Hindcast Case Studies

Tropical Tunas: Indian Ocean Yellowfin

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24 June, 2020

Retrospective

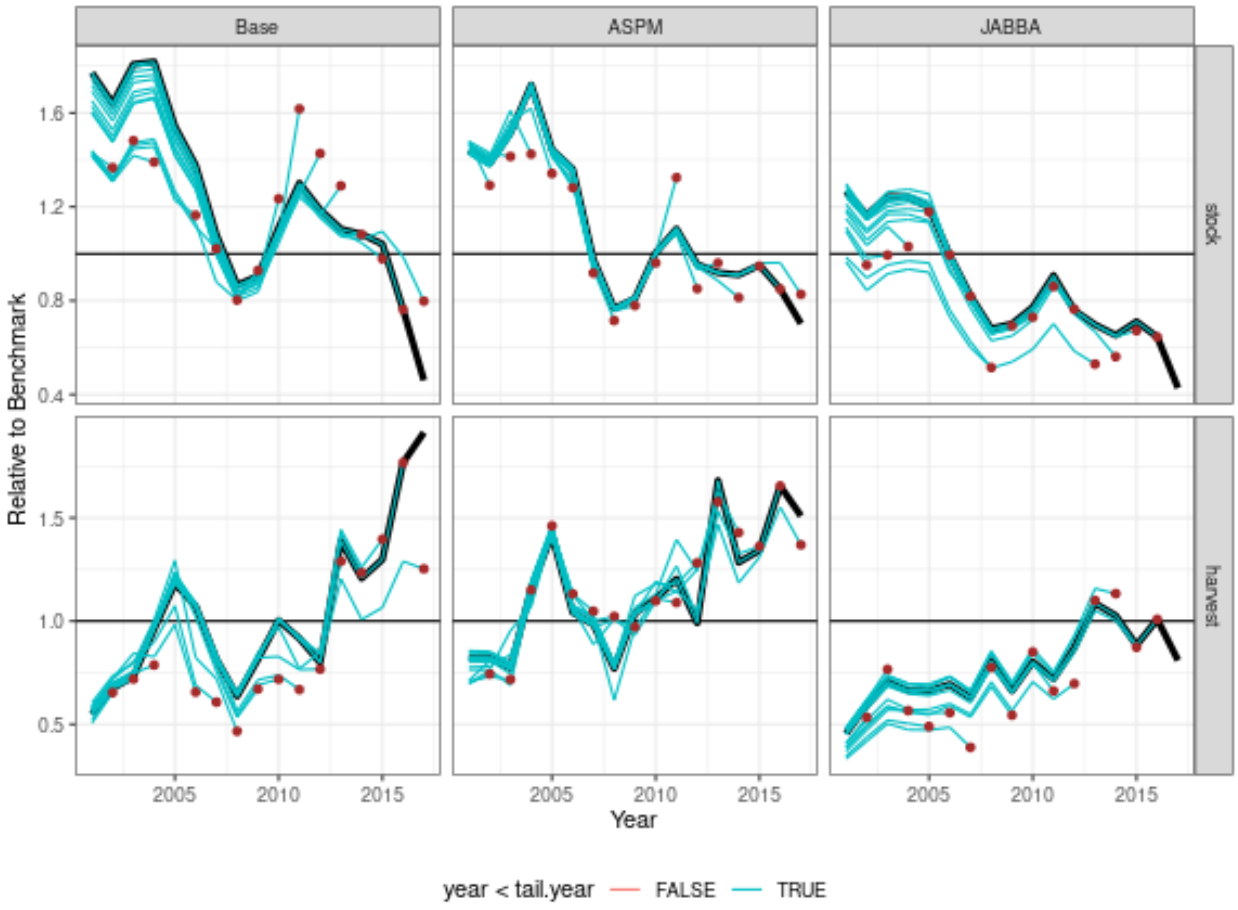

Figure 1 Retrospective analyses.

Figure 2 Retrospective analyses (cyan) with 3 year projections (pink); the thick black line is the assessed estimates, the brown points the terminal years and blue points are the 3 step ahead projections.

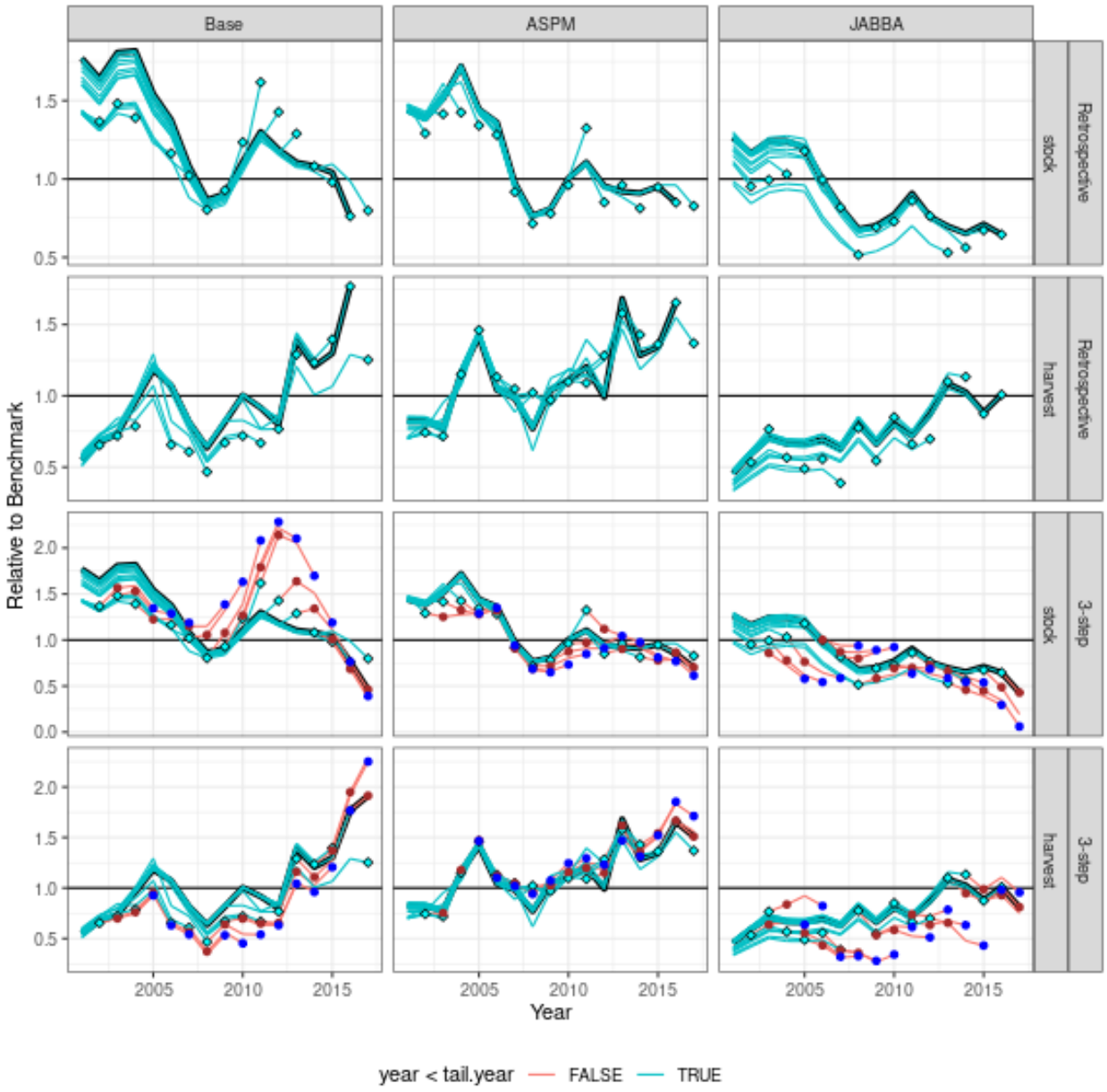

Figure 3 Retrospective analyses (cyan) with 3 (blue), 1 (brown) projections the thick black line is the assessed estimates, the brown points the terminal years and blue points are the projections.

