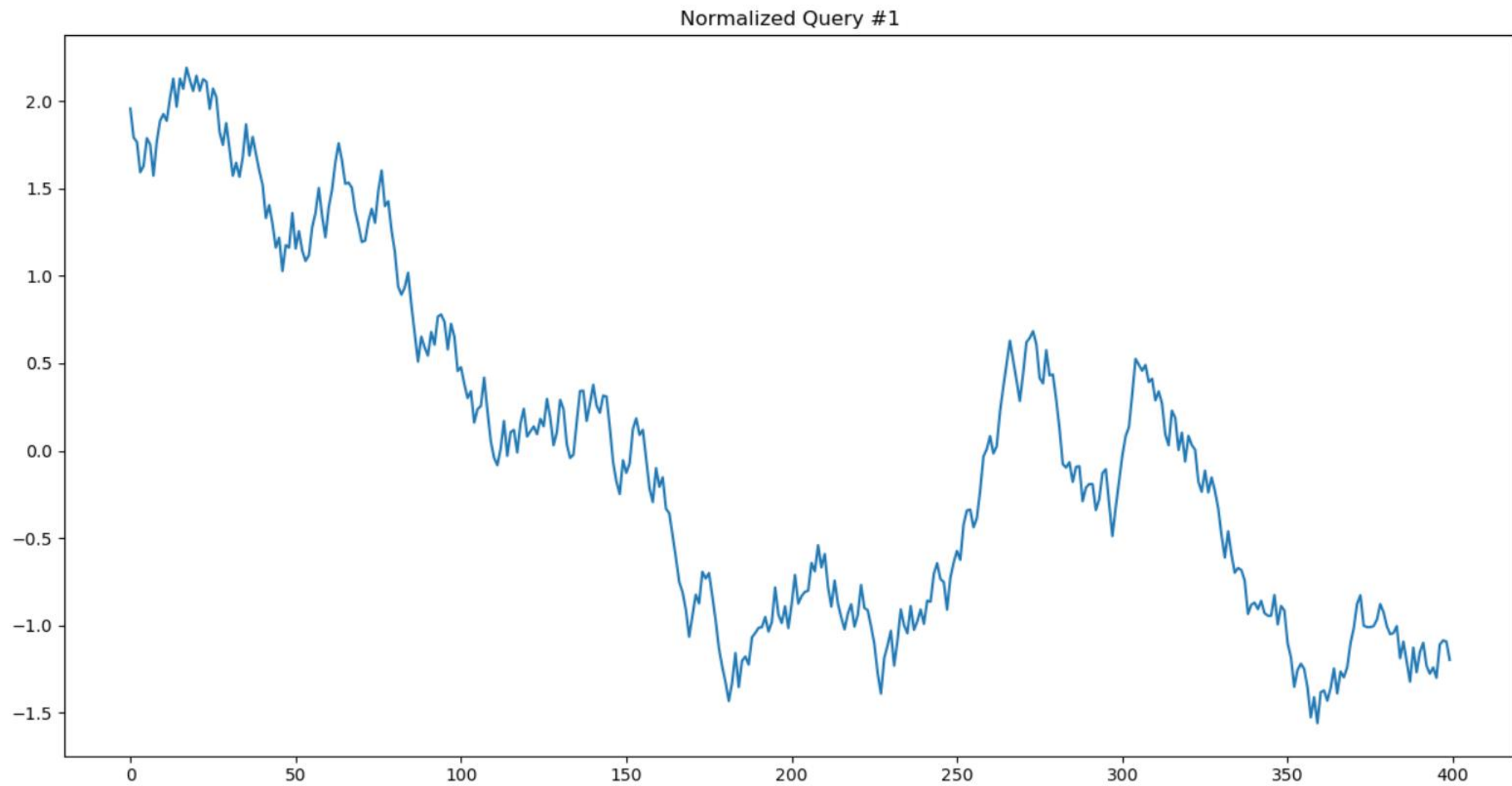
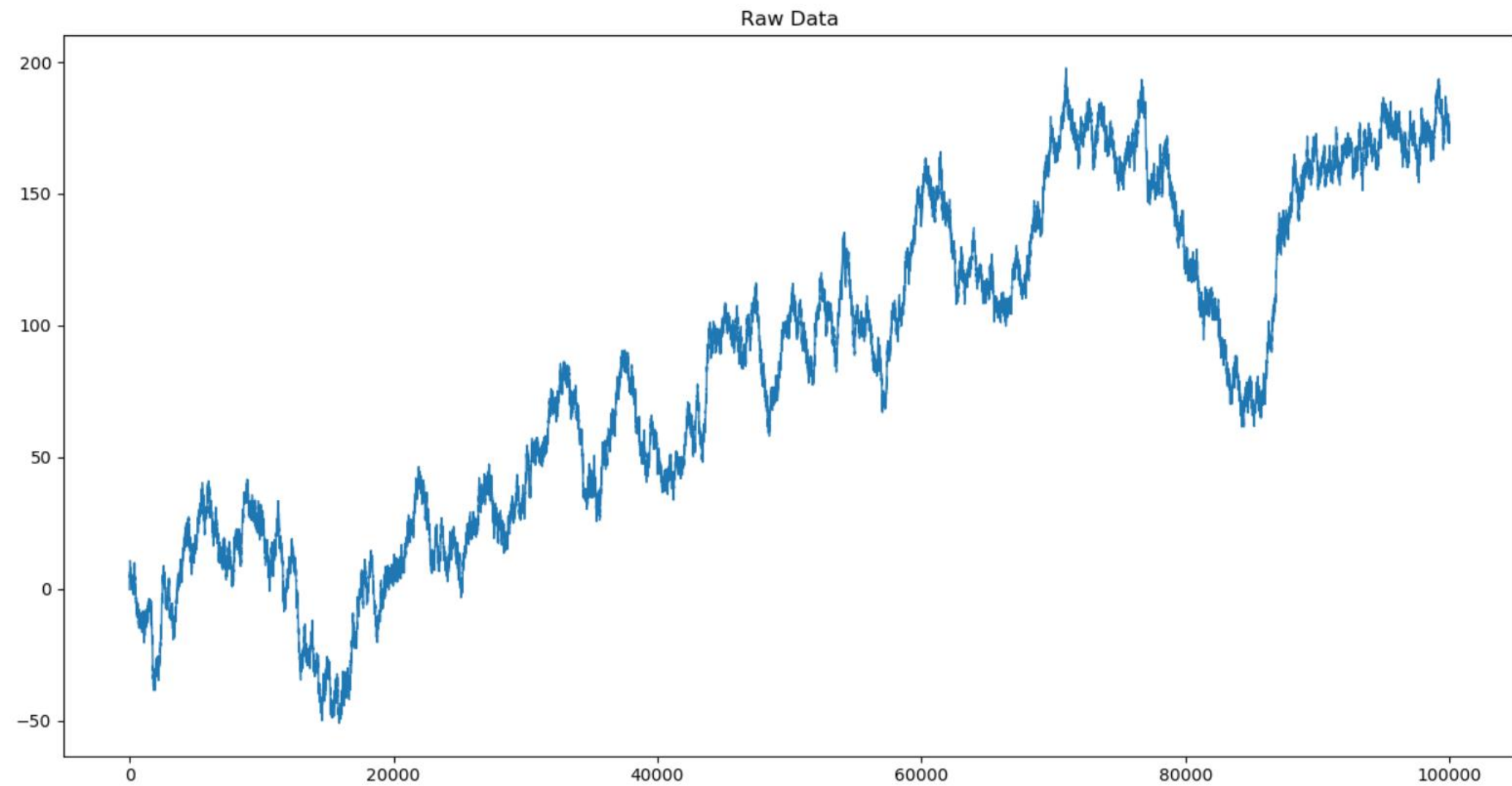


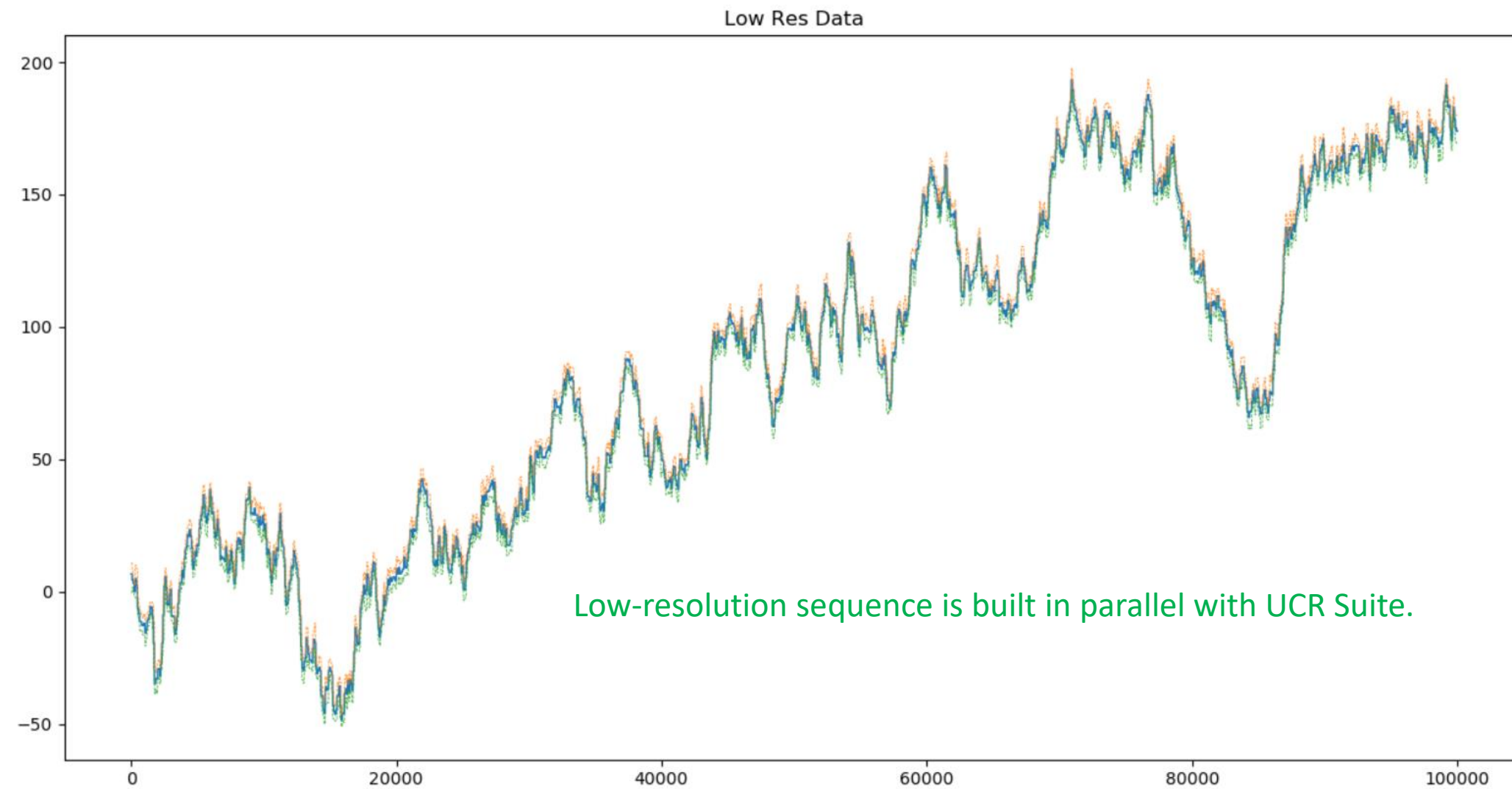
Demonstration

Query #1, length = 400

1st Query: Build low-resolution dataset







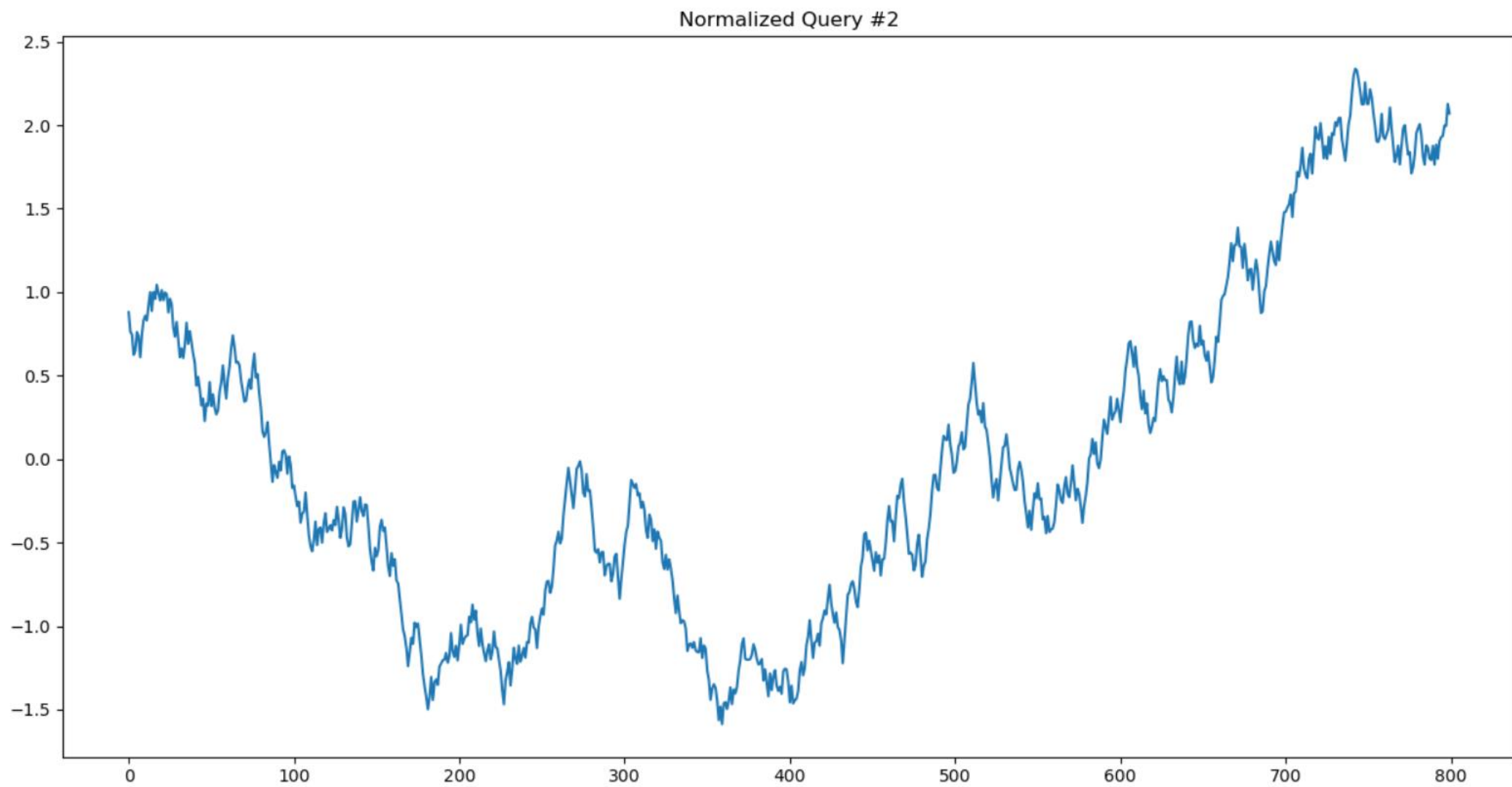
```
C:\Development\LowResED>MultiQ_ED_LowRes.py
..... Tue May 5 01:09:07 2020 start loading data .....
..... Tue May 5 01:09:07 2020 finish loading data .....
query mean = -9.891938955495885
query std = 4.8780370288604855
query len = 400
best-so-far = inf
kNN neighbor = 3
Please Enter to run similarity search by UCR_ED
..... Tue May 5 01:09:30 2020 start running UCR_ED .....
..... Tue May 5 01:09:31 2020 finish running UCR_ED .....
Processing time: 0.9794135093688965
Prune by LB_LowResED: N/A
kNN:
[[54.97412721339357, 61425], [55.119463023532234, 61426], [55.13129056279767, 61424]]
```

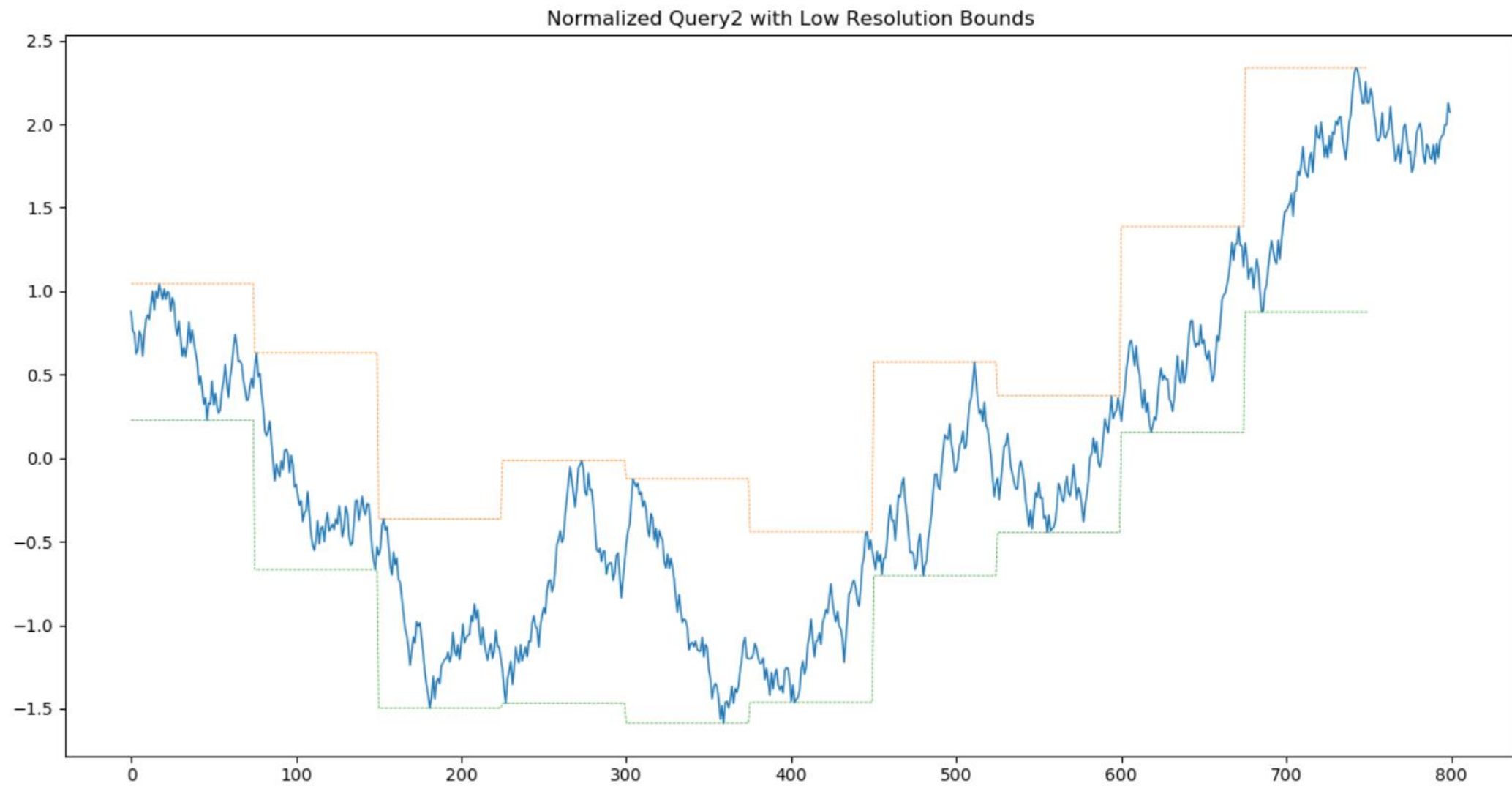
Unmodified UCR Suite for 1st query. No subsequences are pruned by *LB_LowResED*

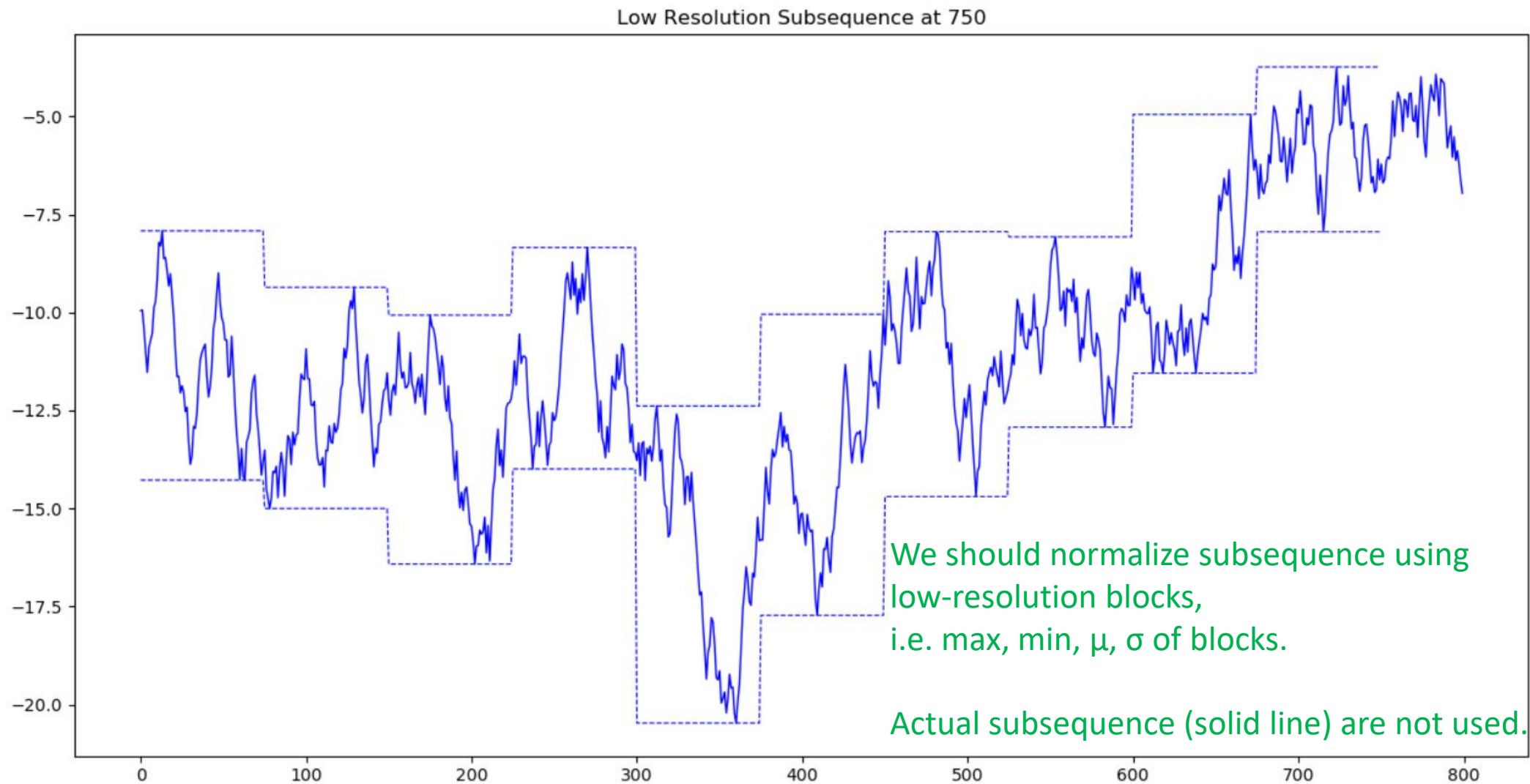
Query #2, length = 800

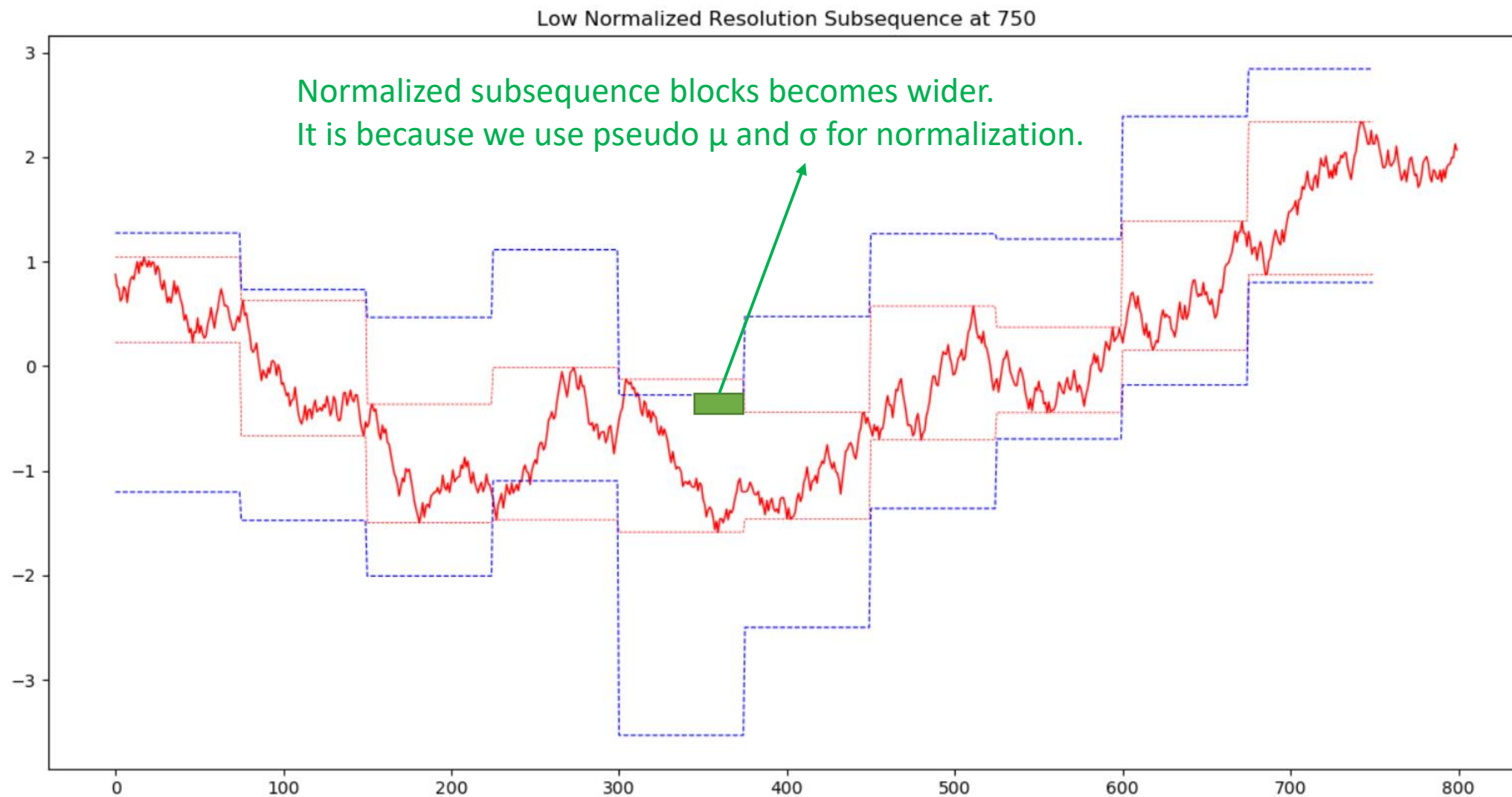
Block length = 75

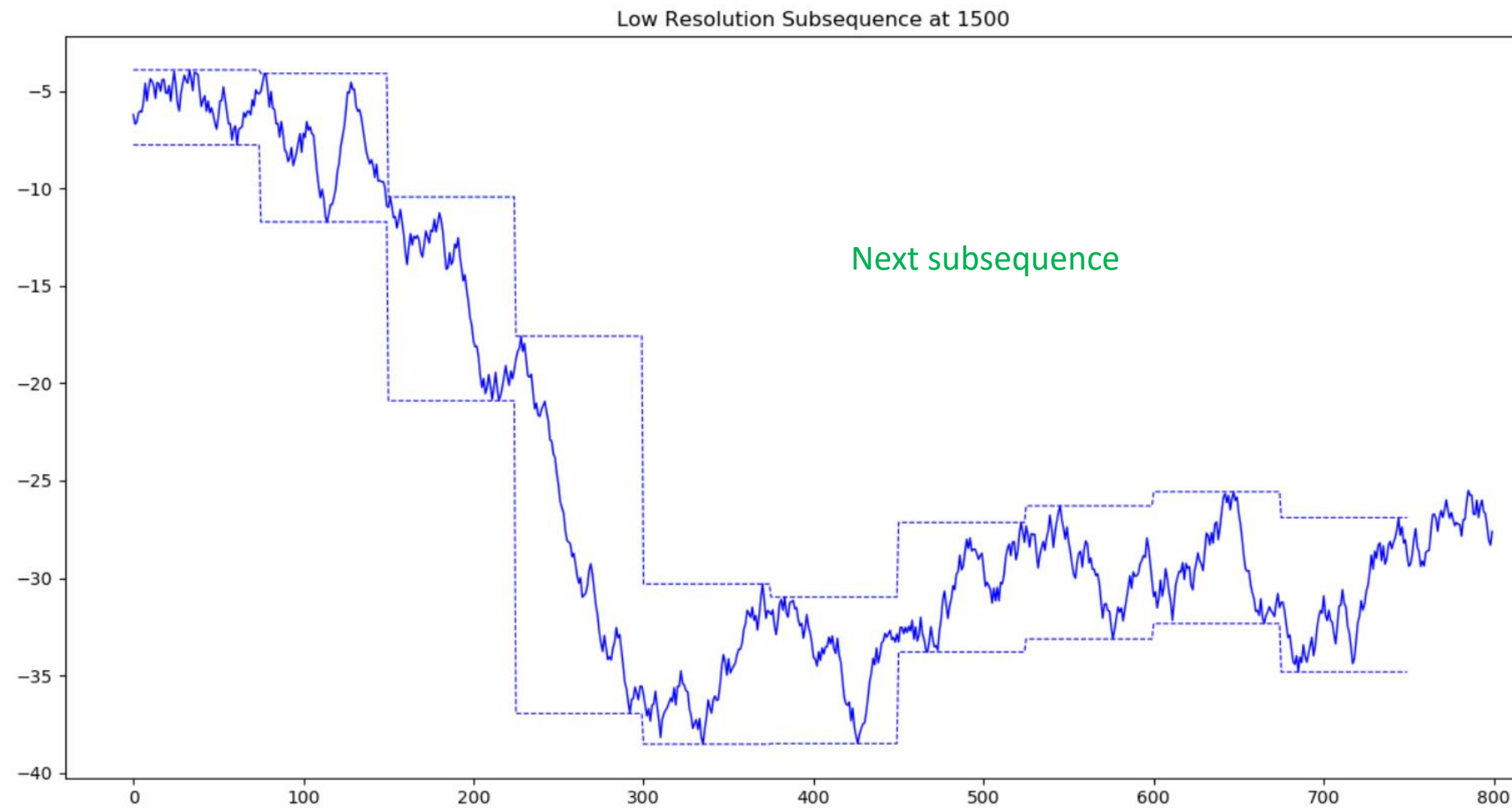
Total 10 blocks

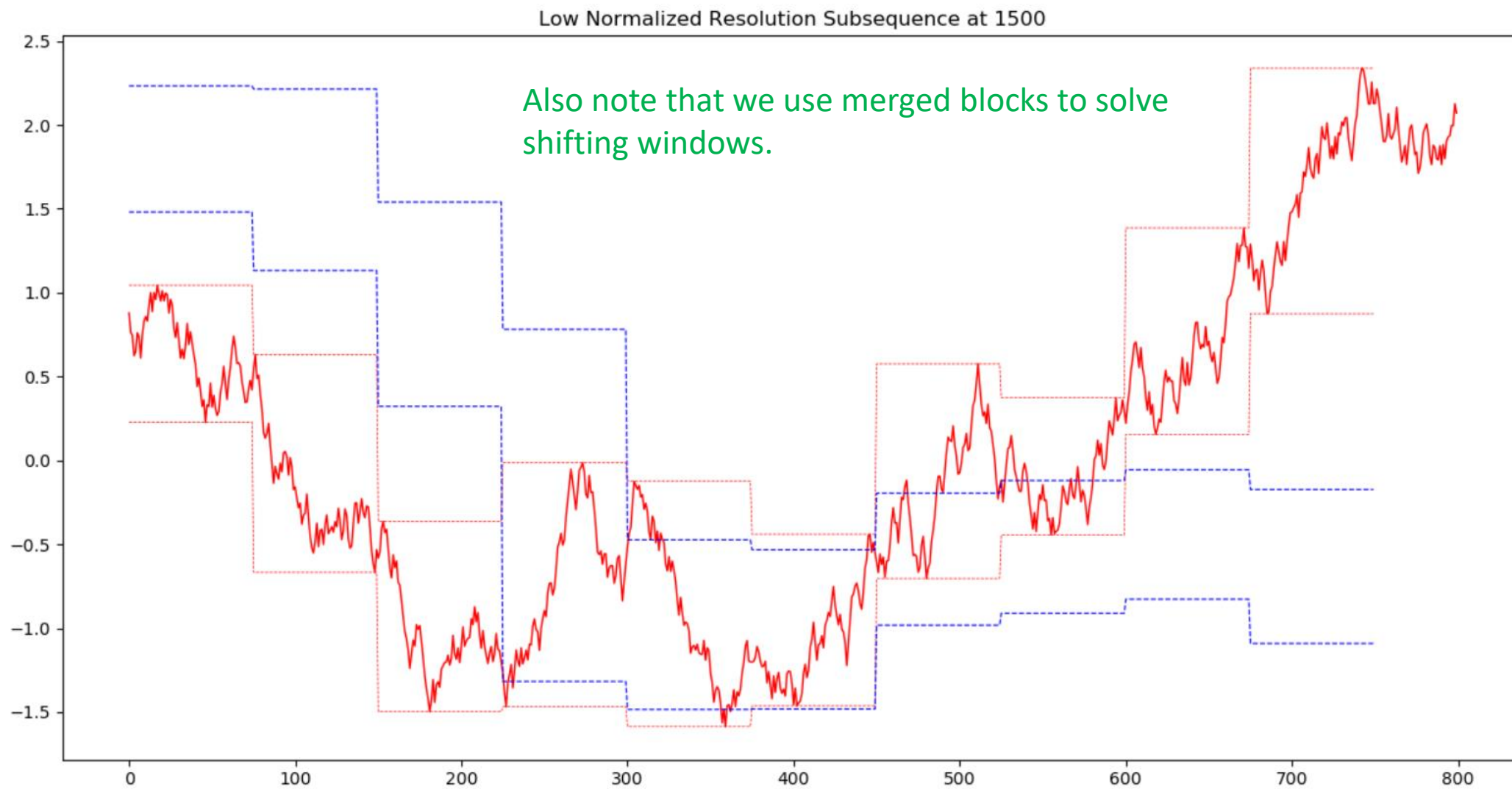


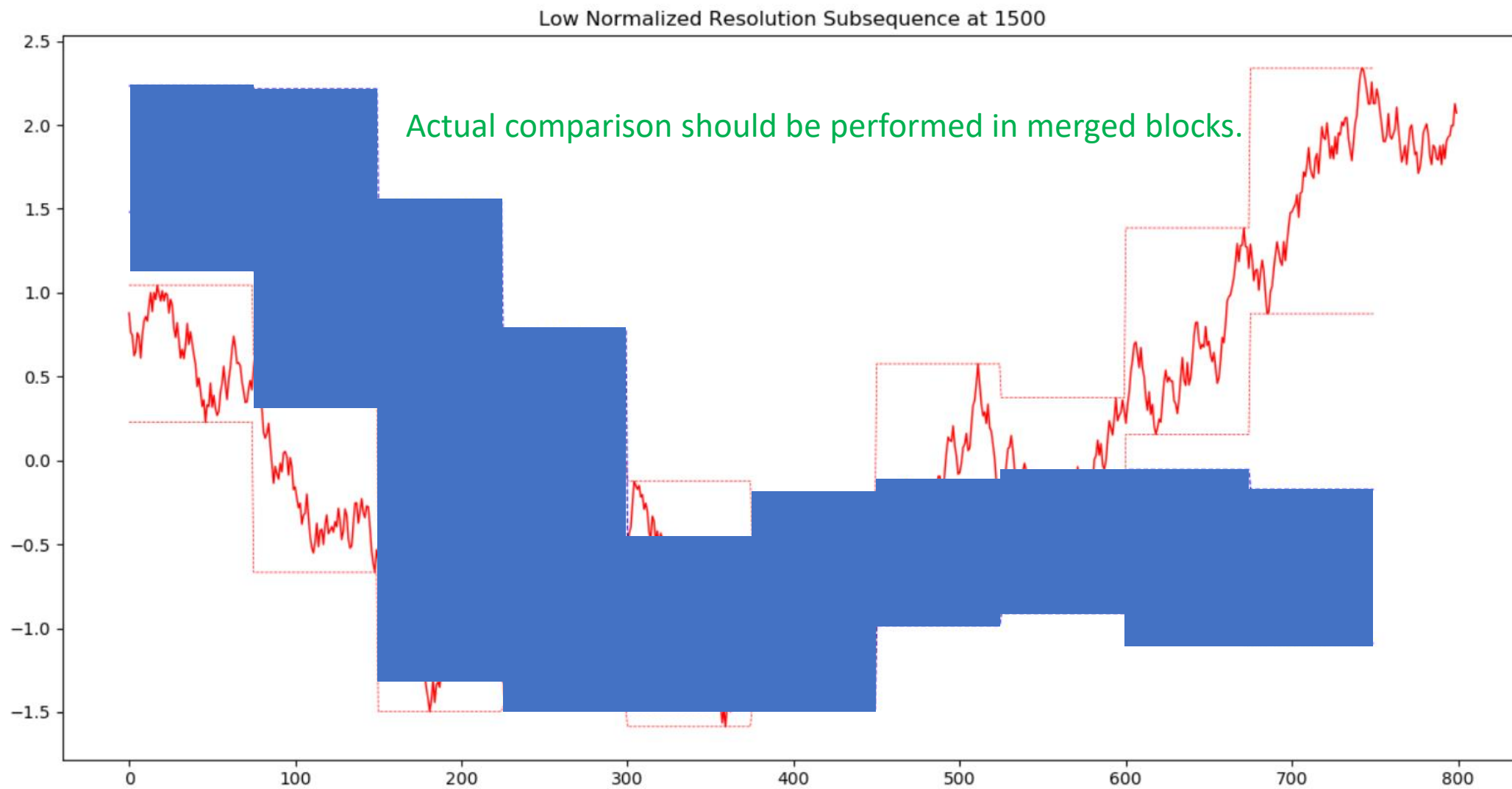


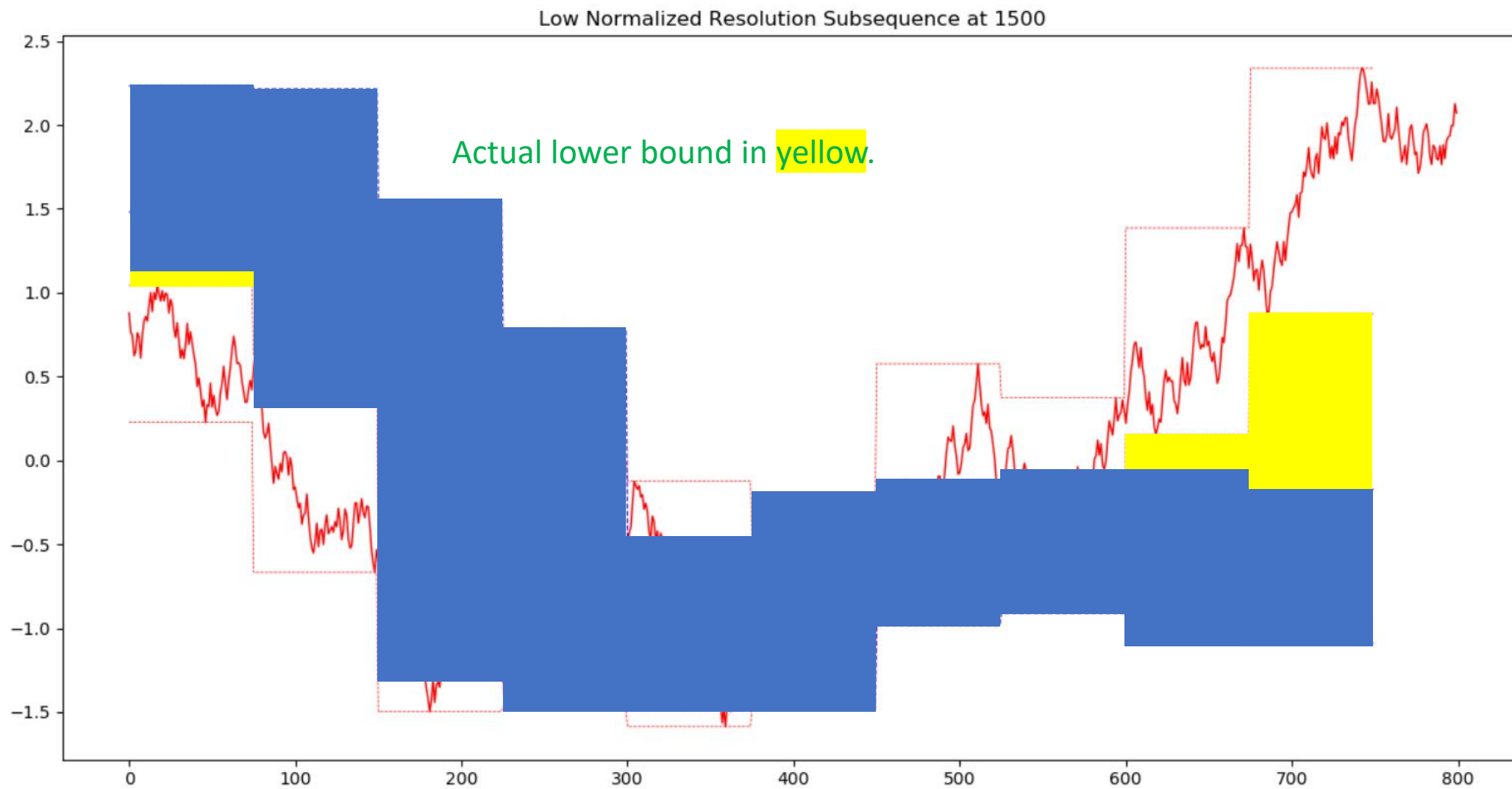












```
C:\Development\LowResED>MultiQ_ED_LowRes.py
..... Tue May 5 01:09:07 2020 start loading data .....
..... Tue May 5 01:09:07 2020 finish loading data .....
query mean = -9.891938955495885
query std = 4.8780370288604855
query len = 400
best-so-far = inf
kNN neighbor = 3
Please Enter to run similarity search by UCR_ED
..... Tue May 5 01:09:30 2020 start running UCR_ED .....
..... Tue May 5 01:09:31 2020 finish running UCR_ED .....
..... Processing time: 0.9794135093688965
Prune by LB_LowResED: N/A
kNN:
[[54.97412721339357, 61425], [55.119463023532234, 61426], [55.13129056279767, 61424]]

query mean = -6.46172940822874
query std = 6.9536915923116975
query len = 800
best-so-far = inf
kNN neighbor = 3
Please Enter to run similarity search by UCR_ED
..... Tue May 5 01:12:23 2020 start running UCR_ED .....
..... Tue May 5 01:19:29 2020 finish running UCR_ED .....
..... Processing time: 426.1598732471466
Prune by LB_LowResED: 0.00225
kNN:
[[84.01893436315038, 43035], [84.10723981334381, 43034], [84.17486118627806, 43036]]
```

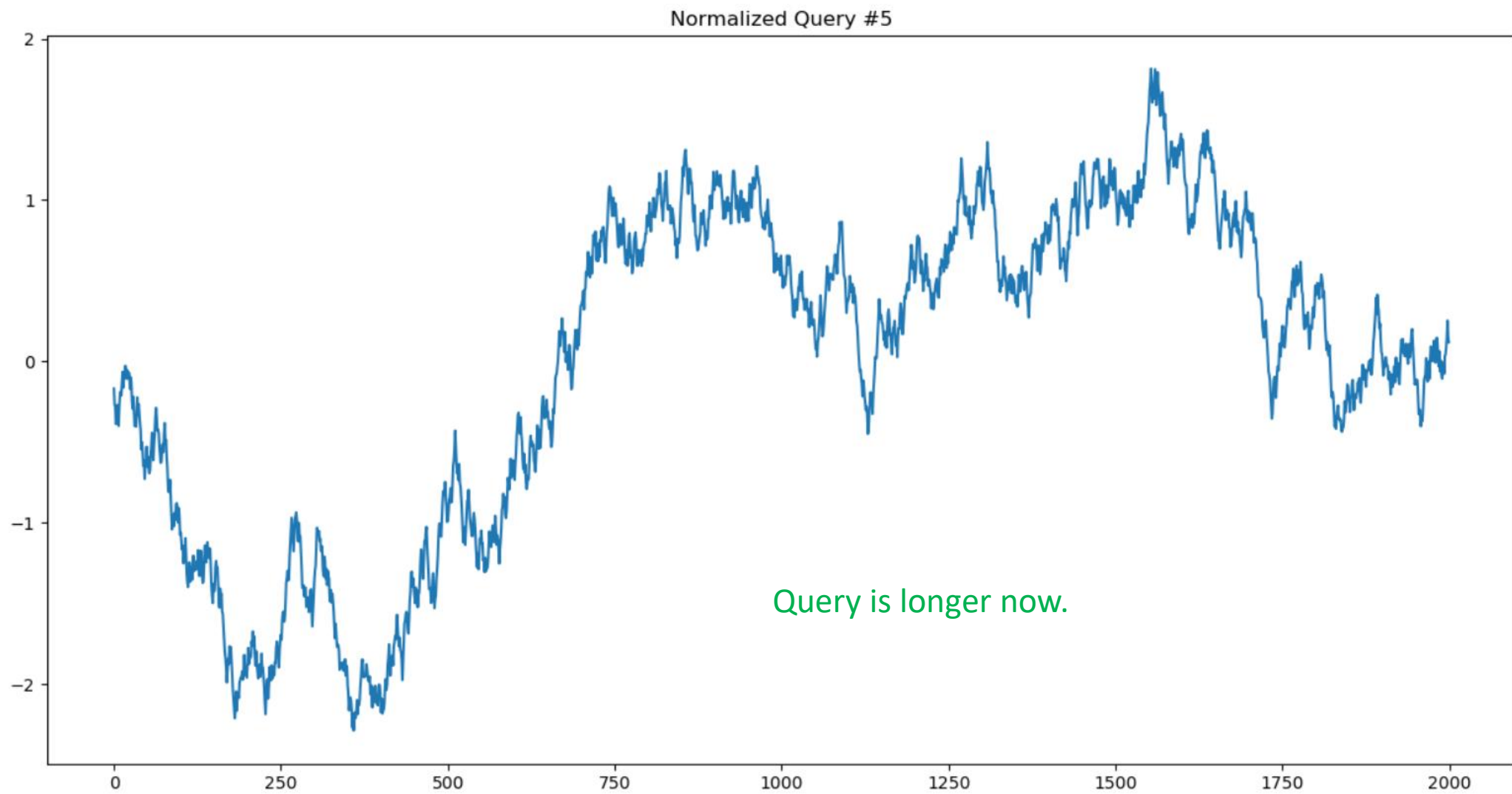
Pruning ability is very weak for short query, and relatively wide blocks.

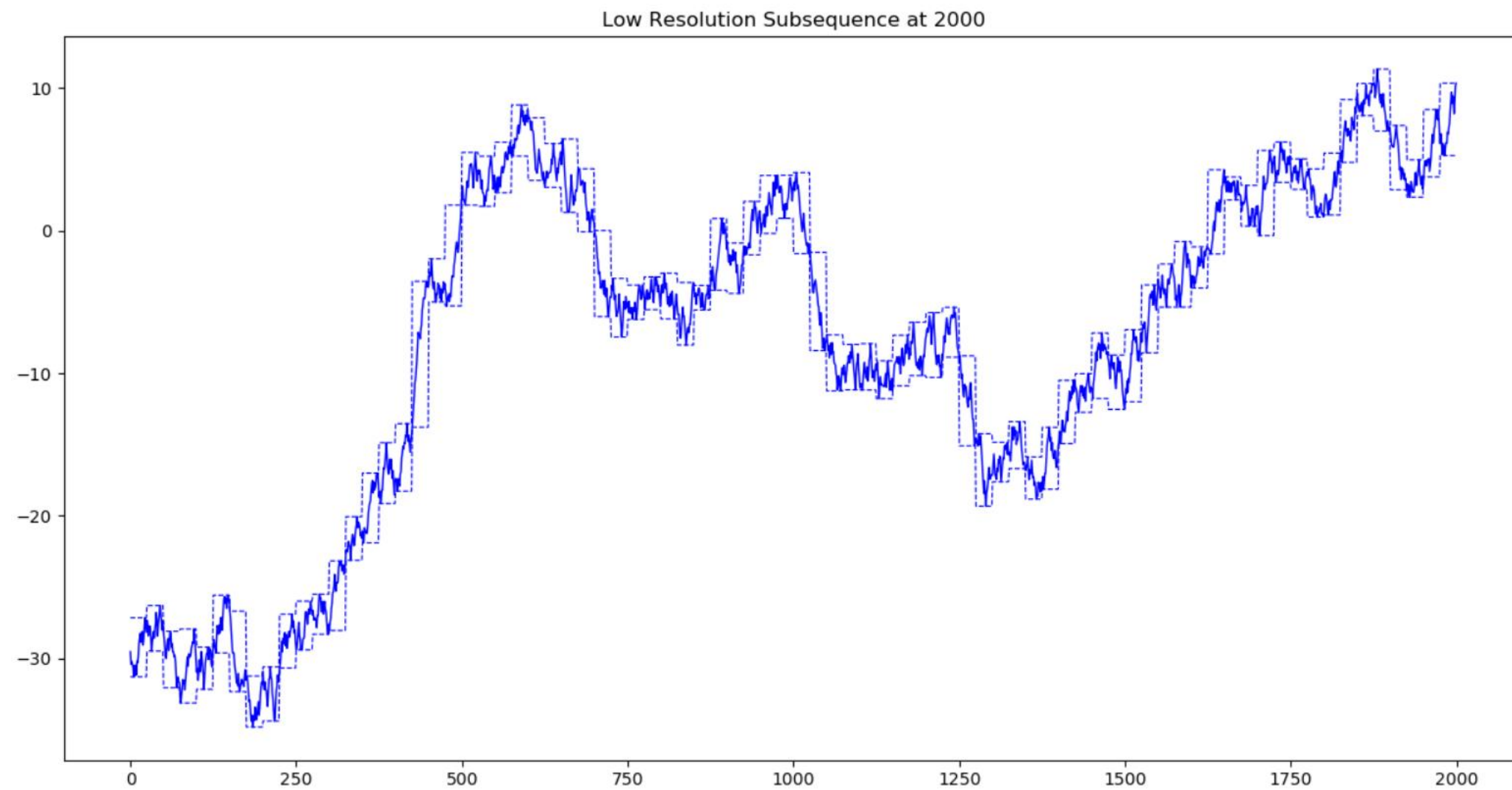
Query #5, length = 2,000

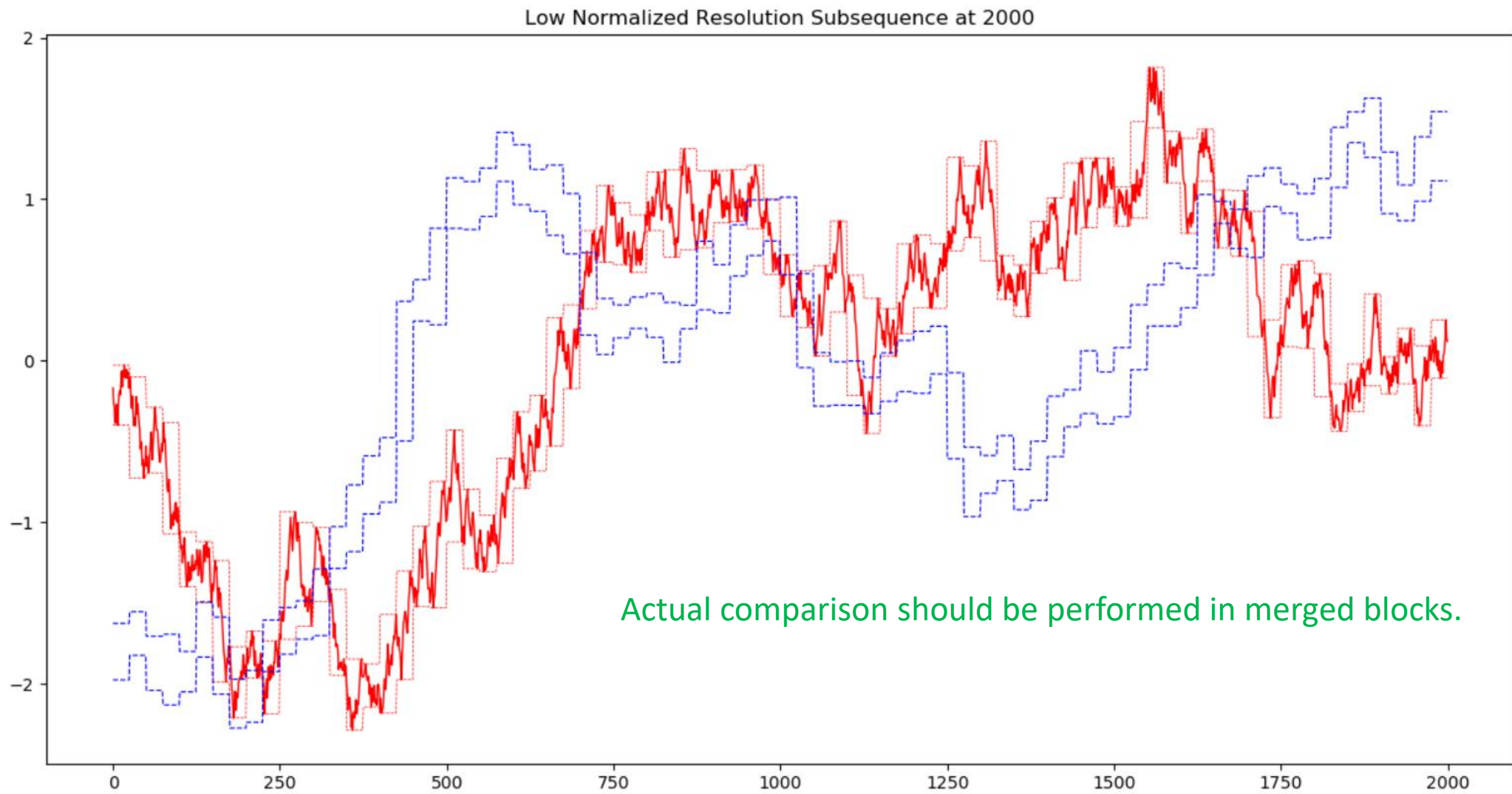
Block length = 75

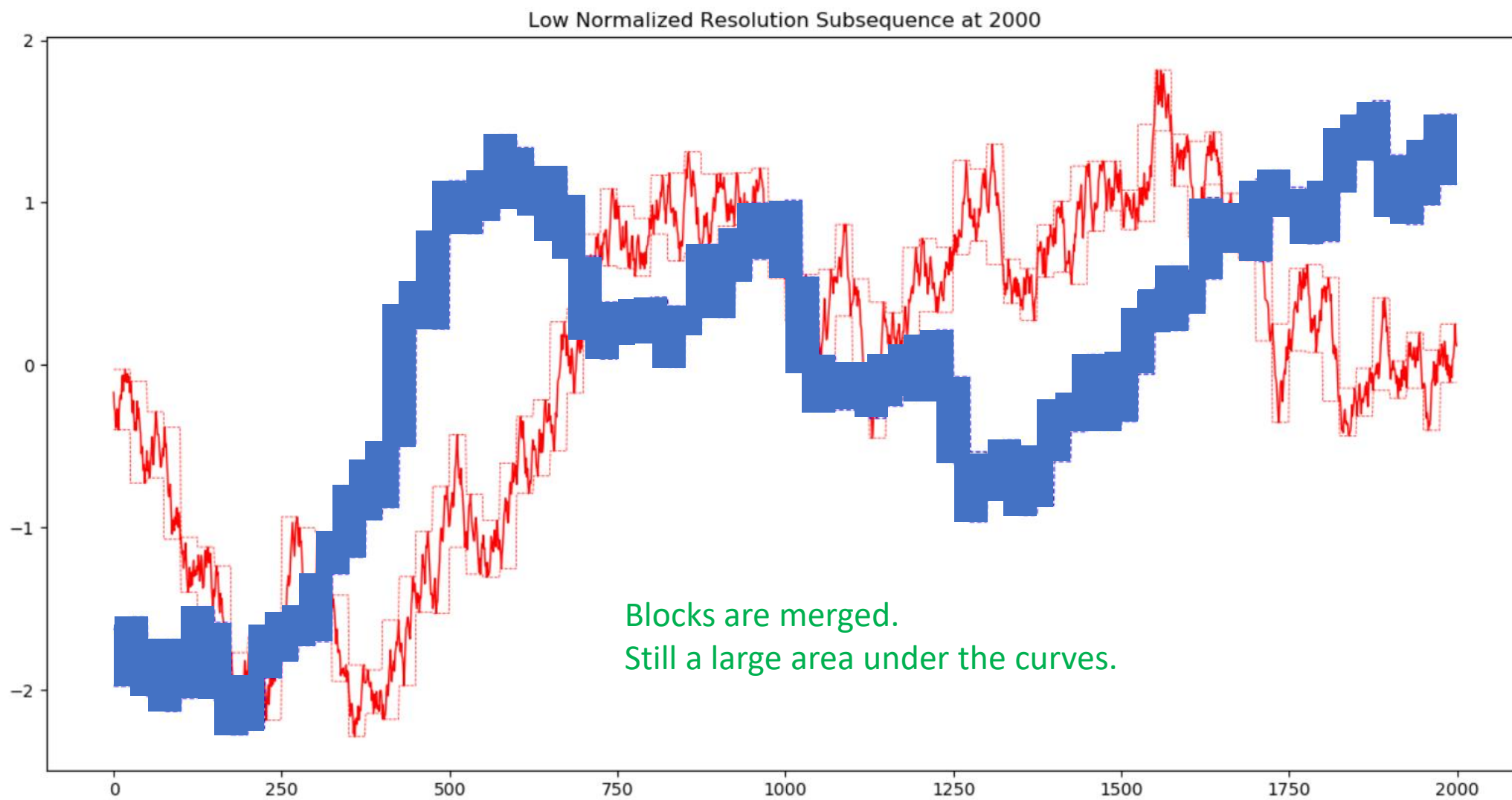
Total 80 blocks

Same query, difference subsequence with narrow blocks.









```
kNN:  
[[84.01893436314597, 43035], [84.10723981333918, 43034], [84.17486118627399, 43036]]
```

```
query mean = -2.277235434778781  
query std = 8.39731426138627  
query len = 1200  
best-so-far = inf  
kNN neighbor = 3  
Please Enter to run similarity search by UCR_ED  
..... Tue May 5 02:07:46 2020 start running UCR_ED .....  
..... Tue May 5 02:07:54 2020 finish running UCR_ED .....  
..... Processing time: 8.17048716545105  
Prune by LB_LowResED: 0.352
```

```
kNN:  
[[133.4619712346244, 43035], [133.51813542826872, 43034], [133.71833560536865, 43036]]
```

```
query mean = 0.38758497091682687  
query std = 8.717389243998893  
query len = 1600  
best-so-far = inf  
kNN neighbor = 3  
Please Enter to run similarity search by UCR_ED  
..... Tue May 5 02:08:00 2020 start running UCR_ED .....  
..... Tue May 5 02:08:11 2020 finish running UCR_ED .....  
..... Processing time: 10.924406051635742  
Prune by LB_LowResED: 0.52
```

```
kNN:  
[[165.84485716996733, 43034], [165.96628144026138, 43035], [166.03337972812363, 43033]]
```

```
query mean = 1.0169533080793909  
query std = 8.089830039878338  
query len = 2000  
best-so-far = inf  
kNN neighbor = 3  
Please Enter to run similarity search by UCR_ED  
..... Tue May 5 02:08:15 2020 start running UCR_ED .....  
..... Tue May 5 02:09:52 2020 finish running UCR_ED .....  
..... Processing time: 96.58126425743103  
Prune by LB_LowResED: 0.42
```

42% are pruned, which is good.

```
kNN:  
[[421.4467751853835, 4509], [421.463573044112, 4508], [421.7859078818495, 4507]]
```

```
> Total time for answering 5 query(s) is 123.92727541923523 seconds.
```

```
C:\Development\LowResED>
```