In [16]: import pandas as pd
import warnings
warnings.filterwarnings("ignore")

In [17]: data=pd.read\_csv("/home/placement/Downloads/rainfall in india 1901-2015.csv")

In [18]: data.describe()

Out[18]:

	YEAR	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	
count	4116.000000	4112.000000	4113.000000	4110.000000	4112.000000	4113.000000	4111.000000	4109.000000	4112.000000	4110.000000	4109.0
mean	1958.218659	18.957320	21.805325	27.359197	43.127432	85.745417	230.234444	347.214334	290.263497	197.361922	95.!
std	33.140898	33.585371	35.909488	46.959424	67.831168	123.234904	234.710758	269.539667	188.770477	135.408345	99.!
min	1901.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.400000	0.000000	0.000000	0.100000	0.0
25%	1930.000000	0.600000	0.600000	1.000000	3.000000	8.600000	70.350000	175.600000	155.975000	100.525000	14.0
50%	1958.000000	6.000000	6.700000	7.800000	15.700000	36.600000	138.700000	284.800000	259.400000	173.900000	65.1
75%	1987.000000	22.200000	26.800000	31.300000	49.950000	97.200000	305.150000	418.400000	377.800000	265.800000	148.4
max	2015.000000	583.700000	403.500000	605.600000	595.100000	1168.600000	1609.900000	2362.800000	1664.600000	1222.000000	948.:

In [19]: data.head()

Out[19]:

	SUBDIVISION	YEAR	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	ОСТ	NOV	DEC	ANNUAL	Jan- Feb	Mar- May	Jun- Sep	Oct- Dec
0	ANDAMAN & NICOBAR ISLANDS	1901	49.2	87.1	29.2	2.3	528.8	517.5	365.1	481.1	332.6	388.5	558.2	33.6	3373.2	136.3	560.3	1696.3	980.3
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	359.0	160.5	3520.7	159.8	458.3	2185.9	716.7
2	ANDAMAN & NICOBAR ISLANDS	1903	12.7	144.0	0.0	1.0	235.1	479.9	728.4	326.7	339.0	181.2	284.4	225.0	2957.4	156.7	236.1	1874.0	690.6
3	ANDAMAN & NICOBAR ISLANDS	1904	9.4	14.7	0.0	202.4	304.5	495.1	502.0	160.1	820.4	222.2	308.7	40.1	3079.6	24.1	506.9	1977.6	571.0
4	ANDAMAN & NICOBAR ISLANDS	1905	1.3	0.0	3.3	26.9	279.5	628.7	368.7	330.5	297.0	260.7	25.4	344.7	2566.7	1.3	309.7	1624.9	630.8

## In [20]: data.info()

```
<class 'pandas.core.frame.DataFrame'>
RangeIndex: 4116 entries, 0 to 4115
Data columns (total 19 columns):
                  Non-Null Count Dtype
     Column
 #
 0
     SUBDIVISION
                  4116 non-null
                                   object
 1
     YEAR
                  4116 non-null
                                   int64
 2
     JAN
                  4112 non-null
                                   float64
 3
     FEB
                  4113 non-null
                                   float64
 4
     MAR
                  4110 non-null
                                   float64
 5
     APR
                  4112 non-null
                                   float64
     MAY
                  4113 non-null
                                   float64
 7
     JUN
                  4111 non-null
                                  float64
 8
     JUL
                  4109 non-null
                                   float64
 9
     AUG
                  4112 non-null
                                   float64
 10
     SEP
                  4110 non-null
                                   float64
                                   float64
 11
     0CT
                  4109 non-null
 12
     NOV
                  4105 non-null
                                   float64
 13
     DEC
                  4106 non-null
                                   float64
 14
     ANNUAL
                  4090 non-null
                                   float64
    Jan-Feb
                  4110 non-null
                                  float64
 15
 16
    Mar-May
                  4107 non-null
                                  float64
    Jun-Sep
                                   float64
 17
                  4106 non-null
 18
    Oct-Dec
                  4103 non-null
                                  float64
dtypes: float64(17), int64(1), object(1)
memory usage: 611.1+ KB
```

In [21]: data.groupby(['SUBDIVISION']).count()

Out[21]:

