

Figure S1: Hourly evolution of measured SEB fluxes and surface lowering averaged at KAN\_L for the period 01 June - 25 August 2022 (a) and at S6 for the period 12 June – 18 August 2004 (b). Periods are chosen based on available observations. PTA = Pressure transducer assembly, SR = sonic height ranger, DW = draw wire. The vertical extent of the shaded area denotes twice the standard variability per hour of day.

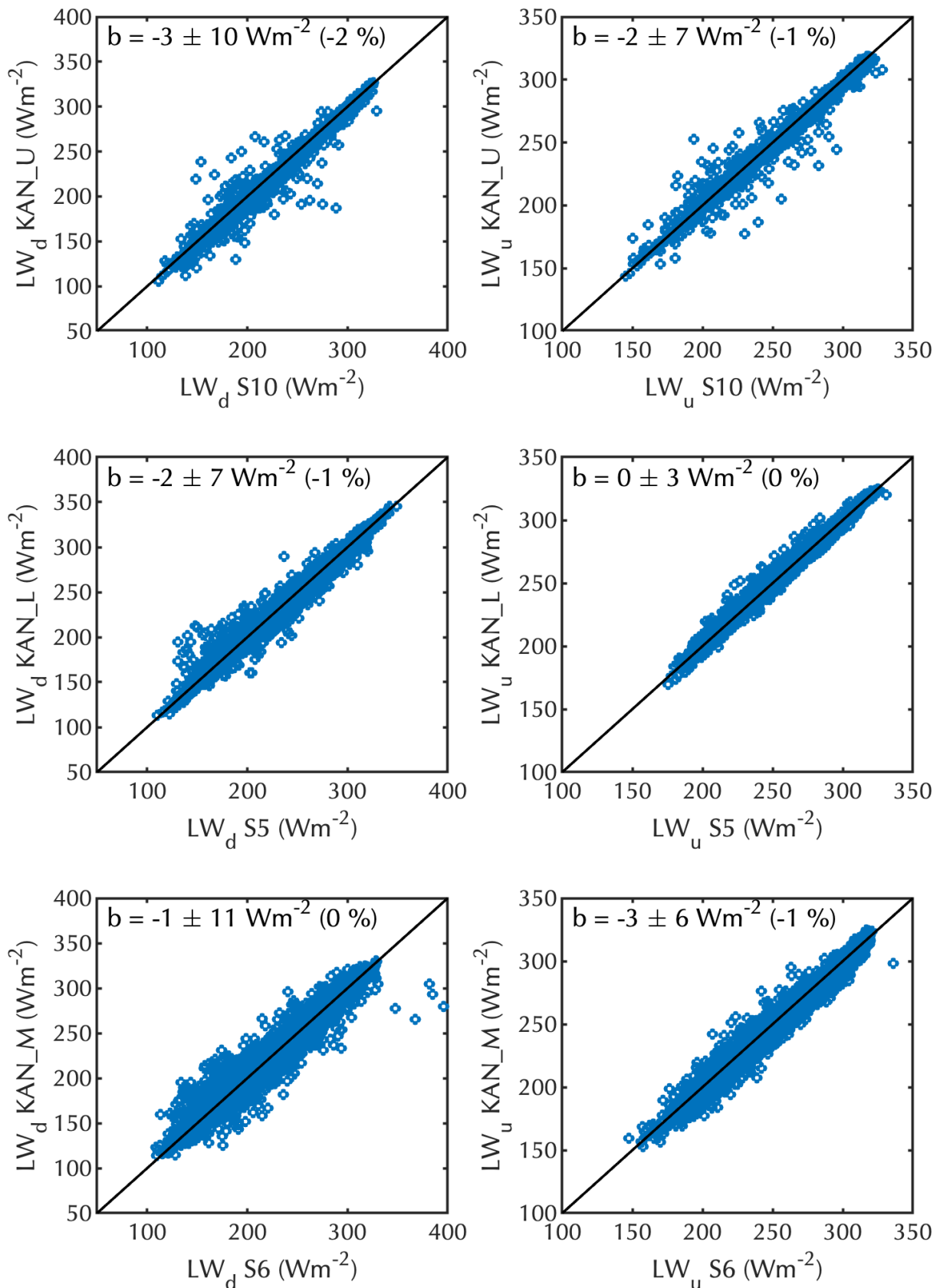


Figure S2: Comparison of daily measured downward and upward longwave fluxes between S10 and KAN\_L (top panels), S5 and KAN\_L (middle panels) and S6 and KAN\_M (bottom panels) for the entire period with available measurements.

