Supplementary material for “The representation of surface temperature trends in C3S seasonal forecast systems”

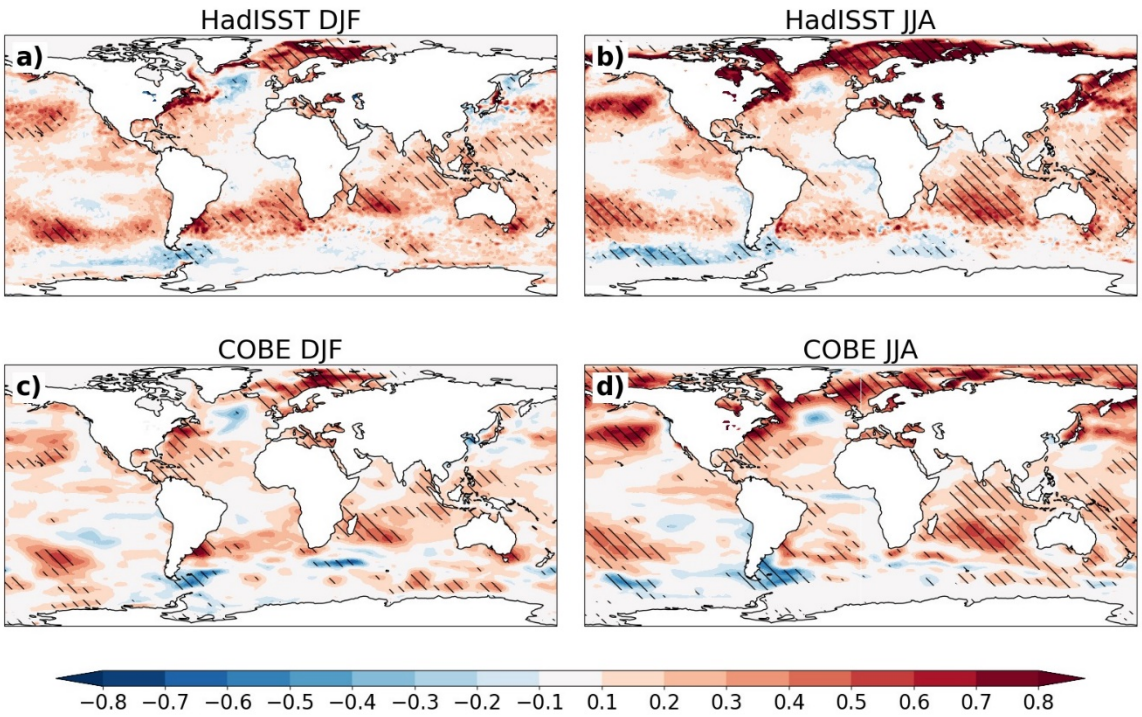

Figure S1: Trends in observational SST datasets over the common hindcast period (1993-2016). Shown are a,b) HadISST and c,d) COBE for a,c) DJF and b,d) JJA. Units are K/decade. Hatching indicates grid-points for which the trend is statistically significantly different from zero at the 5% level, following a Student's t-test.

