Urban Climate News

Quarterly Newsletter of the IAUC

ISSUE NO. 87 MARCH 2023 • www.urban-climate.org • INTERNATIONAL ASSOCIATION FOR URBAN CLIMATE

From the IAUC President

Dear IAUC community,

We are one newsletter away from ICUC-11 at the University of New South Wales (UNSW) in Sydney, Australia. The conference registration opened earlier this month, and travel grant applications are now accepted for early-career research and delegates from underrepresented areas. For more information, please check out the ICUC-11 update by Negin Nazarian and Melissa Hart at the end of this newsletter. I hope to see you all "down under" at the end of August!

In the meantime, preparations for ICUC-12 in 2025 are in full swing. We received ten Expressions of Interest (EOIs) from organizing teams all across the world. We were excited about the diverse pool of potential host locations! The IAUC Board reviewed the EOIs and invited six groups to prepare a full proposal by the end of May. The Board will discuss the proposals in June and select finalists for proposal presentations in Sydney.

Inside the March issue...

Sydney Harbour and Opera House from above

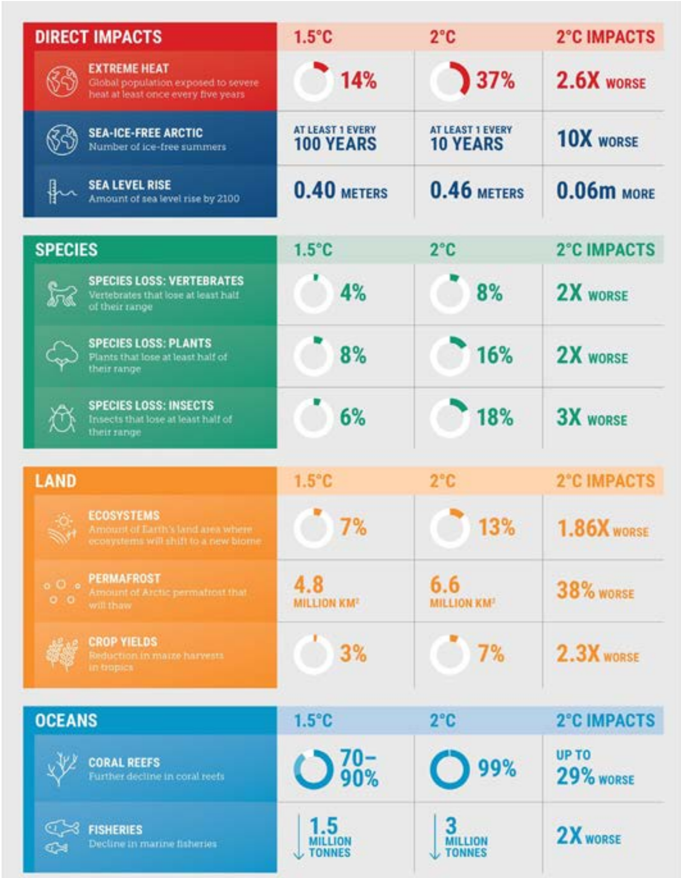
I hope that you will enjoy reading Issue no. 87 of this newsletter! As always, David Pearlmutter and the IAUC News team have compiled the hottest urban climate news stories to keep you posted on what's happening in the IAUC community. This issue's Feature by Yan Zhang and colleagues describes how the Coriolis force deflects the flow of an urban heat dome. In the Urban Project section, Heike Schlünzen summarizes WMO guidance concerning UHI measurement, modeling, and monitoring, and Sebastian Pfautsch reports on an Urban Cooling Course at Western Sydney University.

Enjoy!

– Ariane Middel
IAUC President
Ariane.middel@asu.edu

Climate change: The IPCC just published its summary of five years of reports – here's what you need to know

- The Intergovernmental Panel on Climate Change has just launched its latest report on the climate crisis.
- The *AR6 Synthesis Report: Climate Change 2023* summarizes five years of reports on global temperature rises, fossil fuel emissions and climate impacts.
- Here are the main findings and what needs to happen to limit global warming to below 1.5°C.



The difference in projected climate impacts at 1.5°C and 2°C of warming (IPCC 2018). *Source:* weforum.org

March 2023 — The viability of humanity living within planetary boundaries rests on the actions we take in the next seven years. There's no time to lose to keep to the target of limiting the global average temperature to below 1.5°C.

"There is a rapidly closing window of opportunity to secure a liveable and sustainable future for all."

This is the conclusion of the Intergovernmental Panel on Climate Change (IPCC) in its latest report, which sets out to summarize the scientific data on global temperature rises, fossil fuel emissions and the impact of the climate crisis.

The *AR6 Synthesis Report: Climate Change 2023* finds that, despite progress in policies and legislation around climate mitigation since the previous such report in 2014, it's "likely that warming will exceed 1.5°C during the 21st century".

This is based on the expected levels of global greenhouse gas (GHG) emissions in the atmosphere by 2030, based on all countries' climate targets – known as nationally determined contributions or "NDCs" – announced as of October 2021.

Limiting warming to "well below 2°C", by 2030, as per the Paris Agreement targets, will be hard to achieve, but avoiding 1.5°C is still possible.

The report also lays out the economic imperative for taking action, finding that the "global economic benefit of limiting global warming to 2°C exceeds the cost of mitigation in most of the assessed literature".

Here's what you need to know about the latest IPCC report, its findings and what needs to happen to ensure we stay on track to meet climate goals.

How is this IPCC report different from previous ones?

The Synthesis Report (SYR) is the culmination of a cycle of reports (the Sixth Assessment) that have been published over the past five years.

Since the Fifth Assessment Report cycle, which ended in 2014, there has been an intensified focus around the globe on the climate crisis and efforts to mitigate its impacts, with the annual Conference of the Parties (COP) meetings driving this progress.

This report is the summary of all reports of the IPCC's 6th Assessment Cycle that were published between 2018 and 2023, which covered, including the landmark Global Warming of 1.5°C, the more recent reports demonstrating how anthropogenic greenhouse gases are causing unprecedented damage, and the report demonstrating that at current levels, many parts of the planet will become unliveable in the next few decades.

This summary report demonstrates an undeniable scientific consensus about the urgency of the climate crisis, its primary causes, its current devastating impacts – especially on most climate vulnerable regions – and the irreversible harm that will occur if warming surpasses 1.5°C, even temporarily.

Its aim is to provide policymakers with a high-level, up-to-date understanding of climate change, its impacts and future risks, and highlight solutions and options for addressing it.

As the next cycle, the Seventh Assessment Report, is not expected before at least 2027, this report provides the foundation for what will be a critical seven-year period to 2030.

We're not going to have this time again, where we know what the situation is so conclusively. This scientific consensus, combined with the fact that the majority of climate solutions to avoid the worst consequences of climate change exist, provides a unique opportunity for us to address the gaps and take action.

What are the main findings of the AR6 report?

The new report, written by [39 scientists](), is separated into three sections arranged by timeframes: *Current Status and Trends* looks back through history to the present day; *Long-term Climate and Development Futures* projects scenarios to 2100 and beyond; and *Near-term Responses in a Changing Climate* looks at current international policy timeframes between now and the 2030s.

Here are some of the main findings:

• Human-caused climate change is already affecting many weather and climate extremes in every region across the globe – with widespread loss and damage to both nature and people.

• GHG emissions will lead to increasing global warming in the near term, and it's likely this will reach 1.5°C between 2030 and 2035.

• We are currently at around 1.1°C of warming and current climate policies are projected to increase global warming by 3.2°C by 2100.

• The IPCC has "very high confidence" that the risks and adverse impacts from climate change will escalate with increasing global warming.

• To keep within the 1.5°C limit, emissions need to be reduced by at least 43% by 2030 compared to 2019 levels, and at least 60% by 2035. This is the decisive decade to make that happen.

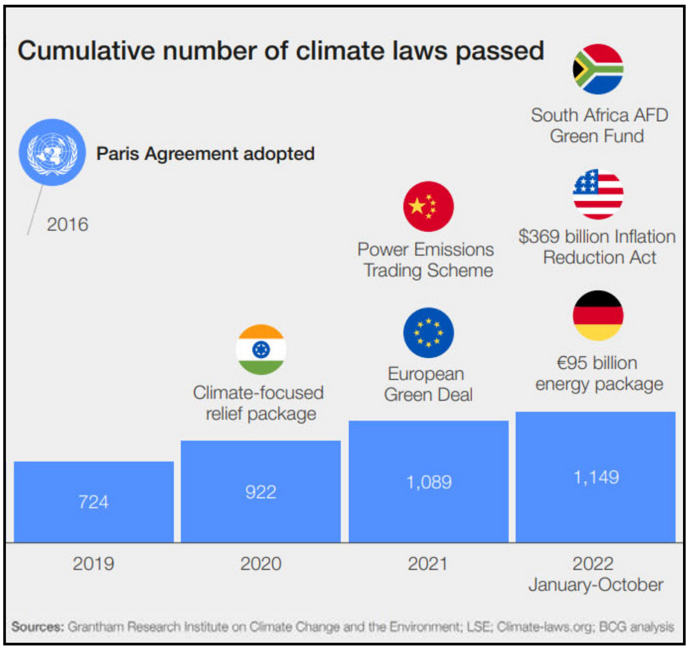
• Losses and damages will disproportionately affect the poorest and most vulnerable populations, particularly those in Africa and least-developed countries, creating more poverty.

• Prioritizing equity, social justice, inclusion and just transition processes would enable ambitious climate mitigation actions and climate-resilient development.

• Tracked climate finance for mitigation falls short of the levels needed to limit warming to below 2°C or to 1.5°C across all sectors and regions.

• Public and private finance flows for fossil fuels are still greater than those for climate adaptation and mitigation.

• Among other measures to ensure energy systems are net-zero CO_2 emitters, we need a "substantial reduction in overall fossil fuel use, minimal use of unabated fossil fuels, and use of carbon capture and storage in the remaining fossil fuel systems; energy conservation and efficiency; and greater integration across the energy system".



Momentum is building to tackle climate change. Image: Alliance of CEO Climate Leaders. *Source:* [weforum.org]()

Why do we need to listen to the IPCC?

The IPCC is the United Nations' (UN) [global organization for assessing the science related to climate change]() and is made up of 195 member countries.

Thousands of experts from all over the world volunteer to objectively assess the latest scientific research and write reports for the IPCC, which are signed off by the governments of member countries.

Over the course of a week-long session held in Switzerland, the 58th Session of the IPCC, governments have approved the shorter *Summary for Policymakers of the Synthesis Report* **line by line** and have adopted the longer report.This will then shape international climate change negotiations at the future COP meetings – the decision-making body of the UN Framework Convention on Climate Change.

Is it too late to stay within 1.5 °C?

We need to see 1.5°C not as a target but as a ceiling. Overshooting 1.5 °C means we are entering a danger zone, beyond planetary limits in which natural, animal and human life has flourished for millions of years.

As the IPCC report shows, we're not too late to avoid passing 1.5 °C, but the greatest threat is apathy. The impacts of climate change will only get worse.

The cost of inaction is far greater than the cost of action – and the financial implications will impact everyone, from governments to companies and families.

Every fraction of a degree counts. We're already seeing the disproportionate impact the warming of 1.1°C is having globally, particularly on the lives and livelihoods of more vulnerable communities.

The IPCC finds nearly half of the world's population live in this danger zone of climate impacts, where their lives and livelihoods are under threat from more frequent and intense extreme weather events, such as flooding and drought, which impacts on food and water security, as well as loss of vital natural ecosystems.

In reality, the difference between 1.5°C and 2°C degrees is not merely a temperature rise of 0.5°C – but as the chart above shows, it means climate risks will be at least two times worse.

We need to act now to protect climate-vulnerable communities, while also taking action towards a cleaner, healthier and more prosperous future.

What needs to happen now and what is the World Economic Forum doing?

The solutions are out there to reduce emissions by at least 43% over the next seven years.

The IPCC highlights that to achieve this we need to transition "from fossil fuels without carbon capture and storage (CCS) to very low- or zero-carbon energy sources, such as renewables or fossil fuels with CCS, demand-side measures and improving efficiency".

Governments, businesses, civil society and communities can work together to transform our energy, food, transport and manufacturing systems. This can be achieved through clear, courageous and concerted policies to further unlock the transformative power of financial markets, industry, and innovators.

The UN Secretary-General António Guterres outlined a major new Acceleration Agenda in his video message to launch the Synthesis Report, which includes:

• Ensuring net-zero electricity generation by 2035 for all developed economies and 2040 for the rest of the world.

• Ceasing all licensing or funding of new oil and gas – consistent with the findings of the International Energy Agency.

