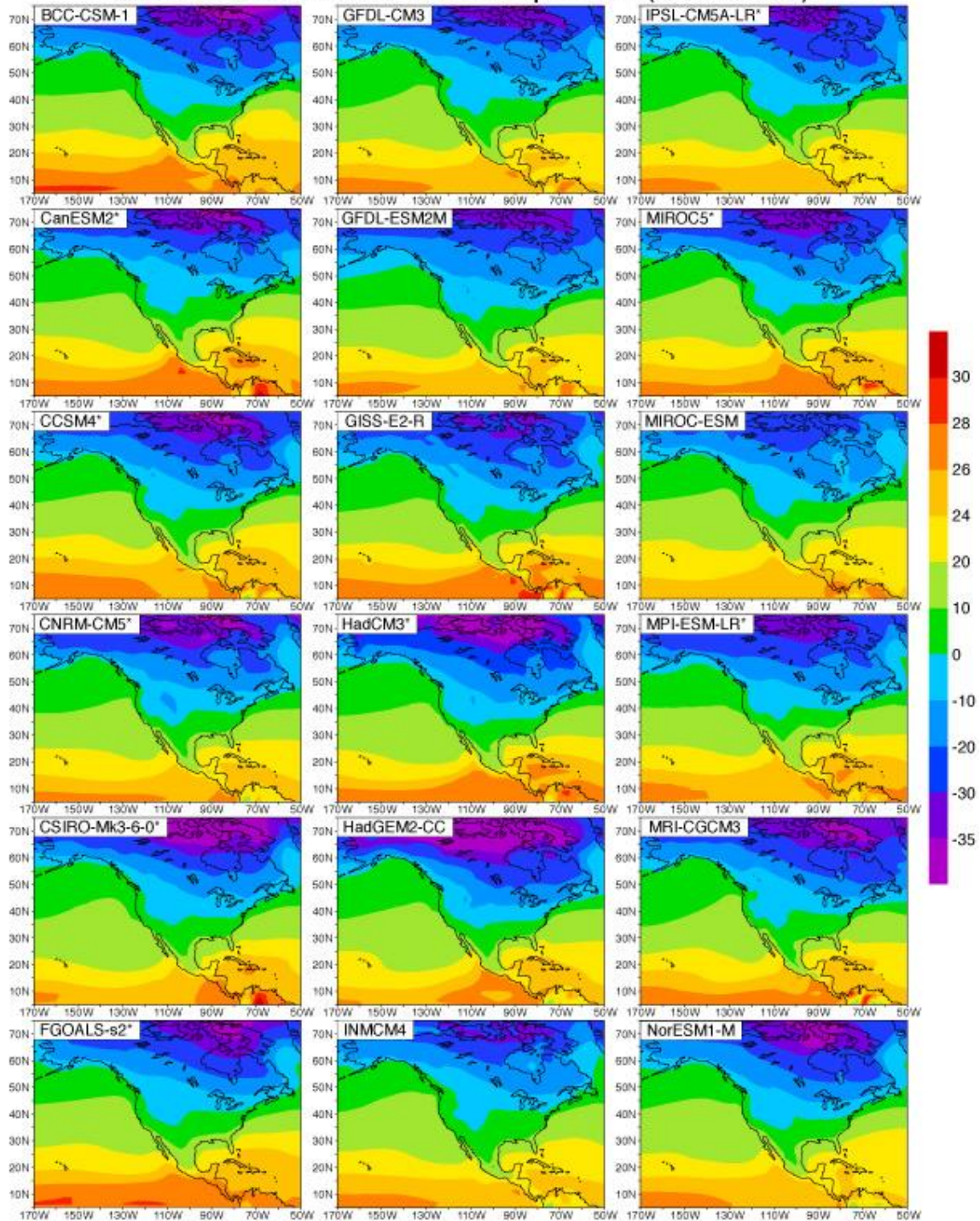


Supplemental material for

Sheffield et al., 2013: North American Climate in CMIP5 Experiments. Part I: Evaluation of Historical Simulations of Continental and Regional Climatology

