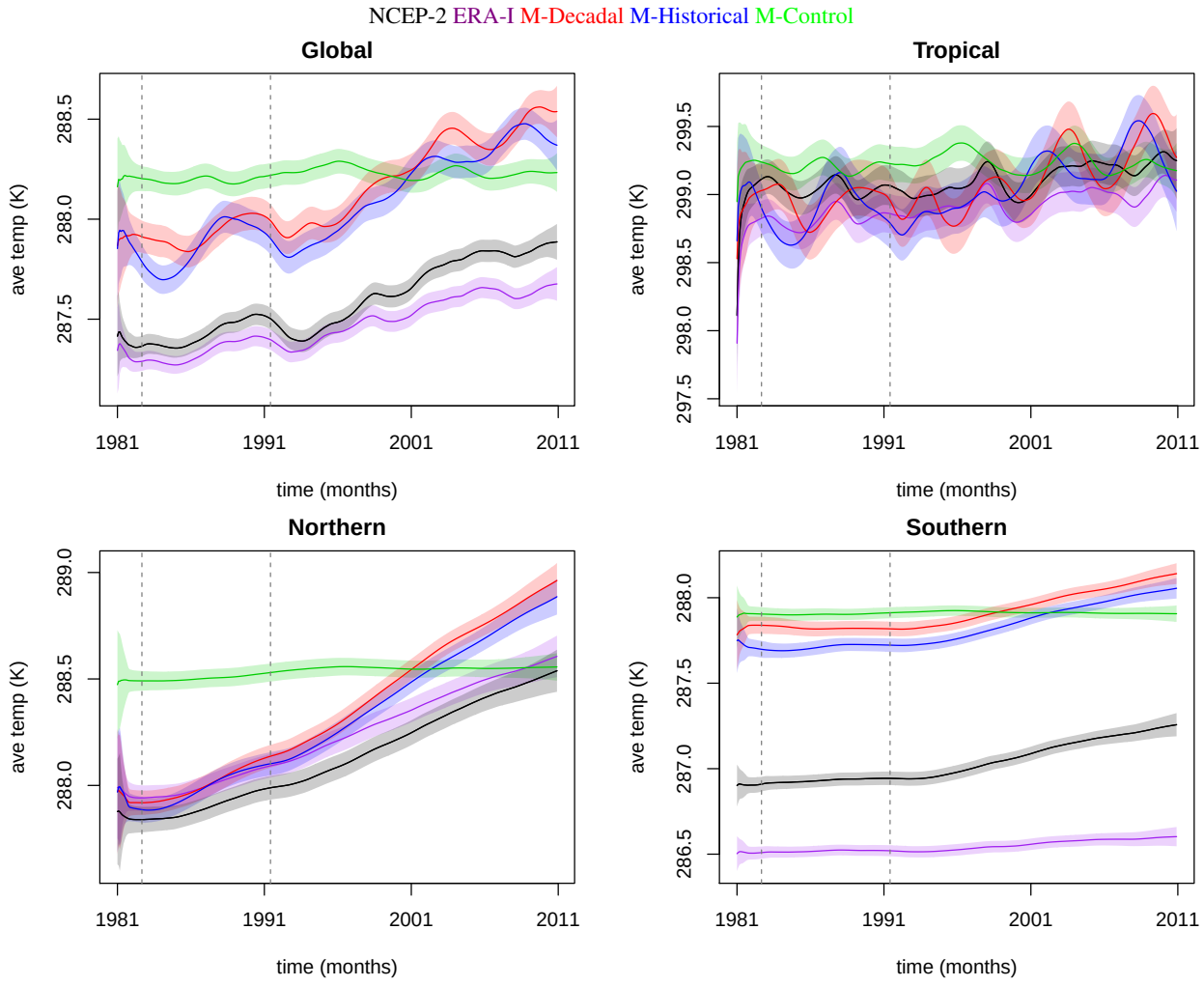

Figure 2. Baseline temperature estimates which capture long-term externally forced changes (as well as short-term cooling responses to volcanic eruptions). Different line colors denote the type of simulation and the reanalysis product. Top: Global (left), tropical (right). Bottom: Northern (left), Southern Hemispheres (right). Vertical lines indicate the volcanic eruption of El Chichón in 1982 and Pinatubo in 1991.

In the global and tropical regions, superimposed on the long-term warming trends in the reanalyses and the decadal prediction and historical runs are short-term (1-2 year) surface cooling signals associated with the major eruptions of El Chichón in 1982 and Pinatubo in 1991 (Santer et al., 2001). Because averaging over larger domains damps spatial noise, volcanic cooling signals are more pronounced in the global-spatial average, and are more noisy in the smaller-scale tropical averages. The surface cooling signals caused by El Chichón and Pinatubo are markedly smaller in the Northern and Southern Hemisphere averages than for the global domain. This is the result of the Northern and Southern Hemispheres baselines being estimated with discount factors close to 1 (see Table 1). As mentioned briefly in Section 3.3, it is not unexpected for the hemisphere-specific externally-forced components to be less variable than the spatial domains which contain interaction between the distinct hemispheric