• Stopping any expansion of existing oil and gas reserves. Shifting subsidies from fossil fuels to a just energy transition.

• Establishing a global phase-down of existing oil and gas production compatible with the 2050 global net-zero target.

• Speeding-up efforts to deliver climate justice to those on the frontlines.

We have seen a miraculous breakthrough in renewables, where solar and wind are now the cheapest source of new power in countries representing 90% of electricity generation, and electric vehicles are projected price parity with internal combustion engines in the next 2-3 years.

We need similar breakthroughs across the so-called "hard-to-abate" sectors of heavy industry and long-haul transport – and this is where the World Economic Forum's work with the First Movers Coalition (FMC) is leveraging the power of demand to accelerate the supply of transformational near-zero-emission solutions.

Since it was launched at COP26 in 2021, 74 companies and 12 governments have joined this global, public-private coalition, which aims to decarbonize heavy industry and long-distance transport responsible for 30% of global emissions. To date, FMC represents a strong early market signal of $12 billion in demand for near-zero-emission solutions.

And we need to catalyse similar breakthroughs to transform our food systems. There is no way to keep 1.5°C alive without stopping and reversing deforestation, transforming our food and land use systems and protecting ocean ecosystems.

Today, agri-food systems are responsible for up to a third of emissions and are the primary driver of biodiversity loss. Our food and land use systems need to flip from carbon emitters to carbon sinks, and from a contributor to protectors of biodiversity, all while meeting global demand for food.

The green transition has multiple benefits beyond the immediate mitigation of climate change impacts. It could create 24 million new jobs globally by 2030, according to the International Labour Organization. And protect the 1.2 billion workers in farming, fishing, forestry and tourism activities that rely directly on a healthy and stable environment.

In the year 2020-21, employment in the renewable energy sector grew by 700,000, reaching 12.7 million jobs, according to the International Renewable Energy Agency.

Climate action is now essential to drive sustainable development. Failure to act could shrink global GDP by up to 18% in the next 30 years, according to the Swiss Re Institute.

The net-zero transition will require $125 trillion by 2050 in climate investment. While this level of investment has yet to be achieved, momentum is building. In 2021, the world spent $755 billion on low-carbon energy technologies, up 27% from the year prior.

Guterres looked ahead to COP28, which will be held in November 2023 in Dubai, calling for "all G20 leaders to have committed to ambitious new economy-wide nationally determined contributions encompassing all greenhouse gases and indicating their absolute emissions cuts targets for 2035 and 2040. The transition must cover the entire economy. Partial pledges won't cut it". *Source:* https://www.weforum.org/agenda/2023/03/the-ipcc-just-published-its-summary-of-5-years-of-reports-here-s-what-you-need-to-know/

"Climate change adaptation plans of cities across Europe are getting better – but there is still a lot of progress to be made"

March 2023 — That is the headline conclusion of our new study, published in npj Nature Urban Sustainability, in which we assess the most recent adaptation plans of 167 European cities. In these plans, produced between 2005 and 2020, we find that the overall quality has improved.

Looking into different components of the plans, we find that cities have mostly improved in setting adaptation goals, suggesting thorough and varied adaptation measures and outlining their implementation. The Bulgarian capital Sofia and the Irish cities of Galway and Dublin score highest for their plans.

However, there has been only a slight improvement on how the implementation of city plans is monitored and on including civil society in plan making.

And while newer plans are slightly better at proposing measures that match the previously identified climate risks, the involvement of vulnerable people and the monitoring of adaptation measures that aim to support those people is still rare.

Here, we unpack the details of the clear positive trend in urban adaptation plans in Europe – and show that there is still a long way to go towards more inclusive and robust adaptation planning for climate risk reduction.

Adaptation planning

Adapting to the impacts of climate change formed a key part of the 2015 Paris Agreement, which stressed the need to review progress on adaptation, including through regular "global stocktakes".

However, given that the effectiveness of many adaptation measures only really becomes apparent after some time – often only after a severe weather event has hit – it is notoriously difficult to assess this progress. Indeed, to date there is no agreement on the current state of adaptation, what "progress" means and how it should be assessed.

In our study, we examine the contents of adaptation plans to analyse the extent to which they identify climate risks and propose measures to reduce the scale of potential impacts.

To achieve this, we develop and apply three different indices to assess the quality of adaptation plans and apply them to 167 cities across Europe.

We find that these cities have improved in their abilities to plan for adaptation. These improvements may come about through processes of collective learning, knowledge transfer, capacity building, transnational networks and other types of science-policy collaborations.

However, most local governments are still not considering the needs of vulnerable people, nor involving them in policy formulation or monitoring whether adaptation measures reduce their vulnerability to climate threats. This is something that we regard as necessary for a good adaptation plan in order to make sure adaptation works for people most in need of it.

Evaluating progress

The impacts of climate change can be particularly pronounced in cities – many of which are highly vulnerable to heatwaves, flooding, coastal erosion and storms. This potentially puts a huge number of people at risk – around 40% of the population of Europe lives in cities, amounting to approximately 300 million people.

Therefore, we might expect that many city governments have set out how they seek to address these threats in official plans. These plans cannot tell the whole story in terms of actual progress in the collective reduction – or redistribution – of climate risks, because they do not tend to monitor implementation or the effectiveness of previous policies.

However, they can provide information about the quality and relevance of adaptation processes and actions, and help to assess the likelihood that cities' advance adaptation goals by reducing risks and increasing resilience equitably.

As one previous study put it: "The best method [of] ensuring robust adaptation is to ensure rigorous adaptation planning processes."

As such, developing and applying a set of indicators to measure and track the quality of urban adaptation plans can help us to learn collectively about how to deal with climate threats better.

We have incorporated our indicators into a free online tool to help city practitioners assess the quality of their own plans and benchmark their progress against others.

Defining urban adaptation planning quality

We assess adaptation plan quality according to six principles that are already well-established in previous studies:

1. Evidence of impacts and risks in the local area.

2. Adaptation goals.

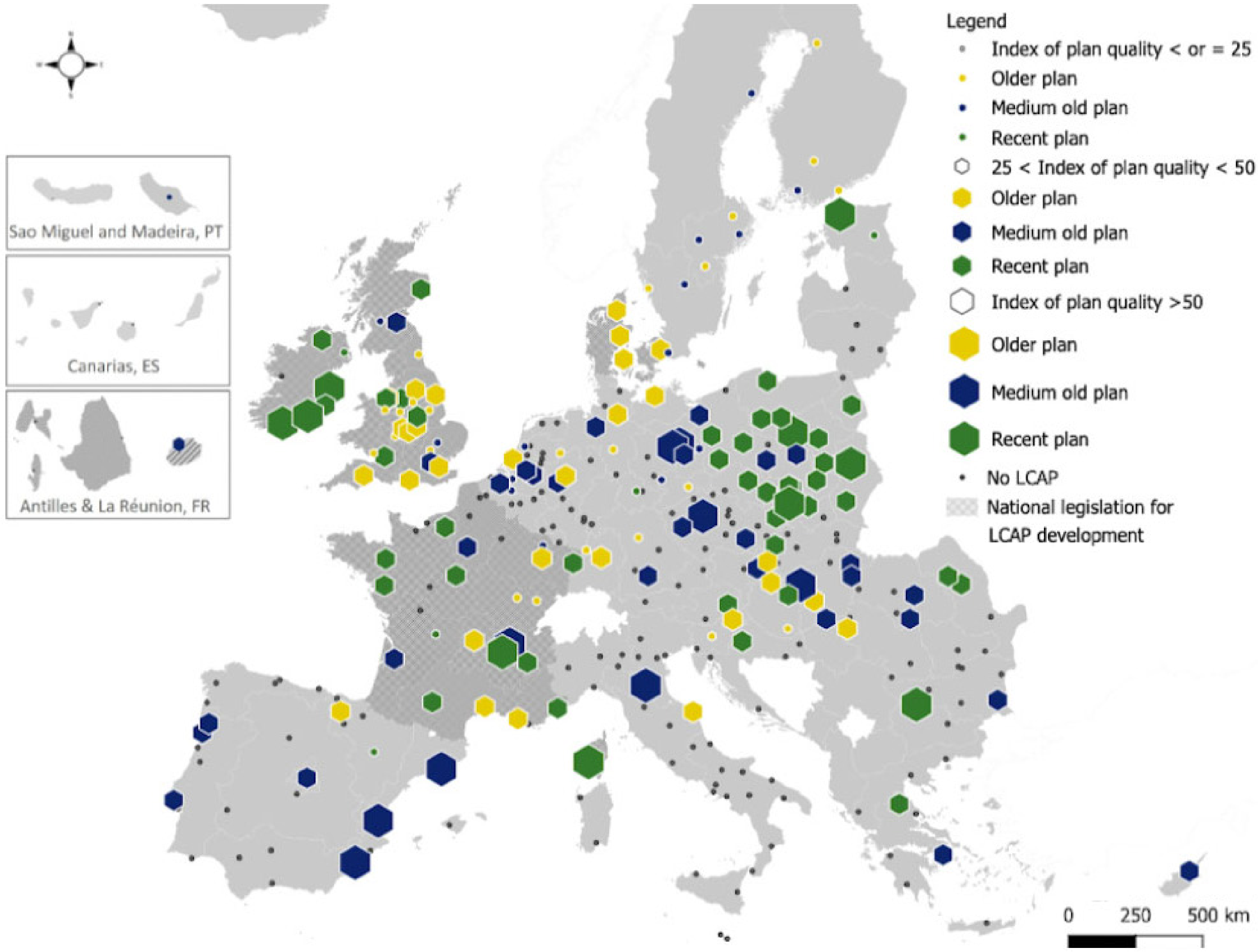
3. Adaptation measures.

4. Details on the implementation of adaptation measures.

5. Monitoring and evaluation of adaptation measures.

6. Societal participation in plan creation.

In addition, we introduce a relatively new aspect concerning the "consistency" of the plans. Consistency means that impacts, risks, goals, measures, monitoring



Map of European cities with urban climate adaptation plans and their quality score. The quality of the plan is shown by the size of the hexagon. Colours refer to the age of the plan, from before mid-2015 (yellow), to between mid-2015 and mid-2018 (blue) and after mid-2018 (green). Cities in our sample without an adaptation plan are shown by grey dots. Hatched countries have national legislation that requires cities to develop urban climate adaptation plans (France, the UK, Ireland and Denmark). *Source: Reckien et al., 2023* (https://www.carbonbrief.org)

and participation are aligned with each other. For example, if a city identifies that it is vulnerable to heatwaves, which puts older people at particular risk, then a good plan designs and implements specific heat-related measures that target older people, and puts mechanisms in place to assess whether their vulnerability to heat risks reduces after implementation.

Based on a combination of these six principles and various consistency measures, we develop a new "ADAptation plan Quality Assessment" (ADAQA) index. We then apply it to urban adaptation plans in a sample of 327 European cities that were published between 2005 and 2020.

Plan quality in European cities

The map below illustrates which European cities do (shown by hexagons) and do not (shown by grey dots) have adaptation plans. For cities that do have plans, the colour of the hexagon shows how recent it is, from before mid-2015 (yellow) to between mid-2015 and mid-2018 (blue) and then after mid-2018 (green). The size of the hexagon indicates the quality score of the plan, with larger hexagons signifying higher scores.

Of the whole sample, about 50% – 167 cities – have an adaptation plan. The largest numbers are found in the UK (30 plans), Poland and France (22 plans each) and Germany (19 plans).

A total of 53 of these 167 cities (32%) were developed under a national, regional or local law that requires municipalities (sometimes above a certain threshold of population size) to develop an urban climate adaptation plan. This is the case for cities in Denmark, Ireland, the UK and France.

The cities of Sofia in Bulgaria and Galway and Dublin in Ireland score highest in the adaptation plan index. Notably, the Irish government requires cities to produce adaptation plans that include certain features – such as an assessment of climate risks to the urban area – and this contributes towards their high scores.

Galway in particular achieves the highest score and performs particularly well on the first, fourth and sixth principles (impacts, implementation and participation, respectively) and also in terms of taking account of vulnerable sectors in its plan. The city has set clear priorities for different actions, identified responsible parties, set out a timeline for implementation and developed a detailed budget. Furthermore, it involved a wide range of stakeholders in the plan-making process.

Galway's plan included a detailed risk assessment of how climate change threatens critical infrastructure, biodiversity, cultural capital, water resources and community services in the city. It then sets out a comprehensive action plan, which includes timescales and assigns responsibility to specific posts and teams within the municipality.

