

Review

Understanding the Links between LULC Changes and SUHI in Cities: Insights from Two-Decadal Studies (2001–2020)

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Table S1. Descriptive list of reviewed literature sorted chronologically based on year of publication.

	Author(s) & YoP	Title	Study Area	Climate	Data Sources	Factors Contributing to SUHI
1	Lo and Quattrochi 2003	Land-use and land-cover change, urban heat island phenomenon, and health implications	Atlanta United States North America	Temperate (Cfa)	Landsat (MSS & TM)	Inter-annual variations; Seasonal variations; LULC types; LULC patterns; Biophysical; Topography; Socioeconomic; Others
2	Chen et al. 2006	Remote sensing image-based analysis of the relationship between urban heat island and land use/cover changes	Shenzhen China Asia	Temperate (Cwa)	Landsat (TM & ETM+) IKONOS	Inter-annual variations; Seasonal variations; LULC types; LULC patterns; Biophysical; PDENS; Others
3	Zhang et al. 2009	Bi-temporal characterization of land surface temperature in relation to impervious surface area, NDVI and NDBI, using a sub-pixel image analysis	Fuzhou China Asia	Temperate (Cfa)	Landsat (TM & ETM+) IKONOS	Inter-annual variations; Seasonal variations; LULC types; LULC patterns; Biophysical
4	Kant et al. 2009	Satellite-based analysis of the role of land use/land cover and vegetation density on surface temperature regime of Delhi, India	Delhi India Asia	Arid (BSh)	ASTER	Inter-annual variations; Day/Night variations; LULC types; LULC patterns
5	Amiri et al. 2009	Spatial-temporal dynamics of land surface temperature in relation to fractional vegetation cover and land use/cover in the Tabriz urban area, Iran	Tabriz Iran Asia	Arid (BSk)	Landsat (TM & ETM+)	Inter-annual variations; LULC types; LULC patterns
6	Li et al. 2009	Remote sensing evaluation of urban heat island and its spatial pattern of the Shanghai metropolitan area, China	Shanghai China Asia	Temperate (Cfa)	Landsat (TM)	Inter-annual variations; Seasonal variations; LULC types; LULC patterns; Biophysical; Landscape
7	Hu and Jia 2010	Influence of land use change on urban heat island derived from multi-sensor data	Guangzhou China Asia	Temperate (Cwa)	Landsat (TM & ETM+) MODIS	Inter-annual variations; LULC types; LULC patterns; Biophysical

8	Cai et al. 2011	Monitoring of urban heat island effect in Beijing combining ASTER and TM data	Beijing China Asia	Continental (Dwa)	Landsat (TM) ASTER	Inter-annual variations; Seasonal variations; LULC types; LULC patterns
9	Li et al. 2011	Impacts of landscape structure on surface urban heat islands: A case study of Shanghai, China	Shanghai China Asia	Temperate (Cfa)	Landsat (ETM+)	Inter-annual variations; Seasonal variations; LULC types; LULC patterns; Biophysical; PDENS; Socioeconomic; Landscape; Others
10	Zhou and Wang 2011	Dynamics of Land Surface Temperature in Response to Land-Use/Cover Change	Kunming China Asia	Temperate (Cwb)	Landsat (TM)	Inter-annual variations; Seasonal variations; LULC types; LULC patterns; Biophysical
11	Apolonio Callejas et al. 2011	Relationship between land use/cover and surface temperatures in the urban agglomeration of Cuiaba-Varzea Grande, Central Brazil	Cuiaba & Varzea Grande Brazil South America	Tropical (Aw)	Landsat (TM) Quickbird	Inter-annual variations; LULC types; LULC patterns
12	Xiong et al. 2012	The Impacts of Rapid Urbanization on the Thermal Environment: A Remote Sensing Study of Guangzhou, South China	Guangzhou China Asia	Temperate (Cwa)	Landsat (TM & ETM+) SPOT	Inter-annual variations; Seasonal variations; LULC types; LULC patterns; Biophysical; PDENS; Socioeconomic
13	Li et al. 2012	Monitoring patterns of urban heat islands of the fast-growing Shanghai metropolis, China: Using time-series of Landsat TM/ETM+ data	Shanghai China Asia	Temperate (Cfa)	Landsat (TM & ETM+)	Inter-annual variations; Seasonal variations; LULC types; LULC patterns; Biophysical; PDENS; Others
14	Chen et al. 2012	The influence of socioeconomic and topographic factors on nocturnal urban heat islands: A case study in Shenzhen, China	Shenzhen China Asia	Temperate (Cwa)	Landsat (TM) ASTER	Day/Night variations; LULC types; LULC patterns; Topography; PDENS; Others
15	Cui and Shi 2012	Urbanization and its environmental effects in Shanghai, China	Shanghai China Asia	Temperate (Cfa)	MODIS	Inter-annual variations; Seasonal variations; LULC types; LULC patterns; Biophysical; PDENS; Socioeconomic; Others

