Wildfires in Northern Eurasia affect the budget of black carbon in the Arctic. A 12-year retrospective synopsis (2002–2013).

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SUPPLEMENTARY INFORMATION

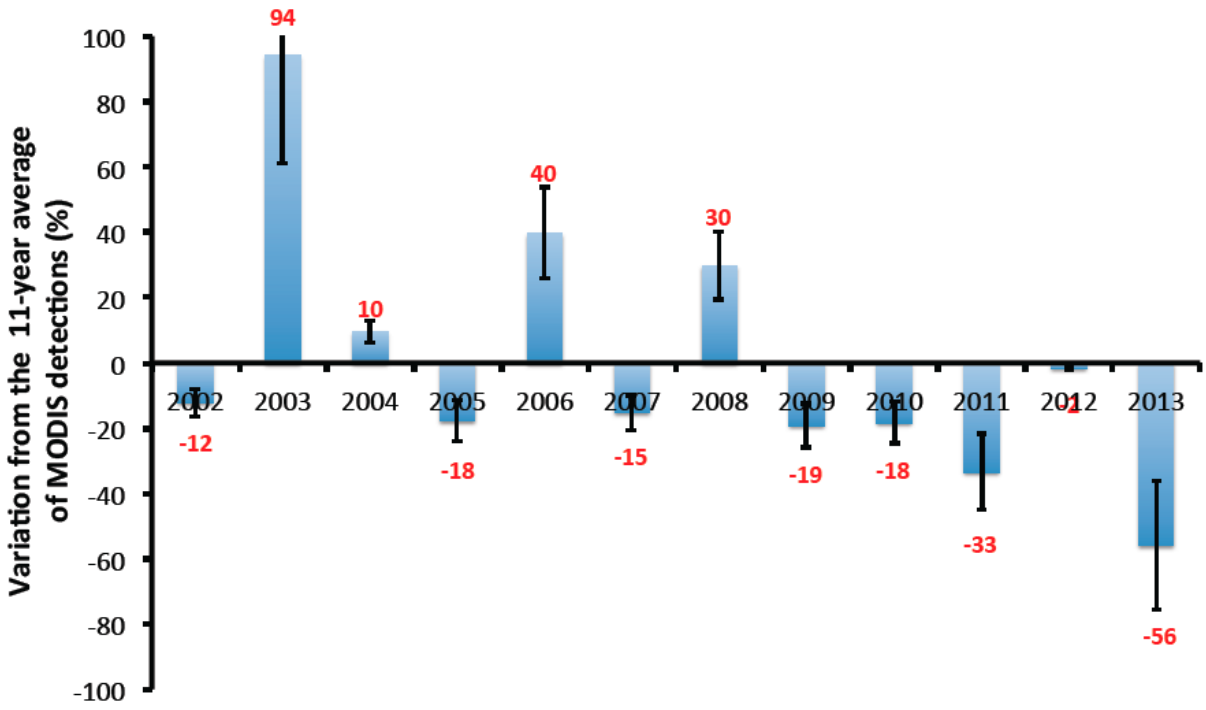

Figure S 1. Percentage variation of MODIS detections from the 12-year (2002–2013) average. The most intense fire years are characterized by positive values comparing to the average for the period 2002–2013 (1,075,208±378,399 detections).

