Supplementary Material

A sea spray aerosol flux parameterization encapsulating wave state

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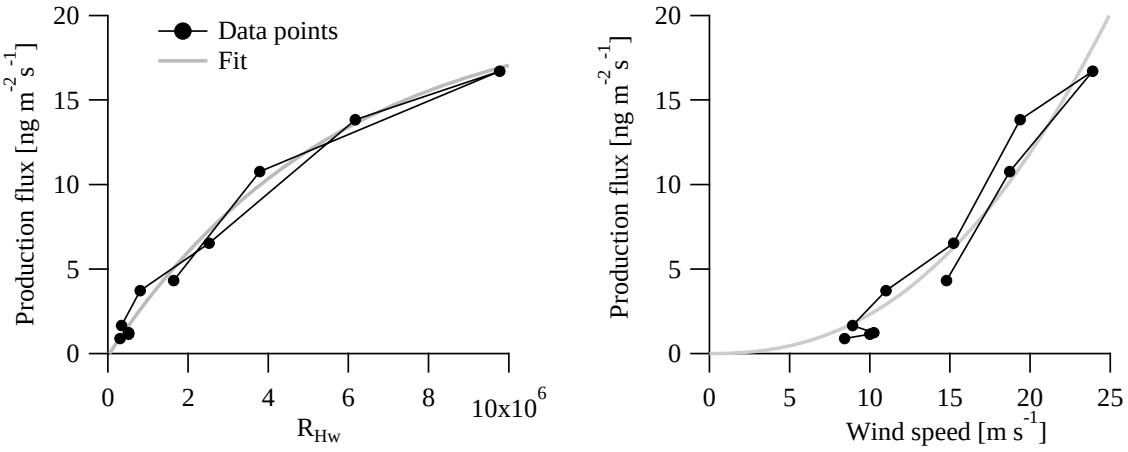

Figure S1. Production Flux dependence on the Reynolds number, R_{Hw}, (left panel) and wind speed (right panel). A deployment of the Reynolds number instead of wind speed in the

submicron Flux parameterization reduced the data point scatter as R_{Hw} accounted for the wave history and the effects of increasing and decreasing wind speeds. For the data points presented here, the wind speed was initially increasing then levelling off and eventually declining, therefore, intercrossing lines for the relationship on the left panel – Flux vs. Reynolds number – indicated that there were no separation between the two regimes (increasing and decreasing wind speed), however, Flux vs. Wind speed (right panel) indicated distinctly different relationships for the different regimes, especially, at higher winds.

