

Supplementary Material for the paper entitled
"Analysis of the impact of vertical variation and
temporal frequency of the chlorophyll forcing field on
modelled temperature in the Mediterranean Sea and
potential implications for regional climate projections"

Yutong Zhang^a, Florence Sevault^b, Romain Pennel^c, Melika Baklouti^{a,*}

^a*Aix-Marseille Université, Université de Toulon, CNRS, IRD, MIO UM 110, Campus de Luminy - OCEANOMED, CEDEX 09, Marseille, 13288, France*

^b*CNRM, Université de Toulouse, Météo-France, CNRS, 42 avenue Gaspard Coriolis, Toulouse, 31057, France*

^c*LMD/IPSL, École Polytechnique, Institut Polytechnique de Paris, ENS, PSL Research University, Sorbonne Université, CNRS, Rte de Saclay, Palaiseau, 91120, France*

*Corresponding author

Email address: melika.baklouti@mio.osupytheas.fr (Melika Baklouti)

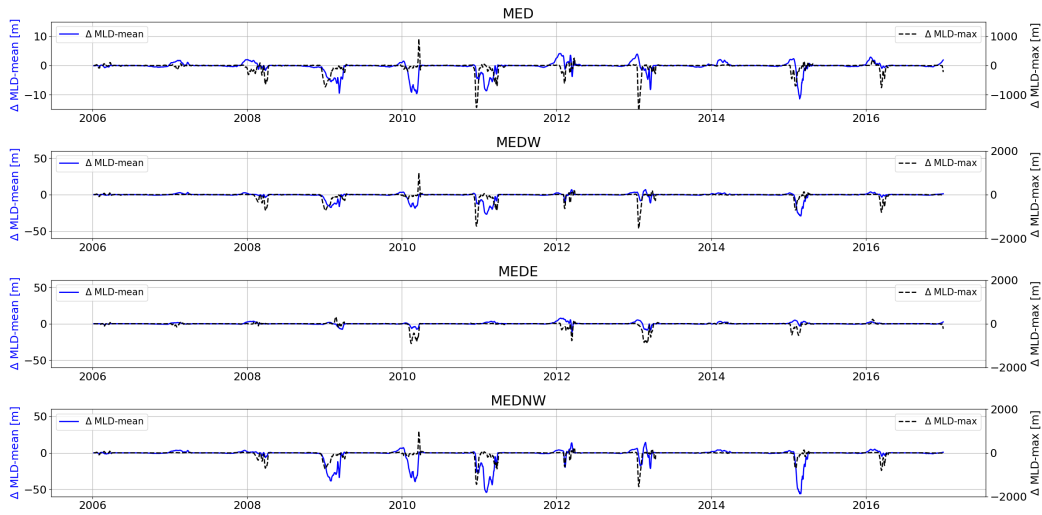


Figure SM1: Evolution with time of the differences $\Delta\text{MLD-mean}$ and $\Delta\text{MLD-max}$ between SAT_VHOM and SAT_VVAR.

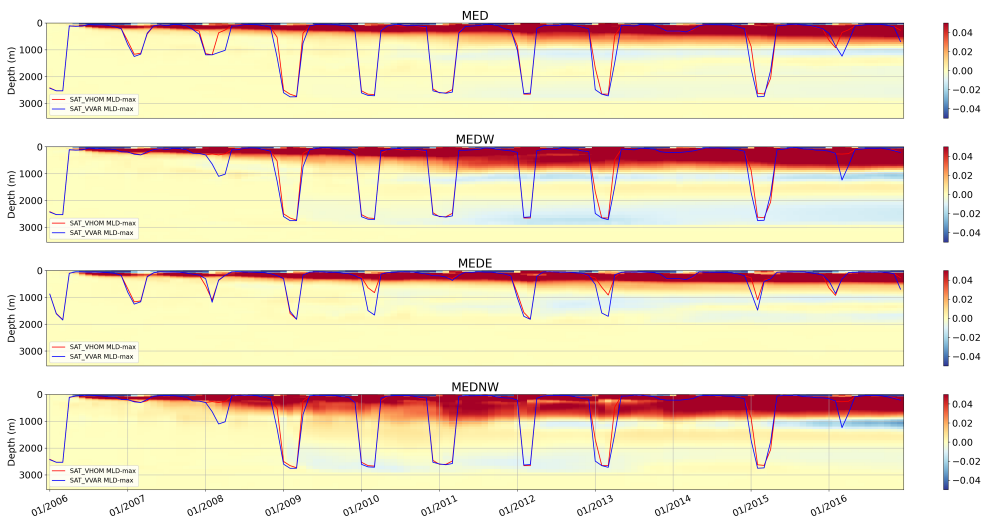


Figure SM2: Time-depth evolution of ΔT between the SAT_VHOM and SAT_VVAR simulations for the entire MED and three sub-basins. The red and blue lines represent the maximum MLD (i.e. MLD-max) of SAT_VHOM and SAT_VVAR, respectively.