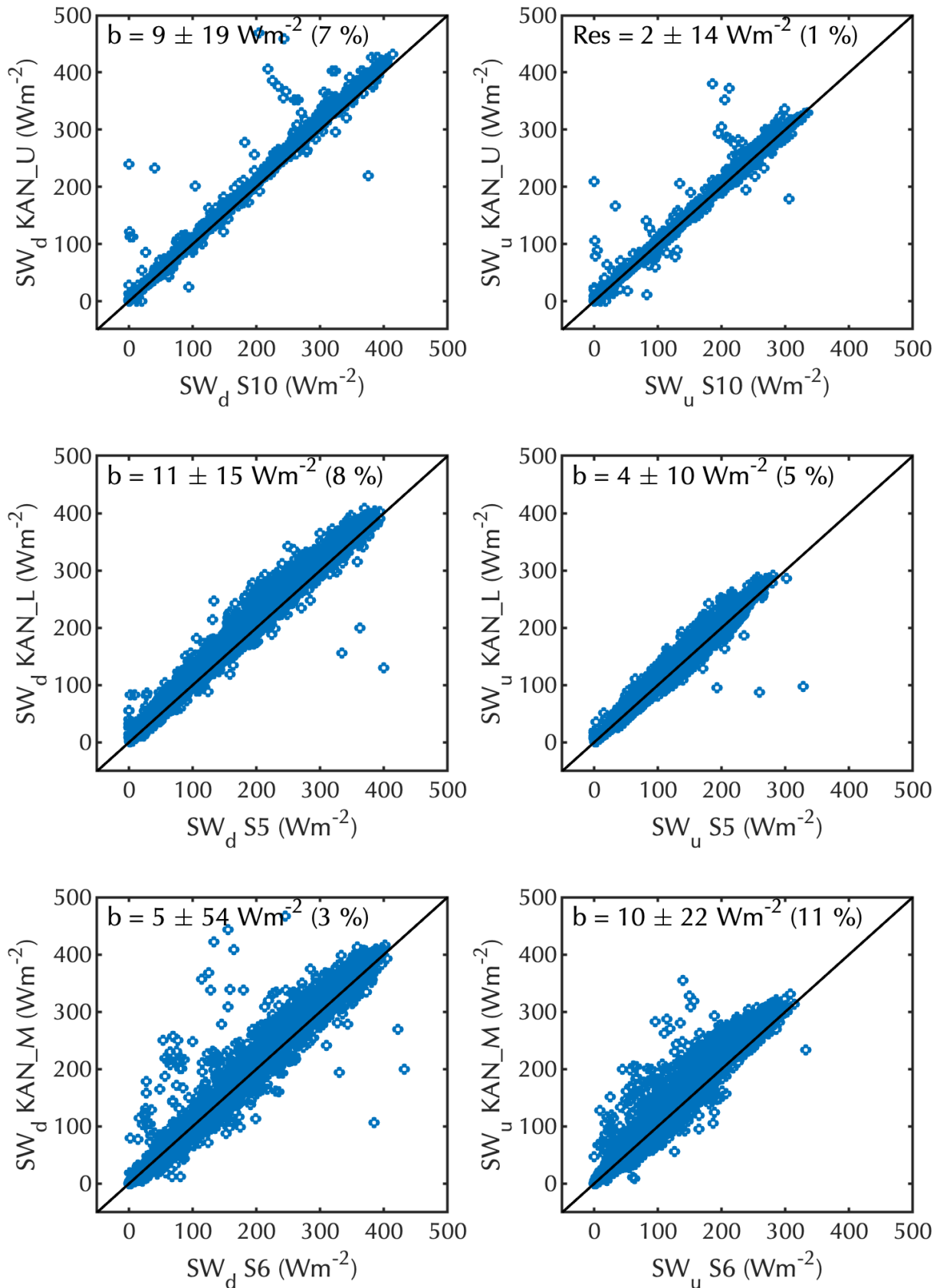


Figure S3: Comparison of daily measured downward and upward shortwave fluxes between S10 and KAN\_L (top panels), S5 and KAN\_L (middle panels) and S6 and KAN\_M (bottom panels) for the entire period with available measurements.

