Geoscientific
Model Development

Supplement of

Sources of interannual yield variability in JULES-crop and implications for forcing with seasonal weather forecasts

**K. E. Williams and P. D. Falloon**

Correspondence to: K. Williams (karina.williams@metoffice.gov.uk)

name	mean	standard deviation	global corr with control	global corr with disagg
		maize		
control	10.6	0.55		
irrig	16.2	0.18	0.48	
init	10.3	0.48	0.91	
disagg	10.2	0.53	0.98	
sens-T	10.7	0.23		0.23
sens-P	10.9	0.42		0.87
sens-TP	11.1	0.51		0.92
sens-TPR	11.1	0.50		0.92
sens-TPW	10.3	0.52		0.96
		soybean		
control	6.23	0.38		
irrig	8.22	0.31	0.44	
init	6.06	0.44	0.86	
disagg	6.22	0.44	0.82	
sens-T	6.61	0.30		0.56
sens-P	6.36	0.42		0.54
sens-TP	6.54	0.43		0.90
sens-TPR	6.48	0.43		0.89
sens-TPW	6.32	0.42		0.97
		rice		
control	7.14	0.23		
irrig	7.91	0.23	0.80	
init	7.14	0.21	0.98	
disagg	6.52	0.24	0.98	
sens-T	6.72	0.17		0.75
sens-P	6.62	0.15		0.48
sens-TP	6.64	0.20		0.98
sens-TPR	6.59	0.21		0.98
sens-TPW	6.62	0.21		0.99
		spring wheat		
control	4.75	0.34		
irrig	8.29	0.10	0.19	
init	4.01	0.27	0.86	
disagg	4.91	0.43	0.89	
sens-T	4.06	0.12		0.56
sens-P	5.25	0.26		0.81
sens-TP	5.30	0.36		0.95
sens-TPR	5.33	0.38		0.96
sens-TPW	4.99	0.40		0.96

