



Contribution of Smoke Emissions to Secondary Organic Aerosols (SOA): Real-World Evaluation of Fire SOA Emissions Factors from Fires in a Data Management System (REFERS-DMS)

*Joint Fire Science Program competitive review process for federal grant funding
(https://www.firescience.gov/AFP/14-1-03/14-1-03_FON_Announcement.pdf)
if awarded, project to start September 2015*

WRAP Board Review – December 10, 2013

Overview

The 3-year REFERS-DMS project will advance the smoke management and air quality communities' understanding of Secondary Organic Aerosols (SOAs) from fires, by systematically testing current fire SOA emission factors (EFs) with the CAMx photochemical grid model (PGM) and evaluating current and emerging fire SOA EFs using real-world atmospheric chemistry measurements. Our proposed approach would address portions of each of the four research questions in the "Contribution of smoke emissions to secondary organic aerosols" topic. A fire SOA EF testing and Evaluation Toolbox will be developed using state-of-science fire emissions and PGM modeling tools, and detailed atmospheric chemistry data of observed fire plumes from 2013/2014 field study campaigns. The fire SOA EF Evaluation Toolbox will be used to evaluate fire SOA EFs from other studies, such as EFs from smog chamber data, laboratory, and controlled field burning EF studies. We will host a series of open workshops for air quality and fire analysts to review and discuss the work and analysis steps during this project. Expected results from this project are directly applicable to planning needs of states and EPA for the Particulate Matter National Ambient Air Quality Standards and Regional Haze.

Roles and responsibilities of associated personnel

Personnel	Role	Responsibility
Tom Moore	Principal Investigator	Coordinate and manage project
Matthew Mavko, David Randall – Air Sciences, Inc.	Technical analysis and web database support	Analysis of SOA _{ef} and fire emissions, delivery of web tools
Ralph Morris, Bonyoung Koo - ENVIRON	PGM applications and technical analysis	SOA and PM modeling, evaluation, source apportionment
Professor Allen Robinson – Carnegie-Mellon University	Lead advisor on SOA _{ef}	Provide expert advice on evaluation of SOA _{ef}
Mark Fitch, NPS	FLM collaborators	Fire activity and emissions needs of FLMs
Michael Barna, NPS		PGM applications and air quality impacts affecting protected federal lands from fire and other sources
Bret Anderson, USFS		Interpretation of technical results for FLM use in management of air resource protection programs, as part of responsibilities for resource protection / planning
Bill Jackson, USFS		
Michael George, NPS		
John Vimont, NPS		

Current related research grants

Grant Program	Project or Proposal Description/Identification	Funding Amount	Completion Date
WRAP - JFSP Project 12-1-08-31	Particulate Matter Deterministic & Empirical Tagging & Assessment of Impacts on Levels - PMDETAIL	\$703,562	Fall 2015
WRAP - JFSP Project 11-1-6-6	DEASCO ₃ - Deterministic and Empirical Assessment of Smoke's Contribution to Ozone .	\$370,000	June 2013
JFSP Project 09-1-03-1	Experimental Determination of Secondary Organic Aerosol Production from Biomass Combustion	\$621,750	December 2013
Federal / State Agencies, Private Industry	WestJumpAQMS - Modeling and Analysis of Regional Ozone and Related Air Quality Indicators	\$722,000	September 2013

Project Budget

WRAP*	\$	40,000
Air Sciences	\$	207,819
ENVIRON	\$	216,366
Advisors	\$	35,000
Total Project Funding Request	\$	499,185
In-Kind – Federal Collaborators	\$	109,641
Total Project Funding Value	\$	608,826

*It is anticipated that project meetings, conference calls, and travel for WRAP staff would be funded separately out of the WESTAR/WRAP grant from EPA.