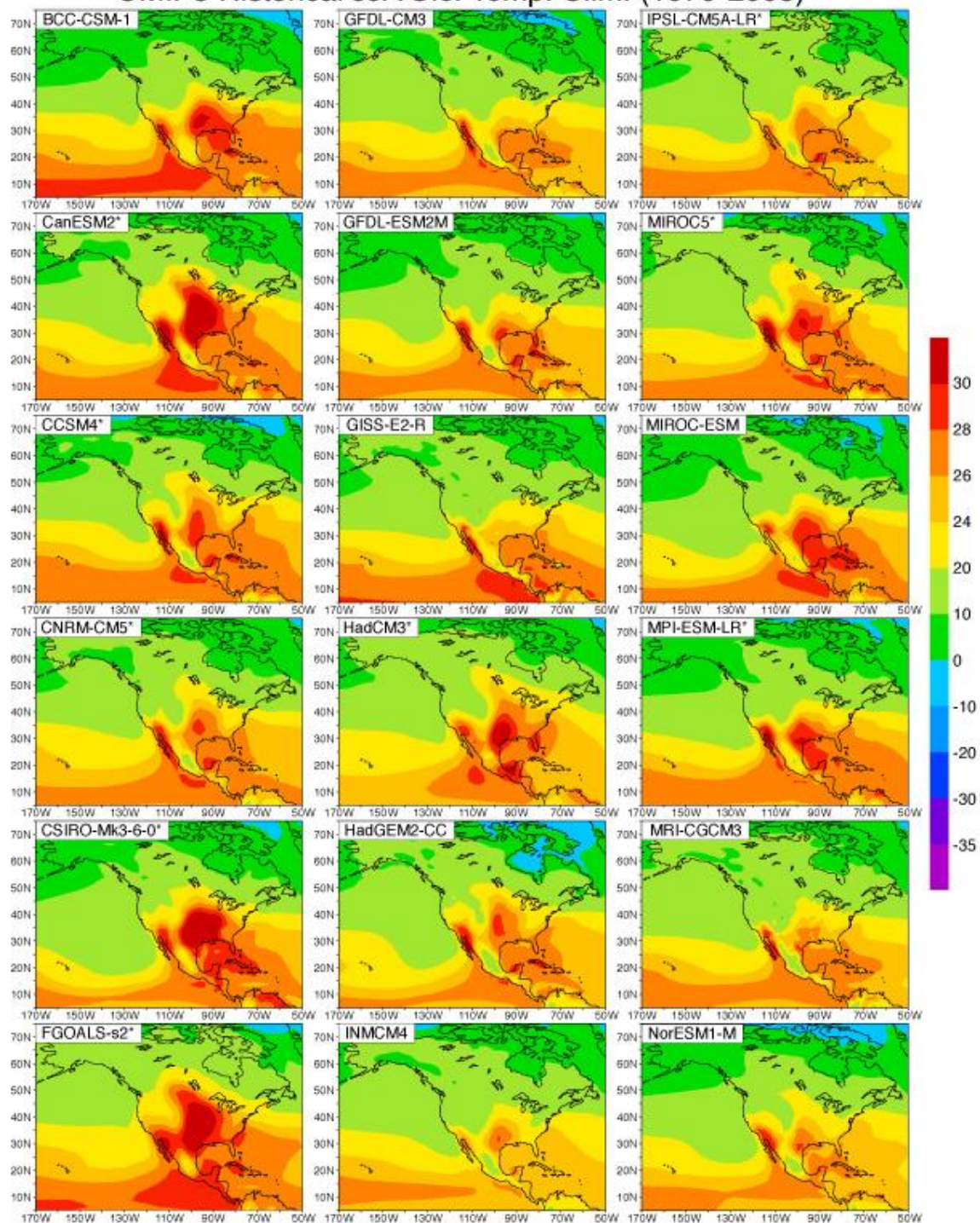
### CMIP5 Historical DJF Sfc. Temp. Clim. (1979-2005)



**Figure S1.** Surface air temperature climatology as in Fig. 1a of the main text for December-February (1979-2005) but for individual models denoted by their acronyms.



