Enhancing Coastal Modeling: Integrating Suspended Particulate Matter effects on Biogeochemical Processes in the Tyrrhenian Sea

Suspended particulate matter (SPM) plays a critical role in coastal environments, particularly in the attenuation of light, which has significant implications for biogeochemical processes and marine ecosystems. Incorporating SPM models into coastal modeling frameworks enhances the accuracy and predictive capabilities of these models by accounting for the effects of light dissipation. In this study, conducted within the framework of the NECCTON (EU project), the unstructured SHYFEM model, coupled with the Biogeochemical Flux Model (BFM), is employed to simulate coastal dynamics over Civitavecchia in the Tyrrhenian Sea. Preliminary results will be presented, comparing simulations with and without SPM, highlighting the differences in light attenuation and biogeochemical effects. This integration allows for a more comprehensive understanding of the interactions between light and particulate matter, leading to improved assessments of biogeochemical processes (e.g. photosynthesis rates), and the health of marine ecosystems

Giulia Bonino (1) , Tomas Lovato (1), Momme Butenschön (1) CMCC Foundation - Euro-Mediterranean Center on Climate Change, Italy.