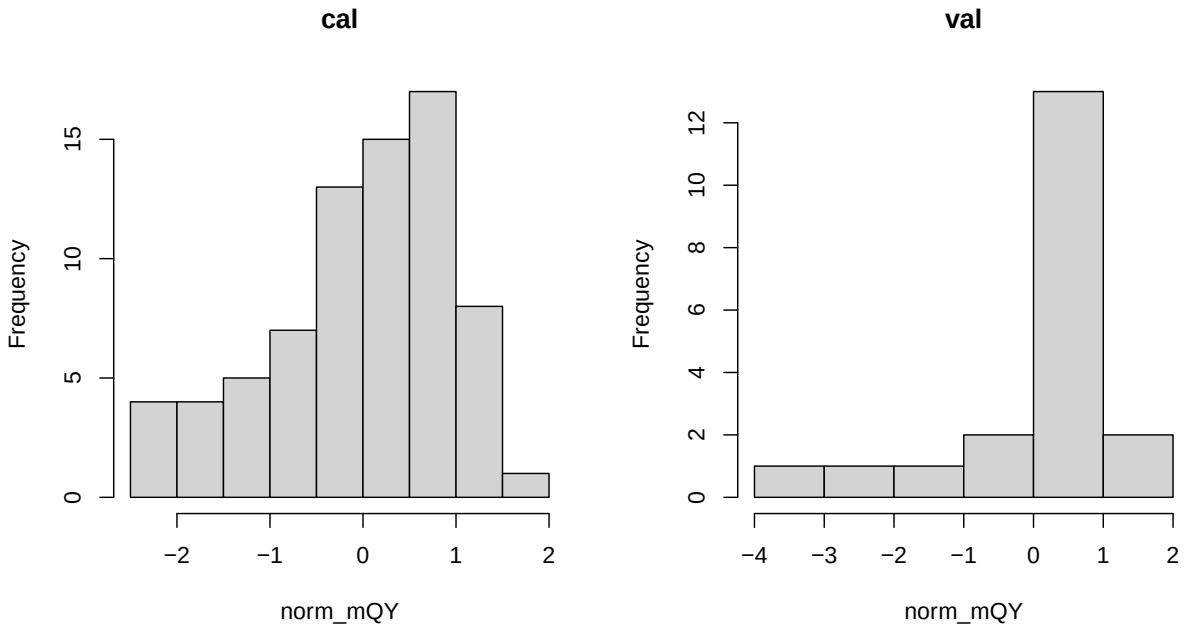
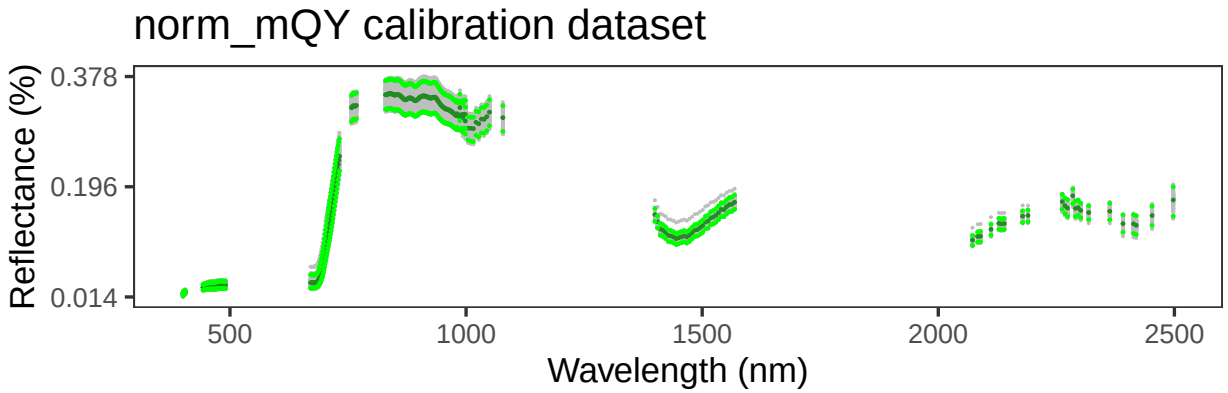
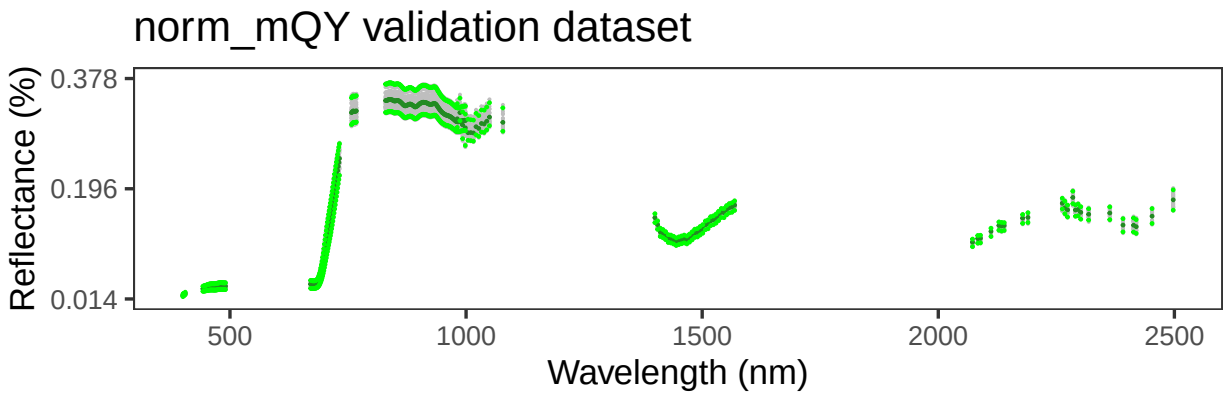
Use side-view HSI data to predict mQY

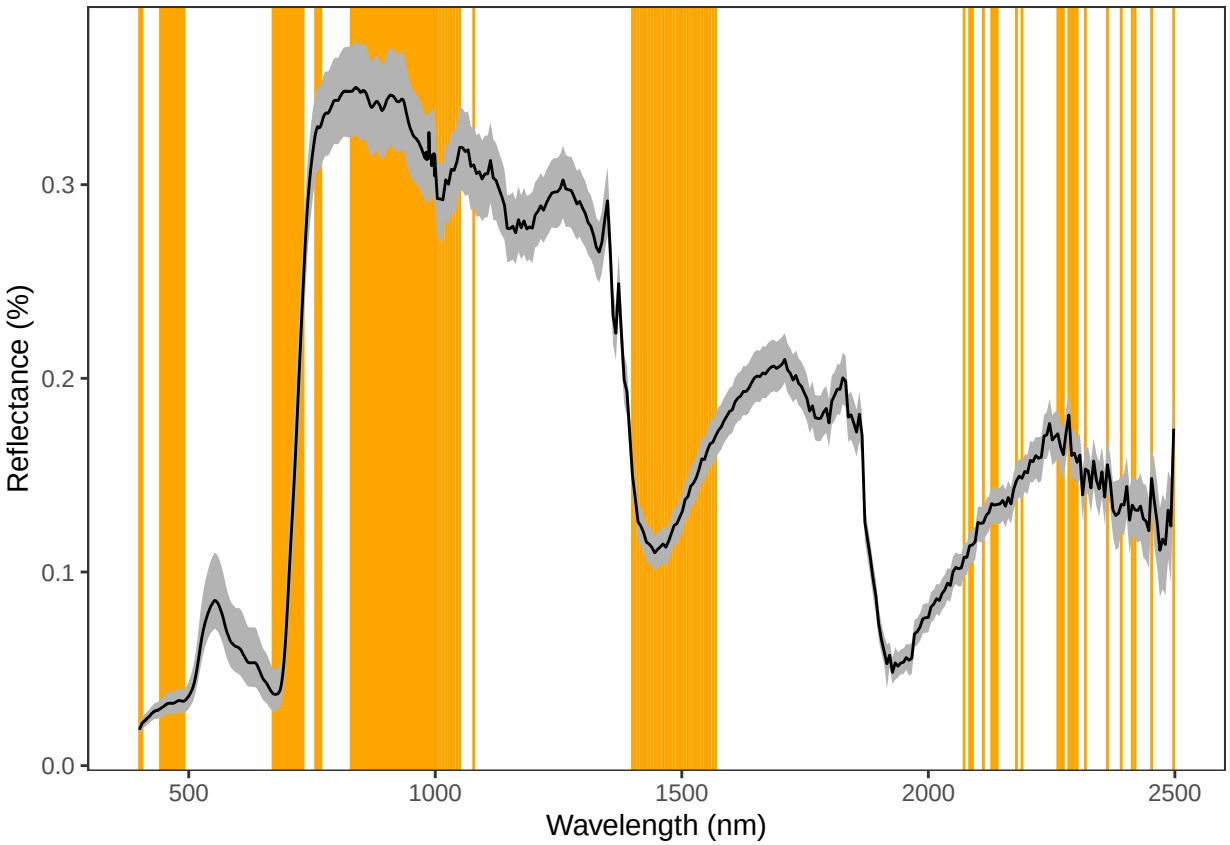
2023-08-08

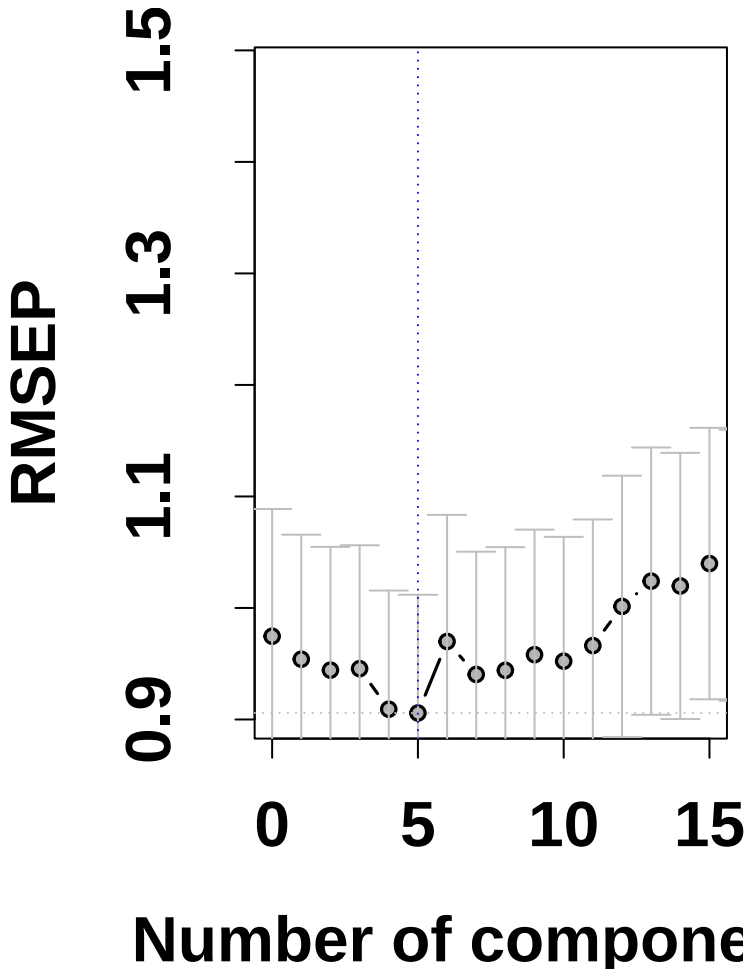
```
## $plsralg
## [1] "oscorespls"

##  [1] "906" "931" "948" "943" "940" "920" "919" "937" "941" "907" "910" "917"
## [13] "918" "947" "930" "942" "905" "914" "946" "944" "923" "904" "927" "921"
