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Ozone Concentrations Exposure Assessment in a Climate Scenario for Mexico Megacity

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Climate change can induce variations in primary and secondary pollutant distribution and therefore have an impact on population exposure. Applying a dynamical downscaling technique the meteorological data for a base case (1980's) and a climate scenario (2070's) were obtained. The emissions inventory was updated, considering the new land use distribution for 2020. The air quality simulations were performed using a coupled meteorology-chemistry model. Since an increase in temperature can induce more atmospheric reactivity but also modify the meteorology dynamics; with a coupled model both effects can be taken into account. To evaluate the effect of ozone concentrations in the population, three metrics from Georgopoulos et al. 1997 were used: severity, pervasiveness and potential integrated exposure. Severity sums the times that a concentration exceeds a threshold level (110ppb for ozone). Pervasiveness is the sum of grid cells that registered concentrations above the threshold level during the evaluation period, and the integrated potential exposure measures the exposure in time and space, considering the number of population potentially exposed to outdoor hazardous levels. Results from the base scenario 1980 and two climate scenarios, one using emissions from base case 1980 and the second using 2020 emissions are presented.