Supplemental Material for "Impacts of Different Characterizations of Large-Scale Background on Simulated Regional-Scale Ozone Over the Continental United States"

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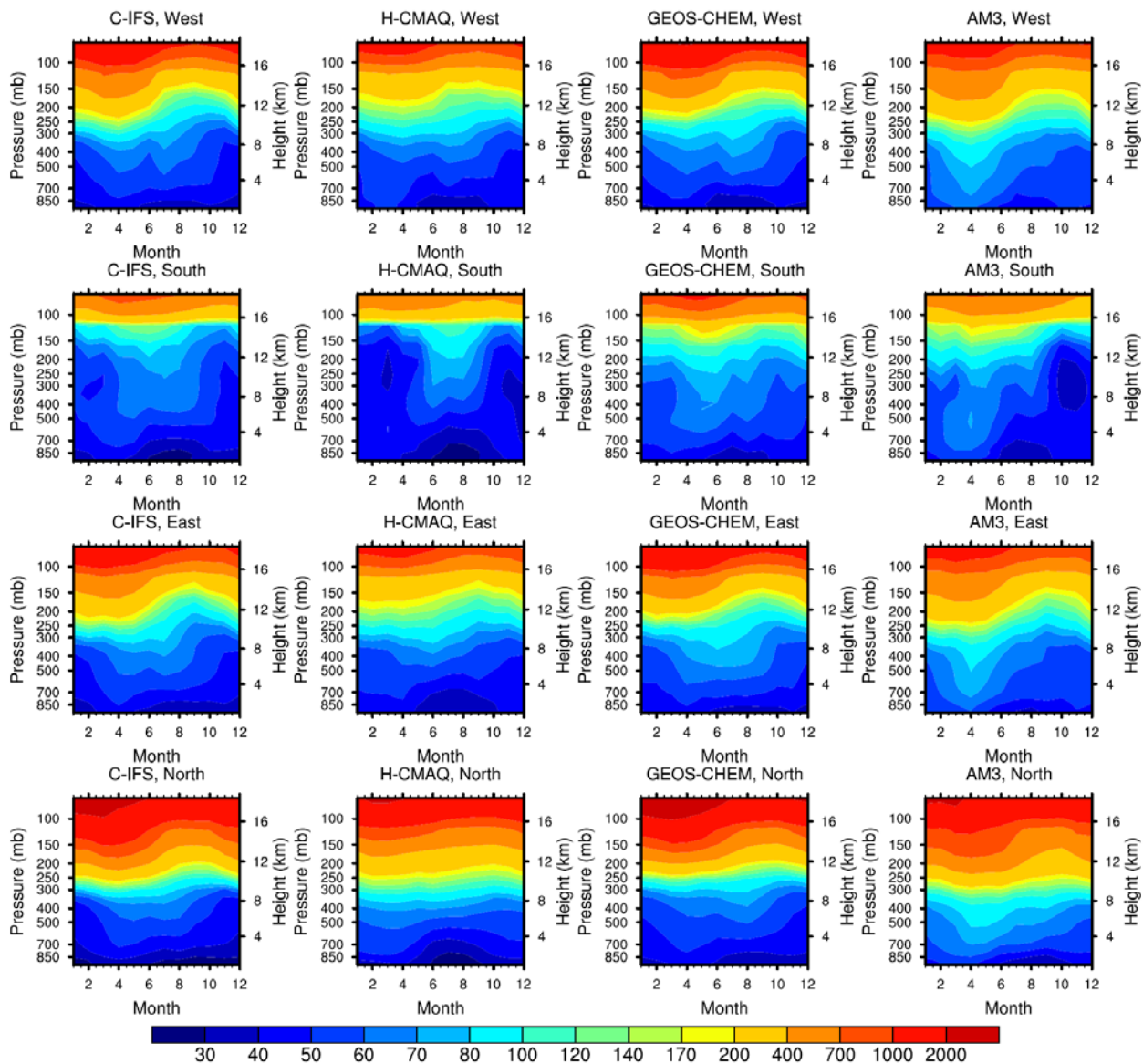
Figure S1. Time-height cross sections of monthly mean ozone mixing ratios along the western, southern, eastern, and northern boundary of the regional CMAQ domain for the four large-scale models from which boundary conditions were derived, i.e. C-IFS, H-CMAQ, GEOS-Chem, and AM3. The mixing ratios were averaged over all columns or rows defining a given boundary and also were averaged for each month.
