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]:
```
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

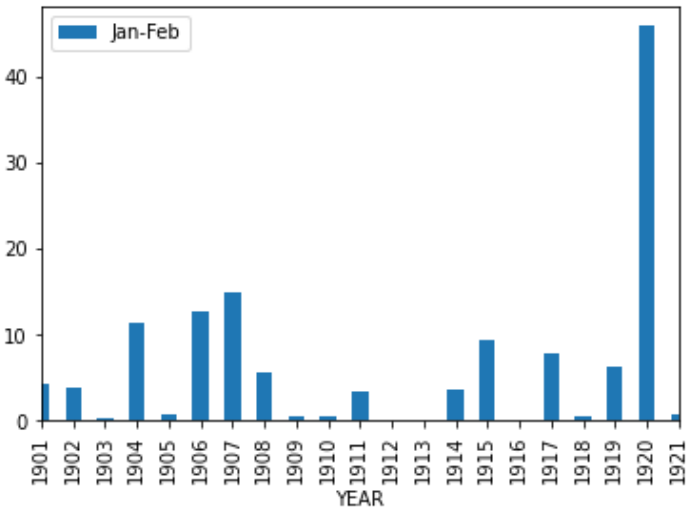
In [4]:
```
dat1=df[df["SUBDIVISION"]=="GUJARAT REGION"]
dat1
```

Out[4]:

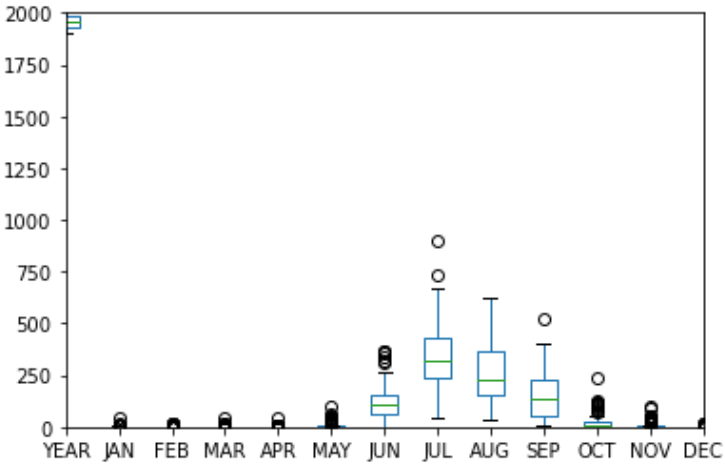
	index	SUBDIVISION	YEAR	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV
2277	2277	GUJARAT REGION	1901	4.2	0.0	0.6	1.6	7.0	60.3	240.2	205.4	18.1	16.6	0.0
2278	2278	GUJARAT REGION	1902	3.9	0.0	0.0	0.6	1.0	32.8	229.8	299.0	281.2	2.3	1.5
2279	2279	GUJARAT REGION	1903	0.3	0.1	1.4	0.0	12.3	30.1	452.9	202.0	183.2	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

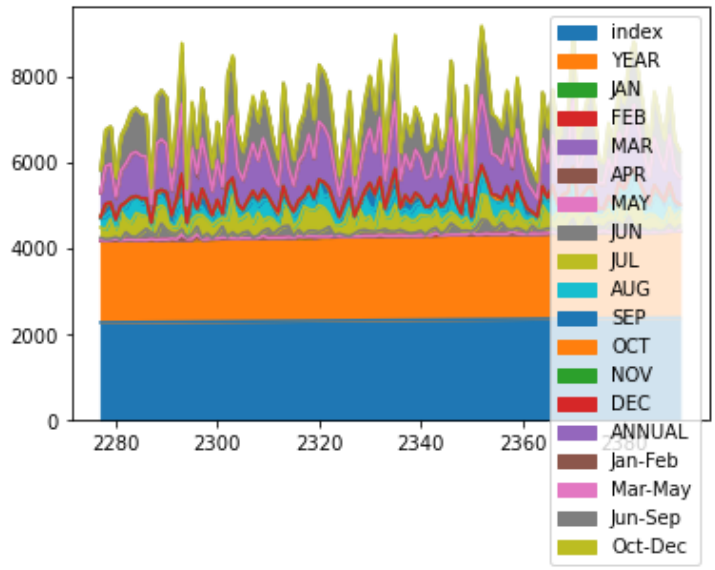
115 rows × 20 columns

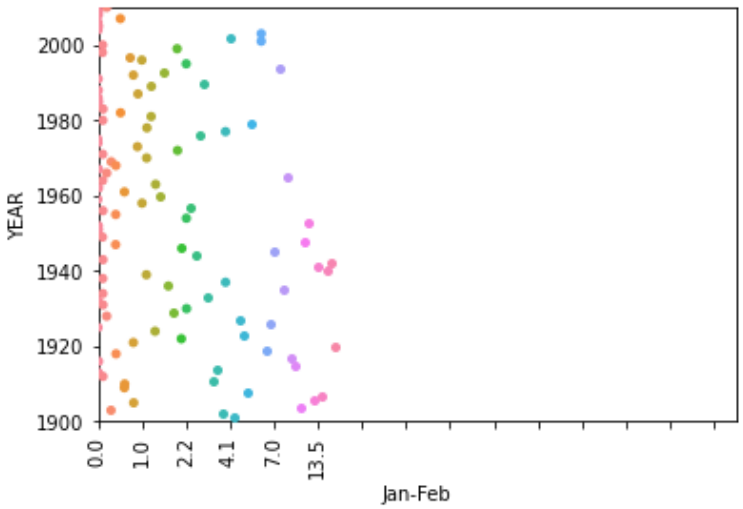
In [5]:
```
dat1.plot.bar("YEAR","Jan-Feb")
plt.xlim(0,20)
plt.figure(figsize=(60,30))
plt.show()
dat1.plot.box()
plt.xlim(2,14)
plt.ylim(0,2000)
plt.show()
dat1.plot.area()
dat1.plot.scatter("YEAR","Jan-Feb")
sns.stripplot(x=dat1["Jan-Feb"],y=dat1["YEAR"],jitter=True)
plt.ylim(1900,2010)
plt.xlim(0,145)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



