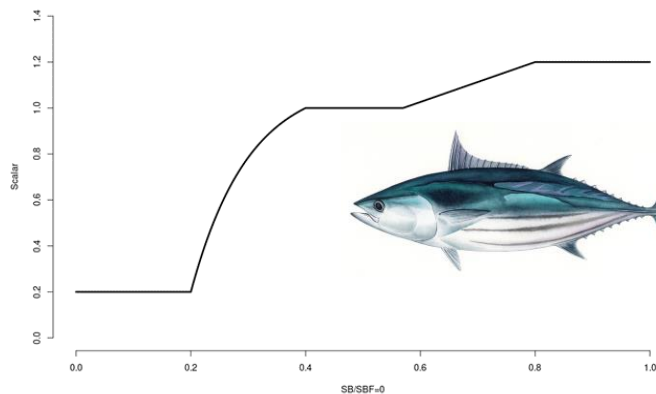# South Pacific Albacore
MSE progress and work plan

SPC OFP-SAM

SPA-RM-IWG-04

05 May 2023

WCPFC Harvest Strategy Workplan

Stock:	SKJ	SP-ALB	BET	YFT
Key Gear:	Tropical Purse Seine	Southern Longline	Tropical Longline	
Management Objectives	Noted	Noted	Noted 2024	Noted 2024
Management Procedure	Adopted (interim)	Initial MPs	2025	2025
Performance Indicators	Identified	Identified	Identified	Identified
Mixed Fishery	Developing	Developing	Developing	Developing
Monitoring Strategy	Outlined in CMM	Developing		

2023 WORK PLAN

SKIPJACK

- WCPO Skipjack MP

- WCPO Skipjack monitoring strategy

SOUTH PACIFIC ALBACORE

- SPA operating models – South Pacific wide
  - Reference set   (based on 2021 assessment)
  - Robustness set

- SPA management procedure
  - Estimation models
  - HCR designs
  - Preliminary evaluations and performance indicators

- SPAMPLE & OM viewer

BIGEYE & YELLOWFIN

South Pacific albacore OM grid

| Axis	1	2	3
Reference Set			
Steepness (S)	0.65	0.8	0.95
Movement (M)	M1 – Estimated, age dependent	M2 – SEAPODYM	
Size data weight (D)	Low (50)	Medium (25)	High (10)
Rec Distbn (R)	R1 - SEAPODYM	R2 – Regions 2 & 3	
Growth/M (G)	M1 - Fixed otolith	M2 - Estimated	
Robustness Set			
CPUE	2021 VAST	??	
Effort creep	0 %	??	
Hyperstability in CPUE	0	??	
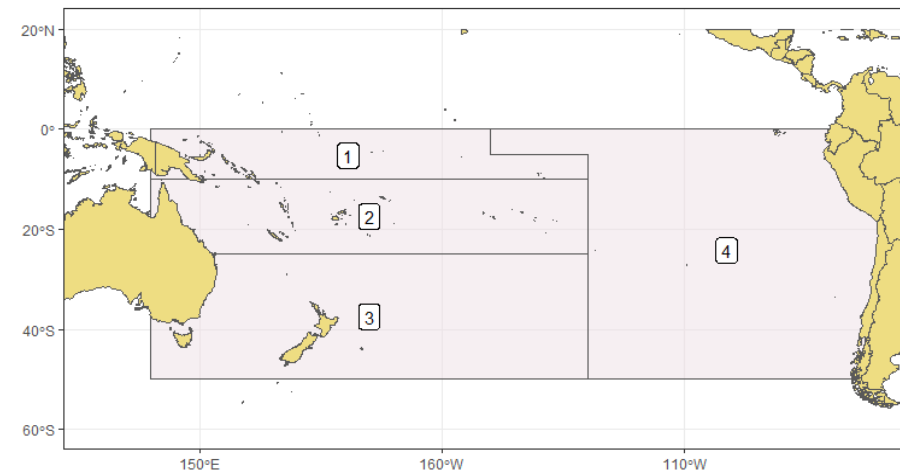
Reference Set – 72 models (2021 assessment)

Robustness Set
  Alternative CPUE inputs ?
  Effort creep in LL fisheries
  Hyperstability in albacore CPUE ?
  Climate change scenarios

