

Article

A global climatology of dust aerosols based on satellite data: spatial, seasonal and inter-annual patterns over the period 2005-2019

Supplement

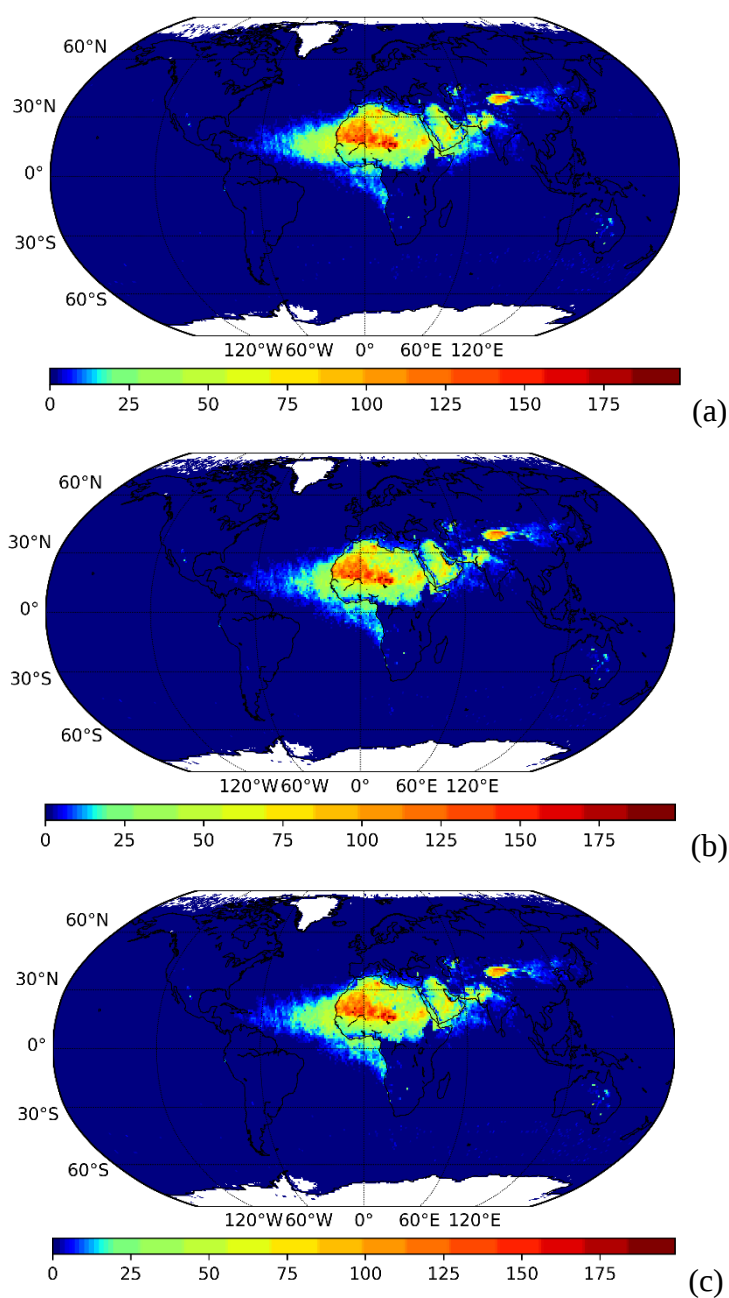


Figure S1. Global distribution of the annual absolute frequency of occurrence of dust aerosols (in number of days/year) for Ångström Exponent computed at 470nm - 660nm over land and 470nm - 2130nm over ocean (a), at 470nm - 660nm over land and 470nm - 650nm over ocean (b) and 550nm - 660nm over land and 550nm - 650nm over ocean (c). The results are for the year 2005.

