SUPPLEMENTARY 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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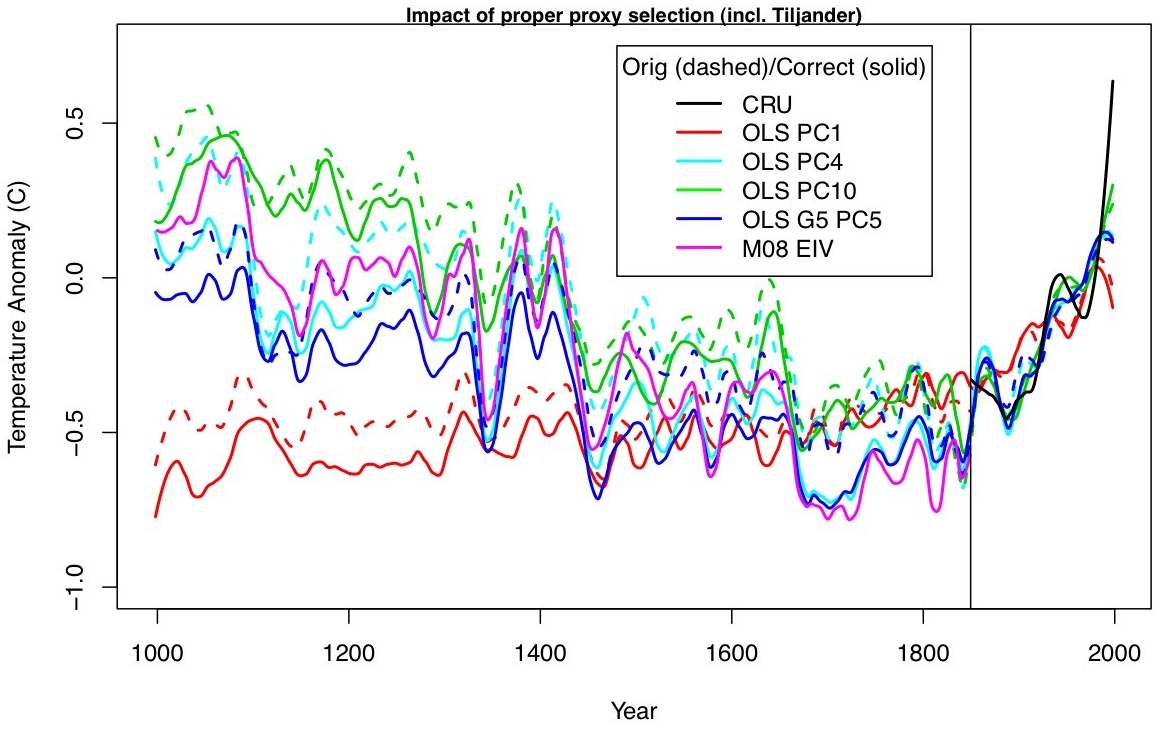

Figure S1: As fig 1a, but including the Tiljander proxies to highlight the impact of the removal of the inappropriate tree-ring series only (59 proxies series). The M08 EIV reconstruction as previously uses the same input proxy data and the frozen 1000 AD network as the OLS reconstructions.

