

Review of the manuscript titled **“Comparing two years of Saharan dust source activation obtained by regional modeling and satellite observations”** by Tegen et al.

In the presented manuscript, the authors show simulations of Saharan dust distribution and compare those simulations with observations from MSG-SEVIRI, OMI and aerosol optical depth from AERONET. The results point out the importance of low-level jets for dust emissions and the difficulties of the model to correctly reproduce these low-level jets. The paper is well-written and the results are presented in a clear way.

I suggest this paper for publication after some minor revisions detailed in the following:

p. 3, l. 19: „Temporal integration is carried out by an implicit-explicit method.“ What is an “implicit-explicit method”? Please clarify.

Section 2.2: Please give more detail in this section. To me it is not fully clear, how dust source areas were determined.

I would like to see an intercomparison of modeled and measured (e.g. from radio soundings) low-level jets.

Figure 1: I realize that the different colors are explained in the figure caption. However, it would be much easier for the reader if a legend explaining the different colors would be added to the graph itself.

Figure 3: The figure caption refers to “Number of days per month (...)”. In contrast, the color bar refers to „Percent (days with dust emission)”. To which time period does “percent” refer? Please use only “number of days per month”. Does Figure 3a show results for the year 2007 and Figure 3b show the results for the year 2008? Please indicate. Same for Figures 3c and 3d.

**Technical comments:**

p. 1, l. 3: “. Tegen” → I. Tegen

p.1, l.19: Add fullstop after „2007“.

p.6, l. 30: “2009). “. → remove fullstop.

p.7, l.1: remove blank between “65” and “%”

p.7, l.31: “can are” → remove „can“

Figure 4: “a, b, c, d” are missing. Please correct.