



Data User Guide

GPM Ground Validation GOES 14 Visible and Infrared Images IPHEX

Introduction

The GPM Ground Validation GOES 14 Visible and Infrared Images IPHEX dataset contains visible and infrared images from the GOES 14 Imager collected during the Integrated Precipitation and Hydrology Experiment (IPHEX) field campaign in the southeast region of the United States. The GPM Ground Validation GOES 14 IPHEX dataset files are available in PNG format at 1 minute intervals, for all dates between May 8, 2014 and May 24, 2014.

Citation

National Weather Service and Space Science and Engineering Center. 2018. GPM Ground Validation GOES 14 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/GOES14/DATA101>

Keywords:

NOAA, Geostationary, GHRC, GPM, IPHEX, GOES 14, Imager, Infrared, Visible

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 about GPM GV 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) 14, known as GOES-O prior to reaching its operational orbit, was launched on June 27, 2009. Upon reaching geostationary orbit, on July 7, 2009, it was re-designated as GOES 14. GOES 14 is the 14th in a series of U.S. satellites in geostationary orbit over the equator in an Earth geosynchronous orbit. It is part of the GOES N-Series (including GOES 13 through 15). GOES 14 carries an imager, sounder, a Space Environment Monitor (SEM) package, a solar X-ray imager, and SARSAT Search and Rescue ground-data relaying equipment. The GOES 14 Imager is a five channel (one visible, four infrared) imaging radiometer designed to sense radiant and reflected solar energy from sampled areas of the Earth. GOES 14 was positioned over 104.5 degrees west longitude during the IPHEX field campaign period which allowed for views of the eastern United States. GOES 14 Super Rapid Scan Operations for GOES-R (SRSOR) mode was activated from May 8 to May 24, 2014, to provide visible and infrared images at 1-minute intervals.

Investigators

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Data Characteristics

The GPM Ground Validation GOES 14 Visible and Infrared Images IPHEX dataset consists of Image files in PNG format at Level 1B processing level and [KML \(Keyhole Markup Language\)](#) files that store geographic modeling information in [XML](#) format. The data are

visible (VIS) and infrared (IR) images covering the IPHEX field campaign study area. GOES 14 images are available for all dates between May 8, 2014 and May 24, 2014 at 1-minute intervals. This is known as rapid-scan imaging.

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 14 data files.

Table 1: GOES 14 Data Characteristics

Characteristic	Description
Platform	GOES 14
Instrument	GOES 14 Imager
Projection	n/a
Spatial Coverage	N: 49.8525, S: -10.7964, E: 14.3952, W: -125.3952
Spatial Resolution	1 km for VIS, 4 km for IR
Temporal Coverage	May 8, 2014 to May 24, 2014
Temporal Resolution	1 minute
Sampling Frequency	<1 second
Parameter	Infrared wavelengths, visible wavelengths
Version	1
Processing Level	Level 1B

File Naming Convention

The GPM Ground Validation GOES 14 Visible and Infrared Images IPHEX datasets include visible and infrared images in PNG format with geographic modeling information stored in KML files. The files are named using the following convention:

Browse files: iphex_<YYYY-MM-DD>_<hh-mm-ss>_GOES-14_<***>.[png|kml]

Table 4: GOES 14 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 (IR4 or VIS) IR4: thermal infrared (10.2-11.2 μm) VIS: visible (0.55-0.75 μm)
png kml	png: Portable Network Graphics format kml: Keyhole Markup Language file

Data Format and Parameters

The GPM Ground Validation GOES 14 Visible and Infrared Images IPHEX dataset files are available in PNG format and contain visible and infrared band images over the IPHEX campaign areas. KML files storing geographic modeling information are also provided.

Software

KML files are used by Google Earth and other Earth browser programs. KML files can be opened in Google Maps by hosting it on an online location and then typing the [URL](#) into the Google Maps search box (<https://fileinfo.com/extension/kml>).

Known Issues or Missing Data

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

References

GOES 14. NASA website:

<https://nssdc.gsfc.nasa.gov/nmc/spacecraftDisplay.do?id=2009-033A>

GOES-N Series. NASA website:

http://www.nasa.gov/mission_pages/goes-n/index.html#.VOymYvnF8n0

IPHEX Field Campaign Data Collection:

<http://dx.doi.org/10.5067/GPMGV/IPHEX/DATA101>

Related Data

GOES 13, residing at the GOES-East geosynchronous position, provides visible and infrared images for IPHEX during May 1, 2014 and June 16, 2014. These data files are in PNG format and are also included in the IPHEX field campaign collection. GOES-13 images are available at: DOI: <http://dx.doi.org/10.5067/GPMGV/IPHEX/GOES13/DATA101>

All datasets from IPHEX can be considered related to this dataset. Other 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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E-mail: support-ghrc@earthdata.nasa.gov

Web: <https://ghrc.nsstc.nasa.gov/>

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