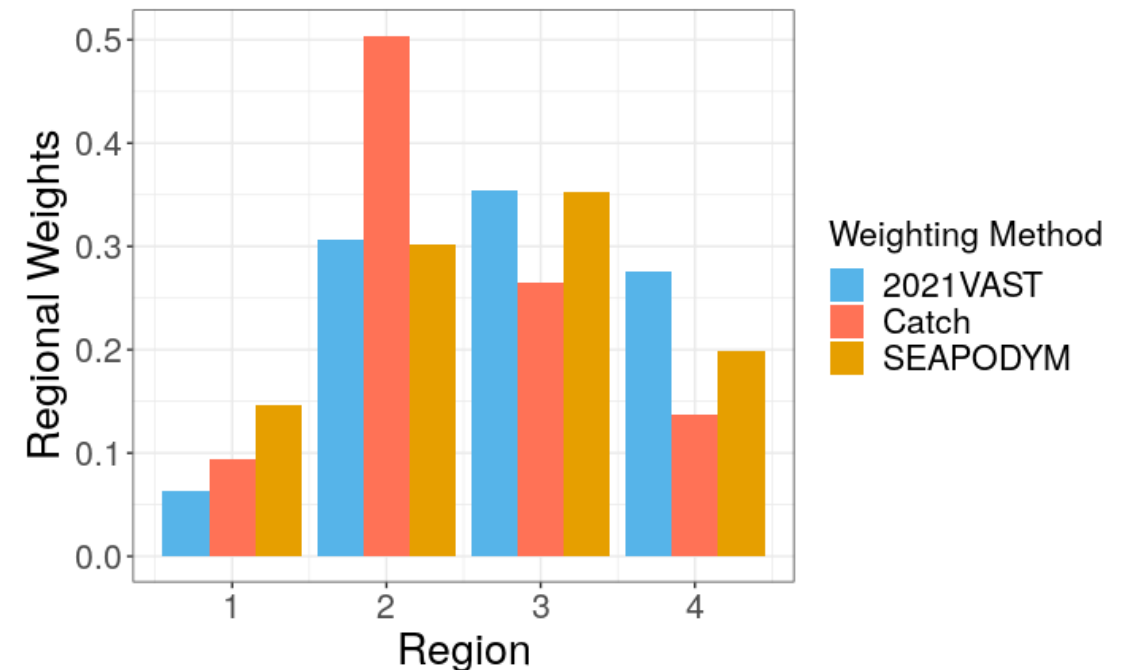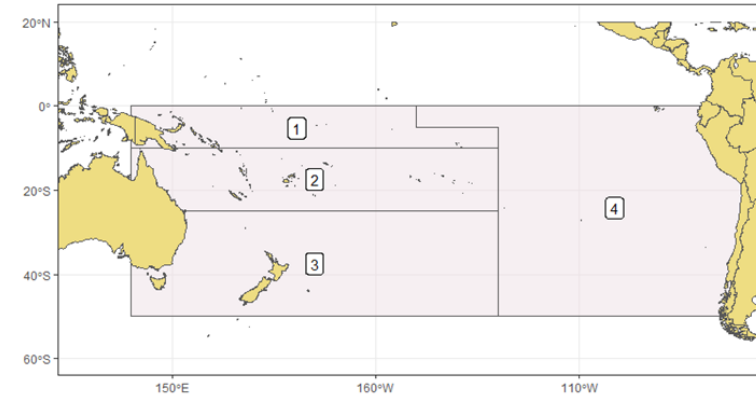# South Pacific albacore OM grid: CPUE

3 areas investigated

1. Using hooks between floats instead of species cluster analyses to define fishing operations

2. Geostatistical VAST model – spatial aggregations
   1. WCPFC-CA only
   2. Individual single region fits
   3. Single flag (JP) fits

