In [186]:

```python
import seisbench
import numpy as np
import pandas as pd
import obspy
from obspy.signal.trigger import pk_baer
import os
import matplotlib.pyplot as plt
import seisbench.models as sbm
from obspy.core.utcdatetime import UTCDateTime
```

In [89]:

```python
dirname='C:\\Users\\adich\\Documents\\Seisbench\\2016'
ext=('.SAC')
total_streams=[]
for files in os.listdir(dirname):
    if files.endswith(ext):
        st=obspy.read(files)
        total_streams.append(st)
    else:
        continue
```

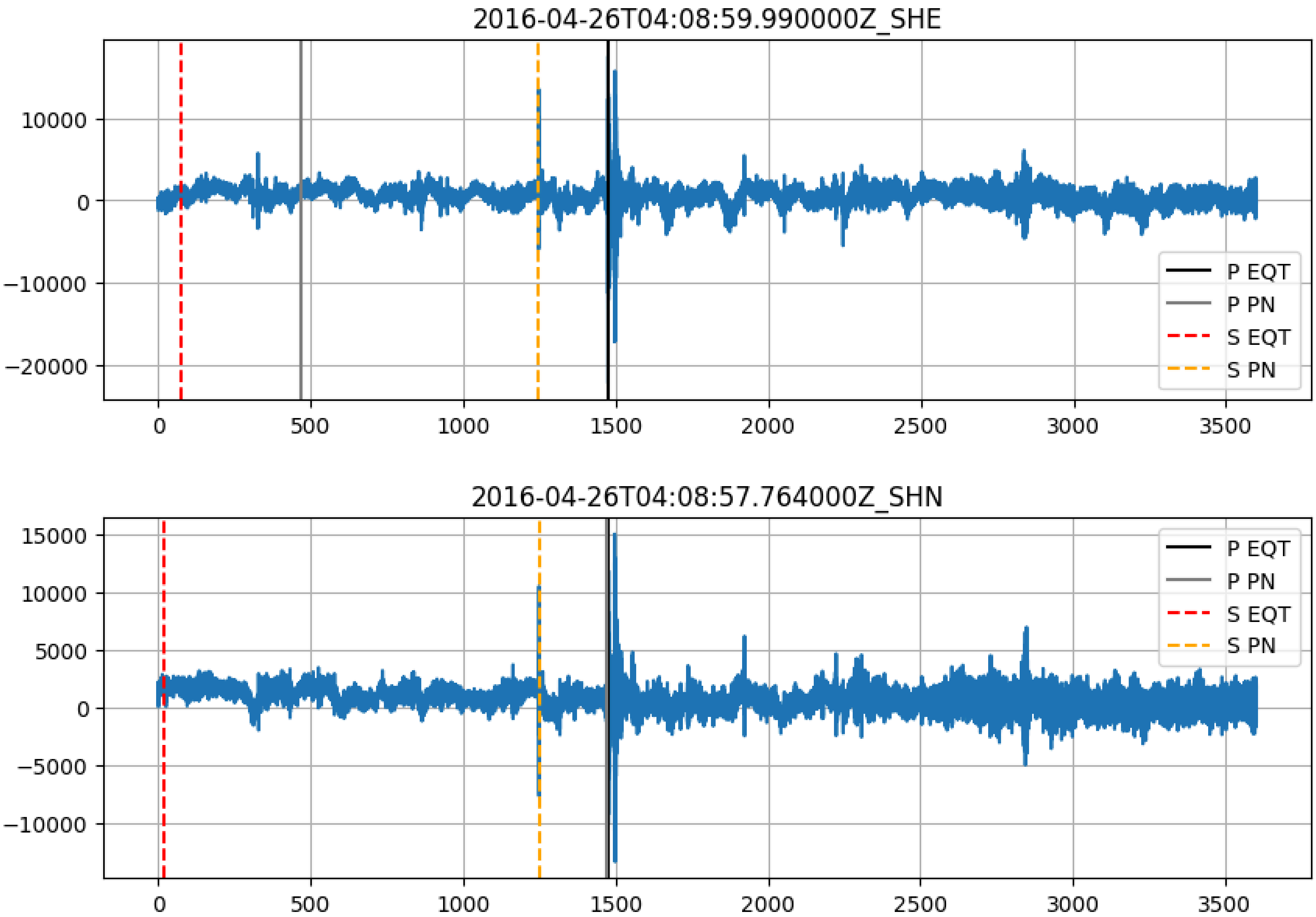
In [203]:

```python
model_PhaseNet=sbm.PhaseNet.from_pretrained('ethz')
model_EQT=sbm.EQTransformer.from_pretrained('geofon')
```

In [225]:

```python
for i in range(len(total_streams)):
    stream=total_streams[i]
    p_pn=model_PhaseNet.classify(stream, batch_size=1000, P_threshold=0.075, S_threshold=0.075)
    p_eqt=model_EQT.classify(stream, batch_size=1000, P_threshold=0.075, S_threshold=0.075)[0]
    pn=np.array([[p.peak_time.datetime,p.phase.lower(),p.peak_value] for p in p_pn])
    eqt=np.array([[p.peak_time.datetime,p.phase.lower(),p.peak_value] for p in p_eqt])
#     print(pn.shape)
    if ((eqt.shape[0]<=1 or pn.shape[0]<=1)):
        continue
    if (((np.sum(eqt[:,1]=='p')==0 or np.sum(eqt[:,1]=='s')==0) or np.sum(pn[:,1]=='p')==0) or np.sum(pn[:,1]=='s
        continue
    p_eqt=eqt[np.argmax(eqt[np.where(eqt[:,1]=='p')][:,2])]
    s_eqt=eqt[np.argmax(eqt[np.where(eqt[:,1]=='s')][:,2])]
    p_pn=pn[np.argmax(pn[np.where(pn[:,1]=='p')][:,2])]
    s_pn=pn[np.argmax(pn[np.where(pn[:,1]=='s')][:,2])]
    p_est_eqt=UTCDateTime(p_eqt[0])-total_streams[i][0].stats.starttime
    s_est_eqt=UTCDateTime(s_eqt[0])-total_streams[i][0].stats.starttime
    p_est_pn=UTCDateTime(p_pn[0])-total_streams[i][0].stats.starttime
    s_est_pn=UTCDateTime(s_pn[0])-total_streams[i][0].stats.starttime
    fig=plt.figure(figsize=(10,3))
    start=total_streams[i][0].stats.starttime
    time=total_streams[i][0].times()
    data=total_streams[i][0].data
    plt.plot(time,data)
    plt.axvline(p_est_eqt,linestyle="-",color='k',label='P EQT')
    plt.axvline(p_est_pn,linestyle="-",color='gray',label='P PN')
    plt.axvline(s_est_eqt,linestyle="--",color='red',label='S EQT')
    plt.axvline(s_est_pn,linestyle="--",color='orange',label='S PN')
    plt.title(str(total_streams[i][0].stats.starttime)+"_"+str(total_streams[i][0].stats.channel))
    plt.grid()
    plt.legend()
```

```
C:\Users\adich\AppData\Local\Temp\ipykernel_23172\3036875449.py:20: RuntimeWarning: More than 20 figures have been op
ened. Figures created through the pyplot interface (`matplotlib.pyplot.figure`) are retained until explicitly closed
and may consume too much memory. (To control this warning, see the rcParam `figure.max_open_warning`). Consider using
`matplotlib.pyplot.close()`.
