North Atlantic Albacore MSE

Validation

L Kell

25 agosto, 2017

OM conditioning

The Operating Model (OM) is a mathematical–statistical model used to describe the actual resource dynamics in simulation trials and to generate resource monitoring data when projecting forward. The OM simulates historical and future dynamics and psuedo data for use in the Management procedure (MP).

An OM is conditioned on available information by adjusting the parameter values to ensure that it is consistent with this information, and hence reflects assumptions that are plausible this process maybe, but does not have to be similar to an assessment; the conditioning provides the initial conditions for projecting resource dynamics forward.

The OEM is the component of the OM that generates fishery-dependent and/or fishery-independent resource monitoring data for input to an MP.

Multifan-CL

The OM was conditioned by fitting Multifan-Cl to a range of scenarios based on the 2013 ICCAT North Atlantic Albacore Stock Assessment i.e.

- **Base** Model specifications provided in SCRS/2013/058
- **Alt1** Includes Chinese Taipei LL SF data and allows dome-shaped selectivity for this fleet
- **Alt2** Model starts in 1950
- **Alt3** All SF data down-weighted
- **Alt4** Japanese LL CPUE data no longer down-weighted
- **Alt5** Includes the Chen and Watanabe age-specific natural mortality vector (Santiago 2004)
- **Alt6** Excludes final 4 years of data (2008 – 2011)
- **Alt7** Includes equal weights for Japan and Chinese Taipei LL SF and CPUE data (similar to 2009 continuity run)
- **Alt8** Includes total catch in weight but effort calculated from CPUE in numbers (incorrect effort data calculation)
- **Tag** Includes tagging data for release events that occurred between 1988 and 1991

Additional scenarios were considered corresponding to

- **Natural Mortality** three levels
- **Steepness** four levels
- **Trend in catchability** two levels

Biological parameters

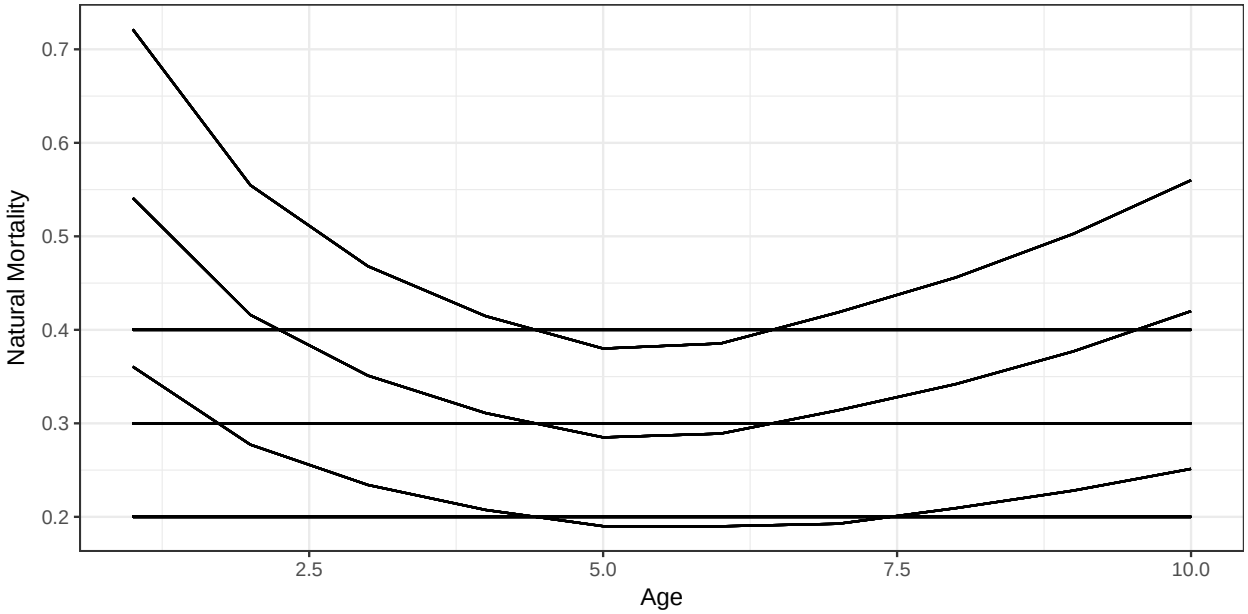

Figure 1. Natural Mortality vectors showing the three levels of M, and the Chen Watannabe vector that assumes scenescence.

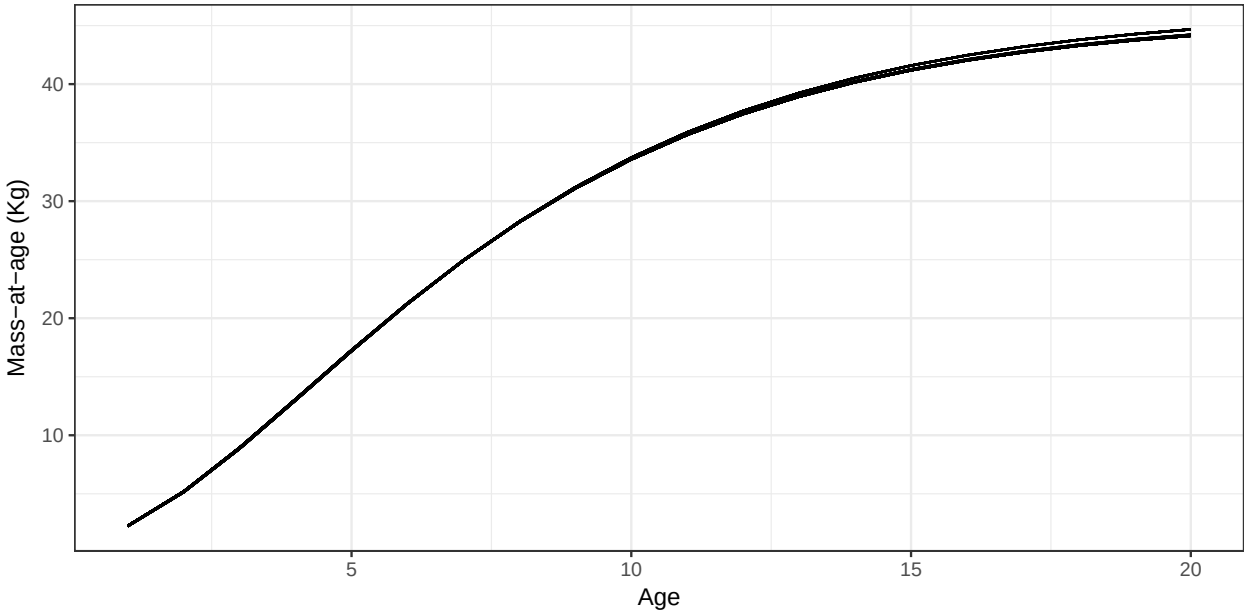

Figure 2. Mass-at-age.