	YEAR	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	ост	NOV	DEC	ANNUAL	Jan- Feb	Mar- May	Jun- Sep	Oct- Dec
SUBDIVISION																		
ANDAMAN & NICOBAR ISLANDS	110	110	110	108	108	109	108	108	108	107	108	108	107	104	110	107	107	107
ARUNACHAL PRADESH	97	96	96	95	97	97	96	96	97	97	95	95	95	91	96	95	95	94
ASSAM & MEGHALAYA	115	115	115	115	115	115	115	115	115	115	115	115	115	115	115	115	115	115
BIHAR	115	115	115	115	115	115	115	115	115	115	115	115	115	115	115	115	115	115
CHHATTISGARH	115	115	115	115	115	115	115	115	115	115	115	115	115	115	115	115	115	115
COASTAL ANDHRA PRADESH	115	115	115	115	115	115	115	115	115	115	115	115	115	115	115	115	115	115
COASTAL KARNATAKA	115	114	115	115	115	115	115	115	115	115	115	115	115	114	114	115	115	115
EAST MADHYA PRADESH	115	115	115	115	115	115	115	115	115	115	115	115	115	115	115	115	115	115
EAST RAJASTHAN	115	115	115	115	115	115	115	115	115	115	115	115	115	115	115	115	115	115
EAST UTTAR PRADESH	115	115	115	115	115	115	115	115	115	115	115	115	115	115	115	115	115	115
GANGETIC WEST BENGAL	115	115	115	115	115	115	115	115	115	115	115	115	115	115	115	115	115	115
GUJARAT REGION	115	115	115	115	115	115	115	115	115	115	115	115	115	115	115	115	115	115
HARYANA DELHI & CHANDIGARH	115	115	115	115	115	115	115	115	115	115	115	115	115	115	115	115	115	115
HIMACHAL PRADESH	115	115	115	115	115	115	115	115	115	115	115	115	115	115	115	115	115	115
JAMMU & KASHMIR	115	115	115	115	115	115	115	114	115	115	115	114	114	114	115	115	114	114
JHARKHAND	115	115	115	115	115	115	115	115	115	115	115	115	115	115	115	115	115	115
KERALA	115	115	115	115	115	115	115	115	115	115	115	115	115	115	115	115	115	115
KONKAN & GOA	115	115	115	115	115	115	115	115	115	115	115	115	115	115	115	115	115	115
LAKSHADWEEP	114	112	113	112	112	112	112	111	112	111	111	108	110	103	111	110	110	108
MADHYA MAHARASHTRA	115	115	115	115	115	115	115	115	115	115	115	115	115	115	115	115	115	115
MATATHWADA	115	115	115	115	115	115	115	115	115	115	115	115	115	115	115	115	115	115
NAGA MANI MIZO TRIPURA	115	115	115	115	115	115	115	115	115	115	115	115	115	115	115	115	115	115

	YEAR	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	ост	NOV	DEC	ANNUAL	Jan- Feb	Mar- May	Jun- Sep	
SUBDIVISION																		
NORTH INTERIOR KARNATAKA	115	115	115	115	115	115	115	115	115	115	115	115	115	115	115	115	115	115
ORISSA	115	115	115	115	115	115	115	115	115	115	115	115	115	115	115	115	115	115
PUNJAB	115	115	115	115	115	115	115	115	115	115	115	115	115	115	115	115	115	115
RAYALSEEMA	115	115	115	115	115	115	115	115	115	115	115	115	115	115	115	115	115	115
SAURASHTRA & KUTCH	115	115	115	115	115	115	115	115	115	115	115	115	115	115	115	115	115	115
SOUTH INTERIOR KARNATAKA	115	115	115	115	115	115	115	115	115	115	115	115	115	115	115	115	115	115
SUB HIMALAYAN WEST BENGAL & SIKKIM	115	115	115	115	115	115	115	115	115	115	115	115	115	115	115	115	115	115
TAMIL NADU	115	115	115	115	115	115	115	115	115	115	115	115	115	115	115	115	115	115
TELANGANA	115	115	115	115	115	115	115	115	115	115	115	115	115	115	115	115	115	115
UTTARAKHAND	115	115	115	115	115	115	115	115	115	115	115	115	115	115	115	115	115	115
VIDARBHA	115	115	115	115	115	115	115	115	115	115	115	115	115	115	115	115	115	115
WEST MADHYA PRADESH	115	115	114	115	115	115	115	115	115	115	115	115	115	114	114	115	115	115
WEST RAJASTHAN	115	115	115	115	115	115	115	115	115	115	115	115	115	115	115	115	115	115
WEST UTTAR PRADESH	115	115	115	115	115	115	115	115	115	115	115	115	115	115	115	115	115	115

Out[22]:

	SUBDIVISION	YEAR	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	ост	NOV	DEC	ANNUAL	Jan- Feb	Mar- May	Jun- Sep	(
0	ANDAMAN & NICOBAR ISLANDS	1901	49.2	87.1	29.2	2.3	528.8	517.5	365.1	481.1	332.6	388.5	558.2	33.6	3373.2	136.3	560.3	1696.3	9
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	359.0	160.5	3520.7	159.8	458.3	2185.9	7
2	ANDAMAN & NICOBAR ISLANDS	1903	12.7	144.0	0.0	1.0	235.1	479.9	728.4	326.7	339.0	181.2	284.4	225.0	2957.4	156.7	236.1	1874.0	6:
3	ANDAMAN & NICOBAR ISLANDS	1904	9.4	14.7	0.0	202.4	304.5	495.1	502.0	160.1	820.4	222.2	308.7	40.1	3079.6	24.1	506.9	1977.6	5
4	ANDAMAN & NICOBAR ISLANDS	1905	1.3	0.0	3.3	26.9	279.5	628.7	368.7	330.5	297.0	260.7	25.4	344.7	2566.7	1.3	309.7	1624.9	6
4111	LAKSHADWEEP	2011	5.1	2.8	3.1	85.9	107.2	153.6	350.2	254.0	255.2	117.4	184.3	14.9	1533.7	7.9	196.2	1013.0	3
4112	LAKSHADWEEP	2012	19.2	0.1	1.6	76.8	21.2	327.0	231.5	381.2	179.8	145.9	12.4	8.8	1405.5	19.3	99.6	1119.5	1
4113	LAKSHADWEEP	2013	26.2	34.4	37.5	5.3	88.3	426.2	296.4	154.4	180.0	72.8	78.1	26.7	1426.3	60.6	131.1	1057.0	1
4114	LAKSHADWEEP	2014	53.2	16.1	4.4	14.9	57.4	244.1	116.1	466.1	132.2	169.2	59.0	62.3	1395.0	69.3	76.7	958.5	2
4115	LAKSHADWEEP	2015	2.2	0.5	3.7	87.1	133.1	296.6	257.5	146.4	160.4	165.4	231.0	159.0	1642.9	2.7	223.9	860.9	5

