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Drivers of the fungal spore bioaerosol budget: observational analysis and global modeling

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Table S1: global emissions, burden and lifetime for the population and statistical model for two sensitivity runs

Emission scheme	Simulation	Emission (Tg year-1)	Burden (Gg)	Lifetime (days)
Population model	DILFACT0.3	2.7	15.8	2.1
Statistical model	DILFACT0.3	2.9	12.0	1.4
Population model	RAINOUT0	3.4	25.6	2.9
Statistical model	RAINOUT0	3.7	20.0	2.1

Table S2: normalization factors of the FBAP measurements for each campaign. We applied min-max normalization, which scales all values to a range between 0 and 1.

Campaign	Normalization factor
Germany	9.6×10^{-3}
Finland	0.014
Colorado	0.019
Ideas	0.095
SEAC4RS	3.6×10^{-3}
NAAMES 2015	0.15
NAAMES 2016	0.048
NAAMES 2017	0.12

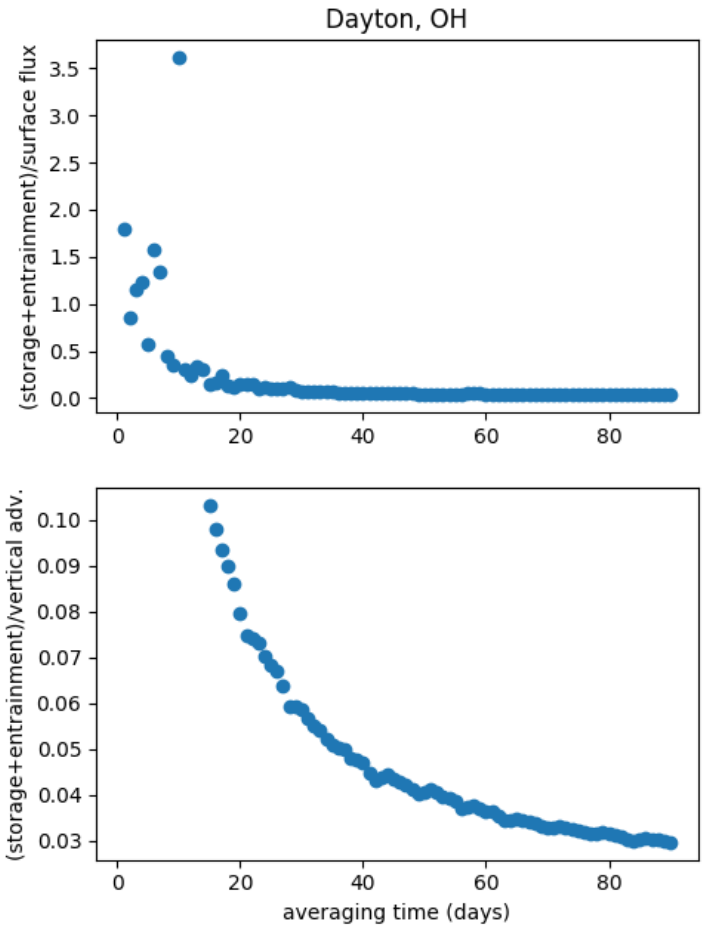

Figure S1: ratio of storage+entrainment vs. the net surface flux and vertical advection for different averaging times

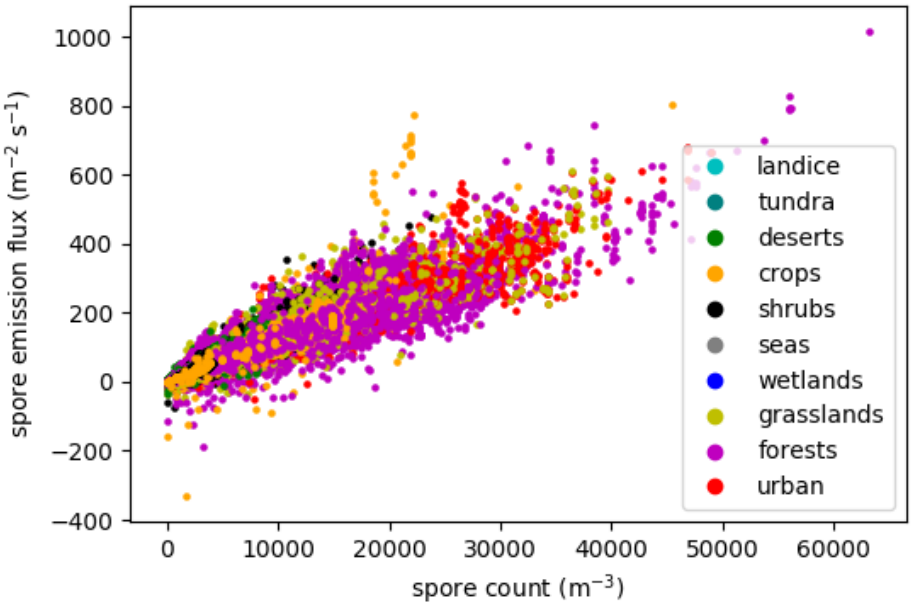

Figure S2: relationship between spore counts and derived emissions for different land use types. Each point represents a daily spore count at a single AAAAI station

