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Ministero dell'Università e della Ricerca

Italiadomani
PIANO NAZIONALE DI RIPRESA E RESILIENZA

POTS - Porting OGSTM-BFM on TeRABIT federated Services, optimising the optimisation of OGSTM-BFM.

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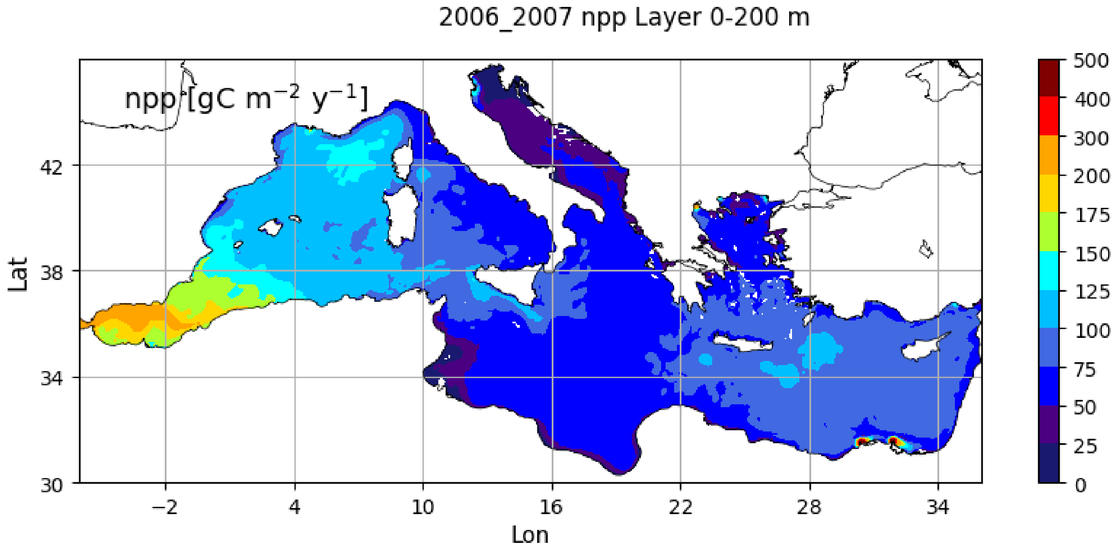
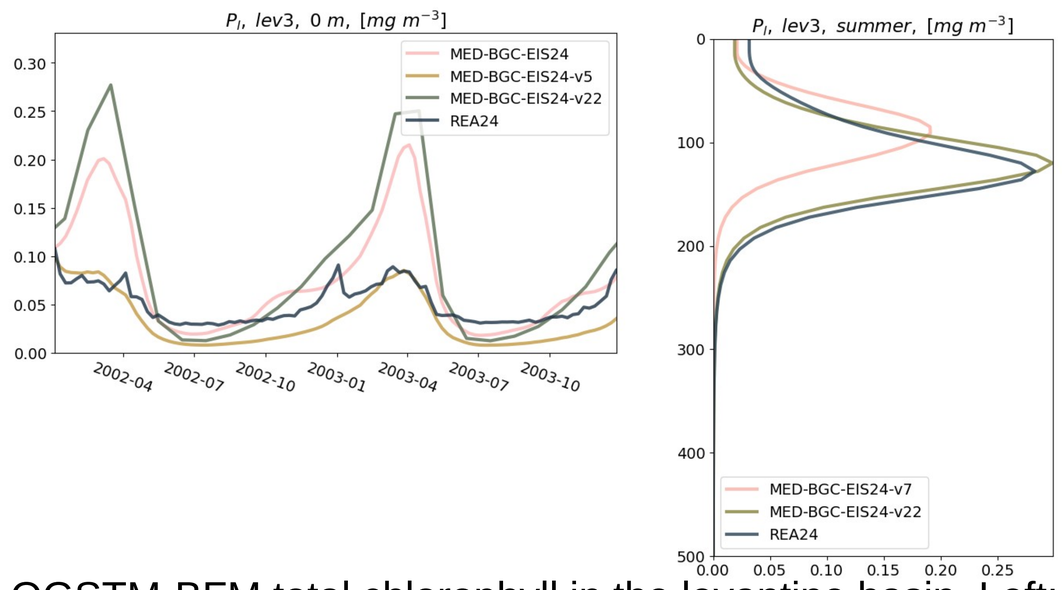


