Figure S1. Time series of 30-minute estimates for the 12 predictors. Variable name denotes, from top to bottom, air temperature (T_{air} [^{o}C]), surface temperature (T_{surf} [^{o}C]), soil temperature (T_{soil} [^{o}C]), growing degree days (GDD [^{o}C d]), soil volumetric water content (VWC [-]), vapour pressure deficit (VPD [kPa]), incoming shortwave radiation (SW$_{\mathrm{in}}$ [W m^{-2}]), incoming longwave radiation (LW$_{\mathrm{in}}$ [W m^{-2}]), surface albedo (albedo [-]), snow depth (SD [cm]), fractional snow-covered area (FSCA [-]), normalised difference vegetation index (NDVI [-])

Table S1. Fractions of weighted contributions from different nature types for both footprints separately as well as combined. Statistics represent averages over all valid CO_2 flux measurements from 2019-2021.

	Combined	East	West
Water	0.25	0.32	0.20
Other	0.02	0.00	0.04
Mountain heathlands	0.11	0.08	0.14
Lichen heathlands	0.18	0.18	0.18
Moderate snow beds	0.21	0.13	0.26
Late snow beds	0.09	0.19	0.01
Flood plains	0.03	0.03	0.03
Fens	0.11	0.07	0.14

Table S2. Mean evaluation statistics for 10 random forest regression models using different random subsets of data for training (80%) and testing (20%). Root mean square error (RMSE) values are given in the respective flux units, i.e. μmol m^{-2} s^{-1} for NEE and mmol m^{-2} s^{-1} for ET.

	Footprint	# of estimates	RMSE			R^2		
			Training	Test	All	Training	Test	All
NEE	East	10270	0.008	0.055	0.017	0.982	0.868	0.960
	West	13806	0.014	0.098	0.031	0.992	0.945	0.983
ET	East	10031	0.002	0.015	0.005	0.979	0.849	0.954
	West	12677	0.005	0.039	0.012	0.985	0.886	0.965

Table S3. Growing season statistics based on gap-filled NEE and ET fluxes of both footprints for the three years with flux measurements.

	Year	Footprint West	Footprint East
Start date	2019	25 June	18 June
	2020	30 July	18 July
	2021	25 June	20 June
End date	2019	08 September	21 September
	2020	26 September	19 September
	2021	05 September	05 September
Carbon balance [gC m^{-2}]	2019	61.9	43.7
	2020	28.4	16.6
	2021	81.4	67.7
ET loss [mm]	2019	73.0	47.7
	2020	34.4	20.9
	2021	69.0	51.8
Water use efficiency [μmol-CO$_2$ mmol-H$_2$O^{-1}]	2019	1.27	1.37
	2020	1.24	1.20
	2021	1.77	1.96
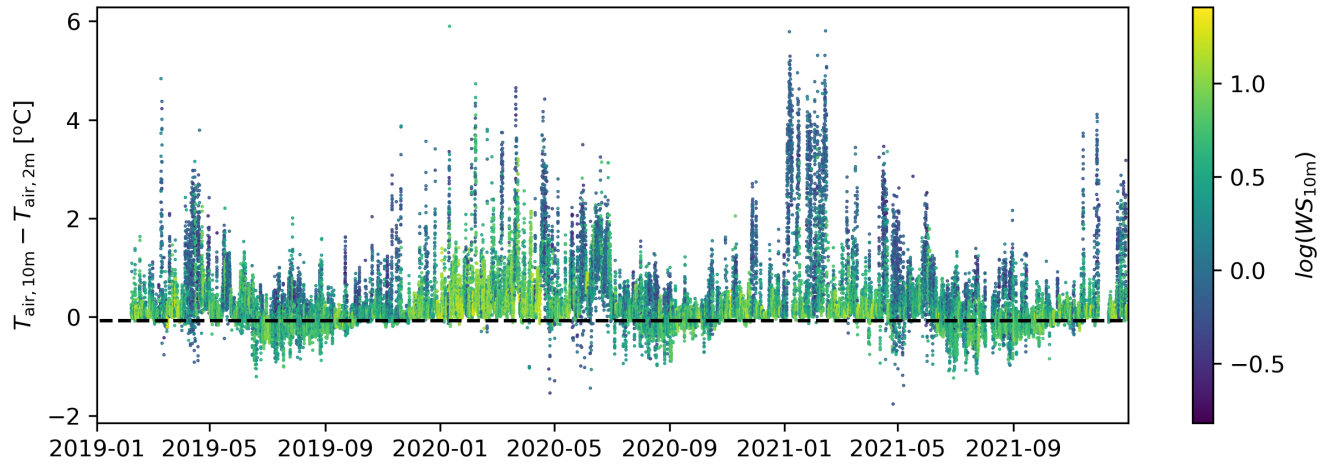
Figure S2. Time series of 30-minute estimates of air temperature differences between 10 and 2 m a.g.l. Colors indicate horizontal wind speeds at 10 m a.g.l. on a logarithmic scale. The stipulated line indicates neutral stratification.

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