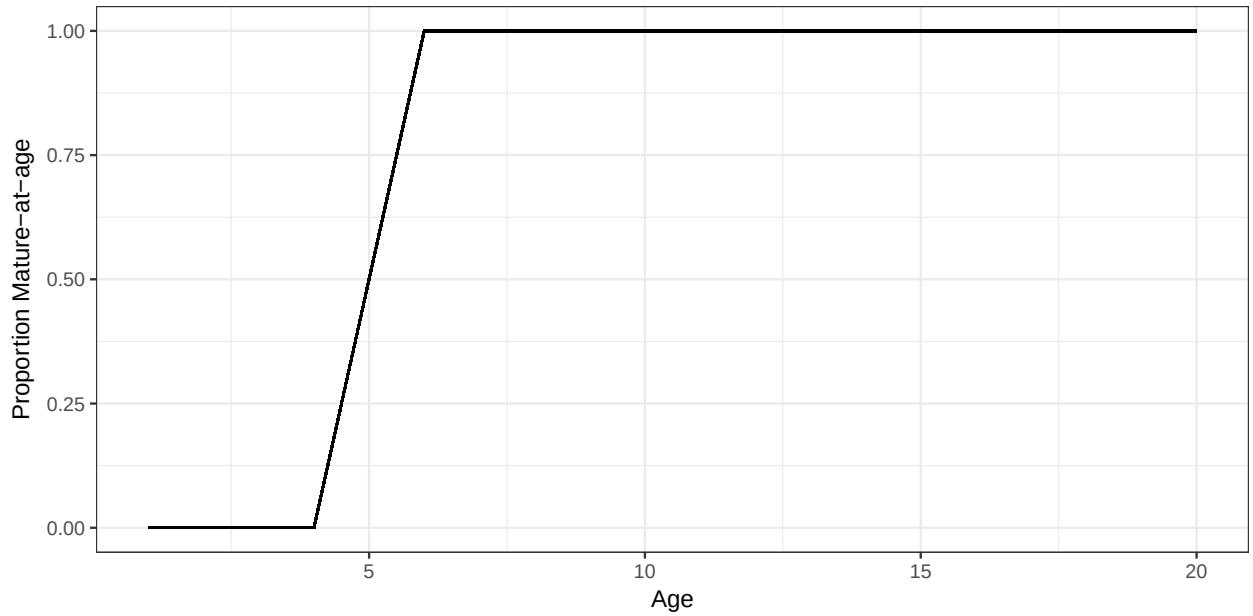

Figure 3. Proportion mature-at-age.

Recruitment dynamics

The stock recruitment relationship and the recruitment deviates are estimated as part of the Multifan-CL fitting procedure. A prior was used for steepness.

Base run configuration and base tests to assess it is doing what we think it should, i.e. the steepness formulation should not be driven by the prior for recruitment dynamics.

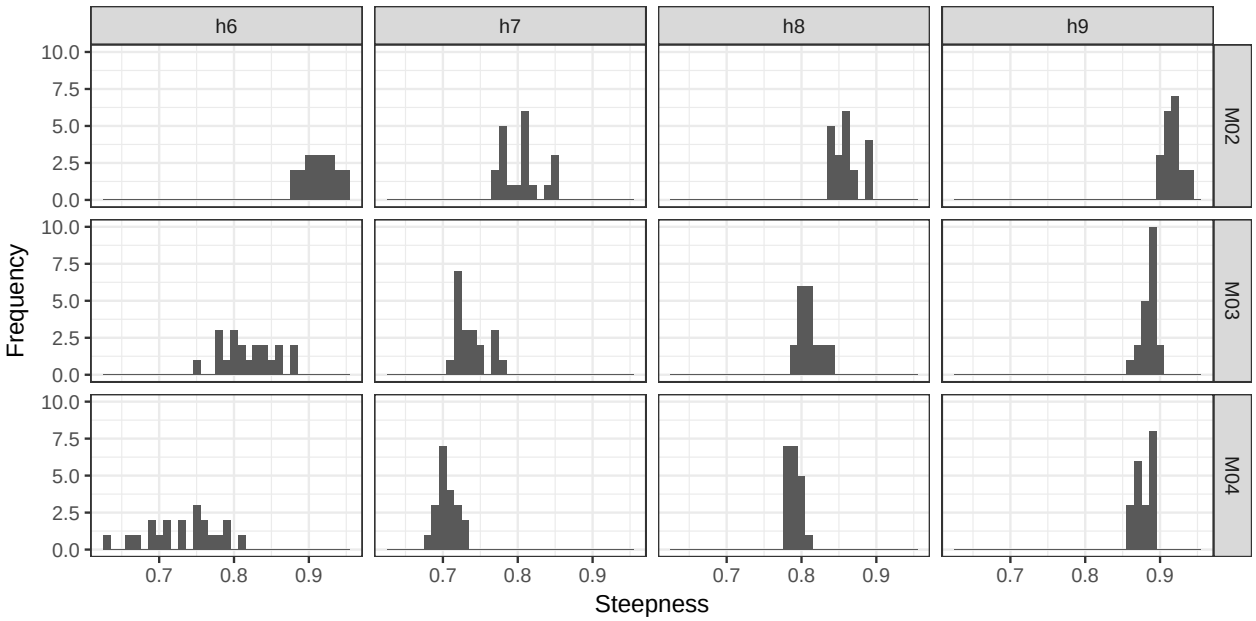

Figure 4. Steepness of the stock recruitment relationship, estimated by Multifan-CL.

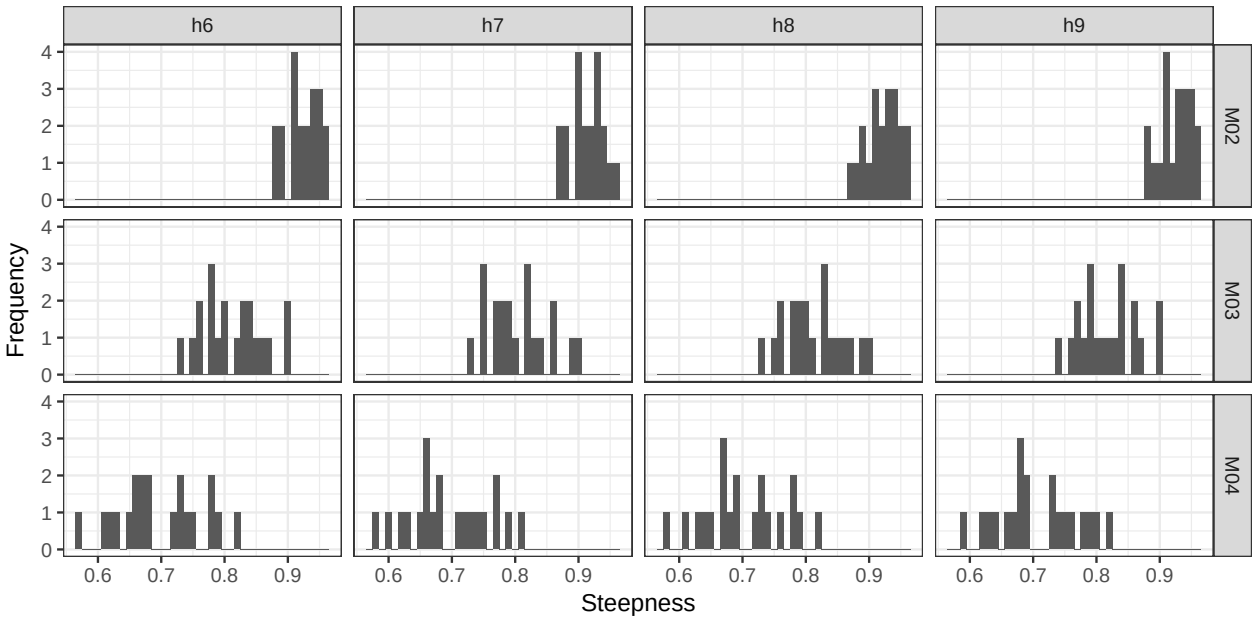

Figure 5. Steepness of the stock recruitment relationship estimated from on the stock recruitment parirs estimated by Multufan-CL.