CPUE

```
Some stats skipped because the .cor file not found: /home/laurence-kell/Dropbox/xval/io-yft/base/ss3.co
warning.sso file not found
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warning.sso file not found
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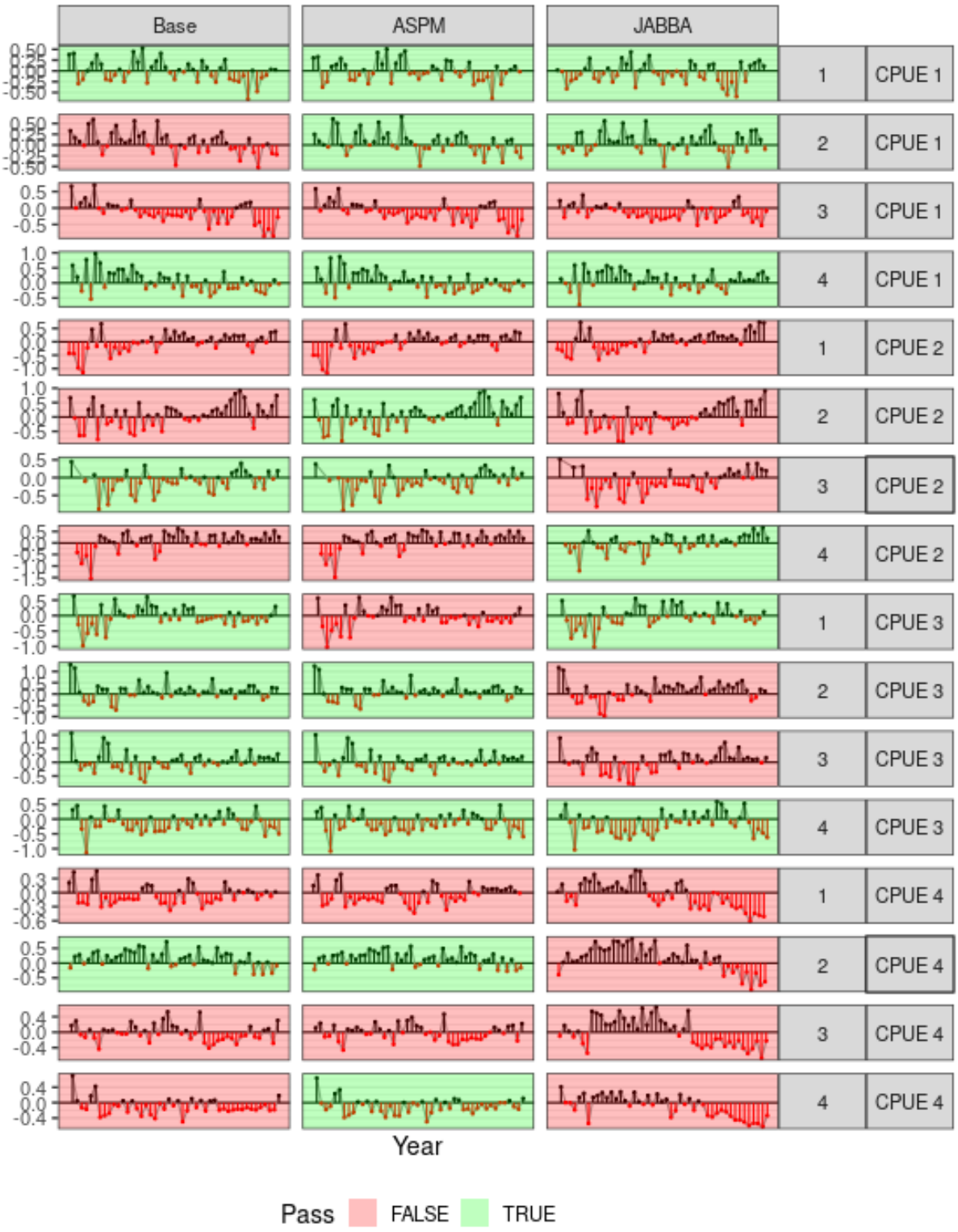

Base
ASPM
JABBA
1
CPUE 1
2
CPUE 1
3
CPUE 1
4
CPUE 1
1
CPUE 2
2
CPUE 2
3
CPUE 2
4
CPUE 2
1
CPUE 3
2
CPUE 3
3
CPUE 3
4
CPUE 3
1
CPUE 4
2
CPUE 4
3
CPUE 4
4
CPUE 4
Year
Pass
FALSE
TRUE

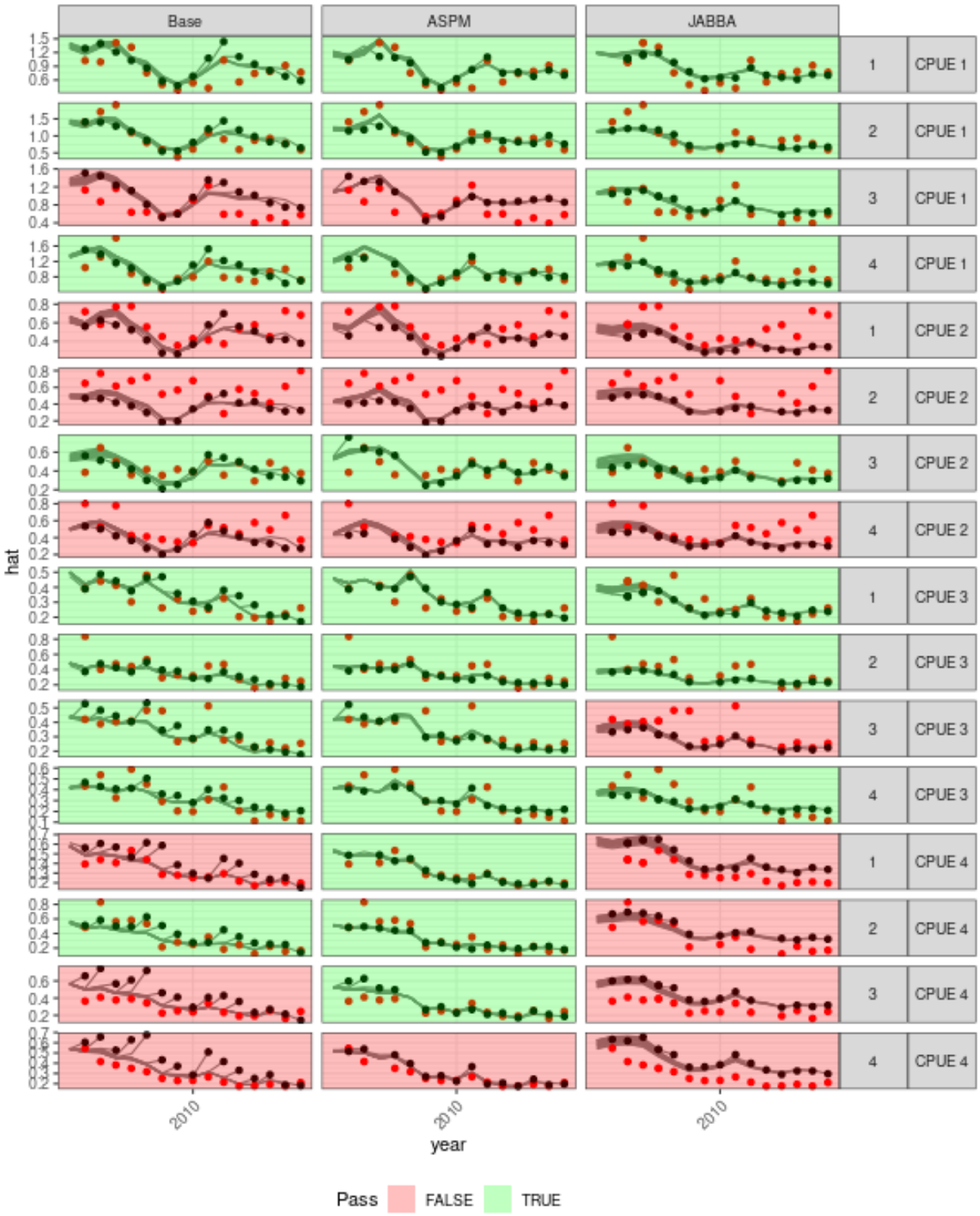


Figure 4 Time series of CPUE indices for hindcast by **quarter, year and series**, observations (red) and estimates from hindcast (blue).

