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Join the Orange County Local Section of the American Chemical Society Meeting Online

Wednesday, December 16, 2020

Zoom Presentation at 7:00 PM

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Ambient Air Concentrations and Source Attribution of Toxic Metals and Particulate Matter in the Maywood, California, Environmental Justice Community

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Abstract

The community of Maywood, California, located in southeastern Los Angeles County, is a community of nearly 30,000 residents in 1.2 square miles. Seven of the nine census tracts in Maywood are in the highest decile of the environmental justice index for air pollution. Maywood is surrounded on the north and east by multiple air pollution sources, including the I-710 freeway, rail lines, and local industrial sources. The I-710 freeway—as well as the two main arterial roads in the community, Atlantic Blvd. and Slauson Ave.—have significant heavy-duty diesel truck traffic. The goal of this work was to determine the concentrations of pollutants significant to public health including toxic metals, diesel particulate matter (DPM), and particulate matter smaller than 2.5 microns (PM2.5) in the Maywood community and to identify their source(s). Additionally, we are working with local community members and the LA Unified School District on actions to reduce exposure to these pollutants. To understand the spatial variation of PM2.5 concentrations in the community and engage residents on air pollution issues, we deployed 20 Purple Air sensors at community residences for one year from May 2019-May 2020. In addition, during May-July 2019, we collected measurements at Heliotrope Elementary School in Maywood to determine sources and concentrations of metals, chromium-6, and DPM, as well as to estimate associated health risks to the community. We will present on how concentrations vary within the community, how concentrations compare to those at nearby communities, and how concentrations can be attributed to local versus non-local sources such as freeways, arterials, rail yards, and point sources. Finally, we will present the health implications of the results and share feedback from the community members on how they are using the results to advance change.

Biographies

Jennifer DeWinter

PMP joined Sonoma Technology Inc. in 2008. As an atmospheric scientist and project manager at STI, her projects span air quality, meteorology, fire, and smoke, with a particular focus on hyperlocal data from air sensors and air pollution in the near-road environment. Recently, she has been working on multiple projects involving low-cost air sensor data collected by PurpleAir sensors. She recently analyzed two years of PurpleAir data collected throughout California in order to evaluate the patterns of sensor usage, and quantify field-based sensor performance, including performance during wildfires. In addition to her work as an Atmospheric Scientist, Jennifer is STI's Data Systems Project Manager, and has ten years of experience working at the confluence of atmospheric science and software application development. She leads interdisciplinary teams of scientists, meteorologists, computer engineers, and graphic designers to design, develop, operate, and maintain complex data systems. Jennifer has a B.S. degree in Earth Science and B.A. in English from California Polytechnic State University, San Luis Obispo.

Olivia Ryder, Ph.D

joined Sonoma Technology Inc. in 2019. She has over a decade of experience in atmospheric chemistry research and analysis. Her current projects include analyzing ambient data for toxic metals as part of community air monitoring efforts, conducting source apportionment assessments, and supporting geographic information system (GIS) work. She has a strong interest in communicating environmental issues across scientific disciplines and to the public through outreach efforts. Olivia previously served as the Education, Outreach, and Diversity Coordinator for the Center for Aerosol Impacts on Chemistry of the Environment, a National Science Foundation Center for Chemical Innovation. Olivia has a Ph.D. and Master's degree in Chemistry with a focus on Atmospheric Chemistry from University of California, San Diego and a B.S. in Chemistry from University of California, Irvine.