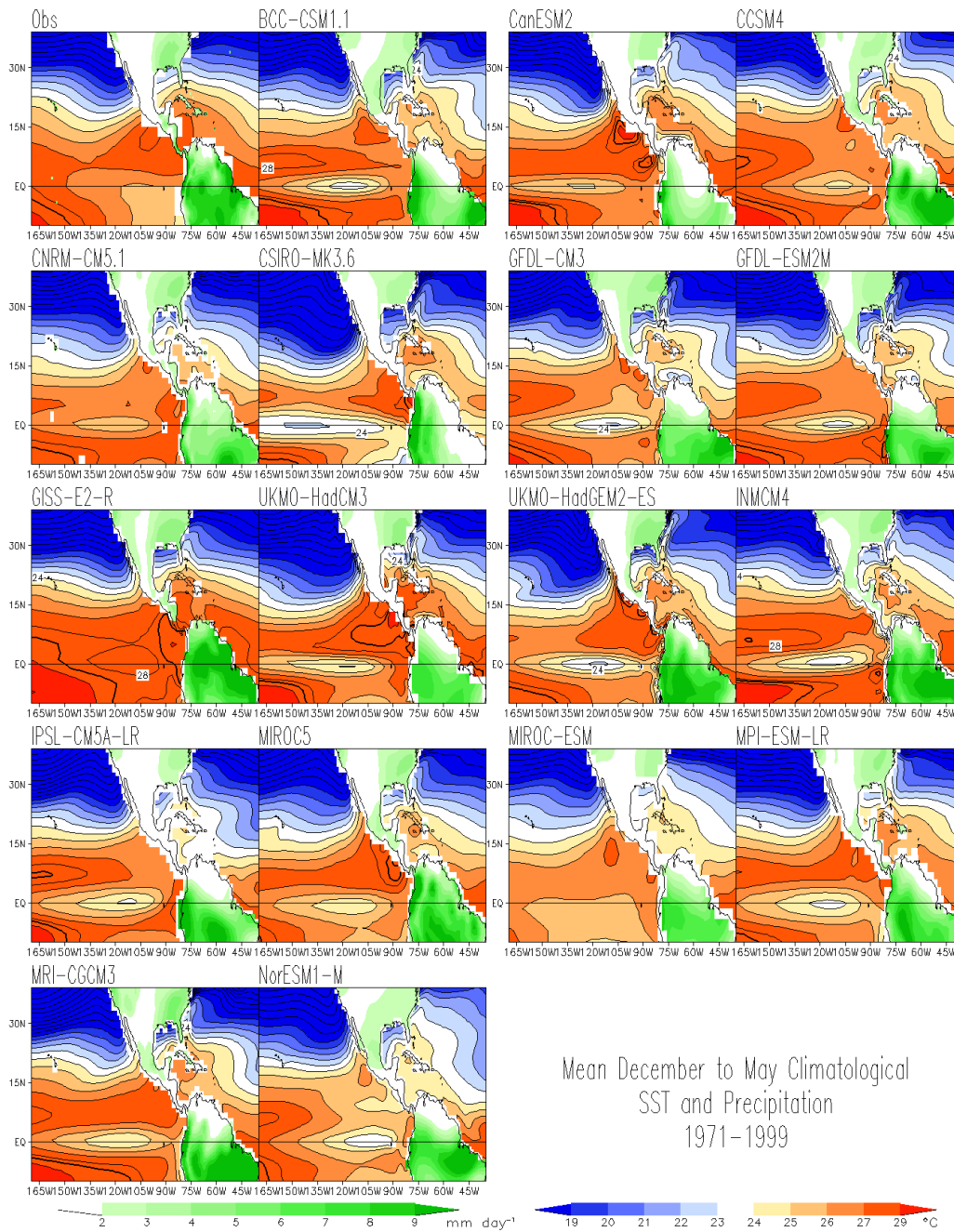
### CMIP5 Historical JJA Sfc. Temp. Clim. (1979-2005)



**Figure S2.** Surface air temperature climatology as in Fig. 1a of the main text for June-August (1979-2005) but for individual models denoted by their acronyms.