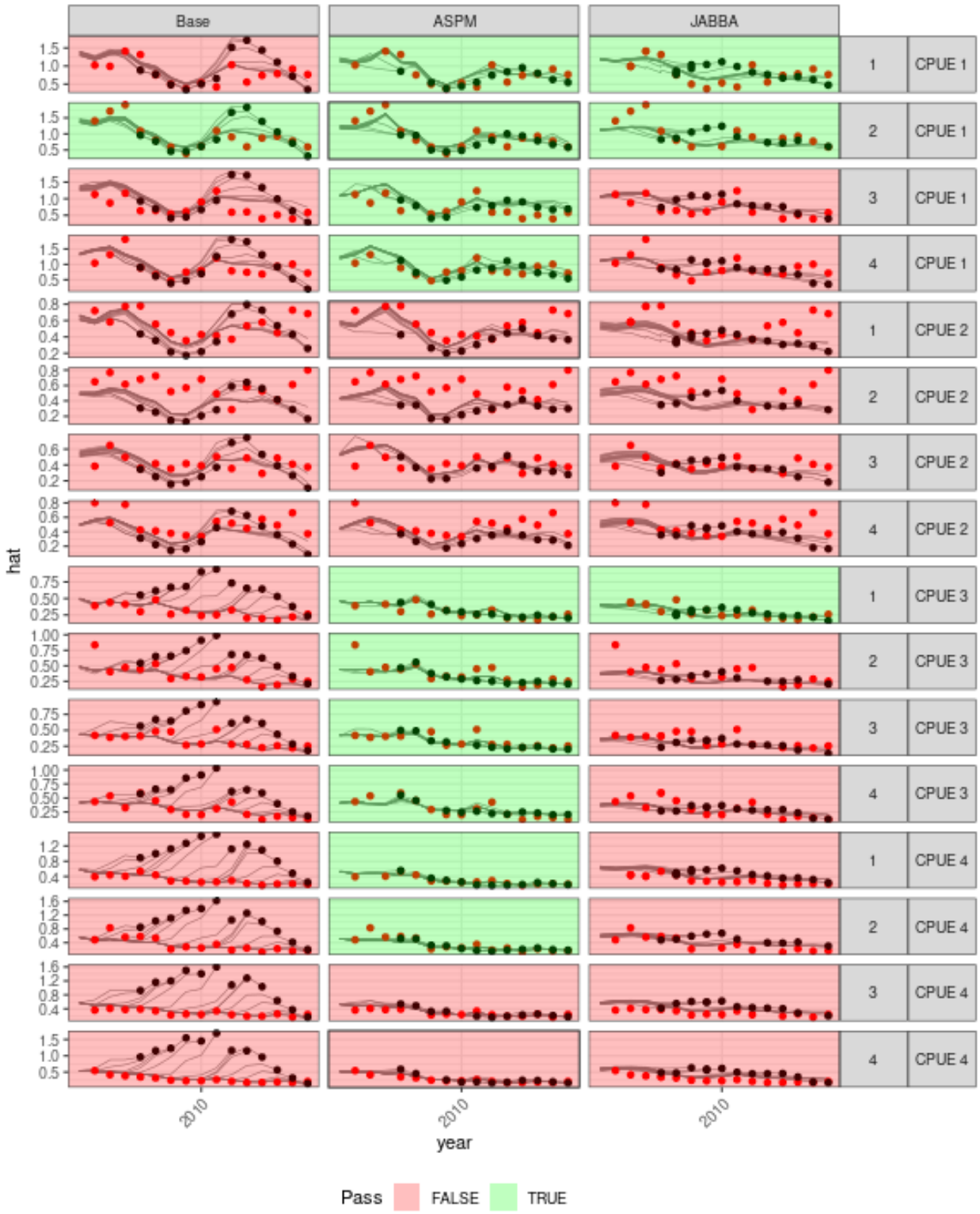


Figure 5 Time series of CPUE indices with 3 steps ahead for hindcast by **quarter, year and series**, observations (red) and estimates from hindcast (blue).

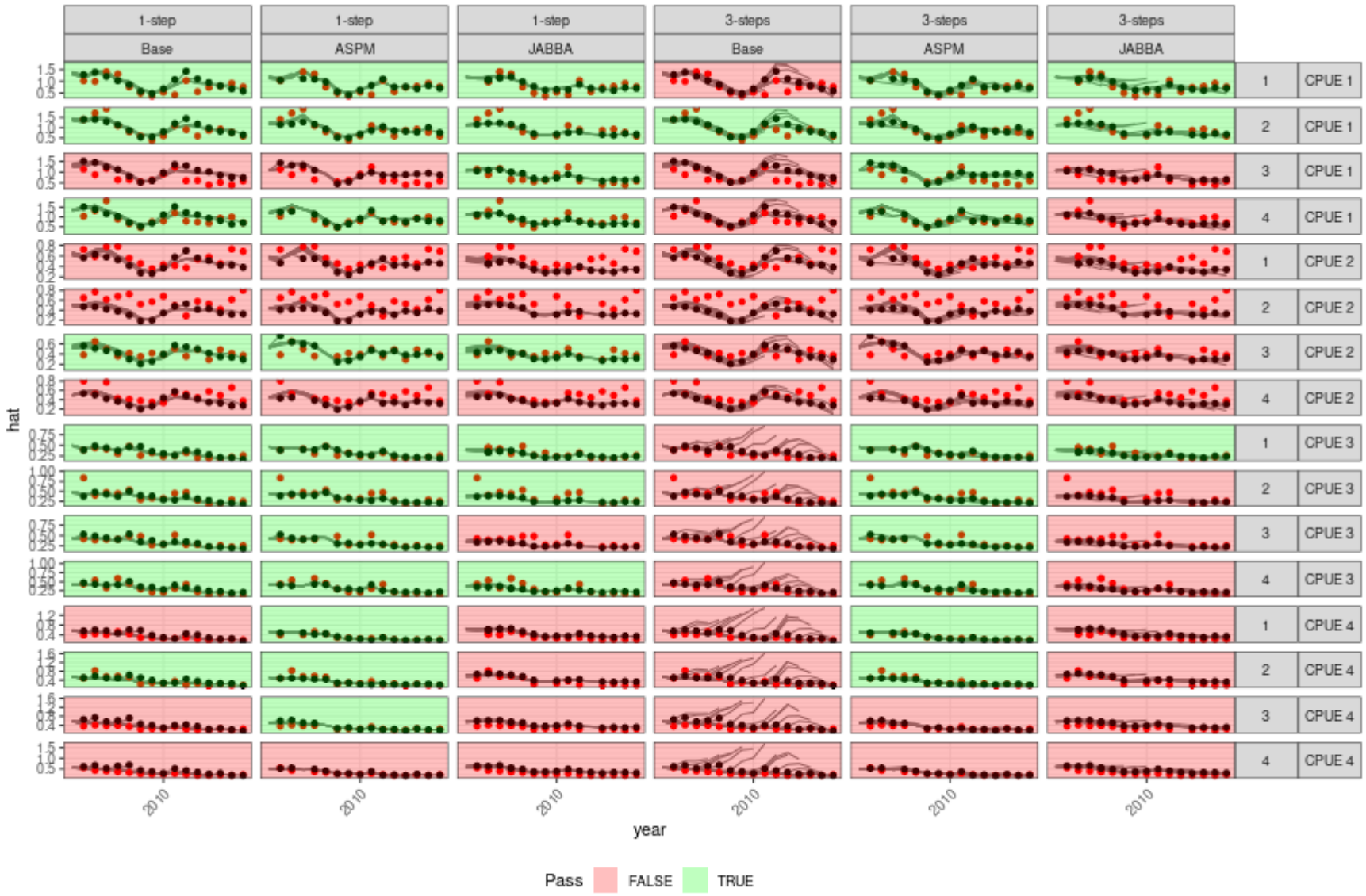
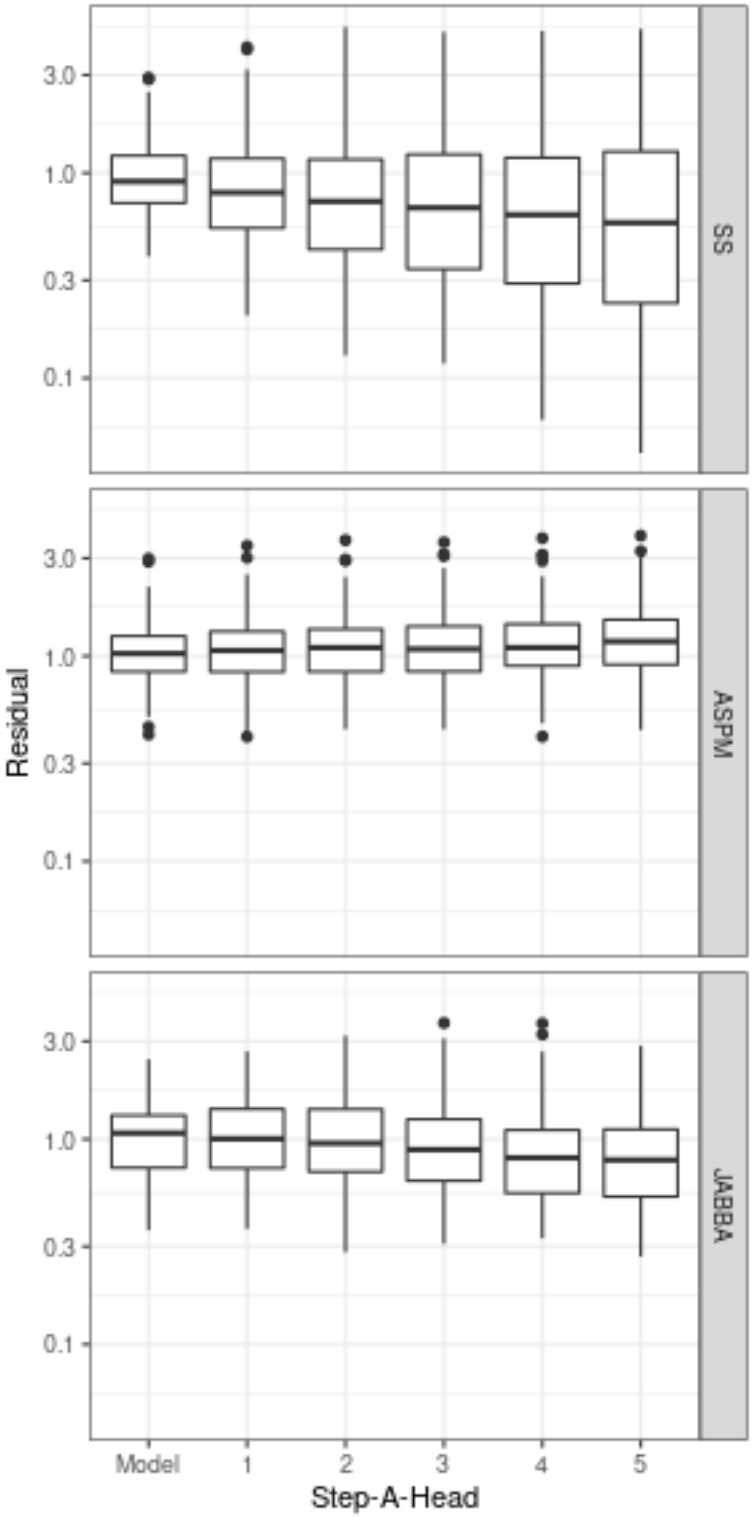