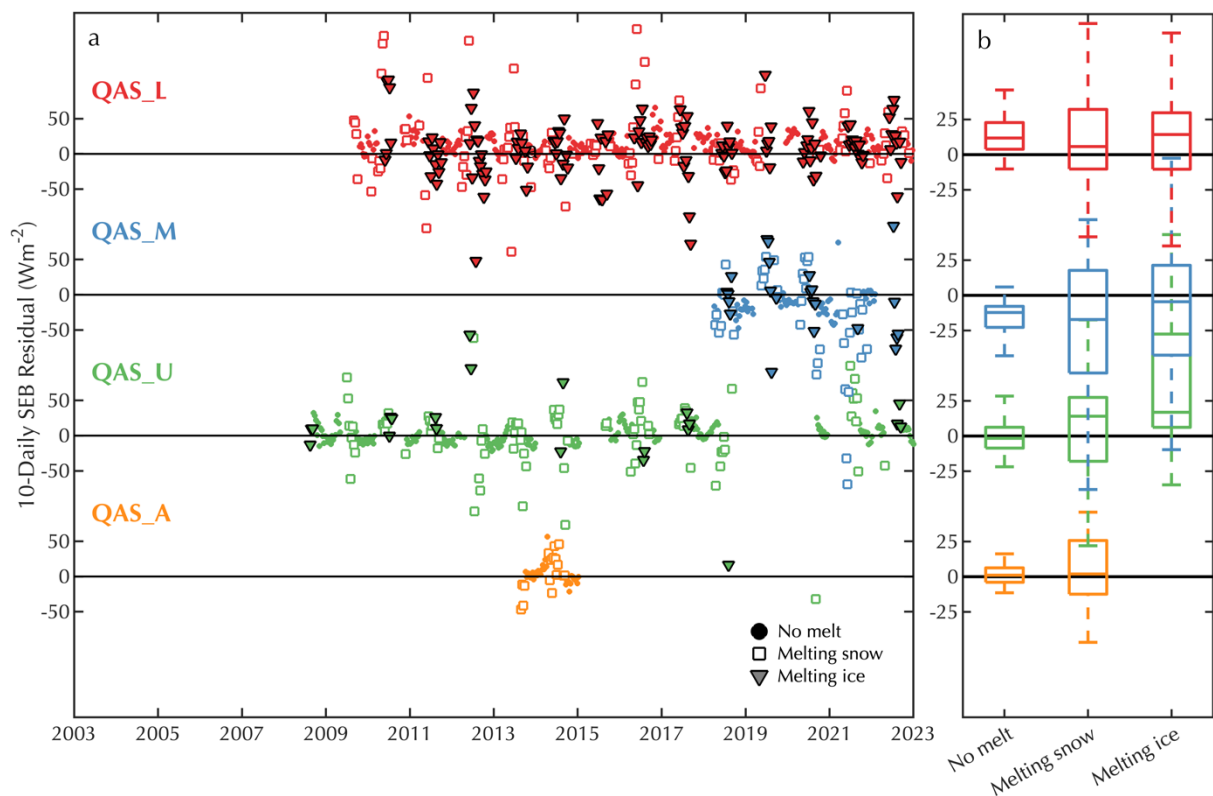


Figure S4: (a) 10-daily averaged SEB residual for each AWS on the Q-transect during the period of available AWS data. Dots are days with a non-melting surface, triangles are days with a melting ice surface only, and squares are days with a melting snow surface only. (b) boxplots containing the minimum, maximum, interquartile range and median of the 10-daily residual per station and per surface type. Averages and standard deviations are given in Table 2.

