

2013-2014 : Statistical characterization of a highly damaging winter



- ▶ understand extreme storms events
- ▶ financial aspects for coastal infrastructures

Damages examples



Damages examples



Problematic : Is there a mean to give a reliable indicator for damaging storms ?

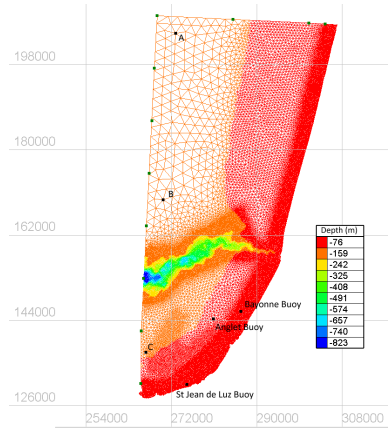
Two ways for generating data

Buoys

- ▶ Hourly measurements

Numerical simulations

- ▶ Linear wave theory
- ▶ Propagation along a grid

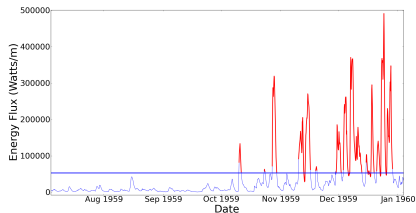


Data

- ▶ Wave height (H_s), period (T), direction (H_{dir})
- ▶ Period analysed : 1953-2014 Anglet buoy point

Different integrating levels

1. Energy flux
2. Storm
3. Winter



Variables

- ▶ Storm : mean intensity (I), duration (D)
- ▶ Winter : $\sum I, \sum D$

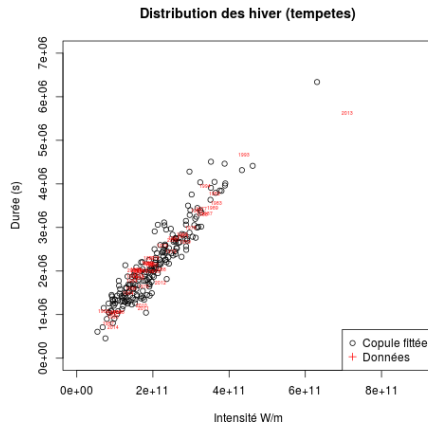
Results : creation of a model

Bivariate model

- ▶ Extreme value theory
- ▶ Copula theory

Main result

Winter 2013-2014 probability : 0.002
(once every 500 years)



Historical data

Aim :

- ▶ Having knowledge of erosion hazards and past floods
- ▶ Ability to define a territory subject to risks
- ▶ Anticipate potential endomagements - Have a forward-looking vision

How to do it ?

- ▶ Find historical archives
 - * Digital, oral, written and iconographic census of archives
- ▶ Study of past events Assessment damages is the best way to account the characteristics of each past event. By observing damages to :
 - * Infrastructures related to human activity
 - * The coastline in its natural component → Could have an impact in urban tissue.

We can build a temporal perspective thanks to databases (historic and geologic scales)

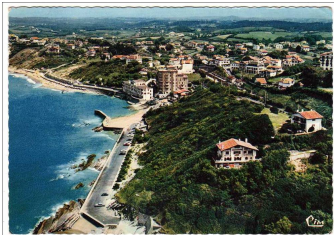
Thanks to that, we can determinate the most important issue and we can estimate the level of vulnerability of the territory.

Localisation of the areas and where we can find archives





Anglet



Guetary



Saint-Jean de Luz



Capbreton



Biarritz

Début XXème siècle.jpg

