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Spatial Surface PM2.5 Concentration Estimates for Wildfire Smoke Plumes in the Western U.S. Using Satellite Retrievals and Data Assimilation Techniques . SANDRA-MARCELA LORIA-SALAZAR, HEATHER A HOLMES, Univ of Nevada - Reno — Health effects studies of aerosol pollution have been extended spatially using data assimilation techniques that combine surface PM2.5 concentrations and Aerosol Optical Depth (AOD) from satellite retrievals. While most of these models were developed for the dark-vegetated eastern U.S. they are being used in the semi-arid western U.S. to remotely sense atmospheric aerosol concentrations. However, the models developed for the eastern U.S. are not robust in the western U.S. due to different aerosol formation mechanisms, transport phenomena, and optical properties. This region is a challenge because of complex terrain, anthropogenic and biogenic emissions, secondary organic aerosol formation, smoke from wildfires, and low background aerosol concentrations. This research uses and evaluates of satellite remote sensing to estimate surface PM2.5 concentrations from AOD satellite retrievals over California and Nevada during the summer months of 2012 and 2013. The aim of this investigation is to incorporate a spatial statistical model that uses AOD from AERONET as well as MODIS, surface PM2.5 concentrations, and land-use regression to characterize spatial surface PM2.5 concentrations. The results will be used in a spatially resolved health study to determine the association between wildfire smoke exposure and cardiorespiratory health enpoints. This relationship can be used with future projections of wildfire emissions related to climate change and droughts to quantify the expected health impact.

Sandra-Marcela Loria-Salazar
Univ of Nevada - Reno

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