In [1]:
```python
import pandas as pd
import matplotlib.pyplot as plt
import seaborn as sns
import matplotlib.ticker as tic
```

In [2]:
```python
df=pd.read_csv("cleaned_rainfall")
df
```

Out[2]:

	index	SUBDIVISION	YEAR	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT
0	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
1	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
2	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
3	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
4	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
...	...	...	...	...	...	...	...	...	...	...	...	...	...
4111	4111	LAKSHADWEEP	2011	5.1	2.8	3.1	85.9	107.2	153.6	350.2	254.0	255.2	117.4
4112	4112	LAKSHADWEEP	2012	19.2	0.1	1.6	76.8	21.2	327.0	231.5	381.2	179.8	145.9
4113	4113	LAKSHADWEEP	2013	26.2	34.4	37.5	5.3	88.3	426.2	296.4	154.4	180.0	72.8
4114	4114	LAKSHADWEEP	2014	53.2	16.1	4.4	14.9	57.4	244.1	116.1	466.1	132.2	169.2
4115	4115	LAKSHADWEEP	2015	2.2	0.5	3.7	87.1	133.1	296.6	257.5	146.4	160.4	165.4

4116 rows × 20 columns

In [3]: `df["SUBDIVISION"].value_counts()`

Out[3]:
```
ASSAM & MEGHALAYA                    115
UTTARAKHAND                          115
EAST UTTAR PRADESH                   115
EAST RAJASTHAN                       115
JAMMU & KASHMIR                      115
WEST RAJASTHAN                       115
KONKAN & GOA                         115
PUNJAB                               115
COASTAL ANDHRA PRADESH               115
MADHYA MAHARASHTRA                   115
TAMIL NADU                           115
VIDARBHA                             115
RAYALSEEMA                           115
SUB HIMALAYAN WEST BENGAL & SIKKIM   115
COASTAL KARNATAKA                    115
HARYANA DELHI & CHANDIGARH           115
NORTH INTERIOR KARNATAKA             115
JHARKHAND                            115
WEST MADHYA PRADESH                  115
GUJARAT REGION                       115
WEST UTTAR PRADESH                   115
SOUTH INTERIOR KARNATAKA             115
EAST MADHYA PRADESH                  115
GANGETIC WEST BENGAL                 115
TELANGANA                            115
KERALA                               115
ORISSA                               115
CHHATTISGARH                         115
BIHAR                                115
SAURASHTRA & KUTCH                   115
MATATHWADA                           115
HIMACHAL PRADESH                     115
NAGA MANI MIZO TRIPURA               115
LAKSHADWEEP                          114
ANDAMAN & NICOBAR ISLANDS            110
ARUNACHAL PRADESH                     97
Name: SUBDIVISION, dtype: int64
```

COASTAL KARNATAKA

In [4]:
```
dat1=df[df["SUBDIVISION"]=="COASTAL KARNATAKA"]
dat1
```

Out[4]:

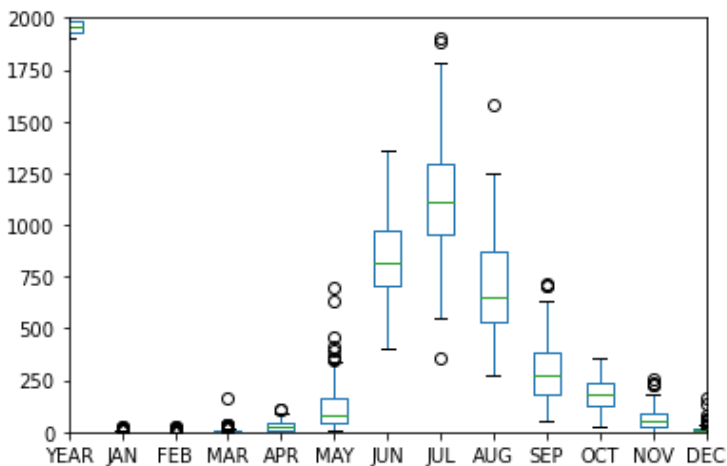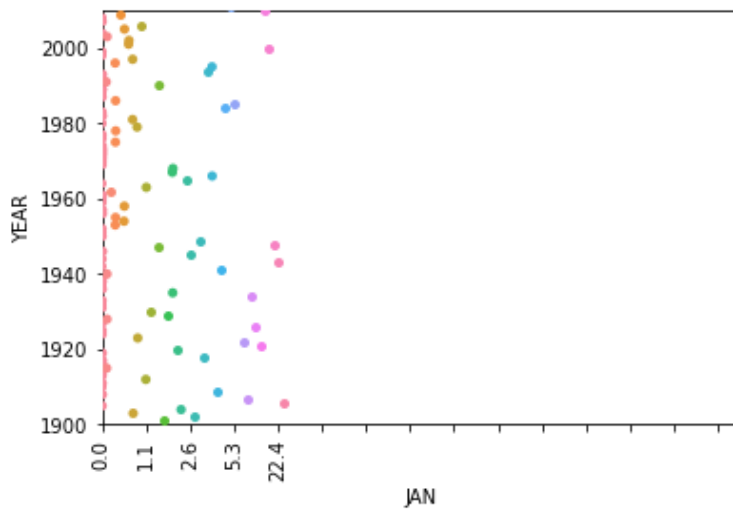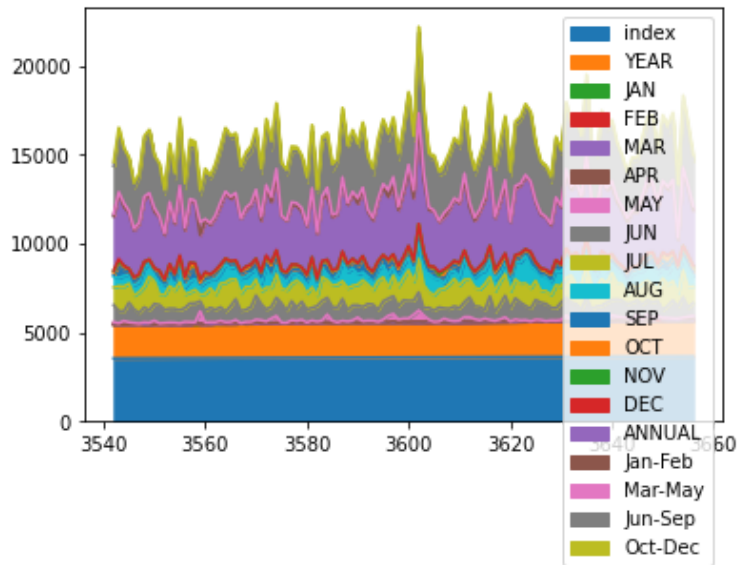|	index	SUBDIVISION	YEAR	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT
3542	3542	COASTAL KARNATAKA	1901	1.8	0.6	10.7	52.4	81.6	960.9	991.2	606.4	108.0	120.5
3543	3543	COASTAL KARNATAKA	1902	3.2	0.3	4.9	10.2	54.6	698.4	1401.6	454.2	708.4	180.4
3544	3544	COASTAL KARNATAKA	1903	0.7	0.0	0.0	4.1	202.8	536.5	1405.5	593.8	304.4	185.0
3545	3545	COASTAL KARNATAKA	1904	2.4	0.0	4.8	23.7	93.2	1108.2	1070.0	465.6	245.3	127.2
3546	3546	COASTAL KARNATAKA	1905	0.0	0.2	0.0	6.4	83.1	767.3	777.3	586.9	172.9	222.2
...	...	...	...	...	...	...	...	...	...	...	...	...	...
3652	3652	COASTAL KARNATAKA	2011	4.8	3.8	8.7	66.1	49.3	1018.4	1080.5	861.3	545.2	178.8
3653	3653	COASTAL KARNATAKA	2012	6.0	11.4	5.1	77.0	22.9	650.9	754.6	1027.6	382.0	115.1
3654	3654	COASTAL KARNATAKA	2013	2.4	19.6	19.0	28.5	100.4	1153.0	1515.3	680.2	379.1	265.1
3655	3655	COASTAL KARNATAKA	2014	0.0	0.3	1.9	40.5	181.9	507.0	1155.4	1121.0	379.3	226.4
3656	3656	COASTAL KARNATAKA	2015	1.4	1.0	32.3	72.2	150.3	735.3	930.9	575.2	260.3	208.5

115 rows × 20 columns

In [5]:
```python
dat1.plot.bar("YEAR","JAN")
plt.xlim(0,20)
plt.figure(figsize=(60,30))
plt.show()
dat1.plot.box()
plt.xlim(2,14)
plt.ylim(0,2000)
plt.show()
dat1.plot.area()
dat1.plot.scatter("YEAR","JAN")
sns.stripplot(x=dat1["JAN"],y=dat1["YEAR"],jitter=True)
plt.ylim(1900,2010)
plt.xlim(0,145)
plt.xticks(dat1["JAN"],rotation="vertical")
plt.gca().xaxis.set_major_locator(tic.MultipleLocator(base=10))
plt.show()
dat1.plot.hist()
```
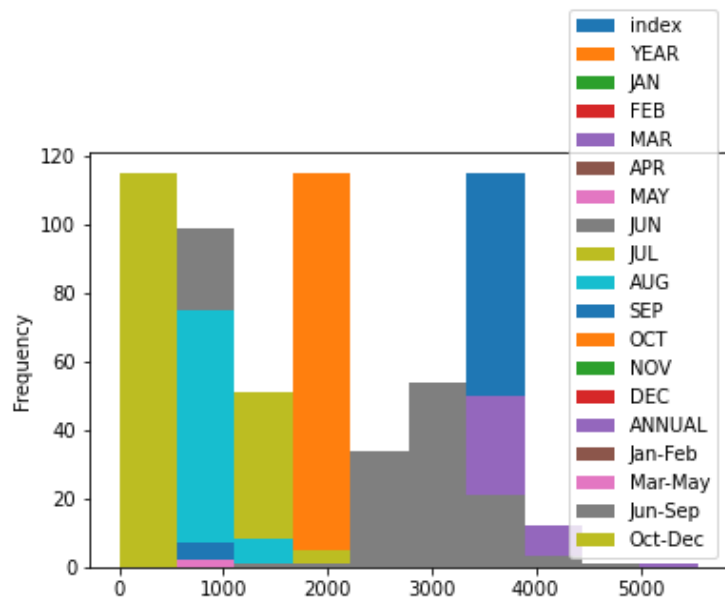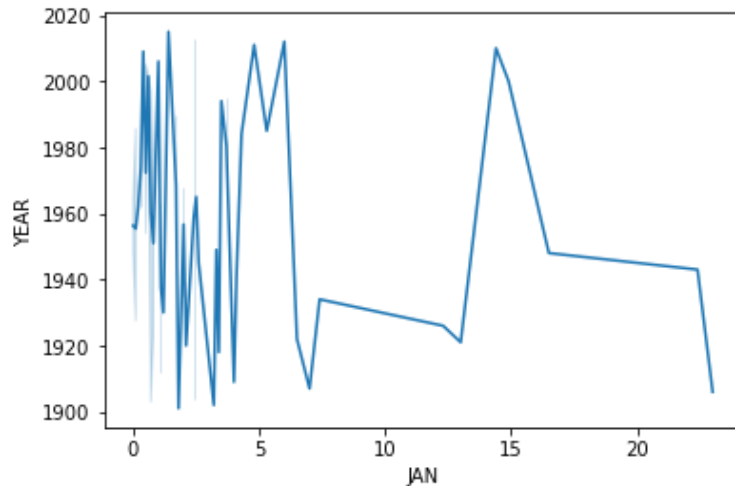


```
<Figure size 4320x2160 with 0 Axes>
```
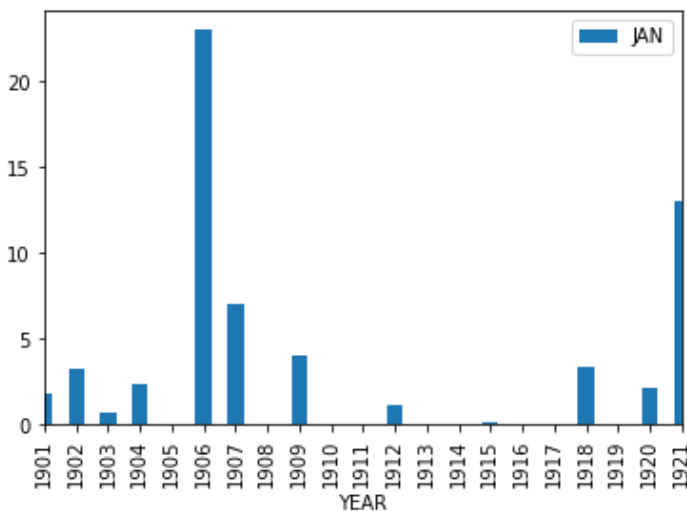
Out[5]: <AxesSubplot:ylabel='Frequency'>

In [6]:
```python
sns.lineplot(x=dat1["JAN"],y=dat1["YEAR"])
plt.show()
```


MADHYA MAHARASHTRA

In [7]:
```python
dat2=df[df["SUBDIVISION"]=="MADHYA MAHARASHTRA"]
dat2
```

Out[7]:

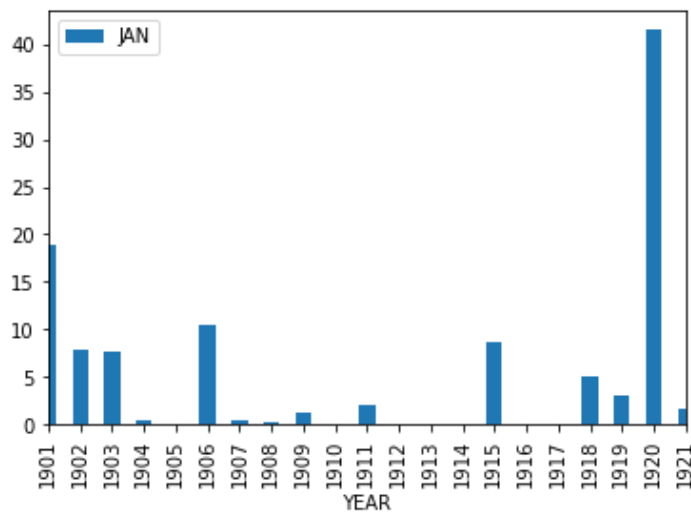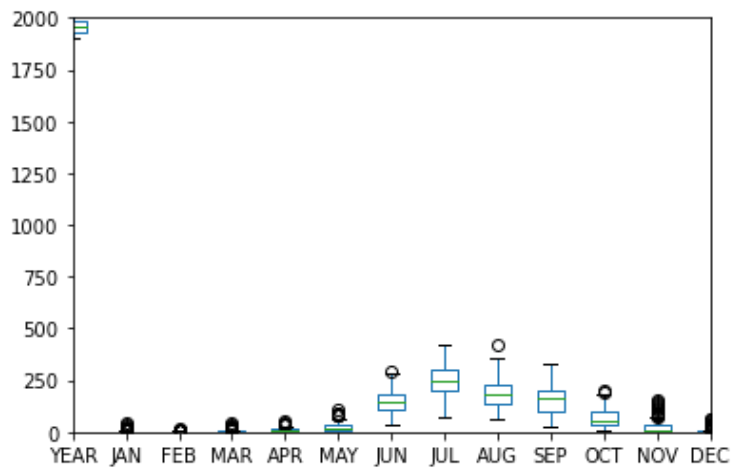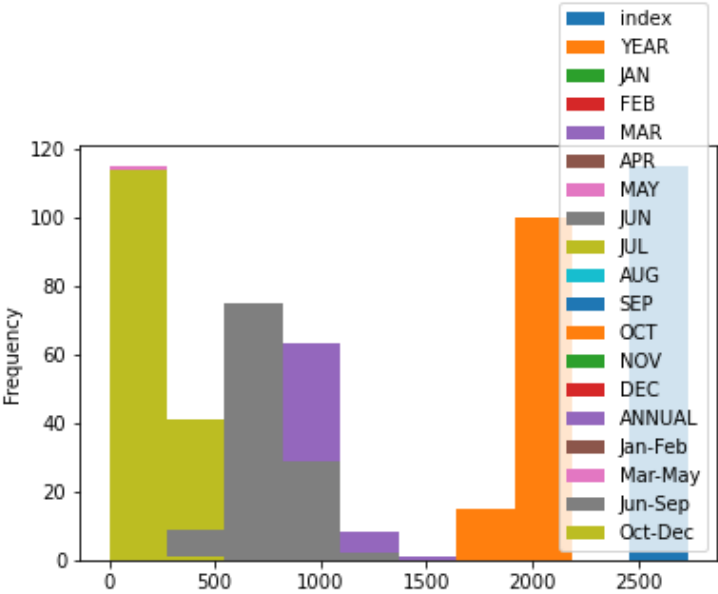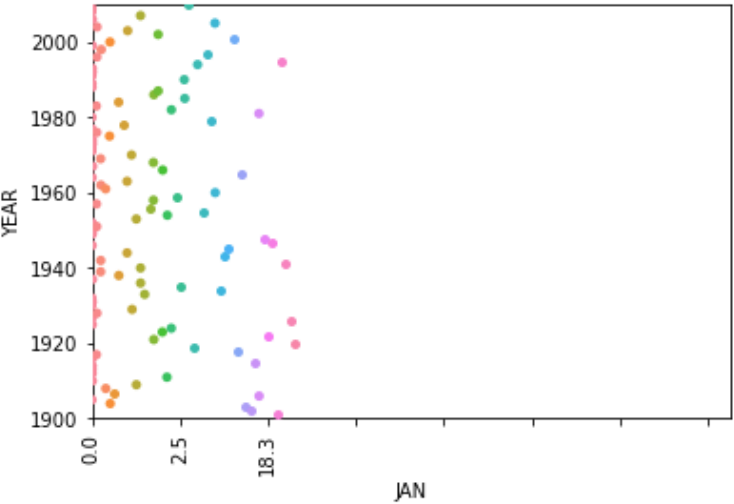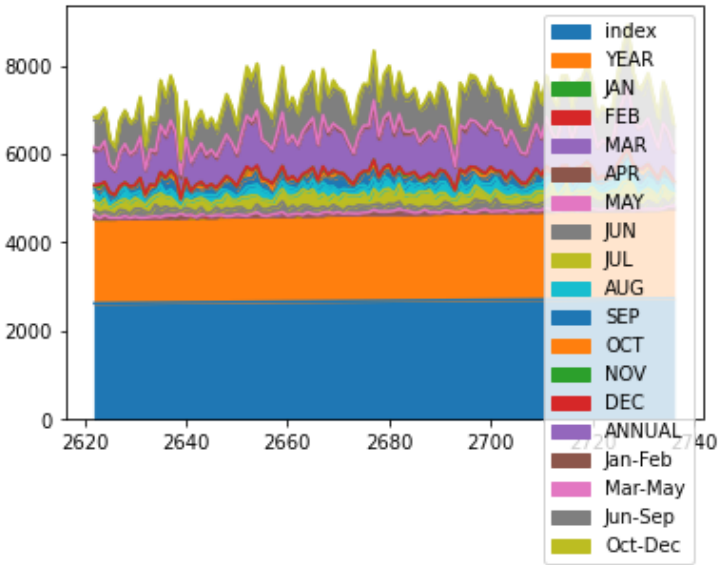|	index	SUBDIVISION	YEAR	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	N(
2622	2622	MADHYA MAHARASHTRA	1901	18.8	0.6	7.7	36.6	30.4	107.7	215.9	194.1	83.7	68.7	∠
2623	2623	MADHYA MAHARASHTRA	1902	7.8	0.0	0.1	5.0	9.8	102.6	210.9	114.5	169.5	60.4	40
2624	2624	MADHYA MAHARASHTRA	1903	7.6	0.0	0.0	3.2	77.2	86.3	281.8	155.5	142.3	74.2	7
2625	2625	MADHYA MAHARASHTRA	1904	0.4	4.7	1.7	3.0	18.7	114.6	126.5	59.5	183.0	91.1	(
2626	2626	MADHYA MAHARASHTRA	1905	0.0	1.2	0.0	2.3	23.6	65.0	252.8	79.0	52.6	52.9	8
...	...	...	...	...	...	...	...	...	...	...	...	...	...	
2732	2732	MADHYA MAHARASHTRA	2011	0.0	0.3	0.3	5.0	2.9	133.3	261.4	238.1	148.4	62.8	(
2733	2733	MADHYA MAHARASHTRA	2012	0.0	0.0	0.0	3.0	1.4	67.9	203.0	187.8	129.5	95.2	2
2734	2734	MADHYA MAHARASHTRA	2013	0.1	5.3	0.8	5.7	6.0	212.4	311.8	147.0	210.3	57.8	∠
2735	2735	MADHYA MAHARASHTRA	2014	3.1	6.2	24.4	7.5	29.8	44.0	277.9	240.3	120.4	38.5	3:
2736	2736	MADHYA MAHARASHTRA	2015	1.4	0.8	41.2	9.6	24.4	177.0	111.7	67.2	146.6	48.3	1(

115 rows × 20 columns

In [8]:
```python
dat2.plot.bar("YEAR","JAN")
plt.xlim(0,20)
plt.figure(figsize=(60,30))
plt.show()
dat2.plot.box()
plt.xlim(2,14)
plt.ylim(0,2000)
plt.show()
dat2.plot.area()
dat2.plot.scatter("YEAR","JAN")
sns.stripplot(x=dat2["JAN"],y=dat2["YEAR"],jitter=True)
plt.ylim(1900,2010)
plt.xlim(0,145)
plt.xticks(dat2["JAN"],rotation="vertical")
plt.gca().xaxis.set_major_locator(tic.MultipleLocator(base=20))
plt.show()
dat2.plot.hist()
plt.show()
```
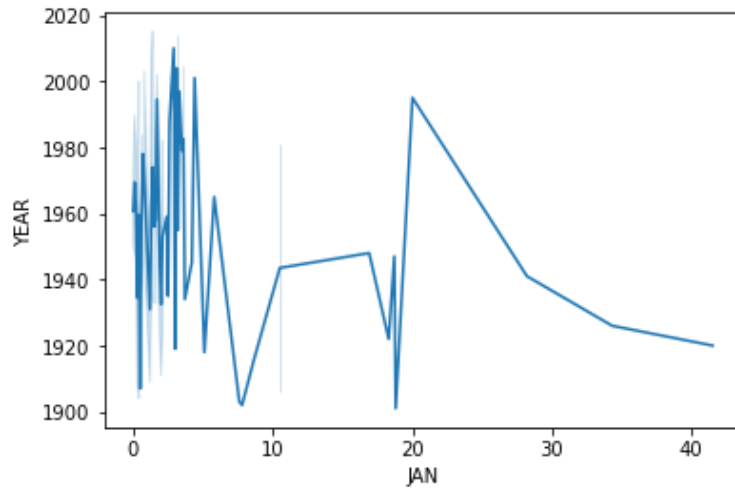

<Figure size 4320x2160 with 0 Axes>

In [9]:
```python
sns.lineplot(x=dat2["JAN"],y=dat2["YEAR"])
plt.show()
```

In [1]:
```python
import pandas as pd
import matplotlib.pyplot as plt
import seaborn as sns
import matplotlib.ticker as tic
```

In [2]:
```python
df=pd.read_csv("cleaned_rainfall")
df
```

Out[2]:

	index	SUBDIVISION	YEAR	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT
0	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
1	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
2	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
3	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
4	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
...	...	...	...	...	...	...	...	...	...	...	...	...	...
4111	4111	LAKSHADWEEP	2011	5.1	2.8	3.1	85.9	107.2	153.6	350.2	254.0	255.2	117.4
4112	4112	LAKSHADWEEP	2012	19.2	0.1	1.6	76.8	21.2	327.0	231.5	381.2	179.8	145.9
4113	4113	LAKSHADWEEP	2013	26.2	34.4	37.5	5.3	88.3	426.2	296.4	154.4	180.0	72.8
4114	4114	LAKSHADWEEP	2014	53.2	16.1	4.4	14.9	57.4	244.1	116.1	466.1	132.2	169.2
4115	4115	LAKSHADWEEP	2015	2.2	0.5	3.7	87.1	133.1	296.6	257.5	146.4	160.4	165.4

4116 rows × 20 columns

```python
In [3]: df["SUBDIVISION"].value_counts()
```

```
Out[3]: EAST RAJASTHAN                         115
        JHARKHAND                              115
        SOUTH INTERIOR KARNATAKA               115
        RAYALSEEMA                             115
        TAMIL NADU                             115
        WEST MADHYA PRADESH                    115
        HARYANA DELHI & CHANDIGARH             115
        PUNJAB                                 115
        WEST RAJASTHAN                         115
        KERALA                                 115
        EAST UTTAR PRADESH                     115
        TELANGANA                              115
        EAST MADHYA PRADESH                    115
        COASTAL ANDHRA PRADESH                 115
        NORTH INTERIOR KARNATAKA               115
        HIMACHAL PRADESH                       115
        MATATHWADA                             115
        MADHYA MAHARASHTRA                     115
        UTTARAKHAND                            115
        KONKAN & GOA                           115
        ASSAM & MEGHALAYA                      115
        BIHAR                                  115
        JAMMU & KASHMIR                        115
        SUB HIMALAYAN WEST BENGAL & SIKKIM     115
        WEST UTTAR PRADESH                     115
        CHHATTISGARH                           115
        COASTAL KARNATAKA                      115
        ORISSA                                 115
        SAURASHTRA & KUTCH                     115
        GUJARAT REGION                         115
        NAGA MANI MIZO TRIPURA                 115
        GANGETIC WEST BENGAL                   115
        VIDARBHA                               115
        LAKSHADWEEP                            114
        ANDAMAN & NICOBAR ISLANDS              110
        ARUNACHAL PRADESH                       97
        Name: SUBDIVISION, dtype: int64
```

HARYANA DELHI & CHANDIGARH

In [4]:
```python
dat1=df[df["SUBDIVISION"]=="SUB HIMALAYAN WEST BENGAL & SIKKIM"]
dat1
```

Out[4]:

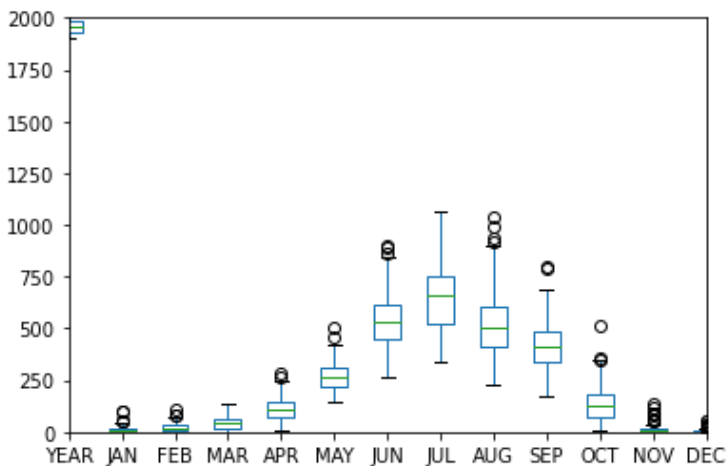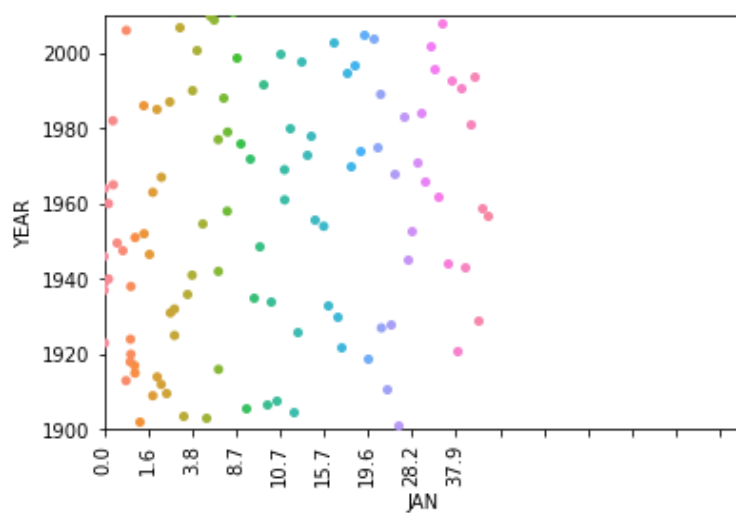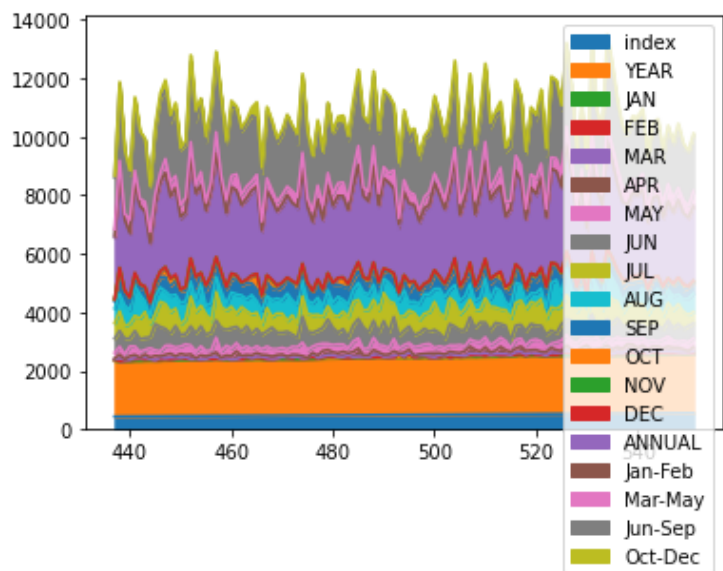|	index	SUBDIVISION	YEAR	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	N(
437	437	SUB HIMALAYAN WEST BENGAL & SIKKIM	1901	26.5	14.8	14.1	29.2	195.5	488.4	524.8	501.1	242.7	55.5	17
438	438	SUB HIMALAYAN WEST BENGAL & SIKKIM	1902	1.2	0.7	87.1	126.1	271.3	539.2	671.0	603.8	799.9	74.4	!
439	439	SUB HIMALAYAN WEST BENGAL & SIKKIM	1903	5.5	8.7	19.6	18.6	163.6	541.2	431.5	708.8	365.2	141.3	(
440	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	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	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	2(
548	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	12
549	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	1(
550	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	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	2:

115 rows × 20 columns

In [5]:
```python
dat1.plot.bar("YEAR","JAN")
plt.xlim(0,20)
plt.figure(figsize=(60,30))
plt.show()
dat1.plot.box()
plt.xlim(2,14)
plt.ylim(0,2000)
plt.show()
dat1.plot.area()
dat1.plot.scatter("YEAR","JAN")
sns.stripplot(x=dat1["JAN"],y=dat1["YEAR"],jitter=True)
plt.ylim(1900,2010)
plt.xlim(0,145)
plt.xticks(dat1["JAN"],rotation="vertical")
plt.gca().xaxis.set_major_locator(tic.MultipleLocator(base=10))
plt.show()
dat1.plot.hist()
```
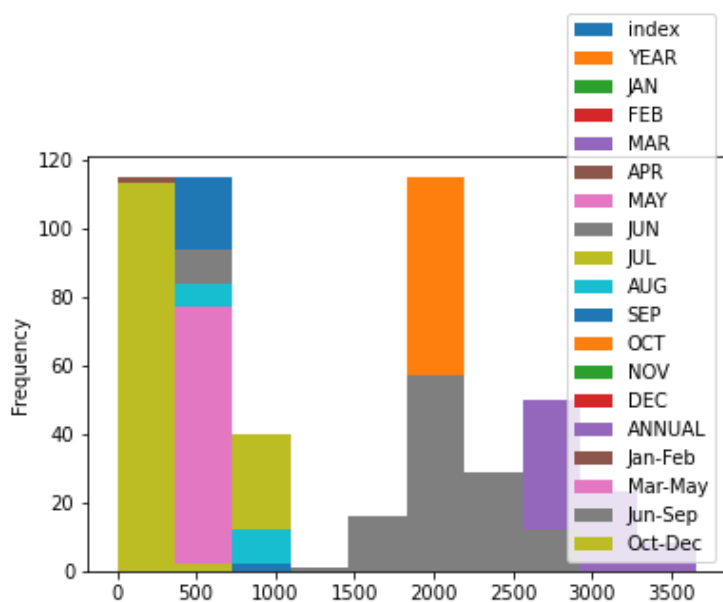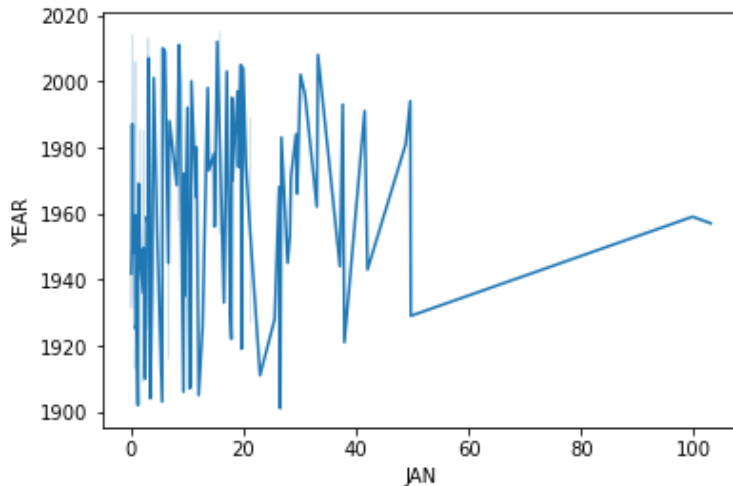


```
<Figure size 4320x2160 with 0 Axes>
```
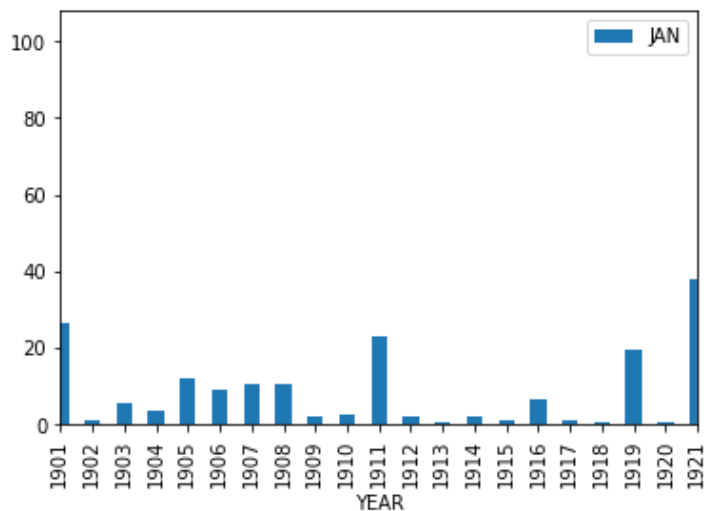
Out[5]: <AxesSubplot:ylabel='Frequency'>

In [6]:
```python
sns.lineplot(x=dat1["JAN"],y=dat1["YEAR"])
plt.show()
```


PUNJAB

In [7]:
```python
dat2=df[df["SUBDIVISION"]=="PUNJAB"]
dat2
```

Out[7]:

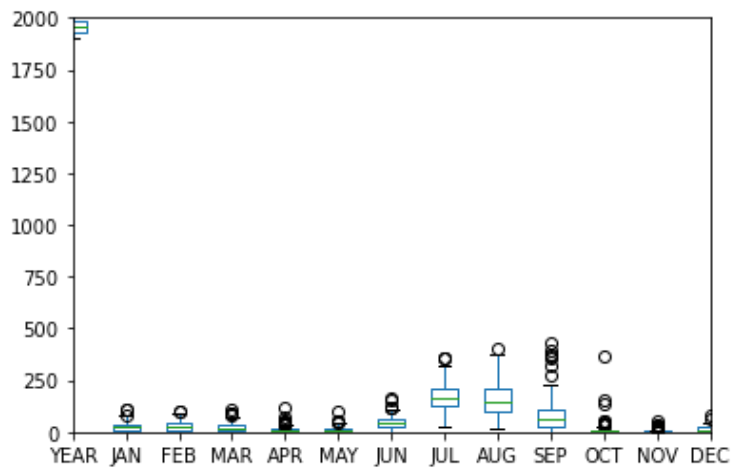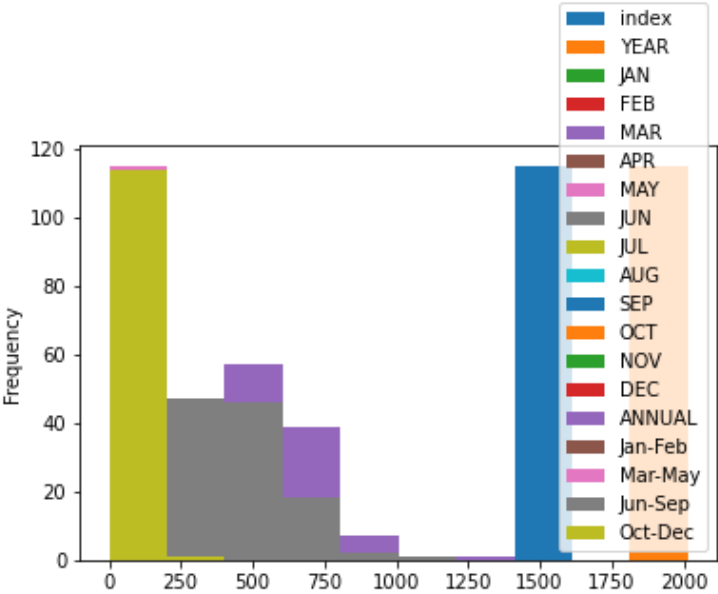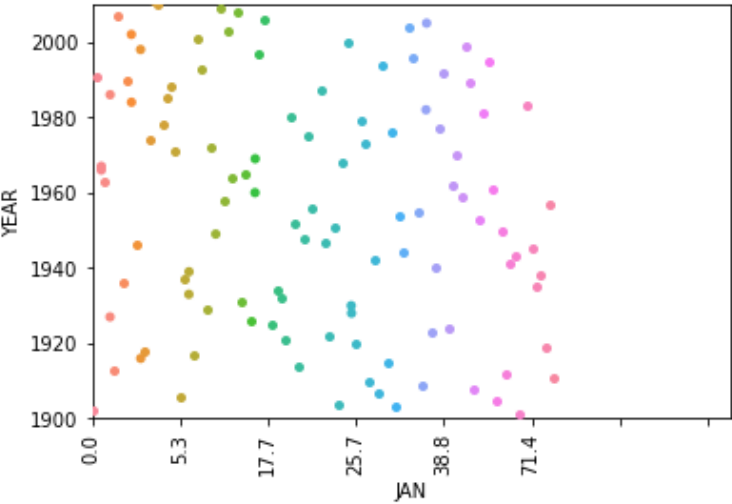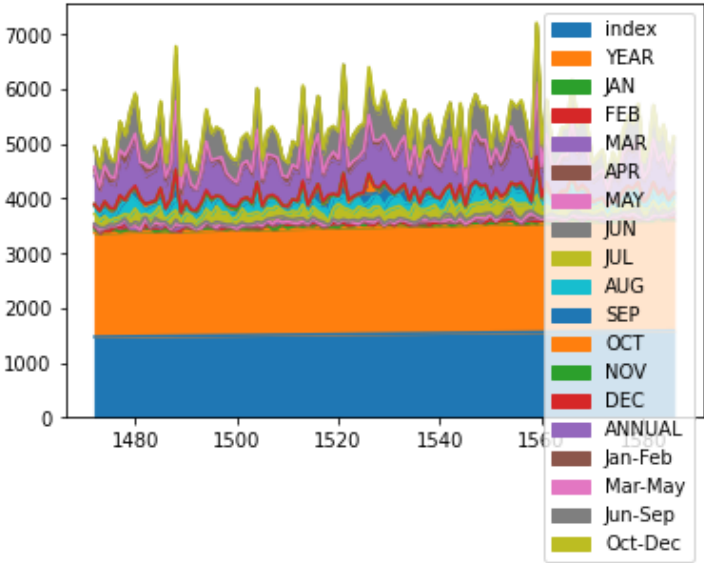|	index	SUBDIVISION	YEAR	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV
1472	1472	PUNJAB	1901	55.7	50.1	25.2	2.1	25.2	10.4	178.2	145.0	24.4	3.7	0.0
1473	1473	PUNJAB	1902	0.0	0.8	9.9	10.9	29.6	49.9	125.6	94.9	67.2	9.0	0.0
1474	1474	PUNJAB	1903	29.5	0.5	45.0	1.3	9.2	5.2	212.2	119.1	132.5	6.9	0.0
1475	1475	PUNJAB	1904	24.2	1.7	87.8	1.2	13.8	22.0	59.9	124.0	73.8	7.4	9.8
1476	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	1582	PUNJAB	2011	3.5	35.6	8.2	17.8	18.9	162.9	120.9	193.5	140.2	0.0	1.0
1583	1583	PUNJAB	2012	62.6	3.2	1.9	31.1	1.6	11.9	120.2	135.1	112.3	2.2	0.4
1584	1584	PUNJAB	2013	9.3	50.1	11.6	3.4	3.6	120.3	117.9	217.1	24.4	16.2	6.1
1585	1585	PUNJAB	2014	21.8	20.1	30.3	24.5	20.8	20.6	76.3	41.9	105.8	6.0	0.7
1586	1586	PUNJAB	2015	17.7	31.3	68.5	29.8	16.7	48.3	130.2	88.6	69.2	9.0	0.8

