Global long-term mapping of surface temperature shows intensified intra-city urban heat island extremes
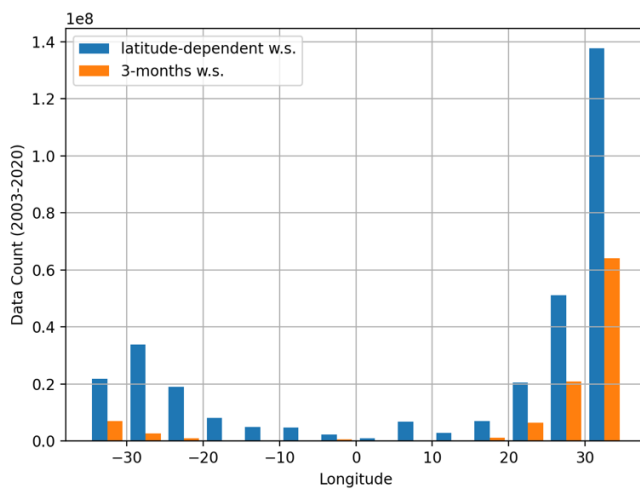
Supplementary Information

Fig. S1 | Comparison of the total number of occurrences of 3 consecutive days of observations of daily SUHI grouped by latitude, employing our definition of warm season varying with the latitude (blue bars), versus the usual 3-months definition (orange bars).
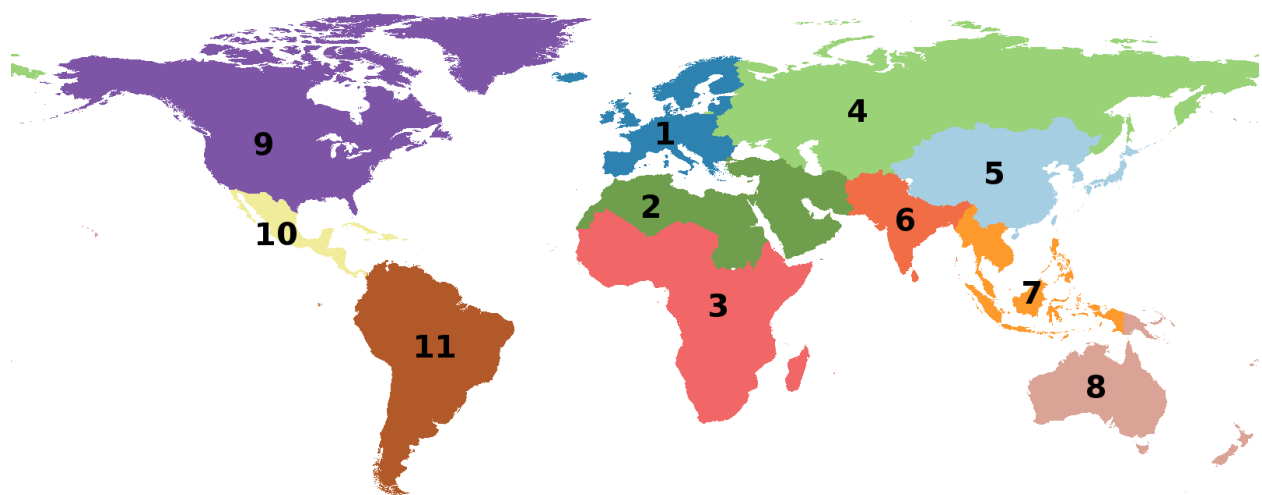

Fig. S2 | Macro-regions used for the estimation of the aggregate estimation of the trend. 1: Europe. 2: Middle East + N Africa. 3: Subsaharan Africa. 4: Russia + Ukraine + CSI. 5: Eastern Asia. 6: Southern Asia. 7: South-Eastern Asia. 8: Oceania. 9: Northern America. 10: Central America. 11: Southern America.
