Supporting Information

Generalised Linear Regression model to determine the threshold effects of climate variables on Dengue Fever: A Case Study on Bangladesh

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Table S-1: Descriptive statistics of dengue cases in various months of different years (2000 to 2021).

Months	Mean	St. Dev.	Max	Min
January	18.9	45.64	199	0
February	6.68	15.3	58	0
March	6	10.57	36	0
April	10.64	20.89	73	0
May	24.14	49.82	193	0
June	164.1	398.08	1884	0
July	1164	3414.66	16253	3
August	3405.23	11126.68	52636	4
September	1676.96	3792.73	16856	3
October	1008.55	1993.1	8143	0
November	602.95	1074.84	4011	0
December	602.95	1074.84	4011	0

Table S-2: Descriptive statistics of the variable daily average Temperature (°C) in various months of different years (2000 to 2021).

Months	Mean	St. Dev.	Max	Min	Months	Mean	St. Dev.	Max	Min
January	17.94	0.818	19.2	16.3	July	28.58	0.314	29.1	28
February	21.51	0.879	23.6	19.7	August	28.69	0.308	29.2	28.2
March	25.64	0.782	27.2	24.1	September	28.51	0.331	29.1	27.7
April	28.19	0.778	29.6	27.1	October	27.28	0.455	28.3	26.5
May	28.84	0.700	29.8	27.7	November	23.58	0.490	24.5	22.8
June	28.80	0.506	29.6	27.8	December	19.56	0.669	20.6	17.9

Table S-3: Descriptive statistics of the variable monthly total rainfall (mm) in various months of different years (2000 to 2021).

Months	Mean	St. Dev.	Max	Min
January	6.14	10.08	40	0
February	15.71	18.05	61	0
March	36.29	33.23	121	3
April	106.71	62.50	274	24
May	272.52	101.28	511	151
June	498.05	137.2	832	261
July	530.67	121.80	721	327
August	392.48	102.81	658	236
September	324.38	99.18	653	185
October	204.67	85.21	401	64
November	27.48	35.22	98	0
December	10.33	18.63	68	0

Fig. S-1: Trends in annual dengue cases from 2000 to 2021. The trend over the years is represented by a smooth line that was obtained using the LOESS smoothing function; the shaded area displays the pointwise 95% confidence interval. Dots represent the total number of dengue cases in a given year.

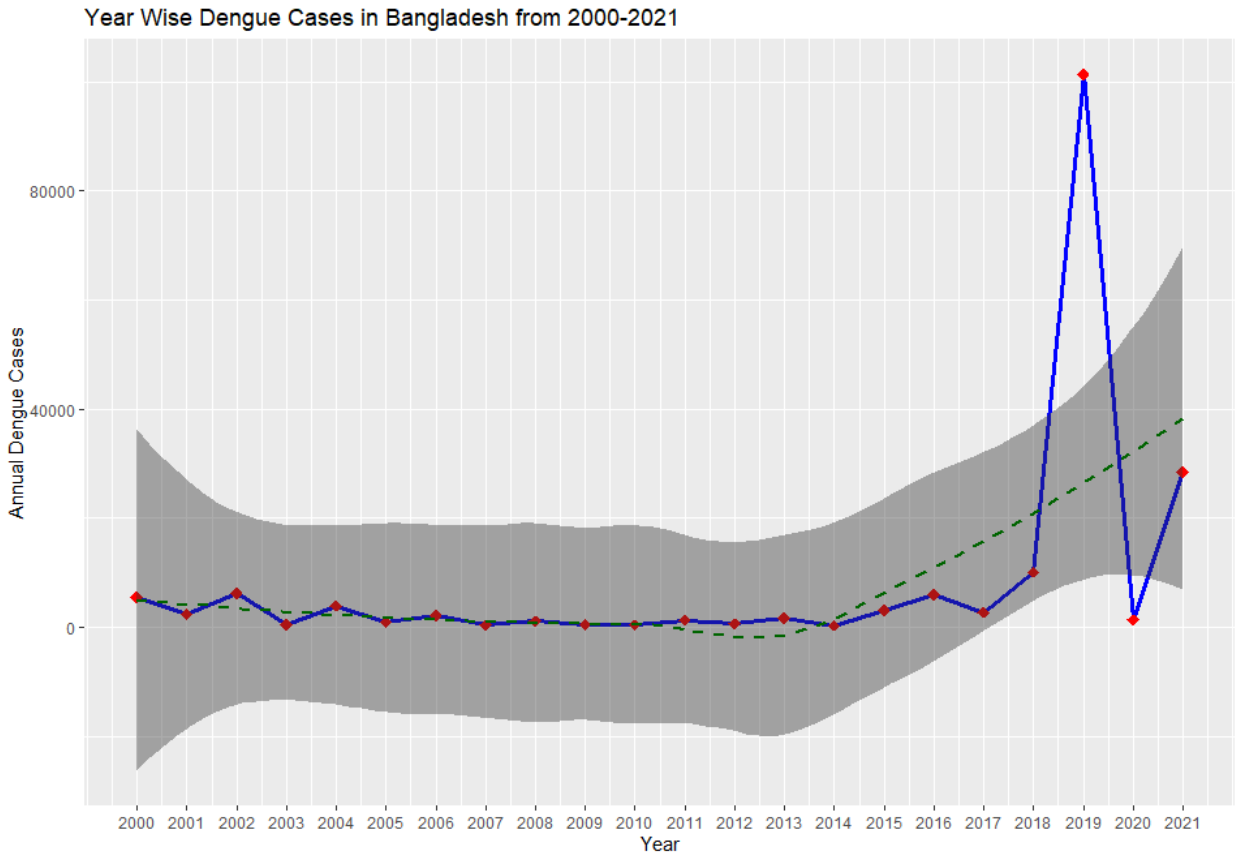


Fig. S-2: Average temperatures (˚C) in Bangladesh from 2000 to 2021: A LOESS smoothing function is used to obtain a smooth line to represent the trend over the years. The shaded region represents the 95% confidence interval. Dots represent the average temperature of a given year.

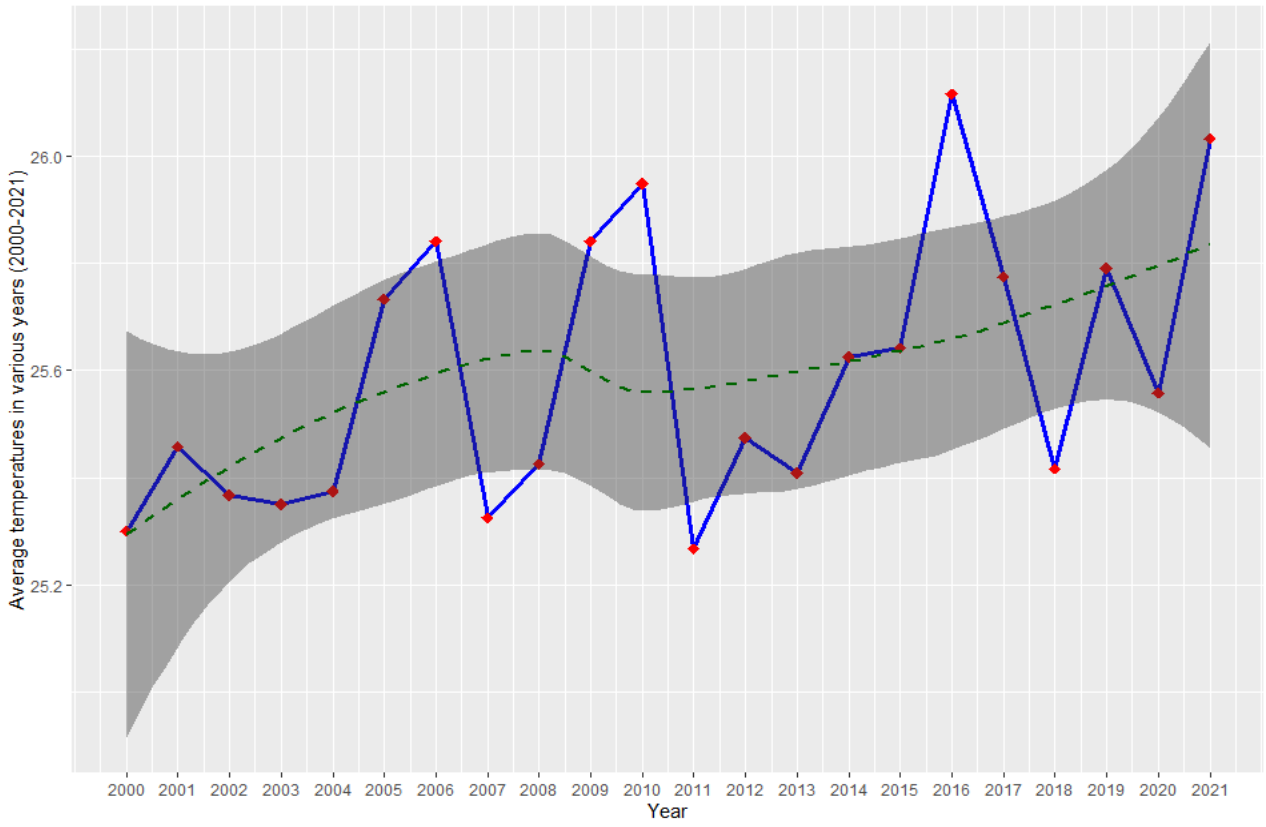


Fig. S-3: Total rainfall (mm) in Bangladesh from 2000 to 2021: A LOESS smoothing function is used to obtain a smooth line to represent the trend over the years. The shaded region represents the 95% confidence interval. Dots represent the total rainfall of a given year.

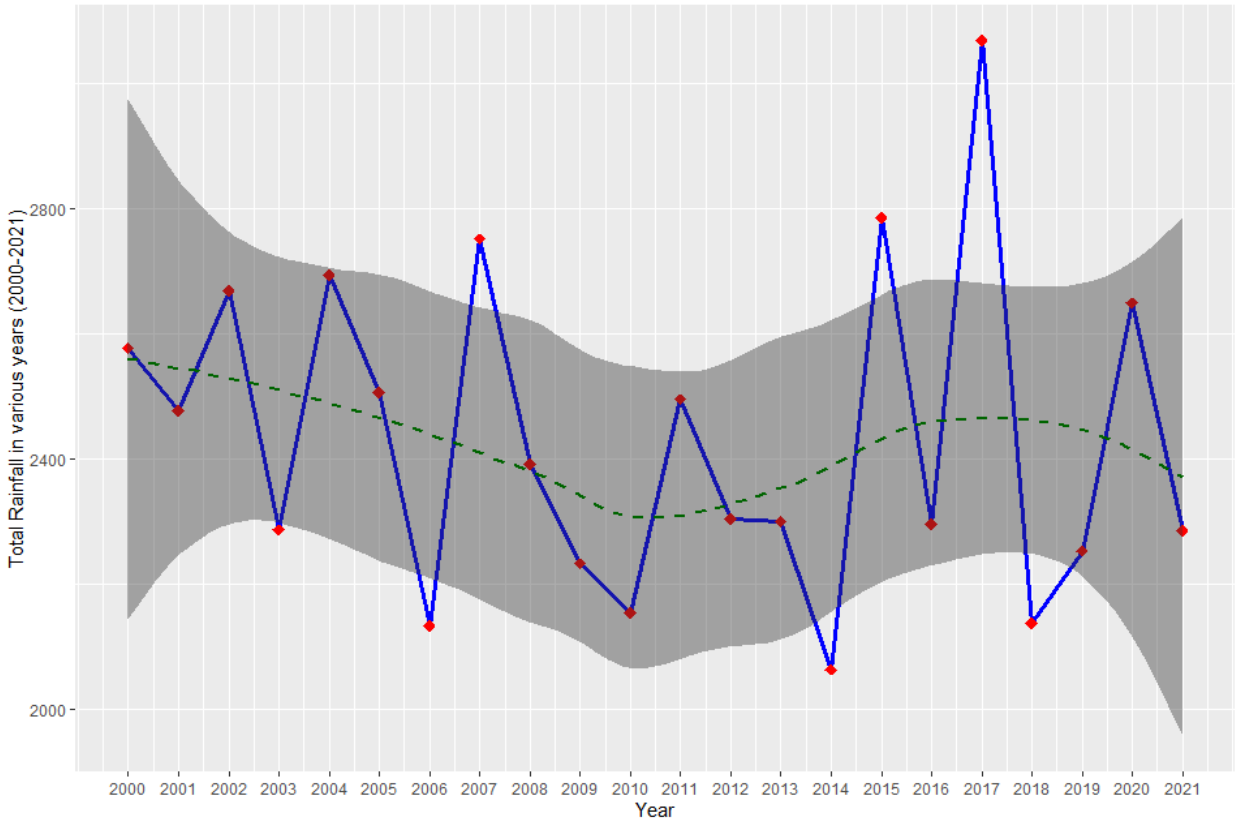
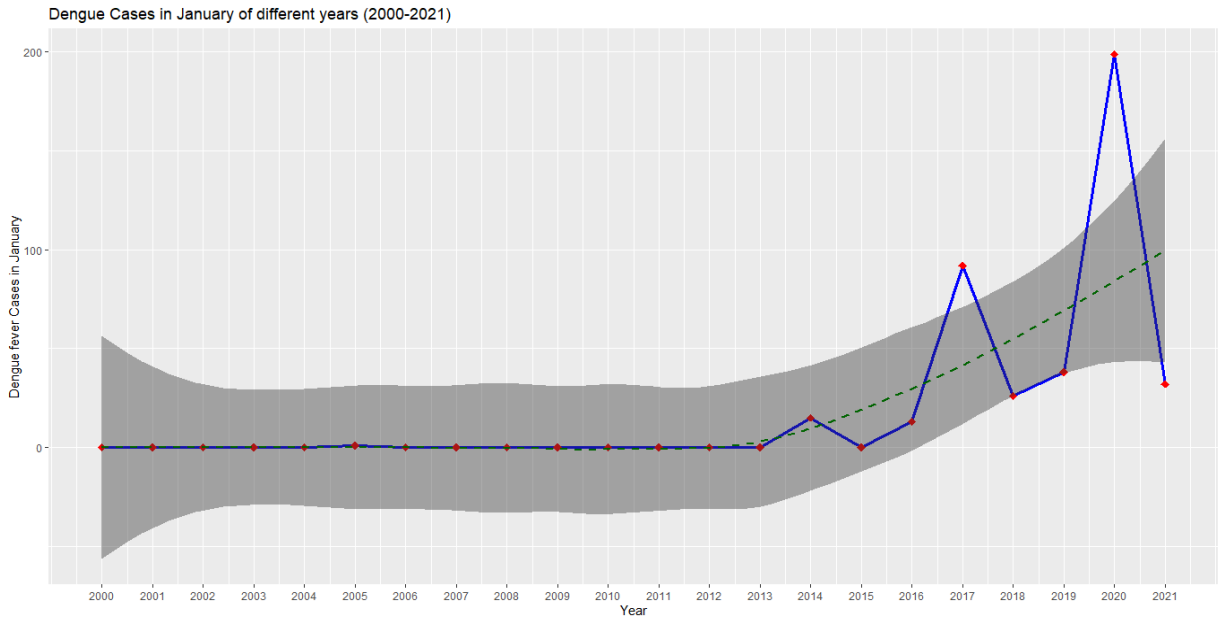


Fig. S-4: Trends in dengue cases in various months (January to December) from 2000 to 2021. A LOESS smoothing function is used to obtain a smooth line to represent the trend over the years. The shaded region represents the 95% confidence interval. Dots represent the monthly dengue incidence of different years.

