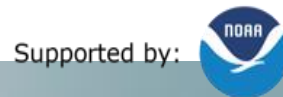
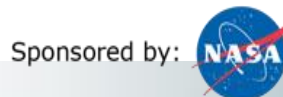





# Comparing GLOBE Data to NASA Data

Kristen Weaver



Implemented by:  UCAR

2017-03-14

My ▼  Sites  Measurements

Layers

**Data Layers** Add +

Map Coordinates Grid

Filters

Multi-Site Plots



<https://vis.globe.gov>

2017-03-14

My ▼  Sites  Measurements

Layers

**Data Layers** Add +

Map Coordinates Grid

Filters

Multi-Site Plots

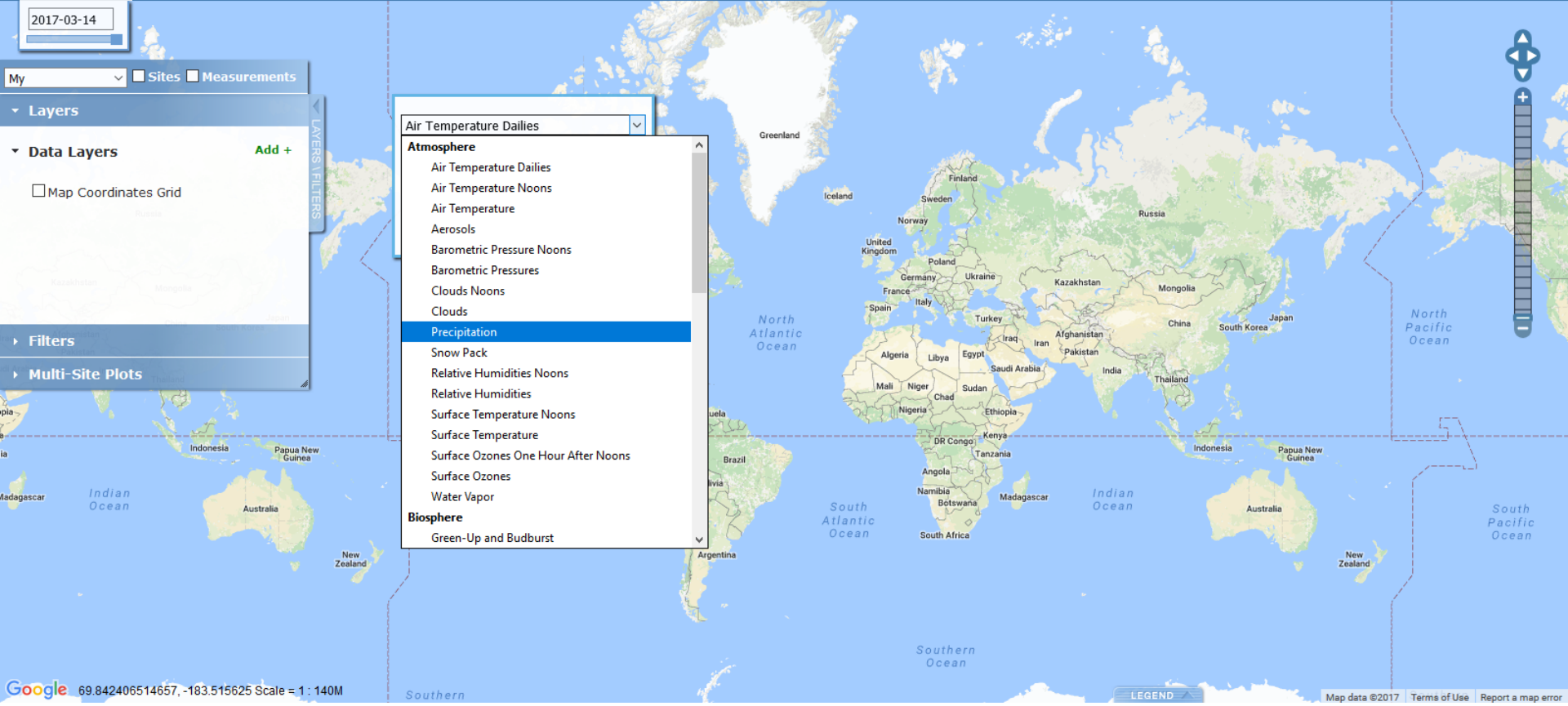
Air Temperature Dailies ▼

**Atmosphere**

- Air Temperature Dailies
- Air Temperature Noons
- Air Temperature
- Aerosols
- Barometric Pressure Noons
- Barometric Pressures
- Clouds Noons
- Clouds
- Precipitation**
- Snow Pack
- Relative Humidities Noons
- Relative Humidities
- Surface Temperature Noons
- Surface Temperature
- Surface Ozones One Hour After Noons
- Surface Ozones
- Water Vapor

**Biosphere**

- Green-Up and Budburst



2017-03-14

My  Sites  Measurements

Layers

Data Layers Add + Map Coordinates Grid

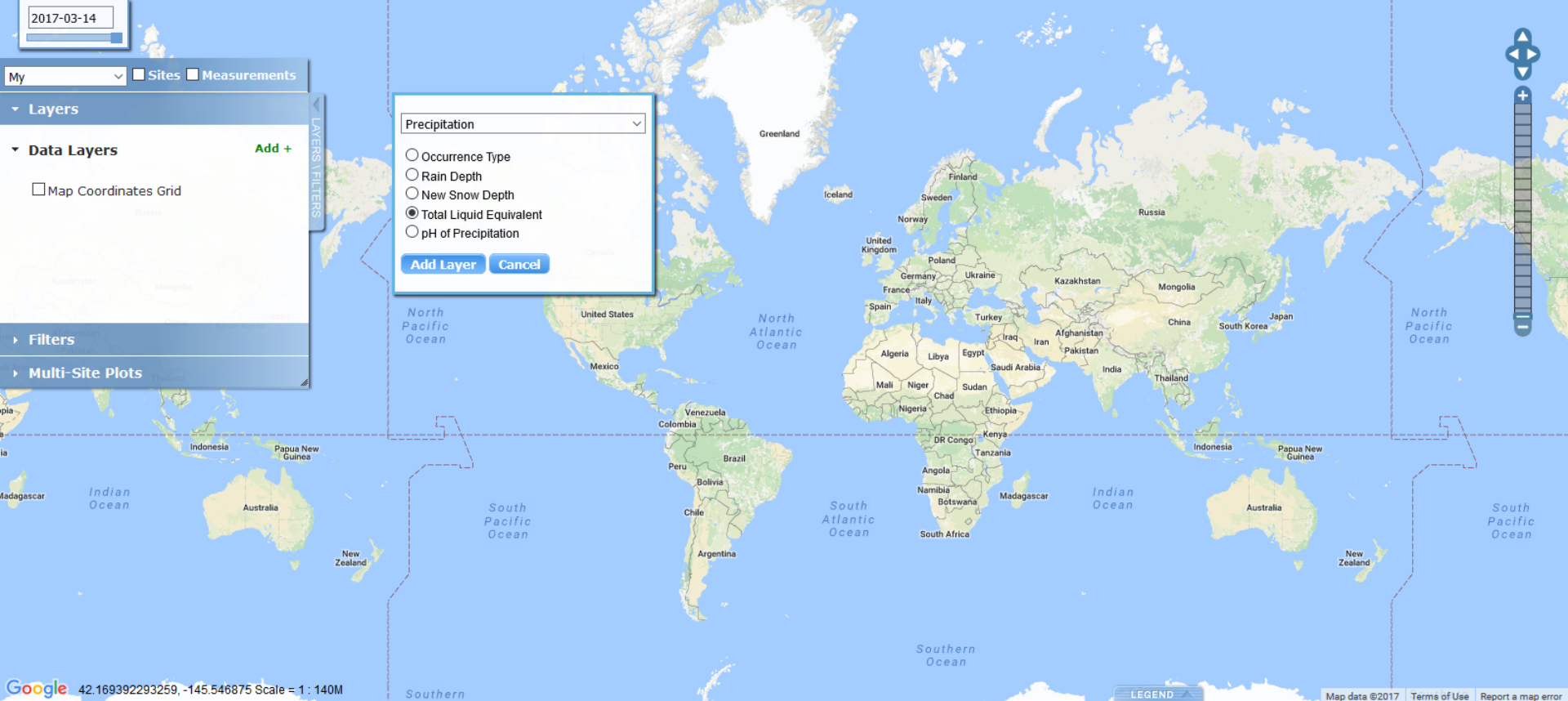
Filters

Multi-Site Plots

Precipitation

- Occurrence Type
- Rain Depth
- New Snow Depth
- Total Liquid Equivalent
- pH of Precipitation

