

```
n = int(key)
```

TypeError: int() argument must be a string, a bytes-like object or a number, not 'datetime.datetime'

In [83]:

```
In [83]: sc[2017-03-21 23:45]
File "<ipython-input-83-7d6adf58f7d3>", line 1
      sc[2017-03-21 23:45]
          ^
```

SyntaxError: invalid token

In [84]:

```
In [84]: sc["2017-03-21 23:45"]
```

Traceback (most recent call last):

```
File "<ipython-input-84-d9fc1c21b4f9>", line 1, in <module>
      sc["2017-03-21 23:45"]
```

```
File "C:\Users\admin\Anaconda3\lib\site-packages\pandas\core\frame.py", line 2688, in
__getitem__
    return self._getitem_column(key)
```

```
File "C:\Users\admin\Anaconda3\lib\site-packages\pandas\core\frame.py", line 2695, in
_getitem_column
    return self._get_item_cache(key)
```

```
File "C:\Users\admin\Anaconda3\lib\site-packages\pandas\core\generic.py", line 2489, in
_get_item_cache
    values = self._data.get(item)
```

```
File "C:\Users\admin\Anaconda3\lib\site-packages\pandas\core\internals.py", line 4115,
in get
    loc = self.items.get_loc(item)
```

```
File "C:\Users\admin\Anaconda3\lib\site-packages\pandas\core\indexes\base.py", line
3080, in get_loc
    return self._engine.get_loc(self._maybe_cast_indexer(key))
```

```
File "pandas\_libs\index.pyx", line 140, in pandas._libs.index.IndexEngine.get_loc
```

```
File "pandas\_libs\index.pyx", line 162, in pandas._libs.index.IndexEngine.get_loc
```

```
File "pandas\_libs\hashtable_class_helper.pxi", line 1492, in
pandas._libs.hashtable.PyObjectHashTable.get_item
```

```
File "pandas\_libs\hashtable_class_helper.pxi", line 1500, in
pandas._libs.hashtable.PyObjectHashTable.get_item
```

KeyError: '2017-03-21 23:45'

In [85]:

```
In [85]: sc[parser("2017-03-21 23:45")]
File "<ipython-input-85-2d454081dbac>", line 1
      sc[parser("2017-03-21 23:45")]
              ^
```

SyntaxError: invalid syntax

In [86]:

In [85]:

In [85]:

In [86]: start_index

Out[86]: datetime.datetime(2017, 2, 16, 0, 0)

In [87]: sc[start_index]