## [25] "903" "926" "913" "932" "925" "911" "936" "939" "909" "934" "928" "922"
## [37] "929" "950" "984" "972" "989" "964" "983" "992" "981" "965" "976" "971"
## [49] "969" "963" "985" "954" "957" "962" "967" "996" "953" "995" "970" "993"
## [61] "987" "994" "975" "952" "982" "958" "979" "951" "961" "956" "978" "959"
## [73] "990" "980"

##  [1] "902" "908" "912" "915" "916" "924" "933" "935" "938" "945" "955" "960"
## [13] "966" "968" "973" "974" "977" "986" "988" "991"

##          value        wv
## 344 0.03452470  829.5796
## 36  0.03440495  442.8147
## 687 0.03430261 2178.7600
## 220 0.03397651  670.9629
## 704 0.03389868 2273.8000
## 744 0.03387148 2497.5600
```




norm_mQY calibration dataset
Reflectance (%)
0.378
0.196
0.014
500
1000
1500
2000
2500
Wavelength (nm)

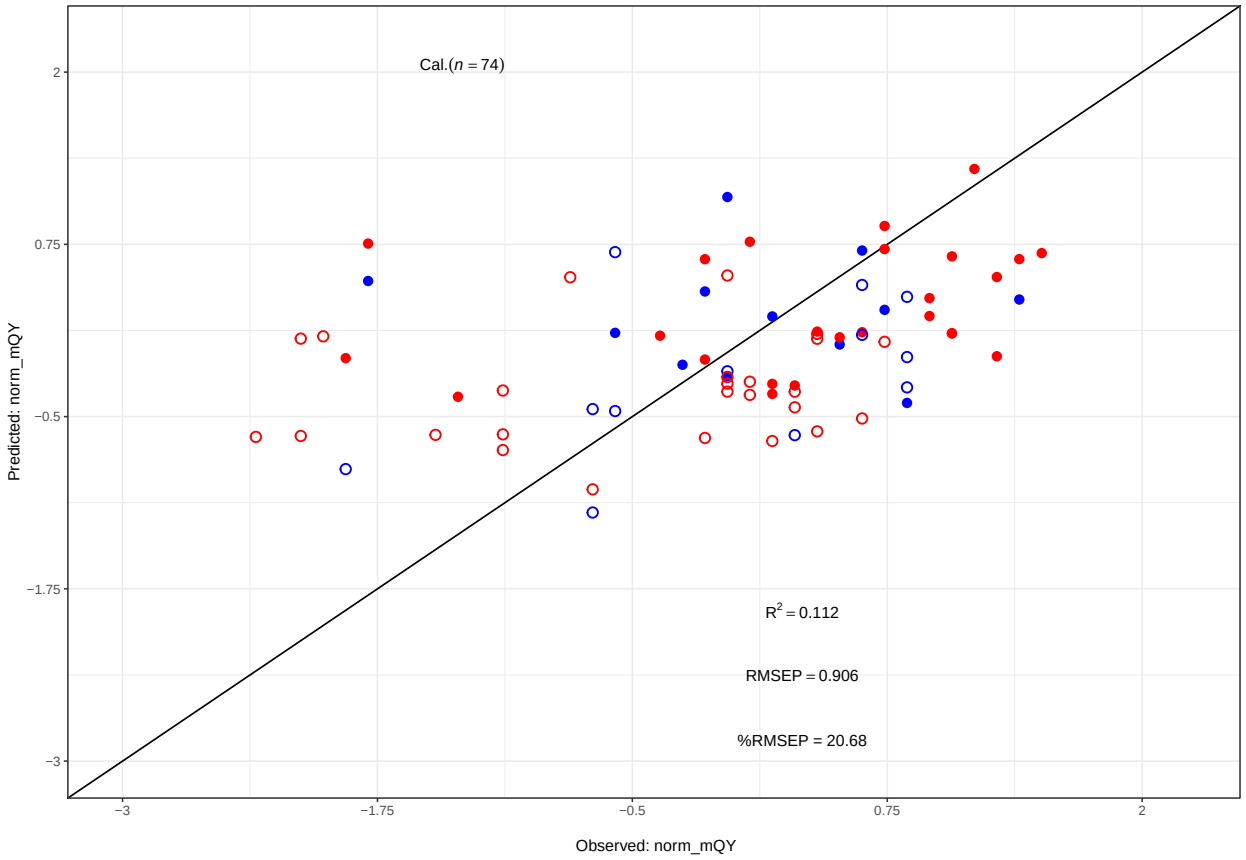

norm_mQY validation dataset
Reflectance (%)
0.378