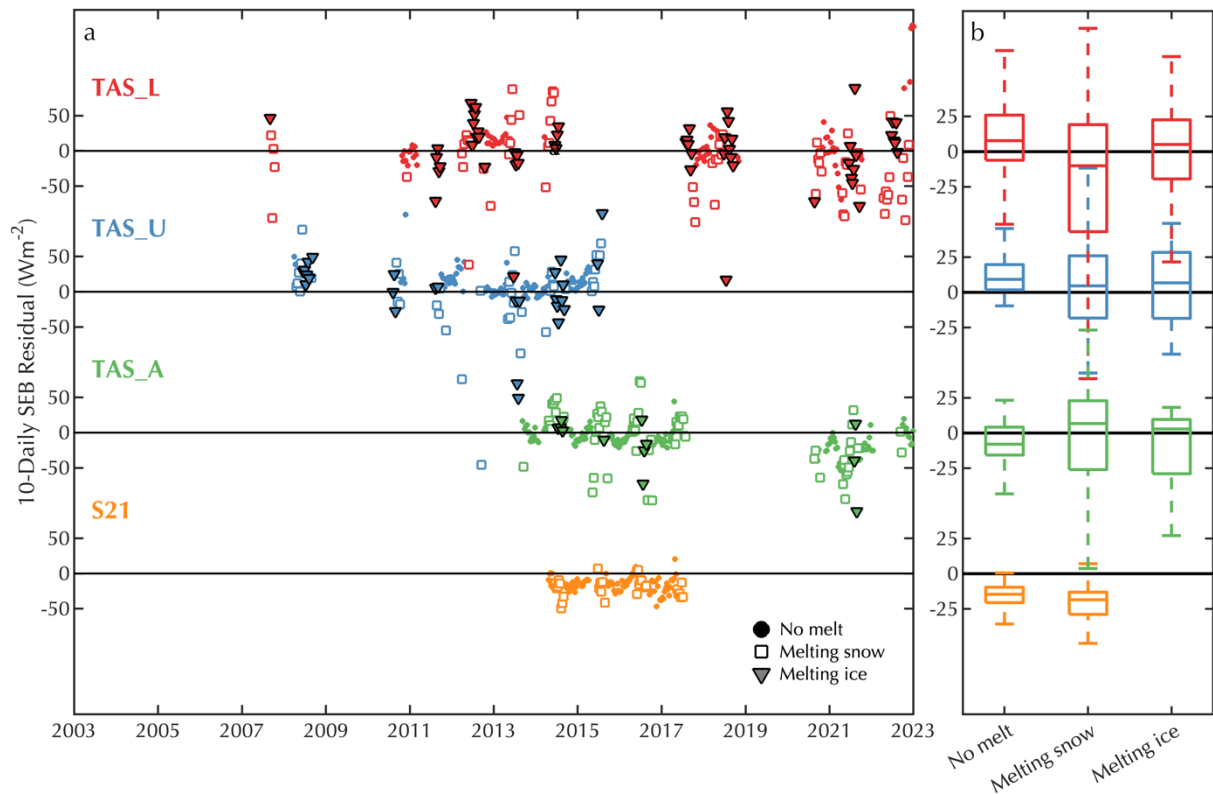


Figure S5: (a) 10-daily averaged SEB residual for each AWS in SE Greenland during the period of available AWS data. Dots are days with a non-melting surface, triangles are days with a melting ice surface only, and squares are days with a melting snow surface only. (b) boxplots containing the minimum, maximum, interquartile range and median of the 10-daily residual per station and per surface type. Averages and standard deviations are given in Table 2.

