

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

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Referee 2.

Reviewer suggests sections 2 and 3 repeat material already discussed in Bingham and Hughes 2008 and Bingham et al 2008 papers (hereafter BH08 and Betal08) and should, therefore be reduced to summary?

Section 2.1 has been greatly reduced using bullets, as its material is reviewed in Bingham and Hughes 2008. Sections 2.2 and 2.3 however, while containing previously published results has not been reviewed before and we consider important enough to want to retain because we believe it is not appreciated sufficiently in either the geodetic or ocean modelling communities. As seen by the references some of this work is still

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very recent.

Section 3 actually has some new material which is not published elsewhere. Section 3.1 shows some realistic test results using different filters in Figs 2 and 3 which have not appeared before. Section 3.2 reviews entirely different material to that in BH08 or Betal08 focussing on using ensemble methods to give prior estimates of MDT errors. Section 3.3 has been enhanced now to give more details of how Geoid covariance errors might be used, as requested elsewhere in the review.

Reviewer suggests operational experiences 5.1 – 5.3 should be expanded and including section 5.4 material here instead of in separate section.

Section 5.4 has now been removed because it is too difficult to merge with sections 5.1-5.3. This was a specific experiment used for comparing the operational systems during the GOCINA project. The methodologies reported for treating the MDT in the systems have now changed so the results would not be relevant for the descriptions given in the previous subsections now.

The sections 5.1-5.3 cannot easily be expanded since it is not the purpose of this paper to give many details for the operational systems themselves but simply to describe the options and previous tests that have been developed in readiness for introducing new MDT data from GOCE. Therefore provided there is sufficient information to understand the results presented it would not be appropriate to include a lot more here.

Minor issues GOCINA, GOCINO GUTS references largely removed from current text except once in introduction and then in acknowledgements as requested

Chambers et al 2007 reference now included in introduction.

Terms space domain, real space, physical space have been unified mostly to “physical space domain”

Reference to the GRACE error estimates recently available now appear in section 3.3 as requested

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Brief references to other assimilation systems ECMWF and BLUELINK treatment of MDT are now included at the start of section 5. The ECCO and Mediterranean systems are mentioned at the beginning of section 4.

Author name typo corrected

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

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