Specific initiatives include carrying out climate risk assessments of all council buildings and infrastructure (such as roads), integrating adaptation into planning decisions (such as by restricting development near coastal erosion zones), upgrading stormwater drainage systems and planting trees. The city is also running campaigns to inform the public about how they can reduce their exposure to climate risks and to raise awareness amongst businesses about the funding that is available to help with adaptation. Galway is committed to regular monitoring of climate impacts and reviewing its policies accordingly, and producing annual reports that evaluate how it is implementing the plan.

For its part, the city of Sofia focuses more on improving blue-green infrastructure (such as grey water recycling), improving surface water management, acquiring additional land to increase the amount of green space, planting a new forest on deserted council-owned property and upgrading water supply and sewerage systems.

In contrast, Lincoln in the UK had the oldest plan in our sample and – perhaps unsurprisingly – achieved a much lower score. Lincoln's plan was approved by the municipality in 2005, but had not been updated before our cut-off date at the end of 2020. Although Lincoln was ahead of most other cities at that time (its plan sets out ideas for combatting various climate threats), it does not consider the specific needs of vulnerable groups, nor set out clear goals, timelines or priorities for action.

Evolution of plan quality over time

We find that the quality of city adaptation plans has shown a small improvement over time. On a linear basis, plan quality has increased by about 1.3 points per year from 2005 to 2020. Despite this progress, we find clear differences in terms of the various principles of plan quality.

This is shown in more detail in a series of charts, which show the overall trend and also unpack the quality scores into each of the six principles individually.

On average, cities improved most in terms of goal setting (second principle) – suggesting detailed and different measures – and setting out the implementation approach (fourth principle). The plans improved only slightly with regard to monitoring (fifth principle) – that is, the progress of implementing the measures – and participation (sixth principle), such as including civil society in plan making.

Consistency of plans over time

As mentioned, one of the central characteristics of our index is its focus on consistency between identified climate risks and the measures that the city plans and monitors.

We find that the consistency improved slightly over time, particularly with regards to aligning risks with adaptation goals and vulnerable industries with adaptation measures.

The risks for vulnerable groups and how these groups were involved in plan development, as well as how adaptation measures for vulnerable groups were monitored over time, were also better aligned in later plans.

However, the overall number of cities that engage vulnerable people in developing plans and monitor the impact of adaptation measures on these at-risk groups remains very low.

In other words, vulnerable groups – such as older people and those on low incomes – are rarely involved in participation processes and the vast majority of plans make no mention of monitoring and evaluation to address their specific needs.

Moreover, urban adaptation plans got worse over time setting out measures that particularly address these vulnerable groups. That means, more recent plans involve fewer measures that particularly address identified vulnerable groups.

Overall, although the quality of urban adaptation plans in Europe has improved since 2005, many cities are still lagging behind or are yet to even produce a plan.

Furthermore, most of the existing plans do not sufficiently take account of the specific needs of those people who are particularly vulnerable to climate impacts.

We hope that our study – and the accompanying online tool – can help practitioners and policymakers reflect on what they can include in future plans, and thereby contribute towards improved resilience in cities across Europe and elsewhere.

Source: https://www.carbonbrief.org/guest-post-how-climate-adaptation-plans-for-european-cities-are-gradually-getting-better/

Threat of rising seas to Asian megacities could be worse than thought

March 2023 — Parts of Asia's largest cities could be under water by 2100 thanks to rising sea levels, according to a new study that combines both the impact of climate change with natural oceanic fluctuations.

Sea levels have already been on the rise due to increasing ocean temperatures and unprecedented levels of ice melting caused by climate change.

But a report published in the journal Nature Climate Change offers fresh insight and stark warnings about how bad the impact could be for millions of people.

While many shoreline Asian megacities were already at risk of flooding, the study suggests that previous analysis underestimated the degree of sea level rise and subsequent flooding caused by natural ocean fluctuations.

Since natural fluctuations have a high degree of variability, their impact is hard to quantify. But the study showed that with the maximum possible impact from natural fluctuations combined with the expected consequences of climate change, several Southeast Asian megacities would become new hotspots of high sea-level rise.

In the Philippine capital Manila, for example, the study predicts that coastal flooding events within the next century will occur 18 times more often than before, solely because of climate change.

But factoring in naturally-occurring fluctuations in sea level increases the frequency of coastal flooding up to 96 times more often than before, the study found.

Millions should 'prepare for the worst

Lourdes Tibig, a climate science adviser for the Institute for Climate and Sustainable Cities in the Philippines, said the study's findings underscore the urgency of addressing climate change.

"The world needs to act on climate change with far more urgency and ambition to protect the millions living in our coastal megacities," Tibig said. Manila, where more than 13 million people live, is far from alone.

The study, conducted by scientists at the French National Center for Scientific Research (CNRS), the University of La Rochelle in France and the National Center for Atmospheric Research in the United States (NCAR), found that Thailand's capital Bangkok, Vietnam's Ho Chi Minh City and Yangon, Myanmar are particularly at risk, along with Chennai and Kolkata in India, some western tropical Pacific islands and the western Indian Ocean.

The rise in sea level along the west coasts of the United States and Australia would also increase, the study suggested.Across the Asian megacities alone, more than 50 million people could be affected by the higher than expected rise in sea levels – nearly 30 million of them in India.

Bangkok is home to at least 11 million people, Ho Chi Minh City more than 9 m, and Yangon around 5.6 million.

https://www.youtube.com/watch?v=fp02H6oJFsQ&t=3s

'Mind boggling': CNN meteorologist shows how rising sea levels will affect the coasts. Source: https://edition.cnn.com/2023/03/07/asia/rising-sea-levels-asia-cities-threat-climate-intl-hnk-scn/index.html

The sea level changes detailed in the report are not likely to take effect until the end of the 21st century. However, if the pace of greenhouse gas emissions increases, the threat becomes more imminent, the authors warned. NCAR scientist Aixue Hu, one of the study's authors, said policy makers and the general public alike should be concerned about these potential threats. From a policy perspective, we have to prepare for the worst," Hu said.

Warming waters

According to a NCAR news release, the study found that naturally occurring events such as El Niño, a weather phenomenon known to leave much of the West Pacific, Australia and Asia warmer than usual, could amplify the anticipated sea level rise due to climate change by 20-30%, which also increases the risk of extreme flooding events.

Climate change has already triggered unprecedented extreme flooding in the Asia-Pacific region within the last year. An analysis by the European Union's Copernicus Climate Change Service described 2022 as "a year of climate extremes," including deadly floods in Pakistan and widespread flooding in Australia.

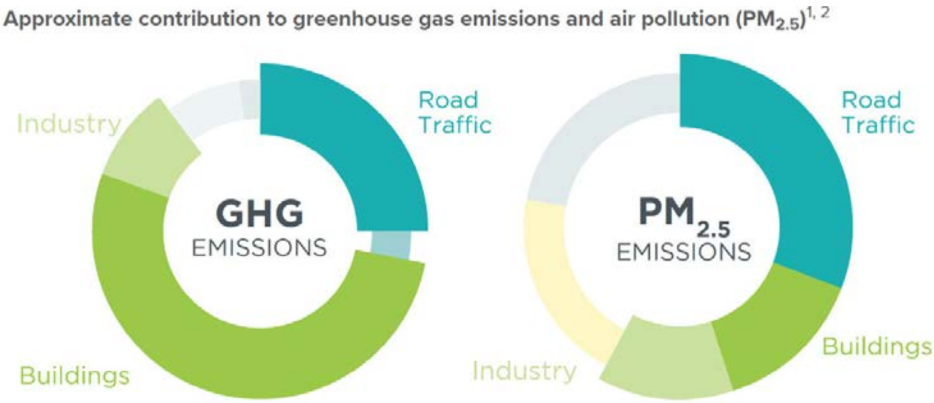
At the same time, ocean temperatures are the highest they've ever been and expected to continue increasing.A January report from the National Oceanic and Atmospheric Administration noted that ocean temperatures were at a record high last year, surpassing the previous record set in 2021. The past four years have been the warmest four on record for the planet's oceans.

"And unfortunately, we're predicting that 2023 will actually be warmer than 2022," Gavin Schmidt, a climate scientist at NASA, said in January.

Source: https://edition.cnn.com/2023/03/07/asia/rising-sea-levels-asia-cities-threat-climate-intl-hnk-scn/index.html

Win-Win: Why cities should tackle climate change and air pollution together

Many of the air pollutants that harm our health also harm our climate, or share sources. Cities' efforts to tackle air pollution the climate crisis must go hand-in-hand. The good news is that action to limit these emissions delivers local, near-term health benefits, as well as longer-term, global climate impacts. This article explains the synergies between air pollution and climate change, and the shared solutions.



Climate change and air pollution share sources

Many sources of carbon dioxide (CO2) and methane (CH4) also produce health-harming air pollutants. This means that climate action to limit emissions from these sources also reduces air pollution and its health and economic impacts, even though these greenhouse gases are not themselves harmful to human health (except at very high concentrations).

Common sources that produce both greenhouse gases and air pollutants in cities are road traffic (particularly diesel vehicles), building energy use (including cooking and heating with wood and coal), unsafe waste disposal and open burning, and industry (including fossil fuel-powered heavy machinery and brick kilns).

Most greenhouse gases and other climate-altering air pollutants are also damaging to our health. The pollutants contributing to both climate change and air pollution are mostly short-lived climate pollutants. This means they stay in the air for a relatively short period of time. Carbon dioxide, in contrast, remains in the air for around 200 years.The main pollutants that damage both climate and health are:

Black carbon (soot), which is a major component of fine particulate air pollution (PM2.5) and is especially damaging to our lungs and health because of its very small size. Black carbon is an aerosol formed of solid airborne particles, rather than a greenhouse gas. It contributes to climate change by converting light into heat, with a warming impact up to 1,500 times that of carbon dioxide. It also influences cloud formation and rainfall patterns. Black carbon comes mainly from coal and biomass stoves used for cooking and heating, which together account for around 58% of black carbon emissions globally, as well as diesel engines, brick kilns and waste incineration. It stays in the air for around 12 days.

Ground-level (or tropospheric) ozone (O3), which is the main component of urban smog. At ground level, ozone is harmful to our health. It is a greenhouse gas with a strong warming effect, and also impacts evaporation rates, cloud formation, rainfall and more. Ground-level ozone is not emitted directly but forms from reactions of emitted gases, namely: methane (CH4) and other 'volatile organic compounds', carbon monoxide and nitrogen oxides (NOx). To reduce ozone pollution cities should focus on reducing emissions of methane and nitrogen oxides, which come from vehicle engines, fossil fuel burning, agriculture and waste. Ground-level ozone stays in the air for anything from a few hours to a few weeks.

As well as being an important pre-cursor to ozone, methane is also an extremely potent greenhouse gas in itself. It stays in the air for around ten years. Methane: Why cities must act now explains more.

Without action, climate change will make air pollution worse

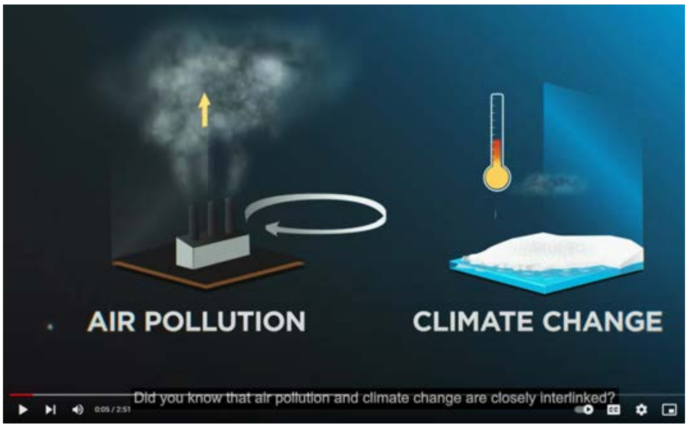
The main ways that climate change impacts outdoor air pollution concentrations are:

Particulate matter (PM2.5 and PM10): the more intense droughts and wildfires that accompany higher temperatures in many regions generate more dust and smoke particles. Wind can carry these particles for thousands of miles, affecting many people and cities.

Ground-level ozone: longer, hotter summers will increase ozone levels even if emissions of the pollutants it forms from stay the same, because heat speeds up ozone formation.

Allergens: plants produce more pollen in warmer temperatures, leading to longer pollen seasons with increased allergies, asthma episodes missed school days and diminished productive work days.

Watch [this short animation from the World Meteorological Organization]() to learn more about these links.



