

1.149 Implementation of a high-resolution WRF-Chem CO tracer model in Buenos Aires, Argentina..

Early Career Scientist

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Abstract:

This study presents the implementation of a state-of-the-art atmospheric chemistry model over the Buenos Aires Metropolitan Area of Buenos Aires (MABA). The MABA is a highly populated area with an estimated of more than three million of vehicles circulating in approximately four thousand square kilometers. Even though the MABA has a good vent due to the flat surroundings and regional atmospheric circulation, it is important to monitor and study the evolution of pollutant concentrations given the intensity of the local sources and the size of the population potentially exposed to harmful concentrations of contaminants. Few studies dealt with the high resolution three dimensional atmospheric modelling of pollutants in MABA region. In this work we implemented the WRF-Chem model over MABA region using a high resolution area source emission inventory of carbon monoxide (CO) (Venegas et al. 2011). The evaluation of the model performance in reproducing CO concentrations at several observations stations within the city, under different large scale environmental conditions is presented. The emission inventory for the MABA includes mobile sources (road traffic and airplanes) and fixed sources (residential, commercial and small industries activities). The test cases chosen were: 10-14 november of 2009 and 2-7 June 2010 where we have available and continuous measurements at least two different locations within MABA. In these first experiments we model carbon monoxide concentrations considering it as a passive tracer. The configuration of the model includes 2 nested way with an inner domain of 1 kilometer in which we test the sensibility of the modeled concentrations to three different boundary layer parameterizations (YSU, MYJ and MYNN) representing the most common schemes used in WRF-Chem. Results showing the evolution of CO concentrations as well as the comparison with the observations will be presented at the conference.