

Mercator Ocean system reference	Domain	Resolution	Model	Assimilation	Assimilated observations
PSY4V1R3	Global	Horizontal: 1/12° Vertical: 50 levels	ORCA12 NEMO 1.09 LIM2, bulk CLIO 24 h atmospheric forcing	SAM (SEEK) IAU	RTG SST SLA <i>T/S vertical profiles</i>
PSY4V2R2	Global	Horizontal: 1/12° Vertical: 50 levels	ORCA12 <i>NEMO 3.1</i> <i>LIM2 EVP, bulk CORE</i> <i>3 h atmospheric forcing</i> <i>New parameterization of vertical mixing</i> <i>Taking into account ocean color for depth of light extinction</i> <i>Large-scale correction to the downward radiative and precipitation fluxes</i> <i>Adding runoff for iceberg melting</i> <i>Adding seasonal cycle for surface mass budget</i>	SAM (SEEK) IAU <i>3D-VAR bias correction</i> <i>Obs. errors higher near the coast (for SST and SLA) and on shelves (for SLA)</i> <i>MDT error adjusted</i> <i>Increase in Envisat altimeter error</i> <i>QC on T/S profiles</i> <i>New correlation radii</i>	<i>AVHRR + AMSRE SST</i> SLA <i>T/S vertical profiles</i> <i>MDT CNES-CLS09 adjusted</i> <i>Sea mammal T/S vertical profiles</i>
PSY4V3R1	Global	Horizontal: 1/12° Vertical: 50 levels	ORCA12 NEMO 3.1 LIM2 EVP, bulk CORE 3 h atmospheric forcing New parameterization of vertical mixing Taking into account ocean color for depth of light extinction Adding seasonal cycle for surface mass budget <i>50 % of model surface currents used for surface momentum fluxes</i> <i>Updated runoff from Dai et al. (2009) + runoff fluxes coming from Greenland and Antarctica</i> <i>Addition of a trend (2.2 mm yr⁻¹) to the runoff</i> <i>Global steric effect added to the sea level</i> <i>New correction of precipitation using satellite data + no more correction of the downward radiative fluxes</i> <i>Correction of the concentration–dilution water flux term</i> <i>Relaxation toward WOA13v2 at Gibraltar and Bab-el-Mandeb</i>	SAM (SEEK) IAU <i>3D-VAR bias correction (1-month time window)</i> MDT error adjusted Increase in Envisat altimeter error QC on <i>T/S profiles</i> New correlation radii <i>Addition of a second QC on T/S vertical profiles</i> <i>Adaptive tuning of observation errors for SLA and SST</i> <i>New 3-D observation errors files for assimilation of in situ profiles</i> <i>Use of the SSH increment instead of the sum of barotropic and dynamic height increments</i> <i>Global mean increment of the total SSH is set to zero</i>	<i>CMEMS OSTIA SST</i> SLA <i>T/S vertical profiles</i> <i>MDT adjusted based on CNES-CLS13</i> <i>Sea mammal T/S vertical profiles</i> <i>CMEMS sea ice concentration</i> <i>WOA13v2 climatology (temperature and salinity) constrained below 2000 m (assimilation using a non-Gaussian error at depth)</i>