



Application of genetic algorithms to a parameter optimization of a coupled ocea – sea ice model in the Arctic Ocean

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We applied genetic algorithms to a parameter optimization problem in a coupled ocean – sea ice model, and examined applicability and efficiency of this approach from the point of view of a practical use for sea ice – ocean simulation in the Arctic Ocean. Several series of parameter optimization experiments were performed by minimizing a cost function composed of model – data misfit of 3 types of sea ice properties. The result shows that the genetic algorithms can effectively estimate near optimal parameter set with a practical number of iterations, and the methods provided better results compared to a traditional gradient descent approach. The result of the study indicates that a sophisticated stochastic approach is of practical use to a parameter optimization of a coupled ocean–sea ice model.