  fig=plt.figure(figsize=(10,3))
```



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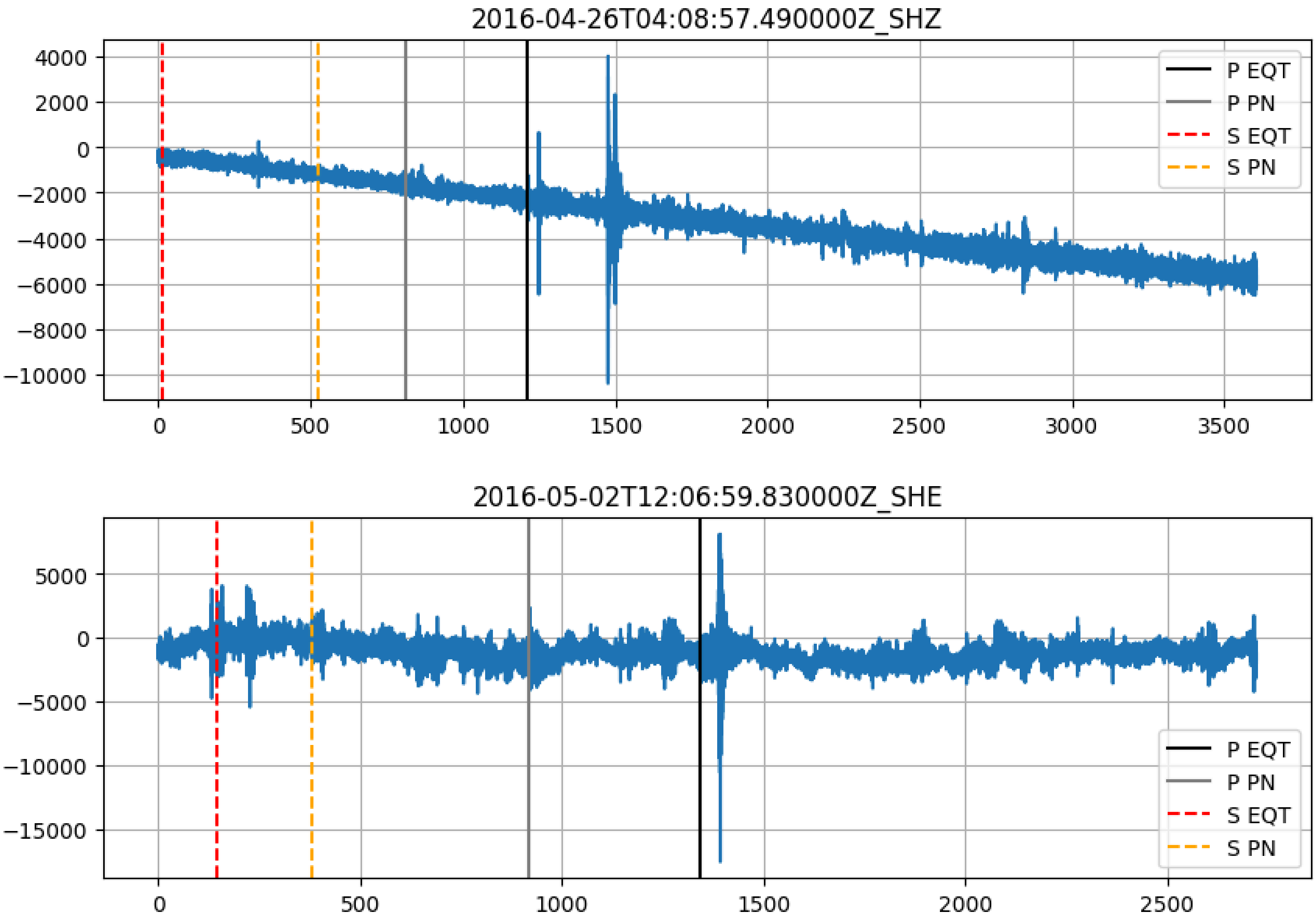
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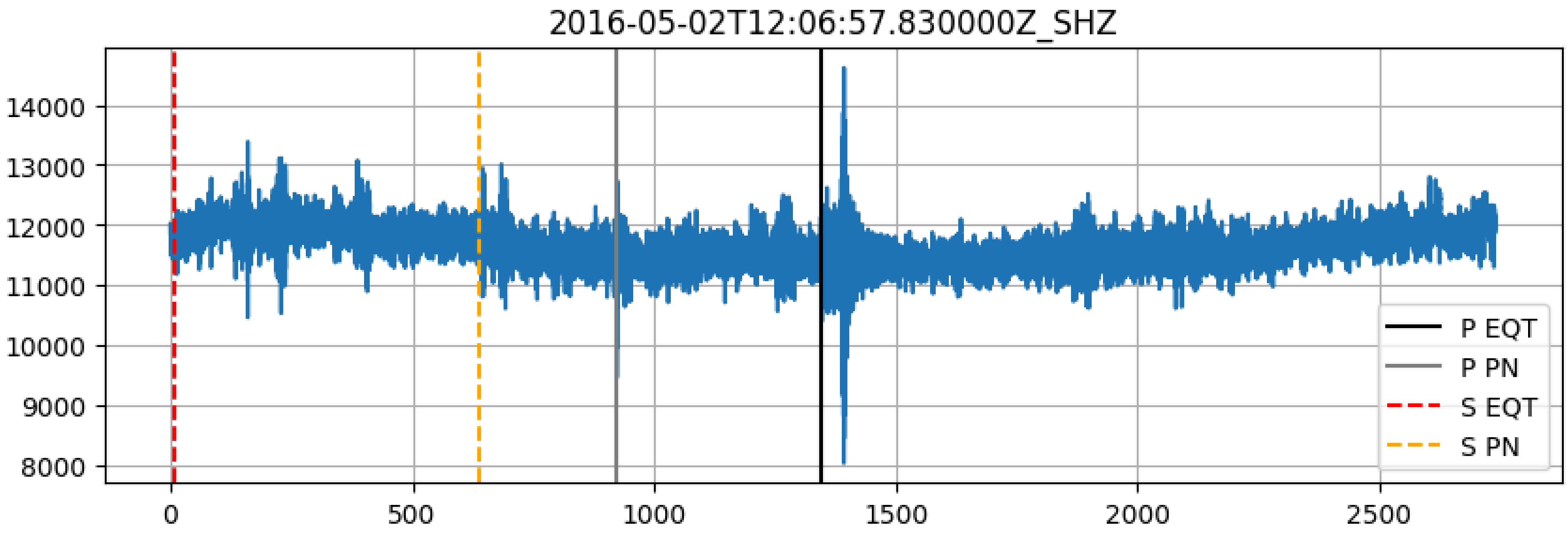
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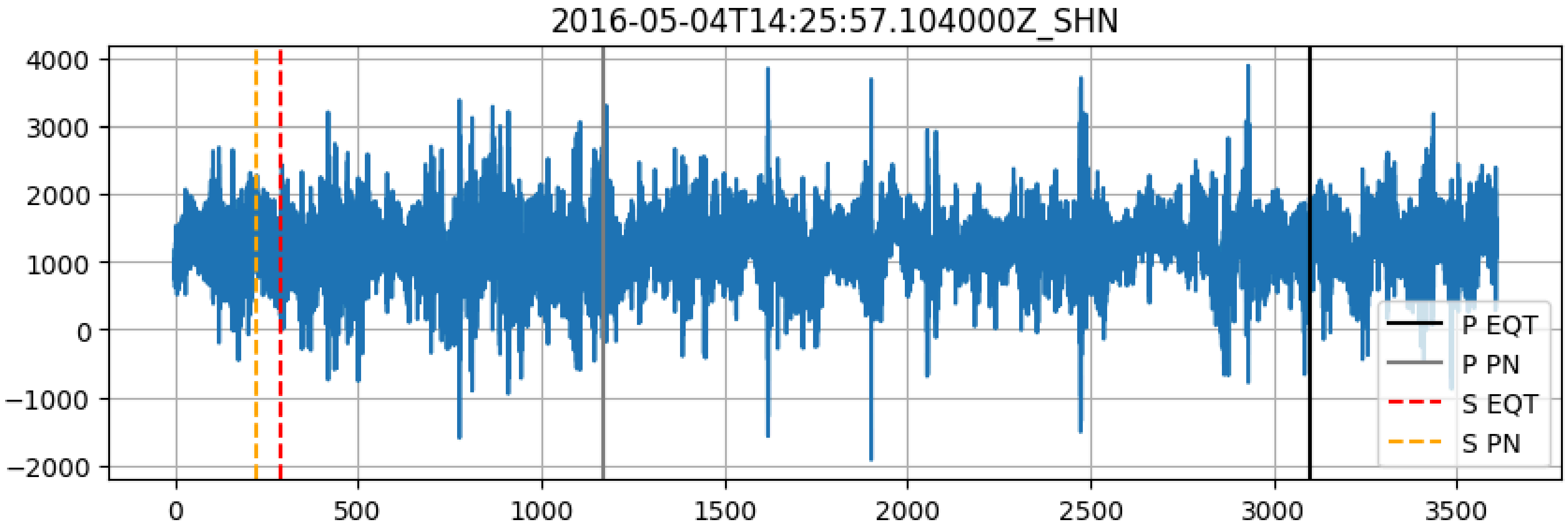
