

Hydrol. Earth Syst. Sci. Discuss., referee comment RC4  
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## Comment on hess-2021-75

Anonymous Referee #3

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Referee comment on "River-enhanced non-linear overtide variations in long estuaries" by  
Leicheng Guo et al., Hydrol. Earth Syst. Sci. Discuss.,  
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Finding M4 tide in the Changjiang and Amazon River estuaries, this manuscript discussed how the M4 is generated by different river discharges. This is an interesting work but the study of the mechanism seems not too strong. I have few comments:

(1) If the morphology is schematized, the authors can also try other convergence ratios besides the prismatic model. Maybe Amazon model. Or how can the results relate to Amazon since the morphology comes from Changjiang?

(2) To what extent the R2T value ( $= 1$ ) is applicable since morphology plays a role?

(3) Give more details about the benefits of maximal overtide amplitude.

(4) How does the river discharge affect the effective friction? Is the location of the maximum overtide amplitude related to the morphology? where the friction is maximum?

(5) How is the M4 identified from the model? Or which term represents the M4 in the model?

(6) What is the role of the tide in this study?