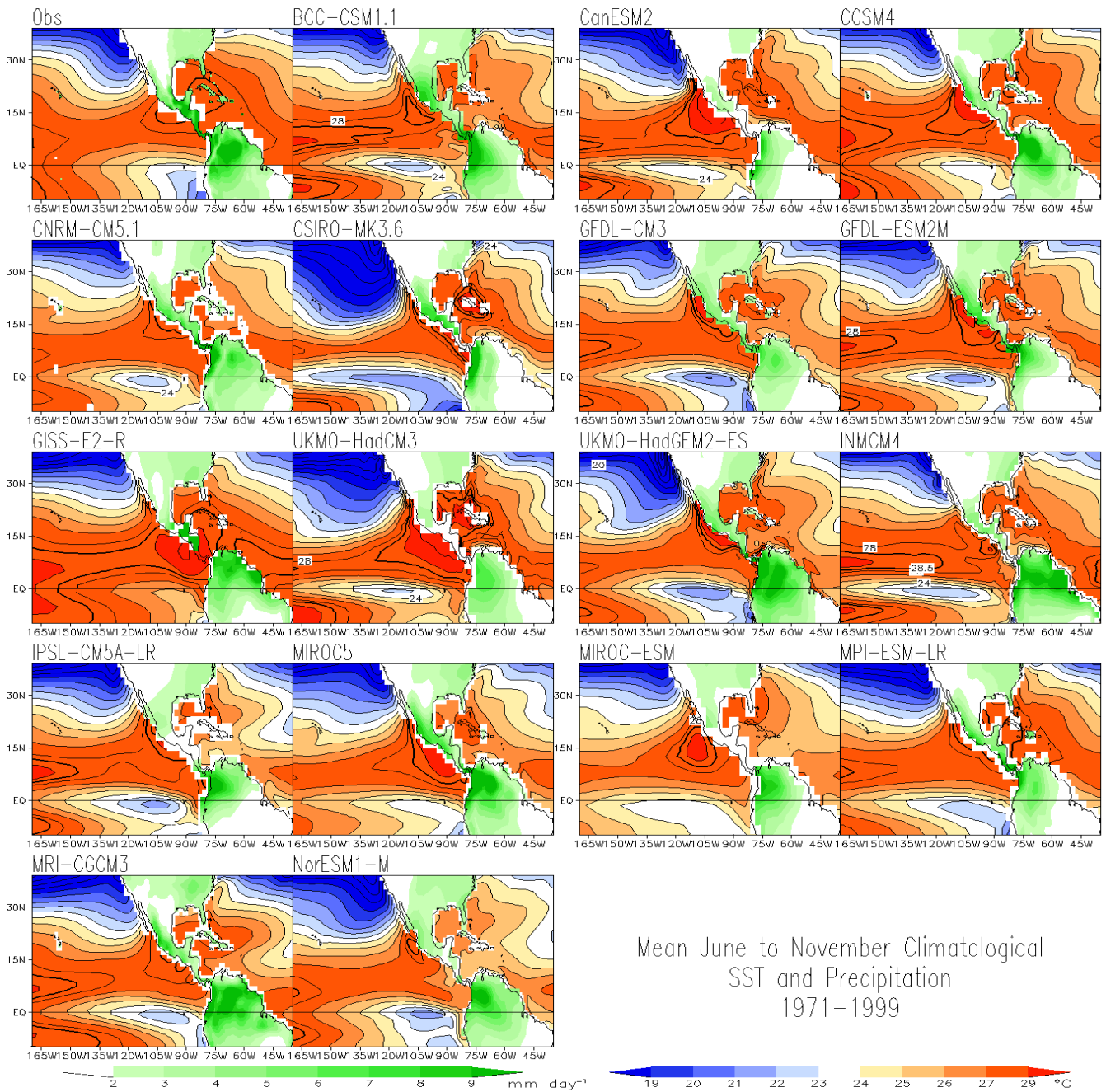


**Figure S3.** Definition of regions



**Figure S4.** Climatological winter-to-spring (December to May) sea surface temperature and precipitation in observations from HadISSTv1.1 and CRUTS3.1 data sets, and historical simulations of the 20<sup>th</sup> century climate from CMIP3 and CMIP5 models for the common period 1971-1999. The number in parenthesis denotes the number of ensembles used from each model. Temperatures are shaded blue/red for values equal or lower/larger than 23/24°C; the thick black line highlights the 28.5°C isotherm as indicator of the Western Hemisphere Warm Pool. Precipitation is shaded green for values equal or larger than 2 mm day<sup>-1</sup>. Contour intervals are 1°C and 1 mm day<sup>-1</sup>.





