

## **The review of the manuscripts titled “Aerosol Climatology over Nile Delta based on MODIS, MISR and OMI satellite data ” by Marey et al.,**

The authors presented the analysis of the satellite measurements over Egypt to investigate the Saharan dust storm and black-cloud over Egypt.

In general, the result show a significant distribution of the aerosol climatology over the studied area and it could help for understanding the regional impacts of aerosol either from desert or from black cloud events on the regional climate. The paper is well written and is appropriate to be published in ACP with minor corrections.

### **General comments:**

1 – The authors mentioned that the autumn peak of AOD is due to the black cloud over Cairo, this is not precisely correct, because dust/sand storm are frequently occurred in the transitional seasons (spring and autumn) over Egypt. The aerosols from the black ash stuck to the surface due to the local meteorological effects and the boundary layer inversions.

2- The meteorological factors ( the main reasons for this local scale phenomena) needs more discussions. Due to subsidences over Egypt, there are an aerosols transboundary from Europe invaded Egypt; in addition to the natural aerosols as sea-salt from Mediterranean effects the region.

3- The discussion about reasons for the differences between the different phenomea (dust-storm and black cloud) does not enable the reader to better understand the performance of the different events.

4- What is the frequency of occurrences of the dust-storm over Egypt? And What is the main source of the occurrences?

## Specific Comments:

Lines 20-25 Page 10457: The author mentioned that “ but with no obvious long term trend ... “ cloud you please explain why there is no annual trend?

Lines 10-15 Page 10458 : “ The monthly climatological means of MODIS AOD550 over the Nile Delta have a distinct annual cycle” Is this annual cycle due to the black-cloud events or the dust-storm is included as well?

Lines 20-25 Page 10458: the author said “ precipitation data suffer from errors .... ”, It is local observation from the ground stations in Egypt? What is the average of the precipitation rate in winter and summer?

Lines 25-26 Page 10458: Yes, this correct there is increase in the summer aerosols due to the photochemical reaction which take place in summer, but there is aerosol in summer seasons due to the convections and thermal motions.

Lines 10-15 Page 10459: AOD is high over Delta not only because of the local air pollution, but AOD values is higher over Delta and Cairo because Cairo is effected by three sources: a) local air pollution(traffic and industrial activities), b)desert dust aerosols, and c) Black-cloud events.

Lines 1-5 Page 10460: “The AOD at 500 nm is considerably higher than those values at 1020 nm in the summer and fall seasons..... ” why is that? It may because of the water vapor effects at that wavelength??!