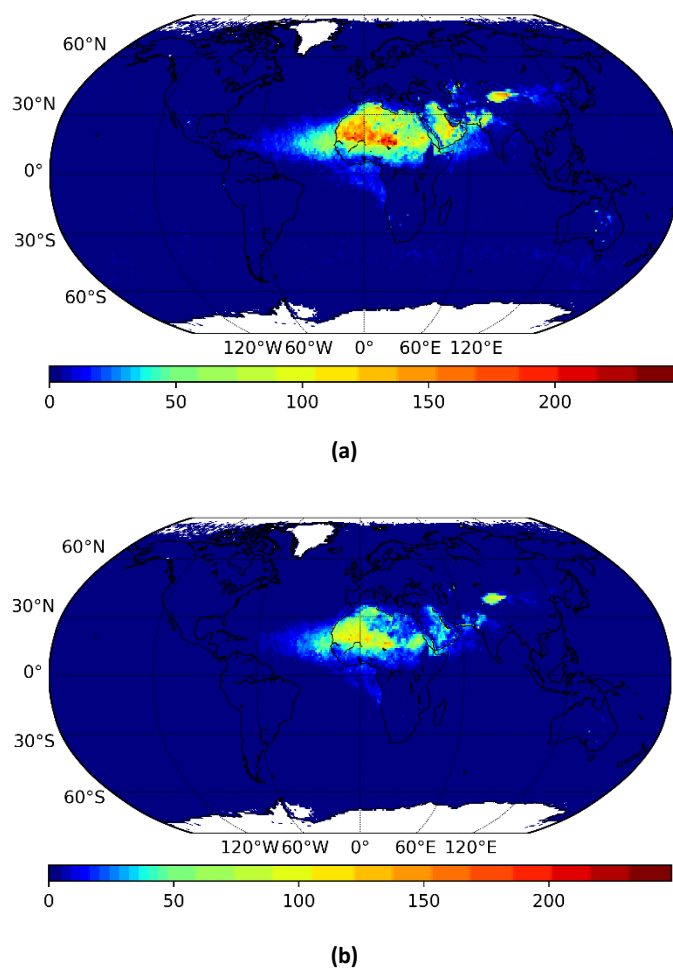
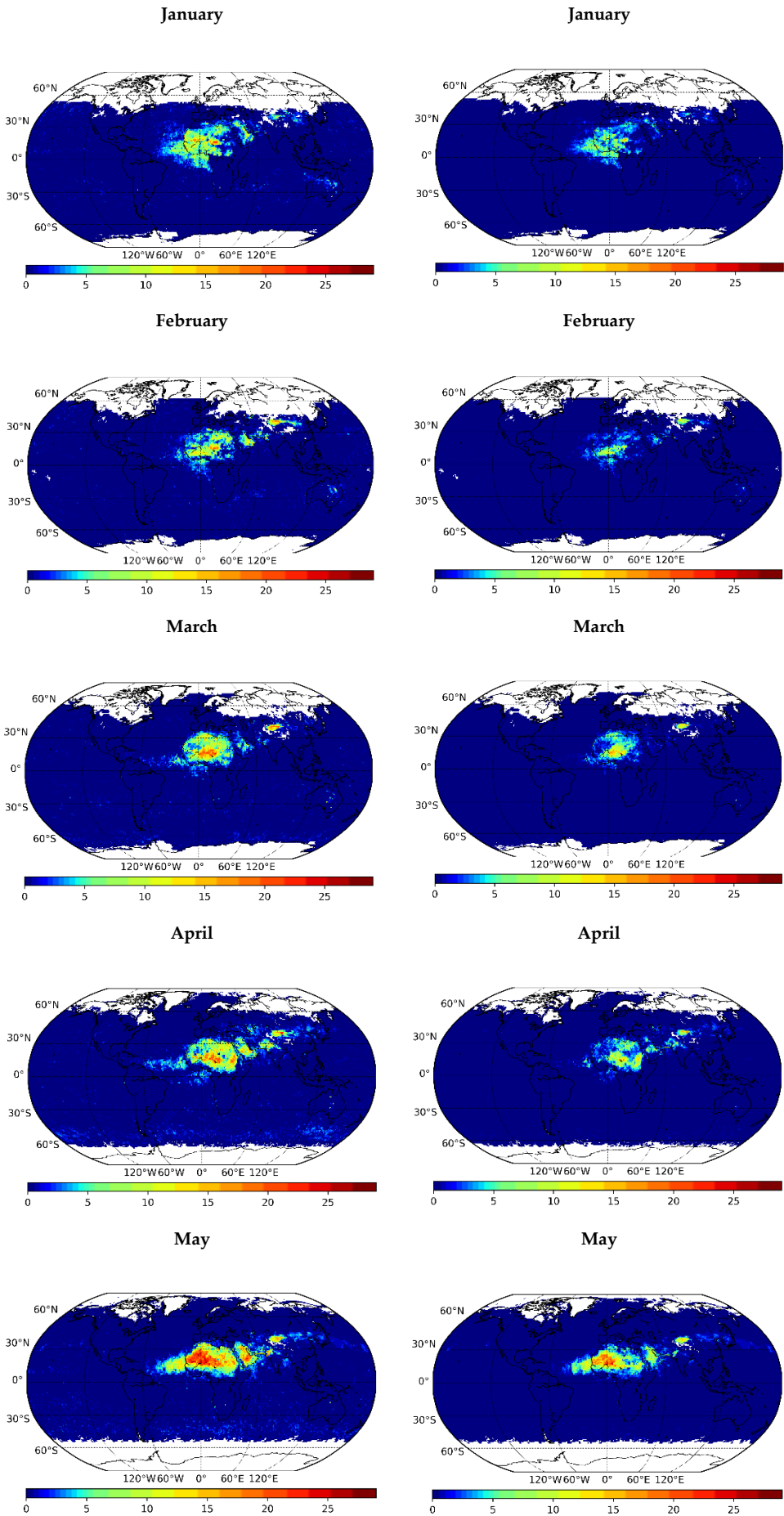
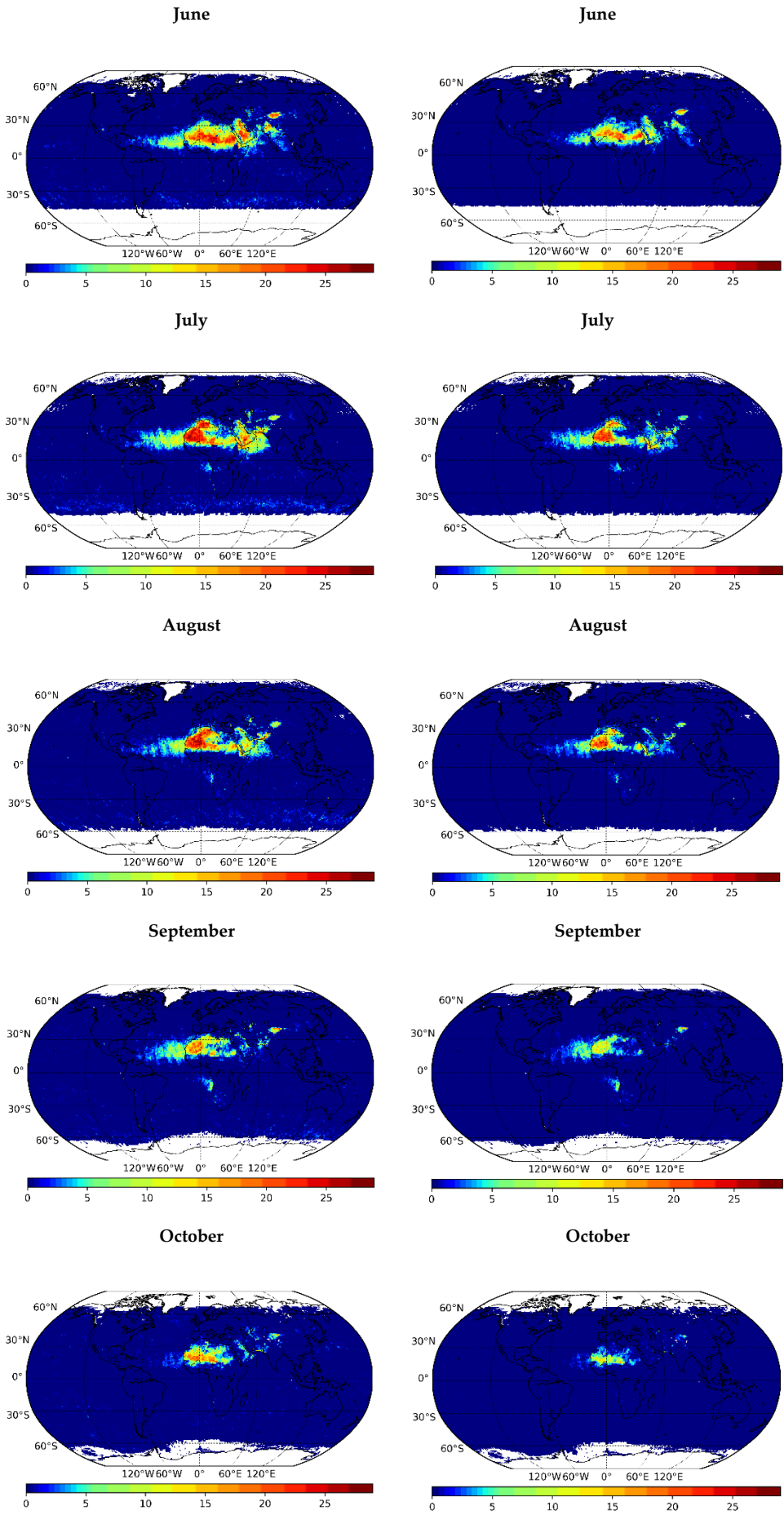