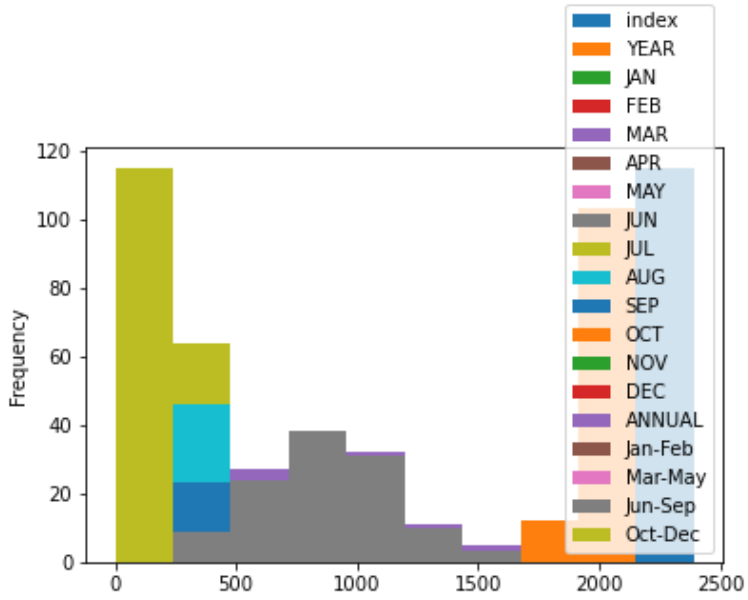

```
<Figure size 4320x2160 with 0 Axes>
```



