Data User Guide

GPM Ground Validation Total Sky Imager IPHEx

Introduction

The GPM Ground Validation Total Sky Imager IPHEx dataset was gathered during the GPM Ground Validation Integrated Precipitation and Hydrology Experiment (IPHEx) in North Carolina from May 9, 2014 through June 14, 2014. The dataset includes data from the total sky imager instrument which is part of the NASA Goddard Space Flight Center (GSFC) ACHIEVE ground-based mobile laboratory. It is an automatic, full-color sky imager system providing real-time, full color digital images of daytime sky conditions. Data files are available in the JPEG image format.

Citation

Tsay, Si-Chee, Adrian Loftus, and Peter Pantina. 2015. GPM Ground Validation Total Sky Imager IPHEx [indicate subset used]. Dataset available online from the NASA Global Hydrometeorology Resource Center DAAC, Huntsville, Alabama, U.S.A.
http://dx.doi.org/10.5067/GPMGV/IPHEX/TOTALSKYIMAGER/DATA101

Keywords:

NASA, GHRC, GPM GV, ACHIEVE, IPHEx, optical rain gauge, tipping bucket rain gauge, precipitation rate, temperature, cumulative precipitation

Campaign

The Global Precipitation Measurement mission Ground Validation (GPM GV) campaign used a variety of methods for validation of GPM satellite constellation measurements prior to and after launch of the GPM Core Satellite, which launched on February 27, 2014. The validation effort entailed numerous GPM-specific and joint-agency/international external field campaigns, using state of the art cloud and precipitation observational infrastructure

(polarimetric radars, profilers, rain gauges, disdrometers). Surface rainfall was measured by very dense rain gauge and disdrometer networks at various field campaign sites. These field campaigns accounted for the majority of the effort and resources expended by GPM GV mission. More information about the GPM GV mission is available at the PMM Ground Validation webpage.

The GPM Integrated Precipitation and Hydrology Experiment (IPHEx) was held in North Carolina during the months of April-June 2014. IPHEx seeks to characterize warm season orographic precipitation regimes, and the relationship between precipitation regimes and hydrologic processes in regions of complex terrain. The IPHEx focus includes the development, evaluation and improvement of remote-sensing precipitation algorithms in support of the GPM mission through the NASA GPM GV field campaign (IPHEX_GVFC) and the evaluation of Quantitative Precipitation Estimation (QPE) products for hydrologic forecasting and water resource applications in the Upper Tennessee, Catawba-Santee, Yadkin-Pee Dee and Savannah river basins: (IPHEX-HAP, H4SE). NOAA Hydrometeorology Testbed (HTM) has synergy with this project. More information about IPHEx is available at the IPHEx Field Campaign webpage.

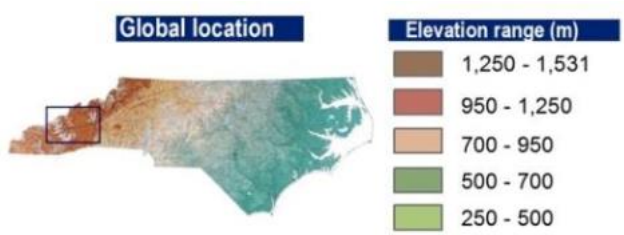

Figure 1: Region of North Carolina IPHEx campaign ground validation (image source: http://gpm-gv.gsfc.nasa.gov/Gauge/)

Instrument Description

The Total Sky Imager TSI880 instrument was located near Maggie Valley, North Carolina (lat: 35.520, lon: -83.095) during the IPHEx field campaign. It provides real-time, full color digital images of daytime sky conditions. More information about this instrument is available at YESINC.

Figure 2: Image of the TSI-880
(Image source: Automatic Total Sky Imager TSI-880 | Biotechnology)

Investigators

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Data Characteristics

The GPM Ground Validation Total Sky Imager IPHEx data are available in JPEG image format with a Level 1B data processing level. More information about the NASA data processing levels is available on the EOSDIS Data Processing Levels webpage. The characteristics of this dataset are listed in Table 1 below.

Table 1: Data Characteristics

Characteristic	Description
Platform	Ground Stations
Instrument	Total Sky Imager
Spatial Coverage	N: 35.56, S: 35.48, E: -83.04, W: -83.18 (North Carolina)
Spatial Resolution	Point
Temporal Coverage	May 6, 2014 - June 15, 2014
Temporal Resolution	1 minute
Parameter	Ground-based observations
Version	1
Processing Level	1B

File Naming Convention

The GPM Ground Validation Total Sky Imager IPHEx dataset files are named using the following convention:

Data files: IPHEx_TSI880_totalskyimager_YYYYMMDDhhmmss.jpg

Table 2: File naming convention variables

Variable	Description
YYYY	Four-digit year
MM	Two-digit month
DD	Two-digit day
hh	Two-digit hour in UTC
mm	Two-digit minute in UTC
ss	Two-digit second in UTC
.jpg	JPEG image format

Software

No special software is required to view these JPEG images.

Known Issues or Missing Data

There are no known issues or missing data.

Related Data

All other data collected during the IPHEx field campaign are considered related data. These data can be located using the GHRC HyDRO2.0 search tool with the search term 'IPHEx'.

Contact Information

To order these data or for further information, please contact:

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