Supplement of Extratropical cyclones drive the spatial heterogeneity distribution of Sea Salt Aerosol (SSA) and vertical transport in the Southern Ocean
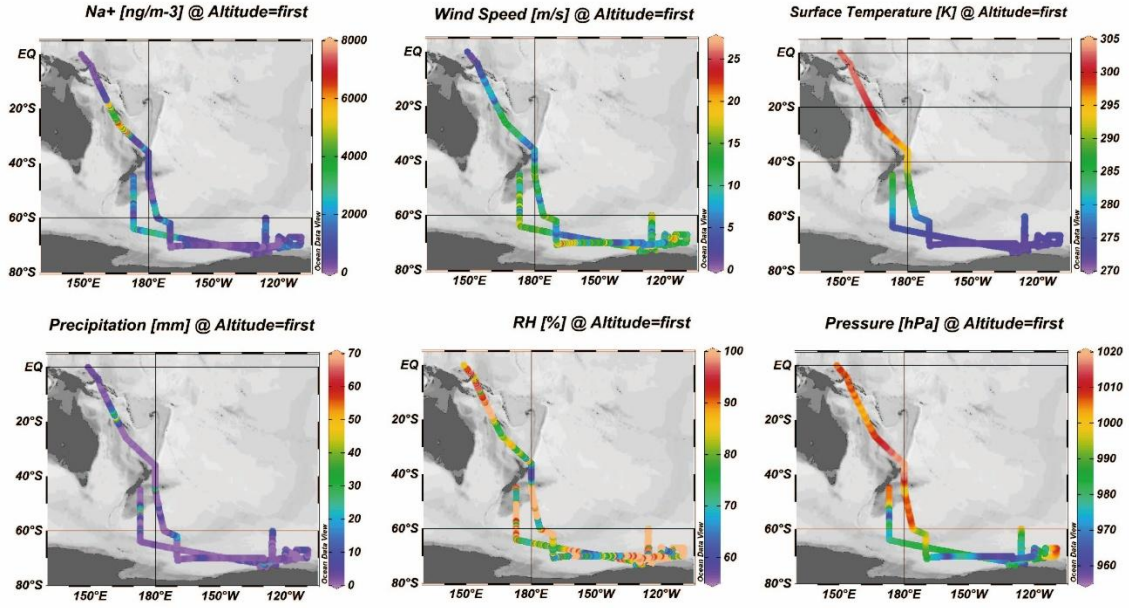
Fig. S1 Temporal distribution of Na$^+$ and related meteorological parameters in the route of the 34th Chinese Antarctic scientific research vessel.
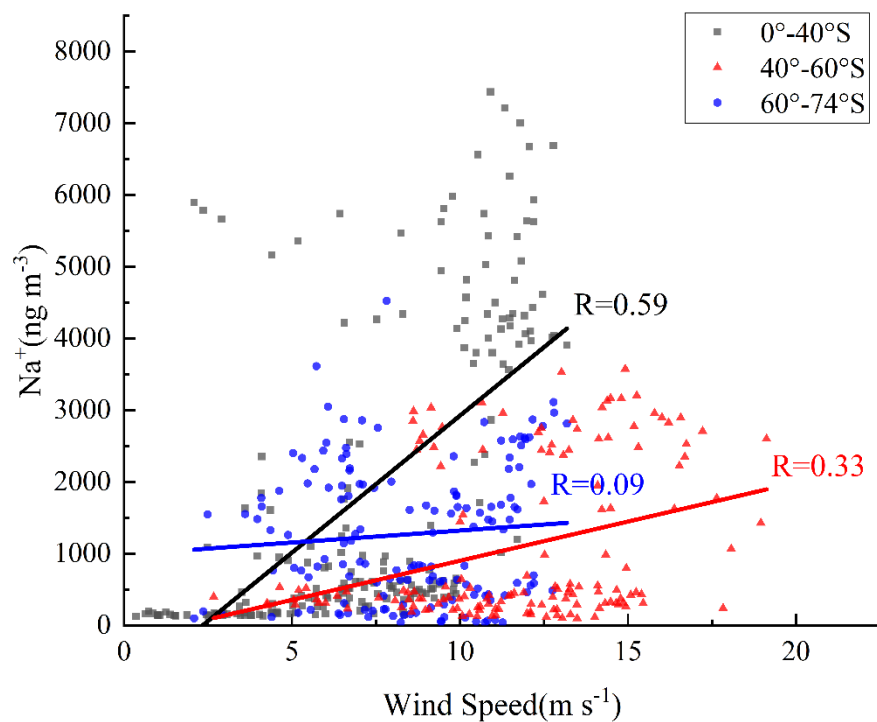
Fig. S2 Correlation between Na+ and wind speed in regions of different latitude.
