707 Supplementary materials for

708 **Flexpart v10.1 simulation of source contributions to Arctic black carbon**

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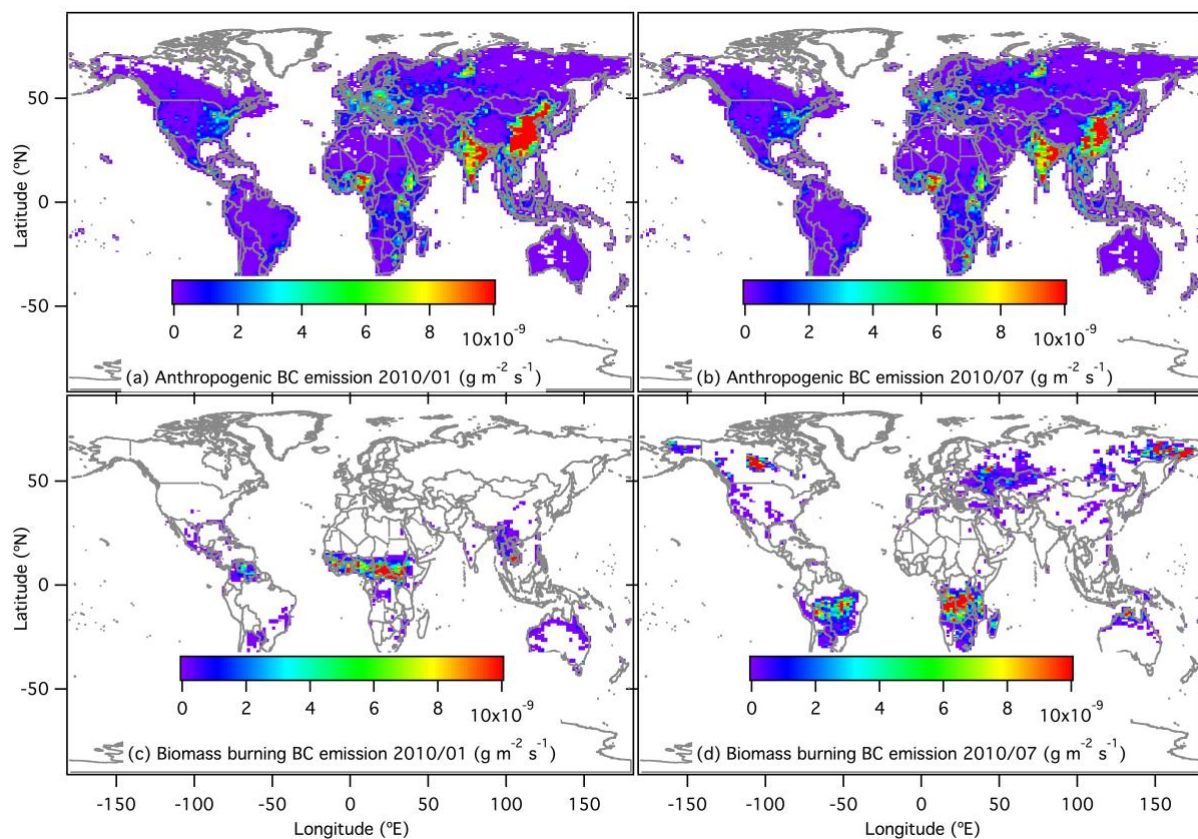
722 This file contains Figures S1, Figure S2, and Figure S3.

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724 Figure S1. Spatial distributions of BC emissions from (a) anthropogenic sources in January

725 2010, (b) anthropogenic sources in July 2010, (c) biomass burning in January 2010, and (d)

726 biomass burning in July 2010.

