The mse classes

MSE with FLR/a4a course. JRC (Ispra) 25-29 November 2019

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FLmse

- @stock, *FLStock*.
- @tracking, *FLQuant*.
- @sr, *FLSR*.
- @refpts, *FLPar*.
- @control, *fwdControl*.
- @fleetBehaviour, *mseCtrl*.
- @oem, *FLoem*.
- @projection, *mseCtrl*.
- @genArgs, *list*.

FLmse

- @stock, *FLStock*.
    - @stock.n, *FLQuant*.
    - ssb(), *FLQuant*.
- @tracking, *FLQuant*.
- @sr, *FLSR*.
- @refpts, *FLPar*.
- @control, *fwdControl*.
- @fleetBehaviour, *mseCtrl*.
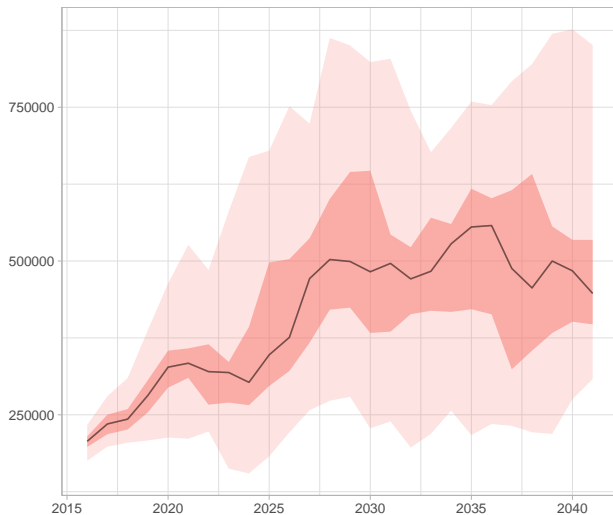- @oem, *FLoem*.

stock

`plot(stock(res.dr))`
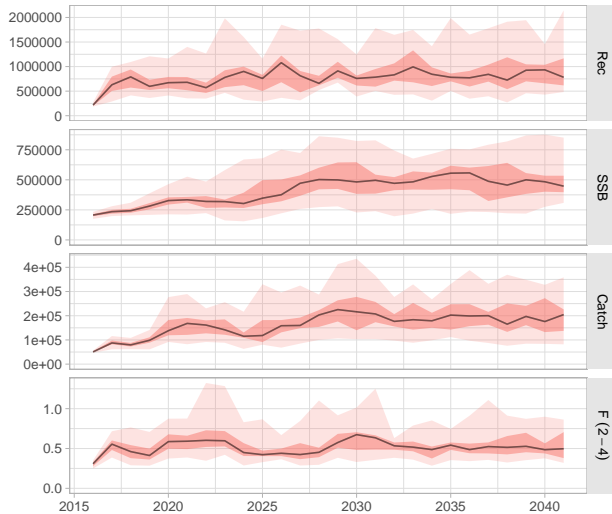
stock

- `m(stock(res.dr))`
- `fbar(stock(res.dr))`
- `stock.n(stock(res.dr))`
- `stk <- stock(res.dr)`
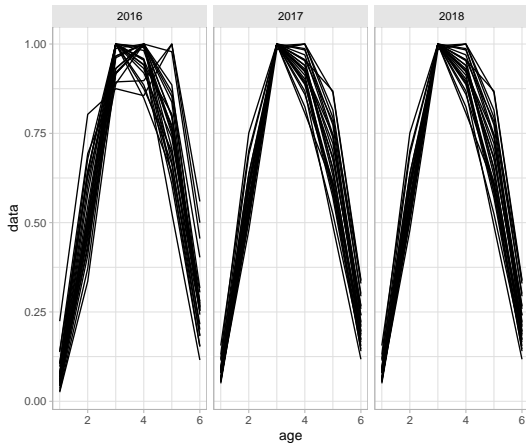
stock