Figure S2. Global distribution of the annual absolute frequency of occurrence of dust aerosols (in number of days/year) for AI thresholds equal to 0.8 (a) and 1.2 (b). The results are for the year 2005.





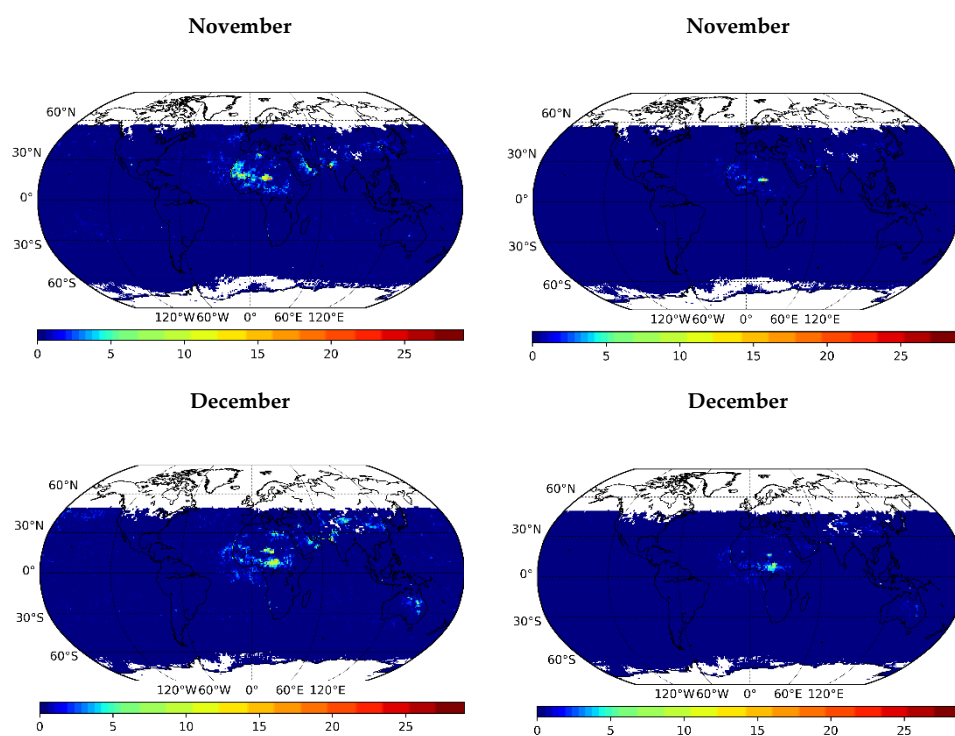


Figure S3. Global distribution of the monthly absolute frequency of occurrence of dust aerosols (in number of days/month) for AI thresholds equal to 0.8 (left column) and 1.2 (right column). Each row corresponds to the months of the year, from January (top) to December (bottom). The results are for the year 2005.