#1



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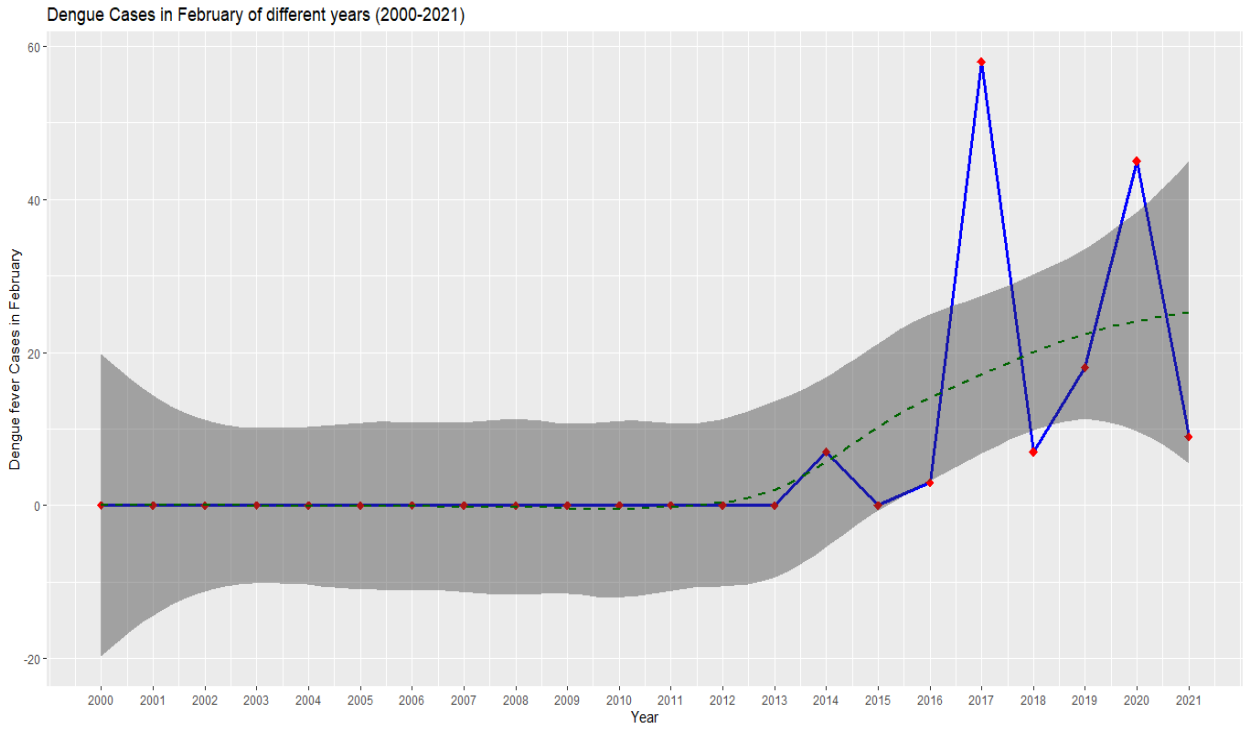

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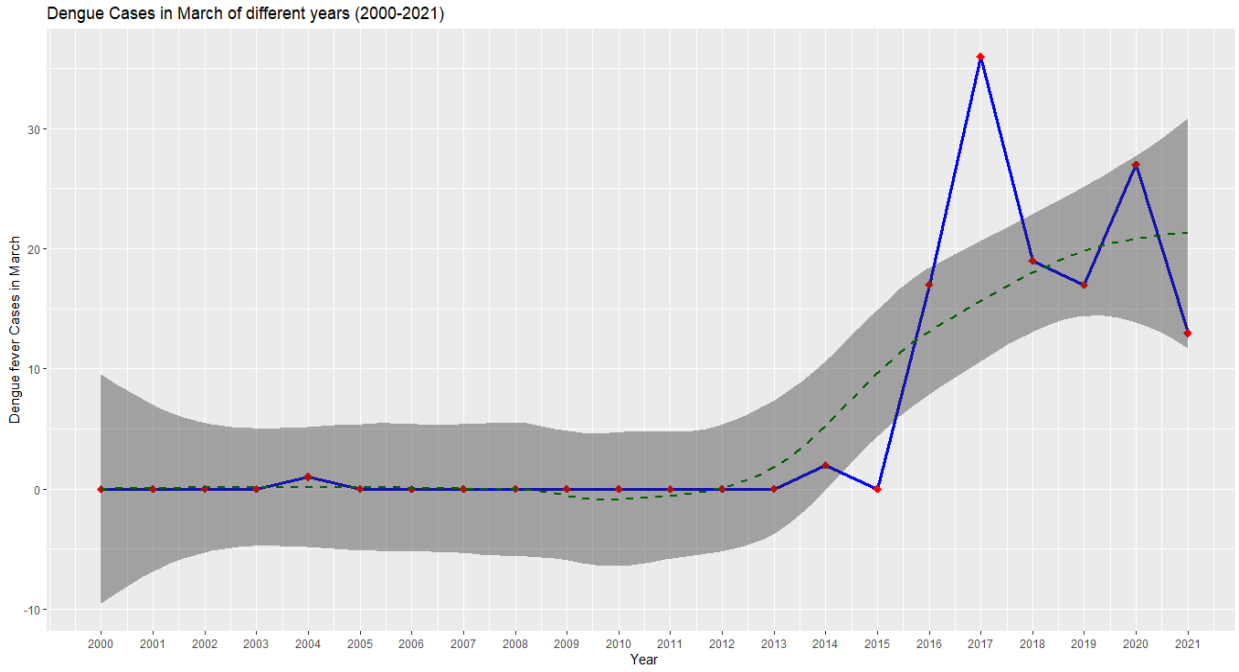
Dengue Cases in March of different years (2000-2021)
Dengue fever Cases in March
30
20
10
0
-10
2000
2001
2002
2003
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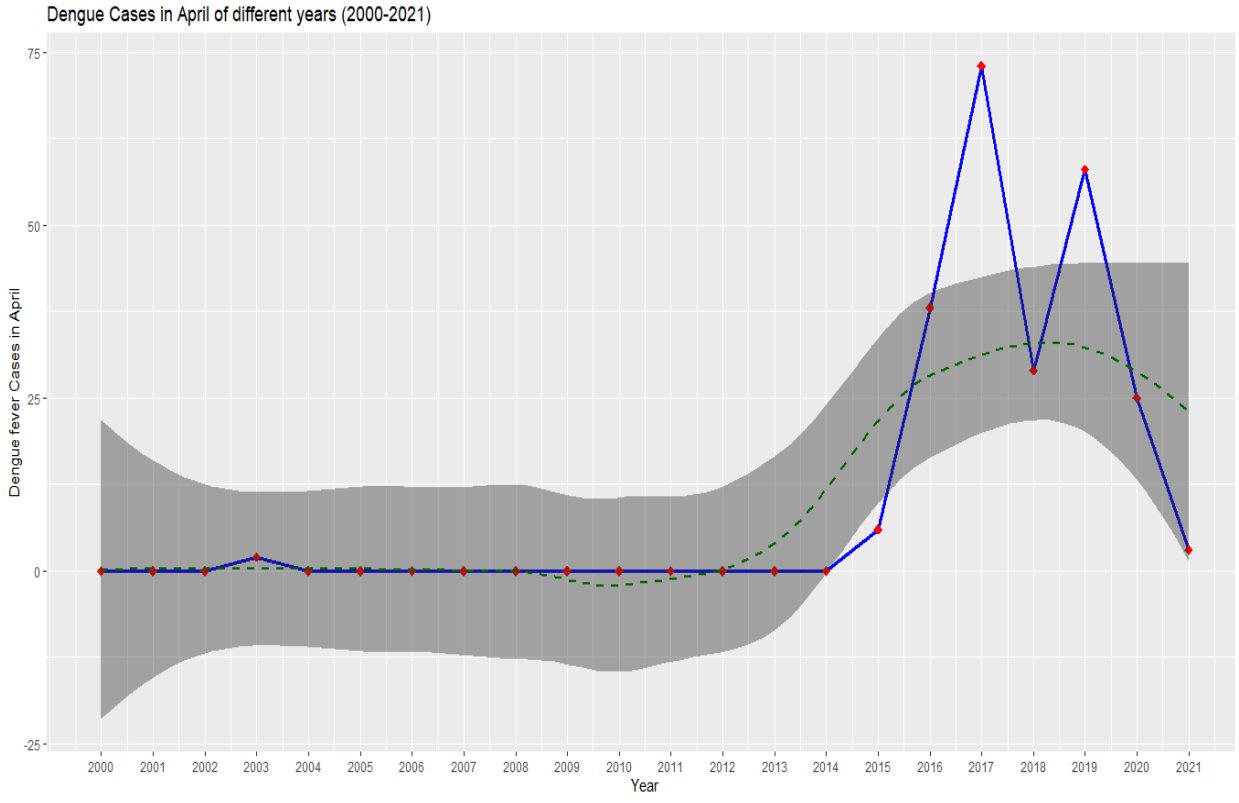
2020
2021
Year

#4


Dengue Cases in April of different years (2000-2021)
Dengue fever Cases in April
75
50
25
0
-25
2000
2001
2002
2003
2004
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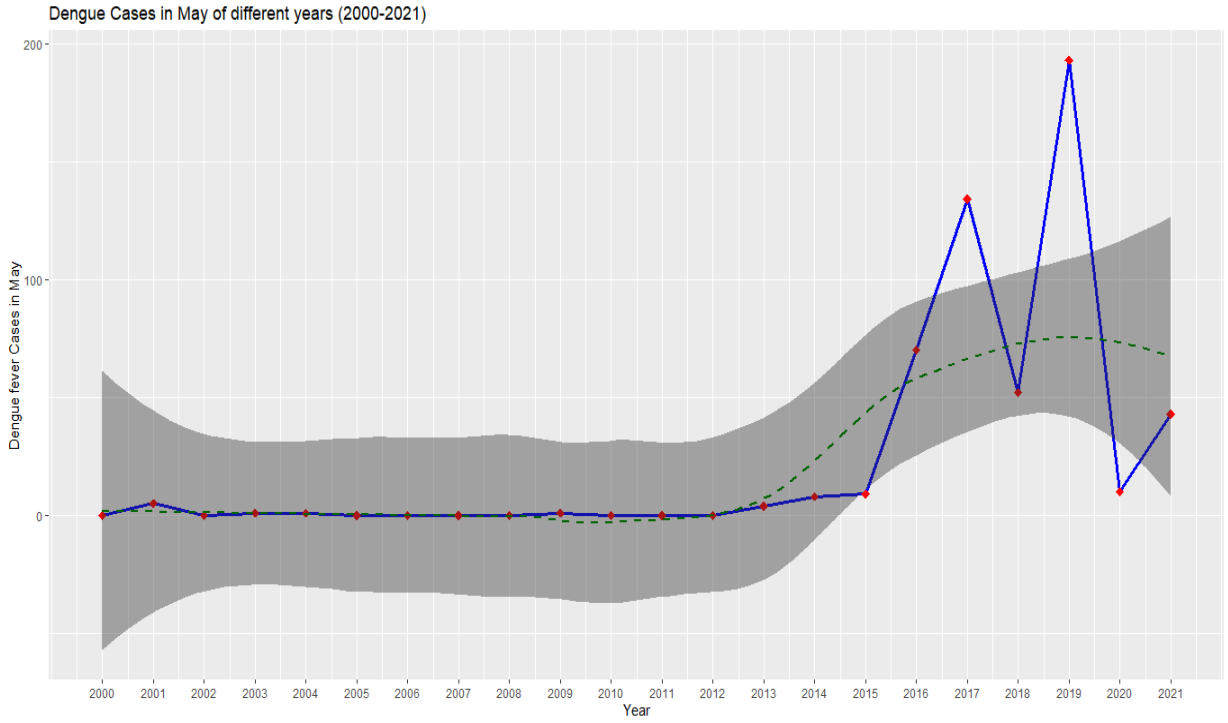
2021
Year

#5


Dengue Cases in May of different years (2000-2021)
Dengue fever Cases in May
200
100
0
2000
2001
2002
2003
2004
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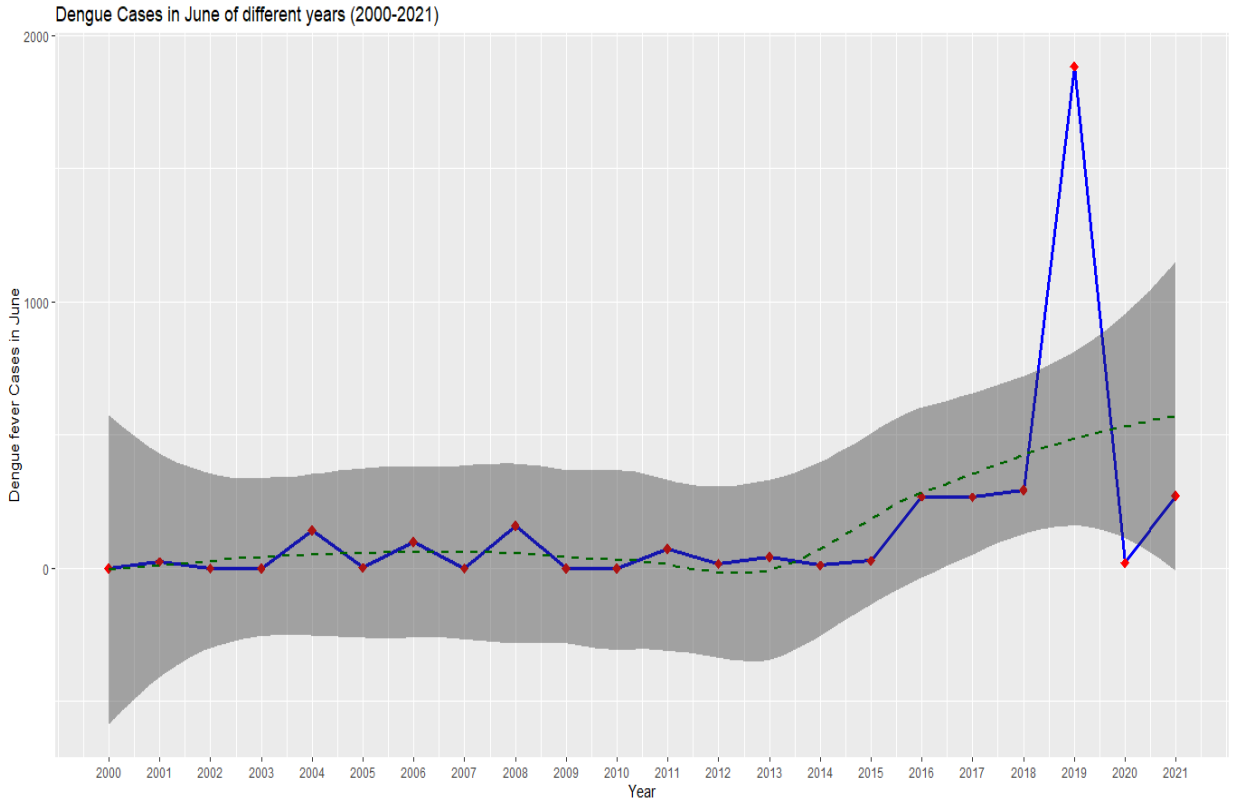
2021
Year

#6


Dengue Cases in June of different years (2000-2021)
Dengue fever Cases in June
2000
1000
0
2000
2001
2002
2003
2004
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2021
Year