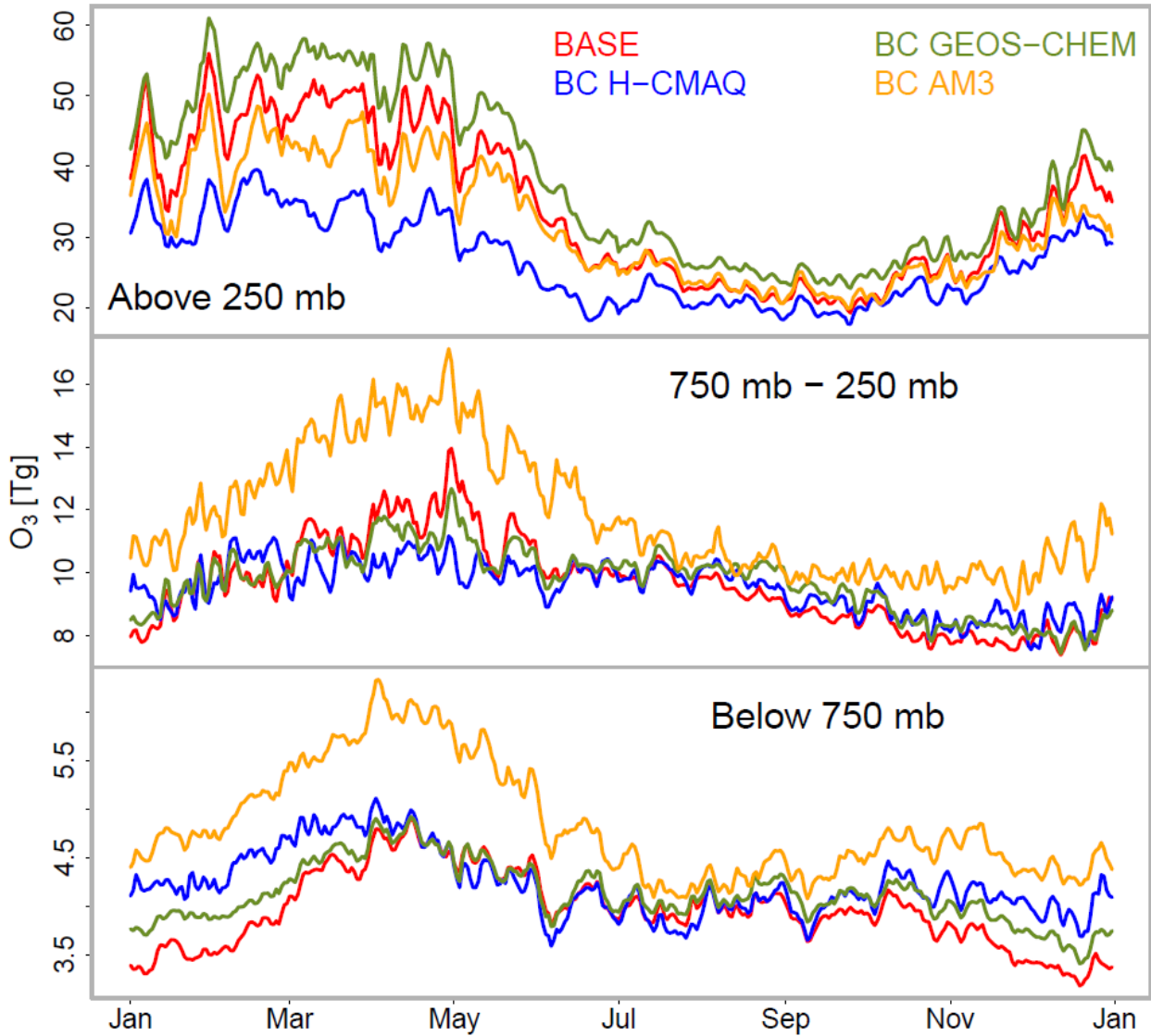
Figure S2. Daily time series of CMAQ-simulated domain-total ozone column mass for the same three layer ranges used in Figures 5 and 6. The results are for the BASE, BC H-CMAQ, BC GEOS-Chem, and BC-AM3 simulations.