16	Dobrovolný 2013	The surface urban heat island in the city of Brno (Czech Republic) derived from land surface temperatures and selected reasons for its spatial variability	Brno Czech Republic Europe	Continental (Dfb)	Landsat (TM & ETM+)	Inter-annual variations; LULC types; LULC patterns; Biophysical; Topography; PDENS; Socioeconomic; Others
17	Meng and Liu 2013	Remote-sensing image-based analysis of the patterns of urban heat islands in rapidly urbanizing Jinan, China	Jinan China Asia	Continental (Dwa)	Landsat (TM & ETM+)	Inter-annual variations; Seasonal variations; LULC types; LULC patterns; Biophysical; PDENS; Socioeconomic
18	Mallick et al. 2013	Modeling urban heat islands in heterogeneous land surface and its correlation with impervious surface area by using night-time ASTER satellite data in highly urbanizing city, Delhi-India	Delhi India Asia	Arid (BSh)	Landsat (ETM+) ASTER	Inter-annual variations; Day/Night variations; LULC types; LULC patterns; PDENS
19	Zhang et al. 2013	Analysis of land use/land cover change, population shift, and their effects on spatiotemporal patterns of urban heat islands in metropolitan Shanghai, China	Shanghai China Asia	Temperate (Cfa)	Landsat (TM & ETM+)	Inter-annual variations; Seasonal variations; LULC types; LULC patterns; PDENS; Others
20	Lucena et al. 2013	Urban climate and clues of heat island events in the metropolitan area of Rio de Janeiro	Rio de Janeiro Brazil South America	Tropical (Am)	Landsat (TM)	Inter-annual variations; LULC types; LULC patterns
21	Ding and Shi 2013	Land-use/land-cover change and its influence on surface temperature: a case study in Beijing City	Beijing China Asia	Continental (Dwa)	Landsat (TM & ETM+) Quickbird	Inter-annual variations; Seasonal variations; LULC types; LULC patterns
22	Senanayake et al. 2013	Remote sensing based analysis of urban heat islands with vegetation cover in Colombo city, Sri Lanka using Landsat-7 ETM+ data	Colombo Sri Lanka Asia	Tropical (Af)	Landsat (ETM+)	Inter-annual variations; Seasonal variations; LULC types; LULC patterns; Biophysical; Others
23	Sharma and Joshi 2014	Identifying seasonal heat islands in urban settings of Delhi (India) using remotely sensed data - An anomaly based approach	Delhi India Asia	Arid (BSh)	Landsat (TM)	Inter-annual variations; Seasonal variations; LULC types; LULC patterns
24	Wu et al. 2014	Assessing the effects of land use spatial structure on urban heatislands using HJ-	Wuhan China Asia	Temperate (Cfa)	HJ-1B	Inter-annual variations; LULC types; LULC patterns; Biophysical; Landscape; Others

