

```
In [1]: import pandas as pd
import numpy as np
import warnings
warnings.filterwarnings("ignore")
import seaborn as sns
import matplotlib.pyplot as plt
```

```
In [2]: data = pd.read_csv(r"C:\Users\Kishore\OneDrive\Desktop\CSV Files\rainfall i
```

```
In [3]: data
```

Out[3]:

	SUBDIVISION	YEAR	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	C
0	ANDAMAN & NICOBAR ISLANDS	1901	49.2	87.1	29.2	2.3	528.8	517.5	365.1	481.1	332.6	38
1	ANDAMAN & NICOBAR ISLANDS	1902	0.0	159.8	12.2	0.0	446.1	537.1	228.9	753.7	666.2	19
2	ANDAMAN & NICOBAR ISLANDS	1903	12.7	144.0	0.0	1.0	235.1	479.9	728.4	326.7	339.0	18
3	ANDAMAN & NICOBAR ISLANDS	1904	9.4	14.7	0.0	202.4	304.5	495.1	502.0	160.1	820.4	22
4	ANDAMAN & NICOBAR ISLANDS	1905	1.3	0.0	3.3	26.9	279.5	628.7	368.7	330.5	297.0	26
...
4111	LAKSHADWEEP	2011	5.1	2.8	3.1	85.9	107.2	153.6	350.2	254.0	255.2	11
4112	LAKSHADWEEP	2012	19.2	0.1	1.6	76.8	21.2	327.0	231.5	381.2	179.8	14
4113	LAKSHADWEEP	2013	26.2	34.4	37.5	5.3	88.3	426.2	296.4	154.4	180.0	7
4114	LAKSHADWEEP	2014	53.2	16.1	4.4	14.9	57.4	244.1	116.1	466.1	132.2	16
4115	LAKSHADWEEP	2015	2.2	0.5	3.7	87.1	133.1	296.6	257.5	146.4	160.4	16

4116 rows × 19 columns

In [4]: `data.describe()`

Out[4]:

	YEAR	JAN	FEB	MAR	APR	MAY	
count	4116.000000	4112.000000	4113.000000	4110.000000	4112.000000	4113.000000	4111.0
mean	1958.218659	18.957320	21.805325	27.359197	43.127432	85.745417	230.2
std	33.140898	33.585371	35.909488	46.959424	67.831168	123.234904	234.7
min	1901.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.4
25%	1930.000000	0.600000	0.600000	1.000000	3.000000	8.600000	70.3
50%	1958.000000	6.000000	6.700000	7.800000	15.700000	36.600000	138.7
75%	1987.000000	22.200000	26.800000	31.300000	49.950000	97.200000	305.1
max	2015.000000	583.700000	403.500000	605.600000	595.100000	1168.600000	1609.9

In [5]: `data.isna().sum()`

Out[5]:

SUBDIVISION	0
YEAR	0
JAN	4
FEB	3
MAR	6
APR	4
MAY	3
JUN	5
JUL	7
AUG	4
SEP	6
OCT	7
NOV	11
DEC	10
ANNUAL	26
Jan-Feb	6
Mar-May	9
Jun-Sep	10
Oct-Dec	13

dtype: int64

In [6]:

data1=data.drop(columns=['ANNUAL','Jan-Feb','Mar-May','Jun-Sep','Oct-Dec'])
data1

Out[6]:

	SUBDIVISION	YEAR	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	C
0	ANDAMAN & NICOBAR ISLANDS	1901	49.2	87.1	29.2	2.3	528.8	517.5	365.1	481.1	332.6	38
1	ANDAMAN & NICOBAR ISLANDS	1902	0.0	159.8	12.2	0.0	446.1	537.1	228.9	753.7	666.2	19
2	ANDAMAN & NICOBAR ISLANDS	1903	12.7	144.0	0.0	1.0	235.1	479.9	728.4	326.7	339.0	18
3	ANDAMAN & NICOBAR ISLANDS	1904	9.4	14.7	0.0	202.4	304.5	495.1	502.0	160.1	820.4	22
4	ANDAMAN & NICOBAR ISLANDS	1905	1.3	0.0	3.3	26.9	279.5	628.7	368.7	330.5	297.0	26
...
4111	LAKSHADWEEP	2011	5.1	2.8	3.1	85.9	107.2	153.6	350.2	254.0	255.2	11
4112	LAKSHADWEEP	2012	19.2	0.1	1.6	76.8	21.2	327.0	231.5	381.2	179.8	14
4113	LAKSHADWEEP	2013	26.2	34.4	37.5	5.3	88.3	426.2	296.4	154.4	180.0	7
4114	LAKSHADWEEP	2014	53.2	16.1	4.4	14.9	57.4	244.1	116.1	466.1	132.2	16
4115	LAKSHADWEEP	2015	2.2	0.5	3.7	87.1	133.1	296.6	257.5	146.4	160.4	16

4116 rows × 14 columns

In [7]:

data1.isnull().sum()

Out[7]:

SUBDIVISION	0
YEAR	0
JAN	4
FEB	3
MAR	6
APR	4
MAY	3
JUN	5
JUL	7
AUG	4
SEP	6
OCT	7
NOV	11
DEC	10
dtype:	int64

In []:

```
In [8]: data['SUBDIVISION'].unique()
```

```
Out[8]: array(['ANDAMAN & NICOBAR ISLANDS', 'ARUNACHAL PRADESH',  
              'ASSAM & MEGHALAYA', 'NAGA MANI MIZO TRIPURA',  
              'SUB HIMALAYAN WEST BENGAL & SIKKIM', 'GANGETIC WEST BENGAL',  
              'ORISSA', 'JHARKHAND', 'BIHAR', 'EAST UTTAR PRADESH',  
              'WEST UTTAR PRADESH', 'UTTARAKHAND', 'HARYANA DELHI & CHANDIGARH',  
              'PUNJAB', 'HIMACHAL PRADESH', 'JAMMU & KASHMIR', 'WEST RAJASTHAN',  
              'EAST RAJASTHAN', 'WEST MADHYA PRADESH', 'EAST MADHYA PRADESH',  
              'GUJARAT REGION', 'SAURASHTRA & KUTCH', 'KONKAN & GOA',  
              'MADHYA MAHARASHTRA', 'MATATHWADA', 'VIDARBHA', 'CHHATTISGARH',  
              'COASTAL ANDHRA PRADESH', 'TELANGANA', 'RAYALSEEMA', 'TAMIL NADU',  
              'COASTAL KARNATAKA', 'NORTH INTERIOR KARNATAKA',  
              'SOUTH INTERIOR KARNATAKA', 'KERALA', 'LAKSHADWEEP'], dtype=object)
```

Getting only Costal Andhra Pradesh

In [9]:

data2=data1.loc[(data.SUBDIVISION=='COASTAL ANDHRA PRADESH')]
data2

Out[9]:

	SUBDIVISION	YEAR	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT
3082	COASTAL ANDHRA PRADESH	1901	18.8	80.9	7.2	28.7	68.7	77.7	113.0	133.7	125.3	173.4
3083	COASTAL ANDHRA PRADESH	1902	2.0	0.0	2.8	23.9	37.6	72.6	144.5	236.1	204.5	262.0
3084	COASTAL ANDHRA PRADESH	1903	0.8	13.3	0.2	6.2	73.4	154.0	248.6	258.0	216.5	159.1
3085	COASTAL ANDHRA PRADESH	1904	1.3	0.0	5.4	3.0	136.3	107.8	120.2	117.7	116.8	240.9
3086	COASTAL ANDHRA PRADESH	1905	1.1	16.7	68.0	37.0	68.8	84.4	64.6	210.8	170.2	66.0
...
3192	COASTAL ANDHRA PRADESH	2011	0.0	17.9	0.9	62.3	67.9	86.8	196.0	215.8	129.7	74.6
3193	COASTAL ANDHRA PRADESH	2012	37.6	0.0	2.7	24.0	39.3	95.4	221.9	221.2	246.5	140.0
3194	COASTAL ANDHRA PRADESH	2013	2.0	29.6	0.2	48.0	28.2	127.5	162.4	123.1	132.0	411.5
3195	COASTAL ANDHRA PRADESH	2014	0.4	1.2	9.1	6.0	112.9	45.7	151.8	177.8	144.5	195.6
3196	COASTAL ANDHRA PRADESH	2015	2.0	0.6	5.5	32.3	34.1	283.8	116.0	192.0	201.8	59.7

115 rows × 14 columns



```
In [10]: data2.isnull().sum()
```

```
Out[10]: SUBDIVISION    0  
        YEAR          0  
        JAN           0  
        FEB           0  
        MAR           0  
        APR           0  
        MAY           0  
        JUN           0  
        JUL           0  
        AUG           0  
        SEP           0  
        OCT           0  
        NOV           0  
        DEC           0  
        dtype: int64
```

Getting only ANDAMAN & NICOBAR ISLANDS and Filling Null values

```
In [11]: data6=data1.loc[(data.SUBDIVISION=='ANDAMAN & NICOBAR ISLANDS')]
```

In [12]:

data6

Out[12]:

	SUBDIVISION	YEAR	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OC
0	ANDAMAN & NICOBAR ISLANDS	1901	49.2	87.1	29.2	2.3	528.8	517.5	365.1	481.1	332.6	388.
1	ANDAMAN & NICOBAR ISLANDS	1902	0.0	159.8	12.2	0.0	446.1	537.1	228.9	753.7	666.2	197.
2	ANDAMAN & NICOBAR ISLANDS	1903	12.7	144.0	0.0	1.0	235.1	479.9	728.4	326.7	339.0	181.
3	ANDAMAN & NICOBAR ISLANDS	1904	9.4	14.7	0.0	202.4	304.5	495.1	502.0	160.1	820.4	222.
4	ANDAMAN & NICOBAR ISLANDS	1905	1.3	0.0	3.3	26.9	279.5	628.7	368.7	330.5	297.0	260.
...
105	ANDAMAN & NICOBAR ISLANDS	2011	265.9	84.8	272.8	111.4	326.5	383.2	583.2	441.5	757.1	212.
106	ANDAMAN & NICOBAR ISLANDS	2012	119.9	45.6	30.9	55.8	533.9	458.2	317.3	369.6	868.9	209.
107	ANDAMAN & NICOBAR ISLANDS	2013	67.1	37.6	43.0	46.3	509.3	777.0	564.8	336.7	473.6	455.
108	ANDAMAN & NICOBAR ISLANDS	2014	41.9	8.6	0.0	11.1	238.0	416.6	467.6	321.6	412.9	402.
109	ANDAMAN & NICOBAR ISLANDS	2015	126.8	7.6	3.1	138.2	331.9	346.4	328.9	480.0	523.3	252.

