Interactive comment on "SM2RAIN-CCI: A new global long-term rainfall data set derived from ESA CCI soil moisture" *by* Luca Ciabatta et al.

Anonymous Referee #2

Received and published: 11 October 2017

General comments:

The presented dataset is of interest for the community. The paper is reasonably well written, although the English could be improved. I have a number of editorial recommendations:

- Quality of Figures must be improved

- Scores Tables are missing and should be added

Some datasets are used for validation but one of them (GPCC) had previously been used for calibration. This is confusing. The authors have to make a clear difference between what can be considered as a simple quality check of the calibration (using GPCC) and indirect validation using pre-existing datasets (other than GPCP).

Recommendation: minor revisions.

Specific comments:

- L. 47 (10.34 mm): please clarify units (mm per month ?)

- L. 47: BIAS should be lower case

- L. 57: I would delete "very" as these in situ observations have their own instrumental issues

- L. 120 ("GPCC ... used for calibrating SM2RAIN"): should then not be used for validation in Section 3 (?) Please clarify.

- L. 160: Please write here that 3 regional datasets are used for validation in Section 3.2 (E-OBS, etc.).

- L. 173: frequencies

- L. 186 (deserts): do you mean "arid areas" ?

- L. 202 (Eq. (1)): insert space between "a" and "s"

- L. 227 (Eq. (3)): delete "*"

- L. 249 ("in order to perform a fair comparison with the benchmark"): please clarify. These are scores corresponding to the "learning phase" of the algorithm (based on GPCC-FDD). Obtaining good score values in such conditions is not surprizing. What is the purpose of Figure 4 ? Validation or evaluation of the quality of the calibration ?

- L. 262 (Figure 5): Please indicate which period is considered here. A table giving min-max-mean-std of scores is needed.

- L. 273 (Figure 6): A table giving min-max-mean-std of scores is needed. Again, this is not validation (GPCC was used for calibration). Please clarify.

- L. 298: please explain why you use E-OBS here, and not GPCC.

- L. 303: raingauge

- L. 352-353 ("SM2RAIN-CCI is completely independent from"): Not GPCC since GPCC was used for calibration. Ddo you mean "independent from other satellite-derived products" ?

- L. 514 (Figure 1): "used for removing" ; color table is useless here ; the two colors (dark blue and dark red) are not easily distinguishable

- L. 516 (Figure 2): This Figure is not very informative. Please complete either caption or figure, or both.

- L. 523 (Figure 4): "correlation coefficient" ;

- L. 533 (Figure 6): Top sub-figure is too big with respect to the seven bottom sub-figures.