

## ***Interactive comment on “An estuarine tuned Quasi-Analytical Algorithm for VIIRS (QAA-V): assessment and application to satellite estimates of SPM in Galveston Bay following Hurricane Harvey” by Ishan D. Joshi and Eurico J. D’Sa***

**Anonymous Referee #2**

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### General comment

This study presents a tuning of the well-known standard quasi-analytical algorithm (QAA, Lee et al., 2002) to improve its performance in optically complex and shallow estuarine waters. This tuning is based on both synthetic data and in-situ measurements. The improvement due the tuned algorithm (called QAA-V) is assessed based on once again synthetic data (Hydrolight computations) and in-situ measurements in several US coastal and estuarine waters. The performance of the tuned algorithm is proved to be reasonable so as the improvement when compared to QAA last version

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(v6). Finally, QAA-V is applied to VIIRS satellite data recorded over turbid coastal waters (Galveston Bay, Texas) to retrieve then map the particulate light backscattering coefficient at 532 (bbp532) actually converted into suspended particulate matter concentrations (SPM) using an empirical relationship. SPM maps generated after an intense flooding event are analyzed using river discharge and wind speed/direction data. Overall, the manuscript presents a significant piece of work with interesting results. Moreover, it is well organized and written. The most convincing part is certainly the tuning of the QAA algorithm for shallow estuarine waters and the efforts made to validate the results obtained. The less convincing section is the retrieval and mapping of SPM concentrations in Galveston Bay using VIIRS satellite data as: QAA allows retrieving the light absorption and particulate coefficients of colored water constituents on top of pure water (anw and bbnw, respectively), i.e. much more than SPM concentration. One would expect maps of anw and bbnw to be presented and analyzed at the end of the study that could highlight interesting spatial and temporal variations of CDOM and SPM composition and size distribution over the study area.

My recommendation is to accept the manuscript for publication if the authors can address in more details this last comment, at least in the Discussion and Conclusions sections.

### Additional comments

Page 6 SPM uncertainty? Sensor used for bbp measurements and data processing/corrections?

Eq. 2: Rrs(residual)? Please define and justify

Eqs. 1-3: provide physical unit for each parameter

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