

## Multi-mission altimetry data to evaluate hydrodynamic model-based stage-discharge rating curves in flood-prone Mahanadi River, India

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### Reviewer 2

Unfortunately, I do not see any major new contribution in this paper. The authors try to justify their new contribution by showing the relative performances of altimetry-based rating curve and model-generated rating curve at ungaged virtual locations. This whole concept is not too different from what was presented in many previous studies, including Paris et al. (2016) and Tarpanelli et al. (2013).

Paris et al., 2016. <https://doi.org/10.1002/2014WR016618>

Tarpanelli et al., 2013. <https://doi.org/10.3390/rs5094145>

We are grateful to reviewer for their brief critical comment and suggestions. However, we would like to highlight that we have not used altimetry data to generate rating curves at virtual stations. Rather, we have generated stage-discharge rating curves at virtual stations (where altimeter track crosses the river) using hydrodynamic modelling. The multi-mission altimetry data has been used to evaluate these generated rating curves. We have clearly mentioned in the introduction (Line 75-98), with reference to Table 1, the work falls in the category of 'calibration and validation of hydrodynamic models using satellite altimetry-based water levels'. As per the author's best knowledge, this is the first study where multi-mission altimetry data has been used to evaluate model-based rating curves. The work done by Paris et al., 2016 and Tarapanelli et al., 2013 have generated rating curves/estimated river discharge using altimetry-based water levels and modelled river discharge. However, in present our, we have used altimetry-based water levels to evaluate rating curves not to generate.