Figure 6 Time series of CPUE indices for hindcast by **quarter, year and series**, observations (red) and estimates from hindcast (blue).


SS
ASPM
JABBA
Residual
3.0
1.0
0.3
0.1
Model
1
2
3
4
5
Step-A-Head

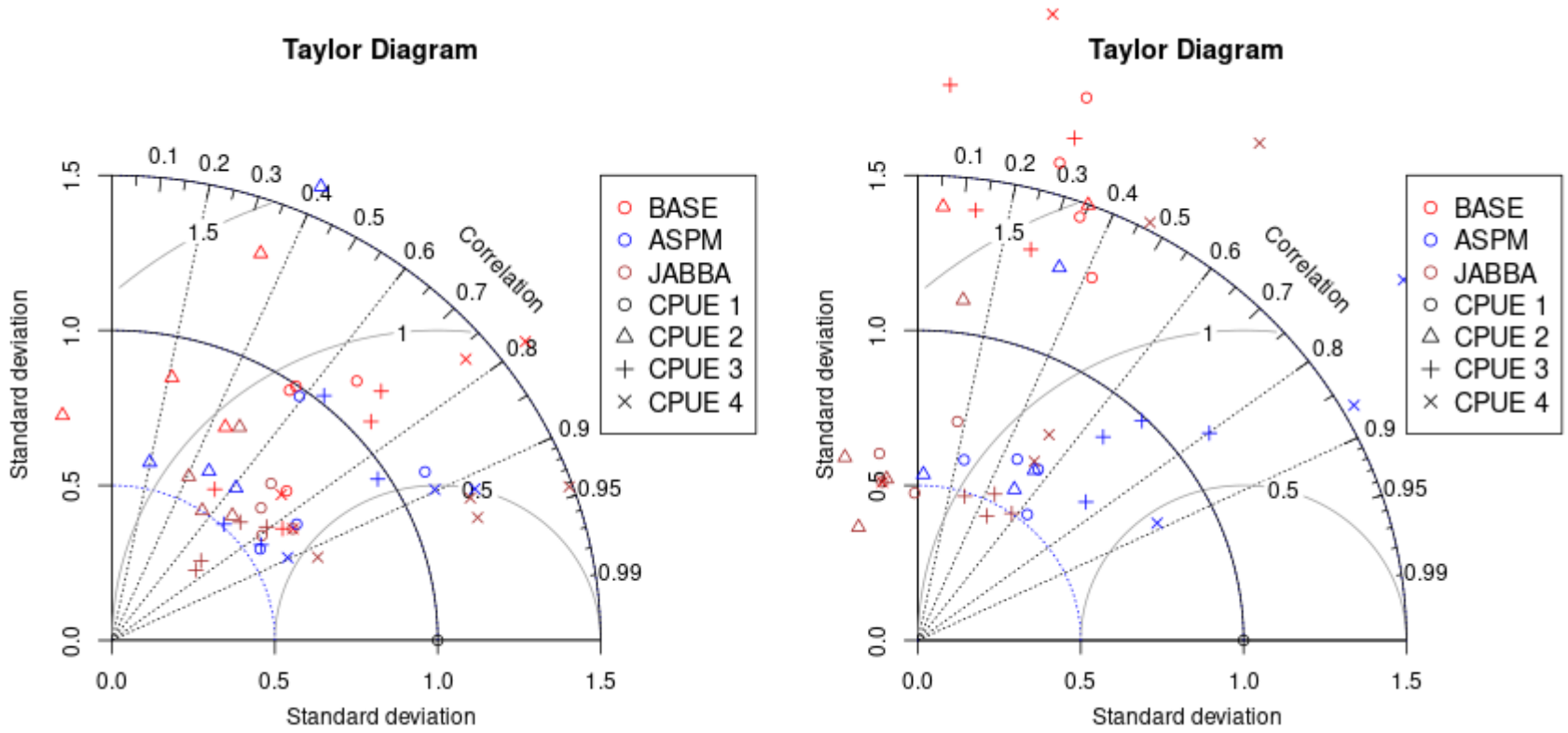


Figure 7 One and three step ahead fits.