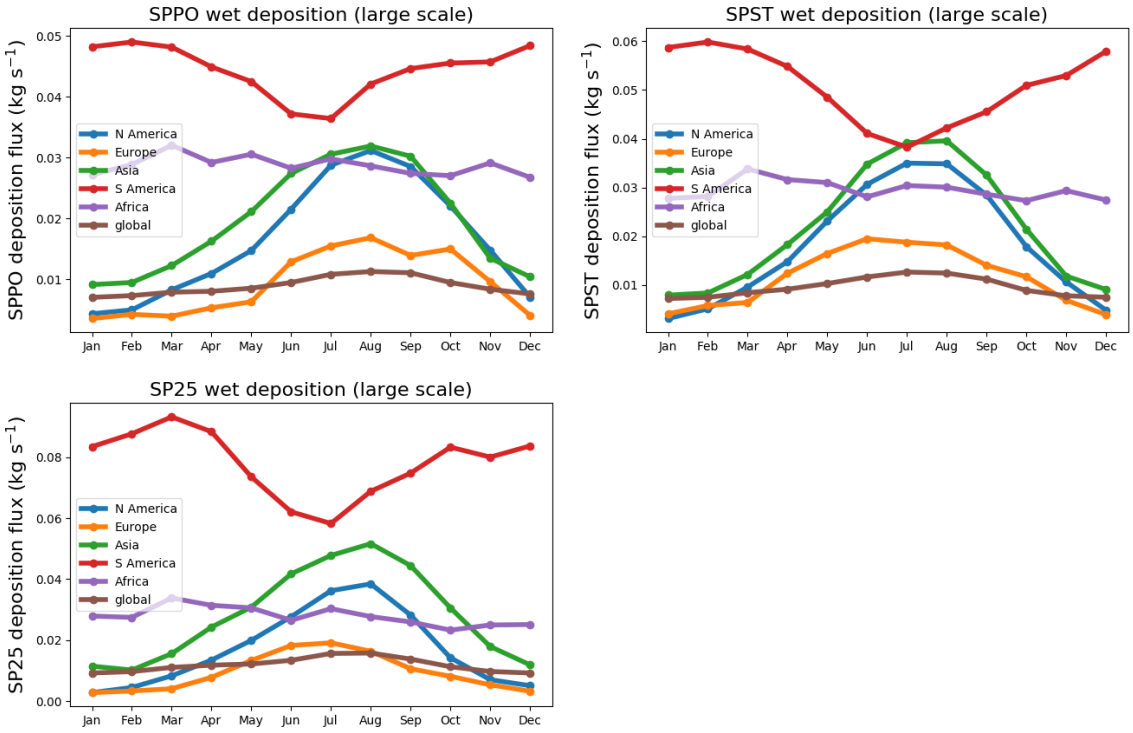

Figure S3: Seasonal cycles of fungal spore wet deposition in GEOS-Chem simulations for the statistical, the population and the HS09 model. Note the different scales on the y-axis

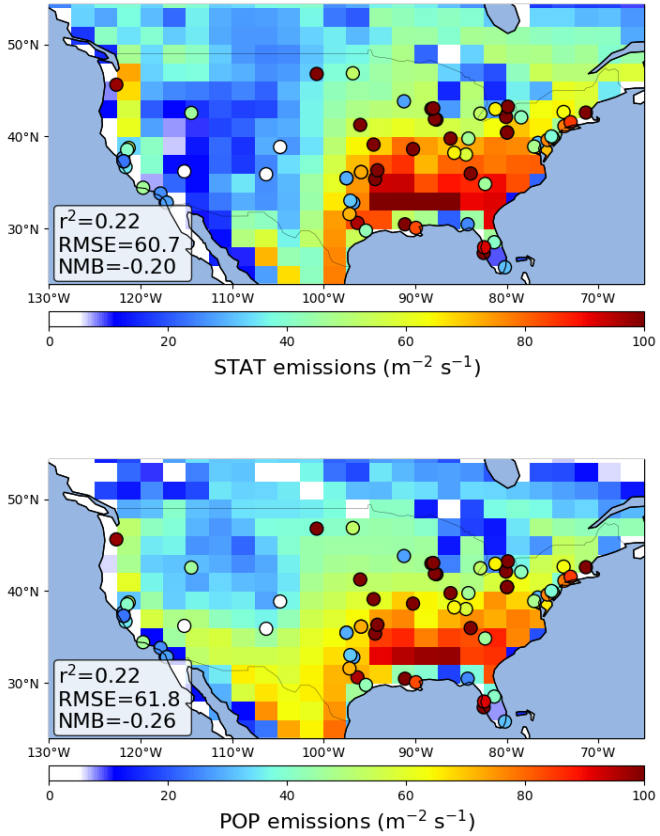

Figure S4: Comparison of GEOS-Chem simulated (CTRL simulation) emission fluxes of fungal spores to emission fluxes derived from AAAAI observations for the statistical model (top) and the population model (bottom). Statistics describing the comparisons are shown inset.