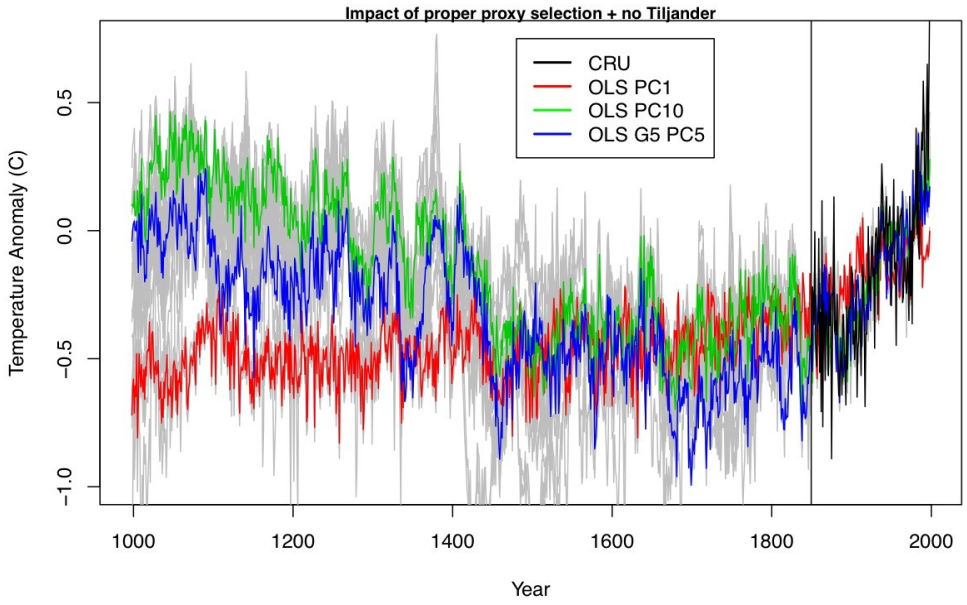

Figure S2: The impact of the appropriate proxy selection and removal of the Tiljander proxies on the annual reconstruction for the reconstructions highlighted in MW fig. 14.

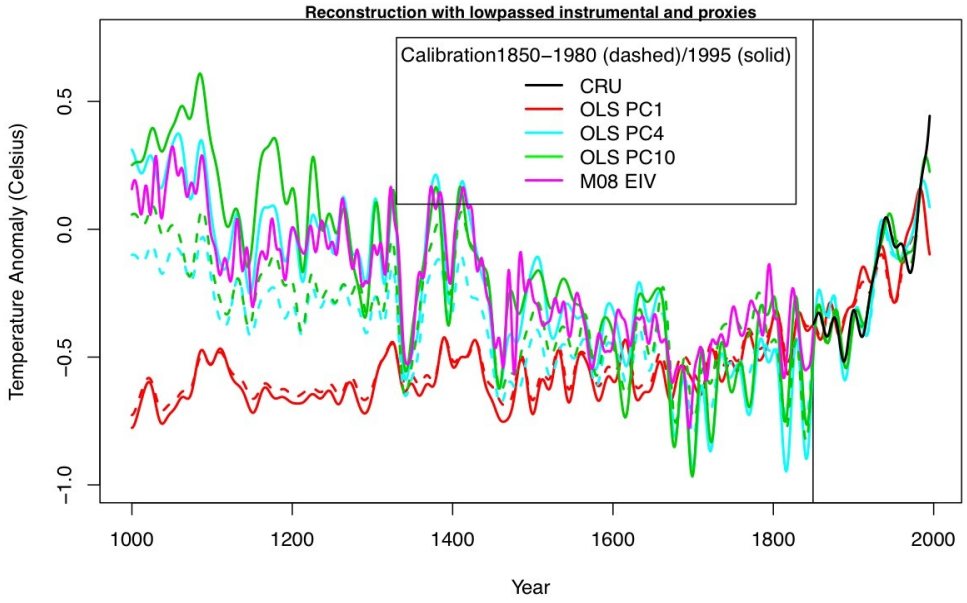

Figure S3: Results of reconstructions using only lowpassed proxies and instrumental data to assess the impact of potentially problematic differences in resolution in the proxy network (compare to fig. 1a). The lowpass filter is set to remove all frequencies higher than 1/20 year^{-1}. Two different calibration intervals are shown (1850-1980 and 1850-1995). It is notable that the OLS PC10 case has a significant sensitivity to the calibration interval, providing further evidence that it is overfitted to the calibration data.