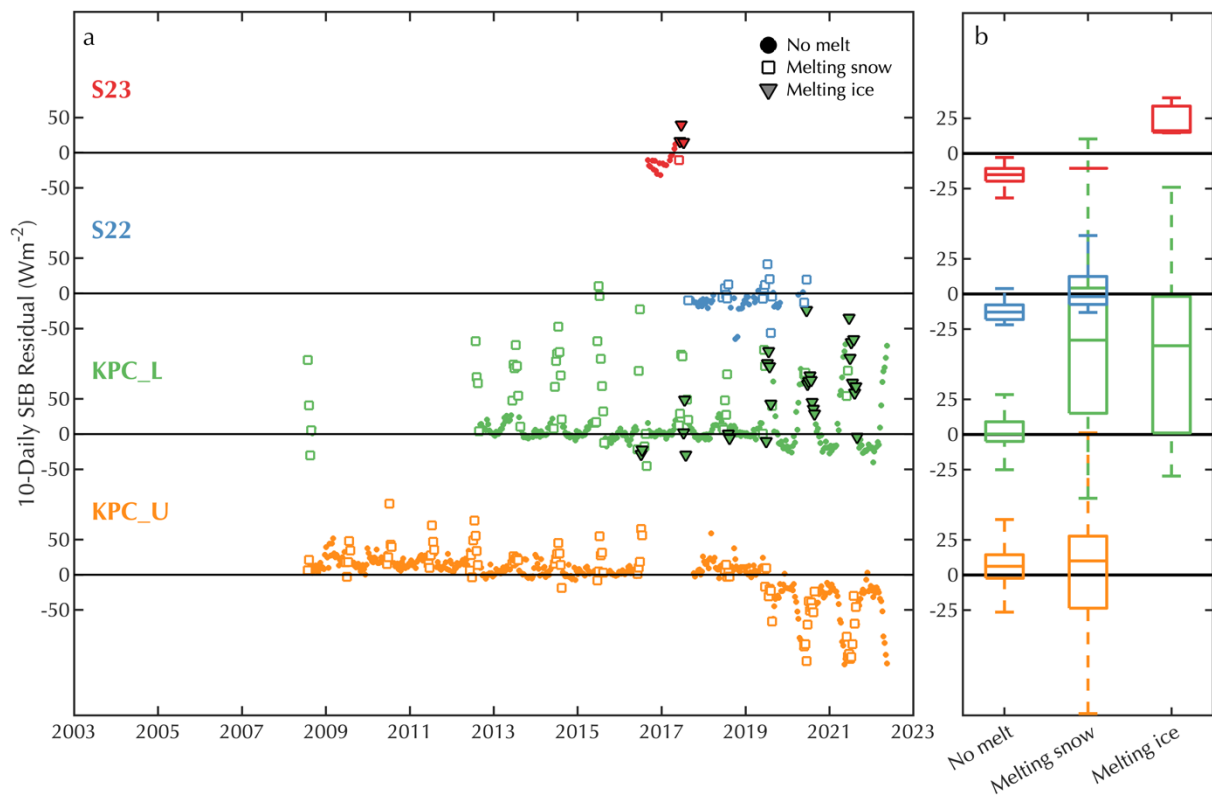


Figure S6: (a) 10-daily averaged SEB residual for each AWS in NE Greenland during the period of available AWS data. Dots are days with a non-melting surface, triangles are days with a melting ice surface only, and squares are days with a melting snow surface only. (b) boxplots containing the minimum, maximum, interquartile range and median of the 10-daily residual per station and per surface type. Averages and standard deviations are given in Table 2.

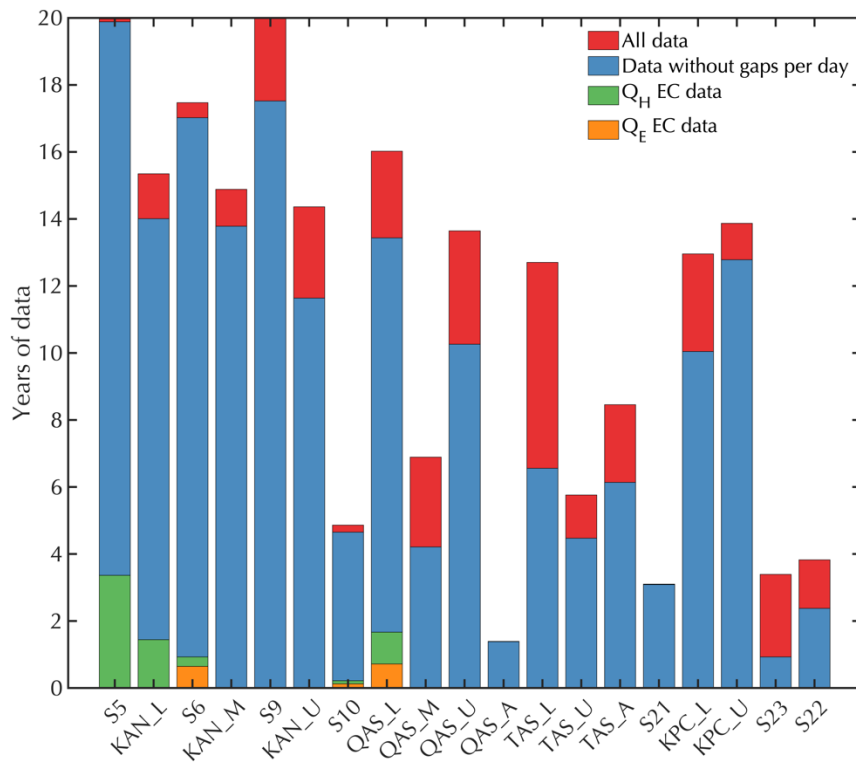


Figure S7: Number of years of AWS and EC measurement per station considered in this study. Red denotes all the data, blue the number of data with 24 hours of valid measurements per day, green the number of sensible heat flux data from eddy covariance measurements and orange the number of latent heat flux data using both eddy covariance data and open path gas analyser data.