110 rows × 14 columns



In [13]:

data6.isnull().sum()

Out[13]:

SUBDIVISION	0
YEAR	0
JAN	0
FEB	0
MAR	2
APR	2
MAY	1
JUN	2
JUL	2
AUG	2
SEP	3
OCT	2
NOV	2
DEC	3
dtype:	int64

```
In [14]: data7= data6.fillna(data6.median())
data7
```

```
Out[14]:
```

	SUBDIVISION	YEAR	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OC
0	ANDAMAN & NICOBAR ISLANDS	1901	49.2	87.1	29.2	2.3	528.8	517.5	365.1	481.1	332.6	388.
1	ANDAMAN & NICOBAR ISLANDS	1902	0.0	159.8	12.2	0.0	446.1	537.1	228.9	753.7	666.2	197.
2	ANDAMAN & NICOBAR ISLANDS	1903	12.7	144.0	0.0	1.0	235.1	479.9	728.4	326.7	339.0	181.
3	ANDAMAN & NICOBAR ISLANDS	1904	9.4	14.7	0.0	202.4	304.5	495.1	502.0	160.1	820.4	222.
4	ANDAMAN & NICOBAR ISLANDS	1905	1.3	0.0	3.3	26.9	279.5	628.7	368.7	330.5	297.0	260.
...
105	ANDAMAN & NICOBAR ISLANDS	2011	265.9	84.8	272.8	111.4	326.5	383.2	583.2	441.5	757.1	212.
106	ANDAMAN & NICOBAR ISLANDS	2012	119.9	45.6	30.9	55.8	533.9	458.2	317.3	369.6	868.9	209.
107	ANDAMAN & NICOBAR ISLANDS	2013	67.1	37.6	43.0	46.3	509.3	777.0	564.8	336.7	473.6	455.
108	ANDAMAN & NICOBAR ISLANDS	2014	41.9	8.6	0.0	11.1	238.0	416.6	467.6	321.6	412.9	402.
109	ANDAMAN & NICOBAR ISLANDS	2015	126.8	7.6	3.1	138.2	331.9	346.4	328.9	480.0	523.3	252.

110 rows × 14 columns



```
In [15]: data7.isnull().sum()
```

```
Out[15]: SUBDIVISION    0
YEAR                0
JAN                 0
FEB                 0
MAR                 0
APR                 0
MAY                 0
JUN                 0
JUL                 0
AUG                 0
SEP                 0
OCT                 0
NOV                 0
DEC                 0
dtype: int64
```


In []:

Getting only Costal ARUNACHAL PRADESH

In [16]:

data8=data1.loc[(data.SUBDIVISION=='ARUNACHAL PRADESH')]
data8

Out[16]:

	SUBDIVISION	YEAR	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT
110	ARUNACHAL PRADESH	1916	48.1	69.8	71.1	316.1	424.6	1124.9	NaN	629.7	333.9	NaN
111	ARUNACHAL PRADESH	1917	21.4	164.5	NaN	269.6	107.9	823.8	909.1	628.4	411.5	191.1
112	ARUNACHAL PRADESH	1918	10.4	11.0	191.2	144.6	861.1	1609.9	1303.0	692.6	515.8	121.1
113	ARUNACHAL PRADESH	1919	34.5	67.8	28.5	256.9	420.6	973.6	999.0	286.7	628.7	941.1
114	ARUNACHAL PRADESH	1920	14.0	196.3	605.6	364.7	173.6	840.6	535.4	896.5	376.7	101.1
...
202	ARUNACHAL PRADESH	2011	40.0	51.3	174.5	240.8	219.6	288.4	531.4	277.6	286.7	51.1
203	ARUNACHAL PRADESH	2012	57.8	35.8	134.2	403.4	187.4	645.8	638.9	316.0	724.9	241.1
204	ARUNACHAL PRADESH	2013	18.5	40.5	115.1	175.1	335.8	290.0	329.6	230.2	316.1	161.1
205	ARUNACHAL PRADESH	2014	19.0	101.9	80.3	86.7	299.0	415.8	392.4	599.6	343.0	311.1
206	ARUNACHAL PRADESH	2015	30.8	47.5	97.5	287.1	238.9	637.9	329.3	595.5	374.2	611.1

97 rows × 14 columns

In [17]:

data8.isnull().sum()

Out[17]:

SUBDIVISION	0
YEAR	0
JAN	1
FEB	1
MAR	2
APR	0
MAY	0
JUN	1
JUL	1
AUG	0
SEP	0
OCT	2
NOV	2
DEC	2

dtype: int64

In [18]:

data9= data8.fillna(data8.median())
data9

Out[18]:

	SUBDIVISION	YEAR	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT
110	ARUNACHAL PRADESH	1916	48.1	69.8	71.1	316.1	424.6	1124.9	609.35	629.7	333.9	10
111	ARUNACHAL PRADESH	1917	21.4	164.5	139.9	269.6	107.9	823.8	909.10	628.4	411.5	19
112	ARUNACHAL PRADESH	1918	10.4	11.0	191.2	144.6	861.1	1609.9	1303.00	692.6	515.8	17
113	ARUNACHAL PRADESH	1919	34.5	67.8	28.5	256.9	420.6	973.6	999.00	286.7	628.7	94
114	ARUNACHAL PRADESH	1920	14.0	196.3	605.6	364.7	173.6	840.6	535.40	896.5	376.7	10
...
202	ARUNACHAL PRADESH	2011	40.0	51.3	174.5	240.8	219.6	288.4	531.40	277.6	286.7	4
203	ARUNACHAL PRADESH	2012	57.8	35.8	134.2	403.4	187.4	645.8	638.90	316.0	724.9	24
204	ARUNACHAL PRADESH	2013	18.5	40.5	115.1	175.1	335.8	290.0	329.60	230.2	316.1	10
205	ARUNACHAL PRADESH	2014	19.0	101.9	80.3	86.7	299.0	415.8	392.40	599.6	343.0	3
206	ARUNACHAL PRADESH	2015	30.8	47.5	97.5	287.1	238.9	637.9	329.30	595.5	374.2	0

97 rows × 14 columns



In [19]:

data9.isnull().sum()

Out[19]:

SUBDIVISION	0
YEAR	0
JAN	0
FEB	0
MAR	0
APR	0
MAY	0
JUN	0
JUL	0
AUG	0
SEP	0
OCT	0
NOV	0
DEC	0
dtype:	int64

In []:

Getting only Costal ASSAM & MEGHALAYA and Filling Null values

```
In [20]: data10=data1.loc[(data.SUBDIVISION=='ASSAM & MEGHALAYA')]  
data10
```

```
Out[20]:
```

	SUBDIVISION	YEAR	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT
207	ASSAM & MEGHALAYA	1901	27.1	19.5	30.6	223.0	207.0	524.9	430.6	464.1	291.4	163.7
208	ASSAM & MEGHALAYA	1902	9.3	10.2	105.6	350.0	262.1	620.7	510.8	536.0	441.3	97.0
209	ASSAM & MEGHALAYA	1903	19.9	25.4	103.6	140.6	206.6	607.4	362.7	551.9	306.4	159.5
210	ASSAM & MEGHALAYA	1904	11.1	56.1	51.9	457.1	375.2	385.7	477.6	438.8	245.9	115.9
211	ASSAM & MEGHALAYA	1905	19.9	16.9	137.9	213.0	275.5	521.7	439.1	649.1	276.0	200.0
...
317	ASSAM & MEGHALAYA	2011	11.1	11.4	109.0	92.1	238.3	316.0	395.8	302.6	221.6	30.2
318	ASSAM & MEGHALAYA	2012	15.2	6.9	28.8	279.1	185.8	729.7	444.3	289.2	411.6	199.4
319	ASSAM & MEGHALAYA	2013	1.1	9.6	44.0	112.8	346.7	286.2	367.8	289.7	229.3	126.3
320	ASSAM & MEGHALAYA	2014	2.0	28.3	29.3	51.5	351.1	426.4	374.4	484.6	420.2	35.0
321	ASSAM & MEGHALAYA	2015	13.4	15.5	37.5	250.9	332.5	558.5	300.1	590.9	279.9	62.6

115 rows × 14 columns



```
In [21]: data10.isnull().sum()
```

```
Out[21]: SUBDIVISION    0  
YEAR                0  
JAN                 0  
FEB                 0  
MAR                 0  
APR                 0  
MAY                 0  
JUN                 0  
JUL                 0  
AUG                 0  
SEP                 0  
OCT                 0  
NOV                 0  
DEC                 0  
dtype: int64
```

In []:

Getting only Costal NAGA MANI MIZO TRIPURAand Filling Null values

In [22]:

data11=data1.loc[(data.SUBDIVISION=='NAGA MANI MIZO TRIPURA')]
data11

Out[22]:

	SUBDIVISION	YEAR	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT
322	NAGA MANI MIZO TRIPURA	1901	11.7	18.1	29.4	206.2	124.0	443.3	331.4	466.0	304.1	166.7
323	NAGA MANI MIZO TRIPURA	1902	4.8	0.5	36.3	297.8	215.5	480.1	392.4	312.8	318.7	102.4
324	NAGA MANI MIZO TRIPURA	1903	6.5	40.5	139.8	45.5	159.9	458.6	300.2	470.6	366.1	166.4
325	NAGA MANI MIZO TRIPURA	1904	2.3	46.9	47.5	290.3	230.5	455.3	423.5	423.6	375.8	128.9
326	NAGA MANI MIZO TRIPURA	1905	9.1	35.3	306.5	161.7	193.6	339.7	450.1	429.9	320.1	246.4
...
432	NAGA MANI MIZO TRIPURA	2011	12.6	3.6	51.4	81.1	334.9	374.2	313.3	367.6	258.3	92.6
433	NAGA MANI MIZO TRIPURA	2012	24.5	10.2	20.3	243.5	163.5	396.2	280.1	342.7	248.7	160.9
434	NAGA MANI MIZO TRIPURA	2013	0.2	5.7	19.7	60.3	348.9	206.6	255.9	291.3	241.4	125.6
435	NAGA MANI MIZO TRIPURA	2014	1.2	21.0	25.4	49.6	192.5	268.3	295.7	372.3	300.9	69.6
436	NAGA MANI MIZO TRIPURA	2015	14.4	14.2	21.6	253.5	198.3	283.9	413.6	334.2	255.9	118.7

115 rows × 14 columns

```
In [23]: data11.isnull().sum()
```

```
Out[23]: SUBDIVISION    0  
        YEAR          0  
        JAN           0  
        FEB           0  
        MAR           0  
        APR           0  
        MAY           0  
        JUN           0  
        JUL           0  
        AUG           0  
        SEP           0  
        OCT           0  
        NOV           0  
        DEC           0  
        dtype: int64
```

```
In [ ]:
```

Getting only Costal SUB HIMALAYAN WEST BENGAL & SIKKIM and Filling Null values

```
In [24]: data12=data1.loc[(data.SUBDIVISION=='SUB HIMALAYAN WEST BENGAL & SIKKIM')]  
data12
```

Out[24]:

	SUBDIVISION	YEAR	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT
437	SUB HIMALAYAN WEST BENGAL & SIKKIM	1901	26.5	14.8	14.1	29.2	195.5	488.4	524.8	501.1	242.7	55.5
438	SUB HIMALAYAN WEST BENGAL & SIKKIM	1902	1.2	0.7	87.1	126.1	271.3	539.2	671.0	603.8	799.9	74.4
439	SUB HIMALAYAN WEST BENGAL & SIKKIM	1903	5.5	8.7	19.6	18.6	163.6	541.2	431.5	708.8	365.2	141.3
440	SUB HIMALAYAN WEST BENGAL & SIKKIM	1904	3.4	29.2	0.9	124.3	333.6	274.2	500.4	468.5	260.6	164.8
441	SUB HIMALAYAN WEST BENGAL & SIKKIM	1905	12.0	31.2	51.9	104.4	290.6	524.8	523.1	1036.6	321.1	87.9
...
547	SUB HIMALAYAN WEST BENGAL & SIKKIM	2011	8.5	19.9	71.2	135.0	247.8	419.8	612.3	470.3	356.3	46.7
548	SUB HIMALAYAN WEST BENGAL & SIKKIM	2012	15.3	13.9	45.5	159.8	202.4	604.2	684.5	332.7	434.7	119.4
549	SUB HIMALAYAN WEST BENGAL & SIKKIM	2013	3.0	23.6	32.1	114.7	296.5	404.9	588.4	416.3	308.0	199.8
550	SUB HIMALAYAN WEST BENGAL & SIKKIM	2014	0.2	26.6	37.7	47.9	308.6	543.2	384.6	563.3	371.5	31.2
551	SUB HIMALAYAN WEST BENGAL & SIKKIM	2015	15.7	15.0	64.8	149.0	304.6	508.2	393.3	626.6	354.9	53.6

115 rows × 14 columns



```
In [25]: data12.isnull().sum()
```

```
Out[25]: SUBDIVISION    0  
        YEAR          0  
        JAN           0  
        FEB           0  
        MAR           0  
        APR           0  
        MAY           0  
        JUN           0  
        JUL           0  
        AUG           0  
        SEP           0  
        OCT           0  
        NOV           0  
        DEC           0  
        dtype: int64
```

```
In [ ]:
```



```
In [26]: data13=data1.loc[(data.SUBDIVISION=='GANGETIC WEST BENGAL')]
data13
```

```
Out[26]:
```

	SUBDIVISION	YEAR	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT
552	GANGETIC WEST BENGAL	1901	37.1	58.4	3.9	64.1	121.7	198.0	280.8	275.7	313.5	51.1
553	GANGETIC WEST BENGAL	1902	0.0	1.2	44.2	103.8	161.6	140.9	347.8	264.8	230.5	32.5
554	GANGETIC WEST BENGAL	1903	17.5	24.6	37.3	30.6	78.5	201.7	179.6	277.6	300.7	198.0
555	GANGETIC WEST BENGAL	1904	0.1	23.9	35.6	17.5	160.2	286.7	435.3	241.7	142.8	35.1
556	GANGETIC WEST BENGAL	1905	30.9	49.6	84.7	84.9	156.8	70.9	525.5	263.6	287.6	107.3
...
662	GANGETIC WEST BENGAL	2011	2.5	2.7	40.5	75.0	132.6	434.5	219.9	443.2	295.9	36.9
663	GANGETIC WEST BENGAL	2012	40.7	15.3	4.4	57.7	44.2	146.6	315.0	261.4	246.9	64.2
664	GANGETIC WEST BENGAL	2013	2.5	10.0	4.8	45.6	195.9	233.4	263.2	401.4	254.0	353.2
665	GANGETIC WEST BENGAL	2014	0.9	42.2	19.9	1.9	124.4	193.6	298.7	292.6	229.5	56.9
666	GANGETIC WEST BENGAL	2015	12.9	5.5	19.3	88.7	57.6	247.2	633.1	260.6	164.0	32.7

115 rows × 14 columns



```
In [27]: data13.isnull().sum()
```

```
Out[27]: SUBDIVISION    0
YEAR                0
JAN                 0
FEB                 0
MAR                 0
APR                 0
MAY                 0
JUN                 0
JUL                 0
AUG                 0
SEP                 0
OCT                 0
NOV                 0
DEC                 0
dtype: int64
```

In []:

In [28]:

data14=data1.loc[(data.SUBDIVISION=='ORISSA')]
data14

Out[28]:

	SUBDIVISION	YEAR	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT
667	ORISSA	1901	39.5	65.1	16.1	51.6	79.0	78.2	288.4	307.7	185.3	76.6
668	ORISSA	1902	3.4	0.2	14.2	101.1	56.7	108.3	437.4	349.1	202.7	33.2
669	ORISSA	1903	19.7	18.9	10.5	34.6	73.3	154.3	410.4	295.2	265.6	228.5
670	ORISSA	1904	0.2	12.2	20.6	10.1	100.2	342.9	336.7	350.4	227.8	111.8
671	ORISSA	1905	24.3	17.2	66.3	56.9	107.5	92.0	330.1	281.4	344.1	36.4
...
777	ORISSA	2011	3.7	16.2	4.9	58.2	75.6	210.1	199.6	358.6	398.7	20.2
778	ORISSA	2012	50.8	3.6	0.9	34.8	21.3	169.6	324.3	417.0	242.4	66.0
779	ORISSA	2013	3.3	7.8	2.1	53.6	57.7	272.6	380.0	254.9	208.1	391.0
780	ORISSA	2014	0.0	17.6	25.1	11.7	111.9	92.2	496.2	386.3	281.1	111.8
781	ORISSA	2015	15.1	3.3	10.5	67.6	32.6	238.6	294.8	264.0	237.0	24.7

115 rows × 14 columns

In [29]:

data14.isnull().sum()

Out[29]:

SUBDIVISION0
YEAR0
JAN0
FEB0
MAR0
APR0
MAY0
JUN0
JUL0
AUG0
SEP0
OCT0
NOV0
DEC0
dtype: int64

In []:

```
In [30]: data15=data1.loc[(data.SUBDIVISION=='JHARKHAND')]
data15
```

```
Out[30]:
```

	SUBDIVISION	YEAR	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT
782	JHARKHAND	1901	92.7	66.6	11.1	18.4	33.5	70.9	269.4	415.1	248.0	37.3
783	JHARKHAND	1902	4.2	7.7	13.2	28.5	59.8	89.9	456.1	204.9	306.6	17.6
784	JHARKHAND	1903	25.1	19.5	10.7	32.8	56.4	142.1	206.1	280.8	190.2	210.1
785	JHARKHAND	1904	2.5	17.0	38.1	9.1	116.1	308.9	494.1	336.1	125.6	30.6
786	JHARKHAND	1905	38.4	53.3	61.6	32.9	66.2	41.5	420.3	293.7	322.8	21.3
...
892	JHARKHAND	2011	3.3	2.5	6.4	25.4	55.0	349.0	181.8	403.2	324.6	23.3
893	JHARKHAND	2012	34.6	10.3	1.5	9.6	6.6	121.1	287.2	282.4	217.6	37.8
894	JHARKHAND	2013	1.1	17.9	1.6	22.3	85.0	181.5	211.1	278.1	173.8	281.1
895	JHARKHAND	2014	9.9	47.5	22.9	1.9	98.2	139.7	321.3	290.9	178.2	44.9
896	JHARKHAND	2015	12.2	2.6	21.6	55.5	25.5	183.3	429.7	240.7	85.1	22.7