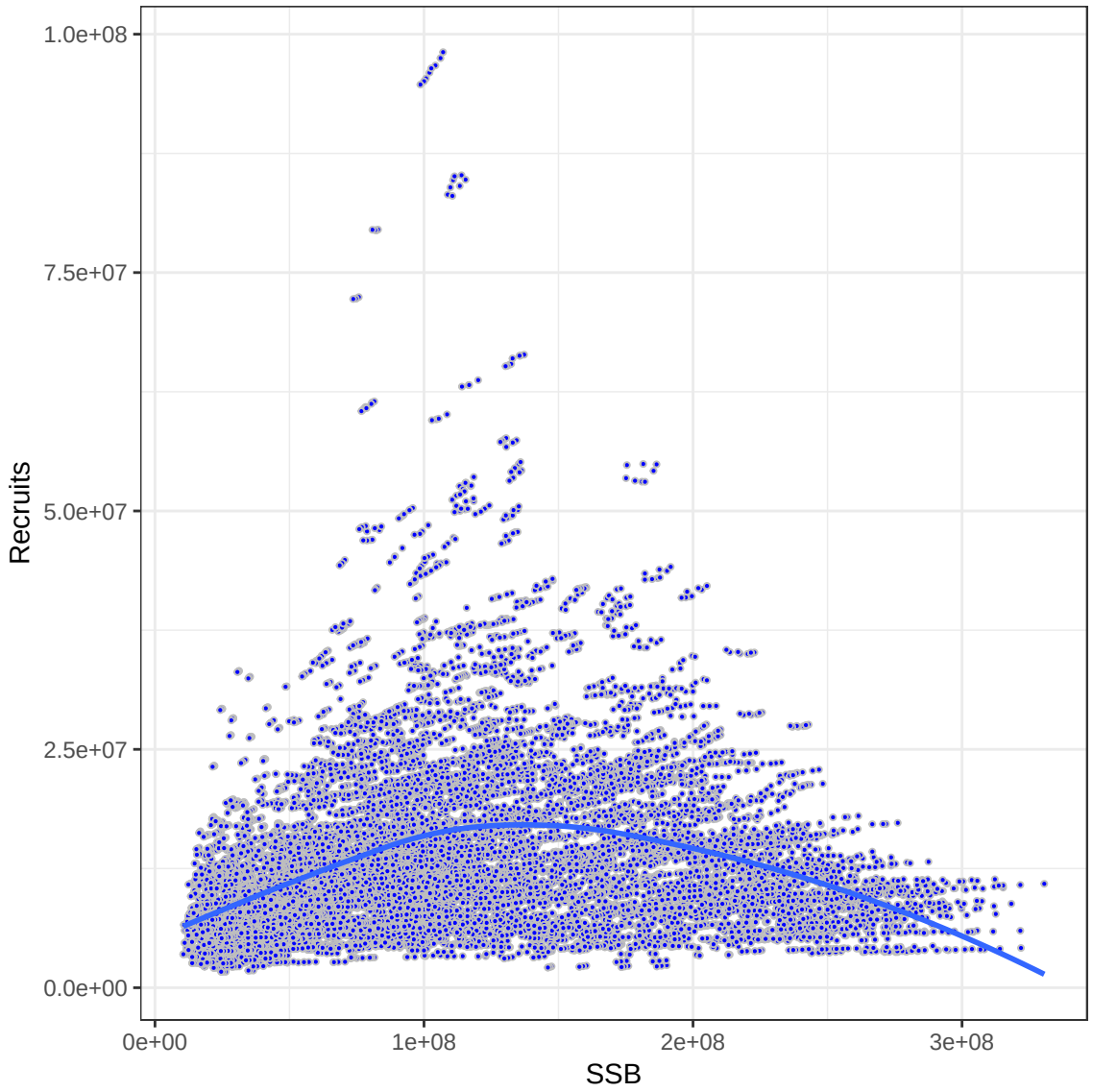

Figure 6. Stock recruitment pairs, with loess smoother.

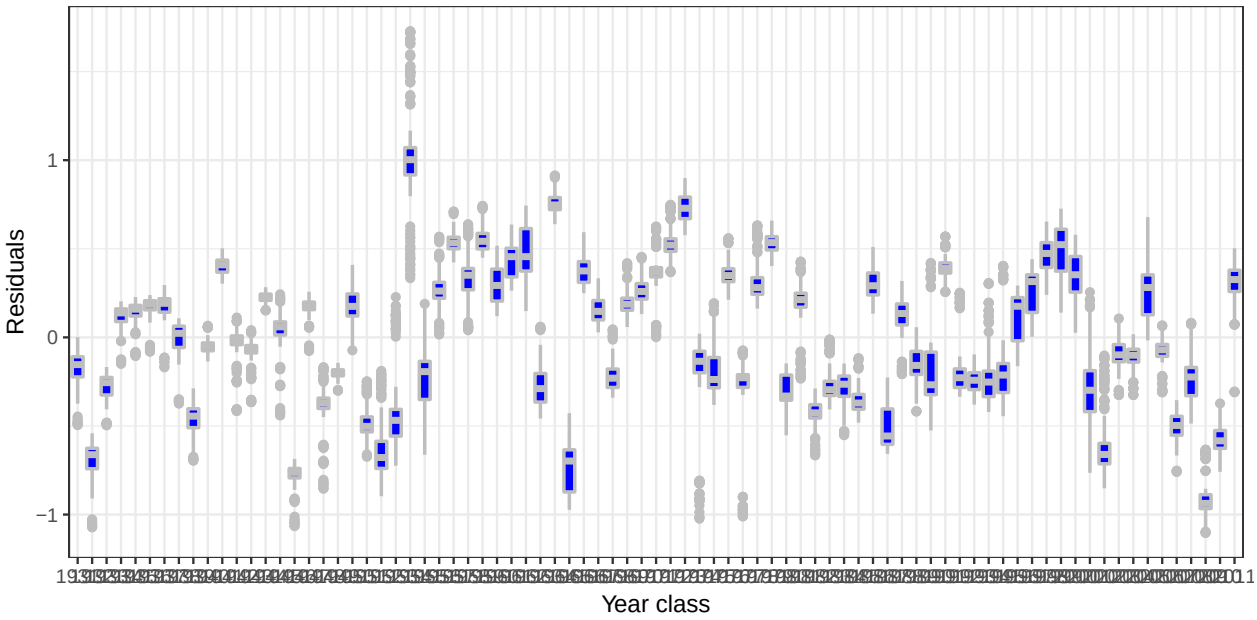

Figure 7. Recruitment residuals.

