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Title: Identification of Atmospheric Transport and Dispersion of Asian Dust Storms

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Recommendation: In my opinion the present version of the manuscript is not appropriate to be published in the Natural Hazard and Earth System Sciences Journal.

Major comments:

Authors claim that the main goal of their paper is to identify Asian Dust storms (ADS) outbreaks affecting Korea from January 2003 to August 2015. To achieve this goal authors uses as the main methodology the Hybrid Single Particle Lagrangian Integrated Trajectory (HYSPLIT) model to determine the origin of air masses and air pollutant and to establish source-receptor relationships. Under these premises, the paper address relevant questions as dust contributes by about 45% to the total atmospheric aerosol and in addition the topic is within the scope of NHESS, however the manuscript has serious defects:

1. The lack of the HYSPLIT model description, scientific methods must be outlined clearly.

2. Pollutant transport and dispersion are affected by atmospheric dynamics, fluid physical phenomena that occur in the atmosphere, and physical laws that govern them. These may facilitate or constrain transport and dispersion. All these topics are not considered in this manuscript.

3. Pollutant transport and dispersion are affected also by different scales of motions as microscale, mesoscale, and synoptic scale. The authors make reference to this point only indirectly, as in section 3 in line 17 they commented that the data files to run HYSPLIT model comes from NCEP/NCA reanalysis, that I suppose with horizontal resolution of 2º, but they left many questions unanswered about this topic.

4. In my opinion, the above problems led poor results (Section 4) and they are not conclusive (Section 5).

Minor comments:

1. In the introduction, in line 29, you must change irradiation by radiation, they are different concepts.

2. Which version of the HYSPLIT model do you have used?

3. You have used data from NCEP/NCAR analysis and you claim in the last sentence of the introduction that your results correspond to a local scale, are you sure?

4. Do you can explain the reason to consider the HYSPLIT backward trajectories at the altitudes of 1000 m, 1500 m and 2000 m, could you have considered backward trajectories at different heights?

5. Please, use dust air concentration, not dust density.