Supplement of Estimates of mass absorption cross sections of black carbon for filter-based absorption photometers in the Arctic

Sho Ohata et al.

Correspondence to: Sho Ohata (sho.ohata@isee.nagoya-u.ac.jp)

The copyright of individual parts of the supplement might differ from the article licence.
Figure S1. Correlation of $M_{BC}$ measured by COSMOS and SP2 at (a) Alert and (b) Fukue. The axes are on a logarithmic scale. The solid line in the correlation plot is the least squares regression forced through the origin.
Figure S2. Histograms of $b_{\text{abs}}$ (PSAP; $\lambda = 550$ nm) / $M_{\text{BC}}$ (COSMOS) ratios at Alert for (a) 1-h averaged and (b) 24-h averaged data. Histograms for all data and data with $M_{\text{BC}}$ (COSMOS) < 10 ng m$^{-3}$ are shown. The interquartile ranges are shown in parentheses.
Figure S3. Time series of $M_{BC}$ (COSMOS) and $b_{abs}$ (Aethalometer; $\lambda = 590$ nm) from January 2018 to December 2019 at Alert for (a) 1-h averaged and (b) 24-h averaged data. (c) and (d) Corresponding histograms of $b_{abs}$ (Aethalometer) / $M_{BC}$ (COSMOS) ratios for all data and data with $M_{BC}$ (COSMOS) < 10 ng m$^{-3}$. The interquartile ranges are shown in parentheses.
**Figure S4.** Time series of $M_{BC}$ (COSMOS) and $b_{abs}$ (PSAP; $\lambda = 550$ nm) from April 2012 to September 2016 at Ny-Ålesund for (a) 1-h averaged and (b) 24-h averaged data. (c) and (d) Corresponding histograms of $b_{abs}$ (PSAP) / $M_{BC}$ (COSMOS) ratios for all data and data with $M_{BC}$ (COSMOS) < 10 ng m$^{-3}$. The interquartile ranges are shown in parentheses.
Figure S5. Time series of $M_{BC}$ (COSMOS) and $b_{abs}$ (Aethalometer; $\lambda = 590$ nm) from April 2012 to August 2019 at Ny-Ålesund for (a) 1-h averaged and (b) 24-h averaged data. (c) and (d) Corresponding histograms of $b_{abs}$ (Aethalometer) / $M_{BC}$ (COSMOS) ratios for all data and data with $M_{BC}$ (COSMOS) < 10 ng m$^{-3}$. The interquartile ranges are shown in parentheses.
Figure S6. Time series of $M_{BC}$ (COSMOS) and $b_{abs}$ (MAAP; $\lambda = 637$ nm) from January 2017 to December 2020 at Ny-Ålesund for (a) 1-h averaged and (b) 24-h averaged data. (c) and (d) Corresponding histograms of $b_{abs}$ (MAAP) / $M_{BC}$ (COSMOS) ratios for all data and data with $M_{BC}$ (COSMOS) < 10 ng m$^{-3}$. The interquartile ranges are shown in parentheses.
Figure S7. Time series of $M_{BC}$ (COSMOS) and $b_{abs}$ (PSAP/CLAP; $\lambda = 550$ nm) from August 2012 to December 2019 at Barrow for (a) 1-h averaged and (b) 24-h averaged data. (c) and (d) Corresponding histograms of $b_{abs}$ (PSAP/CLAP) / $M_{BC}$ (COSMOS) ratios for all data and data with $M_{BC}$ (COSMOS) < 10 ng m$^{-3}$. The interquartile ranges are shown in parentheses.
Figure S8. Time series of $M_{BC}$ (COSMOS) and $b_{abs}$ (MAAP; $\lambda = 637$ nm) from July 2019 to July 2020 at Pallas for (a) 1-h averaged and (b) 24-h averaged data. (c) and (d) Corresponding histograms of $b_{abs}$ (MAAP) / $M_{BC}$ (COSMOS) ratios for all data and data with $M_{BC}$ (COSMOS) < 10 ng m$^{-3}$. The interquartile ranges are shown in parentheses.
Figure S9. Time series of $M_{BC}$ (COSMOS) and $b_{abs}$ (MAAP; $\lambda = 590$ nm) from April 2009 to May 2019 at Fukue for (a) 1-h averaged and (b) 24-h averaged data.