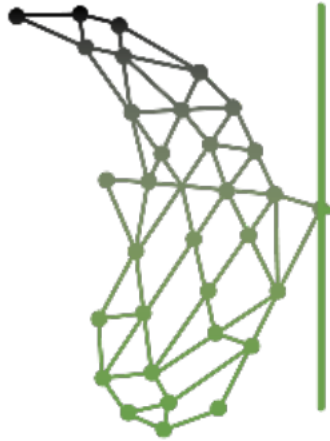

NECCTON

NEW COPERNICUS CAPABILITY FOR TROPHIC OCEAN NETWORKS

Climate change impact on the low-trophic ecosystem of the Black Sea

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Model configuration

Ocean model: NEMO (v4.2) + BAMHBI (v1.1)
(Gregoire et al, 2025)

Resolution
- 15x15km
- 59 lvls

Boundary Conditions
- Bosphorus: *two-stream parametrisation (Oguz et al, 1990)*

River forcing
- Composite: *in-situ, SESAME, EFAS*

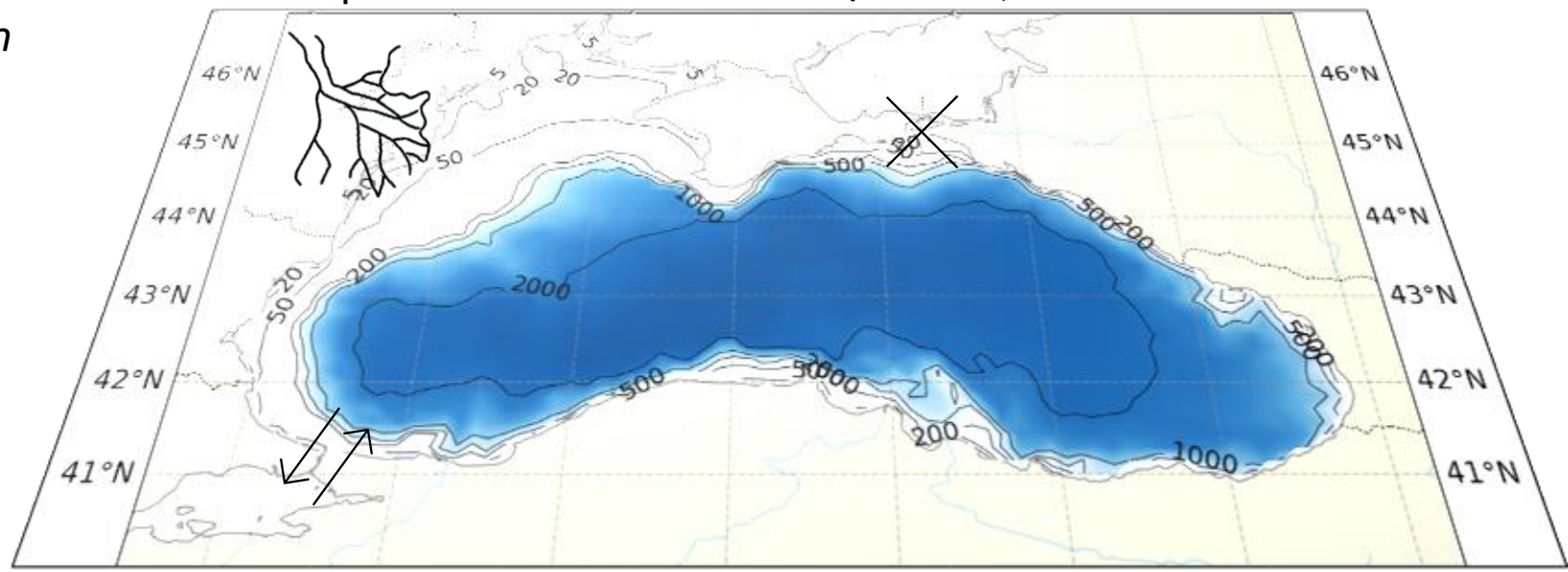
Initial Conditions
- Temp & Salin: *WOD data*
- Nutrients: *ATLANTIS-II*

