

## **The evolution of particulates and aerosol radiative forcing over Mexico using the WRF-chem fully-coupled meteorology-chemistry-aerosol model**

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Jerome Fast, Pacific Northwest National Laboratory A multi-scale 3-D model is used to predict the evolution of particulates and aerosol radiative forcing over Mexico between March 17 and 23 when the ambient winds aloft were southwesterly. The predictions are evaluated with a wide range of particulate composition, size distribution, and optical property measurements, including those at the T1 and T2 sites and six flights of the G-1 aircraft. The relative contribution of anthropogenic particulates and those originating from biomass burning and volcanic sources are quantified. Emission estimates from biomass burning are as large as those estimated for the metropolitan area of Mexico City on some days, contributing to a large fraction of the downwind particulate concentrations. During this period of the field campaign, the ambient winds rapidly transported smoke and anthropogenic particulates towards the northeast over the Gulf of Mexico where the largest aerosol radiative forcing was predicted and observed by satellite measurements.