`plot(ssb(stock(res.dr)))`

stock

```
catch.sel(stock(res.dr))[, '2017']
```

```
## An object of class "FLQuant"
## iters:  25
##
## , , unit = unique, season = all, area = unique
##
##      year
## age 2017
##    1 0.080001(0.0253)
##    2 0.561746(0.0589)
##    3 1.000000(0.0000)
##    4 0.925128(0.0463)
##    5 0.677463(0.1057)
##    6 0.211873(0.0692)
##
## units:  NA
```
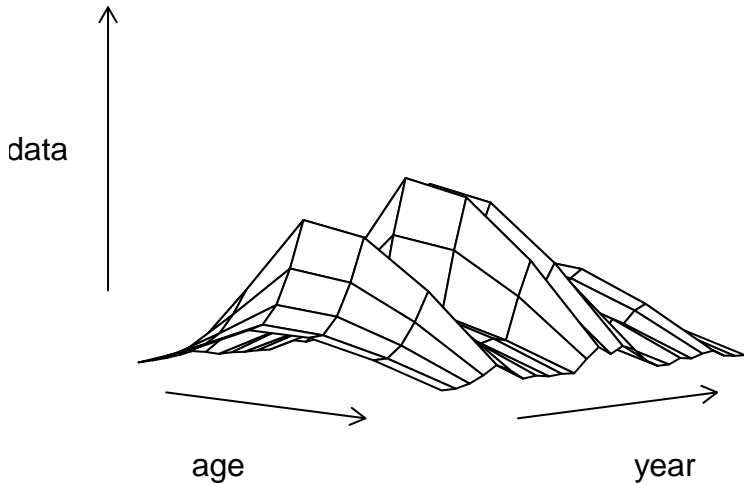
stock

```
ggplot(catch.sel(stock(res.dr))[, ac(2016:2018)], aes(x=age, y=da
  geom_line() + facet_wrap(~year)
```

stock

```
wireframe(harvest(stock(res.dr)), zlab="F")
```

refpts

```
refpts(res.dr)
```

```
## An object of class "FLPar"
##          quant
## refpt     harvest yield    rec      ssb      biomass  revenue
##    virgin 0.00e+00 0.00e+00 1.58e+06 4.96e+06 6.04e+06      NA
##    msy    2.99e-01 2.48e+05 1.30e+06 1.37e+06 2.19e+06      NA
##    crash  9.68e-01 2.19e-06 1.08e-05 2.76e-06 8.83e-06      NA
##    f0.1   3.36e-01 2.46e+05 1.25e+06 1.17e+06 1.95e+06      NA
##    fmax   5.83e-01 1.73e+05 8.20e+05 4.02e+05 8.88e+05      NA
##    spr.30 3.35e-01 2.46e+05 1.25e+06 1.18e+06 1.96e+06      NA
##    mey         NA       NA       NA       NA       NA      NA
##          quant
## refpt     profit
##    virgin     NA
##    msy        NA
##    crash      NA
##    f0.1       NA
##    fmax       NA
##    mey        NA
```
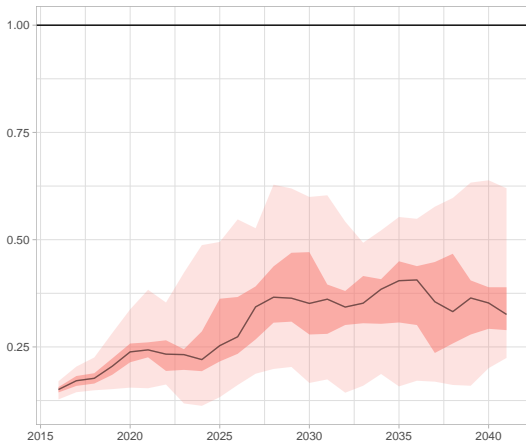
stock + refpts

```
plot(ssb(stock(res.dr)) / refpts(res.dr)["msy","ssb"]) + geom_hli
```