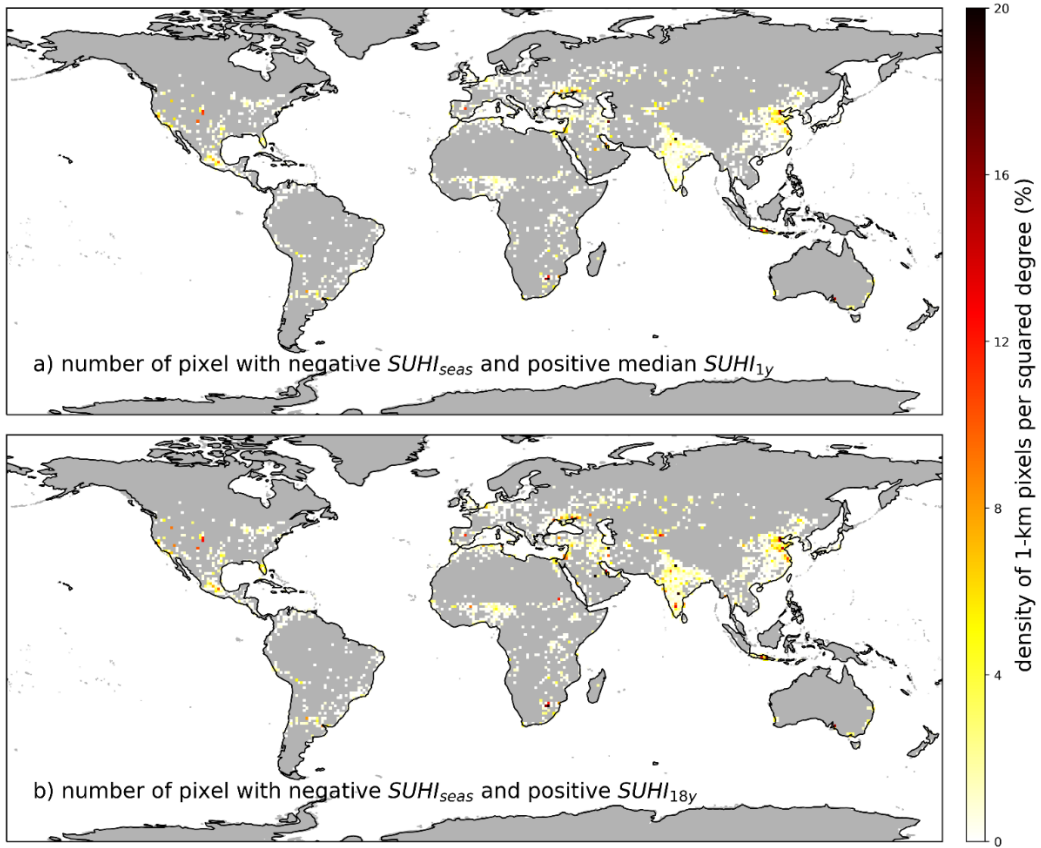
Fig. S3 | Number of 1-km pixels per squared degree experiencing (a) negative $SUHI_{seas}$ (median of annual values) and positive $SUHI_{1y}$ (median of annual values) and (b) negative $SUHI_{seas}$ and positive $SUHI_{18y}$.
