

Producing and interpreting the ZONAL MEAN plot using NASA Giovanni.

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

For this assignment you will produce and compare zonal mean plots of monthly rainfall taken from the NASA TRMM dataset.

PART 1 (3pts): part a) produce a zonal mean plot from 1998-2008 for the region between 80-50W, 0-40N. (2pts)

part b) set the y-axis scale to range from 0-300 (1pt)

attach plot to assignment

PART 2 (3pts): part a) produce a zonal mean plot from 2009-2018 for the region between 80-50W, 0-40N. (2pts)

part b) set the y-axis scale to range from 0-300 (1pt)

attach plot to assignment

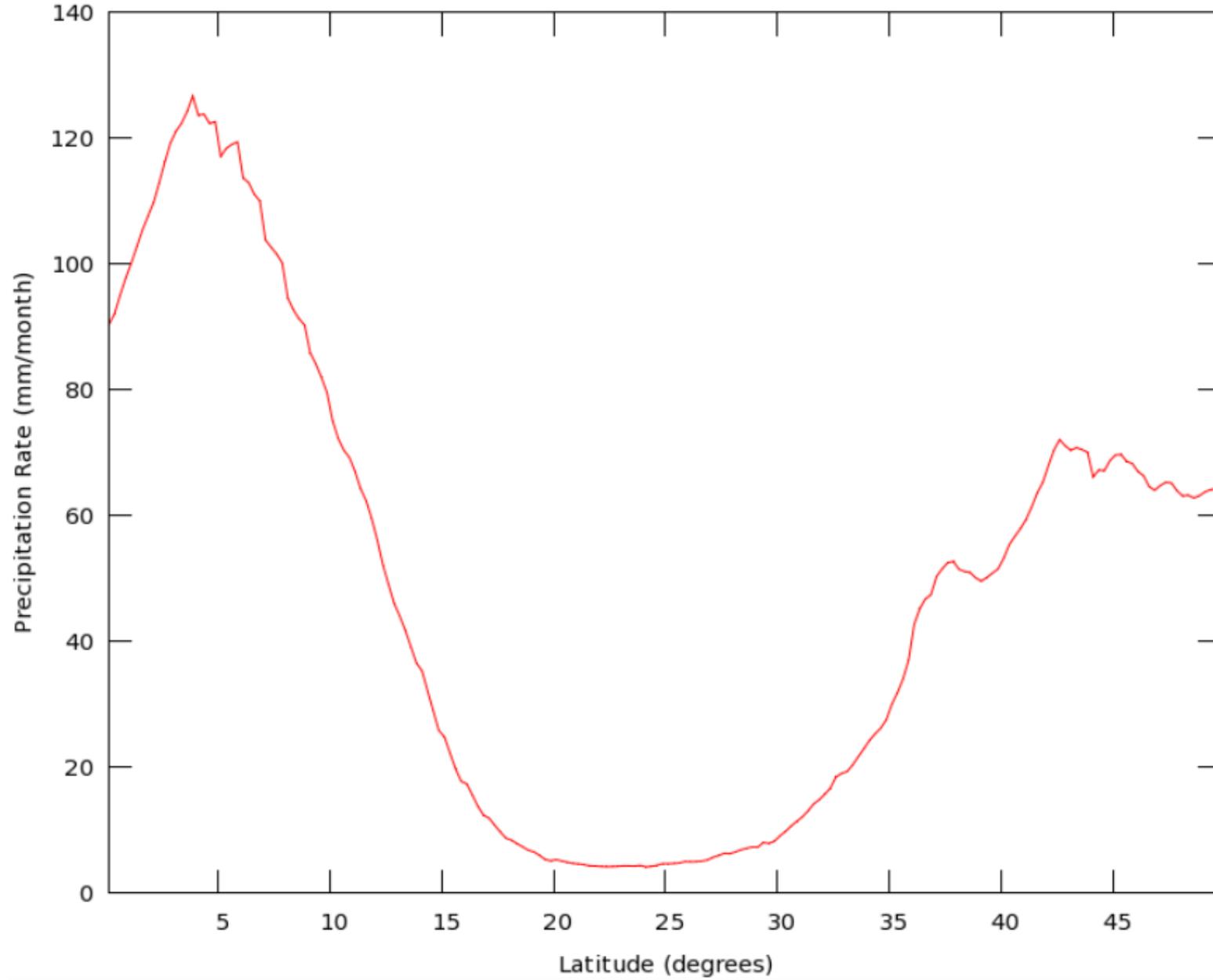
PART 3 (2pts): Provide an interpretation of the plots. Include in your discussion the following: description of both y and x axis, any geographic references of land types or continents, and a comparison (or contrast) of the two. Provide at least 5 sentences.