Add Layer Cancel



2017-03-14

My [v]  Sites  Measurements

Layers

**Data Layers** Add +

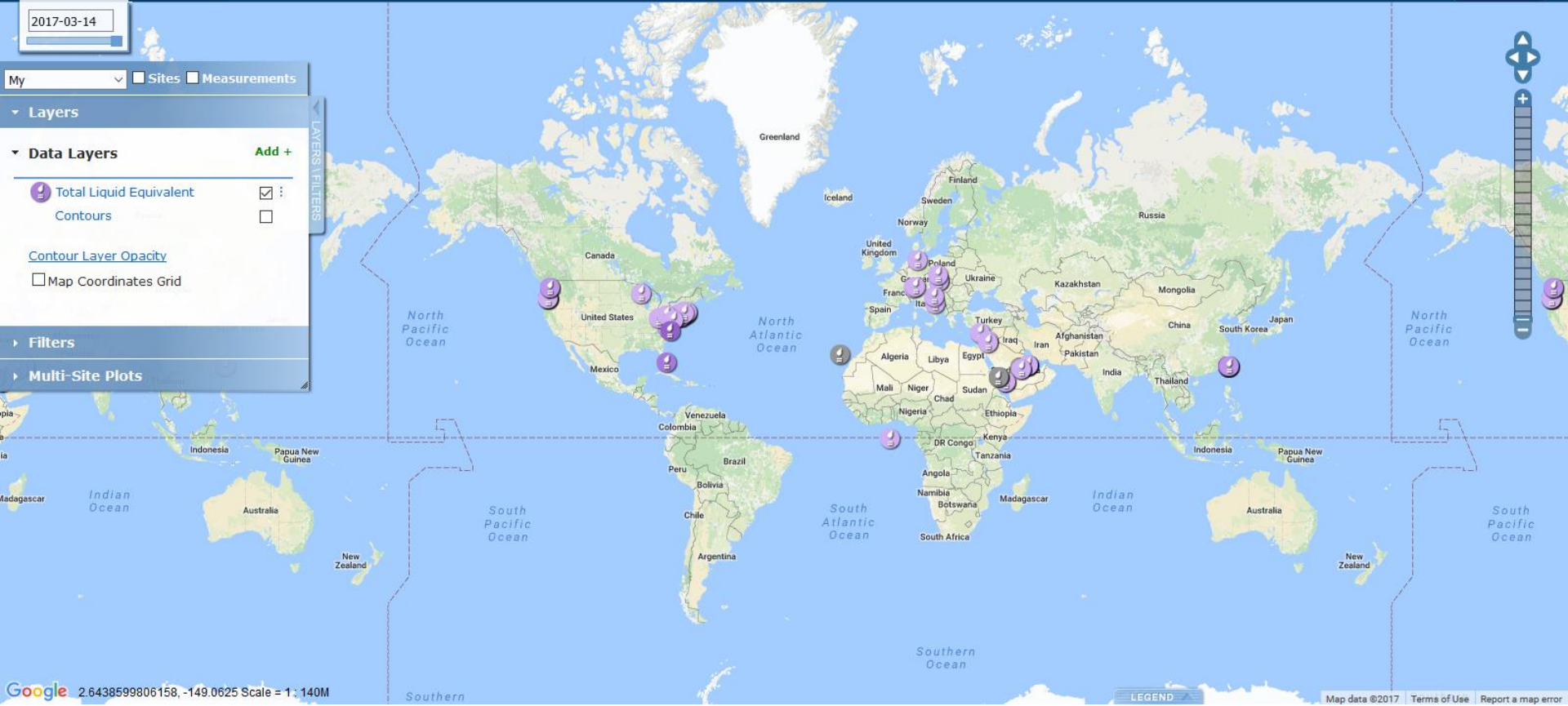
- Total Liquid Equivalent Contours

[Contour Layer Opacity](#)

Map Coordinates Grid

Filters

Multi-Site Plots



2016-11-16

November 2016

| Su | Mo | Tu | We | Th | Fr | Sa |
|----|----|----|----|----|----|----|
|    |    | 1  | 2  | 3  | 4  | 5  |
| 6  | 7  | 8  | 9  | 10 | 11 | 12 |
| 13 | 14 | 15 | 16 | 17 | 18 | 19 |
| 20 | 21 | 22 | 23 | 24 | 25 | 26 |
| 27 | 28 | 29 | 30 |    |    |    |