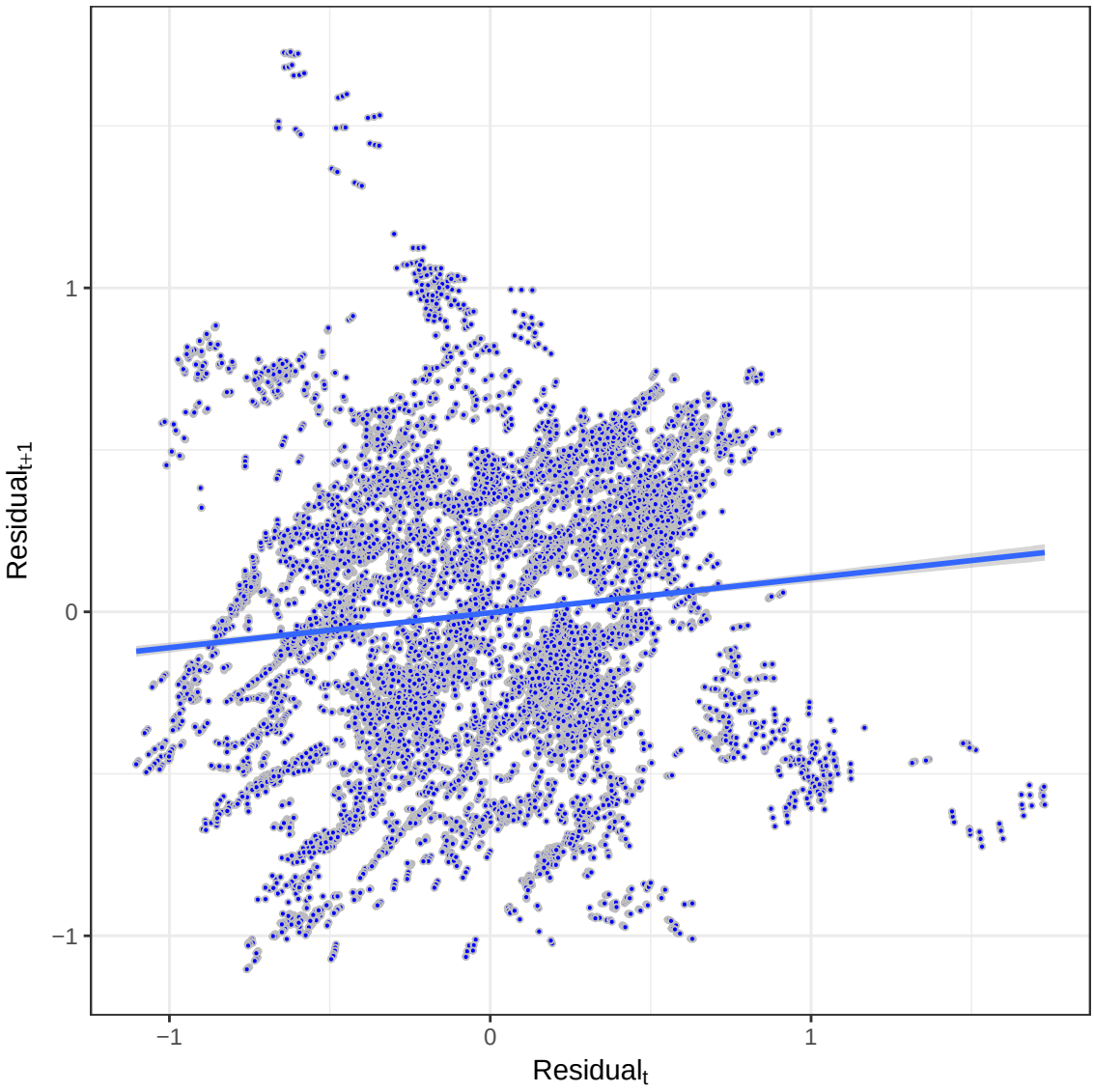

Figure 8. Autocorrelation in residuals

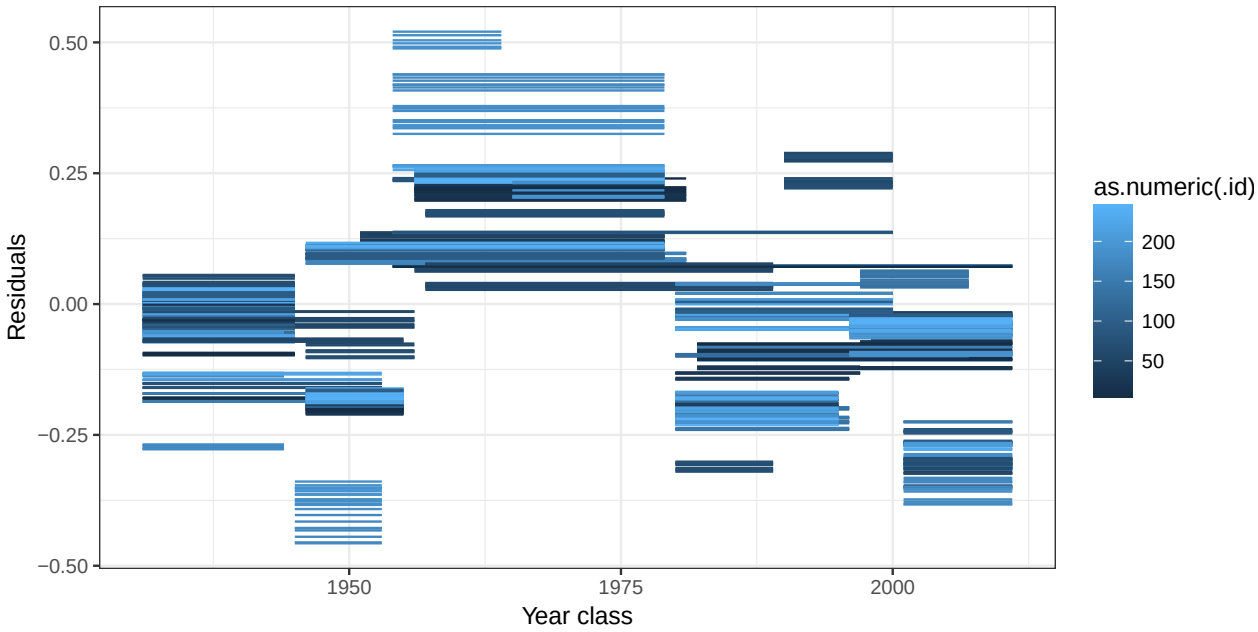

Figure 9. Regimes in recruitment residuals

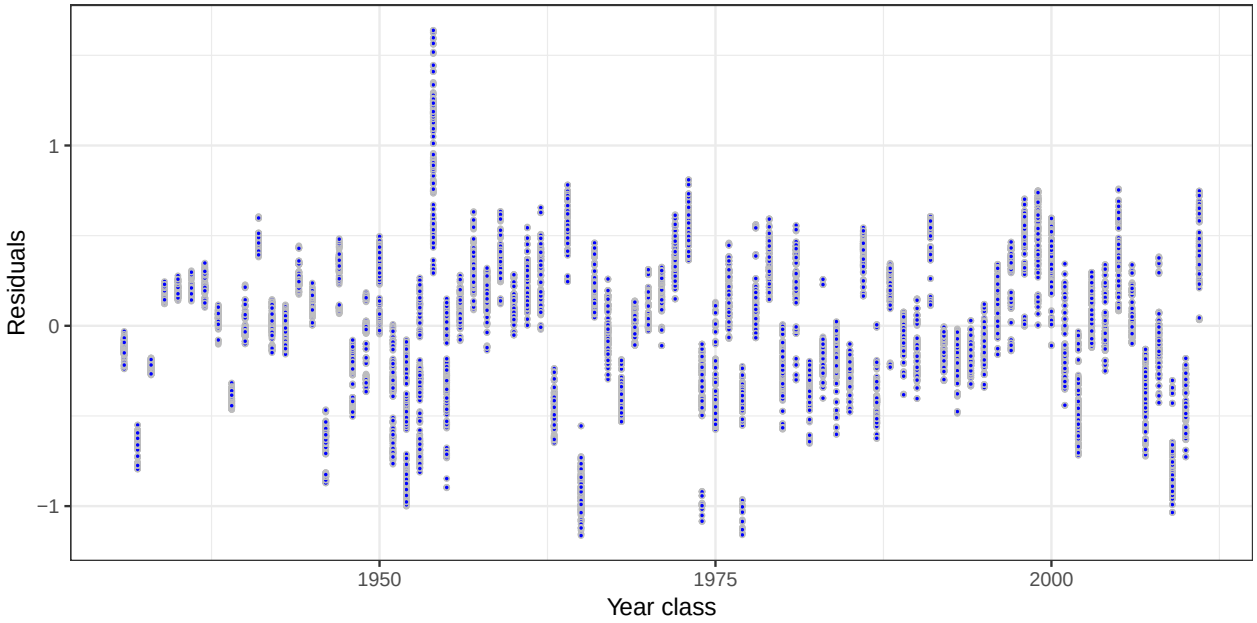

Figure 10. Recruitment residuals with regimes removed

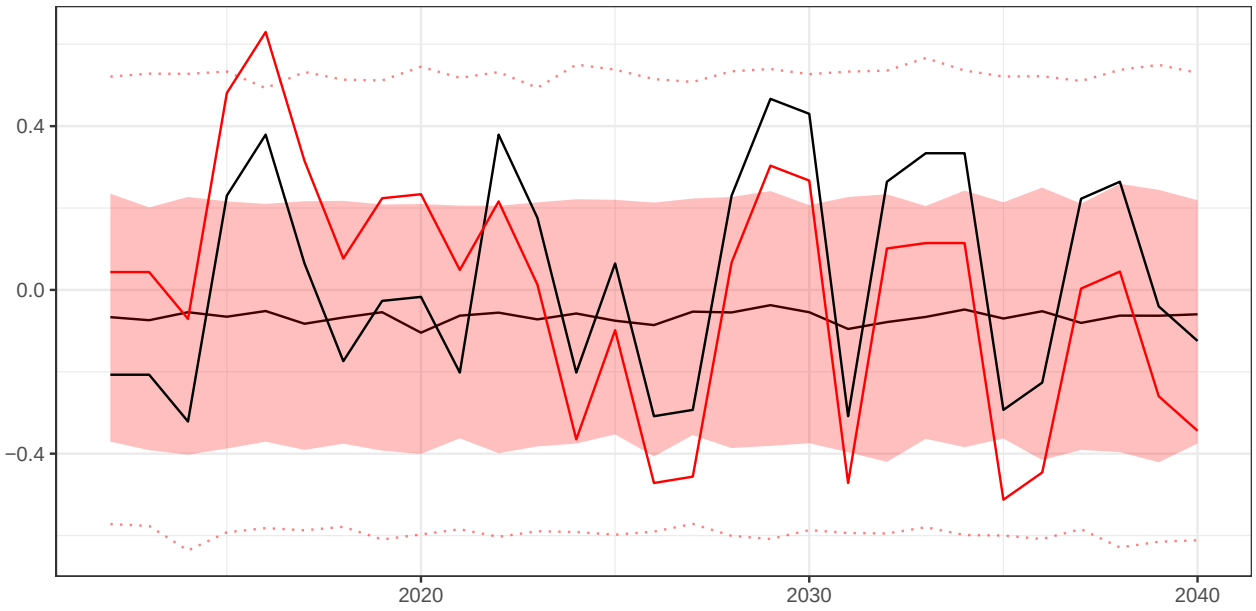