Climate change and air pollution share solutions

Swift action to limit the sources of short-lived pollutants, especially methane, is our best chance of avoiding runaway global heating, and for limiting warming to 1.5°C. Because they remain in the atmosphere for a relatively short period of time, reducing these pollutants delivers rapid benefits for both climate and health. Strong action on these pollutants will slow climate change in the near-term – it can avoid over half a degree of warming by 2050, a huge win for climate – and will greatly reduce the chances of triggering dangerous climate tipping points, like the irreversible release of carbon dioxide and methane from thawing Arctic permafrost. Indeed, limiting global heating to 1.5°C is no longer possible without an aggressive strategy to tackle methane, in parallel to carbon dioxide.

However, any climate gains made by reducing only short-lived pollutants would be wiped out by the end of this century if efforts are not accompanied by strong reductions in carbon dioxide. It is vital, then, that the solutions used to reduce these pollutants also tackle carbon dioxide. This means limiting emissions at source, rather than relying on air purifiers, 'anti-smog guns' which spray water into the air or other temporary air quality solutions that seek to extract pollutants which have already been emitted.

Cities can target these pollutants by:

- Reducing emissions from traffic, by supporting a shift from private vehicles to public transport, walking and cycling and by shifting those vehicles remaining to electric. In particular, cities can support increased efficiency and electrification of freight vehicles and buses, which are major sources of traffic emissions over which cities often have more control.
- Supporting a shift to cleaner cookstoves, in particular replacing household cookstoves fuelled by kerosene, coal and biomass with more efficient models that use clean fuels – ideally electricity, if affordable and reliable electric connections are possible; otherwise liquid petroleum gas, ethanol and biogas, which are also cleaner. This is especially relevant in cities in lower-income countries, where these highly polluting cookstoves are more commonly used, and from an equity perspective, as air pollution from domestic solid fuel use disproportionately affects women and children.16 A shift to cleaner fuels could significantly alleviate the burden of poverty-related diseases.
- Shifting energy production within the city, and ideally the region, to clean and more efficient technologies, including by increasing the use of building-scale technologies such as solar.
- Reducing emissions from municipal sewage and solid waste (particularly food waste), by collecting, safely disposing and treating waste. This includes collecting waste to reduce open burning, treating food and organic waste, which otherwise produces methane, and treating recyclable waste. Avoid incinerating waste.
- Improved building energy efficiency to reduce energy demand, through existing building retrofits and high standards for new buildings. This helps to reduce air pollution from power plants or from fuel combustion for district heating, for example. Electrifying buildings also helps to reduce methane leaks and emissions from cooking or heating with gas.

Early deaths avoided this century by local 1.5°C-aligned climate action (see interactive graphic at c40knowledgehub)

Cities should integrate air quality management planning and climate action planning to develop solutions that effectively tackle both air pollution and climate change. Clean air, healthy planet offers a framework to support this.

Local benefits for public health and cities' economies

The benefits of reduced black carbon and ground level ozone can be felt within days or weeks, and are concentrated in the area where action is taken.

Health benefits

Globally, emissions reductions in line with the 1.5°C target, relative to weaker action delivering 2°C of heating, could lead to 153 million avoided early deaths due to better air quality this century (2020–2100).21 This figure would be much higher if it compared 1.5°C-aligned emissions reductions with 'business as usual' emissions.

The numbers of lives saved are greatest in cities in Asia and Africa, which have some of the worst air quality in the world. Find out below how many early deaths would be avoided in your city by strong local climate action, relative to weaker 2°C emissions reductions.

Financial savings

The economic gains from the air quality-related health benefits of strong climate action, in line with the 1.5°C target, are up to 145% higher than the cost of the interventions needed to achieve it. Read Toward a Healthier World: Connecting the dots between climate, air quality and health to find out how to estimate the health and financial benefits of specific interventions in your city.

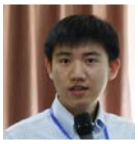
Cities with poor air quality must ensure that these synergies between improving air quality and climate change are incorporated in climate action plans. By clearing the air, cities can maximise near-term, local health benefits and long-term climate impacts simultaneously. Find out about your city's air quality in our Air Quality Data Explorer.

Source: https://www.c40knowledgehub.org/s/article/Win-Win-Why-cities-should-tackle-climate-change-and-air-pollution-together?language=en_US

Urban heat dome flow deflected by the Coriolis force

By Yan Zhang[1,2,3], Xiaoxue Wang[4], Yifan Fan[1,2,3*], Yongling Zhao[5*], Jan Carmeliet[5], Jian Ge[1,3]






[1] Department of Architecture, College of Civil Engineering and Architecture, Zhejiang University, Hangzhou, China
[2] Center for Balance Architecture, Zhejiang University, Hangzhou, China
[3] International Research Center for Green Building and Low-Carbon City, Zhejiang University, Haining, China
[4] School of Information and Communication, Shenzhen Institute of Information Technology, Shenzhen, China
[5] Department of Mechanical and Process Engineering, ETH Zürich, Switzerland

* Corresponding authors: Yifan Fan (yifanfan@zju.edu.cn); Yongling Zhao (yozhao@ethz.ch)

This report is based on: Zhang Y, Wang X, Fan Y, Zhao Y, Carmeliet J and Ge J (2023) Urban heat dome flow deflected by the Coriolis force. *Urban Climate* 49:101449. https://doi.org/10.1016/j.uclim.2023.101449

The urban heat island is one of the most evident urban climate phenomena (Vardoulakis et al., 2013) caused by urbanisation/densification and subsequent changes to underlying surface properties (Fan et al., 2021), vegetation effects (Manickathan et al., 2022), radiative heat exchange (Zhao et al., 2014) and urban ventilation (Van Hooff et al., 2012). Under stable and calm background conditions, airflow in cities is dominated by different scales of natural convection (Fan et al., 2016a), and an urban heat dome flow induced by urban heat island effects may form at city scale (Fan et al., 2017). The urban heat dome flow is widely believed to strongly affect urban environment (Yang and Li, 2009), building energy consumption (Li et al., 2019), comfort and health of residents (Manoli et al., 2019).

It is known that the Coriolis effect leads to the deflection of meso- and regional- scale flows (Hunt et al., 2010) and the generation of vortices (Lazpita et al., 2022), such as cyclone and anticyclone phenomena (Frank et al., 2017). These wind deflection effects have also the potential to affect the urban heat dome flow and subsequently further affect urban ventilation, heat dissipation (removal and storage), and pollution dispersion in urban and suburban areas (Mirzaei and Haghighat, 2010).

The urban heat dome flow has been evaluated using field measurements (Shreffler, 1979), numerical simulations (Lemonsu and Masson, 2002), and water/air tank experiments (Hidalgo et al., 2008) without considering the Coriolis force. This is justified when the characteristic length is small (<10 km) and the Rossby number (Ro) is significantly larger than unity (>>1) (Pournazeri et al., 2012). However, an increasing number of megacities and city clusters have emerged as a result of rapid urbanisation, with many of these cities exceeding 20 km in characteristic diameter (Hunt et al., 2013). As a result, the value for Ro becomes close or even smaller than 1. Therefore,

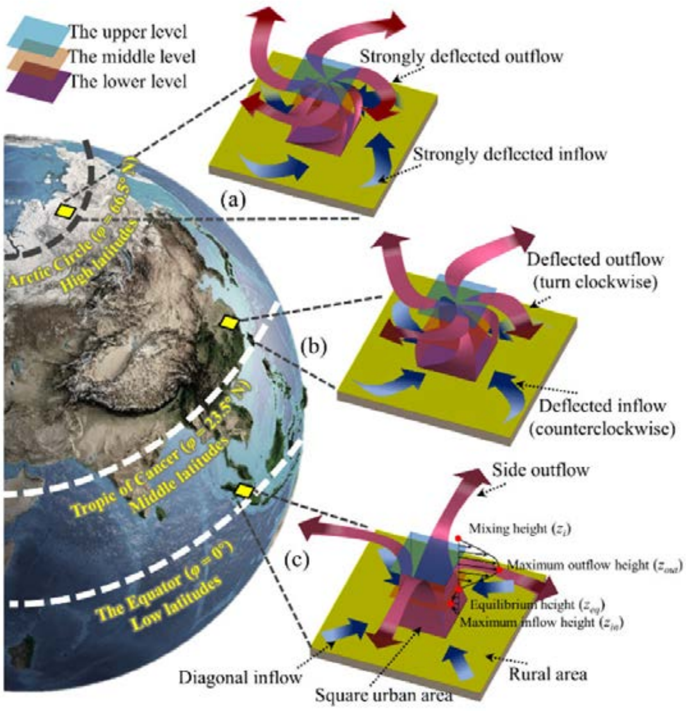


Figure 1. Illustration of the urban heat dome flow over square urban areas at different latitudes.

the Coriolis force should be taken into consideration when performing urban heat dome flow studies, particularly over megacities locating in high latitude regions (See Fig. 1). The urban heat dome flow near the equator has negligible Coriolis force (Fig. 1c). When the Coriolis force is significant, the urban heat dome flow becomes deflected. Blue and red arrows in Fig. 1 (a) and (b) indicate main lower-level inflows and upper-level outflows respectively, which are strongly deflected by the Coriolis force. Lower-level inflow is deflected counter-clockwise and upper-level outflow is deflected clockwise, and the deflection effect gets stronger as the latitude increases.

Numerical model used in the study

The large-eddy simulation (LES) is used to solve the continuity, momentum, and energy equations. The Wall Adapting Local Eddy Viscosity (WALE) model is used to calculate the eddy-viscosity term. To ensure that the proper settings of potential temperature and stable stratification are used, vertical coordinate transformation (Wang and Li, 2016) is applied and a new set of governing equations is obtained. All simulations are performed using transformed coordinates. After the simulation, the results are converted back to the Cartesian coordinate system with the physical height for better presentation and analysis. The governing equations of continuity, momentum, and energy are rewritten as Eqs. (1-3):

$$\nabla \cdot \vec{V} = 0 \quad (1)$$

$$\frac{d(\rho_0 \vec{V})}{dt} = -\nabla p + \mu \nabla \vec{V}^2 + \rho_0 \beta (T - T_0) g + \vec{F_n} + \vec{F_c} = 0 \quad (2)$$

$$\frac{d(\rho_0 C_p T)}{dt} = \nabla(k \nabla T) + S_T \quad (3)$$

where t is time [s], μ is the molecular viscosity for the friction term (kg m^{-1} s^{-2}], and k is the incompressible conductivity [W m^{-1} K^{-1}]. T [K] and p [Pa] represent temperature and pressure. The Coriolis force term ($\vec{F_c}$) and coordinate transformed term ($\vec{F_n}$) are included in Eq. (4) and (5) respectively. The parameters J and ξ are given in Eq. (6) and (7):

$$\vec{F_c} = \begin{bmatrix} \rho_0 f v - \rho_0 l w_n J \\ -\rho_0 f u \\ \rho_0 l u J \end{bmatrix} \quad (4)$$

$$\vec{F_n} = \begin{bmatrix} 0 \\ 0 \\ (J^2 - 1)\rho_0 \beta(\theta - T_0) g + \xi \rho_0 {w_n}^2 J - p_n \xi (J + 1 + \xi z_n) \end{bmatrix} \quad (5)$$

$$J = 1/(1 - \xi z_n) \quad (6)$$

$$\xi = -\frac{1}{z}\left(\frac{g}{R}\left(\frac{\partial \theta}{\partial z}\right)^{-1} - 1\right) ln\left(1 - \left(\frac{\partial \theta}{\partial z}\right)\frac{z}{T_0}\right) \quad (7)$$

where f (f = 2Ωsinφ) and l (l = 2Ωcosφ) are the vertical and horizontal components of the Coriolis frequency, respectively [rad s^{-1}]. Ω (7.25 × 10^{-5} rad s^{-1}) is the angular speed of the Earth's rotation, and φ is the latitude.

Boundary conditions

In this study, an ideal square city subject to uniform heating is considered (Fig. 2). D and B are characteristic diameter of urban area and the distance from urban edge to domain boundary, respectively. D is chosen to be 20 km.

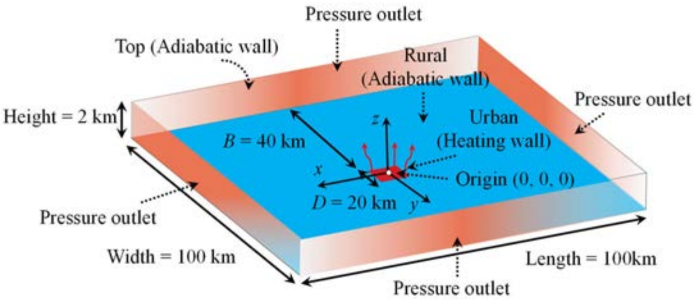


Figure 2. The computational domain and boundary conditions. The origin of coordinates is located in the centre of the urban area.