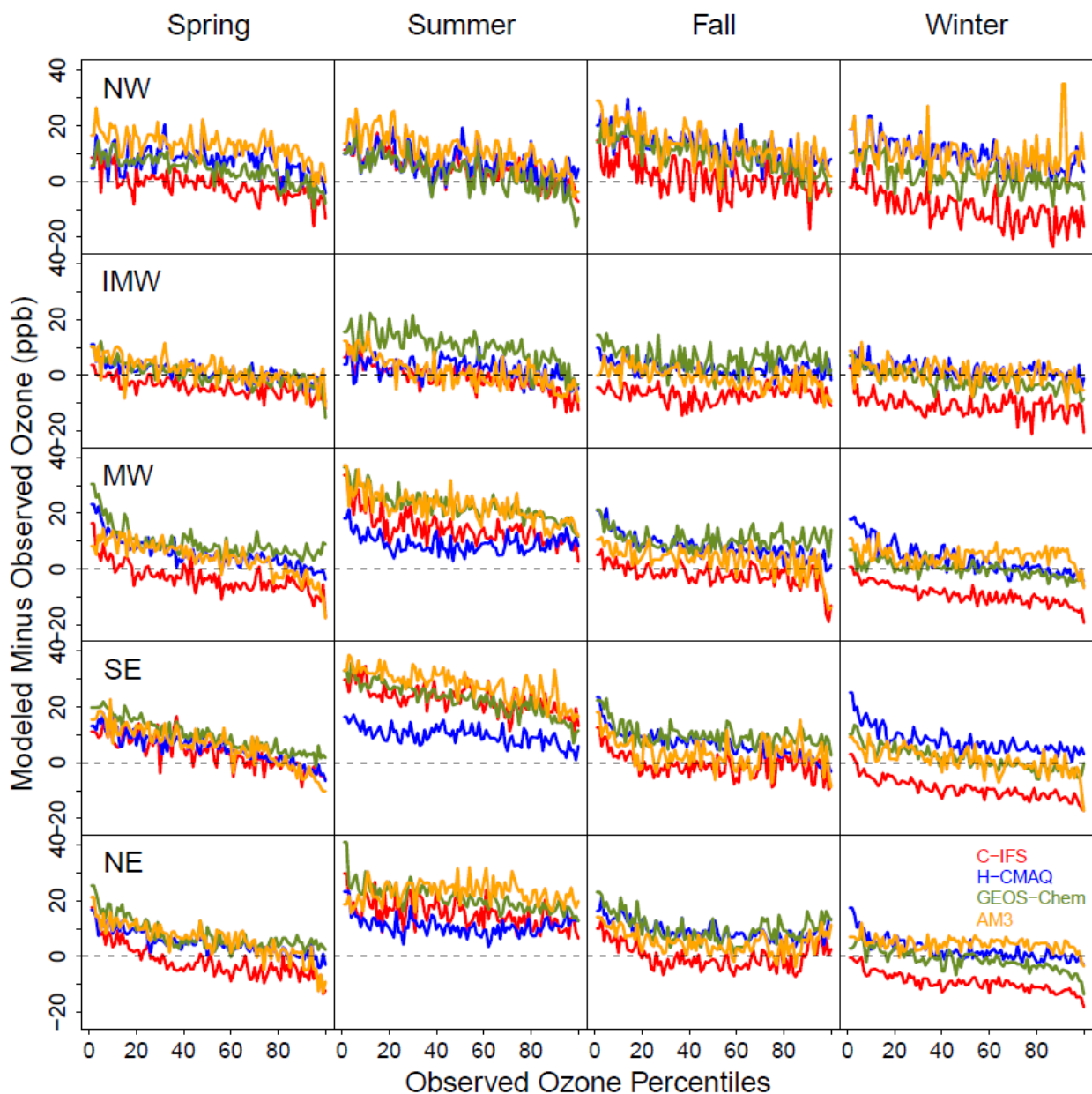
Figure S3. Paired-in-time differences between daytime average ozone from observations and large-scale models for each season and analysis region. Model results are for C-IFS (red), H-CMAQ (blue), GEOS-Chem (green), and AM3 (orange). For each season and region, the observed daytime average ozone concentrations were rank ordered. Next, differences between large-scale model simulations and observations were computed for each observed percentile by selecting the model value corresponding to the date of the observed percentile. Finally, the median value of these paired-in-time differences across all CASTNET stations in a given season and region was then computed for each observed percentile and is shown in this figure.
