ESSD-2023-460 A Global Multi-Source Tropical Cyclone Precipitation (MSTCP) Dataset

Author's answers to each referee's comments

Referee # 1

We thank the referee for taking the time to review the manuscript.

The authors produce a so-called Global Multi-Source Tropical Cyclone Precipitation (MSTCP) dataset by using two publicly available datasets: a tropical cyclone (TC) best track dataset (IBTrACS) and a new version of global precipitation product (MSWEP V2), and then performed some statistics of TC precipitation, most of which have already been investigated by using similar datasets in previous studies.

Nothing to say.

Although the computation is relatively cost, the MSTCP dataset can be easily derived by professionals and thus it is not unique.

As the reviewer notes, the calculations required to analyze TCP are costly and time-consuming. If each user repeats our analysis, the community will spend an overall large amount of time calculating these diagnostics. Instead, our dataset allows a larger community of users to devote their time on the direct analysis of TCP and avoid the very high initial cost of calculating TCP diagnostics. By making the MSTCP dataset available, we aim to accelerate knowledge transfer and creation. Given that TRMM has been discontinued in 2019, it is likely that MSTCP (based upon MSWEP v2) will become the standard in the future for TCP analysis.

In addition, the MSTCP dataset is unique in the sense that it is the first publicly available dataset of processed TCP from a global precipitation dataset. We found that Zhang et al. (2019) and Torres-Alavez et al. (2021) did apply MSWEP v2 and IBTrACS to process TCP but they both did not publish the resulting dataset. Moreover, Torres-Alavez et al. (2021) only covers 1995-2014, whereas MSTCP is available from 1979 to the present. A longer time coverage is more useful, e.g., for trend analyses. Finally, Zhang et al. (2019) has a longer time coverage (1980-2015) but they only computed precipitation over land.

In addition, the azimuthally averaged MSTCP data limit its usefulness in studying TC precipitation asymmetry.

Azimuthal averages are commonly used for model evaluation (see e.g. Vannière et al., 2020, Moon et al., 2022) and observational studies interested in the spatial or temporal variability of the observed structure of azimuthally averaged TCP, including the study of trends of TCP (see e.g., Lavender and

McBride 2021, Tu et al., 2021). These applications provide a strong motivation for our dataset to provide an azimuthally averaged product.

In addition, we could add additional columns in the profile dataset to report the radial profiles of precipitation per quadrant (shear-relative and storm-relative) to expand the usefulness of the MSTCP dataset.

Therefore, I don't think the manuscript qualifies publication in ESSD.

Nothing to say.

References

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