MSE\_analysis

Haikun Xu

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library(tidyr)

## Warning: package 'tidyr' was built under R version 4.2.3

library(dplyr)

## Warning: package 'dplyr' was built under R version 4.2.3

##   
## Attaching package: 'dplyr'

## The following objects are masked from 'package:stats':  
##   
## filter, lag

## The following objects are masked from 'package:base':  
##   
## intersect, setdiff, setequal, union

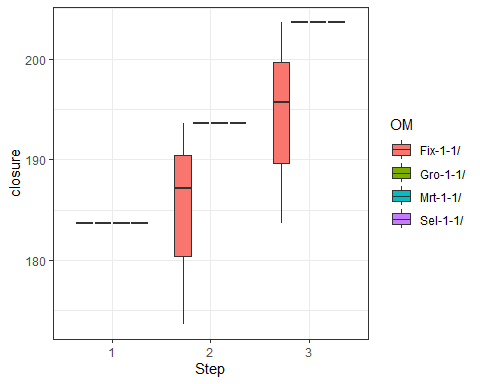
library(ggplot2)  
  
# Specify path of parent directory  
pdir = "D:/OneDrive - IATTC/IATTC/2025/MSE/Test/"  
  
# Specify the path of conditioned initial OM  
sdir = "D:/OneDrive - IATTC/IATTC/2025/SAC16/BET F30/"  
  
# Dimensions  
library(IATTCMSE)  
library(foreach)  
library(doParallel)

## Loading required package: iterators

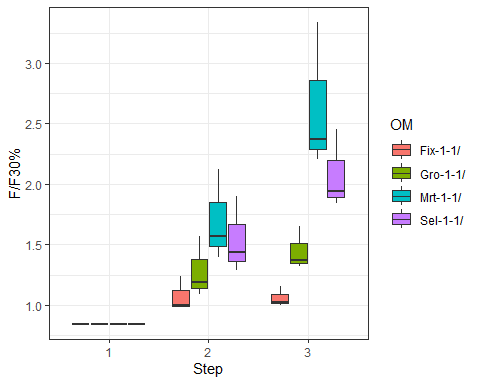
## Loading required package: parallel

#Specify path of parent directory  
pdir <- "D:/OneDrive - IATTC/IATTC/2025/MSE/Test/"  
  
#Specify the path of conditioned initial OM  
sdir <- "D:/OneDrive - IATTC/IATTC/2025/SAC16/BET F30/"  
  
# Dimensions  
niterations <- 3  
nyears <- 9  
nquarters <- nyears \* 4  
Mcycle <- 3  
nsteps <- nyears / Mcycle  
endquarter <- 196  
startquarter <- 17  
n\_extra\_R <- 2 #number of assessment period recruitment in the projection  
EM\_comp\_fleet <- c(4, 23) # fleets with comps in ASPM Rdevs+  
  
OM\_name <- c("Fix-1-1", "Sel-1-1", "Gro-1-1", "Mrt-1-1")  
HCR\_name <- c("HCR\_staff", "HCR\_staff\_0")  
  
# Set the harvest strategy  
HSnum <- 1  
HS <- paste0("HS", HSnum, "/")  
  
# Set the HCR  
HCRnum <- 1  
HCR <- paste0(HCR\_name[HCRnum], "/")

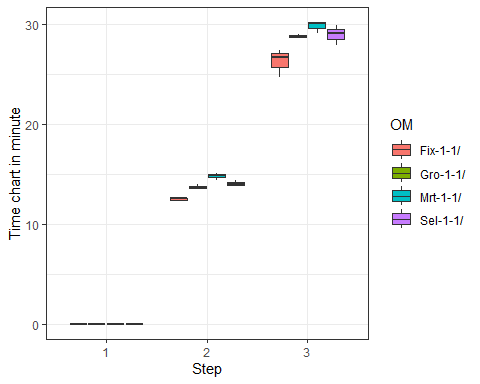
for (OMnum in 1:4) {  
 # Set the scenario  
 OM <- paste0(OM\_name[OMnum], "/")  
   
 # extract saved management output  
 for (itrnum in 1:niterations) {  
 itr = paste0("itr", itrnum, "/")  
 Record <- read.csv(paste0(paste0(pdir, HS, HCR, OM, itr, "Record.csv")))  
 Record$Step <- 1:nsteps  
 Record$OM <- OM  
 Record$itr <- itrnum  
   
 if (OMnum == 1 & itrnum == 1)  
 Record\_all <- Record  
 else  
 Record\_all <- rbind(Record\_all, Record)  
 }  
   
 Record\_all$itr <- as.factor(Record\_all$itr)  
}  
  
Record\_all$Step <- as.factor(Record\_all$Step)  
  
ggplot(data = Record\_all) +  
 geom\_boxplot(aes(x = Step, y = closure, fill = OM)) +  
 theme\_bw()