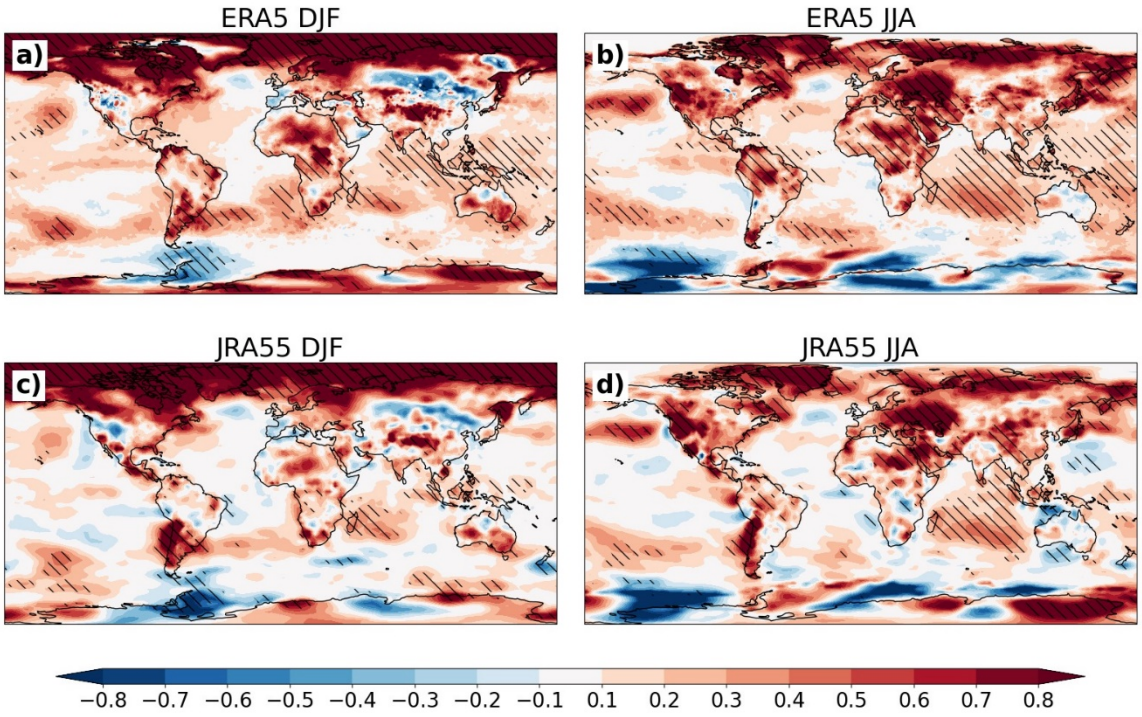

Figure S2: Trends in reanalysis near-surface temperature datasets over the common hindcast period (1993-2016). Shown are a,b) ERA5 and c,d) JRA-55 for a,c) DJF and b,d) JJA. Units are K/decade. Hatching indicates grid-points for which the trend is statistically significantly different from zero at the 5% level, following a Student's t-test.

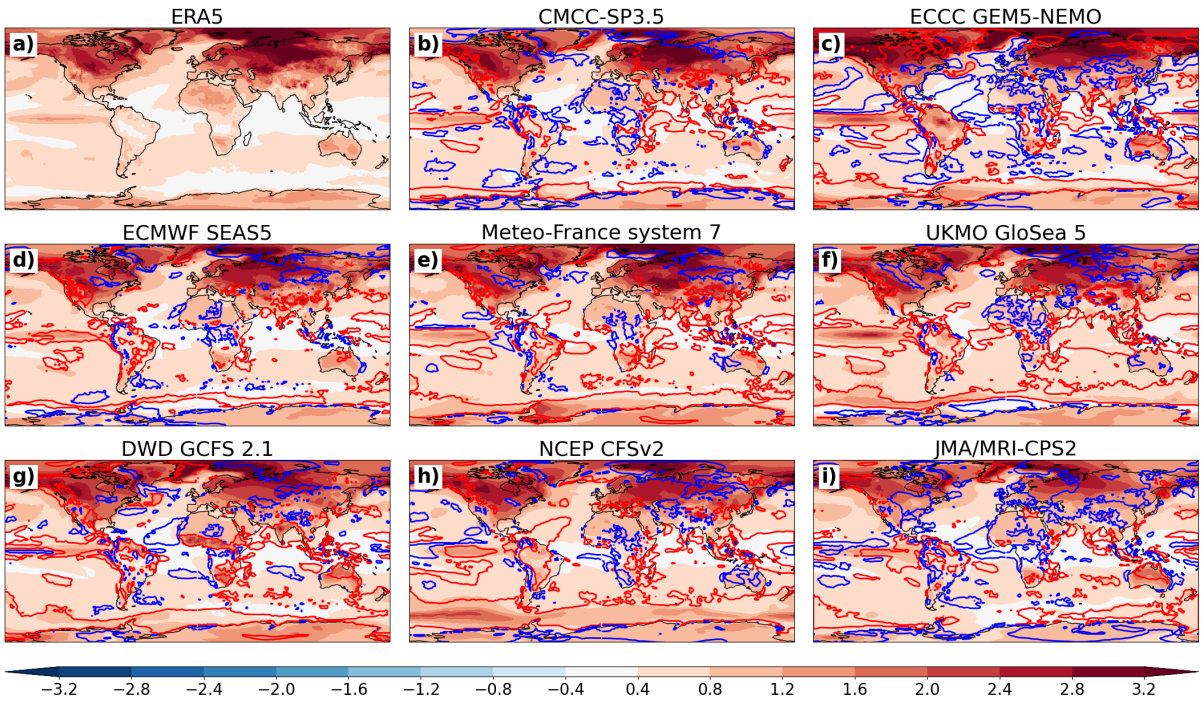

Figure S3 Variability in seasonal forecast systems compared to ERA5 for DJF (1994-2017). Shown is a) the standard deviation in ERA5 b-i) the mean standard deviation for 1000 time series with a random ensemble member chosen for each year (colours). Similar to figures 4-7 of the main paper, percentiles indicate where ERA5 is above the 97.5th percentile of the ensemble at each grid-point (blue) and below the 2.5th percentile (red). That is red shows where the models show more variability than ERA5 and blue where the models show less variability. Units of K.