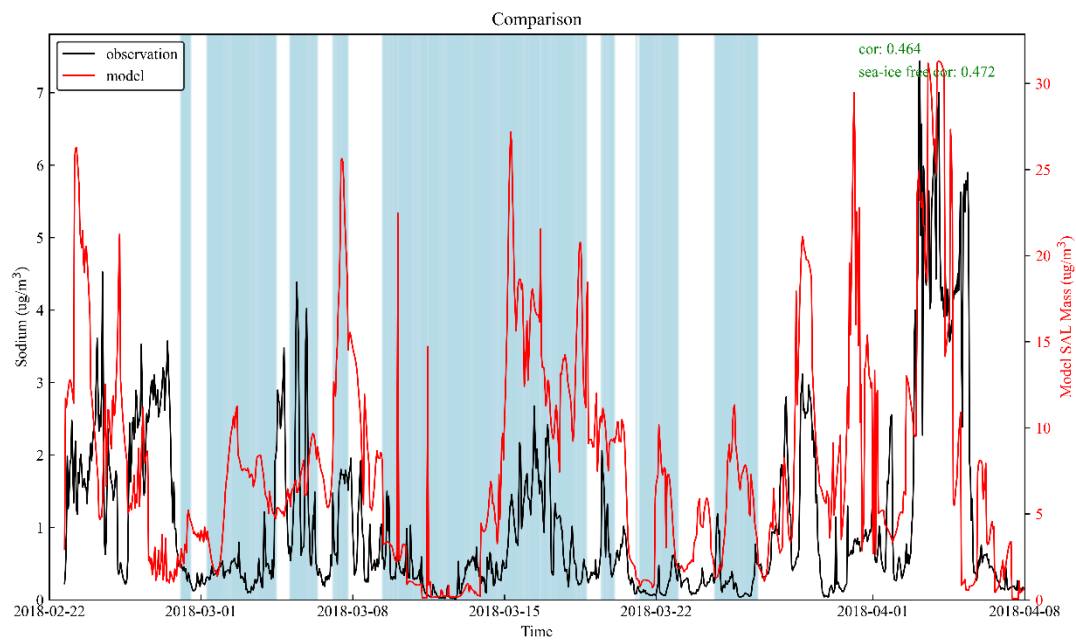
Fig. S3 The correlation between SSA mass concentrations simulated GEOS-Chem-APM

model and Na⁺ mass concentrations observed during the cruise.
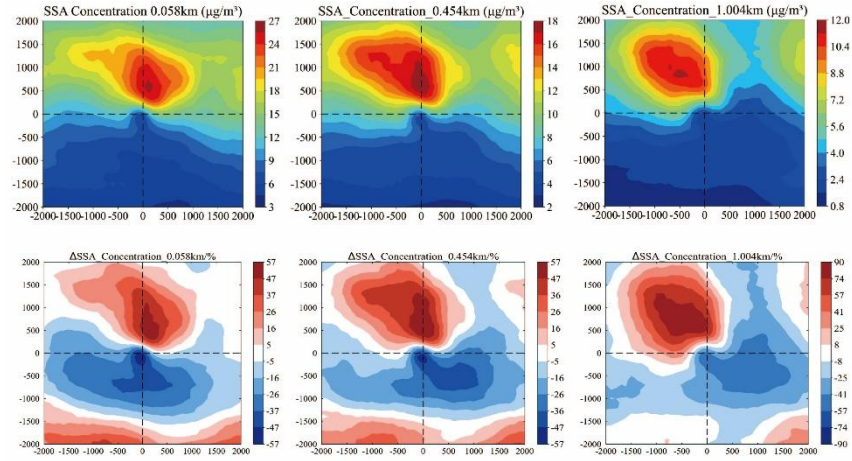
Fig. S4 ETCs composites of SSA mass concentrations at different altitude layers and anomalies relative to background.
