Sardine two stock assessment excluding prior on "south" stock recruitment residuals

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The baseline sardine two stock assessment has been re-fit firstly excluding the prior on the "south" stock recruitment residuals, and secondly in addition, excluding the survey estimates of "west" stock recruitment from 2001-2003. A positive definite Hessian has not been obtained for either of these runs. In all Figures the new results are compared to the baseline model results.

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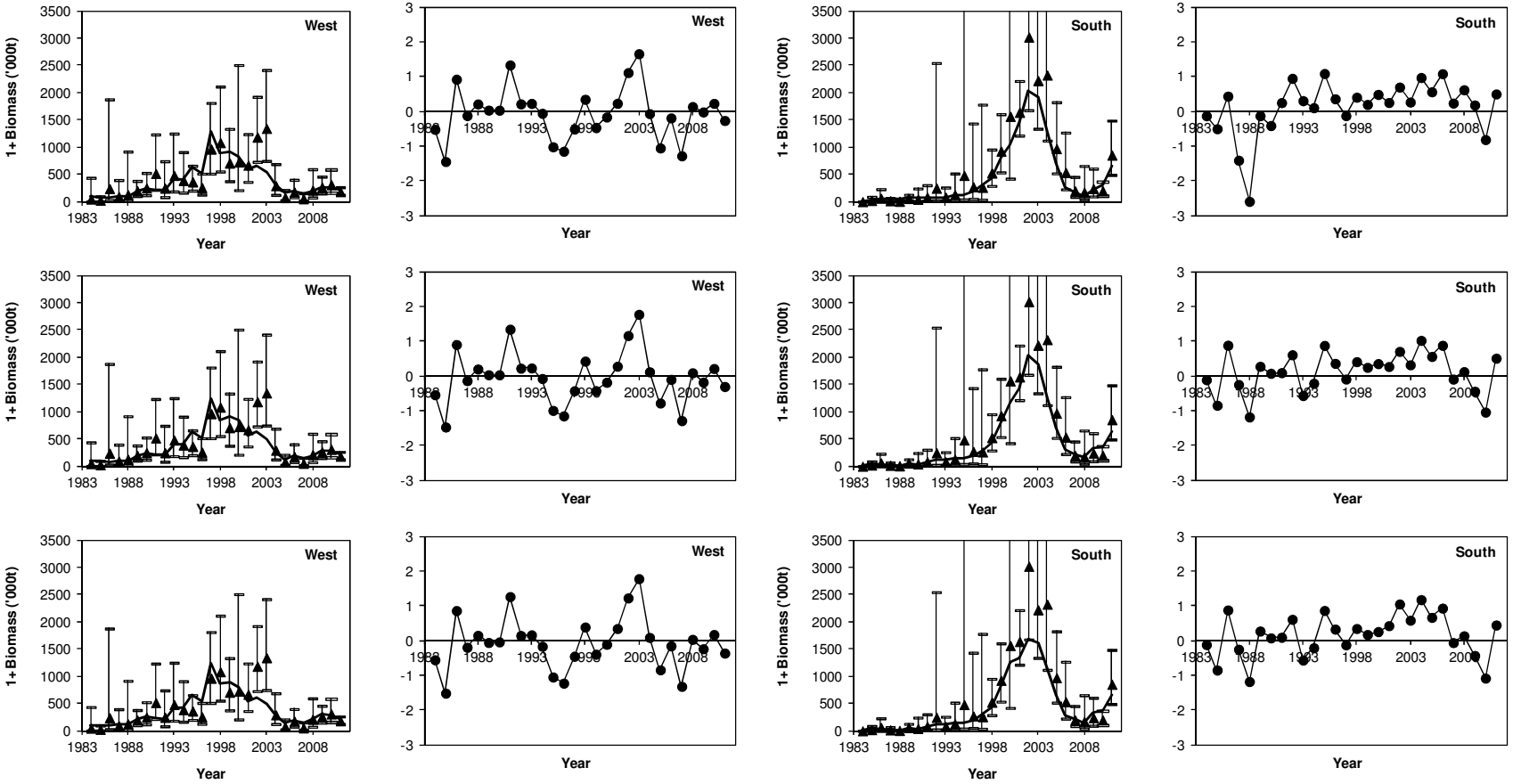

Figure 1. Acoustic survey estimated and model predicted November sardine 1+ biomass from 1984 to 2011. The survey indices are shown with 95% confidence intervals. The standardised residuals from the fits are given in the right hand plots. The top plots are from MARAM IWS/DEC13/Sardine/P1, the middle plots are from the new analysis excluding the prior on "south" stock recruitment residuals, while the lower plots also exclude the survey estimates of "west" stock recruitment in 2001-2003.

