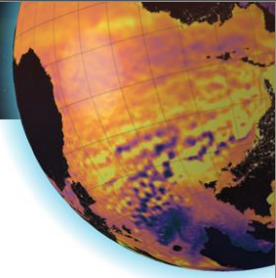




Ocean and coastal prediction and early warning system on the Basque Coast

The ocean and coastal prediction and Early Warning System (EWS) implemented in the Basque Country waters by AZTI consists of a regional operational ocean forecasting system (EUSCOMvu) and a coastal impact prediction system for storm hazards and long-term changes. EUSCOMvu is based on the CROCO model and estimates 3D hourly ocean fields (sea level, temperature, salinity, zonal and meridional velocity components) with a 4-day forecast horizon. The system is a downstream service that daily ingests data from the Copernicus Marine Atlantic-Iberian Biscay Irish- Ocean Physics Analysis and Forecast product as initial and boundary conditions. It also integrates the daily freshwater discharges of the main rivers in the study domain. Some of the results are published on the EuskOOS portal (Basque Operational Oceanography System) and are used in different applications such as safety and rescue, water quality and marine litter transport. Coastal impacts are predicted with different model chains with special focus on: (1) Near Real Time (NRT) predictions and EWS for storm hazards, and (2) risk analysis and climate change adaptation planning. (1) An operational system operated by Euskalmet (Basque meteorological agency) integrates the results of different wave models and assimilates data provided by the coastal videometry technology KostaSystem. An EWS estimates the hazard level depending on the coastal flooding intensity for the main beaches and ports during storms. It is under improvement and will integrate the results of the process-based phase resolving model, XBeach non-hydrostatic, to better reproduce infragravity processes and consider the influence of climatic and morphologic parameters and coastal defences during storms. The new system is currently being tested at Zarautz beach. (2) A coastal flooding and erosion assessment has been performed at regional scale for different climate scenarios by using the Kostaegoki model. In the framework of the EU Regions4Climate project and the NextGeneration MyFlood project the modelling system will be improved and tested in several pilot sites (e.g. Txingudi and Oka estuaries) to include compound flooding processes and long-term morphological changes. Once implemented, the modelling system will be tested in operational mode for flooding alerts in the estuaries. The ocean and coastal prediction and EWS in the Basque Country waters are part of a cross-border collaboration through the French-Spanish common laboratory KostaRisk. The two sides operate a coastal prediction system and share knowledge, data and technologies.



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