MPI-ESM1-2-HR-EUR, EC-Earth3-Veg
~100x100 km

MAR Simulation

Atmospheric forcing
~10x10 km

Temp Wind Pressure Precip SWR, LWR Cloudiness

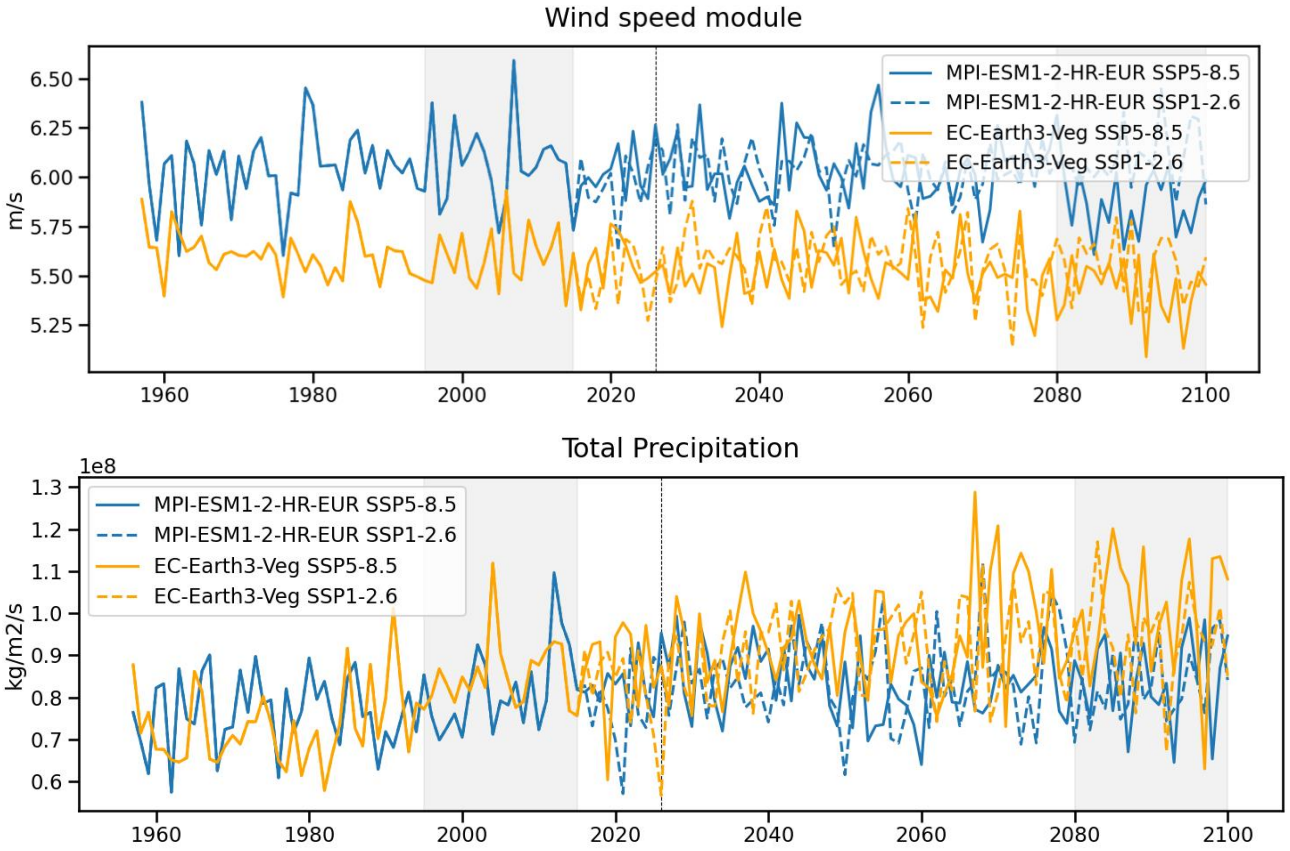


Simulation timeline

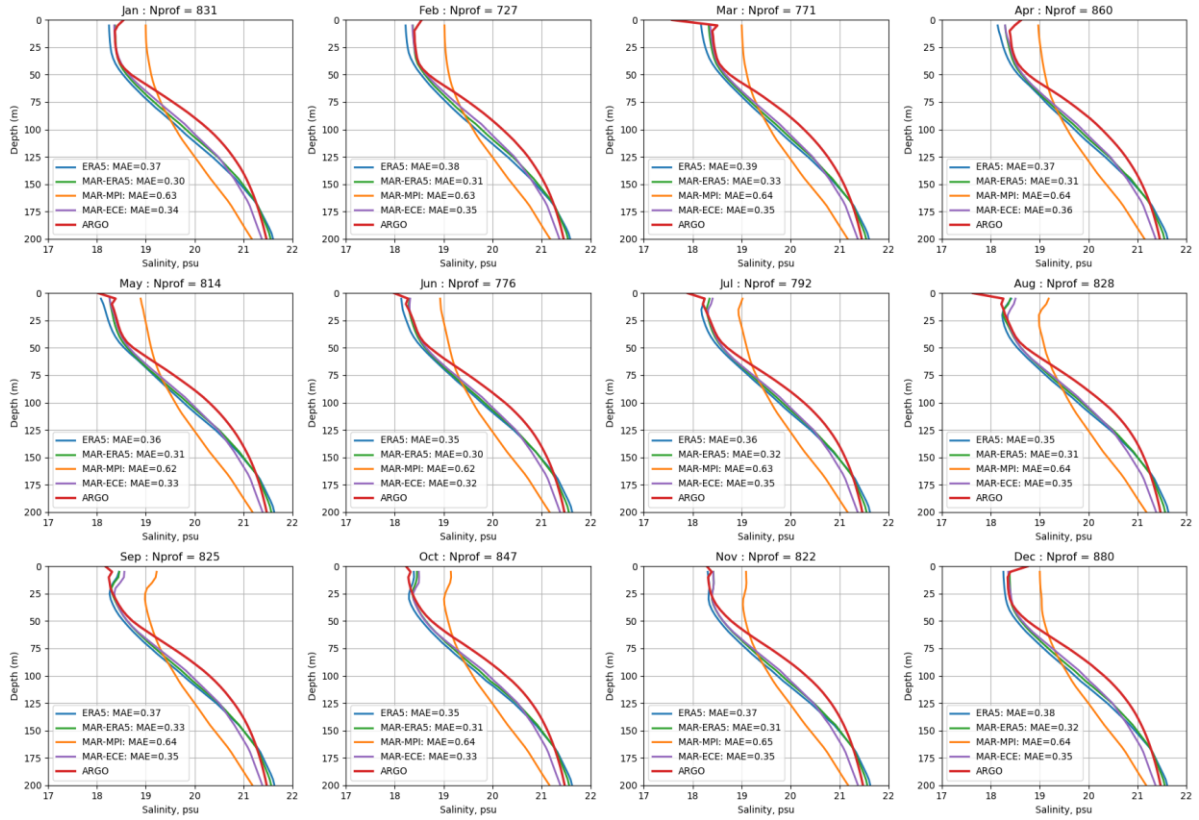
Spin-up | Historical period | Climate projections: SSP1-2.8, SSP5-8.5

