Plots_Predicted_Arrival_Time

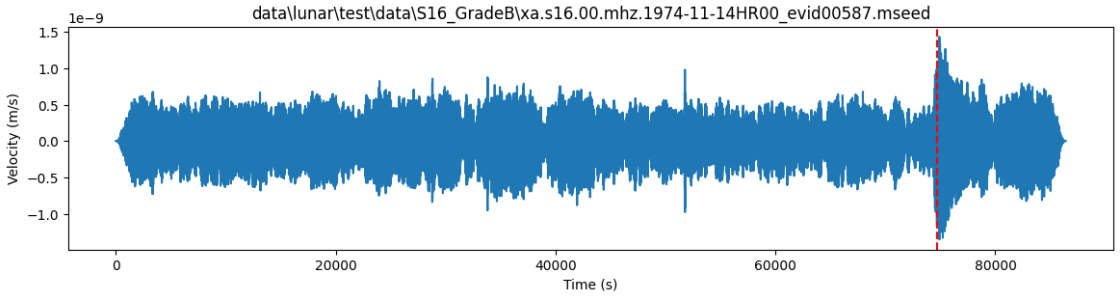
October 6, 2024

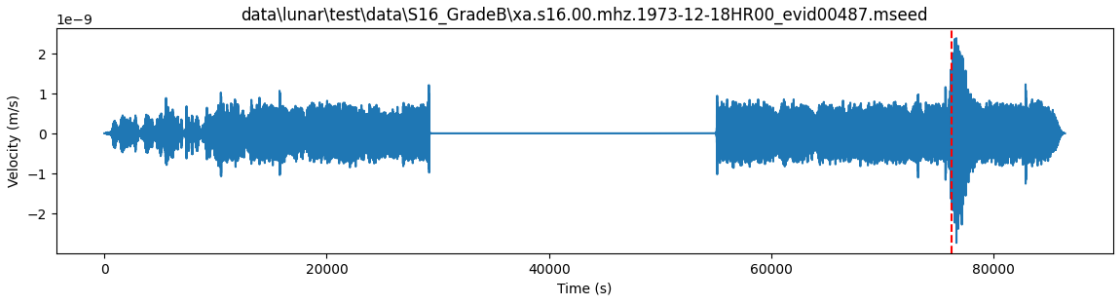
[3]:
```
import numpy as np
import obspy
import emd
import pandas as pd
from tqdm.notebook import tqdm
import os
import scipy.signal as sg
from obspy.signal.trigger import recursive_sta_lta, classic_sta_lta
from concurrent.futures import ThreadPoolExecutor, as_completed
from matplotlib import pyplot as plt
```

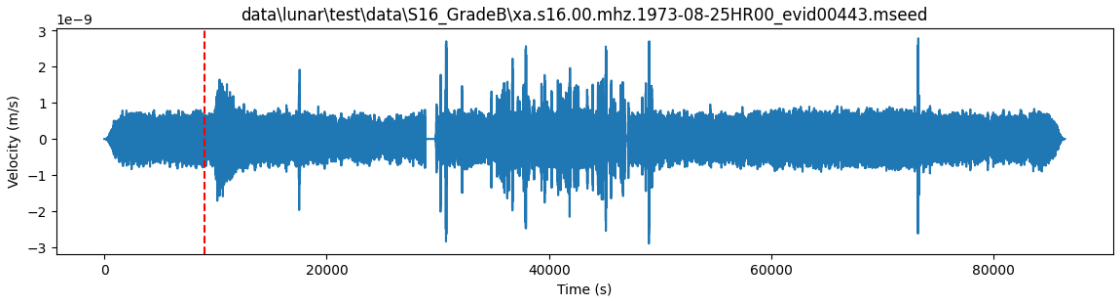
[14]:
```
predicted_catalog = pd.read_csv('lunar_predictions\catalog.csv')
data_folder = r'data\lunar\test\data'

def plot_results(num):
    filename = predicted_catalog.at[num, 'filename']
    full_path = None
    for folders in ['S12_GradeB', 'S15_GradeA', 'S15_GradeB', 'S16_GradeA',␣
 ↪'S16_GradeB']:
        full_path = os.path.join(data_folder, folders, filename+'.mseed')
        if os.path.exists(full_path):
            filename = full_path
            break

    arrival_time = predicted_catalog.at[num, 'time_rel(sec)']
    stream = obspy.read(filename)
    data = stream[0].data
    time = stream[0].times()
    plt.figure(figsize=(14, 3))
    plt.plot(time, data)
    plt.axvline(arrival_time, color='r', linestyle='--', label='Predicted␣
 ↪arrival time')
    plt.title(filename)
    plt.xlabel('Time (s)')
    plt.ylabel('Velocity (m/s)')