Traceback (most recent call last):

```
File "<ipython-input-87-05bf0fd5c4ac>", line 1, in <module>
    sc[start_index]
```

```
File "C:\Users\admin\Anaconda3\lib\site-packages\pandas\core\frame.py", line 2688, in
__getitem__
    return self._getitem_column(key)
```

```
File "C:\Users\admin\Anaconda3\lib\site-packages\pandas\core\frame.py", line 2695, in
_getitem_column
    return self._get_item_cache(key)
```

```
File "C:\Users\admin\Anaconda3\lib\site-packages\pandas\core\generic.py", line 2489, in
_get_item_cache
    values = self._data.get(item)
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```
File "C:\Users\admin\Anaconda3\lib\site-packages\pandas\core\internals.py", line 4115,
in get
    loc = self.items.get_loc(item)
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File "C:\Users\admin\Anaconda3\lib\site-packages\pandas\core\indexes\base.py", line
3080, in get_loc
    return self._engine.get_loc(self._maybe_cast_indexer(key))
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```
File "pandas\_libs\index.pyx", line 140, in pandas._libs.index.IndexEngine.get_loc
```

```
File "pandas\_libs\index.pyx", line 162, in pandas._libs.index.IndexEngine.get_loc
```

```
File "pandas\_libs\hashtable_class_helper.pxi", line 1492, in
pandas._libs.hashtable.PyObjectHashTable.get_item
```

```
File "pandas\_libs\hashtable_class_helper.pxi", line 1500, in
pandas._libs.hashtable.PyObjectHashTable.get_item
```

```
KeyError: datetime.datetime(2017, 2, 16, 0, 0)
```

```
In [88]:
```

```
In [88]: dataset.types
```

```
Traceback (most recent call last):
```

```
File "<ipython-input-88-bf8daa9f2fd5>", line 1, in <module>
    dataset.types
```

```
File "C:\Users\admin\Anaconda3\lib\site-packages\pandas\core\generic.py", line 4376, in
__getattr__
    return object.__getattribute__(self, name)
```

```
AttributeError: 'DataFrame' object has no attribute 'types'
```

```
In [89]:
```

```
In [89]: dataset.type
```

```
Traceback (most recent call last):
```

```
File "<ipython-input-89-75f0dd715325>", line 1, in <module>
    dataset.type
```

```
File "C:\Users\admin\Anaconda3\lib\site-packages\pandas\core\generic.py", line 4376, in
__getattr__
    return object.__getattribute__(self, name)
```

```
AttributeError: 'DataFrame' object has no attribute 'type'
```

```
In [90]:
```

```
In [90]: dataset.dtypes
```

```
Out[90]:
```

```
SC(uS)      float64
```

```
Turb(FNU)   float64
```

```
DO(mg/L)    float64
```

```
dtype: object
```

```
In [91]: sc.loc[parser("2017-03-21 23:45")]
```

```
Out[91]:
```

```
SC(uS)      457.0
```

```
Name: 2017-03-21 23:45:00, dtype: float64
```

```
In [92]: sc.parser("2017-03-21 23:45")
```

```
Traceback (most recent call last):
```

```
File "<ipython-input-92-84613bf46ecd>", line 1, in <module>
    sc.parser("2017-03-21 23:45")
```

```
File "C:\Users\admin\Anaconda3\lib\site-packages\pandas\core\generic.py", line 4376, in
__getattr__
```

```
return object.__getattr__(self, name)
```

AttributeError: 'DataFrame' object has no attribute 'parser'

In [93]:

```
In [93]: sc.loc[parser("2017-03-21 23:45")]
```

Out[93]:

```
SC(uS)    457.0
```

```
Name: 2017-03-21 23:45:00, dtype: float64
```

```
In [94]: start_index = parser("2017-02-16 00:00")
```

```
....: end_index = "2017-03-21 23:45"
```

```
....: forecast = sc_arima_fit.predict(start=1920, end=5171)
```

C:\Users\admin\Anaconda3\lib\site-packages\statsmodels\tsa\base\tsa_model.py:531:

ValueWarning: No supported index is available. Prediction results will be given with an integer index beginning at `start`.

ValueWarning)

Traceback (most recent call last):

File "<ipython-input-94-88549f4cd97f>", line 3, in <module>

```
forecast = sc_arima_fit.predict(start=1920, end=5171)
```

File "C:\Users\admin\Anaconda3\lib\site-packages\statsmodels\base\wrapper.py", line 95, in wrapper

```
obj = data.wrap_output(func(results, *args, **kwargs), how)
```

File "C:\Users\admin\Anaconda3\lib\site-packages\statsmodels\base\data.py", line 416, in wrap_output

```
return self.attach_dates(obj)
```

File "C:\Users\admin\Anaconda3\lib\site-packages\statsmodels\base\data.py", line 560, in attach_dates

```
return Series(squeezed, index=self.predict_dates)
```

File "C:\Users\admin\Anaconda3\lib\site-packages\pandas\core\series.py", line 262, in __init__

```
.format(val=len(data), ind=len(index)))
```

ValueError: Length of passed values is 3253, index implies 3252

In [95]:

```
In [95]: start_index = parser("2017-02-16 00:00")
```

```
....: end_index = "2017-03-21 23:45"
```

```
....: forecast = sc_arima_fit.predict(start=1921, end=5171)
```

C:\Users\admin\Anaconda3\lib\site-packages\statsmodels\tsa\base\tsa_model.py:531:

ValueWarning: No supported index is available. Prediction results will be given with an integer index beginning at `start`.