1B remote sensing imagery in Wuhan, China						
25	Effat and Hassan 2014	Change detection of urban heat islands and some related parameters using multi-temporal Landsat images; a case study for Cairo city, Egypt	Cairo Egypt Africa	Arid (BWh)	Landsat (TM & ETM+)	Inter-annual variations; LULC types; LULC patterns; Biophysical; Others
26	Yusuf et al. 2014	Spatio-temporal Assessment of Urban Heat Island Effects in Kuala Lumpur Metropolitan City Using Landsat Images	Kuala Lumpur Malaysia Asia	Tropical (Af)	Landsat (TM & ETM+)	Inter-annual variations; LULC types; LULC patterns; Biophysical
27	Singh et al. 2014	Inter-seasonal variations of surface temperature in the urbanized environment of Delhi using landsat thermal data	Delhi India Asia	Arid (BSh)	Landsat (TM)	Inter-annual variations; Seasonal variations; LULC types; LULC patterns; Landscape
28	Feng et al. 2014	Using land use change trajectories to quantify the effects of urbanization on urban heat island	Xiamen China Asia	Temperate (Cfa)	Landsat (TM & ETM+)	Inter-annual variations; LULC types; LULC patterns; Others
29	Li et al. 2014	Impact of land cover and population density on land surface temperature: case study in Wuhan, China	Wuhan China Asia	Temperate (Cfa)	Landsat (TM)	Inter-annual variations; LULC types; LULC patterns; Biophysical; PDENS
30	Odindi et al. 2015	Assessing the value of urban green spaces in mitigating multi-seasonal urban heat using MODIS land surface temperature (LST) and landsat 8 data	Ethekwini SouthAfrica Africa	Temperate (Cfa)	Landsat (TIRS/OLI) MODIS	Inter-annual variations; Seasonal variations; LULC types; LULC patterns; Biophysical; Landscape
31	Lu et al. 2015	The Effect of Urban Expansion on Urban Surface Temperature in Shenyang, China: an Analysis with Landsat Imagery	Shenyang China Asia	Continental (Dwa)	Landsat (TM & ETM+)	Inter-annual variations; LULC types; LULC patterns
32	Rasul et al. 2015	Spatial variation of the daytime Surface Urban Cool Island during the dry season in Erbil, Iraqi Kurdistan, from Landsat 8	Erbil Iraq Asia	Temperate (Csa)	Landsat (TIRS/OLI)	Inter-annual variations; LULC types; LULC patterns; Biophysical

33	Rotem-Mindali et al. 2015	The role of local land-use on the urban heat island effect of Tel Aviv as assessed from satellite remote sensing	Tel Aviv Israel Asia	Temperate (Csa)	Landsat MODIS	Inter-annual variations; LULC types; LULC patterns; Biophysical
34	Wang et al. 2016	Spatio-temporal modeling of the urban heat island in the Phoenix metropolitan area: Land use change implications	Phoenix United States North America	Arid (BWh)	Landsat (TM & TIRS/OLI) MODIS	Inter-annual variations; LULC types; LULC patterns; Biophysical
35	Amanollahi et al. 2016	Urban heat evolution in a tropical area utilizing Landsat imagery	Kuala Lumpur Malaysia Asia	Tropical (Af)	Landsat (TM & ETM+)	Inter-annual variations; LULC types; LULC patterns; Topography; Others
36	Cai et al. 2016	Quantifying the Impact of Land use/Land Cover Changes on the Urban Heat Island: A Case Study of the Natural Wetlands Distribution Area of Fuzhou City, China	Fuzhou China Asia	Temperate (Cfa)	Landsat (TM)	Inter-annual variations; LULC types; LULC patterns; Biophysical; PDENS; Others
37	Kikon et al. 2016	Assessment of urban heat islands (UHI) of Noida City, India using multi-temporal satellite data	Noida India Asia	Arid (BSh)	Landsat (ETM+ & TIRS/OLI)	Inter-annual variations; LULC types; LULC patterns; Biophysical; Others
38	Deilami et al. 2016	Correlation or causality between land cover patterns and the urban heat island effect? Evidence from Brisbane, Australia	Brisbane Australia Oceania	Temperate (Cfa)	Landsat (TM & TIRS/OLI)	Inter-annual variations; Seasonal variations; LULC types; LULC patterns; Biophysical; PDENS; Others
39	Chen et al. 2016	Surface Heat Island in Shanghai and Its Relationship with Urban Development from 1989 to 2013	Shanghai China Asia	Temperate (Cfa)	Landsat (TM & TIRS/OLI)	Inter-annual variations; LULC types; LULC patterns; Biophysical
40	Fu and Weng 2016	A time series analysis of urbanization induced land use and land cover change and its impact on land surface temperature with Landsat imagery	Atlanta USA North America	Temperate (Cfa)	Landsat (TM & ETM+)	Inter-annual variations; Seasonal variations; LULC types; LULC patterns
41	Yang et al. 2017	Mapping the influence of land use/land cover changes on the urban heat island effect-A case study of Changchun, China	Changchun China Asia	Continental (Dwa)	Landsat (TM & TIRS/OLI) GF-1	Inter-annual variations; LULC types; LULC patterns; Biophysical