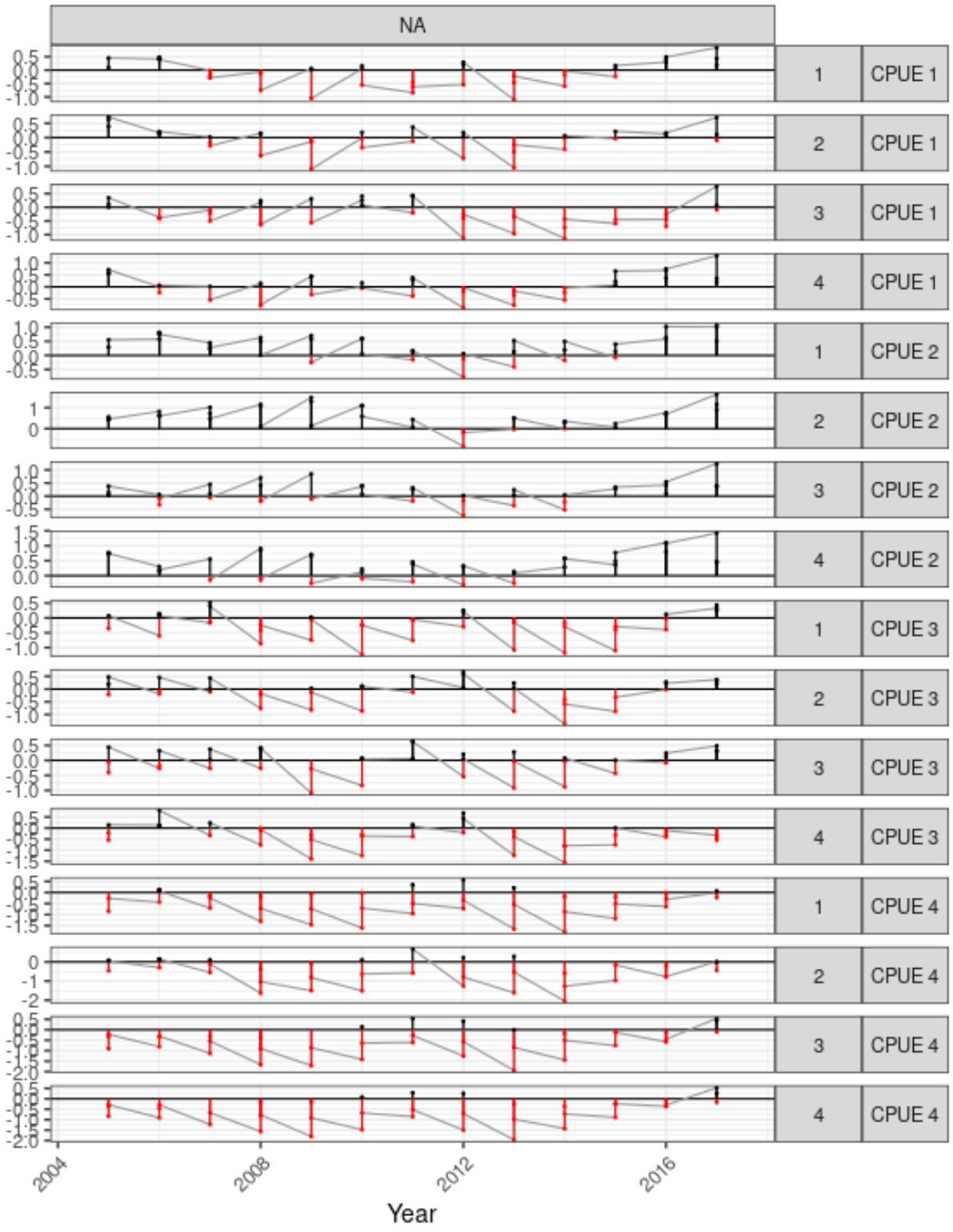


Figure 8 Residuals for scenarios by year, red background indicates unusually long runs or unusually few crossings.

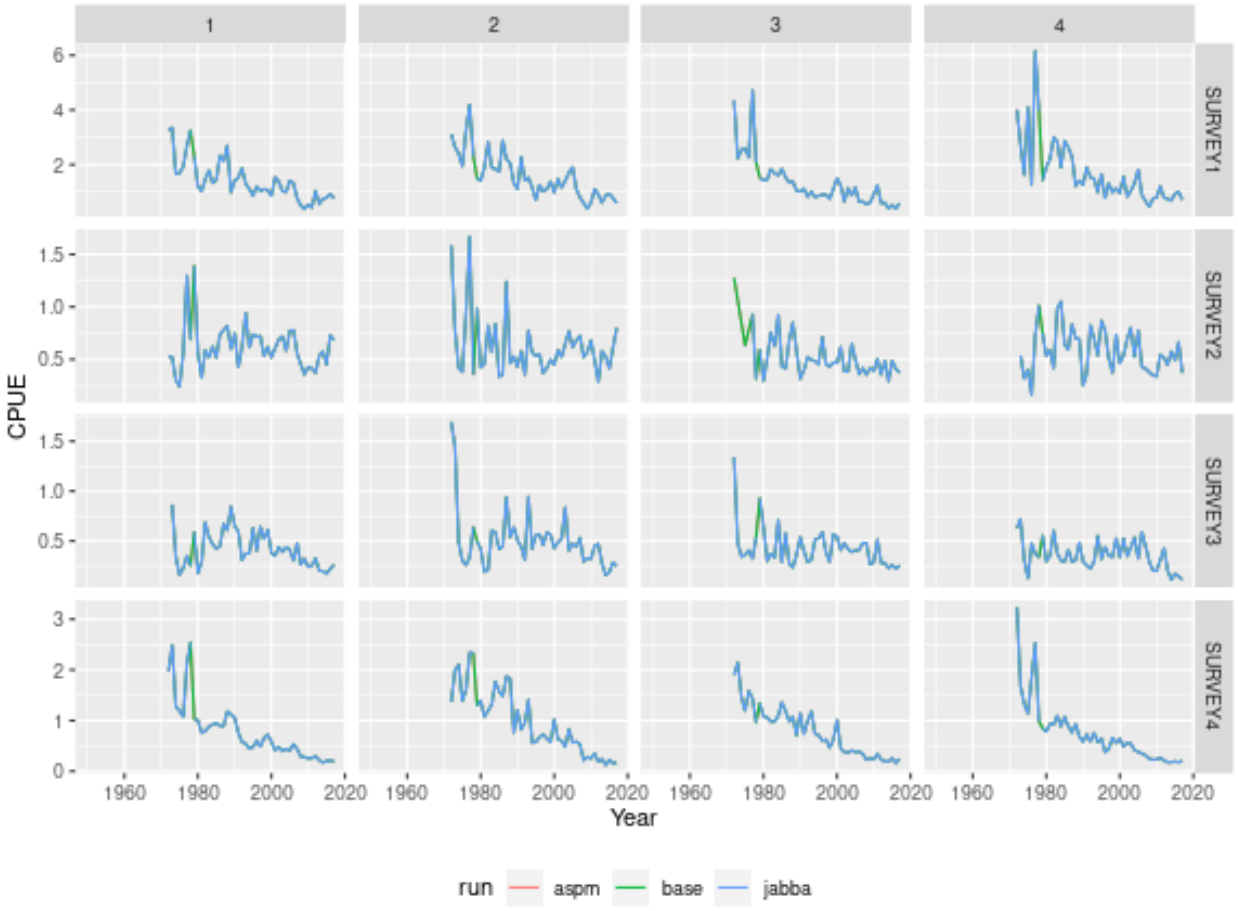


Figure 9 CPUEs as used by the three models.

