

How will climate change affect the planktonic food web and the biogeochemistry of the Mediterranean Sea according to the RCP 8.5 scenario ?

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CL4.24 : Climate change in the Mediterranean region: understanding the processes, assessing the impacts and designing adaptation

In recent studies, the Mediterranean region is once again identified as a region particularly sensitive to climate change, with recorded temperature and sea level rises during the last decades exceeding the mean variations recorded at global scale. Moreover, according to climate scenarios, there seems to be some consensus regarding the impact on climate change on some hydrodynamical features, as for example on stratification which should become stronger and more persistent. However, nothing or very few is known about the expected changes nor in the structure and the functioning of the planktonic food web, neither in the main biogeochemical cycles. This study is intended to progress on this issue, using a coupled (one way) physical-biogeochemical model: CNRM-RCSM4/NEMO-MED12/Eco3M-Med. A 110-year simulation over the period 1990-2100 has been run and from 2006, the simulation is forced by a RCP 8.5 regional scenario of the Med Sea (a control simulation has also been run simultaneously). After having verified the model's ability to describe the main characteristics of the marine planktonic food web and biogeochemistry through several comparisons with available data during the historical period, the model outputs have been analyzed. Preliminary results indicate a significant decrease in the annual primary production and the export of organic carbon at 200 and 1000 m in both the eastern and the western basins, associated with changes in the structure of the planktonic community.