



HIPPO Experiment Data Access and Subsetting System

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HIAPER Pole-to-Pole Observations (HIPPO) was an NSF- and NOAA-funded, multi-year global airborne research project to survey the latitudinal and vertical distribution of greenhouse and related gases, and aerosols. Project scientists and support staff flew five month-long missions over the Pacific Basin on the NSF/NCAR Gulfstream V, High-performance Instrumented Airborne Platform for Environmental Research (HIAPER) aircraft between January 2009 and September 2011, spread throughout the annual cycle, from the surface to 14 km in altitude, and from 87N to 67S.

The landmark study resulted in an extensive, highly detailed dataset of over 90 atmospheric species, from six categories, all with navigation and atmospheric structure data, including greenhouse gases and carbon cycle gases; ozone and water vapor; black carbon and aerosols; ozone-depleting substances and their replacements; light hydrocarbons and PAN; and sulfur gases/ocean-derived gases. A suite of specialized instruments on the aircraft made high-rate measurements as the plane flew, while several whole air samplers collected flasks of air for later analysis in laboratories around the U.S. Flights were conducted in a continuously profiling mode, with the aircraft alternately climbing or descending as it flew from its home base in Broomfield, Colorado north to Alaska and the Arctic, south down the middle of the Pacific Ocean to New Zealand and the Southern Ocean near Antarctica, and then back to the Arctic a second time before returning home. In all, the aircraft made 64 flights and flew 787 vertical profiles while covering 285,000 km. Instruments collected 434 hours of high-rate continuous measurements and 4,235 flask samples were collected during the five HIPPO missions.

Data from the HIPPO study of greenhouse gases and aerosols are now available to the atmospheric research community and the public. This comprehensive dataset provides the first high-resolution vertically resolved measurements of over 90 unique atmospheric species from nearly pole-to-pole over the Pacific Ocean across all seasons. The suite of atmospheric trace gases and aerosols is pertinent to understanding the carbon cycle and challenging global climate models. This dataset will provide opportunities for research across a broad spectrum of Earth sciences, including those analyzing the evolution in time and space of the greenhouse gases that affect global climate. The Carbon Dioxide Information Analysis Center (CDIAC) at Oak Ridge National Laboratory (ORNL) provides data management support for the HIPPO experiment including long-term data storage and dissemination. CDIAC has developed a relational database to house HIPPO merged 10-second meteorology, atmospheric chemistry, and aerosol data. This data set provides measurements from all Missions, 1 through 5, that took place from January of 2009 to September 2011. This presentation introduces newly build database and web interface, reflects the present state and functionality of the HIPPO Database and Exploration System as well as future plans for expansion and inclusion of combined discrete flask and GC sample GHG, Halocarbon, and hydrocarbon data.