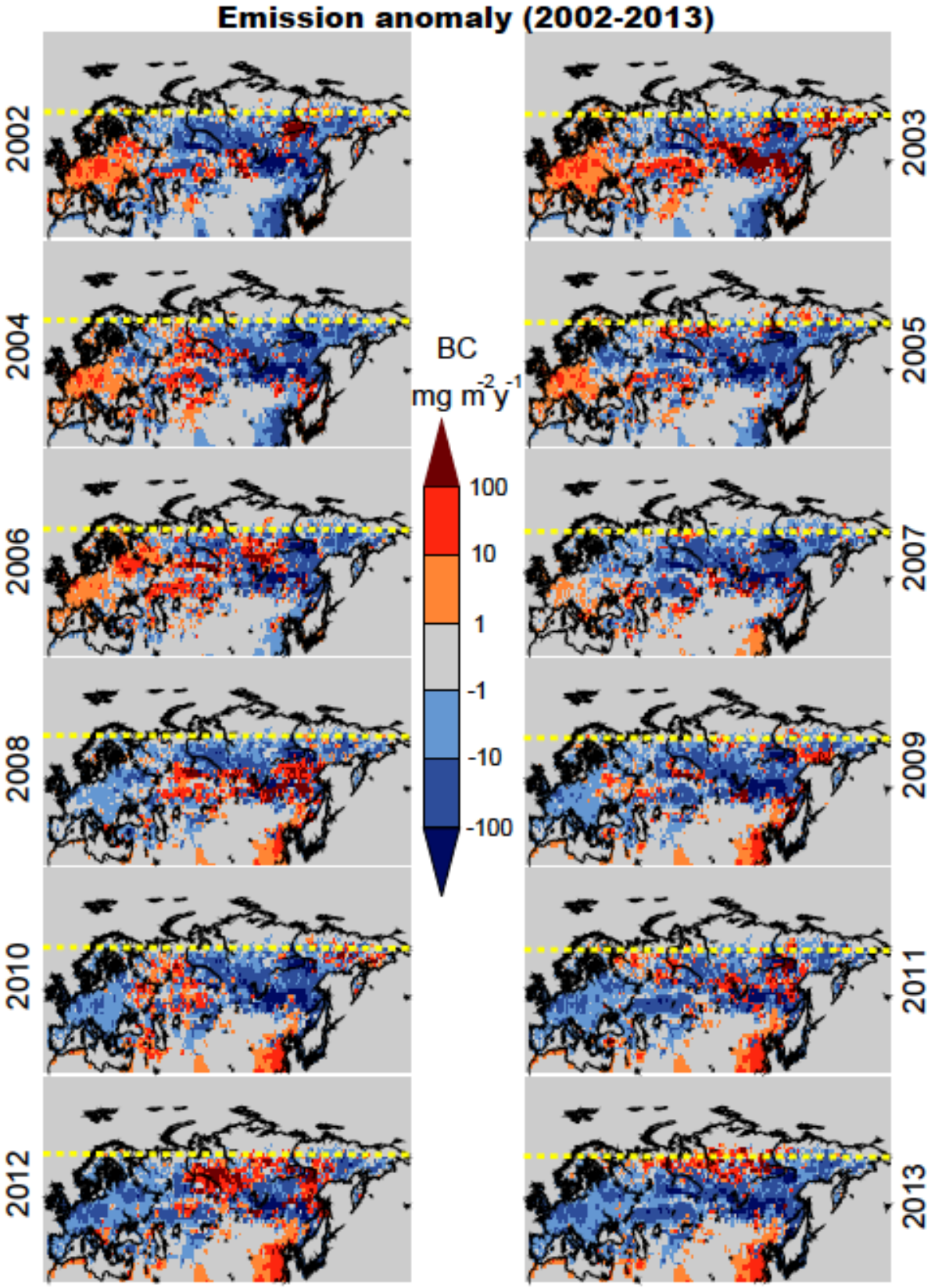

Figure S 2. Emission anomalies of BC (mg m^{-2} y^{-1}) in Northern Eurasia for the period 2002–2013 from our combined simulation (FEI-NE+MACCity). The dashed yellow line represents the border of the Arctic (~67°N).

