

Interactive comment on “An oceanographer’s guide to GOCE and the geoid” by C. W. Hughes and R. J. Bingham

Anonymous Referee #2

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Comments

Aim of the paper is to give to oceanographers an overview and the basic knowledge about the geoid needed to use GOCE data. As a consequence no new information is given and the paper consists in a summary of information that can be found elsewhere.

If such a paper is of interest to the journal is a decision of the editors.

As a guide, it would be of more interest if the authors address also information relevant to geodesists (e.g. relation between geoid and ocean models, principles of ocean models, different type of ocean models, resolution, etc.). This is partly done in Section 2.2 (page 1551) and at the end of Section 3 (page 1556), but it is now incomplete.

I suggest to make the paper shorter giving the necessary references for details. Some

important references are missing, those used are in general quite old. As the paper is a summary of known information, the corresponding bibliography should be referenced all along the text.

Definitions can be shortened. Examples using geoid and oceanographic models available should be included, as well as reference to actual studies.

Detailed suggestions for the author

1. Section 2. The geoid is defined as equi-geopotential surface. This comes too late in page 1546. It could be the first sentence in Section 2.
2. Better use notation ϕ for latitude, as θ is generally the co-latitude. λ is the longitude.
3. Page 1551. 21 km bulge at page 1551, 21.4 at page 1545. If this is the same it is confusing, if it is not the same the difference should be explained. Again 21 km at page 1552.
4. Page 1556. Concepts as “degree variances” and its meaning are fundamental for use of a geoid model. They should be mentioned with examples.
5. Page 1558. There is no Gibbs’ effect in the geoid.
6. Page 1559. The sentence “The full omission error is incurred by a satellite altimeter measurement ...” is unclear. The dimension of the altimeter footprint depends on the satellite and is smaller than 7 km. Seven km is the along-track distance between the 1-sec measurements.
7. Page 1560. The omission error part is unclear. What is “Omission error in coastal region”?
8. Page 1562. Two, six-month change in “two six month”.
9. Page 1566. Eq. 22. Why is γ depending also on longitude? In the other

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formulas is only dependent on latitude.

10. Reference to global and local recent models of Geoids, mean sea level, mean dynamic topographie etc. studies (e.g. in GOCINA etc.) with accuracies and outlook is needed. A good collection is for example in : Cahier du Centre Europeeen de Geodynamique et Seismologique Volume 25, Proceedings of the Workshop Gocina 2005, Luxemburg 2006

11. Page 1544. "not used to WORK"

Interactive comment on Ocean Sci. Discuss., 3, 1543, 2006.

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