Supporting Information:

A New Simplified Parameterization of Secondary Organic Aerosol in the Community Earth System Model Version 2 (CESM2; CAM6.3)

Duseong S. Jo[1], Simone Tilmes[1], and Louisa K. Emmons[1], Siyuan Wang[2,3], Francis Vitt[1]

[1]National Center for Atmospheric Research, Boulder, CO, USA
[2]Cooperative Institute for Research in Environmental Sciences, University of Colorado, Boulder, CO, USA
[3]NOAA Chemical Sciences Laboratory, Boulder, CO, USA

Correspondence to: Duseong S. Jo (cdswk@ucar.edu)
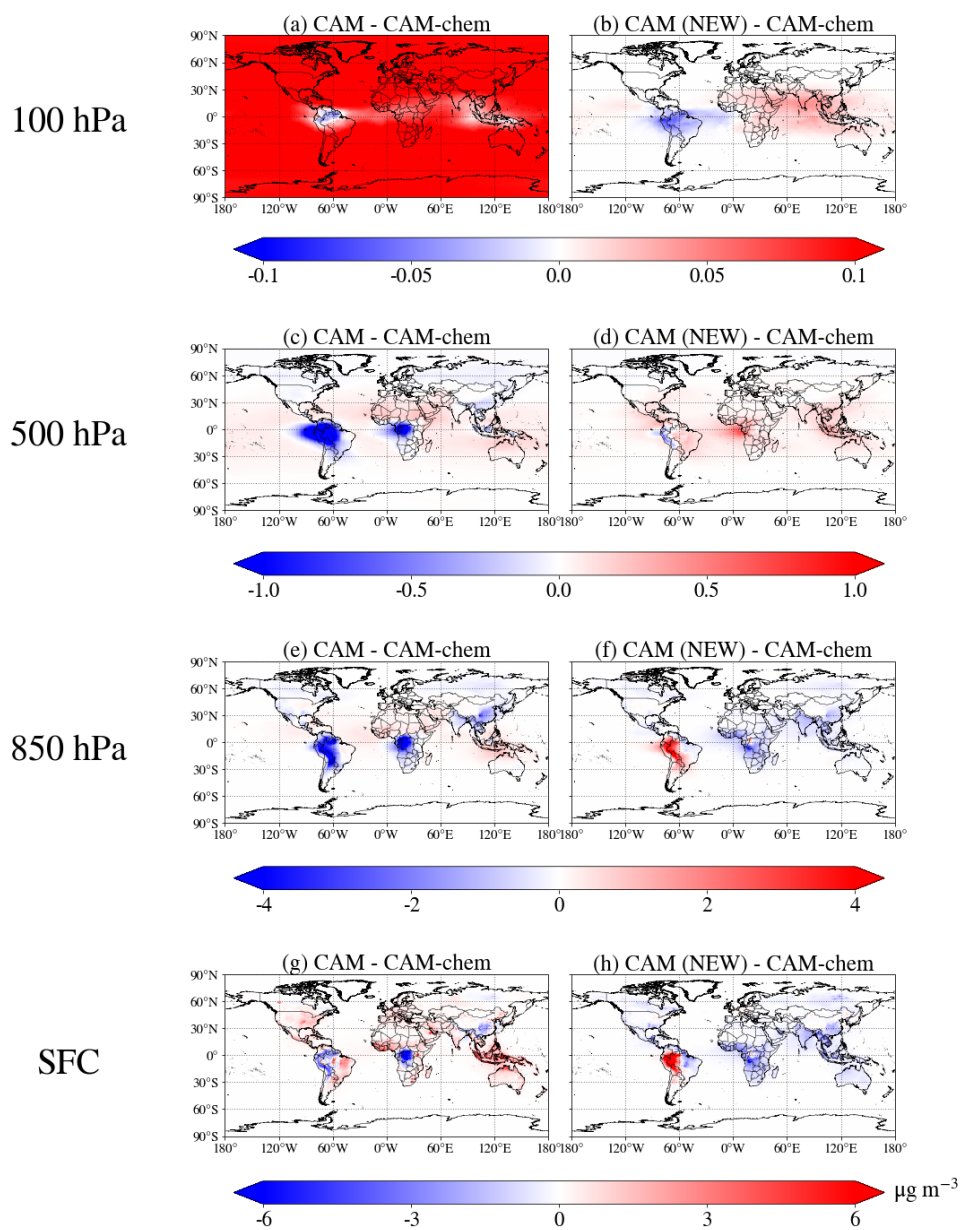
Figure S1. SOA concentrations difference between CAM and CAM-chem, for the current CAM SOA scheme (left column) and new CAM SOA scheme (right column), respectively.