4116 rows × 19 columns

localhost:8888/notebooks/Desktop/ds/ rainfall in india.ipynb

In	[23]:	data.isna().s	um()
	[23]:		um()  0 0 4 3 6 4 3 5 7 4 6 7 11 10 26
		Jan-Feb	6
		Mar-May	9
		Jun-Sep	10
		Oct-Dec	13
		dtype: int64	

In [24]: data1=data.loc[(data.YEAR<=2013)]
 data1</pre>

Out[24]:

	SUBDIVISION	YEAR	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	ост	NOV	DEC	ANNUAL	Jan- Feb	Mar- May	Jun- Sep	
	ANDAMAN & NICOBAR ISLANDS	1901	49.2	87.1	29.2	2.3	528.8	517.5	365.1	481.1	332.6	388.5	558.2	33.6	3373.2	136.3	560.3	1696.3	9:
	ANDAMAN & NICOBAR ISLANDS	1902	0.0	159.8	12.2	0.0	446.1	537.1	228.9	753.7	666.2	197.2	359.0	160.5	3520.7	159.8	458.3	2185.9	7
	ANDAMAN & NICOBAR ISLANDS	1903	12.7	144.0	0.0	1.0	235.1	479.9	728.4	326.7	339.0	181.2	284.4	225.0	2957.4	156.7	236.1	1874.0	6
	ANDAMAN & NICOBAR ISLANDS	1904	9.4	14.7	0.0	202.4	304.5	495.1	502.0	160.1	820.4	222.2	308.7	40.1	3079.6	24.1	506.9	1977.6	5
	ANDAMAN & NICOBAR ISLANDS	1905	1.3	0.0	3.3	26.9	279.5	628.7	368.7	330.5	297.0	260.7	25.4	344.7	2566.7	1.3	309.7	1624.9	6:
410	9 LAKSHADWEEP	2009	4.7	1.5	0.1	18.1	162.1	401.2	266.4	185.0	145.1	87.4	166.2	132.3	1570.1	6.2	180.3	997.7	3
411	0 LAKSHADWEEP	2010	18.8	0.0	1.2	35.6	79.0	318.9	336.7	335.1	161.5	155.4	201.5	81.5	1725.2	18.8	115.8	1152.2	4
411	1 LAKSHADWEEP	2011	5.1	2.8	3.1	85.9	107.2	153.6	350.2	254.0	255.2	117.4	184.3	14.9	1533.7	7.9	196.2	1013.0	3
411	2 LAKSHADWEEP	2012	19.2	0.1	1.6	76.8	21.2	327.0	231.5	381.2	179.8	145.9	12.4	8.8	1405.5	19.3	99.6	1119.5	1
411	3 LAKSHADWEEP	2013	26.2	34.4	37.5	5.3	88.3	426.2	296.4	154.4	180.0	72.8	78.1	26.7	1426.3	60.6	131.1	1057.0	1