Figure 11. Recruitment deviates for the same scenario and random number seed, with (red) and without (black) regime shift.

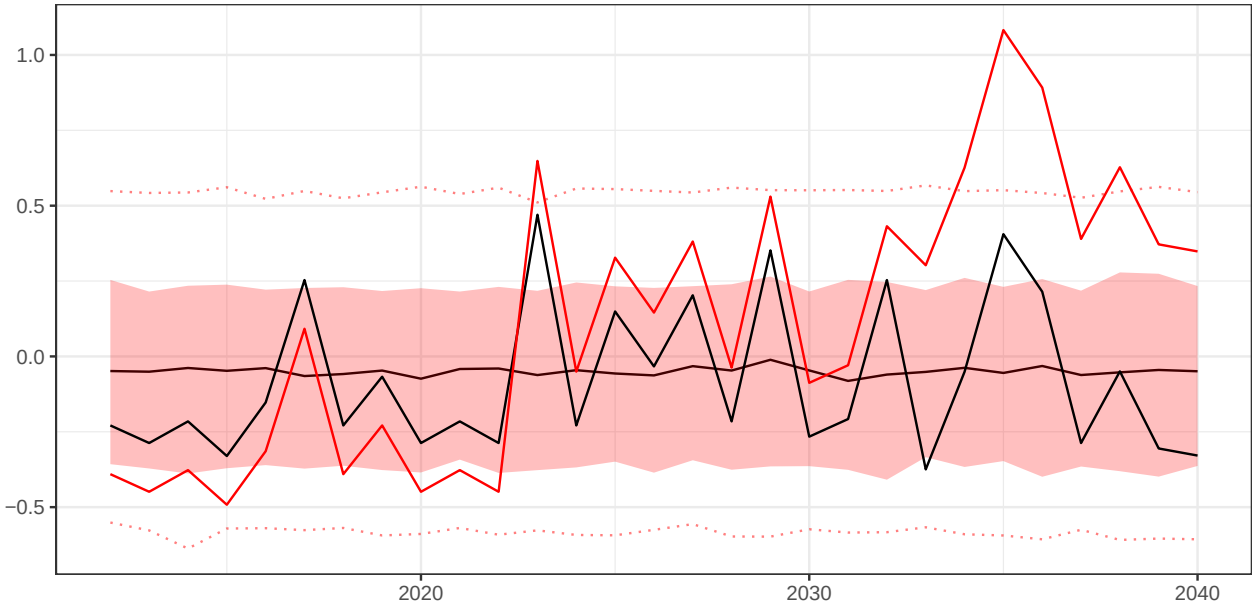

Figure 12. Recruitment deviates for two different scenario for the same random number seed with regime shift.

OEM

How is the OE component being implemented.