0.196
0.014
500
1000
1500
2000
2500
Wavelength (nm)

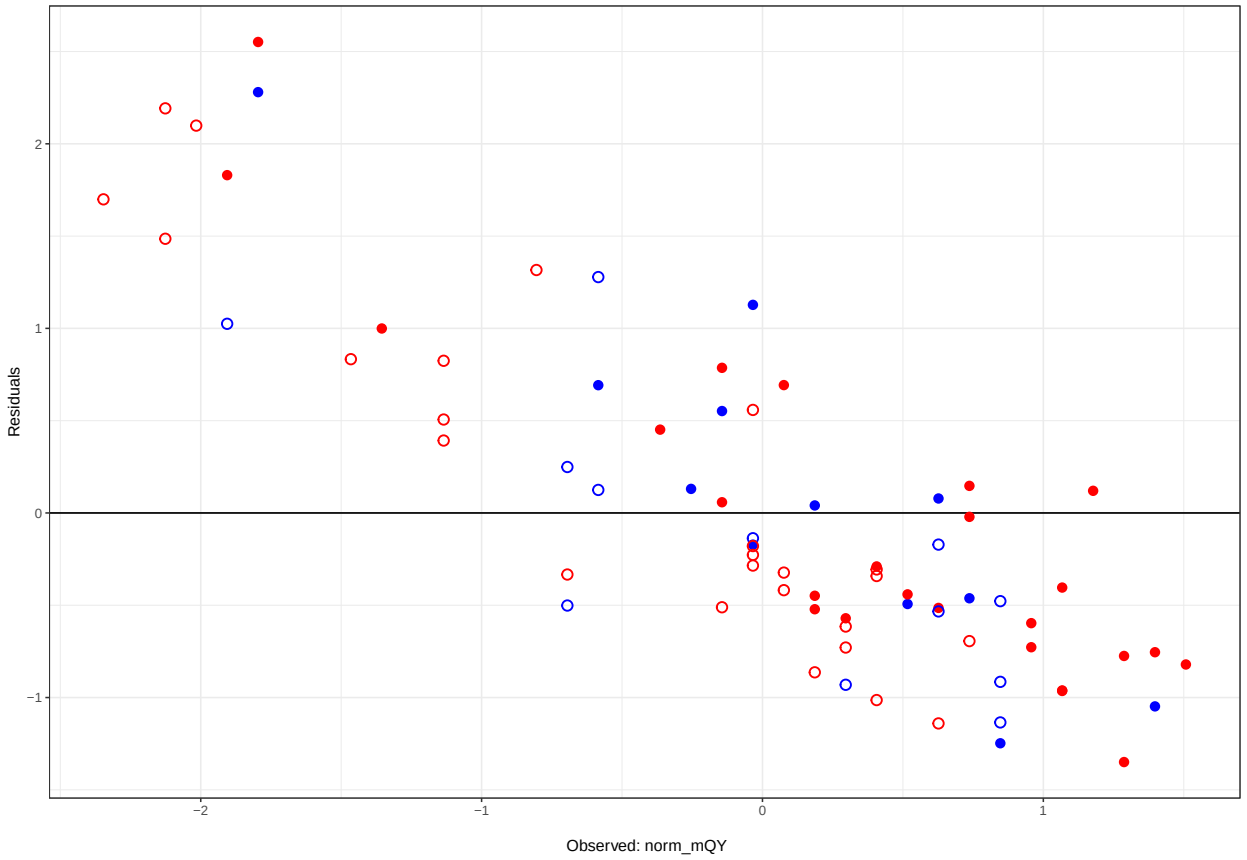

Reflectance (%)
0.0
0.1
0.2
0.3
500
1000
1500
2000
2500
Wavelength (nm)

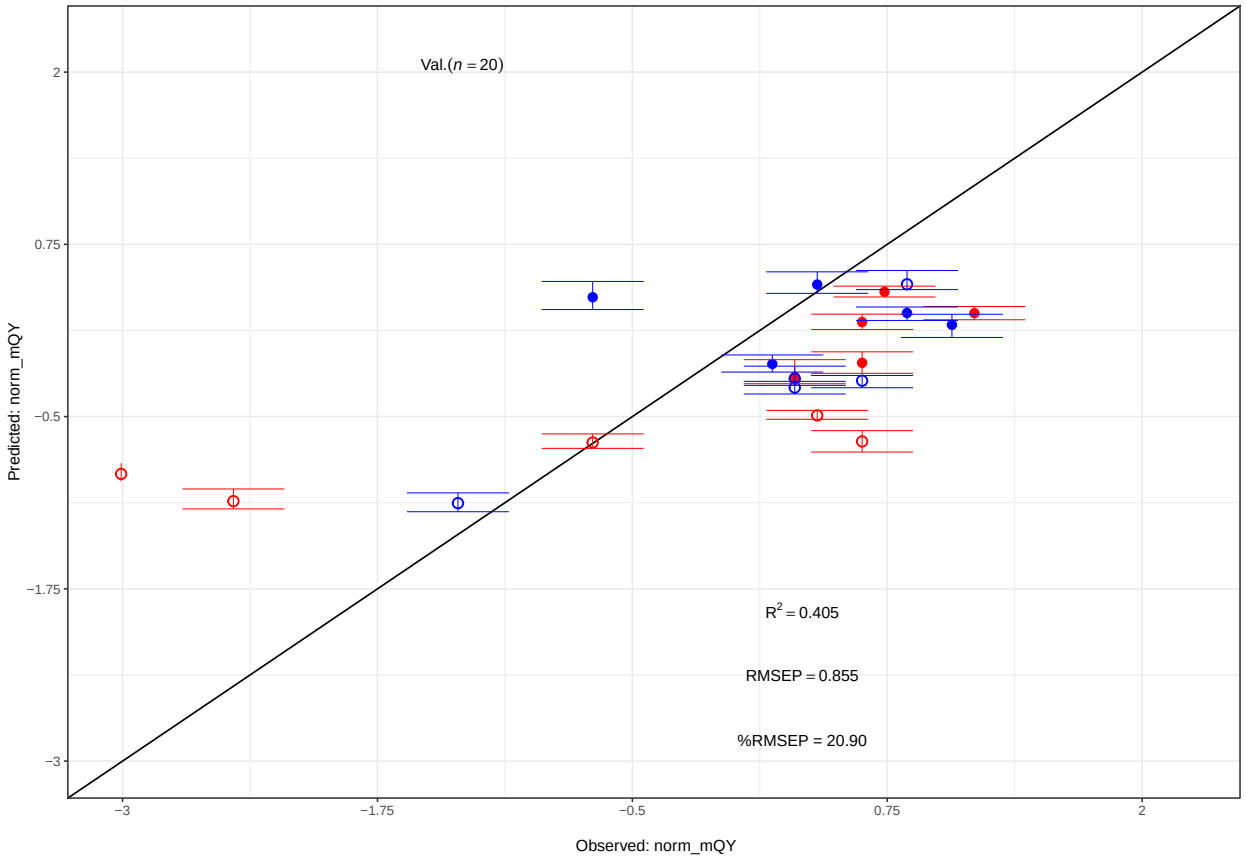


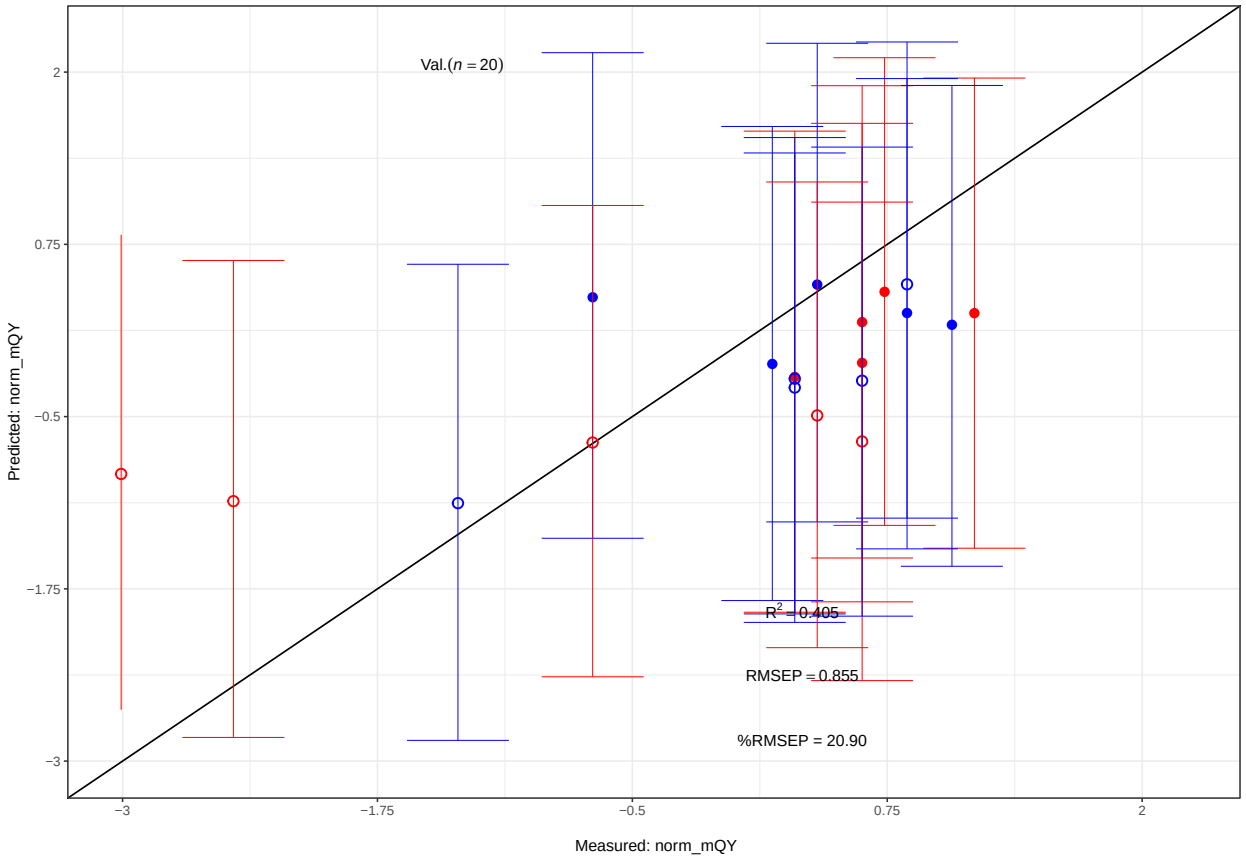

```
##   data_set    R2 RMSEP NRMSEP
## 1      cal 0.112 0.906 23.503
## 2      val 0.405 0.855 20.423
```

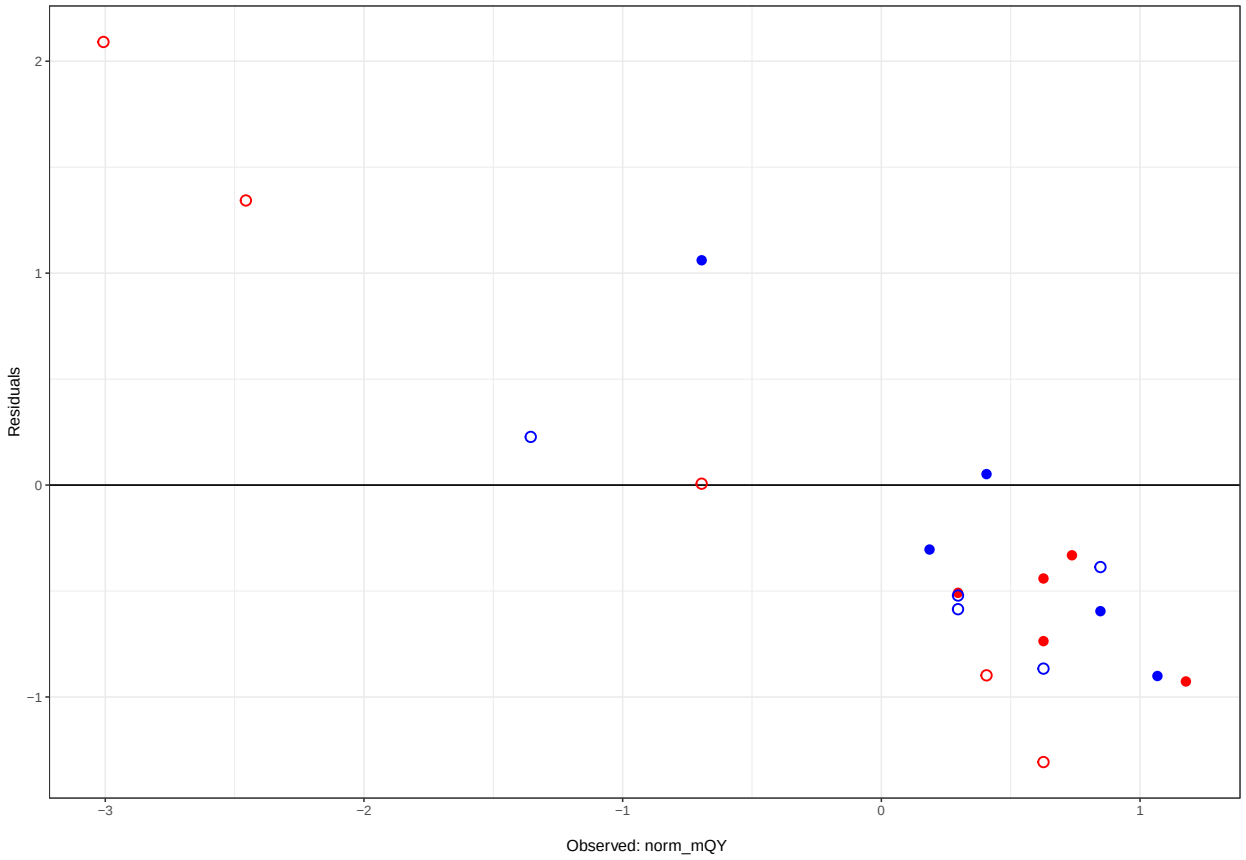
```