4044 rows × 19 columns

[25]: data	a.tai																		
[25]:	S	SUBDIVISION	YEAR	JAN	FEB	MAR	APR	MAY	JUN	JUL A	AUG S	SEP	ОСТ	NOV	DEC A	ANNUAL	Jan- Feb	Mar- May	J
4111	<b>1</b> LA	KSHADWEEP	2011	5.1	2.8	3.1	85.9	107.2	153.6 3	50.2 2	54.0 2	55.2 1	17.4	184.3	14.9	1533.7	7.9	196.2	10
4112	<b>2</b> LA	KSHADWEEP	2012	19.2	0.1	1.6	76.8	21.2	327.0 2	31.5 3	81.2 1 <sup>-</sup>	79.8 1	45.9	12.4	8.8	1405.5	19.3	99.6	11
4113	3 LAP	KSHADWEEP	2013	26.2	34.4	37.5	5.3	88.3	426.2 2	96.4 1	54.4 18	80.0	72.8	78.1	26.7	1426.3	60.6	131.1	10
4114	4 LA	KSHADWEEP	2014	53.2	16.1	4.4	14.9	57.4 2	244.1 1	16.1 4	66.1 13	32.2 1	69.2	59.0	62.3	1395.0	69.3	76.7	ç
4115	5 LA	KSHADWEEP	2015	2.2	0.5	3.7	87.1	133.1 2	296.6 2	57.5 1	46.4 10	60.4 1	65.4 2	231.0 1	59.0	1642.9	2.7	223.9	8
4																			
data		ata.drop([																	
		ata.drop([		AL','		eb',						JUL			ост	- NOV	DEC		
data	a3	ata.drop([ DAMAN&NIC	SUBDI	VISION	I YEA	R JAI	N FE	B MAR	R APR	MAY	JUN	JUL	AUG	S SEP			<b>DEC</b> 33.6	_	
data [26]:	a3 0 ANI		<b>SUBDI</b> OBAR IS	<b>VISION</b>	1 <b>YEA</b>	<b>R JAI</b>	N FE	B MAR	2 2.3	<b>MAY</b> 528.8	<b>JUN</b> 517.5	<b>JUL</b> 365.1	AUG	S SEP	388.5	5 558.2		_	
data [26]:	<ul><li>a3</li><li>o ANI</li><li>1 ANI</li></ul>	DAMAN & NIC	SUBDI OBAR IS	VISION LANDS	1 <b>YEA</b> 5 190 6 190	<b>R JAI</b> 01 49. 02 0.	N FE 2 87. 0 159.	B MAR .1 29.2	2 2.3 2 0.0	<b>MAY</b> 528.8 446.1	<b>JUN</b> 517.5 537.1	<b>JUL</b> 365.1 228.9	481.1 753.7	SEP 1 332.6 7 666.2	388.5 197.2	5 558.2 2 359.0	33.6	_	
data [26]:	<ul><li>a3</li><li>o ANI</li><li>1 ANI</li><li>2 ANI</li></ul>	DAMAN & NICO	SUBDI OBAR IS OBAR IS	VISION LANDS LANDS	1 YEA 5 190 5 190 6 190	R JAI 01 49. 02 0. 03 12.	N FE 2 87. 0 159. 7 144.	B MAF .1 29.2 .8 12.2 .0 0.0	2 2.3 2 0.0 0 1.0	MAY 528.8 446.1 235.1	<b>JUN</b> 517.5 537.1 479.9	365.1 228.9 728.4	481.1 753.7 326.7	SEP 1 332.6 7 666.2 7 339.0	388.5 2 197.2 3 181.2	5 558.2 2 359.0 2 284.4	33.6 160.5	_	
data [26]:	<ul><li>a3</li><li>o ANI</li><li>1 ANI</li><li>2 ANI</li><li>3 ANI</li></ul>	DAMAN & NICO DAMAN & NICO DAMAN & NICO	SUBDI OBAR IS OBAR IS OBAR IS	VISION LANDS LANDS LANDS	1 YEA 5 190 6 190 6 190 6 190	R JAI 01 49. 02 0. 03 12. 04 9.	N FEI 2 87. 0 159. 7 144. 4 14.	B MAF .1 29.2 .8 12.2 .0 0.0 .7 0.0	2 2.3 2 0.0 0 1.0 0 202.4	MAY 528.8 446.1 235.1 304.5	JUN 517.5 537.1 479.9 495.1	<b>JUL</b> 365.1 228.9 728.4 502.0	481.1 753.7 326.7 160.1	SEP 1 332.6 7 666.2 7 339.0 1 820.4	388.5 197.2 181.2 222.2	5 558.2 2 359.0 2 284.4 2 308.7	33.6 160.5 225.0	_	