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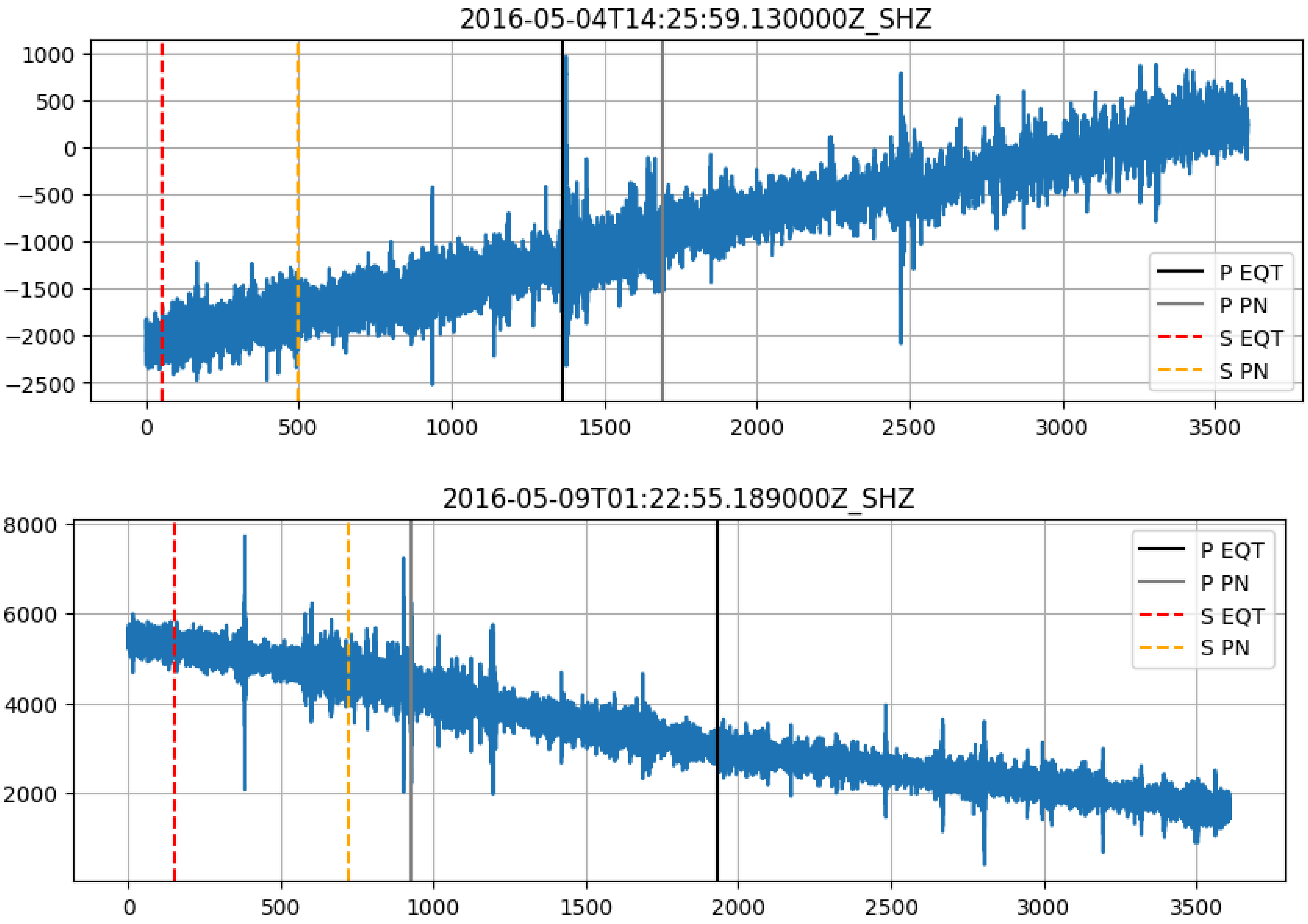
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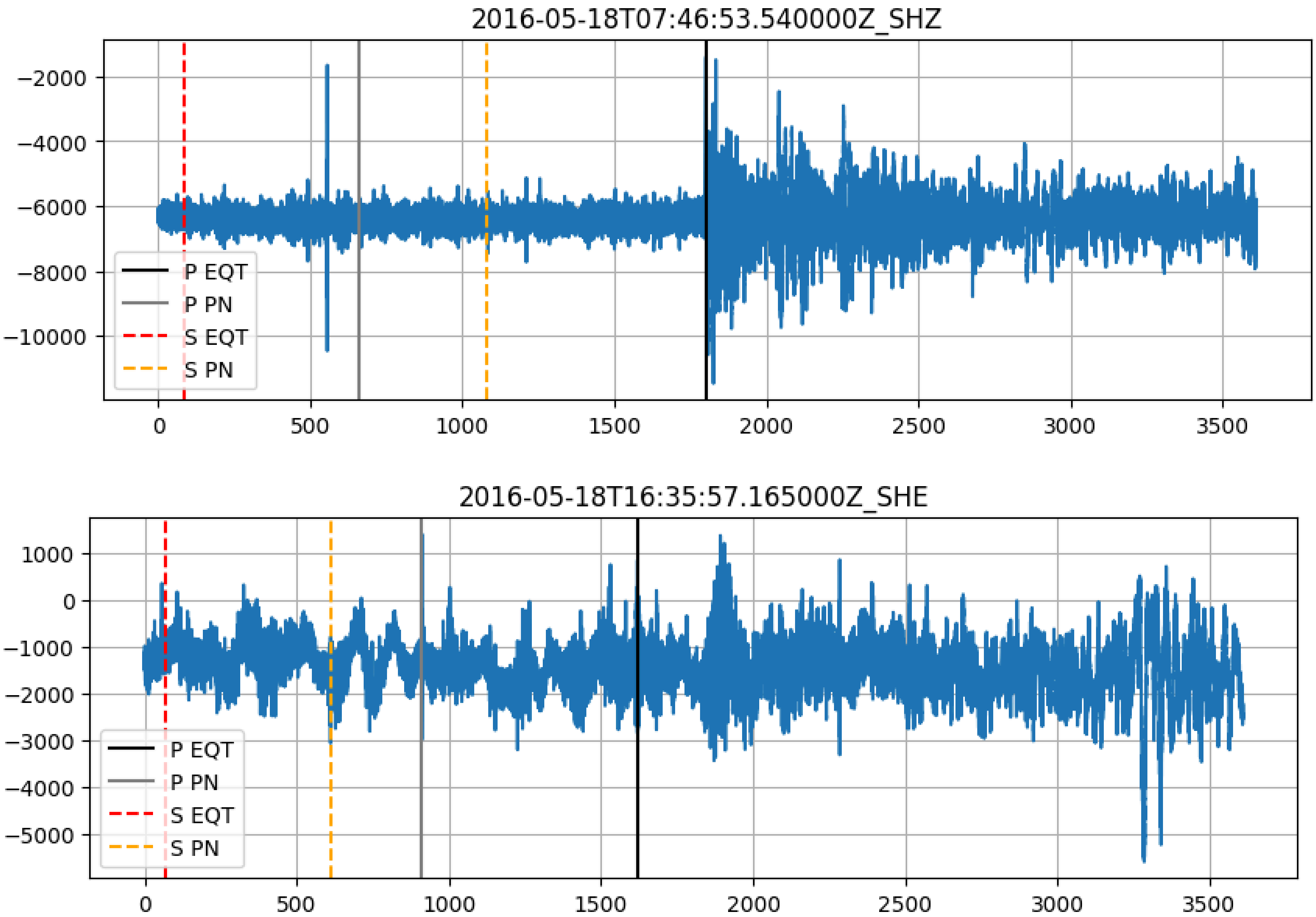
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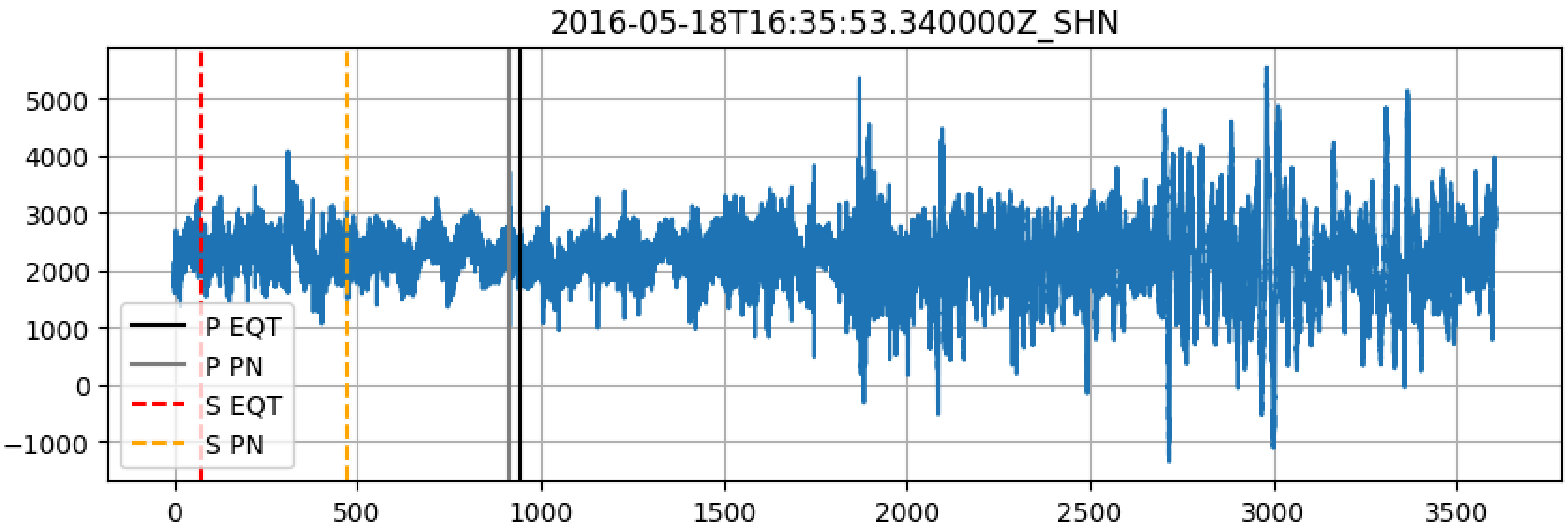