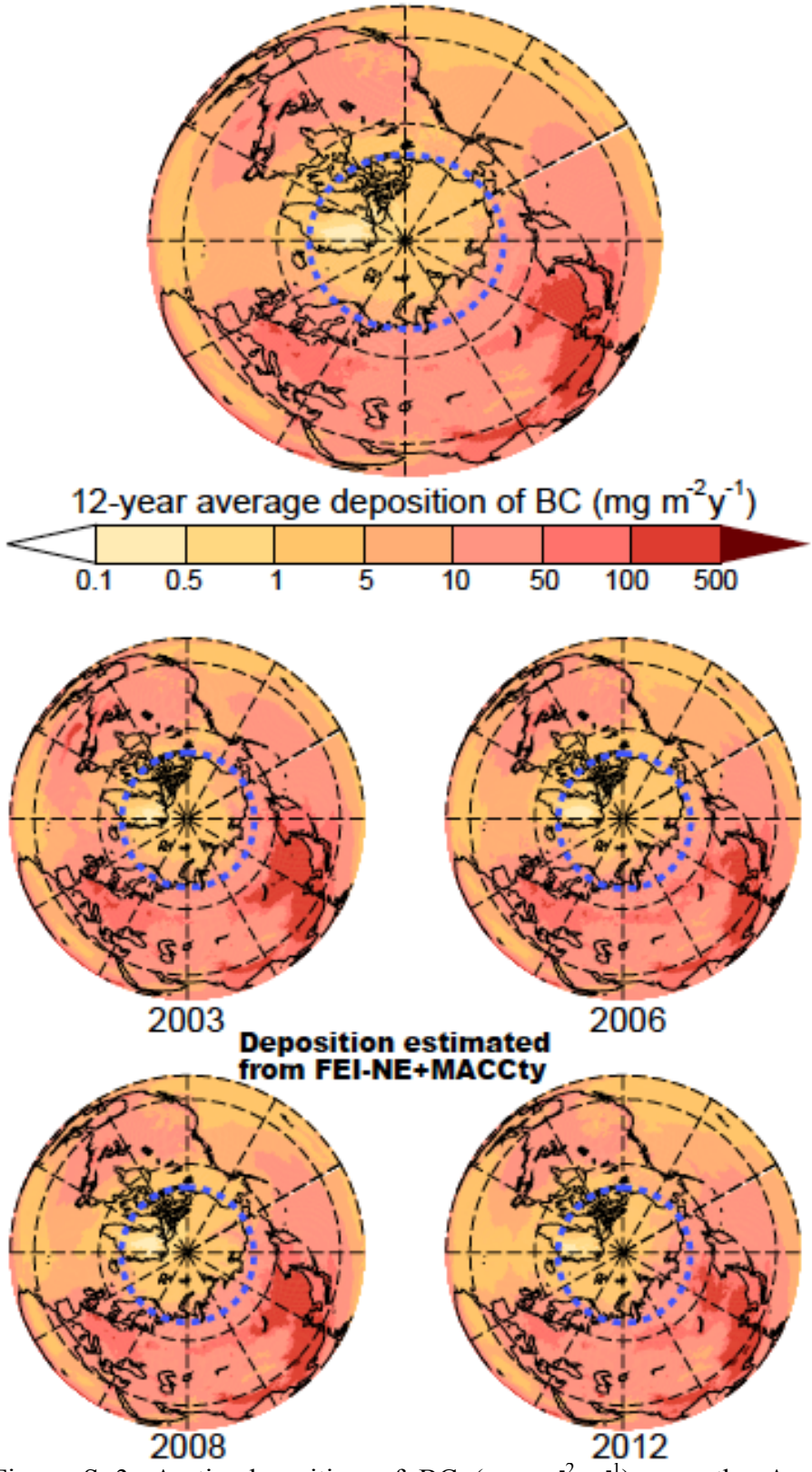

Figure S 3. Arctic deposition of BC (mg m^{-2} y^{-1}) over the Arctic (FEI-NE+MACCity simulation). The upper panel depicts the 11-year average deposition, while the lower 4 panels the most intense fire years (2003, 2006, 2008, and 2012). The dashed blue line represents the border of the Arctic (~67°N).

