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comment

Interactive comment on "Evaluation of Multiple Climate Data Sources for Managing Environmental Resources in East Africa" *by* Solomon H. Gebrechorkos et al.

Anonymous Referee #2

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General comments This paper is specifically validating the quality of three climatic variables coming from different satellites data-streams and models using scientifically proven quality validation methodologies. The three include rainfall, maximum temperature and minimum temperature. Being a research that has been done for the first time that I know of, the paper unravels the different quality of each of these datasets and with evidence provide great knowledge of which is the best among the 6 datasets for each variable. If further validate the same dataset with observed rainfall and satellite from weather stations. Though not conclusive, through this research, one can relate that the CHIRPS dataset is better for rainfall analysis in specific areas which have complex topography with a case study in three East African countries. While the ORH

dataset works best for the Tmax/ Tmin variable. The paper specifically highlight the methods used and why and how each one is best. East Africa being a complex region of climate analysis. The paper seems to have limited itself to specific sites which might not fully represent the entire region. Despite having fewer observed data the sample areas of interest might limit the imagination of the complexity of the region. CHIRPS products seemed to work well in some areas while at the same time came in second in other areas. The author should try and indicate by what percentage in all the analysis done was CHIRPS top and if the percentage is worth representing the region as the best dataset. Specific comments In page 9 of the document the author mentions that "The quality of selected stations was checked and extremely high rainfall records during dry seasons were excluded." Through this statement it is not clear what is considered as a dry season and the reason for exclusion of such rainfall dataset remains hanging. Also in consideration of the same, extreme event such as flash floods may be recorded in a single days' rainfall. A few questions to be asked are; Could the x,y decimal places affect the location of a given station ending up reporting a value for a wrong location? For example a station reading of 36.123456, -1.123456 might fall at a different location compared to a reading of 36.123, -1.123. In this reference were the station locations validated? From this paper it is also not clear what the following terms refer to; Wet days, duration of wet days and average amount of wet periods this might be confusing since they all are represented by one unit which is days. For example, when we talk about wet days we say 10 days. If we talk about duration of wet days do we still say 10 days? The same applies to the average amount of wet periods. From the paper it is very clear that the author highlights CHIRPS as the best rainfall product while ORH as the best temperature product. CHIRPS comes out better than the rest based on the characteristics described by the author in page 14 but the author has not conclusively stated by how much is CHIRPS better than all this other products if you compare all the statistical analysis done. The Author has only highlighted that "In general, the observed rainfall characteristics 15 are well captured by CHIRPS compared to CHIRP, ARC2, ORH, RCM, and RCMs." While at the same time pointed out areas that

ARC2 has performed better that CHIRPS and CHIRP. Regarding the above, in some instances such as EthioShed4 the CHIRP and CHIRPS have equal R squared while in some areas ARC2 came on top. Through the analysis of all the Sheds analyzed what percentage of CHIRPS compared to the rest of the datasets was better. Still in line with that there are some areas where all the R squared were between 0.13 and 0.55, is it possible to elaborate on why such cases occur? Is it the methodology used to model the datasets that limits the correlation with the station data? Another question of concern is what explains the equal value for CHIRP and CHIRPS as portrayed in EthioShed4? In the introduction the paper highlights CHIRPS as a dataset that has both station and satellite data in it. Might this explain the high correlation? Are the same stations in CHIRPS used to validate the CHIRPS product? In conclusion to the specific comments. The paper is very clear on how the validation is done. However, more can be done to ensure that these products are regarded as the best products as indicated by the author. The paper currently is validating the products for areas with low observed dataset. Perhaps, the author can use historical analysis as a means of validation too. Also, an elaborate point of validation would be to highlight how the non-blended datasets such as CHIRP is performing compared to observed station data in regions that have well established network of weather stations such as the developed countries. Then further, validating the CHIRP against the CHIRPS. This will basically ensure less redundancy.

Technical comments

In page 7, the Dekadal should come after pentadal since the former represents 10 days and the later represents 5 days. In page 13, 17 is numerical while three and one are text – you might want to use either for all. In Page 20, it is indicated that "The products are available with higher spatial and temporal resolution and for longer periods." – doesn't longer periods mean the same as temporal resolution?

558, 2017.