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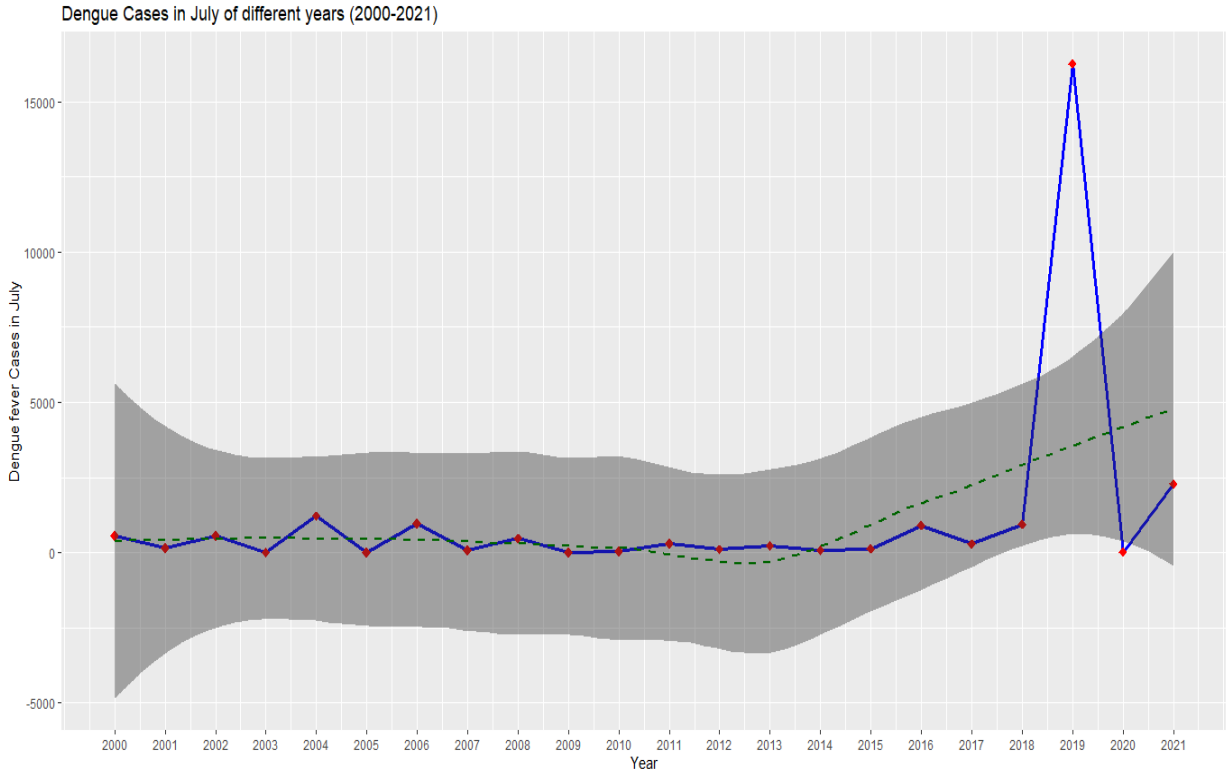
Dengue Cases in July of different years (2000-2021)
Dengue fever Cases in July
15000
10000
5000
0
-5000
2000
2001
2002
2003
2004
2005
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2008
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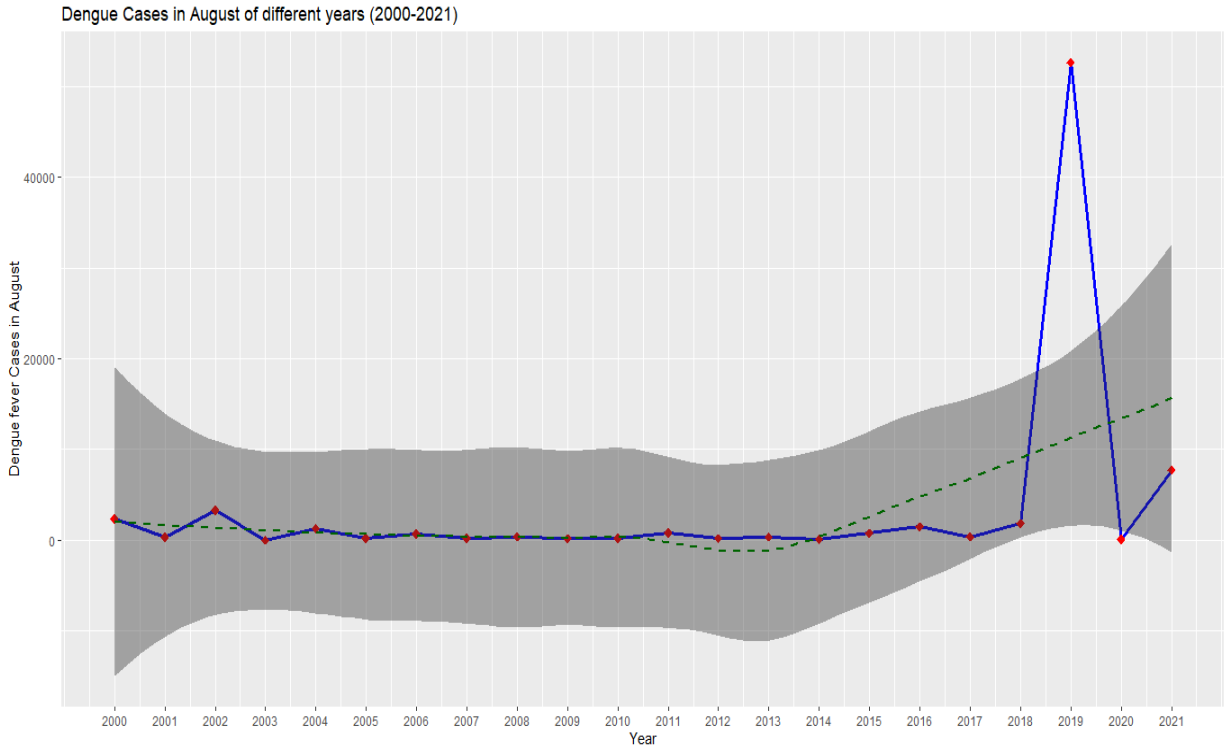
2021
Year

#8


Dengue Cases in August of different years (2000-2021)
Dengue fever Cases in August
40000
20000
0
2000
2001
2002
2003
2004
2005
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2020
2021
Year

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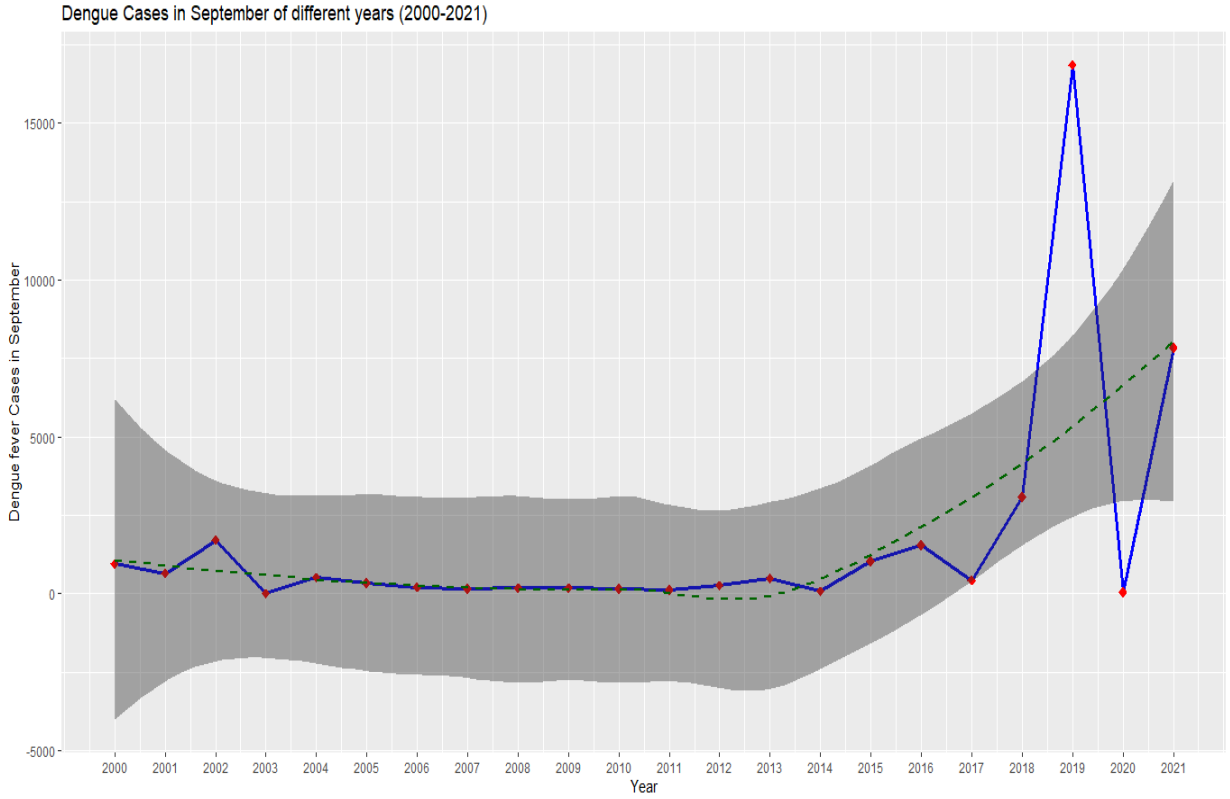
Dengue Cases in September of different years (2000-2021)
Dengue fever Cases in September
15000
10000
5000
0
-5000
2000
2001
2002
2003
2004
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Year

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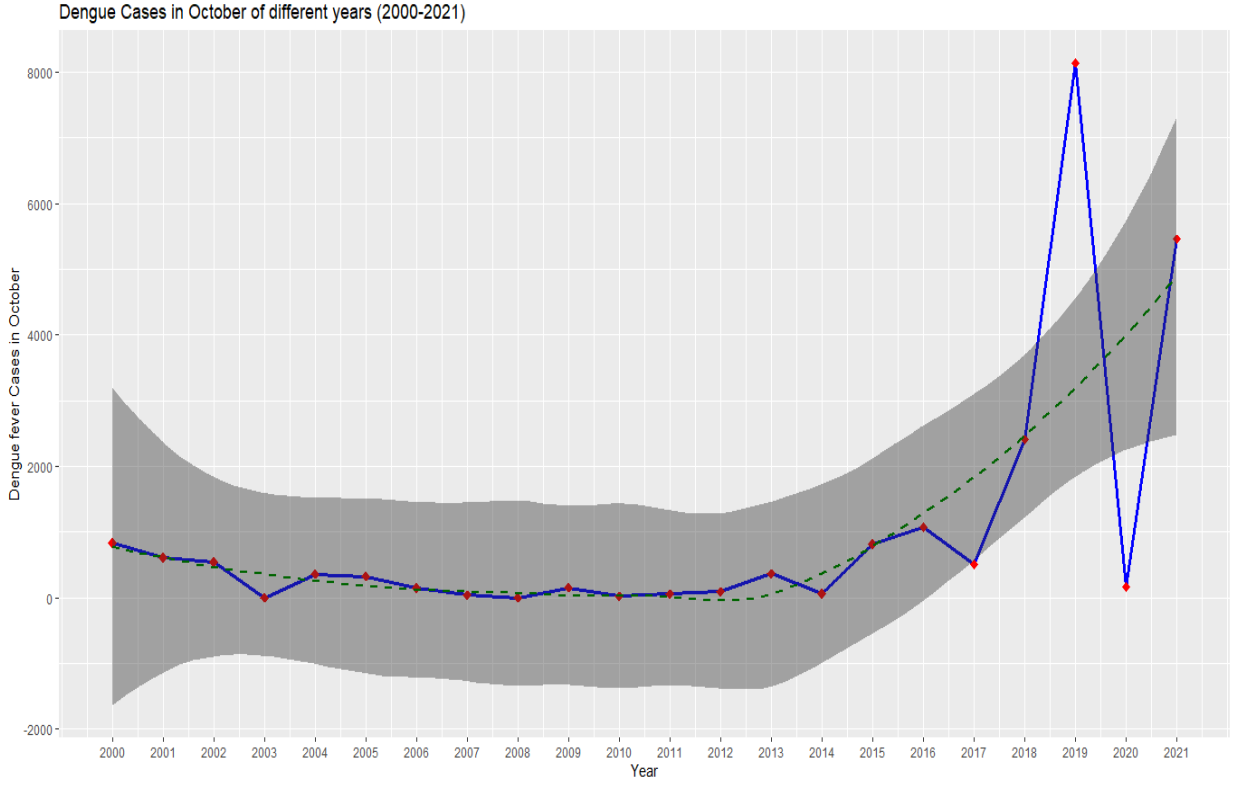
Dengue Cases in October of different years (2000-2021)
Dengue fever Cases in October
8000
6000
4000
2000
0
-2000
2000
2001
2002
2003
2004
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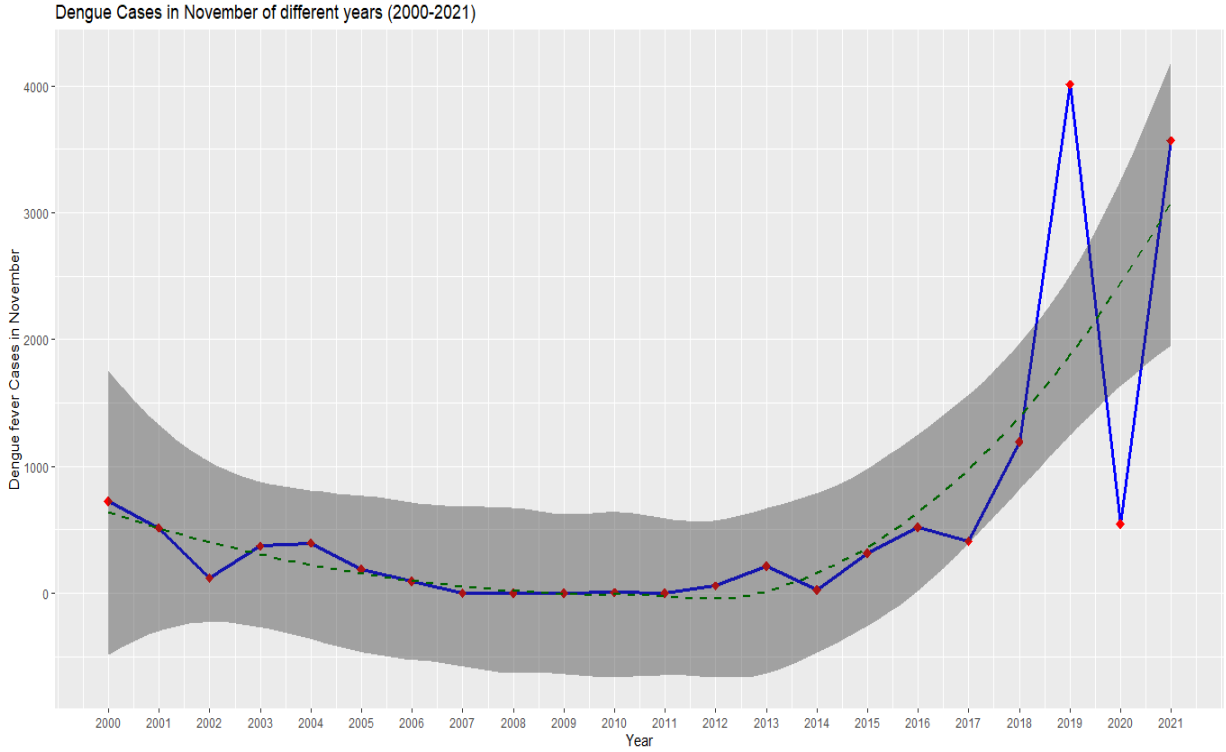
Dengue Cases in November of different years (2000-2021)
Dengue fever Cases in November
4000
3000
2000
1000
0
2000
2001
2002
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2021
Year

