In [1]:
```
import pandas as pd
import numpy as np
import matplotlib.pyplot as plt
import seaborn as sns
```

In [2]:
```
data=pd.read_csv(r"C:\Users\user\Desktop\vicky\rainfall\rainfall in india 1901-2015.csv")[1704:1818
```

In [3]:
```
data.info()
```

```
<class 'pandas.core.frame.DataFrame'>
RangeIndex: 114 entries, 1704 to 1817
Data columns (total 20 columns):
 #   Column       Non-Null Count  Dtype  
---  ------       --------------  -----  
 0   index        114 non-null    int64  
 1   SUBDIVISION  114 non-null    object 
 2   YEAR         114 non-null    int64  
 3   JAN          114 non-null    float64
 4   FEB          114 non-null    float64
 5   MAR          114 non-null    float64
 6   APR          114 non-null    float64
 7   MAY          114 non-null    float64
 8   JUN          114 non-null    float64
 9   JUL          113 non-null    float64
 10  AUG          114 non-null    float64
 11  SEP          114 non-null    float64
 12  OCT          114 non-null    float64
 13  NOV          113 non-null    float64
 14  DEC          113 non-null    float64
 15  ANNUAL       113 non-null    float64
 16  Jan-Feb      114 non-null    float64
 17  Mar-May      114 non-null    float64
 18  Jun-Sep      113 non-null    float64
 19  Oct-Dec      113 non-null    float64
dtypes: float64(17), int64(2), object(1)
memory usage: 17.9+ KB
```

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

Out[4]:

| | index | SUBDIVISION | YEAR | JAN | FEB | MAR | APR | MAY | JUN | JUL | AUG | SEP | OCT | NOV | DEC | ANNUAL |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **1704** | 1704 | JAMMU & KASHMIR | 1903 | 96.2 | 21.5 | 238.6 | 58.7 | 57.3 | 18.9 | 332.5 | 218.6 | 176.9 | 10.7 | 15.0 | 41.8 | 1286.6 |
| **1705** | 1705 | JAMMU & KASHMIR | 1904 | 110.6 | 17.3 | 145.2 | 64.5 | 67.8 | 25.9 | 182.3 | 132.2 | 62.3 | 50.0 | 24.8 | 99.2 | 982.2 |
| **1706** | 1706 | JAMMU & KASHMIR | 1905 | 146.7 | 76.3 | 161.4 | 71.7 | 65.2 | 43.3 | 145.2 | 111.5 | 239.7 | 5.8 | 0.6 | 90.2 | 1157.7 |
| **1707** | 1707 | JAMMU & KASHMIR | 1906 | 81.0 | 160.4 | 167.2 | 49.3 | 39.4 | 52.2 | 107.0 | 257.4 | 237.0 | 5.3 | 0.0 | 36.9 | 1193.1 |
| **1708** | 1708 | JAMMU & KASHMIR | 1907 | 99.6 | 195.8 | 132.2 | 151.0 | 57.0 | 85.9 | 85.1 | 220.3 | 24.9 | 13.9 | 3.1 | 0.8 | 1069.6 |

In [5]:
```
data.shape
```

Out[5]: (114, 20)

In [6]:
```
new_data=data.fillna(value=1)
new_data
```

Out[6]:

| | index | SUBDIVISION | YEAR | JAN | FEB | MAR | APR | MAY | JUN | JUL | AUG | SEP | OCT | NOV | DEC | ANNUAL |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **1704** | 1704 | JAMMU & KASHMIR | 1903 | 96.2 | 21.5 | 238.6 | 58.7 | 57.3 | 18.9 | 332.5 | 218.6 | 176.9 | 10.7 | 15.0 | 41.8 | 1286.6 |
| **1705** | 1705 | JAMMU & KASHMIR | 1904 | 110.6 | 17.3 | 145.2 | 64.5 | 67.8 | 25.9 | 182.3 | 132.2 | 62.3 | 50.0 | 24.8 | 99.2 | 982.2 |
| **1706** | 1706 | JAMMU & KASHMIR | 1905 | 146.7 | 76.3 | 161.4 | 71.7 | 65.2 | 43.3 | 145.2 | 111.5 | 239.7 | 5.8 | 0.6 | 90.2 | 1157.7 |
| **1707** | 1707 | JAMMU & KASHMIR | 1906 | 81.0 | 160.4 | 167.2 | 49.3 | 39.4 | 52.2 | 107.0 | 257.4 | 237.0 | 5.3 | 0.0 | 36.9 | 1193.1 |
| **1708** | 1708 | JAMMU & KASHMIR | 1907 | 99.6 | 195.8 | 132.2 | 151.0 | 57.0 | 85.9 | 85.1 | 220.3 | 24.9 | 13.9 | 3.1 | 0.8 | 1069.6 |
| **...** | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... |
| **1813** | 1813 | JAMMU & KASHMIR | 2012 | 150.9 | 95.8 | 45.2 | 86.6 | 48.9 | 32.6 | 118.8 | 264.9 | 106.7 | 15.7 | 10.8 | 57.8 | 1034.7 |
| **1814** | 1814 | JAMMU & KASHMIR | 2013 | 52.2 | 136.4 | 41.9 | 47.4 | 47.4 | 80.5 | 125.1 | 219.1 | 41.2 | 34.4 | 13.4 | 20.3 | 859.3 |
| **1815** | 1815 | JAMMU & KASHMIR | 2014 | 75.8 | 64.0 | 153.1 | 76.1 | 52.7 | 25.3 | 100.5 | 134.6 | 362.8 | 32.2 | 14.1 | 2.3 | 1093.4 |
| **1816** | 1816 | JAMMU & KASHMIR | 2015 | 27.9 | 187.2 | 341.4 | 173.3 | 64.6 | 121.4 | 233.2 | 129.2 | 130.2 | 87.1 | 38.1 | 39.3 | 1572.8 |
| **1817** | 1817 | WEST RAJASTHAN | 1901 | 6.7 | 0.0 | 1.1 | 0.0 | 6.1 | 3.0 | 79.0 | 59.2 | 1.0 | 2.1 | 0.0 | 0.6 | 158.9 |

114 rows × 20 columns

In [7]:
```
new_data.index
```

Out[7]:
```
RangeIndex(start=1704, stop=1818, step=1)
```

In [8]:
```
new_data.columns
```

Out[8]:
```
Index(['index', 'SUBDIVISION', 'YEAR', 'JAN', 'FEB', 'MAR', 'APR', 'MAY',
       'JUN', 'JUL', 'AUG', 'SEP', 'OCT', 'NOV', 'DEC', 'ANNUAL', 'Jan-Feb',
       'Mar-May', 'Jun-Sep', 'Oct-Dec'],
      dtype='object')
```

In [9]:
```
new_data.plot.line()
```

Out[9]:
```
<AxesSubplot:>
```

In [10]:
```
new_data.plot.bar()
```

Out[10]:
```
<AxesSubplot:>
```

In [11]:
```
new_data.plot.area()
```

Out[11]:
```
<AxesSubplot:>
```

In [12]:
```
new_data.plot.hist()
```

Out[12]:
```
<AxesSubplot:ylabel='Frequency'>
```

In [13]:
```
new_data.plot.pie(y='ANNUAL')
```

Out[13]:
```
<AxesSubplot:ylabel='ANNUAL'>
```

In [14]:
```
new_data.plot.scatter(x='YEAR',y='ANNUAL')
```

Out[14]:
```
<AxesSubplot:xlabel='YEAR', ylabel='ANNUAL'>
```

In [15]:
```
sns.pairplot(new_data)
```

Out[15]:
```
<seaborn.axisgrid.PairGrid at 0x2054e664fa0>
```

In [16]:
```
sns.distplot(data['YEAR'])
```

```
C:\ProgramData\Anaconda3\lib\site-packages\seaborn\distributions.py:2557: FutureWarning: `distplot
` is a deprecated function and will be removed in a future version. Please adapt your code to use
either `displot` (a figure-level function with similar flexibility) or `histplot` (an axes-level f
unction for histograms).
  warnings.warn(msg, FutureWarning)
```

Out[16]:
```
<AxesSubplot:xlabel='YEAR', ylabel='Density'>
```

In [17]:
```
sns.heatmap(new_data.corr())
```

Out[17]:
```
<AxesSubplot:>
```