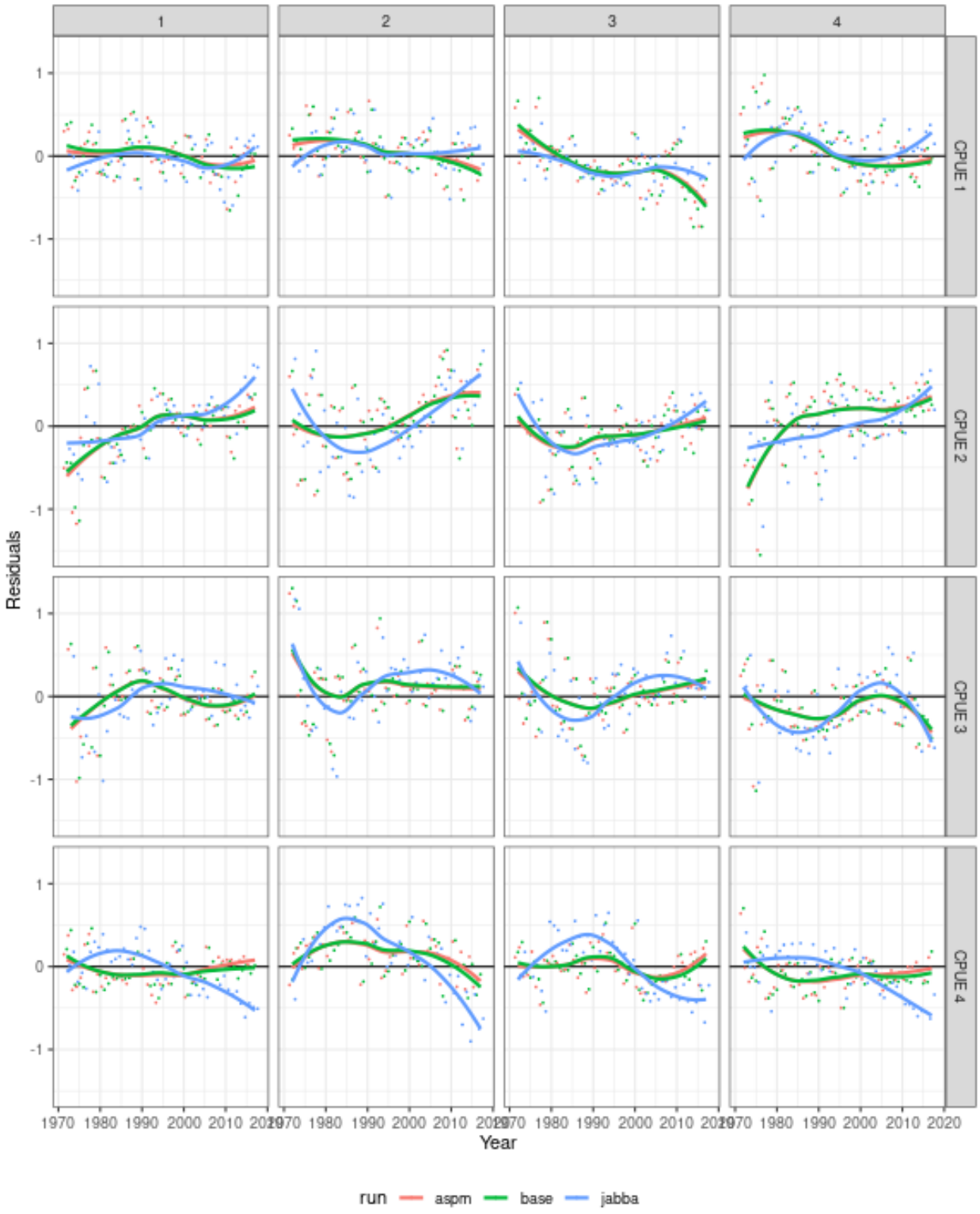


Figure 10 Residuals.

RMSE

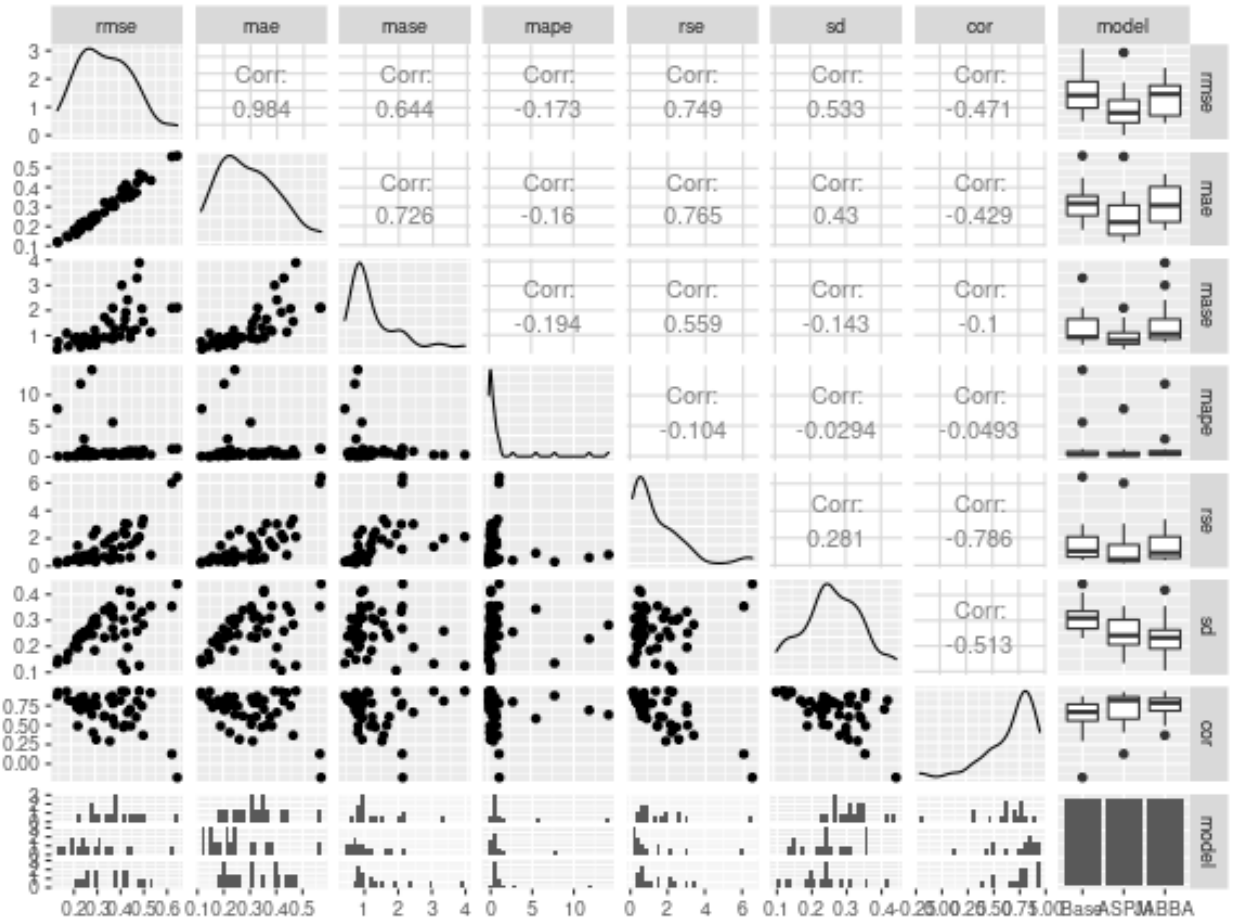


Figure 11 Metrics.

Figure 12. Pairwise scatter plots to look at correlations between Indices.