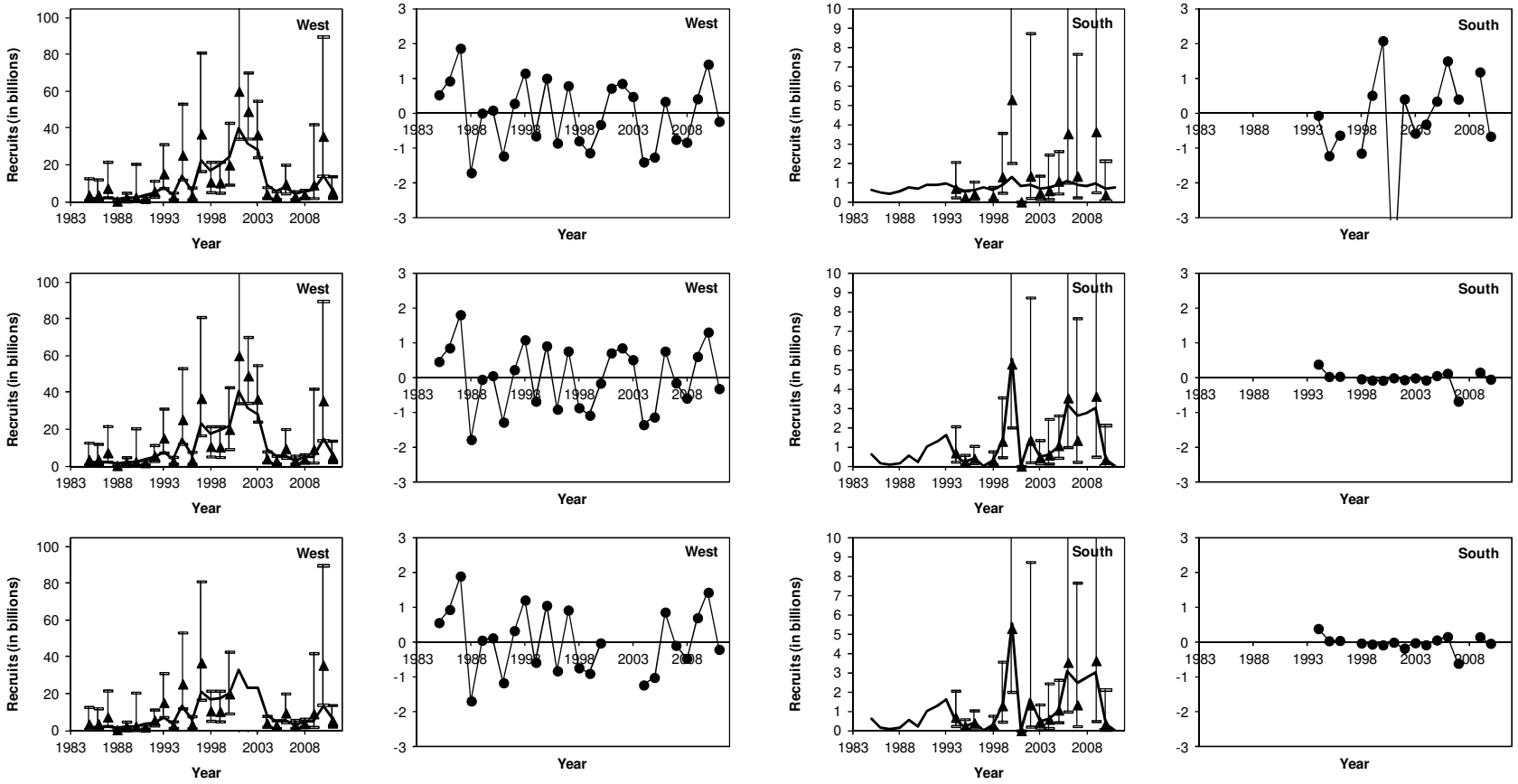

Figure 2. Acoustic survey estimated and model predicted sardine recruitment numbers from May 1985 to 2011. The survey indices are shown with 95% confidence intervals. The standardised residuals from the fits are given in the right hand plots. The top plots are from MARAM IWS/DEC13/Sardine/P1, the middle plots are from the new analysis excluding the prior on "south" stock recruitment residuals, while the lower plots also exclude the survey estimates of "west" stock recruitment in 2001-2003.