42	Tran et al. 2017	Characterizing the relationship between land use land cover change and land surface temperature	Hanoi Vietnam Asia	Temperate (Cwa)	Landsat (TM & ETM+)	Inter-annual variations; LULC types; LULC patterns; Biophysical; Others
43	Majkowska et al. 2017	The urban heat island in the city of Poznań as derived from Landsat 5 TM	Poznań Poland Europe	Continental (Dfb)	Landsat (TM)	Inter-annual variations; LULC types; LULC patterns; Biophysical; Socioeconomic
44	Hereher 2017	Retrieving spatial variations of land surface temperatures from satellite data—Cairo region, Egypt	Cairo Egypt Africa	Arid (BWh)	Landsat (TIRS/OLI) MODIS	Inter-annual variations; LULC types; LULC patterns; Biophysical; Topography; Socioeconomic
45	Pal and Ziaul 2017	Detection of land use and land cover change and land surface temperature in English Bazar urban centre	Malda India Asia	Temperate (Cwa)	Landsat (TM & ETM+)	Inter-annual variations; Seasonal variations; LULC types; LULC patterns; Biophysical
46	Sannigrahi et al. 2017	Changing dynamics of urban biophysical composition and its impact on urban heat island intensity and thermal characteristics: the case of Hyderabad City, India	Hyderabad India Asia	Arid (BSh)	Landsat (TM & ETM+)	Inter-annual variations; LULC types; LULC patterns; Biophysical
47	X. Zhang et al. 2017	An urban heat island study in Nanchang City, China based on land surface temperature and social-ecological variables	Nanchang China Asia	Temperate (Cfa)	Landsat (TM & TIRS/OLI)	Inter-annual variations; LULC types; LULC patterns; Biophysical; PDENS; Socioeconomic
48	Guha et al. 2017	Dynamic analysis and ecological evaluation of urban heat islands in Raipur city, India	Raipur India Asia	Tropical (Aw)	Landsat (TM & TIRS/OLI) MODIS	Inter-annual variations; LULC types; LULC patterns; Biophysical
49	Wang et al. 2017	Surface urban heat island analysis of shanghai (China) based on the change of land use and land cover	Shanghai China Asia	Temperate (Cfa)	Landsat (TM & TIRS/OLI) QuickBird	Inter-annual variations; LULC types; LULC patterns; Biophysical
50	Swain et al. 2017	Impact of Rapid Urbanization on the City of Bhubaneswar, India	Bhubaneswar India Asia	Tropical (Aw)	Landsat (ETM+ & TIRS/OLI) MODIS	Inter-annual variations; Seasonal variations; Day/Night variations; LULC types; LULC patterns; Biophysical

51	Singh et al. 2017	Impact of land use change and urbanization on urban heat island in Lucknow city, Central India. A remote sensing based estimate	Lucknow India Asia	Temperate (Cwa)	Landsat (TM & TIRS/OLI)	Inter-annual variations; LULC types; LULC patterns; Biophysical
52	Fan et al. 2017	Understanding the Impact of Urbanization on Surface Urban Heat Islands-A Longitudinal Analysis of the Oasis Effect in Subtropical Desert Cities	5 Arid cities 5 Countries 3 Continents	Arid (BSh/BWk/BWh)	Landsat (TM)	Inter-annual variations; LULC types; LULC patterns; Biophysical; Others
53	Xinping Zhang et al. 2017	Effects of Land Use/Cover Changes and Urban Forest Configuration on Urban Heat Islands in a Loess Hilly Region: Case Study Based on Yan'an City, China	Yan'an China Asia	Continental (Dwa)	Landsat (TM, ETM+, & TIRS/OLI) GeoEye	Inter-annual variations; LULC types; LULC patterns; Biophysical; Landscape
54	Estoque and Murayama 2017	Monitoring surface urban heat island formation in a tropical mountain city using Landsat data (1987–2015)	Baguio Philippines Asia	Tropical (Am)	Landsat (TM, ETM+, & TIRS/OLI)	Inter-annual variations; LULC types; LULC patterns; Biophysical; Topography; Landscape
55	Ranagalage et al. 2017	An urban heat island study of the Colombo Metropolitan Area, Sri Lanka, based on Landsat data (1997-2017)	Colombo Sri Lanka Asia	Tropical (Af)	Landsat (TM & TIRS/OLI)	Inter-annual variations; LULC types; LULC patterns; Biophysical
56	Ranagalage et al. 2018	Quantifying surface urban heat island formation in the world heritage tropical mountain city of Sri Lanka	Kandy Sri Lanka Asia	Tropical (Af)	Landsat (TM & TIRS/OLI)	Inter-annual variations; LULC types; LULC patterns; Biophysical
57	Sultana and Satyanarayana 2018	Urban heat island intensity during winter over metropolitan cities of India using remote-sensing techniques: impact of urbanization	Multiple cities India Asia	Tropical (Am/Aw) Arid (BSh/BWh) Temperate(Cwa)	Landsat (ETM+)	Inter-annual variations; LULC types; LULC patterns; Biophysical
58	Rousta et al. 2018	Spatiotemporal analysis of land use/land cover and its effects on surface urban heat Island using landsat data: A case study of Metropolitan City Tehran (1988-2018)	Tehran Iran Asia	Arid (BSk)	Landsat (TM & TIRS/OLI)	Inter-annual variations; LULC types; LULC patterns; Biophysical
59	Lin et al. 2018	Urbanization effect on spatiotemporal thermal patterns and changes in Hangzhou (China)	Hangzhou China Asia	Temperate (Cfa)	Landsat (TM)	Inter-annual variations; LULC types; LULC patterns; Biophysical; Landscape