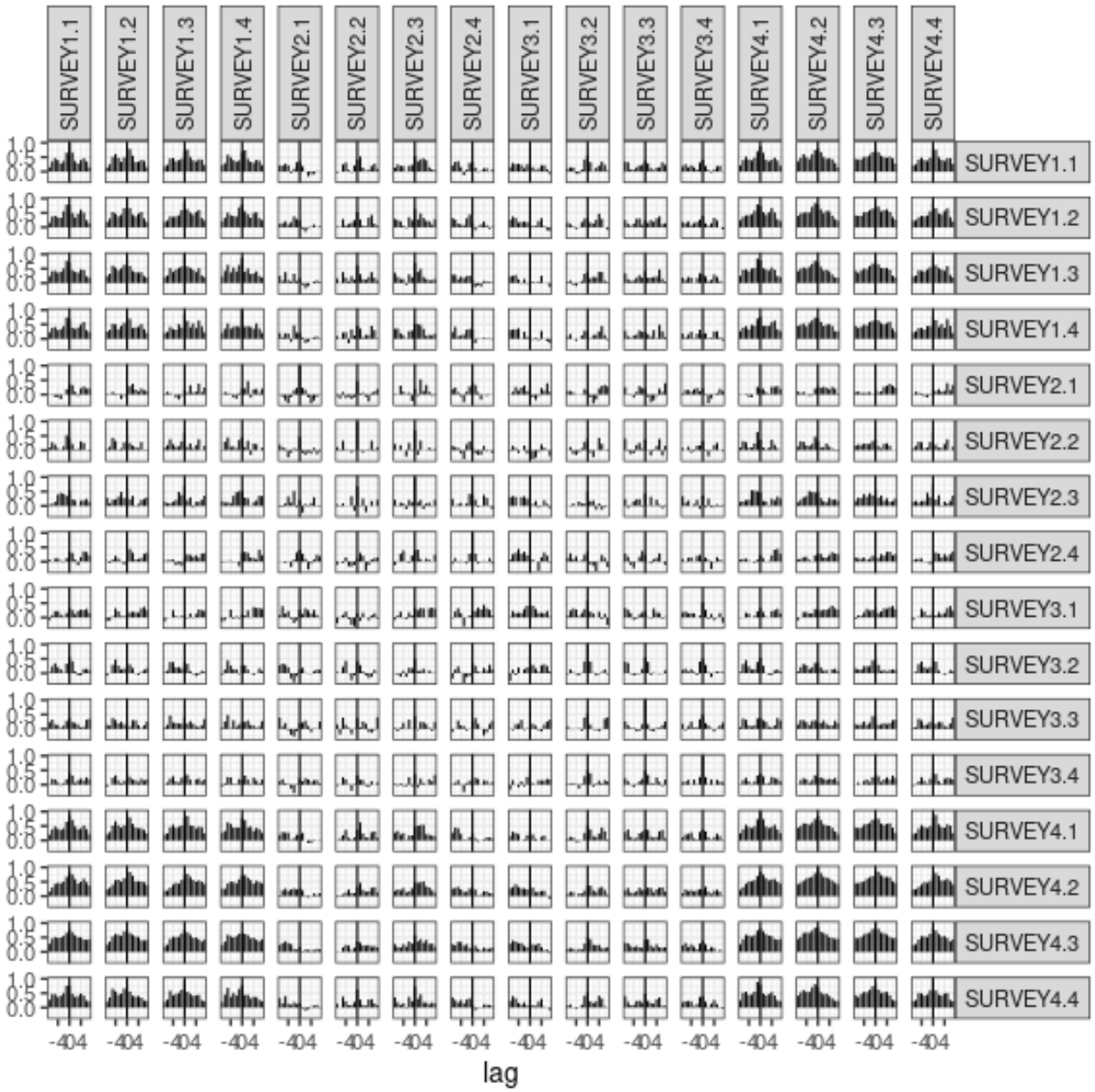
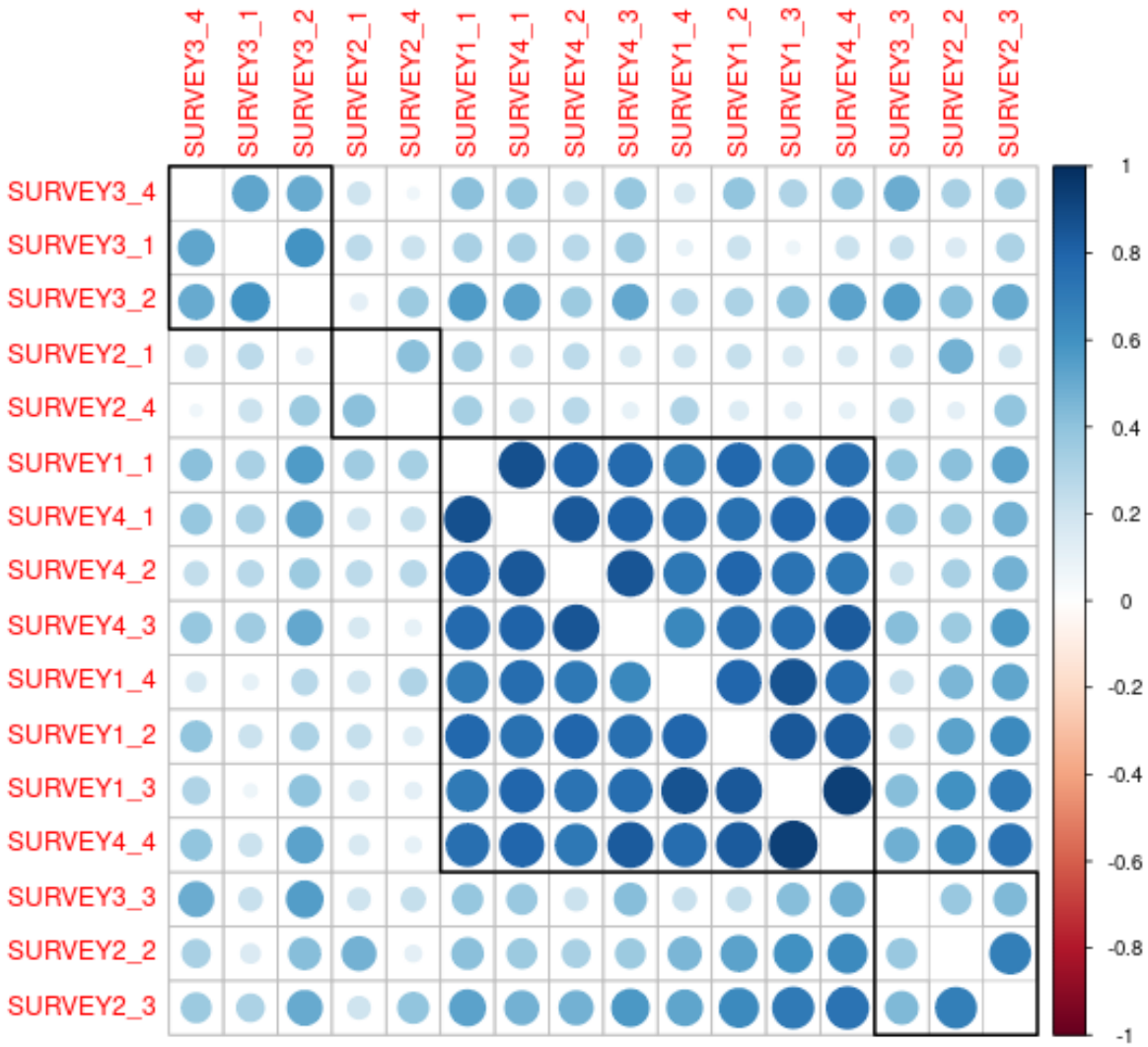


Figure 13 Cross correlations between indices, to identify potential lags due to year-class effects.