indexs = predicted_catalog.index[::-1]
```

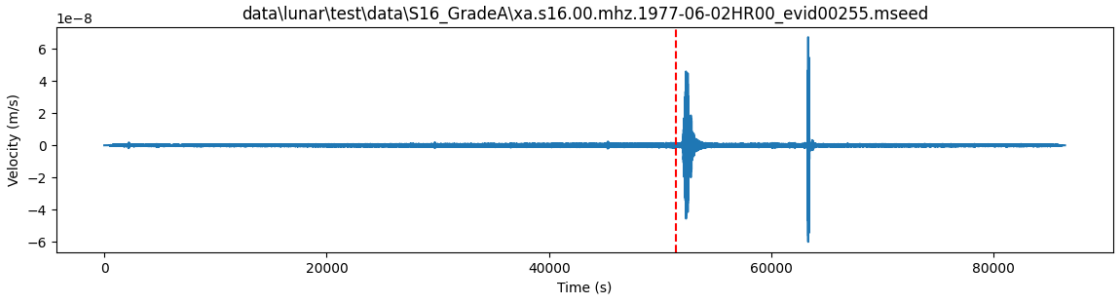
```
for idx in indexs:
    plot_results(idx)
```

```
C:\Users\alail\AppData\Local\Temp\ipykernel_30920\172008349.py:17:
RuntimeWarning: More than 20 figures have been opened. 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()`.
  plt.figure(figsize=(14, 3))
```





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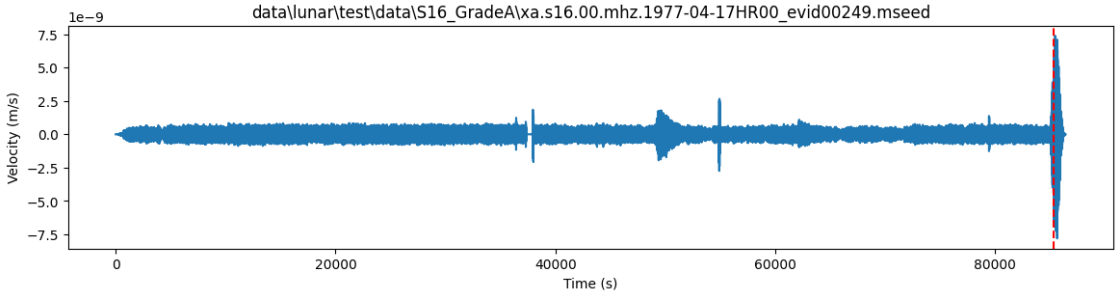
Time (s)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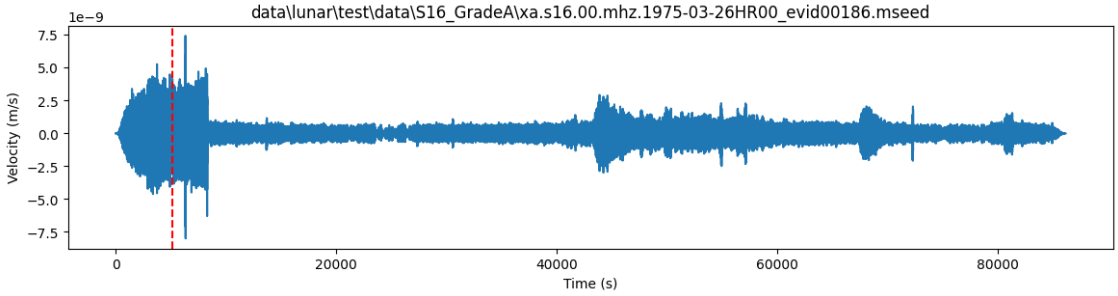
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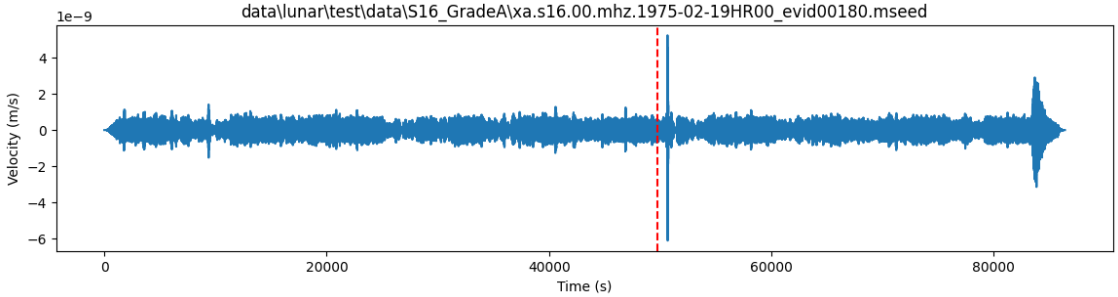
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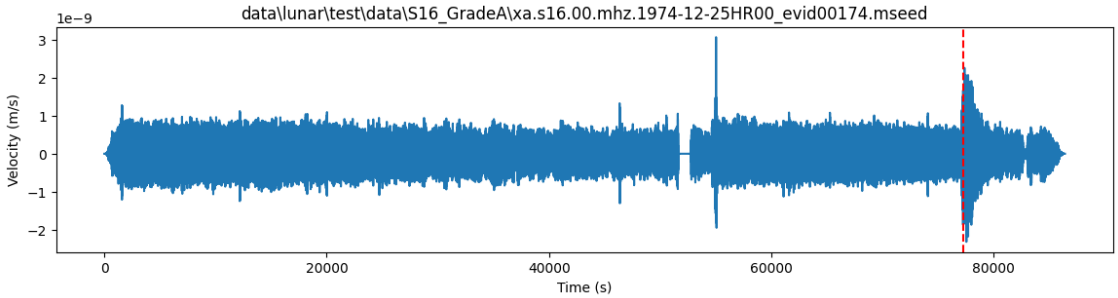
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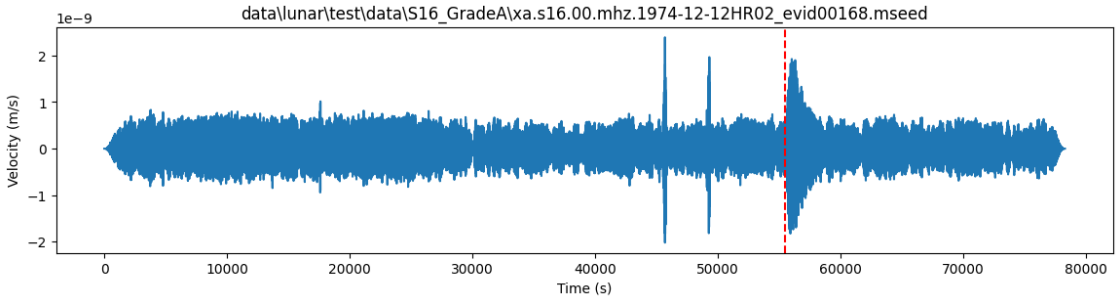
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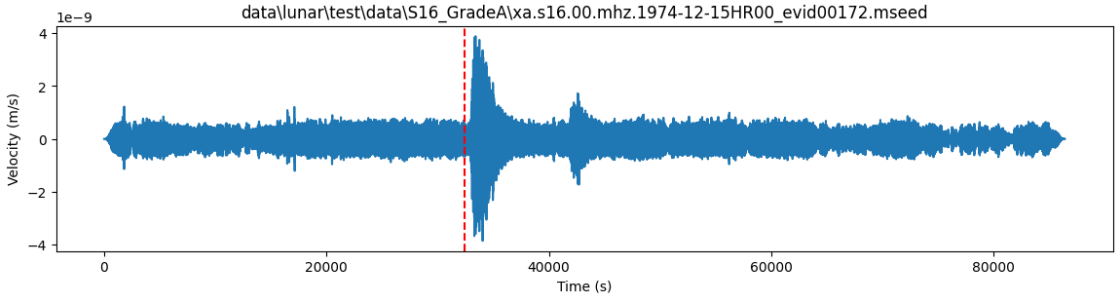
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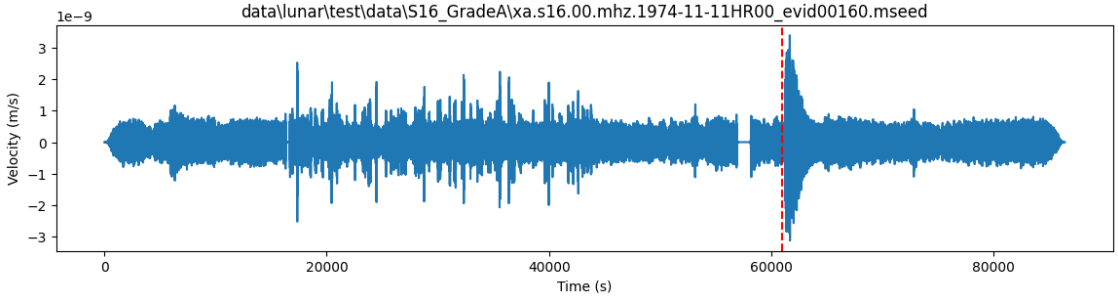
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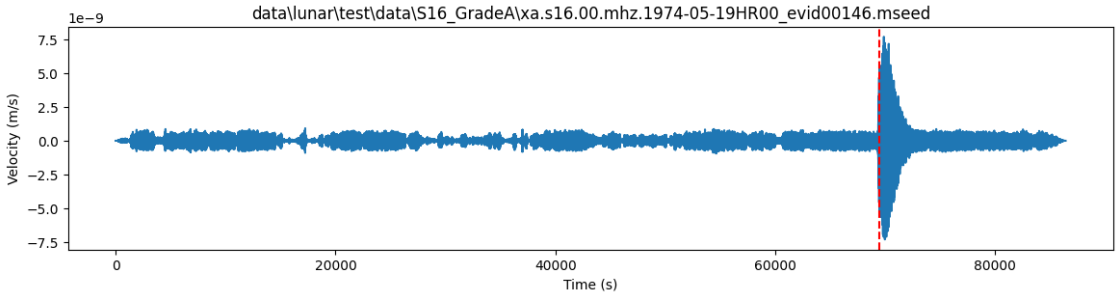
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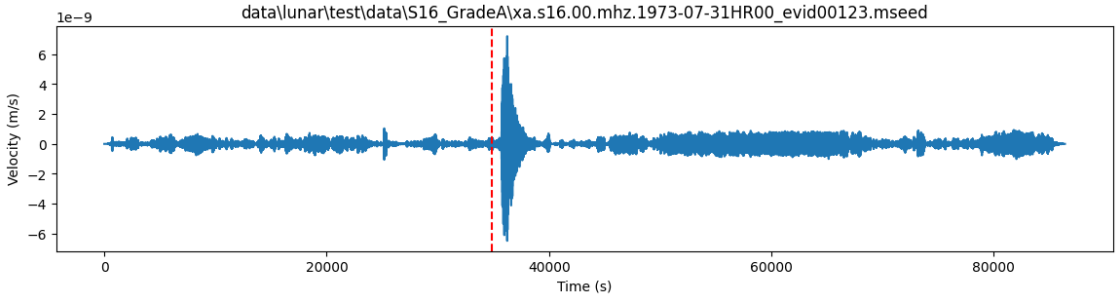
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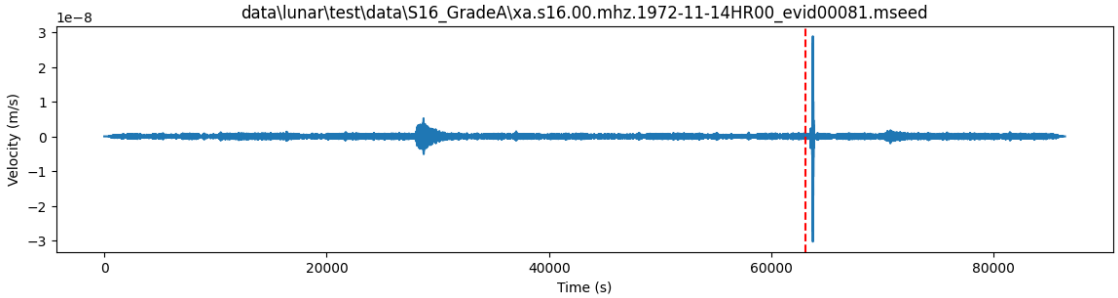
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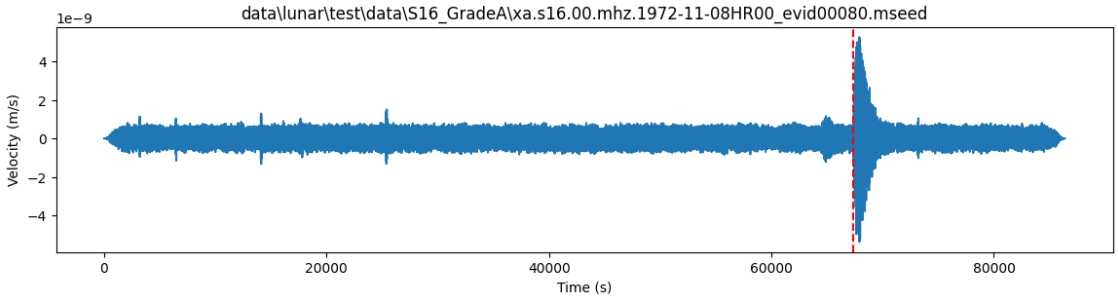
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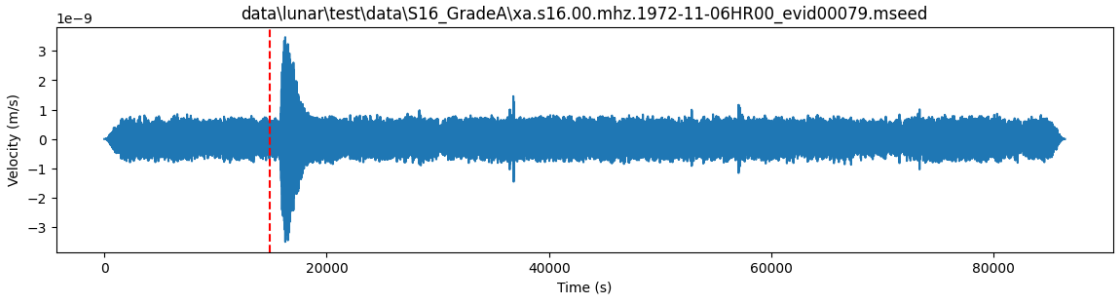
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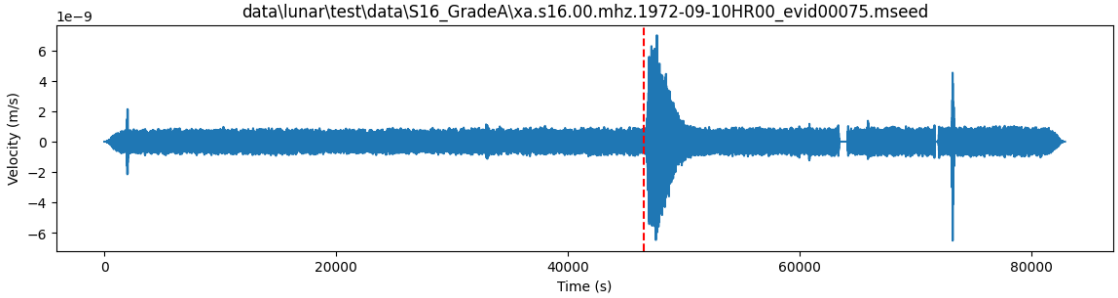
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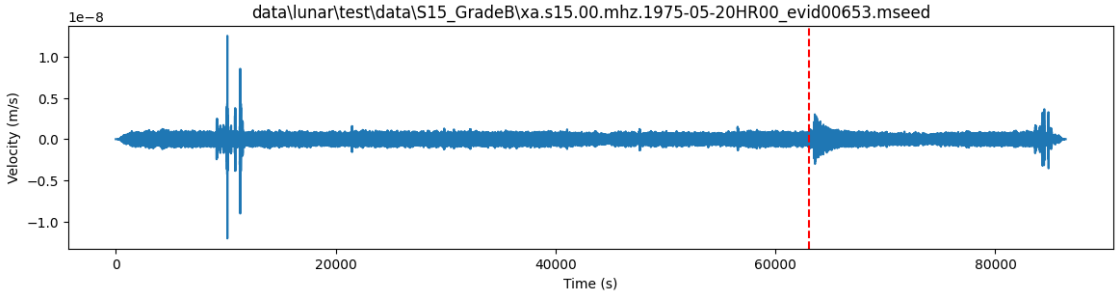
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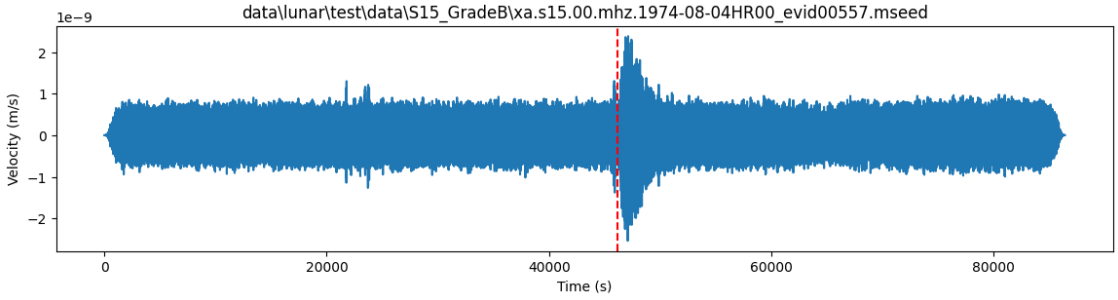
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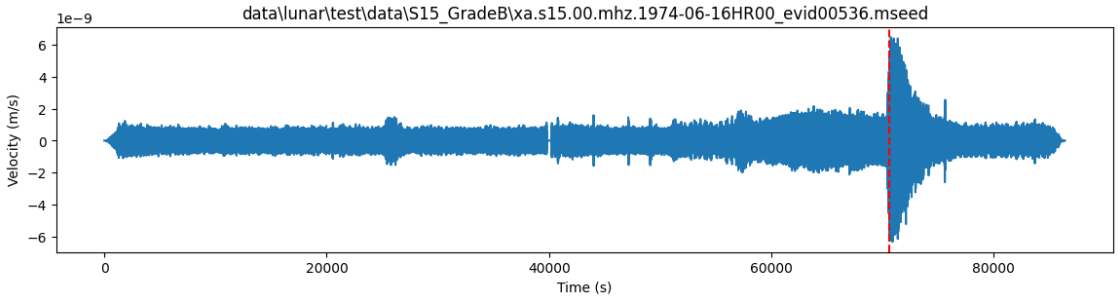
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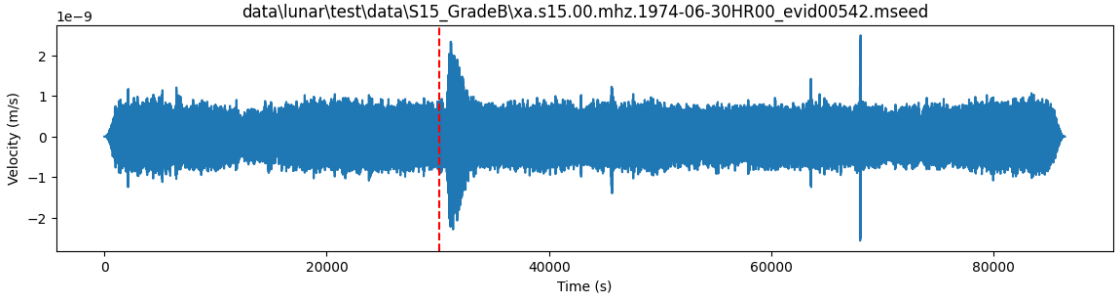
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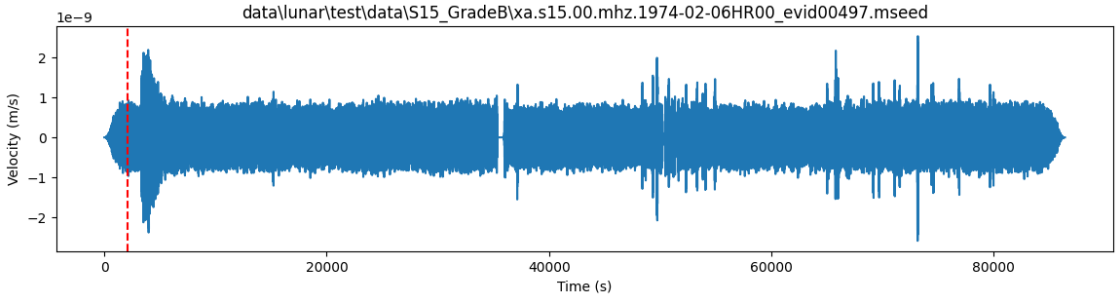
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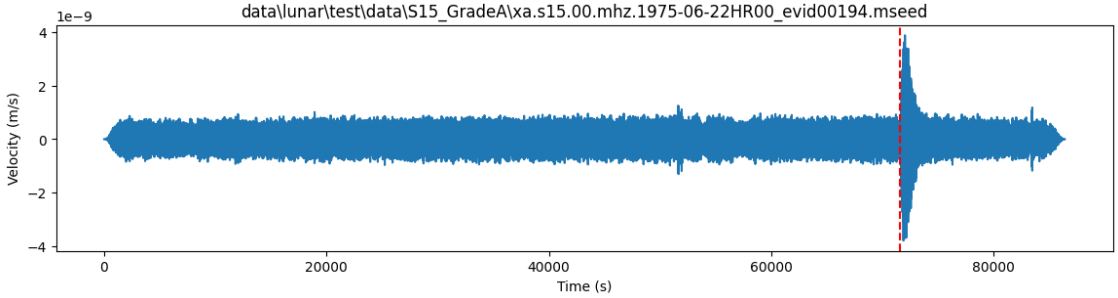
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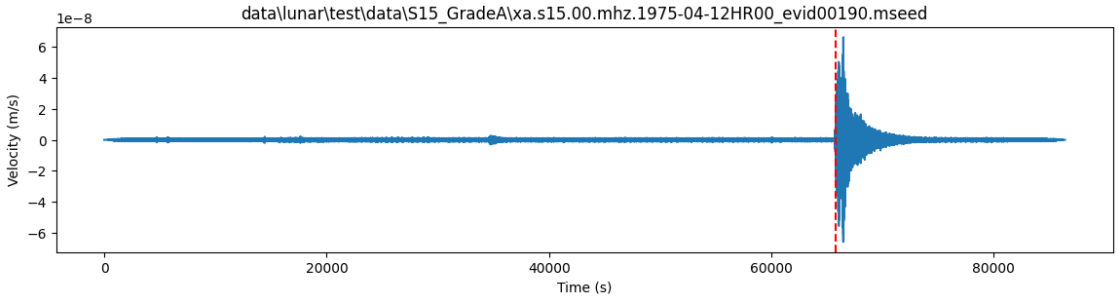
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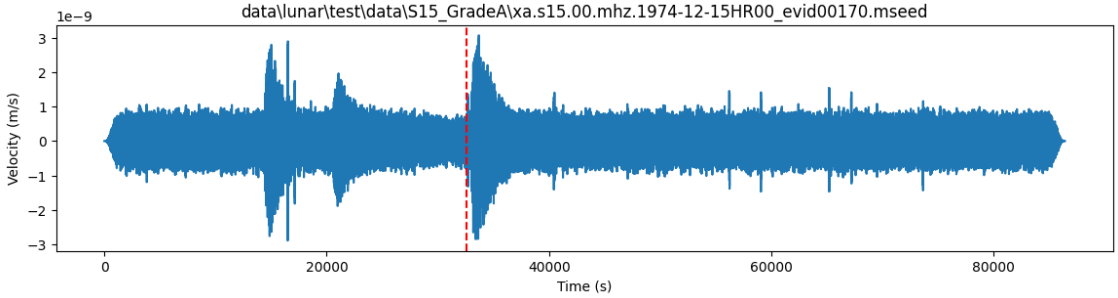
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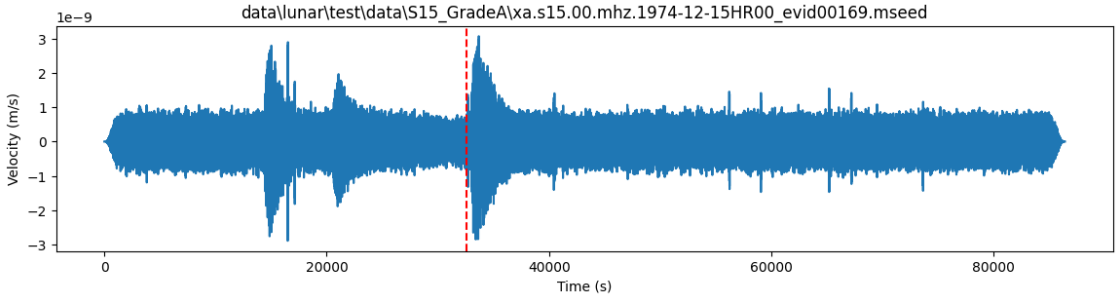
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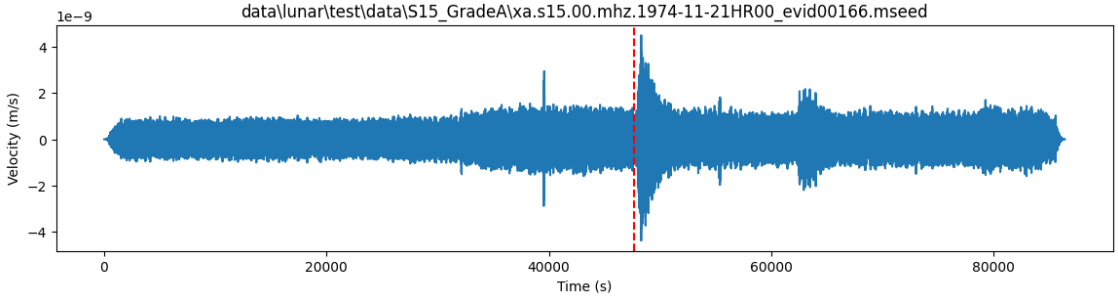
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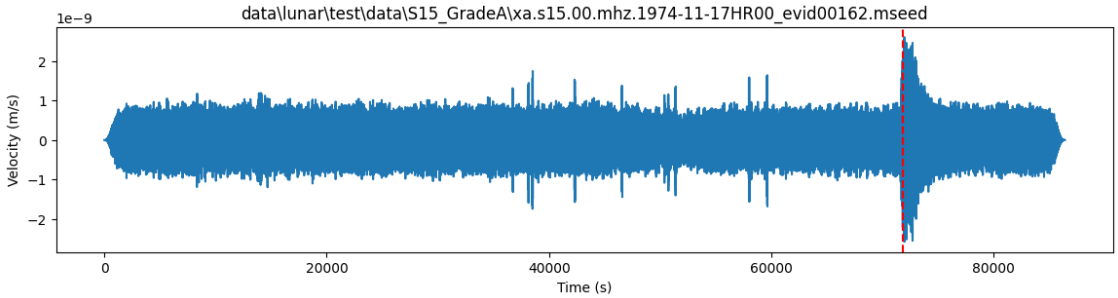
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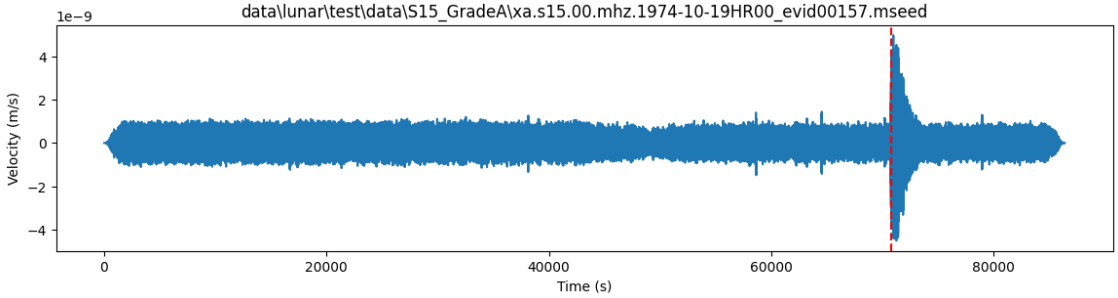
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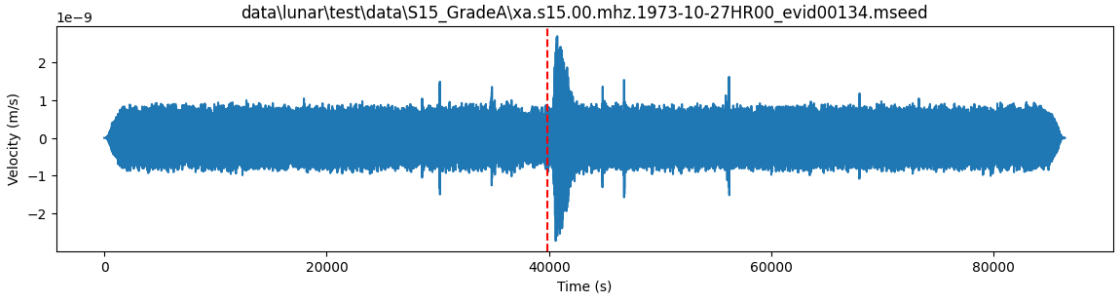
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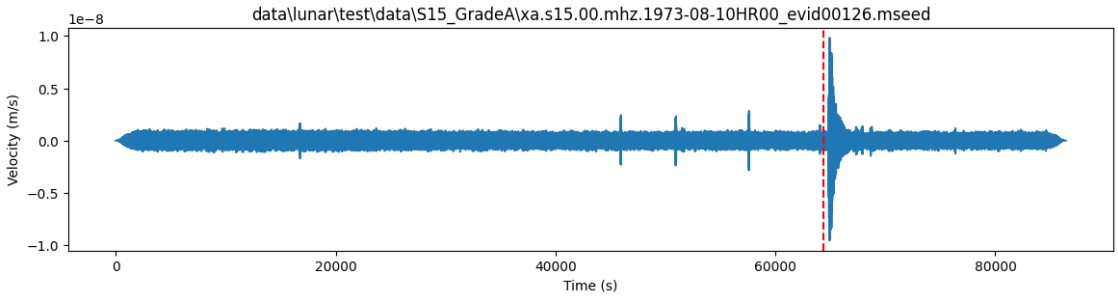
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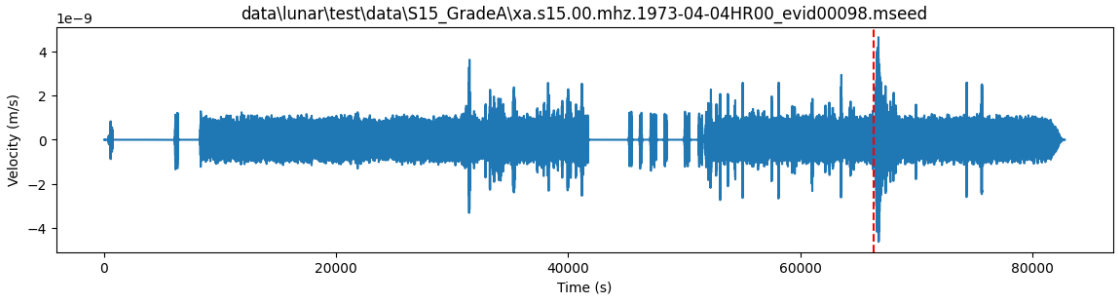
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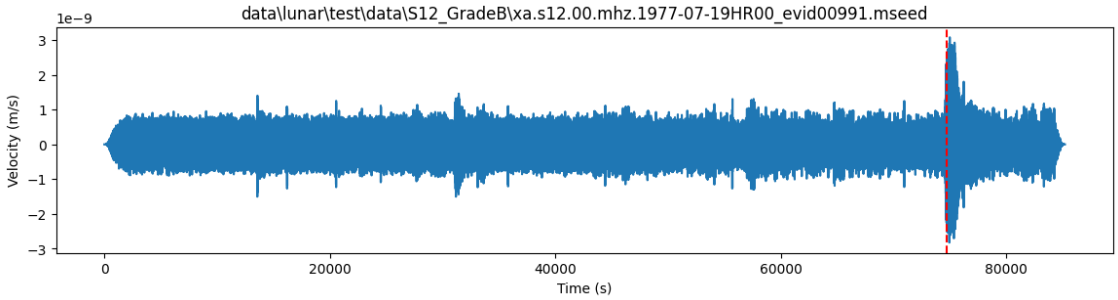
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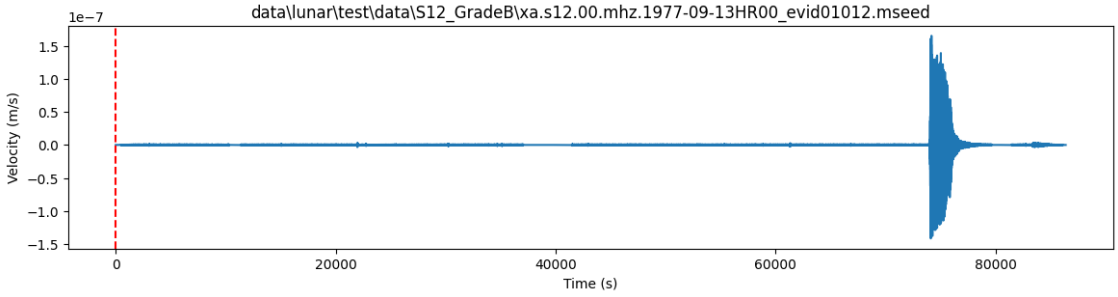
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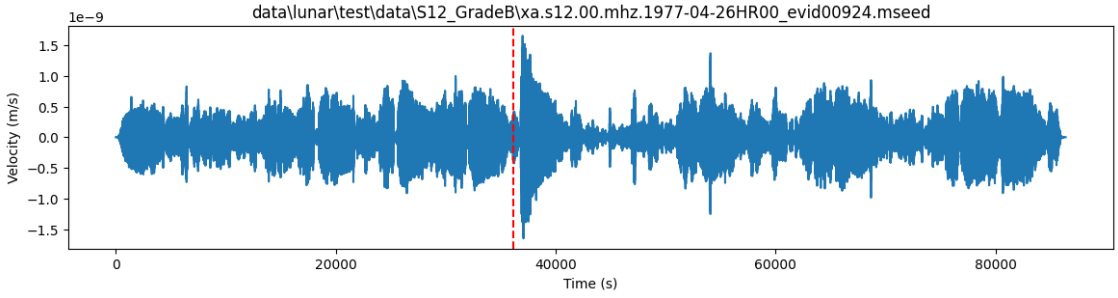
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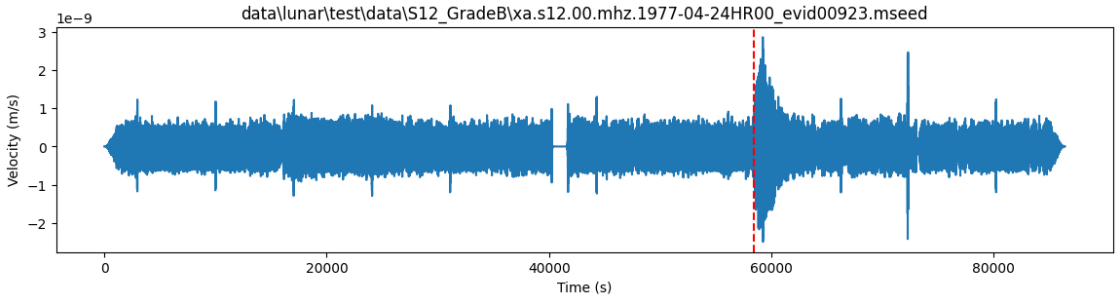
Time (s)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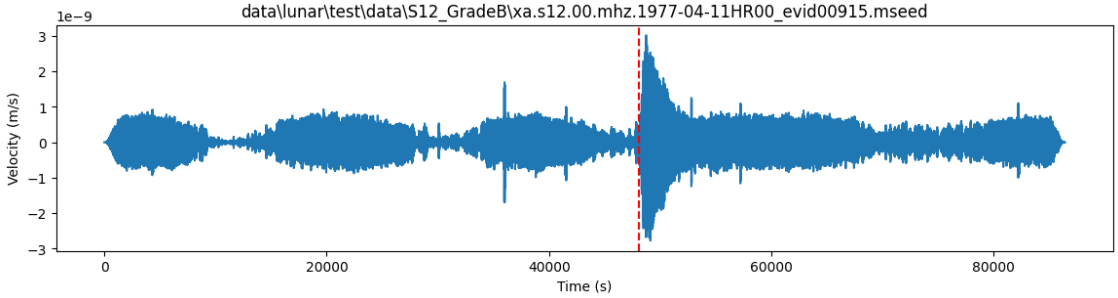
Time (s)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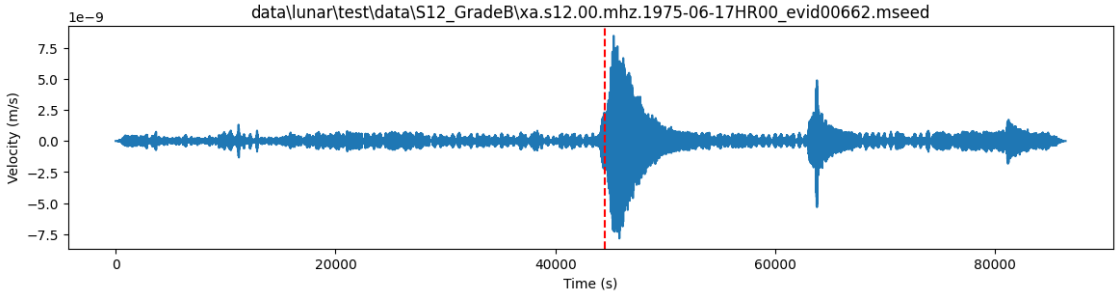
Time (s)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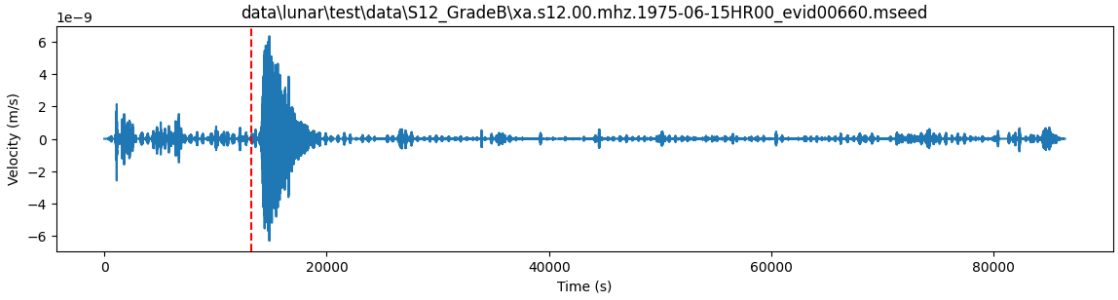
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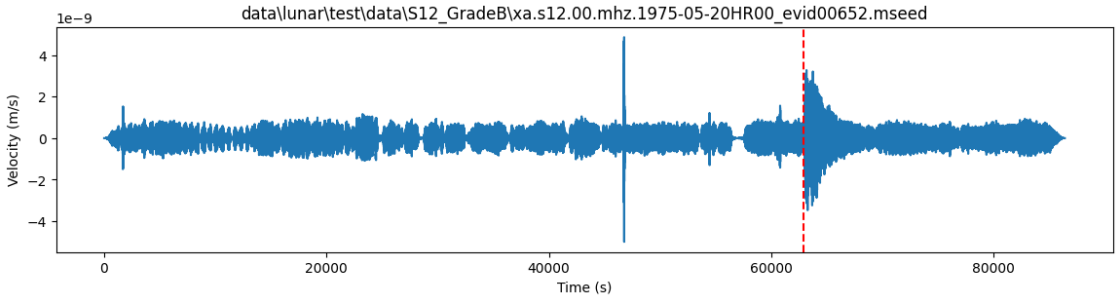
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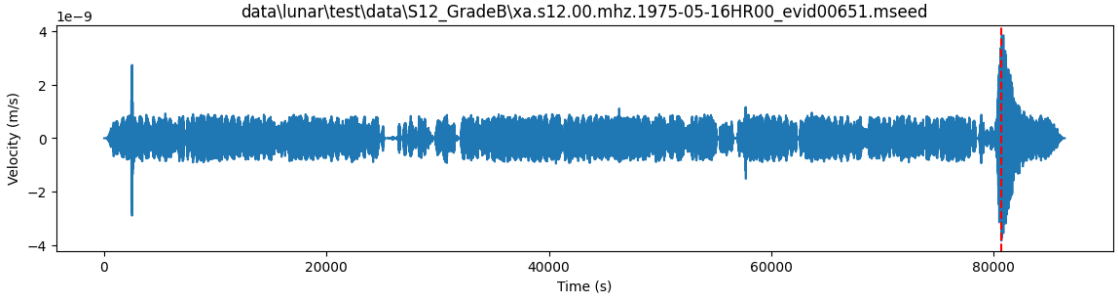
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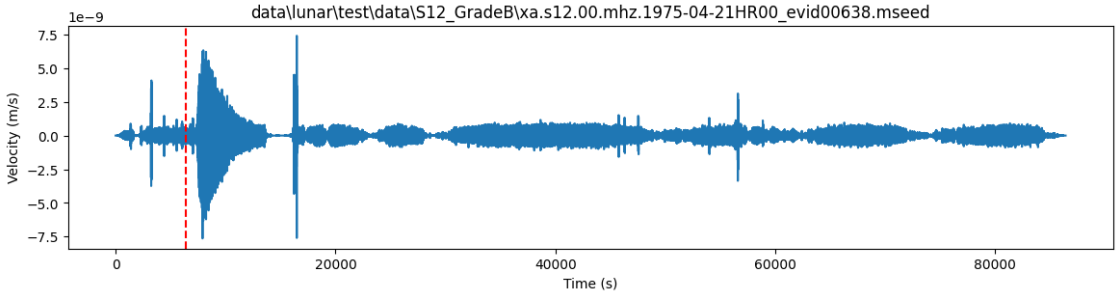
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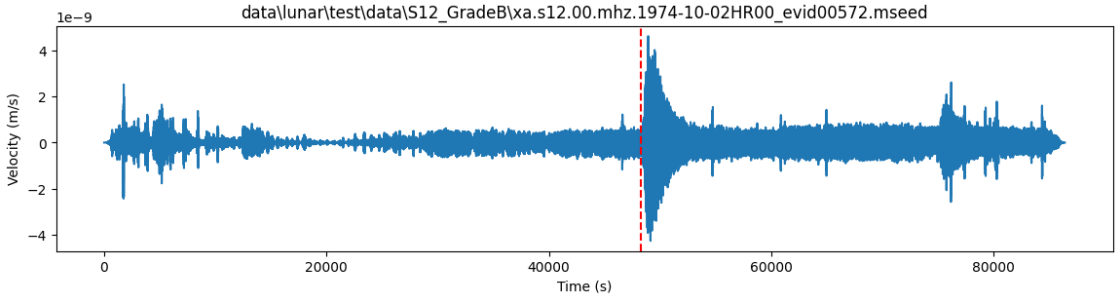
Time (s)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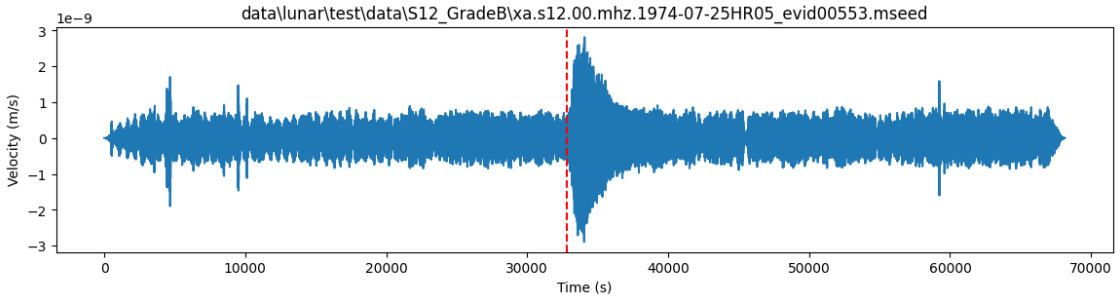
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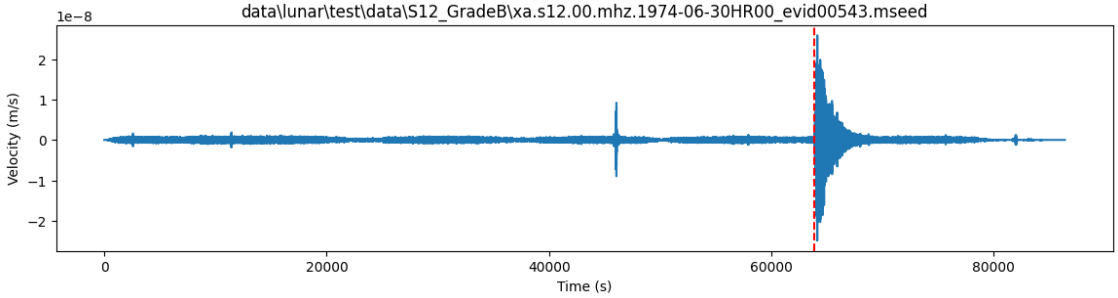
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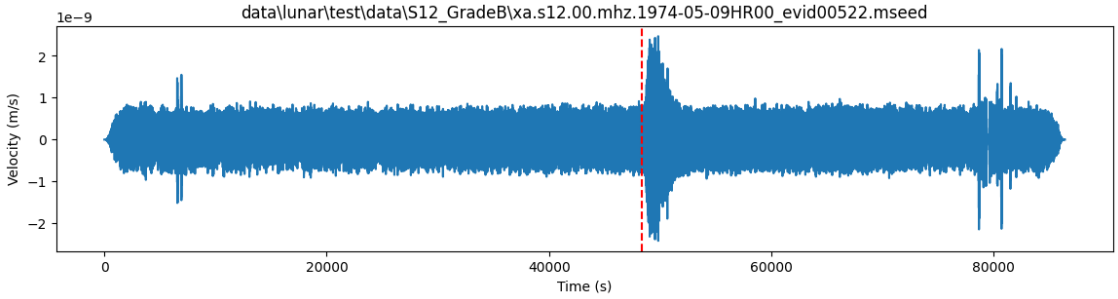
Time (s)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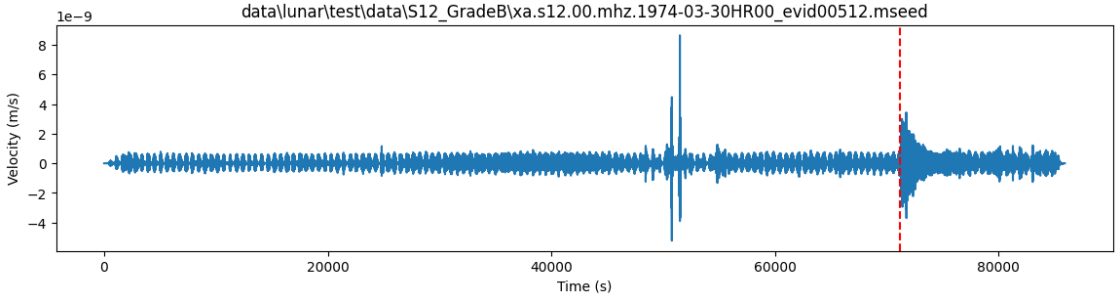
Velocity (m/s)
Time (s)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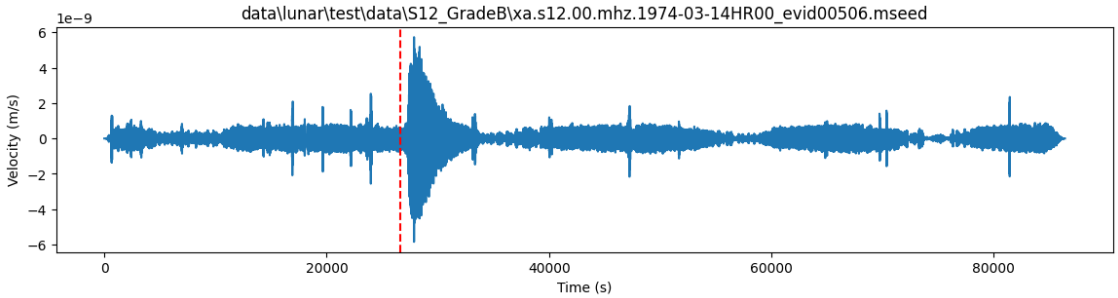
Time (s)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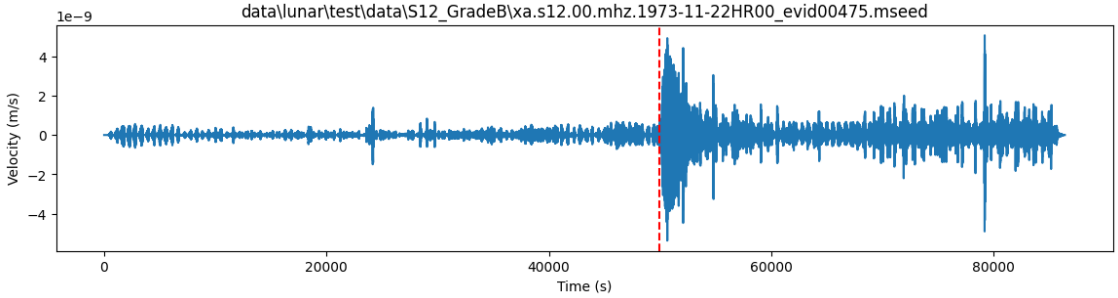
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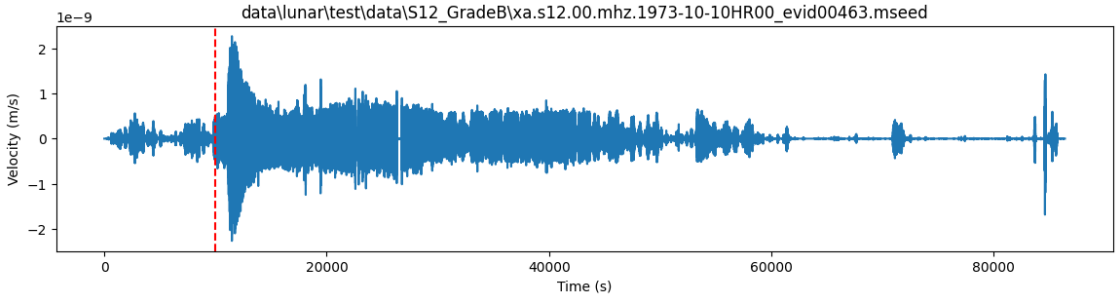
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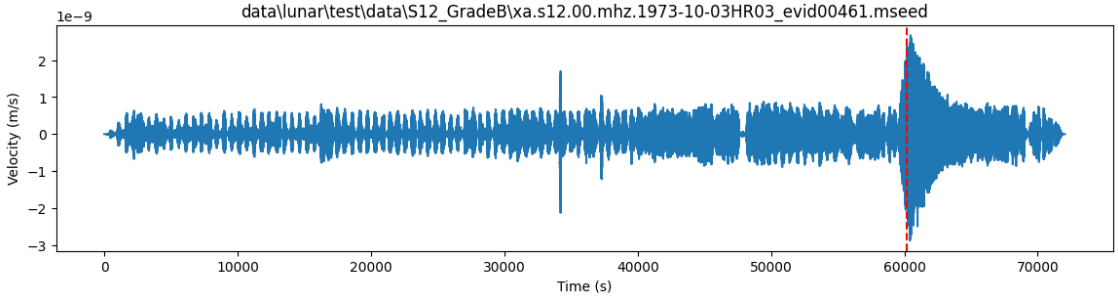
Time (s)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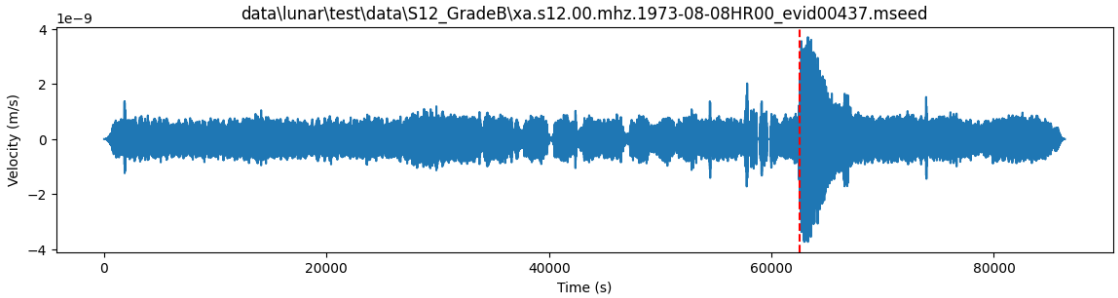
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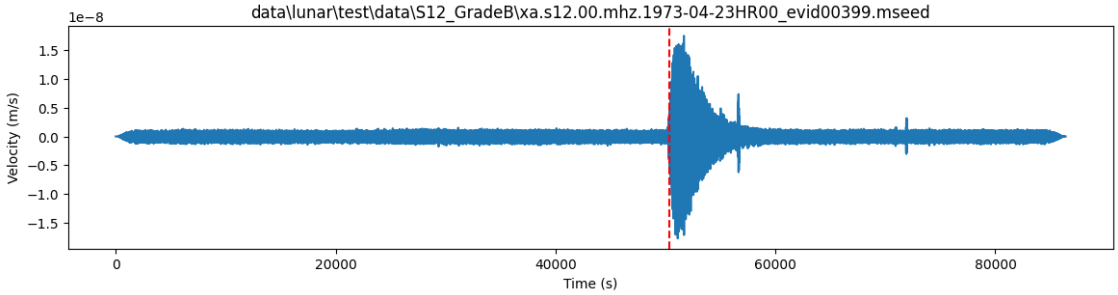
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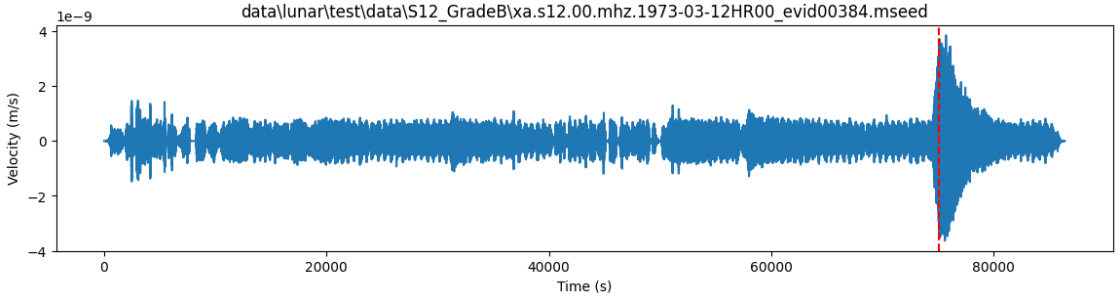
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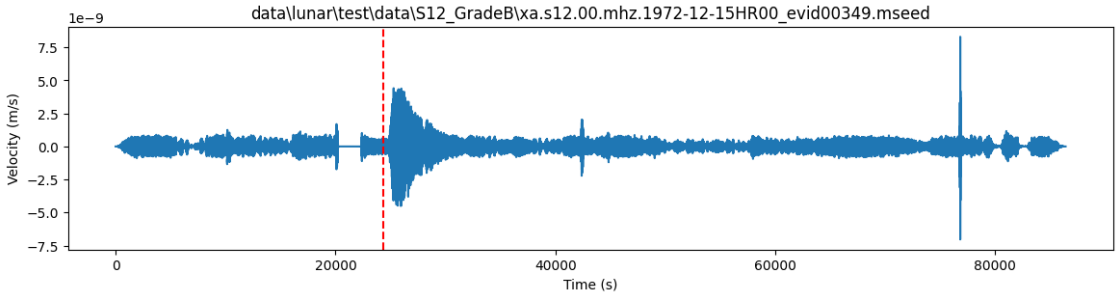
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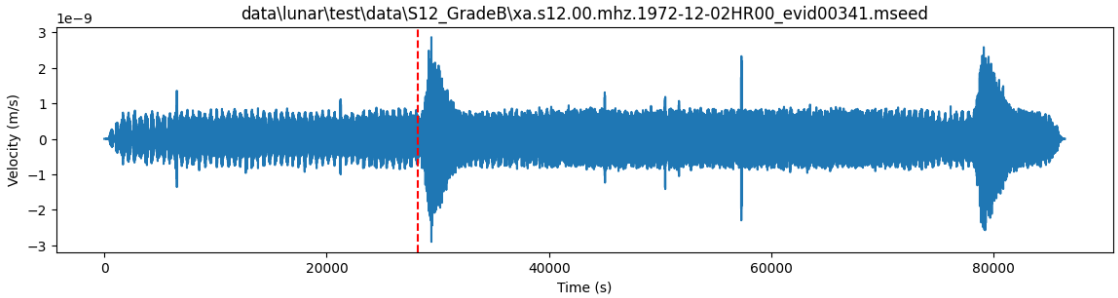
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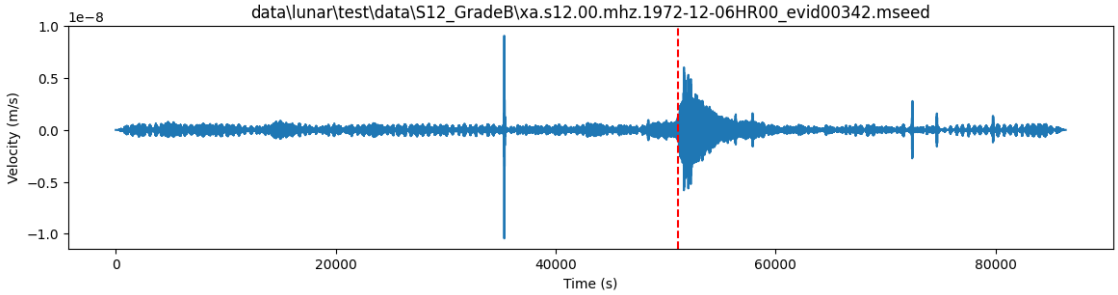
Time (s)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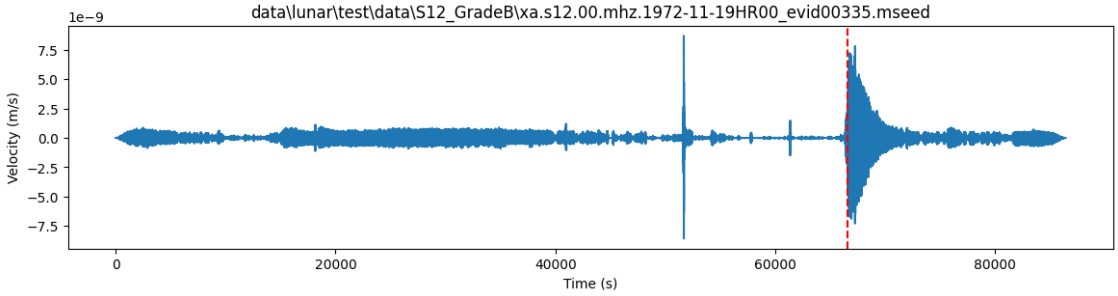
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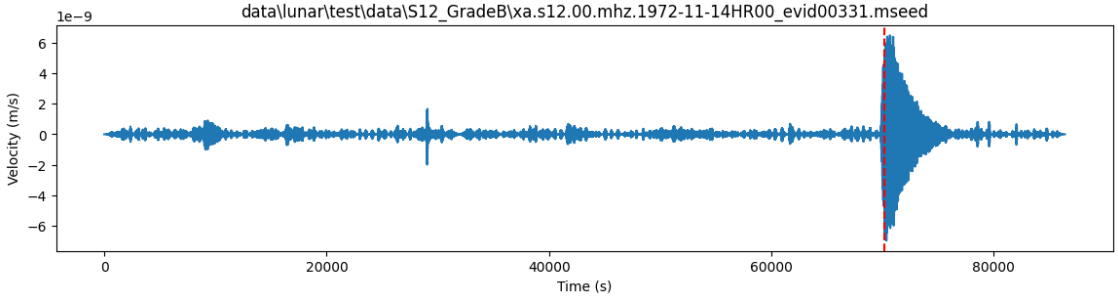
Velocity (m/s)
Time (s)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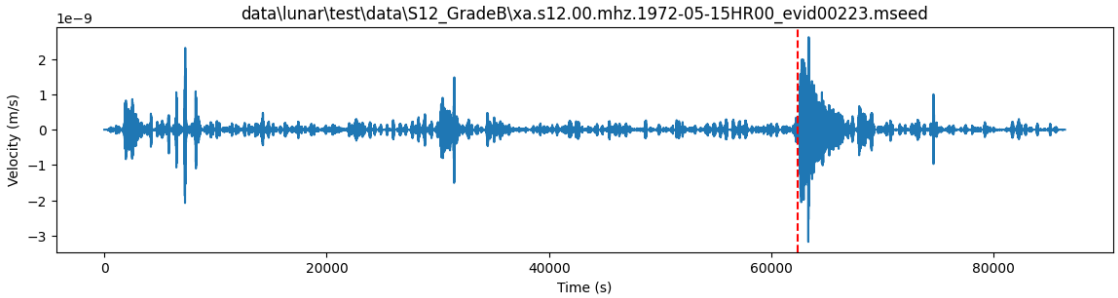
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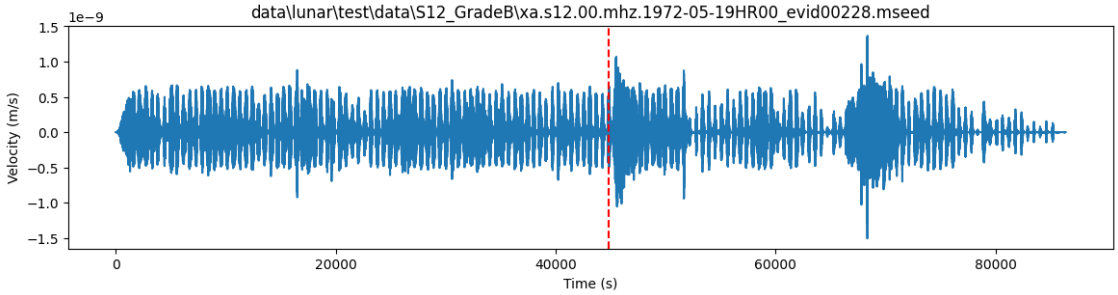
Time (s)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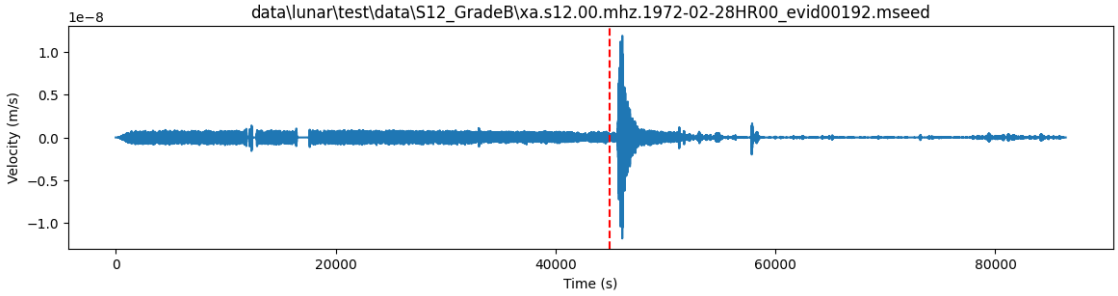
Time (s)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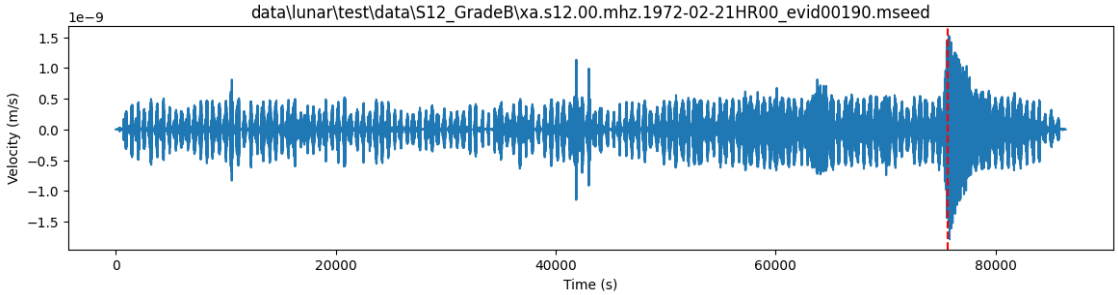
Time (s)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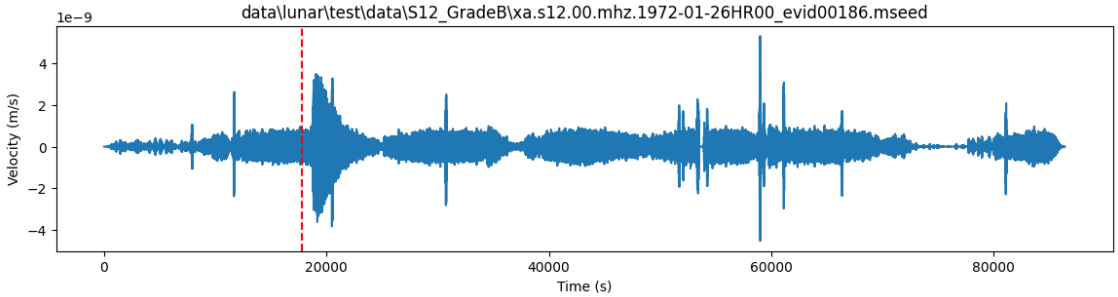
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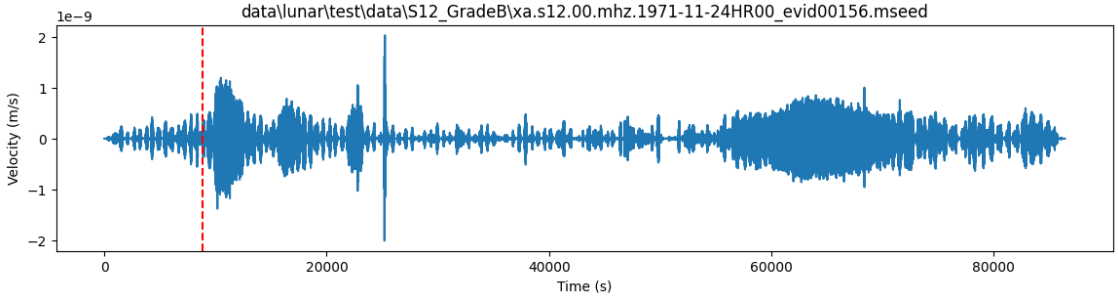
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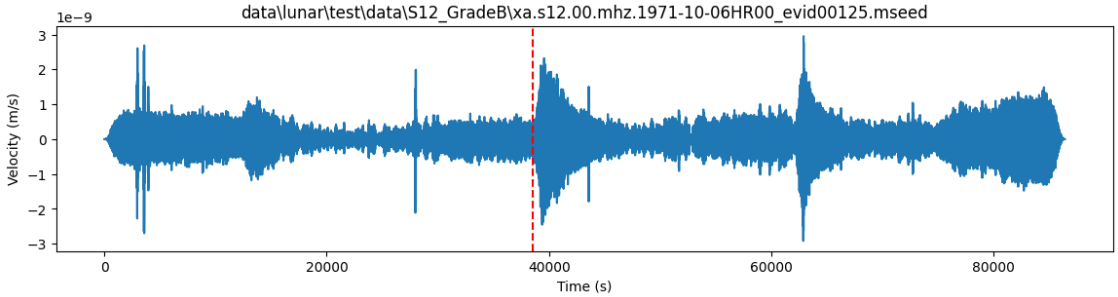
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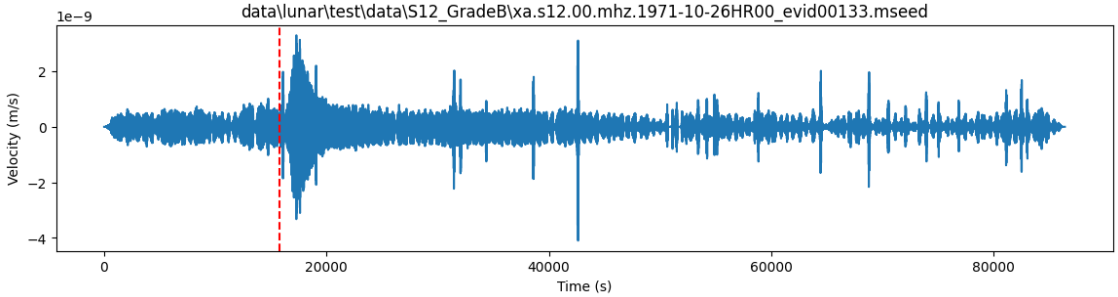
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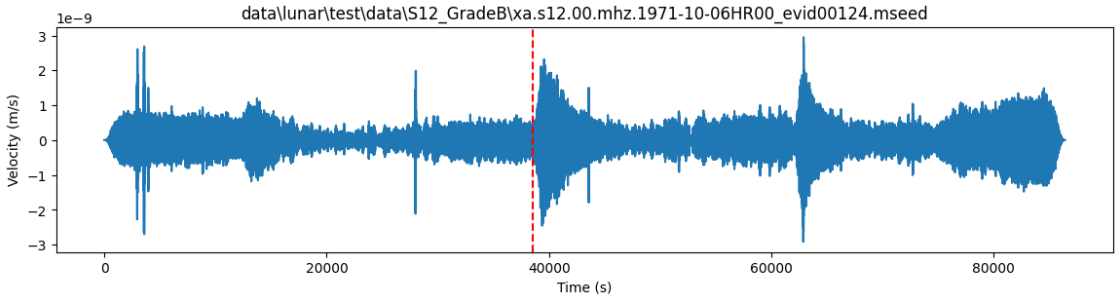
Time (s)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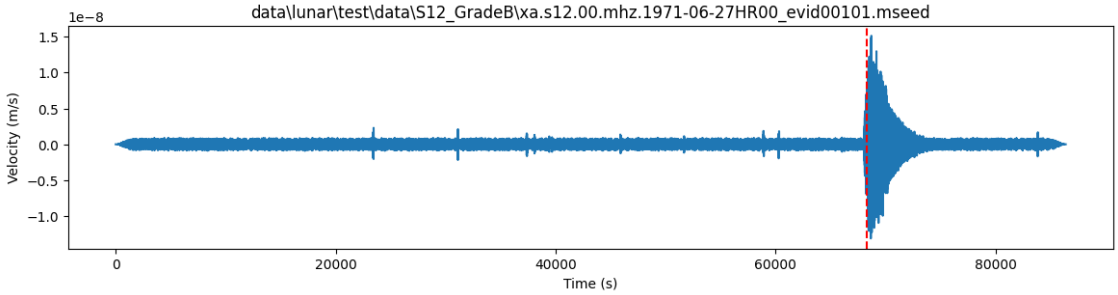
Time (s)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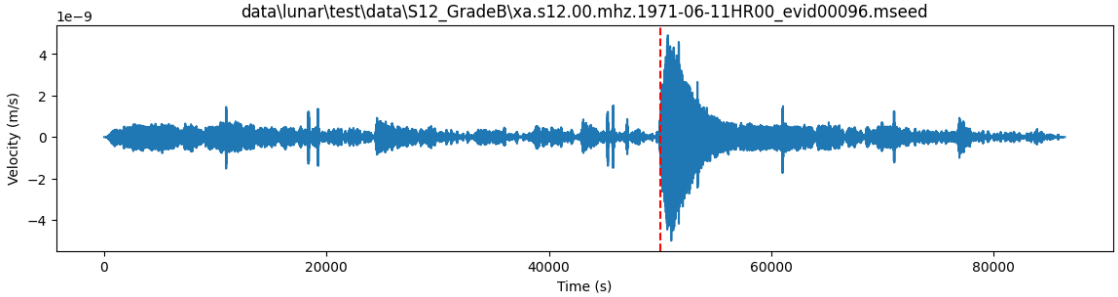
Time (s)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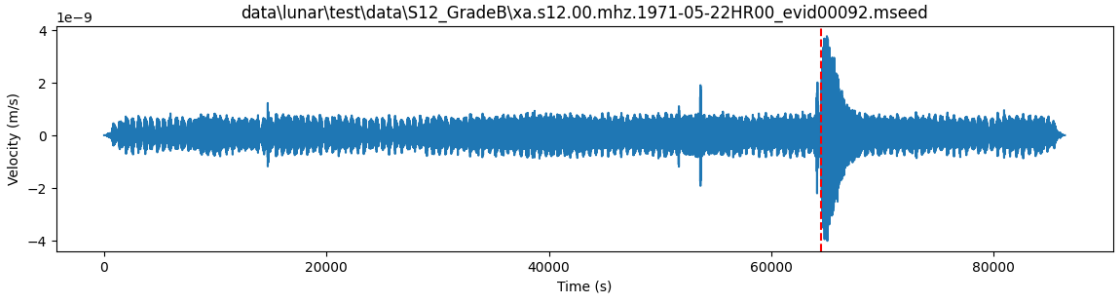
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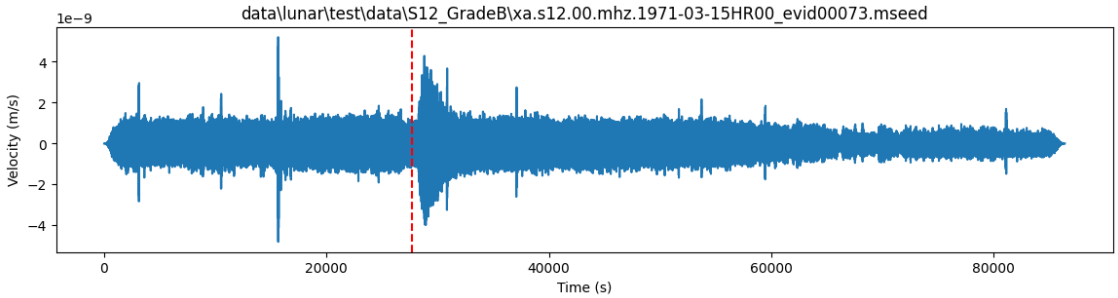
Time (s)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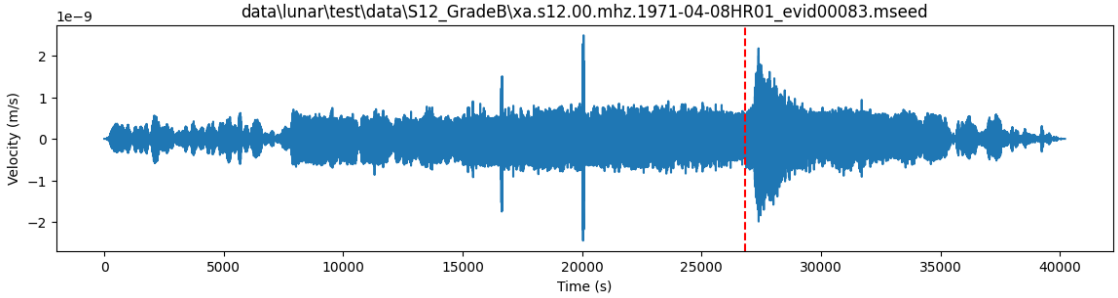
Velocity (m/s)
Time (s)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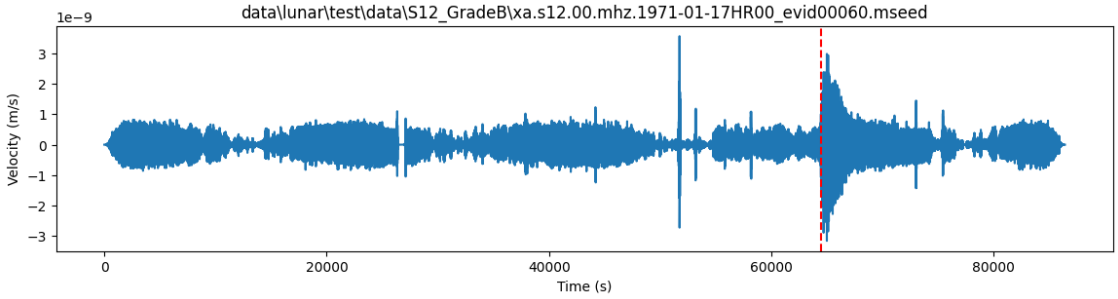
Velocity (m/s)
Time (s)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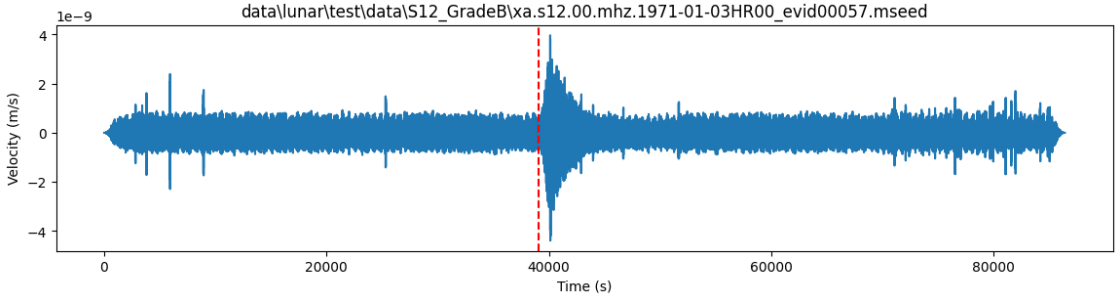
Time (s)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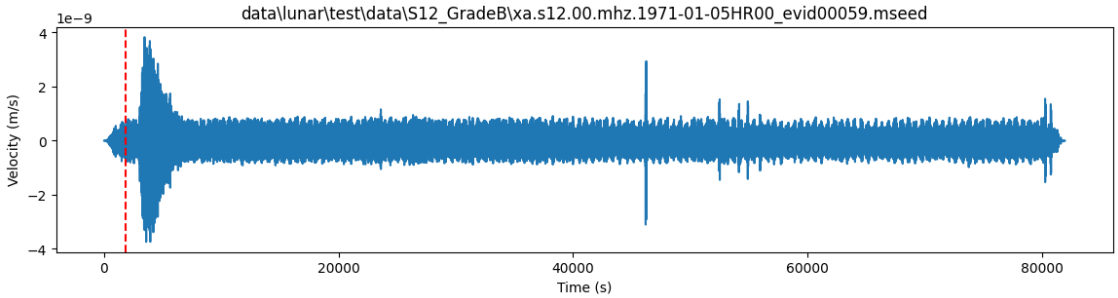
Time (s)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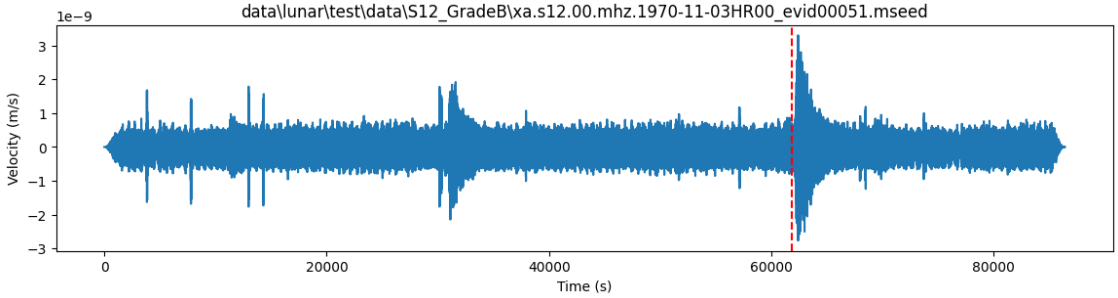
Velocity (m/s)
Time (s)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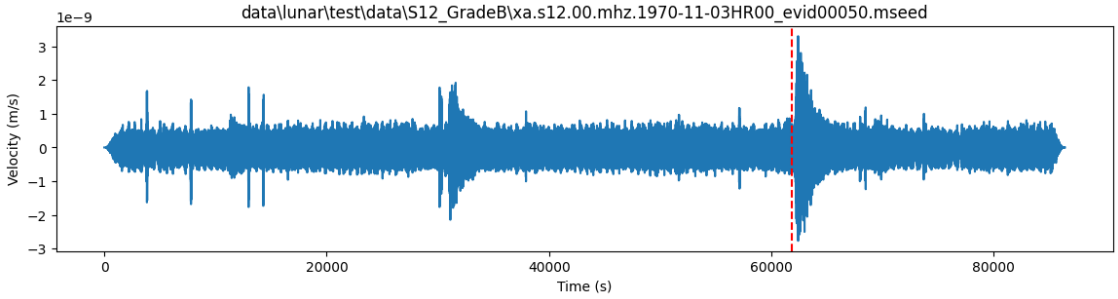
Velocity (m/s)
Time (s)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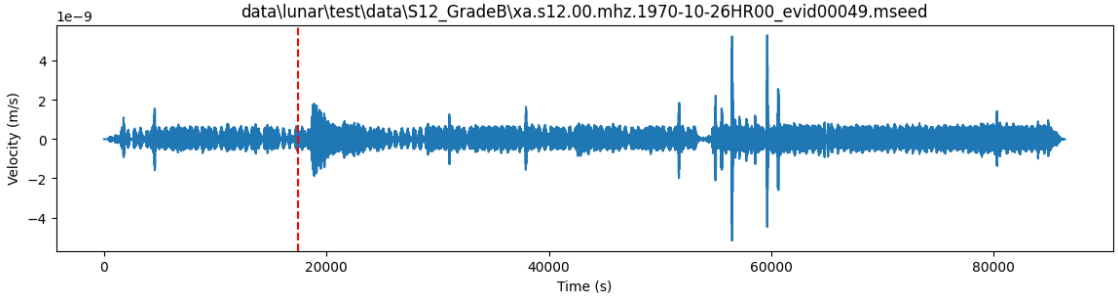
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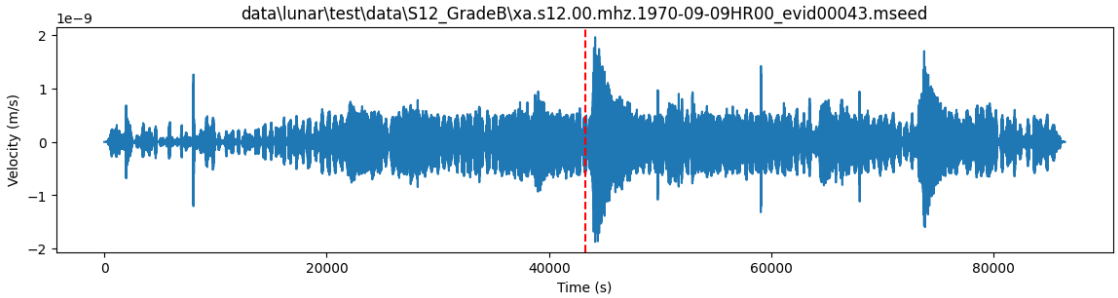
Velocity (m/s)
Time (s)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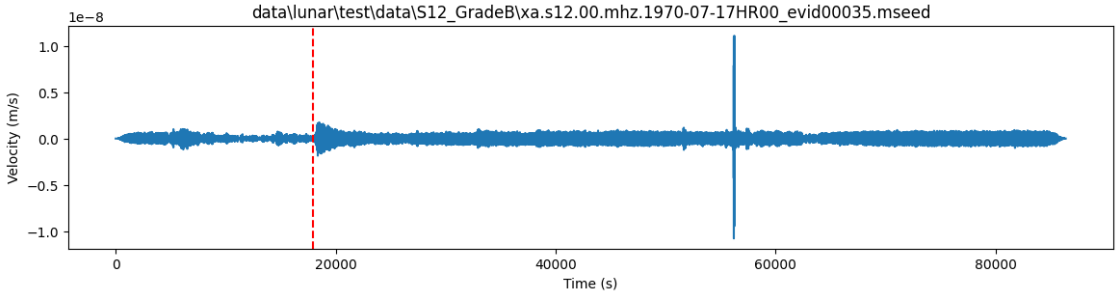
Time (s)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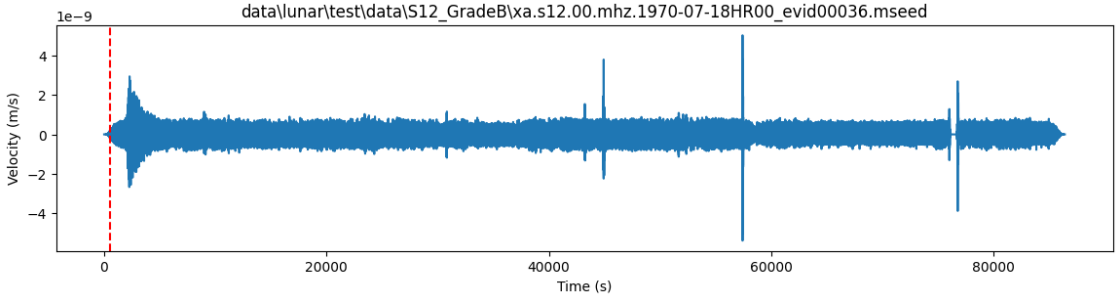
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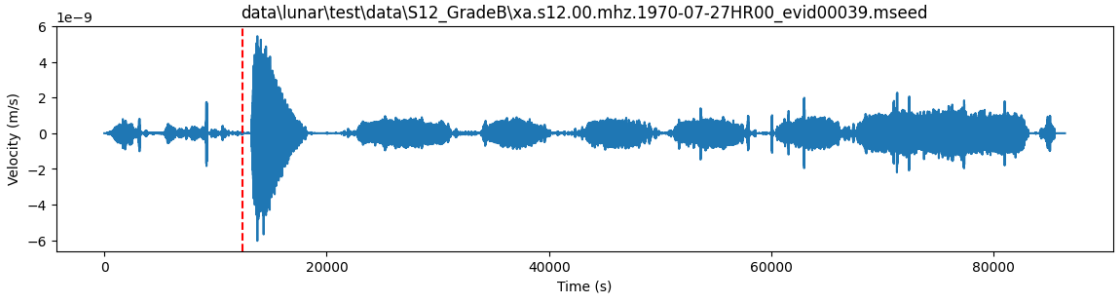
Time (s)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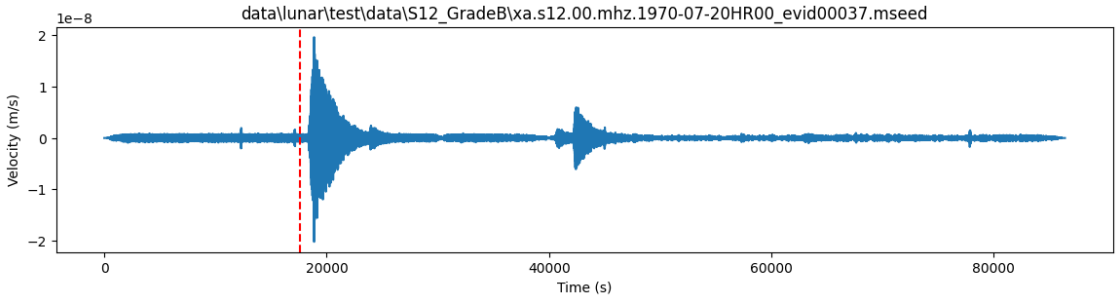