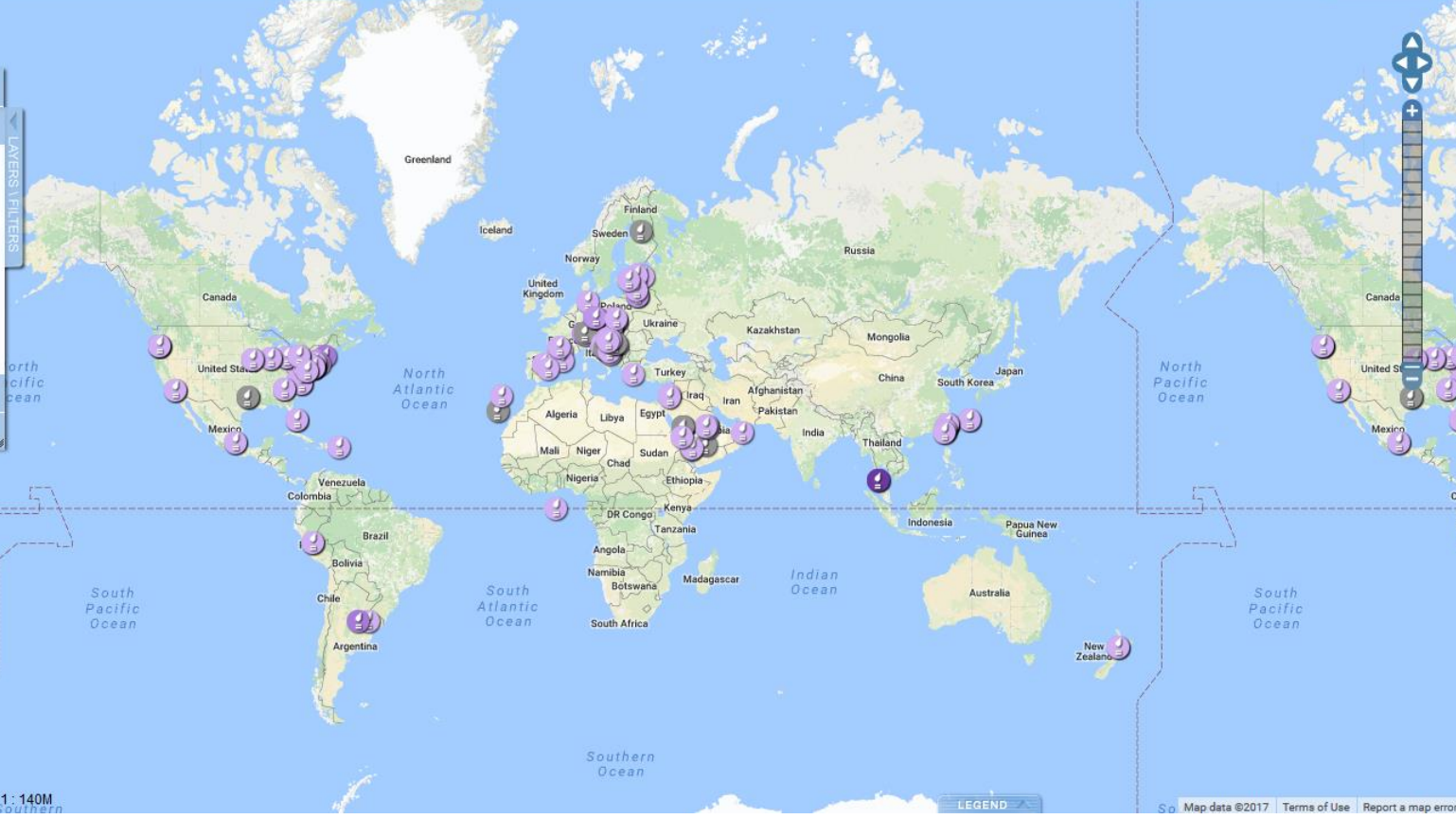
My  Contours


Contour Layer Opacity

Map Coordinates Grid

Filters

Multi-Site Plots





## THE GLOBE PROGRAM

Visualization System

Select Language

Powered by Google Translate

Measurements | Data Counts | Load Filters | Save Filters | Choose Base Map
Sites on Map: 141 Kristen Weaver

2016-11-16

**School:** XV. Gimnazija

**Site:** NOVA MIOC:ATM-03

Next Site

2/2

Measurements | Data Counts | School Info | Site Info | Photos

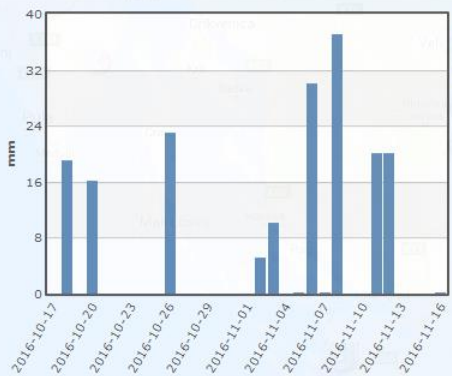
**Atmosphere**

Precipitation

- Rain Depth
- New Snow Depth
- Total Liquid Equivalent
- pH of Precipitation

Data Date Range: 2010-09-20 to 2017-03-10

Measured At: 2016-11-16 11:00:00  
 Days Accumulated: 1  
 Solar Noon At: 2016-11-16 10:40:00  
 Solar Measured At: 2016-11-16 12:20:00  
 Occurrence Type: rain  
 Rain Depth: 0.05 mm  
 Total Liquid Equivalent: 0.05 mm  
 Elevation: 81.00 m



| Date       | Precipitation (mm) |
|------------|--------------------|
| 2016-10-17 | 18                 |
| 2016-10-20 | 16                 |
| 2016-10-23 | 22                 |
| 2016-10-26 | 24                 |
| 2016-10-29 | 10                 |
| 2016-11-01 | 10                 |
| 2016-11-04 | 10                 |
| 2016-11-07 | 30                 |
| 2016-11-10 | 28                 |
| 2016-11-13 | 20                 |
| 2016-11-16 | 20                 |

30 Days | 1 Year | Custom

Google 44.935527631761, 16.776123046876 Scale = 1: 2M

LEGEND ©2017 GeoBasis-DE/BKG (©2009), Google Terms of Use Report a map error

XV. Gimnazija : NOVA MIOC:ATM-03 Data Table

| School Name   | Site Name        | Userid  | Latitude | Longitude | Elevation | Measured At         | Solar Measured At   | Solar Noon At       | Occurrence Type | Days Accumulated | Vis Rain Depth | Vis Snow Depth |
|---------------|------------------|---------|----------|-----------|-----------|---------------------|---------------------|---------------------|-----------------|------------------|----------------|----------------|
| XV. Gimnazija | NOVA MIOC:ATM-03 | 3062664 | 45.82065 | 16.00687  | 81        | 2016-10-21 11:00:00 | 2016-10-21 12:21:00 | 2016-10-21 10:40:00 | rain            | 2                |                |                |
| XV. Gimnazija | NOVA MIOC:ATM-03 | 3062664 | 45.82065 | 16.00687  | 81        | 2016-10-18 11:00:00 | 2016-10-18 12:21:00 | 2016-10-18 10:41:00 | rain            | 1                | 19             |                |
| XV. Gimnazija | NOVA MIOC:ATM-03 | 3062664 | 45.82065 | 16.00687  | 81        | 2016-10-20 11:00:00 | 2016-10-20 12:21:00 | 2016-10-20 10:40:00 | rain            | 1                | 16             |                |
| XV. Gimnazija | NOVA MIOC:ATM-03 | 3062664 | 45.82065 | 16.00687  | 81        | 2016-10-26 11:30:00 | 2016-10-26 12:52:00 | 2016-10-26 10:39:00 | rain            | 1                | 23             |                |
| XV. Gimnazija | NOVA MIOC:ATM-03 | 3062664 | 45.82065 | 16.00687  | 81        | 2016-11-08 11:30:00 | 2016-11-08 12:52:00 | 2016-11-08 10:39:00 | rain            | 1                | 37             |                |
| XV. Gimnazija | NOVA MIOC:ATM-03 | 3062664 | 45.82065 | 16.00687  | 81        | 2016-11-03 11:30:00 | 2016-11-03 12:52:00 | 2016-11-03 10:39:00 | rain            | 1                | 10             |                |
| XV. Gimnazija | NOVA MIOC:ATM-03 | 3062664 | 45.82065 | 16.00687  | 81        | 2016-11-05 11:00:00 |                     |                     |                 | 1                | 0.05           |                |
| XV. Gimnazija | NOVA MIOC:ATM-03 | 3062664 | 45.82065 | 16.00687  | 81        | 2016-11-11 11:00:00 |                     |                     |                 | 1                | 20             |                |
| XV. Gimnazija | NOVA MIOC:ATM-03 | 3062664 | 45.82065 | 16.00687  | 81        | 2016-11-06 11:00:00 |                     |                     |                 | 1                | 30             |                |
| XV. Gimnazija | NOVA MIOC:ATM-03 | 3062664 | 45.82065 | 16.00687  | 81        | 2016-11-12 11:00:00 |                     |                     |                 | 1                | 20             |                |
| XV. Gimnazija | NOVA MIOC:ATM-03 | 3062664 | 45.82065 | 16.00687  | 81        | 2016-11-16 11:00:00 |                     |                     |                 | 1                | 0.05           |                |
| XV. Gimnazija | NOVA MIOC:ATM-03 | 3062664 | 45.82065 | 16.00687  | 81        | 2016-11-02 11:30:00 |                     |                     |                 | 1                | 5              |                |
| XV. Gimnazija | NOVA MIOC:ATM-03 | 3062664 | 45.82065 | 16.00687  | 81        | 2016-11-07 11:30:00 |                     |                     |                 | 1                | 0.05           |                |

Opening dv\_precipitations\_2016-10-17-2016-11-16.csv

You have chosen to open:

**dv\_precipitations\_2016-10-17-2016-11-16.csv**  
 which is: Microsoft Excel Comma Separated Values File  
 from: <https://vis.globe.gov>

What should Firefox do with this file?

Open with Notepad (default)

Save File

Do this automatically for files like this from now on.

