Adapting Coastal State Indicators to end-users: the iCoast Project

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The extraordinary development of the built environment and of the population densities in the coastal areas are making coastal communities highly exposed. The sea level rise induced by climate change will worsen this coastal vulnerability scenario and a considerable amount of people are expected to be threatened by coastal flooding in the future.

Due to the increasing number of catastrophic events, and the consequent increased number of damages and people affected, over the last decades coastal hazard management has become a fundamental activity in order to improve the resilience of coastal community. In this scenario, iCoast (integrated COastal Alert SysTem) project has been founded to develop a tool able to address coastal risks caused by extreme waves and high sea water levels in European coastal areas.

In the framework of iCoast Project, a set of Coastal State Indicators (CSIs) has been developed in order to improve the forecasting and the assessment of coastal risks. CSIs are indeed parameters able to provide end-users with an essential information about coastal hazards and related impacts.

Within the iCoast Project, following a comprehensive literature review about existing indicators concerning coastal risks, a list of CSIs have been chosen as parameters that can be derived from the meteorological and the hydrodynamic modules. They include both physical variables used as trigger for meteorological and flood warnings from the majority of the operational National/Regional warning systems and further essential parameters, so called 'storm integrated' coastal-storm indicators, able to describe the physical processes that drive coastal damages, such as erosion, accumulation, flooding, destructions.

Nowadays, it is generally acknowledged that communities are not homogenous and hence their different vulnerable groups might need different warnings. Generally, even existing national EWS in developed countries are often ineffective to issue targeted warnings for specific user groups because they generate warnings whenever strong winds or high waves are expected. Once aggregated, weighted and compared with established thresholds, CSIs whereas allow to produce alert messages that can be tailored to different end-users needs.

In the present study, the set of CSIs chosen in the framework of the iCoast Project, along with their performances tested for the case study of the Spanish NW Mediterranean Coast (i.e. Catalan Coast), is presented.