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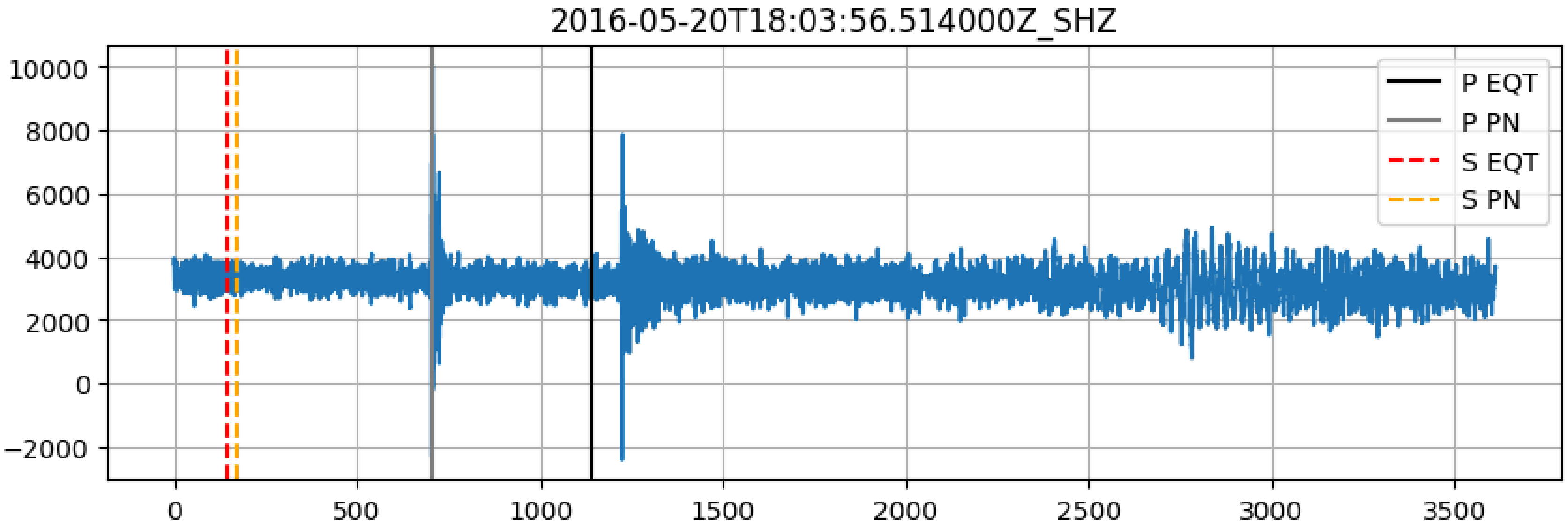
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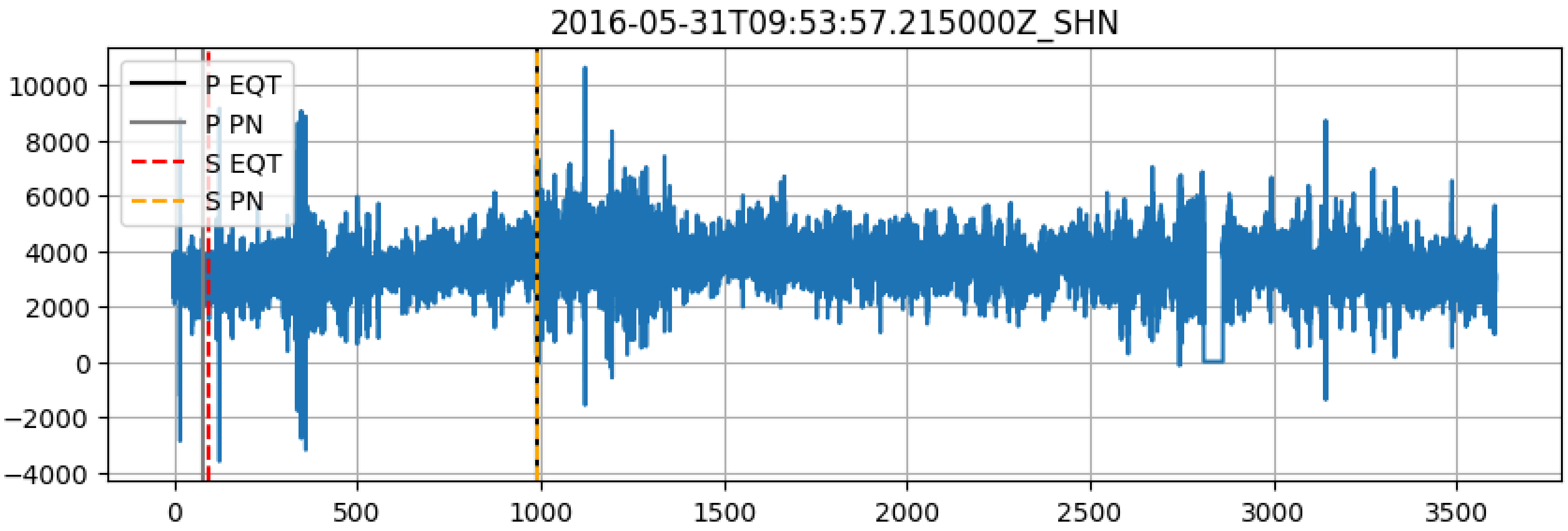
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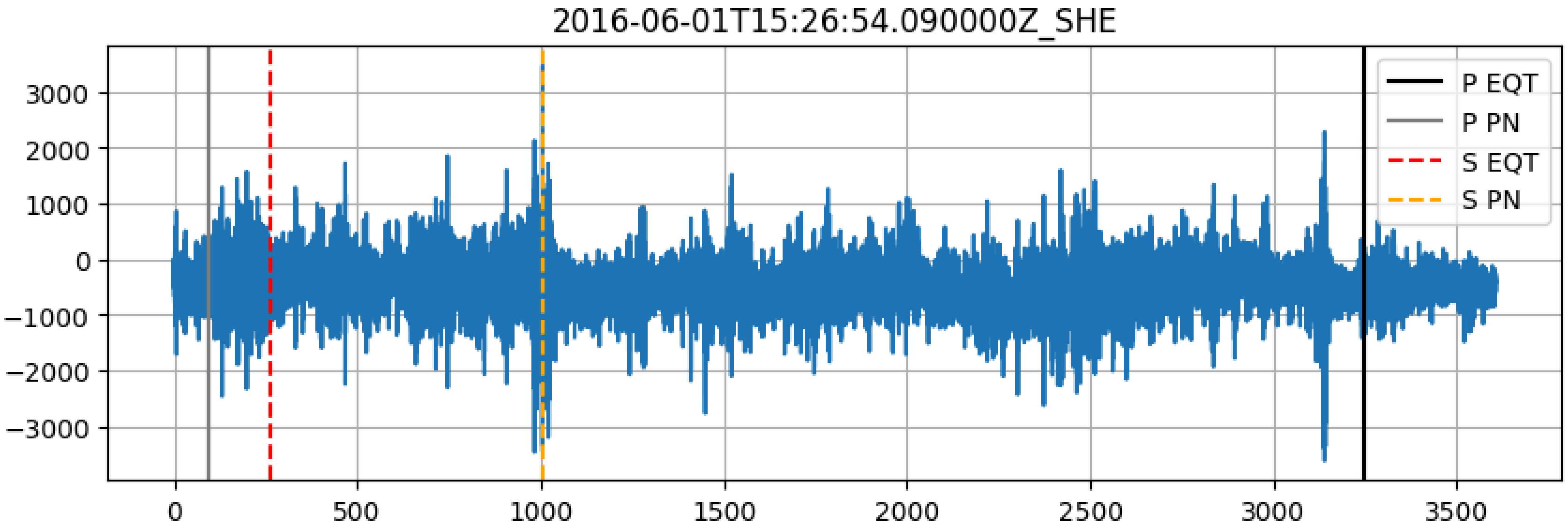
