

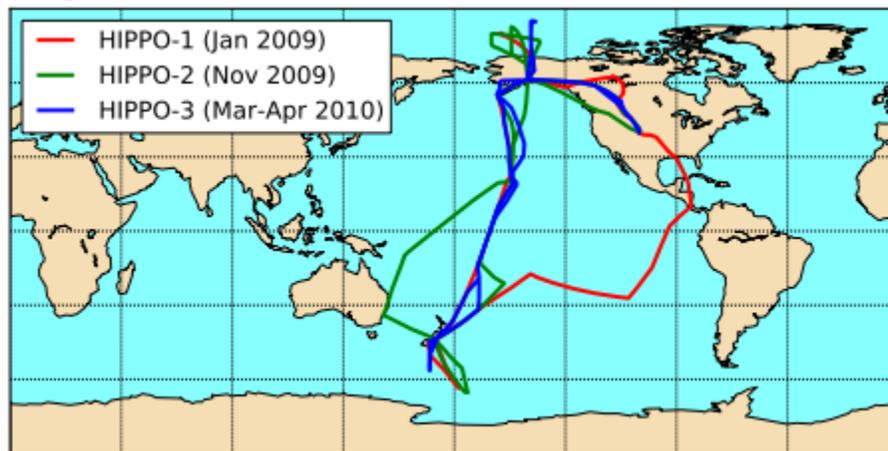
## Airborne Measurements of Trace Gases During HIPPO: Comparisons with Satellite Retrievals from ACE-FTS and Aura Instruments

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“HIAPER” is a Gulfstream-V research aircraft owned by the National Science Foundation and operated by the Earth Observing Laboratory of the National Center for Atmospheric Research. An ostensibly global, tropospheric survey of atmospheric carbon dioxide and other trace gases (dubbed the HIAPER Pole-to-Pole Observations of Greenhouse Gases and Aerosols field campaign, or “HIPPO”) was initiated in January 2009. A total of five, wide-ranging sorties in about half as many years were to be flown by the HIAPER from its home base in Broomfield, Colorado. Each excursion was to occur during a unique segment of the seasonal cycle and would carry the aircraft between 85°N and 65°S latitude over the Pacific Ocean in the general vicinity of the international dateline while gradually ascending and descending almost continuously between the surface and the tropopause region. This first-of-its-kind airborne field campaign was designed to answer questions about the global distributions of many important atmospheric constituents – and the sources, sinks and transport process driving those distributions – with the hope of ultimately providing new and better constraints for global inverse and transport models. Integral to this effort is information about the upper troposphere/lower stratosphere to be drawn from satellite remote sensing, and the HIPPO data provide a unique opportunity for satellite retrieval validation. This poster will present comparisons of HIPPO data to retrievals from the Atmospheric Chemistry Experiment Fourier Transform Spectrometer (ACE-FTS) aboard the Canadian SCISAT-1 satellite, as well as other instruments aboard the Aura satellite in NASA’s A-Train constellation. The goal of this work is to validate satellite measurements with a set of precise and accurate aircraft data in order to create a combined dataset with global coverage from the surface to the upper atmosphere.



**Figure 1.** Flight tracks of the first three HIPPO missions.