ValueWarning)

Traceback (most recent call last):

File "<ipython-input-95-ac2543266c59>", line 3, in <module>

```

forecast = sc_arma_fit.predict(start=1921, end=5171)

File "C:\Users\admin\Anaconda3\lib\site-packages\statsmodels\base\wrapper.py", line 95,
in wrapper
    obj = data.wrap_output(func(results, *args, **kwargs), how)

File "C:\Users\admin\Anaconda3\lib\site-packages\statsmodels\base\data.py", line 416, in
wrap_output
    return self.attach_dates(obj)

File "C:\Users\admin\Anaconda3\lib\site-packages\statsmodels\base\data.py", line 560, in
attach_dates
    return Series(squeezed, index=self.predict_dates)

File "C:\Users\admin\Anaconda3\lib\site-packages\pandas\core\series.py", line 262, in
__init__
    .format(val=len(data), ind=len(index)))

```

ValueError: Length of passed values is 3253, index implies 3251

In [96]:

```

In [96]: start_index = parser("2017-02-16 00:00")
...: end_index = "2017-03-21 23:45"
...: forecast = sc_arma_fit.predict(start=1919, end=5171)
C:\Users\admin\Anaconda3\lib\site-packages\statsmodels\tsa\base\tsa_model.py:531:
ValueWarning: No supported index is available. Prediction results will be given with an
integer index beginning at `start`.
ValueWarning)

```

```

In [97]: plt.figure(figsize=(22,10))
...: plt.plot(sc_test,label = "original")
...: plt.plot(forecast,label = "predicted")
...: plt.title("Time Series Forecast")
...: plt.xlabel("Date")
...: plt.ylabel("Z score")
...: plt.legend()
...: plt.show()

```

Traceback (most recent call last):

```

File "C:\Users\admin\Anaconda3\lib\site-packages\IPython\core\formatters.py", line 341,
in __call__
    return printer(obj)

File "C:\Users\admin\Anaconda3\lib\site-packages\IPython\core\pylabtools.py", line 244,
in <lambda>
    png_formatter.for_type(Figure, lambda fig: print_figure(fig, 'png', **kwargs))

File "C:\Users\admin\Anaconda3\lib\site-packages\IPython\core\pylabtools.py", line 128,
in print_figure
    fig.canvas.print_figure(bytes_io, **kw)

File "C:\Users\admin\Anaconda3\lib\site-packages\matplotlib\backend_bases.py", line
2049, in print_figure

```

```

    **kwargs)

File "C:\Users\admin\Anaconda3\lib\site-packages\matplotlib\backends\backend_agg.py",
line 510, in print_png
    FigureCanvasAgg.draw(self)

File "C:\Users\admin\Anaconda3\lib\site-packages\matplotlib\backends\backend_agg.py",
line 402, in draw
    self.figure.draw(self.renderer)

File "C:\Users\admin\Anaconda3\lib\site-packages\matplotlib\artist.py", line 50, in
draw_wrapper
    return draw(artist, renderer, *args, **kwargs)

File "C:\Users\admin\Anaconda3\lib\site-packages\matplotlib\figure.py", line 1649, in
draw
    renderer, self, artists, self.suppressComposite)

File "C:\Users\admin\Anaconda3\lib\site-packages\matplotlib\image.py", line 138, in
_draw_list_compositing_images
    a.draw(renderer)

File "C:\Users\admin\Anaconda3\lib\site-packages\matplotlib\artist.py", line 50, in
draw_wrapper
    return draw(artist, renderer, *args, **kwargs)

File "C:\Users\admin\Anaconda3\lib\site-packages\matplotlib\axes\_base.py", line 2628,
in draw
    mimage._draw_list_compositing_images(renderer, self, artists)

File "C:\Users\admin\Anaconda3\lib\site-packages\matplotlib\image.py", line 138, in
_draw_list_compositing_images
    a.draw(renderer)

File "C:\Users\admin\Anaconda3\lib\site-packages\matplotlib\artist.py", line 50, in
draw_wrapper
    return draw(artist, renderer, *args, **kwargs)

File "C:\Users\admin\Anaconda3\lib\site-packages\matplotlib\axis.py", line 1185, in draw
    ticks_to_draw = self._update_ticks(renderer)

File "C:\Users\admin\Anaconda3\lib\site-packages\matplotlib\axis.py", line 1023, in
_update_ticks
    tick_tups = list(self.iter_ticks()) # iter_ticks calls the locator

File "C:\Users\admin\Anaconda3\lib\site-packages\matplotlib\axis.py", line 967, in
iter_ticks
    majorLocs = self.major.locator()

File "C:\Users\admin\Anaconda3\lib\site-packages\matplotlib\dates.py", line 1230, in
__call__
    self.refresh()

File "C:\Users\admin\Anaconda3\lib\site-packages\matplotlib\dates.py", line 1250, in
refresh

