Full Data Policy (Update July 7, 2015)

HIPPO Data Policy: Sharing, Access, and Use Recommendations

The HIAPER Pole-to-Pole Observations (HIPPO) project, 2009 – 2011, investigated carbon cycle and greenhouse gases throughout various altitudes of the western hemisphere through the annual cycle. HIPPO was supported by the National Science Foundation (NSF) and its operations are managed by the Earth Observing Laboratory (EOL) of the National Center for Atmospheric Research (NCAR). The research was conducted aboard HIAPER, a modified Gulfstream-V (G-V) aircraft that was designed for high altitude observing and sampling. The main goal of this project was to determine the global distribution of carbon dioxide and other trace atmospheric gases by sampling at various altitudes and latitudes over the Pacific Basin. Five missions were conducted: January, 2009, November, 2009, March/April 2010, June 2011 and August/September 2011.

Open sharing of HIPPO data among researchers, the broader scientific community, and the public is critical to advancing the mission of NSF's climate change program.

Data are being archived and served from the Carbon Dioxide Information Analysis Center (CDIAC) HIPPO Data Archive (http://hippo.ornl.gov/) and the Earth Observing Laboratory (EOL) HIPPO data archive (http://www.eol.ucar.edu/projects/hippo/). The procedures for citing HIPPO data in a publication are specified on the http://hippo.ornl.gov/ site, at the link http://hippo.ornl.gov/in_depth.

Data Sharing

Timeliness of Data Availability

Data are processed and subjected to Quality Assurance and Quality Control (Q/A-Q/C), with a target date for first public release one year after each mission.

Quality Assurance of Data

Data products submitted to the Archive for access by the scientific community and public are considered at **Quality Level 2**. Level 2 indicates a complete, externally consistent data product that has undergone interpretative and diagnostic analysis by HIPPO researchers. Sampling, data collection and instrument calibration issues are identified in the daily mission summary reports, daily technician's reports and the Project Managers' Data Quality Reports, and have been addressed to the extent possible as indicated in the metadata.

Characteristics of Data Quality Levels

Level 1: Indicates an internally consistent data product that has been subjected to quality checks and data management procedures. For example:

- Flight documentation has been reviewed for completeness.
- Procedures and protocols were reviewed for compliance.
- Calibrations and quality control samples have been evaluated and necessary corrections made.
- The data have been adjusted for "zero drift" (continuous measurements), or for "blank bias" (lab analyses) as appropriate.
- Consistency checks have been performed with other measurements within the same

data file.

Level 2: Indicates that additional checks have been carried out, in addition to Level 1 procedures, for example:

- Data have been examined for external consistency when compared to other related data, e.g. ground data.
- Comparisons of measurements made by two or more different methods. Data are not adjusted to agree, but bad data identified by these comparisons are removed.

Data Archiving and Discovery

The HIPPO data are archived with the Carbon Dioxide Information Analysis Center (CDIAC). and the Earth Observing Laboratory (EOL) HIPPO data archive (http://www.eol.ucar.edu/projects/hippo/).

The Carbon Dioxide Information Analysis Center (CDIAC) is the primary climate-change data and information analysis center of the U.S. Department of Energy (DOE) located at DOE's Oak Ridge National Laboratory. CDIAC provides long-term system stability and archive longevity for the HIPPO multi-year project, and reliable access to the integrated data products intended for the scientific community and the public.

NCAR's Earth Observing Laboratory (EOL) develops and deploys NSF Lower Atmospheric Observing Facilities (LAOF) and provides field project support and data services needed to advance scientific understanding of the earth system. EOL serves as the long-term data archive for investigator-provided quality-assured individual instrument data files, supporting data sets (e.g. operational satellite, model output, global observations, etc.), ancillary flight information, field catalogs, data quality reports, and documentation. EOL provides version control for the R software which merges individual instrument files into the integrated data products provided by CDIAC. EOL also provides access to value-added products including movies from aircraft-mounted camera with time-synchronized navigation and state parameter data, pole-to-pole atmospheric cross-section plots of chemical species, and investigator-authored publications.

The discovery (identifying and finding) of HIPPO data sets, derived products, synthesis results, and models (inputs, outputs, and codes) by the scientific community and public will be facilitated through the compilation of descriptive companion metadata records and their inclusion in searchable metadata databases and clearinghouses.

Recommendations for Data Users

The HIPPO data provided on this public archive are freely available to the public and other researchers. The data were submitted by HIPPO scientists who encourage their widespread use. New data users are encouraged to consider the following recommendations for fair, appropriate, and optimal use of HIPPO data products:

Data quality:

- Note that while the quality level of these data products is generally good, data products may be updated after additional Q/A-Q/C analyses.
- Check the HIPPO archive frequently to ensure that the latest available version of each data product is being used. Inquire with the HIPPO scientist(s) responsible for the data product about any forthcoming updates. Dataset documentation includes revision history.

HIPPO scientists:

- Inform the HIPPO scientist(s) associated with each data product about the new data analysis activity near the beginning of the effort, and of any publication plans as the effort nears completion. HIPPO science team members are listed at http://hippo.ucar.edu/team. Alternatively, an initial point of contact for communications with HIPPO scientists is Dr. Steven C. Wofsy (swofsy@seas.harvard.edu), Lead Principal Investigator for HIPPO.
- Consult with the respective HIPPO scientist(s) concerning your data analysis plans to assure that the latest data product is being used and that it is being used appropriately. Good communication with HIPPO scientists will reduce potential problems and optimize the outcome in scientific investigations involving this complex dataset.
- Consider establishing a collaboration with HIPPO scientists in new data analysis or interpretation studies that use their data products.

Acknowledgments: (Update July 7, 2015)

- Acknowledge (1) the use of HIPPO data products with other cited references as provided in the data archive documentation at http://hippo.ornl.gov/in_depth, using the DOI number.
- Acknowledge the agency or organization (e.g., NSF and NOAA) that supported the collection of the original HIPPO data when publishing new analyses and results using HIPPO data products.
- Include the following terms and keywords as applicable in new publications resulting from the use of HIPPO data products: HIPPO, HIAPER Pole-to-Pole Observations, National Science Foundation, NSF, NSF/NCAR Gulfstream-V (GV). This will ensure that the HIPPO mission and its institutional supporters will be fully recognized.

Publications:

Please submit a HIPPO publication reference or reprint at http://www.eol.ucar.edu/projects/hippo/publications/publication_refs.html of your independent work so that all publications resulting from HIPPO data products may be tracked, recorded, and referenced.

Disclaimer of Liability

Data and documents available from the HIPPO web site (http://hippo.ornl.gov/) were prepared as an account of work sponsored by an agency of the U.S. Government. Neither the U.S. Government nor any agency thereof, or any of their employees, makes any warranty, express or implied, or assumes any legal liability or responsibility for the accuracy, completeness, or usefulness of any information, apparatus, product, or process disclosed, or represents that its use would not infringe privately owned rights. Further, Oak Ridge National Laboratory is not responsible for the contents of any off-site pages referenced.

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