data [26]:	<ul><li>a3</li><li>o ANI</li><li>1 ANI</li><li>2 ANI</li><li>3 ANI</li><li>4 ANI</li></ul>	DAMAN & NICO DAMAN & NICO DAMAN & NICO DAMAN & NICO	SUBDI OBAR IS OBAR IS OBAR IS	VISION LANDS LANDS LANDS	1 YEA 5 190 6 190 6 190 6 190	R JAI 01 49. 02 0. 03 12. 04 9. 05 1.	N FEI 2 87. 0 159. 7 144. 4 14. 3 0.	B MAF .1 29.2 .8 12.2 .0 0.0 .7 0.0	2 2.3 2 0.0 0 1.0 0 202.4	MAY 528.8 446.1 235.1 304.5	JUN 517.5 537.1 479.9 495.1	<b>JUL</b> 365.1 228.9 728.4 502.0	481.1 753.7 326.7 160.1	SEP 1 332.6 7 666.2 7 339.0 1 820.4	388.5 197.2 181.2 222.2	5 558.2 2 359.0 2 284.4 2 308.7	33.6 160.5 225.0 40.1	_	
data [26]:	<ul><li>a3</li><li>o ANI</li><li>1 ANI</li><li>2 ANI</li><li>3 ANI</li><li>4 ANI</li><li></li></ul>	DAMAN & NICO DAMAN & NICO DAMAN & NICO DAMAN & NICO DAMAN & NICO	SUBDI OBAR IS OBAR IS OBAR IS	VISION ELANDS ELANDS ELANDS ELANDS	1 YEA 5 190 6 190 6 190 6 190	R JAI 01 49. 02 0. 03 12. 04 9. 05 1.	N FEI 2 87. 0 159. 7 144. 4 14. 3 0.	B MAF .1 29.2 .8 12.2 .0 0.0 .7 0.0 .0 3.3	2 2.3 2 0.0 0 1.0 0 202.4 3 26.9	MAY 528.8 446.1 235.1 304.5 279.5	JUN 517.5 537.1 479.9 495.1	365.1 228.9 728.4 502.0 368.7	481.1 753.7 326.7 160.1 330.5	SEP 1 332.6 7 666.2 7 339.0 1 820.4 5 297.0	388.5 2 197.2 3 181.2 4 222.2 9 260.7	5 558.2 2 359.0 2 284.4 2 308.7 7 25.4	33.6 160.5 225.0 40.1 344.7	_	
data [26]:  (1)  (4)  4112	a3  0 ANI 1 ANI 2 ANI 3 ANI 4 ANI 1	DAMAN & NICO	SUBDI OBAR IS OBAR IS OBAR IS OBAR IS	VISION  SLANDS  SLANDS  SLANDS  SLANDS  SLANDS	1 YEA 6 190 6 190 6 190 6 190 7 201	R JAI 01 49. 02 0. 03 12. 04 9. 05 1 11 5.	N FE 2 87. 0 159. 7 144. 4 14. 3 0 1 2. 2 0.	B MAF  .1 29.2 .8 12.2 .0 0.0 .7 0.0 .0 3.3	R APR 2 2.3 2 0.0 1.0 2 202.4 3 26.9 1 85.9	MAY 528.8 446.1 235.1 304.5 279.5 107.2	JUN 517.5 537.1 479.9 495.1 628.7 153.6	365.1 228.9 728.4 502.0 368.7  350.2	481.1 753.7 326.7 160.1 330.5	SEP 1 332.6 7 666.2 7 339.0 1 820.4 5 297.0 0 255.2	388.5 2 197.2 3 181.2 4 222.2 9 260.7 	5 558.2 2 359.0 2 284.4 2 308.7 7 25.4  4 184.3	33.6 160.5 225.0 40.1 344.7	_	
data [26]:  (1) (2) (3) (4) (4)	a3  0 ANI 1 ANI 2 ANI 3 ANI 4 ANI 1	DAMAN & NICO L	SUBDI OBAR IS OBAR IS OBAR IS OBAR IS	VISION  ELANDS  ELANDS	1 YEA 6 190 6 190 6 190 6 190 6 201	R JAI 01 49. 02 0. 03 12. 04 9. 05 1 11 5.	N FE 2 87. 0 159. 7 144. 4 14. 3 0 1 2. 2 0.	B MAR .1 29.2 .8 12.2 .0 0.0 .7 0.0 .0 3.38 3.1 .1 1.6	R APR 2 2.3 2 0.0 1.0 2 202.4 3 26.9 1 85.9 6 76.8	528.8 446.1 235.1 304.5 279.5  107.2 21.2	JUN 517.5 537.1 479.9 495.1 628.7 153.6 327.0	365.1 228.9 728.4 502.0 368.7  350.2 231.5	481.1 753.7 326.7 160.1 330.5 254.0 381.2	SEP 1 332.6 7 666.2 7 339.0 1 820.4 5 297.0 0 255.2 2 179.8	388.5 2 197.2 3 181.2 4 222.2 5 260.7 	5 558.2 2 359.0 2 284.4 2 308.7 7 25.4  4 184.3 9 12.4	33.6 160.5 225.0 40.1 344.7 	_	