115 rows × 20 columns

In [8]:

```python
dat2.plot.bar("YEAR","JAN")
plt.xlim(0,20)
plt.figure(figsize=(60,30))
plt.show()
dat2.plot.box()
plt.xlim(2,14)
plt.ylim(0,2000)
plt.show()
dat2.plot.area()
dat2.plot.scatter("YEAR","JAN")
sns.stripplot(x=dat2["JAN"],y=dat2["YEAR"],jitter=True)
plt.ylim(1900,2010)
plt.xlim(0,145)
plt.xticks(dat2["JAN"],rotation="vertical")
plt.gca().xaxis.set_major_locator(tic.MultipleLocator(base=20))
plt.show()
dat2.plot.hist()
plt.show()
```
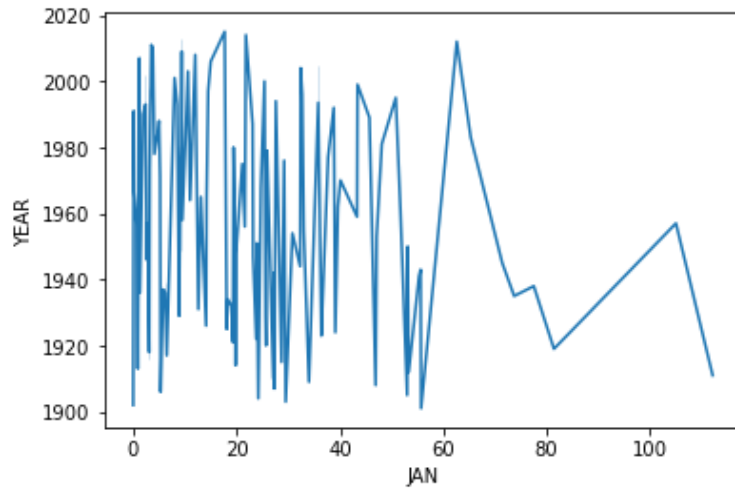
<Figure size 4320x2160 with 0 Axes>

In [9]:
```python
sns.lineplot(x=dat2["JAN"],y=dat2["YEAR"])
plt.show()
```

In [1]:
```python
import pandas as pd
import matplotlib.pyplot as plt
import seaborn as sns
import matplotlib.ticker as tic
```

In [2]:
```python
df=pd.read_csv("cleaned_rainfall")
df
```

Out[2]:

	index	SUBDIVISION	YEAR	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT
0	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
1	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
2	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
3	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
4	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
...	...	...	...	...	...	...	...	...	...	...	...	...	...
4111	4111	LAKSHADWEEP	2011	5.1	2.8	3.1	85.9	107.2	153.6	350.2	254.0	255.2	117.4
4112	4112	LAKSHADWEEP	2012	19.2	0.1	1.6	76.8	21.2	327.0	231.5	381.2	179.8	145.9
4113	4113	LAKSHADWEEP	2013	26.2	34.4	37.5	5.3	88.3	426.2	296.4	154.4	180.0	72.8
4114	4114	LAKSHADWEEP	2014	53.2	16.1	4.4	14.9	57.4	244.1	116.1	466.1	132.2	169.2
4115	4115	LAKSHADWEEP	2015	2.2	0.5	3.7	87.1	133.1	296.6	257.5	146.4	160.4	165.4

4116 rows × 20 columns

In [3]: `df["SUBDIVISION"].value_counts()`

```
Out[3]: BIHAR                              115
        RAYALSEEMA                         115
        SUB HIMALAYAN WEST BENGAL & SIKKIM 115
        VIDARBHA                           115
        EAST UTTAR PRADESH                 115
        JAMMU & KASHMIR                    115
        WEST MADHYA PRADESH                115
        COASTAL ANDHRA PRADESH             115
        JHARKHAND                          115
        EAST MADHYA PRADESH                115
        TAMIL NADU                         115
        KONKAN & GOA                       115
        COASTAL KARNATAKA                  115
        TELANGANA                          115
        SOUTH INTERIOR KARNATAKA           115
        KERALA                             115
        EAST RAJASTHAN                     115
        GANGETIC WEST BENGAL               115
        GUJARAT REGION                     115
        UTTARAKHAND                        115
        SAURASHTRA & KUTCH                 115
        ORISSA                             115
        NORTH INTERIOR KARNATAKA           115
        MADHYA MAHARASHTRA                 115
        ASSAM & MEGHALAYA                  115
        NAGA MANI MIZO TRIPURA             115
        HARYANA DELHI & CHANDIGARH         115
        WEST UTTAR PRADESH                 115
        WEST RAJASTHAN                     115
        MATATHWADA                         115
        PUNJAB                             115
        CHHATTISGARH                       115
        HIMACHAL PRADESH                   115
        LAKSHADWEEP                        114
        ANDAMAN & NICOBAR ISLANDS          110
        ARUNACHAL PRADESH                   97
        Name: SUBDIVISION, dtype: int64
```

GUJARAT REGION

In [4]:
```python
dat1=df[df["SUBDIVISION"]=="GUJARAT REGION"]
dat1
```

Out[4]:

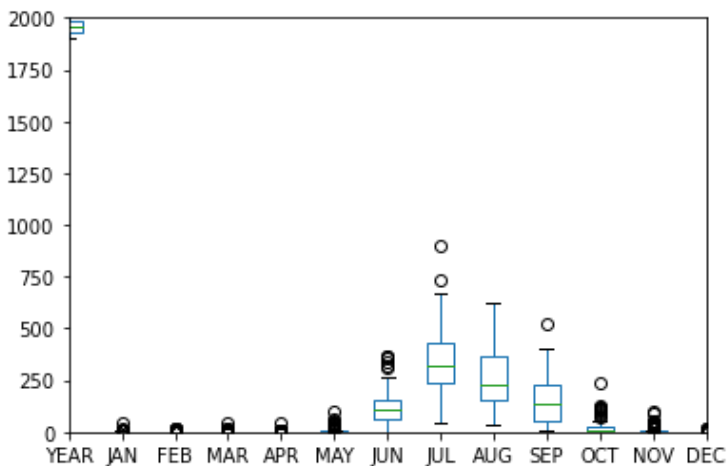|	index	SUBDIVISION	YEAR	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV
2277	2277	GUJARAT REGION	1901	4.2	0.0	0.6	1.6	7.0	60.3	240.2	205.4	18.1	16.6	0.0
2278	2278	GUJARAT REGION	1902	3.9	0.0	0.0	0.6	1.0	32.8	229.8	299.0	281.2	2.3	1.5
2279	2279	GUJARAT REGION	1903	0.3	0.1	1.4	0.0	12.3	30.1	452.9	202.0	183.2	5.4	0.0
2280	2280	GUJARAT REGION	1904	0.8	10.6	16.8	0.2	3.9	48.3	194.8	71.8	138.0	6.1	0.1
2281	2281	GUJARAT REGION	1905	0.1	0.7	1.1	0.3	0.0	20.1	668.3	37.9	81.3	1.4	0.2
...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
2387	2387	GUJARAT REGION	2011	0.0	0.2	0.0	0.0	0.0	16.3	259.2	451.7	162.5	0.4	0.0
2388	2388	GUJARAT REGION	2012	0.1	0.0	0.0	0.0	0.0	34.4	178.2	230.3	263.8	7.1	0.0
2389	2389	GUJARAT REGION	2013	0.0	0.9	0.1	4.6	0.0	155.7	405.4	211.1	287.3	53.2	0.1
2390	2390	GUJARAT REGION	2014	5.7	0.1	0.2	1.0	1.3	11.6	307.5	138.6	235.1	3.3	1.3
2391	2391	GUJARAT REGION	2015	1.8	0.0	6.1	5.5	0.9	120.7	354.7	37.4	93.4	2.2	0.3

115 rows × 20 columns

In [5]:
```python
dat1.plot.bar("YEAR","Jan-Feb")
plt.xlim(0,20)
plt.figure(figsize=(60,30))
plt.show()
dat1.plot.box()
plt.xlim(2,14)
plt.ylim(0,2000)
plt.show()
dat1.plot.area()
dat1.plot.scatter("YEAR","Jan-Feb")
sns.stripplot(x=dat1["Jan-Feb"],y=dat1["YEAR"],jitter=True)
plt.ylim(1900,2010)
plt.xlim(0,145)
plt.xticks(dat1["Jan-Feb"],rotation="vertical")
plt.gca().xaxis.set_major_locator(tic.MultipleLocator(base=10))
plt.show()
dat1.plot.hist()
```
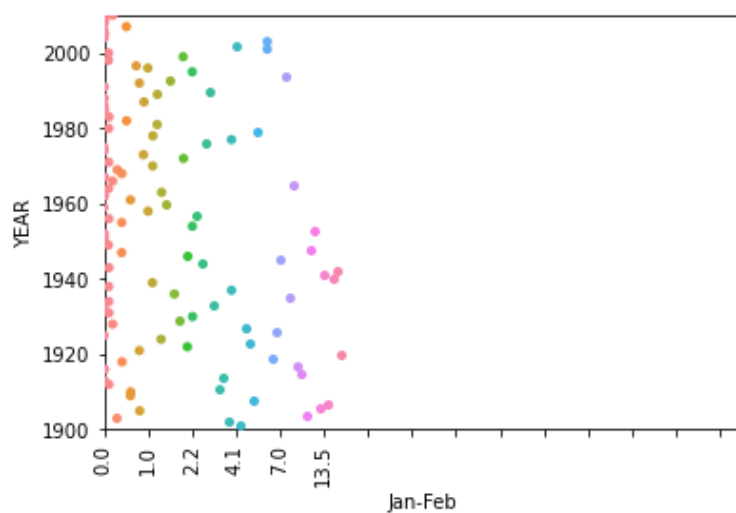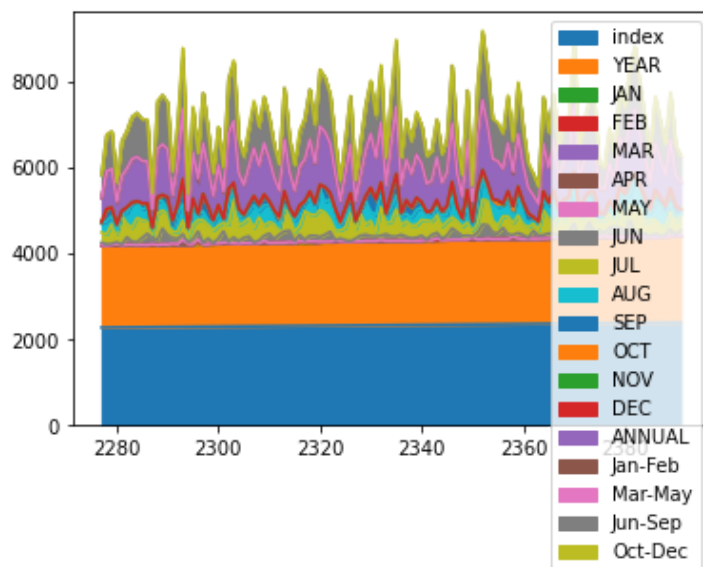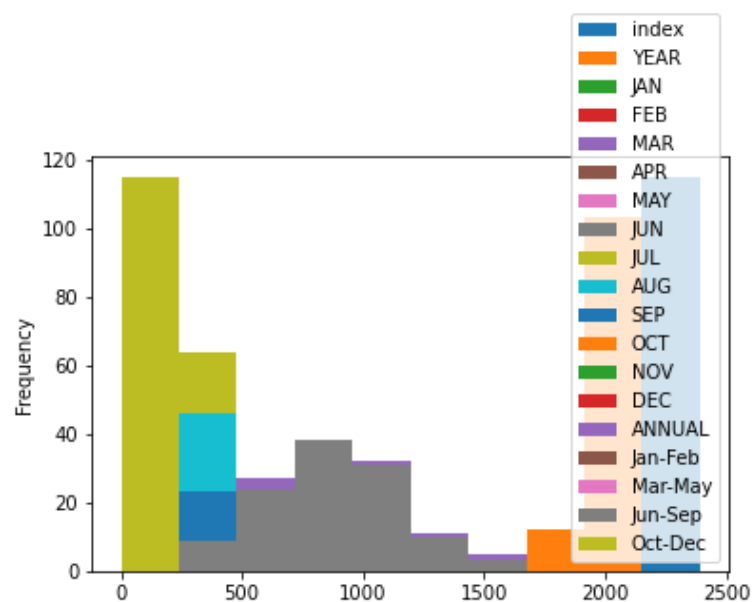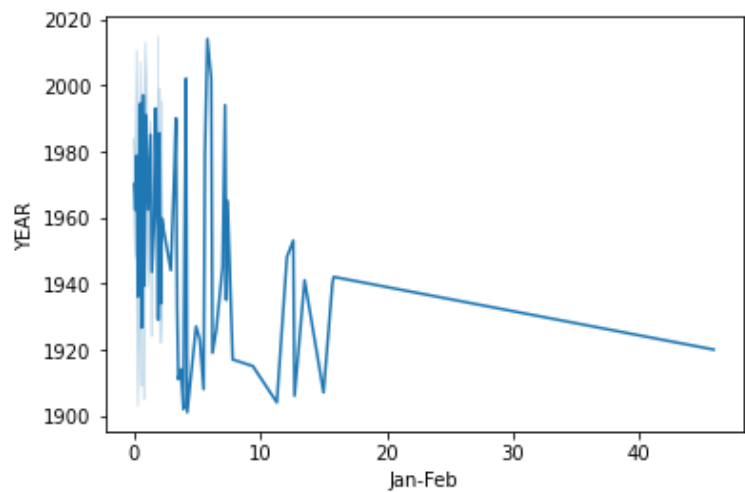


```
<Figure size 4320x2160 with 0 Axes>
```
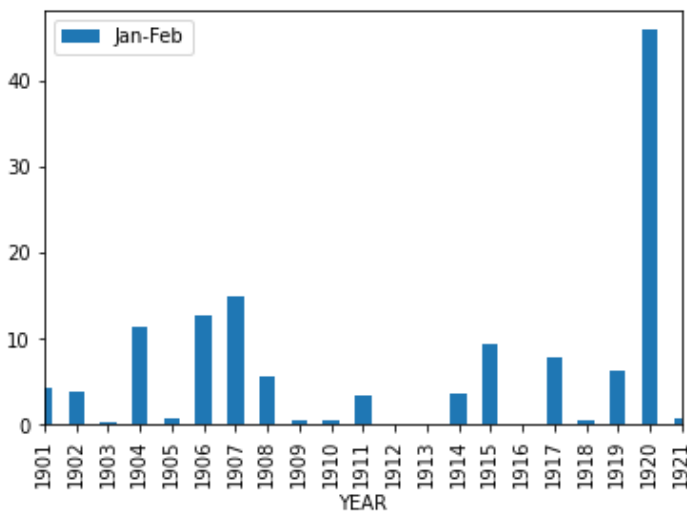
Out[5]: <AxesSubplot:ylabel='Frequency'>