```

```
dmin, dmax = self.viewlim_to_dt()
```

```
File "C:\Users\admin\Anaconda3\lib\site-packages\matplotlib\dates.py", line 1001, in  
viewlim_to_dt  
    .format(vmin))
```

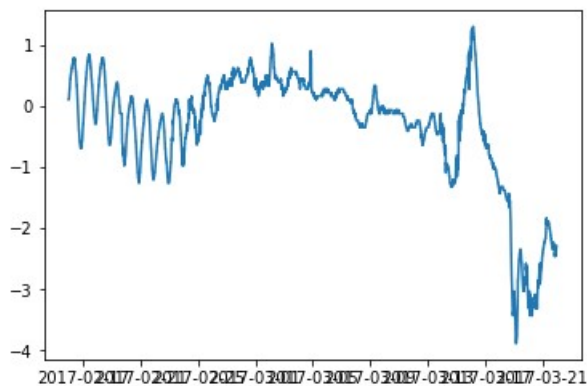
ValueError: view limit minimum -34805.54947916667 is less than 1 and is an invalid Matplotlib date value. This often happens if you pass a non-datetime value to an axis that has datetime units

<Figure size 1584x720 with 1 Axes>

In [98]:

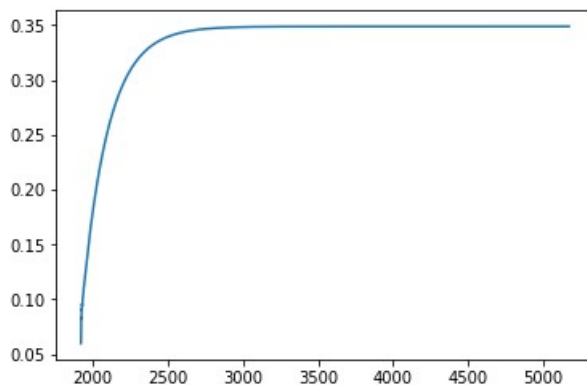
```
In [98]: plt.plot(sc_test,label = "original")
```

```
Out[98]: [<matplotlib.lines.Line2D at 0x2288f932a90>]
```



```
In [99]: plt.plot(forecast,label = "predicted")
```

```
Out[99]: [<matplotlib.lines.Line2D at 0x2288fa69cf8>]
```

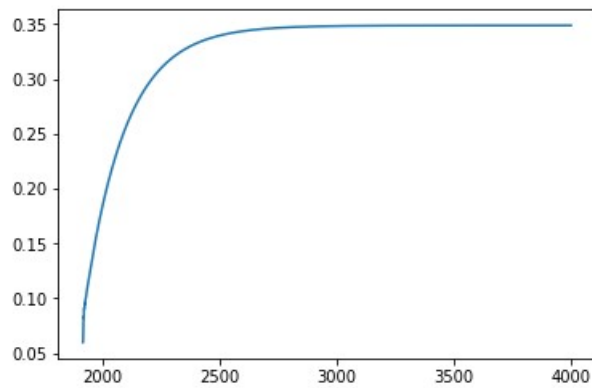


```
In [100]: forecast = sc_arma_fit.predict(start=1919, end=4000)
```

