Regional projections of the impact of climate change on the Black Sea: trends, events, and tipping points

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Introduction

- The Black Sea temperature has been rising since the 20th century due the climate change.
- Intense changes in physical and biogeochemical parameters increase the vulnerability of the marine ecosystem.
- This research aims to comprehensively assess the impact of global climate change on the Black Sea in the 21st century.

Model configuration

- **NEMOv4.2+BAMHBIv1.1:**

  Vertical resolution:

  59 lvls with ~1 m step in the upper 15 m

  Horizontal resolution:

  44x81 points, ~ 15x15km

  Vertical mixing:

  TKE

  Air-Sea interaction:

  MFS

- **MARv3.14:**

  Vertical resolution:

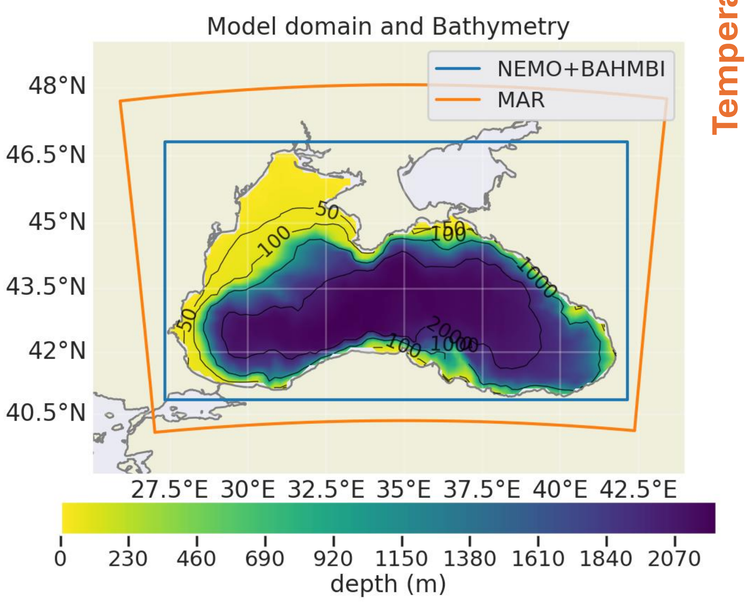
  24 sigma levels, 0-70 hPa

  Horizontal resolution:

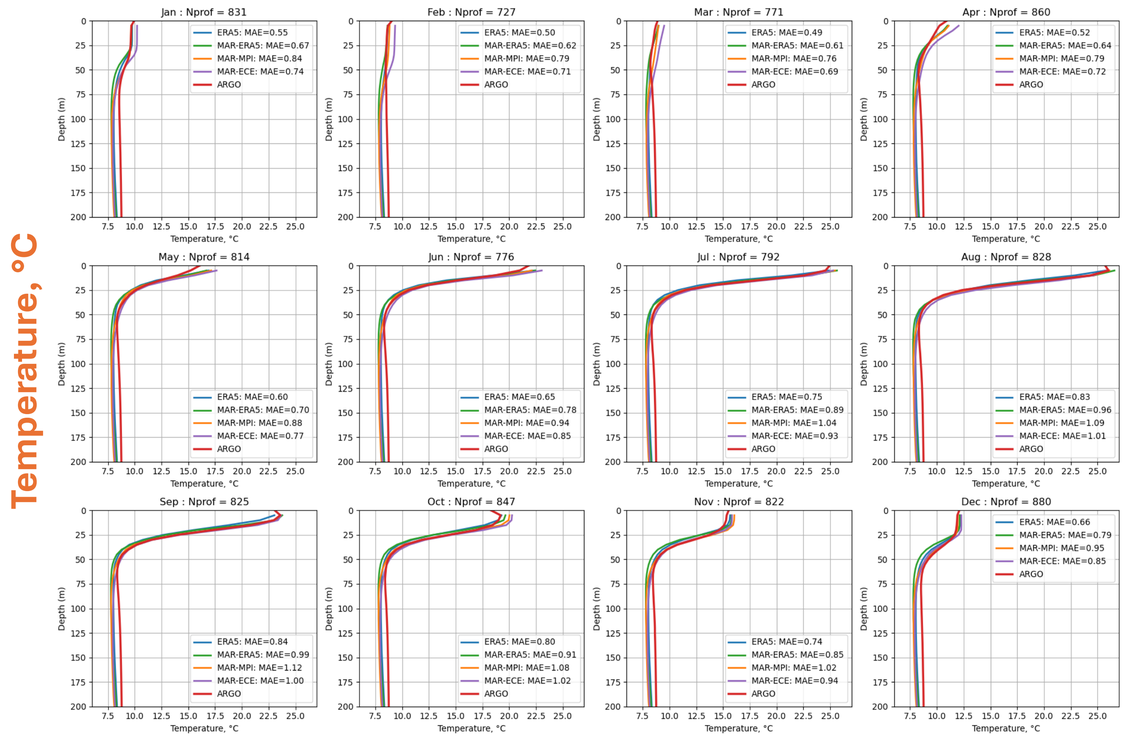
  87x132 points ~ 10x10km

  BDY:

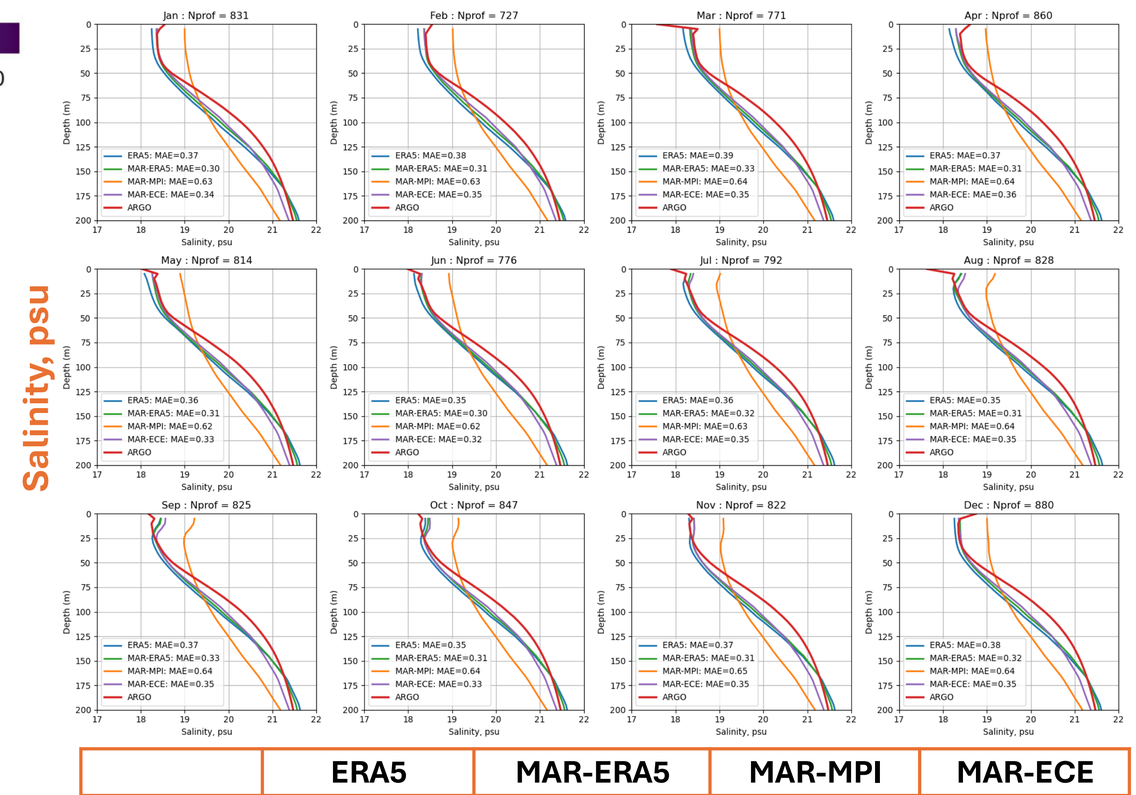
  MPI-ESM1-2-HR-EUR, EC-Earth3-Veg



Validation

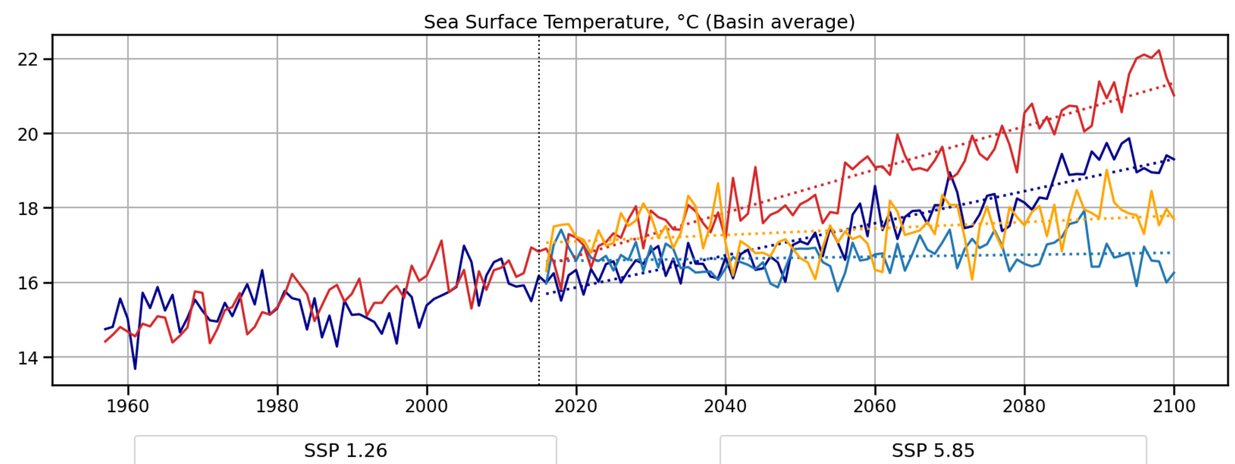


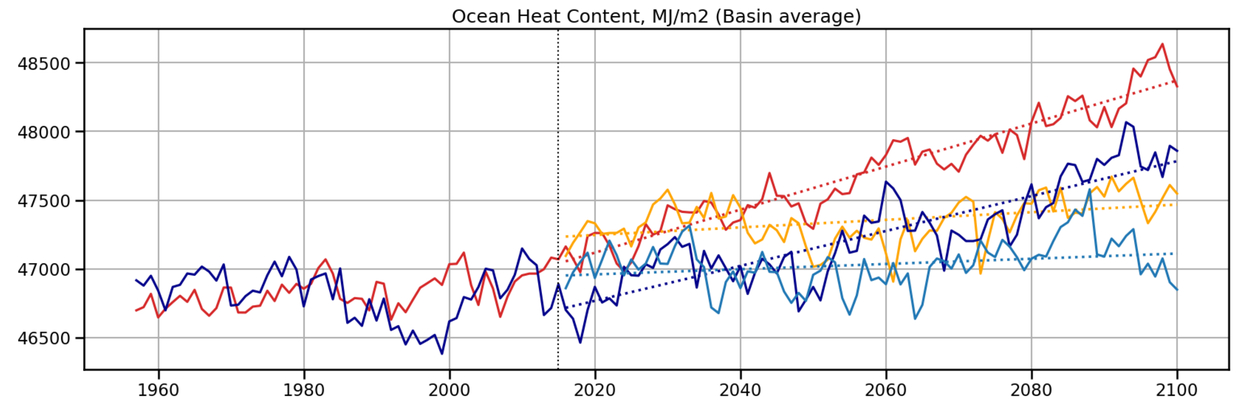
	ERA5	MAR-ERA5	MAR-MPI	MAR-ECE
MAE	0.66	0.78	0.94	0.85

