



Supplement of

A regional climate palaeosimulation for Europe in the period 1500–1990 – Part 2: Shortcomings and strengths of models and reconstructions

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:OF1 SAT (x 1) in DJF in CRU3GRID2 (61.706 % EOF1 SAT (x 3) in JJA in CRU3GRID2 (36.98 %

EOF1 SAT (x 1) in DJF in MM5GRID2 (71.407 % EOF1 SAT (x 3) in JJA in MM5GRID2 (57.074 %







Figure S1: EOF1 for SAT in in DJF (left) and JJA (right). Top correspond to NCEP and CRU, middle to ECHOG-MM5 and bottom to reconstruction. 2



:OF2 SAT (x 2) in DJF in CRU3GRID2 (16.501 9:OF2 SAT (x 3) in JJA in CRU3GRID2 (20.516 9

EOF2 SAT (x 2) in DJF in MM5GRID2 (13.196 % EOF2 SAT (x 3) in JJA in MM5GRID2 (11.853 %



EOF2 SAT (x 2) in DJF in LUTGRID2 (17.168 % EOF2 SAT (x 3) in JJA in LUTGRID2 (25.733 %



Figure S2: EOF2 for SAT in in DJF (left) and JJA (right). Top correspond to NCEP and CRU, middle to ECHOG-MM5 and bottom to reconstruction. 3



:OF3 SAT (x 3) in DJF in CRU3GRID2 (7.5717 9:OF3 SAT (x 5) in JJA in CRU3GRID2 (12.148 9

EOF3 SAT (x 3) in DJF in MM5GRID2 (5.5556 % EOF3 SAT (x 5) in JJA in MM5GRID2 (10.568 %



EOF3 SAT (x 3) in DJF in LUTGRID2 (5.5277 % EOF3 SAT (x 5) in JJA in LUTGRID2 (13.093 %



Figure S3: EOF3 for SAT in in DJF (left) and JJA (right). Top correspond to NCEP and CRU, middle to ECHOG-MM5 and bottom to reconstruction. 4



DF1 PRE (x 0.1) in DJF in CRU3GRID2 (29.534 DF1 PRE (x 0.1) in JJA in CRU3GRID2 (15.452

OF1 PRE (x 0.1) in DJF in MM5GRID2 (34.301 ' EOF1 PRE (x 0.1) in JJA in MM5GRID2 (11.83 %



OF1 PRE (x 0.1) in DJF in LUTGRID2 (46.066 % OF1 PRE (x 0.1) in JJA in LUTGRID2 (39.802 %



Figure S4: EOF1 for PRE in in DJF (left) and JJA (right). Top correspond to NCEP and CRU, middle to ECHOG-MM5 and bottom to reconstruction. 5



DF2 PRE (x 0.1) in DJF in CRU3GRID2 (14.613 OF2 PRE (x 0.1) in JJA in CRU3GRID2 (14.44 °

EOF2 PRE (x 0.1) in DJF in MM5GRID2 (14.72 9 OF2 PRE (x 0.1) in JJA in MM5GRID2 (8.1818 9



OF2 PRE (x 0.1) in DJF in LUTGRID2 (21.087 % OF2 PRE (x 0.1) in JJA in LUTGRID2 (19.017 %



Figure S5: EOF2 for PRE in in DJF (left) and JJA (right). Top correspond to NCEP and CRU, middle to ECHOG-MM5 and bottom to reconstruction. -6



OF3 PRE (x 0.1) in DJF in CRU3GRID2 (8.514 ' OF3 PRE (x 0.1) in JJA in CRU3GRID2 (8.4884

OF3 PRE (x 0.1) in DJF in MM5GRID2 (11.336 ° OF3 PRE (x 0.1) in JJA in MM5GRID2 (5.2479 °



EOF3 PRE (x 0.1) in DJF in LUTGRID2 (8.09 % :OF3 PRE (x 0.1) in JJA in LUTGRID2 (8.9907 %



Figure S6: EOF3 for PRE in in DJF (left) and JJA (right). Top correspond to NCEP and CRU, middle to ECHOG-MM5 and bottom to reconstruction. 7



Figure S7: Temporal series of **SAT** (C) in each of the nine areas in Figure 1 in winter. Colour indicates to which data set each corresponds: ECHO-G (black), MM5-ECHO-G (brown) and the gridded reconstructions (blue). Bold lines correspond to the median, whereas the shading indicates the 25-50 interquartile range.



Figure S8: Temporal series of **precipitation (mm/month)** in each of the nine areas in Figure 1 in **winter**. Colour indicates to which data set each corresponds: ECHO-G (black), MM5-ECHO-G (brown) and the gridded reconstructions (blue). Bold lines correspond to the median, whereas the shading indicates the 25-50 interquartile range.



Figure S9: Temporal series of **SAT** (C) in each of the nine areas in Figure 1 in **summer**. Colour indicates to which data set each corresponds: ECHO-G (black), MM5-ECHO-G (brown) and the gridded reconstructions (blue). Bold lines correspond to the median, whereas the shading indicates the 25-50 interquartile range.



Figure S10: Temporal series of **precipitation (mm/month)** in each of the nine areas in Figure 1 in **summer**. Colour indicates to which data set each corresponds: ECHO-G (black), MM5-ECHO-G (brown) and the gridded reconstructions (blue). Bold lines correspond to the median, whereas the shading indicates the 25-50 interquartile range.



Figure S11: Temporal series of **SAT** (**C**) in each of the nine areas in Figure 1 in **spring**. Colour indicates to which data set each corresponds: ECHO-G (black), MM5-ECHO-G (brown) and the gridded reconstructions (blue). Bold lines correspond to the median, whereas the shading indicates the 25-50 interquartile range.



Figure S12: Temporal series of **precipitation (mm/month)** in each of the nine areas in Figure 1 in **spring**. Colour indicates to which data set each corresponds: ECHO-G (black), MM5-ECHO-G (brown) and the gridded reconstructions (blue). Bold lines correspond to the median, whereas the shading indicates the 25-50 interquartile range.



Figure S13: Temporal series of **SAT** (**C**) in each of the nine areas in Figure 1 in **autumn**. Colour indicates to which data set each corresponds: ECHO-G (black), MM5-ECHO-G (brown) and the gridded reconstructions (blue). Bold lines correspond to the median, whereas the shading indicates the 25-50 interquartile range.



Figure S14: Temporal series of **precipitation (mm/month)** in each of the nine areas in Figure 1 in **autumn**. Colour indicates to which data set each corresponds: ECHO-G (black), MM5-ECHO-G (brown) and the gridded reconstructions (blue). Bold lines correspond to the median, whereas the shading indicates the 25-50 interquartile range.