

Interactive comment on “Data assimilation of in-situ and satellite remote sensing data to 3D hydrodynamic lake models” by Theo Baracchini et al.

Anonymous Referee #2

Received and published: 11 September 2019

The ms is well-written and presented , reinforcing the expectation that satellite data providing

additional data coverage improve the data assimilation results assimilated along with in-situ observations of 3D lake models.

The DA method used was EnKF .

The authors should briefly address data assimilation using variational method i.e.4DVAR method, along with displaying relative sensitivity of model to the type of observations being assimilated.

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Model error should also be briefly discussed. See for instance:

Santha Akella and I.M. Navon: Different approaches to model error formulation in 4D-Var: a study with high resolution advection schemes . , Tellus A . , Vol 61A, 112–128 (2009)

Daescu D.N. and Navon I.M.: Sensitivity Analysis in Nonlinear Variational Data Assimilation: Theoretical Aspects and Applications. Chapter in book : Advanced Numerical Methods for Complex Environmental Models: Needs and Availability. Istvan Farago and Zahari Zlatev (Editors), Bentham Science Publishers, Published December 2013, ISBN: 978-1-60805-777-1 (2013)

Another issue to address is the question of existence of an upper limit to the amount of information that can be assimilated and the improvement in model error..

Interactive comment on Geosci. Model Dev. Discuss., <https://doi.org/10.5194/gmd-2019-47>, 2019.

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