115 rows × 14 columns



```
In [31]: data15.isnull().sum()
```

```
Out[31]: SUBDIVISION    0
YEAR                0
JAN                 0
FEB                 0
MAR                 0
APR                 0
MAY                 0
JUN                 0
JUL                 0
AUG                 0
SEP                 0
OCT                 0
NOV                 0
DEC                 0
dtype: int64
```

```
In [ ]:
```

In [32]:

data16=data1.loc[(data.SUBDIVISION=='BIHAR')]
data16

Out[32]:

	SUBDIVISION	YEAR	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT
897	BIHAR	1901	51.8	19.6	11.9	1.1	65.6	66.3	245.9	319.4	155.1	8.3
898	BIHAR	1902	4.6	0.7	24.3	17.3	66.3	118.2	361.0	225.5	358.7	28.5
899	BIHAR	1903	5.3	4.7	2.0	4.7	28.2	192.9	115.0	342.6	173.9	147.0
900	BIHAR	1904	6.3	1.7	3.5	5.3	118.7	191.6	394.4	351.3	84.4	98.1
901	BIHAR	1905	16.0	30.1	32.6	21.4	77.5	50.5	409.1	495.3	353.9	11.6
...
1007	BIHAR	2011	4.2	7.7	9.2	23.9	74.5	211.0	241.1	278.7	234.1	10.0
1008	BIHAR	2012	18.1	2.7	7.3	20.4	18.8	96.2	354.0	240.4	233.8	34.3
1009	BIHAR	2013	5.1	22.6	0.6	32.3	89.5	183.3	182.0	213.6	143.3	197.1
1010	BIHAR	2014	17.0	33.5	8.4	0.7	103.9	115.2	265.4	307.6	160.3	47.8
1011	BIHAR	2015	12.8	1.8	27.2	38.7	39.5	122.1	231.5	287.0	101.7	10.4

115 rows × 14 columns

◀

▶

In [33]:

data16.isnull().sum()

Out[33]:

SUBDIVISION0
YEAR0
JAN0
FEB0
MAR0
APR0
MAY0
JUN0
JUL0
AUG0
SEP0
OCT0
NOV0
DEC0
dtype: int64

In []:

In [34]:

data17=data1.loc[(data.SUBDIVISION=='EAST UTTAR PRADESH')]
data17

Out[34]:

	SUBDIVISION	YEAR	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT
1012	EAST UTTAR PRADESH	1901	62.6	31.3	8.2	1.1	13.6	21.8	226.5	285.6	215.4	4.9
1013	EAST UTTAR PRADESH	1902	6.1	2.3	2.4	2.0	21.4	32.5	411.5	155.4	257.2	13.2
1014	EAST UTTAR PRADESH	1903	8.2	0.4	1.3	0.7	15.3	71.6	115.3	420.2	258.7	324.7
1015	EAST UTTAR PRADESH	1904	7.3	1.5	8.3	0.4	28.7	148.0	359.4	328.8	95.0	50.6
1016	EAST UTTAR PRADESH	1905	16.8	23.6	20.0	5.4	15.4	17.3	302.4	316.2	169.5	3.3
...
1122	EAST UTTAR PRADESH	2011	1.0	2.7	1.6	2.9	32.2	163.8	197.9	232.1	146.4	0.6
1123	EAST UTTAR PRADESH	2012	20.3	1.2	3.4	2.8	0.2	18.5	234.2	156.0	164.4	0.7
1124	EAST UTTAR PRADESH	2013	6.1	59.6	2.7	8.7	1.1	309.7	230.0	246.1	78.2	97.4
1125	EAST UTTAR PRADESH	2014	47.4	25.8	15.4	1.7	10.7	47.8	224.5	138.1	106.7	74.7
1126	EAST UTTAR PRADESH	2015	30.0	4.1	48.2	23.2	8.6	95.3	179.0	175.8	21.9	11.8

115 rows × 14 columns



In [35]:

data17.isnull().sum()

Out[35]:

SUBDIVISION 0
YEAR 0
JAN 0
FEB 0
MAR 0
APR 0
MAY 0
JUN 0
JUL 0
AUG 0
SEP 0
OCT 0
NOV 0
DEC 0
dtype: int64

In []:

```
In [36]: data18=data1.loc[(data.SUBDIVISION=='WEST UTTAR PRADESH')]
data18
```

```
Out[36]:
```

	SUBDIVISION	YEAR	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT
1127	WEST UTTAR PRADESH	1901	51.4	25.6	9.5	0.7	5.6	23.8	201.9	374.3	67.7	7.6
1128	WEST UTTAR PRADESH	1902	4.6	4.6	0.6	4.8	7.2	54.5	325.9	180.6	143.1	9.6
1129	WEST UTTAR PRADESH	1903	13.4	0.4	1.2	0.0	8.2	32.7	145.4	279.1	150.4	177.3
1130	WEST UTTAR PRADESH	1904	6.3	2.0	29.7	0.4	24.8	68.5	358.8	311.1	97.1	2.7
1131	WEST UTTAR PRADESH	1905	32.3	26.6	14.8	3.6	7.1	18.9	139.8	95.0	92.2	0.2
...
1237	WEST UTTAR PRADESH	2011	2.1	10.4	3.9	2.8	29.6	175.9	215.9	232.3	101.7	0.7
1238	WEST UTTAR PRADESH	2012	14.5	0.1	1.4	4.7	0.3	4.0	145.1	149.1	67.8	0.5
1239	WEST UTTAR PRADESH	2013	20.4	69.5	3.5	1.6	2.1	190.6	233.9	287.1	52.2	61.2
1240	WEST UTTAR PRADESH	2014	48.3	29.4	22.6	5.3	11.0	22.0	151.6	81.0	84.7	14.6
1241	WEST UTTAR PRADESH	2015	31.6	7.2	66.8	21.0	8.1	72.0	194.2	143.5	26.5	6.9

115 rows × 14 columns



```
In [37]: data18.isnull().sum()
```

```
Out[37]: SUBDIVISION    0
YEAR                0
JAN                 0
FEB                 0
MAR                 0
APR                 0
MAY                 0
JUN                 0
JUL                 0
AUG                 0
SEP                 0
OCT                 0
NOV                 0
DEC                 0
dtype: int64
```

```
In [ ]:
```

```
In [38]: data19=data1.loc[(data.SUBDIVISION=='UTTARAKHAND')]  
data19
```

```
Out[38]:
```

	SUBDIVISION	YEAR	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT
1242	UTTARAKHAND	1901	134.5	81.4	44.5	5.9	60.8	33.6	381.1	612.3	167.1	16
1243	UTTARAKHAND	1902	0.0	17.0	52.2	63.7	52.1	113.1	444.1	327.5	220.4	31
1244	UTTARAKHAND	1903	68.0	7.9	87.6	10.3	37.5	83.0	251.6	442.7	249.3	57
1245	UTTARAKHAND	1904	40.0	5.2	78.3	13.6	61.1	180.1	449.6	417.2	174.1	6
1246	UTTARAKHAND	1905	115.4	80.7	99.8	26.1	70.3	111.5	299.9	349.5	129.5	0
...
1352	UTTARAKHAND	2011	30.9	65.2	18.0	30.9	84.2	223.1	433.3	523.7	148.4	3
1353	UTTARAKHAND	2012	38.8	11.9	28.1	39.2	9.1	46.0	387.1	419.5	220.6	4
1354	UTTARAKHAND	2013	73.0	188.3	22.0	24.7	18.2	488.9	413.4	359.4	111.3	29
1355	UTTARAKHAND	2014	45.9	99.9	68.4	37.6	52.9	62.9	462.7	264.2	107.9	40
1356	UTTARAKHAND	2015	54.5	62.6	127.3	57.3	38.0	186.6	337.0	305.3	52.6	16

115 rows × 14 columns



```
In [39]: data19.isnull().sum()
```

```
Out[39]: SUBDIVISION    0  
YEAR                0  
JAN                 0  
FEB                 0  
MAR                 0  
APR                 0  
MAY                 0  
JUN                 0  
JUL                 0  
AUG                 0  
SEP                 0  
OCT                 0  
NOV                 0  
DEC                 0  
dtype: int64
```

```
In [ ]:
```

In [40]:

```
data20=data1.loc[(data.SUBDIVISION=='HARYANA DELHI & CHANDIGARH')]  
data20
```

Out[40]:

	SUBDIVISION	YEAR	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV
1357	HARYANA DELHI & CHANDIGARH	1901	35.4	28.9	11.1	0.0	5.1	13.2	126.4	151.5	10.5	2.0	
1358	HARYANA DELHI & CHANDIGARH	1902	0.0	0.7	2.9	10.2	15.8	74.6	149.3	97.1	59.8	9.3	
1359	HARYANA DELHI & CHANDIGARH	1903	14.7	0.5	2.3	0.5	8.5	8.6	151.6	138.2	97.7	4.0	
1360	HARYANA DELHI & CHANDIGARH	1904	7.6	0.7	48.0	0.5	29.3	34.3	109.7	162.9	102.3	1.5	
1361	HARYANA DELHI & CHANDIGARH	1905	44.8	20.8	14.0	1.3	7.4	20.1	93.6	23.1	92.6	0.0	
...	
1467	HARYANA DELHI & CHANDIGARH	2011	0.7	26.7	6.9	8.9	28.7	94.4	85.0	127.3	133.1	0.0	
1468	HARYANA DELHI & CHANDIGARH	2012	8.2	0.2	0.1	11.8	3.8	5.3	68.1	196.6	90.7	2.4	
1469	HARYANA DELHI & CHANDIGARH	2013	21.1	52.2	5.3	3.3	1.4	62.1	96.5	161.9	42.8	10.9	
1470	HARYANA DELHI & CHANDIGARH	2014	13.0	17.3	26.8	7.5	20.3	25.9	72.3	34.8	67.3	10.5	
1471	HARYANA DELHI & CHANDIGARH	2015	12.4	6.6	71.8	34.8	8.4	43.7	130.3	89.2	32.1	3.7	