OK Cancel

Export .csv 1 - 13 of 13



dv\_precipitations\_2016-10-17-2016-11-16.csv [Read-Only] - Microsoft Excel

File Home Insert Page Layout Formulas Data Review View

Clipboard Font Alignment Number Styles Cells Editing

Calibri 11 Wrap Text General Normal Bad Good Neutral Calculation Check Cell

|    | A             | B                | C       | D        | E         | F         | G                | H                 | I                | J               | K                | L              | M              | N                           | O                     | P                          | Q                   | R                        |       |
|----|---------------|------------------|---------|----------|-----------|-----------|------------------|-------------------|------------------|-----------------|------------------|----------------|----------------|-----------------------------|-----------------------|----------------------------|---------------------|--------------------------|-------|
| 1  | School Name   | Site Name        | Userid  | Latitude | Longitude | Elevation | Measured At      | Solar Measured At | Solar Noon At    | Occurrence Type | Days Accumulated | Vis Rain Depth | Vis Snow Depth | Vis Total Liquid Equivalent | Snowfall Accumulation | Snowfall Accumulation Flag | Liquid Accumulation | Liquid Accumulation Flag |       |
| 2  | XV. Gimnazija | NOVA MIOC:ATM-03 | 3062664 | 45.82065 | 16.00687  | 81        | 10/21/2016 11:00 | 10/21/2016 12:21  | 10/21/2016 10:40 | rain            |                  | 2              |                |                             |                       |                            |                     | 6                        |       |
| 3  | XV. Gimnazija | NOVA MIOC:ATM-03 | 3062664 | 45.82065 | 16.00687  | 81        | 10/18/2016 11:00 | 10/18/2016 12:21  | 10/18/2016 10:41 | rain            |                  | 1              | 19             |                             | 19                    |                            |                     | 19                       |       |
| 4  | XV. Gimnazija | NOVA MIOC:ATM-03 | 3062664 | 45.82065 | 16.00687  | 81        | 10/20/2016 11:00 | 10/20/2016 12:21  | 10/20/2016 10:40 | rain            |                  | 1              | 16             |                             | 16                    |                            |                     | 16                       |       |
| 5  | XV. Gimnazija | NOVA MIOC:ATM-03 | 3062664 | 45.82065 | 16.00687  | 81        | 10/26/2016 11:30 | 10/26/2016 12:52  | 10/26/2016 10:39 | rain            |                  | 1              | 23             |                             | 23                    |                            |                     | 23                       |       |
| 6  | XV. Gimnazija | NOVA MIOC:ATM-03 | 3062664 | 45.82065 | 16.00687  | 81        | 11/8/2016 11:30  | 11/8/2016 12:52   | 11/8/2016 10:39  | rain            |                  | 1              | 37             |                             | 37                    |                            |                     | 37                       |       |
| 7  | XV. Gimnazija | NOVA MIOC:ATM-03 | 3062664 | 45.82065 | 16.00687  | 81        | 11/3/2016 11:30  | 11/3/2016 12:52   | 11/3/2016 10:39  | rain            |                  | 1              | 10             |                             | 10                    |                            |                     | 10                       |       |
| 8  | XV. Gimnazija | NOVA MIOC:ATM-03 | 3062664 | 45.82065 | 16.00687  | 81        | 11/5/2016 11:00  | 11/5/2016 12:22   | 11/5/2016 10:39  | rain            |                  | 1              | 0.05           |                             | 0.05                  |                            |                     | 0.05                     | trace |
| 9  | XV. Gimnazija | NOVA MIOC:ATM-03 | 3062664 | 45.82065 | 16.00687  | 81        | 11/11/2016 11:00 | 11/11/2016 12:21  | 11/11/2016 10:40 | rain            |                  | 1              | 20             |                             | 20                    |                            |                     | 20                       |       |
| 10 | XV. Gimnazija | NOVA MIOC:ATM-03 | 3062664 | 45.82065 | 16.00687  | 81        | 11/6/2016 11:00  | 11/6/2016 12:22   | 11/6/2016 10:39  | rain            |                  | 1              | 30             |                             | 30                    |                            |                     | 30                       |       |
| 11 | XV. Gimnazija | NOVA MIOC:ATM-03 | 3062664 | 45.82065 | 16.00687  | 81        | 11/12/2016 11:00 | 11/12/2016 12:21  | 11/12/2016 10:40 | rain            |                  | 1              | 20             |                             | 20                    |                            |                     | 20                       |       |
| 12 | XV. Gimnazija | NOVA MIOC:ATM-03 | 3062664 | 45.82065 | 16.00687  | 81        | 11/16/2016 11:00 | 11/16/2016 12:20  | 11/16/2016 10:40 | rain            |                  | 1              | 0.05           |                             | 0.05                  |                            |                     | 0.05                     | trace |
| 13 | XV. Gimnazija | NOVA MIOC:ATM-03 | 3062664 | 45.82065 | 16.00687  | 81        | 11/2/2016 11:30  | 11/2/2016 12:52   | 11/2/2016 10:39  | rain            |                  | 1              | 5              |                             | 5                     |                            |                     | 5                        |       |
| 14 | XV. Gimnazija | NOVA MIOC:ATM-03 | 3062664 | 45.82065 | 16.00687  | 81        | 11/7/2016 11:30  | 11/7/2016 12:52   | 11/7/2016 10:39  | rain            |                  | 1              | 0.05           |                             | 0.05                  |                            |                     | 0.05                     | trace |

<https://giovanni.sci.gsfc.nasa.gov/giovanni/>

EARTHDATA | Data Discovery | DAACs | Community | Science Disciplines

## GIOVANNI

The Bridge Between Data and Science v 4.21.6 [Release Notes](#) [Browser Compatibility](#) [Known Issues](#)

**Giovanni transition to https...** [1 of 3 messages] [Read More](#)

**Select Plot**

Maps: Time Averaged Map |  Comparisons: Select... |  Vertical: Select... |  Time Series: Select... |  Miscellaneous: Select...

**Select Date Range (UTC)** | **Select Region (Bounding Box or Shapefile)**

YYYY-MM-DD. HH:mm to [calendar icon] [calendar icon] [calendar icon] [calendar icon] **Show Map**

Valid Range: 1948-01-01 to 2017-03-14

**Select Variables**

**Disciplines**

- Aerosols (179)
- Atmospheric Chemistry (53)
- Atmospheric Dynamics (322)
- Cryosphere (15)
- Hydrology (1004)
- Ocean Biology (44)
- Oceanography (48)
- Water and Energy Cycle (1045)

**Measurements**

- Aerosol Index (3)
- Aerosol Optical Depth (34)
- Air Pressure (48)
- Air Temperature (71)
- Albedo (18)
- Altitude (4)
- Angstrom Exponent (16)
- Atmospheric Moisture (92)
- Black Carbon (5)
- Buoyancy (2)
- CH4 (8)
- CO (13)
- CO2 (2)
- Canopy Water Storage (7)
- Chlorophyll (11)
- Cloud Fraction (25)
- Cloud Properties (67)
- Component Aerosol Optical Depth (7)

Number of matching Variables: 0 of 1639 | Total Variable(s) included in Plot: 0

Keyword:  **Search** **Clear**

**Help** **Reset** **Feedback** **Plot Data**

<https://giovanni.sci.gsfc.nasa.gov/>

**Giovanni transition to https...** [1 of 3 messages] [Read More](#)

Select Plot

Maps: Time Averaged Map
  Comparisons: Select...
  Vertical: Select...
  Time Series: Select...
  Miscellaneous: Select...

