



Analysis of NO, NO₂, O₃, NO_x and level of oxidant (OX) measured at Seville (Spain) in two monitoring stations during one year

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The variation of oxidant OX concentrations with NO_x is investigated, for the first time in the south of the Iberian Peninsula. For this purpose, ambient concentrations of NO, NO₂ and ozone are measured continuously at two monitoring stations with different characteristics in Seville (Andalusia region). The aim of this work is to contribute to a better understanding of atmospheric sources of OX in the metropolitan area of Seville, as a stepping stone towards the understanding of its prevalence in the region as a whole. The concentration of OX can usually be described in terms of the sum of a NO_x independent regional contribution (as the O₃ background), and a linearly NO_x dependent local contribution. Therefore, this study will aid in the progress towards understanding the OX dynamic at sites located in the Western Mediterranean area of Spain, where there is an undeniable air quality problem. The diurnal cycles of NO, NO₂ and O₃ registered in this study show that the urban atmosphere of this Southern European city is strongly affected by motor traffic and photochemistry. According to obtained results, the highest daily concentration of the primary pollutant NO was observed overnight at the urban traffic station in Torneo, at the centre of Seville, which is an area with very high traffic emissions. Similar results were observed in the case of NO₂, but without the great disparity between the two monitoring stations, as in the case of NO. A comparatively high concentration of O₃ was measured at the peripheral station in Aljarafe, during the summer. This result indicates that downwind from urban centres, O₃ may peak (in the afternoon or even after dark), dependent on emission levels at the centre, and air currents from the centre containing O₃, and other secondary pollutants that were formed during daylight hours.