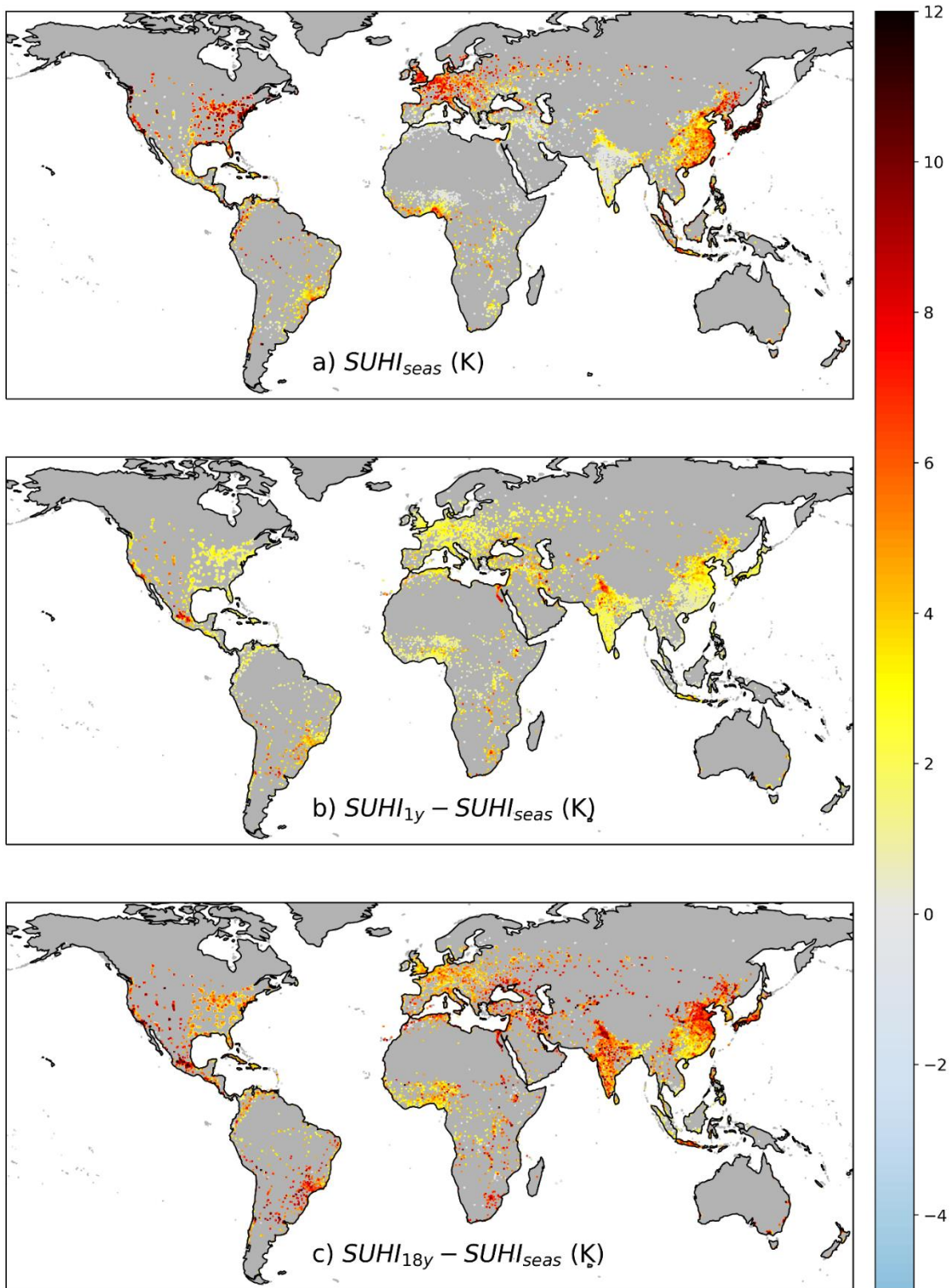
Fig. S4 | Seasonal median SUHI ($SUHI_{seas}$, a), difference between annual maxima ($SUHI_{1y}$) and $SUHI_{seas}$ (b), and between 18-year maxima ($SUHI_{18y}$) and $SUHI_{seas}$ (c).
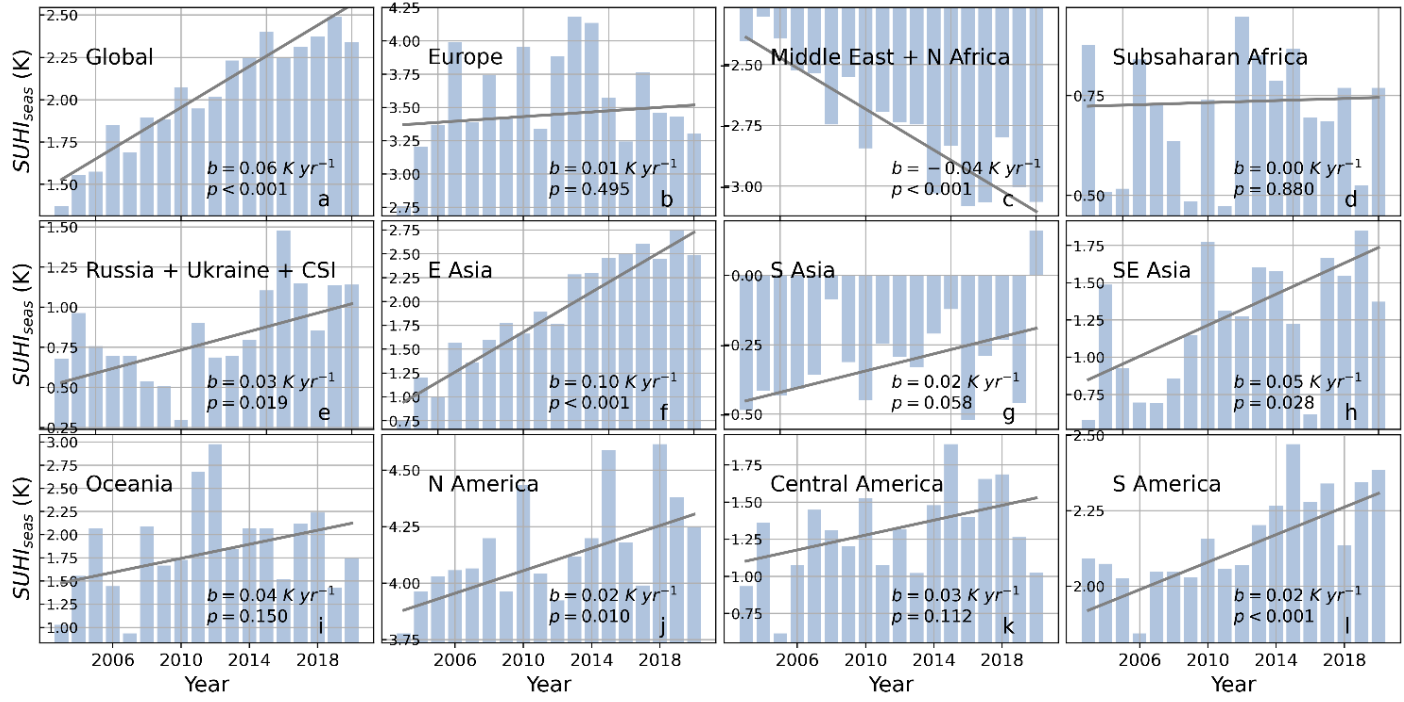