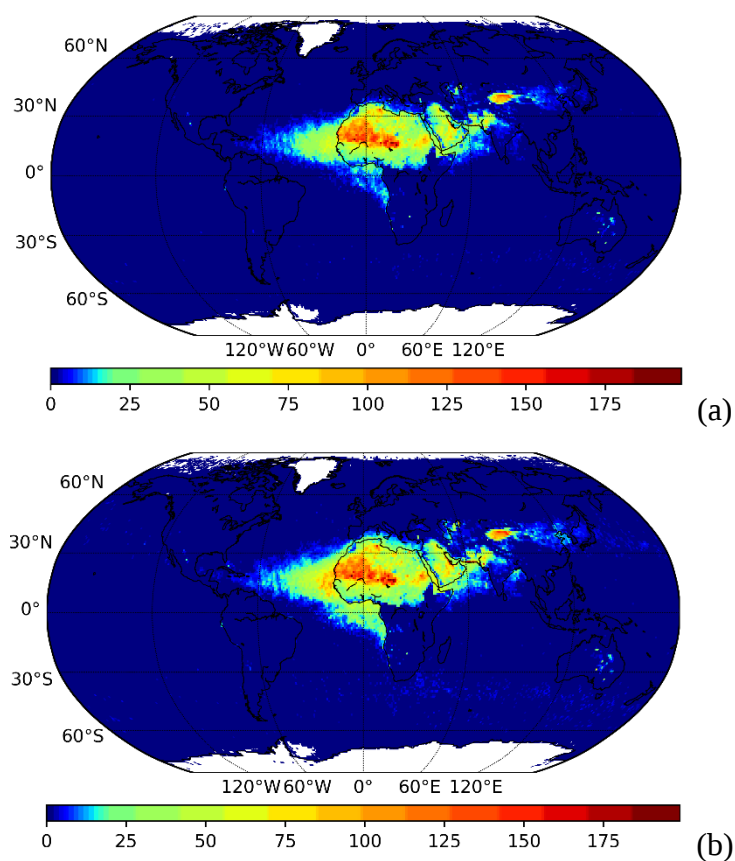
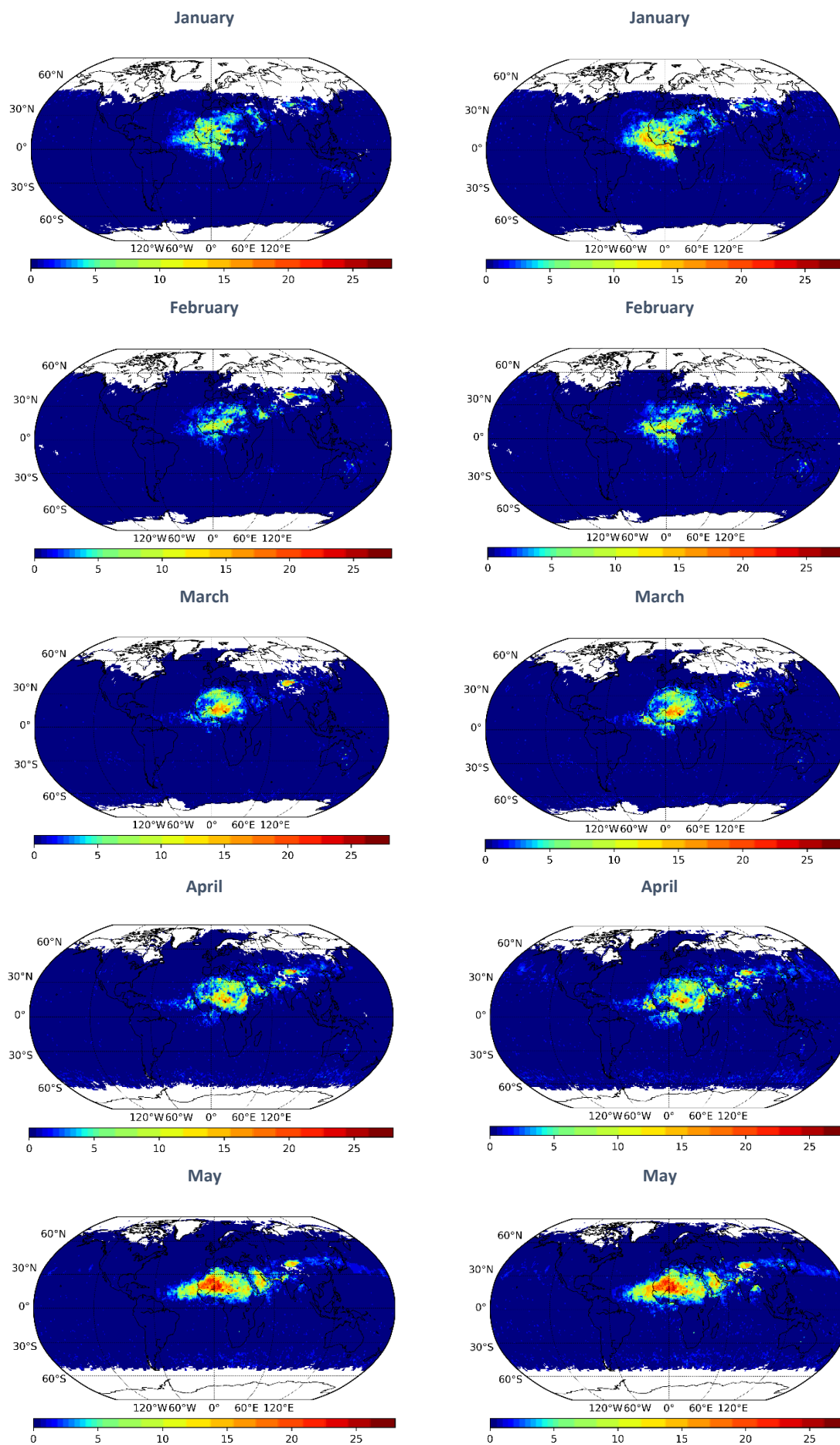