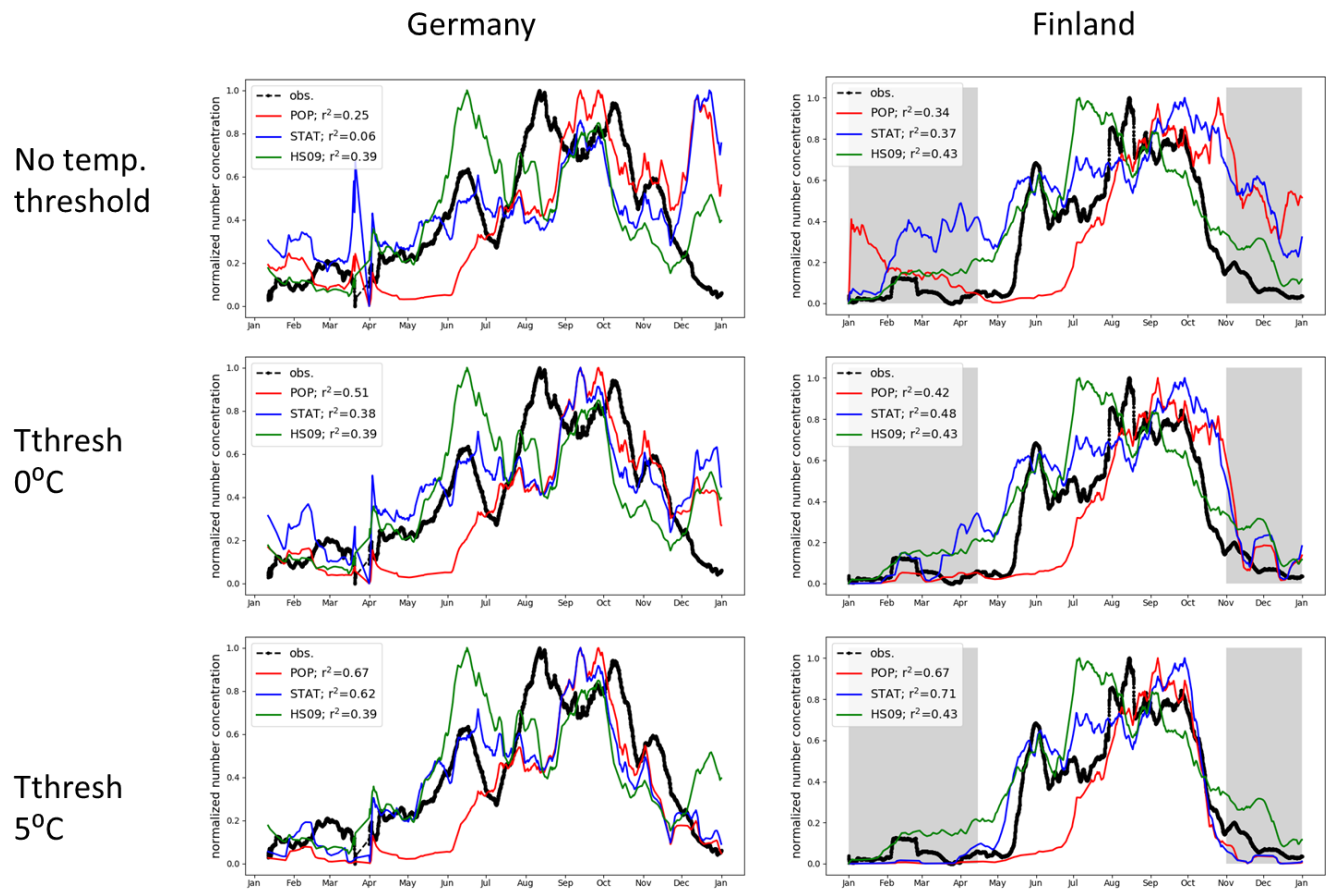

Figure S5: sensitivity to chosen temperature threshold of modeled spore concentrations at the sites in Germany and Finland. No temperature threshold (top), threshold of 0°C (middle) and threshold of 5°C (bottom)