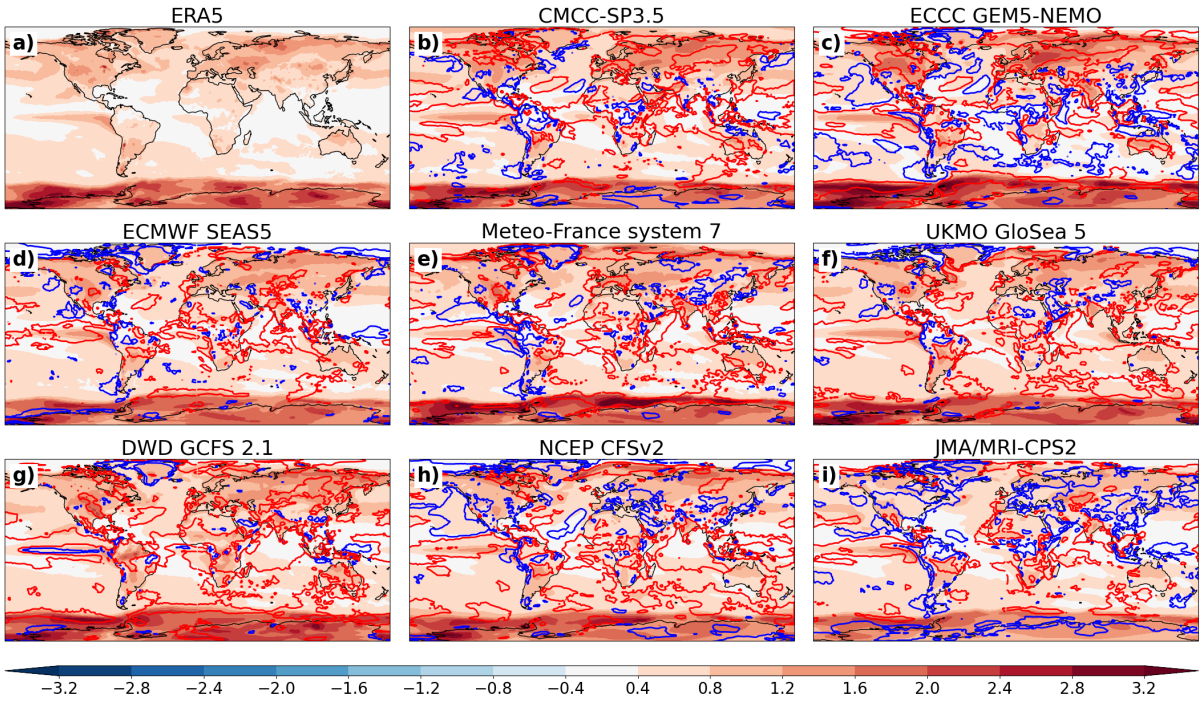

Figure S4 As in figure S3 but for JJA (1993-2016).

