

Assessing the marine biogeochemical processes along the South east African shelf from observational datasets, remote sensing and simulations.

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Ocean dynamics on the continental shelf influence the nutrient supply necessary for photosynthesis, and thus a thorough understanding of the dynamics is imperative. In this study we aim at investigating the different processes on the southeast African shelf. The ocean dynamics on the shelf are highly influenced by the Agulhas current, but very little data exists with a general paucity of high resolution studies. Through the simulations of the nested model (NEMO coupled with PISCES), remote sensing products (ESA OC), observational datasets (CARS, WOA13 and GLORYS) and high resolution *in situ* data from 2 hydrographic surveys (January and August 2017), the impact of different ocean dynamics on the marine biogeochemistry of the shelf was investigated. Firstly, based from the vorticity equation balance, we determined the dominant cause of the coastal upwelling on the shelf and its impacts on the marine biogeochemistry. Secondly compared to other simulations, we also investigated whether divergence is temporary or permanent on the shelf, and whether it can lead to upwelling. We also calculated different fluxes by tracking the flow of nutrients along the east coast. Lastly, due to the high number of river mouths along the coast, we investigated whether land runoff can possibly contribute to the phytoplankton production on the shelf.