

## Selection of the flood events and data for the present period



### Databases

INUNGAMA

PRESSGAMA

FLOODHYMEX

Flood event dates  
Affected basins

### Per event and basin:

- Insurance payments (CCS)
- Precipitation in 24 h (AEMET)
- Population (IDESCAT – INE)

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*Use of the data for  
developing the model*

## Development of the damage model for the present climate: Probability of a damaging event

Generalized linear mixed model (GLMM)

Insurance payments ~ Mean precipitation in 24 h + total population

Binary data ( $\pi$ )

P

R

$$\log\left(\frac{\pi}{1-\pi}\right) = \beta_0 + \beta_1 P + \beta_2 R + b_i + b_j$$

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*Use of the model  
developed*

## Application of the model with projected data

### Estimation of the probability of damaging event

+ 1.5 °C

+ 2 °C

+ 3 °C

Reference period  
1976–2005

Changes in the  
probability of  
damaging event  
(1.5, 2, 3 °C)

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## Data for the future period

- Precipitation → seven simulations from EURO-CORDEX
  - Population → five SSPs + 2UP model
- Bias correction  
per basin  
and projection*

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*Use of the data from  
the projections*