60	El-Hattab et al. 2018	Monitoring and assessment of urban heat islands over the Southern region of Cairo Governorate, Egypt	Cairo Egypt Africa	Arid (BWh)	Landsat (TM, ETM+, & TIRS/OLI)	Inter-annual variations; LULC types; LULC patterns; Biophysical; Others
61	Hoan et al. 2018	Assessing the effects of land-use types in surface urban heat islands for developing comfortable living in Hanoi City	Hanoi Vietnam Asia	Temperate (Cwa)	Landsat (TIRS/OLI)	Inter-annual variations; LULC types; LULC patterns
62	Yu et al. 2018	Variations in land surface temperature and cooling efficiency of green space in rapid urbanization: The case of Fuzhou city, China	Fuzhou china Asia	Temperate (Cfa)	Landsat (ETM+ & TIRS/OLI) SPOT	Inter-annual variations; LULC types; LULC patterns
63	Kamruzzaman et al. 2018	Investigating the urban heat island effect of transit oriented development in Brisbane	Brisbane Australia Oceania	Temperate (Cfa)	Landsat (TM & TIRS/OLI) IKONOS	Inter-annual variations; LULC types; LULC patterns; PDENS; Others
64	Peres et al. 2018	The urban heat island in Rio de Janeiro, Brazil, in the last 30 years using remote sensing data	Rio de Janeiro Brazil South America	Tropical (Am)	Landsat (TM, ETM+, & TIRS/OLI)	Inter-annual variations; LULC types; LULC patterns; Biophysical
65	Rani et al. 2018	Multi-temporal NDVI and surface temperature analysis for Urban Heat Island inbuilt surrounding of sub-humid region: A case study of two geographical regions	Haridwar & Kanpur India Asia	Temperate (Cwa)	Landsat (ETM+)	Inter-annual variations; LULC types; LULC patterns; Biophysical
66	Dihkan et al. 2018	Evaluation of urban heat island effect in Turkey	Multiple cities Turkey Asia	Arid (BSk) Temperate (Cfa/Csa) Continental (Dfb)	Landsat (TM) ASTER	Inter-annual variations; Day/Night variations; LULC types; LULC patterns; Biophysical; Topography; PDENS; Socioeconomic; Landscape
67	Min et al. 2018	Spatio-temporal evolution analysis of the urban heat island: A case study of Zhengzhou city, China	Zhengzhou China Asia	Temperate (Cwa)	Landsat (TM & TIRS/OLI)	Inter-annual variations; Seasonal variations; LULC types; LULC patterns; Biophysical; PDENS; Socioeconomic