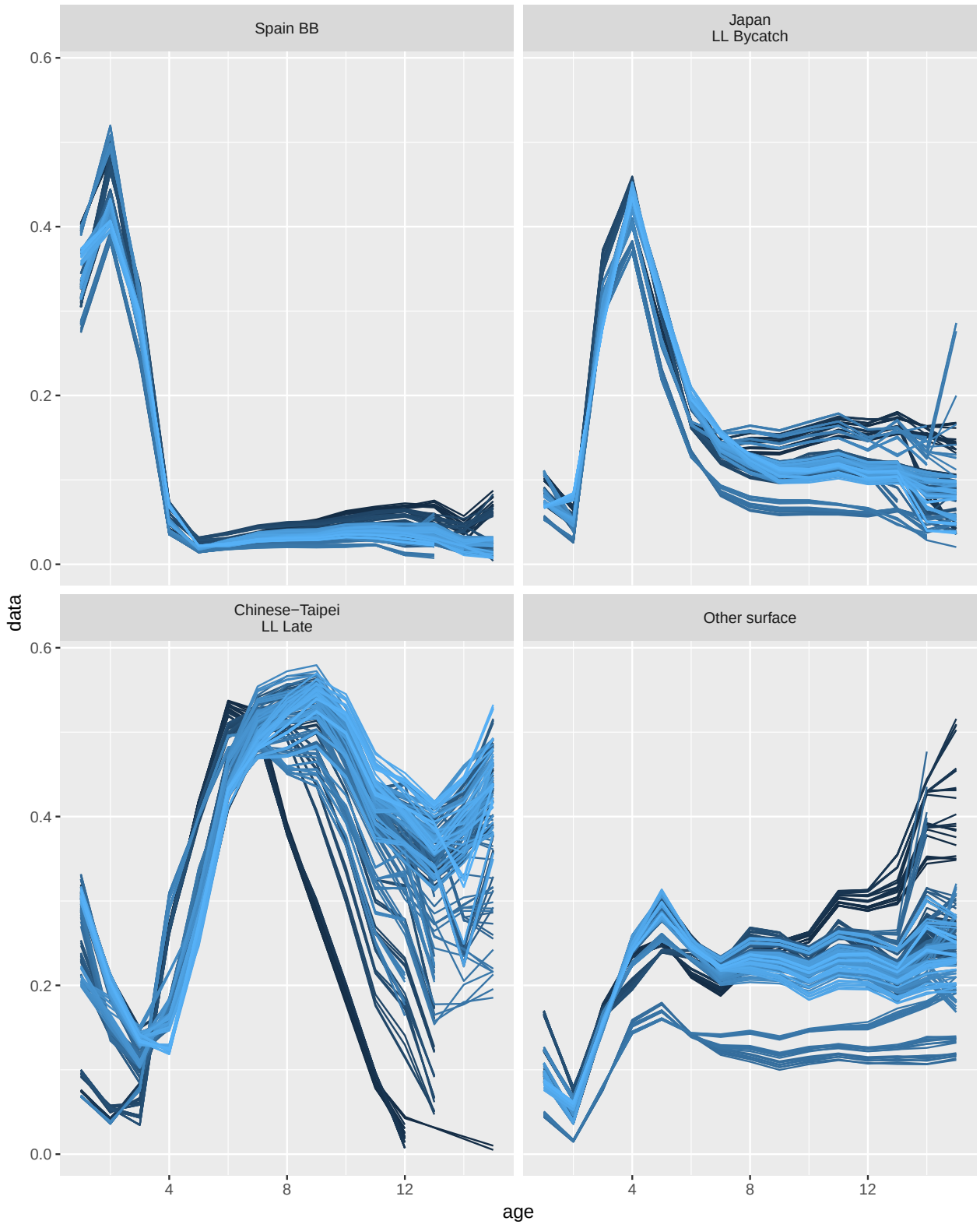

Figure 13. Selection Patterns from the 240 Multigan-CL runs.

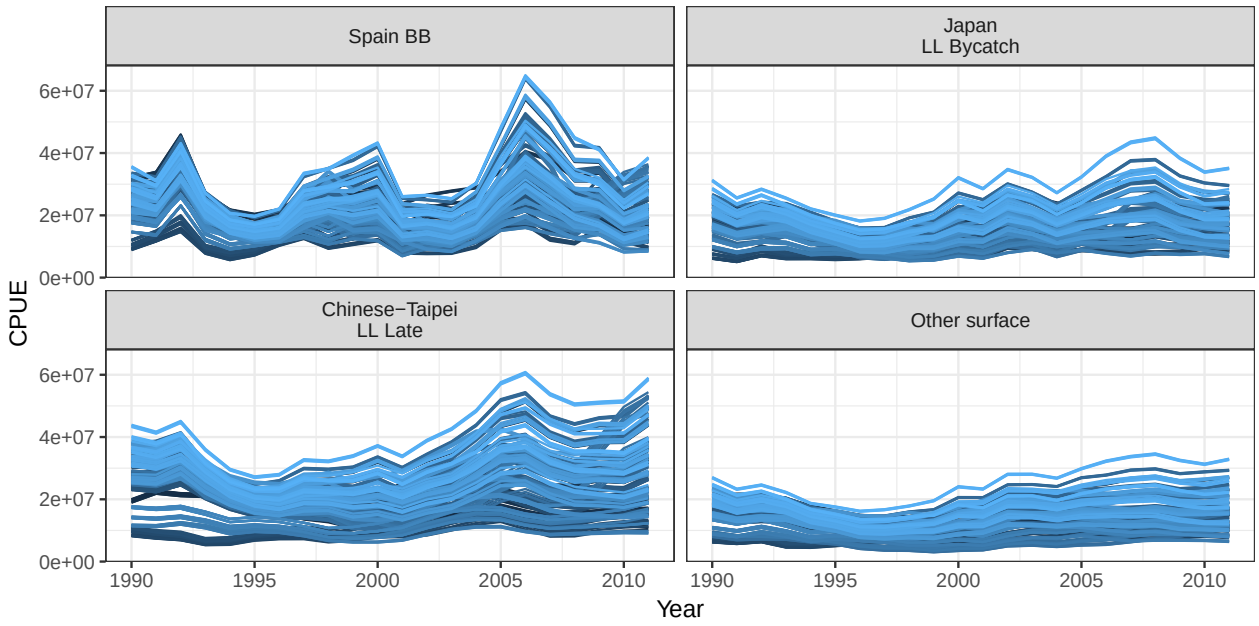

Figure 14. CPUE series

Biomass Dynamic

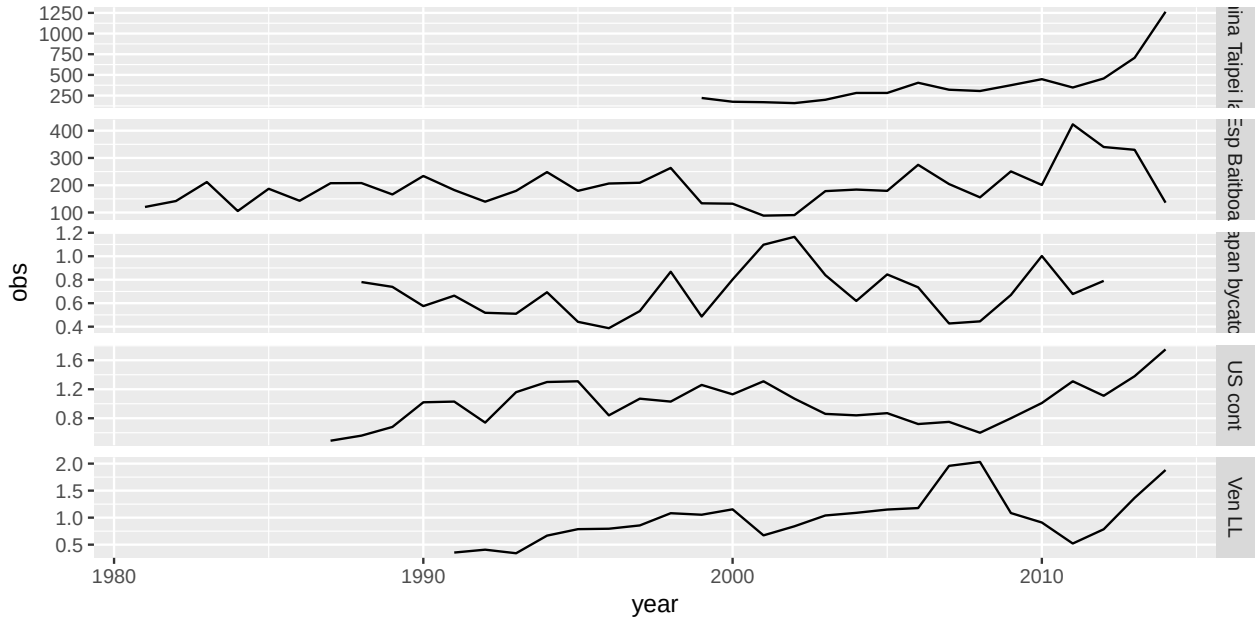

Figure 15. CPUE series used in biomass dynamic assessment model.