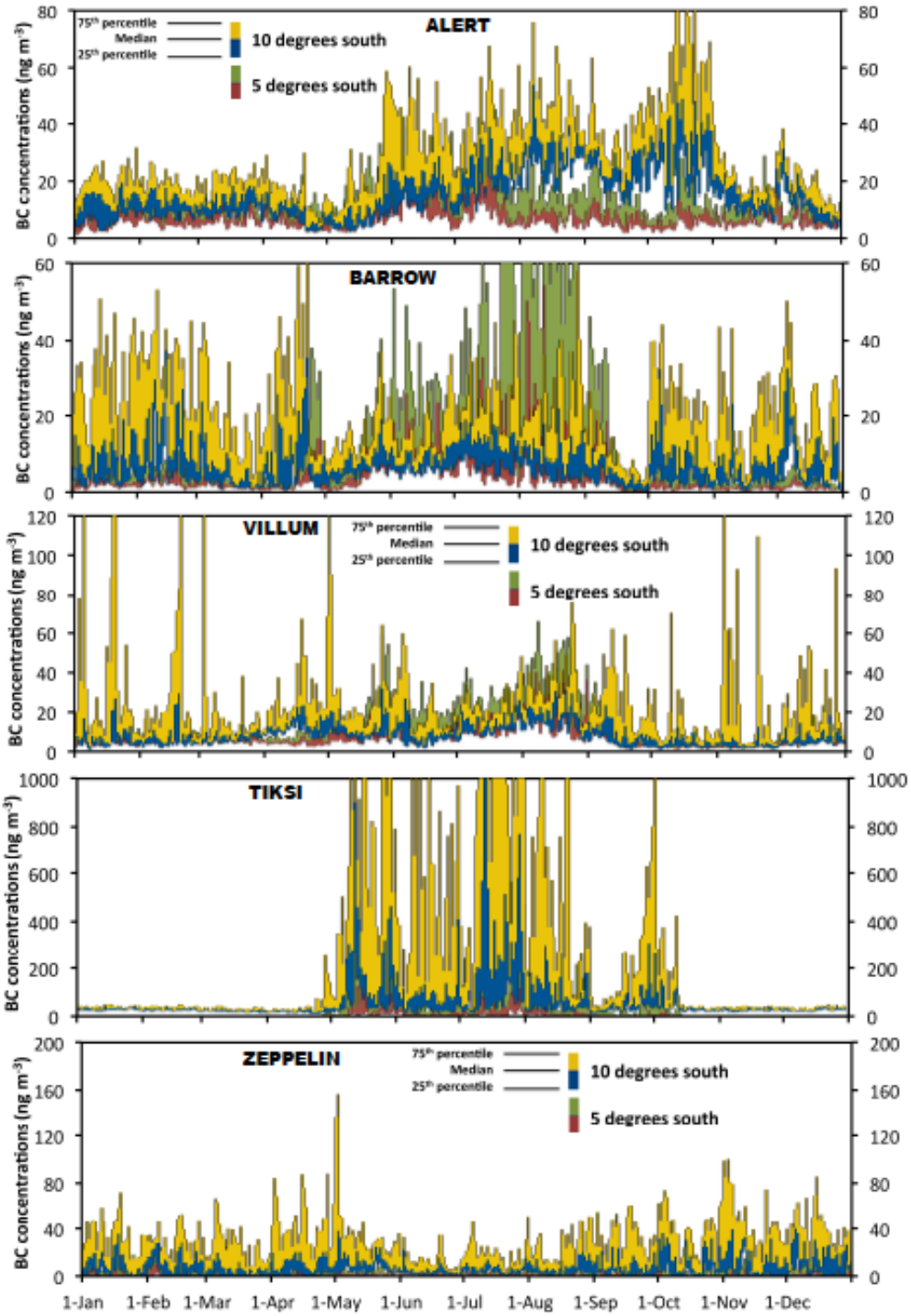

Figure S 4. Surface modelled concentrations of BC for the FEI-NE+MACCity simulation in the Arctic stations 5º and 10º south of Alert, Barrow, Villum, Tiksi, and Zeppelin. The results are presented as Box & Whisker plots of surface daily concentrations of BC for the period 2002–2013. The plots show the minimum value, the 25th percentile, which holds 25% of the values at or below it. The median is the 50th percentile, the third quartile is the 75th percentile and the maximum is the 100th percentile (i.e., 100% of the values are at or below it).