In [6]:
```python
sns.lineplot(x=dat1["Jan-Feb"],y=dat1["YEAR"])
plt.show()
```


VIDARBHA

In [7]:
```python
dat2=df[df["SUBDIVISION"]=="VIDARBHA"]
dat2
```

Out[7]:

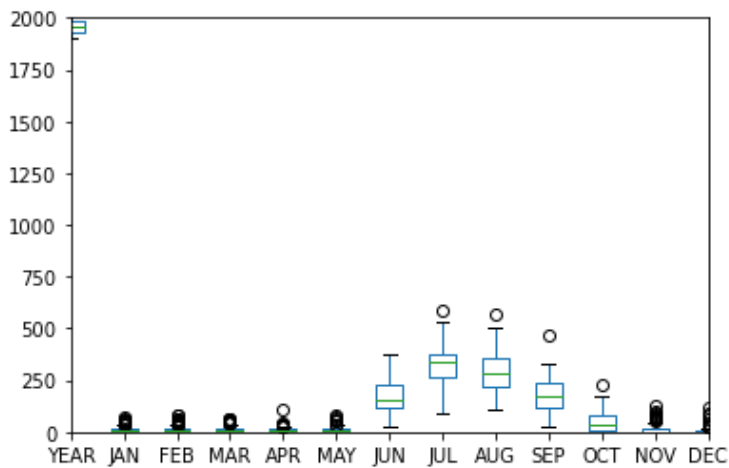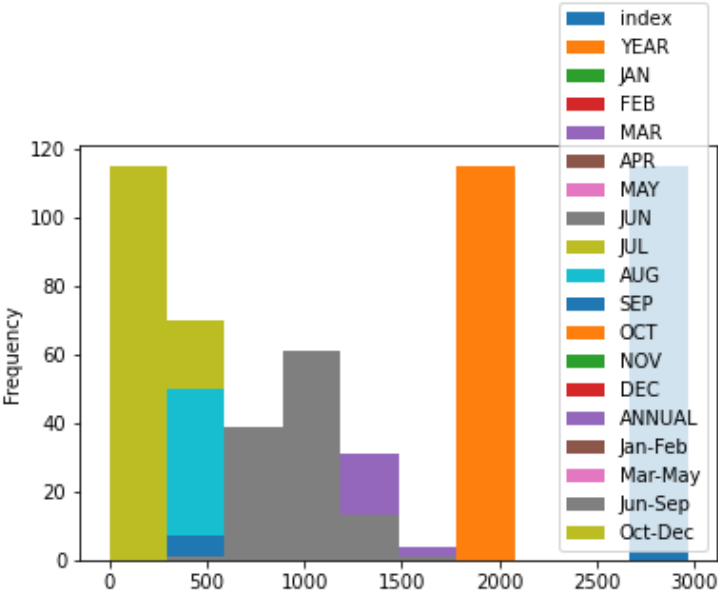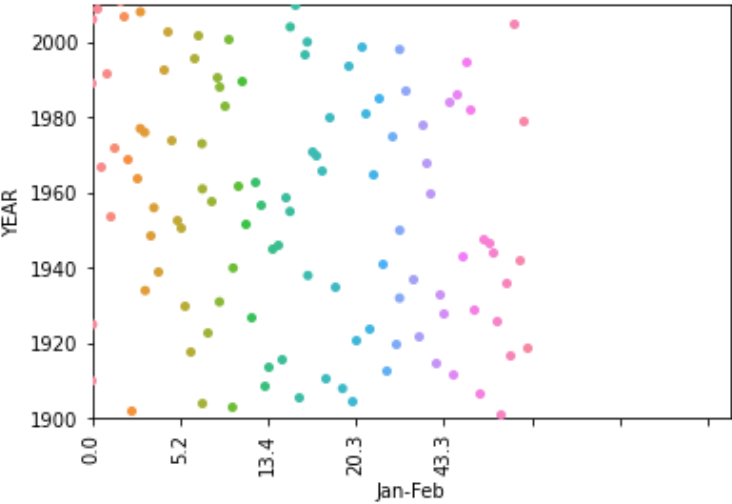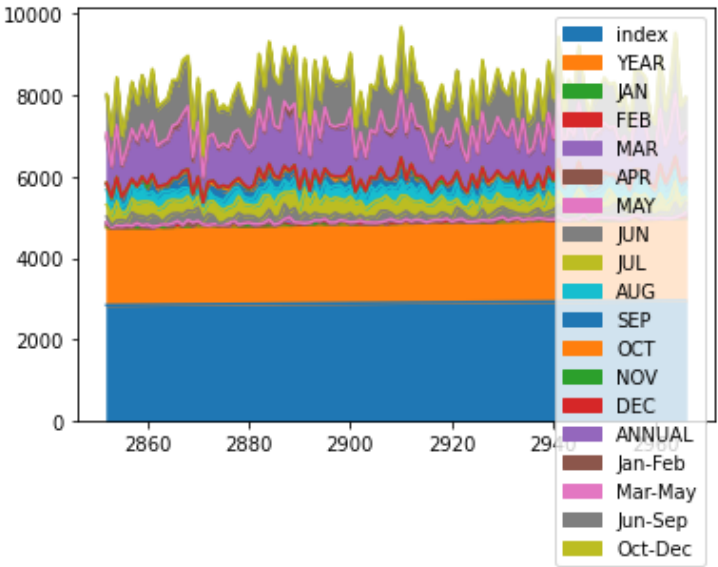|	index	SUBDIVISION	YEAR	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV
2852	2852	VIDARBHA	1901	36.8	39.9	30.9	26.1	7.3	129.7	295.3	368.8	123.4	35.2	0.0
2853	2853	VIDARBHA	1902	1.6	0.1	0.0	6.5	4.1	38.0	270.7	204.7	150.9	29.6	16.
2854	2854	VIDARBHA	1903	5.2	4.0	0.1	2.5	37.8	121.2	475.5	325.5	154.8	100.8	2.0
2855	2855	VIDARBHA	1904	4.3	2.4	12.9	0.2	14.8	148.9	158.3	151.8	196.9	61.7	0.0
2856	2856	VIDARBHA	1905	7.3	12.7	12.4	16.2	14.0	81.0	254.5	216.3	321.3	6.0	0.2
...	...	...	...	...	...	...	...	...	...	...	...	...	...	..
2962	2962	VIDARBHA	2011	0.0	1.2	0.1	7.7	0.6	137.9	247.1	302.8	191.0	4.7	0.0
2963	2963	VIDARBHA	2012	3.1	0.1	0.0	0.6	0.2	125.5	370.5	316.2	249.4	34.9	7.3
2964	2964	VIDARBHA	2013	6.6	13.0	3.8	2.8	0.5	366.7	535.5	326.1	131.7	133.5	0.0
2965	2965	VIDARBHA	2014	1.2	18.3	49.6	2.6	4.0	63.3	337.6	191.7	224.9	17.3	6.2
2966	2966	VIDARBHA	2015	26.3	4.7	66.3	28.1	12.8	254.6	137.2	288.9	167.5	7.0	0.0

115 rows × 20 columns

In [8]:
```python
dat2.plot.bar("YEAR","Jan-Feb")
plt.xlim(0,20)
plt.figure(figsize=(60,30))
plt.show()
dat2.plot.box()
plt.xlim(2,14)
plt.ylim(0,2000)
plt.show()
dat2.plot.area()
dat2.plot.scatter("YEAR","Jan-Feb")
sns.stripplot(x=dat2["Jan-Feb"],y=dat2["YEAR"],jitter=True)
plt.ylim(1900,2010)
plt.xlim(0,145)
plt.xticks(dat2["Jan-Feb"],rotation="vertical")
plt.gca().xaxis.set_major_locator(tic.MultipleLocator(base=20))
plt.show()
dat2.plot.hist()
plt.show()
```
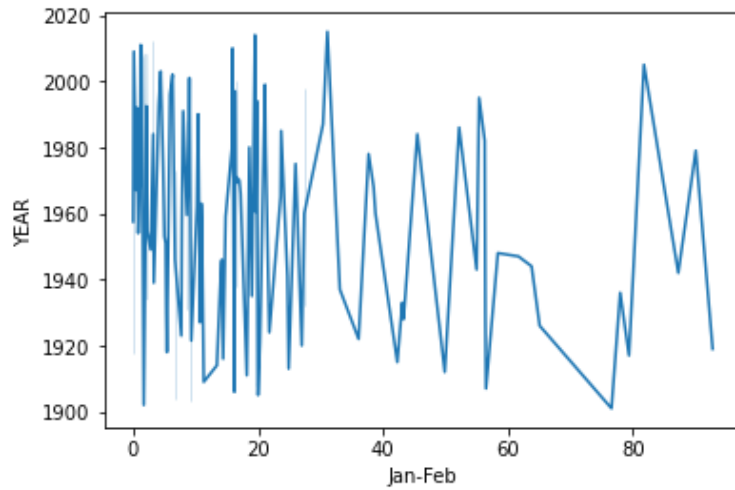


```
<Figure size 4320x2160 with 0 Axes>
```
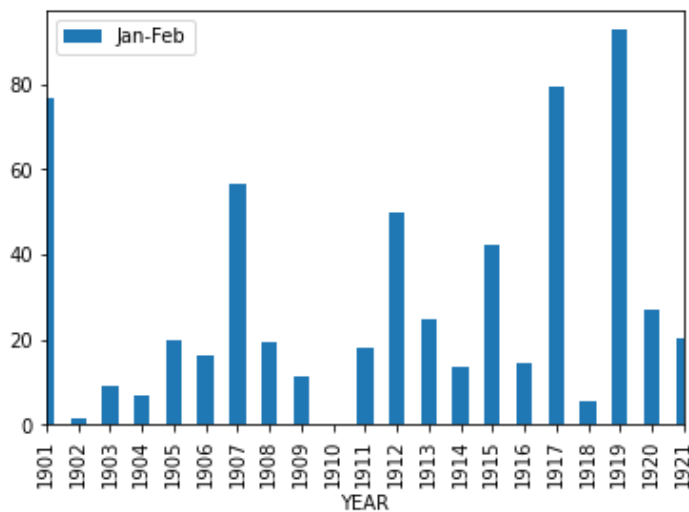
In [9]:
```python
sns.lineplot(x=dat2["Jan-Feb"],y=dat2["YEAR"])
plt.show()
```

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

```
In [2]: df=pd.read_csv("cleaned_rainfall")
        df
```

Out[2]:

	index	SUBDIVISION	YEAR	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT
0	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
1	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
2	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
3	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
4	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
...	...	...	...	...	...	...	...	...	...	...	...	...	...
4111	4111	LAKSHADWEEP	2011	5.1	2.8	3.1	85.9	107.2	153.6	350.2	254.0	255.2	117.4
4112	4112	LAKSHADWEEP	2012	19.2	0.1	1.6	76.8	21.2	327.0	231.5	381.2	179.8	145.9
4113	4113	LAKSHADWEEP	2013	26.2	34.4	37.5	5.3	88.3	426.2	296.4	154.4	180.0	72.8
4114	4114	LAKSHADWEEP	2014	53.2	16.1	4.4	14.9	57.4	244.1	116.1	466.1	132.2	169.2
4115	4115	LAKSHADWEEP	2015	2.2	0.5	3.7	87.1	133.1	296.6	257.5	146.4	160.4	165.4

4116 rows × 20 columns

```
In [3]: df["SUBDIVISION"].value_counts()
```

```
Out[3]: EAST MADHYA PRADESH                    115
        ORISSA                                 115
        KERALA                                 115
        GUJARAT REGION                         115
        JAMMU & KASHMIR                        115
        TAMIL NADU                             115
        JHARKHAND                              115
        EAST RAJASTHAN                         115
        SUB HIMALAYAN WEST BENGAL & SIKKIM     115
        CHHATTISGARH                           115
        MADHYA MAHARASHTRA                     115
        ASSAM & MEGHALAYA                      115
        COASTAL KARNATAKA                      115
        WEST RAJASTHAN                         115
        SAURASHTRA & KUTCH                     115
        MATATHWADA                             115
        HIMACHAL PRADESH                       115
        TELANGANA                              115
        WEST UTTAR PRADESH                     115
        VIDARBHA                               115
        WEST MADHYA PRADESH                    115
        RAYALSEEMA                             115
        UTTARAKHAND                            115
        PUNJAB                                 115
        GANGETIC WEST BENGAL                   115
        BIHAR                                  115
        NAGA MANI MIZO TRIPURA                 115
        SOUTH INTERIOR KARNATAKA               115
        EAST UTTAR PRADESH                     115
        COASTAL ANDHRA PRADESH                 115
        KONKAN & GOA                           115
        NORTH INTERIOR KARNATAKA               115
        HARYANA DELHI & CHANDIGARH             115
        LAKSHADWEEP                            114
        ANDAMAN & NICOBAR ISLANDS              110
        ARUNACHAL PRADESH                       97
        Name: SUBDIVISION, dtype: int64
```