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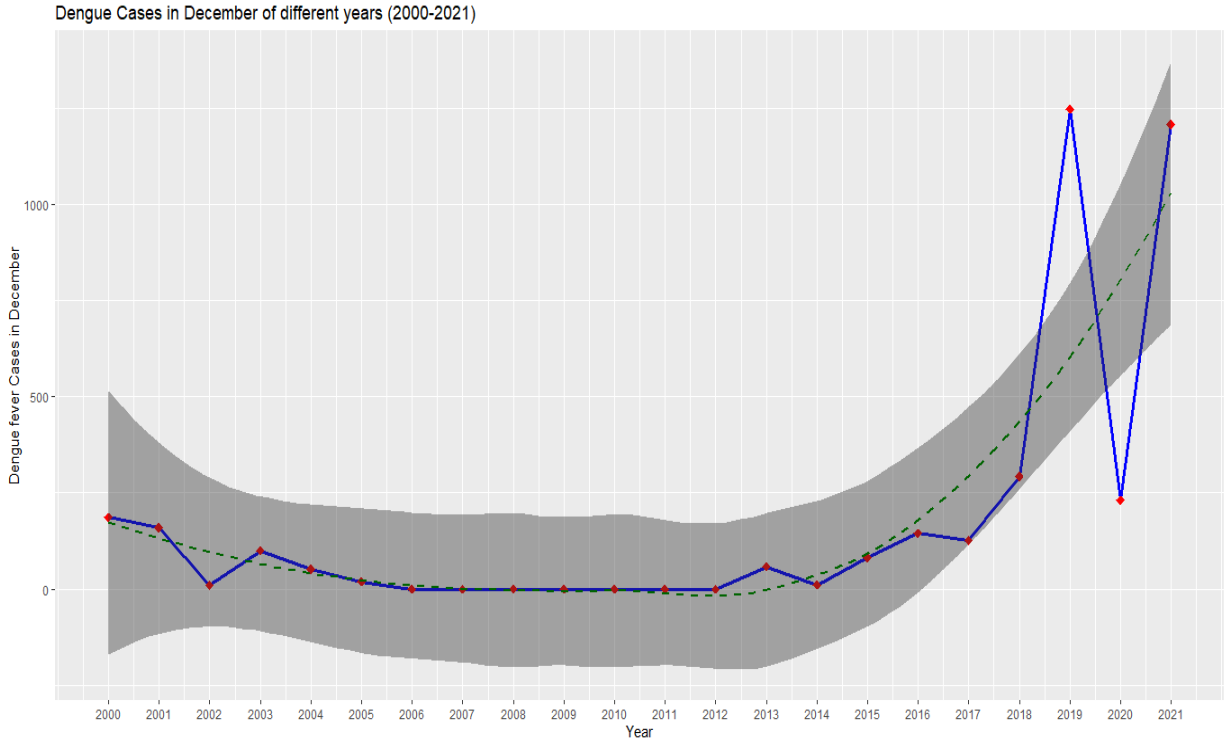
Dengue Cases in December of different years (2000-2021)
Dengue fever Cases in December
1000
500
0
2000
2001
2002
2003
2004
2005
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2007
2008
2009
2010
2011
2012
2013
2014
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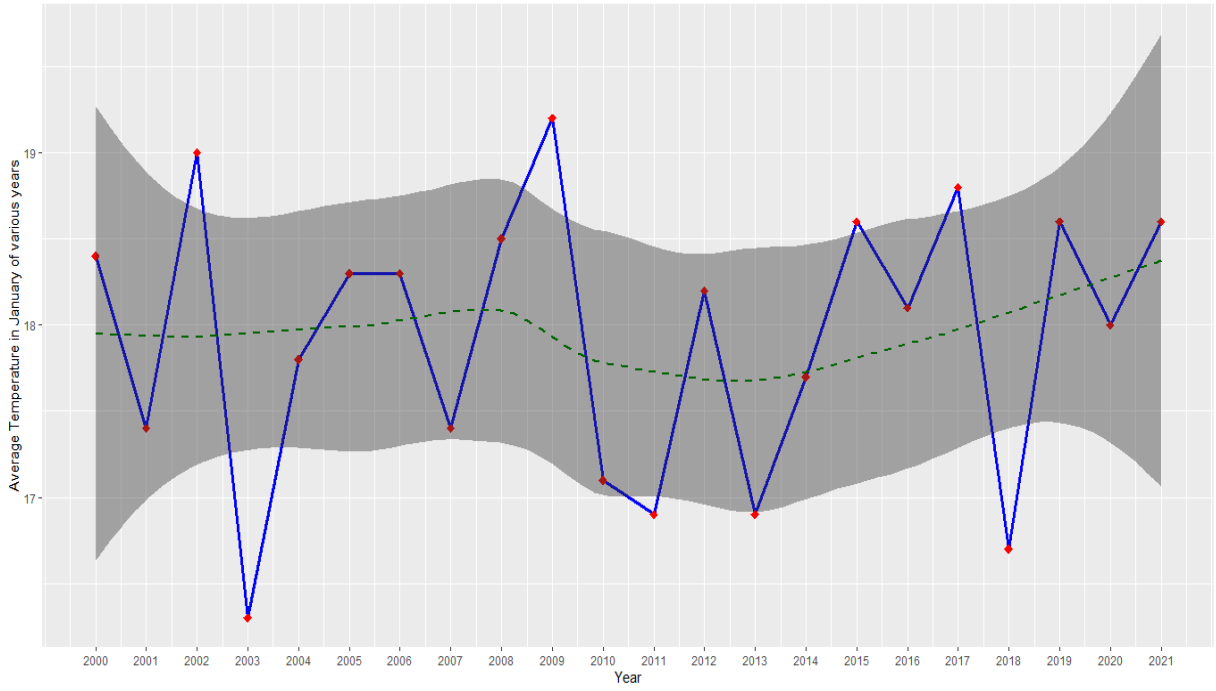
Year

Fig. S-5: Daily average temperatures (˚C) in different months in Bangladesh between January 2000 and December 2021. A LOESS smoothing function is used to obtain a smooth line to represent the trend over the years. The shaded region represents the 95% confidence interval. Dots represent a given month's daily average temperature for different years.

#1



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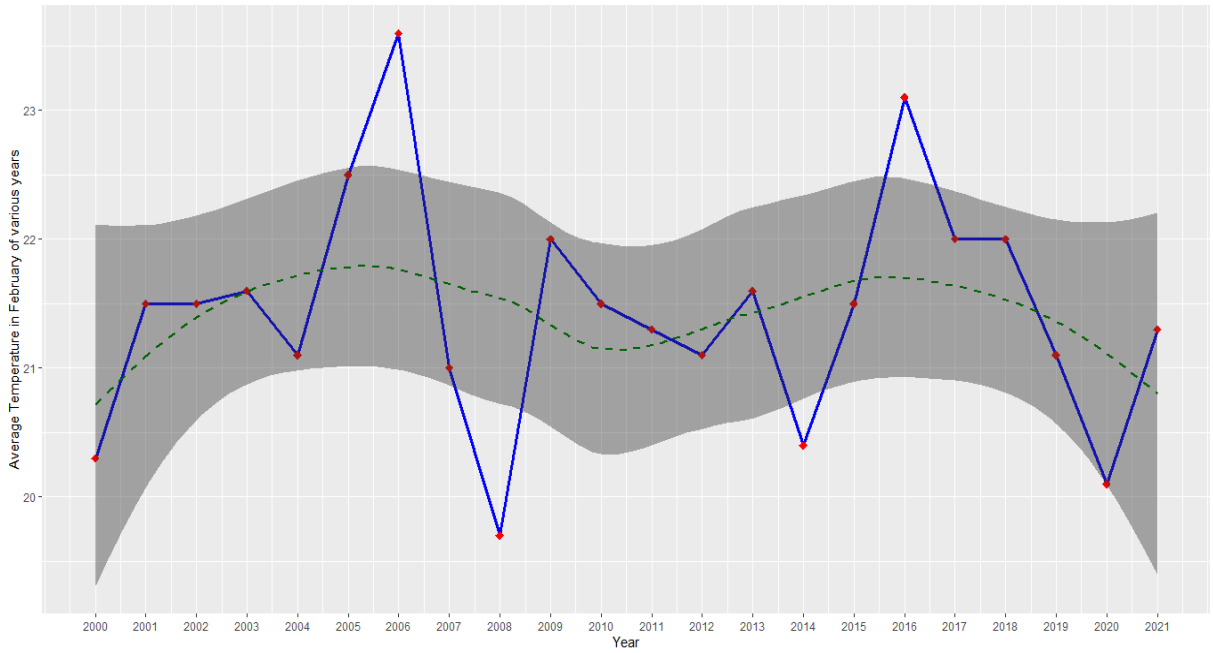

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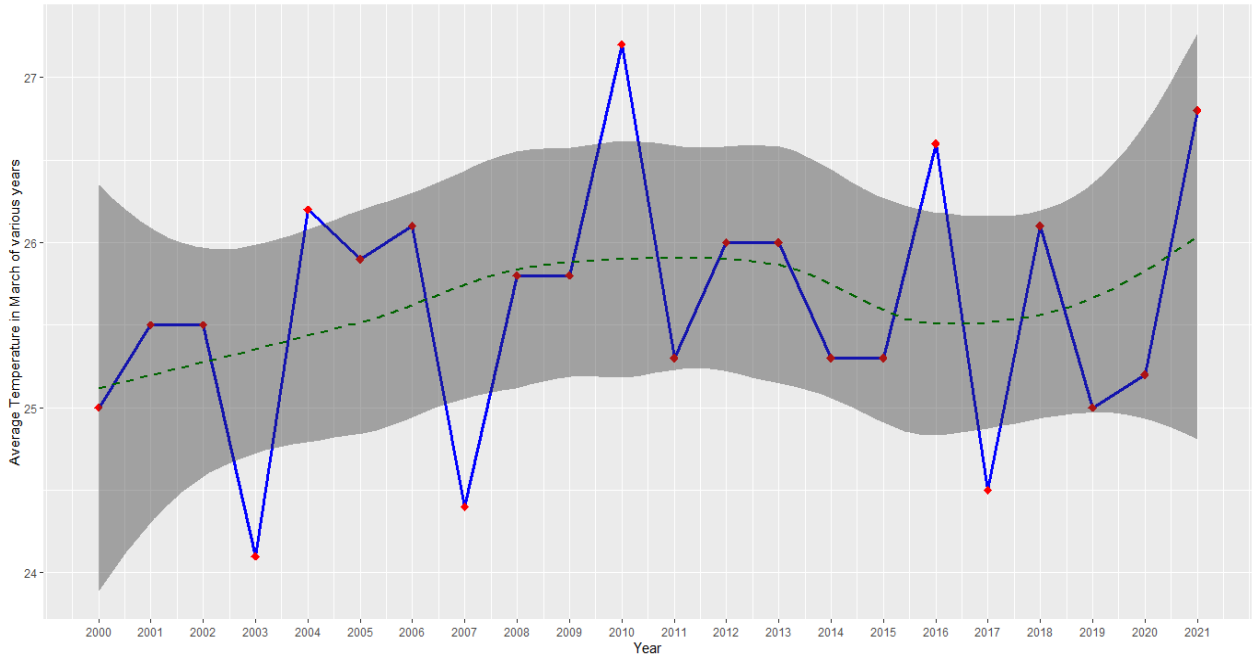
Average Temperature in March of various years
27
26
25
24
2000
2001
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2021
Year

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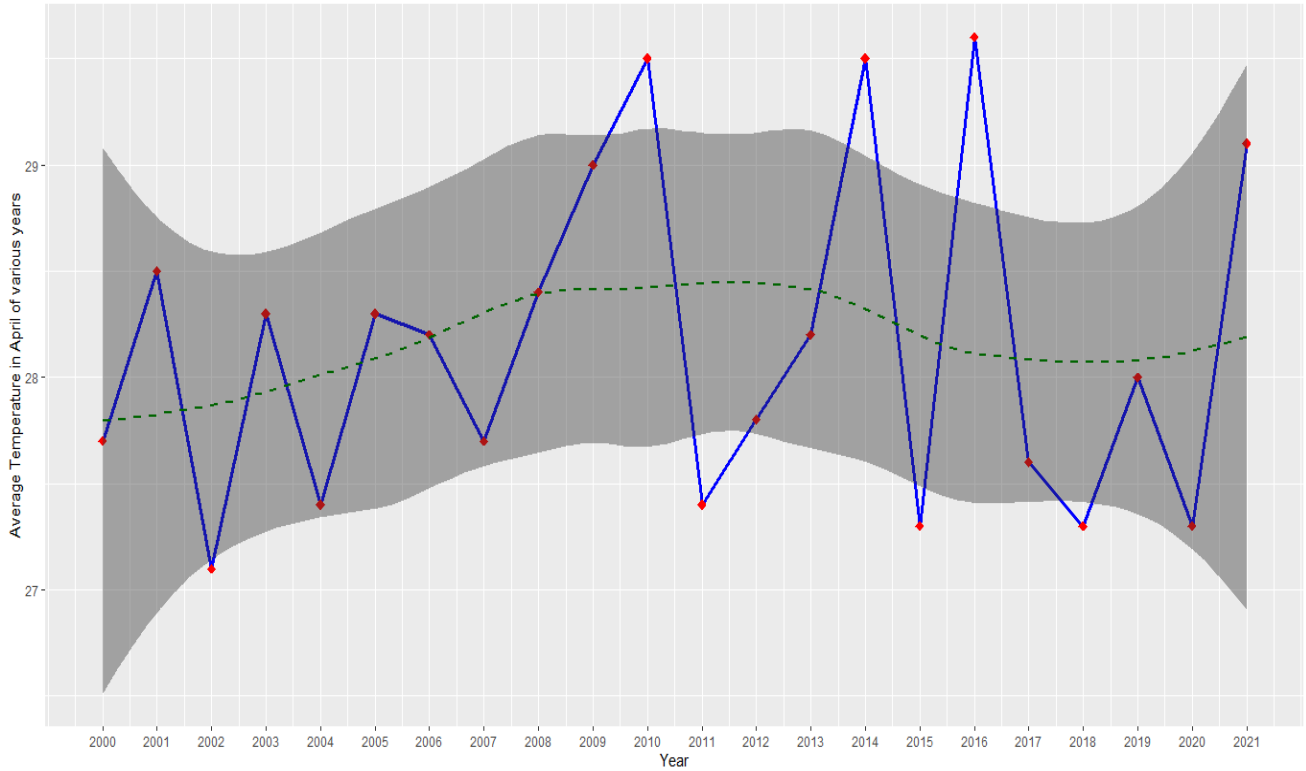
Average Temperature in April of various years
29
28
27
2000
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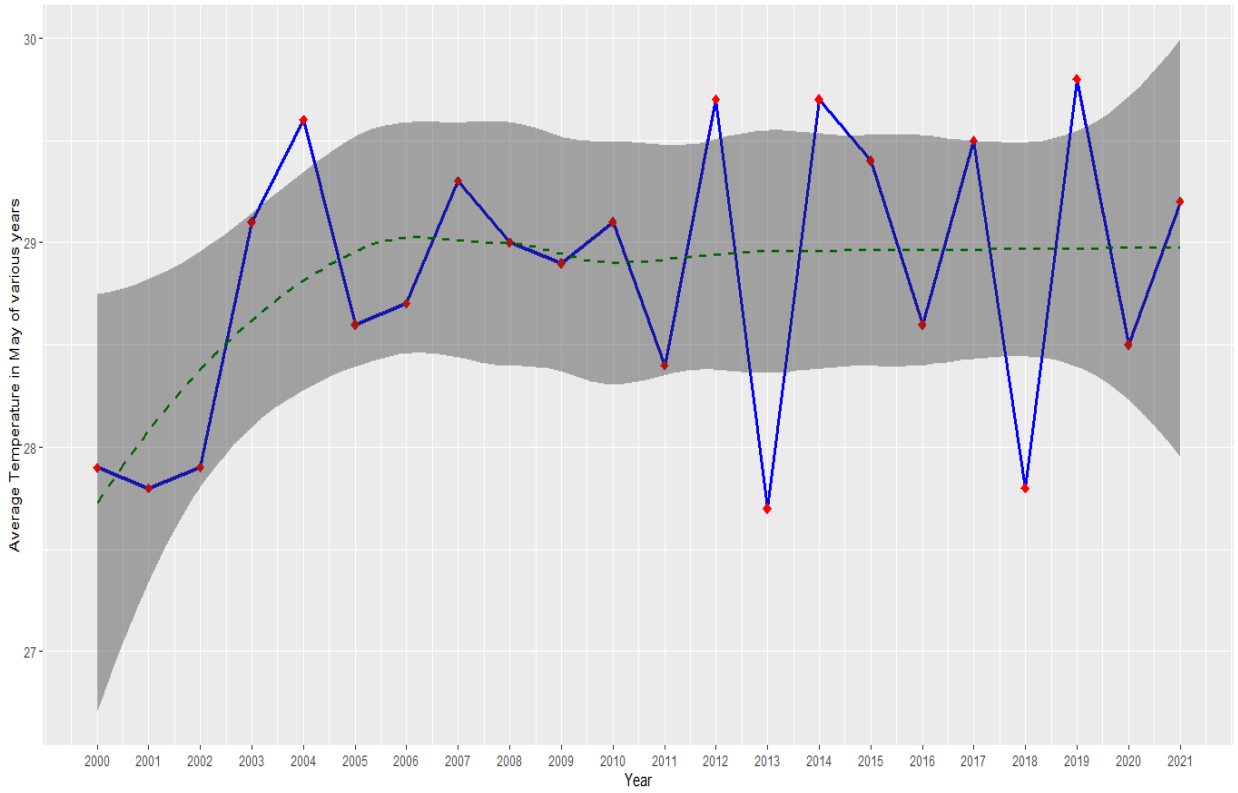
Average Temperature in May of various years
30
29
28
27
2000
2001
2002
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2021
Year