4116 rows × 14 columns

LAKSHADWEEP

2015

2.2

0.5

4115

87.1 133.1 296.6 257.5 146.4 160.4 165.4 231.0 159.0

Oct Dec

316.6 167.: 177.6 290. 555.4

Out[32]:

:	SUBDIVISION	YEAR	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	ОСТ	NOV	DEC	ANNUAL	Jan- Feb	Mar- May	Jun- Sep	Oct- Dec
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	164.8	1.5	993.8	99.7	104.6	449.7	339.8
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	50.4	27.1	1063.6	2.0	64.4	657.7	339.5
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	173.9	12.1	1316.2	14.2	79.8	877.1	345.1
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	0.0	10.7	860.2	1.3	144.7	462.6	251.6
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	7.4	0.0	795.2	17.8	173.8	530.1	73.4
3190	COASTAL ANDHRA PRADESH	2009	0.0	0.0	5.7	6.4	53.0	72.6	140.9	163.5	151.9	92.6	102.6	1.3	790.5	0.0	65.1	528.8	196.5
3191	COASTAL ANDHRA PRADESH	2010	21.8	2.3	4.4	14.8	162.0	156.1	318.9	248.6	230.5	204.0	210.9	138.2	1712.4	24.1	181.2	954.0	553.1
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	4.9	5.0	861.9	17.9	131.2	628.4	84.4
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	289.7	0.0	1318.4	37.6	66.1	785.0	429.7
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	53.1	2.8	1120.5	31.7	76.4	545.0	467.4

113 rows × 19 columns

data4.isna().sum()

In [33]: data4['AUNNAL RAIN']=data4.apply(lambda row:row.JAN+row.FEB,axis=1)
 data4

Out[33]