**Figure S5.** As Figure S4 but for summer-to-fall (June to November).

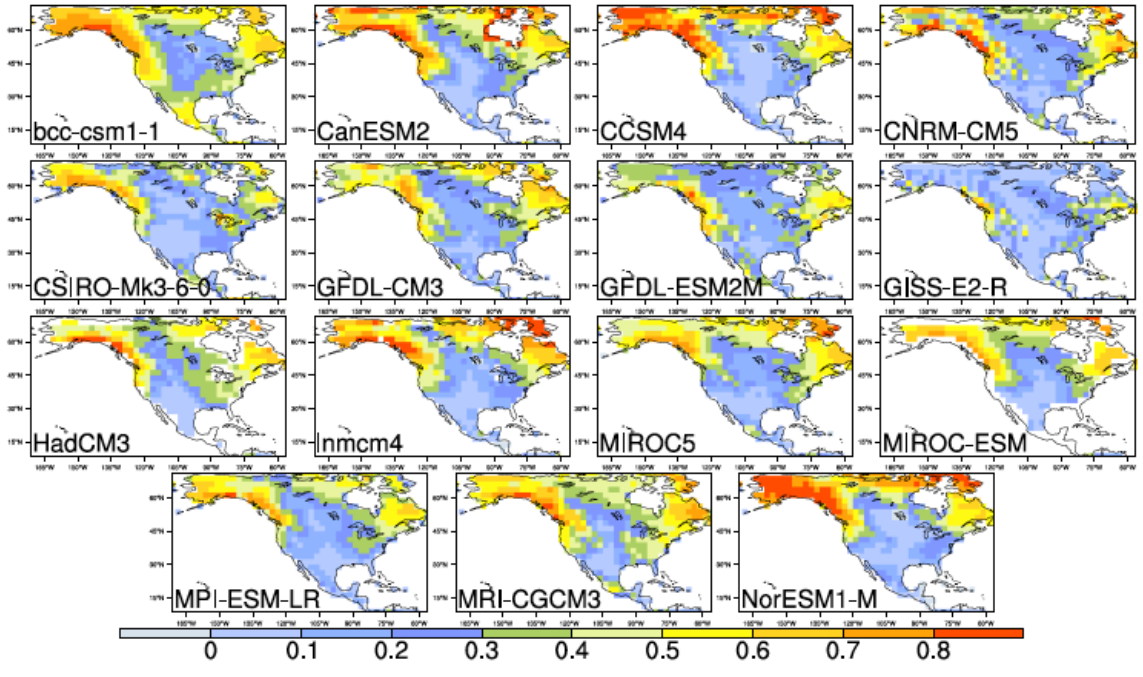