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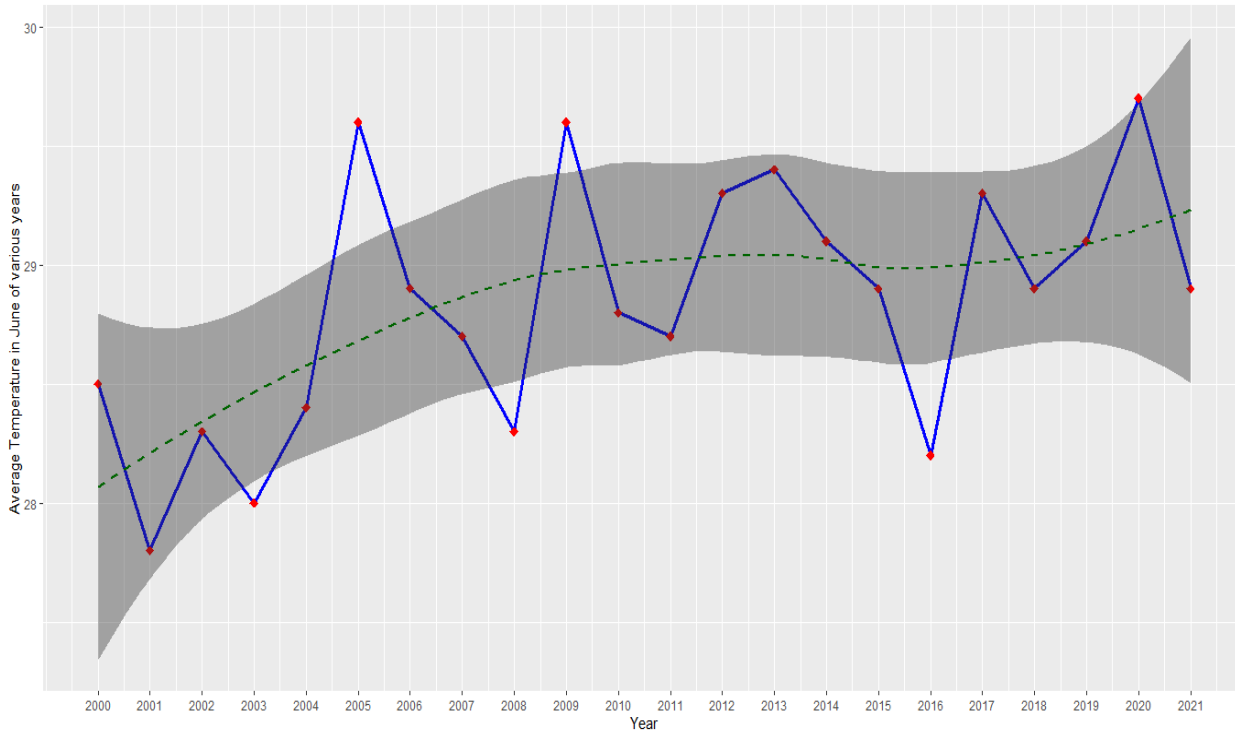
Average Temperature in June of various years
30
29
28
2000
2001
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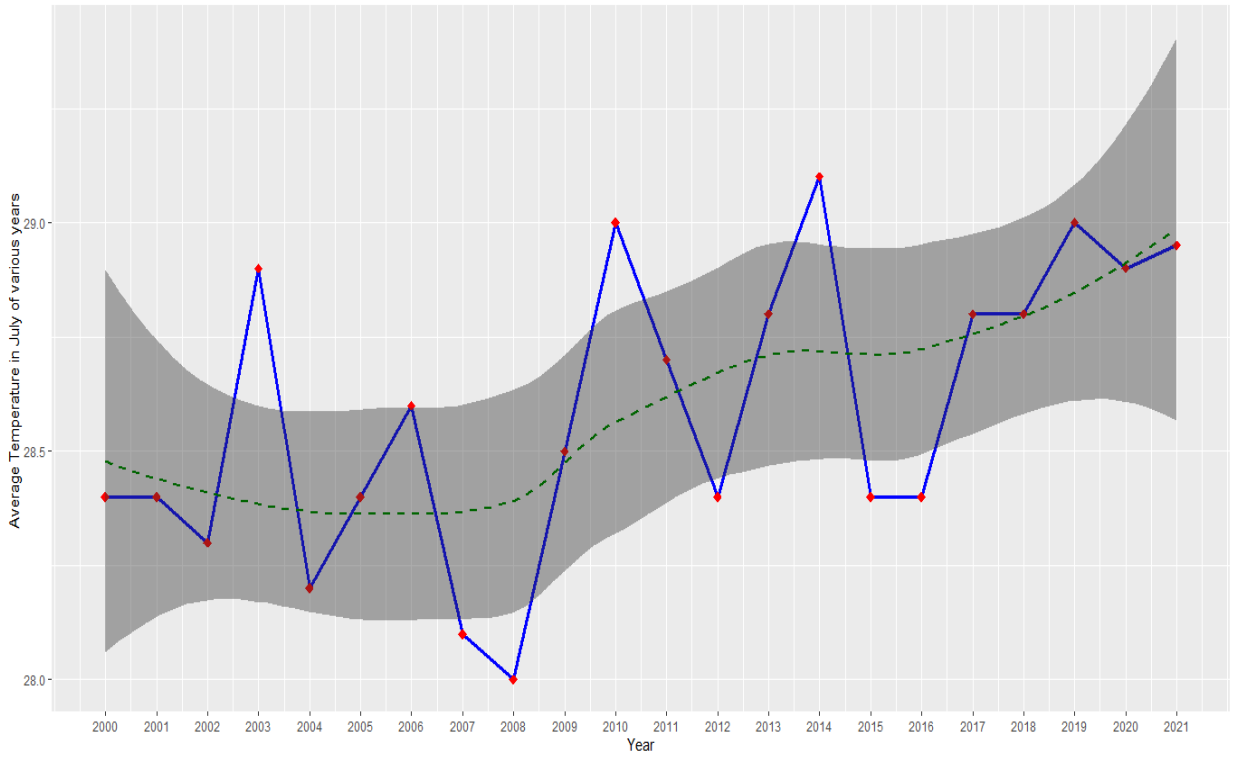
Average Temperature in July of various years
29.0
28.5
28.0
2000
2001
2002
2003
2004
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2021
Year

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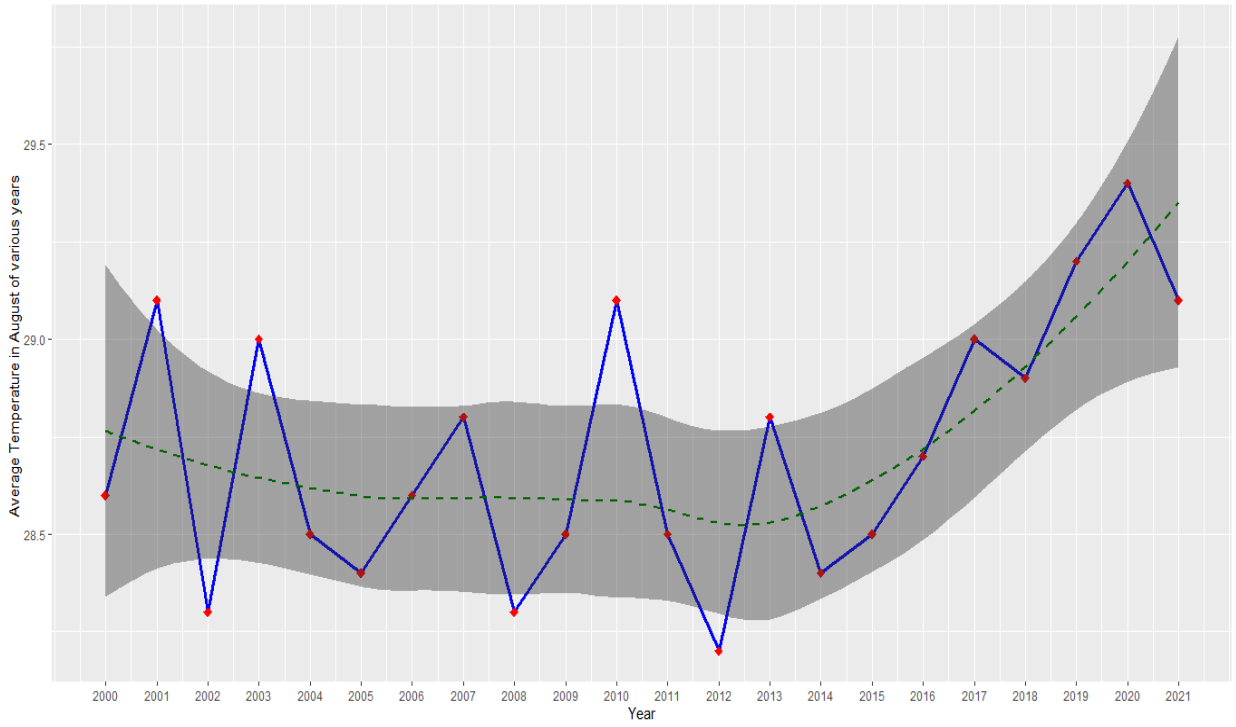
Average Temperature in August of various years
29.5
29.0
28.5
2000
2001
2002
2003
2004
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2021
Year

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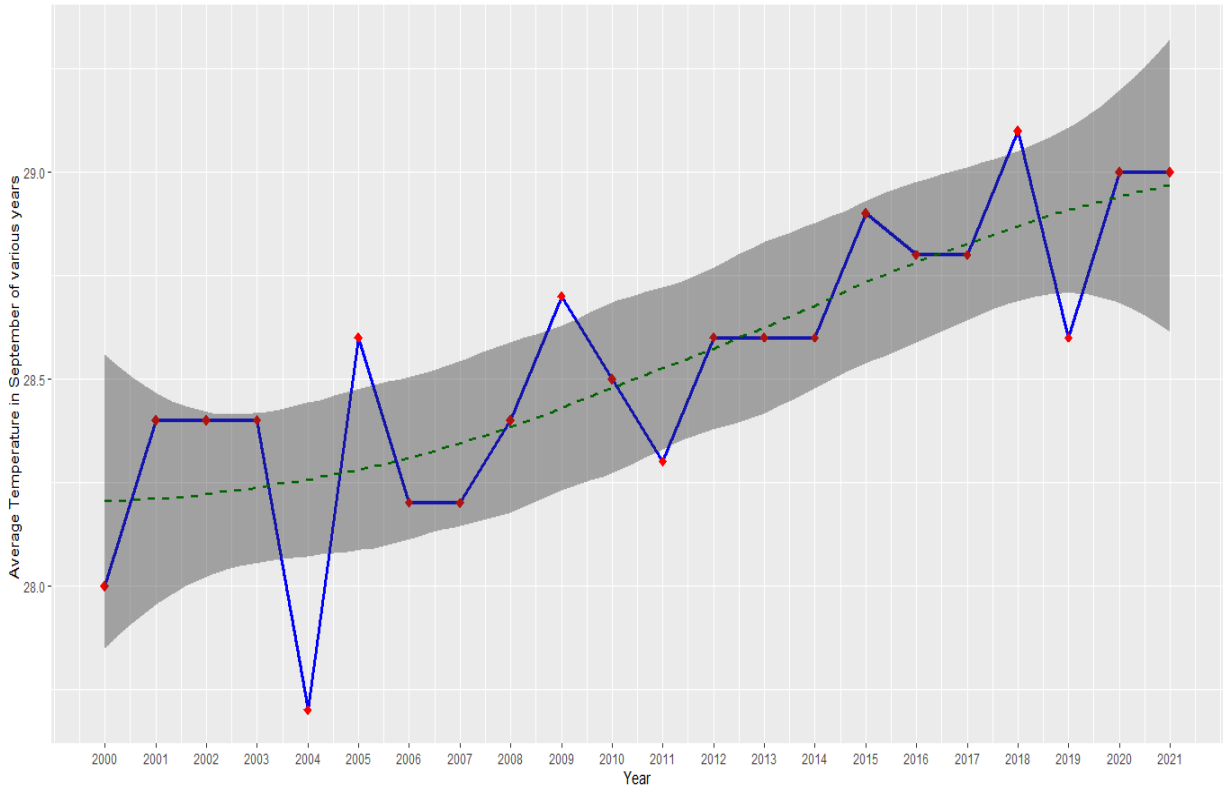
Average Temperature in September of various years
29.0
28.5
28.0
2000
2001
2002
2003
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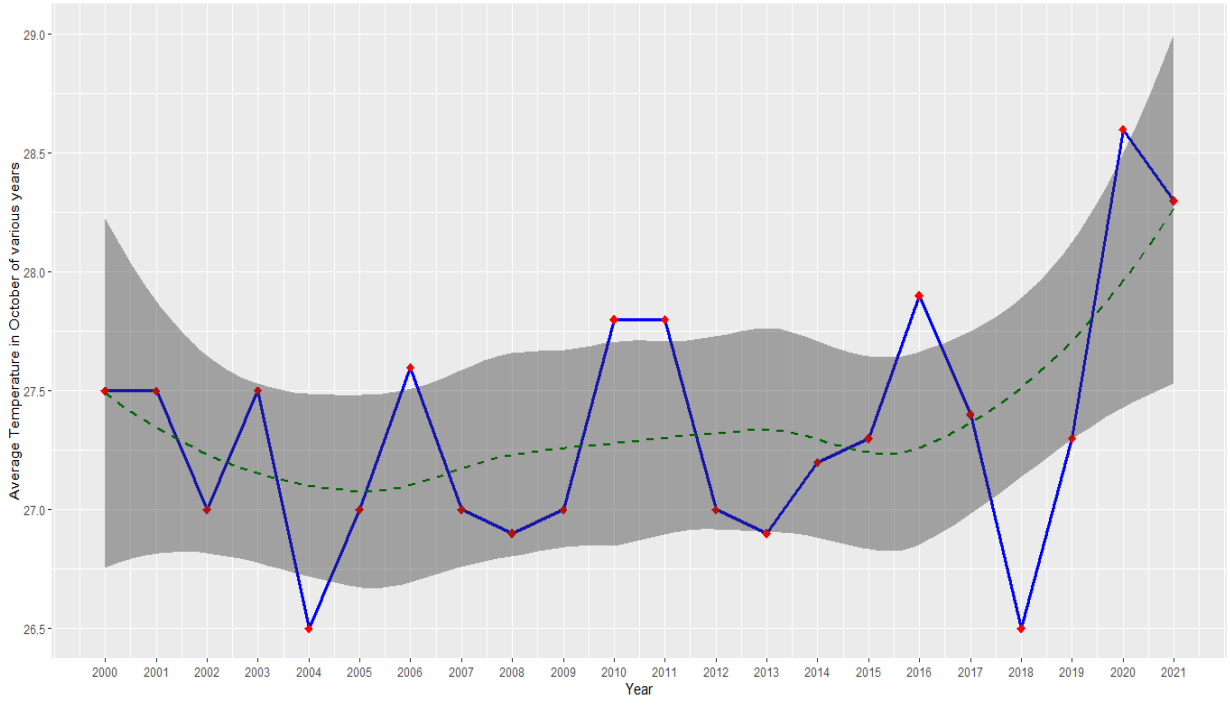
Year

