

**Data assimilation of the Eastern Mediterranean climatology using the adjoint method applied to the GFDL circulation model**

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The objective of model fitting is to find the model state minimizing the misfit between the data and their model counterparts. The best fit is determined by the values of the independent variables that minimize the cost function. This technique was applied to assimilate the Eastern Mediterranean climatology in terms of wind stress field, temperature and salinity distributions.

The GFDL general circulation model was adapted to the Eastern Mediterranean with 0.25 degree of resolution and 17 vertical levels, and coupled with the adjoint version of the same model in order to fit the model to data to have a steady state solution.

The output fields of velocity, temperature, salinity and streamfunction are compared with the ISGM multilevel model spinup.