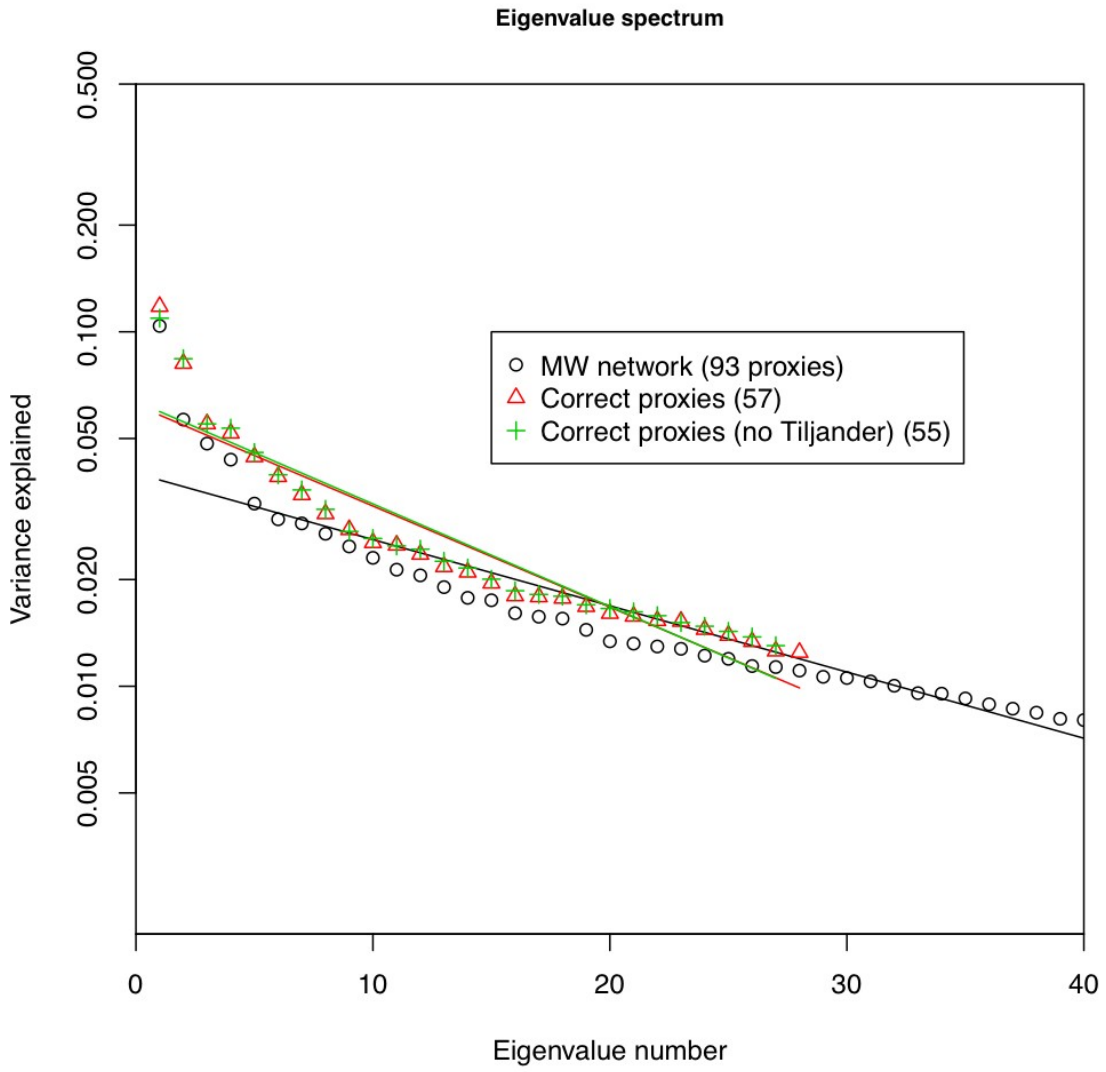

Figure S4 (corrected 12/16/2010): The eigenvalue spectrum for each of the relevant proxy networks used in the reconstructions. The original MW network had 93 proxies (95 minus two Tiljander proxies for stability reasons). Screening out the inappropriate tree-ring data leaves 57 proxies, and removing the remaining Tiljander proxies leaves 55. The lines are a fit to the log of the eigenvalues over the first half of the PCs. An objective criteria to assess which PCs to retain is only to retain the PCs for which the eigenvalues fall above the linear fit by a tolerance set by the residuals (Mann et al., 2007). In each case above, this method implies that only 4 PCs should be retained. Other criteria (such as ensuring that the PCs cumulatively explain more than half the variance) can give larger numbers of retained PCs. (Note that the original submission used the square of the eigenvalues instead of the eigenvalues themselves, and incorrectly fit the regression over the all the eigenvalues instead of the lower half. We are grateful to Blakeley McShane and Abraham Wyner for noticing the error).