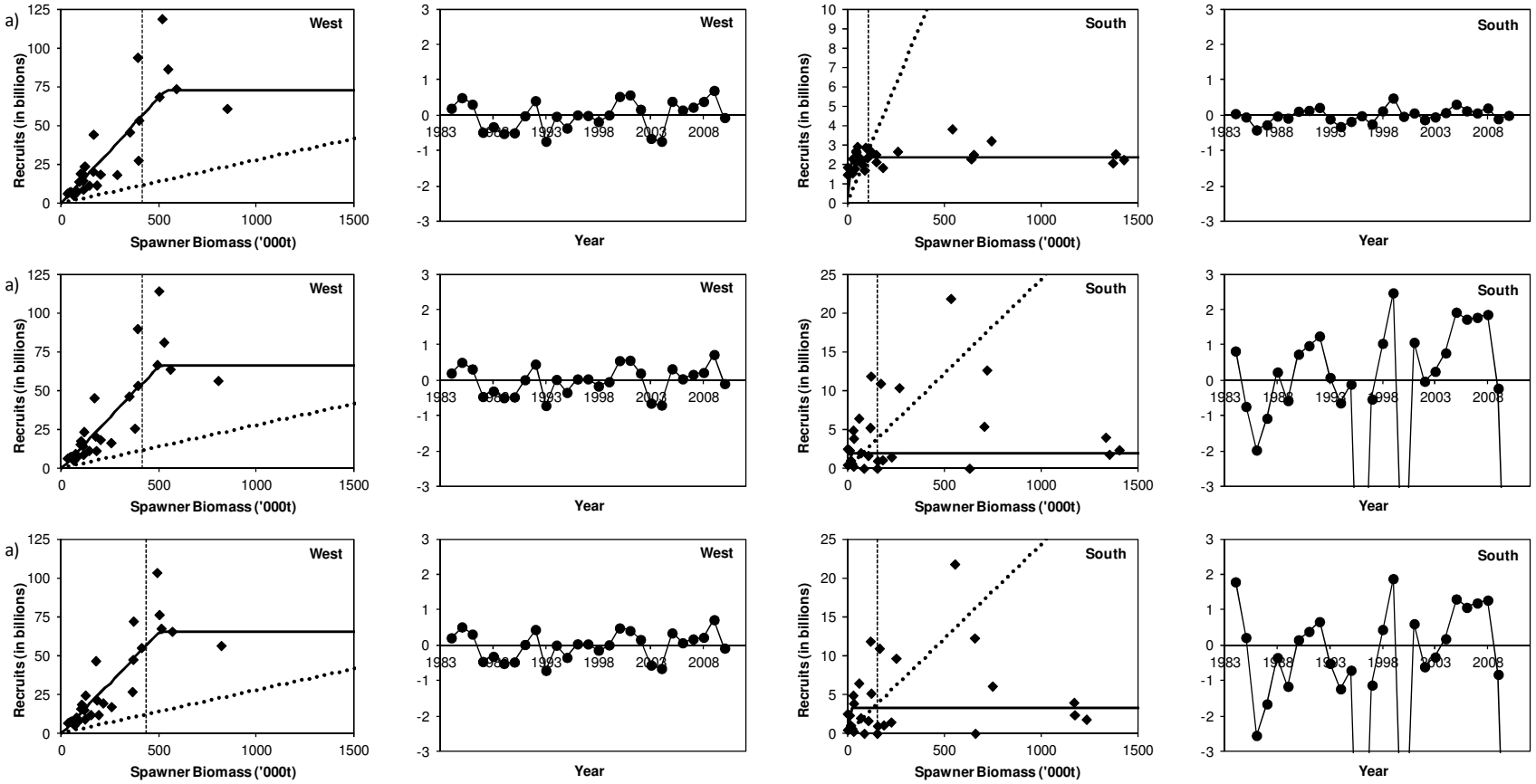

Figure 3. Model predicted sardine recruitment (in November) plotted against spawner biomass from November 1984 to November 2010 with the estimated Hockey stick stock recruitment relationship. The dotted line indicates the replacement line. The standardised residuals from the fit are given in the right hand plots. The top plots are from MARAM IWS/DEC13/Sardine/P1, the middle plots are from the new analysis excluding the prior on "south" stock recruitment residuals, while the lower plots also exclude the survey estimates of "west" stock recruitment in 2001-2003.