#10


Average Temperature in October of various years
29.0
28.5
28.0
27.5
27.0
26.5
2000
2001
2002
2003
2004
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2020
2021
Year

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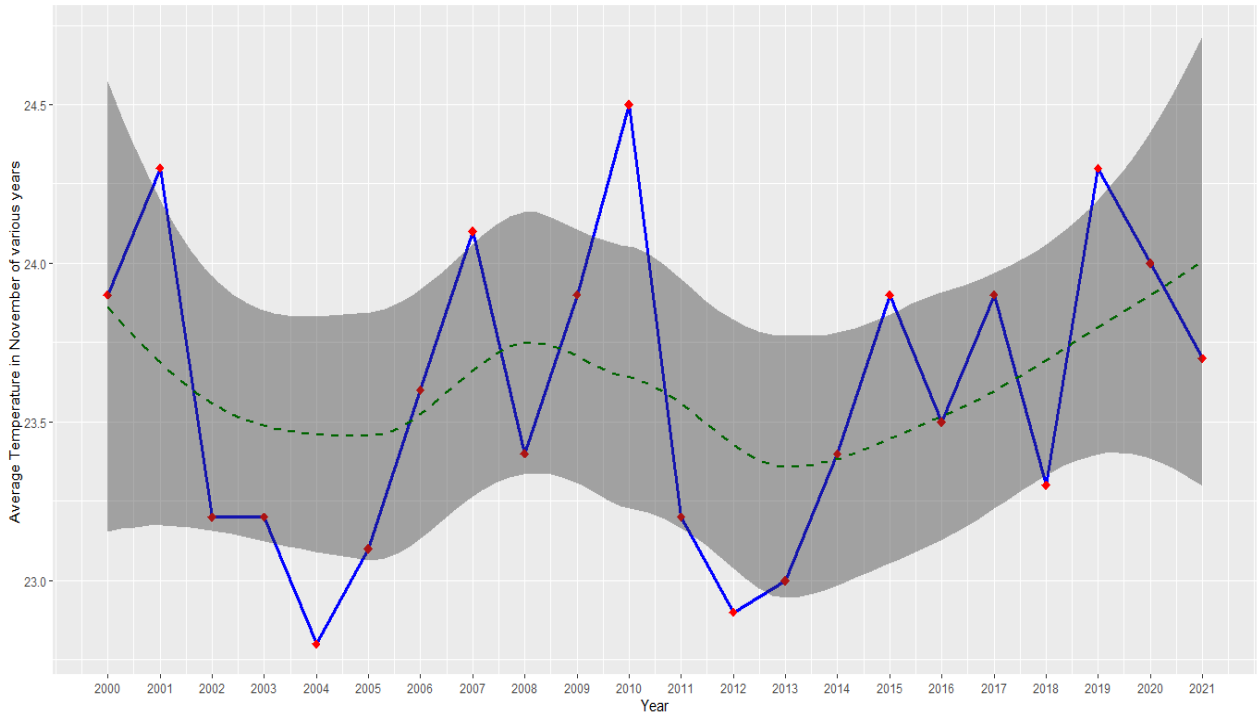
Average Temperature in November of various years
24.5
24.0
23.5
23.0
2000
2001
2002
2003
2004
2005
2006
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2008
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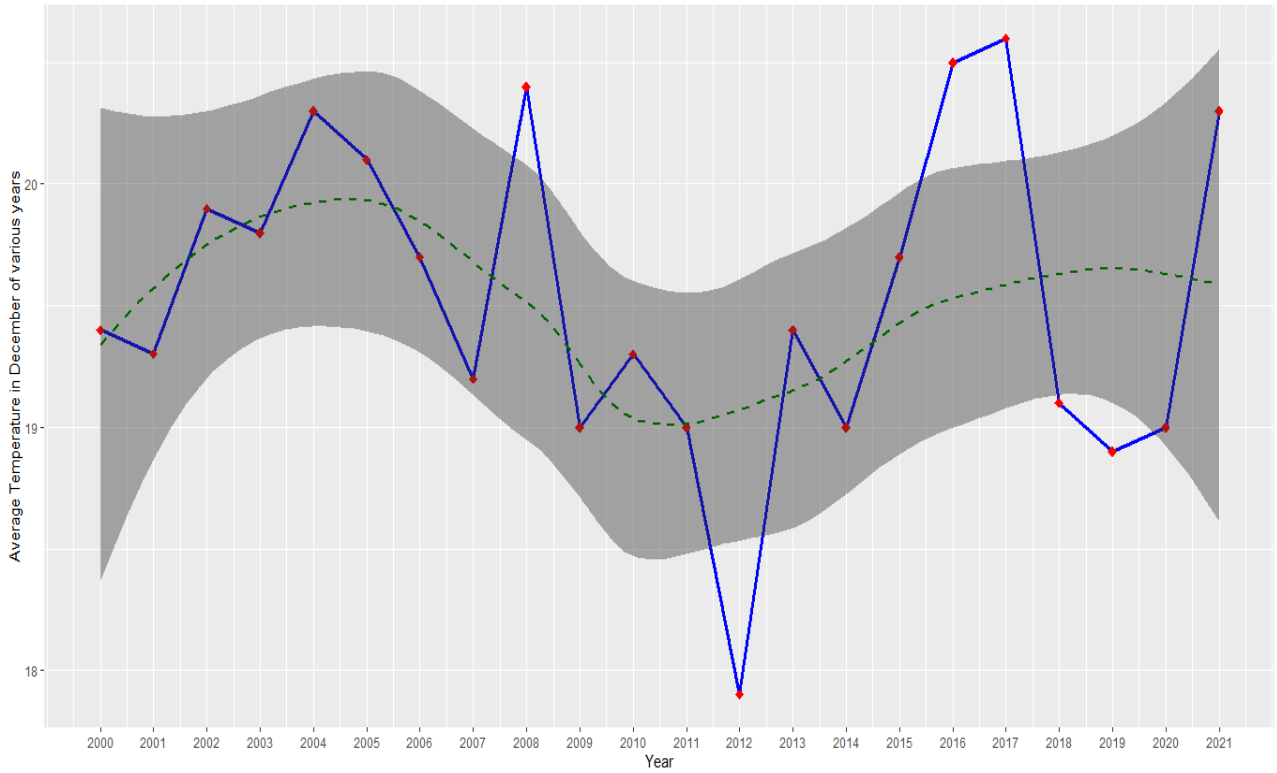
2020
2021
Year

#12


Average Temperature in December of various years
20
19
18
2000
2001
2002
2003
2004
2005
2006
2007
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2009
2010
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2013
2014
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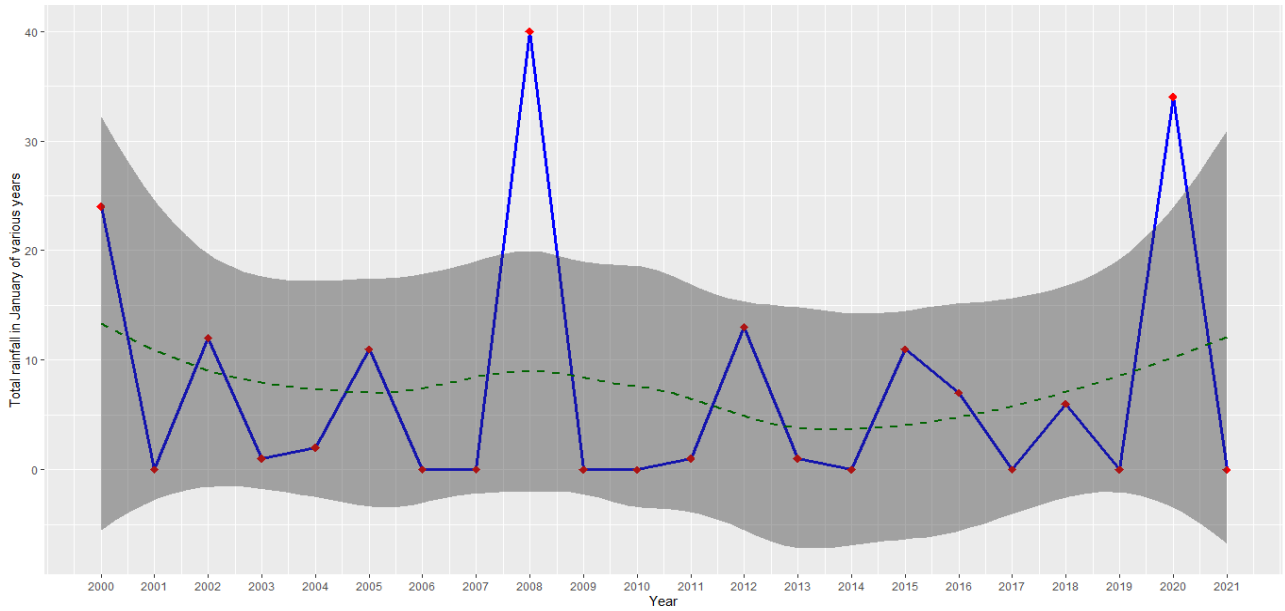
2019
2020
2021
Year

Fig. S- 6: **Monthly total rainfall in Bangladesh between January 2000 and December 2021**. A LOESS smoothing function is used to obtain a smooth line to represent the trend over the years. The shaded region represents the 95% confidence interval. Dots represent the monthly total rainfall of a given month for different years.

#1



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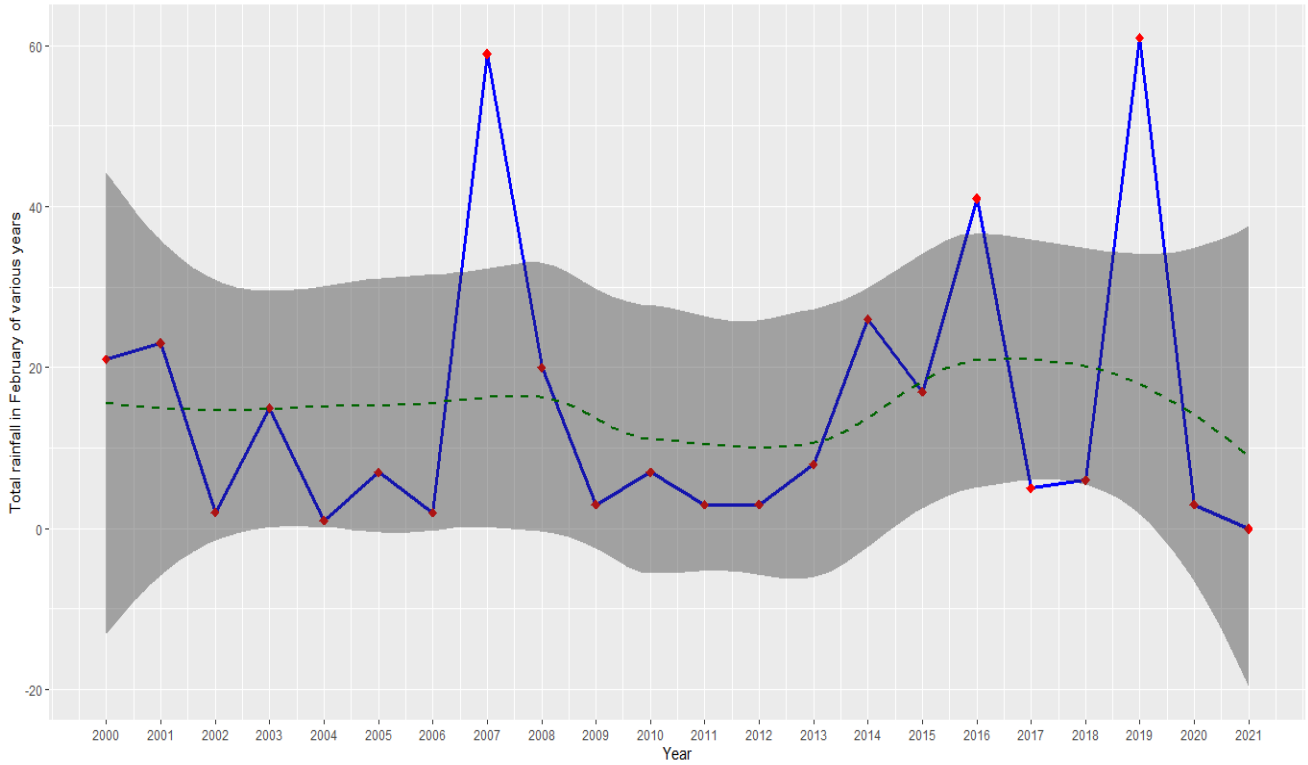