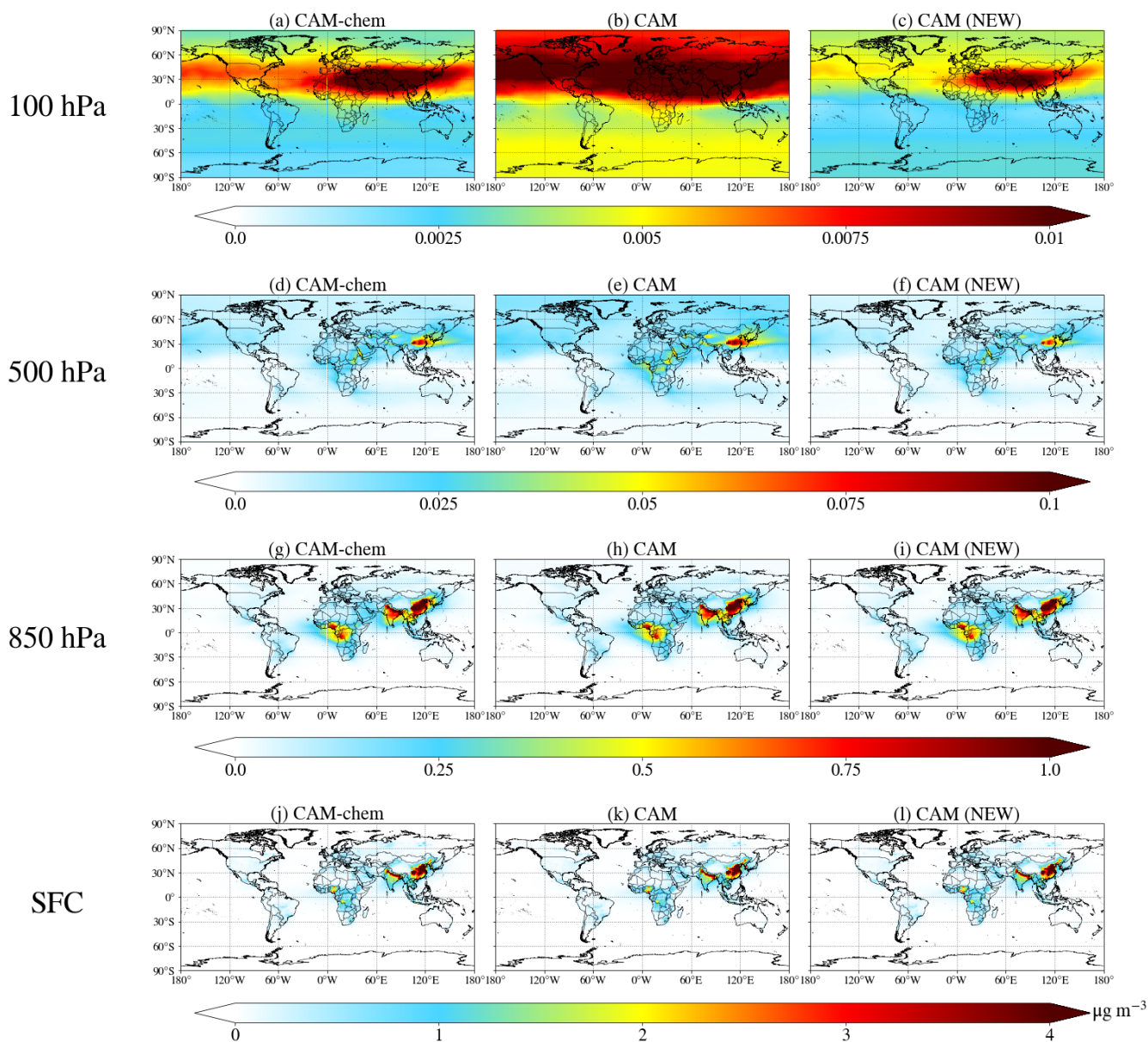
Figure S2. Global maps of BC in 2013 simulated by CAM-chem (first column), CAM (second column), and CAM (NEW) (third column) at four different vertical levels (surface, 850 hPa, 500 hPa, and 100 hPa). The difference maps between CAM and CAM-chem are available in Fig. S3.