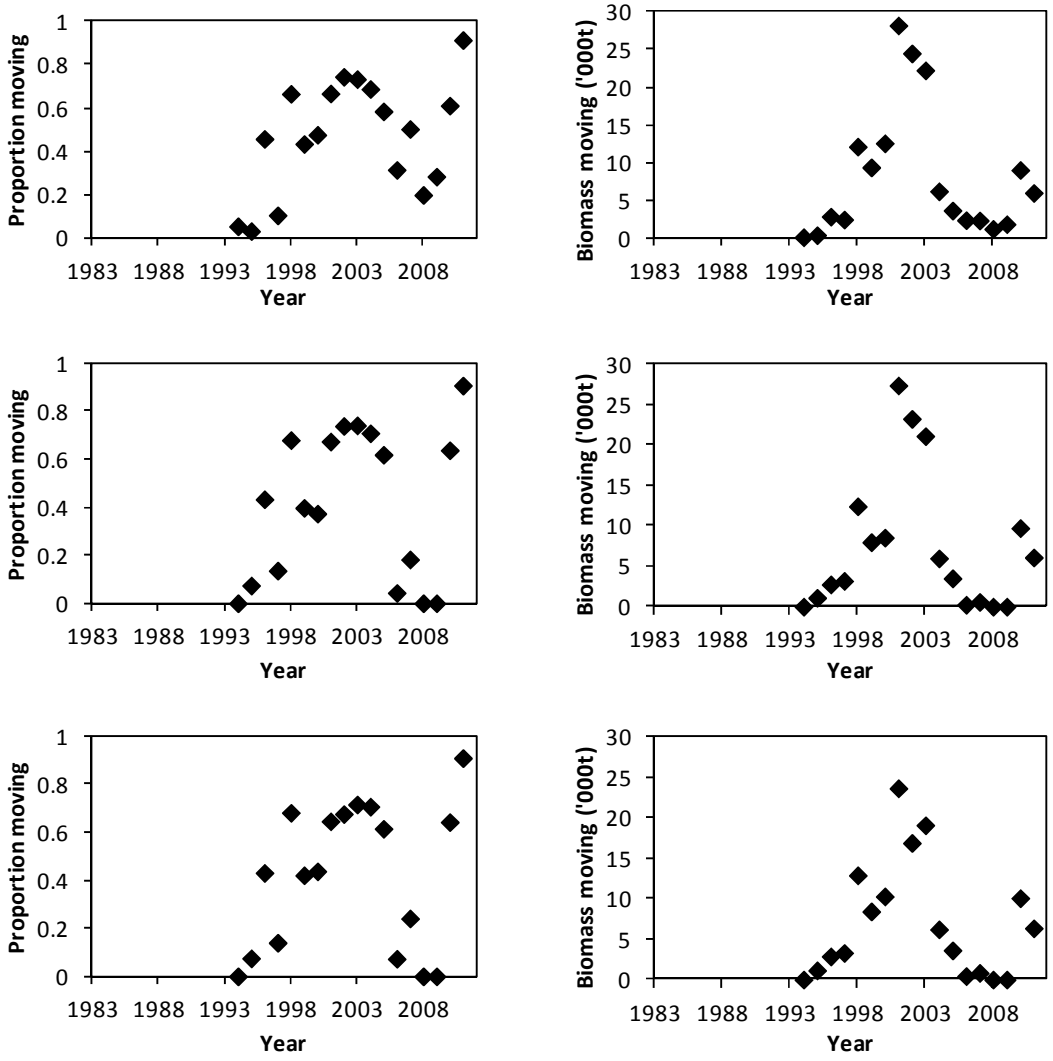

Figure 4. Model estimated proportion of recruits which move from the "west" stock to the "south" stock in November as they reach age 1 (no movement is modelled prior to 1994). The right hand plot shows rough[1] estimates of the biomass of recruits which move. The top plots are from MARAM IWS/DEC13/Sardine/P1, the middle plots are from the new analysis excluding the prior on "south" stock recruitment residuals, while the lower plots also exclude the survey estimates of "west" stock recruitment in 2001-2003.

[1] Calculated using the average of "west" and "south" stock weights-at-age 1.

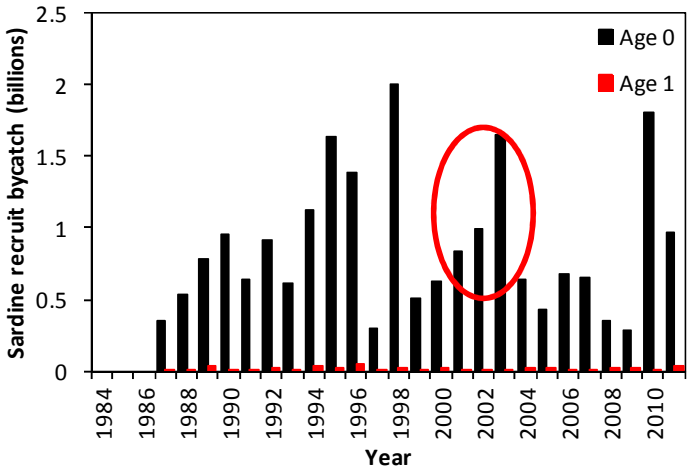

Figure 5. The annual sardine bycatch with anchovy (used quarterly within the model), assumed taken from the "west" stock.