115 rows × 14 columns



In [41]:

data20.isnull().sum()

Out[41]:

SUBDIVISION0
YEAR0
JAN0
FEB0
MAR0
APR0
MAY0
JUN0
JUL0
AUG0
SEP0
OCT0
NOV0
DEC0
dtype: int64

In []:

In [42]:

data21=data1.loc[(data.SUBDIVISION=='PUNJAB')]
data21

Out[42]:

	SUBDIVISION	YEAR	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV
1472	PUNJAB	1901	55.7	50.1	25.2	2.1	25.2	10.4	178.2	145.0	24.4	3.7	0.0
1473	PUNJAB	1902	0.0	0.8	9.9	10.9	29.6	49.9	125.6	94.9	67.2	9.0	0.0
1474	PUNJAB	1903	29.5	0.5	45.0	1.3	9.2	5.2	212.2	119.1	132.5	6.9	0.0
1475	PUNJAB	1904	24.2	1.7	87.8	1.2	13.8	22.0	59.9	124.0	73.8	7.4	0.0
1476	PUNJAB	1905	53.0	40.3	24.3	0.5	2.2	19.2	122.6	50.3	111.1	1.2	0.0
...
1582	PUNJAB	2011	3.5	35.6	8.2	17.8	18.9	162.9	120.9	193.5	140.2	0.0	0.0
1583	PUNJAB	2012	62.6	3.2	1.9	31.1	1.6	11.9	120.2	135.1	112.3	2.2	0.0
1584	PUNJAB	2013	9.3	50.1	11.6	3.4	3.6	120.3	117.9	217.1	24.4	16.2	0.0
1585	PUNJAB	2014	21.8	20.1	30.3	24.5	20.8	20.6	76.3	41.9	105.8	6.0	0.0
1586	PUNJAB	2015	17.7	31.3	68.5	29.8	16.7	48.3	130.2	88.6	69.2	9.0	0.0

115 rows × 14 columns

In [43]:

data21.isnull().sum()

Out[43]:

SUBDIVISION0
YEAR0
JAN0
FEB0
MAR0
APR0
MAY0
JUN0
JUL0
AUG0
SEP0
OCT0
NOV0
DEC0
dtype: int64

In []:

In [44]:

data22=data1.loc[(data.SUBDIVISION=='HIMACHAL PRADESH')]
data22

Out[44]:

	SUBDIVISION	YEAR	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT
1587	HIMACHAL PRADESH	1901	137.8	174.5	75.0	19.2	89.6	32.7	280.5	459.7	53.0	3.9
1588	HIMACHAL PRADESH	1902	6.5	27.0	104.4	76.2	61.3	78.8	258.6	199.3	113.4	23.6
1589	HIMACHAL PRADESH	1903	76.5	21.4	213.7	25.4	54.7	32.2	157.7	256.5	107.9	5.8
1590	HIMACHAL PRADESH	1904	79.3	22.4	131.7	48.0	90.3	33.1	241.1	184.3	56.4	51.6
1591	HIMACHAL PRADESH	1905	81.3	76.8	160.2	39.3	50.4	43.6	191.1	132.8	119.1	0.3
...
1697	HIMACHAL PRADESH	2011	43.9	97.4	49.7	62.4	45.1	118.3	177.7	380.2	120.3	6.0
1698	HIMACHAL PRADESH	2012	92.3	51.3	28.4	55.9	9.4	31.1	241.5	280.6	133.1	3.1
1699	HIMACHAL PRADESH	2013	79.9	182.6	76.6	28.9	32.6	233.6	208.8	240.0	65.8	21.8
1700	HIMACHAL PRADESH	2014	69.6	124.9	125.2	60.6	68.9	51.7	203.6	146.7	84.6	19.3
1701	HIMACHAL PRADESH	2015	67.2	156.6	192.5	84.9	45.0	85.8	249.9	195.9	75.5	17.7

115 rows × 14 columns

In [45]: `data22.isnull().sum()`

```
Out[45]: SUBDIVISION    0
YEAR                0
JAN                 0
FEB                 0
MAR                 0
APR                 0
MAY                 0
JUN                 0
JUL                 0
AUG                 0
SEP                 0
OCT                 0
NOV                 0
DEC                 0
dtype: int64
```

In []:

Getting only Costal JAMMU & KASHMIR and Filling Null values

In [46]: `data23=data1.loc[(data.SUBDIVISION=='JAMMU & KASHMIR')]`
`data23`

```
Out[46]:
```

	SUBDIVISION	YEAR	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OC
1702	JAMMU & KASHMIR	1901	66.4	69.3	69.6	132.2	105.8	53.4	171.7	181.3	101.8	24
1703	JAMMU & KASHMIR	1902	6.5	9.7	91.3	100.5	70.7	113.3	108.4	136.9	62.2	15
1704	JAMMU & KASHMIR	1903	96.2	21.5	238.6	58.7	57.3	18.9	332.5	218.6	176.9	10
1705	JAMMU & KASHMIR	1904	110.6	17.3	145.2	64.5	67.8	25.9	182.3	132.2	62.3	50
1706	JAMMU & KASHMIR	1905	146.7	76.3	161.4	71.7	65.2	43.3	145.2	111.5	239.7	5
...
1812	JAMMU & KASHMIR	2011	43.4	211.6	97.8	89.0	32.4	72.5	81.6	131.2	72.0	19
1813	JAMMU & KASHMIR	2012	150.9	95.8	45.2	86.6	48.9	32.6	118.8	264.9	106.7	15
1814	JAMMU & KASHMIR	2013	52.2	136.4	41.9	47.4	47.4	80.5	125.1	219.1	41.2	34
1815	JAMMU & KASHMIR	2014	75.8	64.0	153.1	76.1	52.7	25.3	100.5	134.6	362.8	32
1816	JAMMU & KASHMIR	2015	27.9	187.2	341.4	173.3	64.6	121.4	233.2	129.2	130.2	87

115 rows × 14 columns



```
In [47]: data23.isnull().sum()
```

```
Out[47]: SUBDIVISION    0
YEAR                0
JAN                 0
FEB                 0
MAR                 0
APR                 0
MAY                 0
JUN                 0
JUL                 1
AUG                 0
SEP                 0
OCT                 0
NOV                 1
DEC                 1
dtype: int64
```

```
In [48]: data27= data23.fillna(data23.median())
data27
```

```
Out[48]:
```

	SUBDIVISION	YEAR	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OC
1702	JAMMU & KASHMIR	1901	66.4	69.3	69.6	132.2	105.8	53.4	171.7	181.3	101.8	24
1703	JAMMU & KASHMIR	1902	6.5	9.7	91.3	100.5	70.7	113.3	108.4	136.9	62.2	15
1704	JAMMU & KASHMIR	1903	96.2	21.5	238.6	58.7	57.3	18.9	332.5	218.6	176.9	10
1705	JAMMU & KASHMIR	1904	110.6	17.3	145.2	64.5	67.8	25.9	182.3	132.2	62.3	50
1706	JAMMU & KASHMIR	1905	146.7	76.3	161.4	71.7	65.2	43.3	145.2	111.5	239.7	5
...
1812	JAMMU & KASHMIR	2011	43.4	211.6	97.8	89.0	32.4	72.5	81.6	131.2	72.0	19
1813	JAMMU & KASHMIR	2012	150.9	95.8	45.2	86.6	48.9	32.6	118.8	264.9	106.7	15
1814	JAMMU & KASHMIR	2013	52.2	136.4	41.9	47.4	47.4	80.5	125.1	219.1	41.2	34
1815	JAMMU & KASHMIR	2014	75.8	64.0	153.1	76.1	52.7	25.3	100.5	134.6	362.8	32
1816	JAMMU & KASHMIR	2015	27.9	187.2	341.4	173.3	64.6	121.4	233.2	129.2	130.2	87

115 rows × 14 columns



In [49]:

data27.isnull().sum()

Out[49]:

SUBDIVISION0
YEAR0
JAN0
FEB0
MAR0
APR0
MAY0
JUN0
JUL0
AUG0
SEP0
OCT0
NOV0
DEC0
dtype: int64

In []:

Getting only LAKSHADWEEP and Filling Null values

In [50]:

data24=data1.loc[(data.SUBDIVISION=='LAKSHADWEEP')]
data24

Out[50]:

	SUBDIVISION	YEAR	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT
4002	LAKSHADWEEP	1901	22.6	86.4	114.8	263.8	37.3	459.0	0.0	0.0	46.7	18.0
4003	LAKSHADWEEP	1902	99.3	9.6	32.6	40.4	179.1	374.2	413.3	170.0	214.3	38.0
4004	LAKSHADWEEP	1903	63.5	95.0	0.0	29.5	144.1	212.4	261.8	202.0	292.1	7.0
4005	LAKSHADWEEP	1904	0.0	0.0	13.5	13.2	143.3	261.3	256.0	38.9	219.9	15.0
4006	LAKSHADWEEP	1905	62.4	0.0	0.0	0.0	166.7	400.7	68.7	377.5	107.5	23.0
...
4111	LAKSHADWEEP	2011	5.1	2.8	3.1	85.9	107.2	153.6	350.2	254.0	255.2	11.0
4112	LAKSHADWEEP	2012	19.2	0.1	1.6	76.8	21.2	327.0	231.5	381.2	179.8	14.0
4113	LAKSHADWEEP	2013	26.2	34.4	37.5	5.3	88.3	426.2	296.4	154.4	180.0	7.0
4114	LAKSHADWEEP	2014	53.2	16.1	4.4	14.9	57.4	244.1	116.1	466.1	132.2	16.0
4115	LAKSHADWEEP	2015	2.2	0.5	3.7	87.1	133.1	296.6	257.5	146.4	160.4	16.0