1950 1955 2015 2100

Atmospheric forcing impact

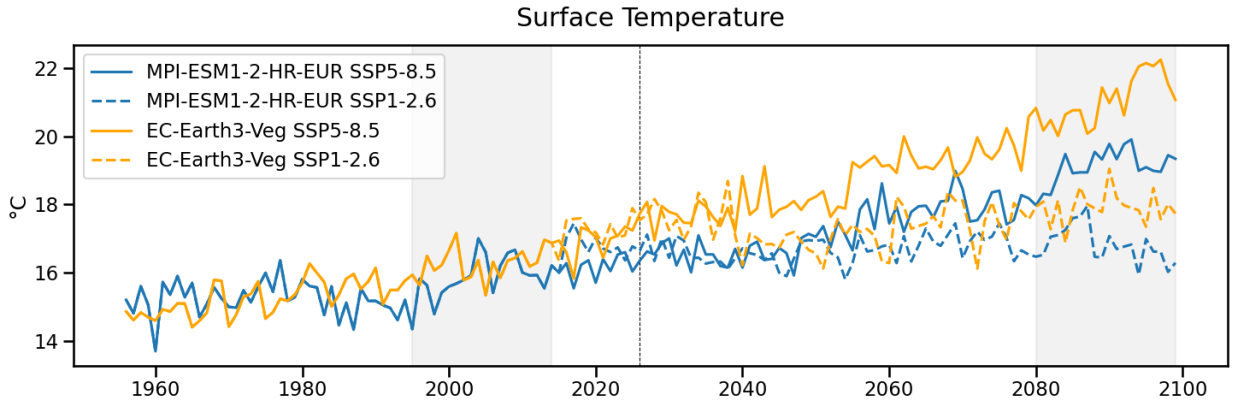


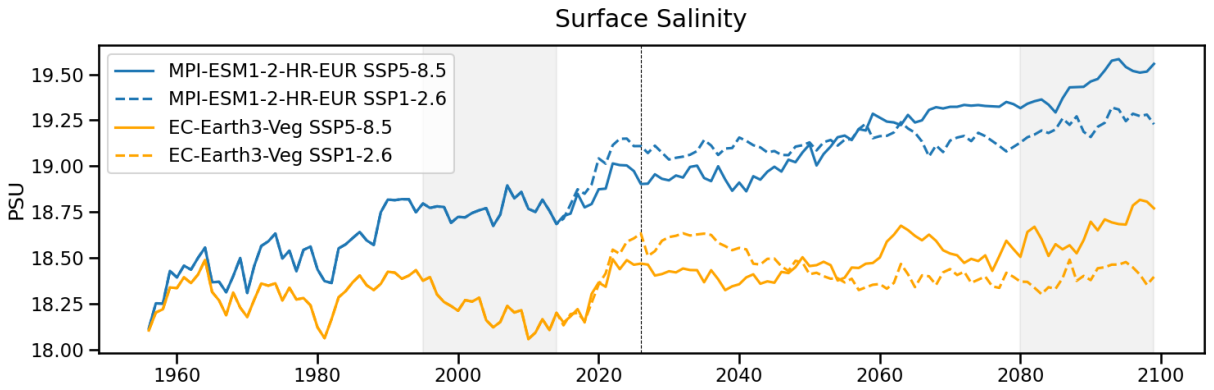
Salinity: Model vs ARGO

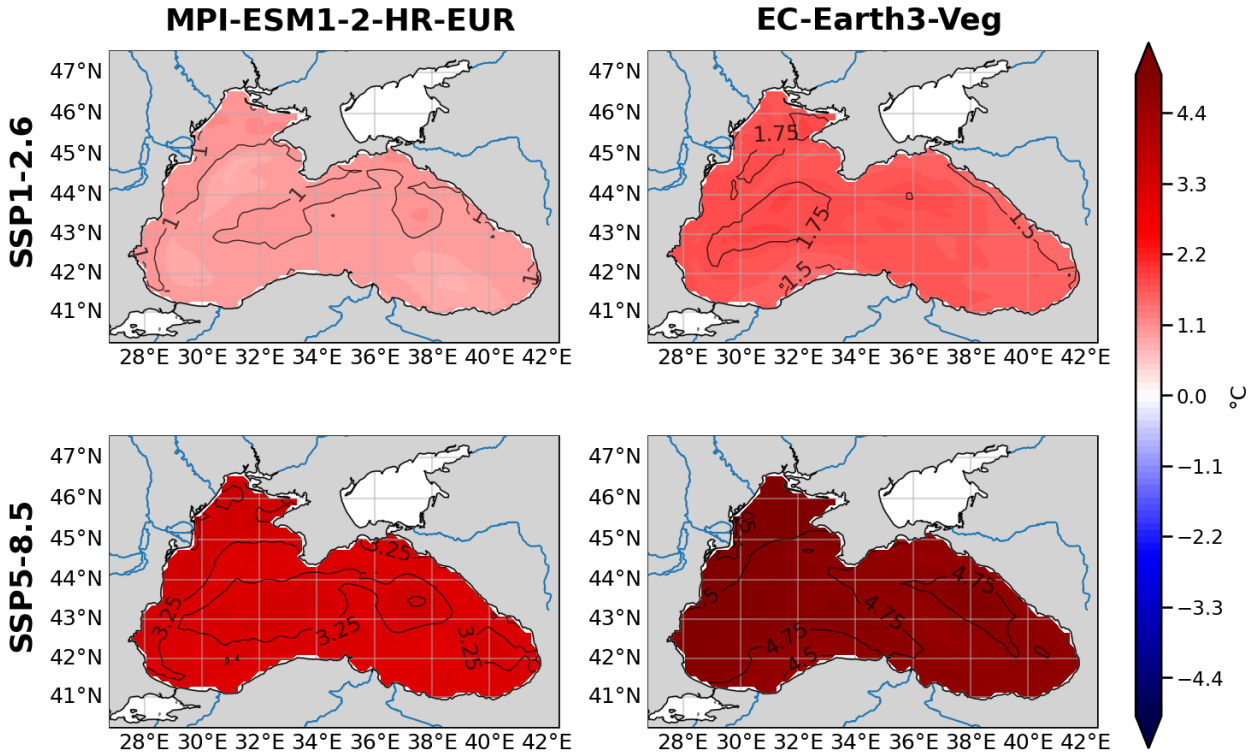


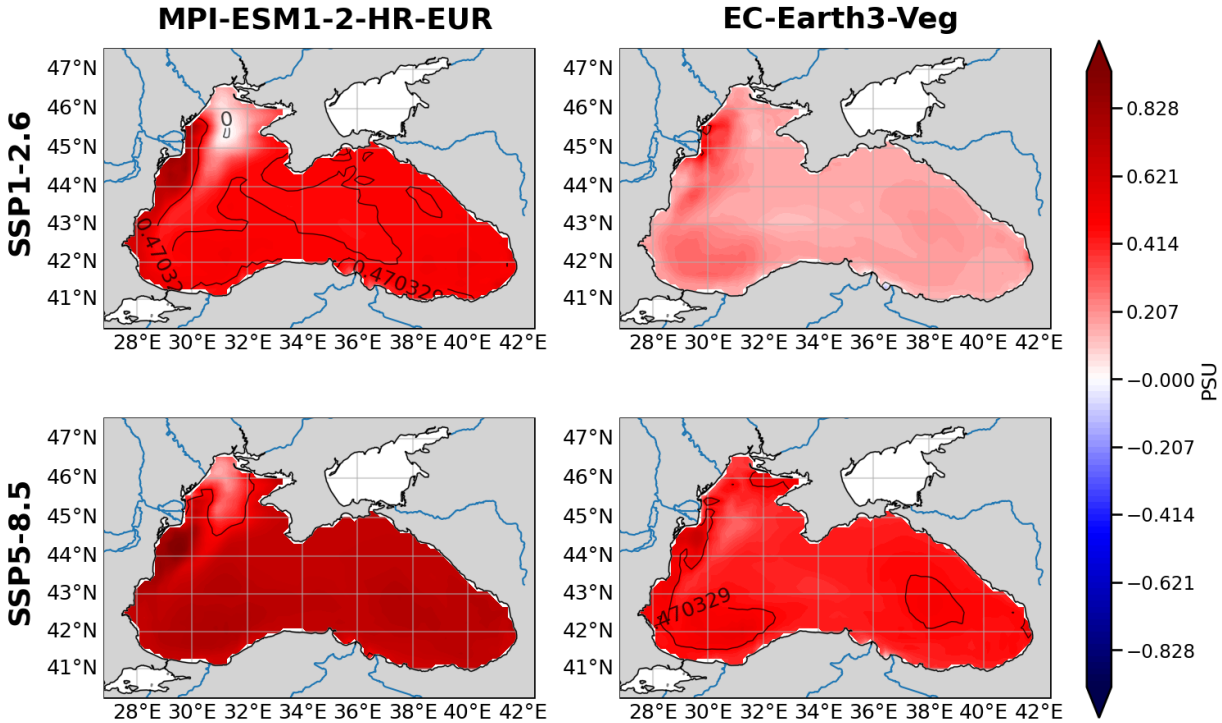
	ERA5	MAR-ERA5	MAR-MPI	MAR-ECE
MAE	0.37	0.31	0.63	0.34