COASTAL ANDHRA PRADESH

In [4]:
```python
dat1=df[df["SUBDIVISION"]=="COASTAL ANDHRA PRADESH"]
dat1
```

Out[4]:

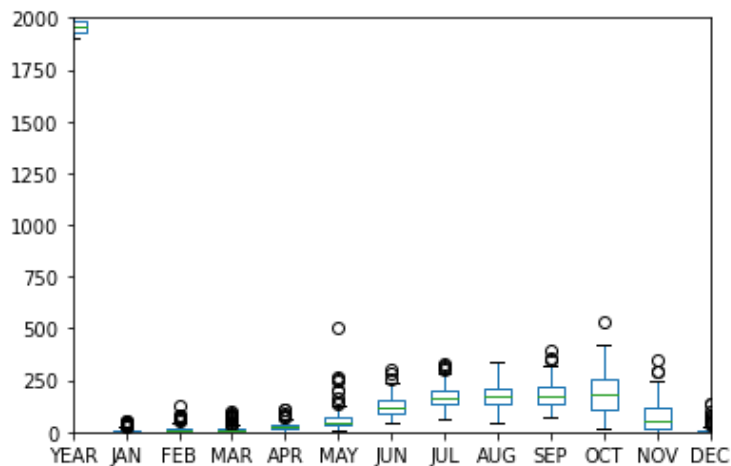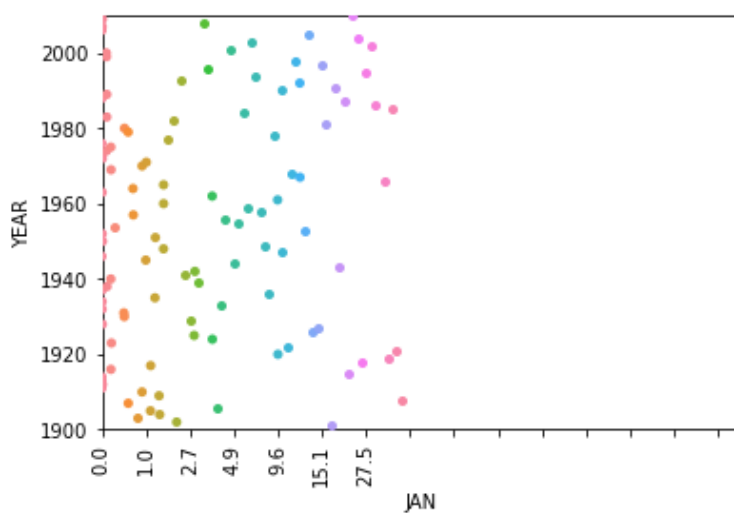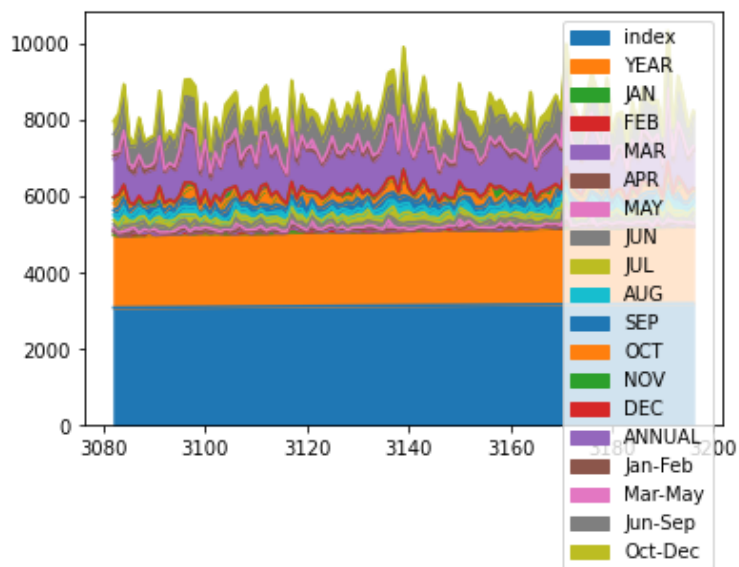|	index	SUBDIVISION	YEAR	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NC
3082	3082	COASTAL ANDHRA PRADESH	1901	18.8	80.9	7.2	28.7	68.7	77.7	113.0	133.7	125.3	173.4	164
3083	3083	COASTAL ANDHRA PRADESH	1902	2.0	0.0	2.8	23.9	37.6	72.6	144.5	236.1	204.5	262.0	5(
3084	3084	COASTAL ANDHRA PRADESH	1903	0.8	13.3	0.2	6.2	73.4	154.0	248.6	258.0	216.5	159.1	173
3085	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	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
...	...	...	...	...	...	...	...	...	...	...	...	...	...	
3192	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	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
3194	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
3195	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	23
3196	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	81

115 rows × 20 columns

In [5]:
```python
dat1.plot.bar("YEAR","JAN")
plt.xlim(0,20)
plt.figure(figsize=(60,30))
plt.show()
dat1.plot.box()
plt.xlim(2,14)
plt.ylim(0,2000)
plt.show()
dat1.plot.area()
dat1.plot.scatter("YEAR","JAN")
sns.stripplot(x=dat1["JAN"],y=dat1["YEAR"],jitter=True)
plt.ylim(1900,2010)
plt.xlim(0,145)
plt.xticks(dat1["JAN"],rotation="vertical")
plt.gca().xaxis.set_major_locator(tic.MultipleLocator(base=10))
plt.show()
dat1.plot.hist()
```
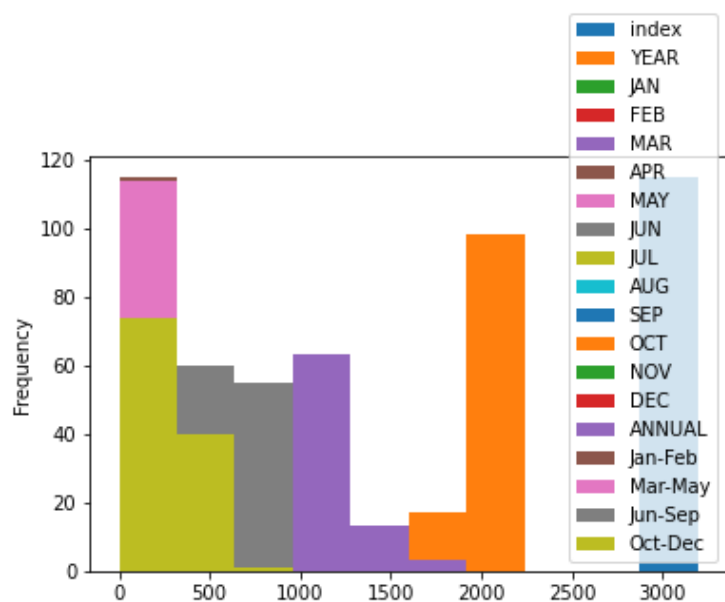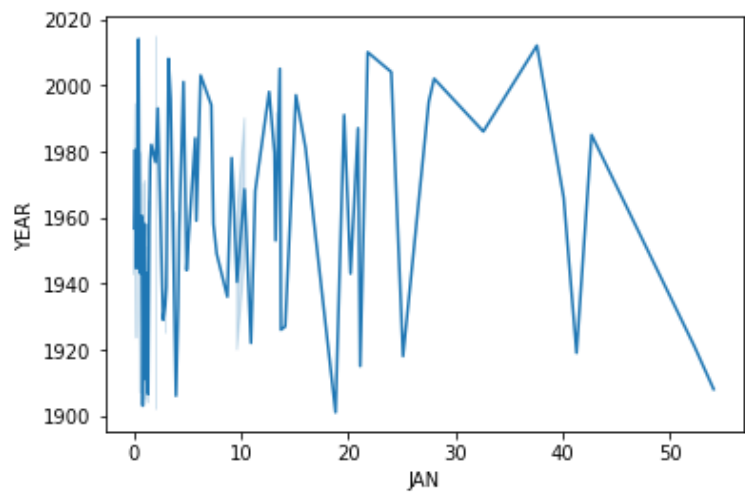


```
<Figure size 4320x2160 with 0 Axes>
```
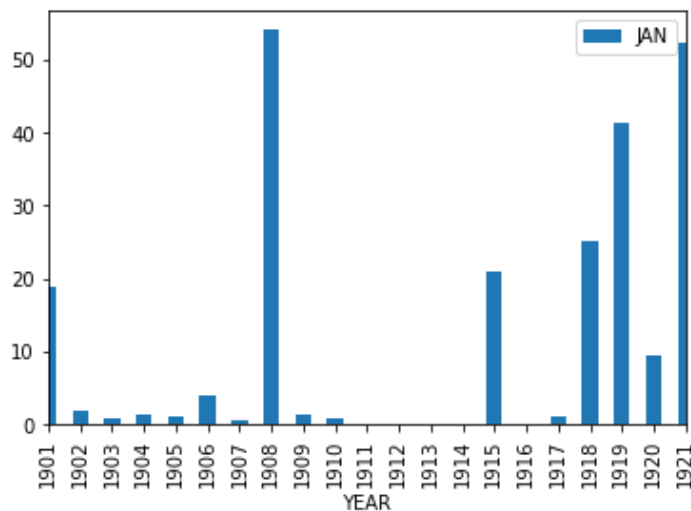
Out[5]: <AxesSubplot:ylabel='Frequency'>

In [6]:
```python
sns.lineplot(x=dat1["JAN"],y=dat1["YEAR"])
plt.show()
```


WEST UTTAR PRADESH

In [7]:
```python
dat2=df[df["SUBDIVISION"]=="WEST UTTAR PRADESH"]
dat2
```

Out[7]:

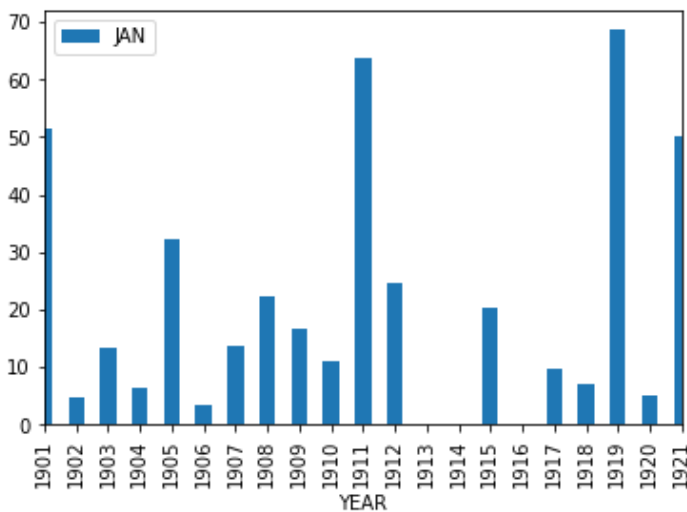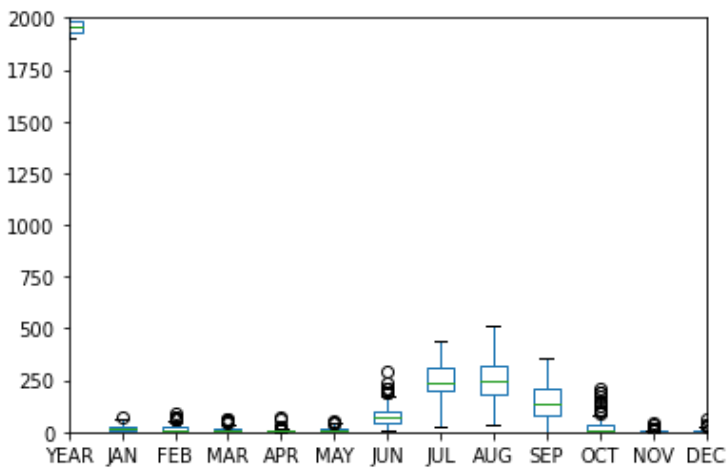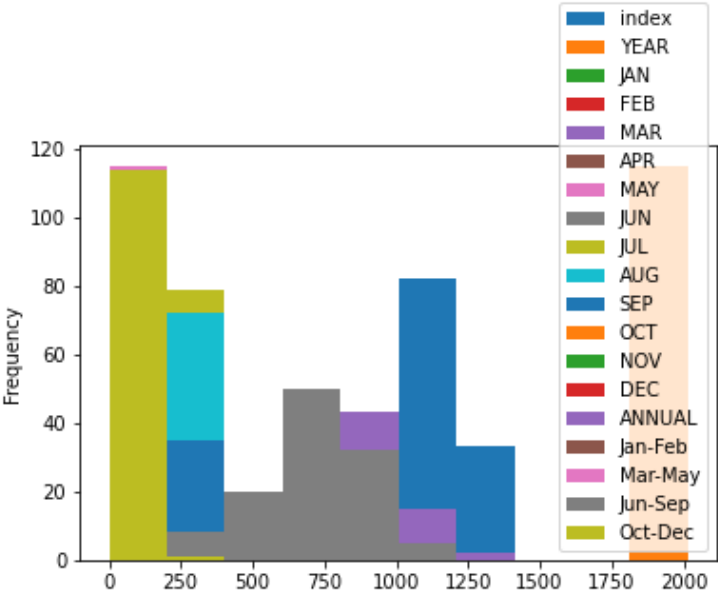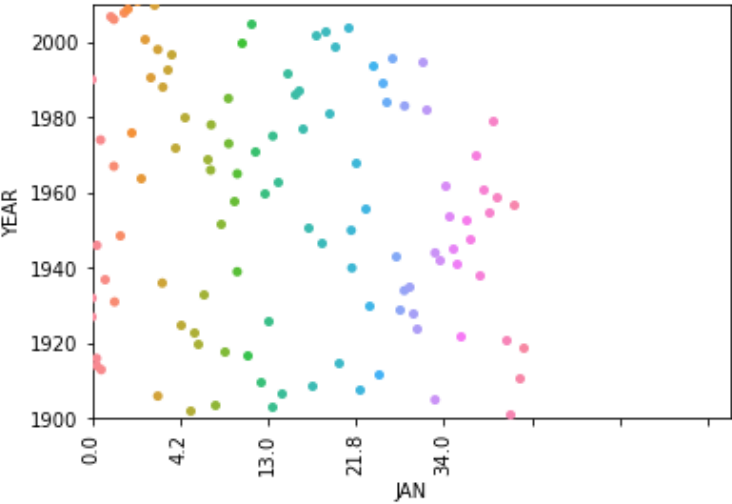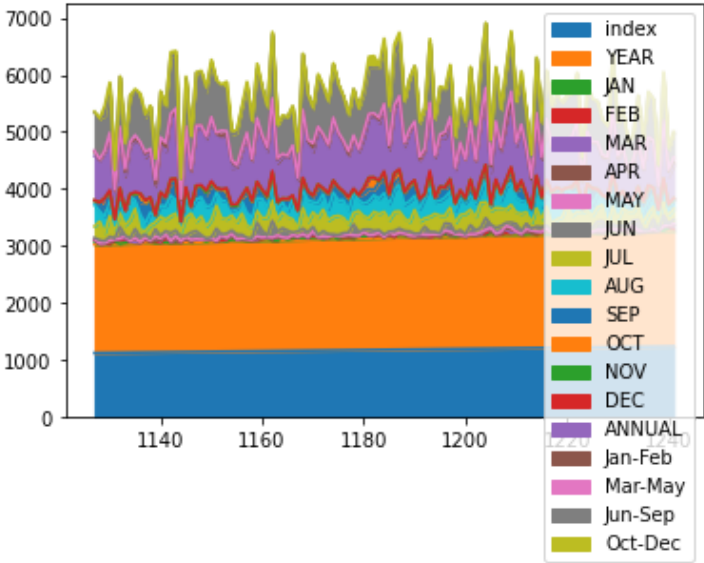|	index	SUBDIVISION	YEAR	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV
1127	1127	WEST UTTAR PRADESH	1901	51.4	25.6	9.5	0.7	5.6	23.8	201.9	374.3	67.7	7.6	0.0
1128	1128	WEST UTTAR PRADESH	1902	4.6	4.6	0.6	4.8	7.2	54.5	325.9	180.6	143.1	9.6	0.9
1129	1129	WEST UTTAR PRADESH	1903	13.4	0.4	1.2	0.0	8.2	32.7	145.4	279.1	150.4	177.3	0.0
1130	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	15.7
1131	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	0.0
...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
1237	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	0.5
1238	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	0.
1239	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	1.7
1240	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	0.0
1241	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	2.0