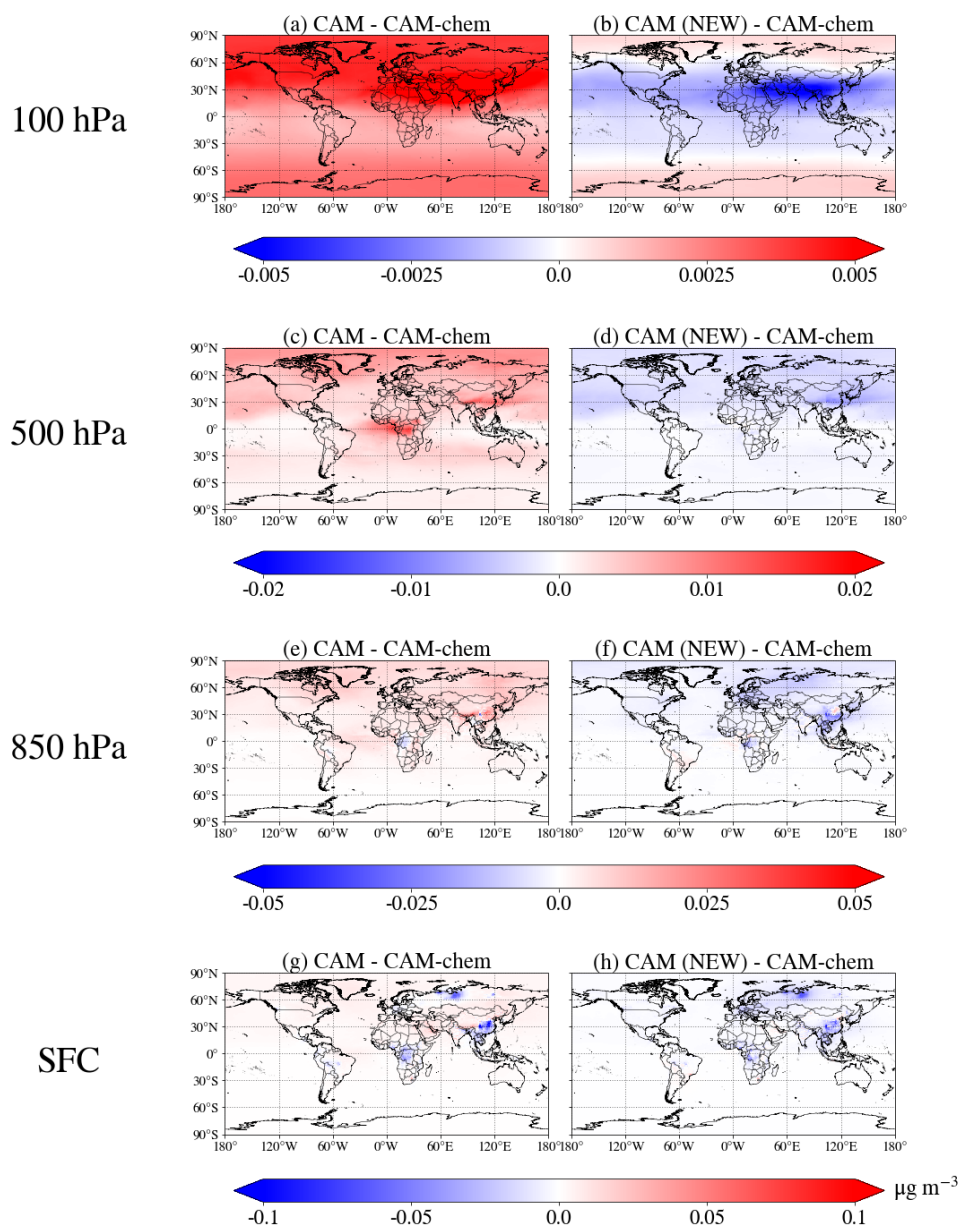
Figure S3. BC concentrations difference between CAM and CAM-chem, for the current CAM SOA scheme (left column) and new CAM SOA scheme (right column), respectively.
