



**Figure 4.** MAP AR  $\log_{10}$  spectra normalized with respect to white-noise for each climate simulation by region with 95% posterior intervals shaded. Instead of the frequency  $\omega$ , the x-axis is labeled at select years ( $2\pi/12\omega$ ). Different line colors denote the type of simulation and the reanalysis product. Top: Global, tropical. Bottom: Northern, Southern hemispheres.

a higher-order AR model ( $q = 7$ ) provides the best fit to the residuals remaining after removal of the baseline and seasonal temperature components. This result is physically reasonable: the tropical domain is the smallest and “noisiest” of the four domains considered here, and is strongly influenced by modes of internal variability acting on a range of different timescales, such as the Madden-Julian Oscillation, ENSO, and the Interdecadal Pacific Oscillation.

- 5 Other features of Figure 4 are also noteworthy. First, within each region, the spectra for the three different types of MIROC5 simulation are very similar. This suggests that the DLM method applied here has consistently estimated the internally generated component of surface temperature within each region from: 1) the significant externally forced components of temperature