68	Silva et al. 2018	Spatiotemporal impact of land use/land cover changes on urban heat islands: A case study of Paco do Lumiar, Brazil	Paço do Lumiar Brazil South America	Tropical (Aw)	Landsat (TM & TIRS/OLI)	Inter-annual variations; Seasonal variations; LULC types; LULC patterns
69	Nguyen et al. 2019	The environmental effects of urban development in Hanoi, Vietnam from satellite and meteorological observations from 1999-2016	Hanoi Vietnam Asia	Temperate (Cwa)	Landsat (TM & TIRS/OLI)	Inter-annual variations; LULC types; LULC patterns; Biophysical; Topography; Socioeconomic; Others
70	Chaka and Oda 2019	Understanding land surface temperature on rift areas to examine the spatial variation of urban heat island: the case of Hawassa, southern Ethiopia	Hawassa Ethiopia Africa	Temperate (Csb)	Landsat (TIRS/OLI) MODIS	Inter-annual variations; Day/Night variations; LULC types; LULC patterns; Biophysical; Others
71	Padmanaban et al. 2019	Satellite image fusion to detect changing surface permeability and emerging urban heat islands in a fast-growing city	Tirunelveli India Asia	Tropical (Aw)	Landsat (ETM+) IRS LISS-III	Inter-annual variations; LULC types; LULC patterns; Biophysical
72	Huang et al. 2019	Quantifying the seasonal contribution of coupling urban land use types on Urban Heat Island using Land Contribution Index: A case study in Wuhan, China	Wuhan China Asia	Temperate (Cfa)	MODIS	Inter-annual variations; Seasonal variations; LULC types; LULC patterns; Biophysical
73	Guo et al. 2019	Quantifying and simulating landscape composition and pattern impacts on land surface temperature: A decadal study of the rapidly urbanizing city of Beijing, China	Beijing China Asia	Continental (Dwa)	Landsat (TM & TIRS/OLI)	Inter-annual variations; LULC types; LULC patterns; Biophysical
74	Dhar et al. 2019	Impact of Land-Use/Land-Cover Change on Land Surface Temperature Using Satellite Data: A Case Study of Rajarhat Block, North 24-Parganas District, West Bengal	Kolkata India Asia	Tropical (Aw)	Landsat (TM & TIRS/OLI) Sentinel 2A	Inter-annual variations; LULC types; LULC patterns; Biophysical
75	Ghosh et al. 2019	Relation between urban biophysical composition and dynamics of land surface temperature in the Kolkata metropolitan	Kolkata India Asia	Tropical (Aw)	Landsat	Inter-annual variations; LULC types; LULC patterns; Biophysical

area: a GIS and statistical based analysis for sustainable planning						
76	Bokaie et al. 2019	Seasonal monitoring of urban heat island using multi-temporal Landsat and MODIS images in Tehran	Tehran Iran Asia	Arid (BSk)	Landsat MODIS SPOT	Inter-annual variations; Seasonal variations; LULC types; LULC patterns; Biophysical; Topography; Socioeconomic
77	Lakra and Sharma 2019	Geospatial Assessment of Urban Growth Dynamics and Land Surface Temperature in Ajmer Region, India	Ajmer India Asia	Arid (BSh)	Landsat (TM & TIRS/OLI)	Inter-annual variations; LULC types; LULC patterns; Biophysical; Topography
78	Dissanayake et al. 2019	Land-use/land-cover changes and their impact on surface urban heat islands: Case study of Kandy City, Sri Lanka	Kandy Sri Lanka Asia	Tropical (Af)	Landsat (TM & TIRS/OLI)	Inter-annual variations; LULC types; LULC patterns; Biophysical
79	Makinde and Agbor 2019	Geoinformatic assessment of urban heat island and land use/cover processes: a case study from Akure	Akure Nigeria Africa	Tropical (Aw)	Landsat (TM, ETM+, & TIRS/OLI)	Inter-annual variations; LULC types; LULC patterns; Biophysical
80	Priyankara et al. 2019	Spatial process of surface urban heat island in rapidly growing seoul metropolitan area for sustainable urban planning using landsat data (1996-2017)	Seoul Korea Asia	Continental (Dwa)	Landsat (TM & TIRS/OLI)	Inter-annual variations; LULC types; LULC patterns; Biophysical
81	Hu et al. 2019	Comparison of surface and canopy urban heat islands within megacities of eastern China	Multiple cities China Asia	Continental (Dwa) Temperate (Cfa/Cwa)	MODIS	Inter-annual variations; Seasonal variations; Day/Night variations; LULC types; LULC patterns; Biophysical; Others
82	Karakuş 2019	The Impact of Land Use/Land Cover (LULC) Changes on Land Surface Temperature in Sivas City Center and Its Surroundings and Assessment of Urban Heat Island	Sivas Turkey Asia	Arid (BSk)	Landsat (TM, ETM+, & TIRS/OLI)	Inter-annual variations; LULC types; LULC patterns; Biophysical
83	Grigoraş and Urişescu 2019	Land Use/Land Cover Changes Dynamics and Their Effects on Surface Urban Heat Island in Bucharest, Romania	Bucharest Romania Europe	Continental (Dfa)	Landsat (TM, ETM+, & TIRS/OLI)	Inter-annual variations; LULC types; LULC patterns; Biophysical

