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Orientation: Ocean Observation and Global Change

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Research Area: 1.1 Physical Oceanography



PhD project: Assessment of risks produced by extreme events on commercially important bivalves

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**Summary:** This thesis investigated the eco-physiological effects of extreme weather events on four of the most relevant bivalve species for the Galician shellfisheries. The increase in the intensity, frequency and duration of heavy precipitations and heatwaves, predicted for the northern European coast, can potentially modify coastal communities by inducing lethal and sublethal effects on the species. The pronounced fluctuations in salinity and temperature during the extreme events modify the biogeochemical processes in water and sediments, particularly in coastal estuarine systems like the *rías*. The environmental stress can cause direct mortality in the short term, but also reduce growth or physiological condition, development and reproductive output of bivalves, or increase their vulnerability to disease or predation. We used a novel experimental approach by reproducing realistic conditions in the laboratory (including sediment or the progressive effect of tides) throughout the seasons. The results obtained were related to the reproductive cycle of the species and to their different life strategies and eco-physiological traits.

The results determine that short term extreme events can reduce the potential to grow, particularly when more energetic investment is needed for reproduction and increase the vulnerability to predation in all species. Particularly, the shallower *C. edule* and the less adapted to the intertidal exposure *V. corrugata* may be more affected. Furthermore, this results highlight the need for a detailed characterization of this impacts on each shellfish bed in order to develop adapted management plans to local conditions.

