

AEROSOL OPTICAL DEPTH ANALYSIS AND IT'S RELATION WITH PRECIPITACION PATTERNS DURING THE SUMMERTIME OF 2013-2015 IN THE SÃO PAULO METROPOLITAN AREA

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ABSTRACT

Between 2013 until 2015, Brazil's southeast region has been affected by a strong drought event, generating disorders to the population, mainly regarding to water supply at São Paulo Metropolitan Area (SPMA). This research has the objective to analyze the precipitation pattern observed at SPMA and to identify possible relations with air pollution. We have used the aerosol optical depth (AOD) data at SPMA during the summertime of 2013 to 2015 from AERONET and MODIS satellites. Trough the mean values of AOD from MODIS between the years 2013 to 2015, it has been observed higher AOD during August, September and October, with the values of 0,11 (8% above average), 0,16 (55,44% above average) and 0,16 (55,44% above average), respectively. Comparing AOD from 2014 with the mean AOD from 2000 to 2015, there has been an increase of 27,76% in AOD in October. Also, higher AOD was observed during 2014, with maximum between August and October. Though it is usual the occurrence of maximum AOD during the winter (April to September), usually it is not common during October. This month is characterized by the onset of the rainy season in the Central Region of Brazil, and the AOD starts to decrease. Furthermore, it was observed precipitation deficits in 2014, with strong deviations from the long term mean associated with the persistent drought since end 2013 to early 2015. In 2014, the total annual precipitation observed at the official raingauge at São Paulo city was 1253,3 mm, with a negative anomaly of 187,8 mm. In October, the anomaly was -101,7 mm. Preliminary analysis suggest AOD at SPMA is associated with precipitation patterns, possibly associated with the reduction of the wet deposition. However, it is not known if the decrease of precipitation is the cause or consequence of the drought.

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