FURTHER INFORMATION FOR:

A COMMENT ON "A STATISTICAL ANALYSIS OF MULTIPLE TEMPERATURE PROXIES: ARE RECONSTRUCTIONS OF SURFACE TEMPERATURES OVER THE LAST 1000 YEARS RELIABLE?" BY MCSHANE AND WYNER

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This further information related to the Schmidt, Mann and Rutherford (2011) comment on the paper by McShane and Wyner (2011) is provided to clarify a small number of issues raised in correspondence with McShane and Wyner and to provide a more consistent derivation of the EIV reconstructions used in our pseudo-proxy experiments.

In order to provide a more accessible code base for other researchers, we have recoded the EIV methods used in our comment specifically for this discussion and rerun the EIV reconstructions in a verifiable and transparent way. Due to a small number of minor inconsistencies that subsequently come to light, and the fact that the original archived reconstructions were decadally smoothed instead of at annual resolution, there are small but noticeable, differences between the originally archived time-series and the new ones (Fig 1). Turnkey code for the EIV method applied to the pseudo-proxies is provided at

`http://www.meteo.psu.edu/~mann/supplements/AOAS/SMR_extra.tar.gz`

(including all of the updated files).

For consistency, we have replotted Fig. 2 from our discussion paper using the updated EIV reconstructions (Fig. 2). While lines on the original figure were baselined to the 1900-1980 period, we use a baseline of the whole calibration interval (1856-1980) here in response to comments made in the McShane and Wyner rejoinder. The relative skill of the EIV methods compared to the methods proposed by McShane and Wyner is clear. The loss of variance when using 'Lasso' is especially noticeable, underlining the inappropriateness of using that method in assessing whether proxies contain more information than various noise models.

We have also recalculated the skill scores from Table 1 in the supplemental data, using the updated EIV curves, and using a baseline over the whole calibration interval. While this affects the magnitude of the RMS scores in particular, the relative skill of the methods across a suite of skill metrics is the same as in our original SI.

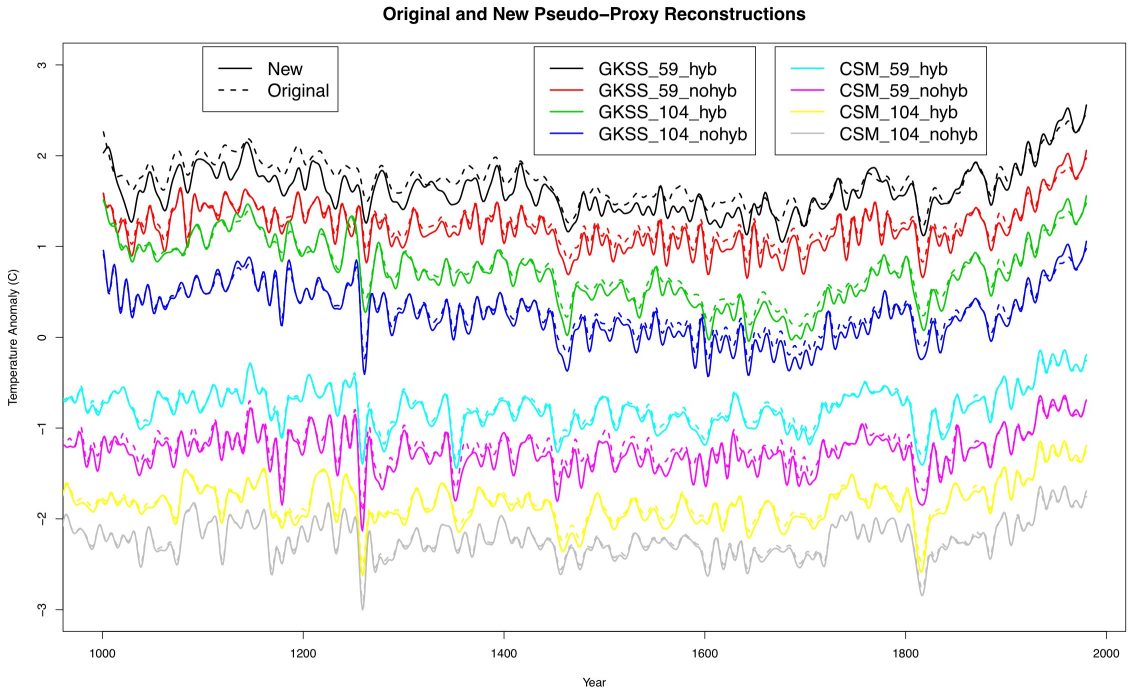

Figure 1: Differences between the originally archived and new reconstructions are due to a) a slightly different target temperature series, b) an error in hand coding the number of retained eigenvalues in one case, and c) a one-year mismatch in the calibration interval. As is clear in the figure, the net differences are minor.