114 rows × 14 columns

In [51]:

data24.isnull().sum()

Out[51]:

SUBDIVISION0
YEAR0
JAN2
FEB1
MAR2
APR2
MAY2
JUN2
JUL3
AUG2
SEP3
OCT3
NOV6
DEC4
dtype: int64

In [52]:

data28= data24.fillna(data24.median())
data28

Out[52]:

	SUBDIVISION	YEAR	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT
4002	LAKSHADWEEP	1901	22.6	86.4	114.8	263.8	37.3	459.0	0.0	0.0	46.7	18.3
4003	LAKSHADWEEP	1902	99.3	9.6	32.6	40.4	179.1	374.2	413.3	170.0	214.3	38.4
4004	LAKSHADWEEP	1903	63.5	95.0	0.0	29.5	144.1	212.4	261.8	202.0	292.1	7.9
4005	LAKSHADWEEP	1904	0.0	0.0	13.5	13.2	143.3	261.3	256.0	38.9	219.9	15.3
4006	LAKSHADWEEP	1905	62.4	0.0	0.0	0.0	166.7	400.7	68.7	377.5	107.5	23.3
...
4111	LAKSHADWEEP	2011	5.1	2.8	3.1	85.9	107.2	153.6	350.2	254.0	255.2	11.3
4112	LAKSHADWEEP	2012	19.2	0.1	1.6	76.8	21.2	327.0	231.5	381.2	179.8	14.3
4113	LAKSHADWEEP	2013	26.2	34.4	37.5	5.3	88.3	426.2	296.4	154.4	180.0	7.3
4114	LAKSHADWEEP	2014	53.2	16.1	4.4	14.9	57.4	244.1	116.1	466.1	132.2	16.3
4115	LAKSHADWEEP	2015	2.2	0.5	3.7	87.1	133.1	296.6	257.5	146.4	160.4	16.3

114 rows × 14 columns

In [53]:

data28.isnull().sum()

Out[53]:

SUBDIVISION0
YEAR0
JAN0
FEB0
MAR0
APR0
MAY0
JUN0
JUL0
AUG0
SEP0
OCT0
NOV0
DEC0
dtype: int64

In []:

Getting only COASTAL KARNATAKA and Filling Null values

In [54]:

data25=data1.loc[(data.SUBDIVISION=='COASTAL KARNATAKA')]
data25

Out[54]:

	SUBDIVISION	YEAR	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT
3542	COASTAL KARNATAKA	1901	1.8	0.6	10.7	52.4	81.6	960.9	991.2	606.4	108.0	121.0
3543	COASTAL KARNATAKA	1902	3.2	0.3	4.9	10.2	54.6	698.4	1401.6	454.2	708.4	181.0
3544	COASTAL KARNATAKA	1903	0.7	0.0	0.0	4.1	202.8	536.5	1405.5	593.8	304.4	181.0
3545	COASTAL KARNATAKA	1904	2.4	0.0	4.8	23.7	93.2	1108.2	1070.0	465.6	245.3	121.0
3546	COASTAL KARNATAKA	1905	0.0	0.2	0.0	6.4	83.1	767.3	777.3	586.9	172.9	221.0
...
3652	COASTAL KARNATAKA	2011	4.8	3.8	8.7	66.1	49.3	1018.4	1080.5	861.3	545.2	171.0
3653	COASTAL KARNATAKA	2012	NaN	11.4	5.1	77.0	22.9	650.9	754.6	1027.6	382.0	111.0
3654	COASTAL KARNATAKA	2013	2.4	19.6	19.0	28.5	100.4	1153.0	1515.3	680.2	379.1	261.0
3655	COASTAL KARNATAKA	2014	0.0	0.3	1.9	40.5	181.9	507.0	1155.4	1121.0	379.3	221.0
3656	COASTAL KARNATAKA	2015	1.4	1.0	32.3	72.2	150.3	735.3	930.9	575.2	260.3	201.0

115 rows × 14 columns



In [55]:

data25.isnull().sum()

Out[55]:

SUBDIVISION0
YEAR0
JAN1
FEB0
MAR0
APR0
MAY0
JUN0
JUL0
AUG0
SEP0
OCT0
NOV0
DEC0
dtype: int64

In [56]:

data29= data25.fillna(data25.median())
data29

Out[56]:

	SUBDIVISION	YEAR	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT
3542	COASTAL KARNATAKA	1901	1.8	0.6	10.7	52.4	81.6	960.9	991.2	606.4	108.0	120.0
3543	COASTAL KARNATAKA	1902	3.2	0.3	4.9	10.2	54.6	698.4	1401.6	454.2	708.4	180.0
3544	COASTAL KARNATAKA	1903	0.7	0.0	0.0	4.1	202.8	536.5	1405.5	593.8	304.4	180.0
3545	COASTAL KARNATAKA	1904	2.4	0.0	4.8	23.7	93.2	1108.2	1070.0	465.6	245.3	120.0
3546	COASTAL KARNATAKA	1905	0.0	0.2	0.0	6.4	83.1	767.3	777.3	586.9	172.9	220.0
...
3652	COASTAL KARNATAKA	2011	4.8	3.8	8.7	66.1	49.3	1018.4	1080.5	861.3	545.2	170.0
3653	COASTAL KARNATAKA	2012	0.1	11.4	5.1	77.0	22.9	650.9	754.6	1027.6	382.0	110.0
3654	COASTAL KARNATAKA	2013	2.4	19.6	19.0	28.5	100.4	1153.0	1515.3	680.2	379.1	260.0
3655	COASTAL KARNATAKA	2014	0.0	0.3	1.9	40.5	181.9	507.0	1155.4	1121.0	379.3	220.0
3656	COASTAL KARNATAKA	2015	1.4	1.0	32.3	72.2	150.3	735.3	930.9	575.2	260.3	200.0

115 rows × 14 columns


```
In [57]: data29.isnull().sum()
```

```
Out[57]: SUBDIVISION    0  
        YEAR          0  
        JAN           0  
        FEB           0  
        MAR           0  
        APR           0  
        MAY           0  
        JUN           0  
        JUL           0  
        AUG           0  
        SEP           0  
        OCT           0  
        NOV           0  
        DEC           0  
        dtype: int64
```

```
In [ ]:
```

Getting only WEST MADHYA PRADESH and Filling Null values

In [58]:

data26=data1.loc[(data.SUBDIVISION=='WEST MADHYA PRADESH')]
data26

Out[58]:

	SUBDIVISION	YEAR	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV
2047	WEST MADHYA PRADESH	1901	25.8	5.8	5.8	2.8	2.1	41.2	228.9	349.9	47.9	5.6	
2048	WEST MADHYA PRADESH	1902	22.1	8.4	0.0	2.0	5.9	35.9	401.9	179.4	194.1	37.9	
2049	WEST MADHYA PRADESH	1903	5.3	0.0	0.0	0.0	22.3	50.6	304.9	261.1	250.2	55.1	
2050	WEST MADHYA PRADESH	1904	3.2	15.5	14.8	0.0	12.0	96.6	273.0	218.6	125.9	3.3	
2051	WEST MADHYA PRADESH	1905	3.5	4.4	1.1	0.8	3.0	36.1	326.3	137.6	183.5	0.3	
...
2157	WEST MADHYA PRADESH	2011	0.0	1.7	0.1	1.8	3.6	241.5	306.7	343.3	165.0	0.2	
2158	WEST MADHYA PRADESH	2012	6.2	0.0	0.0	0.9	3.1	48.2	439.2	341.2	194.3	2.1	
2159	WEST MADHYA PRADESH	2013	1.7	31.1	8.5	2.8	0.4	263.7	485.1	432.6	98.9	68.7	
2160	WEST MADHYA PRADESH	2014	25.6	34.4	4.6	1.4	1.4	30.6	337.4	211.0	192.6	7.0	
2161	WEST MADHYA PRADESH	2015	40.2	6.4	53.5	13.3	2.0	154.1	428.2	276.6	55.6	11.0	

115 rows × 14 columns

In [59]:

data26.isnull().sum()

Out[59]:

SUBDIVISION0
YEAR0
JAN0
FEB1
MAR0
APR0
MAY0
JUN0
JUL0
AUG0
SEP0
OCT0
NOV0
DEC0
dtype: int64

In [60]:

data30= data26.fillna(data26.median())
data30

Out[60]:

	SUBDIVISION	YEAR	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	
2047	WEST MADHYA PRADESH	1901	25.8	5.8	5.8	2.8	2.1	41.2	228.9	349.9	47.9	5.6	
2048	WEST MADHYA PRADESH	1902	22.1	8.4	0.0	2.0	5.9	35.9	401.9	179.4	194.1	37.9	
2049	WEST MADHYA PRADESH	1903	5.3	0.0	0.0	0.0	22.3	50.6	304.9	261.1	250.2	55.1	
2050	WEST MADHYA PRADESH	1904	3.2	15.5	14.8	0.0	12.0	96.6	273.0	218.6	125.9	3.3	
2051	WEST MADHYA PRADESH	1905	3.5	4.4	1.1	0.8	3.0	36.1	326.3	137.6	183.5	0.3	
...	
2157	WEST MADHYA PRADESH	2011	0.0	1.7	0.1	1.8	3.6	241.5	306.7	343.3	165.0	0.2	
2158	WEST MADHYA PRADESH	2012	6.2	0.0	0.0	0.9	3.1	48.2	439.2	341.2	194.3	2.1	
2159	WEST MADHYA PRADESH	2013	1.7	31.1	8.5	2.8	0.4	263.7	485.1	432.6	98.9	68.7	
2160	WEST MADHYA PRADESH	2014	25.6	34.4	4.6	1.4	1.4	30.6	337.4	211.0	192.6	7.0	
2161	WEST MADHYA PRADESH	2015	40.2	6.4	53.5	13.3	2.0	154.1	428.2	276.6	55.6	11.0	