C:\Users\admin\Anaconda3\lib\site-packages\statsmodels\tsa\base\tsa_model.py:531:
ValueWarning: No supported index is available. Prediction results will be given with an integer index beginning at `start`.
ValueWarning)

```
In [101]: plt.plot(forecast,label = "predicted")
```

```
Out[101]: [<matplotlib.lines.Line2D at 0x2288fad0588>]
```



```
In [102]: plt.plot(sc_test,label = "original")
...: plt.plot(forecast,label = "predicted")
Out[102]: [<matplotlib.lines.Line2D at 0x2288fadb9b0>]Error in callback <function
install_repl_displayhook.<locals>.post_execute at 0x0000022881225158> (for post_execute):
Traceback (most recent call last):

  File "C:\Users\admin\Anaconda3\lib\site-packages\matplotlib\pyplot.py", line 109, in
post_execute
    draw_all()

  File "C:\Users\admin\Anaconda3\lib\site-packages\matplotlib\pylab_helpers.py", line
132, in draw_all
    f_mgr.canvas.draw_idle()

  File "C:\Users\admin\Anaconda3\lib\site-packages\matplotlib\backend_bases.py", line
1899, in draw_idle
    self.draw(*args, **kwargs)

  File "C:\Users\admin\Anaconda3\lib\site-packages\matplotlib\backends\backend_agg.py",
line 402, in draw
    self.figure.draw(self.renderer)

  File "C:\Users\admin\Anaconda3\lib\site-packages\matplotlib\artist.py", line 50, in
draw_wrapper
    return draw(artist, renderer, *args, **kwargs)

  File "C:\Users\admin\Anaconda3\lib\site-packages\matplotlib\figure.py", line 1649, in
draw
    renderer, self, artists, self.suppressComposite)

  File "C:\Users\admin\Anaconda3\lib\site-packages\matplotlib\image.py", line 138, in
_draw_list_compositing_images
    a.draw(renderer)

  File "C:\Users\admin\Anaconda3\lib\site-packages\matplotlib\artist.py", line 50, in
draw_wrapper
    return draw(artist, renderer, *args, **kwargs)

  File "C:\Users\admin\Anaconda3\lib\site-packages\matplotlib\axes\_base.py", line 2628,
in draw
    mimage._draw_list_compositing_images(renderer, self, artists)
```



```

File "C:\Users\admin\Anaconda3\lib\site-packages\matplotlib\image.py", line 138, in
_draw_list_compositing_images
    a.draw(renderer)

File "C:\Users\admin\Anaconda3\lib\site-packages\matplotlib\artist.py", line 50, in
draw_wrapper
    return draw(artist, renderer, *args, **kwargs)

File "C:\Users\admin\Anaconda3\lib\site-packages\matplotlib\axis.py", line 1185, in draw
    ticks_to_draw = self._update_ticks(renderer)

File "C:\Users\admin\Anaconda3\lib\site-packages\matplotlib\axis.py", line 1023, in
_update_ticks
    tick_tups = list(self.iter_ticks()) # iter_ticks calls the locator

File "C:\Users\admin\Anaconda3\lib\site-packages\matplotlib\axis.py", line 967, in
iter_ticks
    majorLocs = self.major.locator()

File "C:\Users\admin\Anaconda3\lib\site-packages\matplotlib\dates.py", line 1230, in
__call__
    self.refresh()

File "C:\Users\admin\Anaconda3\lib\site-packages\matplotlib\dates.py", line 1250, in
refresh
    dmin, dmax = self.viewlim_to_dt()

File "C:\Users\admin\Anaconda3\lib\site-packages\matplotlib\dates.py", line 1001, in
viewlim_to_dt
    .format(vmin))