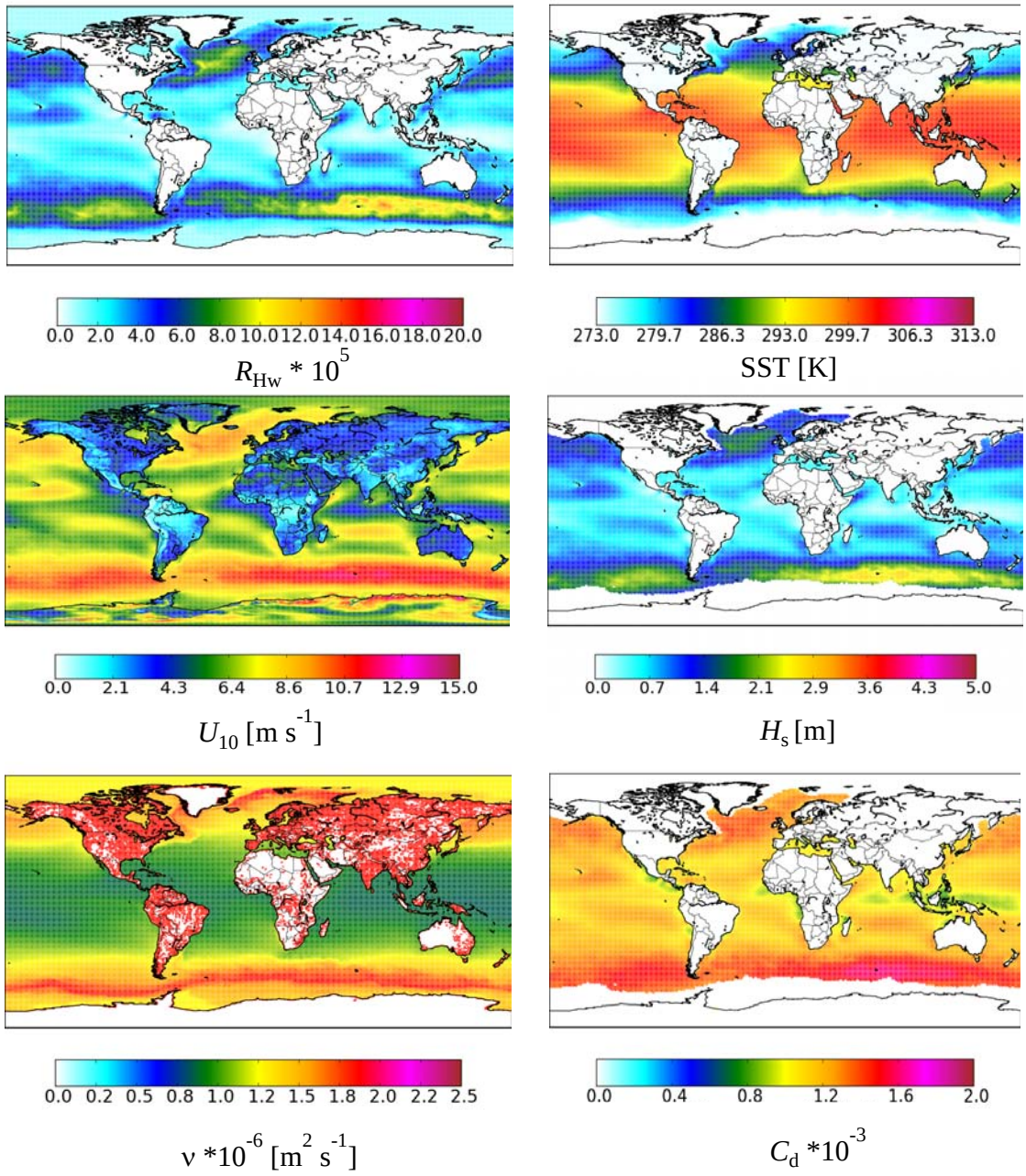

Figure S2. Annual mean values of meteorological/oceanographic fields (ECMWF) that were used for the calculation of the sea spray fluxes for 2006.

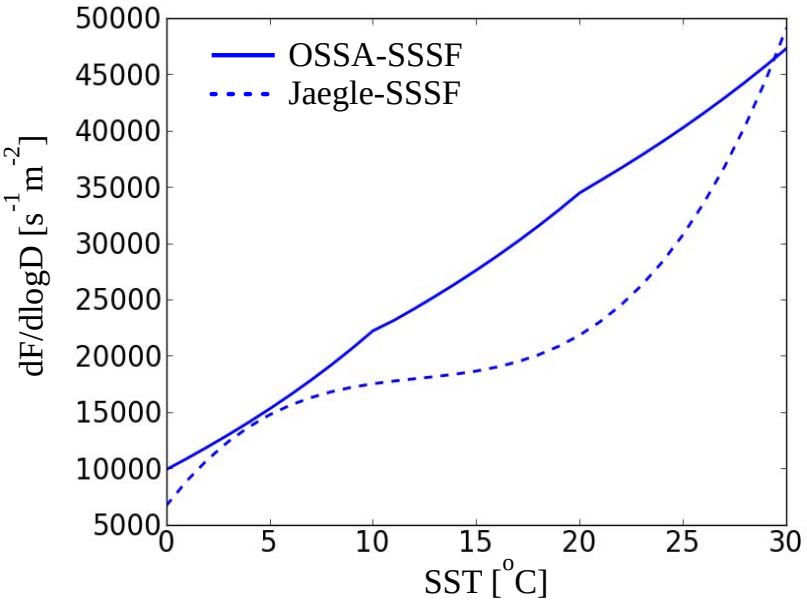

Figure S3. Comparison of the effect of sea surface temperature (SST) on the particle production for using the OSSA-SSSF and the formulation by Jaeglé et al. (2011) for D_p=1 µm particles at 9 m s^{-1} wind speed. To eliminate the effect of the wave state, which was incorporated into the OSSA-SSSF, the constant values of C_d=1.3 e^{-3} and H_s=1.5 were used in the calculation of the production fluxes.