Ocean Science Discussions

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# Comment on os-2020-119

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Community comment on "High-resolution stochastic downscaling method for ocean forecasting models and its application to the Red Sea dynamics" by Georgy I. Shapiro et al., Ocean Sci. Discuss., https://doi.org/10.5194/os-2020-119-CC1, 2021

Very interesting paper using a different mathematical approach comparing to the usual methodology for downscaling, especially to be used for operational downstreaming applications when higher resolution is needed for smaller domains and closer to the coast.

The mentioned "double penalty" effect should be expected in downscaling due to the fact that the coarse model has first of all a coarse bathymetry compared to the higher bathymetry of the downscaled model. Therefore, the spatial displace of hydrodynamical features should be appeared especially in areas with not smooth bathymetry.

I propose to the authors to look the recent Red Sea paper here below and add the relevant citation:

Hoteit, I., Abualnaja, Y., Afzal, S., Ait-El-Fquih, B., Akylas, T., Antony, C., Dawson, C., et al. (2020). Towards an End-to-End Analysis and Prediction System for Weather, Climate, and Marine Applications in the Red Sea. Bulletin of the American Meteorological Society, 1-61. https://doi.org/10.1175/bams-d-19-0005.