To qualitatively and quantitatively demonstrate the influence of different magnitudes of the Coriolis forces on the urban heat dome flow, we simulate four cases corresponding to four latitudes of 0°, 30°, 50°, and 78°, respectively, in the Northern hemisphere. The parameters of the cases are summarised in Table 1.

Validations of the numerical model

In order to better verify the numerical method in this paper, we established a separate numerical water tank model (Case 1). The setting of relevant background conditions was the same as the experimental study of Fan et al. (Fan et al., 2018)

As suggested by Fan et al. (2016b), the non-dimensional horizontal velocity profiles in reduced-scale water tank models and real atmospheric scale models should be scaled using the Prandtl number (Pr) for comparison (Eq. 8).

$$U_W{}^* = U_A{}^* \left(\frac{Pr_W}{Pr_A}\right)^{-c} \quad (8)$$

where Pr_W and Pr_A are the Prandtl numbers for water and air, respectively. U_W* and U_A* are the horizontal velocity scales used for water and air, respectively. The average non-dimensional horizontal velocity profiles at the city edge (x/D = 0.5, y/D = 0) of the numerical model are

Table 1. Summary of all cases.

Case	D (m)	N (s-1)	H_0 (W m-2)	U_D (m s-1)	z_i (m)	Ro, φ (°)
Case 1	0.12	0.68	4444	0.0069	0.0024	∞, 0
Case 2	2×10^3	0.018	200	4.73	705	∞, 0
Case 3	2×10^4	0.018	200	4.73	705	3.25, 30
Case 4	2×10^4	0.018	200	4.73	705	2.12, 50
Case 5	2×10^4	0.018	200	4.73	705	1.66, 78

compared with the experimental data, (Fan et al., 2018) as shown in Fig. 3. Solution time is from 150s to 250s for a numerical water tank case, and 10,000s to 15,000s for the full-scale atmosphere model when the quasi-steady state is reached. The results show that the numerical water tank model (Case 1) is in good agreement with the results obtained from the water tank experiments (Fan et al., 2018).

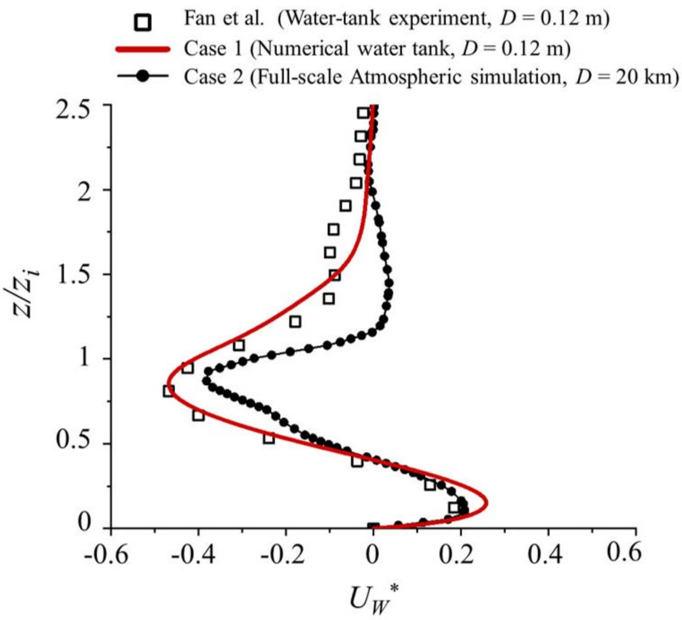


Figure 3. The mean vertical distribution profile of horizontal velocity at the urban edge (x/D = 0.5, y/D = 0). Data for the water tank experiments are obtained from Fan et al., (2018) (Fr = 0.08).

Distinction between model with and without Coriolis force

Based on the vertical distribution profile of the mean horizontal velocity $U_{xy} = (U_x^2 + U_y^2)^{1/2}$ at the urban edge (x/D = 0.5, y/D = 0), the maximum inflow height (z_{in}), equilibrium height (z_{eq}), and maximum outflow height (z_{out}) could be determined (Fig. 1). For Cases 2-4, the velocity fields are determined on horizontal planes at these three heights (z_{in}, z_{eq}, and z_{out}) and represented in Fig. 4.

At the maximum inflow height (z_{in}), the flow field for a 0° latitude case shows a standard convergent inflow along the diagonals (Fig. 4a). At a latitude of 30° (Fig. 4b), the lower-level flow is deflected in a counter-clockwise direction owing to the Coriolis force. Prominent cyclone phenomena manifest at lower levels. As the latitude increases to 50° (Fig. 4c), the high-speed areas on the side regions continue to expand, and the vortex in the dome core region continues to grow.

At the middle level z_{eq} the inflow weakens, and outflow starts to appear. For Case 2, diagonal inflows remain, and the speed on the diagonals is higher than that in other areas (Fig. 4d). For Case 3 (Fig. 4e), while the high-speed area shrinks toward the dome core, a large central vortex is formed. As the latitude increases to 50° (Fig. 4f), the central vortex intensifies as the high-speed area (U_{xy} > 3m s^{-1}) expands.

For the upper level z_{out}, the four side areas exhibit obvious divergent outflows (Case 2, Fig. 4g). Four low-speed recirculation regions (calm regions) form between each of the two high-speed outflow branches. When the Coriolis force is present (Case 3, Fig. 4h), the outflow is displaced towards the counter-clockwise direction over the urban area owing to the rotational inertia of strong inflows in counter-clockwise direction. As the side outflow propagates further away from the urban area, it is deflected in a clockwise direction under the influence of the Coriolis force, that is, the anticyclone phenomenon. As the latitude increases, the deformation of the outflow branch becomes more distinct (Case 4, Fig. 4i).

3D iso-surfaces of the time-averaged velocity $U_{xyz} = (U_x^2 + U_y^2 + U_z^2)^{1/2}$, respectively, for cases at dif-

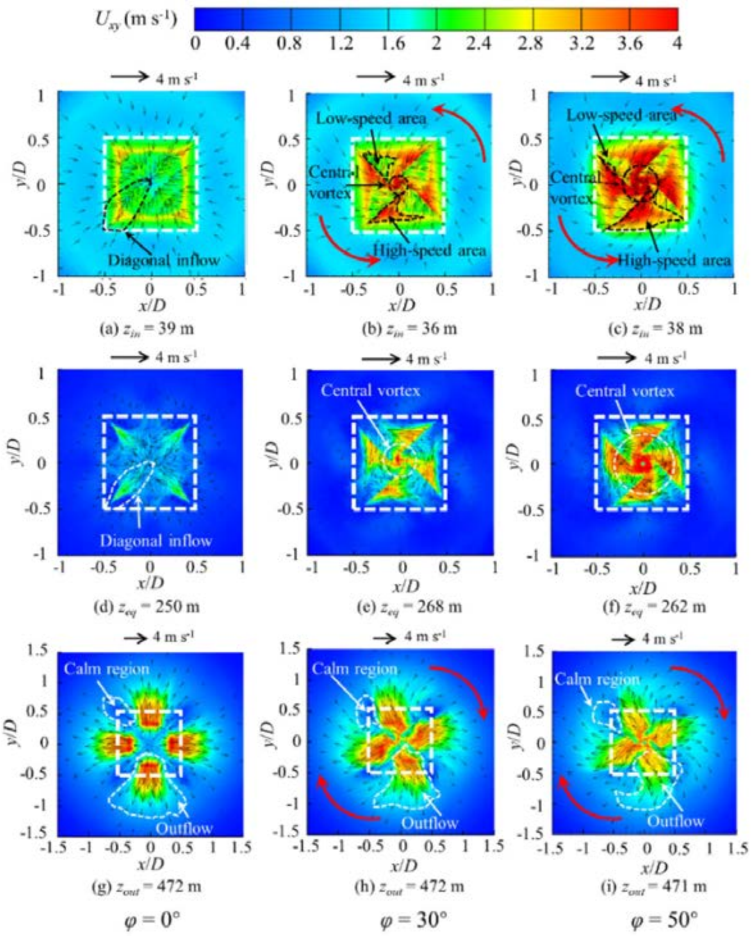


Figure 4. Mean velocity fields on different horizontal planes at quasi-steady state for Case 2 (a, d, g) with φ = 0°, Case 3 (b, e, h) with φ = 30º, and Case 4 (c, f, i) with φ = 50º. The dashed white squares denote the position of the urban area.

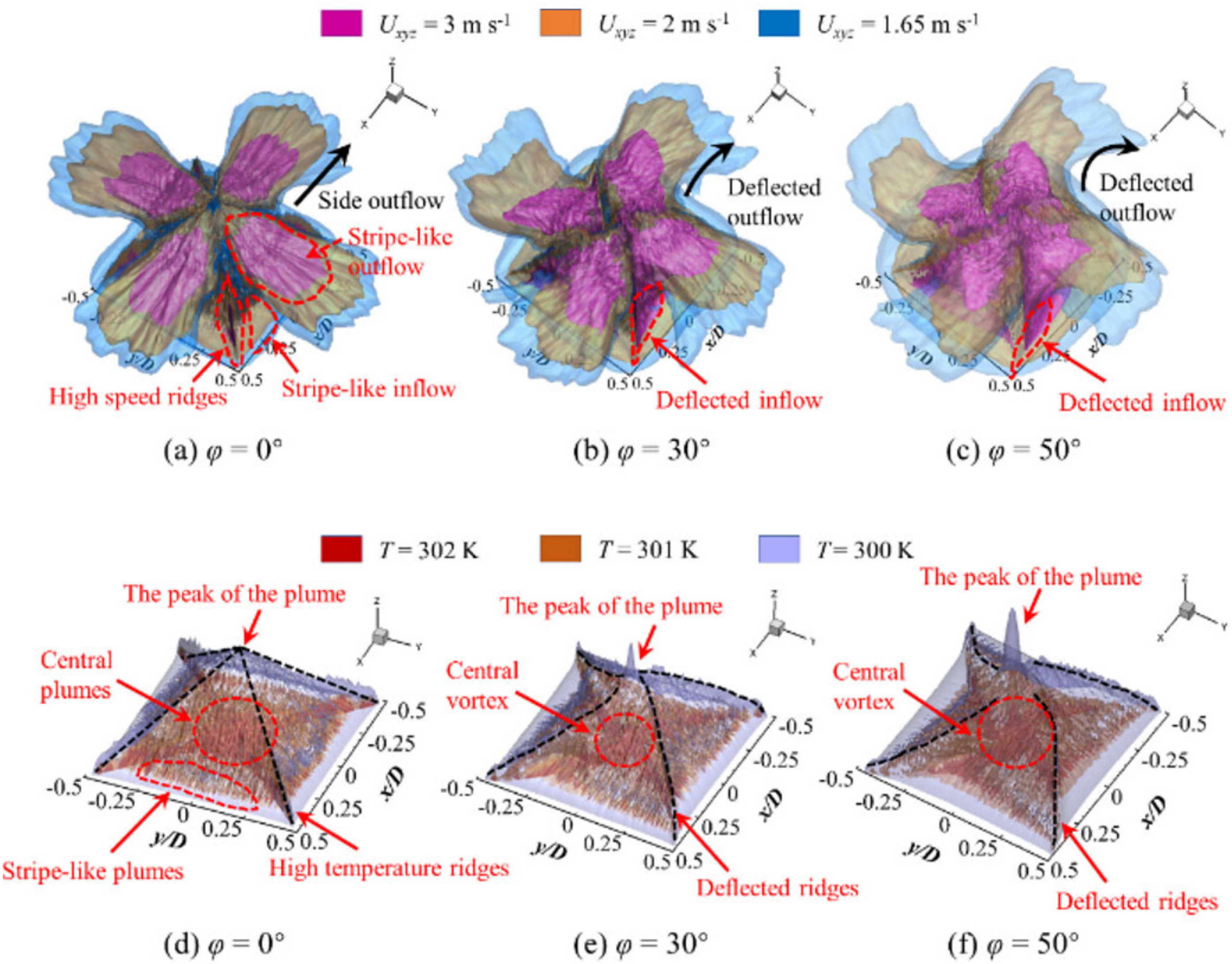


Figure 5. Three dimensional (3D) urban heat dome flow structure for cases at latitude of 0° (a), 30° (b), and 50° (c) visualized by iso-surface of time-averaged velocity magnitude U_{xyz} averaged from solution time 10,000 to 15,000s.

ferent latitudes are shown in Fig. 5(a), (b), and (c). When the Coriolis force is absent (Case 2, Fig. 5a), an iso-surface of 3 m s^{-1} is observed along the diagonal at the lower level. The iso-surface in the side region represents a stripe-like inflow formed by the disturbance of sub-city-scale thermal plumes. At the upper level, the outflows above the four sides of the city present a four-leaf clover structure. Stripe-like outflows are also observed at this level. Figs. 5(b) and (c) further prove that both convergent and divergent outflows are deflected as a result of the Coriolis force, and that the deflection increases with latitude.