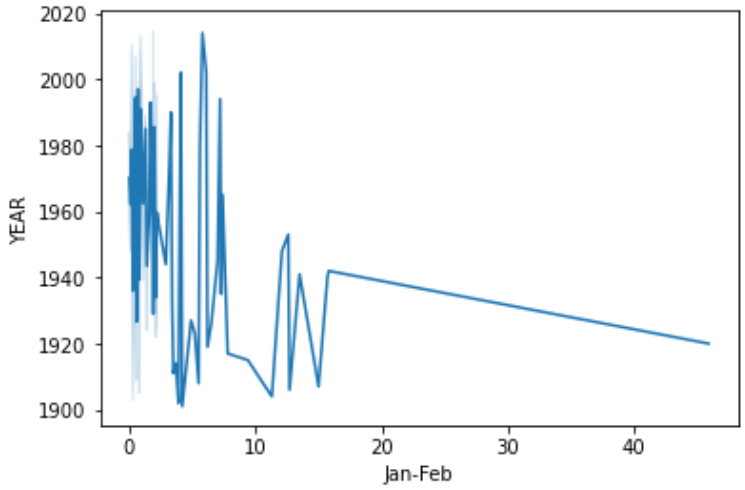




Out[5]: <AxesSubplot:ylabel='Frequency'>



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



VIDARBHA

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

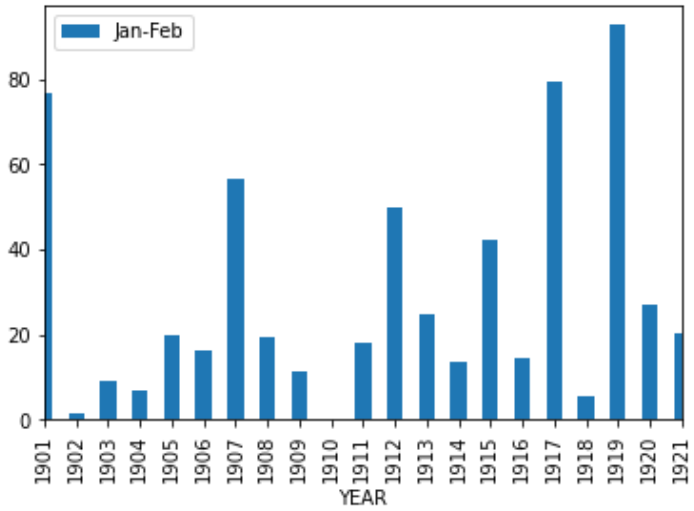
Out[7]:

	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.(
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.(
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.(
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.(
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.(
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.(

