



## **Analysis of the ozone concentrations in Seville metropolitan area (Spain)**

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In Seville metropolitan area is monitoring the ozone concentrations in eight stations, five of them located in the city most busy areas and the rest in adjacent zones. In addition, to these eight ozone stations, two meteorological stations, in the north and south of the studied area, were supplying data. The study period was the 2003-2005. The wind regime is strongly affect by the orography, while the predominant directions are channelled for the valley axis. From May to September, when the ozone concentrations are higher, the more frequent wind directions are the NE and SW, and during the summertime period the atmospheric movements are dominate for the mesoscale processes.

The study of the monthly evolution point out that the lowest ozone concentrations  $17\text{-}33 \mu\text{g m}^{-3}$  took place on January while the highest  $57\text{-}95 \mu\text{g m}^{-3}$  on June. The ozone concentration week-weekend differences from May to September indicate that this phenomenon does not affect the analysed ozone stations, therefore there are others factors more influential that the changes in the precursors emissions, such as the meteorological conditions.

Daily cycles show minimum values between 7:00-8:00 UTC and maximum at noon, higher ozone concentrations was measured in the three farthest of the city, exceed the  $90 \mu\text{g m}^{-3}$  between 13:00 to 17:00 h during summer months.

As well were assessed the thresholds defined in the European Ozone Directive. The

target value to protect the human health was frequently exceeded, maximum annual percentages of exceedances ranging from 12 to 22 % in ozone stations not located in the city. In these stations also have been exceeded the information and alert thresholds.

These results indicate that under mesoscale conditions, in spring and summer months, the ozone episodes could have their origin in several factors. Such as regional transport from southern, in situ photochemical mechanism and recirculation processes. In addition, the transport towards the NE, the wind direction more frequent in the diurnal period during the spring and summer is SW, indicate that the air ozone masses originated in the metropolitan Seville area affect strongly the zone located in the NE from the city. This hypotheses will be tested in futures works.