

Hydrol. Earth Syst. Sci. Discuss., referee comment RC2
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Reply on AC1

Xiao Hua Wang (Referee)

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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The authors have not addressed my comment on $R_{2T}=1$ for maximum M4 generation satisfactorily. The R_{2T} ratio close to unity for maximal M4 generation can be explained by explaining the optimum generation of quadratic frictional coefficient terms in the algebraic development discussed in Godin (1999) as we did in Table 5 in our paper. In lines 555-558, the authors mentioned that the quadratic bottom stress term leads to significant M4 generation. The authors can use their model results to analyze the relationship between the R_{2T} ratio and quadratic frictional terms for the generation of M4 tide to explain the unity of the R_{2T} ratio.

It also should be noted that $R_{2T} = 1$ is not applicable to different estuaries (or indeed at different locations in an estuary) for maximum D4 generation. Our paper has demonstrated that an optimum balance between residual velocity and tidal velocity components is also found at R3 and R5 for the Q20 and Q40 scenarios, respectively.