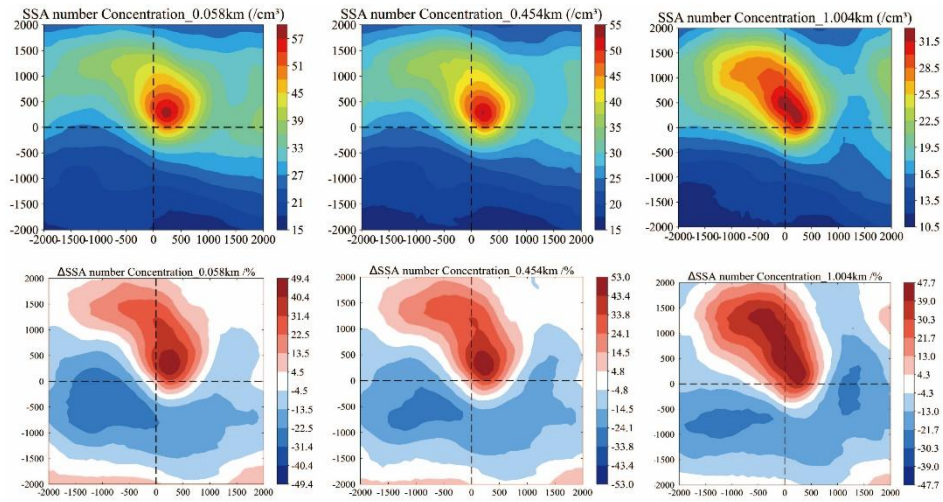
Fig. S5 ETCs composites of SSA number concentrations at different altitude layers and anomalies relative to background.
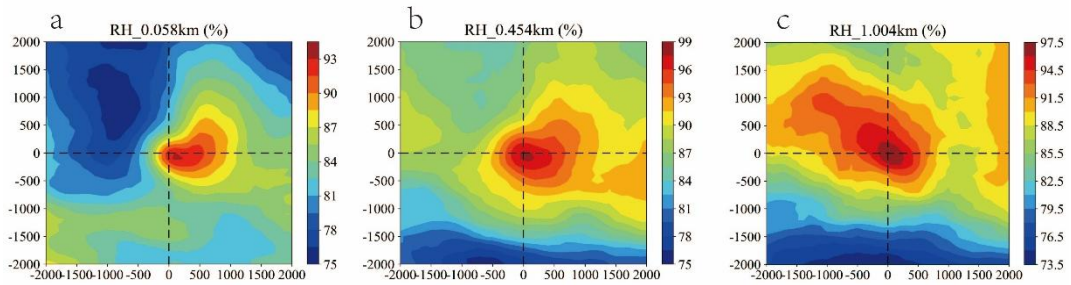
Fig. S6 The composites analysis of RH at different altitudes.
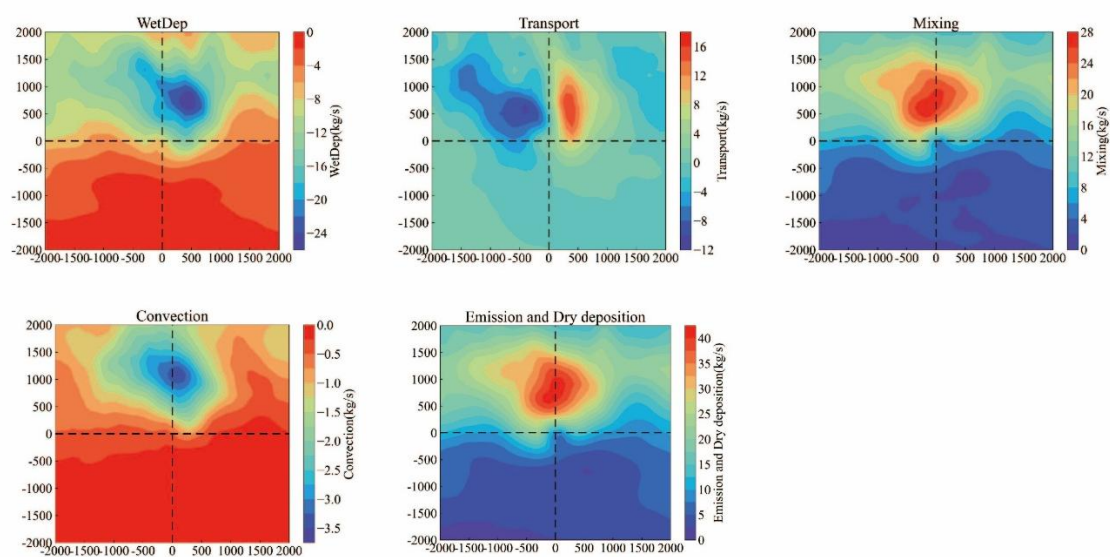
Fig. S7 The composites analysis of various physicochemical processes.