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Enhanced air-sea physics parametrization and assimilation of SST: a combined approach.

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The Sea Surface Temperature forecasting skill of a Ocean General circulation model is crucially affected by two main factors: the errors on the computation of surface fluxes due to the imprecisions in both the traditional empirical (bulk) formulas and the atmospheric forcing fields, and the poor representation of several small scale dynamical features of the ocean itself.
This study describes the use of an enhanced air-sea boundary condition for a Mediterranean OGCM combined with an SST assimilation scheme applied in order to reduce the biases introduced by both these common problems.
The new air-sea physics parameterization consists on the substitution of the standard empirical formulas used to compute the radiative part of the heat budget with the use of the operational analysis fields provided by ECMWF, and on the correction of the basic forcing fields through comparison with more reliable data sets. The method is validated according to heat and freshwater budget considerations.
Re-mapped infrared mono-sensor Sea Surface Temperature satellite images are assimilated by means of a three-dimensional variational (3D-VAR) data assimilation scheme developed by Dobricic et al., 2008.