##     Observed  Predicted   Residuals Treatment Subpop         uci         lci
## 1  0.4064844  0.4582014  0.05171696        N1    TRJ  0.55065258  0.3944822
## 2  0.2963705 -0.2120518 -0.50842225        N1    IND -0.08677174 -0.2612385
## 3  0.1862566 -0.1179451 -0.30420168        N1    TRJ -0.05268490 -0.1768263
## 4 -0.6946549  0.3660784  1.06073331        N1    TRJ  0.48098280  0.2769884
## 5  0.7368262  0.4054337 -0.33139256        N1    IND  0.44682066  0.3681475
## 6  0.6267123  0.1858611 -0.44085120        N1    IND  0.24346774  0.1319015
##        upi       lpi
## 1 2.209319 -1.264184
## 2 1.571725 -1.919735
## 3 1.605488 -1.834999
## 4 2.140872 -1.382901
## 5 2.104329 -1.289361
## 6 1.901373 -1.526004
```


Cal.(n = 74)
2
0.75
−0.5
−1.75
−3
Predicted: norm_mQY
−3
−1.75
−0.5
0.75
2
Observed: norm_mQY
R2 = 0.112
RMSEP = 0.906
%RMSEP = 20.68


Residuals
2
1
0
−1
−2
−1
0
1
Observed: norm_mQY


Val.(n = 20)
