

The correlation coefficient (R), which is define as

$$R = \frac{\sum_{i=1}^n (a_i - \bar{a})(b_i - \bar{b})}{\sqrt{\sum_{i=1}^n (a_i - \bar{a})^2} \sqrt{\sum_{i=1}^n (b_i - \bar{b})^2}} , \quad (1)$$

where a and b are the different variables, and n is the number of samples.

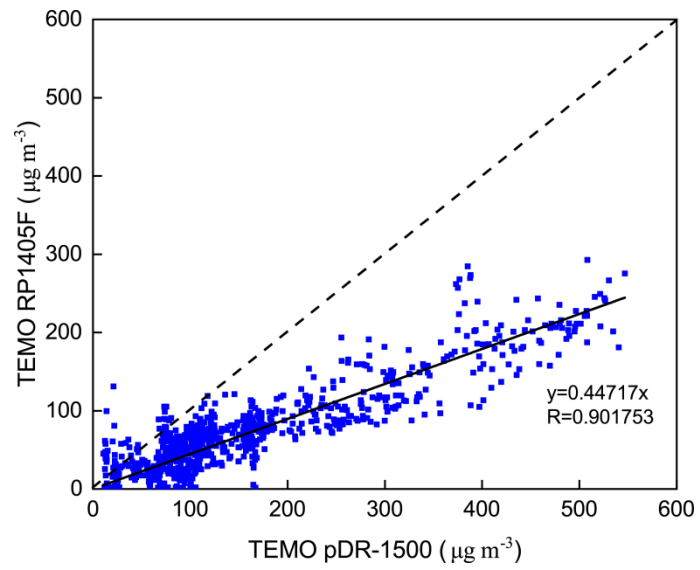


Figure S1 Comparison of PM_{2.5} concentrations measured by TEMO pDR-1500 and RP1405F.