```

ValueError: view limit minimum -34805.54947916667 is less than 1 and is an invalid Matplotlib date value. This often happens if you pass a non-datetime value to an axis that has datetime units

Traceback (most recent call last):

```

File "C:\Users\admin\Anaconda3\lib\site-packages\IPython\core\formatters.py", line 341,
in __call__
    return printer(obj)

File "C:\Users\admin\Anaconda3\lib\site-packages\IPython\core\pylabtools.py", line 244,
in <lambda>
    png_formatter.for_type(Figure, lambda fig: print_figure(fig, 'png', **kwargs))

File "C:\Users\admin\Anaconda3\lib\site-packages\IPython\core\pylabtools.py", line 128,
in print_figure
    fig.canvas.print_figure(bytes_io, **kw)

File "C:\Users\admin\Anaconda3\lib\site-packages\matplotlib\backend_bases.py", line
2049, in print_figure
    **kwargs)

File "C:\Users\admin\Anaconda3\lib\site-packages\matplotlib\backends\backend_agg.py",
line 510, in print_png

```

```

FigureCanvasAgg.draw(self)

File "C:\Users\admin\Anaconda3\lib\site-packages\matplotlib\backends\backend_agg.py",
line 402, in draw
    self.figure.draw(self.renderer)

File "C:\Users\admin\Anaconda3\lib\site-packages\matplotlib\artist.py", line 50, in
draw_wrapper
    return draw(artist, renderer, *args, **kwargs)

File "C:\Users\admin\Anaconda3\lib\site-packages\matplotlib\figure.py", line 1649, in
draw
    renderer, self, artists, self.suppressComposite)

File "C:\Users\admin\Anaconda3\lib\site-packages\matplotlib\image.py", line 138, in
_draw_list_compositing_images
    a.draw(renderer)

File "C:\Users\admin\Anaconda3\lib\site-packages\matplotlib\artist.py", line 50, in
draw_wrapper
    return draw(artist, renderer, *args, **kwargs)

File "C:\Users\admin\Anaconda3\lib\site-packages\matplotlib\axes\_base.py", line 2628,
in draw
    mimage._draw_list_compositing_images(renderer, self, artists)

File "C:\Users\admin\Anaconda3\lib\site-packages\matplotlib\image.py", line 138, in
_draw_list_compositing_images
    a.draw(renderer)

File "C:\Users\admin\Anaconda3\lib\site-packages\matplotlib\artist.py", line 50, in
draw_wrapper
    return draw(artist, renderer, *args, **kwargs)

File "C:\Users\admin\Anaconda3\lib\site-packages\matplotlib\axis.py", line 1185, in draw
    ticks_to_draw = self._update_ticks(renderer)

File "C:\Users\admin\Anaconda3\lib\site-packages\matplotlib\axis.py", line 1023, in
_update_ticks
    tick_tups = list(self.iter_ticks()) # iter_ticks calls the locator

File "C:\Users\admin\Anaconda3\lib\site-packages\matplotlib\axis.py", line 967, in
iter_ticks
    majorLocs = self.major.locator()

File "C:\Users\admin\Anaconda3\lib\site-packages\matplotlib\dates.py", line 1230, in
__call__
    self.refresh()

File "C:\Users\admin\Anaconda3\lib\site-packages\matplotlib\dates.py", line 1250, in
refresh
    dmin, dmax = self.viewlim_to_dt()

File "C:\Users\admin\Anaconda3\lib\site-packages\matplotlib\dates.py", line 1001, in
viewlim_to_dt

```

```
.format(vmin))
```

ValueError: view limit minimum -34805.54947916667 is less than 1 and is an invalid Matplotlib date value. This often happens if you pass a non-datetime value to an axis that has datetime units

