# 1.036 Evaluation of the MOSAIC air quality box model using recent field campaign observations.

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Abstract:

Future air quality will be influenced by various global change factors such as climate, US anthropogenic emissions, wildfire emissions, biogenic emissions, land cover, and background concentration changes associated with long-range transport. Understanding how each global change factor contributes to the changes in future air quality is of interest. However, given the fact each factor has a range of future projections, ensemble analysis of these global factors using three-dimensional chemistry-climate or chemistry transport models is very computationally burdensome.

MOSAIC (Model for Simulating Aerosol Interactions and Chemistry) is an atmospheric chemistry box model with a full and explicit treatment of gas and aerosol phase chemistry and dynamics.  Here, we develop an approach using MOSAIC as the basis for an assessment of global change factors for key air quality issues over the Western US, including wintertime stagnation events, summertime urban to rural transport cases, and wildfire events. In this presentation, we will present results from an initial evaluation of the MOSAIC model using observations from recent field campaigns.  In particular, we will focus  on the model evaluation against the CARES field campaign (Carbonaceous Aerosols and Radiative Effects Study), which was carried out in June 2010 in the central California region. This field campaign included a comprehensive list of gas, aerosol, and meteorological measurements of the Sacramento urban plumes as they were transported into the forested Sierra Nevada areas, making it a good test case for the application of the MOSAIC Lagrangian air quality box model.