Figure S1: Example of the procedure followed to extract the CALIPSO extinction profiles from less than 50 km to Ny-Ålesund.
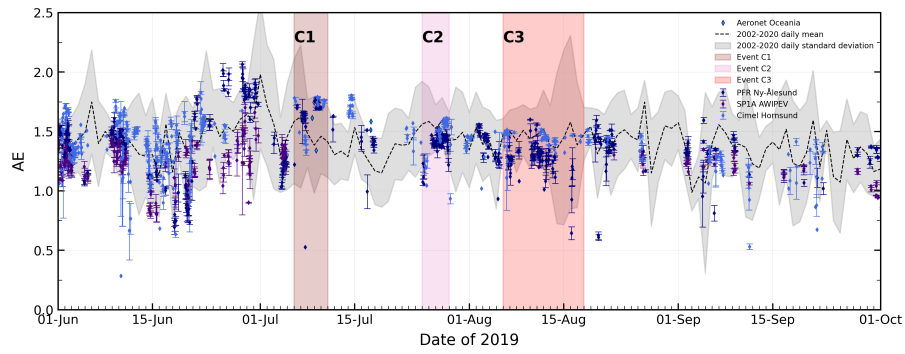
Figure S2: Ångström Exponent (AE) temporal evolution (hourly means with standard deviation) in and around Svalbard in summer 2019, with data from Ny-Ålesund, Hornsund and Oceania (in the Fram Strait). Long-term daily means and the corresponding standard deviation of all available ground-based measurements are represented by the black dashed line and grey shadow respectively.
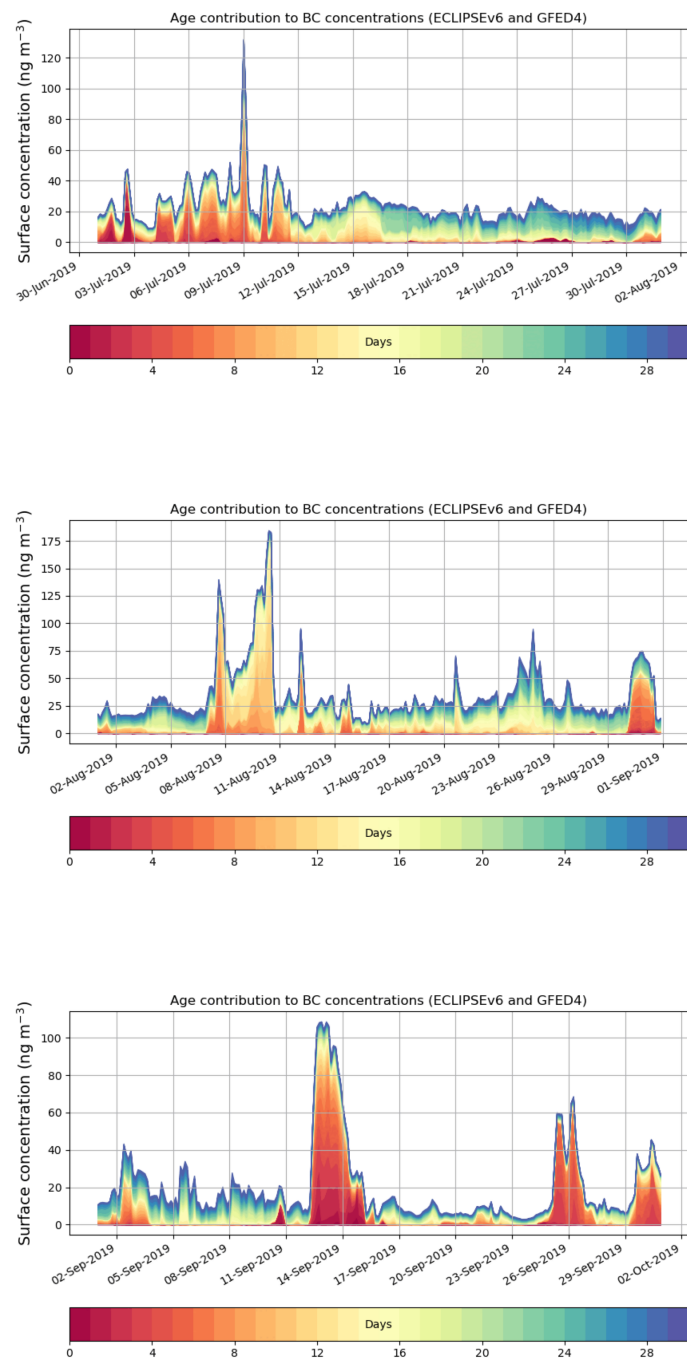
Figure S3: Age contribution to BC concentration product from FLEXPART during July, August and September.