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The FIREX-AQ 2019 Dataset Is Public

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Fire Influence on Regional to Global Environments and Air Quality (FIREX-AQ) was the most comprehensive investigation on the impact of wildfire and biomass smoke on air quality and weather in the continental United States, and took place in the late summer of 2019. FIREX-AQ explored the chemistry and fate of trace gases and aerosols in smoke with four instrumented research aircraft, satellites, ground-based fixed and mobile laboratories, modeling/forecasting, and coordinated airborne and ground-based fuels information gathering. It focused on both northwestern wildfires and the southeastern U.S. agricultural/prescribed burning.

FIREX-AQ was primarily funded by the US public, hence, the quality-assured dataset acquired from all aspects of the mission has become available to the public, including to the international community. FIREX-AQ data is available for use by researchers around the globe to advance understanding of all the impacts of fire on the atmosphere and on humanity.

Both in-situ and remote sensing data sets were acquired with the NASA DC-8 flying laboratory, while the NASA ER-2 supported several satellite emulators, the NOAA Chem-Otter Twin Otter focused on in situ measurements close to fires and in the dark, and the NOAA Met-Otter Twin Otter supported fire radiative power measurements and wind-profiler measurements to assess fire feedbacks on dynamics. NASA and Aerodyne, Inc. mobile labs focused measurements at very young plume age and in areas (for example valley drainage flow) relevant to air quality, and multiple temporary NASA AERONET sun photometer/lidar observations sites and mobile measurement platforms ("DRAGON") were deployed to assess vertically resolved influences of smoke on light.

Extensive modeling efforts and meteorological forecasting efforts associated with the measurements resulted in reports that are also public. Coordination with the US Department of Agriculture and various academic institutions enabled inclusion of detailed fuels information including fuel type and density as well as post-fire information in some cases. Coordination on prescribed burns of different fuels and in different regions in the US provide case studies for connecting emissions to fuels.

A detailed overview of the entire effort is available on-line at:
<https://www.esrl.noaa.gov/csd/projects/firex-aq/>

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