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Regional and Pole-to-Pole In-situ Airborne Sampling of Greenhouse Gases

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[Global Monitoring Division](#) - ESRL-GMD

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ESRL scientists are participating in the Stratosphere-Troposphere Analyses of Regional Transport (START08) airborne experiment operating out of Rocky Mountain Metropolitan Airport in Broomfield, CO using the NSF/NCAR's High-Performance Instrumented Airborne Platform for Environmental Research HIAPER, a Gulfstream V aircraft, April-June, 2008, over the Western and Midwest US. The purpose of START08 is to study the chemical and transport characteristics of the extratropical upper troposphere and lower stratosphere. Springtime is a transition period for the atmosphere from a stable winter air mass regime to rapid mixing both vertically and horizontally as the atmosphere warms. START08 is a prelude to a two-year study of measuring greenhouse gas concentrations from Pole-to-Pole (North of Pt. Barrow, AK to South of Christchurch, New Zealand), four different times during varied seasons. The future mission is called HIAPER Pole-to-Pole Observations of Greenhouse Gases (HIPPO).

Background: ESRL scientists study atmospheric trace gases that affect climate forcing, stratospheric ozone depletion, and air quality. Three ESRL instrument packages are on board the NSF/NCAR Gulfstream V aircraft: a fast response ozone instrument from the NOAA/ESRL Chemical Sciences Division, a six channel gas chromatograph with mass spectrometer and electron capture detectors, and a two channel gas chromatograph, ozone adsorption photometer, and water vapor tunable diode laser spectrometer all integrated into one package. Real time data for ozone and water vapor concentrations are being sent via Iridium satellite to the ground and are distributed during the flight on the Internet. Other collaborators include scientists from the Cooperative Institute for Research in Environmental Sciences, University of Miami, Harvard University, NCAR, Texas A&M University, Scripps Institution for Oceanography, and the Jet Propulsion Laboratory.

Significance: Studying the regional and global distribution of climatically important trace gases is an important requirement of NOAA's climate goal. These airborne campaigns will provide the first comprehensive snapshot of global and US regional atmospheric trace gases covering the full troposphere in all seasons and multiple years.

More information: <http://www.acd.ucar.edu/start/>

Contact information

Name: James W Elkins**Tel:** (303) 497-6224**James.W.Elkins@noaa.gov**[Show printer-friendly page](#)

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