

Variables	Long name	Units	Figures or Tables
SIaave	Average value for mass concentration of SIA	$\mu\text{g}/\text{m}^3$	Figure 1
ECave	Average value for mass concentration of EC	$\mu\text{g}/\text{m}^3$	Figure 1
POMave	Average value for mass concentration of POM	$\mu\text{g}/\text{m}^3$	Figure 1
SSave	Average value for mass concentration of SS	$\mu\text{g}/\text{m}^3$	Figure 1
Dustave	Average value for mass concentration of Dust	$\mu\text{g}/\text{m}^3$	Figure 1
SIastd	Standard deviation for mass concentration of SIA	$\mu\text{g}/\text{m}^3$	Figure 1
ECstd	Standard deviation for mass concentration of EC	$\mu\text{g}/\text{m}^3$	Figure 1
POMstd	Standard deviation for mass concentration of POM	$\mu\text{g}/\text{m}^3$	Figure 1
SSstd	Standard deviation for mass concentration of SS	$\mu\text{g}/\text{m}^3$	Figure 1
Duststd	Standard deviation for mass concentration of Dust	$\mu\text{g}/\text{m}^3$	Figure 1
RH	Relative Humidity		
WSOC/OC	Ratio of WSOC mass to OC mass		Figure 1
B _{abs_370} ave	Monthly-average value for observed aerosol absorption coefficient at 370 nm	Mm^{-1}	Figure 3 & Figure 4 & Figure 5 & Figure 6 & Figure 7 & Figure 8 & Figure S1 & Table 5 & Table 6 & Table 7
B _{abs_520} ave	Monthly-average value for observed aerosol absorption coefficient at 520 nm	Mm^{-1}	Figure 3 & Table 5 & Table 6 & Table 7
B _{abs_660} ave	Monthly-average value for observed aerosol absorption coefficient at 660 nm	Mm^{-1}	Figure 3 & Table 5 & Table 6 & Table 7
B _{abs_370} std	Standard deviation for observed aerosol absorption coefficient at 370 nm	Mm^{-1}	Figure 3
B _{abs_520} std	Standard deviation for observed aerosol absorption coefficient at 520 nm	Mm^{-1}	Figure 3
B _{abs_660} std	Standard deviation for observed aerosol absorption coefficient at 660 nm	Mm^{-1}	Figure 3
AAE ave	Monthly-average value for observed AAE		Figure 3 & Figure 4 & Figure 5 & Figure 6 & Figure 8 & Figure S1 & Table 5 & Table 6 & Table 7
AAE std	Standard deviation for observed AAE		Figure 3
B _{abs_405} ave	Monthly-average value for observed aerosol absorption coefficient at 405 nm	Mm^{-1}	Figure 3 & Figure 4 & Figure 5 & Figure 6 & Figure 7 & Figure 8 & Figure S1 & Table 5 & Table 6 & Table 7
B _{abs_658} ave	Monthly-average value for observed aerosol absorption coefficient at 658 nm	Mm^{-1}	Figure 3 & Table 5 & Table 6 & Table 7
B _{abs_405} std	Standard deviation for observed aerosol absorption coefficient at 405 nm	Mm^{-1}	Figure 3
B _{abs_658} std	Standard deviation for observed aerosol absorption coefficient at 658 nm	Mm^{-1}	Figure 3
B _{abs} Control	Aerosol absorption coefficient simulated from Control run	Mm^{-1}	Figure 3 & Figure 4 & Figure 5 & Figure 6 & Figure 8 & Figure 9 & Figure S1 & Figure S2 & Table 5 & Table 6 & Table 7
B _{abs} Shell_nonBrC	Aerosol absorption coefficient simulated from Shell_nonBrC run	Mm^{-1}	Figure 4 & Figure 9 & Figure S2 & Table 6 & Table 7
B _{abs} Low_abs	Aerosol absorption coefficient simulated from Low_abs run	Mm^{-1}	Figure 5 & Figure 9 & Figure S2 & Table 6 & Table 7
B _{abs} High_abs	Aerosol absorption coefficient simulated from High_abs run	Mm^{-1}	Figure 5 & Figure 9 & Figure S2 & Table 6 & Table 7
B _{abs} Sol-BrC	Aerosol absorption coefficient simulated from Sol-BrC run	Mm^{-1}	Figure 6 & Figure 9 & Figure S2 & Table 6 & Table 7
B _{abs} Ext-mix	Aerosol absorption coefficient simulated from Ext-mix run	Mm^{-1}	Figure 8 & Figure 9 & Figure S2 & Table 6 & Table 7
B _{abs} Insol-BrC	Aerosol absorption coefficient simulated from Insol-BrC run	Mm^{-1}	Figure S1 & Figure S2
B _{abs} PSD	Aerosol absorption coefficient simulated from PSD run	Mm^{-1}	Figure S2
AAE Control	AAE simulated from Control run		Figure 3 & Figure 4 & Figure 5 & Figure 6 & Figure 8 & Figure 9 & Figure S1 & Figure S2 & Table 5 & Table 6 & Table 7
AAE Shell_nonBrC	AAE simulated from Shell_nonBrC run		Figure 4 & Figure 9 & Figure S2 & Table 6 & Table 7
AAE Low_abs	AAE simulated from Low_abs run		Figure 5 & Figure 9 & Figure S2 & Table 6 & Table 7
AAE High_abs	AAE simulated from High_abs run		Figure 5 & Figure 9 & Figure S2 & Table 6 & Table 7
AAE Sol-BrC	AAE simulated from Sol-BrC run		Figure 6 & Figure 9 & Figure S2 & Table 6 & Table 7
AAE Ext-mix	AAE simulated from Ext-mix run		Figure 8 & Figure 9 & Figure S2 & Table 6 & Table 7
AAE Insol-BrC	AAE simulated from Insol-BrC run		Figure S1 & Figure S2
AAE PSD	AAE simulated from PSD run		Figure S2
BrC/WSOC	Ratio of BrC mass to WSOC mass		Figure 7
B _{abs_S} (345-442 nm)	Aerosol absorption coefficient simulated from varying mass ratio of BrC to WSOC	Mm^{-1}	Figure 7