84	Sahana et al. 2019	Assessing land transformation and its relation with land surface temperature in Mumbai city, India using geospatial techniques	Mumbai India Asia	Tropical (Am)	Landsat (TM & TIRS/OLI)	Inter-annual variations; Seasonal variations; LULC types; LULC patterns; Biophysical
85	Chakraborti et al. 2019	Assessing the dynamic relationship among land use pattern and land surface temperature: A spatial regression approach	Hyderabad India Asia	Arid (BWh)	Landsat (ETM+ & TIRS/OLI)	Seasonal variations; LULC types; LULC patterns; Landscape
86	Huang and Wang 2019	Investigating the effects of 3D urban morphology on the surface urban heat island effect in urban functional zones by using high-resolution remote sensing data: A case study of Wuhan, Central China	Wuhan China Asia	Temperate (Cfa)	Landsat (TIRS/OLI)	Inter-annual variations; LULC types; LULC patterns; Biophysical; Socioeconomic; Landscape
87	Choudhury et al. 2019	Assessment of land use land cover changes and its impact on variations of land surface temperature in Asansol-Durgapur Development Region	Durgapur India Asia	Tropical (Aw)	Landsat (TM & TIRS/OLI)	Inter-annual variations; Seasonal variations; LULC types; LULC patterns; Biophysical
88	Miky 2019	Remote sensing analysis for surface urban heat island detection over Jeddah, Saudi Arabia	Jeddah Saudi Arabia Asia	Arid (BWh)	Landsat (TIRS/OLI) SPOT	Inter-annual variations; Seasonal variations; LULC types; LULC patterns
89	Ye et al. 2019	Characterization of Combined Effects of Urban Built-Up and Vegetated Areas on Long-Term Urban Heat Islands in Beijing	Beijing China Asia	Continental (Dwa)	Landsat (TM & TIRS/OLI)	Inter-annual variations; LULC types; LULC patterns; Biophysical; Socioeconomic; Landscape
90	Xiong et al. 2019	Spatiotemporal influences of land use/cover changes on the heat island effect in rapid urbanization area	Multiple cities China Asia	Temperate (Cfa)	Landsat (TM & TIRS/OLI)	Inter-annual variations; Seasonal variations; LULC types; LULC patterns; Biophysical; Topography
91	Eresanya et al. 2019	Investigation of the changing patterns of the land use land cover over Osogbo and its environs	Osogbo Nigeria Africa	Tropical (Aw)	Landsat (TM, ETM+, & TIRS/OLI)	Inter-annual variations; LULC types; LULC patterns

92	Sultana and Satyanarayana 2020	Assessment of urbanisation and urban heat island intensities using landsat imageries during 2000 – 2018 over a sub-tropical Indian City	Chandigarh India Asia	Temperate (Cwa)	Landsat (ETM+ & TIRS/OLI)	Inter-annual variations; Seasonal variations; LULC types; LULC patterns; Biophysical
93	Khamchiangta and Dhakal 2020	Time series analysis of land use and land cover changes related to urban heat island intensity: Case of Bangkok Metropolitan Area in Thailand	Bangkok Thailand Asia	Tropical (Aw)	Landsat (TM & ETM+)	Inter-annual variations; LULC types; LULC patterns; Biophysical; Landscape
94	Du et al. 2020	Analysis of the impact of land use on spatiotemporal patterns of surface urban heat island in rapid urbanization, a case study of Shanghai, China	Shanghai China Asia	Temperate (Cfa)	Landsat (TM, ETM+, & TIRS/OLI)	Inter-annual variations; LULC types; LULC patterns; Biophysical
95	Wang et al. 2020	Spatiotemporal analysis of land use/cover patterns and their relationship with land surface temperature in Nanjing, China	Nanjing China Asia	Temperate (Cfa)	Landsat (ETM+ & TIRS/OLI)	Inter-annual variations; LULC types; LULC patterns; Biophysical
96	Imran and Mehmood 2020	Analysis and mapping of present and future drivers of local urban climate using remote sensing: a case of Lahore, Pakistan	Lahore Pakistan Asia	Tropical (Aw)	Landsat (TM, ETM+, & TIRS/OLI)	Inter-annual variations; LULC types; LULC patterns; Biophysical
97	Roy et al. 2020	Examining the nexus between land surface temperature and urban growth in Chattogram Metropolitan Area of Bangladesh using long term Landsat series data	Chattogram Bangladesh Asia	Tropical (Am)	Landsat (TM & TIRS/OLI)	Inter-annual variations; LULC types; LULC patterns; Biophysical; Landscape
98	Khan et al. 2020	Land-use/land-cover changes and its contribution to urban heat Island: A case study of Islamabad, Pakistan	Islamabad Pakistan Asia	Temperate (Cwa)	Landsat (TM & TIRS/OLI)	Inter-annual variations; LULC types; LULC patterns; Biophysical
99	Song et al. 2020	Effects of green space patterns on urban thermal environment at multiple spatial-temporal scales	Hangzhou China Asia	Temperate (Cfa)	Landsat (TIRS/OLI) SPOT	Inter-annual variations; Seasonal variations; LULC types; LULC patterns; Landscape
100	Athukorala and Murayama 2020	Spatial variation of land use/cover composition and impact on surface urban heat island in a tropical sub-Saharan City of Accra, Ghana	Accra Ghana Africa	Arid (Bwh)	Landsat (ETM+ & TIRS/OLI)	Inter-annual variations; LULC types; LULC patterns

