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TEMPORAL AND SPATIAL VARIABILITIES OF TOTAL OZONE COLUMN OVER IRAQ

**Abstract**

The ozone data obtained from the Ozone Monitoring Instrument (OMI) on Aura satellite have been used to study the temporary and spatial variabilities of Total Ozone Column (TOC) over different cities in Iraq at Baghdad (Lat 33.5 N, Long 44.5 E), Basra (Lat 30.5 N, Long 47.5 E), and Mosul (Lat 36.5 N, Long 43.5 E) over a period from October 2004 to December 2011. The daily TOC shows a notable seasonal behaviour which found considered the spring and summer months higher diurnal TOC variations than autumn and winter months. The daily TOC spatial behavior is found to be higher over the northern part of Iraq (Mosul) than the central part (Baghdad) and southern part (Basra). The linear regression technique was applied to the Monthly TOC to study the trends at three Iraqi cities revealed the presence of strong seasonal cycles and resulted stable variations with low coefficient of determination ( $r=0.004$ ) for Baghdad, ( $r=0.001$ ) for Basra and ( $r=0.006$ ) for Mosul indicates that a small percentage of the variations in total ozone. An examination of the yearly mean values of TOC indicates a marked seasonal variation with a maximum around April and a minimum around October. A trend analysis performed on each individual months, October month shows TOC decline in three Iraqi cities with linear trend value, (-1.178) for Baghdad which is lower than for Mosul (-0.904) and Basra (-0.642), while in April month shows a statistically significant TOC ascend with a linear trend value (3.25) for Mosul higher than for Baghdad (2.071), and Basra (1.178).