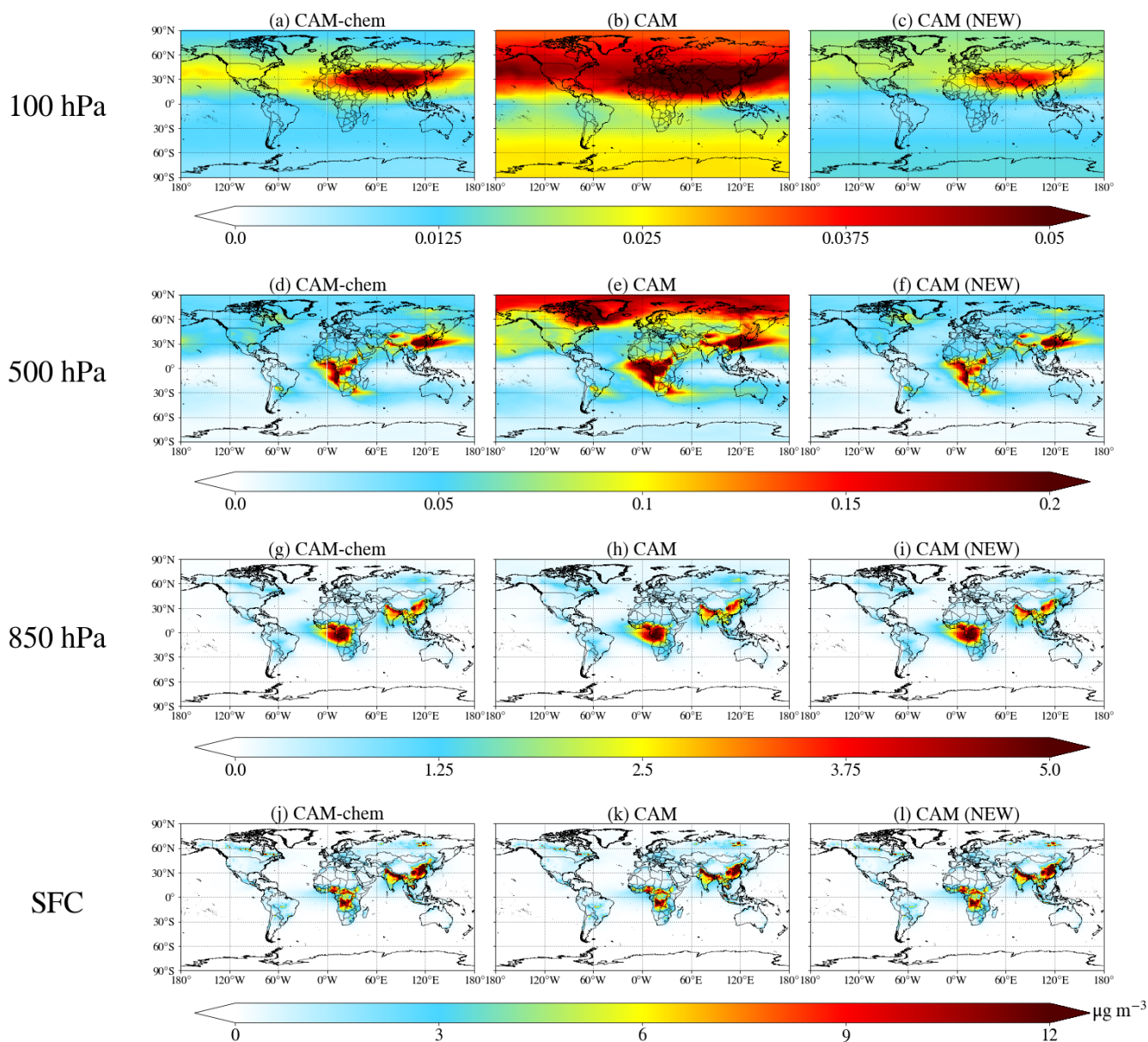
Figure S4. Global maps of POA in 2013 simulated by CAM-chem (first column), CAM (second column), and CAM (NEW) (third column) at four different vertical levels (surface, 850 hPa, 500 hPa, and 100 hPa). The difference maps between CAM and CAM-chem are available in Fig. S3.
