

Dear Anonymous referee#1,

We are grateful for your valuable and fruitful comments. The responses to each comment can be found in “*italic*” font below the comment.

Q1. The 1-dimensional dispersion coefficient lumps the effect of shear in the water velocities through cross sections. The calamitous spill models for rivers indicate the shortcoming of such a lumping. Also in estuaries shortcomings can be identified. Unfortunately the contribution of the authors does not mention any of these limitations.

*Answer: In line 21 page 9, we mentioned the limitations that the analysis does not address the specific mechanisms responsible for this dispersion owing to a lack of velocity measurements. However, this quantitative knowledge of the spatially varying dispersive characteristics of the SRE can be useful for developing and testing hypotheses about various mixing mechanisms. This is the only example known to the authors of either temporal or spatial variability in dispersion estimates at high and low tide for the SRE. These data provide an important starting point for additional characterization of mixing processes in the SRE.*

Q2. It would be very valuable if the authors would continue their research with 3D modeling of their river stretch of interest. In follow-up publications they can then show that for the 3D model to reproduce their extensive dataset well, it is necessary to represent the shape of the bed in sufficient detail. That will be tedious work, but the reward is that salinity measurements will be reproduced with even much greater accuracy without a dispersion coefficient at all. Such a model will then also be fit to address means of influencing the salinity intrusion by changes in the shape of the bed. With the top-of-the-line model Delft3D gone ‘open-source’, it is possible to use competent 3D models for such a study free of charge.

*Answer: We are trying to extend our research using 3D circulation model (FVCOM or Delft3D) to predict salt intrusion through calibration and verification with extensively observed dataset under various river discharges, mixing coefficients and bed friction values. We hope that this follow-up study may represent more detail structure of salinity intrusion with our extensive data set.*