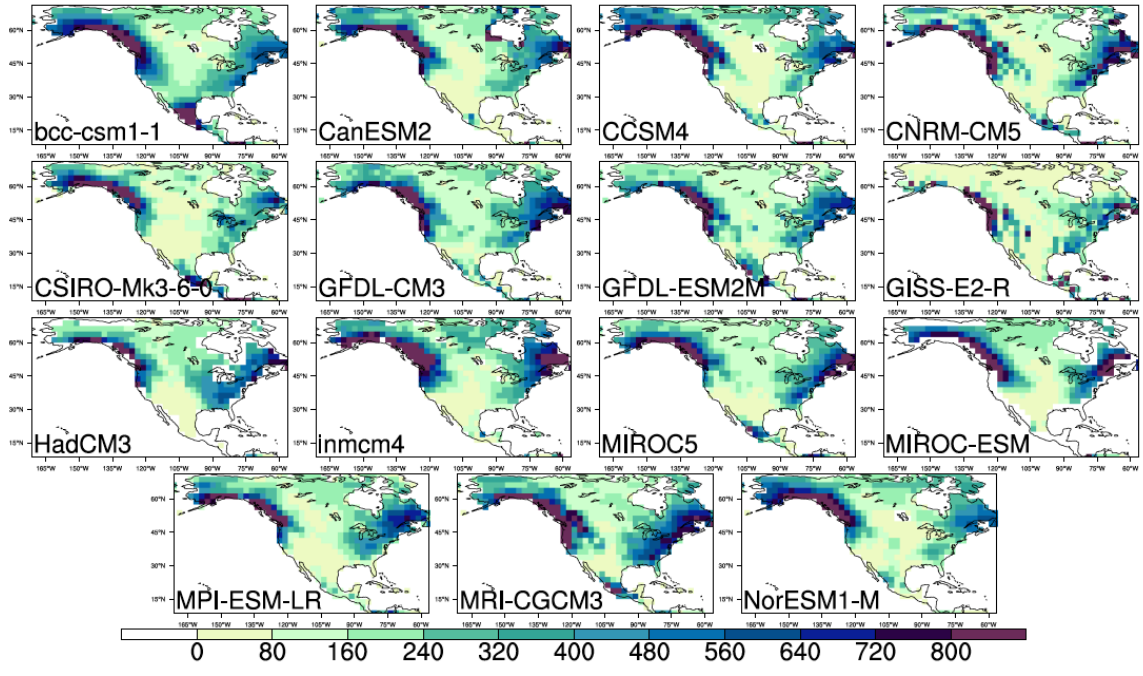
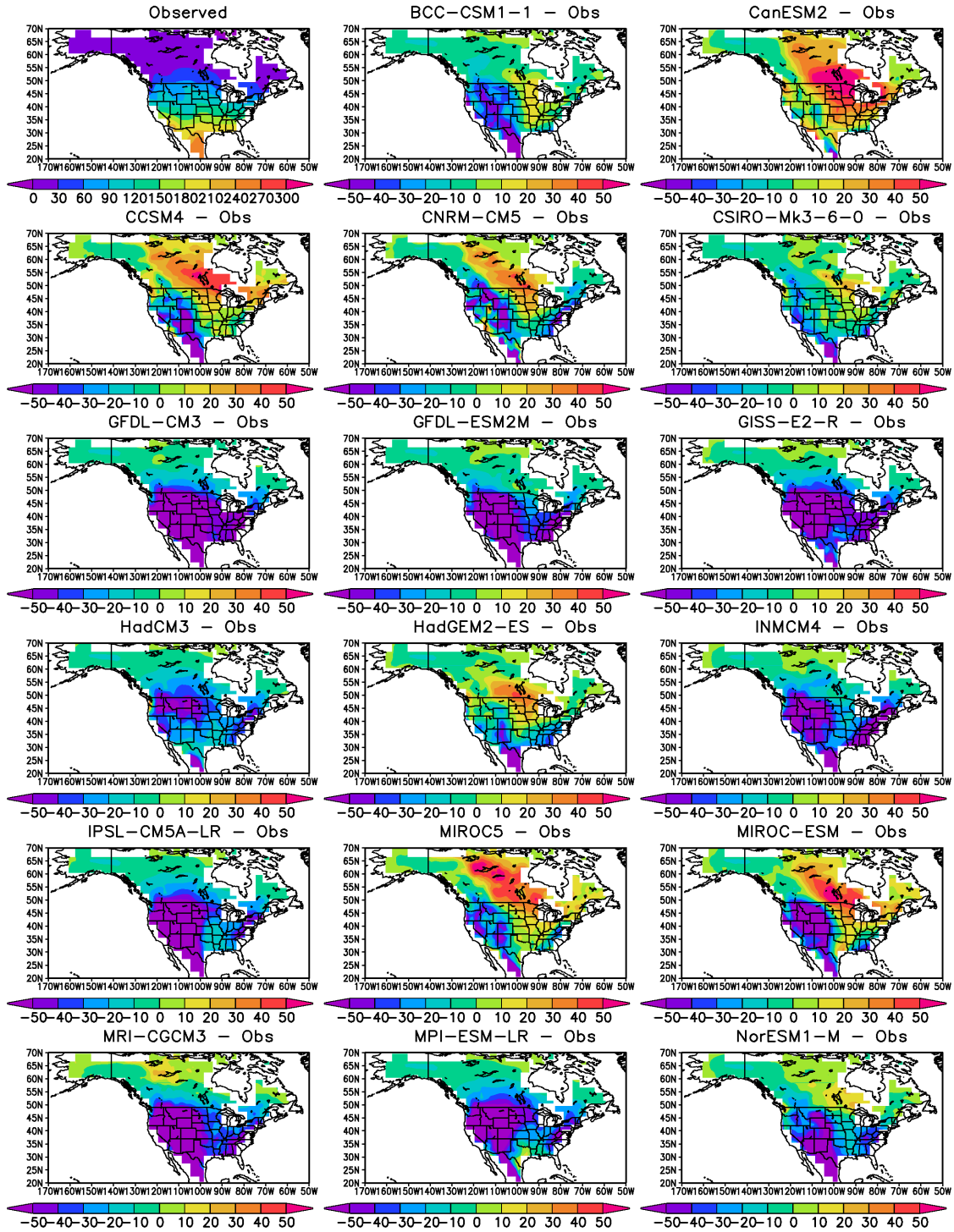


Figure S6: Same as Fig. 9 but for individual models.