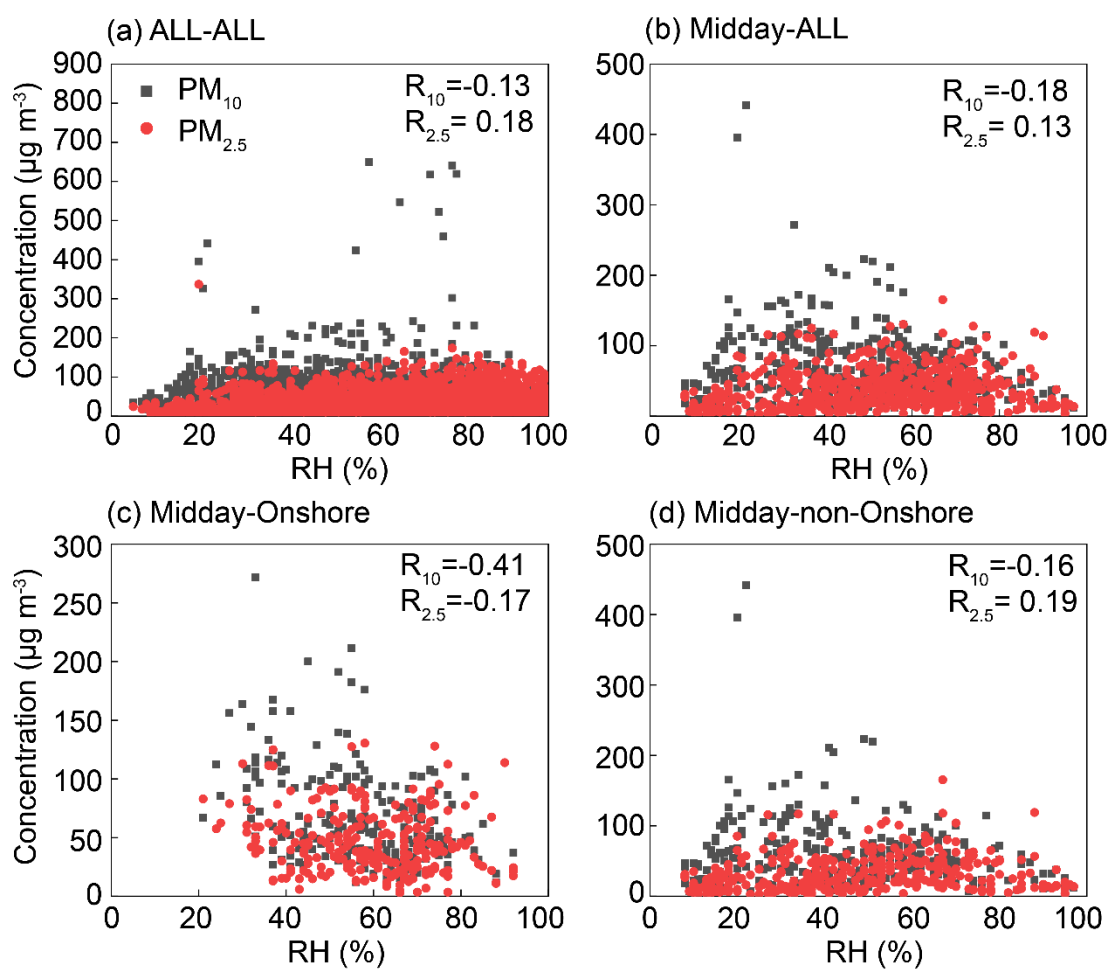


Figure S2 Scatter plots of observed surface PM₁₀ (black square) and PM_{2.5} (red circle) concentration versus relative humidity in Hangu. R_{10} and $R_{2.5}$ represented the correlation coefficients between land-sea air temperature difference and PM₁₀ and PM_{2.5} concentration, respectively. Different time and wind direction was selected as Fig.3 and 4.