Climate change impact on SST and SSS in the Black Sea



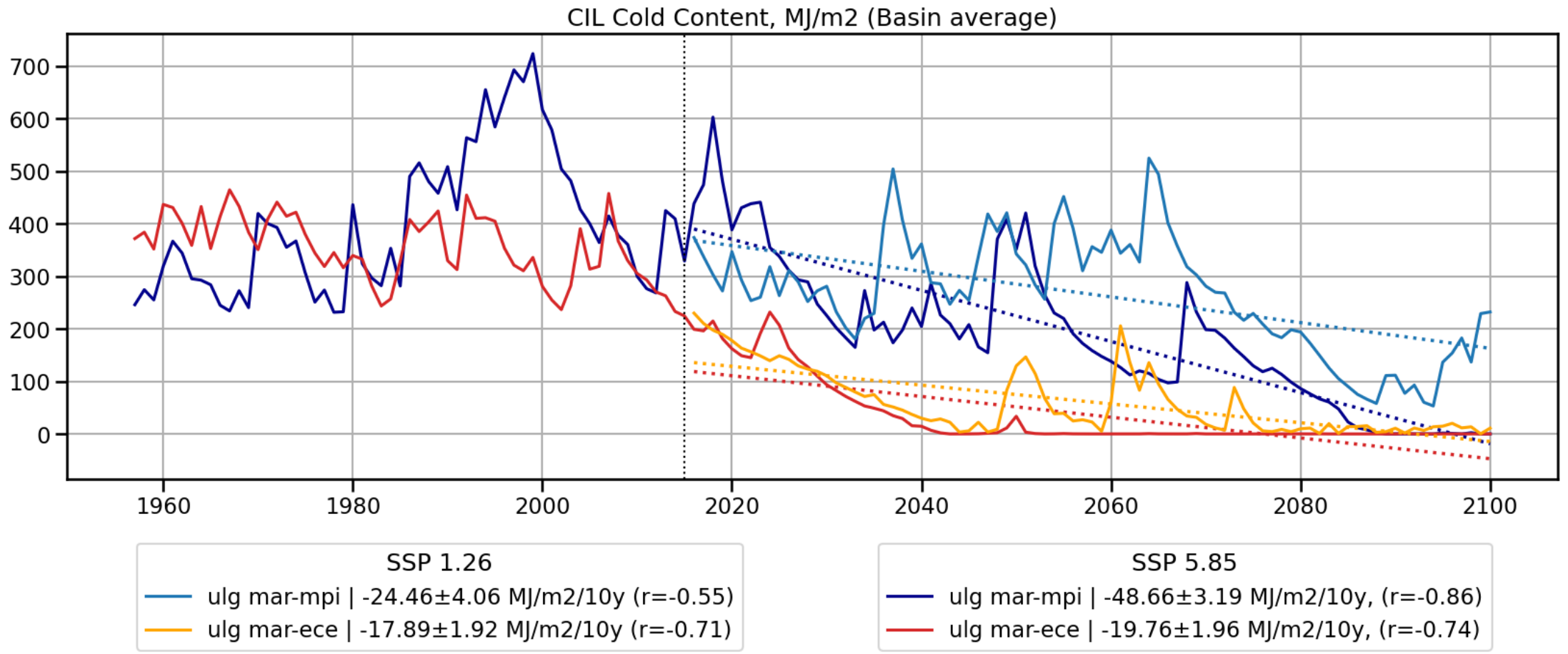




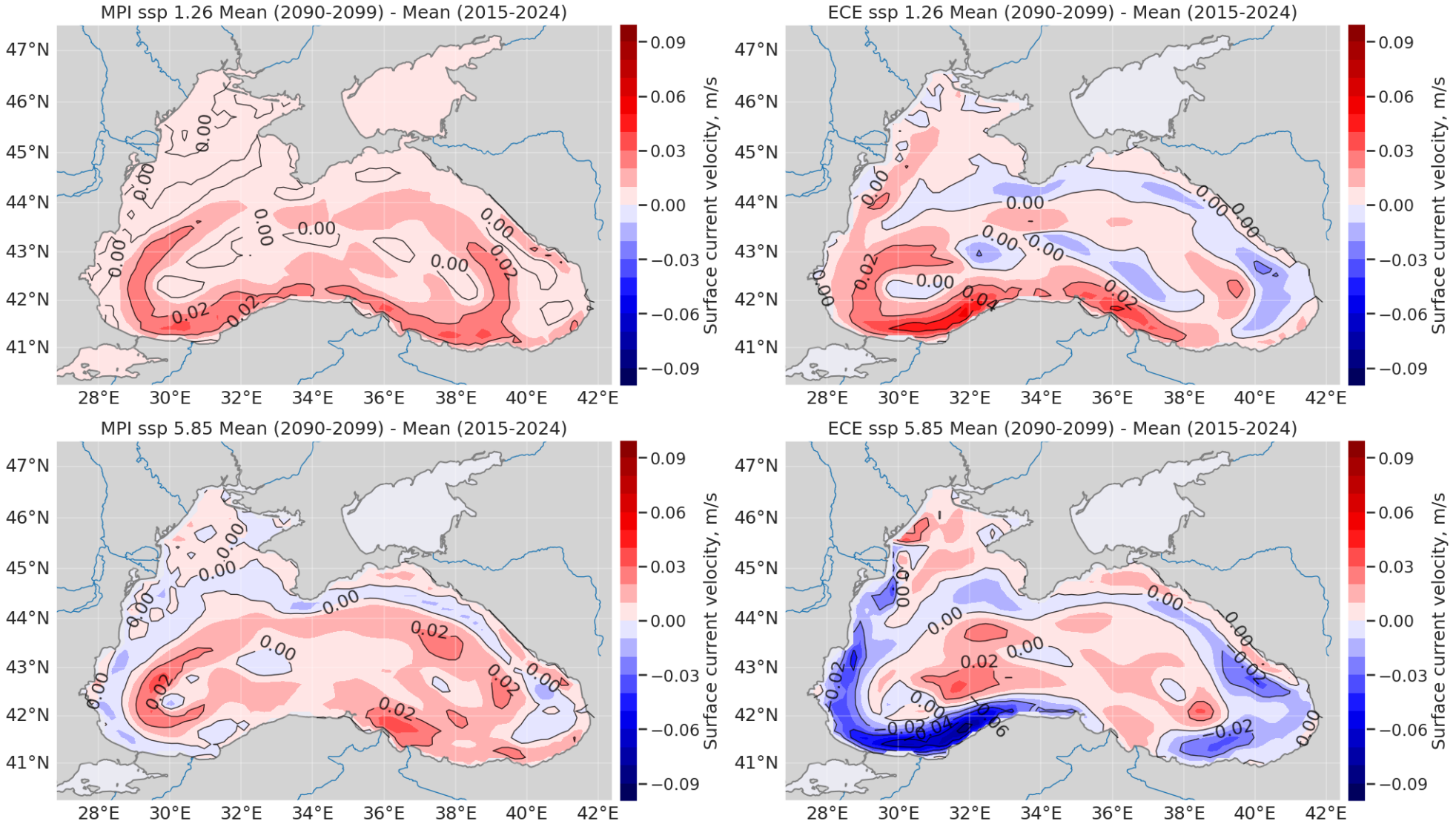


Timeseries of the domain average value (SSP5-8.5 full, SSP1-2.6 dashed)
and spatial differences between (2081-2100) and (1995-2014) for 4 scenarios

