Ocean Science Discussions

Interactive comment on "An ocean modelling and assimilation guide to using GOCE geoid products" by K. Haines et al.

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Referee 1. The TOPAZ experiment uses a large MDT offset. Why is it not removed?

In the other systems this offset is removed and this is clear stated now. Only the MDT gradients matter in driving ocean currents so the absolute mean MDT over the model need not be considered in the assimilation. However this was not done in the TOPAZ experiment and as a result the model allows the mean sea level to be adjusted to fit the imposed mean MDT over a period of time. This comment now added to paper

How are other data (SST and ice) influence the experiments?

The impact of the MDT assimilation on the T profiles is clearly discussed in section 5.2, however there will be relatively little influence of the SST and sea ice assimilation

because SST is a very thin layer (the T profiles are more connected to steric sea level) and the sea ice at high latitudes is beyond the latitude of altimeter observations in most cases.

Section 5.4 transport results. Are they significant compared to interannual variability. This section is not so important?

Whilst this material has not been published elsewhere and therefore we desired to get it in print we do agree with the reviewer that it does not easily fit into the format of this paper and therefore we have decided to remove it.

Figures are a bit small:? New figures will be provided for Figs 2,3,4,5,6

Minor issues have all addressed in new manuscript

Note that p1857 Eq 2 The subscripts i were misprinted (sorry) and have now been removed as they are unnecessary. In Eq 3 the superscripts f are retained and are now explained as representing the filters

P1865 l25 What is the procedure to calibrate the MDT to reduce the mismatch to SST? Here SST means sea surface topography rather than sea surface temperature. Sorry for the confusion and the text has been modified so it is simply removing regional means in sea level.

P1871 8-18 This text has been removed

Interactive comment on Ocean Sci. Discuss., 7, 1849, 2010.