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Variations of the North Atlantic Circulation and its Transport Properties inferred from Ocean State Estimation

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Ocean state estimation is used now in a routine manner to combine ocean observations and numerical models and thereby to obtain a dynamically self-consistent estimate of the changing ocean circulation. In this talk, results from the GECCO (German ECCO) effort will be used to estimate changes of the Atlantic circulation and its transport properties for heat and freshwater. Results will be interpreted in terms of variability of the large-scale circulation and its causes. Results will also be put into the context of other state estimates to discuss uncertainties of our present knowledge and understanding of the variability of the Atlantic circulation. The work is part of the BMBF-funded German consorted effort “North Atlantic” which investigates changes in the Atlantic Circulation and aims to quantify its impacts.