**Figure S7.** Number of summer days for the observations (HadGHCND) and individual CMIP5 models shown as differences with the observations (model – obs) averaged over 1979-2005. The frequencies are calculated on the model grid and then interpolated to 2.0 degree resolution for comparison with the observational estimates.



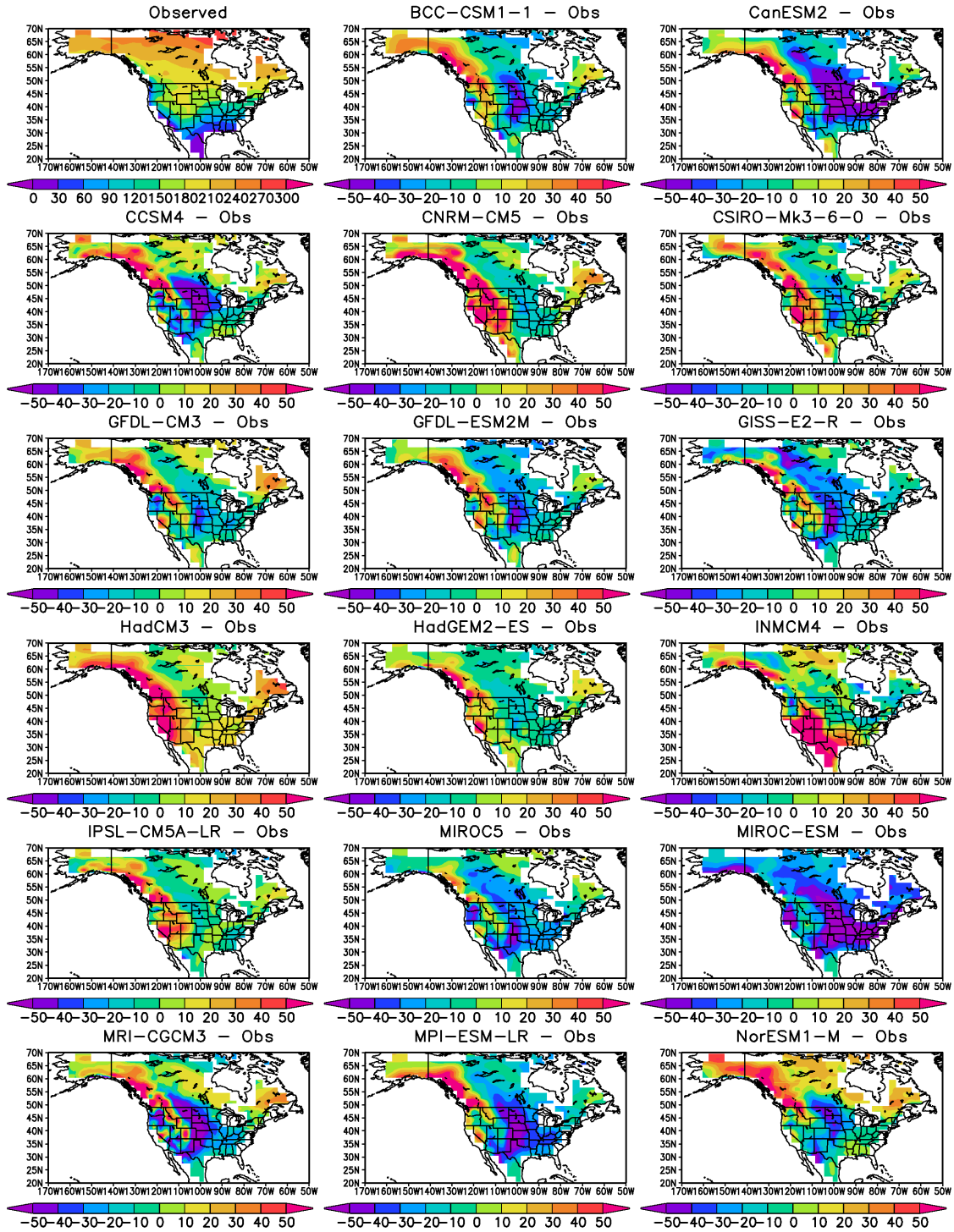


Figure S8. As Figure S7, but for number of frost days.

