Earth Syst. Sci. Data Discuss., author comment AC2
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Reply on RC2

Nadia Ouaadi et al.

Author comment on "C-band radar data and in situ measurements for the monitoring of wheat crops in a semi-arid area (center of Morocco)" by Nadia Ouaadi et al., Earth Syst. Sci. Data Discuss., https://doi.org/10.5194/essd-2020-338-AC2, 2021

Response to reviewer 2

We would like to thank the reviewer for his interest in reviewing the paper. All comments are considered in the new version of the manuscript and have been addressed in detail below:

- 130-132: why the depth of sensors for F1, F2 and F3 is different?

Ok. Thank you.

We had a limited number of sensors during the growing season 2016-2017 and 2017-2018 explaining the different experimental design between F1 and F2. In response to the reviewer's comment, this is now detailed in the new version of the manuscript.

- 162 "the first stage of wheat …." Do you mean the sowing or emergence?

The reviewer is right. It was not clear in the previous version of the manuscript. We meant "the first stages of wheat" when the ground is not completely covered by vegetation. It corresponds to the period from emergence of wheat to early tillering. This is now clearly indicated in the new version of the manuscript.

- Figure 10d needs to add the unit of VWC, FAGB in y axis.

Agree. The unit is the same for VWC, FAGB and AGB (kg/m^2). The three variables were grouped under the nomination biomass on the y-axis for simplification in the previous version. In response to the reviewer's comment, the label of the y-axis was changed to "ABG, FABG and VWC (kg/m^2)". The same was done for Fig. A6-A8.

- The reference need to be modified carefully. For example, Line 551 with Uppercase article title;

Thank you. All the references were checked and modified when needed.

- Line 146 I guess it is 0.018?

Yes, RMSE=0.018 m^3/m^3. Thank you, the comma is replaced by a dot in the new version of the manuscript.

- Add reference for the vegetation water content process.

The reference to Gherboudj et al. (2011) is added in the new version of the manuscript.

- How do you consider the effect of precipitation on the surface roughness?

In addition to irrigation, rain is supposed to impact slightly the roughness in the beginning of the crop season (before the wheat covers the soil) as the rows are directly exposed to rainfall. During this period, the roughness is measured every week/two weeks to take into account the effect of precipitation and irrigation. After this period, the roughness is assumed to be constant. Indeed, it has been shown in literature that after sowing (no soil works happened), roughness is only affected by very limited temporal variations (Bousbih et al., 2017) and it is generally kept constant during the crop season (El Hajj et al., 2016; Gherboudj et al., 2011; Gorrab et al., 2015; Ouaadi et al., 2020). In response to the reviewer comment, this is now clarified in the new version of the manuscript.

- How to measure the surface roughness during the extension growth stage?

With a pin profiler, the measurements of surface roughness when the canopy covers the soil are almost impossible explaining why the data base extends during the first stages of wheat growth. It is assumed to be constant after this time (see response to point above).

- Under what condition will you start irrigation?

The irrigation process is driven by the farmer based on evapotranspiration demand computed with the FAO-56 simple approach (Allen et al., 1998). The timing of irrigation is determined by the farmer according to the available workforce, the occurrence of rain... This is now clarified in the new version of the manuscript.

- How many times of field observations do you made? and can you list the specific information of each filed campaign?

The numbers of field's campaigns are 26, 18 and 16 campaigns during 2016-2017, 2017-2018 and 2018-2019 seasons, respectively. A table summarizes the campaign

details is added in the new version of the manuscript in response to the reviewer suggestion.

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