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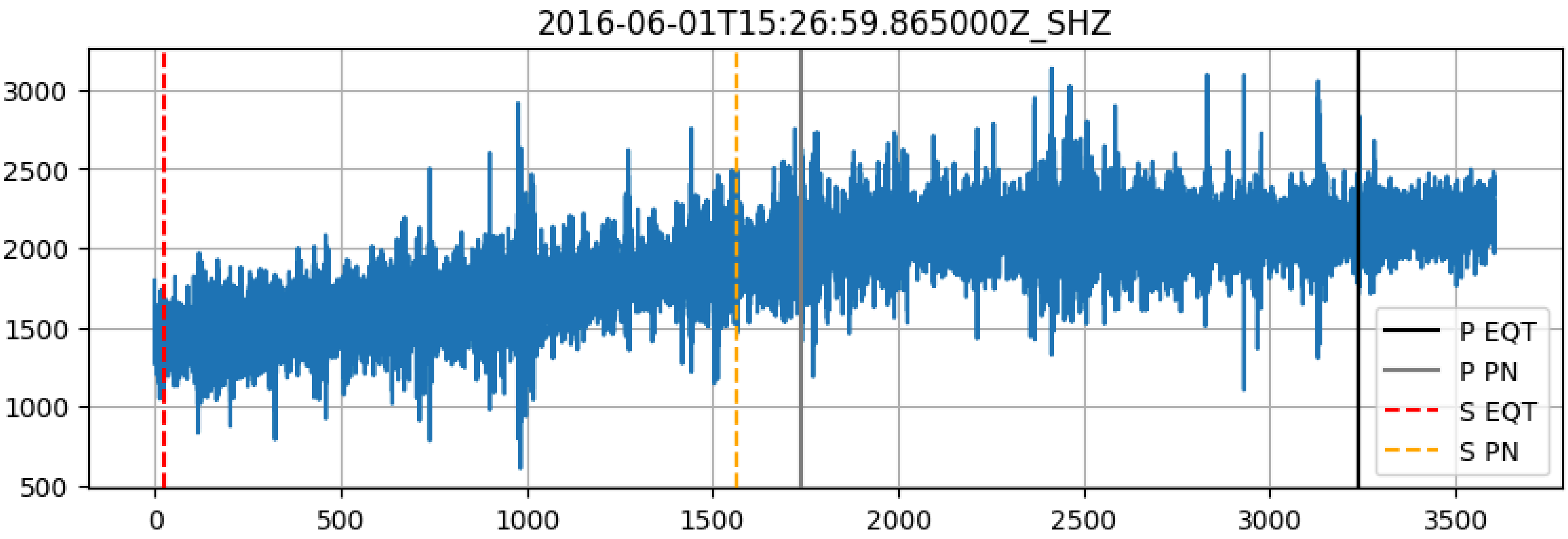
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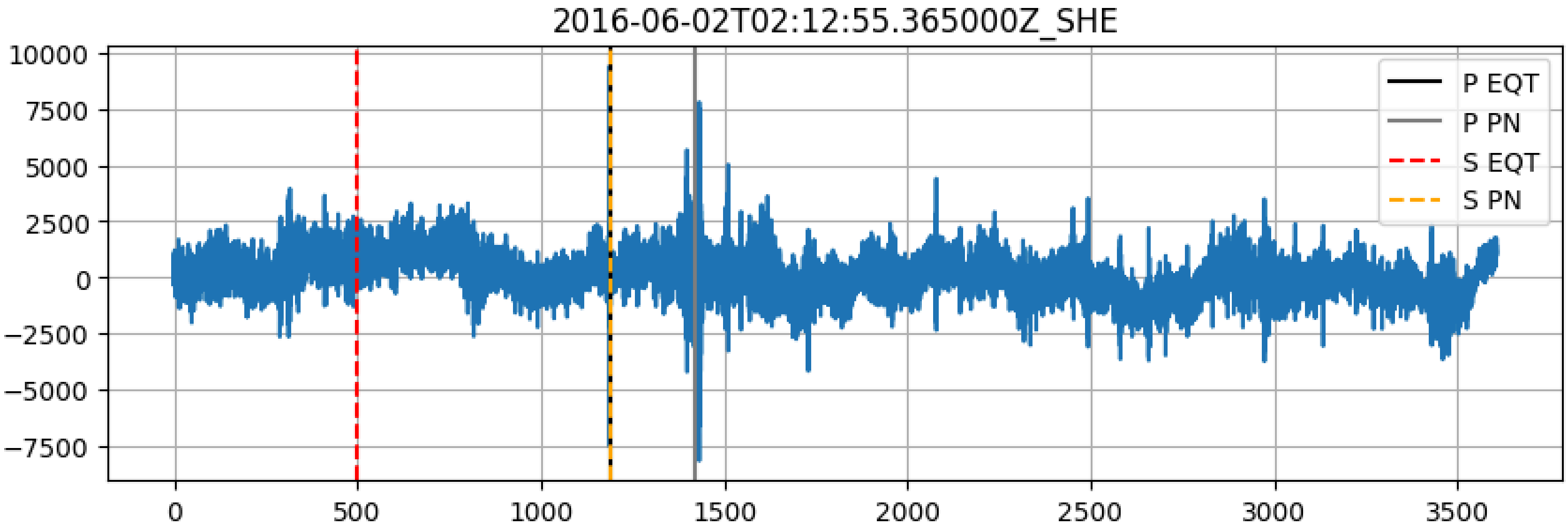
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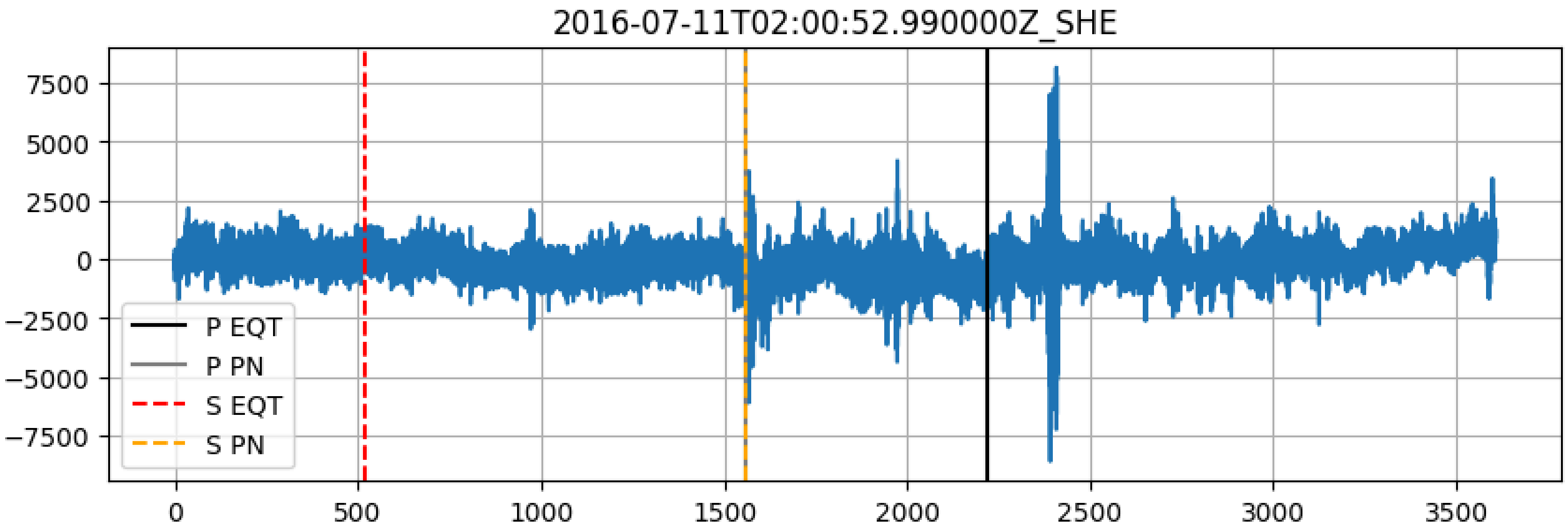