3D iso-surfaces of time-averaged temperature are shown in Figs. 5(d), (e), and (f). In the absence of the Coriolis force (Fig. 5d), stripe-like thermal plumes are observed in the urban edge regions and high-temperature ridges are formed near the diagonal lines. High-temperature plumes are advected towards the core of the dome. When the Coriolis force is applied, the high-temperature ridges begin to deflect and a central vortex appears. As the latitude increases from 30° to 50° (Figs. 5e and f), the deflection of the high-temperature ridges becomes more significant, and the vortex in the dome core region becomes stronger.

The overall effects of the Coriolis force on the urban heat dome flow above a square city are summarised and illustrated in Fig. 6. Fig. 6a-b-c show the schematic diagrams of the urban heat dome flow at different levels without Coriolis force. With presence of Coriolis force, the low-level area presents clear anticyclone characteristics (Fig. 6d). The diagonal inflow is deflected counter-clockwise. High-speed areas appear in the side regions due to deflections. At the upper-level (Fig. 6f), the Coriolis force deflects outflows to turn clockwise, and an anticyclonic phenomenon is manifested. To quantitatively analyse the strength of the deflection effect, maximum speed points in the urban area are identified on the centreline of the outflow branch and connected by a fitted line. The angle between this line and the adjacent coordinate axis is defined as the outflow angle γ as marked in Fig. 6(f).

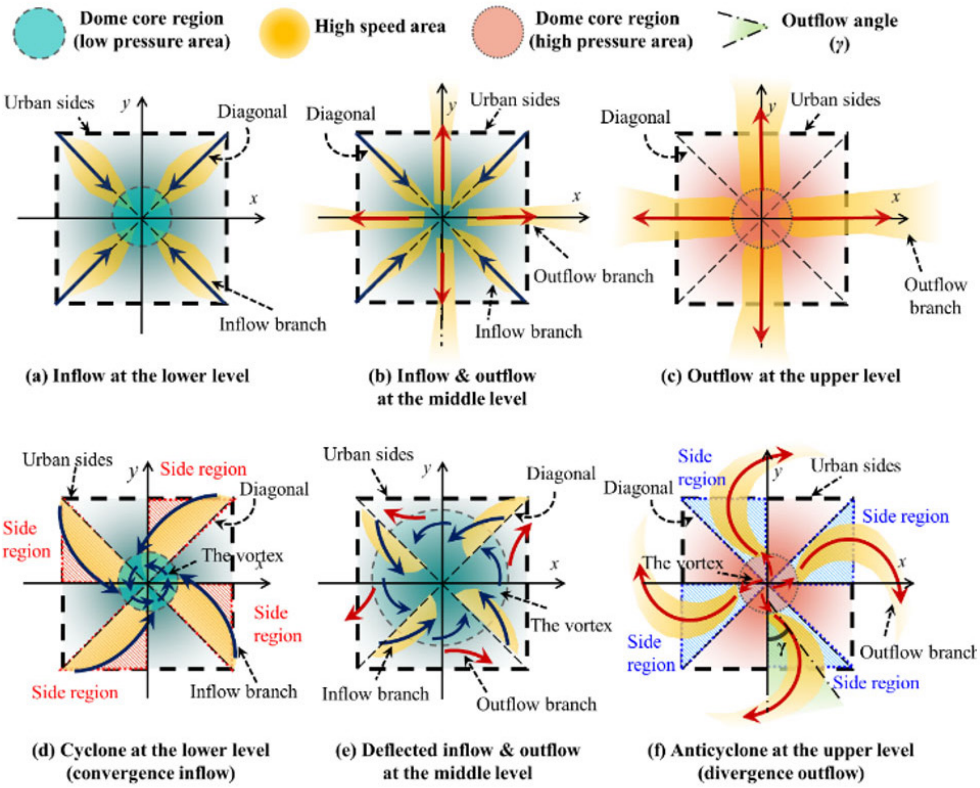


Figure 6. Schematic diagrams of the urban heat dome flow at different levels for (a, b, c) without the Coriolis force and (d, e, f) with the Coriolis force. The black dashed squares denote the urban edges. The side regions are marked by red shadows (d) at the lower level and blue shadows (f) at the upper level.

Quantification of the deflection effects

The outflow angle γ for the various cases is calculated as shown in Fig. 7. The values of γ for Case 3 (γ = 40°, Ro = 3.25) is shown in Fig. 7(a). Case 4 (γ = 49°, Ro = 2.12) and Case 5 (γ = 57°, Ro = 1.66) are shown in Fig. 7(b). As the Coriolis force increases, i.e., Ro decreases, γ shows an increasing trend. Ro quantifies the ratio of the inertia force due to convection to the Coriolis force owing to the Earth's rotation, which determines the rotation of the outflow branch. Therefore, the relationship between the outflow angle γ and Ro is quantified to be $\gamma = 74 \times Ro^{-0.53}$ using a nonlinear regression, where $R^2 = 0.99$. Through a log-log plot (base 10), this relation is transformed to be linear, as shown in Fig. 7(c), where the slope is equal to -0.53.

Conclusion

The Coriolis force becomes more distinct with the increasing of city size, which is considered and modelled to study the buoyancy-driven urban heat dome. When the Coriolis force was taken into account, the urban heat dome flow exhibited an evident deflection effect. At the lower level, the convergence flow was deflected in a counterclockwise direction in the Northern hemisphere. A prominent cyclone phenomenon was manifested. For the upper level, the outflow was deflected in a counterclockwise direction over the urban central area. As the side outflow propagated towards further away from the urban area, it was deflected in a clockwise direction, followed by the manifestation of an anticyclonic phenomenon. Vice versa in the Southern hemisphere. The deflection effect of Coriolis force increases with latitude. To quantitatively analyse the deflection effect of the Coriolis force, the outflow angle γ is defined. As Ro decreases, γ shows an increasing trend. The relationship between the outflow angle γ and Ro is quantified to be $\gamma = 74 \times Ro^{-0.53}$ using a nonlinear regression.

The findings imply that, when urban characteristic diameter reaches beyond 10 km, the deflection of the urban heat dome in high-latitude regions has to be considered for studying heat and pollutant distribution in urban areas. The model provides a tool to help policy-makers to predict hot spots and potential city scale cooling energy demand at unprecedented spatial resolution. The model enables future studies focusing on city scale coupling of heat field, cooling demand and energy resilience analyses, thanks to its ability in delivering urban morphology-resolved heat and airflow fields.

Acknowledgments

The support of the grant from the National Natural Science Foundation of China (NSFC) (No. 51908489) is acknowledged. This work is also supported by the Swiss National Science Foundation (Grant 200021 169323). The research project of the Ministry of Housing and Urban-Rural Development of China (K20210466) is acknowledged.

References

Fan, Y., Li, Y., Hang, J., Wang, K., Yang, X., 2016a. Natural convection flows along a 16-storey high-rise building. *Build. Environ.* 107, 215–225.

Fan, Y., Li, Y., Wang, X., Catalano, F., 2016b. A new convective velocity scale for studying diurnal urban heat island circulation. *J. Appl. Meteorol. Climatol.* 55, 2151–2164.

Fan, Y., Hunt, J.C.R., Li, Y., 2017. Buoyancy and turbulence-driven atmospheric circulation over urban areas. *J. Environ. Sci.* 59, 63–71.

Fan, Y., Hunt, J., Yin, S., Li, Y., 2018. Mean shear flow in recirculating turbulent urban convection and the plume-puff eddy structure below stably stratified inversion layers. *Theor. Appl. Climatol.* 1-15.

Fan, Y., Zhao, Y., Torres, J.F., Xu, F., Lei, C., Li, Y., Carmeliet, J., 2021. Natural convection over vertical and horizontal heated flat surfaces: a review of recent progress focusing on underpinnings and implications for heat transfer and environmental applications. *Phys. Fluids* 33, 101301.

Frank, D., Landel, J.R., Dalziel, S.B., Linden, P.F., 2017. Anticyclonic precession of a plume in a rotating environment. *Geophys. Res. Lett.* 44, 9400–9407.

Hidalgo, J., Pigeon, G., Masson, V., 2008. Urban-breeze circulation during the CAPITOUL experiment: numerical simulations. *Meteorog. Atmos. Phys.* 102, 243–262.

Hunt, J.C.R., Olafsson, H., Bougeault, P., 2010. Coriolis effects on orographic and mesoscale flows. *Q. J. R. Meteorol. Soc.* 127, 601–633.

Hunt, J.C.R., Timoshkina, Y.V., Bohnenstengel, S.I., Belcher, S., 2013. Implications of climate change for expanding cities worldwide. In: *Proceedings of the Institution of Civil Engineers-Urban Design and Planning*, 166, pp. 241–254.

Lazpita, E., Martínez-S´ anchez, A., ´ Corrochano, A., Hoyas, S., Clainche, S.L., Vinuesa, R., 2022. On the generation and destruction mechanisms of arch vortices in urban fluid flows. *Phys. Fluids* 34, 051702.

Lemonsu, A., Masson, V., 2002. Simulation of a summer urban breeze over Paris. *Bound.-Layer Meteo.* 104, 463–490.

Li, X., Zhou, Y., Yu, S., Jia, G., Li, H., Li, W., 2019. Urban heat island impacts on building energy consumption: a review of approaches and findings. *Energy* 174, 407–419

Manickathan, L., Defraeye, T., Carl, S., Richter, H., Allegrini, J., Derome, D., Carmeliet, J., 2022. A study on diurnal microclimate hysteresis and plant morphology of a Buxus sempervirens using PIV, infrared thermography, and X-ray imaging. *Agric. For. Meteorol.* 313, 108722

Manoli, G., Fatichi, S., Schlapfer, ¨ M., Yu, K., Crowther, T.W., Meili, N., Burlando, P., Katul, G.G., Bou-Zeid, E., 2019. Magnitude of urban heat islands largely explained by climate and population. *Nature* 573, 55–60

Mirzaei, P.A., Haghighat, F., 2010. Approaches to study urban Heat Island-abilities and limitations. *Build. Environ.* 45, 2192–2201.

Pournazeri, S., Princevac, M., Venkatram, A., 2012. Scaling of building affected plume rise and dispersion in water channels and wind tunnels-revisit of an old problem. *J. Wind Eng. Ind. Aerodyn.* 103, 16–30.

Shreffler, J.H., 1979. Heat island convergence in St. Louis during calm periods. *J. Appl. Meteorol.* 18, 1512–1520.

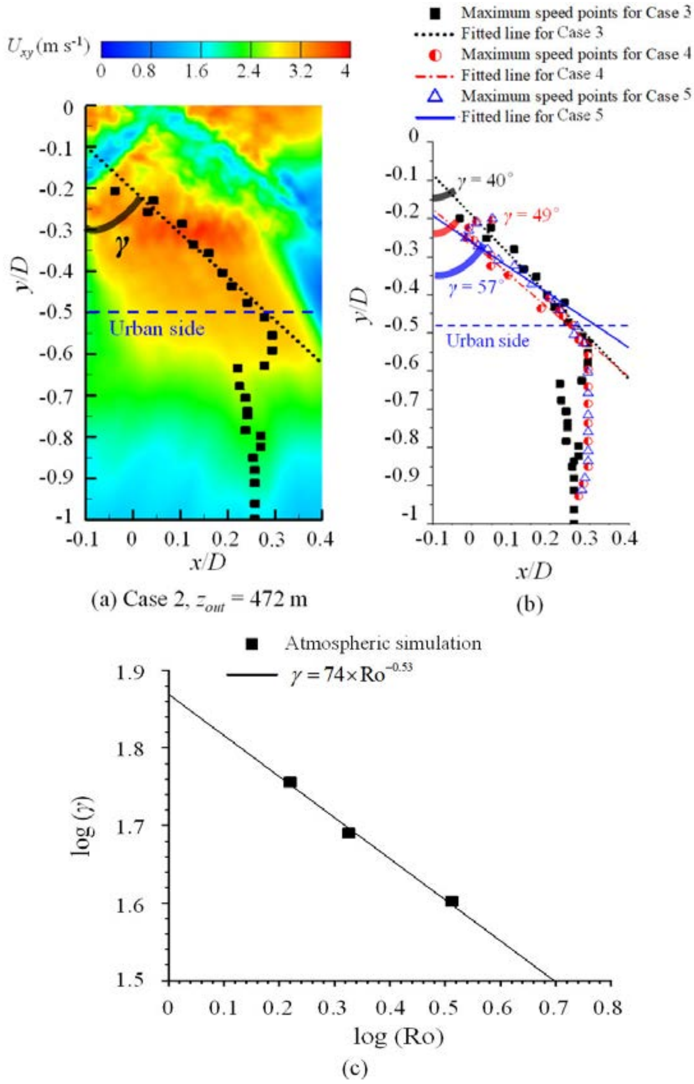


Figure 7. (a) An example (Case 3, φ = 30°) of outflow branches at upper level and the definition of γ. (b) the γ values of Case 3 (φ = 30°), Case 4 (φ = 50°), and Case 5 (φ = 78°). (c) Log-log plot (base 10) of the outflow angle (γ) as a function of the Ro number (Ro = 3.25, 2.12 and 1.66) with the fitted model superimposed.