3. Alternative region weighting options
   1. VAST model weightings
   2. Catch
   3. SEAPODYM
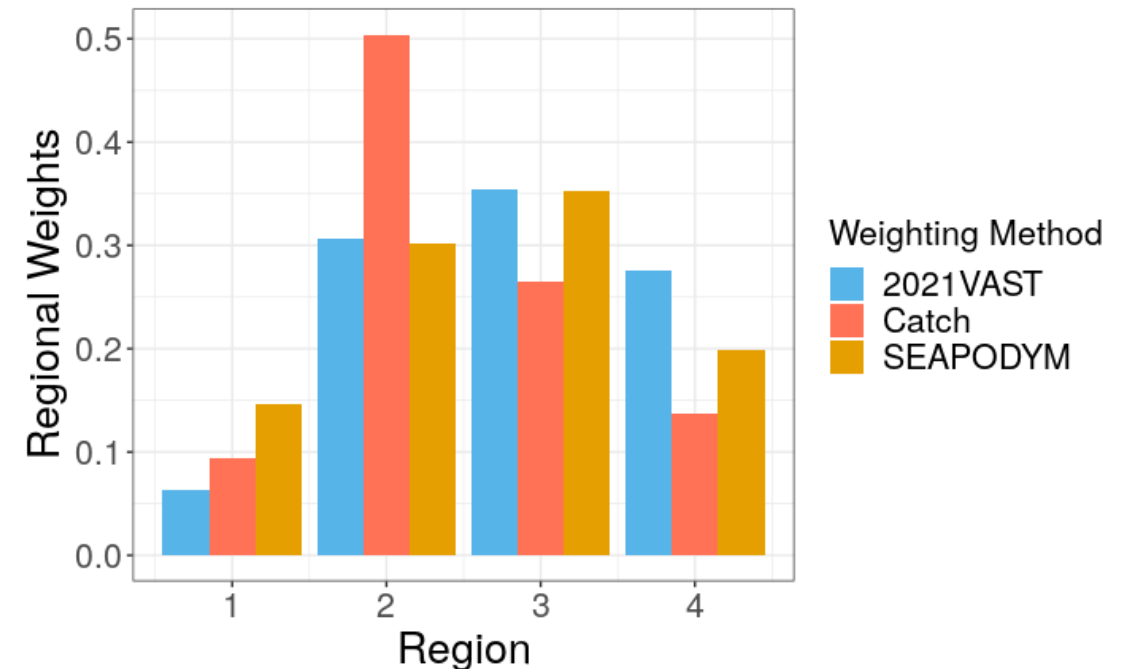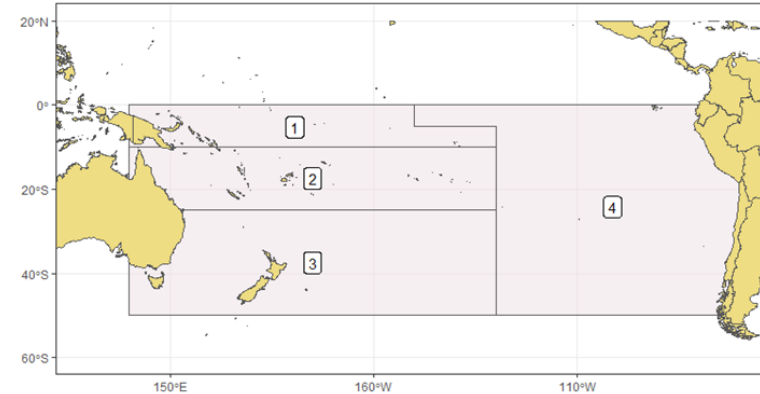
South Pacific albacore OM grid: CPUE

3 areas investigated

1. Using hooks between floats instead of species cluster analyses to define fishing operations

   No significant difference in CPUE values

1. Geostatistical VAST model – spatial aggregations
   1. WCPFC-CA only

      No significant difference
   2. Individual single region fits

      No significant difference
   3. Single flag (JP) fits

      Unreasonable diagnostics

2. Alternative region weighting options
   1. VAST model weightings
   2. Catch
   3. SEAPODYM

      No significant difference

South Pacific albacore OM grid: terminal stock status
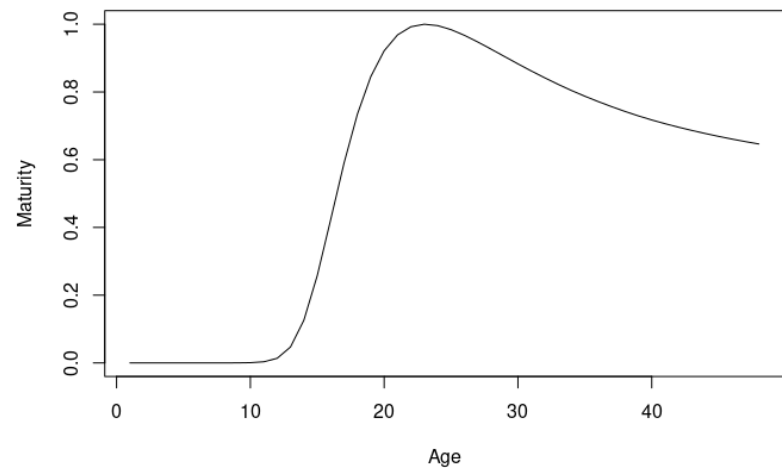
South Pacific albacore OM grid