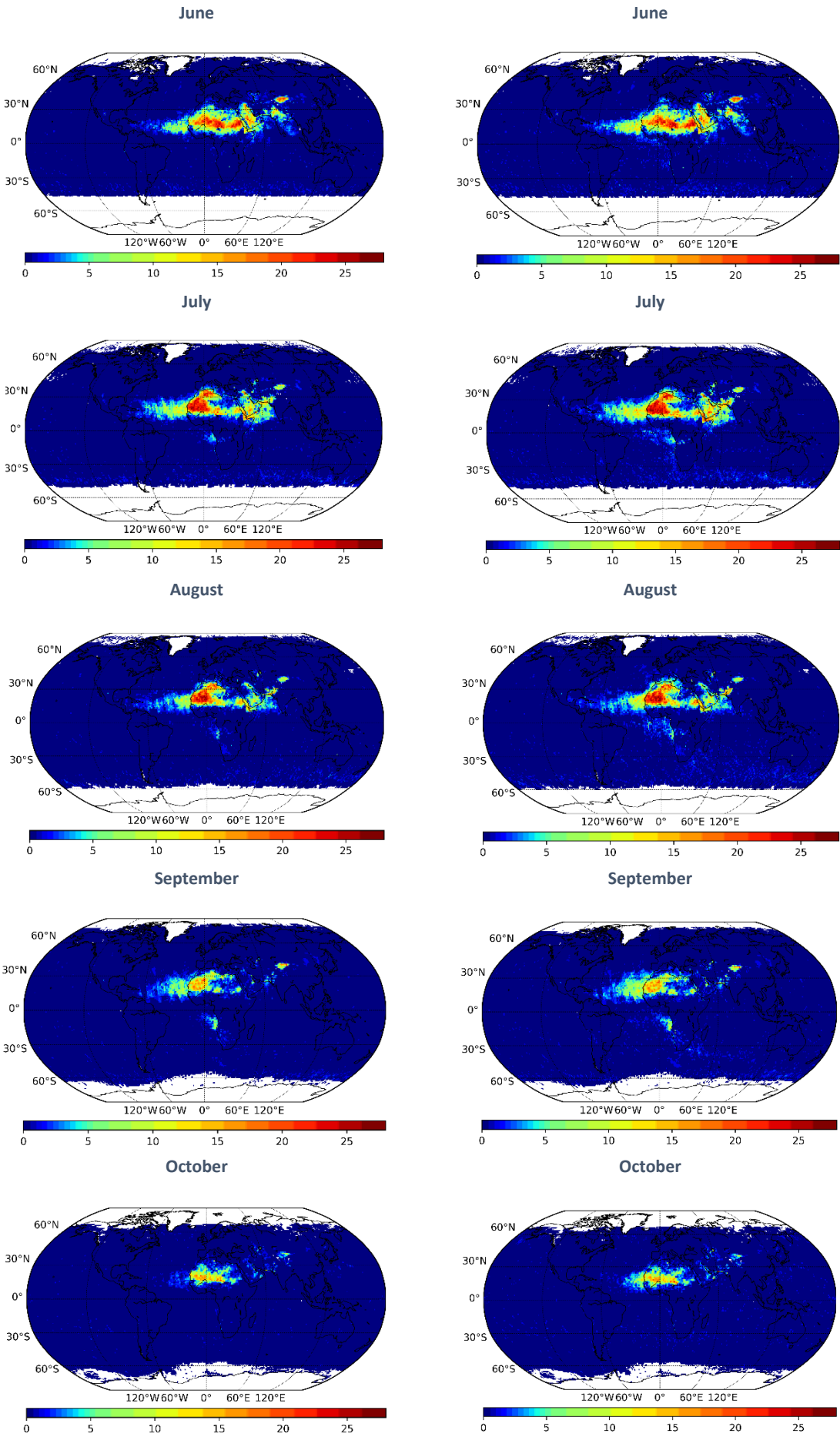