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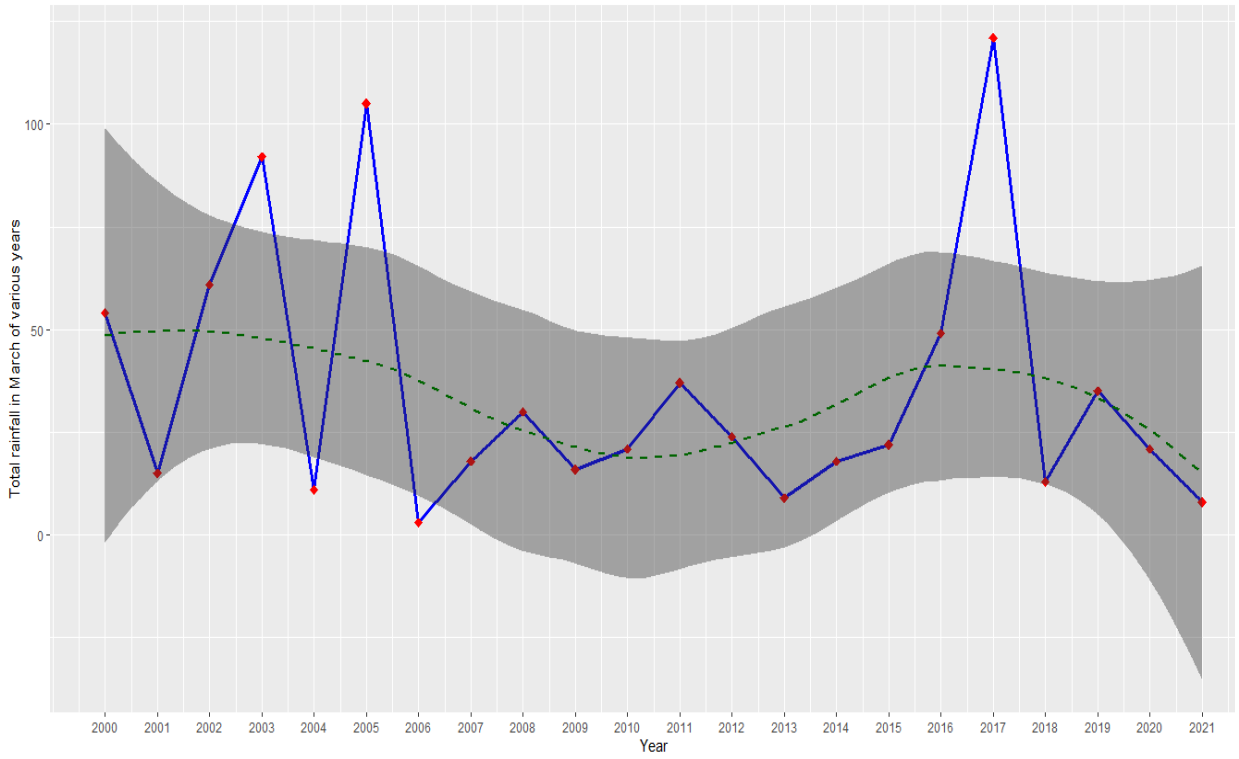
Total rainfall in March of various years
100
50
0
2000
2001
2002
2003
2004
2005
2006
2007
2008
2009
2010
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2013
2014
2015
2016
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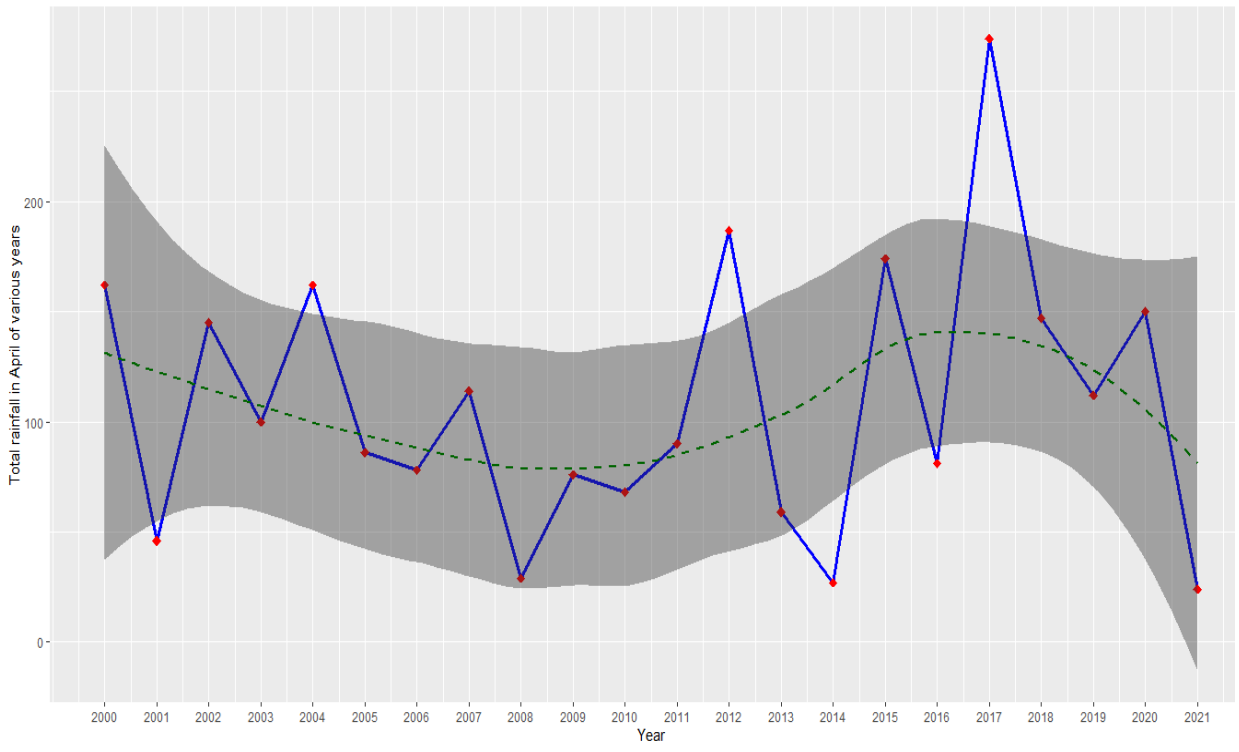
2018
2019
2020
2021
Year

#4


Total rainfall in April of various years
200
100
0
2000
2001
2002
2003
2004
2005
2006
2007
2008
2009
2010
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2013
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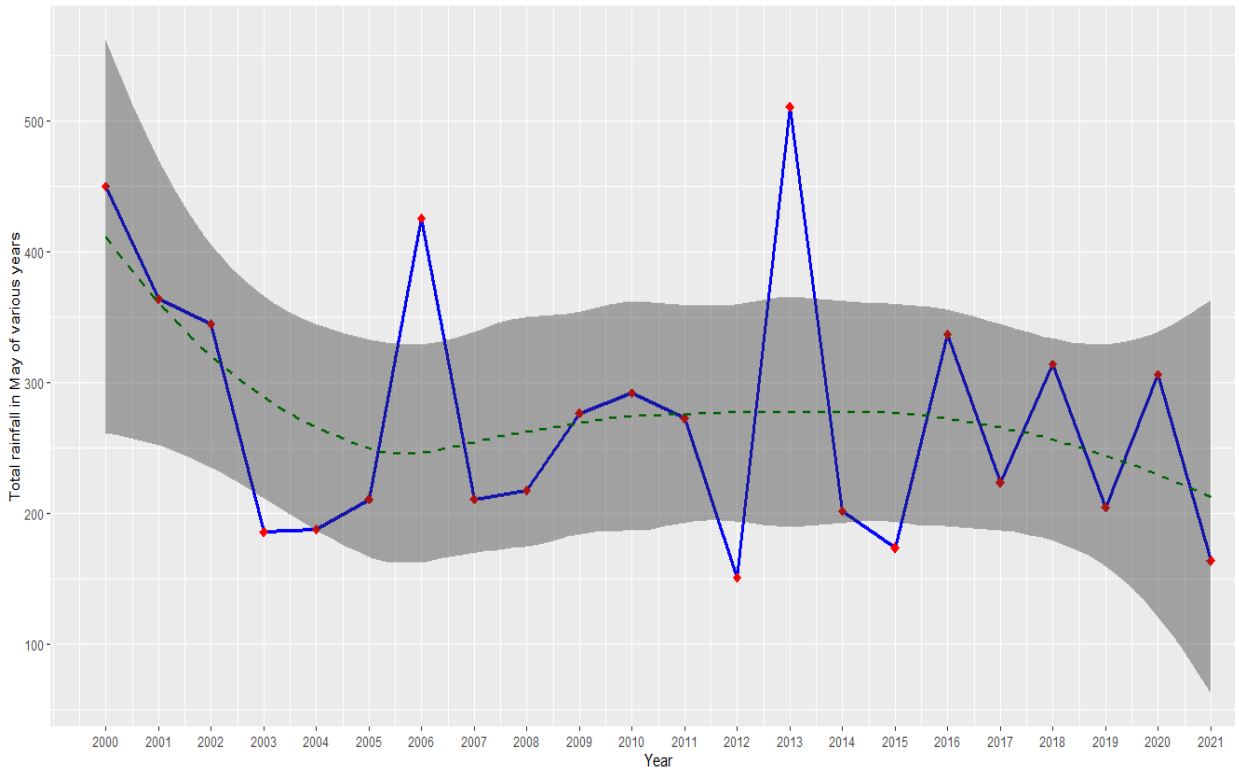
2019
2020
2021
Year

#5


Total rainfall in May of various years
500
400
300
200
100
2000
2001
2002
2003
2004
2005
2006
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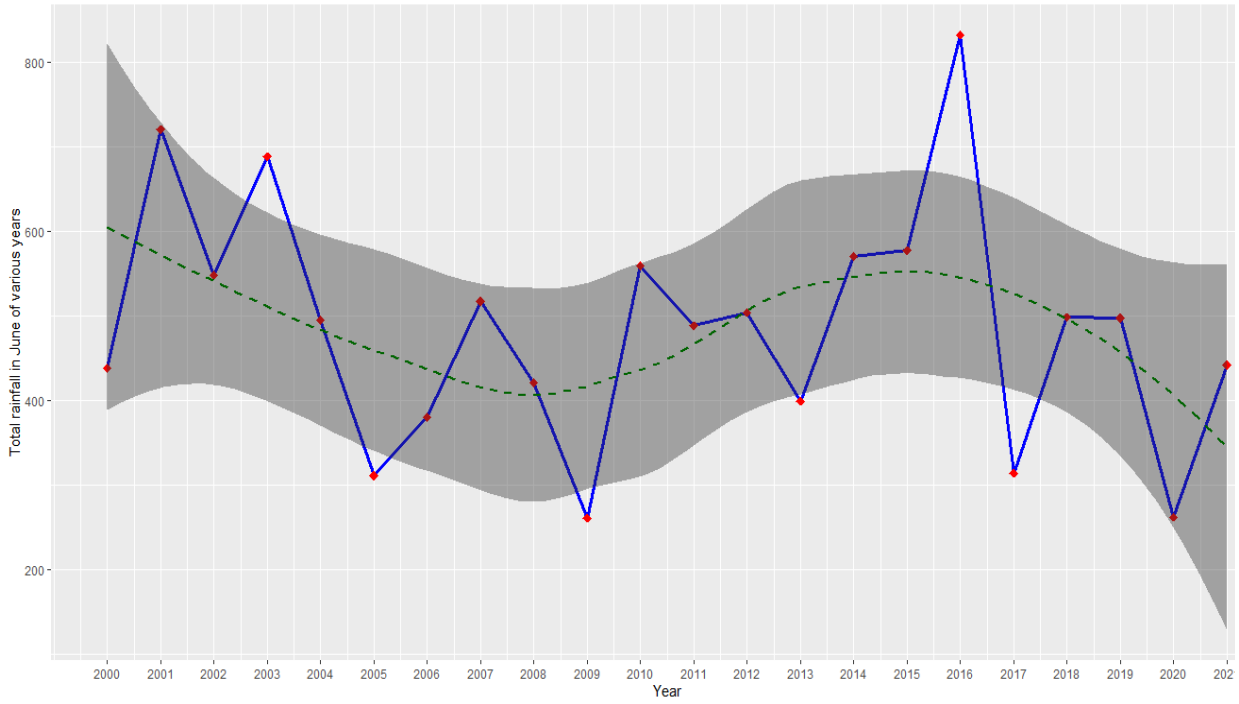
2019
2020
2021
Year

#6


Total rainfall in June of various years
800
600
400
200
2000
2001
2002
2003
2004
2005
2006
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2008
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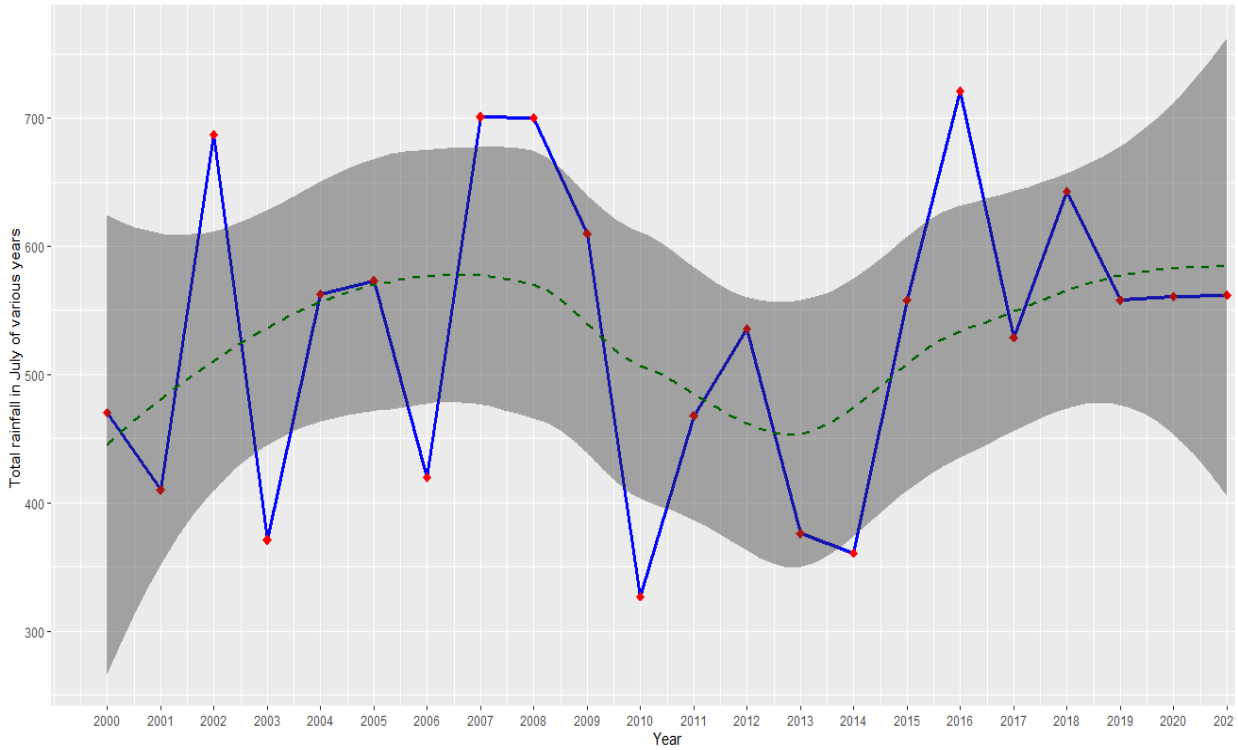
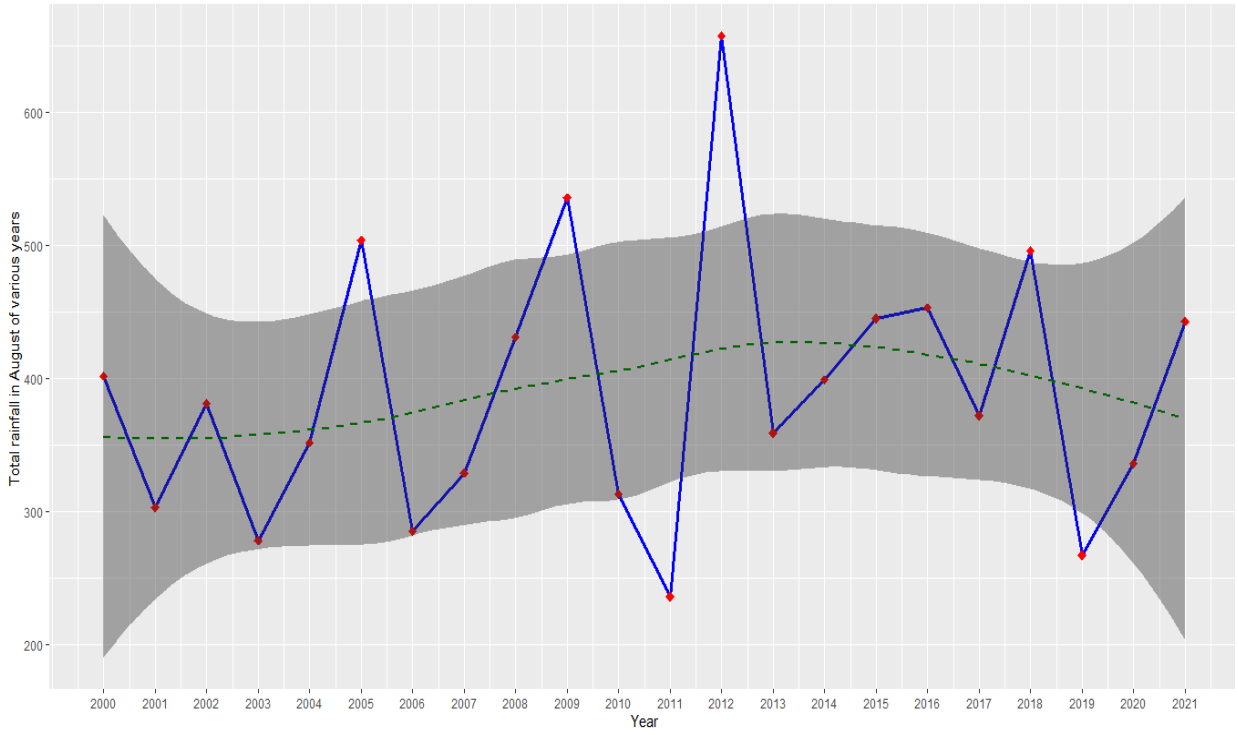
2012
2013
2014
2015
2016
2017
2018
2019
2020
202
Year