Climate change impact on CCC in the Black Sea

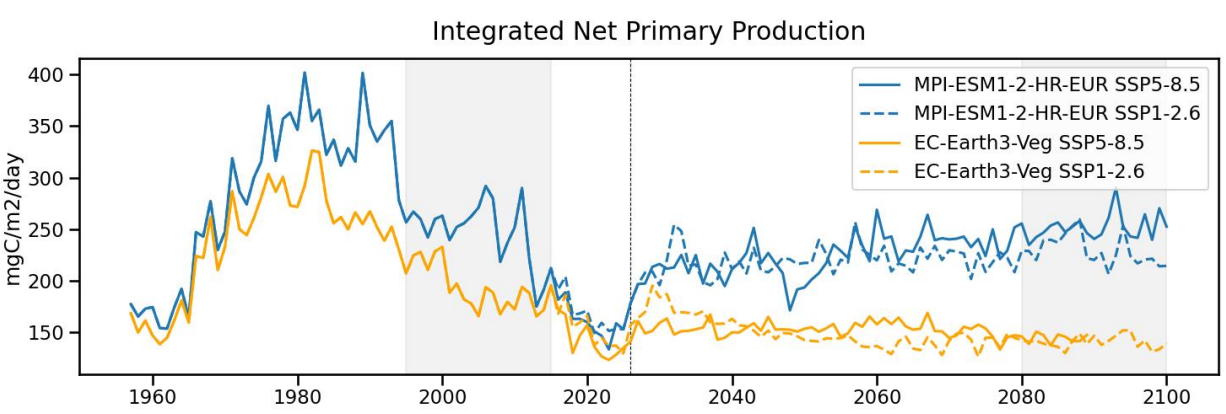


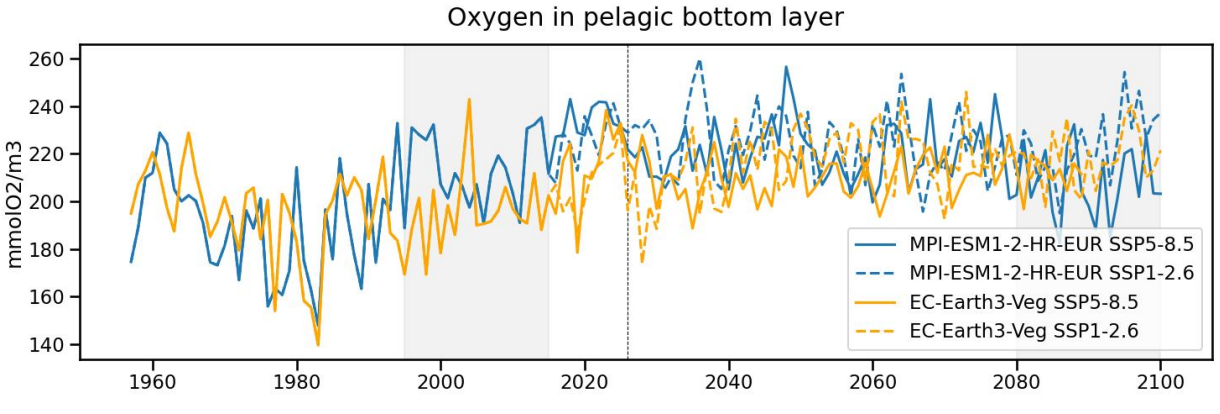
Climate change impact on Surface velocity in the Black Sea

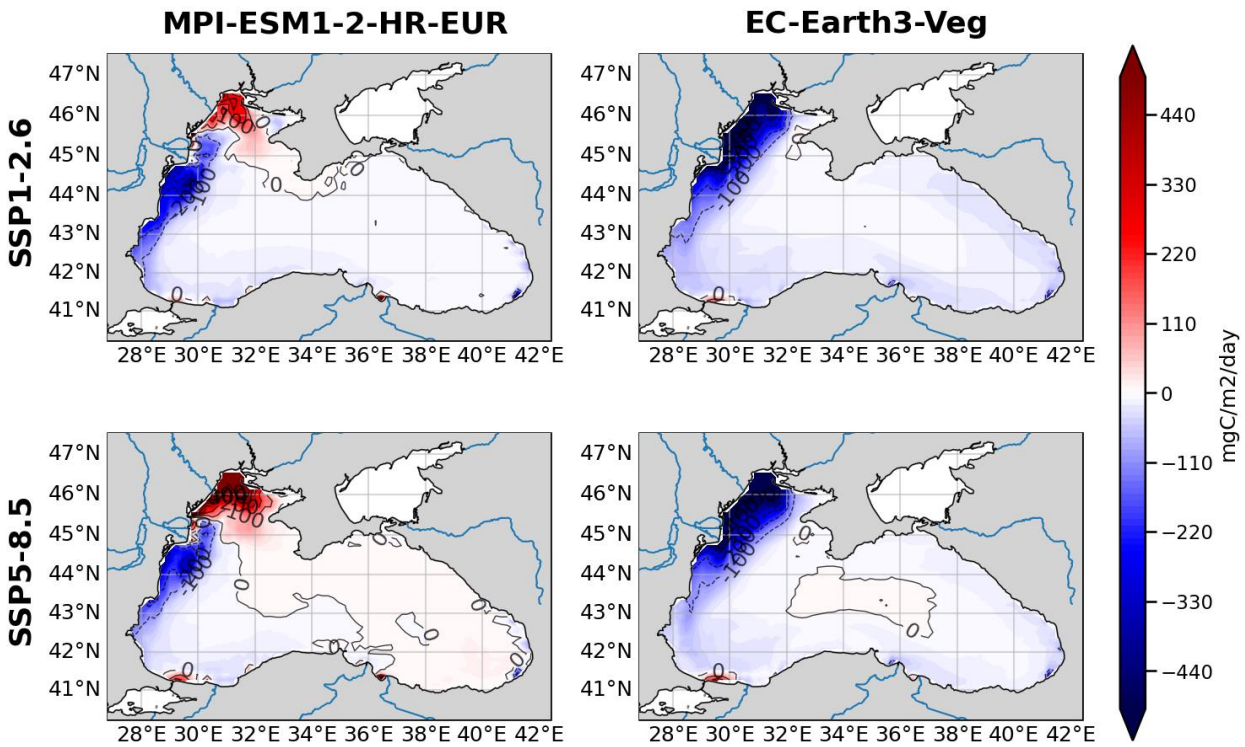


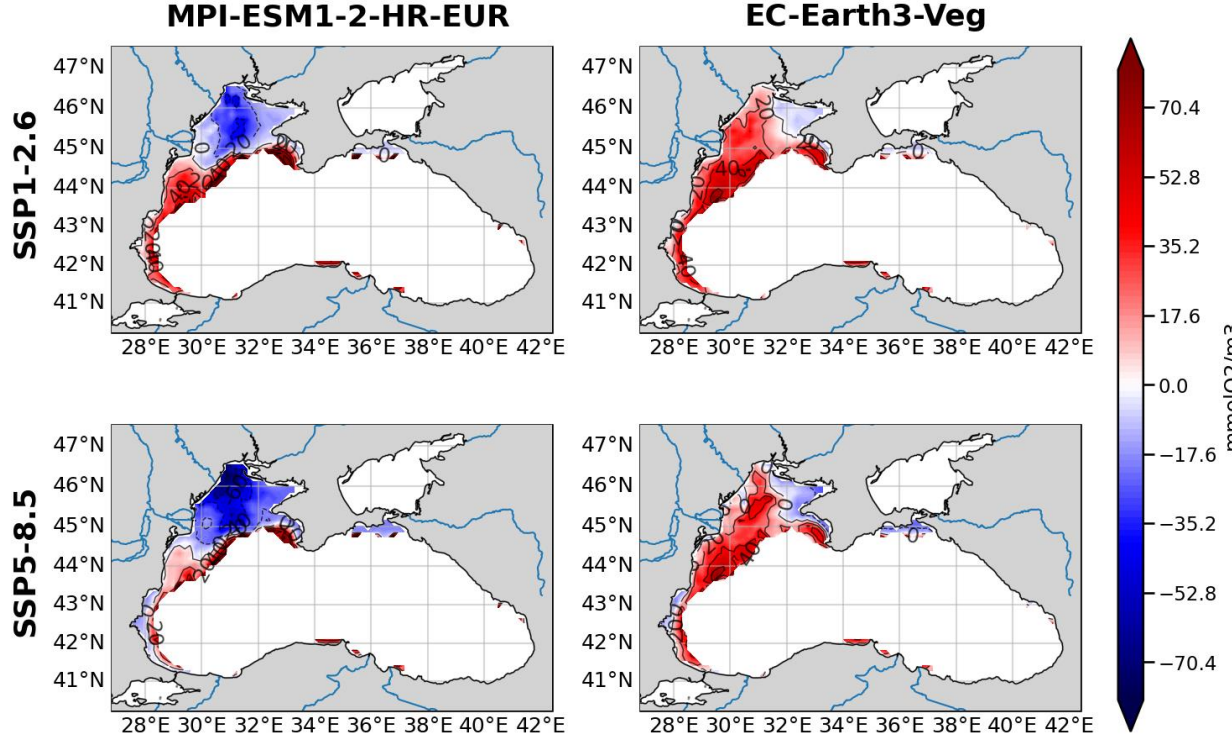
Spatial differences between (2090-2099) and (2015-2025) for 4 scenarios

Climate change impact on NPP in the Black Sea



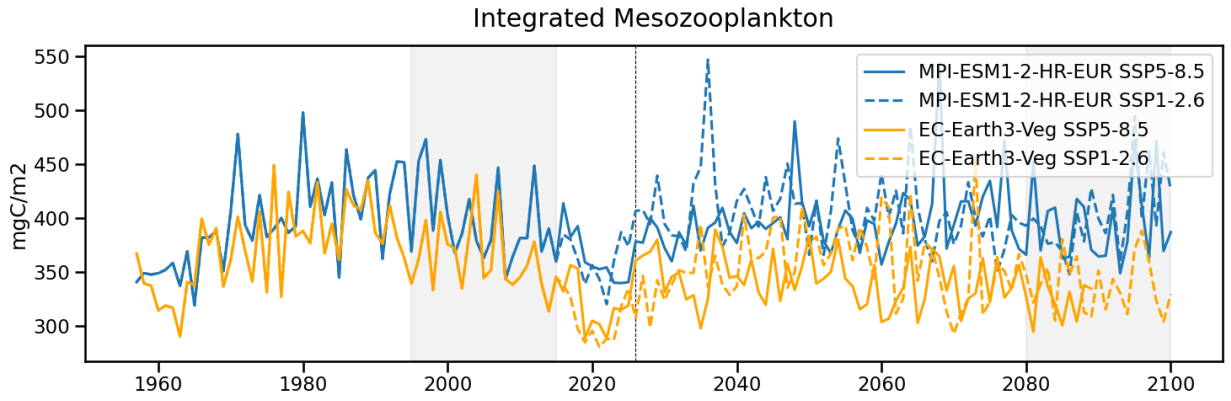


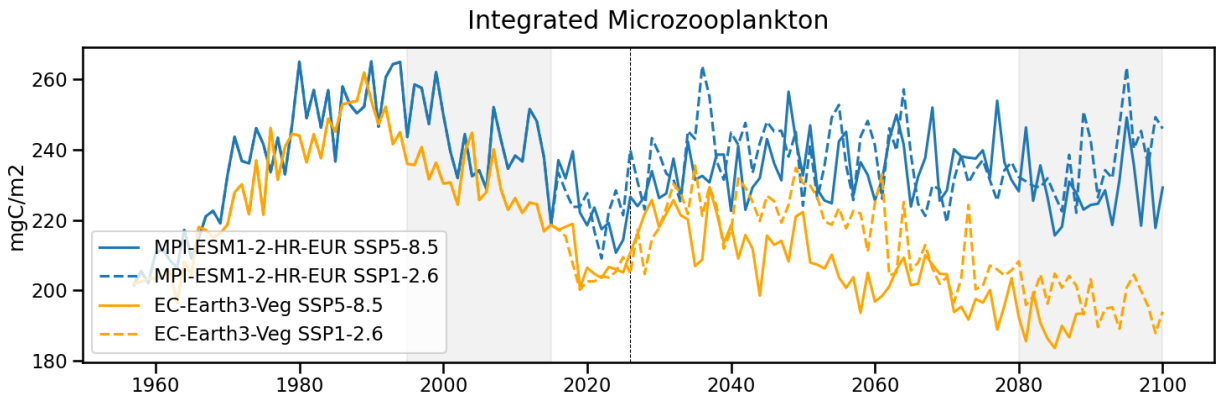


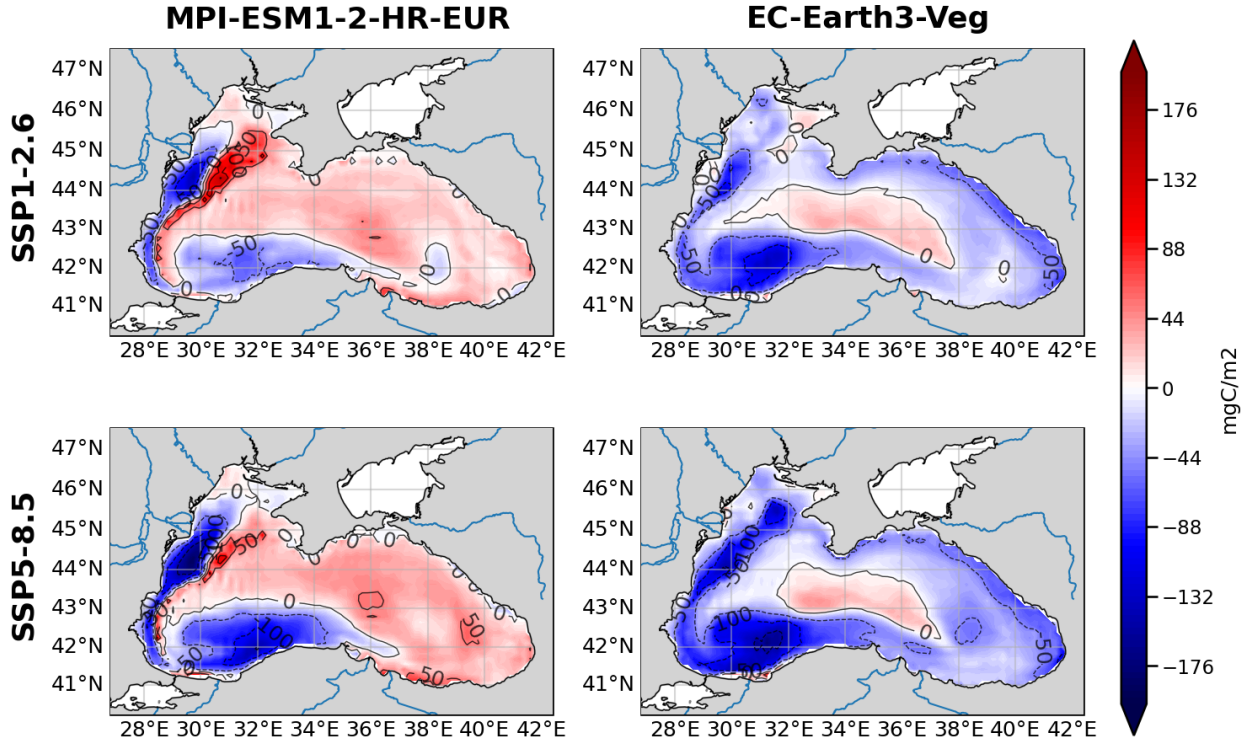


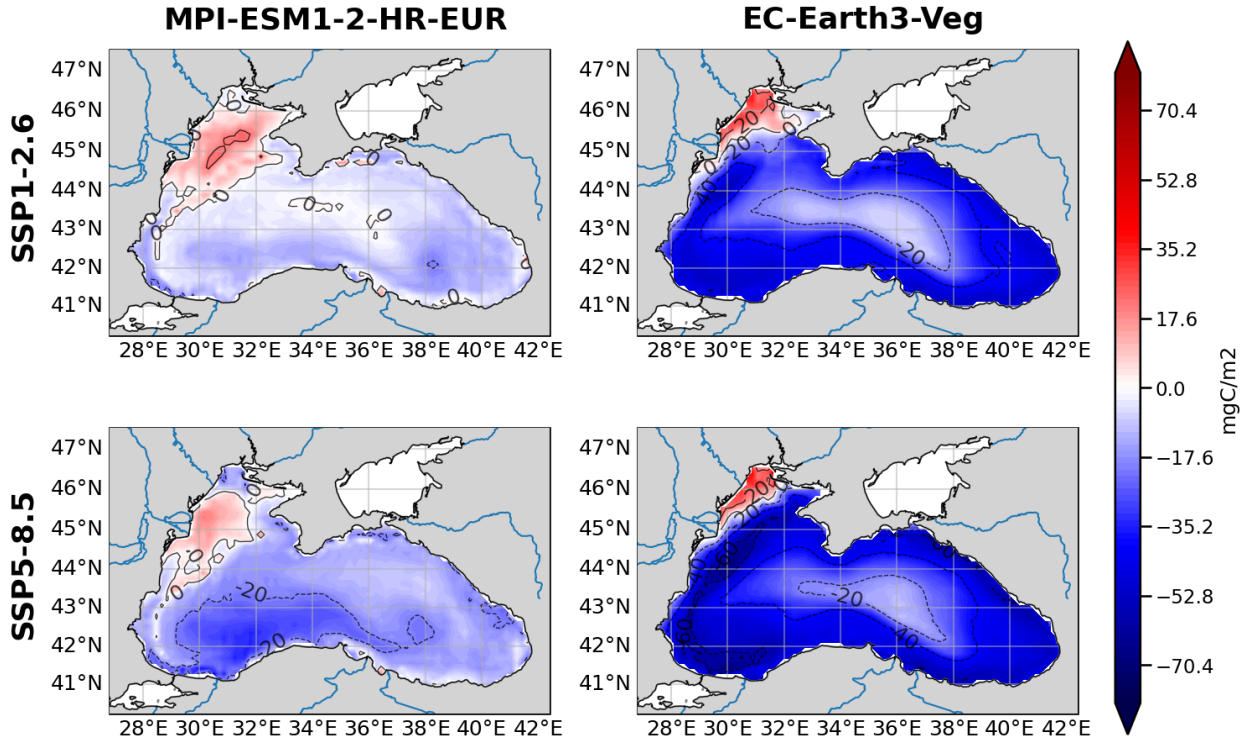
Timeseries of the domain average value (SSP5-8.5 full, SSP1-2.6 dashed)
and spatial differences between (2081-2100) and (1995-2014) for 4 scenarios

Climate change impact on Meso- and Microzooplankton in the Black Sea









Timeseries of the domain average value (SSP5-8.5 full, SSP1-2.6 dashed)
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