Table A1. Results from the global runs described in Section 3 of the manuscript. First column is the run name, second is the mean crop yield in $Mg\,ha^{-1}$, third is the standard deviation of the annual global yield time series in $Mg\,ha^{-1}$. The fourth column gives the Pearson correlation coefficient with the global yield in the control run and the fifth column gives the Pearson correlation coefficient with the global yield in the disagg run. All results have been weighted as described in Section 4 of the manuscript.
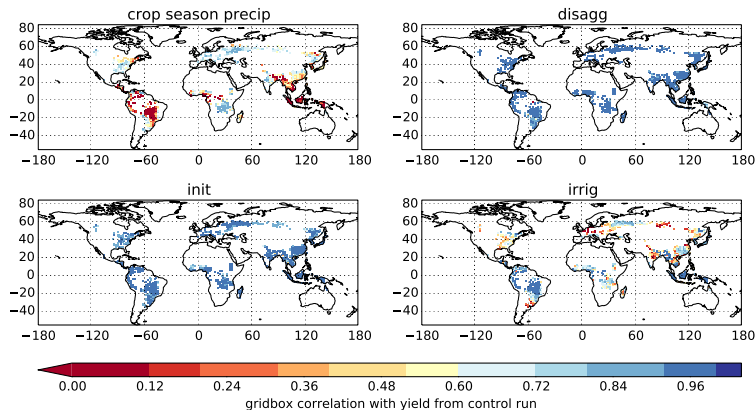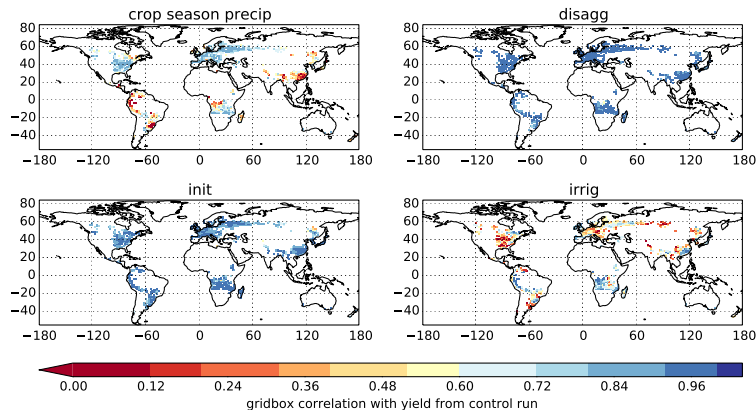
Figure A1. All plots show the correlations with the annual soybean yield in the `control` run for each gridbox. Top left: the correlation between yield in `control` run and crop season precipitation. Top right, bottom left and bottom right: the correlation between yield in `control` run and yield in the `disagg`, `init` and `irrig` runs, respectively.
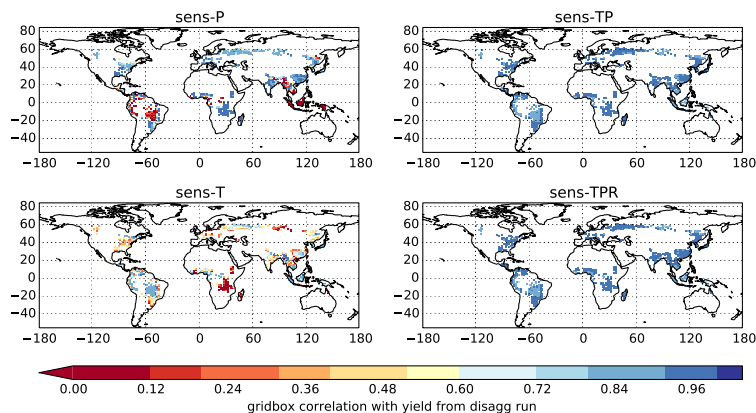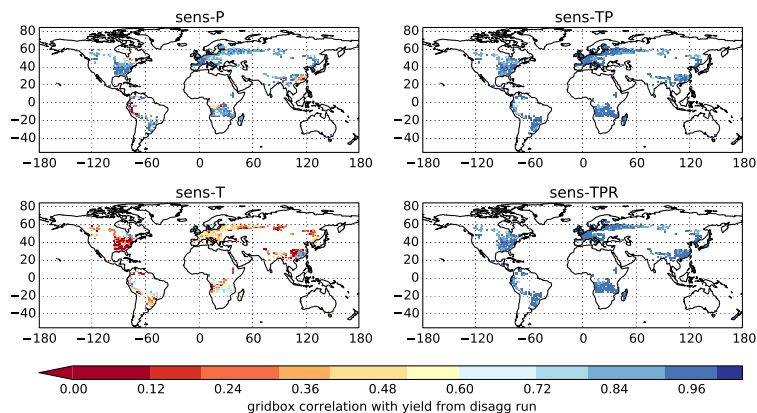
Figure A2. The correlations between the annual soybean yield in the `control` run and the annual soybean yield from the `sens-P` (top left), `sens-TP` (top right), `sens-T` (bottom left) and `sens-TPR` (bottom right) runs for each gridbox.
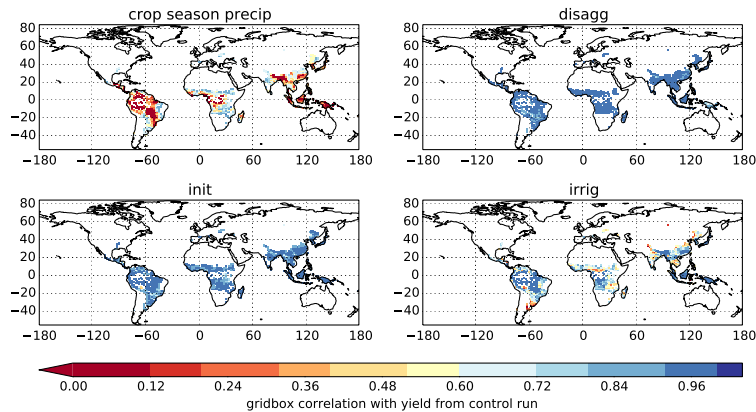
Figure A3. All plots show the correlations with the annual spring wheat yield in the `control` run for each gridbox. Top left: the correlation between yield in `control` run and crop season precipitation. Top right, bottom left and bottom right: the correlation between yield in `control` run and yield in the `disagg`, `init` and `irrig` runs, respectively.

Figure A4. The correlations between the annual spring wheat yield in the `control` run and the annual spring wheat yield from the `sens-P` (top left), `sens-TP` (top right), `sens-T` (bottom left) and `sens-TPR` (bottom right) runs for each gridbox.

Figure A5. All plots show the correlations with the annual rice yield in the `control` run for each gridbox. Top left: the correlation between yield in `control` run and crop season precipitation. Top right, bottom left and bottom right: the correlation between yield in `control` run and yield in the `disagg`, `init` and `irrig` runs, respectively.
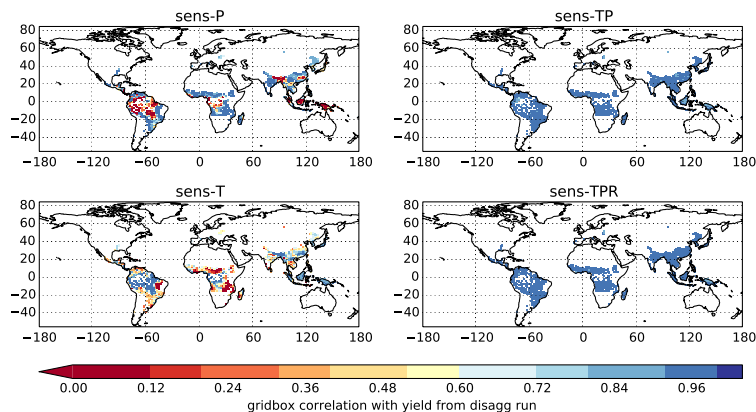
Figure A6. The correlations between the annual rice yield in the `control` run and the annual rice yield from the `sens-P` (top left), `sens-TP` (top right), `sens-T` (bottom left) and `sens-TPR` (bottom right) runs for each gridbox.