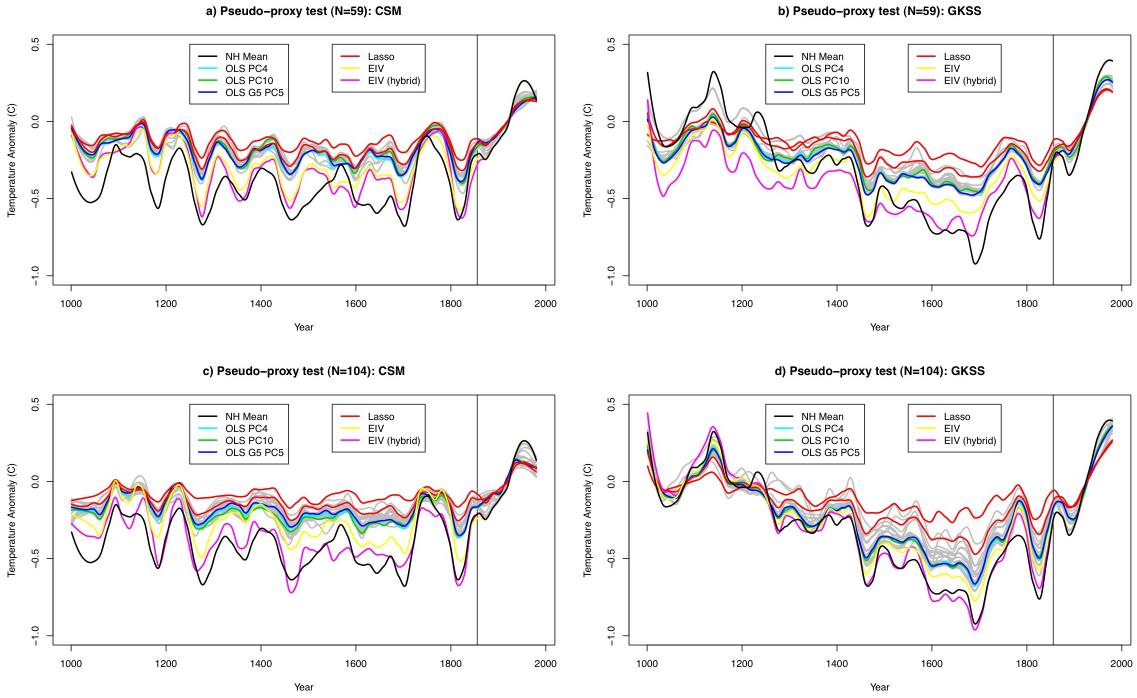

Figure 2: The same as Fig. 2 in the discussion paper except with a) updated versions of the EIV reconstructions, b) a baseline for the plots such that the plots have a zero mean over the calibration interval (compared to 1901-1980 in the original plot). None of our conclusions are materially affected by either change.

Table S1 (recalculated): Skill Scores for Pseudoproxy Reconstructions. Table as in the Supplement Material, updated for the new EIV reconstructions and calculated using a baseline of the whole calibration interval. The relative skill of the methods is unaffected.

Pseudo-proxy results for GKSS using 59 pseudoproxies:								
	RMSE	RMSE (SM)	RE	RE (SM)	CE	CE (SM)	r^2	r^2 (SM)
OLS PC1	0.276	0.214	0.675	0.768	0.372	0.484	0.592	0.949
OLS PC4	0.276	0.196	0.676	0.807	0.375	0.571	0.426	0.902
OLS PC10	0.289	0.205	0.645	0.788	0.314	0.528	0.378	0.868
OLS G5 PC5	0.277	0.197	0.672	0.804	0.368	0.565	0.413	0.889
Lasso Pr	0.360	0.304	0.447	0.534	-0.067	-0.035	0.236	0.809
Lasso PC	0.300	0.248	0.617	0.690	0.260	0.312	0.498	0.929
EIV	0.280	0.160	0.665	0.871	0.353	0.714	0.385	0.874
EIV (hyb)	0.263	0.181	0.704	0.834	0.428	0.630	0.503	0.819
Pseudo-proxy results for CSM using 59 pseudoproxies:								
OLS PC1	0.303	0.255	0.598	0.671	-0.611	-2.000	0.369	0.585
OLS PC4	0.285	0.229	0.646	0.735	-0.418	-1.413	0.383	0.638
OLS PC10	0.298	0.239	0.613	0.711	-0.551	-1.636	0.375	0.643
OLS G5 PC5	0.291	0.237	0.629	0.716	-0.485	-1.584	0.377	0.607
Lasso Pr	0.358	0.306	0.440	0.526	-1.244	-3.323	0.250	0.586
Lasso PC	0.315	0.265	0.565	0.646	-0.740	-2.224	0.342	0.597
EIV	0.259	0.139	0.707	0.903	-0.174	0.116	0.381	0.652
EIV (hyb)	0.214	0.134	0.801	0.909	0.201	0.171	0.428	0.603
Pseudo-proxy results for GKSS using 104 pseudoproxies:								
OLS PC1	0.245	0.179	0.744	0.838	0.506	0.640	0.640	0.954
OLS PC4	0.210	0.128	0.812	0.917	0.638	0.815	0.701	0.973
OLS PC10	0.211	0.131	0.810	0.913	0.634	0.806	0.691	0.967
OLS G5 PC5	0.214	0.135	0.805	0.908	0.624	0.796	0.688	0.967
Lasso Pr	0.366	0.318	0.429	0.488	-0.101	-0.137	0.349	0.843
Lasso PC	0.269	0.228	0.691	0.738	0.403	0.419	0.710	0.973
EIV	0.199	0.085	0.831	0.963	0.674	0.918	0.710	0.977
EIV (hyb)	0.170	0.056	0.877	0.984	0.762	0.964	0.783	0.978
Pseudo-proxy results for CSM using 104 pseudoproxies:								
OLS PC1	0.295	0.251	0.620	0.681	-0.520	-1.906	0.496	0.901
OLS PC4	0.280	0.232	0.656	0.728	-0.376	-1.481	0.486	0.801
OLS PC10	0.274	0.224	0.673	0.746	-0.309	-1.314	0.492	0.794
OLS G5 PC5	0.290	0.244	0.632	0.699	-0.473	-1.738	0.484	0.791
Lasso Pr	0.386	0.343	0.348	0.407	-1.609	-4.401	0.270	0.699
Lasso PC	0.325	0.283	0.539	0.595	-0.847	-2.686	0.466	0.847
EIV	0.243	0.159	0.742	0.872	-0.033	-0.168	0.496	0.849
EIV (hyb)	0.185	0.082	0.850	0.966	0.400	0.694	0.476	0.734