SUBDIVISION	YEAR	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	ОСТ	NOV	DEC	ANNUAL	Jan- Feb	Mar- May	Jun- Sep	Oct- Dec	1
COASTAL 82 ANDHRA PRADESH	1901	18.8	80.9	7.2	28.7	68.7	77.7	113.0	133.7	125.3	173.4	164.8	1.5	993.8	99.7	104.6	449.7	339.8	-
COASTAL 83 ANDHRA PRADESH	1902	2.0	0.0	2.8	23.9	37.6	72.6	144.5	236.1	204.5	262.0	50.4	27.1	1063.6	2.0	64.4	657.7	339.5	
COASTAL 84 ANDHRA PRADESH	1903	0.8	13.3	0.2	6.2	73.4	154.0	248.6	258.0	216.5	159.1	173.9	12.1	1316.2	14.2	79.8	877.1	345.1	
COASTAL 85 ANDHRA PRADESH	1904	1.3	0.0	5.4	3.0	136.3	107.8	120.2	117.7	116.8	240.9	0.0	10.7	860.2	1.3	144.7	462.6	251.6	
COASTAL 86 ANDHRA PRADESH	1905	1.1	16.7	68.0	37.0	68.8	84.4	64.6	210.8	170.2	66.0	7.4	0.0	795.2	17.8	173.8	530.1	73.4	
COASTAL 90 ANDHRA PRADESH	2009	0.0	0.0	5.7	6.4	53.0	72.6	140.9	163.5	151.9	92.6	102.6	1.3	790.5	0.0	65.1	528.8	196.5	
COASTAL 91 ANDHRA PRADESH	2010	21.8	2.3	4.4	14.8	162.0	156.1	318.9	248.6	230.5	204.0	210.9	138.2	1712.4	24.1	181.2	954.0	553.1	
COASTAL 92 ANDHRA PRADESH	2011	0.0	17.9	0.9	62.3	67.9	86.8	196.0	215.8	129.7	74.6	4.9	5.0	861.9	17.9	131.2	628.4	84.4	
COASTAL 93 ANDHRA PRADESH	2012	37.6	0.0	2.7	24.0	39.3	95.4	221.9	221.2	246.5	140.0	289.7	0.0	1318.4	37.6	66.1	785.0	429.7	
COASTAL 94 ANDHRA PRADESH	2013	2.0	29.6	0.2	48.0	28.2	127.5	162.4	123.1	132.0	411.5	53.1	2.8	1120.5	31.7	76.4	545.0	467.4	
	COASTAL ANDHRA PRADESH	82 COASTAL ANDHRA PRADESH  83 ANDHRA PRADESH  84 COASTAL ANDHRA PRADESH  85 COASTAL ANDHRA PRADESH  60 COASTAL ANDHRA PRADESH  60 ANDHRA PRADESH  60 ANDHRA PRADESH  60 COASTAL ANDHRA PRADESH  60 ANDHRA P	COASTAL ANDHRA PRADESH  COASTAL ANDHRA	82       ANDHRA PRADESH       1901       18.8       80.9         83       COASTAL ANDHRA PRADESH       1902       2.0       0.0         84       COASTAL ANDHRA PRADESH       1903       0.8       13.3         85       ANDHRA PRADESH       1904       1.3       0.0         86       ANDHRA PRADESH       1905       1.1       16.7         90       ANDHRA PRADESH       2009       0.0       0.0         91       ANDHRA PRADESH       2010       21.8       2.3         92       ANDHRA PRADESH       2011       0.0       17.9         93       ANDHRA PRADESH       2012       37.6       0.0         94       ANDHRA ANDHRA 2013       2.0       29.6	COASTAL ANDHRA PRADESH  COASTAL ANDHRA 2012 37.6 0.0 2.7	COASTAL ANDHRA PRADESH  COASTAL ANDHRA 2012 37.6 0.0 2.7 24.0 PRADESH  COASTAL ANDHRA 2013 2.0 29.6 0.2 48.0	COASTAL ANDHRA PRADESH  COASTAL ANDHRA 1901 18.8 80.9 7.2 28.7 68.7 PRADESH  COASTAL ANDHRA 1902 2.0 0.0 2.8 23.9 37.6 PRADESH  COASTAL ANDHRA PRADESH  COASTAL ANDHRA 1903 0.8 13.3 0.2 6.2 73.4 PRADESH  COASTAL ANDHRA 1904 1.3 0.0 5.4 3.0 136.3 PRADESH  COASTAL ANDHRA 1905 1.1 16.7 68.0 37.0 68.8 PRADESH  COASTAL ANDHRA 2009 0.0 0.0 5.7 6.4 53.0 PRADESH  COASTAL ANDHRA 2010 21.8 2.3 4.4 14.8 162.0 PRADESH  COASTAL ANDHRA 2011 0.0 17.9 0.9 62.3 67.9 PRADESH  COASTAL ANDHRA 2011 37.6 0.0 2.7 24.0 39.3 PRADESH  COASTAL ANDHRA PRADESH  COASTAL ANDHRA 2012 37.6 0.0 2.7 24.0 39.3 PRADESH  COASTAL ANDHRA 2013 2.0 29.6 0.2 48.0 28.2	82         COASTAL ANDHRA PRADESH         1901         18.8         80.9         7.2         28.7         68.7         77.7           83         COASTAL ANDHRA PRADESH         1902         2.0         0.0         2.8         23.9         37.6         72.6           84         ANDHRA PRADESH         1903         0.8         13.3         0.2         6.2         73.4         154.0           85         COASTAL ANDHRA PRADESH         1904         1.3         0.0         5.4         3.0         136.3         107.8           86         ANDHRA PRADESH         1905         1.1         16.7         68.0         37.0         68.8         84.4           90         ANDHRA PRADESH         2009         0.0         0.0         5.7         6.4         53.0         72.6           91         ANDHRA PRADESH         2010         21.8         2.3         4.4         14.8         162.0         156.1           92         ANDHRA PRADESH         2011         0.0         17.9         0.9         62.3         67.9         86.8           93         ANDHRA PRADESH         2012         37.6         0.0         2.7         24.0         39.3         95.4	R2 COASTAL ANDHRA PRADESH  COASTAL ANDHRA PRADESH	COASTAL ANDHRA PRADESH  83	COASTAL ANDHRA PRADESH  COASTAL ANDHRA 2012 37.6 0.0 2.7 24.0 39.3 95.4 221.9 221.2 246.5 PRADESH  COASTAL ANDHRA PRADESH  COASTAL ANDHRA 2013 2.0 29.6 0.2 48.0 28.2 127.5 162.4 123.1 132.0	COASTAL ANDHRA PRADESH  COASTAL ANDHRA PRADESH  COASTAL ANDHRA 1902 2.0 0.0 2.8 23.9 37.6 72.6 144.5 236.1 204.5 262.0 PRADESH  COASTAL ANDHRA 1903 0.8 13.3 0.2 6.2 73.4 154.0 248.6 258.0 216.5 159.1 PRADESH  COASTAL ANDHRA 1904 1.3 0.0 5.4 3.0 136.3 107.8 120.2 117.7 116.8 240.9 PRADESH  COASTAL ANDHRA 1905 1.1 16.7 68.0 37.0 68.8 84.4 64.6 210.8 170.2 66.0 PRADESH  COASTAL ANDHRA 1905 0.0 0.0 5.7 6.4 53.0 72.6 140.9 163.5 151.9 92.6 PRADESH  COASTAL ANDHRA 2010 21.8 2.3 4.4 14.8 162.0 156.1 318.9 248.6 230.5 204.0 PRADESH  COASTAL ANDHRA 2011 0.0 17.9 0.9 62.3 67.9 86.8 196.0 215.8 129.7 74.6 PRADESH  COASTAL ANDHRA 2012 37.6 0.0 2.7 24.0 39.3 95.4 221.9 221.2 246.5 140.0 PRADESH  COASTAL ANDHRA 2012 37.6 0.0 2.7 24.0 39.3 95.4 221.9 221.2 246.5 140.0 PRADESH  COASTAL ANDHRA 2013 2.0 29.6 0.2 48.0 28.2 127.5 162.4 123.1 132.0 411.5	COASTAL ANDHRA PRADESH  COASTAL ANDHRA 2011 0.0 17.9 0.9 62.3 67.9 86.8 196.0 215.8 129.7 74.6 4.9 PRADESH  COASTAL ANDHRA PRADESH  COASTAL ANDHRA 2012 37.6 0.0 2.7 24.0 39.3 95.4 221.9 221.2 246.5 140.0 289.7 PRADESH  COASTAL ANDHRA 2013 2.0 29.6 0.2 48.0 28.2 127.5 162.4 123.1 132.0 411.5 53.1	82 COASTAL ANDHRA PRADESH  COASTAL PRADESH  COASTAL PRADESH  COASTAL PRADESH  COASTAL PRADESH  COASTAL	82	SUBDIVISION   YEAR   JAN   FEB   MAR   APR   MAY   JUN   JUL   AUG   SEP   OC1   NOV   DEC   ANNUAL   Feb   Feb	COASTAL ANDHRA   1901   18.8   80.9   7.2   28.7   68.7   77.7   113.0   133.7   125.3   173.4   164.8   1.5   993.8   99.7   104.6	SUBDIVISION   VEAR   JAN   FEB   MAR   APR   MAY   JUN   JUN   JUN   JUN   AUG   SEP   OCT   NOV   DEC   ANOUL   Feb   May   Sep	SUBDIVISION   Fab.   SAN   Fab.   SAN   Fab.   SAN   SAN