Select Date Range (UTC) Select Region (Bounding Box or Shapefile)

YYYY-MM-DD HH:mm to YYYY-MM-DD HH:mm  
 2016 -11 -01 00:00 to 2016 -11 -16 23:59

Valid Range: 2015-03-14 to 2017-03-11

- Select Variables
- ▼ Disciplines
    - Hydrology (3)
  - ▼ Measurements
    - Precipitation (3)
    - ▶ Platform / Instrument
    - ▶ Spatial Resolutions
    - ▶ Temporal Resolutions
    - ▶ Portal

Number of matching Variables: 3 of 1639    Total Variable(s) included in Plot: 1

Keyword: IMERG Late    Search    Clear

| Variable   | Source | Temp.Res.   | Spat.Res. | Begin Date | End Date   | Units |
|--|--------|-------------|-----------|------------|------------|-------|
| <input checked="" type="checkbox"/> <a href="#">Daily accumulated precipitation estimate - Late Run (GPM_3IMERGDL_v03)</a>                                   | GPM    | Daily       | 0.1 °     | 2015-03-14 | 2017-03-11 | mm    |
| <input type="checkbox"/> <a href="#">Multi-satellite precipitation estimate with climatological gauge calibration - Late Run (GPM_3IMERGHHL_v03)</a>         | GPM    | Half-Hourly | 0.1 °     | 2015-03-07 | 2017-03-12 | mm/hr |
| <input type="checkbox"/> <a href="#">Random Error for multi-satellite precipitation with climatological gauge calibration - Late Run (GPM_3IMERGHHL_v03)</a> | GPM    | Half-Hourly | 0.1 °     | 2015-03-07 | 2017-03-12 | mm/hr |

Giovanni transition to https... [1 of 3 messages] [Read More](#)

Select Plot

Maps: Select...
  Comparisons: Select...
  Vertical: Select...
  Time Series: Area-Averaged
  Miscellaneous: Select...

Select Date Range (UTC) Select Region (Bounding Box of)

YYYY-MM-DD HH:mm to YYYY-MM-DD HH:mm  
 2016 -11 -01 00:00 to 2016 -11 -16 23:59  
 Valid Range: 2015-03-14 to 2017-03-11

- Select Variables
- Disciplines**
- Aerosols (179)
  - Atmospheric Chemistry (53)
  - Atmospheric Dynamics (322)
  - Cryosphere (15)
  - Hydrology (1004)
  - Ocean Biology (44)
  - Oceanography (48)
  - Water and Energy Cycle (1045)
- Measurements**
- Aerosol Index (3)
  - Aerosol Optical Depth (34)
  - Air Pressure (48)
  - Air Temperature (71)
  - Albedo (18)
  - Altitude (4)
  - Angstrom Exponent (16)
  - Atmospheric Moisture (92)
  - Black Carbon (5)
  - Buoyancy (2)
  - CH4 (8)
  - CO (13)
  - CO2 (2)
  - Canopy Water Storage (7)
  - Chlorophyll (11)
  - Cloud Fraction (25)
  - Cloud Properties (67)
  - Component Aerosol Optical Depth (7)

Number of matching Variables: 0 of 1639 Total Variable(s) included

Keyword:

| Variable  |
|---|
| <input checked="" type="checkbox"/> Daily accumulated precipitation estimate - Late Run |

**Time Series Choices**

- Hovmoller, Longitude-Averaged  
Longitude-averaged Hovmoller, plotted over the selected time and latitude ranges  
[Details...](#)
- Hovmoller, Latitude-Averaged  
Latitude-averaged Hovmoller, plotted over the selected time and longitude ranges  
[Details...](#)
- Area-Averaged Differences  
Time series of area averages of differences between two variables at each spatial grid point  
[Details...](#)
- Area-Averaged  
Time series of area-averaged values  
Area-Averaged
- Seasonal  
Seasonal (inter annual) time series  
[Details...](#)

| Lat Res. | Begin Date | End Date   | Units |
|----------|------------|------------|-------|
| 1°       | 2015-03-14 | 2017-03-11 | mm    |

Giovanni transition to https... [1 of 3 messages] [Read More](#)

Select Plot

Maps: Select... 
  Comparisons: Select... 
  Vertical: Select... 
  Time Series: Area-Averaged 
  Miscellaneous: Select...

Select Date Range (UTC)

YYYY-MM-DD HH:mm to YYYY-MM-DD HH:mm  
 2016 -11 -01 00 : 00 to 2016 -11 -16 23 : 59

Select Region (Bounding Box or Shapefile)

Format: West, South, East, North  
 15.653,45.544,16.2133,45.9395 [Show Map](#)

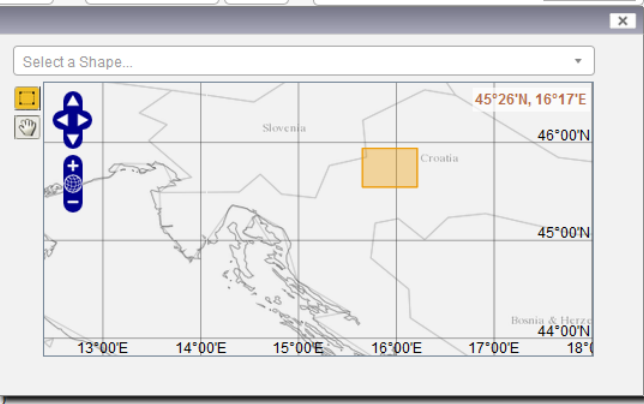
Select Variables

Disciplines

- Aerosols (179)
- Atmospheric Chem
- Atmospheric Dynar
- Cryosphere (15)
- Hydrology (1004)
- Ocean Biology (44)
- Oceanography (48)
- Water and Energy C

Measurements

- Aerosol Index (3)
- Aerosol Optical Dep
- Air Pressure (48)
- Air Temperature (71)
- Albedo (18)
- Altitude (4)
- Angstrom Exponent (16)
- Atmospheric Moisture (92)
- Black Carbon (5)
- Buoyancy (2)
- CH4 (8)
- CO (13)
- CO2 (2)
- Canopy Water Storage (7)
- Chlorophyll (11)
- Cloud Fraction (25)
- Cloud Properties (67)
- Component Aerosol Optical Depth (7)



Search Clear

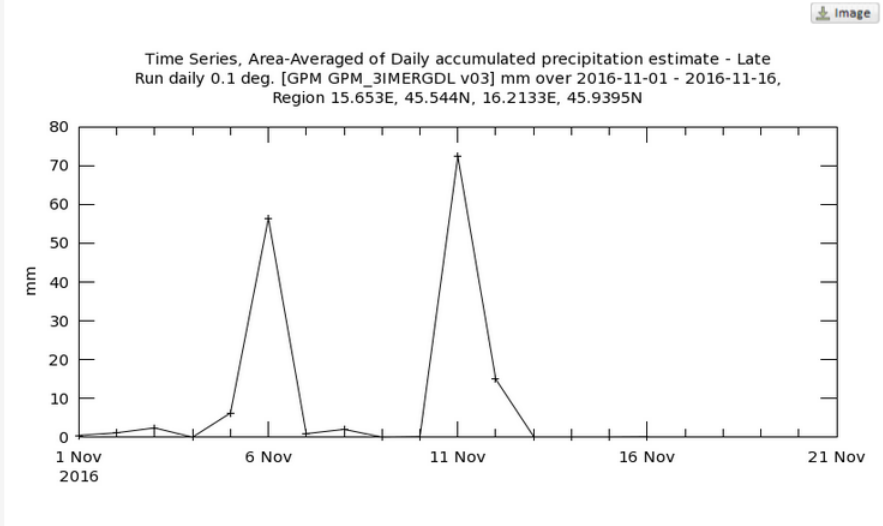
|         | Source | Temp.Res. | Spat.Res. | Begin Date | End Date   | Units |
|---------|--------|-----------|-----------|------------|------------|-------|
| (L_v03) | GPM    | Daily     | 0.1 °     | 2015-03-14 | 2017-03-11 | mm    |

Giovanni transition to https... [1 of 3 messages] [Read More](#)

Browse History

**1. Time Series, Area-Averaged**

- o [User Input](#)
- o [Plots](#)
- o [Plot Options](#)
- o [Downloads](#)
- o [Lineage](#)



**Giovanni transition to https...** [1 of 3 messages] [Read More](#)

Browse History

- [1. Time Series](#)
- [Area-Averaged](#)
  - [User Input](#)
  - [Plots](#)
  - [Plot Options](#)
  - [Downloads](#)
  - [Lineage](#)


Click on file links to download. Files contain data portrayed in the plot images.

**ASCII CSV:**  
[g4.areaAvgTimeSeries.GPM\\_3IMERGDL\\_03\\_precipitationCal.20161101-20161116.15E\\_45N\\_16E\\_45N.csv](#)

**PNG:**  
[g4.areaAvgTimeSeries.GPM\\_3IMERGDL\\_03\\_precipitationCal.20161101-20161116.15E\\_45N\\_16E\\_45N.png](#)

Opening g4.areaAvgTimeSeries.GPM\_3IMERGDL\_03\_precipitationCal.2016... X

You have chosen to open:

 ...03\_precipitationCal.20161101-20161116.15E\_45N\_16E\_45N.csv  
which is: Microsoft Excel Comma Separated Values File  
from: https://giovanni.sci.gsfc.nasa.gov

What should Firefox do with this file?

**Open with** Microsoft Excel (default) v

Save File

Do this automatically for files like this from now on.

OK Cancel

Zagreb IMERG Precip Data.xlsx - Microsoft Excel

| A  | B  | C   | D | E | F | G | H | I | J | K | L | M | N | O | P | Q | R | S | T | U | V | W | X |
|----|--|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1  | Title:   | Time Series Area-Averaged of Daily accumulated precipitation estimate - Late Run daily 0.1 ()   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
| 2  | User Start Da                                      | 2016-11-01T00:00:00Z  |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
| 3  | User End Dat                                       | 2016-11-16T23:59:59Z  |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
| 4  | Bounding Bo  | 15.653,45.544,16.2133,45.9395   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
| 5  | URL to Repro                                       | <a href="https://giovanni.sci.gsfc.nasa.gov/giovanni/#service=ArAvTs&amp;starttime=2016-11-01T00:00:00Z&amp;endtime=2016-11-16T23:59:59Z&amp;bbox=15.653,45.544,16.2133,45.9395&amp;data=GPM_3IMERGDL_03_precipitationCal&amp;portal=GIOVANNI&amp;format=json">https://giovanni.sci.gsfc.nasa.gov/giovanni/#service=ArAvTs&amp;starttime=2016-11-01T00:00:00Z&amp;endtime=2016-11-16T23:59:59Z&amp;bbox=15.653,45.544,16.2133,45.9395&amp;data=GPM_3IMERGDL_03_precipitationCal&amp;portal=GIOVANNI&amp;format=json</a> |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
| 6  | Fill Value (mean_GPM_3IMERGDL_03_precipitationCal) | -9999.9   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
| 7  |  |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
| 8  | time   | mean_GPM_3IMERGDL_03_precipitationCal   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
| 9  | 11/1/2016  | 0.44383   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
| 10 | 11/2/2016  | 1.121531  |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
| 11 | 11/3/2016  | 2.386276  |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
| 12 | 11/4/2016  | 0   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
| 13 | 11/5/2016  | 6.228907  |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
| 14 | 11/6/2016  | 56.37322  |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
| 15 | 11/7/2016  | 0.898664  |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
| 16 | 11/8/2016  | 2.014859  |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
| 17 | 11/9/2016  | 0.010841  |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
| 18 | 11/10/2016   | 0.157047  |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
| 19 | 11/11/2016   | 72.38393  |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
| 20 | 11/12/2016   | 14.9683   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
| 21 | 11/13/2016   | 0   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
| 22 | 11/14/2016   | 0   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
| 23 | 11/15/2016   | 0   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
| 24 | 11/16/2016   | 0.135155  |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
| 25 |  |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
| 26 |  |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
| 27 |  |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
| 28 |  |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
| 29 |  |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
| 30 |  |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |





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C8 GLOBE Precipitation Measurement (mm)

Zagreb IMERG Precip Data.xlsx

| 1  | A   | B   | C   | D    | E | F | G | H | I | J |
|----|---|---|---|------|---|---|---|---|---|---|
| 1  | Title:  | Time Series   | Area-Averaged of Daily accumulated precipitation estimate - Late Run daily 0.1 () |      |   |   |   |   |   |   |
| 2  | User Start Da                                       | 2016-11-01T00:00:00Z  |   |      |   |   |   |   |   |   |
| 3  | User End Dat  | 2016-11-16T23:59:59Z  |   |      |   |   |   |   |   |   |
| 4  | Bounding Bo   | 15.653,45.544,16.2133,45.9395   |   |      |   |   |   |   |   |   |
| 5  | URL to Repro  | https://giovanni.sci.gsfc.nasa.gov/giovanni/#service=ArAvTs&starttime=2016-11-01T00:00:00Z&endtime=2016-11-16T23:59:59Z |   |      |   |   |   |   |   |   |
| 6  | Fill Value (mean_GPM_3IMERGDL_03_precipitationCal): | -9999.9   |   |      |   |   |   |   |   |   |
| 7  |   |   |   |      |   |   |   |   |   |   |
| 8  | Date  | Satellite Precipitation Estimate (mm)   | GLOBE Precipitation Measurement (mm)  |      |   |   |   |   |   |   |
| 9  | 11/1/2016   | 0.443829983   |   |      |   |   |   |   |   |   |
| 10 | 11/2/2016   | 1.12153149  |   | 5    |   |   |   |   |   |   |
| 11 | 11/3/2016   | 2.38627648  |   | 10   |   |   |   |   |   |   |
| 12 | 11/4/2016   | 0   |   |      |   |   |   |   |   |   |
| 13 | 11/5/2016   | 6.22890663  |   | 0.05 |   |   |   |   |   |   |
| 14 | 11/6/2016   | 56.3732224  |   | 30   |   |   |   |   |   |   |
| 15 | 11/7/2016   | 0.89866364  |   | 0.05 |   |   |   |   |   |   |
| 16 | 11/8/2016   | 2.01485944  |   | 37   |   |   |   |   |   |   |
| 17 | 11/9/2016   | 0.010841429   |   |      |   |   |   |   |   |   |
| 18 | 11/10/2016  | 0.157047108   |   |      |   |   |   |   |   |   |
| 19 | 11/11/2016  | 72.383934   |   | 20   |   |   |   |   |   |   |
| 20 | 11/12/2016  | 14.9683037  |   | 20   |   |   |   |   |   |   |
| 21 | 11/13/2016  | 0   |   |      |   |   |   |   |   |   |
| 22 | 11/14/2016  | 0   |   |      |   |   |   |   |   |   |
| 23 | 11/15/2016  | 0   |   |      |   |   |   |   |   |   |
| 24 | 11/16/2016  | 0.135155126   |   | 0.05 |   |   |   |   |   |   |
| 25 |   |   |   |      |   |   |   |   |   |   |