2015 & 2016
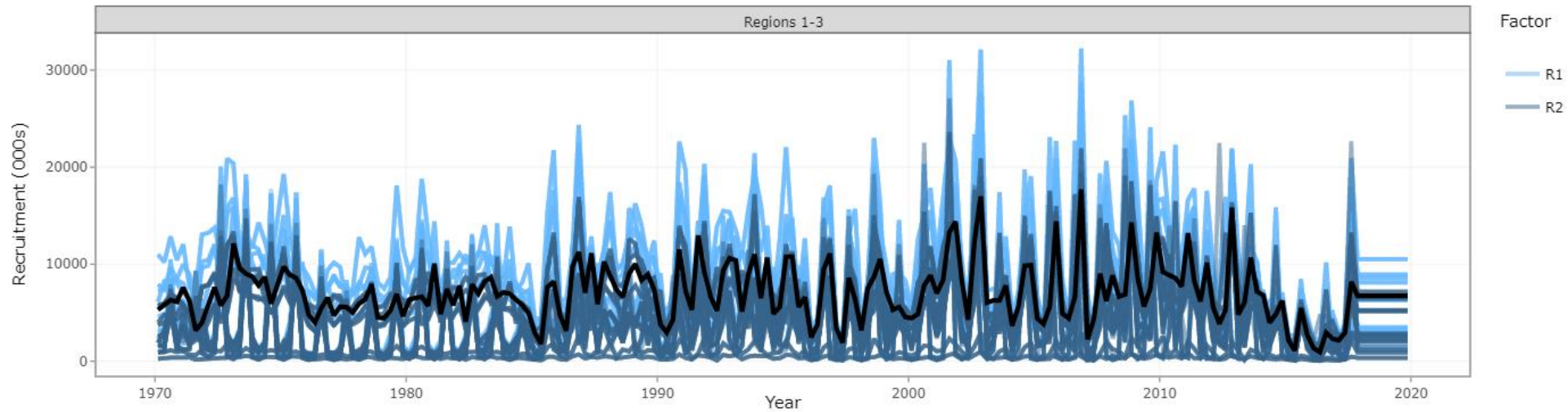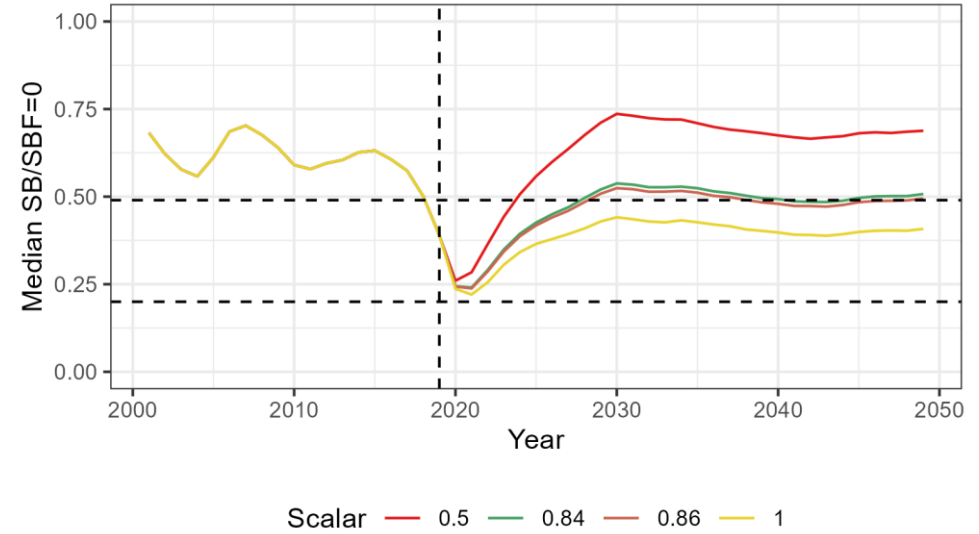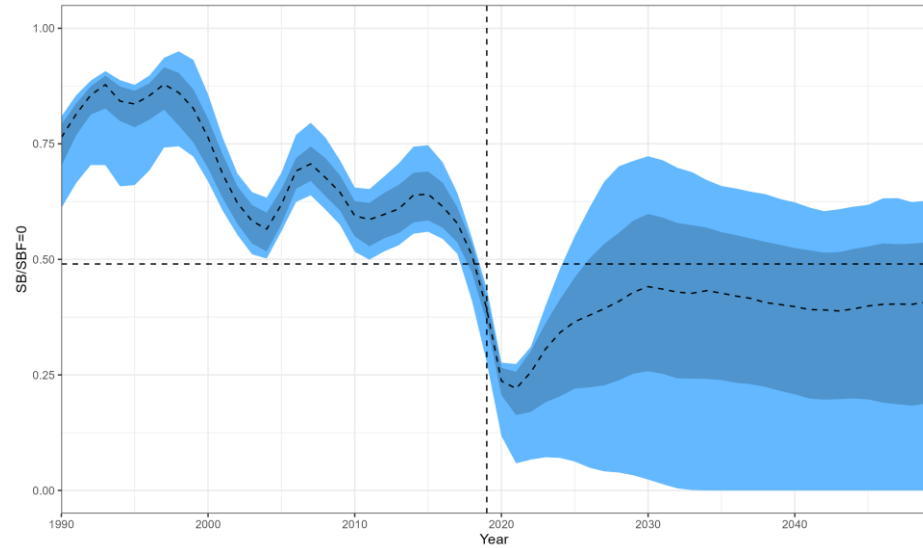