



CARBON TRANSPORT AND PROPAGATION OF UNCERTAINTIES IN AN OCEAN INVERSE MODEL SYSTEM

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The oceanic carbon transport and propagation of uncertainties in an ocean inverse scheme are examined in detail. Traditionally, ocean carbon fluxes are estimated using bulk parameterization of air-sea gas exchange and observed air-sea gradients. An alternative approach has been published using ocean interior observations from the WOCE/JGOFS global carbon dioxide survey and an ocean general circulation model in a Green's function based inverse model to constrain the temporally averaged pre-industrial and present-day carbon dioxide fluxes. Thorough understandings of ocean carbon transport and error propagation through the inverse system are critical initial steps in this work. The ocean carbon transport in the model is examined in detail and with a focus on the impact of uncertainty propagation on carbon transport. The potential biases to carbon transport in the inverse scheme due to the technique used to account for biological processes and the impact of propagation of uncertainty in the observations are discussed.