Van Hooff, T., Blocken, B., Defraeye, T., Carmeliet, J., Van Heijst, G.J.F., 2012. PIV measurements and analysis of transitional flow in a reduced-scale model: ventilation by a free plane jet with Coanda effect. *Build. Environ.* 56, 301–313.

Vardoulakis, E., Karamanis, D., Fotiadi, A., Mihalakakou, G., 2013. The urban heat island effect in a small Mediterranean city of high summer temperatures and cooling energy demands. *Sol. Energy* 94, 128–144.

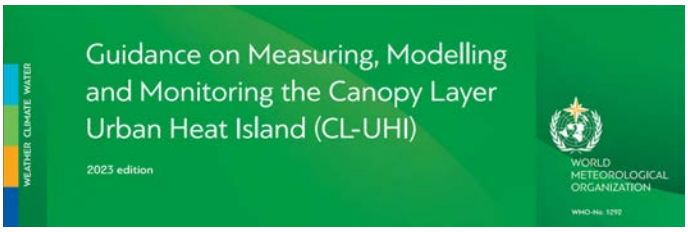
Wang, X., Li, Y., 2016. Predicting urban heat island circulation using CFD. *Build. Environ.* 99, 82–97.

Yang, L., Li, Y., 2009. City ventilation of Hong Kong at no-wind conditions. *Atmos. Environ.* 43, 3111–3121.

Zhao, L., Lee, X., Smith, R.B., Oleson, K., 2014. Strong contributions of local background climate to urban heat islands. *Nature* 511, 216–219.

WMO guidance on UHI measurement, modelling and monitoring

WMO (2023): Guidance on Measuring, Modelling and Monitoring the Canopy Layer Urban Heat Island (CL UHI). K.H. Schlünzen, S. Grimmond, A. Baklanov (editors.), World Meteorological Organisation, WEATHER CLIMATE WATER. 2023 edition. WMO Publication No. 1292, 88 pp.
https://library.wmo.int/doc_num.php?explnum_id=11537



More than half of the world's population lives in urban areas; they contribute ~70% of the greenhouse gas emissions and thus significantly influence global climate change. Furthermore, urban areas with their buildings and sealed surfaces locally alter the meteorology, creating, among other influences, characteristic temperature patterns. One of the best-known and widely studied phenomena is the canopy layer urban heat island (CL-UHI) which is found in cities of all sizes. Specifically, near surface night temperatures (~1.5 m above ground) are often higher in urban areas than in the surrounding rural areas. The CL-UHI characteristics differ between cities, within a city and with time of the day and the season. Urban temperature increases lead to nighttime heat stress and affect the height of the atmospheric boundary layer, atmospheric chemistry, and plant growth or pollen season length, to name a few effects. Climate change induced warming in cities is similar to that experienced in rural areas, but modified by the CL-UHI.

With climate change, the CL-UHI with its additional influence on temperature in urban areas is receiving more and more attention by urban planners. Given this development, and in response to the request of the 18th World Meteorological Congress (Resolutions 32 and 61), experts from WMO GAW (Global Atmosphere Watch) Urban Research Meteorology and Environment (GURME) initiated in 2020 an expert team inviting more than 30 world-wide experts to contribute to a "Guidance on Measuring, Modelling and Monitoring the Canopy Layer Urban Heat Island (CL-UHI)" (https://library.wmo.int/index.php?lvl=notice_display&id=22236). The experts' texts and reviewer's comments were merged into the CL-UHI guidance. It provides the scientific background needed to understand the processes that generate and influence the urban heat island, gives examples for different agencies and services that need the information, and compiles useful metrics. The role of metrics and urban form is discussed, as well as the parameters needed to characterise urban areas at the building level and local scale. The influences of weather conditions, topography and urban features on heat island intensity, and ways of determining the CL-UHI intensity (measurement, modelling, monitoring) are explained. Topics include a clear definition of the CL-UHI and clarifications of what it is not, as well as CL-UHI application examples. The guidance also explains why the CL-UHI mitigation is only part of an answer to reduce urban heat problems. The guidance could serve as a useful reference to meteorologists, climatologists, meteorological administrative staff, and others interested in the CL-UHI.

Coordinating lead authors: K. Heinke Schlünzen (Universität Hamburg, Germany), Sue Grimmond (University of Reading, United Kingdom of Great Britain and Northern Ireland), Alexander Baklanov (WMO).

Lead authors: Alberto Martilli (CIEMAT, Spain), Valéry Masson (Météo France), Shiguang Miao (IUM CMA, China), Chao Ren (The University of Hong Kong), Matthias Roth (National University of Singapore), Iain D. Stewart (Global Cities Institute, Canada).

Contributing authors: Felix Ament (Universität Hamburg, Germany), Lee Chapman (University of Birmingham, United Kingdom), Lesley Choo (NEA Singapore), Andreas Christen (University of Freiburg, Germany), Anurag Dipankar (NEA Singapore), Evyatar Erell (Ben Gurion University of the Negev, Israel), Clare Heaviside (University College London, United Kingdom), Jorge Gonzalez (City College of New York, United States of America), Guido Halbig (DWD, Germany), PeterHoffmann (GERICS, Germany), Meinolf Kossmann (DWD, Germany), Scott Krayenhoff (University of Guelph, Canada), Stephen Po wing Lau (Hong Kong Observatory), Humphrey Lean (UK Met Office, United Kingdom), Glenn McGregor (Durham University, United Kingdom), Gerald Mills (University College Dublin, Ireland), Negin Nazarian (University of New South Wales, Australia), Paulo Saldiva (University of São Paulo, Brazil), Vivek Shandas (Portland State University, United States), Stefan Smith (University of Reading, United Kingdom), Jianguo Tan (Shanghai Institute of Meteorological Science, CAMS, China), Oksana Tarasova (WMO), James Voogt (University of Western Ontario, Canada).

Reviewers: Benjamin Bechtel (Ruhr University Bochum, Germany), Edmilson Dias de Freitas (University of São Paulo, Brazil), Paul Joe (ECCC, Canada), Hunter Jones (NOAA, United States), Feng Liang (Beijing Meteorological Service, China), Juerg Luterbacher (WMO), Yves Alain Roulet (Meteo Swiss, Switzerland), Marcus Thatcher (CSIRO, Australia), Alberto Troccoli (World Energy & Meteorology Council (WEMC), United Kingdom), Helen Ward (University of Innsbruck, Austria).

Urban Cooling Course at Western Sydney University in Australia

Australia is one of the most urbanised countries in the world, where more than 90% of the population live urban lives. The trend in Australia and elsewhere in the world is towards larger and denser cities. Both processes, expansion of cities at their fringe zones and densifying within, make cities warmer. This is counterproductive in a time where our summers become hotter. We must do the opposite – develop urban spaces to keep cool.

Western Sydney University, together with the Western Sydney Regional Organisation of Councils, have developed the new micro-credential course "The Basics of Urban Cooling" that addresses the problems we face head on. The course is packed with the latest knowledge in urban heat mitigation relevant for beginners and experts in the practical implementation of urban climate science, and those that plan, build and manage urban landscapes.

This is the course you want to do when you need an injection of positive, practical examples how to plan and build cool cities. The course will take about 25 hours of learning and engagement and completers are awarded a digital Western Sydney University badge as evidence of having engaged successfully. The course can also be used for professional development credits.

The new micro-credential course "The Basics of Urban Cooling" is delivered online. Check out the course landing page at: https://westernx.edu.au/courses/ucb/?cl=1

Associate Professor Sebastian Pfautsch
Urban Management and Planning
School of Social Sciences

https://youtu.be/HU6WWz--3Yo

Recent Urban Climate Publications

Agbo EP, Nkajoe U, Edet CO (2022) Comparison of Mann-Kendall and Sen's innovative trend method for climatic parameters over Nigeria's climatic zones. *Climate Dynamics*

Aguilera MA, Gracia Gonzalez M (2023) Urban infrastructure expansion and artificial light pollution degrade coastal ecosystems, increasing natural-to-urban structural connectivity. *Landscape and Urban Planning* 229 104609.

Agyekum J, Annor T, Quansah E, Lamptey B, Amekudzi LK, Nyarko BK (2022) Extreme temperature indices over the Volta Basin: CMIP6 model evaluation. *Climate Dynamics*

Ahmad M, Rappenglück B, Osibanjo O, Retama A (2022) A machine learning approach to investigate the build-up of surface ozone in Mexico-City. *Journal of Cleaner Production* 379 134638.

Akio Lucchezi Miyahara A, Wild T, Afonso Sandre A, Mesquita Pellegrino PR, da Silva Filho CA, Silveira Buckeridge M, Maselli Locosselli G (2022) Developing and classifying urban biomes as a basis for nature-based solutions. *Urban Climate* 45 101251.

Aklilu Y, Adams C, Wentworth GR, Mazur M, Dabek-Zlotorzynska E (2023) An approach to inform air quality management through receptor source apportionment and thermodynamic modelling of fine particulate matter in Red Deer, Alberta, Canada. *Atmospheric Research* 283 106583.

Aleksandrowicz O, Pearlmutter D (2023) The significance of shade provision in reducing street-level summer heat stress in a hot Mediterranean climate. *Landscape and Urban Planning* 229 104588.

Algretawee H (2022) The effect of graduated urban park size on park cooling island and distance relative to land surface temperature (LST). *Urban Climate* 45 101255.

AlKheder S (2023) Studying the effect of built environment on traffic safety with random parameter and generalized ordered logit models. *Urban Climate* 47 101388.

Alkhoudiri A, Navarro I, Fort JM, Alumran S (2022) Parametric comparative analysis of outdoor thermal comfort in a desert climate: A case study of single-family houses in riyadh. *Urban Climate* 46 101300.

Alsubhi Y, Qureshi S, Assiri ME, Siddiqui MH (2022) Quantifying the Impact of Dust Sources on Urban Physical Growth and Vegetation Status: A Case Study of Saudi Arabia. *Remote Sensing* 14 5701.

Alwi A, Mohamad M, Ikegaya N, Razak A (2023) Effect of protruding eave on the turbulence structures over two-dimensional semi-open street canyon. *Building and Environment* 228 109921.

Ambrose G, Das K, Fan Y, Ramaswami A (2023) Comparing happiness associated with household and community gardening: Implications for food action planning. *Landscape and Urban Planning* 230 104593.

Andresen I, Healey Trulsrud T, Finocchiaro L, Nocente A, Tamm M, Ortiz J, Salom J, Magyari A, Hoes-van Oeffelen L,

In this edition is a list of publications that have generally come out between **November 2022 and February 2023**. Publications in boldface are **featured** papers recommended by the members of the Bibliography Committee. If you believe your articles are missing, please send your references to the email address below with a header "IAUC publications" and the following format: Author, Title, Journal, Year, Volume, Issue, Pages, Dates, Keywords, URL, Abstract.

For this quarter, we would like to warmly welcome Jie Cao (Chinese Academy of Sciences), Dr. Jia Wang (Chinese Academy of Sciences), Dr. Qian Cao (China University of Geosciences), Xiangwen Deng (China University of Geosciences), Dr. Tirthankar Chakraborty (Pacific Northwest National Laboratory), and Namrata Dhamankar-Jadhav (MKSSS Dr. B. N. College of Architecture), who recently joined the committee.

We are always looking for researchers at any career stage (especially early career) to join the committee and contribute to the IAUC community. If you are interested in joining or would like to learn more information, please feel free to let me know via the email address below.