Fig. S5 | Trend of $SUHI_{seas}$ in different macro-areas. In each panel are reported: the Theil-Sen slope (b) and the p-value (p).
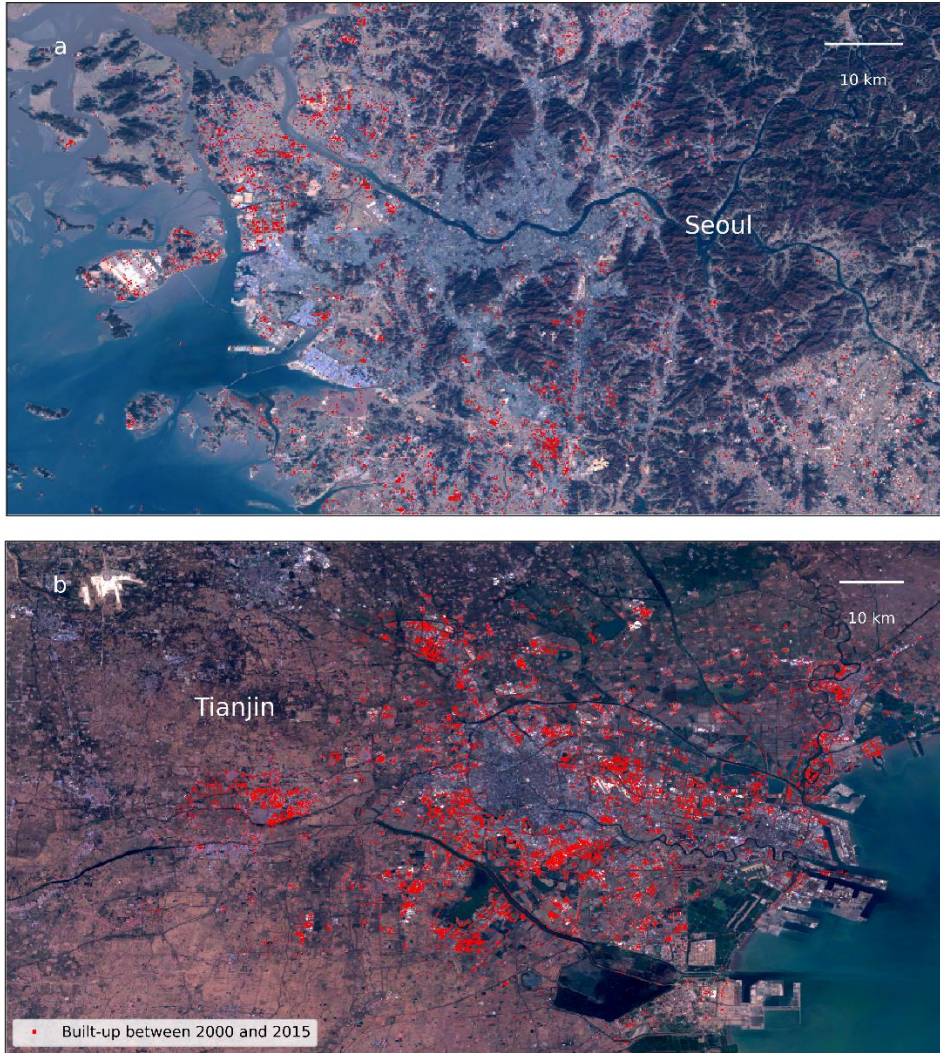
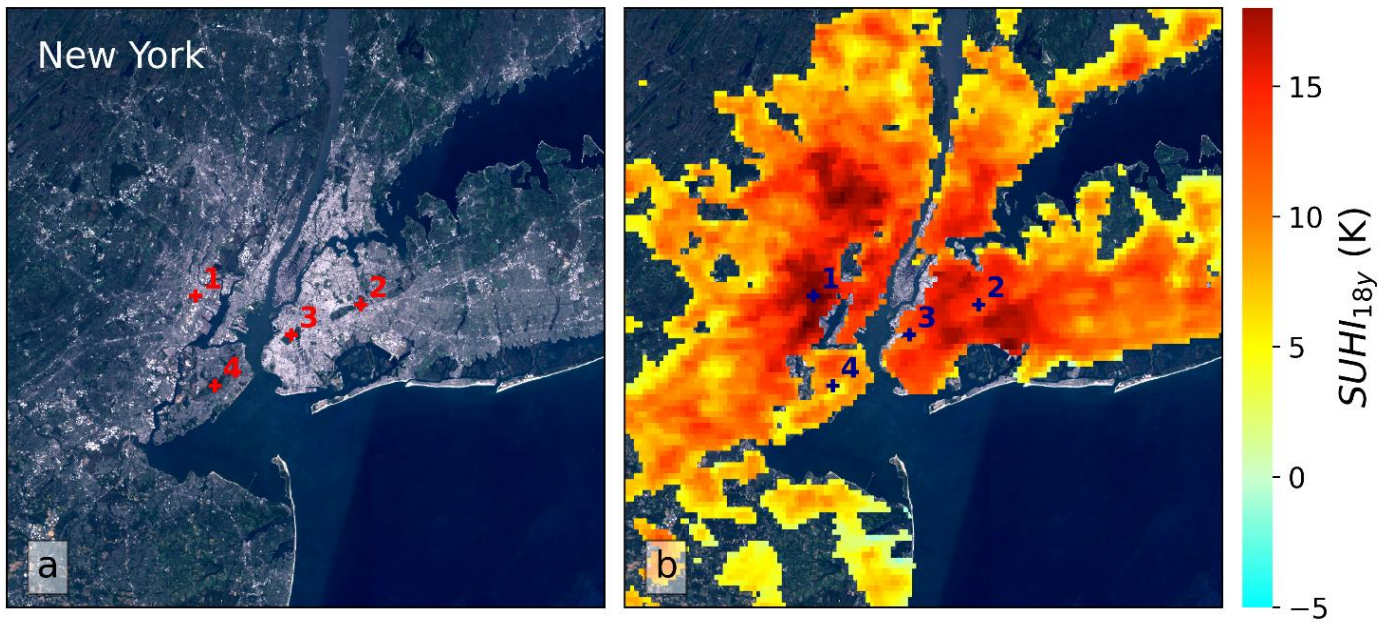**Fig. S6** | Areas built-up (in red) between 2000 and 2015 according to GHSL[1] in Seoul (a) and Tianjin (b).

Fig. S7 | Detailed view of New York. a, Sentinel-2 imagery. **b**, map of $SUHI_{18y}$. The spots highlighted in the maps are: 1) Railroad facility north of the Newark airport; 2) Forest park; 3) Prospect park, and 4) La Tourette park.
