

Geosci. Model Dev. Discuss., community comment CC1
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Comment on gmd-2022-254

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Community comment on "Development and validation of a global $1/32^\circ$ surface wave-tide-circulation coupled ocean model: FIO-COM32" by Bin Xiao et al., Geosci. Model Dev. Discuss., <https://doi.org/10.5194/gmd-2022-254-CC1>, 2022

Good article supporting the fact that tides govern the overall fluid dynamics in the major ocean basins. But must include the impact of the so-called long-period tides of lengths of weeks or more, as these are the factors that better match the lagged thermocline sloshing response (short diurnal cycles are filtered). The curious multidecadal response of the AMO and PDO are a result of the 9.133-day Mt tide interacting with a monomictic thermocline impulse. As 9.133 days is almost a perfect multiple in the annual cycle (~ 39.99 cycles in a year) this creates a reinforcing constructive/destructive interference cycle of ~ 100 years. Cite Mathematical Geoenergy (Wiley/AGU, 2018) for the complete tidal analysis.