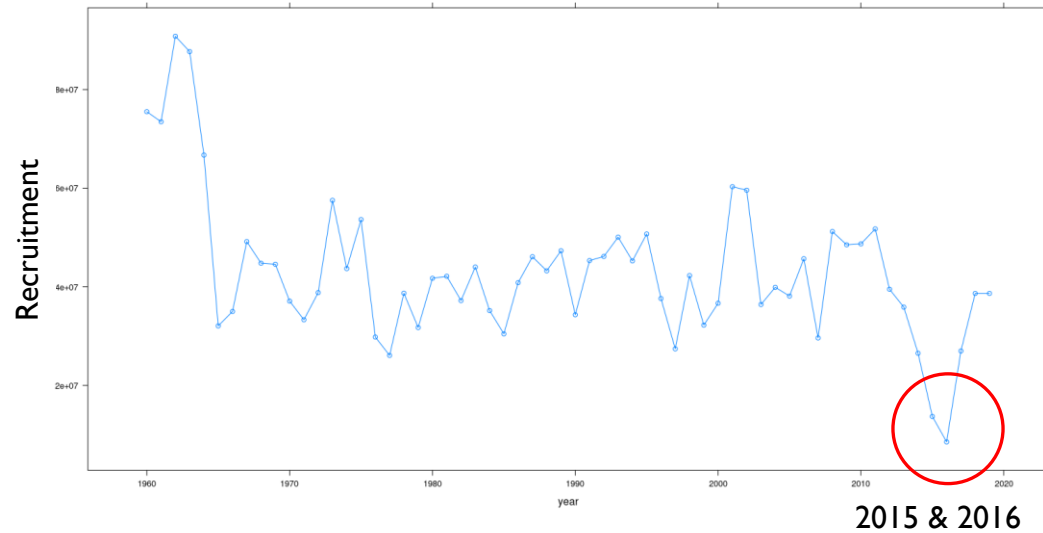
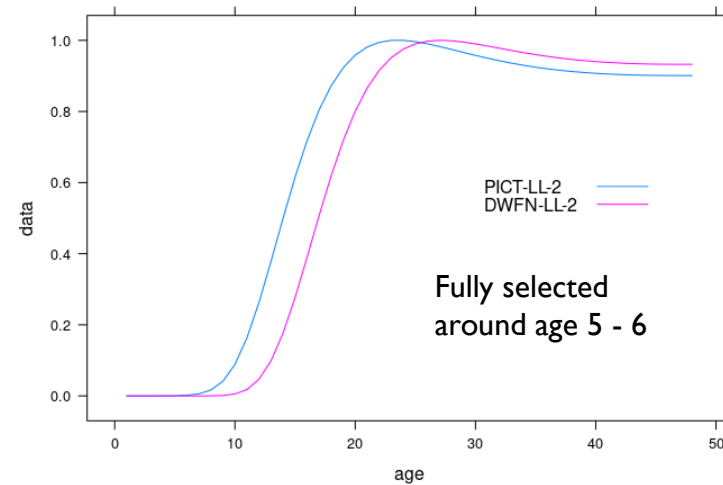Should potentially see impacts on CPUE from around 2020 - 2021 onwards