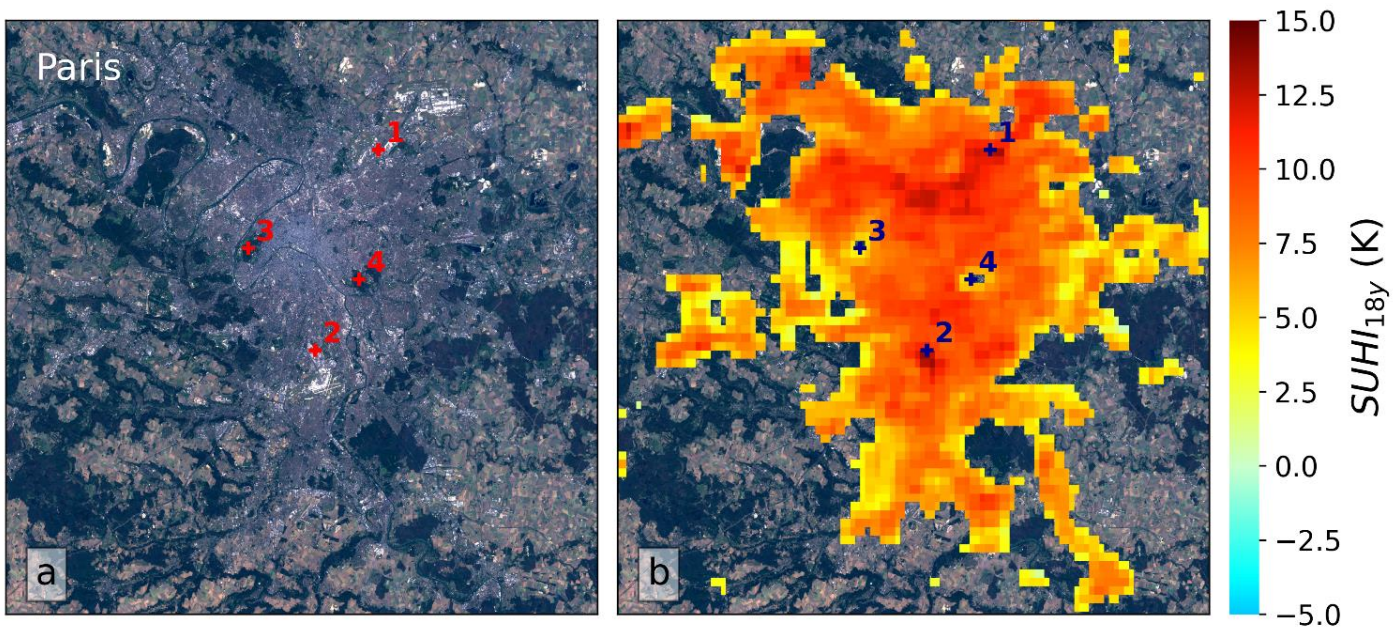

Fig. S8 | Detailed view of Paris. a, Sentinel-2 imagery. **b**, map of $SUHI_{18y}$. The spots highlighted in the maps are: 1) Industrial facilities east of Saint Denise; 2) Industrial facilities close to Chevilly Larue; and 3) Bois de Boulogne. and 4) Bois de Vincennes.