<Figure size 432x288 with 1 Axes>

In [103]:

In [103]:

```
In [103]: plt.plot(sc_test,label = "original")
...: plt.plot(forecast,label = "predicted", color = 'red')
...: plt.show()
```

Traceback (most recent call last):

```
File "C:\Users\admin\Anaconda3\lib\site-packages\IPython\core\formatters.py", line 341,
in __call__
    return printer(obj)
```

```
File "C:\Users\admin\Anaconda3\lib\site-packages\IPython\core\pylabtools.py", line 244,
in <lambda>
    png_formatter.for_type(Figure, lambda fig: print_figure(fig, 'png', **kwargs))
```

```
File "C:\Users\admin\Anaconda3\lib\site-packages\IPython\core\pylabtools.py", line 128,
in print_figure
    fig.canvas.print_figure(bytes_io, **kw)
```

```
File "C:\Users\admin\Anaconda3\lib\site-packages\matplotlib\backend_bases.py", line
2049, in print_figure
    **kwargs)
```

```
File "C:\Users\admin\Anaconda3\lib\site-packages\matplotlib\backends\backend_agg.py",
line 510, in print_png
    FigureCanvasAgg.draw(self)
```

```
File "C:\Users\admin\Anaconda3\lib\site-packages\matplotlib\backends\backend_agg.py",
line 402, in draw
    self.figure.draw(self.renderer)
```

```
File "C:\Users\admin\Anaconda3\lib\site-packages\matplotlib\artist.py", line 50, in
draw_wrapper
    return draw(artist, renderer, *args, **kwargs)
```

```
File "C:\Users\admin\Anaconda3\lib\site-packages\matplotlib\figure.py", line 1649, in
draw
    renderer, self, artists, self.suppressComposite)
```

```
File "C:\Users\admin\Anaconda3\lib\site-packages\matplotlib\image.py", line 138, in
_draw_list_compositing_images
    a.draw(renderer)
```

```
File "C:\Users\admin\Anaconda3\lib\site-packages\matplotlib\artist.py", line 50, in
draw_wrapper
```

```

return draw(artist, renderer, *args, **kwargs)

File "C:\Users\admin\Anaconda3\lib\site-packages\matplotlib\axes\_base.py", line 2628,
in draw
    mimage._draw_list_compositing_images(renderer, self, artists)

File "C:\Users\admin\Anaconda3\lib\site-packages\matplotlib\image.py", line 138, in
_draw_list_compositing_images
    a.draw(renderer)

File "C:\Users\admin\Anaconda3\lib\site-packages\matplotlib\artist.py", line 50, in
draw_wrapper
    return draw(artist, renderer, *args, **kwargs)

File "C:\Users\admin\Anaconda3\lib\site-packages\matplotlib\axis.py", line 1185, in draw
    ticks_to_draw = self._update_ticks(renderer)

File "C:\Users\admin\Anaconda3\lib\site-packages\matplotlib\axis.py", line 1023, in
_update_ticks
    tick_tups = list(self.iter_ticks()) # iter_ticks calls the locator

File "C:\Users\admin\Anaconda3\lib\site-packages\matplotlib\axis.py", line 967, in
iter_ticks
    majorLocs = self.major.locator()

File "C:\Users\admin\Anaconda3\lib\site-packages\matplotlib\dates.py", line 1230, in
__call__
    self.refresh()

File "C:\Users\admin\Anaconda3\lib\site-packages\matplotlib\dates.py", line 1250, in
refresh
    dmin, dmax = self.viewlim_to_dt()

File "C:\Users\admin\Anaconda3\lib\site-packages\matplotlib\dates.py", line 1001, in
viewlim_to_dt
    .format(vmin))

ValueError: view limit minimum -34805.54947916667 is less than 1 and is an invalid
Matplotlib date value. This often happens if you pass a non-datetime value to an axis that
has datetime units

```

<Figure size 432x288 with 1 Axes>

In [104]:

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