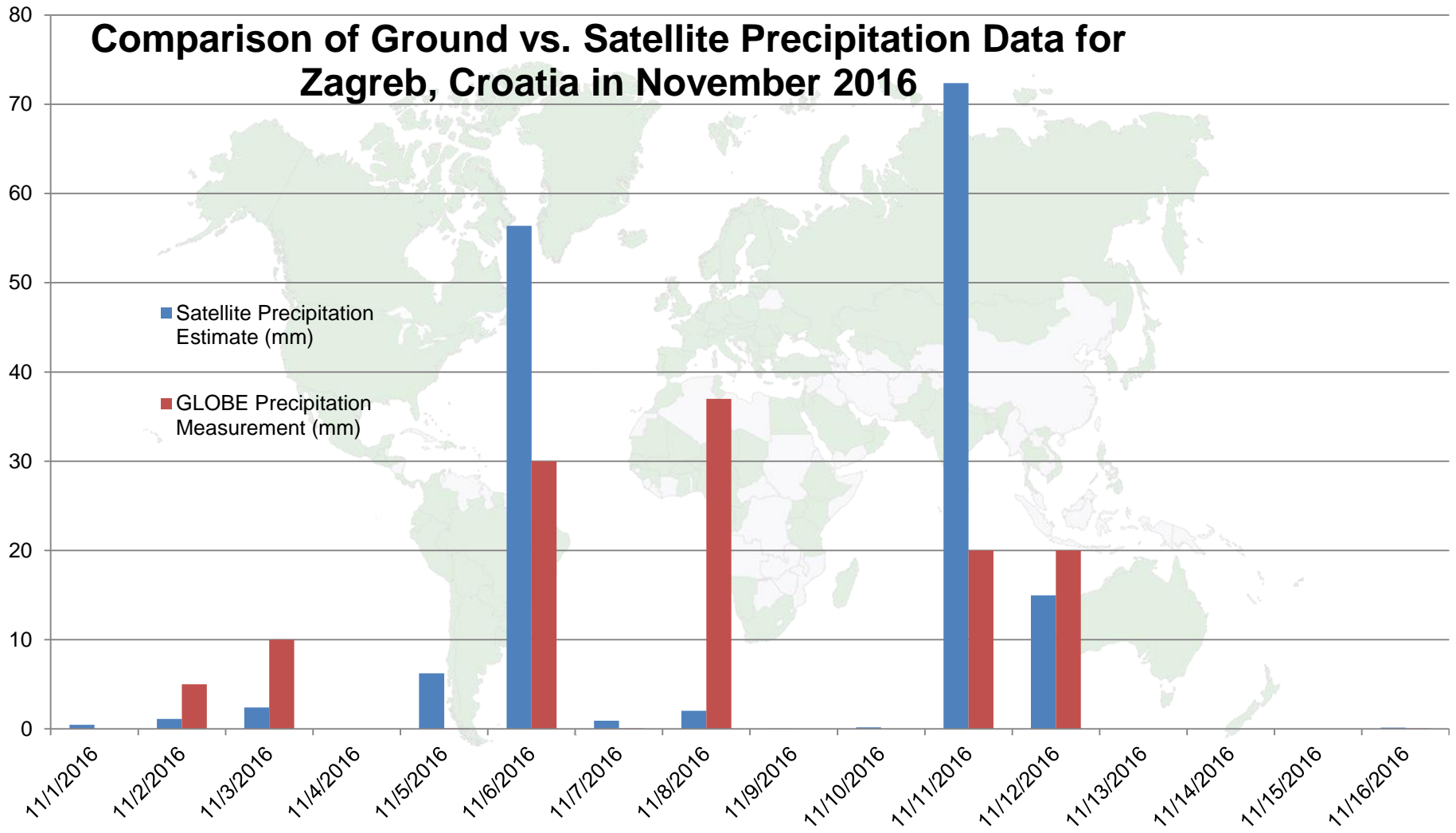
Zagreb GLOBE Precip Data.xlsx

|    | G                | H                 | I                | J               | K                | L              | M              | N                           | O                     | P                      |
|----|------------------|-------------------|------------------|-----------------|------------------|----------------|----------------|-----------------------------|-----------------------|------------------------|
| 1  | Measured At      | Solar Measured At | Solar Noon At    | Occurrence Type | Days Accumulated | Vis Rain Depth | Vis Snow Depth | Vis Total Liquid Equivalent | Snowfall Accumulation | Snow Accumulation Flag |
| 2  | 10/18/2016 11:00 | 10/18/2016 12:21  | 10/18/2016 10:41 | rain            | 1                | 19             |                | 19                          |                       |                        |
| 3  | 10/20/2016 11:00 | 10/20/2016 12:21  | 10/20/2016 10:40 | rain            | 1                | 16             |                | 16                          |                       |                        |
| 4  | 10/21/2016 11:00 | 10/21/2016 12:21  | 10/21/2016 10:40 | rain            | 2                |                |                |                             |                       |                        |
| 5  | 10/26/2016 11:30 | 10/26/2016 12:52  | 10/26/2016 10:39 | rain            | 1                | 23             |                | 23                          |                       |                        |
| 6  | 11/2/2016 11:30  | 11/2/2016 12:52   | 11/2/2016 10:39  | rain            | 1                | 5              |                | 5                           |                       |                        |
| 7  | 11/3/2016 11:30  | 11/3/2016 12:52   | 11/3/2016 10:39  | rain            | 1                | 10             |                | 10                          |                       |                        |
| 8  | 11/5/2016 11:00  | 11/5/2016 12:22   | 11/5/2016 10:39  | rain            | 1                | 0.05           |                | 0.05                        |                       |                        |
| 9  | 11/6/2016 11:00  | 11/6/2016 12:22   | 11/6/2016 10:39  | rain            | 1                | 30             |                | 30                          |                       |                        |
| 10 | 11/7/2016 11:30  | 11/7/2016 12:52   | 11/7/2016 10:39  | rain            | 1                | 0.05           |                | 0.05                        |                       |                        |
| 11 | 11/8/2016 11:30  | 11/8/2016 12:52   | 11/8/2016 10:39  | rain            | 1                | 37             |                | 37                          |                       |                        |
| 12 | 11/11/2016 11:00 | 11/11/2016 12:21  | 11/11/2016 10:40 | rain            | 1                | 20             |                | 20                          |                       |                        |
| 13 | 11/12/2016 11:00 | 11/12/2016 12:21  | 11/12/2016 10:40 | rain            | 1                | 20             |                | 20                          |                       |                        |
| 14 | 11/16/2016 11:00 | 11/16/2016 12:20  | 11/16/2016 10:40 | rain            | 1                | 0.05           |                | 0.05                        |                       |                        |
| 15 |                  |                   |                  |                 |                  |                |                |                             |                       |                        |
| 16 |                  |                   |                  |                 |                  |                |                |                             |                       |                        |
| 17 |                  |                   |                  |                 |                  |                |                |                             |                       |                        |
| 18 |                  |                   |                  |                 |                  |                |                |                             |                       |                        |
| 19 |                  |                   |                  |                 |                  |                |                |                             |                       |                        |
| 20 |                  |                   |                  |                 |                  |                |                |                             |                       |                        |
| 21 |                  |                   |                  |                 |                  |                |                |                             |                       |                        |
| 22 |                  |                   |                  |                 |                  |                |                |                             |                       |                        |
| 23 |                  |                   |                  |                 |                  |                |                |                             |                       |                        |
| 24 |                  |                   |                  |                 |                  |                |                |                             |                       |                        |
| 25 |                  |                   |                  |                 |                  |                |                |                             |                       |                        |

Ready

Taskbar: Ask me anything, Micro..., File Ex..., Webi..., Micro..., Micro..., Mozill..., 100%, 6:40 PM 3/14/2017

## Comparison of Ground vs. Satellite Precipitation Data for Zagreb, Croatia in November 2016



Valid Range: 1948-01-01 to 2017-03-14

Select Variables

- ▼ Disciplines
  - Atmospheric Dynamics (44)
  - Hydrology (32)
  - Water and Energy Cycle (36)
- ▼ Measurements
  - Air Temperature (71)
  - Cloud Properties (4)
- ▶ Platform / Instrument
- ▶ Spatial Resolutions
- ▶ Temporal Resolutions
- ▶ Special Features
- ▶ Portal

