

***Interactive comment on* “Tropical cyclones vertical structure from GNSS radio occultation: an archive covering the period 2001–2018” by Elżbieta Lasota et al.**

Anonymous Referee #1

Received and published: 13 July 2020

Review of the study entitled “Tropical cyclones vertical structure from GNSS radio occultation: an archive covering the period 2001–2018” by Elżbieta Lasota et al.

First of all, I would like to express my deep respect to all the co-authors for creating this interesting data set and making it freely available for the public. This is quite interesting data set related to the GNSS RO and the tropical cyclones (TCs).

In this work, the authors provided a comprehensive data set regarding the TCs vertical structure from the co-located GNSS RO profiles for the period 2001-2018. The GNSS RO profiles are collected with the TC track information in time and space along with the background climatology. The presented data set is very useful for study and under-

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standing the inner core structure of the TC. Personally, I have gone through the data link and downloaded the data. I also processed the data for a single cyclone from the data archive. The data link which is given in the manuscript is working properly and the data are freely accessible. I strongly believe that this data set can play a significant role in TC research and will become a benchmark data set for the future research. Overall the paper is well written, the created data set is demonstrated well and worth to be publishable. However, the manuscript needs some minor changes before the manuscript is ready for publication. Therefore, I strongly recommended the paper for publication in ESSD journal with some minor revision.

Major Comments/Suggestions: I have one major comment to the data set. When open the data link, I have found the data set in a specific folder with the name of individual years (2001, 2002, . . . 2018). Some of the data files are having the name like 'NOT_NAMED_2001_2001031S13072.nc' in each folder of individual years. This will create some confusion for the users. It would be useful to provide sub folders with respect to each oceanic basin for each year. I strongly suggest to the authors, please include the subfolders with respect to the different ocean basin and keep the data files with respect to basins. I hope this may not take much time for the authors.

Specific Comments: Page 1 LN 24-25: It would be good to include one sentence related to the cyclone names over different basins. The authors used 'cyclones/storm/hurricanes' several times in the manuscript. It is good to introduce the cyclone names over different basins.

Page 1 LN 36: replace 'Numerical Weather Models (NWP). . . .' to 'Numerical Weather Prediction (NWP)'

Page 1 LN 36-37: It is good to mention 'name of the oceanic basin'.

Page 3 LN 98: 'global monthly mean multi-satellite climatologies.' Is it the authors considered the data from 2001 to 2018? Please mention in the manuscript.

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Page 3 LN 103: 'downloaded from The International. . . .' Change 'The' into 'the'.

Page 3 LN 115: change '6hour' to 6-hour.

Page 3 LN 125-130: 'seven levels based on the wind speed'. . . It would be good to include a table regarding the different types of TC intensity along with wind speed.

Page 4 LN 151-152: 'the minimum central pressure and the maximum sustained wind' Authors can mention here about 'wmo_pres' and 'wmo_wind' which are given in the data archive actually.

Page 4 LN 167: 'We have collected 48313 co-locations between ROs and TCs from 1570 TCs'. The authors mentioned 1822 TCs in the abstract. Please check it once.

Page 5 LN 182: 'developed in the Indian ocean. . . .' Authors can specify the oceanic basin either it is North or South Indian Ocean. . .

Page 5 LN 196: 'reference climatology profile. . . .'Is it related to the climatology of the respective TC month?

Page 6 LN 225: 'corresponds to an altitude of about 15 km above the mean sea level' check it once.

Page 6 LN 246: The authors can include the usefulness of COSMIC-2 RO data, particularly the ability to study the diurnal changes of the temperature during the extreme events such as TCs/volcanic eruptions.

Figures: Figure 4: Use different color scale. Values more than 624 becomes white. It is difficult to identify.

Please check figure 5. Temperature and humidity anomalies up to 250 km? Is it really possible? I don't think so. Please correct the scale.

References: Ravindra Babu, S. and Liou, Y.-A.: Measurement report: Immediate impact of the Taal volcanic eruption on atmospheric temperature observed from COSMIC-

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2 RO measurements, Atmos. Chem. Phys. Discuss., <https://doi.org/10.5194/acp-2020-513>, in review, 2020.

Interactive comment on Earth Syst. Sci. Data Discuss., <https://doi.org/10.5194/essd-2020-127>, 2020.

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