PART 4 (2pts): Interpret the provided zonal mean plot (see next page). What are the spatial dimensions (not resolution!!) that the plot was produced from (hint: read plot title)? Why is there a very low minimum? Where is this location where we observe the near zero zonal mean in rainfall?

INSTRUCTIONS START ON PAGE 3. DUE OCTOBER 15th BEFORE CLASS. **NO LATE ASSIGNMENTS ACCEPTED.** DO YOU OWN WORK. COPIED WORK WILL RESULT IN A ZERO FOR BOTH STUDENTS. EMAIL QUESTIONS AND ASSIGNMENT TO: tallen@cimh.edu.bb

PLOT for part 4:

Zonal Mean of Precipitation Rate monthly 0.25 deg. [TRMM TRMM_3B43 v7] mm/month over 2009-Jan - 2018-Dec, Region 20W, 0N, 60E, 50N



INSTRUCTIONS:

enter date ranges here

select zonal mean option here

enter coordinates here

The screenshot shows the GIOVANNI web interface with the following elements:

- Select Plot:** Radio buttons for Maps, Comparisons, Vertical, Time Series, and **Miscellaneous: Zonal Mean** (selected).
- Select Date Range (UTC):** Input fields for start date (2009-01-01 00:00) and end date (2018-12-31 23:59). A note indicates a valid range from 1998-01-01 to 2019-07-31.
- Select Region (Bounding Box or Shape):** Input field containing coordinates -80,0,-50,40.
- Select Variables:** A sidebar on the left with categories: Observations, Disciplines, Measurements, Platform / Instrument (expanded), and Temporal Resolutions (expanded). Under Platform / Instrument, TRMM (10) is selected.
- Number of matching Variables:** 10 of 1818. Total Variable(s) included in Plot: 1.
- Keyword:** Search and Clear buttons.
- Table of Variables:**

Variable	Units	Source	Temp.Res.	Spat.Res.	Begin Date	End Date	Vert. Slice
<input checked="" type="checkbox"/> Precipitation Rate (TRMM_3B43 v7)	mm/month	TRMM	Monthly	0.25 °	1998-01-01	2019-07-31	-
<input type="checkbox"/> Cloud Ice (TRMM_3A12 v7)	g/m ³	TRMM	Monthly	0.5 °	1997-12-01	2015-03-31	0.5 km
<input type="checkbox"/> Cloud Liquid Water (TRMM_3A12 v7)	g/m ³	TRMM	Monthly	0.5 °	1997-12-01	2015-03-31	0.5 km
<input type="checkbox"/> Surface Convective Precipitation Rate (TRMM_3A12 v7)	mm/hr	TRMM	Monthly	0.5 °	1997-12-01	2015-03-31	-
<input type="checkbox"/> Graupel (TRMM_3A12 v7)	g/m ³	TRMM	Monthly	0.5 °	1997-12-01	2015-03-31	0.5 km
<input type="checkbox"/> Latent Heating (TRMM_3A12 v7)	C/hr	TRMM	Monthly	0.5 °	1997-12-01	2015-03-31	0.5 km
<input type="checkbox"/> Precipitation (Rain) (TRMM_3A12 v7)	g/m ³	TRMM	Monthly	0.5 °	1997-12-01	2015-03-31	0.5 km
<input type="checkbox"/> Precipitation (Snow) (TRMM_3A12 v7)	g/m ³	TRMM	Monthly	0.5 °	1997-12-01	2015-03-31	0.5 km
<input type="checkbox"/> Precipitation Rate (TRMM_3A12 v7)	mm/hr	TRMM	Monthly	0.5 °	1997-12-01	2015-03-31	-
<input type="checkbox"/> Rain Rate (TRMM_3A12 v7)	mm/hr	TRMM	Monthly	0.5 °	1997-12-01	2015-03-31	-