Number of matching Variables: 75 of 1639    Total Variable(s) included in Plot: 0  
 Please select at least 1 variable  
 Keyword:     Search    Clear

| Variable   | Source      | Temp.Res. | Spat.Res.     | Begin Date | End Date   | Units                          | Vert. Slice                           |
|--|-------------|-----------|---------------|------------|------------|--------------------------------|---------------------------------------|
| <input type="checkbox"/> <a href="#">Air Temperature at 2m</a> (NLDAS_FORA0125_H v002)                     | NLDAS Model | Hourly    | 0.125 °       | 1979-01-01 | 2017-03-10 | K                              | -                                     |
| <input type="checkbox"/> <a href="#">Temperature (NARR hybrid level)</a> (NLDAS_FORB0125_H v002)           | NLDAS Model | Hourly    | 0.125 °       | 1979-01-01 | 2017-03-10 | K                              | -                                     |
| <input type="checkbox"/> <a href="#">Cloud Top Temperature, time average</a> (MAT1NXSLV v5.2.0)            | MERRA Model | Hourly    | 0.5 x 0.667 ° | 1979-01-01 | 2016-02-29 | K                              | -                                     |
| <input type="checkbox"/> <a href="#">Near surface air temperature</a> (GLDAS_NOAH10_3H v2.0)               | GLDAS Model | 3-hourly  | 1 °           | 1948-01-01 | 2010-12-31 | K                              | -                                     |
| <input type="checkbox"/> <a href="#">Near surface air temperature</a> (GLDAS_NOAH025_3H v2.0)              | GLDAS Model | 3-hourly  | 0.25 °        | 1948-01-01 | 2010-12-31 | K                              | -                                     |
| <input type="checkbox"/> <a href="#">Air Temperature, Instantaneous</a> (MAI3CPASM v5.2.0)                 | MERRA Model | 3-hourly  | 1.25 °        | 1979-01-01 | 2016-02-29 | <input type="text" value="K"/> | <input type="text" value="1000 hPa"/> |
| <input type="checkbox"/> <a href="#">Air Temperature (Daytime/Ascending)</a> (AIRX3STD v006)               | AIRS        | Daily     | 1 °           | 2002-08-31 | 2016-09-24 | <input type="text" value="K"/> | <input type="text" value="1000 hPa"/> |
| <input type="checkbox"/> <a href="#">Air Temperature (Nighttime/Descending)</a> (AIRX3STD v006)            | AIRS        | Daily     | 1 °           | 2002-08-31 | 2016-09-24 | <input type="text" value="K"/> | <input type="text" value="1000 hPa"/> |
| <input type="checkbox"/> <a href="#">Air temperature at surface (Daytime/Ascending)</a> (AIRX3STD v006)    | AIRS        | Daily     | 1 °           | 2002-08-31 | 2016-09-24 | <input type="text" value="K"/> | -                                     |
| <input type="checkbox"/> <a href="#">Air temperature at surface (Nighttime/Descending)</a> (AIRX3STD v006) | AIRS        | Daily     | 1 °           | 2002-08-31 | 2016-09-24 | <input type="text" value="K"/> | -                                     |
| <input type="checkbox"/> <a href="#">Tropopause Temperature (Daytime/Ascending)</a> (AIRX3STD v006)        | AIRS        | Daily     | 1 °           | 2002-08-31 | 2016-09-24 | <input type="text" value="K"/> | -                                     |
| <input type="checkbox"/> <a href="#">Tropopause Temperature (Nighttime/Descending)</a> (AIRX3STD v006)     | AIRS        | Daily     | 1 °           | 2002-08-31 | 2016-09-24 | <input type="text" value="K"/> | -                                     |
| <input type="checkbox"/> <a href="#">Air temperature</a> (FLDAS_NOAH01_A_SA_D v001)                        | FLDAS Model | Daily     | 0.1 °         | 2001-01-02 | 2017-03-13 | K                              | -                                     |
| <input type="checkbox"/> <a href="#">Air temperature</a> (FLDAS_NOAH01_A_WA_D v001)                        | FLDAS Model | Daily     | 0.1 °         | 2001-01-02 | 2017-03-13 | K                              | -                                     |
| <input type="checkbox"/> <a href="#">Near surface air temperature</a> (NCALDAS_NOAH0125_D v001)            | NCA-LDA     | Daily     | 0.125 °       | 1979-01-02 | 2015-12-31 | K                              | -                                     |
| <input type="checkbox"/> <a href="#">Daily maximum temperature</a> (NCALDAS_NOAH0125_D v001)               | NCA-LDA     | Daily     | 0.125 °       | 1979-01-02 | 2015-12-31 | K                              | -                                     |
| <input type="checkbox"/> <a href="#">Daily minimum temperature</a> (NCALDAS_NOAH0125_D v001)               | NCA-LDA     | Daily     | 0.125 °       | 1979-01-02 | 2015-12-31 | K                              | -                                     |
| <input type="checkbox"/> <a href="#">Surface air temperature</a> (FLDAS_NOAH01_A_EA_D v001)                | FLDAS Model | Daily     | 0.1 °         | 2001-01-02 | 2017-03-13 | K                              | -                                     |
| <input type="checkbox"/> <a href="#">Air temperature</a> (FLDAS_VIC025_A_EA_D v001)                        | FLDAS       | Daily     | 0.25 °        | 2001-01-02 | 2017-03-13 | K                              | -                                     |
| <input type="checkbox"/> <a href="#">Air temperature</a> (FLDAS_VIC025_A_SA_D v001)                        | FLDAS       | Daily     | 0.25 °        | 2001-01-02 | 2017-03-13 | K                              | -                                     |

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Select Plot

Maps: Time Averaged Map
  Comparisons: Select...
  Vertical: Select...
  Time Series: Select...
  Miscellaneous: Select...

Select Date Range (UTC) Select Region (Bounding Box or Shapefile)

YYYY-MM-DD HH:mm to YYYY-MM-DD HH:mm  
 2016 -07 -01 00 : 00 to 2016 -07 -01 23 : 59  
 Format: West, South, East, North  
 Countries Brazil;

Valid Range: 2002-08-31 to 2016-09-24

Select Variables

Number of matching Variables: 0 of 1639 Total Variable(s) included in Plot: 1

Keyword:

| Disciplines   | Variable | Source | Temp.Res. | Spat.Res.  | Begin Date | End Date | Units |
|---|----------|--------|-----------|------------|------------|----------|-------|
| <input type="checkbox"/> Aerosols (179)   |          |        |           |            |            |          |       |
| <input type="checkbox"/> Atmospheric Chemistry (53)   |          |        |           |            |            |          |       |
| <input type="checkbox"/> Atmospheric Dynamics (322)   |          |        |           |            |            |          |       |
| <input type="checkbox"/> Cryosphere (15)  |          |        |           |            |            |          |       |
| <input type="checkbox"/> Hydrology (1004)   |          |        |           |            |            |          |       |
| <input type="checkbox"/> Ocean Biology (44)   |          |        |           |            |            |          |       |
| <input type="checkbox"/> Oceanography (48)  |          |        |           |            |            |          |       |
| <input type="checkbox"/> Water and Energy Cycle (1045)  |          |        |           |            |            |          |       |
| <input checked="" type="checkbox"/> <b>Surface Temperature (Daytime/Ascending) (AIRX3 STD v006)</b> | AIRS     | Daily  | 1°        | 2002-08-31 | 2016-09-24 | K        |       |

- Disciplines**
- Aerosols (179)
- Atmospheric Chemistry (53)
- Atmospheric Dynamics (322)
- Cryosphere (15)
- Hydrology (1004)
- Ocean Biology (44)
- Oceanography (48)
- Water and Energy Cycle (1045)
- Measurements**
- Aerosol Index (3)
- Aerosol Optical Depth (34)
- Air Pressure (48)
- Air Temperature (71)
- Albedo (18)
- Altitude (4)
- Angstrom Exponent (16)
- Atmospheric Moisture (92)
- Black Carbon (5)
- Buoyancy (2)
- CH4 (8)
- CO (13)
- CO2 (2)
- Canopy Water Storage (7)
- Chlorophyll (11)
- Cloud Fraction (25)
- Cloud Properties (67)
- Component Aerosol Optical Depth (7)

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