Time (s)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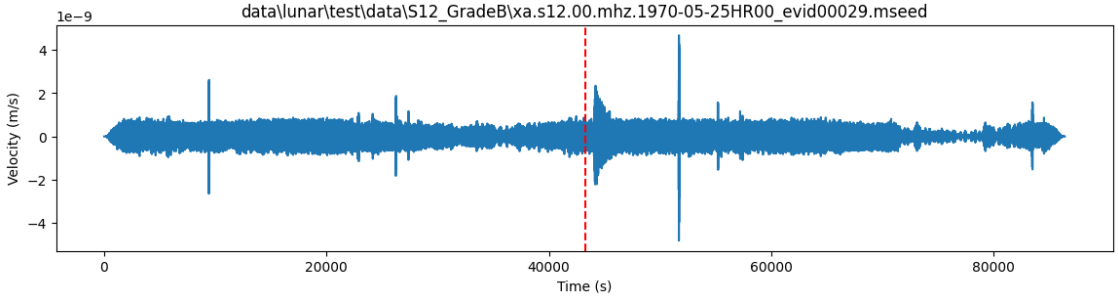
Velocity (m/s)
Time (s)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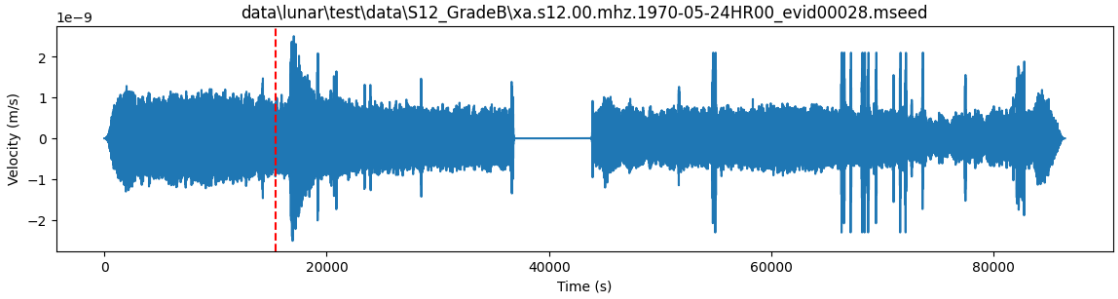
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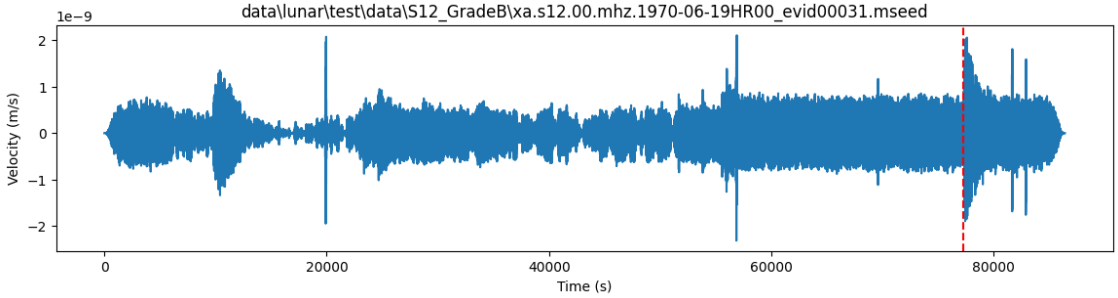
Time (s)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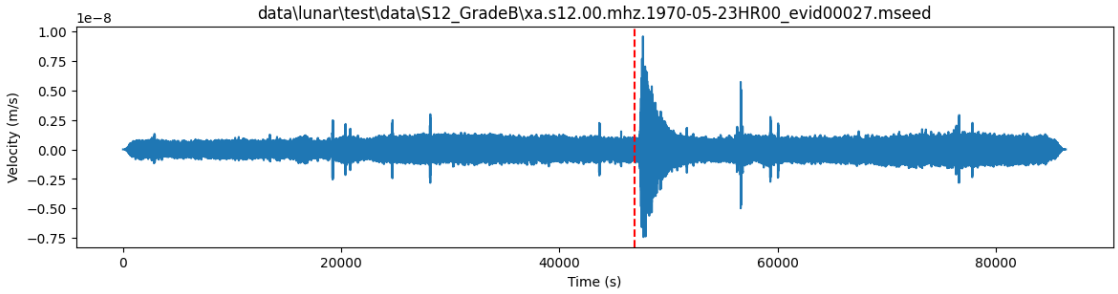
Time (s)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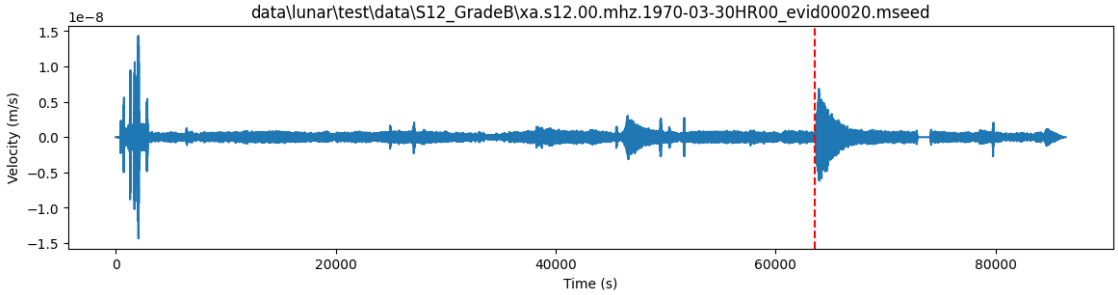
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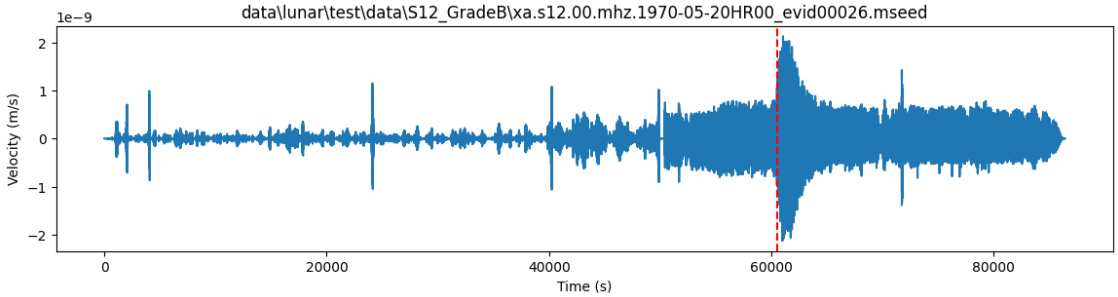
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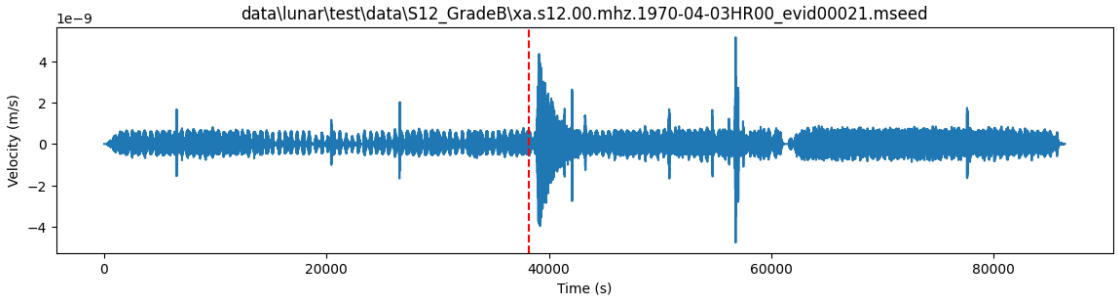
Time (s)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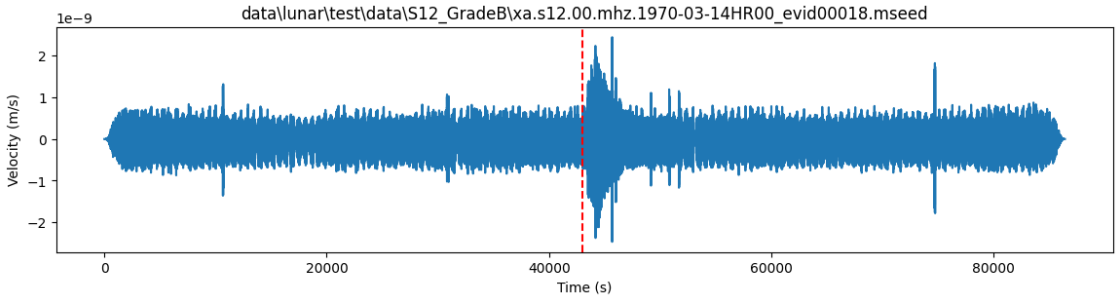
Time (s)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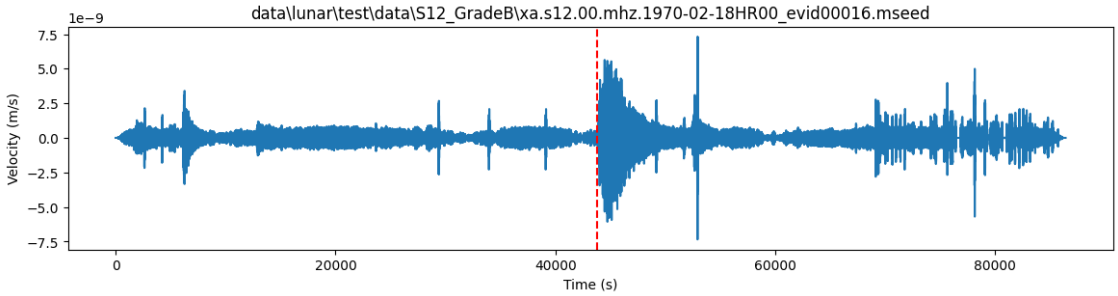
Time (s)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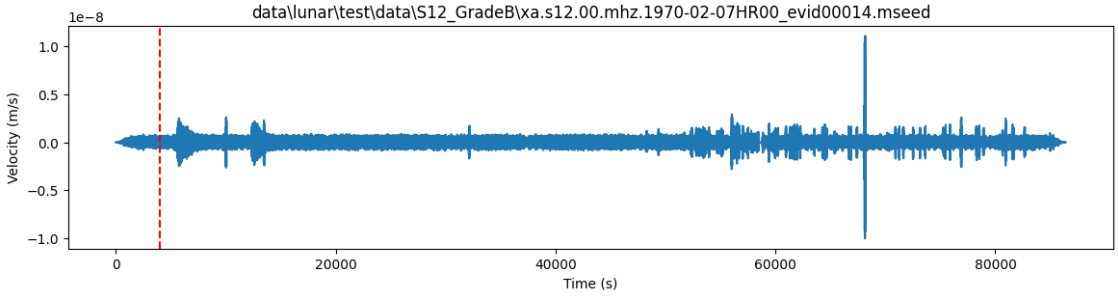
Velocity (m/s)
Time (s)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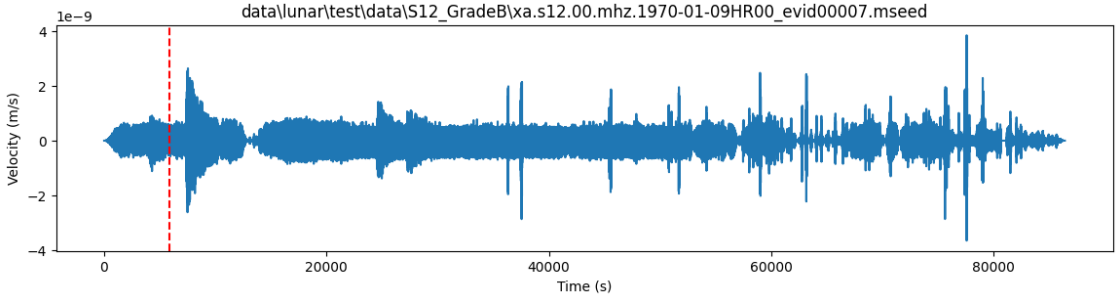
Time (s)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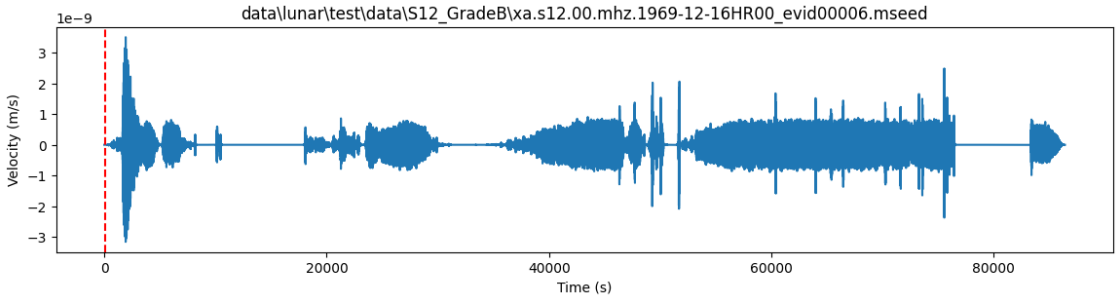
Velocity (m/s)
Time (s)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