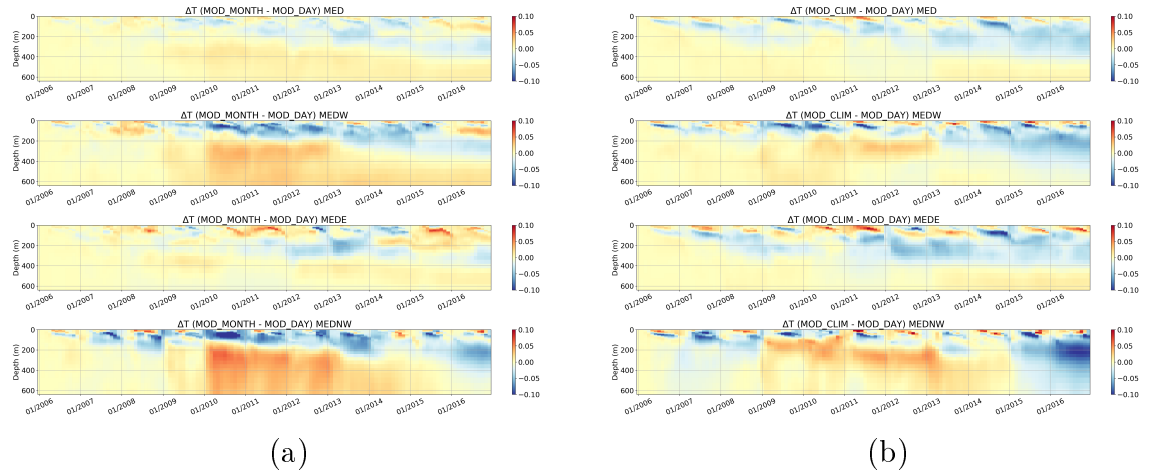


Figure SM3: Time-depth evolution of ΔT between (a) the MOD_MONTH and MOD_DAY simulations and between (b) the MOD_CLIM and MOD_DAY simulations for the entire MED and three sub-basins.

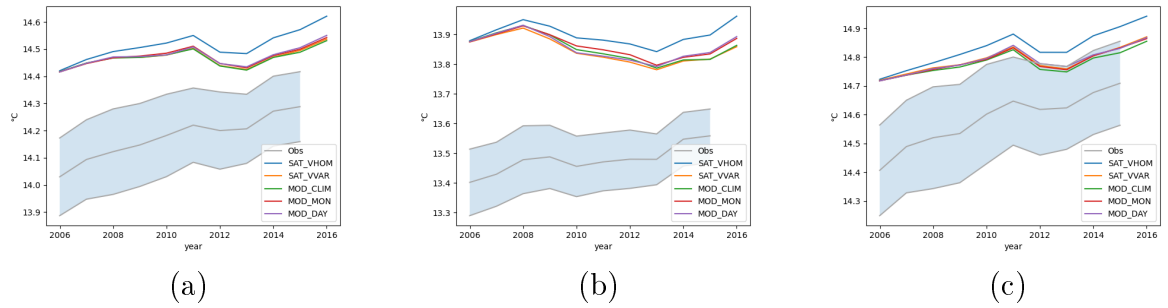


Figure SM4: Mean temperature calculated by the different simulations used in this work and from in situ data for (a) the Mediterranean basin (MED), (b) the Western MED (MEDW), (c) the Eastern MED (MEDE). In situ data are from the MEDHYMAP dataset (Jordà et al., 2017)

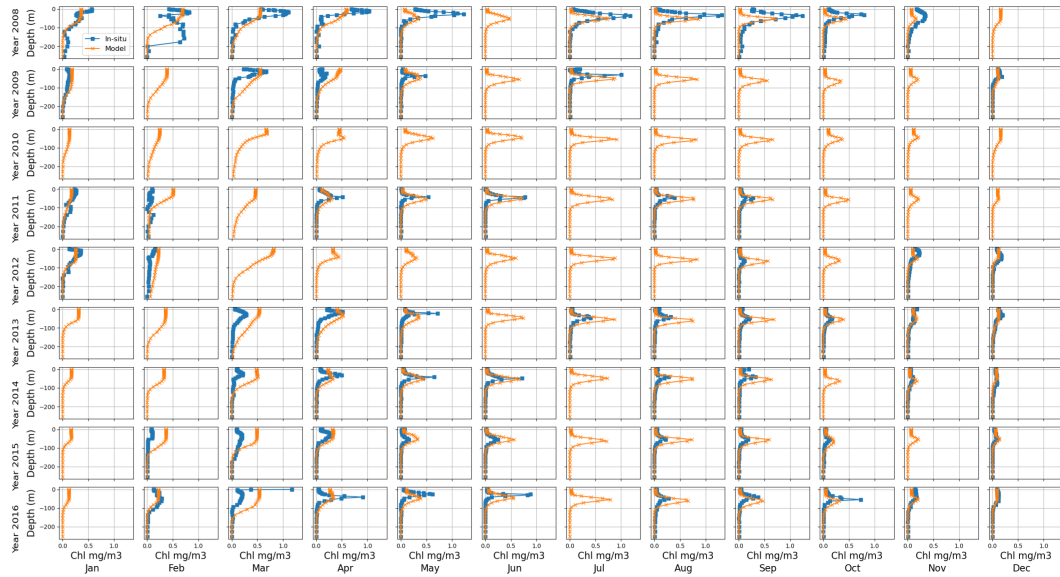


Figure SM5: Comparison between the measured and modelled Chl concentrations at Dy-FaMed site (<https://doi.org/10.17882/43749>)

Reference

Jordà, G., Von Schuckmann, K., Josey, S. A., Caniaux, G., García-Lafuente, J., Sammartino, S., Özsoy, E., Polcher, J., Notarstefano, G., Poulain, P.-M., Adloff, F., Salat, J., Naranjo, C., Schroeder, K., Chiggiato, J., Sannino, G. and Macías, D. The Mediterranean Sea heat and mass budgets: Estimates, uncertainties and perspectives. *Progress in Oceanography*, 156 , 174-208