

GPM Ground Validation Met One Rain Gauge Pairs IFloodS

Introduction

The GPM Ground Validation Met One Rain Gauge Pairs IFloodS data set was collected using Met One Model 380 tipping bucket precipitation gauges at 25 sites in Iowa during the Iowa Flood Studies (IFloodS) ground measurement campaign in 2013. The data set contains quality controlled reformatted rain data recorded in millimeters at a temporal resolution of 1 second and cubic spline interpolated rain rates recorded in millimeters per hour. The information is available in .txt text files.

Citation

The following example shows how to cite the use of this data set in a publication. For more information, please see our [Citing GHRC DAAC and Data](#) page.

Petersen, W., D. Wolff, J. Wang, G. Cutrell. 2014. GPM Ground Validation Met One Rain Gauge Pairs IFloodS [indicate subset used]. Data set available online [http://ghrc.nsstc.nasa.gov/] from the NASA EOSDIS Global Hydrology Resource Center Distributed Active Archive Center Huntsville, Alabama, U.S.A. doi: Coming Soon

Campaign

The [Iowa Flood Studies \(IFloodS\)](#) was a ground measurement campaign that took place in eastern Iowa from May 1 to June 15, 2013. The goals of the campaign were to collect detailed measurements of precipitation at the Earth's surface using ground instruments and advanced weather radars and, simultaneously, collect data from satellites passing overhead. The ground instruments characterized precipitation -- the size and shape of raindrops, the physics of ice and liquid particles throughout the cloud and below as it falls, temperature, air moisture, and distribution of different size droplets -- to improve rainfall estimates from the satellites, and in particular the algorithms that interpret raw data for the upcoming Global Precipitation Measurement (GPM) mission's Core Observatory satellite, which launches in 2014.

The rain gauges were located at 25 sites in central to northeastern Iowa. The geographic locations of each rain gauge pair (gauges A & B) are:

Site	Lat.	Lon.
NASA0026	43° 22' 13.7814"	-92° 22' 8.3712"
NASA0027	43° 7' 23.4948"	-92° 8' 48.03"
NASA0028	43° 2' 32.175"	-91° 57' 46.9692"
NASA0029	42° 48' 50.6658"	-91° 40' 5.5776"
NASA0030	43° 13' 36.8256"	-92° 17' 53.8794"
NASA0031	43° 16' 15.1566"	-92° 1' 50.736"
NASA0032	42° 55' 32.127"	-91° 40' 20.6574"
NASA0033	43° 3' 8.985"	-91° 31' 7.8702"
NASA0034	42° 55' 4.1376"	-91° 56' 33.993"
NASA0035	43° 6' 11.1744"	-91° 45' 17.8734"
NASA0036	42° 43' 2.9784"	-91° 11' 23.406"

NASA0037	42° 58' 42.8586"	-91° 18' 48.078"
NASA0038	42° 50' 37.611"	-91° 23' 49.8516"
NASA0039	43° 11' 7.4076"	-91° 52' 38.748"
NASA0040	42° 46' 32.196"	-91° 27' 12.2034"
NASA0041	43° 19' 51.2538"	-92° 13' 6.1242"
NASA0042	42° 50' 33.5106"	-91° 47' 25.9182"
NASA0043	42° 53' 29.5974"	-91° 34' 0.678"
NASA0044	42° 58' 44.6412"	-91° 47' 15.8604"
NASA0045	42° 38' 39.069"	-91° 23' 2.4576"
NASA0046	42° 18' 17.4312"	-93° 29' 1.0896"
NASA0047	42° 23' 56.0394"	-93° 26' 39.339"
NASA0048	42° 17' 52.1304"	-93° 31' 14.3322"
NASA0049	42° 38' 13.8984"	-93° 20' 28.2552"
NASA0050	42° 27' 4.6758"	-93° 13' 57.1866"

Further details on the IFloodS campaign are available at <https://ghrc.nsstc.nasa.gov/home/field-campaigns/ifloods>. Additional information about the Iowa Flood Center can be found at <http://iowafloodcenter.org>. Information on the Global Precipitation Measurement (GPM) mission is available at <http://pmm.nasa.gov/GPM>.

Instrument Description

The Model 380 precipitation gauge, manufactured by Met One Instruments Inc., is a tipping bucket rain gauge which measures the amount of fallen precipitation. The gauge has a 12 inch (30.5 cm) diameter catchment funnel that directs precipitation to a tipping bucket assembly. When .01 inch (.254 mm) of precipitation is collected, the tipping bucket assembly tips, draining the collection and activating a mercury switch for recording data.

Investigators

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File Naming Convention

The GPM Ground Validation Met One Rain Gauge Pairs IFloodS data set consists of .txt text files. The files are named with the following convention:

ifloods_raingauge_NASA00##[A|B]_[YYYYMMDD_start]_[YYYYMMDD_end]_[gag|gmin].txt

where,

ifloods = Iowa Flood Studies
raingauge = Met One Model 380 Precipitation Gauge
NASA00## = rain gauge number
[A|B] = rain gauge letter (A or B)
YYYYMMDD_start = the year, month, and day of the data's start date (e.g. 20130418)
YYYYMMDD_end = the year, month, and day of the data's end date (e.g. 20130625)
[gag|gmin] = gag or gmin, where gag refers to quality controlled reformatted rainfall data (mm) and gmin refers to cubic spline interpolated rain rates(mm/h) calculated using the algorithm of Wang et al. 2008 (See References)
.txt = text file

The files contain measurements of fallen precipitation at recorded points in time and cubic spline interpolated rain rates during the study period.

Data Format

The GPM Ground Validation Met One Rain Gauge Pairs IFloodS data set is comprised of .txt text files.

References

Wang, J., B. L. Fisher, and D. B. Wolff, 2008: Estimating rain rates from tipping-bucket rain gauge measurements. *J. Atmos. Oceanic Technol.*, 25, 43-56. doi: 10.1175/2007JTECHA895.1

Wang, J., and D. B. Wolff, 2012: Evaluation of TRMM rain estimates using ground measurements over central Florida. *J. Appl. Meteor. Climatol.*, 51, 926-940. doi: 10.1175/JAMC-D-11-080.1

Wang, J., and D. B. Wolff, 2010: Evaluation of TRMM ground-validation radar-rain errors using rain gauge measurements. *J. Appl. Meteor. Climatol.*, 49, 310-24. doi: 10.1175/2009JAMC2264.1

Contact Information

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

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