tracking

```
tracking(res.dr)[, 1:3]
```

```
## An object of class "FLQuant"
## iters:  25
##
## , , unit = unique, season = all, area = unique
##
##                 year
## metric          2016                     2017                     2018
##    C.obs        4.7860e+04(3.86e+03)     5.1428e+04(3.28e+03)     9.0469
##    F.est        3.3997e-01(4.03e-02)     3.1321e-01(5.36e-02)     5.4012
##    B.est        1.9262e+05(2.18e+04)     2.0202e+05(2.85e+04)     2.3507
##    C.est        4.8182e+04(2.83e+03)     5.2193e+04(4.36e+03)     8.7265
##    conv.est     2.0156e-02(2.43e-02)     6.4008e-02(7.46e-02)     2.1841
##    metric.phcr  5.6031e-01(6.38e-02)     5.6031e-01(6.38e-02)     5.6031
##    metric.hcr   5.6031e-01(6.38e-02)     5.6031e-01(6.38e-02)     5.6031
##    metric.is    8.8331e+04(9.07e+03)     8.0644e+04(1.02e+04)     9.8362
##    metric.iem   8.7536e+04(2.10e+04)     7.9449e+04(1.71e+04)     9.8400
##    metric.fb    8.7536e+04(2.10e+04)     7.9449e+04(1.71e+04)     9.8400
##               3.9861e-01(4.86e-02)       5.5471e-01(1.15e-01)     4.6107
##    B.om         2.0691e+05(2.54e+04)     2.3512e+05(4.09e+04)     2.4294
```
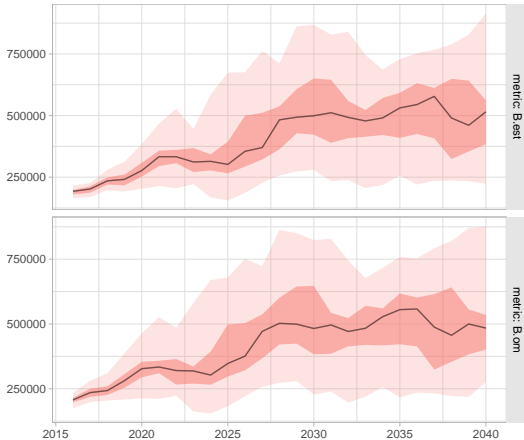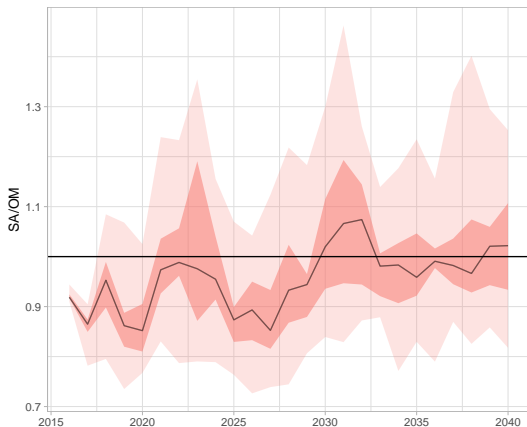
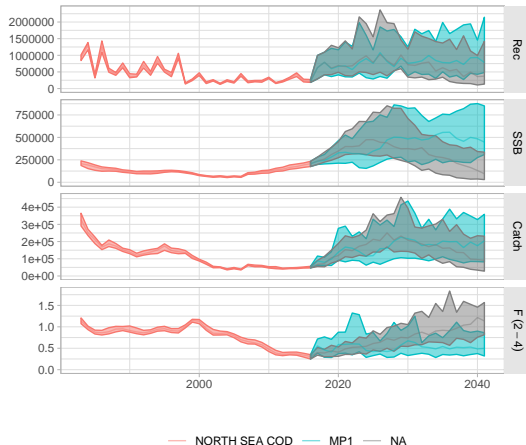# tracking

```
plot(tracking(res.dr)[c("B.est", "B.om")])
```

tracking

```
plot(tracking(res.dr)[c("B.est")] / tracking(res.dr)[c("B.om")])
  geom_hline(yintercept=1) + ylab("SA/OM")
```

plot(om, mse)

plot(stk.om, res.dr, res.dl)

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plot(om, mse)

`plot(stk.om, DR=res.dr, DL=res.dl)`

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