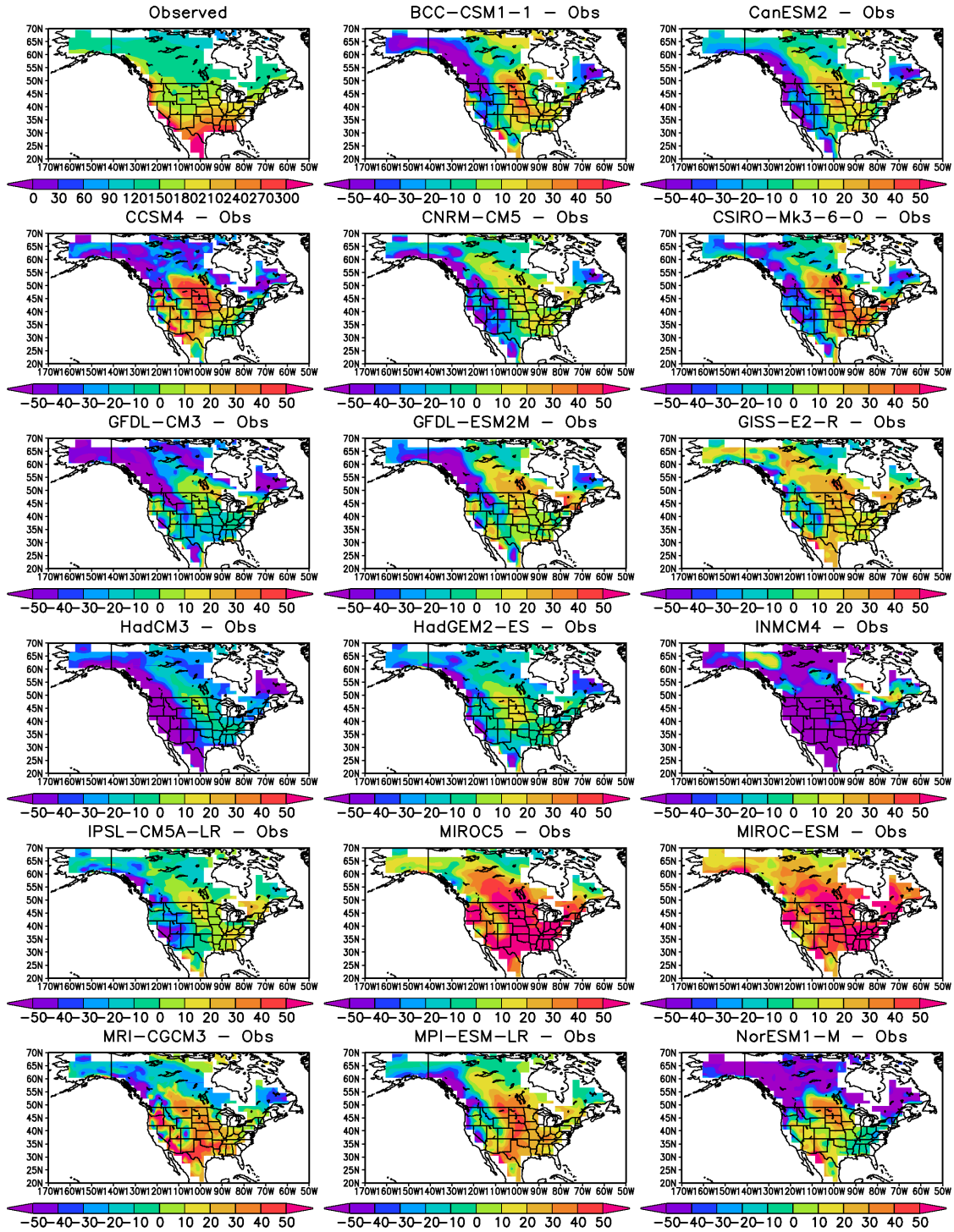


Figure S9. As Figure S7, but for growing season length.