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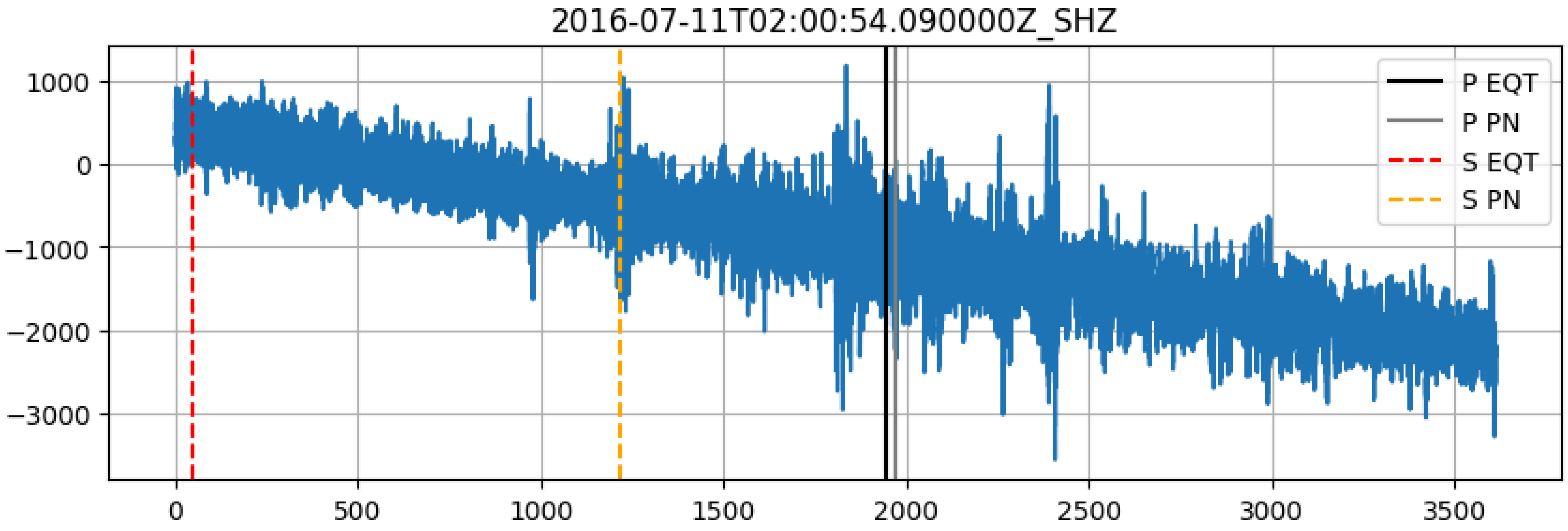

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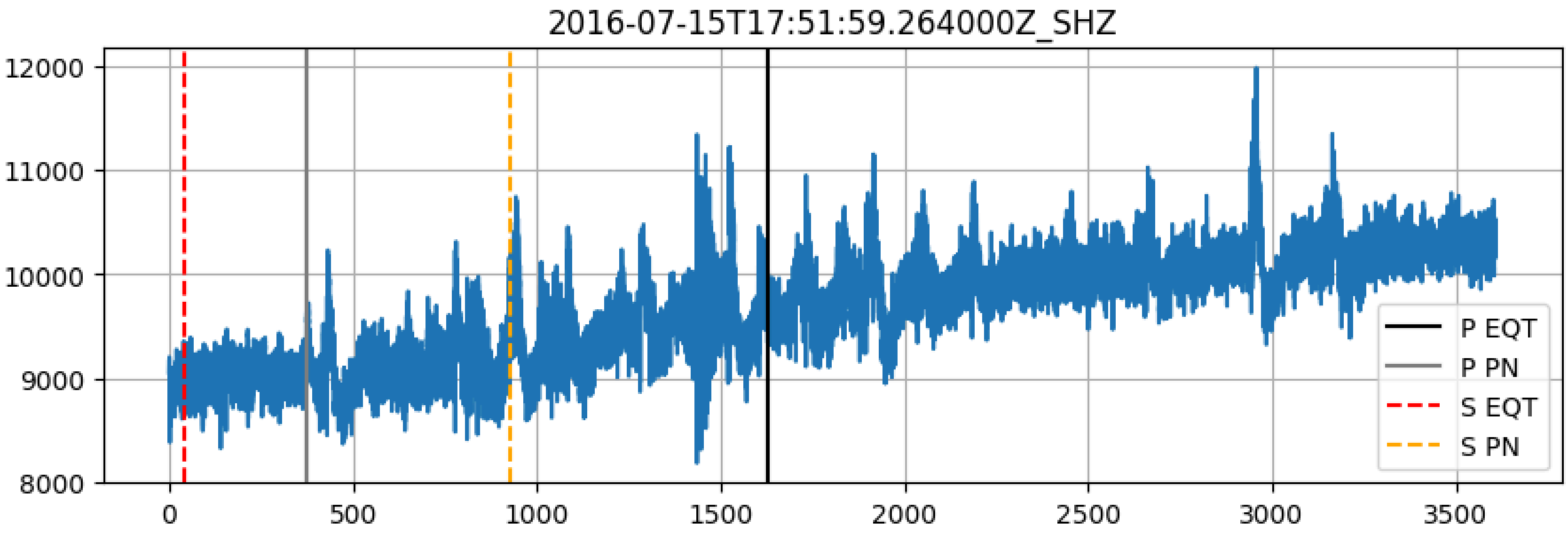
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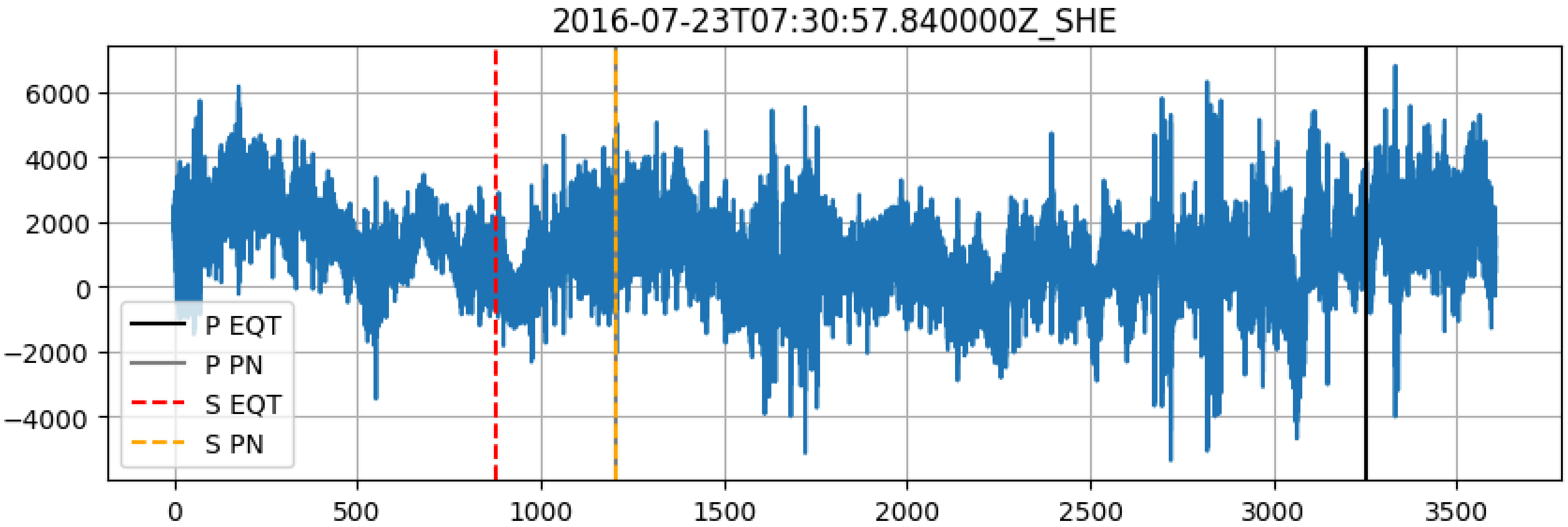
