OBJECTIVES

- Improving scientific knowledge in estuarine margins flooding processes for different climate scenarios: storm surge combined with tide effects and urban drainage
- Flood risk assessment in different territory typologies: urban and interface
- Creating an integrated strategy for risk management, to promote preventive actions for planning, risk mitigation, and alert and warning system optimization.

MAIN INNOVATIVE ASPECTS

- Integration of hydrodynamic and urban drainage modelling
- Different spatial scale of risk assessment: estuarine and urban scale

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ABSTRACT
Floods in estuarine marginal zones are associated with particular climatological conditions, as high tidal levels, storm surges and intense fresh-water discharges. In urban areas, the effects of high water levels in the estuary can be exacerbated due to insufficient drainage conditions associated to episodes of very intense and concentrated in time rainfall and flash floods in small watersheds tributary to the estuary. The quickness of these phenomena makes difficult to timely triggering of warning system with serious consequences for people and goods.

In a context of climate change, rising sea levels and more extreme climate conditions will increase the vulnerability to inundation of estuarine margins. The main challenge of this project is to integrate different strategies and approaches that are typically used independently in flood risk analysis.

As an example of territory conflict occupation along its margins and high potential to flooding, the Tagus estuary was chosen as case study.

METODOLOGY
The project will follow an integrated and interdisciplinary methodology, based on two distinct spatial scales (regional and local). The evaluation in a larger scale will use as reference two territorial typologies, urban and interface zone.

EXPECTED RESULTS
- Database of historical flood events in Tagus estuary
- Natural and urban flood prediction through integrated numerical modelling
- Flood hazard and vulnerability cartographic representation and risk assessment
- Flood risk management guidelines
- Support the optimization of the alert and warning system
- Web-Gis platform for information integration
- Creation of a knowledge platform for flood risk management in estuaries

The numerical modeling of the estuary hydrodynamics and urban drainage will provide the extension of flood prone areas, velocity and depth of the water levels in flood stages. An assessment of flood risk will be made, based on which a set of guidelines will be produced, as well as recommendations and standards for management supporting tools, prevention and risk mitigation, and risk communication and warning.