



## **Inverse Estimate of the North Atlantic Circulation: Influence of the fine resolution GOCINA dynamic topography**

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The circulation in the North Atlantic subpolar gyre and the Nordic Seas has been improved by assimilating the GOCINA dynamic topography into an inverse finite-element ocean circulation model. The inverse model seeks for a density field which is close to the density data and has a large-scale ocean circulation with a surface elevation which is close to the GOCINA dynamic topography. It turned out to be necessary to add information about the deep ocean circulation to obtain a realistic solution. We chose to require closeness of the deep pressure gradient to that of a forward solution.

Two model experiments are reported differing by the use of an additional information on the deep ocean circulation (deep pressure gradients). This information is shown to be crucial in obtaining a realistic solution. Without it the inverse solution approaches the altimetry data by mostly developing a barotropic response with very small changes happening to the steric height.