



CFC Simulations in Hadley Centre Models

Y. Searl and H.T. Banks

Hadley Centre for Climate Prediction and Research (yvonne.searl@metoffice.gov.uk)

A primary motivation for simulating chemical tracers in ocean GCMs is to allow us to evaluate models. We have simulated the invasion and transport of CFCs in three different Hadley Centre climate models. These models are of increasing complexity and differ in resolution, atmospheric forcing and the schemes used for tracer advection. Comparisons between the latest estimates of global and regional CFC inventories derived from WOCE data show discrepancies between model and observed values.

The rate of transfer from the atmosphere to ocean affects subsequent tracer concentrations in the interior. Thus a potential significant source of model error is the accuracy of the air-sea flux parameterisation: this is the same across all three models. The parameterisation depends on SST, SSS and the existing concentration of CFC in the surface. Many new-generation coupled climate models run without flux adjustment, this can result in larger SST errors. We examine the correlation between the SST errors and the inventory patterns in each of the models.