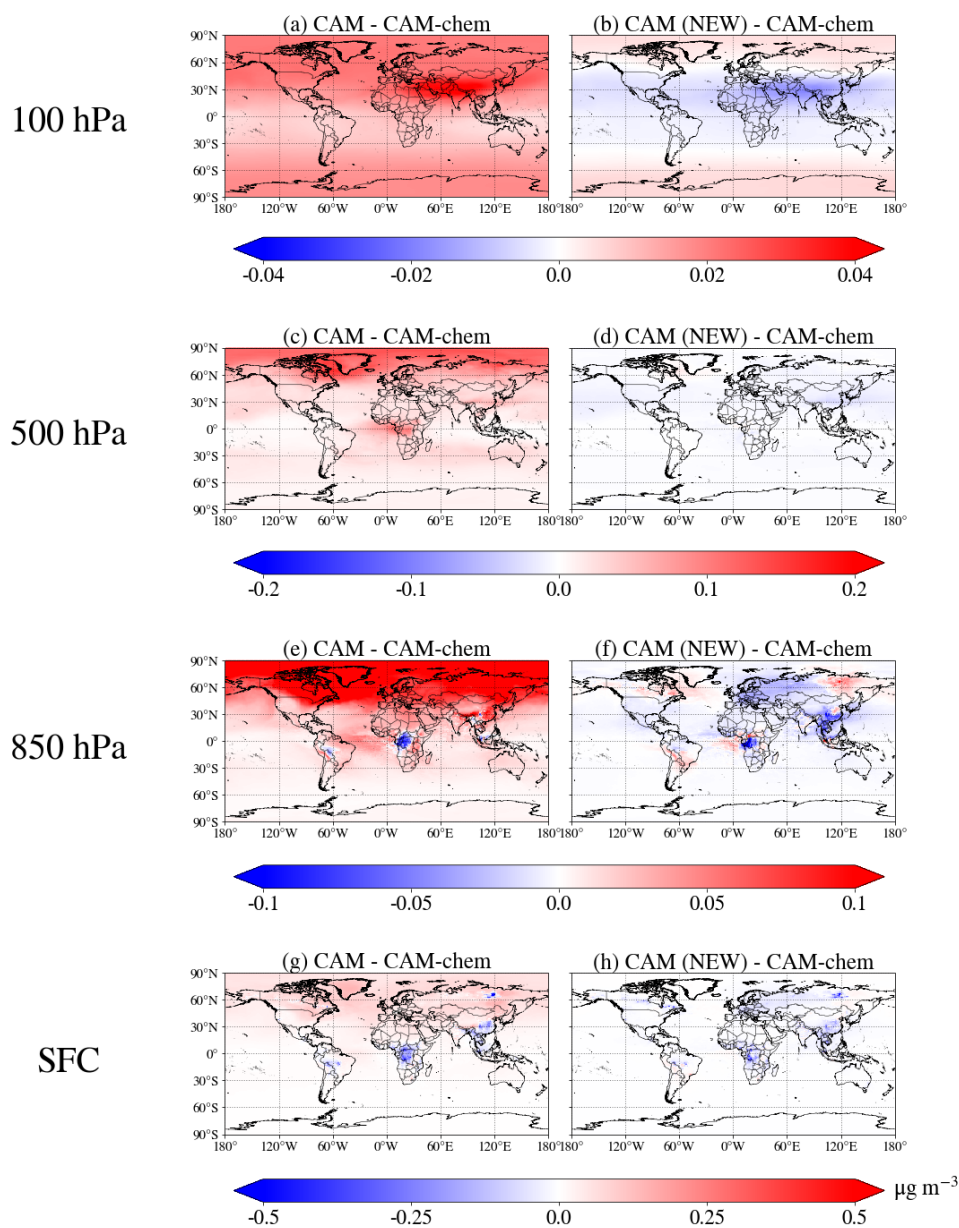
Figure S5. POA concentrations difference between CAM and CAM-chem, for the current CAM SOA scheme (left column) and new CAM SOA scheme (right column), respectively.