115 rows × 20 columns

In [8]:

```
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()
```



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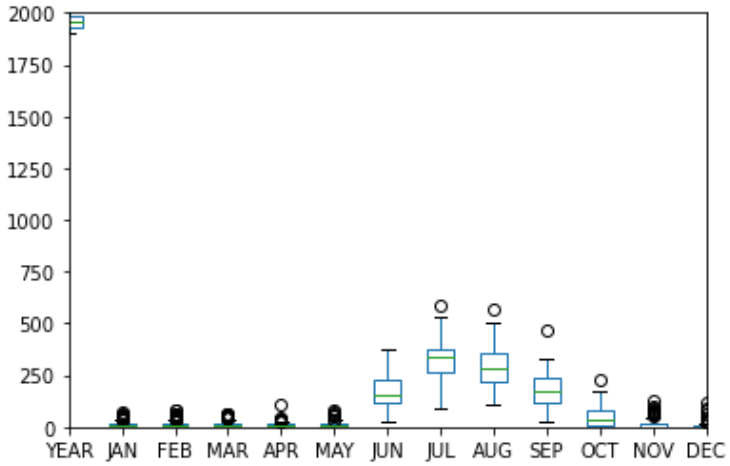
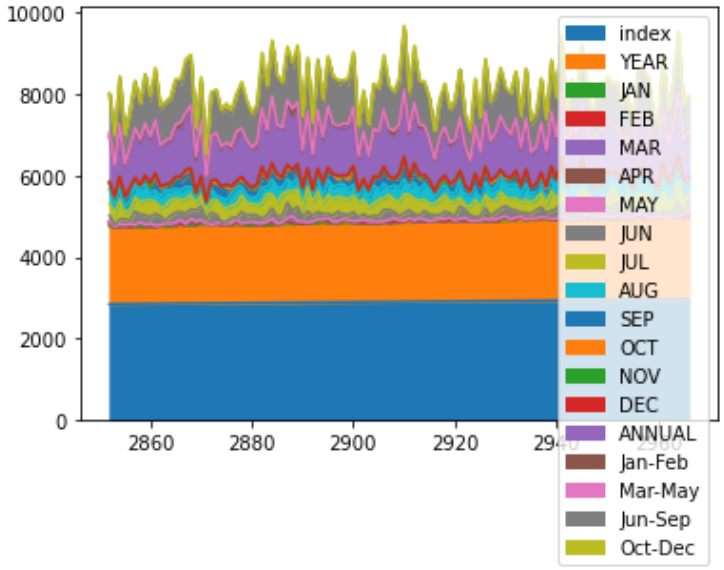
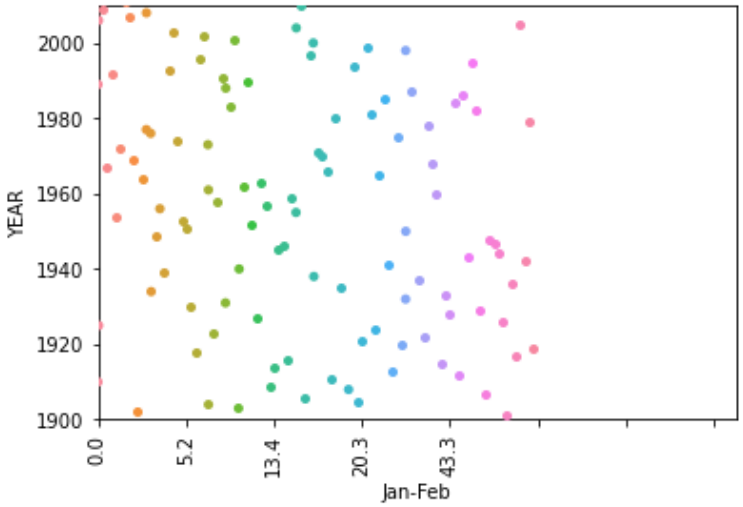
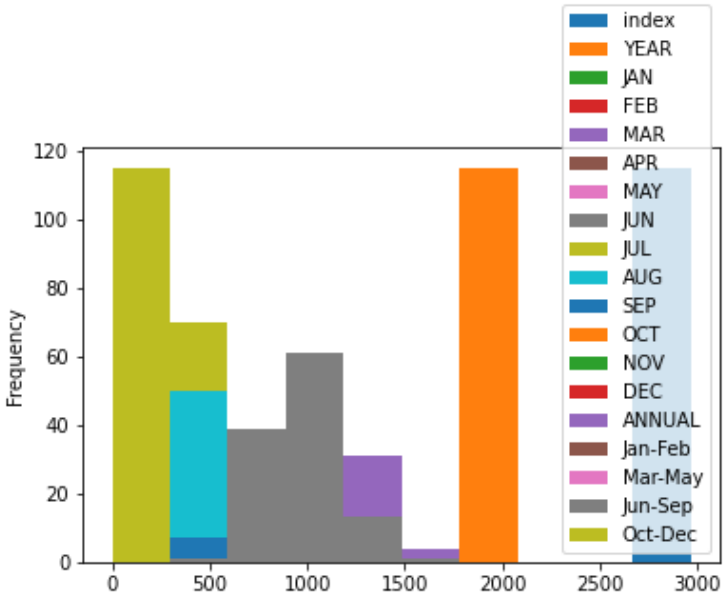



10000
8000
6000
4000
2000
0
2860
2880
2900
2920
index
YEAR
JAN
FEB
MAR
APR
MAY
JUN
JUL
AUG
SEP
OCT
NOV
DEC
ANNUAL
Jan-Feb
Mar-May
Jun-Sep
Oct-Dec


2000
1980
1960
1940
1920
1900
YEAR
0.0
5.2
13.4
20.3
43.3
Jan-Feb


120
100
80
60
40
20
0
Frequency
0
500
1000
1500
2000
2500
3000
index
YEAR
JAN
FEB
MAR
APR
MAY
JUN
JUL
AUG
SEP
OCT
NOV
DEC
ANNUAL
Jan-Feb
Mar-May
Jun-Sep
Oct-Dec

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