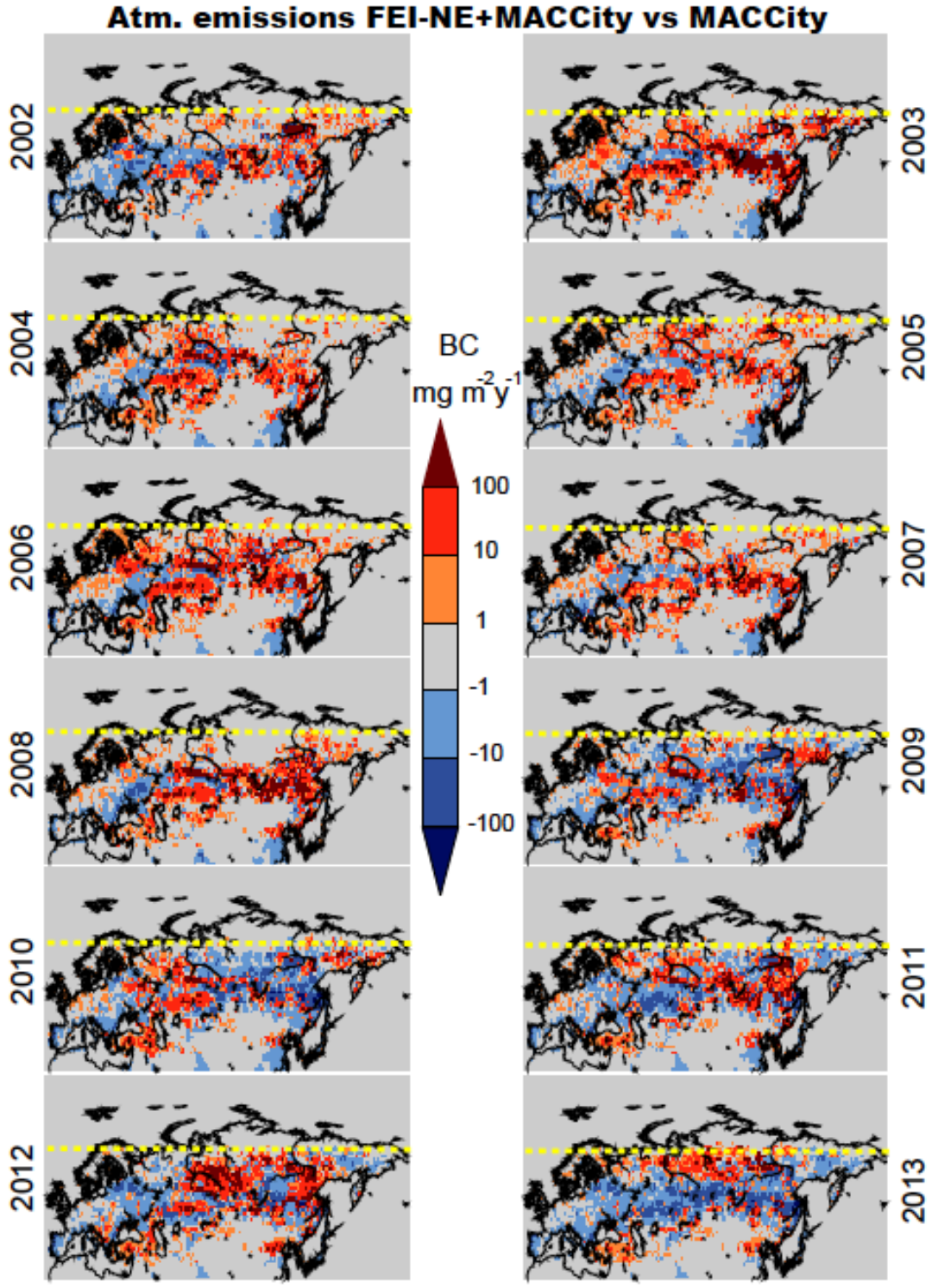

Figure S 5. Difference in atmospheric emissions of BC (mg m^{-2} y^{-1}) between our combined simulation (FEI-NE+MACCity) and MACCity. The dashed yellow line represents the border of the Arctic (~67°N). Emissions were estimated by summing all the vertical layers for 365 days of each of the years (2002–2013). Negative values were only observed in latitudes above 35°N over Northern Eurasia, as a result of the difference in the emissions between FEI-NE+MACCity and MACCity simulations.

