling well



Expected outcomes

- Build a composite sea-level time series over 51 years, from 1859 to 1909, with the data of Fort Boyard and Fort Enet
 - both sites are just a few kilometers away from each other
 - the historical information on the benchmarks is well documented
 - But are these two sites subjected to the same hydrodynamic conditions, and if so, can the different data sets be related to a common datum?
- Expand the historical time series to the present. Since the benchmarks and datum information survived, a modern tide gauge station could be installed at Aix Island and be connected to the historical one through high-precision geodetic techniques.
- Compare our results with those obtained at Brest (Pouvreau et al., 2006), located North of our study zone and with the results that we expect to obtain at the Cordouan lighthouse, located on the South.



Data quality



What's the quality of records made on the Charente-Maritime coast? To help us in this control, we have metadata: information various and varied concerning tide staffs heights, the location of benchmarks as well as memos and comments of tide gauge observers.

References

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Acknowledgements

We are grateful to the SHOM (Service Hydrographique et Océanographique de la Marine, Brest) for providing access to their archives. This work is partially funded by Conseil Général de Charente-Maritime (Ph.D. fellowship).

