



Influence of surface meteorological parameters in the ozone concentrations measured at El Arenosillo (Spain)

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The Atmospheric Sounding Stations located at El Arenosillo (37.1 N – 6.7 W, 42 m asl), southwest of Spain is an observatory dedicated to measure different atmospheric parameters since twenty years ago. Ozone surface is registered at this station from 2000 while the meteorological parameters have been measured from 1994. At present, El Arenosillo belongs to the Air Quality Network of Andalusia Government as an ozone and nitrogen oxides station.

In order to know the influence of wind, temperature and relative humidity in the ozone concentrations have been analyzed the hourly values both meteorological and ozone, recorded at El Arenosillo during the period 2000-2006. The seasonal wind roses exhibit the higher ozone concentrations with wind blowing from fourth quadrant, mainly SW and SSW directions. In this direction is found the Atlantic Ocean, hence this result point out that the major ozone levels coming from the sea, probably caused for the residual ozone layers formed above the sea under atmospheric situations governed for mesoscale processes. The relation between wind speed and ozone shows two patterns according to the season. In winter an increase in wind speed produce and increase in ozone level, while in summer time the high ozone values are registered with low wind speed.

In winter months the temperature no affects strongly to ozone concentrations, measuring mean ozone values very similar with different ranges of temperature, but in summer period an increase in the temperature is directly related with a rise in the ozone levels. This behaviour is more remarkable in the case of maximum daily tem-

peratures and ozone, thus the major ozone concentrations have been measured with daily maximum temperatures higher than 35 °C.

The relative humidity affects to ozone surface of similar manner both cold and warm season. The lower values of relative humidity is related with the major ozone levels while an increase in the relative humidity, higher than 70% cause in important decrease in the ozone values.

These results point out that the higher ozone concentrations are measured in this area with southerly winds from the sea, low wind speed, mean daily temperatures ranging between 20 to 25 °C and maximum higher 30 °C and values of relative humidity lower than 60 %. These meteorological conditions are characteristics of summer anticyclonic situations which favour the circulations of sea-land breeze in this coastal zone.