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EMSL In Brief

Environmental Molecular Sciences Laboratory

Mass Spectrometer, Expertise Deployed to Oklahoma Aerosol Study

Expertise and instrumentation from the Environmental Molecular Sciences Laboratory (EMSL) are helping to support an atmospheric field campaign in Oklahoma that seeks a better understanding of how aerosols affect cloud properties, such as water concentration and droplet size distributions. The campaign is also studying how clouds affect properties of aerosols like chemical composition and location in the atmosphere.

EMSL's proton reaction transfer mass spectrometer was deployed in Battelle's Gulfstream-1 aircraft as part of the Cumulus Humilis Aerosol Processing Study—or CHAPS. Taking place during the month of June, the CHAPS campaign is using the PTR-MS and aircraft to measure aerosol composition and related chemistry. Data obtained from these measurements, along with measurements about the state of the atmosphere, will be compared with new algorithms that represent cloud and aerosol processes in climate models. The campaign will allow researchers to obtain a focused data set during a key season in the region—winter wheat harvest—which coincides with fair weather clouds (cumulus humilis) throughout the Midwest.



EMSL researcher Liz Alexander, shown with the PTR-MS on Battelle's Gulfstream-1 aircraft, supported the CHAPS field campaign in Oklahoma the month of June.

CHAPS involves researchers from Pacific Northwest National Laboratory, EMSL, Brookhaven National Laboratory, National Oceanic and Atmospheric Administration, The Cooperative Institute for Environmental Research, Harvard University, Argonne National Laboratory, Los Alamos National Laboratory, NASA Langley Research Center, and Aerodyne Corporation. The campaign is being conducted in conjunction with the Cloud and Land Surface Interaction Campaign, led by Brookhaven National Laboratory, which is investigating how changes in land use affect clouds through changes to surface heating and associated dynamics.

CHAPS is supported by DOE's Atmospheric Science Program under the Office of Biological and Environmental Research. For more information, contact Mary Ann Showalter (509-376-5751).

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