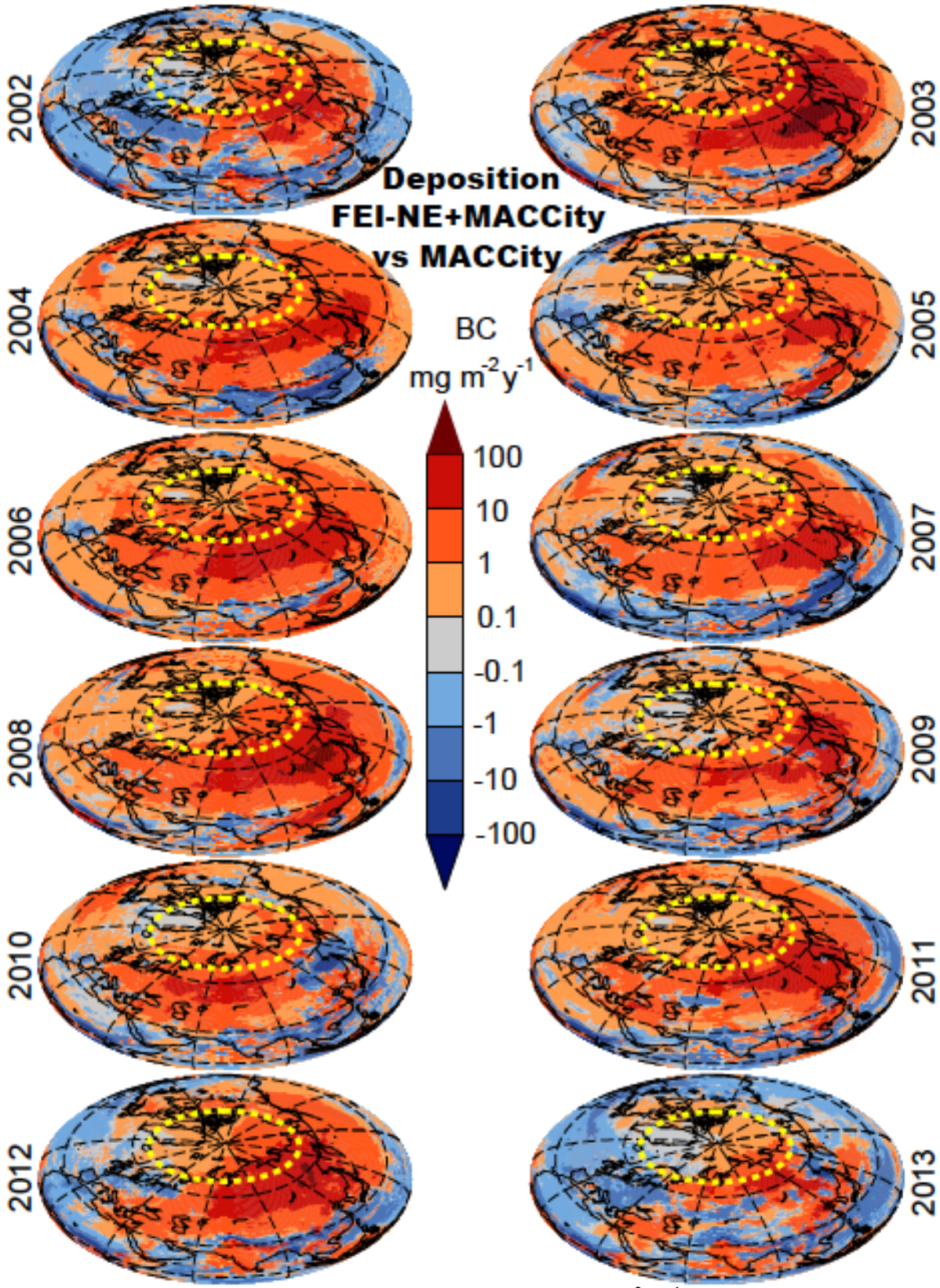

Figure S 6. Difference in Arctic deposition of BC (mg m^{-2} y^{-1}) between our combined simulation (FEI-NE+MACCity) and MACCity. The dashed yellow line represents the border of the Arctic (~67°N). Deposition was estimated by summing all the 365 days of each of the years (2002–2013).