Figure S4. Global distribution of the annual absolute frequency of occurrence of dust aerosols (in number of days/year) for a threshold of Ångström Exponent equal to 0.4 (a) and 0.7 (b). The results are for the year 2005.





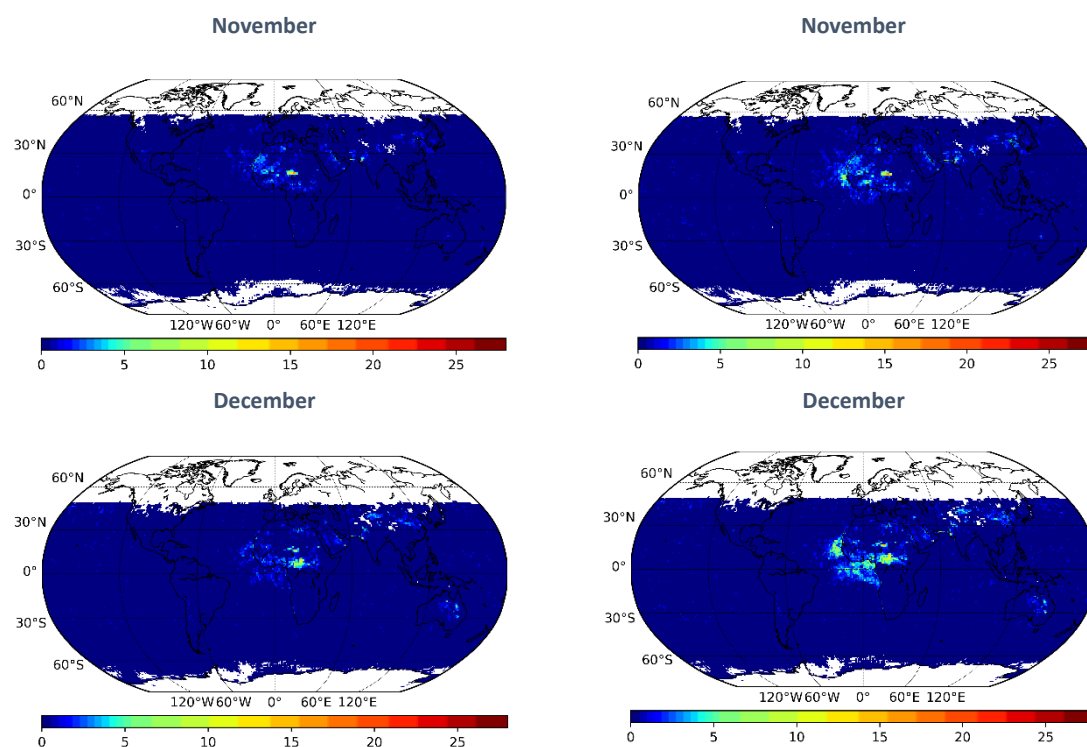
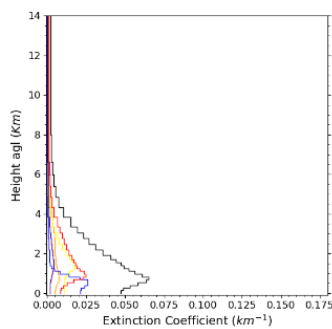
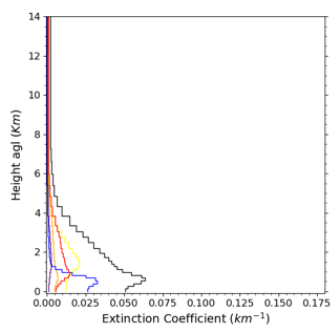


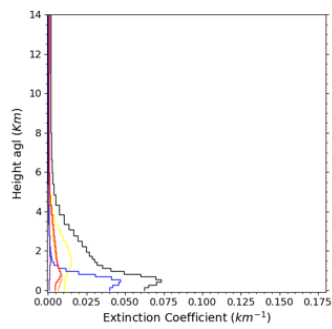
Figure S5. Global distribution of the monthly absolute frequency of occurrence of dust aerosols (in number of days/year) for a threshold of Ångström Exponent equal to 0.4 (left) and 0.7 (right). The results are for the year 2005.



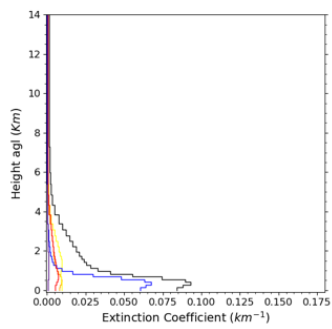
(i)