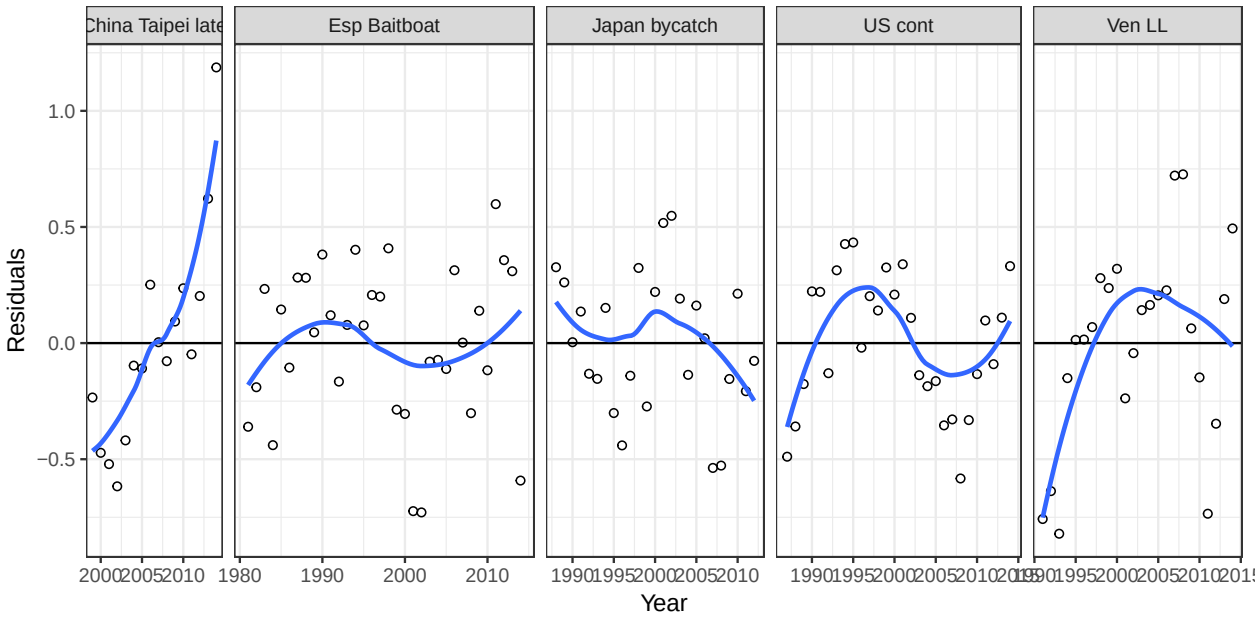

Figure 16. Residuals from fit to CPUE by biomass dynamic assessment model.

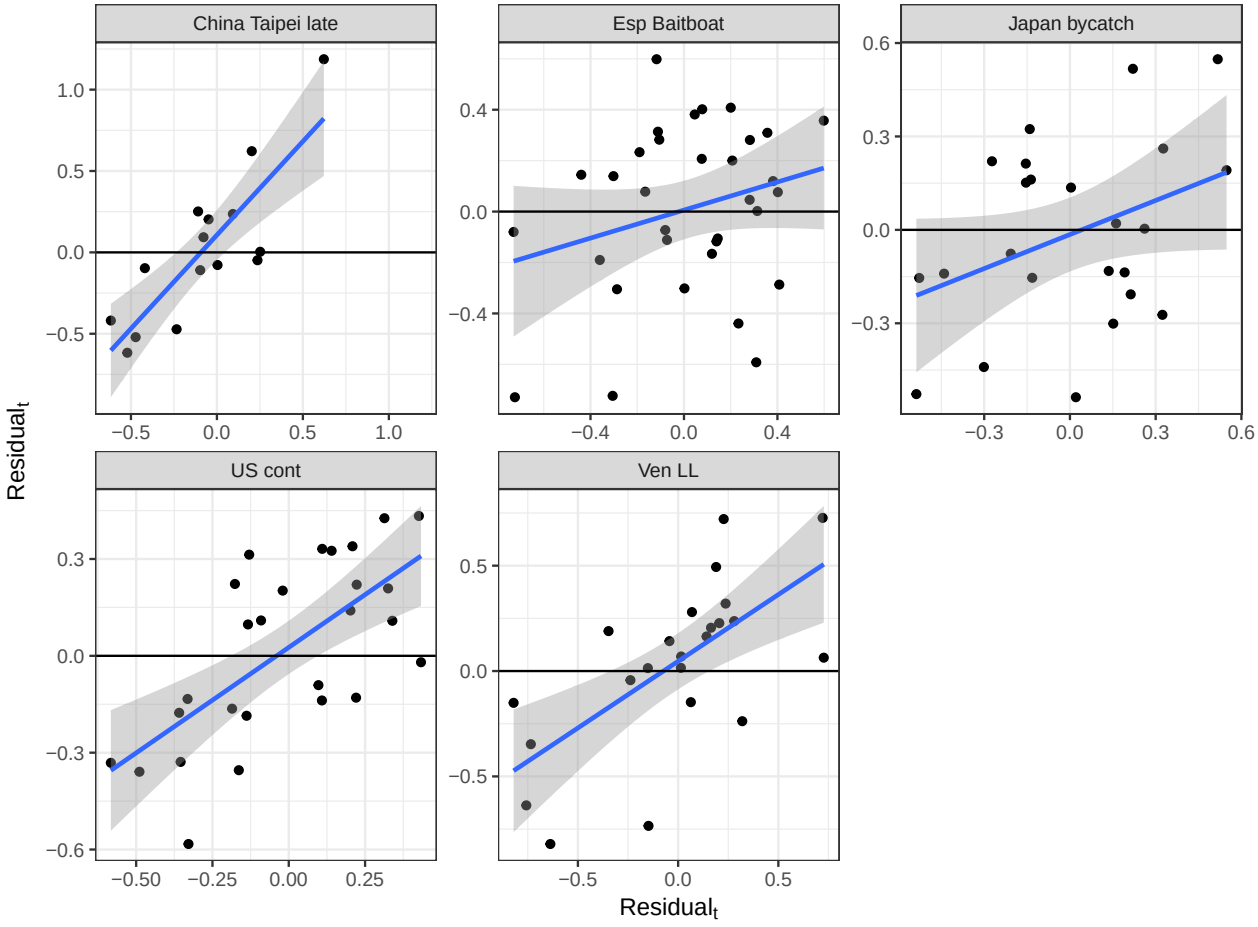

Figure 17. Autocorrelation of residuals (lag 1) from fit to CPUE by biomass dynamic assessment model.

