



Figure. S1: LM global GST annual anomalies and the corresponding 31-yr filtered outputs, the global  $IBS_{L12}$  and the  $B_{mask}$  pseudo-reconstructions based on the linear combination of the four a) and five b) principal components for the  $ALL-F_2$  and  $ALL-F_5$  members of the  $ALL-F$  ensemble. Note the different discretization in the x axis after 1700 CE. Boxplots describing the centennial linear trends over the period 1900-2005 CE calculated for each of the 13 ensemble members within the  $ALL-F$  ensemble are shown on the right-hand side. the GST,  $IBS_{L12}$ ,  $GST_{mask}$ ,  $B_{mask}$  and the differences between  $IBS_{L12} - GST$ ,  $B_{mask} - GST_{mask}$  and  $IBS_{L12} - B_{mask}$  are presented. The 25th, 50th and 75th percentiles are indicated and the whiskers represent the lowest/highest value within 1.5 interquartile range (IQR) of the 25th/75th percentile. Outliers are indicated as diamonds in the same color of the box.