

Supplementary data

Table S1. Grid cell albedo and height for the *Baresoil*, *Lowveget* and urban (*Urban0*, *Urban1*, and *Urban2*) simulations over the 20 urban flux tower sites. Albedo and height are among the variables treated with ORCHIDEE's parameter-aggregation method; accordingly, the values shown here correspond to grid cell averages rather than PFT-specific quantities.

Site	grid cell albedo baresoil (MODIS)	grid cell albedo (lowveget)	grid cell albedo urban (plumber)	grid cell height baresoil	grid cell height lowveget	grid cell height urban
AU-Preston	0.110	0.131	0.141	4.6	4.9	8.5
AU-SurreyHills	0.118	0.133	0.150	6.1	6.3	10.0
CA-Sunset	0.058	0.135	0.122	2.6	3.3	5.9
FI-Kumpula	0.112	0.204	0.208	4.7	5.2	10.5
FI-Torni	0.073	0.234	0.215	2.5	3.2	16.3
FR-Capitole	0.122	0.152	0.128	1.6	2.5	15.1
GR-Heckor	0.128	0.141	0.196	0.8	1.8	11.2
JP-Yoyogi	0.064	0.156	0.136	1.2	2.1	9.5
KR-Jungnang	0.084	0.138	0.126	0.0	1.0	8.4
KR-Ochang	0.094	0.128	0.148	4.0	4.5	7.5
MX-Escandon	0.118	0.127	0.102	1.8	2.3	10.9
NL-Amsterdam	0.096	0.142	0.106	6.4	6.7	16.1
PL-Lipowa	0.110	0.174	0.137	3.3	4.0	11.0
PL-Narutowicza	0.111	0.166	0.142	4.4	4.8	14.8
SG-TelokKurau	0.096	0.157	0.161	6.6	7.5	15.1
UK-KingsCollege	0.079	0.150	0.120	0.8	1.6	17.6
UK-Swindon	0.162	0.170	0.156	2.2	2.7	4.4
US-Baltimore	0.131	0.150	0.141	11.0	11.3	12.7
US-Minneapolis1	0.164	0.201	0.214	9.0	9.2	10.0
US-Minneapolis2	0.223	0.233	0.235	4.8	7.8	5.0
US-WestPhoenix	0.205	0.203	0.189	1.6	2.1	3.8

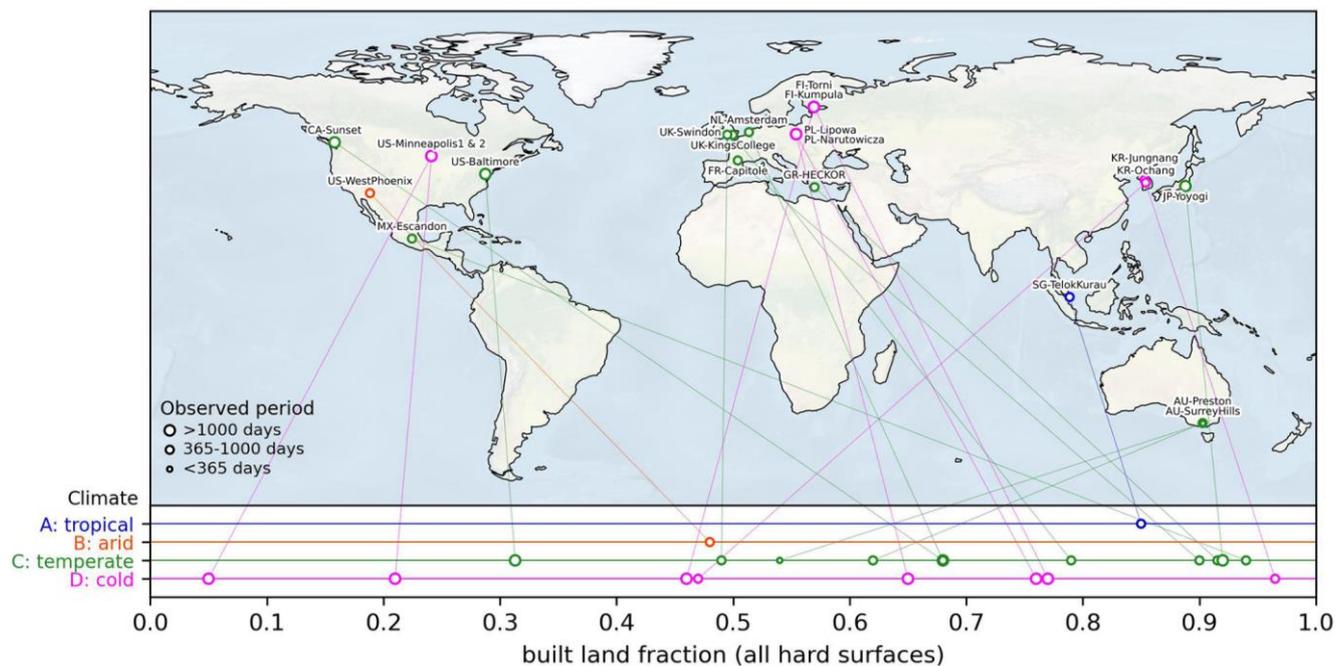


Figure S1. Location of flux tower sites in this collection. Each site Köppen–Geiger climate classification (Beck et al., 2018) and the built land fraction around the tower are indicated at the bottom of the figure. Figure from (Lipson et al., 2022).