

## ***Interactive comment on “Pivotal role of the North African Dipole Intensity (NAFDI) on alternate Saharan dust export over the North Atlantic and the Mediterranean, and relationship with the Saharan Heat Low and mid-latitude Rossby waves” by E. Cuevas et al.***

### **Anonymous Referee #3**

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The study analyses the role of the NAFTI on the dust transport and the potential relationship with the Saharan Heat Low and the mid latitude circulation. Even if this paper shows some interesting it is absolutely necessary to make substantive changes before acceptance. So I would recommend major revisions.

Major points : 1) the paper is too long and needs to be drastically reduced. I especially suggest to remove a lot of descriptive comments or too speculative conclusions proposed by the authors in section 3.2, 3.3 and 3.4. For instance L11 end of paragraph 2,

p13 (too descriptive), p17 second paragraph (too speculative), p19 first paragraph (too long and not clear), p21 beginning of the 3rd paragraph (too speculative and out of the scope)

2) there is a big confusion associated with daily and monthly correlations and daily or monthly values. The authors should clarify how they perform the calculation.

3) all the results are presented without significance tests.

4) the definition of the NAFTI is justified with the August correlation. Why June/July and September are not taken into account ?

5) September month is not provided in Fig. 2 to Fig. 9. But the authors discussed the link with the SHL that is defined for the entire rainy season over the Sahel from 20 June to 17 September. Why the NAFTI is studied only from June to August ? is there a scientific reason ? I agree that is this is the common definition of summer, but in a science point of view this is not necessary robust due to the seasonal cycle of the West African Monsoon.

6) there is a constant back and forth between ERAI and NCEP reanalysis. I would suggest to use only one set of data to be consistent. These two reanalysis are relatively closed but difference are still present.

7) the role of the African Easterly Waves, one of the most important component of the west african monsoon that can modulate the wind and temperature fields at 700hPa is not mentioned.

8) the use of the geopotential at 1000 hPa should be used with a lot of caution due to the topography of the region. The value is provide by using an linear interpolation technique that can influence the results.

These majors changes need to done before to analyse in more details the minor comments.

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