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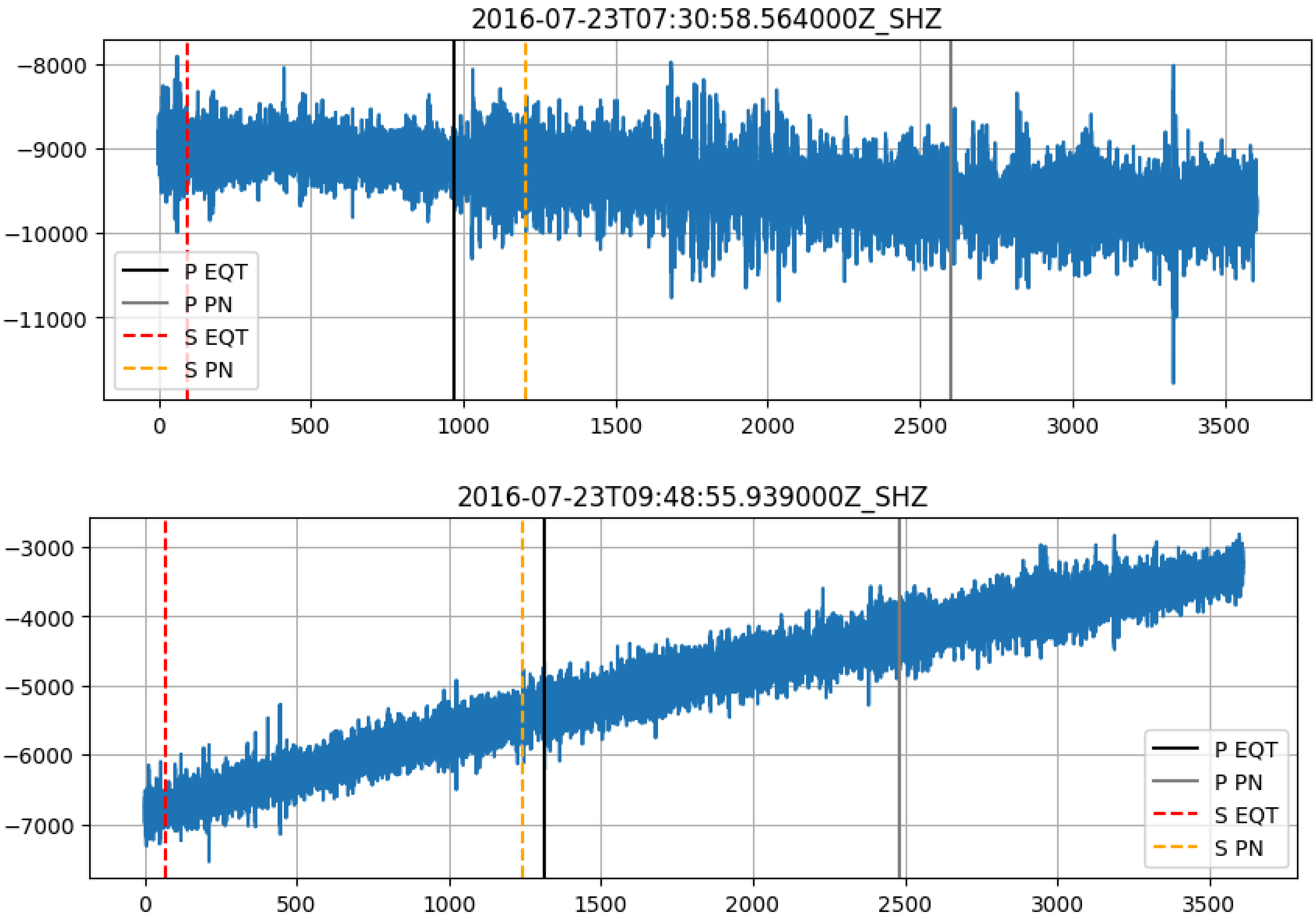
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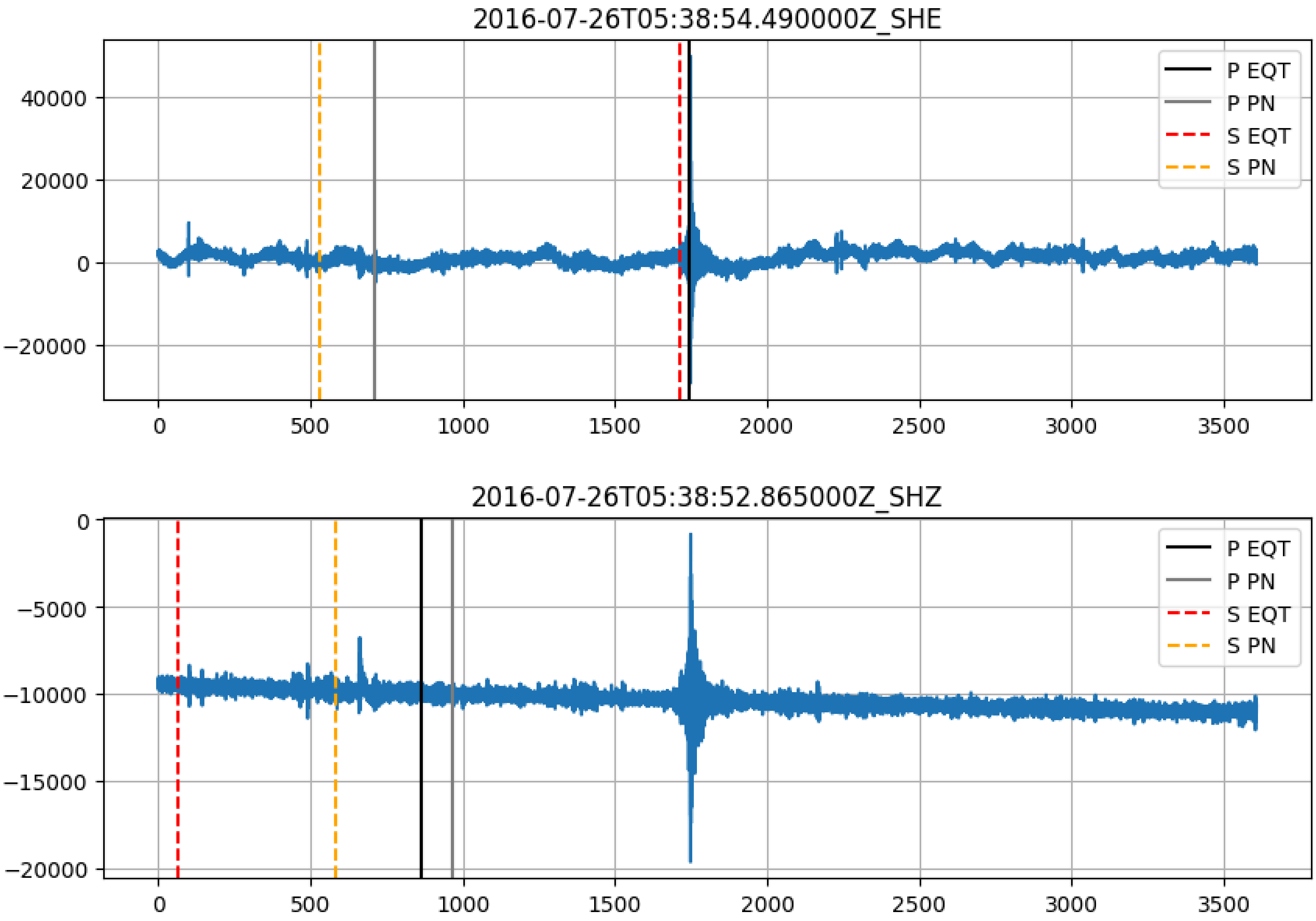
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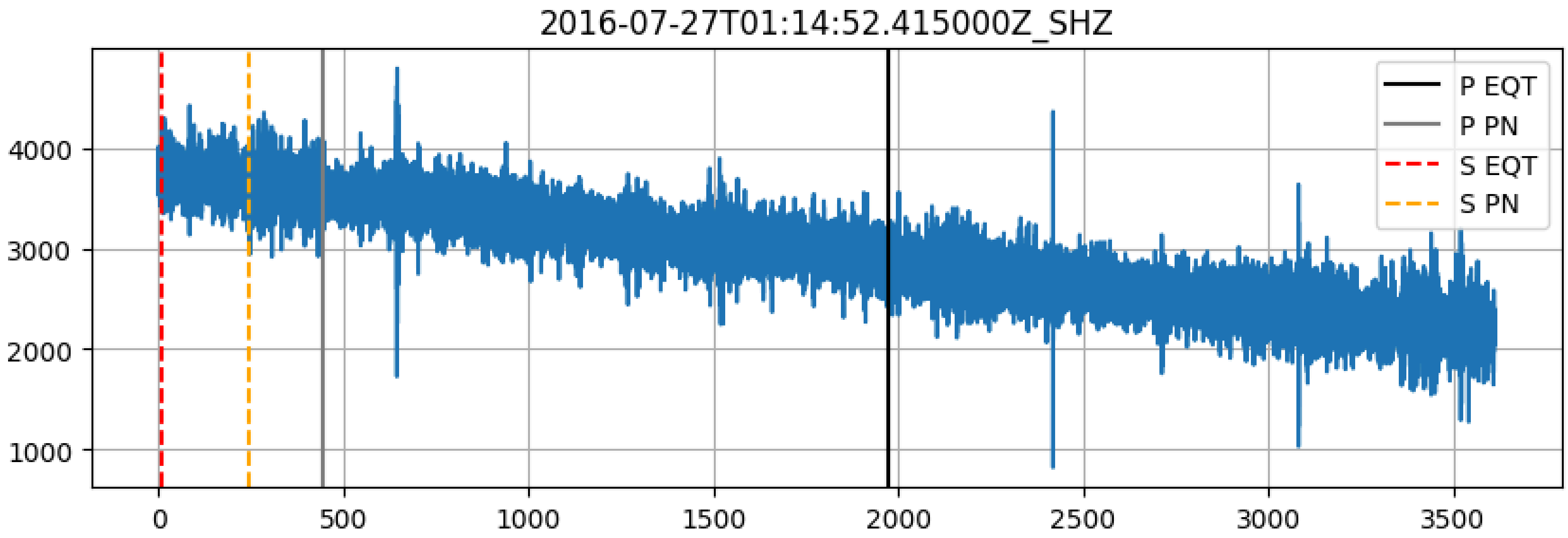

