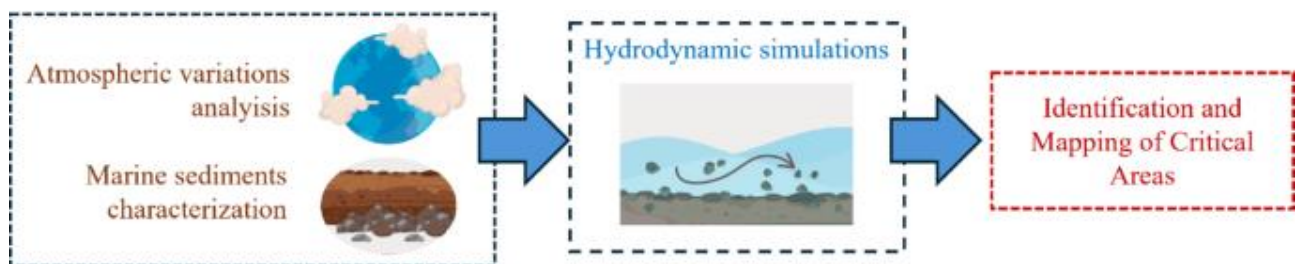


Beneath the Surface: How Climate Change Intensifies Erosion and Suspended Sediment Loads

Summary

This study leverages high-resolution climate datasets and advanced hydrodynamic modelling tools to propose a methodological procedure for assessing the potential impact of changes in atmospheric patterns on marine bottom stress and erosion processes occurring on the seabed. The analysis focuses on the Mar Piccolo basin of Taranto, a coastal area in southern Italy where marine sediments are heavily impacted by both past and ongoing anthropogenic pollution. Hydrodynamic simulations performed to define medium-term future scenarios indicate that, starting from 2035, a marked increase in current intensity is expected in both surface and bottom layers. This shift in current dynamics can be mainly attributed to changes in the wind regime. The enhanced current intensity is expected to lead to stronger shear stresses at the sediment-water interface, exceeding the critical thresholds for sediment resuspension, favouring sediment mobilization. These outcomes highlight the importance of analysing climate-related processes for understanding expected coastal dynamics and designing targeted remediation strategies for contaminated coastal sites.



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