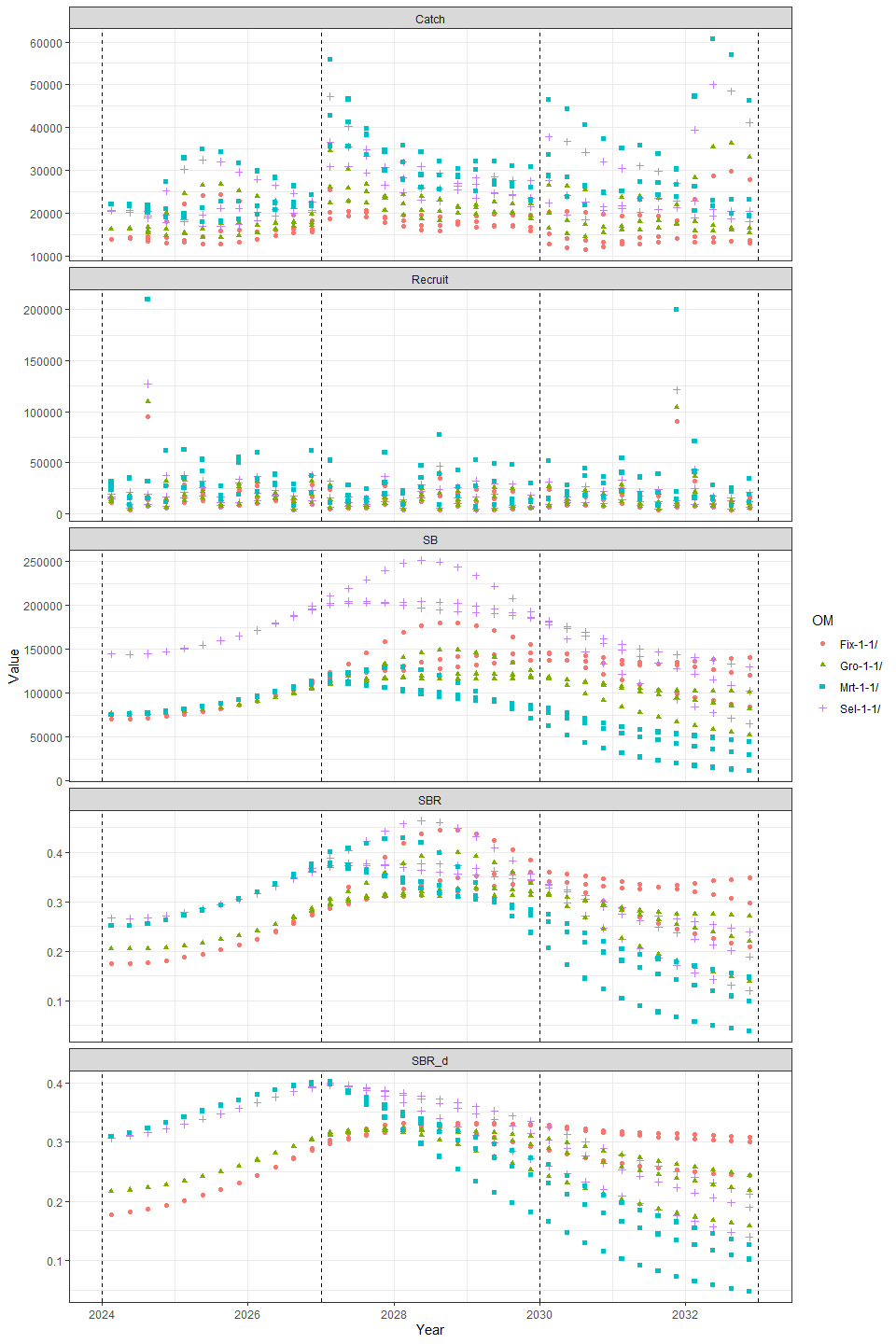
# gggeom\_violin()ggplot(data = Record\_all) +  
# geom\_line(aes(x = Step, y = SBR\_d, color = itr)) +  
# geom\_point(aes(x = Step, y = SBR\_d, color = itr)) +  
# theme\_bw()  
#   
ggplot(data = Record\_all) +  
 geom\_boxplot(aes(x = Step, y = Fadjust, fill = OM)) +  
 theme\_bw() +  
 ylab("F/F30%")



ggplot(data = Record\_all) +  
 geom\_boxplot(aes(x = Step, y = (Time\_Stamp - min(Time\_Stamp))/60, fill = OM)) +  
 theme\_bw() +  
 ylab("Time chart in minute")



for (OMnum in 1:4) {  
 # Set the scenario  
 OM <- paste0(OM\_name[OMnum], "/")  
   
 for (itrnum in 1:niterations) {  
 itr = paste0("itr", itrnum, "/")  
 Output <- read.csv(paste0(paste0(pdir, HS, HCR, OM, itr, "Output.csv")))  
 Output$OM <- OM  
 Output$itr <- itrnum  
   
 if (OMnum == 1 & itrnum == 1)  
 Output\_all <- Output  
 else  
 Output\_all <- rbind(Output\_all, Output)  
 }  
}  
  
Output\_all\_long <- Output\_all %>%  
 mutate(itr = as.factor(itr),  
 Year = Year / 4 + 1974.875,  
 year = floor(Year) + 0.5) %>%  
 gather(2:7, key = "Quantity", value = "Value") %>%  
 filter(Quantity %in% c("Catch", "SB", "SBR", "SBR\_d", "Recruit"))  
  
output\_all\_old <- Output\_all\_long %>%  
 filter(Year < 2024)  
output\_all\_new <- Output\_all\_long %>%  
 filter(Year > 2024, Year < max(Year))  
  
ggplot() +  
 geom\_point(aes(x = Year, y = Value, color = OM, shape = OM), alpha = 1, data = output\_all\_new) +  
 geom\_vline(xintercept = c(seq(0, nyears, Mcycle) + 2024), linetype = "dashed") +  
 facet\_wrap(~Quantity, scales = "free\_y", nrow = 5) +  
 theme\_bw()



ggplot() +  
 geom\_boxplot(aes(x = factor(year), y = Value, fill = OM), data = output\_all\_new) +  
 geom\_vline(xintercept = factor(c(seq(0, nyears, Mcycle) + 2024)), linetype = "dashed") +  
 facet\_wrap(~Quantity, scales = "free\_y", nrow = 5) +  
 theme\_bw()