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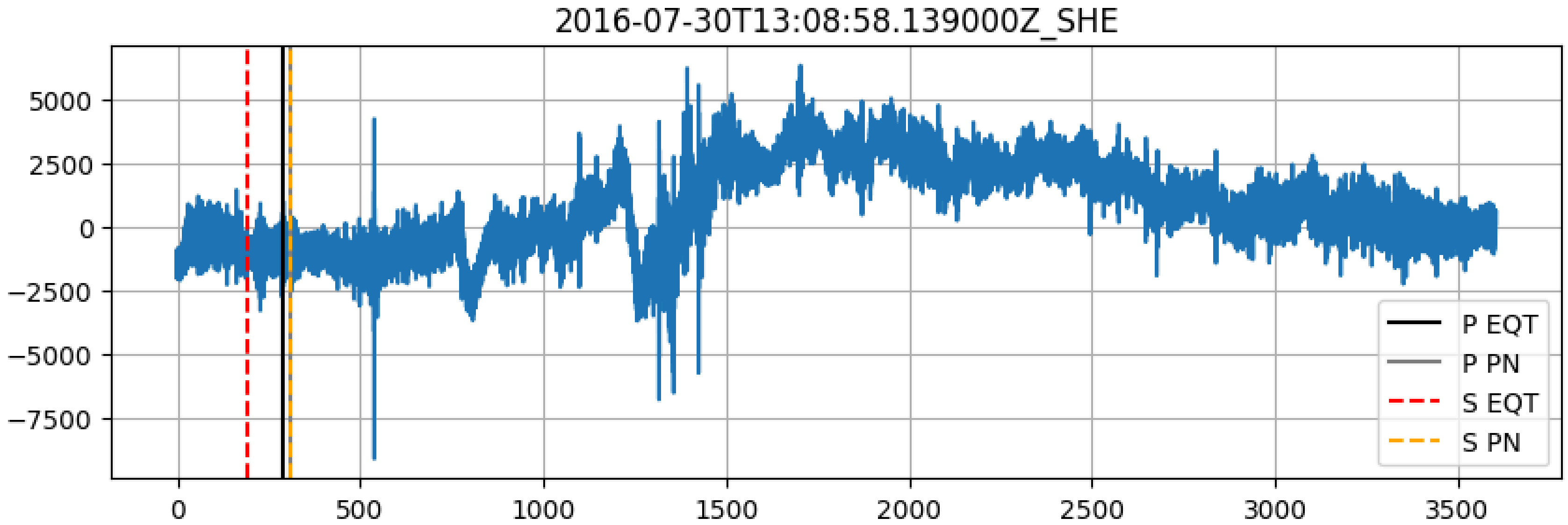

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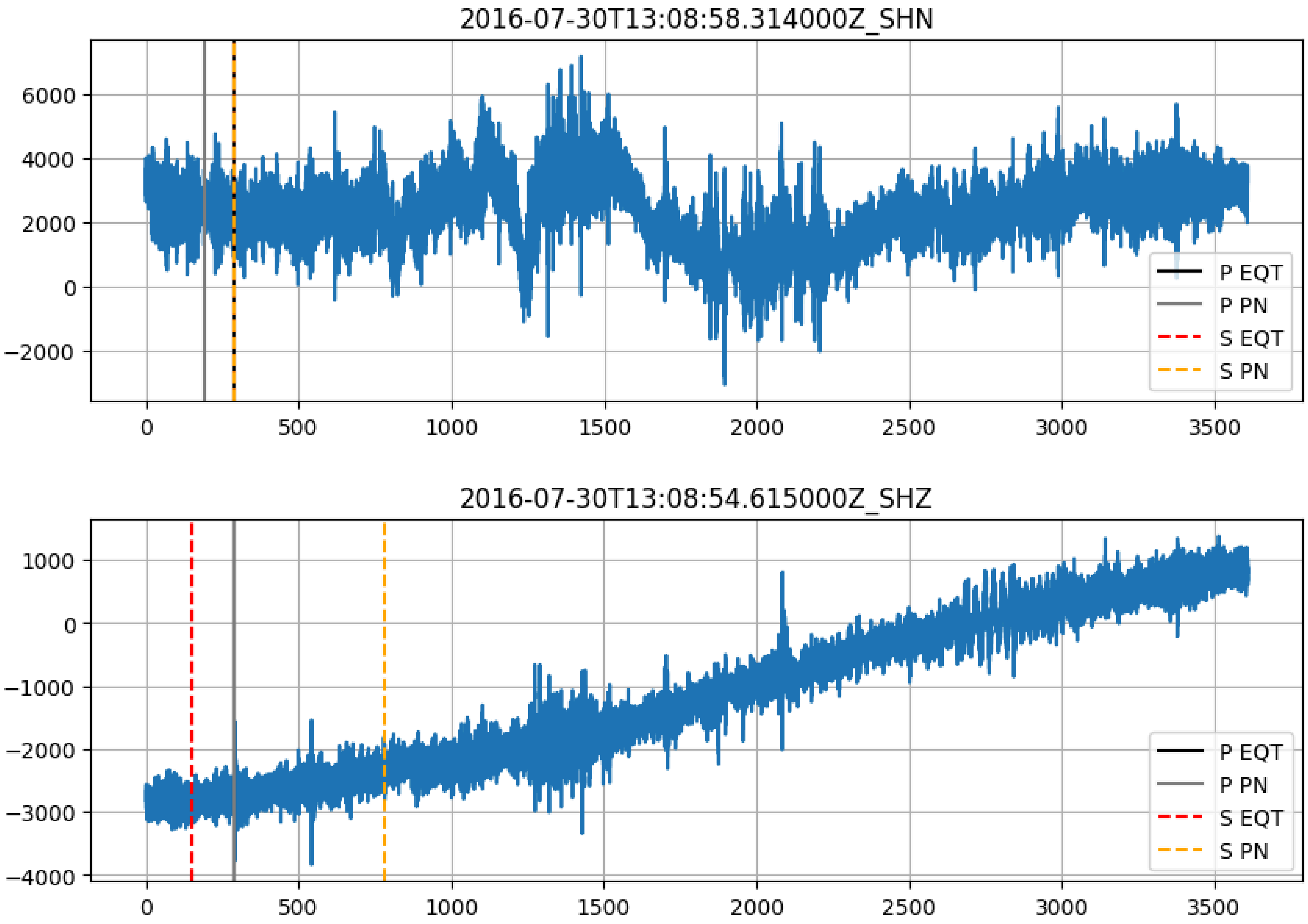
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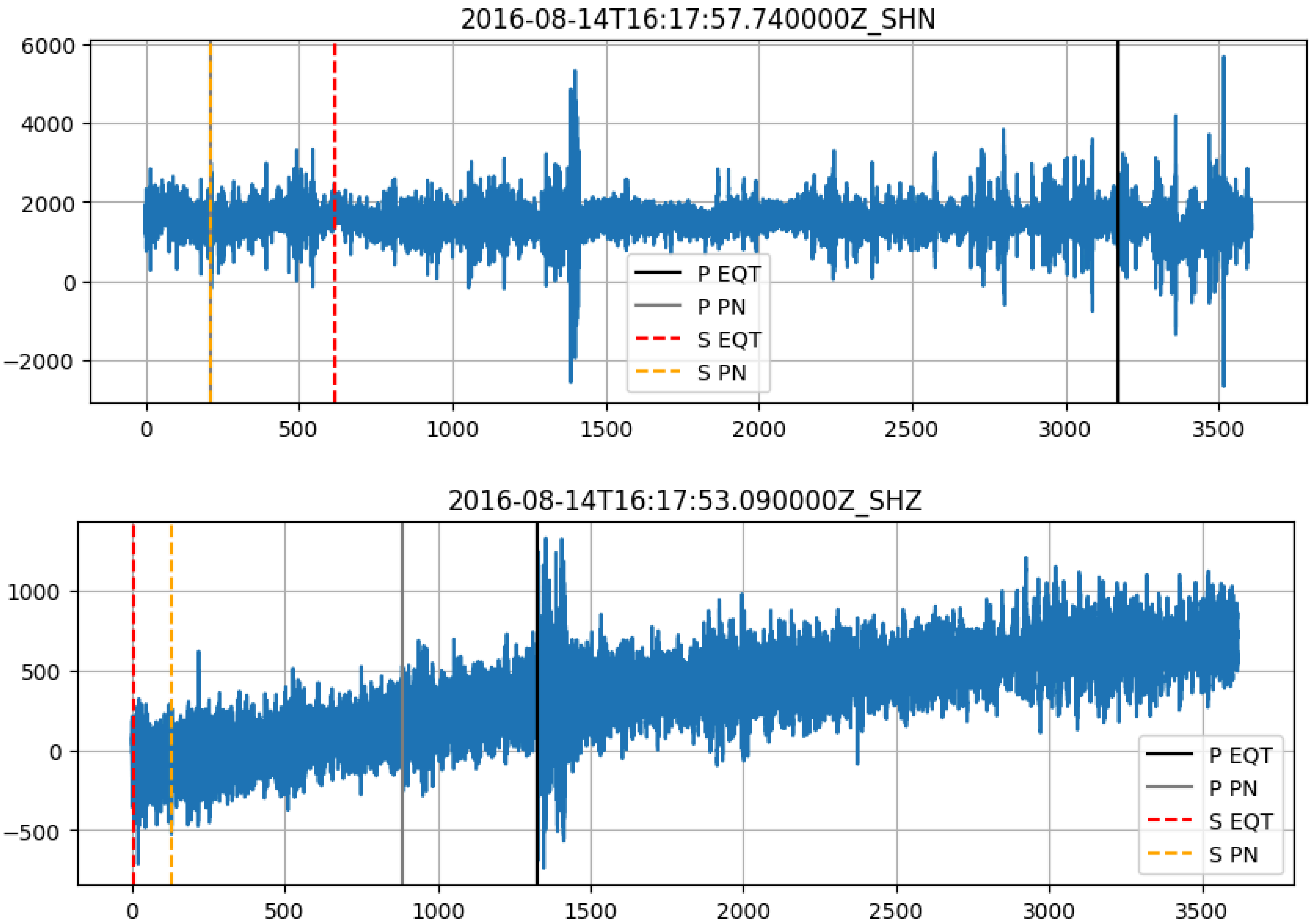
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