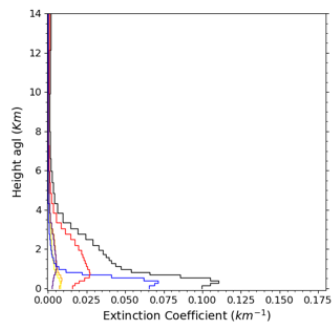
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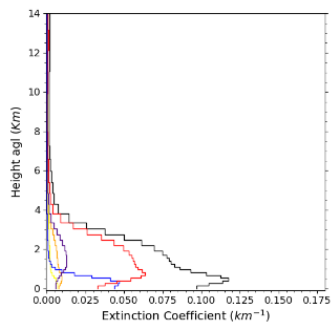
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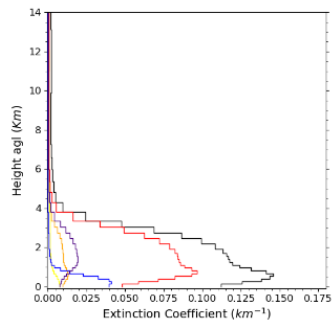
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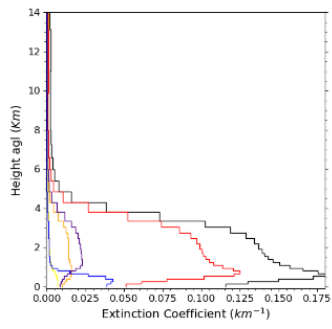
(v)



(vi)



(vii)



(viii)

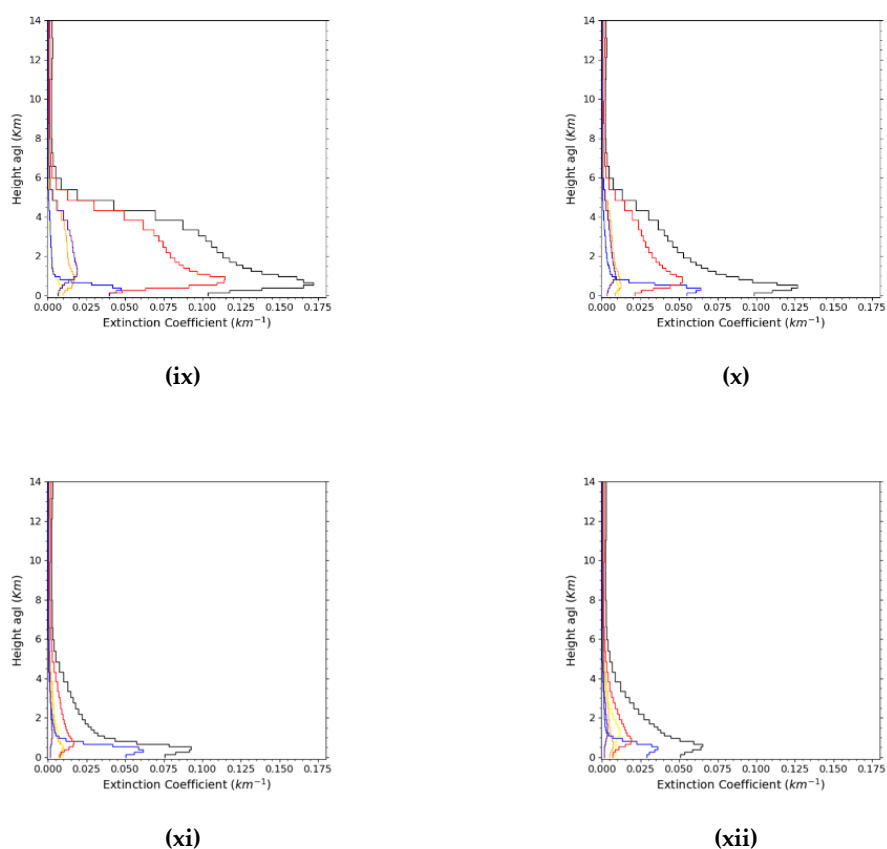
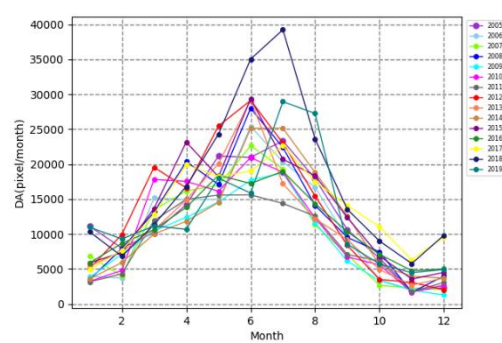
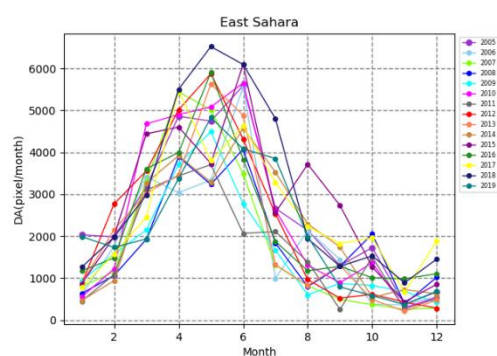


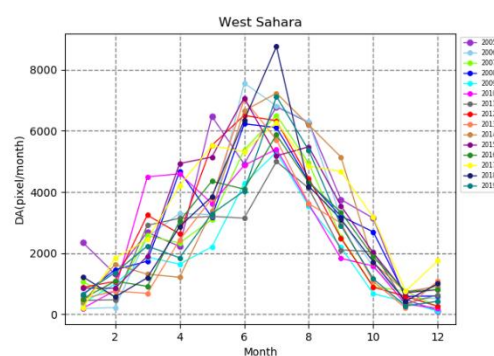
Figure S6. Global distribution of the MERRA-2 based monthly vertical distribution of extinction coefficients (in Km^{-1}) of sulfate (orange curves), dust (yellow curves), sea-salt (blue curves), black carbon (indigo curves) and organic carbon (red curves) aerosols over the southeast Atlantic Ocean (5°E - 14°E and 17°S - 6°S). Total aerosol extinction coefficients (black curves) are also shown in each plot. Each row corresponds to the months of the year, from January (i, top) to December (xii, bottom). The results are averaged over the period 2005-2019.