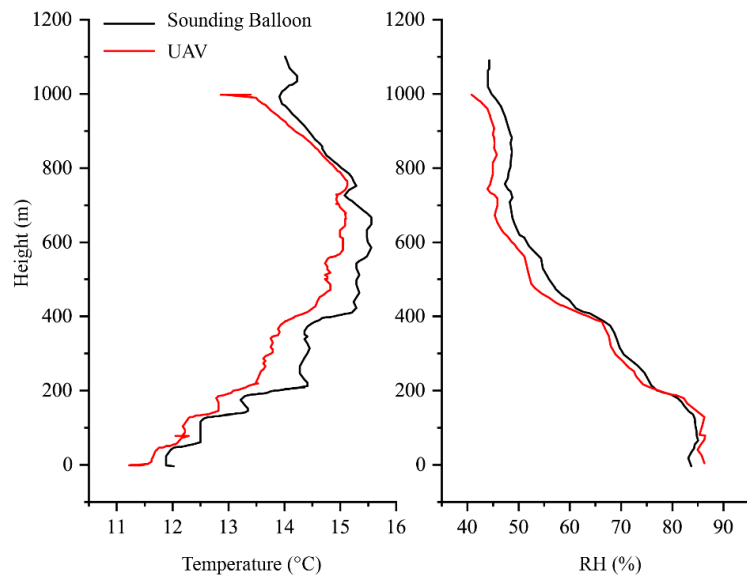


Figure. S3 Comparison of temperature and RH observed by UAV and sounding balloon

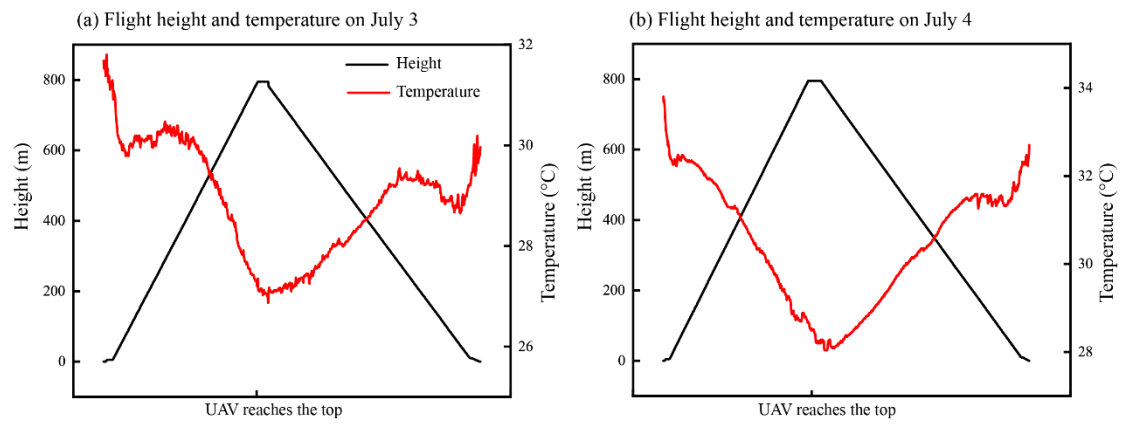


Figure S4 UAV flight height and observed temperature variations on July 3 (a) and July 4 (b)

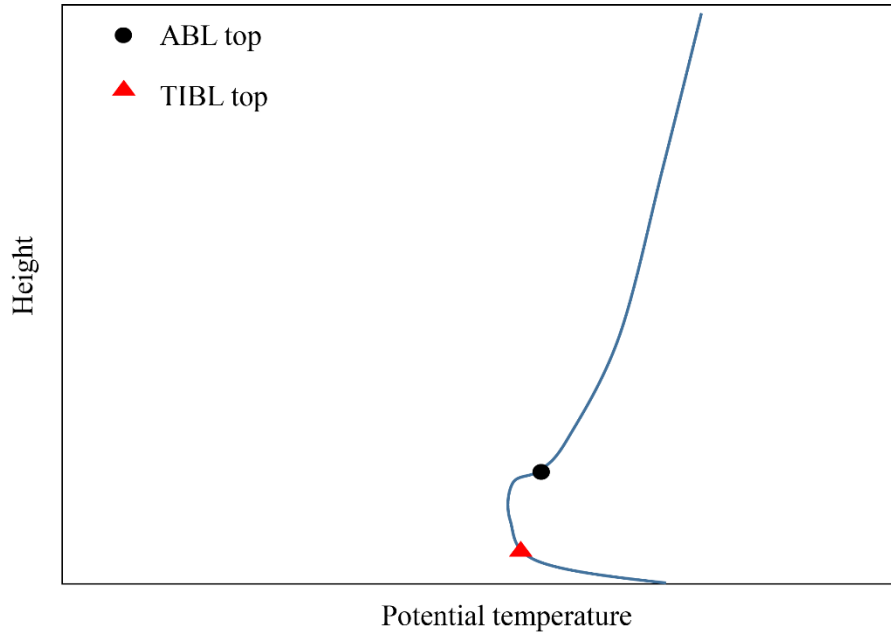


Figure S5 Schematic illustration of the ABL and TIBL

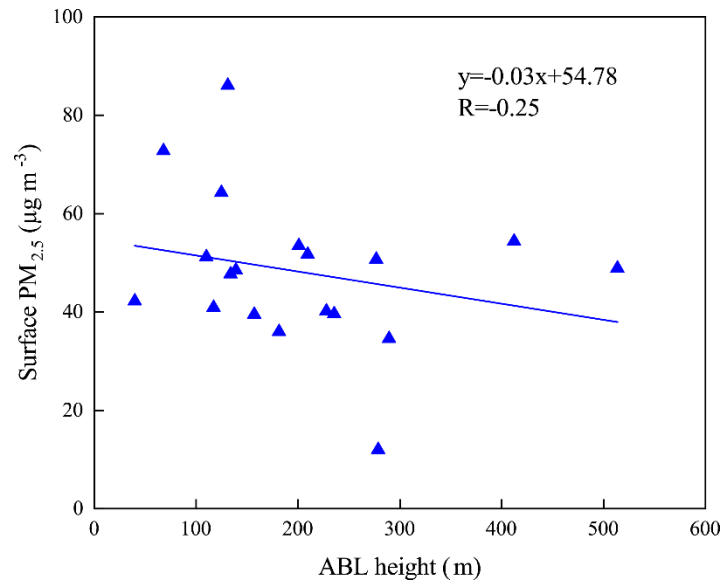


Figure S6 Scatter plots of UAV observed surface PM_{2.5} concentration and ABL height calculated by UAV observed potential temperature profile during the daytime versus land-sea air temperature difference ΔT .