CONTINUE TO PAGE 4

SELECT TRMM from the PLATFORM menu

Select Date Range (UTC)

YYYY-MM HH:mm

2009 -01 -01  00 : 00 to 2018 -12 -31 

Valid Range: 1998-01-01 to 2019-07-31

Select Variables

▶ Observations

▶ Disciplines

▶ Measurements

▼ Platform / Instrument

- AIRS (100)
- Aquarius (3)
- FLDAS Model (188)
- GLDAS Model (141)
- GPM (4)
- MERRA Model (51)
- MERRA-2 Model (185)
- MISR (1)
- MODIS-Aqua (51)
- MODIS-Terra (31)
- MOPITT (9)
- NLDAS Model (214)
- NOBM Model (9)
- OCTS (5)
- SSMI (10)
- SeaWiFS (48)
- TRMM (10)

▶ Spatial Resolutions

▼ Temporal Resolutions

- 3-hourly (2)
- daily (10)
- monthly (10)

▶ Portal

Number of mat

Keyword :

	Variat
<input checked="" type="checkbox"/>	Preci
<input type="checkbox"/>	Clou
<input type="checkbox"/>	Clou
<input type="checkbox"/>	Surfa
<input type="checkbox"/>	Grau
<input type="checkbox"/>	Later
<input type="checkbox"/>	Preci
<input type="checkbox"/>	Preci
<input type="checkbox"/>	Preci
<input type="checkbox"/>	Rain

SELECT MONTHLY

Select Precipitation Rate (TRMM_3B43_v7)

Be sure to select mm/mon for the units!!!

Number of matching Variables: 10 of 1818 Total Variable(s) included in Plot: 1

Keyword: Search Clear

	Variable	Units	Source	Temp.Res.	Spat.Res.	Begin Date	End Date	Vert. Slice
<input checked="" type="checkbox"/>	Precipitation Rate (TRMM_3B43 v7)	mm/month ▼	TRMM	Monthly	0.25 °	1998-01-01	2019-07-31	-
<input type="checkbox"/>	Cloud Ice (TRMM_3A12 v7)	g/m^3	TRMM	Monthly	0.5 °	1997-12-01	2015-03-31	0.5 ▼ km
<input type="checkbox"/>	Cloud Liquid Water (TRMM_3A12 v7)	g/m^3	TRMM	Monthly	0.5 °	1997-12-01	2015-03-31	0.5 ▼ km
<input type="checkbox"/>	Surface Convective Precipitation Rate (TRMM_3A12 v7)	mm/hr	TRMM	Monthly	0.5 °	1997-12-01	2015-03-31	-
<input type="checkbox"/>	Graupel (TRMM_3A12 v7)	g/m^3	TRMM	Monthly	0.5 °	1997-12-01	2015-03-31	0.5 ▼ km
<input type="checkbox"/>	Latent Heating (TRMM_3A12 v7)	C/hr	TRMM	Monthly	0.5 °	1997-12-01	2015-03-31	0.5 ▼ km
<input type="checkbox"/>	Precipitation (Rain) (TRMM_3A12 v7)	g/m^3	TRMM	Monthly	0.5 °	1997-12-01	2015-03-31	0.5 ▼ km
<input type="checkbox"/>	Precipitation (Snow) (TRMM_3A12 v7)	g/m^3	TRMM	Monthly	0.5 °	1997-12-01	2015-03-31	0.5 ▼ km
<input type="checkbox"/>	Precipitation Rate (TRMM_3A12 v7)	mm/hr	TRMM	Monthly	0.5 °	1997-12-01	2015-03-31	-
<input type="checkbox"/>	Rain Rate (TRMM_3A12 v7)	mm/hr	TRMM	Monthly	0.5 °	1997-12-01	2015-03-31	-