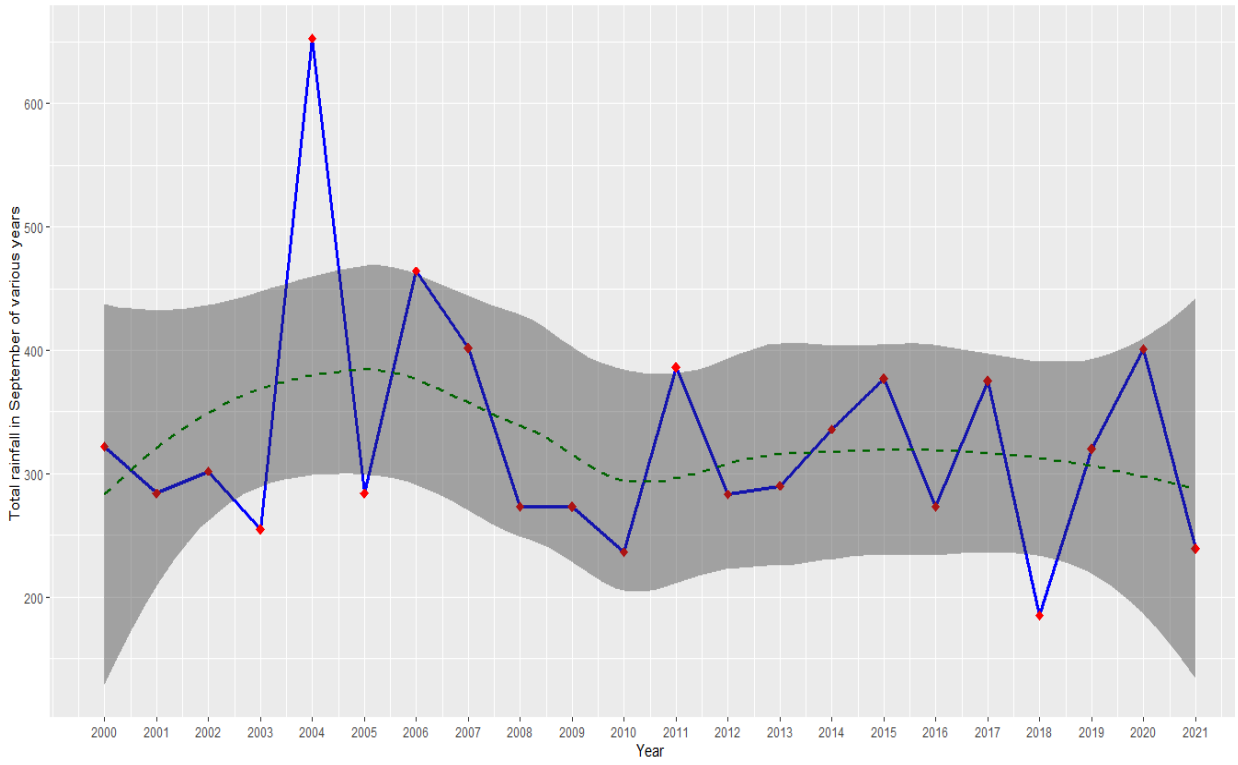
#7


Total rainfall in July of various years
700
600
500
400
300
2000
2001
2002
2003
2004
2005
2006
2007
2008
2009
2010
2011
2012
2013
2014
2015
2016
2017
2018
2019
2020
202
Year

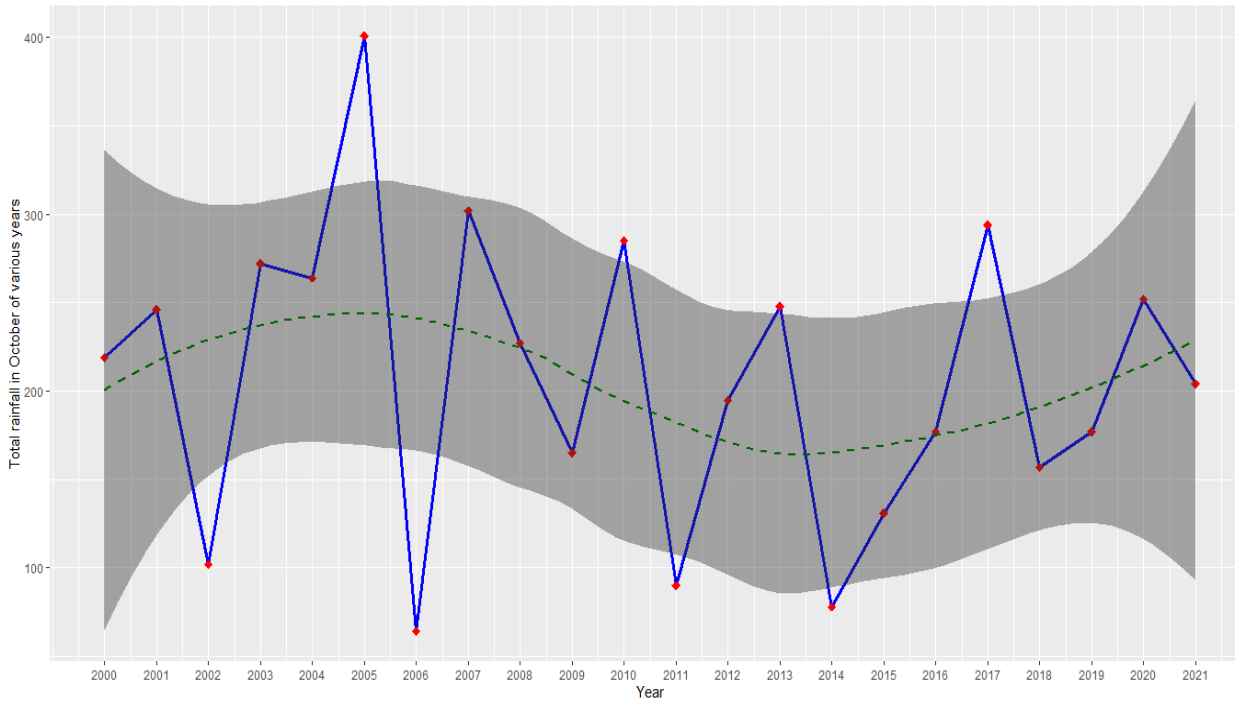
#8


Total rainfall in August of various years
600
500
400
300
200
2000
2001
2002
2003
2004
2005
2006
2007
2008
2009
2010
2011
2012
2013
2014
2015
2016
2017
2018
2019
2020
2021
Year

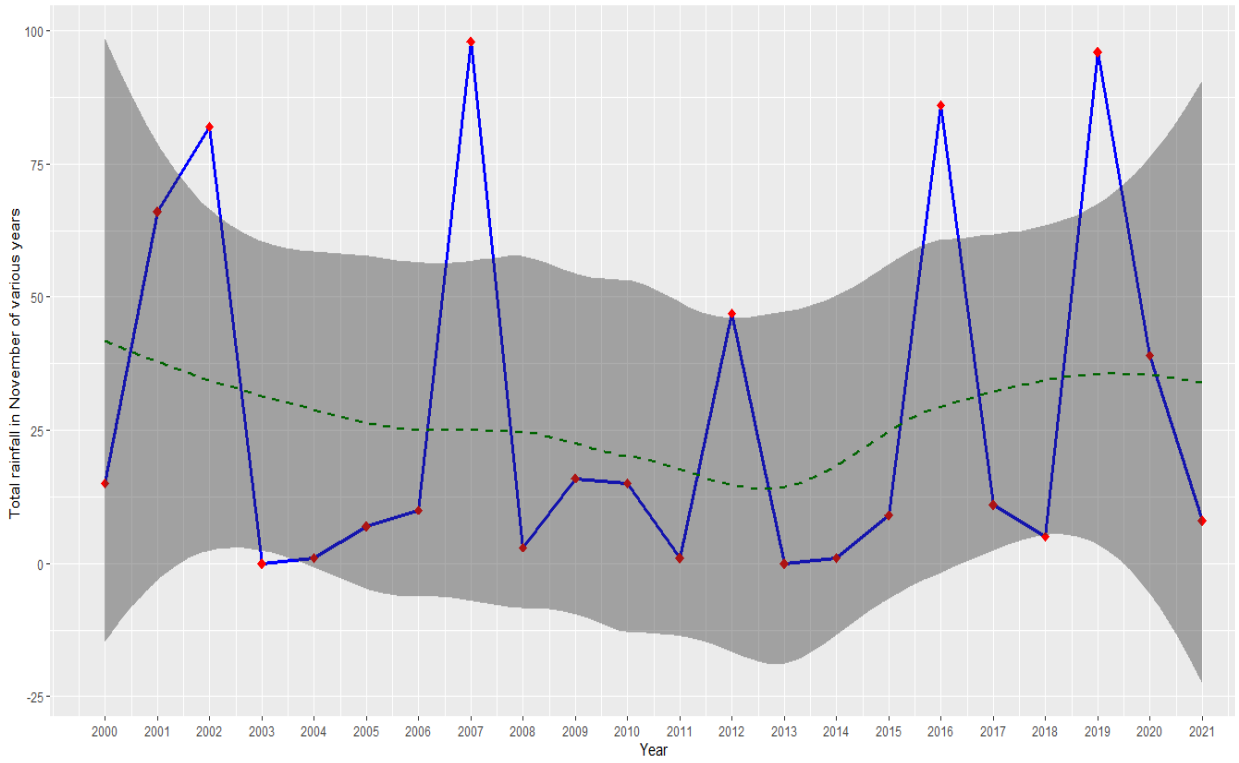
#9


Total rainfall in September of various years
600
500
400
300
200
2000
2001
2002
2003
2004
2005
2006
2007
2008
2009
2010
2011
2012
2013
2014
2015
2016
2017
2018
2019
2020
2021
Year

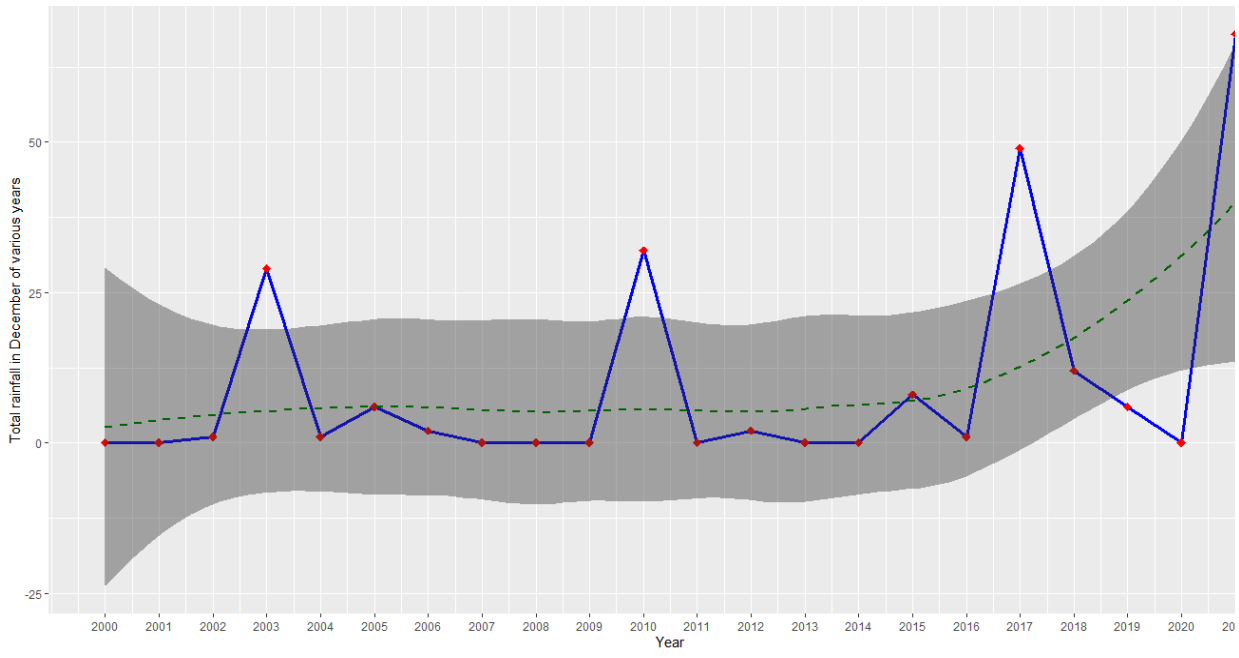
#10


Total rainfall in October of various years
400
300
200
100
2000
2001
2002
2003
2004
2005
2006
2007
2008
2009
2010
2011
2012
2013
2014
2015
2016
2017
2018
2019
2020
2021
Year

#11


Total rainfall in November of various years
100
75
50
25
0
-25
2000
2001
2002
2003
2004
2005
2006
2007
2008
2009
2010
2011
2012
2013
2014
2015
2016
2017
2018
2019
2020
2021
Year

#12


Total rainfall in December of various years
50
25
0
-25
2000
2001
2002
2003
2004
2005
2006
2007
2008
2009
2010
2011
2012
2013
2014
2015
2016
2017
2018
2019
2020
Year