Salinity coef

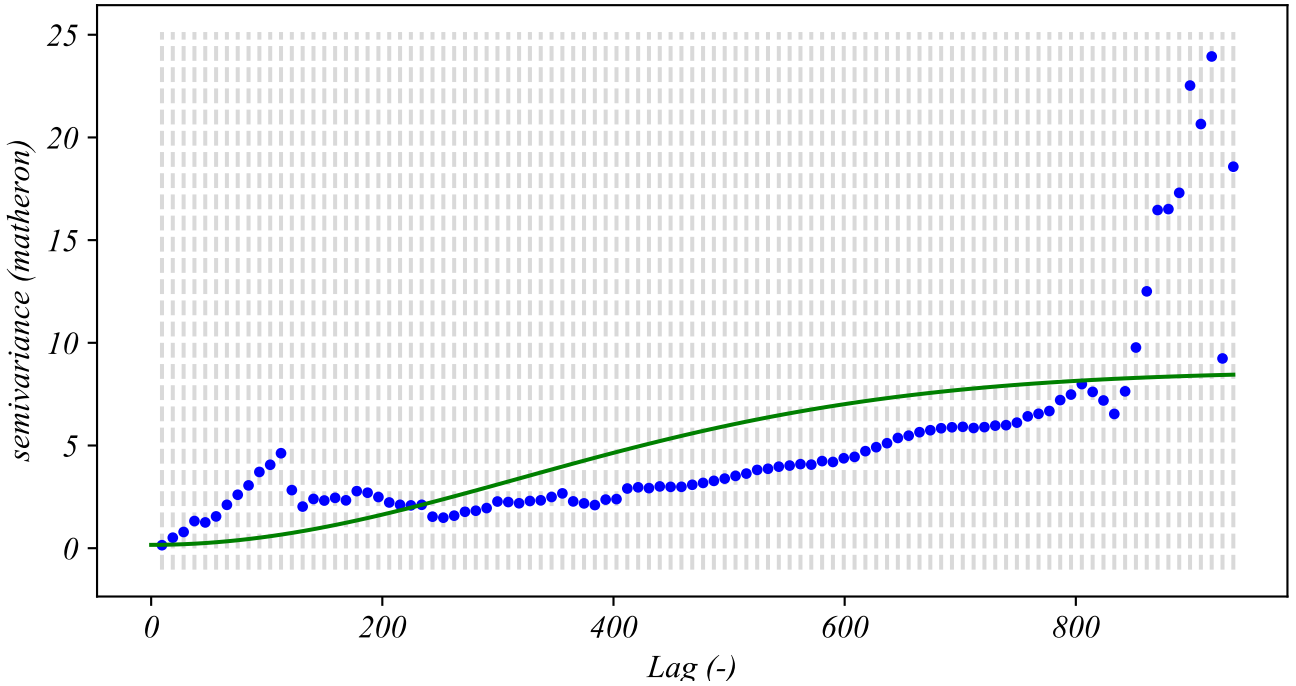
Sigma = sqrt(4)

Eta = 4.5 / 400

Tau = sqrt(0.3)

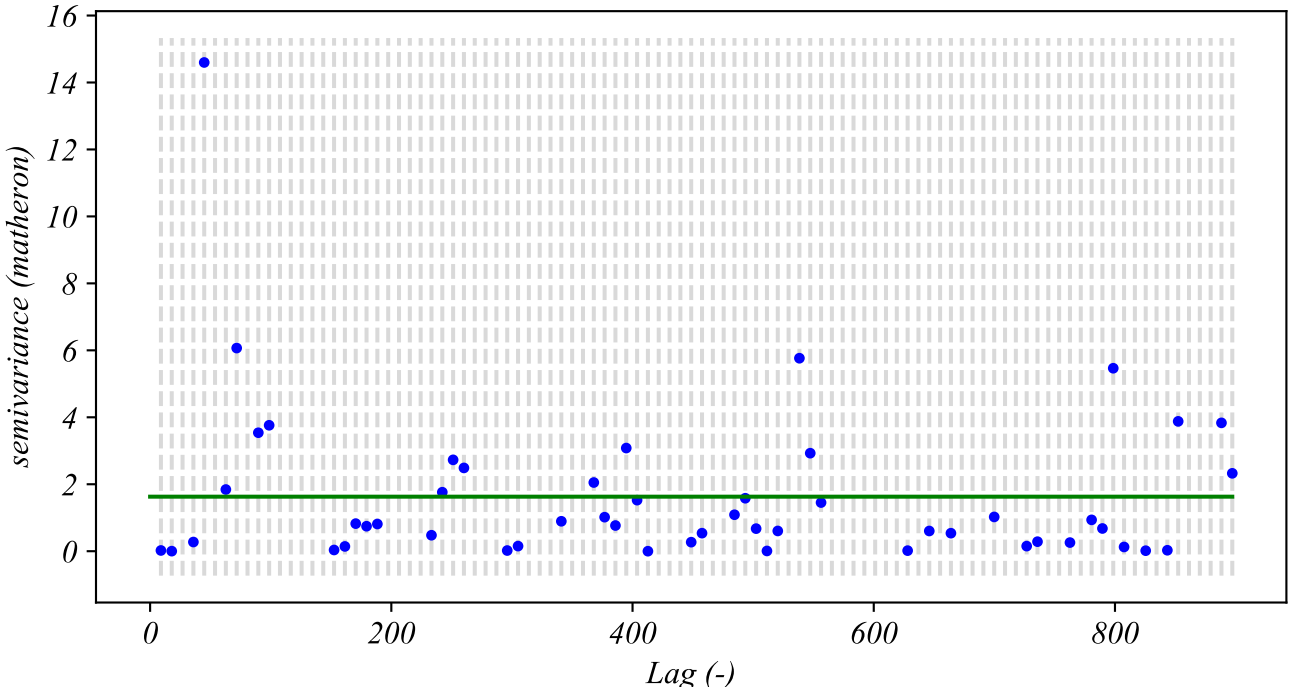
Threshold = 23

Depth 0.5m



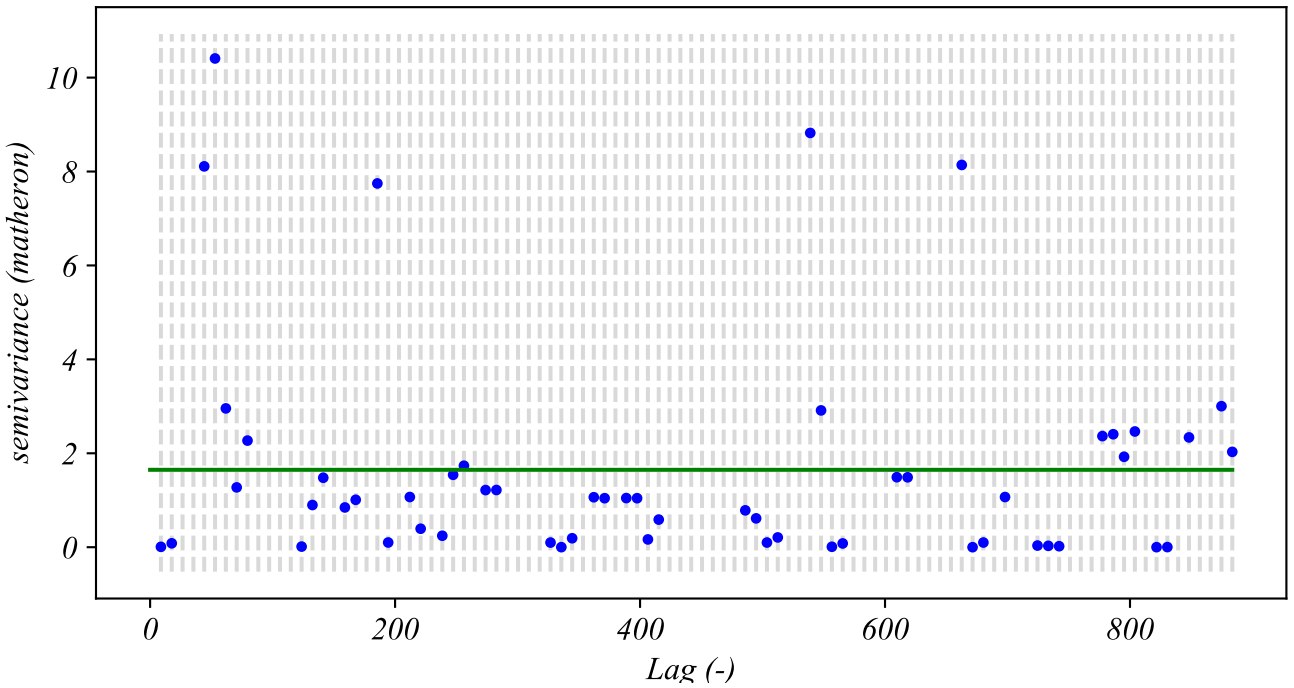

```
matern Variogram
----------------
Estimator:          matheron
Effective Range:    936.26
Sill:               8.47
Nugget:             0.16
```

Depth 1.0m



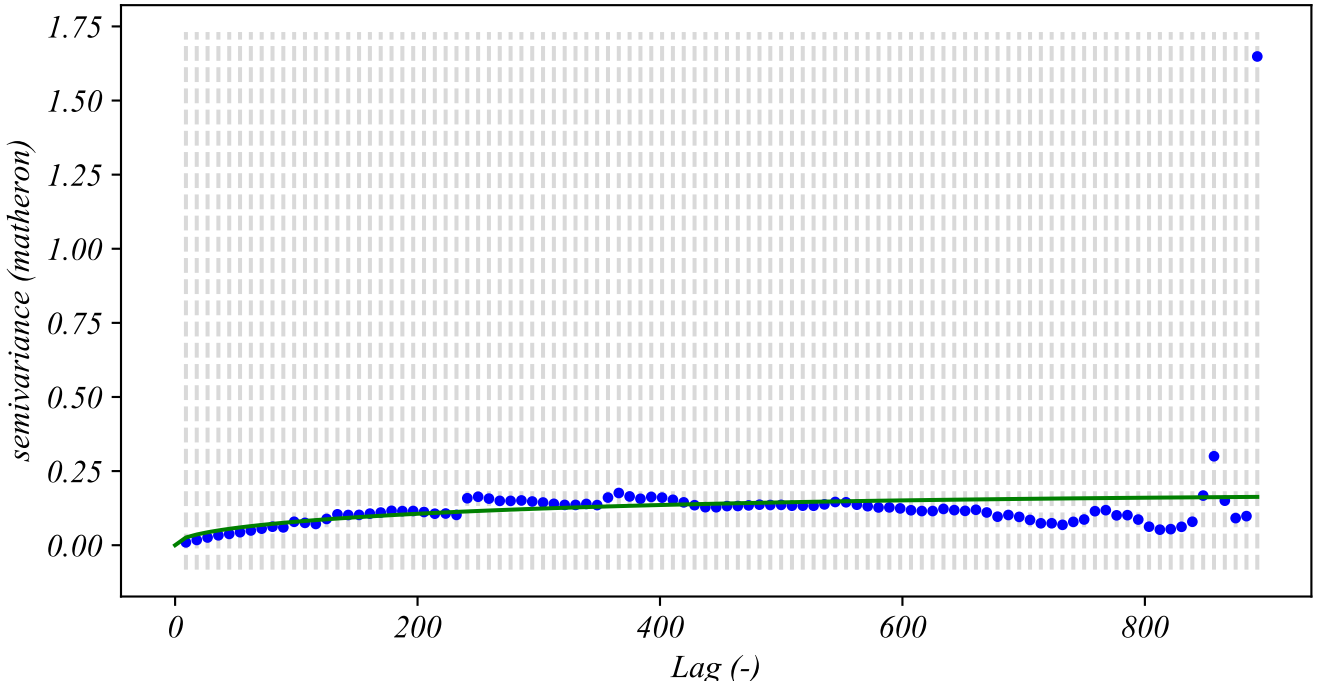

```
matern Variogram
----------------
Estimator:          matheron
Effective Range:    897.27
Sill:               0.00
Nugget:             1.63
```

Depth 1.5m



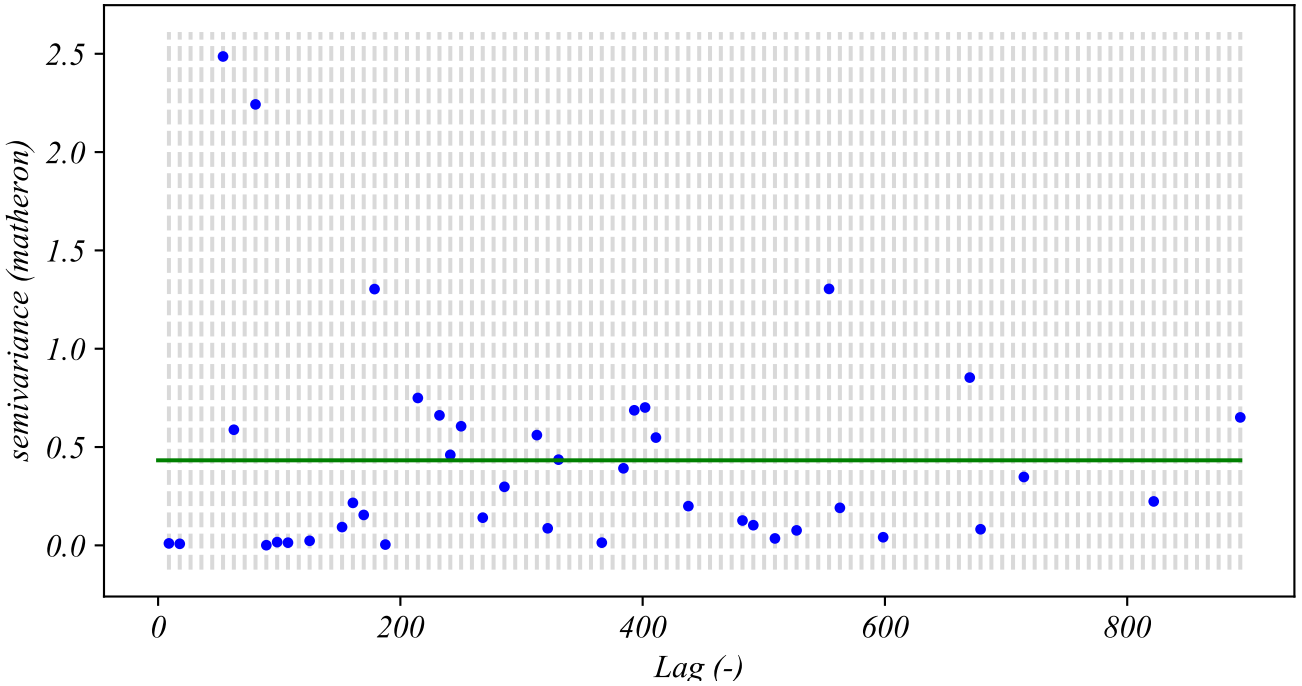

```
matern Variogram
----------------
Estimator:          matheron
Effective Range:    883.51
Sill:               0.00
Nugget:             1.65
```

Depth 2.0m




```
matern Variogram
----------------
Estimator:          matheron
Effective Range:    892.73
Sill:               0.17
Nugget:             0.00
```

Depth 2.5m




```
matern Variogram
----------------
Estimator:          matheron
Effective Range:    893.35
Sill:               0.00
Nugget:             0.43
```

Temperature coef

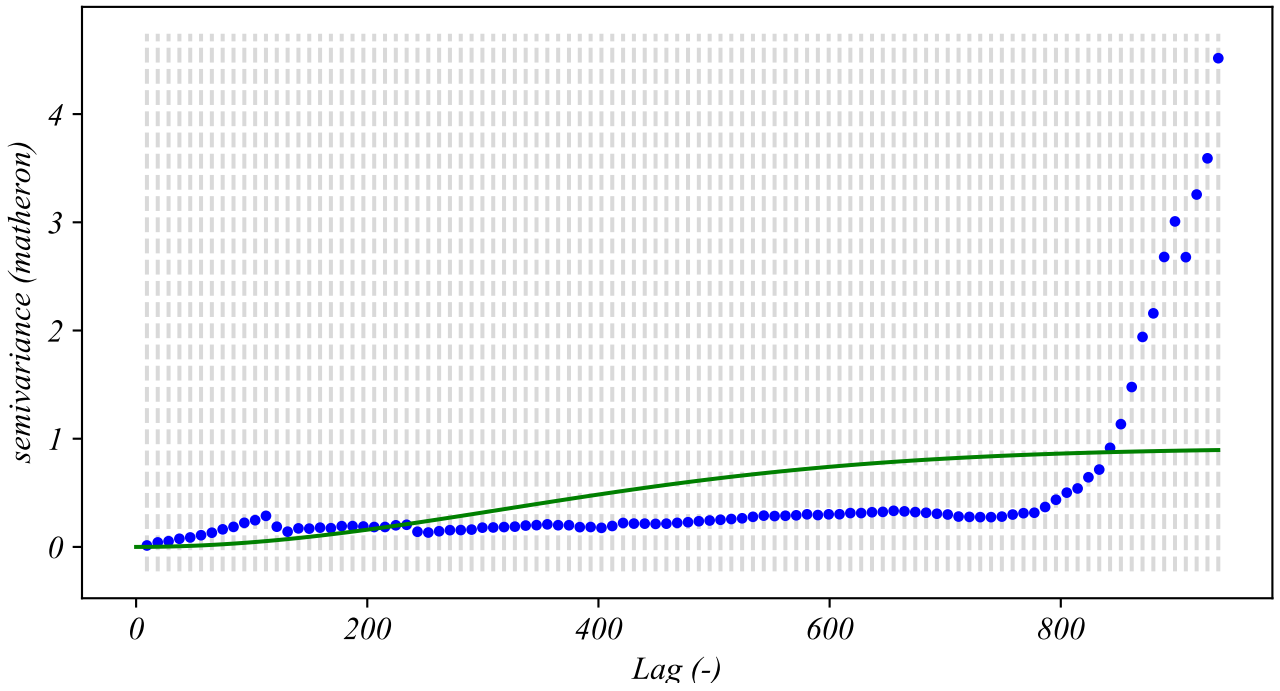
Sigma = sqrt(0.5)

Eta = 4.5 / 400

Tau = sqrt(0.1)

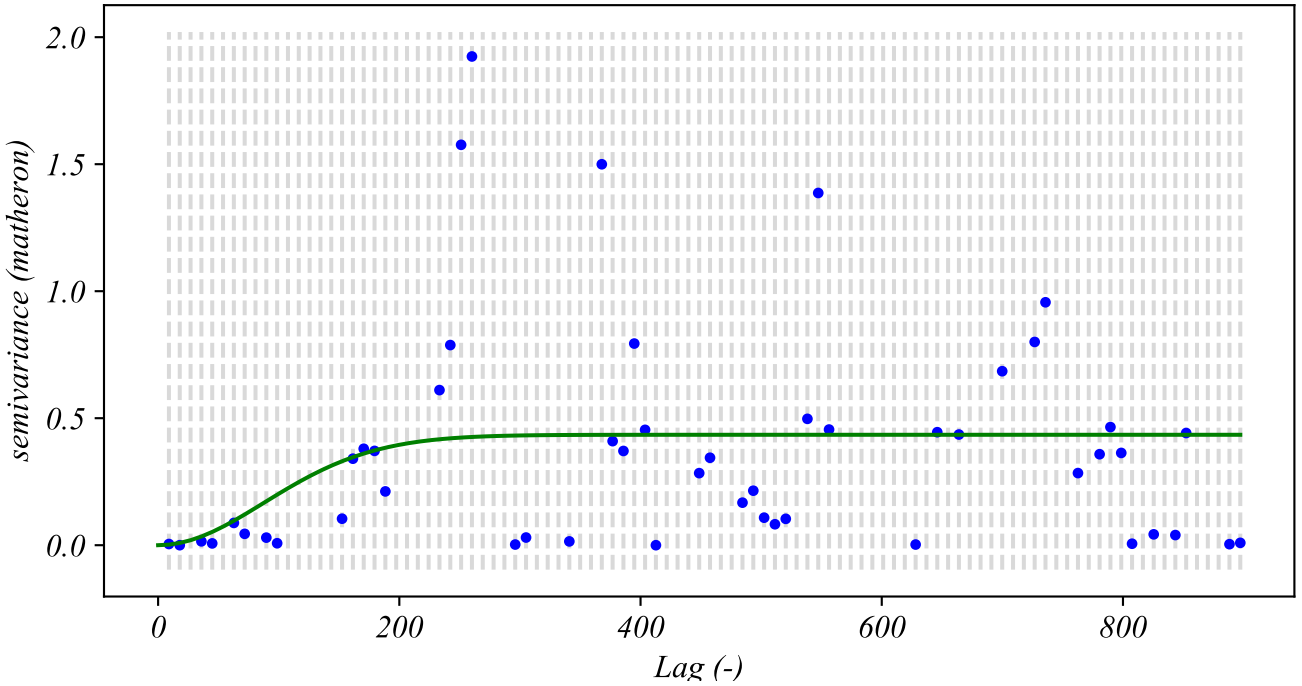
Threshold = 10.5

Depth 0.5m



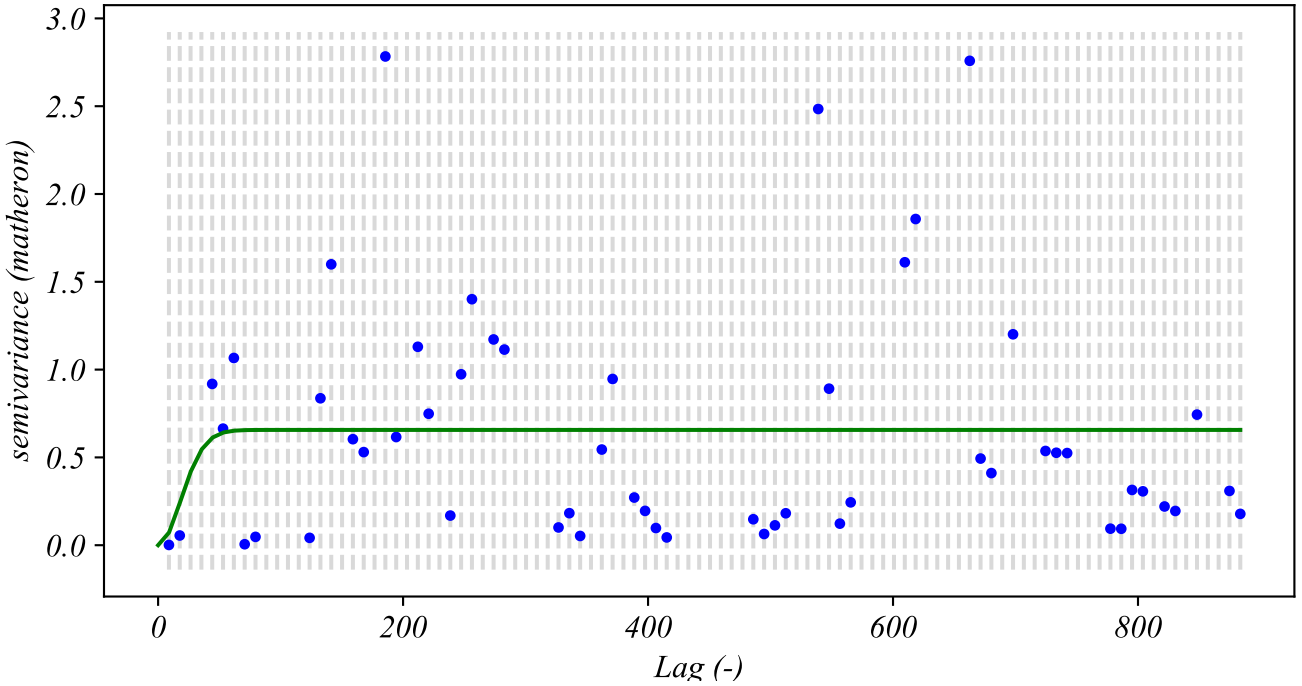

```
matern Variogram
----------------
Estimator:          matheron
Effective Range:    936.26
Sill:               0.92
Nugget:             0.00
```

Depth 1.0m



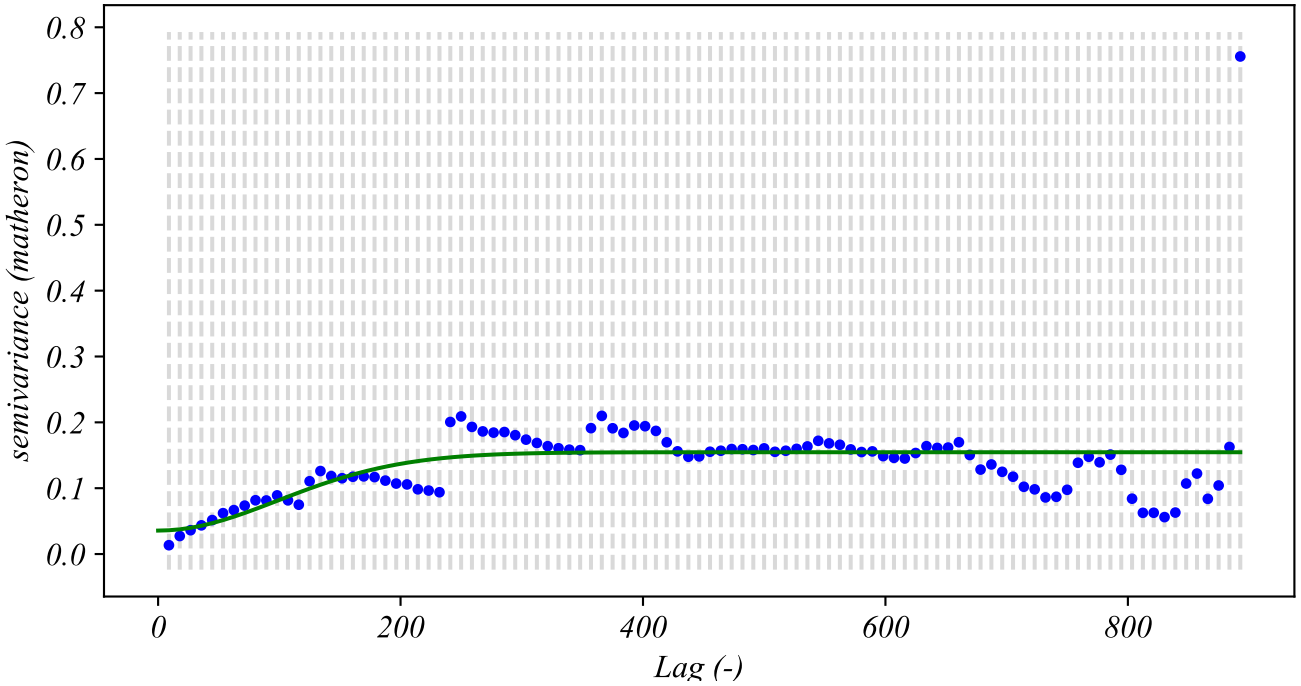

```
matern Variogram
----------------
Estimator:          matheron
Effective Range:    256.88
Sill:               0.43
Nugget:             0.00
```

Depth 1.5m



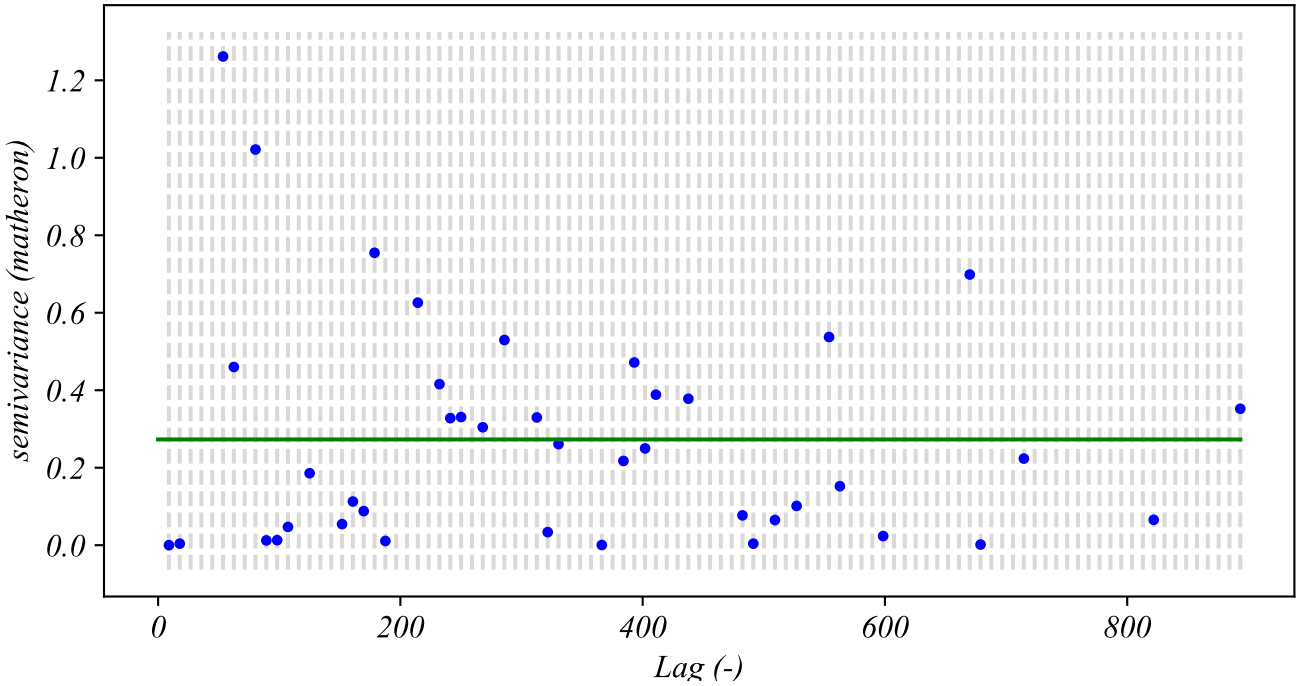

```
matern Variogram
----------------
Estimator:          matheron
Effective Range:    53.50
Sill:               0.66
Nugget:             0.00
```

Depth 2.0m




```
matern Variogram
----------------
Estimator:          matheron
Effective Range:    289.56
Sill:               0.12
Nugget:             0.04
```

Depth 2.5m




```
matern Variogram
----------------
Estimator:          matheron
Effective Range:    889.80
Sill:               0.00
Nugget:             0.27
```

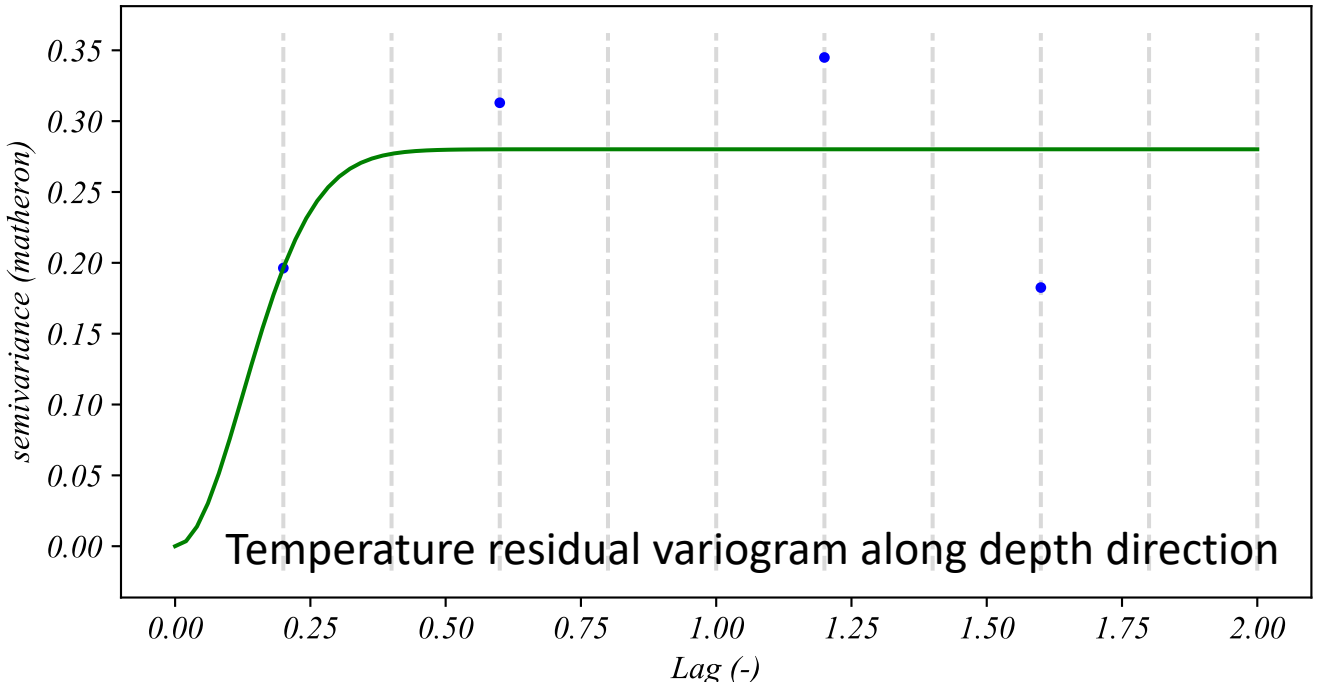
Salinity-Temperaure coef

Sigma = 0.74

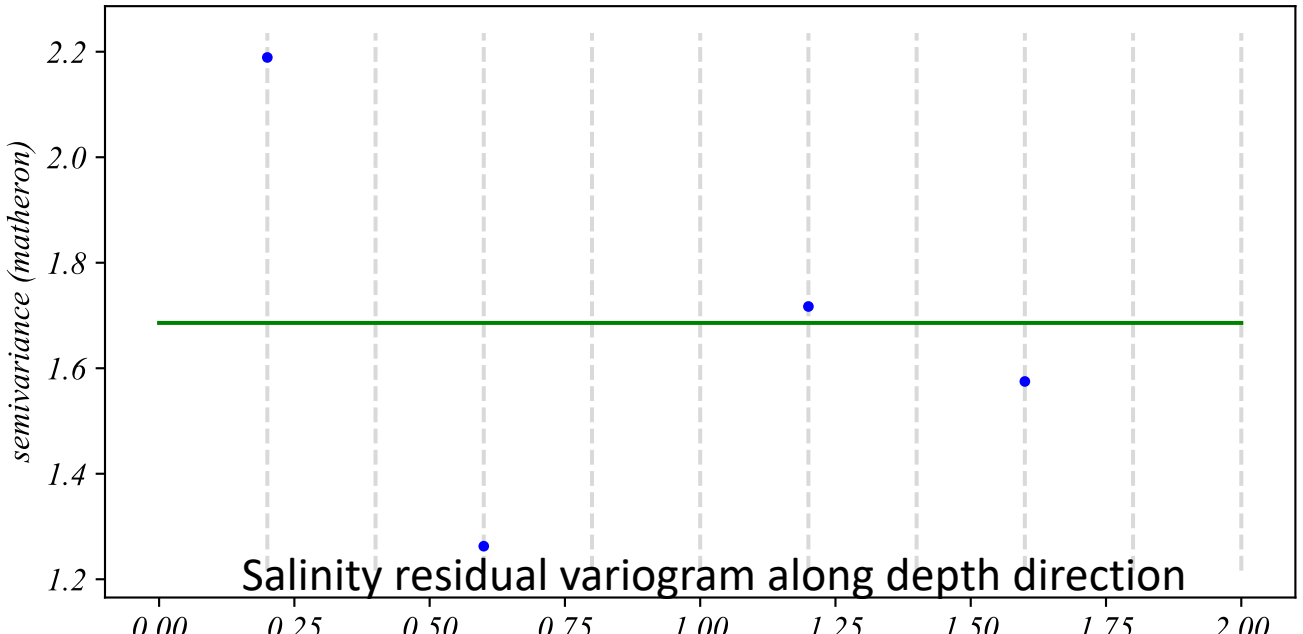

Cross plot of the residuals
Temperature
Salinity
1.5
1.0
0.5
0.0
−0.5
−1.0
−1.5
−2.0
−10.0
−7.5
−5.0
−2.5
0.0
2.5
5.0
7.5

Depth-correlated coef

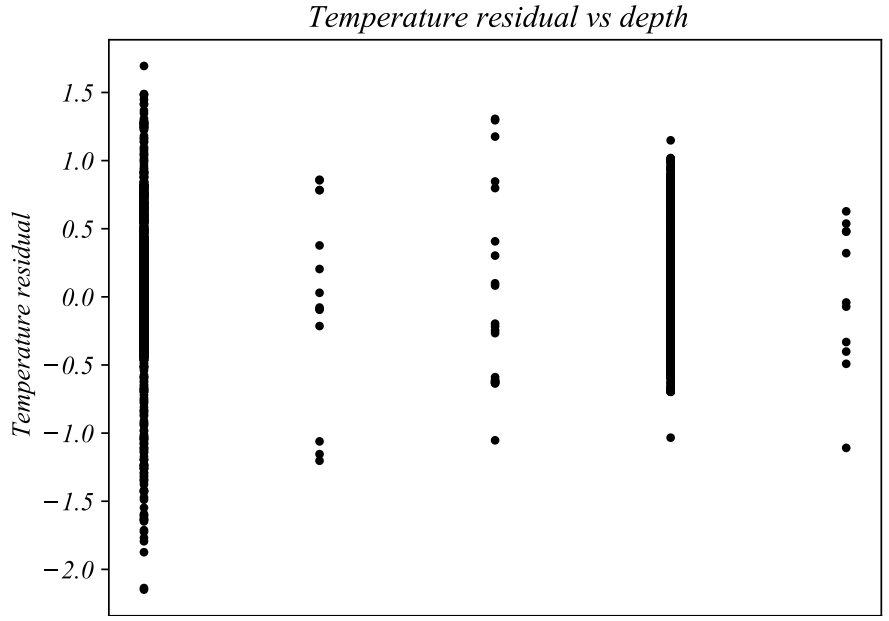
\Ksi^2 = (1000 / 24) ^ 2 / (2.5 / 5) ^ 2 = 6944.43

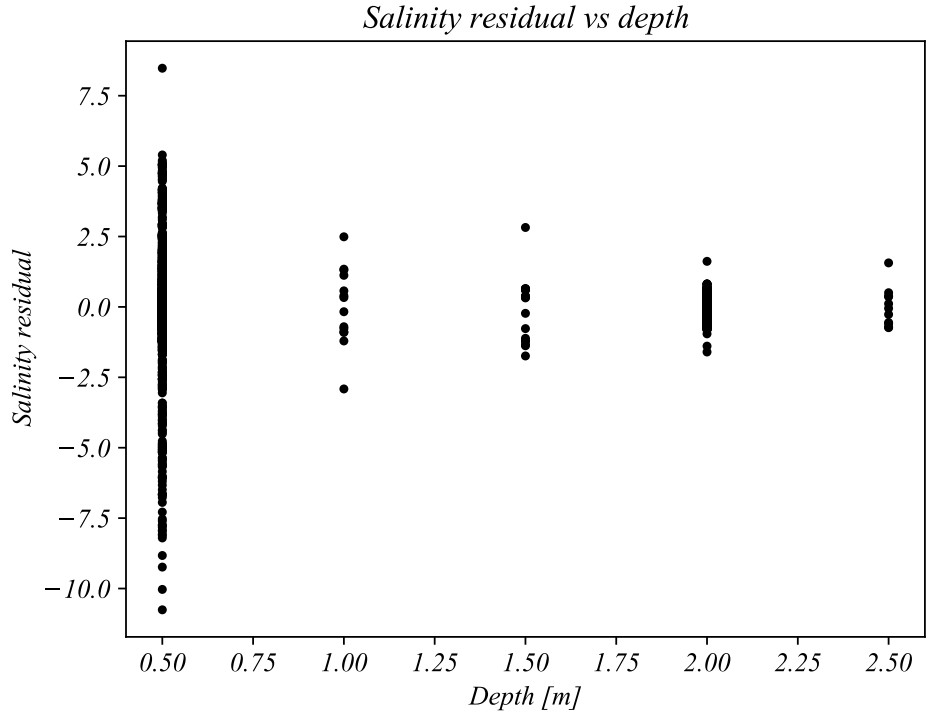



```
matern Variogram
---------------
Estimator:          matheron
Effective Range:    0.37
Sill:               0.28
Nugget:             0.00
```




```
matern Variogram
---------------
Estimator:          matheron
Effective Range:    2.00
Sill:               0.00
Nugget:             1.69
```





It does seem clear that the residual has a strong correlation with depth. Or maybe I used the wrong data. Each

```
[[ 1.00000000e+00 -1.71223421e-15]
 [-1.71223421e-15  1.00000000e+00]]
```

Correlation matrix for temperature residual and depth

```
[[1.00000000e+00 2.89583532e-16]
 [2.89583532e-16 1.00000000e+00]]
```

Correlation matrix for salinity residual and depth