113 rows × 20 columns

4

In [34]: cor=data4.corr()
cor

Out[34]:

	YEAR	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	ОСТ	NOV	С
YEAR	1.000000	0.066512	-0.057253	0.041560	-0.010422	0.045640	-0.016904	0.166908	0.167855	0.023941	0.022385	-0.028236	0.050
JAN	0.066512	1.000000	-0.068674	-0.022536	-0.070099	-0.023369	-0.152391	0.010006	0.006139	-0.008124	-0.081967	0.120978	0.065
FEB	-0.057253	-0.068674	1.000000	0.170653	0.048453	0.255807	0.007598	-0.132597	0.009624	-0.106245	-0.004719	0.091428	-0.087
MAR	0.041560	-0.022536	0.170653	1.000000	0.060434	0.223789	-0.035664	-0.036379	0.080060	-0.089019	-0.140336	-0.125846	-0.010
APR	-0.010422	-0.070099	0.048453	0.060434	1.000000	-0.058998	-0.151867	-0.127911	-0.024604	-0.069777	-0.096417	-0.175553	-0.018
MAY	0.045640	-0.023369	0.255807	0.223789	-0.058998	1.000000	-0.028568	-0.094369	0.107938	-0.123286	0.128245	0.102678	0.028
JUN	-0.016904	-0.152391	0.007598	-0.035664	-0.151867	-0.028568	1.000000	0.028833	0.166481	-0.007533	0.038501	-0.075026	0.062
JUL	0.166908	0.010006	-0.132597	-0.036379	-0.127911	-0.094369	0.028833	1.000000	0.254504	0.112720	0.067075	0.025227	0.218
AUG	0.167855	0.006139	0.009624	0.080060	-0.024604	0.107938	0.166481	0.254504	1.000000	0.015491	-0.102763	-0.044357	0.036
SEP	0.023941	-0.008124	-0.106245	-0.089019	-0.069777	-0.123286	-0.007533	0.112720	0.015491	1.000000	0.010539	-0.010693	-0.034
ОСТ	0.022385	-0.081967	-0.004719	-0.140336	-0.096417	0.128245	0.038501	0.067075	-0.102763	0.010539	1.000000	-0.004397	-0.097
NOV	-0.028236	0.120978	0.091428	-0.125846	-0.175553	0.102678	-0.075026	0.025227	-0.044357	-0.010693	-0.004397	1.000000	-0.044
DEC	0.050318	0.065367	-0.087321	-0.010930	-0.018895	0.028259	0.062249	0.218651	0.036015	-0.034142	-0.097495	-0.044056	1.000
ANNUAL	0.123006	0.012287	0.165149	0.052569	-0.128873	0.446064	0.265360	0.410888	0.386604	0.294683	0.526835	0.382769	0.133
Jan-Feb	-0.017089	0.453805	0.857830	0.140606	0.007146	0.216641	-0.071604	-0.113210	0.011872	-0.099066	-0.046274	0.144149	-0.044
Mar-May	0.047991	-0.046865	0.283015	0.485728	0.255733	0.912699	-0.078712	-0.129163	0.108603	-0.151718	0.044919	0.003795	0.016
Jun-Sep	0.151641	-0.055398	-0.103516	-0.038792	-0.159310	-0.066058	0.465325	0.609825	0.624359	0.559120	0.003225	-0.042997	0.116
Oct-Dec	0.010258	0.020330	0.035174	-0.190658	-0.187377	0.170238	-0.002987	0.110550	-0.102209	-0.004569	0.778068	0.595597	0.085
AUNNAL RAIN	-0.016882	0.453731	0.857875	0.140828	0.007174	0.216463	-0.071705	-0.113288	0.011759	-0.099088	-0.046435	0.143980	-0.044

```
In [35]:
                                      import seaborn as sns
                                       sns.heatmap(cor,vmax=1,vmin=-1,annot=True,linewidth=.5,cmap='bwr')
Out[35]: <AxesSubplot:>
                                                                                                                                                                                                                              - 1.00
                                                               YEAR - 06 705 042 010460 0710 10702 402 20 080 0 122 01 04816 901 017
                                                                   JAN 0:06 P. 0.06 90-2030070-2031050 DO 6300818/212006 9 12245 004.70 9:50 Q. 45
                                                                                                                                                                                                                              - 0.75
                                                                  FEB-0-05.706 D. 1070 482 60 0 J 61 60 9-61 D 0-4379 10 8071 1830 280 01 0 3 1831
                                                                 MAR 0:04 20 D 3 7 0 0 0 22 0 3:6 B 608 0 89 14 10 30 1 0 5 B 1 4 0 . 0 89 10 1 4
                                                                  APR -0.01.070480644.059945.4030425070496080408163001246.146019072
                                                                                                                                                                                                                             - 0.50
                                                                 MAY 0:04 (D D 32 6, 202 0 5 4 0 . 902 9 9:4-0 . 102 1 30 0 0 208 4 6, 2 2 4 0 . 0 6 6 0 7.2 2
                                                                  JUN-0+, 0-10701, 19 907, 6-29 600 50 2 1 1 0 20 900 70 0 70 20 9 602 207, 907, 20 7 50 0 . 900, 20 7 2
                                                                                                                                                                                                                               - 0.25
                                                                   JUL 9.10.0-D.-D30-96-D309-92-10.26 1010-6.10 252 P.40.11.1 310.1-0.11
                                                                 ÁUG 9.0.700.6019.608029.10.107.2.300001-6-0.004-9-30628901021
                                                                  SEP 0-972 4 908 101 0-89907-0-12/007 1010 1 10 0-00 190 1 D 1842/19 0-9991 100 0-004/1899
                                                                                                                                                                                                                            - 0.00
                                                                 OCT 0.02 2082094.2040 960808.960 0.1 0 1 100 040499 7-0 .004 60450 320 .046
                                                                 NOV-0.02/802090.103.18-0.00762/594-4010.0443-0.04/38.0.4938-0.4938-0.14
                                                                                                                                                                                                                              - -0.25
                                                                 DEC 9.00506598700.001.92.8 6020208693.49.04.00.108.004.9.061020860.44
                                                       ANNUAL 9.020 02070 903 10346.207.40.39.29 0.38.13 0.16.30 0.15
                                                                                                                                                                                                                               - -0.50
                                                         Mar-May 0:0480 472 12 0.2 134 0.0 20 130 140 0.0 5045 0380 0536 2 3 10 0.0 10 4012 3
                                                        Jun-Sep 9.105056.0.0-399060661616161000080431200.1021101090142
                                                                                                                                                                                                                              - -0.75
                                                        Oct-Dec 9.00.0020305199.109107.0031.100100416.00.08.00.08.004.004.00
                                       YEAR OCT-DEC CONTROL AND DEC CONTROL AND DEC OCT-DEC CONTROL AND DEC OCT-DEC CONTROL AND DEC OCT-DEC CONTROL AND DEC OCT-DEC CONTROL AND DECCCONTROL A
                                                                                                                                                                                                                              -1.00
   In [ ]:
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