



Parameter Identification in Ocean Models via Oneshot Optimization

C. Kratzenstein (1), T. Slawig (1,2), and A. Griewank (3)

(1) Christian Albrechts University, Kiel, Germany, (2) Cluster of Excellence Future Ocean, Kiel, Germany, (3) Humboldt University, Berlin, Germany

We present an iterative method to solve data assimilation problems to identify climate model parameters, here applied to a 3-dimensional marine ecosystem model. The goal is to correct model parameters already during the simulation process in a piggyback manner. We augment the simulation tool with adjoint solvers to obtain derivatives and immediately use this sensitivity information to determine parameter corrections. We verify that the application of the Oneshot optimization strategy requires only a small multiple of the computational time and costs which are needed for one model spinup with fixed parameters. Numerical results are shown on the basis of a least-squares fit of model output of a nutrient-based 3D marine ecosystem model to given data.