



Nonlinear parameter estimation using an implicit ocean model

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Many models of the ocean, atmosphere and climate contain a set of uncertain parameters, for example those in the parameterization of subgrid-scale processes. Inverse methods are frequently used to attempt to estimate the values of these parameters. In this presentation, we introduce the use of recently developed implicit inverse methods, i.e., where the model transient integration is fully implicit, for the parameter estimation problem. As a background model a fully implicit model of the three-dimensional ocean circulation is used. We will give a short overview of the methodology and then focus on results for the problem of the estimation of the vertical mixing coefficient of heat and salt, given (limited) section (hydrographic) data and/or surface (sea-surface height, sea-surface temperature) observations.