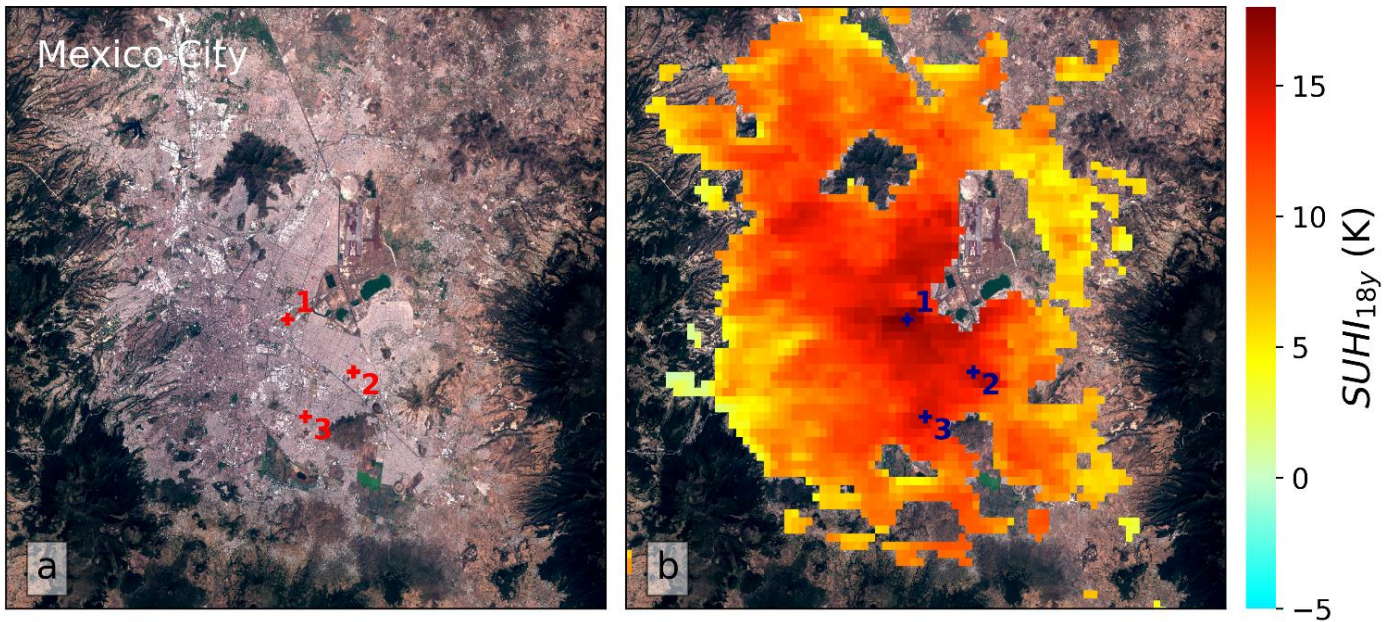
Fig. S9 | Detailed view of Mexico City. a, Sentinel-2 imagery. **b**, map of $SUHI_{18y}$. The spots highlighted in the maps are: 1) the international airport; 2) Ciudad Nezahualcóyotl; and 3) Iztapalapa.
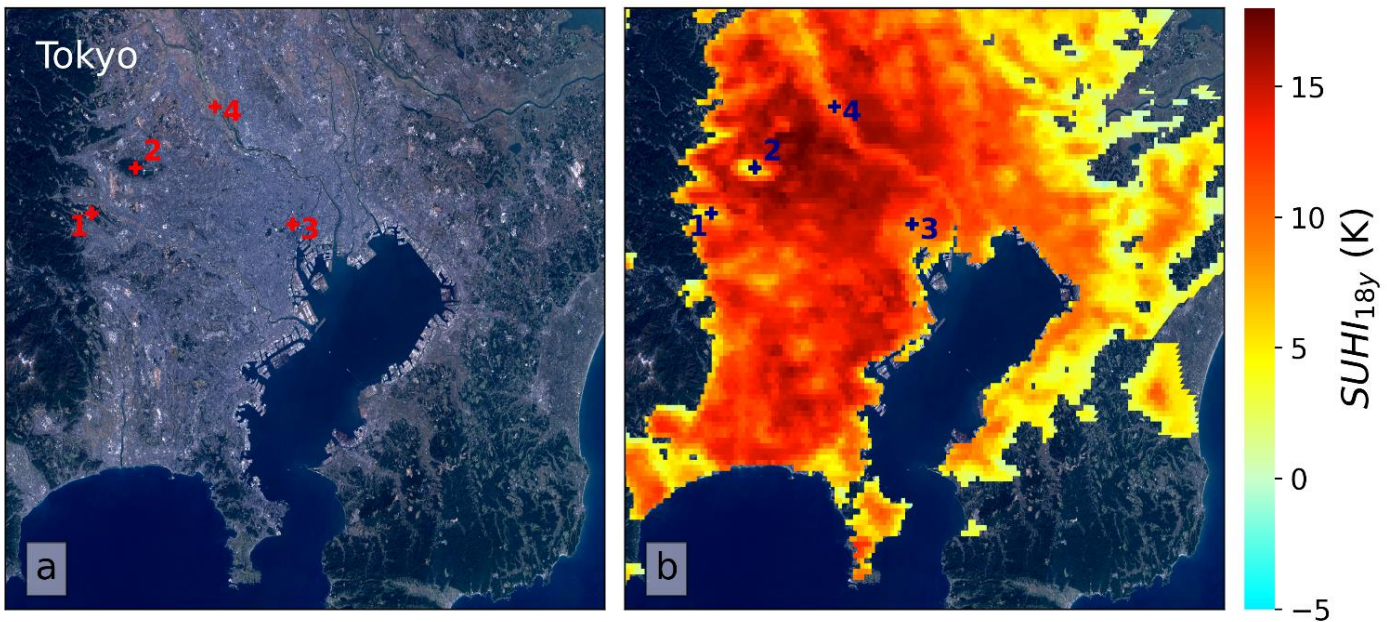

Fig. S10 | Detailed view of Tokyo. a, Sentinel-2 imagery. **b**, map of $SUHI_{18y}$. The spots highlighted in the figure are: 1) the Hachioji forest area; 2) Sayama lake; 3) Chioda city; and 4) Arakawa river.
