

Test case no.	Brief description	Total BC emissions (Gg)	Relative difference with respect to the base case estimate (%)
1	BB aerosol photochemical age is larger than 11 h	416	+2.6
2	The SOA yield in the simulations is increased by a factor of 7	424	+4.6
3	BB aerosol particles are assumed to be hydrophilic and affected by in-cloud scavenging	431	+6.3
4	The background AOD is reduced by 50 %	477	+17.8
5	The background AOD is enhanced by 50 %	398	-1.6
6	The background AAOD is disregarded	443	+9.2
7	The OMI “final AAOD” data product is used instead of the retrieval data provided for different aerosol layer heights	317	-21.8
8	A weaker selection criterion ($\gamma = 0.5$, see Eq. 8) is used	477	+17.8
9	A stricter selection criterion ($\gamma = 1.5$, see Eq. 8) is used	388	-4.1
10	Any gridded data point considered includes at least 10 AAOD pixels	457	+13.0