NULL

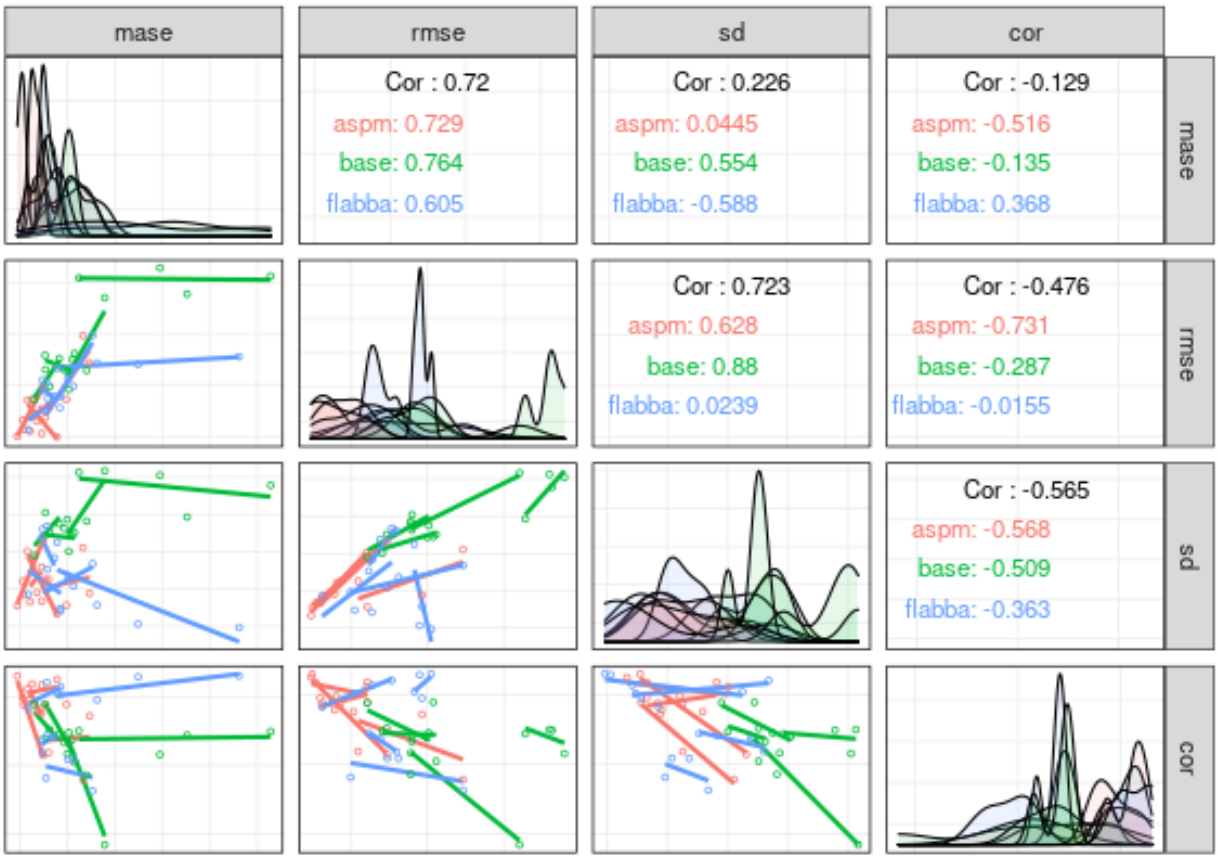
Figure 14. Plot of the correlation matrix for the CPUE indices, blue indicate a positive correlation and red negative. the order of the indices and the rectanglur boxes are chosen based on a hierarchical cluster analysis using a set of dissimilarities for the indices being clustered.

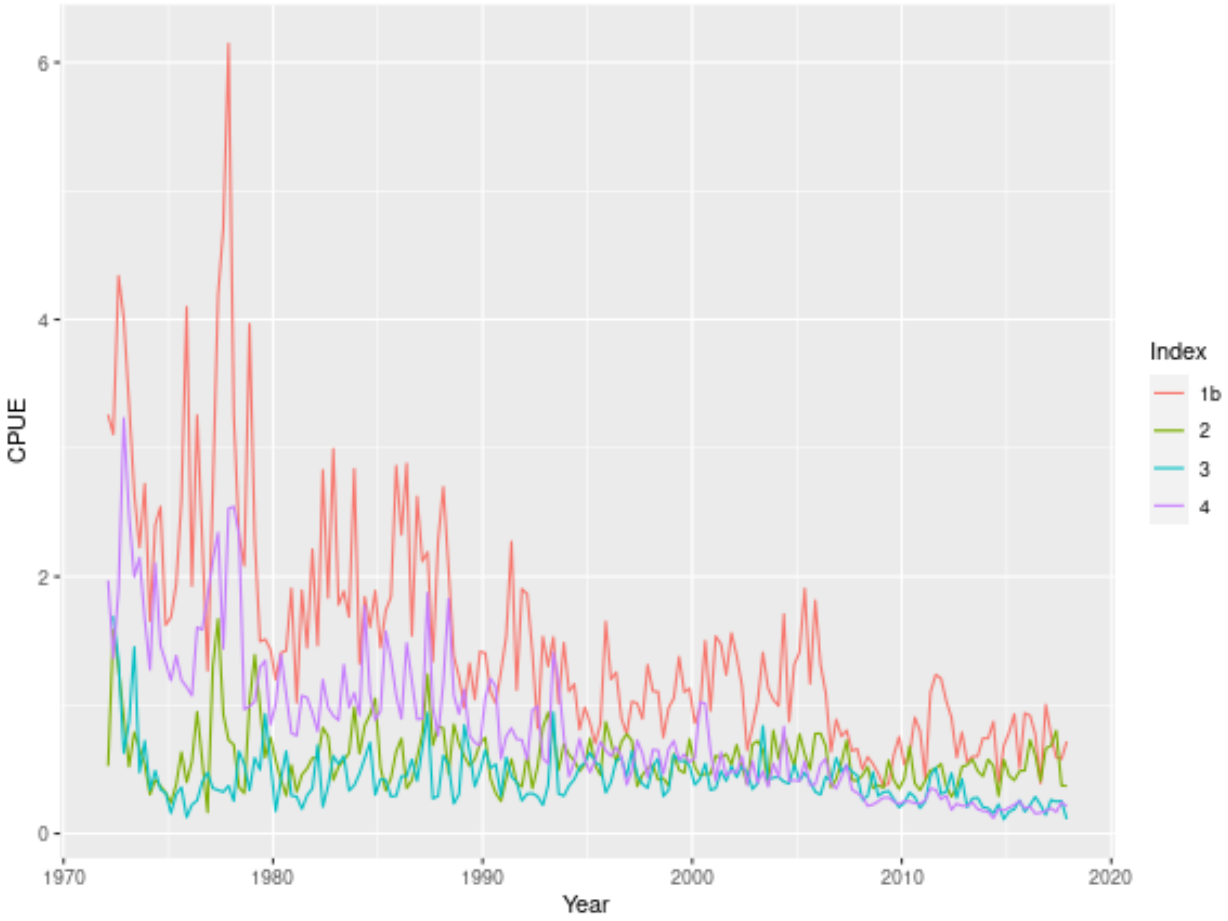
Model-based

aspm
base
jabba
stock
harvest
value.x
1.5
1.0
0.5
2005
2010
2015
year
colour
red

```
  variable   run     rho     re
1    stock  aspm -0.0899 -0.189
2    stock  base  0.3238  0.127
3    stock jabba -0.2140 -1.083
4  harvest  aspm  0.0850  0.190
5  harvest  base -0.2362 -0.265
6  harvest jabba -0.2831 -0.814
```

MASE


mase
rmse
sd
cor
Cor : 0.72
aspm: 0.729
base: 0.764
flabba: 0.605
Cor : 0.226
aspm: 0.0445
base: 0.554
flabba: -0.588
Cor : -0.129
aspm: -0.516
base: -0.135
flabba: 0.368
Cor : 0.723
aspm: 0.628
base: 0.88
flabba: 0.0239
Cor : -0.476
aspm: -0.731
base: -0.287
flabba: -0.0155
Cor : -0.565
aspm: -0.568
base: -0.509
flabba: -0.363


CPUE
6
4
2
0
1970
1980
1990
2000
2010
2020
Year
Index
1b
2
3
4

Catch
2e+05
1e+05
0e+00
1
2
3
4
5
1960
1980
2000
2020
Year
as.character(Gear)
FALSE
TRUE