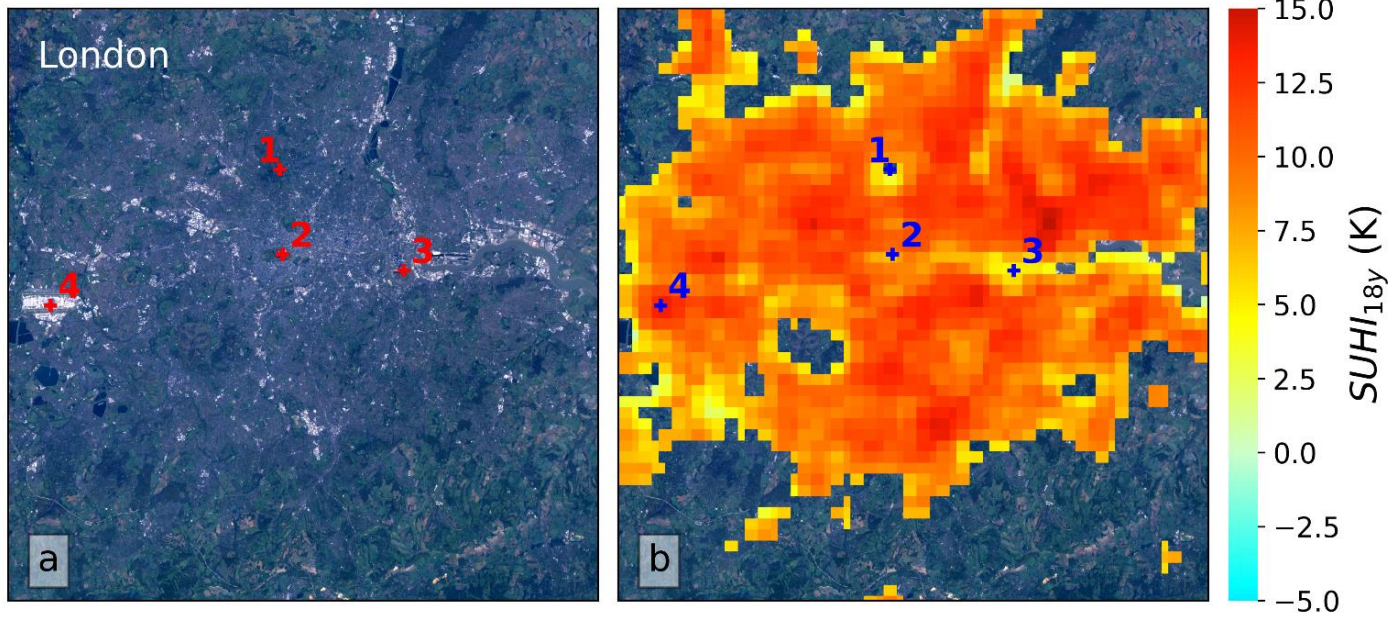
Fig. S11 | Detailed view of London. a, Sentinel-2 imagery. **b**, map of $SUHI_{18y}$. The spots highlighted in the figure are: 1) Hampstead Heath; 2) Hyde park; 3) Thames river; and 4) Heathrow airport.

Bibliography

1.   European Commission. GHSL - Global Human Settlement Layer. *Joint Research Centre (JRC)* (2015). doi:10.1039/C6FD00116E