

Poster.6: . **Impact of urbanization on precipitation: a multi-site observation-modelization analysis over the United States of America.**

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Abstract

Understanding how cities impact precipitation can help to manage the water resources and the risks generated by intense rainfall. Thus, numerous articles aim to investigate the potential effect of urban areas on precipitation. In a recent review of literature (Lalonde-Le Pajolec et al., submitted), we noticed that a consensus on the increase of precipitation induced by cities is found when models are used while it is not true when radar data are analyzed. In this study, we analyze the urban impact on precipitation on a country scale, in 38 cities in the United States of America for 11 years (2002-2012) using the same methodology for all cities and both observation (STAGE-IV) and model (convective-permitting WRF simulation performed at NCAR; Liu et al., 2017) datasets at the same resolution (4km). We examine the hourly precipitation spatial distribution following multiple methodologies (according to wind directions and land uses). Then, we investigate the variation of the results over our city set following four parameters: the urban sprawl, the altitude gradient, the roughness, and the proximity to large water surfaces (lakes, oceans). Our conclusions obtained with the simulation (which does not include an urban scheme but represents cities as rocks) and with radar observations will be analyzed in a second step to assess how much the simulation can reproduce the effects of cities at this resolution, without specific parametrization.