Potential impacts of recent ENSO events

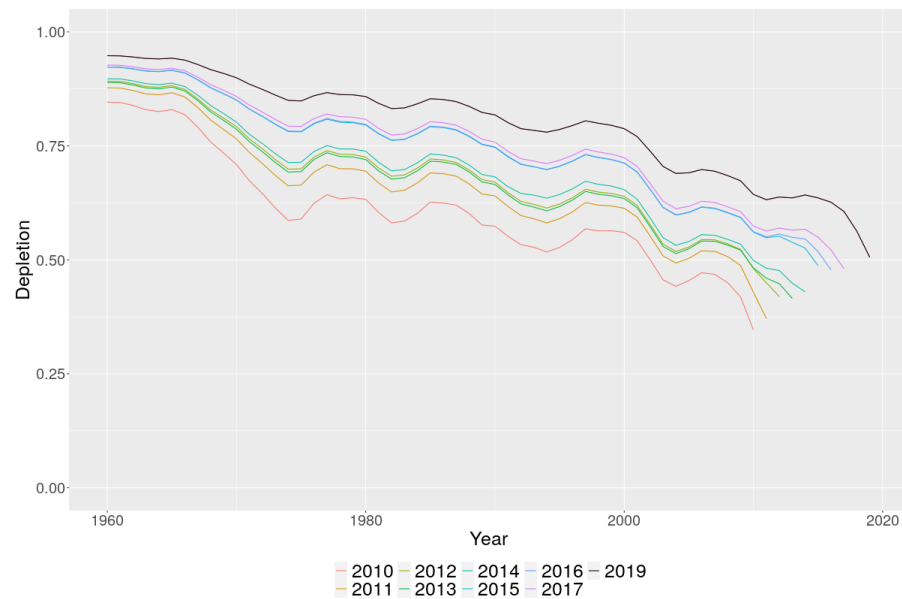Potential confounding with impacts of COVID (wrt recent evidence of CPUE declines)

Maturity

Selection

PICT-LL-2
DWFN-LL-2
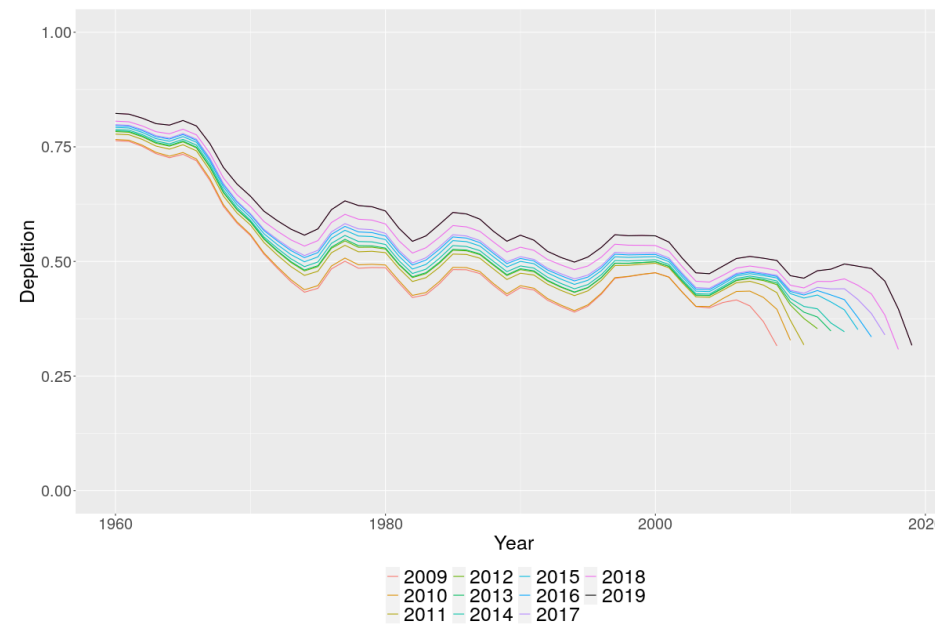
Fully selected around age 5 - 6