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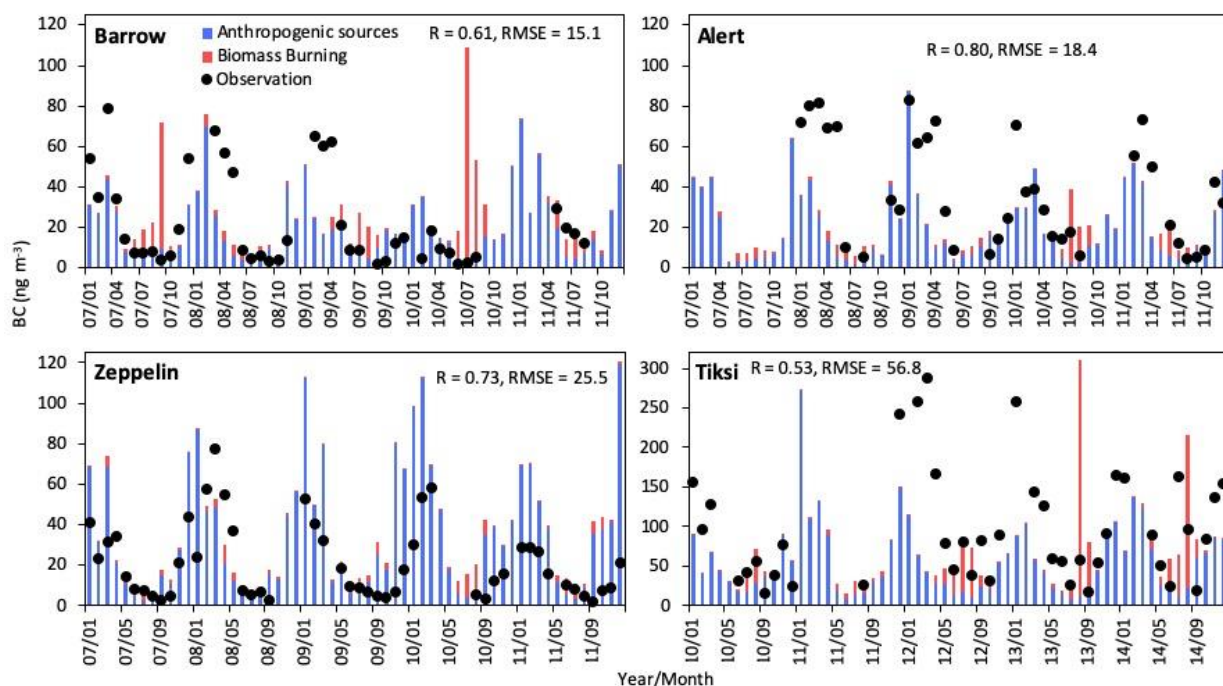
Figure S2. Time series of observed (filled circles) and modeled (bars) seasonal variations in BC mass concentrations at Arctic sites. Contributions from anthropogenic sources (blue) and biomass burning (red) in each month are shown. Monthly averages of observed (filled circles) and simulated (bars) BC are shown for 2007–2011 at Barrow, USA (156.6° W, 71.3° N), Alert, Canada (62.3° W, 82.5° N), and Zeppelin, Norway (11.9° E, 78.9° N), and for 2010–2014 at Tiksi, Russia (128.9° E, 71.6° N). R and RMSE indicate correlation coefficient and root-mean-square error (ng m^{-3}), respectively.
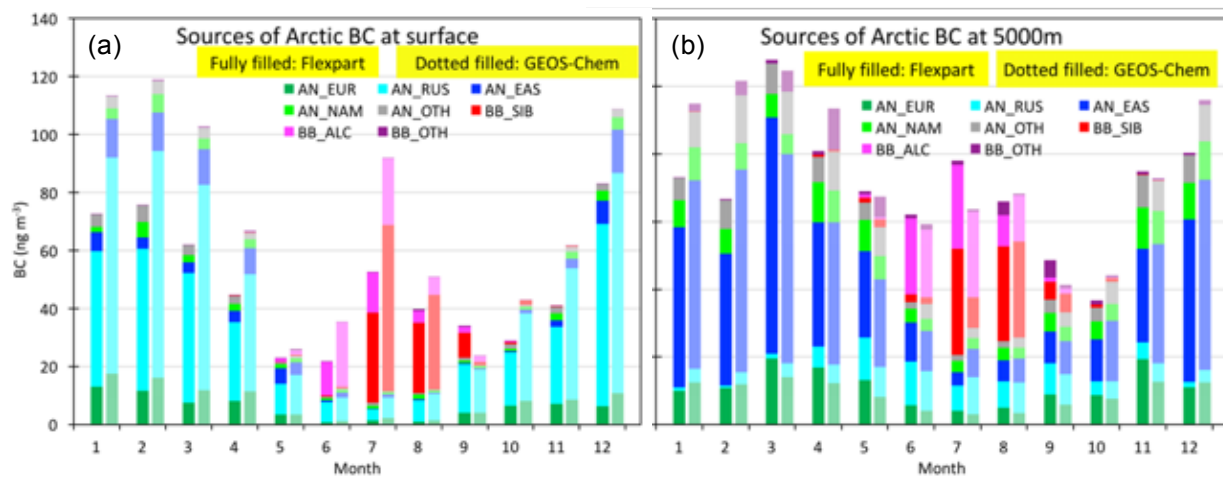
Figure S3. Comparison of Flexpart-simulated Arctic BC sources with those obtained by using GEOS-Chem.