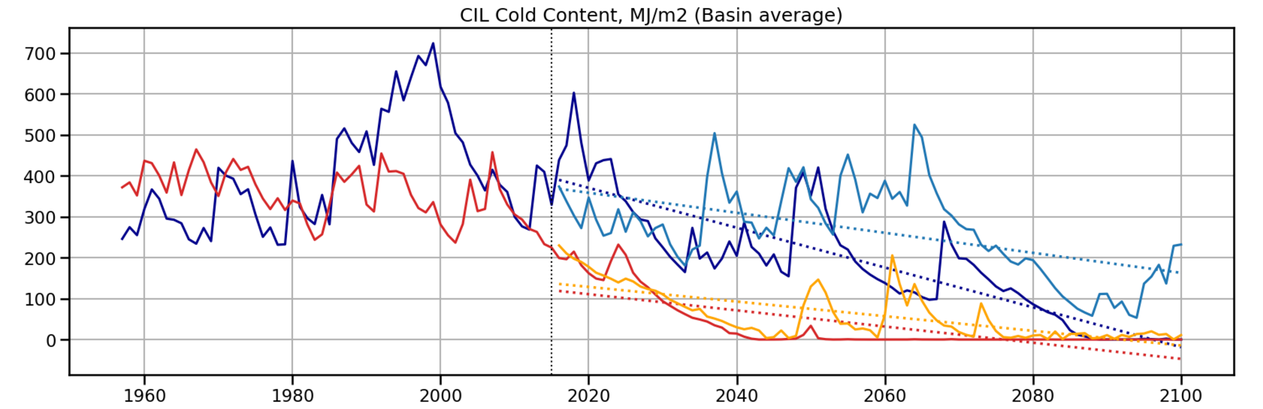


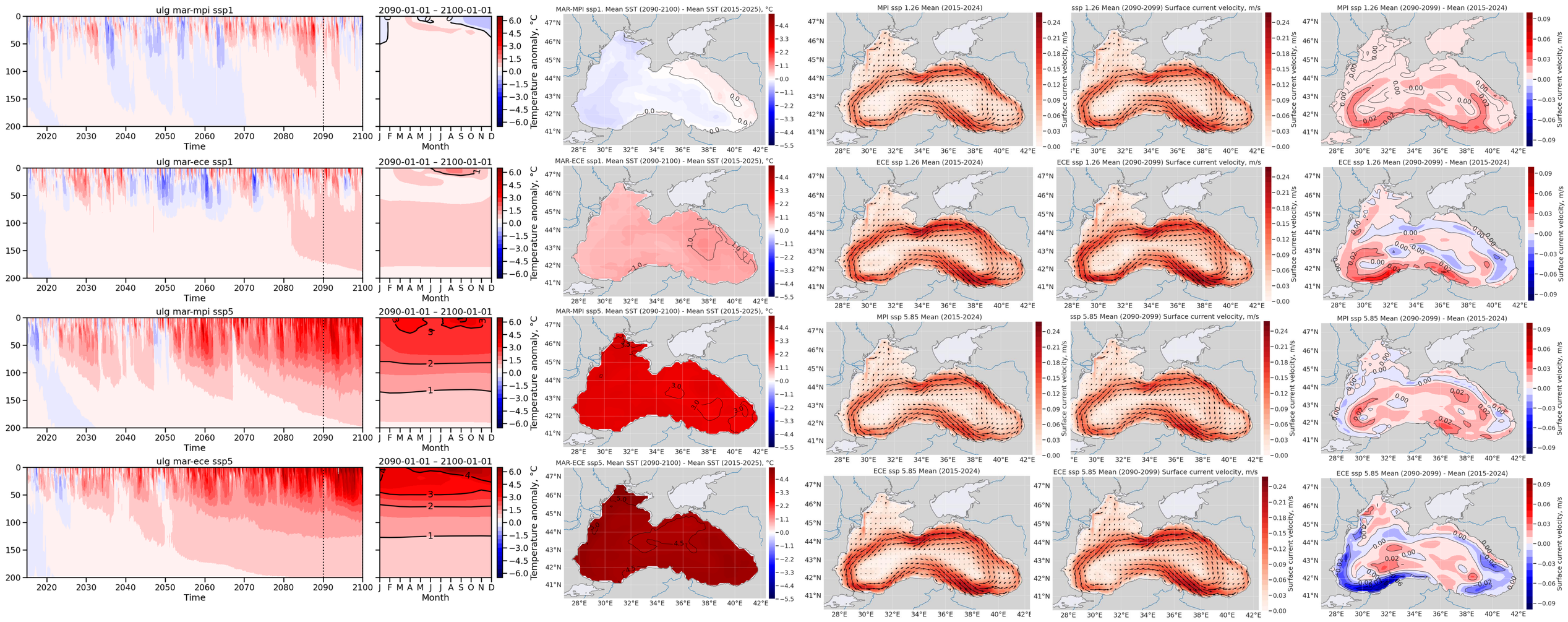
	ERA5	MAR-ERA5	MAR-MPI	MAR-ECE
MAE	0.37	0.31	0.63	0.34

Climate projections: SSP 1.26 and SSP 5.85 scenarios









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