115 rows × 14 columns

```
In [61]: data30.isnull().sum()
```

```
Out[61]: SUBDIVISION      0
YEAR                0
JAN                 0
FEB                 0
MAR                 0
APR                 0
MAY                 0
JUN                 0
JUL                 0
AUG                 0
SEP                 0
OCT                 0
NOV                 0
DEC                 0
dtype: int64
```

```
In [ ]:
```

```
In [62]: data1['SUBDIVISION'].value_counts()
```

```
Out[62]: WEST MADHYA PRADESH      115
EAST RAJASTHAN                    115
COASTAL KARNATAKA                 115
TAMIL NADU                       115
RAYALSEEMA                       115
TELANGANA                        115
COASTAL ANDHRA PRADESH            115
CHHATTISGARH                     115
VIDARBHA                         115
MATATHWADA                       115
MADHYA MAHARASHTRA               115
KONKAN & GOA                     115
SAURASHTRA & KUTCH               115
GUJARAT REGION                   115
EAST MADHYA PRADESH              115
KERALA                           115
WEST RAJASTHAN                   115
SOUTH INTERIOR KARNATAKA         115
JAMMU & KASHMIR                  115
HIMACHAL PRADESH                 115
PUNJAB                          115
HARYANA DELHI & CHANDIGARH       115
UTTARAKHAND                      115
WEST UTTAR PRADESH               115
EAST UTTAR PRADESH               115
BIHAR                           115
JHARKHAND                        115
ORISSA                           115
GANGETIC WEST BENGAL             115
SUB HIMALAYAN WEST BENGAL & SIKKIM 115
NAGA MANI MIZO TRIPURA          115
ASSAM & MEGHALAYA                115
NORTH INTERIOR KARNATAKA         115
LAKSHADWEEP                      114
ANDAMAN & NICOBAR ISLANDS        110
ARUNACHAL PRADESH                97
Name: SUBDIVISION, dtype: int64
```

In []:

In [63]:

#data1.to_csv('newfile.csv')

In [64]:

data1

Out[64]:

	SUBDIVISION	YEAR	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	C
0	ANDAMAN & NICOBAR ISLANDS	1901	49.2	87.1	29.2	2.3	528.8	517.5	365.1	481.1	332.6	38
1	ANDAMAN & NICOBAR ISLANDS	1902	0.0	159.8	12.2	0.0	446.1	537.1	228.9	753.7	666.2	19
2	ANDAMAN & NICOBAR ISLANDS	1903	12.7	144.0	0.0	1.0	235.1	479.9	728.4	326.7	339.0	18
3	ANDAMAN & NICOBAR ISLANDS	1904	9.4	14.7	0.0	202.4	304.5	495.1	502.0	160.1	820.4	22
4	ANDAMAN & NICOBAR ISLANDS	1905	1.3	0.0	3.3	26.9	279.5	628.7	368.7	330.5	297.0	26
...
4111	LAKSHADWEEP	2011	5.1	2.8	3.1	85.9	107.2	153.6	350.2	254.0	255.2	11
4112	LAKSHADWEEP	2012	19.2	0.1	1.6	76.8	21.2	327.0	231.5	381.2	179.8	14
4113	LAKSHADWEEP	2013	26.2	34.4	37.5	5.3	88.3	426.2	296.4	154.4	180.0	7
4114	LAKSHADWEEP	2014	53.2	16.1	4.4	14.9	57.4	244.1	116.1	466.1	132.2	16
4115	LAKSHADWEEP	2015	2.2	0.5	3.7	87.1	133.1	296.6	257.5	146.4	160.4	16

4116 rows × 14 columns



In []:

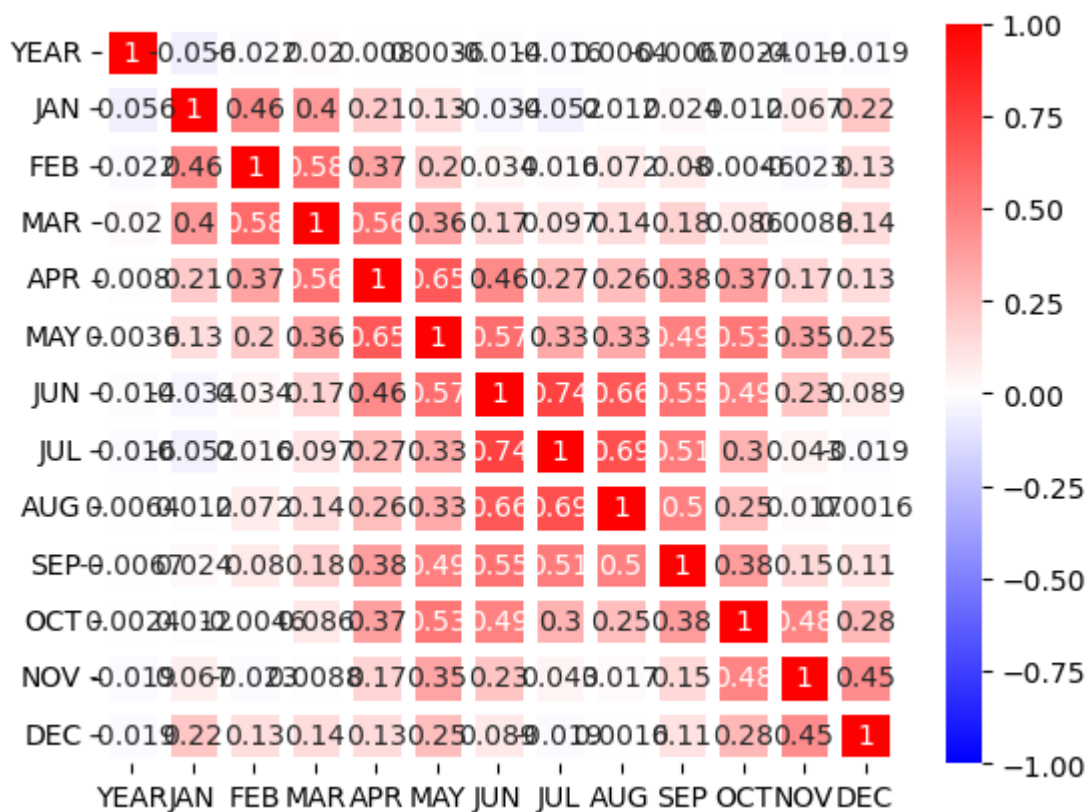
```
In [65]: cor=data1.corr()  
cor
```

```
Out[65]:
```

	YEAR	JAN	FEB	MAR	APR	MAY	JUN	JUL	
YEAR	1.000000	-0.056235	-0.022144	0.020338	0.008007	0.003594	-0.013594	-0.016240	0
JAN	-0.056235	1.000000	0.456183	0.398502	0.209302	0.129622	-0.033725	-0.051642	0
FEB	-0.022144	0.456183	1.000000	0.579819	0.367114	0.203062	0.033703	0.016235	0
MAR	0.020338	0.398502	0.579819	1.000000	0.556856	0.362815	0.165857	0.097334	0
APR	0.008007	0.209302	0.367114	0.556856	1.000000	0.650595	0.457091	0.268097	0
MAY	0.003594	0.129622	0.203062	0.362815	0.650595	1.000000	0.567618	0.332283	0
JUN	-0.013594	-0.033725	0.033703	0.165857	0.457091	0.567618	1.000000	0.741285	0
JUL	-0.016240	-0.051642	0.016235	0.097334	0.268097	0.332283	0.741285	1.000000	0
AUG	0.006442	0.011952	0.072159	0.135071	0.256168	0.329499	0.655142	0.686662	1
SEP	-0.006670	0.024289	0.080148	0.178904	0.382525	0.492378	0.551890	0.513067	0
OCT	0.002406	0.012374	-0.004581	0.086187	0.368886	0.529342	0.490393	0.299221	0
NOV	-0.018776	0.067281	-0.023413	0.008814	0.165642	0.351931	0.229718	0.042671	0
DEC	-0.019139	0.219701	0.132570	0.136328	0.132892	0.250112	0.088782	-0.019427	0

```
In [66]: sns.heatmap(cor,vmax=1,vmin=-1,annot=True,linewidth=5,cmap='bwr')
```

```
Out[66]: <Axes: >
```



```
In [84]: data31=data1.loc[(data.SUBDIVISION=='KERALA')]
data31
```

```
Out[84]:
```

	SUBDIVISION	YEAR	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT
3887	KERALA	1901	28.7	44.7	51.6	160.0	174.7	824.6	743.0	357.5	197.7	266.0
3888	KERALA	1902	6.7	2.6	57.3	83.9	134.5	390.9	1205.0	315.8	491.6	358.0
3889	KERALA	1903	3.2	18.6	3.1	83.6	249.7	558.6	1022.5	420.2	341.8	354.0
3890	KERALA	1904	23.7	3.0	32.2	71.5	235.7	1098.2	725.5	351.8	222.7	328.0
3891	KERALA	1905	1.2	22.3	9.4	105.9	263.3	850.2	520.5	293.6	217.2	383.0
...
3997	KERALA	2011	20.5	45.7	24.1	165.2	124.2	788.5	536.8	492.7	391.2	227.0
3998	KERALA	2012	7.4	11.0	21.0	171.1	95.3	430.3	362.6	501.6	241.1	187.0
3999	KERALA	2013	3.9	40.1	49.9	49.3	119.3	1042.7	830.2	369.7	318.6	259.0
4000	KERALA	2014	4.6	10.3	17.9	95.7	251.0	454.4	677.8	733.9	298.8	355.0
4001	KERALA	2015	3.1	5.8	50.1	214.1	201.8	563.6	406.0	252.2	292.9	308.0