2
0.75
−0.5
−1.75
−3
Predicted: norm_mQY
−3
−1.75
−0.5
0.75
2
Observed: norm_mQY
R2 = 0.405
RMSEP = 0.855
%RMSEP = 20.90


Val.(n = 20)
R² = 0.405
RMSEP = 0.855
%RMSEP = 20.90
Predicted: norm_mQY
Measured: norm_mQY
2
0.75
−0.5
−1.75
−3
−3
−1.75
−0.5
0.75
2




```
##       Iteration  Intercept X1445.01 X1473.13 X1456.26 X1439.39
## Seg 1         1 -0.0264767 2.919707 2.583095 2.999592 2.758179
## Seg 2         2  1.8360581 2.295162 2.113686 2.372905 2.126953
## Seg 3         3  1.5995286 2.135061 1.990766 2.257380 2.022078
## Seg 4         4  1.8893380 2.292527 2.127754 2.374628 2.133557
## Seg 5         5  1.6372955 2.200722 2.008595 2.283414 2.057408
## Seg 6         6  1.3965421 2.351082 2.147376 2.388310 2.161146
```

```
##              coefs
## 1445.01 2.247304
## 1473.13 2.074280
## 1456.26 2.323162
## 1439.39 2.090824
## 1495.62 1.609235
## 1467.51 2.359172
```