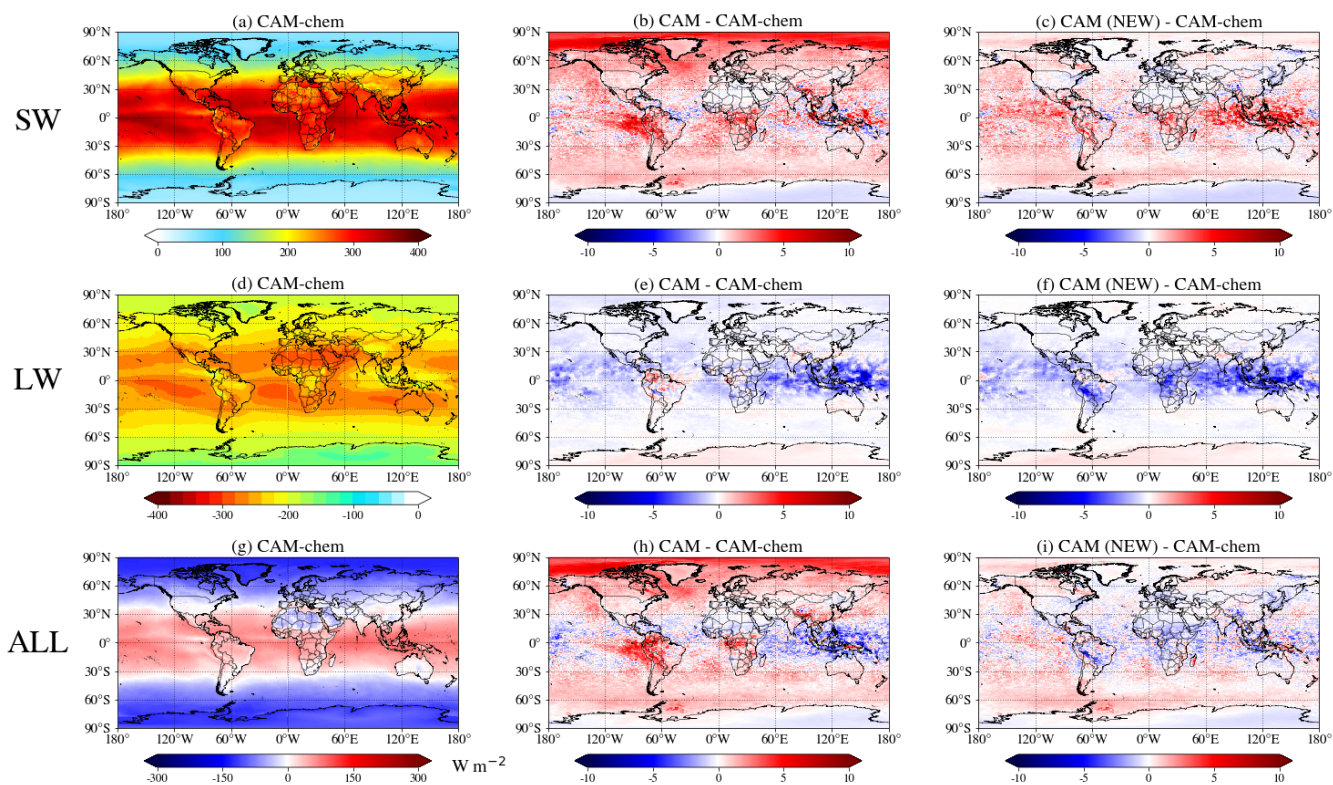
Figure S6. Global maps of net radiative fluxes (SW, LW, and ALL) at the top of the model in 2013. CAM-chem results are shown in the left column. The differences between CAM and CAM-chem are shown in the middle (CAM) and the right column (CAM (NEW)).