115 rows × 14 columns



```
In [93]: data31['ANNUAL_RAIN']=data31.apply(lambda row:row.JAN+row.FEB+row.MAR+row.APR+row.MAY+row.JUN+row.JUL+row.AUG+row.SEP+row.OCT)
```



```
In [94]: data31['Jun-Sep monsoon']=data31.apply(lambda row:row.JUN+row.JUL+row.AUG+row.SEP)
```

```
In [95]: data31['Oct-Dec monsoon']=data31.apply(lambda row:row.OCT+row.NOV+row.DEC, axis=1)
```

```
In [96]: data31
```

```
Out[96]:
```

	SUBDIVISION	YEAR	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	ANNUAL_RAIN	Jun-Sep monsoon	Oct-Dec monsoon
3887	KERALA	1901	28.7	44.7	51.6	160.0	174.7	824.6	743.0	357.5	197.7	266.0	1618.5	1925.3	1091.2
3888	KERALA	1902	6.7	2.6	57.3	83.9	134.5	390.9	1205.0	315.8	491.6	358.0	2685.8	2112.4	1206.6
3889	KERALA	1903	3.2	18.6	3.1	83.6	249.7	558.6	1022.5	420.2	341.8	354.0	2706.4	1801.3	1098.3
3890	KERALA	1904	23.7	3.0	32.2	71.5	235.7	1098.2	725.5	351.8	222.7	328.0	2768.6	2175.5	1147.5
3891	KERALA	1905	1.2	22.3	9.4	105.9	263.3	850.2	520.5	293.6	217.2	383.0	2338.1	1867.3	1213.7
...
3997	KERALA	2011	20.5	45.7	24.1	165.2	124.2	788.5	536.8	492.7	391.2	227.0	2555.4	1817.5	1040.2
3998	KERALA	2012	7.4	11.0	21.0	171.1	95.3	430.3	362.6	501.6	241.1	187.0	1660.3	1245.3	629.1
3999	KERALA	2013	3.9	40.1	49.9	49.3	119.3	1042.7	830.2	369.7	318.6	259.0	2982.2	1550.2	826.7
4000	KERALA	2014	4.6	10.3	17.9	95.7	251.0	454.4	677.8	733.9	298.8	355.0	2530.7	1766.5	908.8
4001	KERALA	2015	3.1	5.8	50.1	214.1	201.8	563.6	406.0	252.2	292.9	308.0	2133.5	1451.7	753.9

115 rows × 17 columns



```
In [89]: data32=data31.drop(columns=['JAN', 'FEB', 'MAR', 'APR', 'MAY', 'JUN', 'JUL', 'AUG', 'SEP', 'OCT', 'NOV', 'DEC'])
```

```
In [90]: data32
```

Out[90]:

	SUBDIVISION	YEAR	ANNUAL_RAIN	Jun-Sep monsoon	Oct-Dec monsoon
3887	KERALA	1901	3248.6	2122.8	666.1
3888	KERALA	1902	3326.5	2403.3	638.2
3889	KERALA	1903	3271.4	2343.1	570.1
3890	KERALA	1904	3129.6	2398.2	365.3
3891	KERALA	1905	2741.7	1881.5	458.1
...
3997	KERALA	2011	3035.3	2209.2	446.4
3998	KERALA	2012	2151.2	1535.6	309.8
3999	KERALA	2013	3255.5	2561.2	431.8
4000	KERALA	2014	3046.6	2164.9	502.2
4001	KERALA	2015	2600.7	1514.7	611.1

115 rows × 5 columns

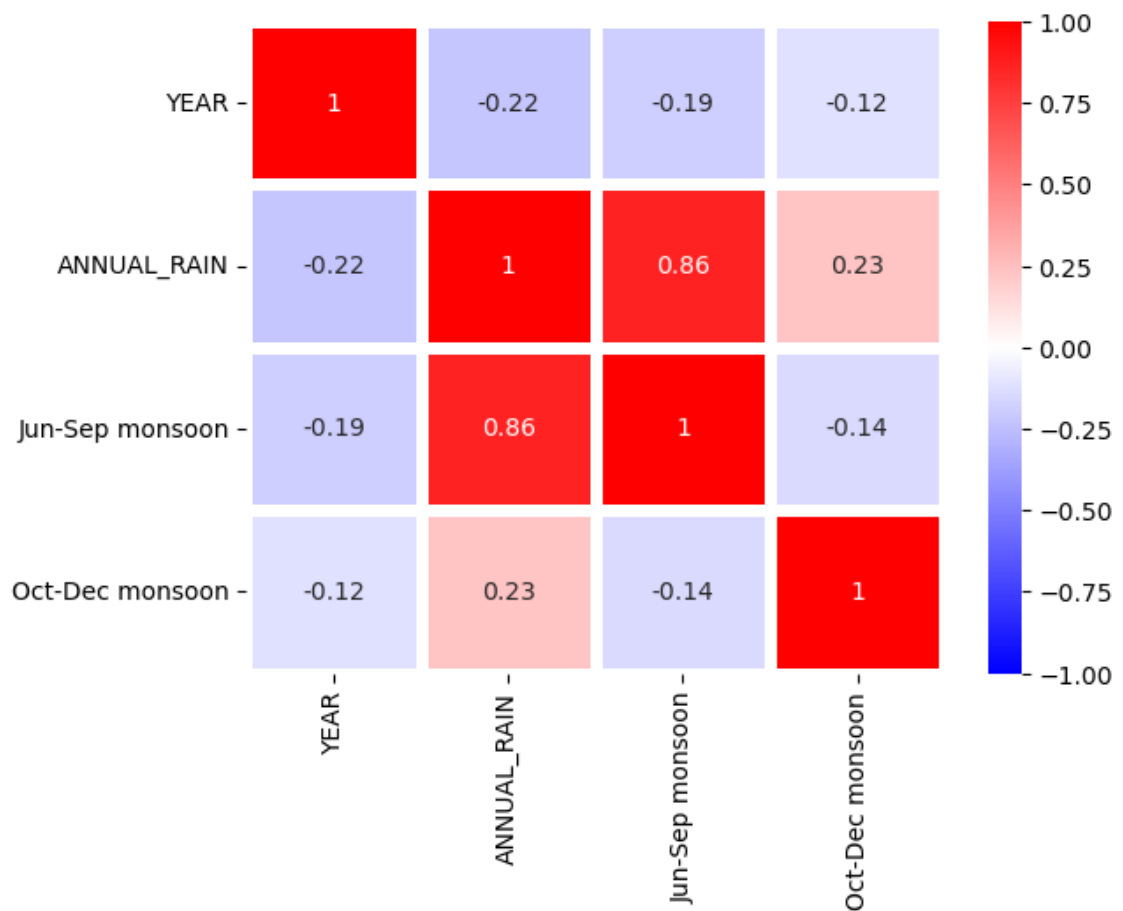
```
In [99]: corr=data32.corr()  
corr
```

Out[99]:

	YEAR	ANNUAL_RAIN	Jun-Sep monsoon	Oct-Dec monsoon
YEAR	1.000000	-0.224439	-0.188431	-0.118936
ANNUAL_RAIN	-0.224439	1.000000	0.861188	0.232037
Jun-Sep monsoon	-0.188431	0.861188	1.000000	-0.141537
Oct-Dec monsoon	-0.118936	0.232037	-0.141537	1.000000


```
In [104]: sns.heatmap(cor,vmax=1,vmin=-1,annot=True,linewidth=5,cmap='bwr')
```

Out[104]: <Axes: >



In [92]:

datanew=pd.concat([data2,data7,data9,data27,data28,data29,data30,data10,dat
datanew

Out[92]:

	SUBDIVISION	YEAR	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT
3082	COASTAL ANDHRA PRADESH	1901	18.8	80.9	7.2	28.7	68.7	77.7	113.0	133.7	125.3	173.4
3083	COASTAL ANDHRA PRADESH	1902	2.0	0.0	2.8	23.9	37.6	72.6	144.5	236.1	204.5	262.0
3084	COASTAL ANDHRA PRADESH	1903	0.8	13.3	0.2	6.2	73.4	154.0	248.6	258.0	216.5	159.1
3085	COASTAL ANDHRA PRADESH	1904	1.3	0.0	5.4	3.0	136.3	107.8	120.2	117.7	116.8	240.9
3086	COASTAL ANDHRA PRADESH	1905	1.1	16.7	68.0	37.0	68.8	84.4	64.6	210.8	170.2	66.0
...
1582	PUNJAB	2011	3.5	35.6	8.2	17.8	18.9	162.9	120.9	193.5	140.2	0.0
1583	PUNJAB	2012	62.6	3.2	1.9	31.1	1.6	11.9	120.2	135.1	112.3	2.2
1584	PUNJAB	2013	9.3	50.1	11.6	3.4	3.6	120.3	117.9	217.1	24.4	16.2
1585	PUNJAB	2014	21.8	20.1	30.3	24.5	20.8	20.6	76.3	41.9	105.8	6.0
1586	PUNJAB	2015	17.7	31.3	68.5	29.8	16.7	48.3	130.2	88.6	69.2	9.0

2161 rows × 14 columns

In []:

In []: