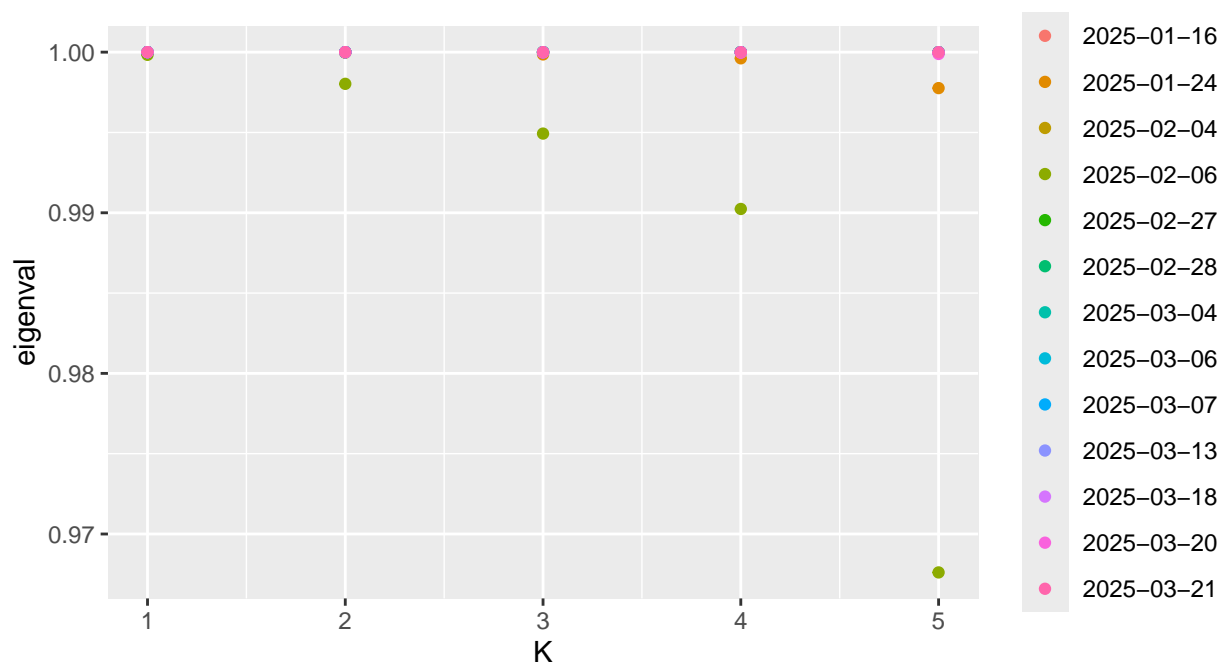
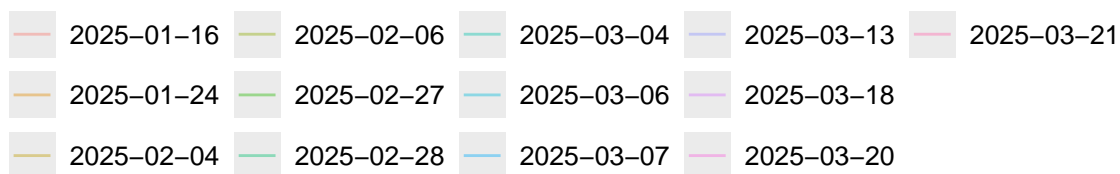
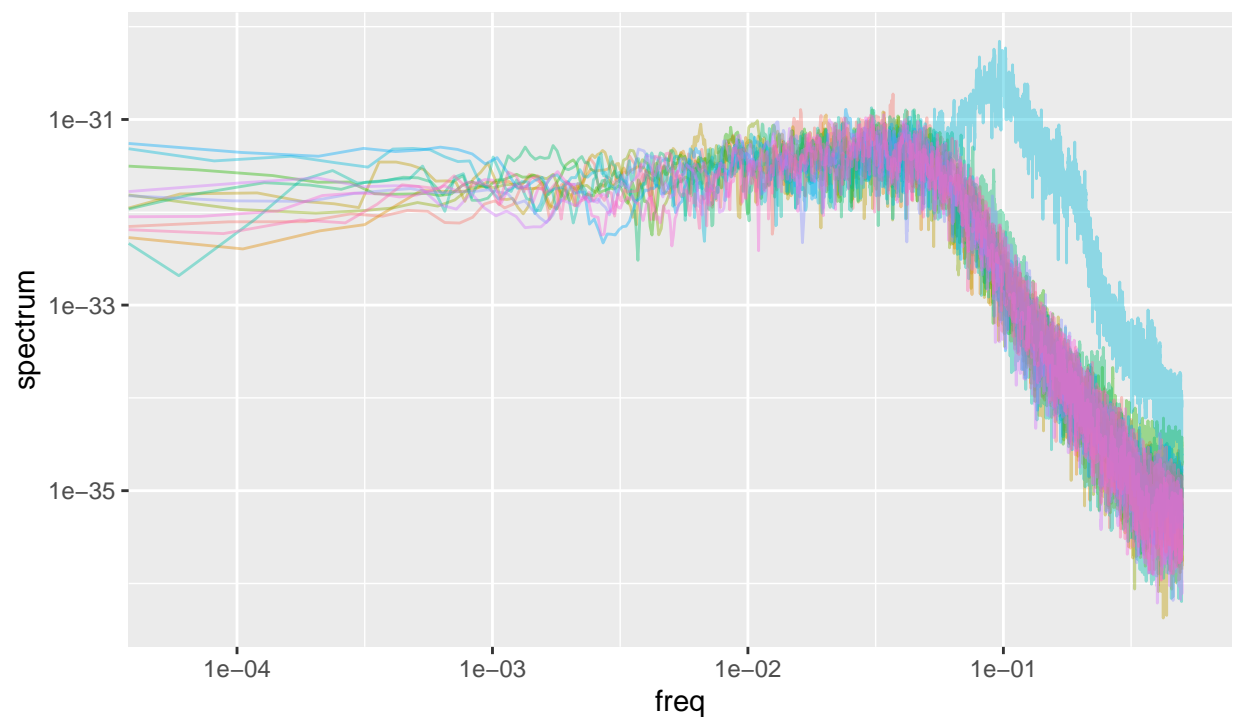


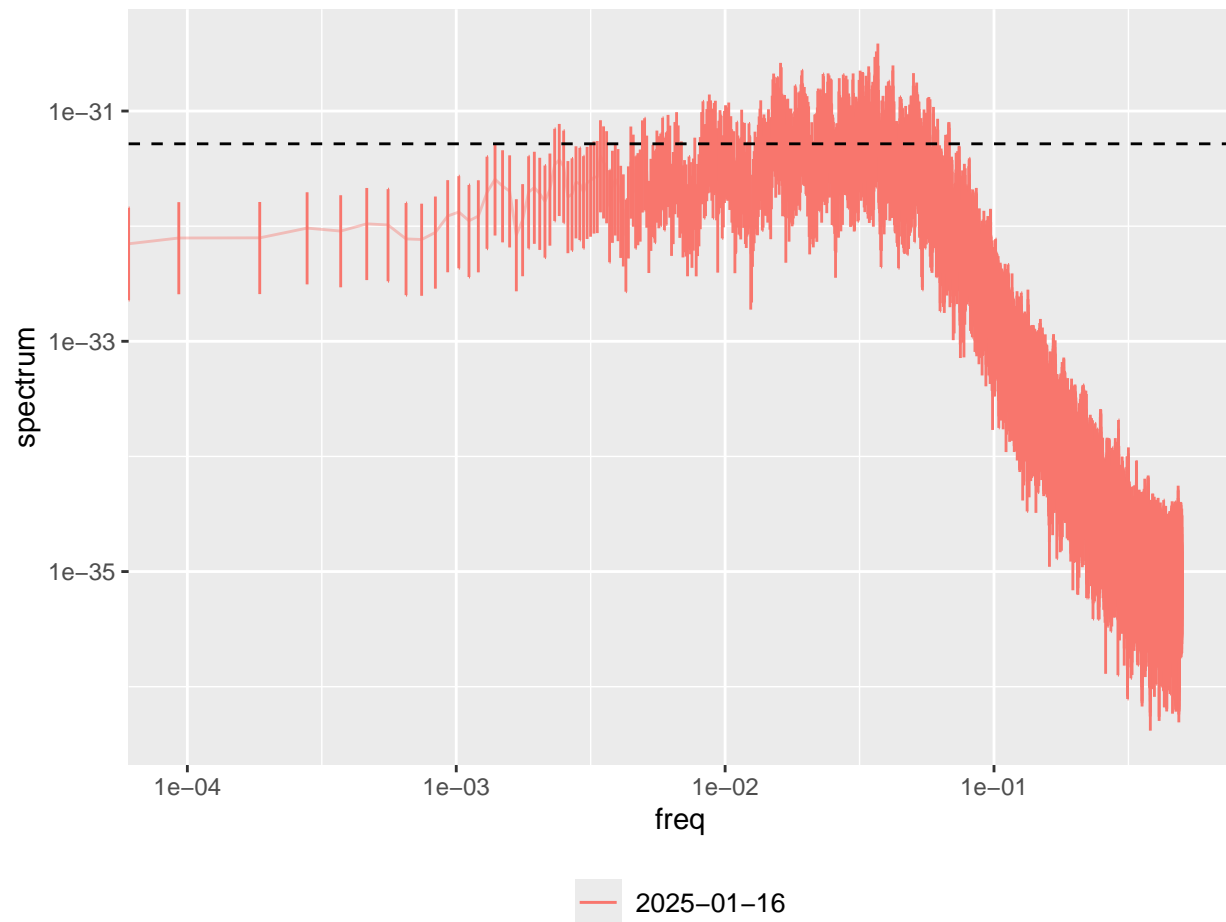
YbSr



## Warning in scale\_x\_log10(): log-10 transformation introduced infinite values.

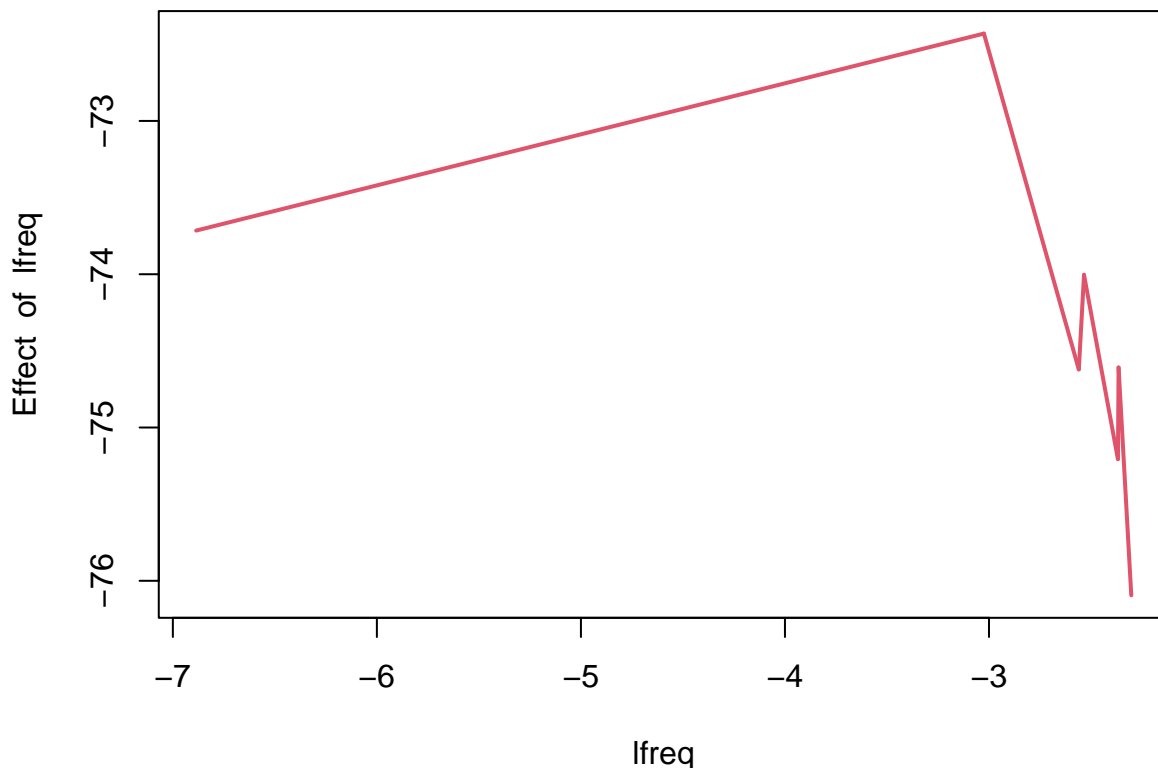


```
## Warning in scale_x_log10(): log-10 transformation introduced infinite values.
## log-10 transformation introduced infinite values.
```



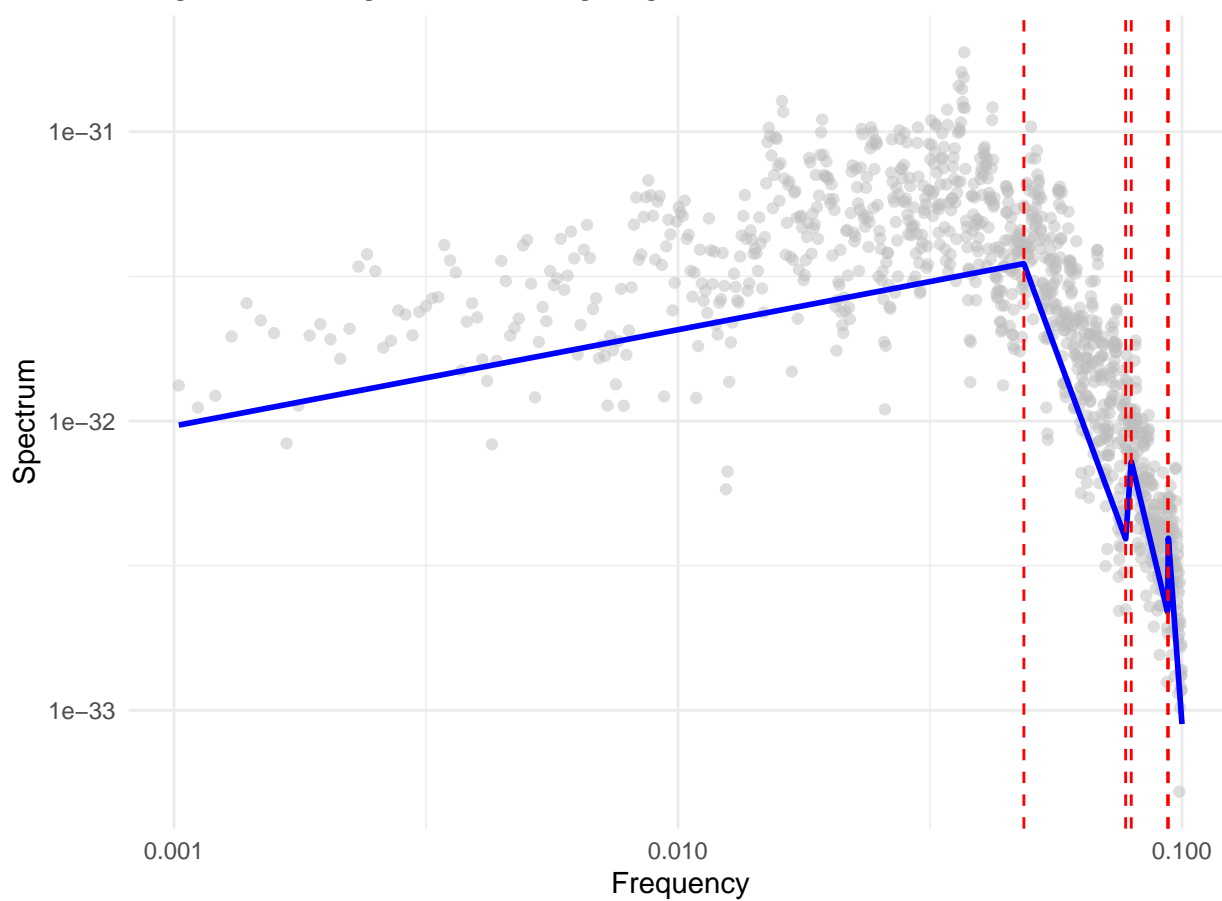
```
## Loading required package: MASS
##
## Attaching package: 'MASS'
## The following object is masked from 'package:dplyr':
##
##   select
## Loading required package: nlme
##
## Attaching package: 'nlme'
## The following object is masked from 'package:dplyr':
##
##   collapse
##
## ***Regression Model with Segmented Relationship(s)***
##
## Call:
## segmented.lm(obj = fit, seg.Z = ~lfreq, npsi = 5)
##
## Estimated Break-Point(s):
```

```
##               Est. St.Err
## psi1.lfreq -3.025  0.056
## psi2.lfreq -2.560  0.006
## psi3.lfreq -2.534  0.009
## psi4.lfreq -2.368  0.001
## psi5.lfreq -2.365  0.001
##
## Coefficients of the linear terms:
##               Estimate Std. Error  t value Pr(>|t|)
## (Intercept)  -71.4230     0.4630 -154.260 < 2e-16 ***
## lfreq         0.3329     0.1007   3.307 0.000974 ***
## U1.lfreq     -5.0443     0.5668  -8.899    NA
## U2.lfreq     28.9141    13.8618   2.086    NA
## U3.lfreq    -31.4408    13.8653  -2.268    NA
## U4.lfreq     195.2812   117.8522   1.657    NA
## U5.lfreq    -211.9145   117.8582  -1.798    NA
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
## Residual standard error: 1.827e+32 on 1054 degrees of freedom
## Multiple R-Squared: 0.6819, Adjusted R-squared: 0.6786
##
## Boot restarting based on 6 samples. Last fit:
## Convergence attained in 6 iterations (rel. change 2.2436e-06)
```

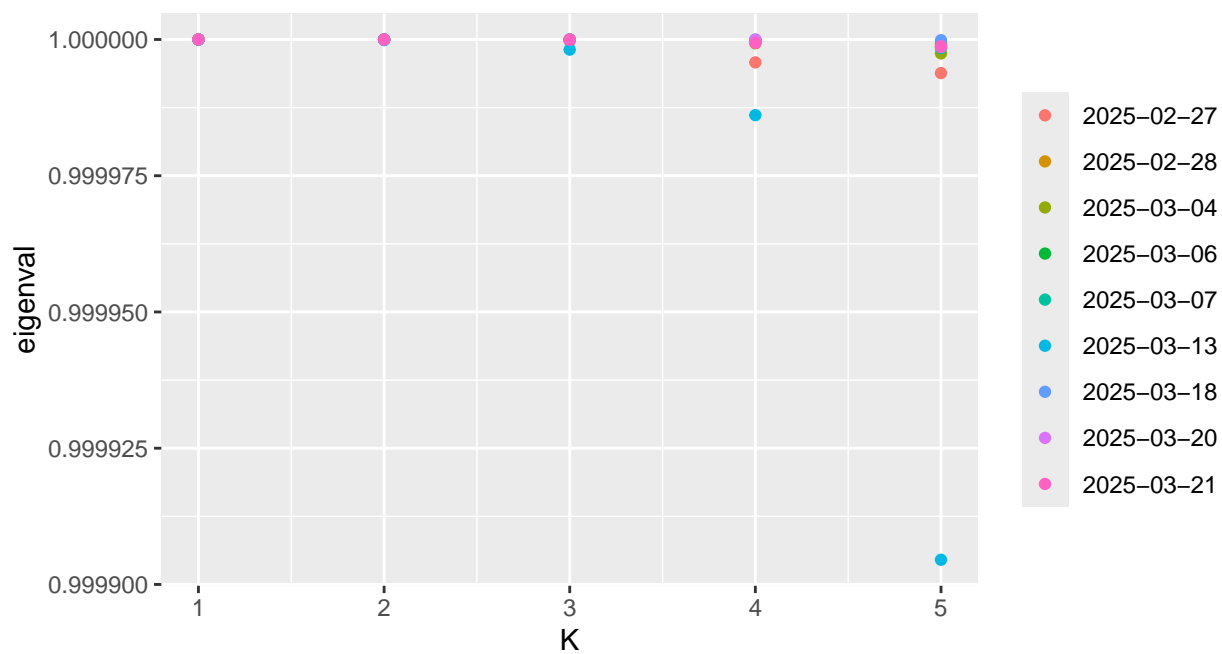


```
## Warning: Using `size` aesthetic for lines was deprecated in ggplot2 3.4.0.
## i Please use `linewidth` instead.
## This warning is displayed once every 8 hours.
## Call `lifecycle::last_lifecycle_warnings()` to see where this warning was
## generated.
```

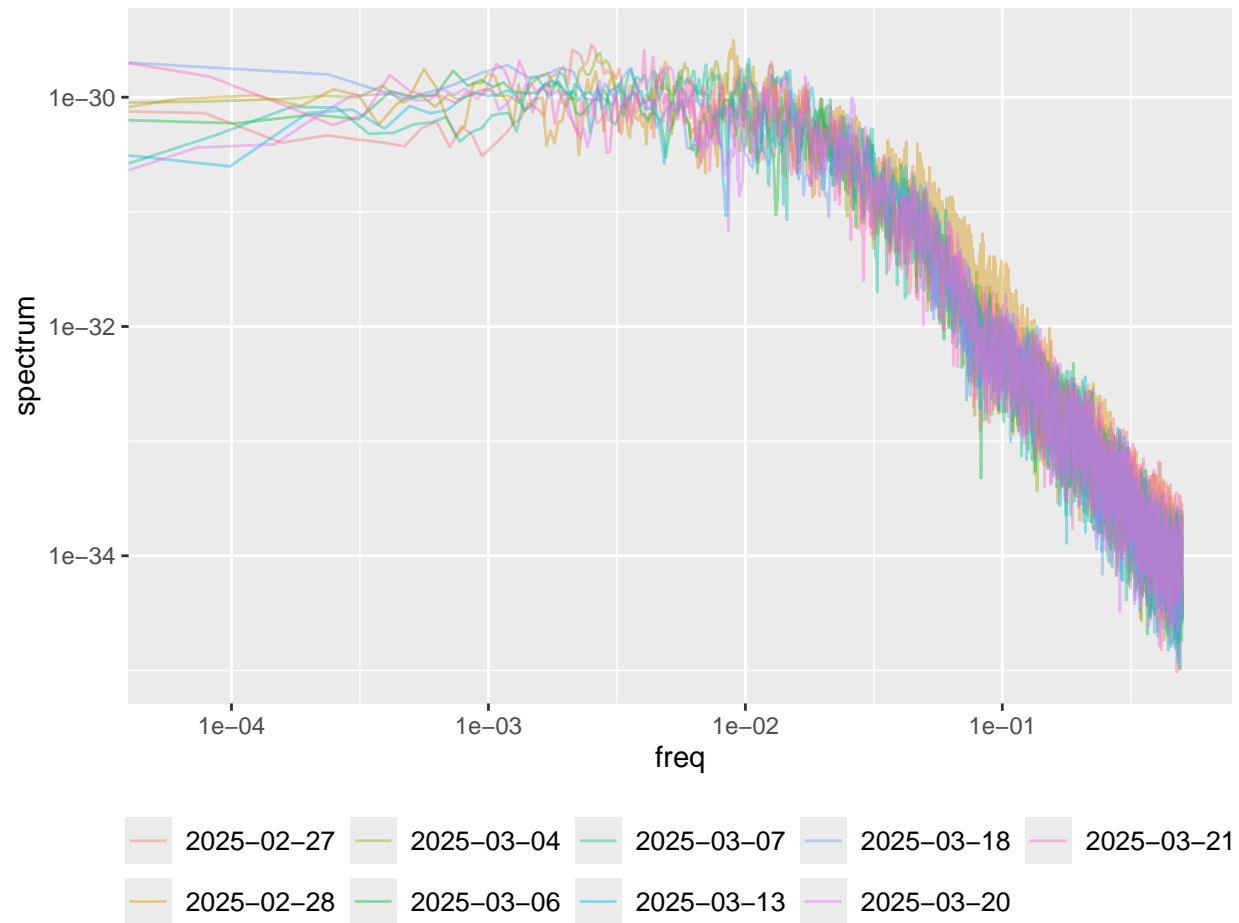
Segmented Regression on log-log scale



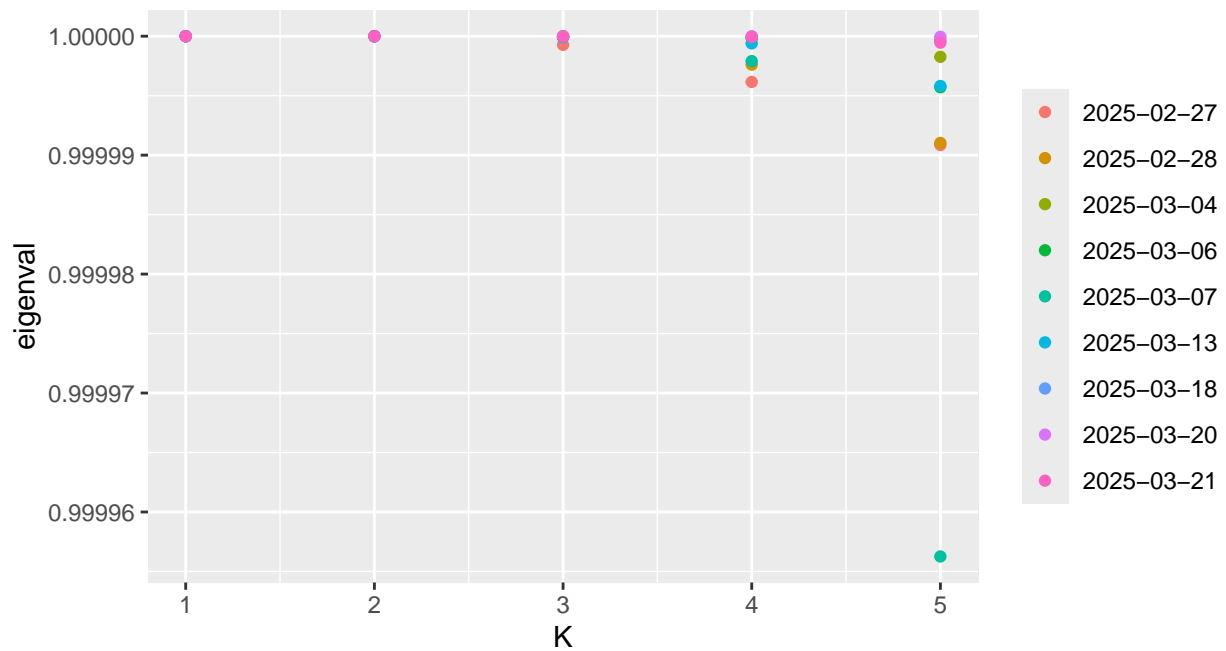
AlSr



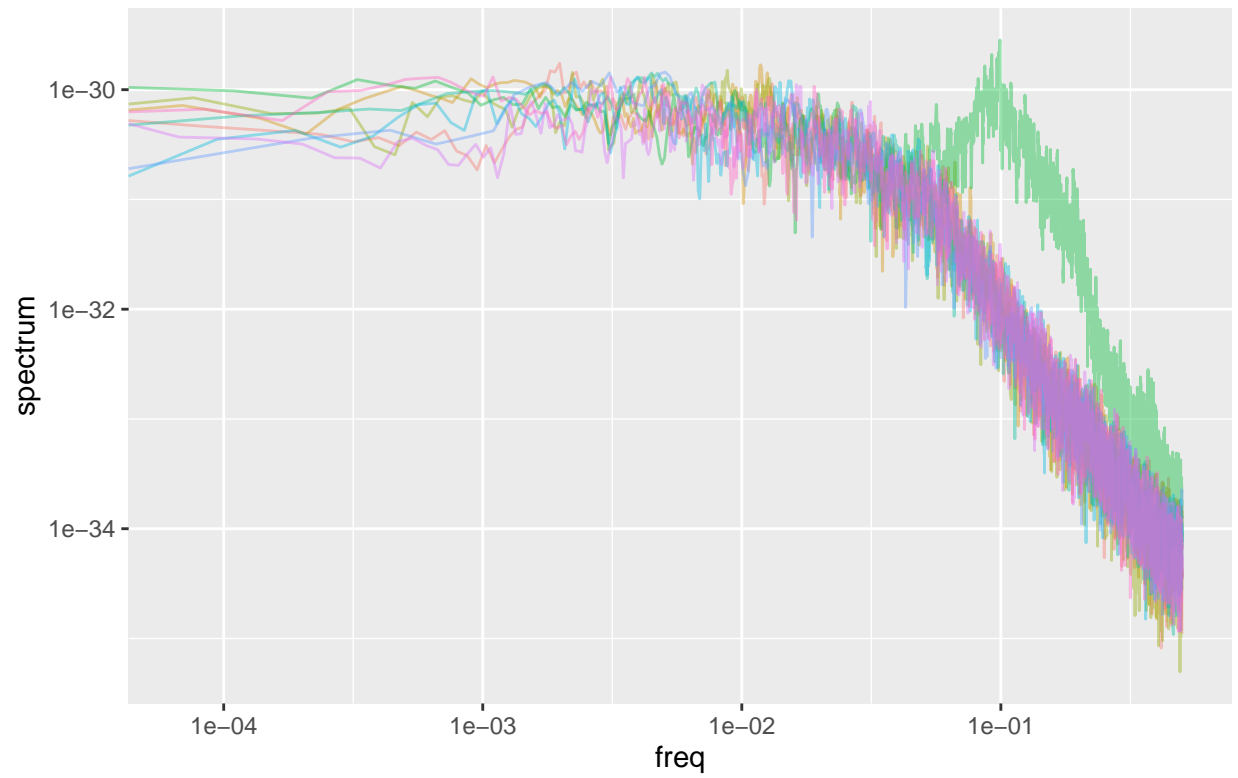
## Warning in scale\_x\_log10(): log-10 transformation introduced infinite values.



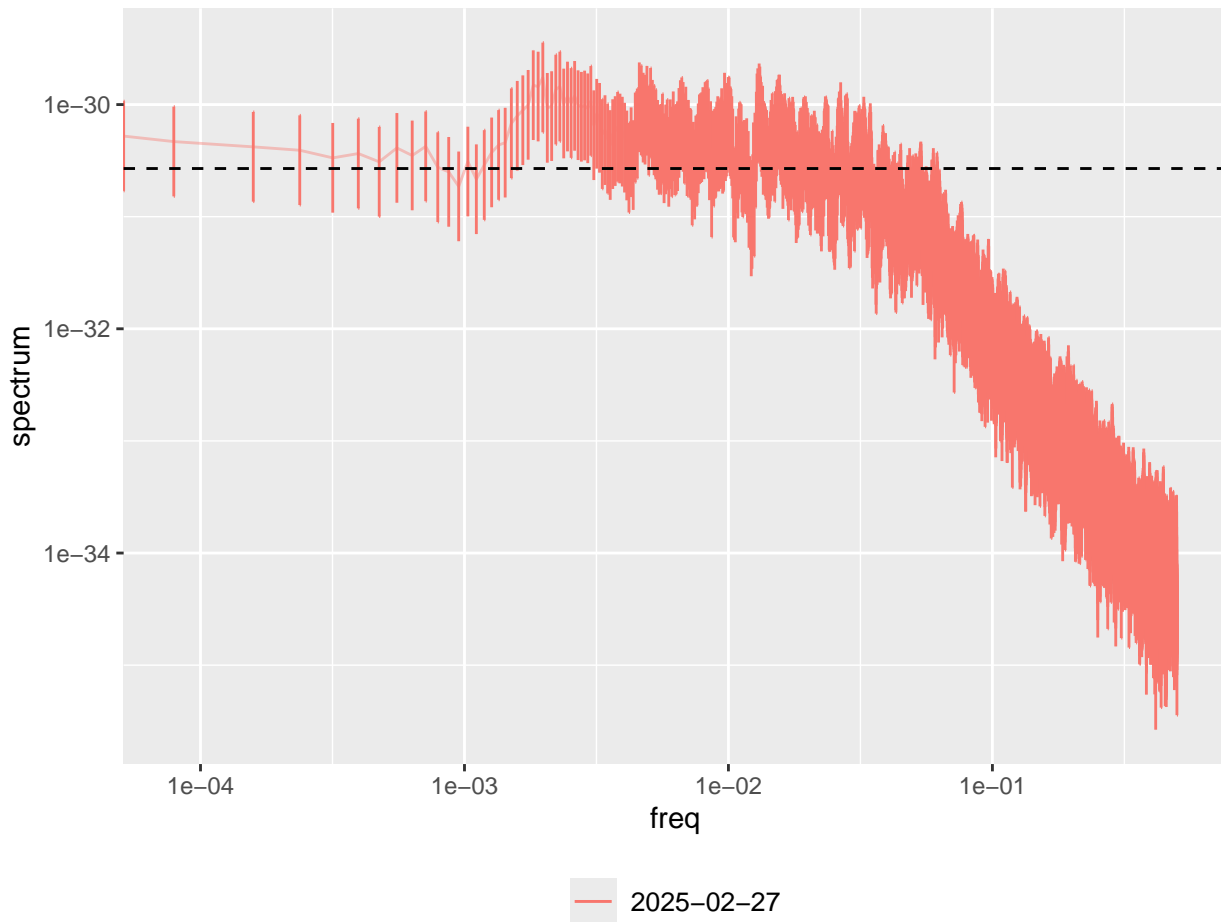
AIYb



```
## Warning in scale_x_log10(): log-10 transformation introduced infinite values.
```

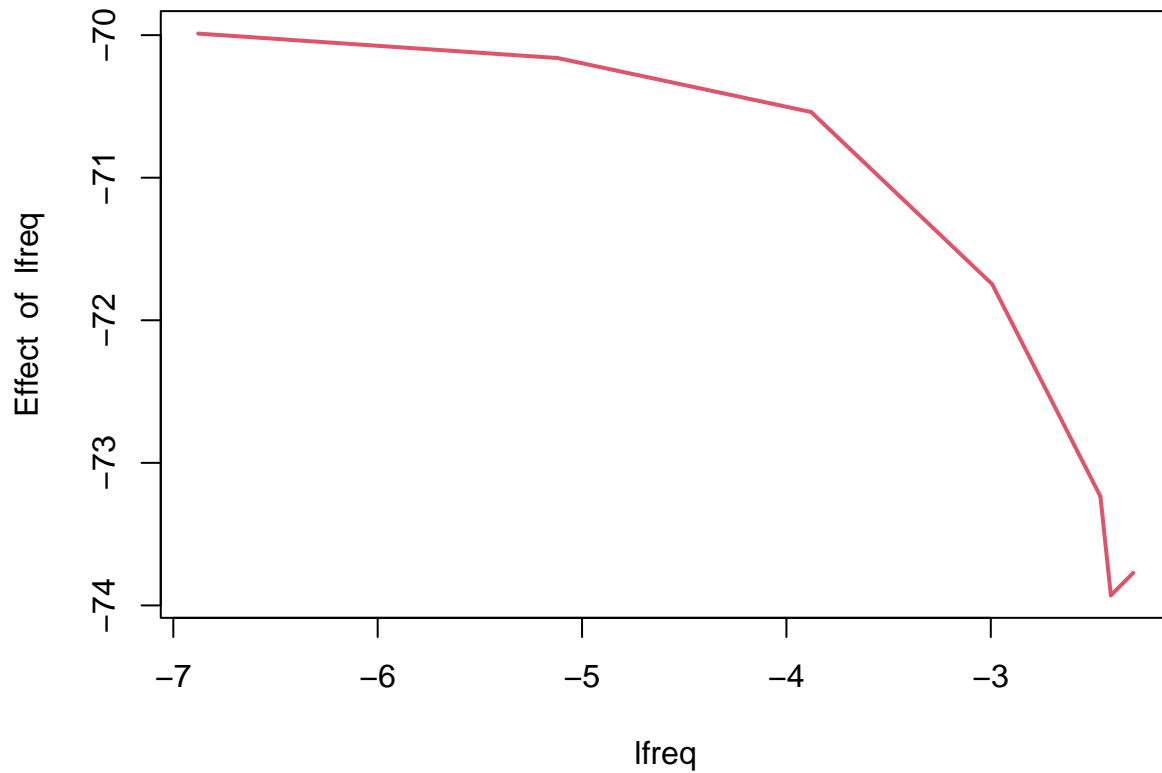


```
## Warning in scale_x_log10(): log-10 transformation introduced infinite values.  
## log-10 transformation introduced infinite values.
```



```
##
## ***Regression Model with Segmented Relationship(s)***
##
## Call:
## segmented.lm(obj = fit, seg.Z = ~lfreq, npsi = 5)
##
## Estimated Break-Point(s):
##           Est. St.Err
## psi1.lfreq -5.120 10.831
## psi2.lfreq -3.879  0.846
## psi3.lfreq -2.993  0.137
## psi4.lfreq -2.464  0.007
## psi5.lfreq -2.412  0.003
##
## Coefficients of the linear terms:
##           Estimate Std. Error t value Pr(>|t|)
## (Intercept) -70.65986   11.15159  -6.336 3.29e-10 ***
## lfreq        -0.09752    1.88237  -0.052  0.959
## U1.lfreq     -0.20765    2.38980  -0.087    NA
## U2.lfreq     -1.05791    1.58657  -0.667    NA
## U3.lfreq     -1.44769    0.63788  -2.270    NA
## U4.lfreq    -10.68352    1.63596  -6.530    NA
## U5.lfreq     14.93486    1.68257   8.876    NA
## ---
```

```
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1  
##  
## Residual standard error: 3.77e+31 on 1238 degrees of freedom  
## Multiple R-Squared:  0.5909,    Adjusted R-squared:  0.5872  
##  
## Boot restarting based on 6 samples. Last fit:  
## Convergence attained in 2 iterations (rel. change 6.0608e-07)
```





Segmented Regression on log-log scale

