



NASA Air Quality Applied Sciences Team

Earth Science Serving Air Quality Management Needs



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AQAST Researchers Weigh In On Satellite Capabilities *New study highlights the power of satellites to estimate air pollution emissions*

LEMONT, Ill. – Today, nine members of NASA Air Quality Applied Sciences Team (AQAST) and other researchers release a paper that reviews the ability of satellites to estimate U.S. air pollution emissions. Lead author and Senior Scientist at Argonne National Laboratory Dr. David Streets says a comprehensive check on satellites' effectiveness in observing air pollutants is valuable information for other scientists, policymakers, and the public.

"We want to get better at the business of making [air quality] predictions, because in the end that's what makes it relatable to people's lives," says Streets.

The paper, called "Emissions estimation from satellite retrievals: A review of current capability," is published today in the journal *Atmospheric Environment*. The study provides an overview of data on eight major air pollutants, from carbon dioxide to particulate matter, and provides suggestions to make satellite data more useful. It identifies sources of emissions that should be targeted with satellite science and gives recommendations on ways to make satellites more usable for researchers.

Streets says the researchers had two main goals for the project starting out: To help air quality managers improve the EPA's National Emissions Inventory, and inform local and state air quality issues with more certainty.

"The next steps involve getting quantitative about under what conditions, and under what uncertainties, we can make estimates about sources of emissions and how they change over time," Streets said. "We want to be able to give policymakers an idea of how all of these sources — power plants, cities, highways, oil and gas drilling sites — contribute."

A co-author of the study, Dr. Bryan Duncan of NASA's Goddard Space Flight Center, says the main advantage of satellites over surface monitors, such as those operated by EPA, is one of spatial coverage.

"The satellites monitor pollution sources over the whole country, including the areas between the surface monitors," Duncan said. "For instance, the satellite data show that some pollutant emissions from many power plants in the eastern U.S. have decreased significantly in the last decade because of the implementation of emission control devices that were mandated by environmental regulations."

On a clear day, satellites can collect data on every significant emissions source from all over the U.S. Air quality researchers continue to advance in the techniques they use to study these data.

“Given the right conditions,” the paper concludes, “we might one day be able to measure the actual emissions from many sources at the same time, all of the time.”

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NASA Air Quality Applied Sciences Team, a nationwide collaborative research team, serves the needs of air quality managers in the United States by analyzing a variety of NASA satellite data, models and suborbital platforms on the ground. Created in 2011 by NASA's Applied Sciences Program, AQAST is made up of 19 of the top minds in all fields of air quality science and strives to inform air quality managers and provide high-quality resources for the press and public. More information may be found at www.aqast-media.org.

Notes for editors

Copies of the research paper are available to credentialed journalists upon request; please contact Elsevier's Newsroom at newsroom@elsevier.com or +31 20 4853564.

About Atmospheric Environment

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