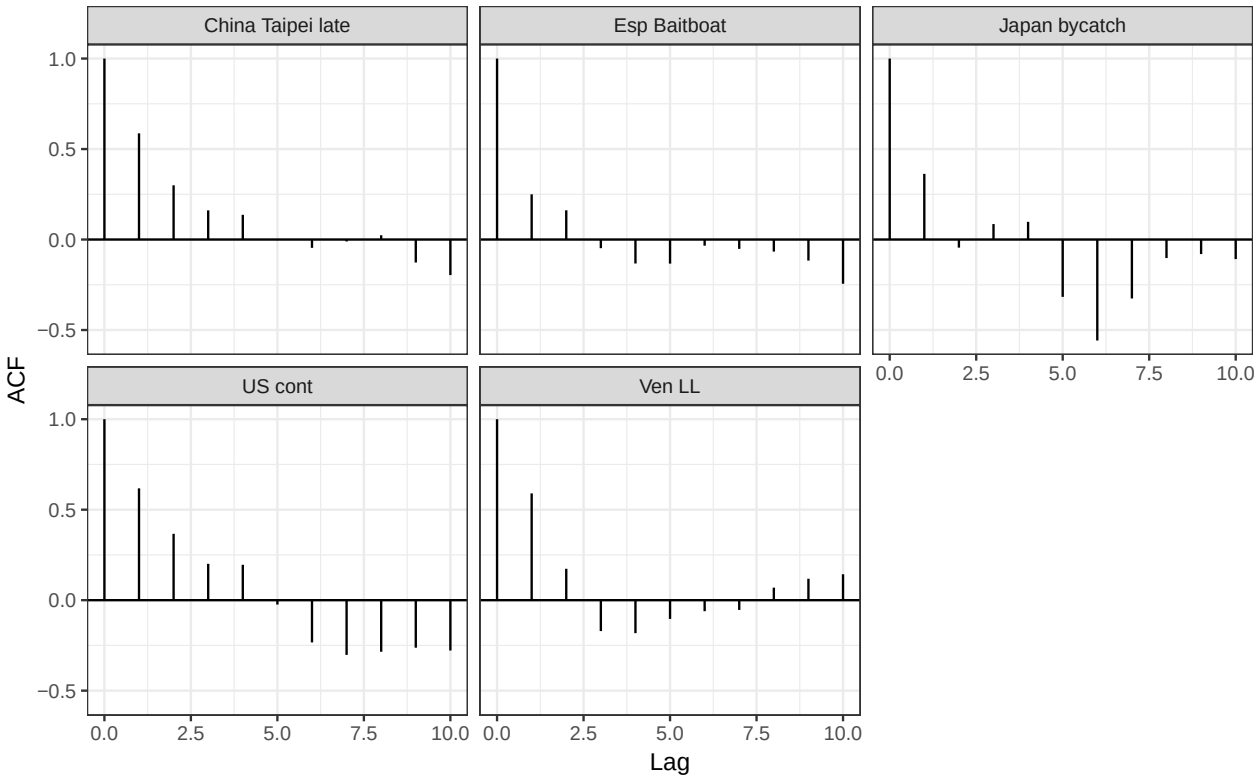

Figure 18. Autocorrelation of residuals from fit to CPUE by biomass dynamic assessment model.

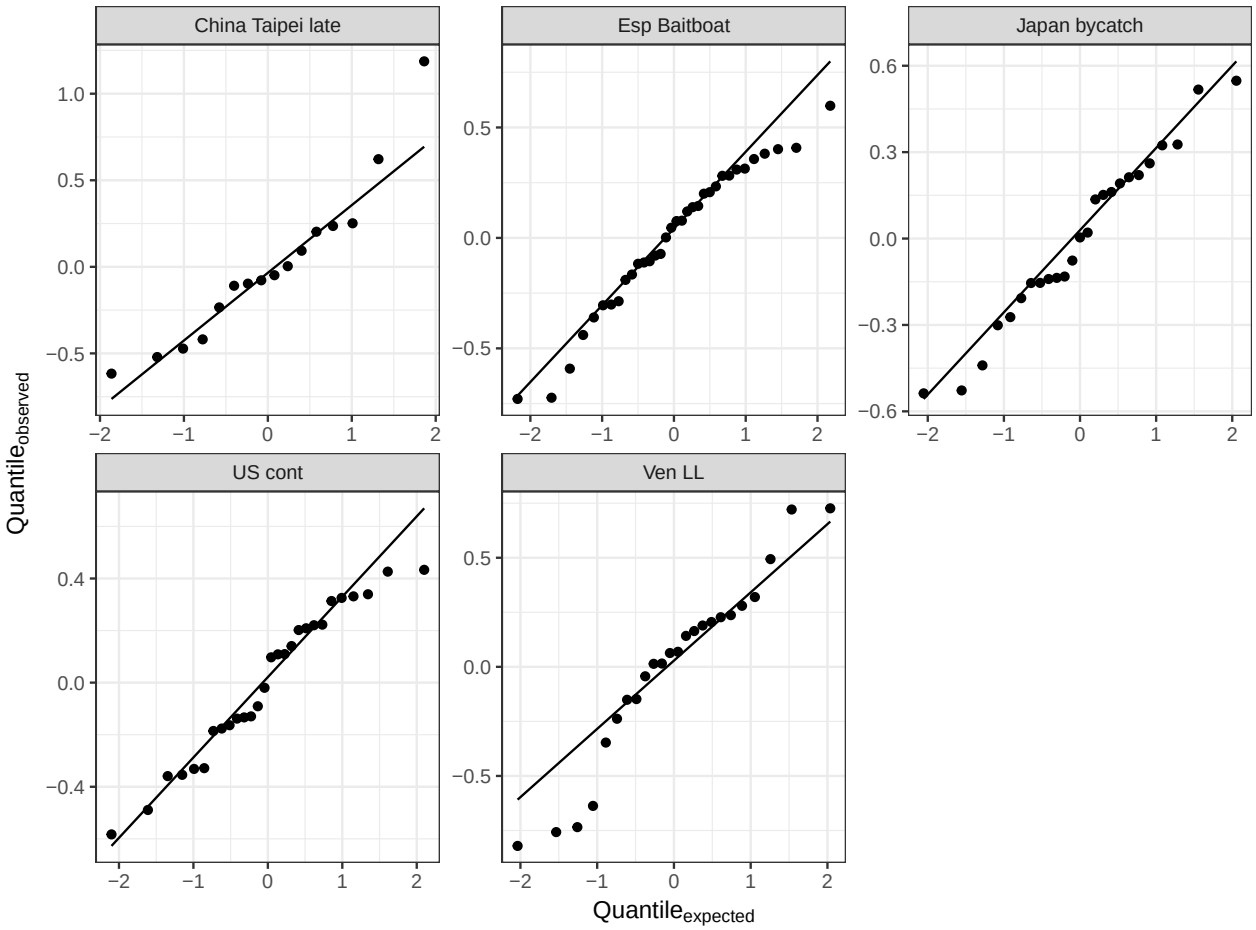

Figure 19. Quantile Quantile plot of residuals from fit to CPUE by biomass dynamic assessment model