Table S1: Skill Scores for Pseudoproxy Reconstructions. For each reconstruction in fig. 2 we calculate the root mean square error (RMSE), the Reduction of Error coefficient (RE), the Coefficient of Efficiency (CE) and the squared correlation coefficient (r^2) with respect to the true NH mean series over the period 1001-1855 for the annual and smoothed ['SM'] results.

Pseudo-proxy results for GKSS using 59 pseudoproxies:								
	RMSE	RMSE (SM)	RE	RE (SM)	CE	CE (SM)	r^2	r^2 (SM)
OLS PC1	0.315	0.259	0.577	0.660	0.184	0.245	0.592	0.949
OLS PC4	0.290	0.213	0.642	0.770	0.309	0.490	0.426	0.902
OLS PC10	0.304	0.224	0.606	0.746	0.239	0.436	0.378	0.868
OLS G5 PC5	0.290	0.214	0.640	0.769	0.306	0.488	0.413	0.889
Lasso Pr	0.404	0.354	0.302	0.368	-0.348	-0.404	0.233	0.808
Lasso PC	0.342	0.297	0.500	0.556	0.035	0.013	0.505	0.931
EIV	0.268	0.206	0.694	0.785	0.409	0.522	0.559	0.880
EIV (hyb)	0.216	0.140	0.801	0.902	0.616	0.781	0.701	0.927
Pseudo-proxy results for CSM using 59 pseudoproxies:								
OLS PC1	0.346	0.305	0.476	0.529	-1.098	-3.292	0.369	0.585
OLS PC4	0.322	0.274	0.548	0.621	-0.809	-2.453	0.383	0.638
OLS PC10	0.329	0.279	0.528	0.608	-0.891	-2.575	0.375	0.643
OLS G5 PC5	0.327	0.280	0.532	0.603	-0.874	-2.619	0.377	0.607
Lasso Pr	0.399	0.357	0.306	0.358	-1.780	-4.850	0.248	0.584
Lasso PC	0.352	0.310	0.457	0.515	-1.173	-3.421	0.344	0.597
EIV	0.281	0.223	0.655	0.750	-0.381	-1.282	0.344	0.585
EIV (hyb)	0.240	0.170	0.748	0.853	-0.010	-0.338	0.364	0.597

Pseudo-proxy results for GKSS using 104 pseudoproxies:								
OLS PC1	0.286	0.231	0.651	0.732	0.327	0.404	0.640	0.954
OLS PC4	0.236	0.166	0.763	0.862	0.543	0.693	0.701	0.973
OLS PC10	0.236	0.167	0.762	0.859	0.541	0.687	0.691	0.967
OLS G5 PC5	0.240	0.172	0.754	0.851	0.525	0.669	0.688	0.967
Lasso Pr	0.401	0.359	0.313	0.349	-0.327	-0.446	0.378	0.859
Lasso PC	0.340	0.307	0.508	0.525	0.050	-0.055	0.706	0.971
EIV	0.222	0.168	0.789	0.857	0.593	0.683	0.790	0.976
EIV (hyb)	0.191	0.107	0.845	0.943	0.700	0.873	0.774	0.975
Pseudo-proxy results for CSM using 104 pseudoproxies:								
OLS PC1	0.343	0.309	0.485	0.517	-1.062	-3.397	0.496	0.901
OLS PC4	0.316	0.280	0.563	0.605	-0.752	-2.600	0.486	0.801
OLS PC10	0.308	0.270	0.586	0.632	-0.659	-2.355	0.492	0.794
OLS G5 PC5	0.328	0.293	0.529	0.566	-0.885	-2.954	0.484	0.791
Lasso Pr	0.435	0.400	0.175	0.190	-2.305	-6.381	0.266	0.690
Lasso PC	0.371	0.340	0.398	0.417	-1.412	-4.314	0.466	0.847
EIV	0.256	0.195	0.713	0.809	-0.149	-0.743	0.448	0.853
EIV (hyb)	0.203	0.111	0.820	0.938	0.278	0.436	0.412	0.774

Note added in proof: Further calculations and additional code can be found at http://www.meteo.psu.edu/~mann/supplements/AOAS including updates and variations on Fig. 2 and Table S1.