115 rows × 20 columns

In [8]:
```python
dat2.plot.bar("YEAR","JAN")
plt.xlim(0,20)
plt.figure(figsize=(60,30))
plt.show()
dat2.plot.box()
plt.xlim(2,14)
plt.ylim(0,2000)
plt.show()
dat2.plot.area()
dat2.plot.scatter("YEAR","JAN")
sns.stripplot(x=dat2["JAN"],y=dat2["YEAR"],jitter=True)
plt.ylim(1900,2010)
plt.xlim(0,145)
plt.xticks(dat2["JAN"],rotation="vertical")
plt.gca().xaxis.set_major_locator(tic.MultipleLocator(base=20))
plt.show()
dat2.plot.hist()
plt.show()
```
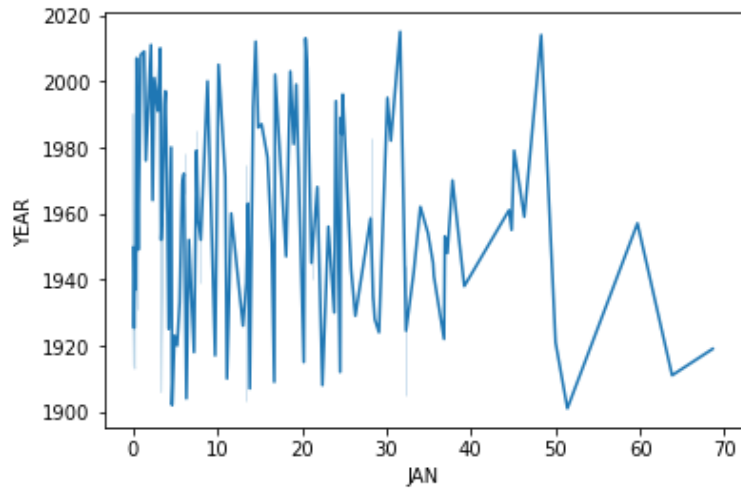


```
<Figure size 4320x2160 with 0 Axes>
```

In [9]:
```python
sns.lineplot(x=dat2["JAN"],y=dat2["YEAR"])
plt.show()
```

In [1]:
```python
import pandas as pd
import matplotlib.pyplot as plt
import seaborn as sns
import matplotlib.ticker as tic
```

In [2]:
```python
df=pd.read_csv("cleaned_rainfall")
df
```

Out[2]:

	index	SUBDIVISION	YEAR	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT
0	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
1	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
2	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
3	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
4	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
...	...	...	...	...	...	...	...	...	...	...	...	...	...
4111	4111	LAKSHADWEEP	2011	5.1	2.8	3.1	85.9	107.2	153.6	350.2	254.0	255.2	117.4
4112	4112	LAKSHADWEEP	2012	19.2	0.1	1.6	76.8	21.2	327.0	231.5	381.2	179.8	145.9
4113	4113	LAKSHADWEEP	2013	26.2	34.4	37.5	5.3	88.3	426.2	296.4	154.4	180.0	72.8
4114	4114	LAKSHADWEEP	2014	53.2	16.1	4.4	14.9	57.4	244.1	116.1	466.1	132.2	169.2
4115	4115	LAKSHADWEEP	2015	2.2	0.5	3.7	87.1	133.1	296.6	257.5	146.4	160.4	165.4

4116 rows × 20 columns

```
In [3]: df["SUBDIVISION"].value_counts()
```

```
Out[3]: GUJARAT REGION                           115
        COASTAL KARNATAKA                        115
        EAST UTTAR PRADESH                       115
        RAYALSEEMA                               115
        TELANGANA                                115
        EAST RAJASTHAN                           115
        WEST RAJASTHAN                           115
        NAGA MANI MIZO TRIPURA                   115
        BIHAR                                    115
        JHARKHAND                                115
        WEST MADHYA PRADESH                      115
        KERALA                                   115
        SAURASHTRA & KUTCH                       115
        HARYANA DELHI & CHANDIGARH               115
        PUNJAB                                   115
        NORTH INTERIOR KARNATAKA                 115
        CHHATTISGARH                             115
        MATATHWADA                               115
        GANGETIC WEST BENGAL                     115
        HIMACHAL PRADESH                         115
        EAST MADHYA PRADESH                      115
        KONKAN & GOA                             115
        SOUTH INTERIOR KARNATAKA                 115
        ORISSA                                   115
        JAMMU & KASHMIR                          115
        SUB HIMALAYAN WEST BENGAL & SIKKIM       115
        TAMIL NADU                               115
        ASSAM & MEGHALAYA                        115
        COASTAL ANDHRA PRADESH                   115
        VIDARBHA                                 115
        MADHYA MAHARASHTRA                       115
        UTTARAKHAND                              115
        WEST UTTAR PRADESH                       115
        LAKSHADWEEP                              114
        ANDAMAN & NICOBAR ISLANDS                110
        ARUNACHAL PRADESH                         97
        Name: SUBDIVISION, dtype: int64
```

BIHAR

In [4]:
```
dat1=df[df["SUBDIVISION"]=="BIHAR"]
dat1
```

Out[4]:

	index	SUBDIVISION	YEAR	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NO
897	897	BIHAR	1901	51.8	19.6	11.9	1.1	65.6	66.3	245.9	319.4	155.1	8.3	7
898	898	BIHAR	1902	4.6	0.7	24.3	17.3	66.3	118.2	361.0	225.5	358.7	28.5	1
899	899	BIHAR	1903	5.3	4.7	2.0	4.7	28.2	192.9	115.0	342.6	173.9	147.0	0
900	900	BIHAR	1904	6.3	1.7	3.5	5.3	118.7	191.6	394.4	351.3	84.4	98.1	10
901	901	BIHAR	1905	16.0	30.1	32.6	21.4	77.5	50.5	409.1	495.3	353.9	11.6	0
...	...	...	...	...	...	...	...	...	...	...	...	...	...	
1007	1007	BIHAR	2011	4.2	7.7	9.2	23.9	74.5	211.0	241.1	278.7	234.1	10.0	2
1008	1008	BIHAR	2012	18.1	2.7	7.3	20.4	18.8	96.2	354.0	240.4	233.8	34.3	6
1009	1009	BIHAR	2013	5.1	22.6	0.6	32.3	89.5	183.3	182.0	213.6	143.3	197.1	0
1010	1010	BIHAR	2014	17.0	33.5	8.4	0.7	103.9	115.2	265.4	307.6	160.3	47.8	0
1011	1011	BIHAR	2015	12.8	1.8	27.2	38.7	39.5	122.1	231.5	287.0	101.7	10.4	0

