

## ***Interactive comment on “Risk of crop failure due to compound dry and hot extremes estimated with nested copulas” by Andreia Filipa Silva Ribeiro et al.***

### **Anonymous Referee #3**

Received and published: 5 June 2020

This is a well-written manuscript that investigates the compound effects of precipitation and temperature on crop failure in two provinces in Spain using nested copulas. It contributes to a better understanding of these type of compound events and it therefore deserves publication.

I have just some minor comments that I recommend the authors to address before publication:

p.4 line 90. Is it monthly daily mean precipitation or monthly accumulated precipitation? Please specify.

p.5 Figure 2. I would highlight the month MAM as it is the choice to of this study to

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perform the compound event analysis.

p 7. line 152. I think this Section should explain what the choice for the marginals is and why.

p 7. line 162 The authors say they invert the margins due to negative dependence between temperature and precipitation. Why not use a rotated copula that can represent negative correlation instead?

p.8 line 183 For wheat 2, it seems that the statistical model tend to produce a larger kendal correlation between temperature and wheat (Figure 5g) than what is seen in the observations (the observations are almost outside the confident interval obtained from simulations). Could the authors explain why the performance for this specific case seems to be worse?

p. 13 line 256 The authors say that in some cases, draught or heat alone may cause more damage than concurrent drought and heat. I see this is the case for wheat 2 (Figure 7b). Any physical explanation to this? I would have assumed that regardless of draught playing a greater role, extreme values of these variables would both contribute to increase yield loss.

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