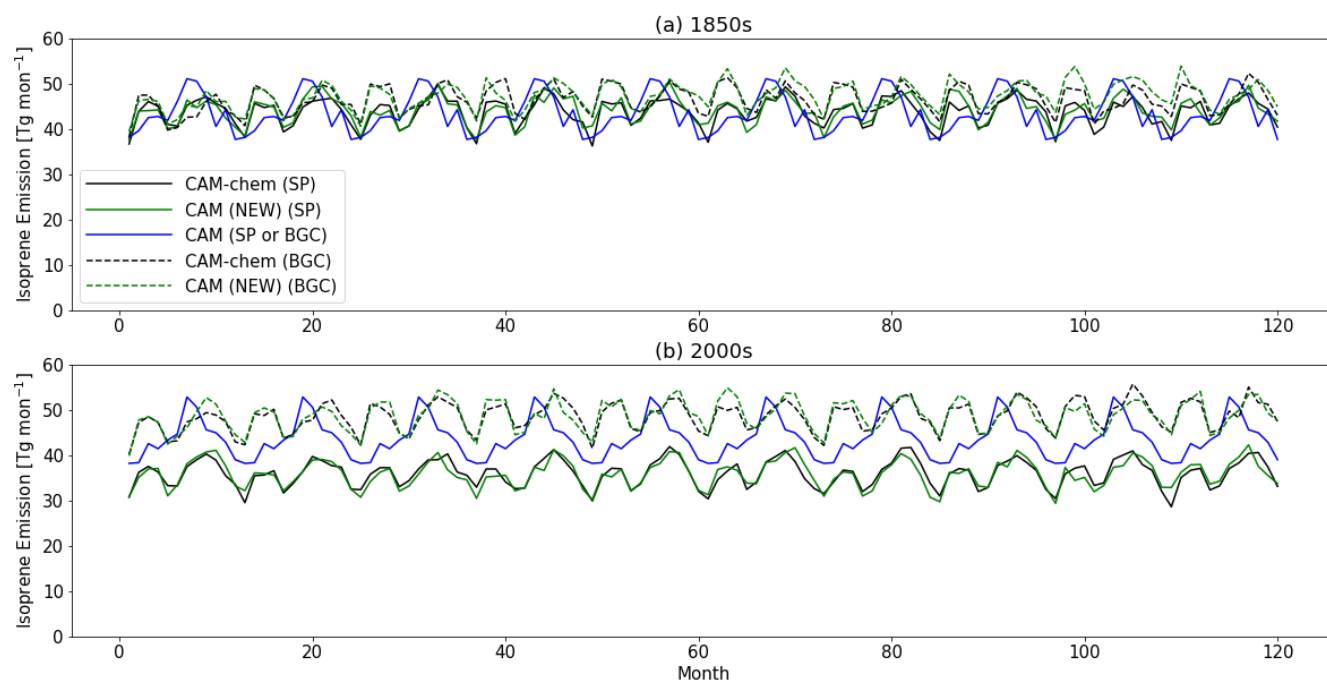
Figure S7. Simulated isoprene emission timeseries in the 1850s and 2000s.