

Clim. Past Discuss., referee comment RC1  
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## Review of cp-2020-162

Anonymous Referee #1

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Referee comment on "Influence of the representation of convection on the mid-Holocene West African Monsoon" by Leonore Jungandreas et al., Clim. Past Discuss.,  
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Jungandreas et al. provide an evaluation of how the parameterized and explicitly resolved deep convection in the ICON climate model affect the meridional distribution of the West African Monsoon at the mid-Holocene by comparing the JAS features with 40km parameterized (40km-P) and 5km explicitly resolved (5km-E) convection. This manuscript is in general well written. I only have a few major comments and a series of minor ones listed below.

Main comments/questions:

### 1. Methods

--The years: I'm confused about the years you've chosen from the simulations. You run the spinup simulations for the period 7039 to 7010 BP. Are these years referred to the exact years BP, or the model years in the simulation? And why did you pick up two years within the spinup run? My understanding of "spinup" is to let a condition reach its equilibrium state. If you choose a model year from the spinup simulation, the condition, here the soil moisture, might not have reached its equilibrium state.

--The resolutions: Though you've used 10km-P and 10km-E simulations to show that the representation of convection is more important than the resolution, figure 3a also shows that the resolution does affect the precipitation rate in some way. I think it would be more convincing if you use the same resolution and only change the convection scheme. Or please explain/clarify your choice.

### 2. Baselines

I would suggest to also give the baselines (and reconstructions if possible) in figures. Directly comparing 40km-P simulation with 5km-E simulation is not clear to show which

one is better.

Minor comments:

Lines 31-33: The description of the comparison here is confusing. PMIP3&4 simulations simulate the annual mean precipitation anomalies over the Sahel region at about 300-400 mm/year on average.

Lines 44-45: The resolution is not always that coarse. However, GCMs usually use a coarse resolution version to run paleo experiments.

Line 68: Change "hasalready" to "has already"

Figure 1: I would suggest to give the latitude and longitude boundaries of the coastal, Sahel and Sahara regions, respectively.

Figure 2, 5, 9 captions: Fig1 doesn't have panel a, rewrite the corresponding words appropriately.

Lines 126-127: There is no need to restart a new paragraph.

Line 195: Rewrite "Fig1: b)...d) the Saharan region" to match your figure 1.