FRAPPÉ Research Project to Launch July 16th

By Ben Kaldunski
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AQAST investigator Gabriele Pfister will spearhead an ambitious effort to study ozone pollution in the Colorado Front Range this summer. Pfister’s team will collaborate with the Colorado Department of Public Health and Environment, the National Oceanic and Atmospheric Administration (NOAA), several universities, and a number of other agencies on this unprecedented campaign that will officially begin on July 16th.

The Front Range Air Pollution and Photochemistry Experiment (FRAPPÉ) is designed to measure pollution that accumulates in the Rocky Mountain’s Front Range region that prevents the area from complying with National Ambient Air Quality Standards (NAAQS) established by the US EPA. “Something this comprehensive has not happened in the Front Range before,” Pfister said.

The FRAPPÉ campaign will involve a series of flights by the NSF/NCAR C-130 aircraft outfitted with sophisticated chemical instruments, ground-based instrumentation as well as tethered balloons and ozone sondes. The combination of air and ground-based measurements is designed to identify the key factors that affect surface ozone formation in the Front Range, and to provide policy makers with a strong scientific foundation to make informed decision on how to reduce pollution in the Front Range.

FRAPPÉ will be closely linked to NASA’s DISCOVER-AQ campaign, both of which will operate in the Front Range from July 16 to August 16. The DISCOVER-AQ project is aimed at improving satellite capabilities to interpret surface air quality conditions by combining satellite data retrievals with aircraft measurements and extensive sampling at selected ground sites.

Aligning the two missions presents a unique opportunity to study and characterize local air quality at a level of detail previously unachievable. "They are two different campaigns, but the way we work it is as one campaign," Pfister said. "We work it as fully complementary."

The FRAPPÉ and DISCOVER-AQ team will also incorporate members of AQAST’s Oil & Gas Tiger Team led by Anne Thompson of Penn State University. The Tiger Team will focus on identifying emissions contributions from natural sources as well as oil and gas operations, regional and interstate transport of oil and gas emissions, and evaluating satellite retrievals of methane emissions.

Thompson will be conducting in situ measurements of hydrocarbon emissions from Penn State’s NATIVE trailer during the FRAPPÉ project based in Platteville, Colorado. NOAA senior research Brad Pierce will measure aerosol and remote trace gases from the University of Wisconsin-Madison’s SPARC trailer in Erie, Colorado. Frank Flocke, an NCAR scientist specializing in in situ measurements, will serve as the project's other primary investigator.

Dr. Gabriele Pfister is a scientist in the Atmospheric Chemistry Division at the National Center for Atmospheric Research and a member of AQAST, a NASA-funded team of air quality experts that strives to use advanced air quality science to develop new tools for air quality managers. Learn more about AQAST at this website and Pfister's research interests here.
This image displays the rigid flight path of NASA’s DISCOVER-AQ P-3-aircraft (red) and the NSF/NCAR-C130 (blue), whose path is flexible and will be decided based on the day’s conditions. The flight patterns are designed to measure pollution profiles in the complex meteorological conditions of mountain-valley regions in the Rocky Mountain Front Range as well as pollution transported into the region (Image Courtesy of NASA)