Region (Bounding Box or Shape)
West, South, East, North
-50.40

1818 Total Variable(s) included in Plot: 1

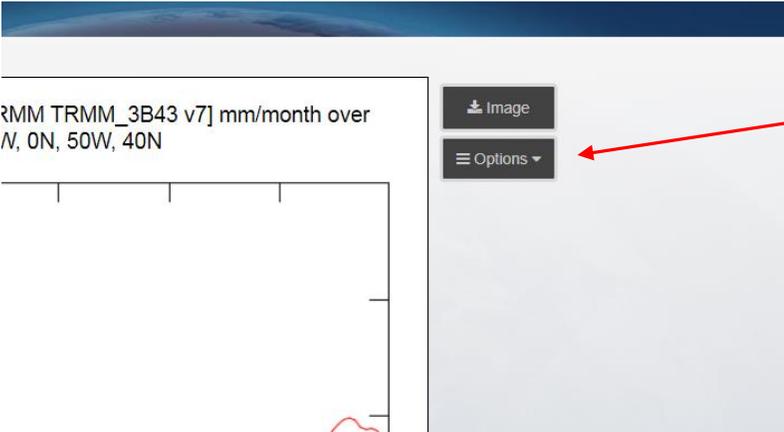
Search Clear

	Units	Source	Temp. Res.	Spat. Res.	Begin Date	End Date	Vert. Slice
M_3B43 v7	mm/month ▼	TRMM	Monthly	0.25 °	1998-01-01	2019-07-31	-
(Z)	g/m^3	TRMM	Monthly	0.5 °	1997-12-01	2015-03-31	0.5 ▼ km
M_3A12 v7	g/m^3	TRMM	Monthly	0.5 °	1997-12-01	2015-03-31	0.5 ▼ km
Rain Rate (TRMM_3A12 v7)	mm/hr	TRMM	Monthly	0.5 °	1997-12-01	2015-03-31	-
(Z)	g/m^3	TRMM	Monthly	0.5 °	1997-12-01	2015-03-31	0.5 ▼ km
A12 v7	C/hr	TRMM	Monthly	0.5 °	1997-12-01	2015-03-31	0.5 ▼ km
M_3A12 v7	g/m^3	TRMM	Monthly	0.5 °	1997-12-01	2015-03-31	0.5 ▼ km
AM_3A12 v7	g/m^3	TRMM	Monthly	0.5 °	1997-12-01	2015-03-31	0.5 ▼ km
L_3A12 v7	mm/hr	TRMM	Monthly	0.5 °	1997-12-01	2015-03-31	-
(Z)	mm/hr	TRMM	Monthly	0.5 °	1997-12-01	2015-03-31	-

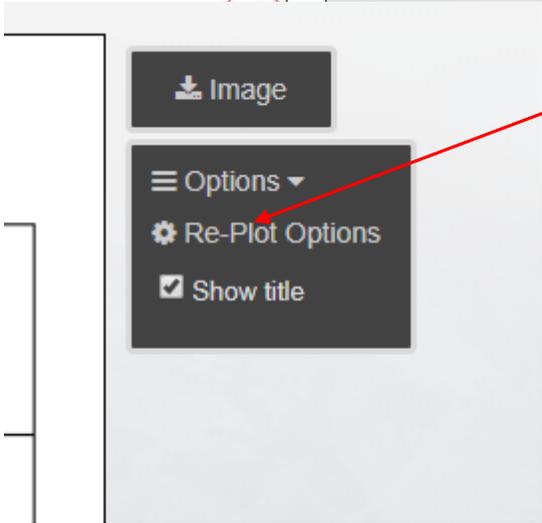
Reset **Plot Data** Go to Results

Select Plot Data

HOW TO SET THE Y-AXIS RANGE:



1. Click on the OPTIONS pull down menu



2. Click on the Re-Plot Options pull down menu

3. Enter the new minimum and maximum, then select Re-Plot