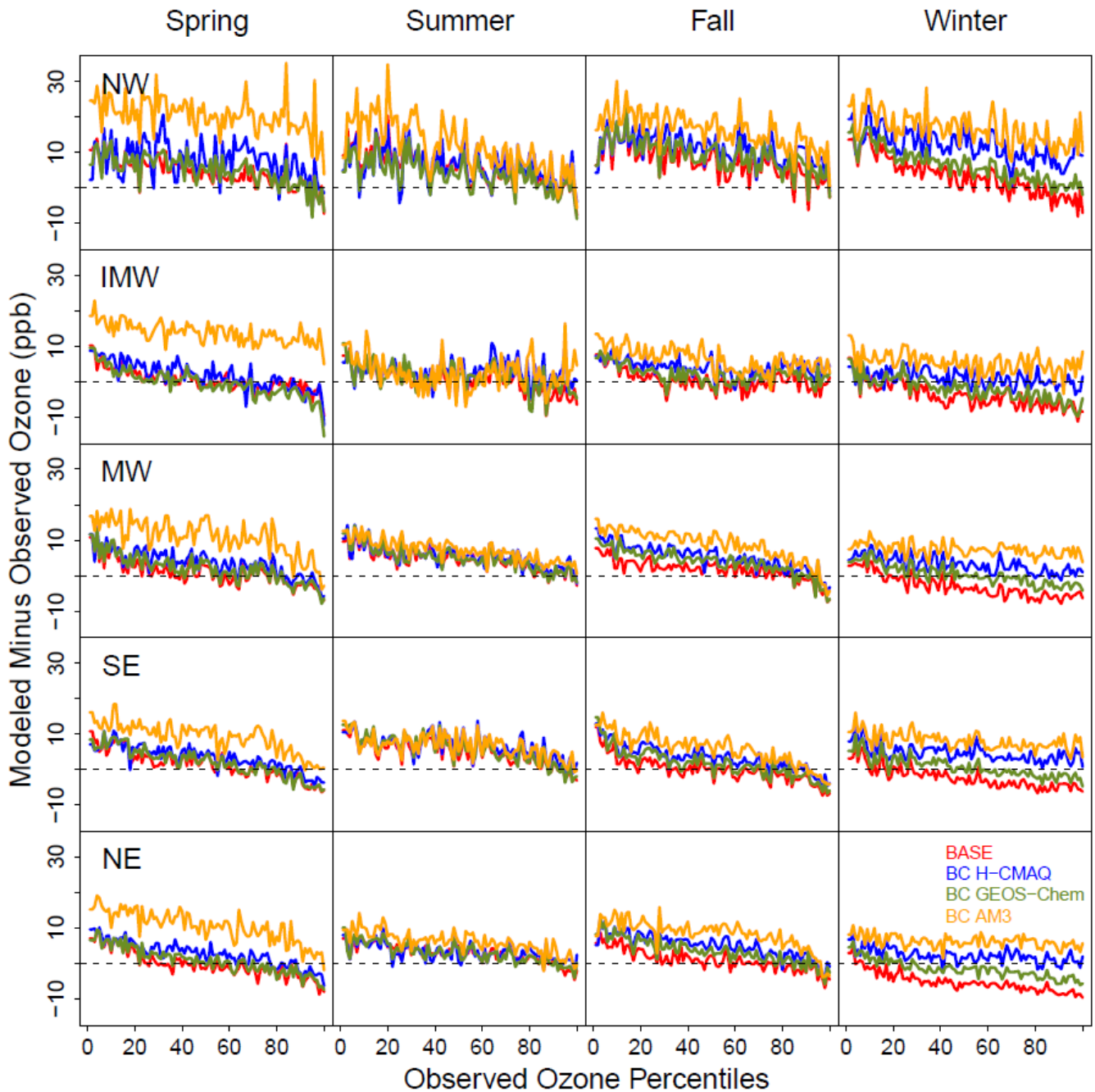
Figure S4. Paired-in-time differences between observed and CMAQ modeled daytime average ozone at CASTNET stations for each season and analysis region. Model results are for BASE (red), BC H-CMAQ (blue), BC GEOS-Chem (green), and BC AM3 (orange). For each season and region, the observed daytime average ozone concentrations were rank ordered. Next, differences between large-scale model simulations and observations were computed for each observed percentile by selecting the model value corresponding to the date of the observed percentile. Finally, the median value of these paired-in-time differences across all CASTNET stations in a given season and region was then computed for each observed percentile and is shown in this figure.