Global Hydrology Resource Center

Data User Guide

GPM Ground Validation GOES 13 Visible and Infrared Images IPHEx

Introduction

The GPM Ground Validation GOES 13 Visible and Infrared Images IPHEx dataset contains visible and infrared images in 3 sizes (FULL, CONUS, and EXT) obtained from the GOES 13 Imager during the Integrated Precipitation and Hydrology Experiment (IPHEx) field campaign that took place in the southeast region of the United States. This collection of GOES 13 images are available at 30 minute (EXT and CONUS) and 3 hour (FULL) intervals for dates between May 1, 2014 and June 16, 2014. The GPM Ground Validation GOES 13 IPHEx data files are in PNG format.

Citation

National Weather Service. 2018. GPM Ground Validation GOES 13 Visible and Infrared Images IPHEx [indicate subset used]. Dataset available online from the NASA EOSDIS Global Hydrology Resource Center Distributed Active Archive Center, Huntsville, Alabama, U.S.A. doi: http://dx.doi.org/10.5067/GPMGV/IPHEX/GOES13/DATA101

Keywords:

NASA, GHRC, GPM, IPHEx, GOES 13, Imager, Infrared, Visible, NOAA

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 instrument validation effort included 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, and disdrometers). These field campaigns accounted for the majority of the effort and resources expended by GPM GV. More information about the GPM mission is at

https://pmm.nasa.gov/GPM/. More information about the GPM Ground Validation mission is available at https://pmm.nasa.gov/science/ground-validation.

One of the GPM Ground Validation field campaigns was the Integrated Precipitation and Hydrology Experiment (IPHEx), which was held in North Carolina during 2014 with an intense study period from May 1 to June 15, 2014. The goal of the IPHEx campaign was to contribute to the development, evaluation, and improvement of remote sensing precipitation algorithms in support of the GPM mission through NASA GPM Ground Validation field campaign (IPHEX_GVFC) and the evaluation of Quantitative Precipitation Estimation (QPE) products for hydrological 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 http://dx.doi.org/10.5067/GPMGV/IPHEX/DATA101 and https://pmm.nasa.gov/IPHEx.

Instrument Description

The Geostationary Operational Environmental Satellite (GOES) 13 is the 13th in a series of U.S. satellites placed in geostationary orbit over the equator in an Earth synchronous orbit. GOES 13 is part of the GOES N-Series (including GOES 13 through 15). GOES 13 was launched on May 24, 2006 and placed into the GOES-East operational weather satellite location prior to and during the IPHEx field campaign. The satellite carries the typical set of GOES instruments: an imager, sounder, Space Environment Monitor (SEM) package, X-ray imager, energetic particle detector, and ground-data relay equipment. This dataset contains images from the GOES 13 Imager, which is a five-channel (one visible, four infrared) imaging radiometer designed to sense radiant and solar reflected energy from sampled areas of the Earth. The GOES-East position is at 75 degrees west longitude and allows for views of the IPHEx field campaign region.

Investigators

National Weather Service
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Data Characteristics

The GPM Ground Validation GOES 13 Visible and Infrared Images IPHEx dataset consists of image files in PNG format at Level 1B processing level. There are visible (VIS) and infrared (IR) images in 3 sizes: the full GOES-13 image (FULL), a region extracted covering the Continental United States (CONUS), and a longitudinal section (EXT). GOES 13 images are available at 30 minute (EXT and CONUS) and 3 hour (FULL) intervals, respectively, for all dates between May 1, 2014 and June 16, 2014.

More information about the NASA data processing levels are available on the NASA Data Processing Levels website. Table 1 provides the characteristics of the GOES 13.

Table 1: GOES 13 Data Characteristics

Characteristic	Description
Platform	GOES 13 Geostationary Satellite
Instrument	GOES 13 Imager
Projection	n/a
Spatial Coverage	CONUS: N: 90.0, S: 22.0, E: -20.0, W: -120.0 EXT: N: 90.0, S: -90.0, E: -20.0, W: -120.0 FULL: N: 90.0, S: -90.0, E: 15.0, W: -165.0
Spatial Resolution	1 km for VIS, 4 km for IR
Temporal Coverage	May 1, 2014 to June 16, 2014
Temporal Resolution	FULL: 3 hours, EXT and CONUS: 30 minutes
Sampling Frequency	<1 second
Parameter	Infrared wavelengths, visible wavelengths
Version	1
Processing Level	Level 1B

File Naming Convention

The GPM Ground Validation GOES 13 Visible and Infrared Images IPHEx dataset consists of visible and infrared images in PNG format collected at the time of the IPHEx field campaign. The files are named using the following convention:

Browse files: iphex_<YYYY-MM-DD>_<hh-mm-ss>_GE_GOES-13_<***>_<#####>.png

Table 2: GOES-13 file naming convention variables

Variable	Description
YYYY-MM-DD	YYYY: 4-digit year MM: 2-digit month DD: 2-digit day
hh-mm-ss	hh: 2-digit hour mm: 2-digit minute ss: 2-digit second
***	Channel (IR3, IR4, or VIS) IR3: moisture infrared (5.80-7.30 µm) IR4: thermal infrared (10.2-11.2 µm) VIS: visible (0.55-0.75 µm)
#####	Type (FULL, CONUS, or EXT) FULL: the full GOES 13 image (N: 90.0, S: -90.0, E: 15.0, W: -165.0) CONUS: a region extracted covering the Continental United States (N: 90.0, S: 22.0, E: -20.0, W: -120.0) EXT: a longitudinal section (N: 90.0, S: -90.0, E: -20.0, W: -120.0)
png	Portable Network Graphics format

Data Format and Parameters

The GPM Ground Validation GOES 13 Visible and Infrared Images IPHEx dataset files are available in PNG format and contain visible and infrared band images over the IPHEx campaign areas.

Known Issues or Missing Data

There are no known issues with these operational data or any known gaps in the dataset.

References

GOES 13. NASA website:
http://nssdc.gsfc.nasa.gov/nmc/spacecraftDisplay.do?id=2006-018A

GOES-N Series. NASA website:
http://www.nasa.gov/mission_pages/goes-n/index.html#.VOymYvnF8n0

IPHEx Field Campaign:
http://dx.doi.org/10.5067/GPMGV/IPHEX/DATA101

Related Data

GOES 14, at 104.5 degrees west longitude, was activated for Super Rapid Scan Operations for GOES-R (SRSOR) mode during the period of May 8-May 24, 2014. GOES 14 visible and infrared images at 1-minute intervals are included in the IPHEx field campaign collection. doi: http://dx.doi.org/10.5067/GPMGV/IPHEX/GOES14/DATA101

All datasets from IPHEx can be considered related to this dataset. IPHEx campaign data can be located using the GHRC HyDRO 2.0 search tool, by entering the term 'IPHEx'.

Contact Information

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

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Created: **May 10, 2018**