South Pacific albacore OM grid

M1 models – MFCL estimated (age dependent)
Retrospective rescaling
Some impact on terminal estimates

M2 models – SEAPODYM
Less retrospective rescaling
Larger impact on terminal estimates

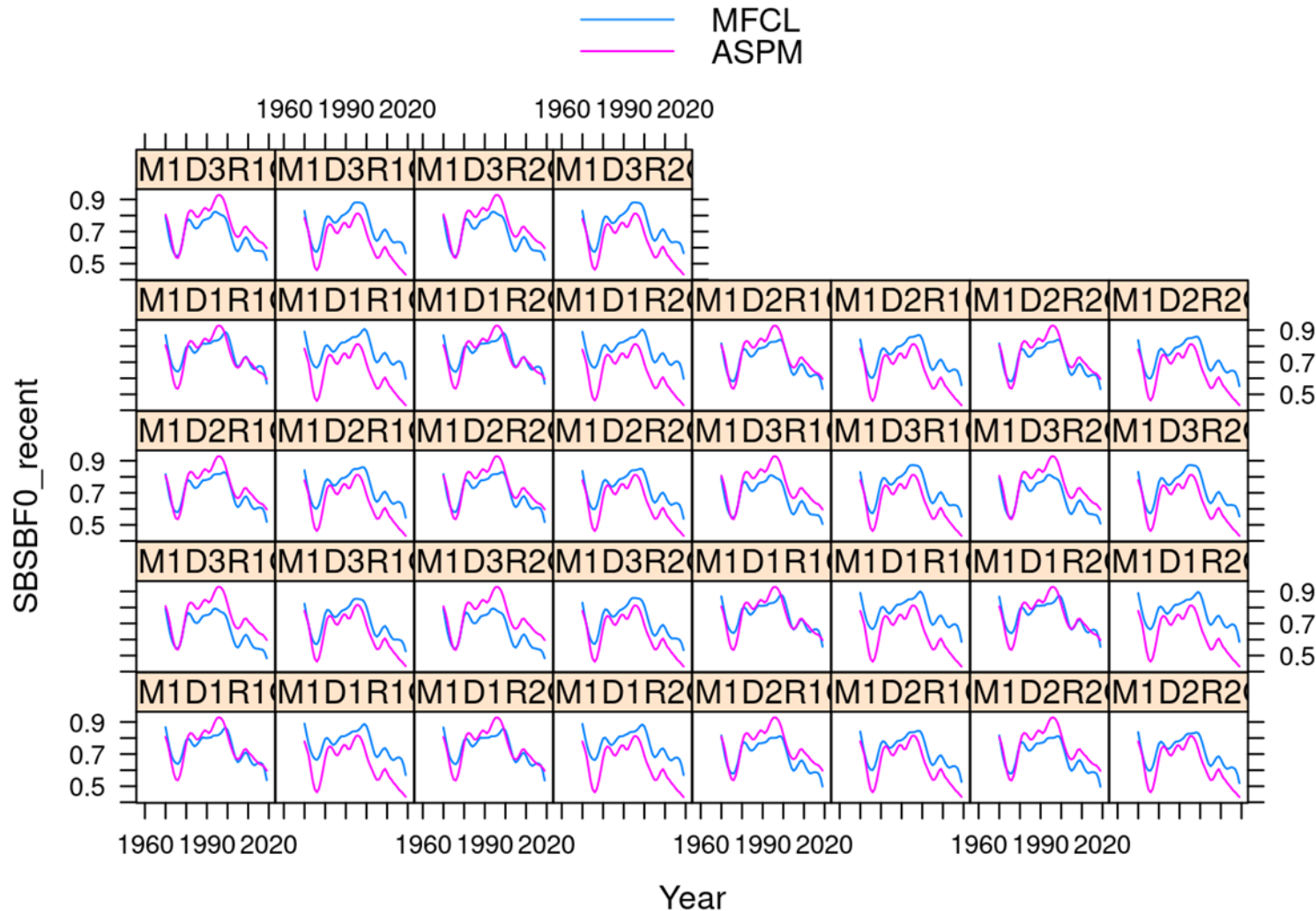# South Pacific albacore: Estimation model