115 rows × 20 columns

In [4]:
```
dat1=df[df["SUBDIVISION"]=="BIHAR"]
dat1
```

In [15]:
```python
dat1.plot.bar("YEAR","ANNUAL")
plt.xlim(0,20)
plt.figure(figsize=(60,30))
plt.show()
dat1.plot.box()
plt.xlim(2,14)
plt.ylim(0,2000)
plt.show()
dat1.plot.area()
dat1.plot.scatter("YEAR","ANNUAL")
sns.stripplot(x=dat1["ANNUAL"],y=dat1["YEAR"],jitter=True)
plt.ylim(1900,2010)
plt.xlim(0,1000)
plt.xticks(dat1["ANNUAL"],rotation="vertical")
plt.gca().xaxis.set_major_locator(tic.MultipleLocator(base=75))
plt.show()
dat1.plot.hist()
```
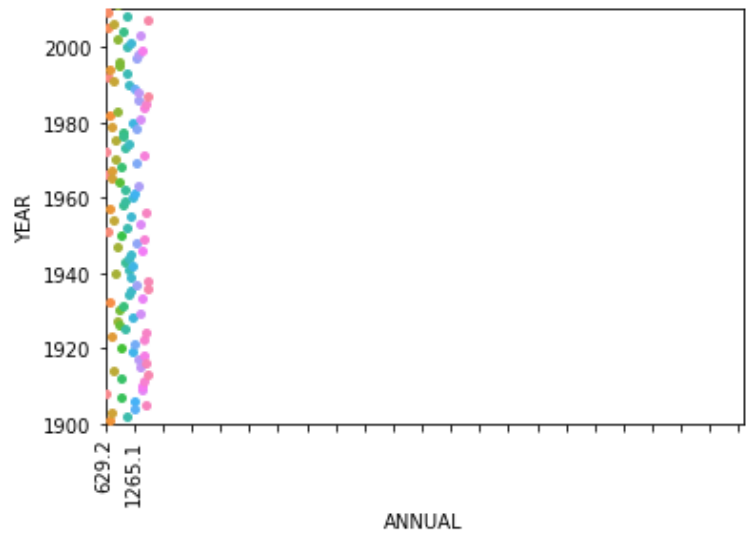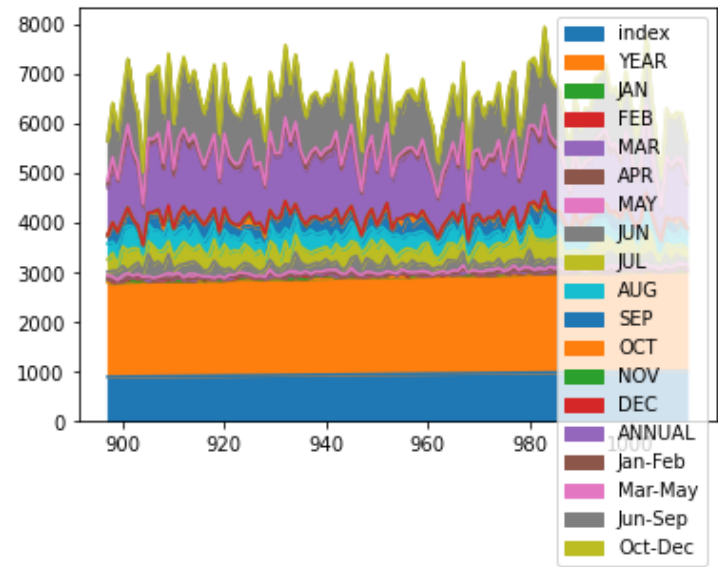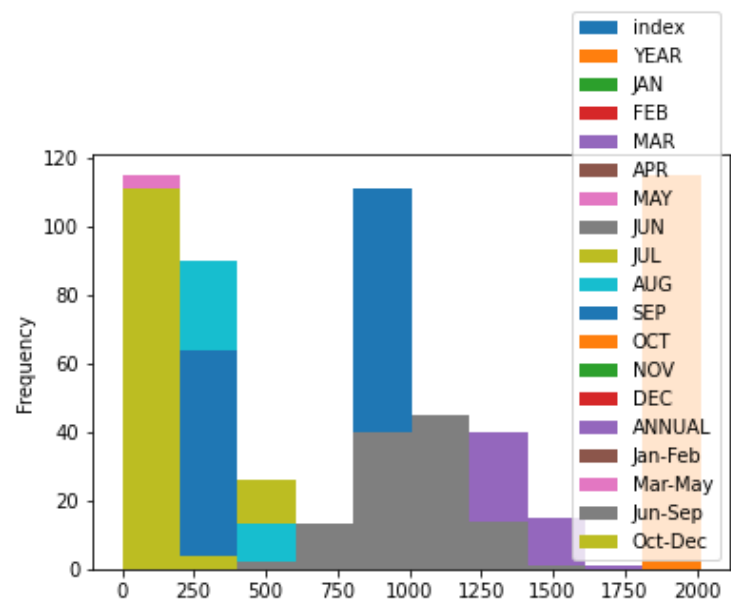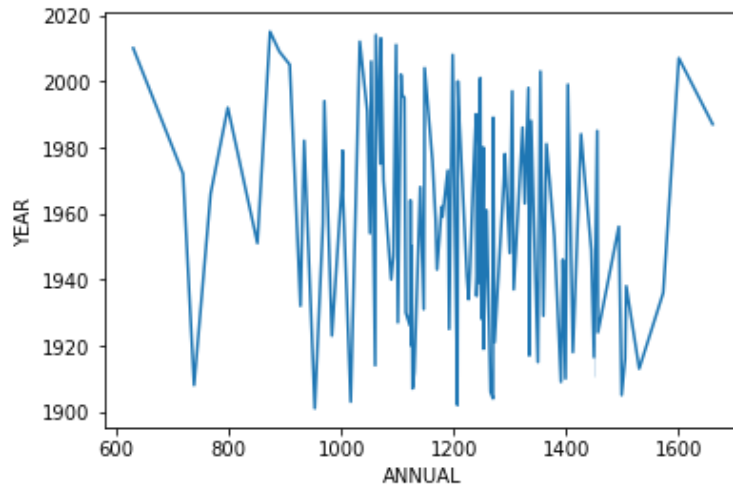
<Figure size 4320x2160 with 0 Axes>
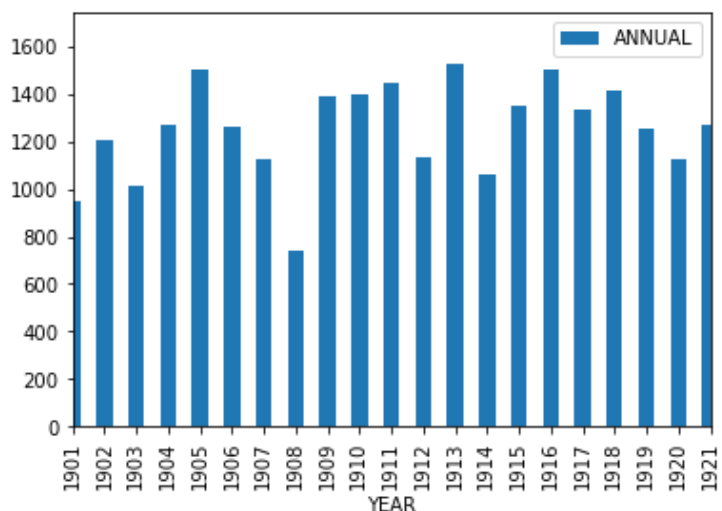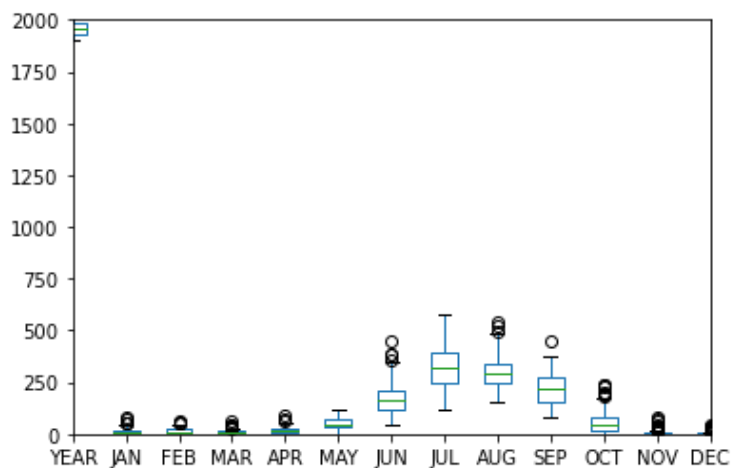
Out[15]: <AxesSubplot:ylabel='Frequency'>

In [6]:
```python
sns.lineplot(x=dat1["ANNUAL"],y=dat1["YEAR"])
plt.show()
```


EAST MADHYA PRADESH

In [7]:
```python
dat2=df[df["SUBDIVISION"]=="EAST MADHYA PRADESH"]
dat2
```

Out[7]:

|	index	SUBDIVISION	YEAR	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV
2162	2162	EAST MADHYA PRADESH	1901	48.5	38.1	15.7	10.7	6.2	61.0	367.5	589.2	189.9	5.9	0.0
2163	2163	EAST MADHYA PRADESH	1902	14.9	8.9	0.0	3.6	2.7	28.0	411.9	227.0	236.6	17.0	27.0
2164	2164	EAST MADHYA PRADESH	1903	5.6	2.9	0.3	0.9	37.5	67.5	261.4	366.7	257.4	177.9	0.0
2165	2165	EAST MADHYA PRADESH	1904	2.0	15.3	48.2	0.0	8.6	109.9	443.2	316.6	135.6	44.8	3.2
2166	2166	EAST MADHYA PRADESH	1905	15.9	8.0	14.3	12.3	10.2	34.4	292.4	243.3	250.9	2.9	0.0
...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
2272	2272	EAST MADHYA PRADESH	2011	0.6	1.9	0.3	7.1	4.7	332.5	323.6	326.9	276.5	1.1	0.0
2273	2273	EAST MADHYA PRADESH	2012	39.4	0.7	0.6	1.1	1.2	67.8	398.9	351.7	172.6	12.7	3.8
2274	2274	EAST MADHYA PRADESH	2013	2.0	43.4	14.1	9.5	0.3	311.9	456.2	480.8	78.0	124.2	0.5
2275	2275	EAST MADHYA PRADESH	2014	32.1	49.7	17.8	5.1	2.5	91.8	283.4	231.8	139.6	56.4	1.9
2276	2276	EAST MADHYA PRADESH	2015	37.3	11.0	73.4	25.8	6.3	139.2	262.2	272.1	71.6	38.2	1.2

115 rows × 20 columns

In [16]:
```python
dat2.plot.bar("YEAR","ANNUAL")
plt.xlim(0,20)
plt.figure(figsize=(60,30))
plt.show()
dat2.plot.box()
plt.xlim(2,14)
plt.ylim(0,2000)
plt.show()
dat2.plot.area()
dat2.plot.scatter("YEAR","ANNUAL")
sns.stripplot(x=dat2["ANNUAL"],y=dat2["YEAR"],jitter=True)
plt.ylim(1900,2010)
plt.xlim(0,145)
plt.xticks(dat2["ANNUAL"],rotation="vertical")
plt.gca().xaxis.set_major_locator(tic.MultipleLocator(base=70))
plt.show()
dat2.plot.hist()
plt.show()
```


<Figure size 4320x2160 with 0 Axes>
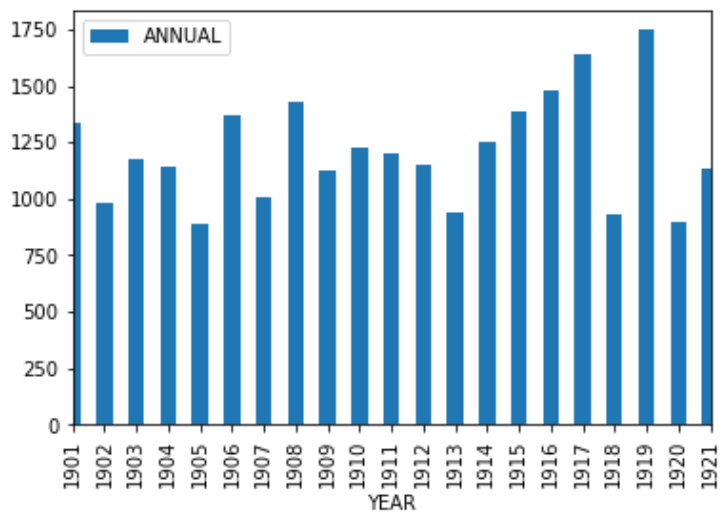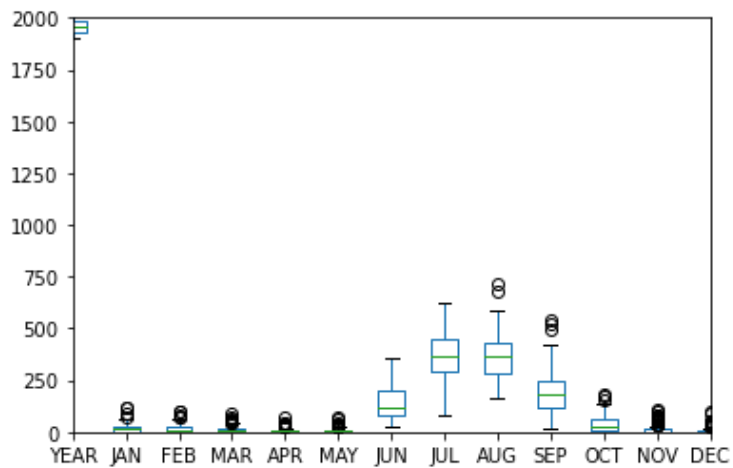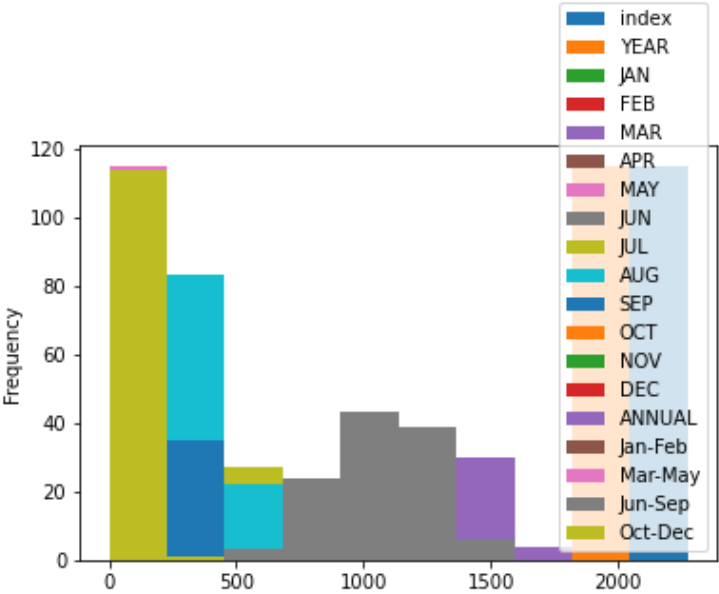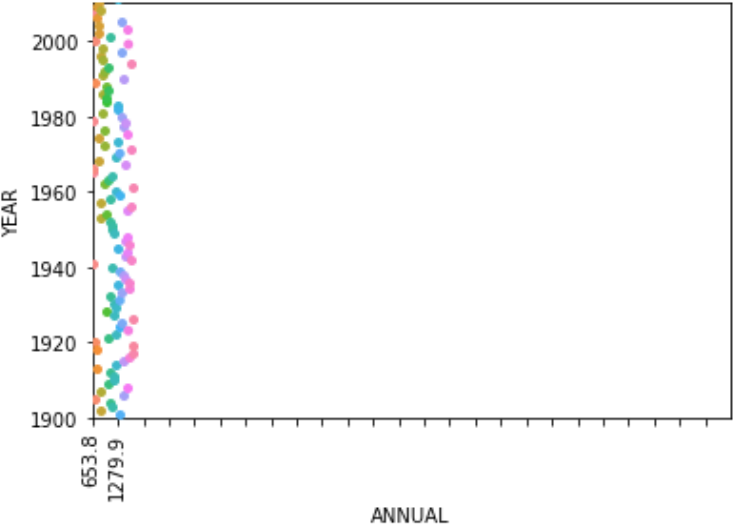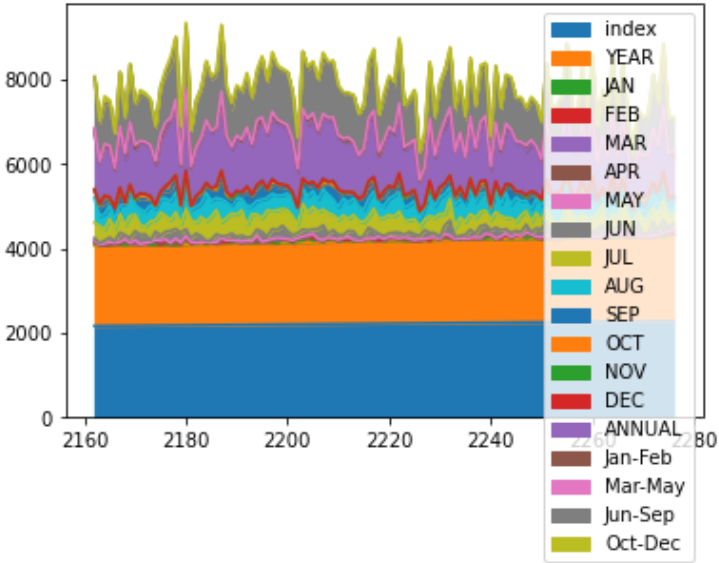
In [9]:
```python
sns.lineplot(x=dat2["ANNUAL"],y=dat2["YEAR"])
plt.show()
```