



## Data User Guide

# ***GPM Ground Validation Citation Videos IPHEX***

### **Introduction**

The GPM Ground Validation Citation Videos IPHEX dataset were collected during the Integrated Precipitation and Hydrology Experiment (IPHEX) in the Southern Appalachians, spanning into the Piedmont and Coastal Plain regions of North Carolina. The campaign sought to characterize warm season orographic precipitation regimes and the relationship between precipitation regimes and hydrologic processes in regions of complex terrain. These videos show flights on June 6, 2014 (1834Z take off) and June 8, 2014 (1817Z take off). Videos have been sped up 12.5 times the original speed and are broken into smaller files of about 3.5 minutes each (covering 45 minutes actual flight time). These videos are associated with the GPM Ground Validation NCAR Cloud Microphysics Particle Probes IPHEX and the GPM Ground Validation UND Cloud Microphysics IPHEX datasets. The video files are in .mp4 video format.

### **Citation**

Poellot, Michael and Andrew Heymsfield. 2016. GPM Ground Validation Citation Videos 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/CAMERA/DATA101>

### **Keywords:**

*NASA; GHRC; IPHEX, GPM GV; North Carolina; UND Citation, UND Cessna Citation II Research Aircraft; take off videos; flight videos;*

### **Campaign**

The GPM Ground Validation campaign used a variety of methods for validation of GPM satellite constellation measurements prior to and after launch on 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. These field campaigns accounted for the majority of the effort and resources expended by the GPM Ground Validation mission. More information about the GPM Ground Validation mission is available at <https://pmm.nasa.gov/index.php?q=science/ground-validation>.

One of the GPM Ground Validation field campaigns was the GPM 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://gpm.nsstc.nasa.gov/iphex/>.

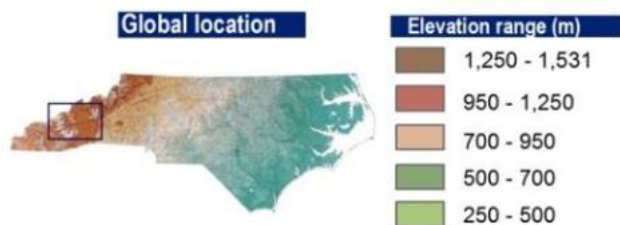


Figure 1: Region of North Carolina IPHEX campaign ground validation (image source: <http://gpm-gv.gsfc.nasa.gov/Gauge/>)

## Instrument Description

The UND Cessna Citation II Research Aircraft is owned and operated by the University of North Dakota. The UND Cessna Citation II Research Aircraft is a twin-engine fanjet with an operating ceiling of 13.1km. The turbofan engines provide sufficient power to cruise at speeds of up to  $175 \text{ m s}^{-1}$  or climb at  $16.8 \text{ m s}^{-1}$ . These high performance capabilities are accompanied by relatively low fuel consumption at all altitudes, giving the UND Cessna Citation II Research Aircraft a flight time of 3 to 5 hours, depending on the mission type. Long wings allow it to be operated out of relatively short airstrips and to be flown at the slower speeds ( $72 \text{ m s}^{-1}$ ) necessary for many types of measurements. More information on the UND Cessna Citation II is available at <http://cumulus.atmos.und.edu/>.

## Related Data Products

The UND Cessna Citation II Research Aircraft carried several instruments onboard during these flights. The videos in this dataset are therefore directly related to the GPM Ground Validation NCAR Cloud Microphysics Particle Probes IPHEX and the GPM Ground Validation UND Cloud Microphysics IPHEX datasets.

## Investigators

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## File Naming Convention

The GPM Ground Validation Citation Videos IPHEX dataset consists of video files with a playback speed of 12.5 times actual video recording speed. The two aircraft flights are broken into smaller files of about 3.5 minutes of playback time per file, representing 45 minutes of flight time. The GPM Ground Validation Citation Videos IPHEX dataset files have the following naming convention.

**Data:** citation\_YYYYMMDDx.mp4

Table 1: File naming convention variables

Variable	Description
YYYY	Four-digit year
MM	Two-digit month
DD	Two-digit day
x	Each movie flight is broken into smaller 3.5 minute files (a, b, c, or d)
.mp4	MP4 video file format

## Data Format Description

The GPM Ground Validation Citation Videos IPHEX dataset consists .mp4 video files that are broken into smaller files of about 3.5 minutes each. Videos have been sped up to 12.5 times the actual speed.

Table 2: Data Characteristics

Characteristic	Description
Platform	UND Cessna Citation II aircraft
Spatial Coverage	N: 46.5 S: 43.5, W: -81 ; E: -78
Temporal Coverage	The files cover two flights: June 6, 2014 and June 8, 2014
Temporal Resolution	3.5 minutes of playback time or 45 minutes of flight time
Version	1

## Contact Information

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