JABBA:
   Just Another Bayesian Biomass Assessment

SPiCT
   Surplus Production model in Continuous Time

Simple biomass dynamic assessment models
Use CPUE and catch as inputs
Estimate total abundance

South Pacific albacore: Estimation model

ASPM
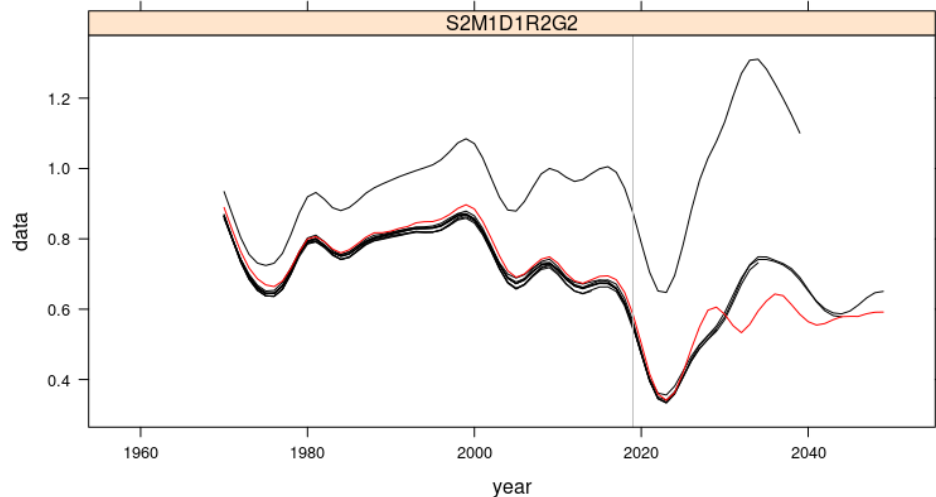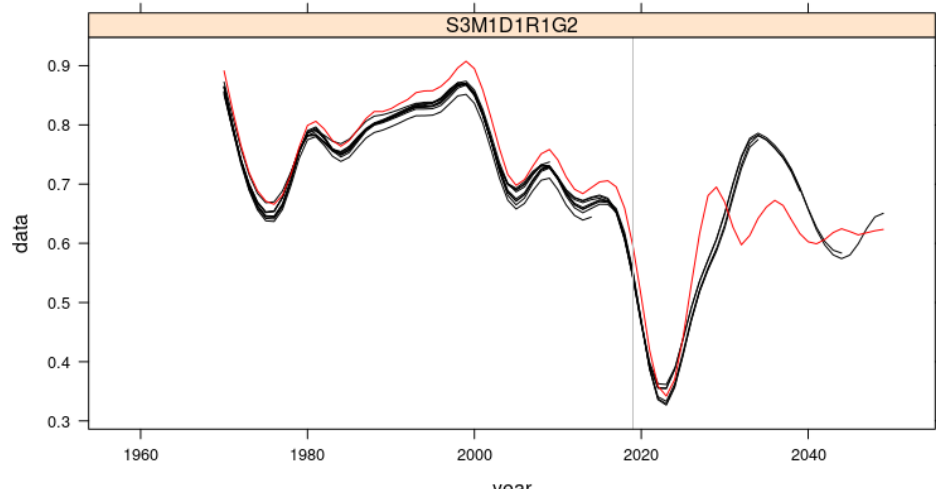 Age Structured Production Model

Remove length composition data
Fix movement
Fix fishery specific selectivity
Diagnostic case settings for grid axes

Provides estimates of depletion ($SB/SB_{F=0}$)

South Pacific albacore: Estimation model

ASPM
  Age Structured Production Model

Remove length composition data
Fix movement
Fix fishery specific selectivity
Diagnostic case settings for grid axes

Provides estimates of depletion ($SB/SB_{F=0}$)

Retrospective analysis
  5 year intervals
  projections without variability in catch / effort

Convergence issues in some models.

South Pacific albacore: Summary

SP ALBACORE

- Operating models
  - 72 models – reference set
  - how to handle the substantial decline in stock status in recent years ?
    - High risk of substantial short term catch reductions
    - High risk of falling below LRP in short term.
  - Reference set and robustness set scenarios
    - Additional axes to the grid ?
      - Effort creep
      - Hyperstability in CPUE
    - Longer term studies
- Estimation model
  - need to find a relatively simple, robust, reliable estimator of stock status
  - Initial investigations using JABBA, SPICT, ASPM

- Candidate MPs