101	Rizvi et al. 2020	The effect of urbanization on the intensification of SUHIs: Analysis by LULC on Karachi	Karachi Pakistan Asia	Arid (BWh)	Landsat (TM & TIRS/OLI)	Inter-annual variations; LULC types; LULC patterns
102	Saleem et al. 2020	Impact assessment of urban development patterns on land surface temperature by using remote sensing techniques: a case study of Lahore, Faisalabad and Multan district	Multiple cities Pakistan Asia	Arid (BSh/BWh/BWh)	Landsat (TM)	Inter-annual variations; LULC types; LULC patterns; Biophysical
103	Saha et al. 2020	Multi-approach synergic investigation between land surface temperature and land-use land-cover	Kolkata India Asia	Tropical (Aw)	Landsat (TM, ETM+, & TIRS/OLI)	Inter-annual variations; LULC types; LULC patterns; Biophysical
104	Dutta and Das 2020	Exploring the Spatio-temporal pattern of regional heat island (RHI) in an urban agglomeration of secondary cities in Eastern India	Malda India Asia	Tropical (Aw)	Landsat (TM & TIRS/OLI)	Inter-annual variations; LULC types; LULC patterns; Biophysical
105	Pramanik and Punia 2020	Land use/land cover change and surface urban heat island intensity: source–sink landscape-based study in Delhi, India	Delhi India Asia	Arid (BSh)	Landsat (TM, ETM+, & TIRS/OLI)	Inter-annual variations; Day/Night variations; LULC types; LULC patterns; Biophysical; PDENS
106	Siqi and Yuhong 2020	Effects of land use and land cover pattern on urban temperature variations: A case study in Hong Kong	Hong Kong China Asia	Temperate (Cwa)	Landsat (TIRS/OLI)	Inter-annual variations; Seasonal variations; LULC types; LULC patterns; Biophysical; Topography
107	Atasoy 2020	Assessing the impacts of land-use/land-cover change on the development of urban heat island effects	Osmaniye Turkey Asia	Temperate (Csa)	Landsat (ETM+)	Inter-annual variations; LULC types; LULC patterns
108	Gupta et al. 2020	Spatio-temporal impact assessment of land use / land cover (LU-LC) change on land surface temperatures over Jaipur city in India	Jaipur India Asia	Arid (BSh)	Landsat (TM) MODIS	Inter-annual variations; Seasonal variations; LULC types; LULC patterns
109	Li et al. 2020	Examining Land Use/Land Cover Change and the Summertime Surface Urban Heat Island Effect in Fast-Growing Greater	Hefei China Asia	Temperate (Cfa)	Landsat (TM & TIRS/OLI)	Inter-annual variations; LULC types; LULC patterns; PDENS

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110	Kamali Maskooni et al. 2020	Impact of spatiotemporal land-use and land-cover changes on surface urban heat islands in a semiarid region using Landsat data	Shiraz Iran Asia	Arid (BSh)	Landsat (TM & TIRS/OLI)	Inter-annual variations; LULC types; LULC patterns; Biophysical; PDENS
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