Hydrology and
Earth System
Sciences

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Discussions

Interactive comment on "Comparison of TRMM, MPEG and CFSR rainfall estimation with the ground observed data for the Lake Tana Basin, Ethiopia" *by* A. W. Worqlul et al.

Anonymous Referee #1

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General comments This paper aims to compare two satellite based QPE (MPE and TRMM) and one NWP rainfall product (CFSR) to rain gauge measurements over the Ethiopian domain. Two methods for validation are used and it is shown that MPE and CFSR are performing better than TRMM for the 2010 test period. In data sparse regions such as Africa, rainfall estimates from remote sensing tools play an important role to aide forecasters in real time decision making processes. Satellite QPE are thus important for this purpose (nowcasting), while NWP rainfall fields can help with forecasting of precipitation.

Scientific questions Can the type/origin of rainfall for Ethiopia be highlighted in the be-

ginning of the document – i.e. what the source/cause for rainfall is in which months? A general discussion on the (rainfall) climatology of the area would be beneficial. Some mention of this is made on page 8022 line 18... Can this be expanded? I would recommend that the descriptions of the three QPEs are included in the main text and not as appendices. Would it be possible to show maps of the three QPEs and rain gauge rainfall totals for some of the months? This would help to get a "feel" for the products - to see more than just the statistical number crunching. Which of the two satellite QPE can be available in near real time for operational purposes? Do forecasters see any of these satellite QPEs displayed graphically in real time? Is the CFSR available to forecasters every day in the Ethiopian Nat Met Agency? How can the knowledge that CFSR and MPE are better than TRMM affect processes in the Ethiopian Nat Met Agency?

Technical Corrections Figure 3: Caption is not describing the two separate images... more description is needed. Abstract: Page 8014 Line 3: network of weather stations measuring Line 9: ...where 28 weather stations were available in 2010... Line 10: Daily gridded... Line 11: observed ground rainfall and (2) areal... Line 12: omit comma after that Line 13: On average, ... (omit the and add comma) Line 14: ...data, respectively, ... Line 17: ...CFSR also have a lower... Line 18: omit comma after that and omit "the" before MPEG/TRMM/CRSR Line 19: ... for some months? Cases? Introduction: Line 22: omit comma after cycle Line 24: water balance components Page 8015 Lines1-2 don't make sense... perhaps the word "though" in the beginning is the misfit? Lines3-4: Sentence not properly constructed, rephrase Line 7: rain gauges... Line 7: hinders flood forecasting for flood deficits – meaning not clear? Line 10: omit comma after hydrologists and put "as noted by Baveye (2013)" between brackets Lines 10-11: meaning not clear Line 13: ... data, particularly... Lines17-18: "the availability of earth observation data for environmental or societal purposes is increasingly available..." rephrase Line 25: omit comma before and

Page 8016 Line 1: ...that tends to be associated with.. Line 2: .. one of the limitations

with a TIR sensor... Line 5: Microwave sensors utilizes a more direct way... Line 9: omit coma after that Line 10: which gives them a longer latency... Line 12: add comma after systems Line 14:.. a combination of MW and IR data from? TRMM, MPEG and ... Line 15: Tana Basin in Ethiopia. Line 17-19: perform in this region. A number of studies have been done to validate TRMM in the Ethiopian highlands (….). These studies have focused on comparison... Lines21-24 – meaning not clear. Rephrase Line 27: omit comma after because Line 28: omit Ethiopia Line 29: omit Faculty ITC

Page 8017: Line 2: omit of after all Line 5: Omit Consequently Lines 7-13 – repetition, can be omitted I suggest serious language revision for the entire paper. I have not pointed out any language/punctuation errors further that paragraph 1 on the top of page 8017.

Interactive comment on Hydrol. Earth Syst. Sci. Discuss., 11, 8013, 2014.