



Temporal climate-scale changes: global versus local artificially-induced perturbations - the interplay between atmospheric pollution and precipitation in Mexico City

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Tropical rainfall during the wet season is, to a large extent, the result of evapotranspiration and heat-driven convection. In Mexico City, which is located in a low-lying area between mountains, the local character of this "short" water cycle is more pronounced than elsewhere. Given this background, it appears that the atmospheric pollution generated by the huge urban and industrial development over the last few decades, while apparently not influencing the quantity of water that participates in the cycle, is however influencing the qualitative aspects of rainfall events, such as frequency and daily incipience hours. The intimate mechanisms responsible for this part of the pollution-rainfall interplay, such as the changes in precipitation nuclei, are not completely elucidated. In the opposite direction of the interaction, rainfall scavenges solid pollutant particles from the atmosphere, hereby washing them away, a process that has been evaluated, to a certain extent, in previous studies. Here, we analyze the statistical behaviour of the process, and propose a stochastic model thereof.