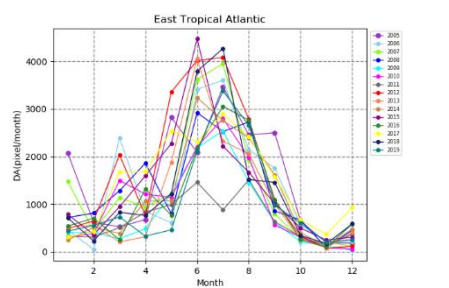
(i)



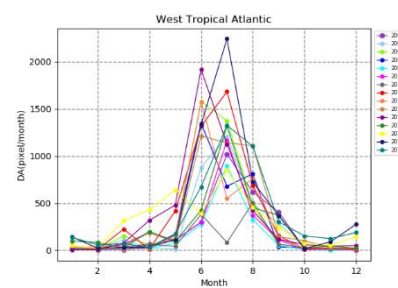
(ii)



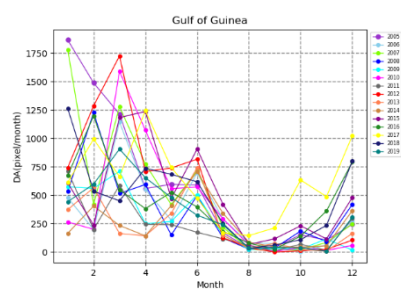
(iii)



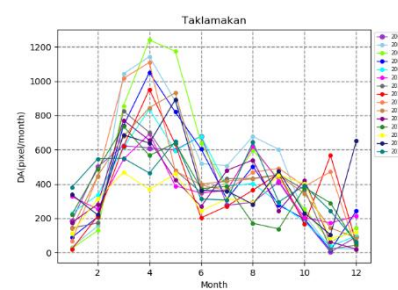
(iv)



(v)



(vi)



(vii)

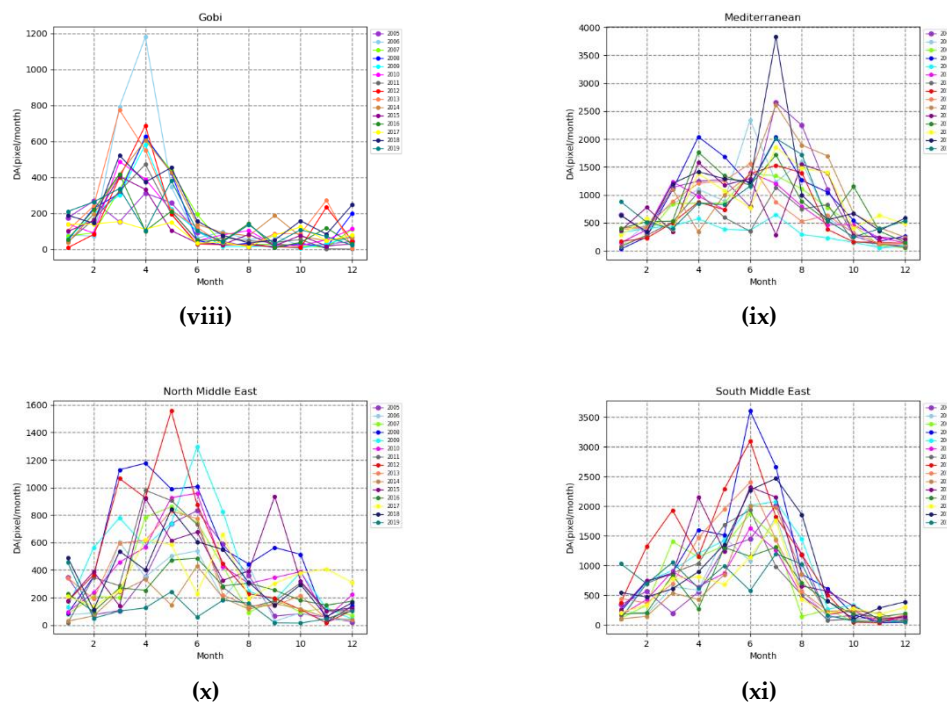


Figure S7. Intra-annual variability, for each year of the period 2005–2019, of the absolute frequency of occurrence of dust aerosols (DA) over the $1^\circ \times 1^\circ$ grid cells of each selected world region. Results are given for: (i) the entire globe, (ii) East Sahara, (iii) West Sahara, (iv) East Tropical Atlantic, (v) West Tropical Atlantic, (vi) Gulf of Guinea, (vii) Taklamakan, (viii) Gobi, (ix) Mediterranean, (x) North Middle East and South Middle East refer to the overall number of grid cells (counts) over which DA have been detected by the satellite algorithm during each year.