In [1]:

```
import json
import pandas as pd
import numpy as np
import matplotlib.pyplot as plt
import plotly.express as px
import seaborn as sns
%matplotlib inline
```

In [2]:

```
india_states = json.load(open("states_india.geojson",'r'))
```

In [3]:

```
dataframe = pd.read_csv(r'C:\Users\ADMIN\Downloads\25_NASA_NEX-GDDP_Indian districts 2001.csv',sep =',')
```

In [4]:

```
dataframe
```

Out[4]:

	DISTRICT	DT_CEN_CD	ST_CEN_CD	ST_NM	date	mean
0	Chandigarh	1	4	Chandigarh	2001-01-01	0.000002
1	Dadra & Nagar Haveli	1	26	Dadara & Nagar Havelli	2001-01-01	0.000000
2	Lakshadweep	1	31	Lakshadweep	2001-01-01	0.000016
3	Data Not Available	99	99	Jammu and Kashmir	2001-01-01	0.000004
4	Anantnag	6	1	Jammu and Kashmir	2001-01-01	0.000008
...	...	...	...	...	...	...
35635	Yanam	1	34	Puducherry	2019-12-01	0.000043
35636	Karaikal	4	34	Puducherry	2019-12-01	0.000166
35637	Mahe	3	34	Puducherry	2019-12-01	0.000011
35638	Nicobars	2	35	Andaman & Nicobar Island	2019-12-01	0.000071
35639	Andamans	1	35	Andaman & Nicobar Island	2019-12-01	0.000037

35640 rows × 6 columns

In [5]:

```
dataframe.date=pd.to_datetime(dataframe.date)
dataframe['month']=dataframe['date'].dt.month
```

In [6]:

```
dataframe.var()
```

Out[6]:

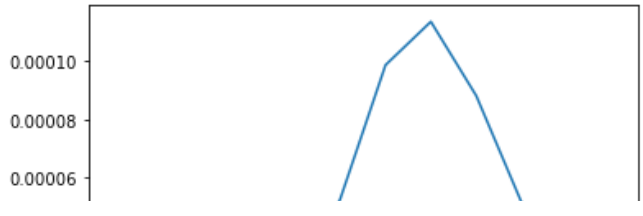
```
DT_CEN_CD    1.941500e+02
ST_CEN_CD    9.867486e+01
mean         3.402900e-09
month        1.191700e+01
dtype: float64
```

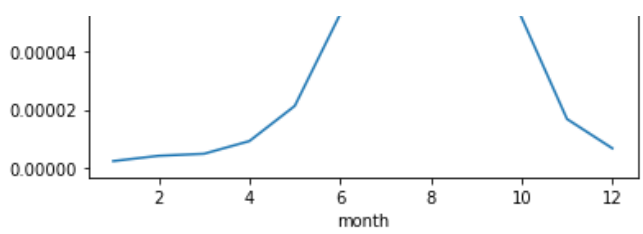
In [7]:

```
x=dataframe.groupby('month').mean()
x['mean'].plot()
```

Out[7]:

```
<matplotlib.axes._subplots.AxesSubplot at 0x266662a2af0>
```



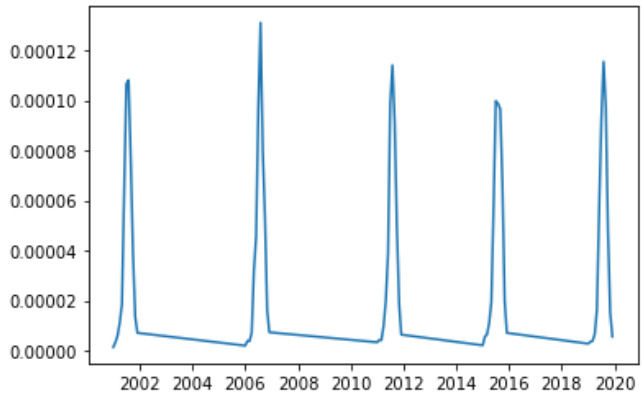


In [8]:

```
y= dataframe.groupby('date').mean()
plt.plot(y.index,y['mean'])
```

Out[8]:

```
[<matplotlib.lines.Line2D at 0x26666229b50>]
```



In [9]:

```
col = ['DISTRICT','ST_NM','date','mean']
new_df = dataframe[col]
new_df
```

Out[9]:

	DISTRICT	ST_NM	date	mean
0	Chandigarh	Chandigarh	2001-01-01	0.000002
1	Dadra & Nagar Haveli	Dadara & Nagar Havelli	2001-01-01	0.000000
2	Lakshadweep	Lakshadweep	2001-01-01	0.000016
3	Data Not Available	Jammu and Kashmir	2001-01-01	0.000004
4	Anantnag	Jammu and Kashmir	2001-01-01	0.000008
...	...	...	...	...
35635	Yanam	Puducherry	2019-12-01	0.000043
35636	Karaikal	Puducherry	2019-12-01	0.000166
35637	Mahe	Puducherry	2019-12-01	0.000011
35638	Nicobars	Andaman & Nicobar Island	2019-12-01	0.000071
35639	Andamans	Andaman & Nicobar Island	2019-12-01	0.000037

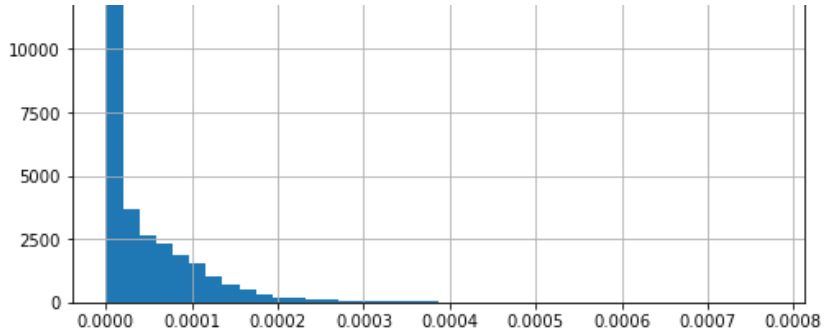
35640 rows × 4 columns

In [10]:

```
new_df.hist(bins=40 ,figsize = (8,6))
```

Out[10]:

```
array([[<matplotlib.axes._subplots.AxesSubplot object at 0x000002666635B460>]],
      dtype=object)
```

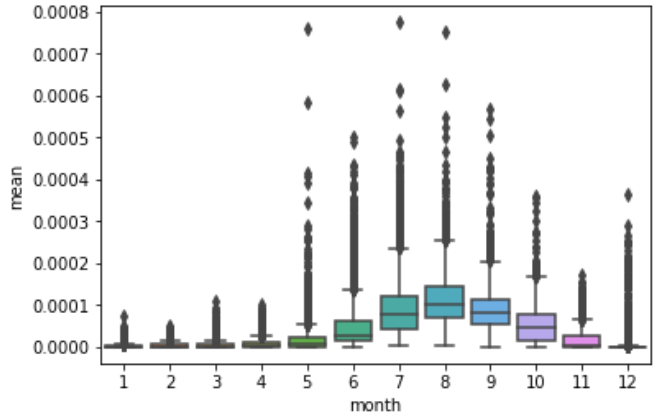


In [11]:

```
y1= dataframe.groupby('date').mean()
sns.boxplot(x = dataframe['month'] , y = dataframe['mean'])
```

Out[11]:

```
<matplotlib.axes._subplots.AxesSubplot at 0x266695e4b50>
```

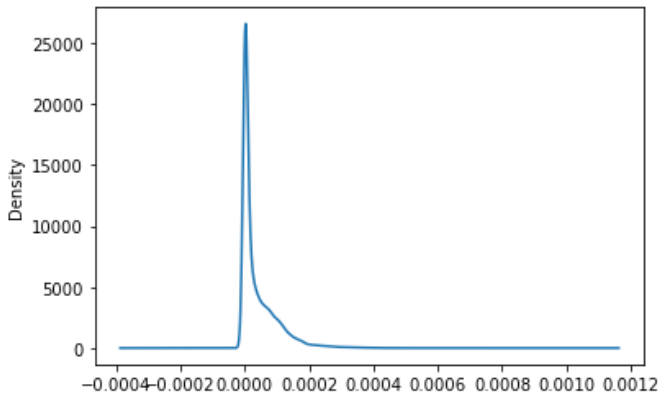


In [12]:

```
dataframe['mean'].plot.kde()
```

Out[12]:

```
<matplotlib.axes._subplots.AxesSubplot at 0x2666974d3d0>
```



In [50]:

```
dataframe['scale']=np.log10(dataframe['mean'])
```

In [51]:

```
dataframe
```

Out[51]:

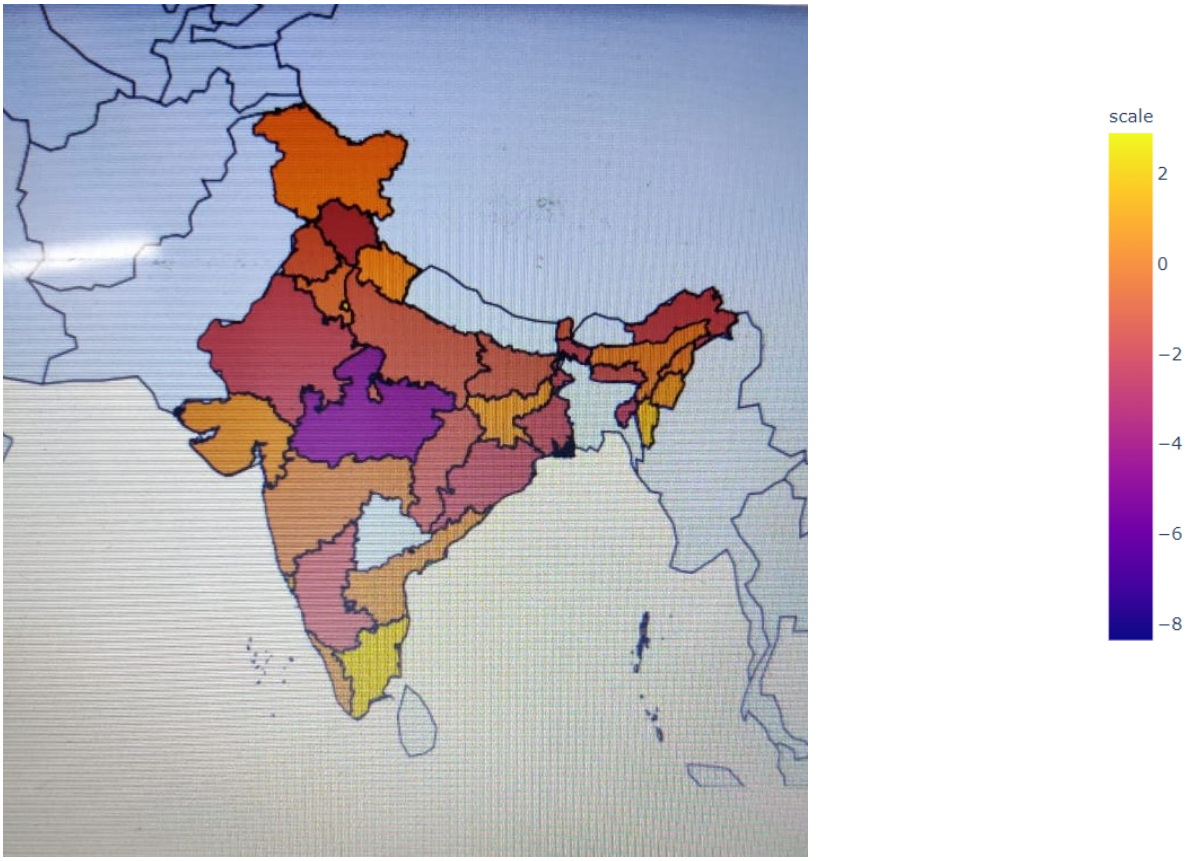
	DISTRICT	DT_CEN_CD	ST_CEN_CD	ST_NM	date	mean	month	scale
0	Chandigarh	1	4	Chandigarh	2001-01-01	0.000002	1	-5.603801
1	Dadra & Nagar Haveli	1	26	Dadara & Nagar Havelli	2001-01-01	0.000000	1	-inf
2	Lakshadweep	1	31	Lakshadweep	2001-01-01	0.000016	1	-4.787812
3	Data Not Available	99	99	Jammu and Kashmir	2001-01-01	0.000004	1	-5.386158
4	Anantnag	6	1	Jammu and Kashmir	2001-01-01	0.000008	1	-5.073143

...	DISTRICT	DT_CEN_CD	ST_CEN_CD	ST_NM	date	mean	month	scale
35635	Yanam	1	34	Puducherry	2019-12-01	0.000043	12	-4.370590
35636	Karaikal	4	34	Puducherry	2019-12-01	0.000166	12	-3.779892
35637	Mahe	3	34	Puducherry	2019-12-01	0.000011	12	-4.943095
35638	Nicobars	2	35	Andaman & Nicobar Island	2019-12-01	0.000071	12	-4.149354
35639	Andamans	1	35	Andaman & Nicobar Island	2019-12-01	0.000037	12	-4.434152

35640 rows × 8 columns

In [52]:

```
fig = px.choropleth(dataframe , locations = 'ST_CEN_CD', geojson=india_states , color = 'scale',scope='asia')
fig.show()
```



In [ ]:

* the file size is too big to convert it into a pdf . so we have to attach it separately.