

Interactive comment on “High resolution modelling of the North Icelandic Irminger Current(NIIC)” by K. Logemann and I. H. Harms

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Thanks for useful comments and critics. The referee identified various points for improvement:

3.3.2 ‘Seasonal variability’ The referee requests a more clear explanation for the seasonal switch in heat flux variability and the evolution of trends. We agree and we will discuss in our new version the heat flux seasonality more precisely. The second point (heat flux trends) refers to a criticism that was also mentioned by referee#1 (his point 5), who suggested a broadening of chapter 3.3.3 with respect to more observational data. We agree and will present a 50 m temperature figure based on Icelandic data and we will refer to the possible underestimation of the 2002/2003 event (new figure 12). Through these measures, we are able to quantify the damping effect caused by data restoring and to explain in a more convincing way that high north Icelandic tem-

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peratures in 2002/2003 were caused by anomalous heat fluxes.

3.3.3 'Interannual variability' The referee suggest to take the seasonal signal out of the time series in Fig. 11, in order to make the interannual signal more clearly visible. However, our intention is to show the seasonality together with the interannual signal, which is to our opinion strong enough to be identified easily within this figure. We agree that the salinity minimum south of Denmark Strait in summer 2003 would be an interesting feature to trace. However, at present our simulation ends in 2003 and the remaining period after summer 2003 is too short to extract any information. We therefore see this feature as a focus for further investigation.

3.4. 'Origins, pathways and composition of NIIC waters: a tracer study' The referee is correct in his/her opinion that the explanation of the applied ocean forcing fields is too slack. We will remove the confusing word "climatologic" and replaced it with "97-03 mean", which is more precise in this context. The referee is also correct in his/her assumption that applying annual mean fields lead to significant different results. In the new version, the discussion on this point will be more precisely. The difference in NIIC volume flux of 0.2 Sv between 02/03 and 98/99 is for yearly mean values significant.

4. 'Discussion' The referee misses a clear distinction and explanation for different AW/PW ratios between observations and model results. This point is also similar to critics from referee #1. The new version will include a more detailed comparison and discussion between model results and observations. Beside Icelandic temperature recordings, we will consider in particular the measurements by Jónsson & Valdimarsson (2005) and focus on a detailed discussion of model results and observations. We discuss the possibility of a model underestimation of the NIIC volume and heat flux which could be caused by a overestimation of the eddy diffusivity and show the most probable reason for that. Like referee #2, also referee #3 criticize the paragraph on correlation and spectral analysis of NIIC volume flux and local wind fields, in particular because it was too speculative in some parts. We fully agree on that and we will completely rewrite this paragraph in the new version. We will also change Fig. 17 (now Fig.

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19) by adding a normalized spectral analysis in order to support our arguments concerning the dependency of NIIC transport variability on wind field variability (suggestion by referee #3). For this analysis, we also removed the seasonal cycle (suggestion by referee #2 and #3) in order to make the correlation beyond 300 days more clear.

All minor typographic and editorial issues will be considered. The Faeroe Islands are of course part of the model, they don't appear because of the plotting.

Interactive comment on Ocean Sci. Discuss., 3, 1149, 2006.

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