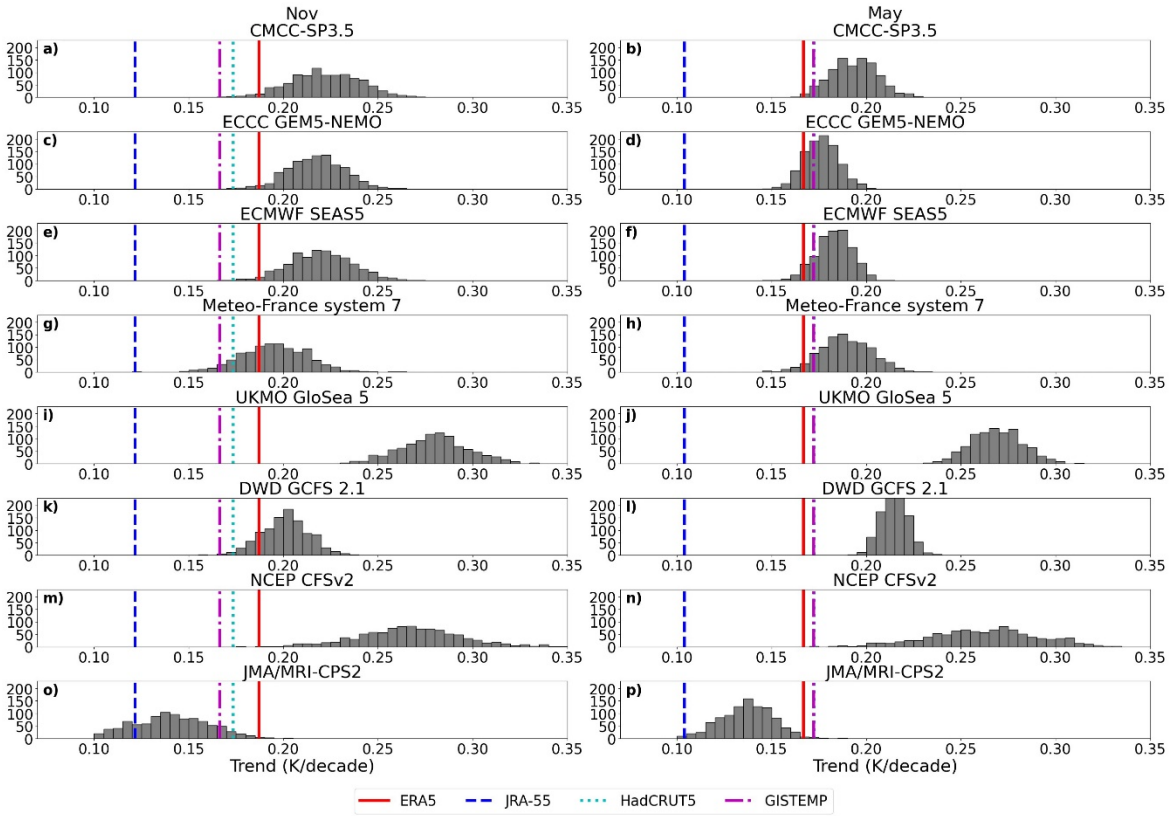

Figure S5: Global-mean trend ensembles as in figure 2 of the main paper, but for left) November and right) May, i.e. the month when the model was initialised.

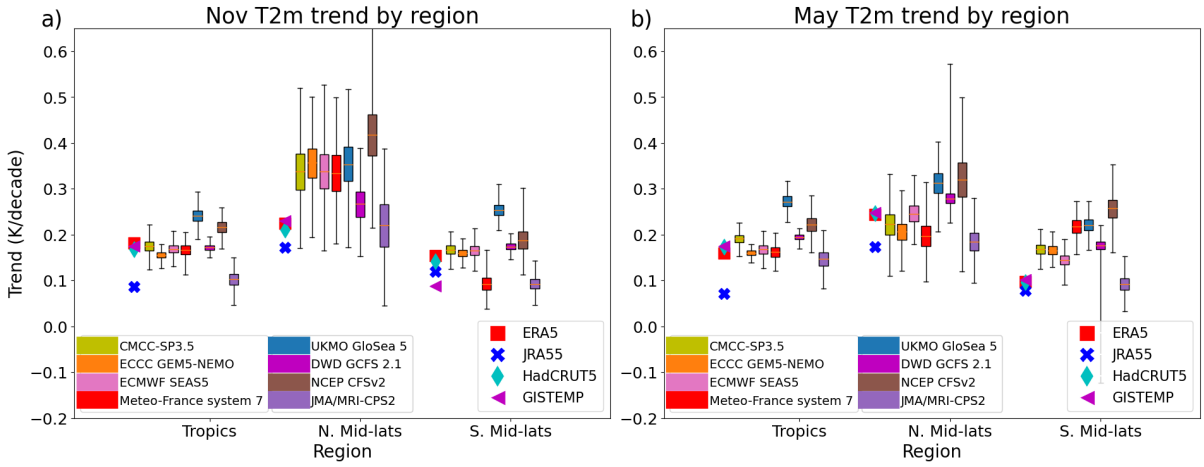

Figure S6: Regional temperature trends for the initialisation month. As in figure 3 of the main paper but for a) November and b) May, i.e. the month when the model was initialised.

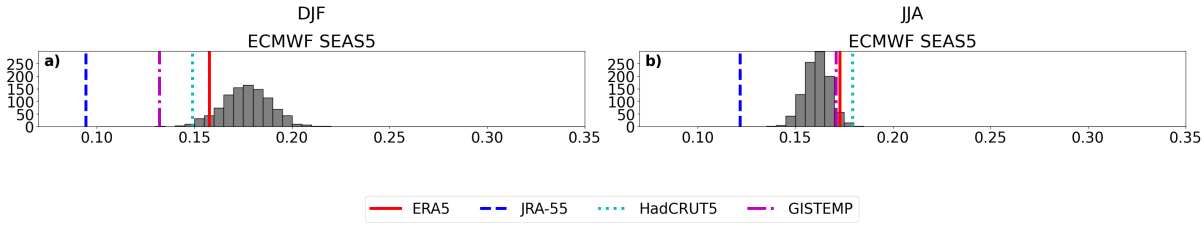

Figure S7: As in figure 2 of the main paper, but for ECWMF SEAS5 over the longer hindcast period 1981-2016.