OGSTM-BFM integrated net primary production



OGSTM-BFM total chlorophyll in the levantine basin. Left: surface, right: summer depth profile. Different model free-runs during calibration, and 2024 Copernicus reanalysis (with assimilation of satellite chlorophyll.

OGSTM-BFM:
Coupled marine physics-biogeochemistry modelling system.

OGSTM:
offline transport model (uses NEMO gcm output).

BFM:
Marine biogeochemistry and lower trophic network.

Mediterranean 1⁄24 deg setup, z, y, x = (125, 380, 1085). Used for operational model (**medeaf.ogs.it**), climate projections, reanalysis (**marine.copernicus.eu/**).

~1d per 2y run on g100, -N20, --ntasks-per-node=48 (960 cores), including postproc.

Parameter optimisation is impractical and time- and resource-consuming.

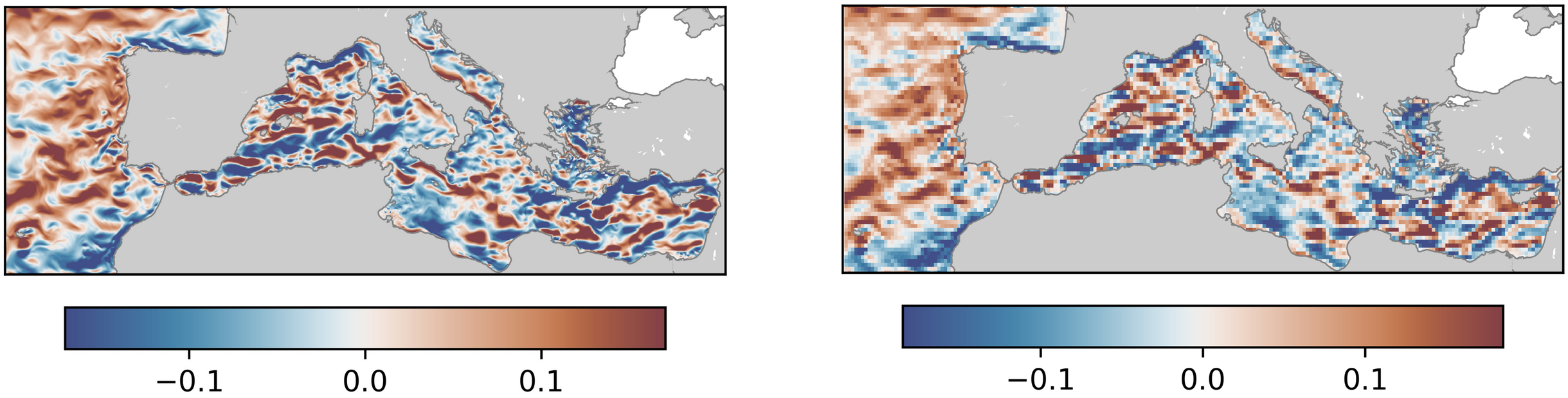
OBJECTIVE:
Set up a degraded resolution (¼ deg) model: z, y, x = (125, 63, 180).

Conservative re-gridding of mesh, forcing fields (3D physics @6h resolution), lateral and atmospheric boundary conditions. Not trivial, each variable its own weighting scheme!

Efficient and effective tool for parameter optimisation, can exploit the TeRABIT cloud infrastructure while the full resolution model uses a “traditional” HPC cluster.

1/24° sea_water_x_velocity [m/s]

1/4° sea_water_x_velocity [m/s]



OGSTM-BFM forcing, horizontal water velocity (surface) at 1/24 (native) and ¼ (degraded) degrees horizontal resolution.