Happy reading,

Chenghao Wang
Chair, IAUC Bibliography Committee
University of Oklahoma, USA
chenghao.wang@ou.edu

The Bibliography Committee


Lilly Rose Amirtham


Anurag Bagade


Debanjali Banerjee


Shreya Banerjee


Pravin Bhiwapurkar


Jie Cao


Qian Cao


Tirthankar Chakraborty


Peter Crank


Xiangwen Deng


Namrata Dhamankar-Jadhav


Ahmed Eldesoky


Rafiq Hamdi


Ansar Khan


Huidong Li


Mathew Lipson


Martina Petralli


Aditya Rahul


Iara Santos


Jia Wang

Borsboom W, Kornaat W, Gaitani N (2022) Design and performance predictions of plus energy neighbourhoods – Case studies of demonstration projects in four different European climates. *Energy and Buildings* 274 112447.

Androulidakis YS, Kourafalou V (2022) Marine Heat Waves over Natural and Urban Coastal Environments of South Florida. *Water* 14 3840.

Antonelli CR, San Miguel TV, De Angelo C, Priotto J, Provensal MC, Gomez MD (2022) What happened to the house mouse: Modelling the occupancy of Mus musculus in an argentine city considering its urban growth. *Landscape and Urban Planning* 227 104542.

Anusha BN, Pradeep Kumar B, Rajasekhar M, Raghu BK (2022) Delineation of groundwater potential zones using geospatial and mcdm approaches in urban areas of anantapur district, ap, india. *Urban Climate* 46 101341.

Ashrafi A, Chowdhury J, Hangan H (2022) Comparison of aerodynamic loading of a high-rise building subjected to boundary layer and tornadic winds. Wind and Structures 34 395-405.

Awan A, Sadiq M, Hassan ST, Khan I, Khan NH (2022) Combined nonlinear effects of urbanization and economic growth on co2 emissions in malaysia. An application of qardl and krls. *Urban Climate* 46 101342.

Aznarez C, Svenning J-C, Taveira G, Baro F, Pascual U (2022) Wildness and habitat quality drive spatial patterns of urban biodiversity. *Landscape and Urban Planning* 228 104570.

Bai Y, Dong Y, Wang W, Pan D, Xu Y, Zhong Y, Chen B, Chen G, Wu G, Wu L, Wang X, Hang J (2023) Air pollutant dispersion in street canyons based on an outdoor scale model and machine learning. *Urban Climate* 47 101381.

Bakhshoodeh R, Ocampo C, Oldham C (2022) Evapotranspiration rates and evapotranspirative cooling of green façades under different irrigation scenarios. *Energy and Buildings* 270 112223.

Balakrishnan S, Udayashankar HN, Wankhede SF, Shetty N, Sharma AV, Balakrishna K (2023) Investigating the impact of long-term agricultural practices on selected peri-urban aquifers in tropical southwest india. *Urban Climate* 47 101356.

Bansal P, Quan SJ (2022) Relationships between building characteristics, urban form and building energy use in different local climate zone contexts: An empirical study in Seoul. *Energy and Buildings* 272 112335.

Barker PA, Allen G, Flynn M, Riddick S, Pitt JR (2022) Measurement of recreational n2o emissions from an urban environment in Manchester, UK. *Urban Climate* 46 101282.

Barra A, Reyes-Carmona C, Herrera G, Pedro Galve J, Solari L, Maria Mateos R, Miguel Azanon J, Bejar-Pizarro M, Lopez-Vinielles J, Palama R, Crosetto M, Sarro R, Cuervas-Mons J, Monserrat O (2022) From satellite interferometry displacements to potential damage maps: A tool for risk reduction and urban planning. *Remote Sensing of Environment* 282 113294.

Basu T, Das A (2023) Urbanization induced degradation of urban green space and its association to the land surface temperature in a medium-class city in India. *Sustainable Cities and Society* 90 104373.

Battista G, Evangelisti L, Guattari C, Roncone M, Balaras C (2023) Space-time estimation of the urban heat island in Rome (Italy): Overall assessment and effects on the energy performance of buildings. *Building and Environment* 228 109878.

Bedi C, Kansal A, Mukheibir P (2023) A conceptual framework for the assessment of and the transition to liveable, sustainable and equitable cities. *Environmental Science and Policy* 140 134-145.

Behnami A, Jafari N, Benis KZ, Fanaei F, Abdolahnejad A (2023) Spatio-temporal variations, ozone and secondary organic aerosol formation potential, and health risk assessment of BTEX compounds in east of Azerbaijan province, Iran. *Urban Climate* 47 101360.

Bera D, Chatterjee N, Ghosh S, Dinda S, Bera S (2022) Recent trends of land surface temperature in relation to the influencing factors using Google Earth Engine platform and time series products in megacities of India. *Journal of Cleaner Production* 379 134735.

Bibi TS, Tekesa NW (2023) Impacts of climate change on IDF curves for urban stormwater management systems design: the case of Dodola Town, Ethiopia. *Environmental Monitoring and Assessment* 195 170.

Birkel JFH, Twine TE, Liess S, Kalkstein LS, Sheridan S (2022) Trends in synoptic heat events in four minnesota urban areas through the 21st century. *Urban Climate* 46 101307.

Bonacci O, Roje-Bonacci T, Vrsalović A (2022) The day-to-day temperature variability method as a tool for urban heat island analysis: A case of Zagreb-Grič Observatory (1887–2018). *Urban Climate* 45 101281.

Bonaccorso N, da Graça GC (2022) Low-cost DIY thermal upgrades for overheating mitigation in slum houses in Latin America & Caribbean. *Energy and Buildings* 271 112319.

Bondyopadhyay S, Mohapatra M (2023) Determination of suitable thermodynamic indices and prediction of thunderstorm events for Eastern India. *Meteorology and Atmospheric Physics* 135 4.

Boudali Errebai F, Strebel D, Carmeliet J, Derome D (2022) Impact of urban heat island on cooling energy demand for residential building in Montreal using meteorological simulations and weather station observations. *Energy and Buildings* 273 112410.

Bradsworth N, White JG, Rendall AR, Carter N, Whisson DA, Cooke R (2022) Using thresholds to determine priorities for apex predator conservation in an urban landscape. *Landscape and Urban Planning* 228 104559.

Briegel F, Makansi O, Brox T, Matzarakis A, Christen A (2023) Modelling long-term thermal comfort conditions in urban environments using a deep convolutional encoder-decoder as a computational shortcut. *Urban Climate* 47 101359.

Bu F, Yan D, Tan G, Sun H, An J (2023) Acceleration algorithms for long-wavelength radiation integral in the annual simulation of radiative cooling in buildings. *Renewable Energy* 202 255-269.

Buisan ST, Serrano-Notivoli R, Kochendorfer J, Bello-Millan FJ (2022) Adjustment of Solid Precipitation during the Filomena Extreme Snowfall Event in Spain: From Observations to "True Precipitation". *Bulletin of the American Meteorological Society* 103 E2570-E2578.

Burgos-Cuevas A, Magaldi A, Adams D, Grutter M, García Franco J, Ruiz-Angulo A (2023) Boundary Layer Height Characteristics in Mexico City from Two Remote Sensing Techniques. *Boundary-layer Meteorology* 186 287-304.

Buzasi A, Jager BS, Hortay O (2022) Mixed approach to assess urban sustainability and resilience-A spatio-temporal perspective. *City and Environment Interactions* 16 100088.

Cai B, Liu H, Zhang X, Pan H, Zhao M, Zheng T, Nie J, Du M, Dhakal S (2022) High-resolution accounting of urban emissions in China. *Applied Energy* 325 119896.

Cai Z, Guldmann JM, Tang Y, Han G (2022) Does city-water layout matter? Comparing the cooling effects of water bodies across 34 Chinese megacities. *Journal of Environmental Management* 324 116263.

Cai Z, Demuzere M, Tang Y, Wan Y (2022) The characteristic and transformation of 3D urban morphology in three Chinese mega-cities. *Cities* 131 103988.

Caliot C, Schoetter R, Forest V, Eymet V, Chung T-Y (2023) Model of Spectral and Directional Radiative Transfer in Complex Urban Canopies with Participating Atmospheres. *Boundary-layer Meteorology* 186 145-175.

Cannon JB, Warren LT, Ohlson GC, Hiers JK, Shrestha M, Mitra C, Hill EM, Bradfield SJ, Ocheltree TW (2022) Applications of low-cost environmental monitoring systems for fine-scale abiotic measurements in forest ecology. *Agricultural and Forest Meteorology* 321 108973.

Cao J, Zhou W, Yu W, Hu X, Yu M, Wang J, Wang J (2022) Urban expansion weakens the contribution of local land cover to urban warming. *Urban Climate* 45 101285.

Cao W, Dong L, Cheng Y, Wu L, Guo Q, Liu Y (2023) Constructing multi-level urban clusters based on population distributions and interactions. *Computers Environment and Urban Systems* 99 101897.

Cárdenas-Jirón LA, Graw K, Gangwisch M, Matzarakis A (2023) Influence of street configuration on human thermal comfort and benefits for climate-sensitive urban planning in Santiago de Chile. *Urban Climate* 47 101361.

Castelli G, Sanchez AC, Mestrallet A, Montano LC, de Armentia TL, Salbitano F, Bresci E (2023) Fog as unconventional water resource: Mapping fog occurrence and fog collection potential for food security in Southern Bolivia. *Journal of Arid Environments* 208 104884.

Cecilia A, Casasanta G, Petenko I, Conidi A, Argentini S (2023) Measuring the urban heat island of rome through a dense weather station network and remote sensing imperviousness data. *Urban Climate* 47 101355.

Chai B, Li P (2023) An ensemble method for monitoring land cover changes in urban areas using dense Landsat time series data. ISPRS Journal of Photogrammetry & Remote Sensing 195 29-42.

Chakraborty T, Venter ZS, Qian Y, Lee X (2022) Lower Urban Humidity Moderates Outdoor Heat Stress. *AGU Advances* 3 e2022AV000729.

Chalakkal JB, Mohan M (2022) Is the monsoon climatology observed over the national capital region, delhi indicative of an urban monsoon linkage on rainfall modification? *Urban Climate* 46 101289.

Chang JHW, Griffith SM, Lin NH (2022) Impacts of land-surface forcing on local meteorology and ozone concentrations in a heavily industrialized coastal urban area. *Urban Climate* 45 101257.

Chang H-S, Su Q, Jheng D-C (2022) Comparing the spatial patterns of flooding and individual risk perception: A case study of Yunlin, Taiwan. *Urban Climate* 45 101260.

Chang J, Lin Z, Vojnovic I, Qi J, Wu R, Xie D (2023) Social environments still matter: The role of physical and social environments in place attachment in a transitional city, Guangzhou, China. *Landscape and Urban Planning* 232 104680.

Chaudhary S, Chua LHC, Kansal A (2023) The uncertainity in stormwater quality modelling for temperate and tropical catchments. *Journal of Hydrology* 617 128941.

Chen Z, Zhang J, Ma Q, Li S, Niu M (2022) Multi-timescale modulation of North Pacific Victoria mode on Central Asian vortices causing heavy snowfall. *Climate Dynamics*

Chen W, Wu H, Kimball JS, Alfieri L, Nanding N, Li X, Jiang L, Wu W, Tao Y, Zhao S, Zhong W (2022) A Coupled River Basin-Urban Hydrological Model (DRIVE-Urban) for Real-Time Urban Flood Modeling. *Water Resources Research* 58 e2021WR031709.

Chen X, Yang J (2022) Potential benefit of electric vehicles in counteracting future urban warming: A case study of Hong Kong. *Sustainable Cities and Society* 87 104200.

Chen Y, Wang Y, Zhou D, Gu Z, Meng X (2022) Summer urban heat island mitigation strategy development for high-anthropogenic-heat-emission blocks. *Sustainable Cities and Society* 87 104197.

Chen M, Wang X, Wang M, Liu X, Wu Y, Wang X (2022) Estimating Rainfall from Surveillance Audio Based on Parallel Network with Multi-Scale Fusion and Attention Mechanism. *Remote Sensing* 14 5750.

Chen Y, Hu Y (2022) The urban morphology classification under local climate zone scheme based on the improved method - A case study of Changsha, China. *Urban Climate* 45 101271.

Chen C, Bagan H, Yoshida T, Borjigin H, Gao J (2022) Quantitative analysis of the building-level relationship between building form and land surface temperature using airborne LiDAR and thermal infrared data. *Urban Climate* 45 101248.

Chen Z, Ledoux H, Khademi S, Nan L (2022) Reconstructing compact building models from point clouds using deep implicit fields. ISPRS *Journal of Photogrammetry and Remote Sensing* 194 58-73.

Chen Y-C, Lin P-H, Chen W-N, Tsai I-C, Laplace S, Ting C-C, Fu C, Charles C-KC (2022) Long-term measurements for investigating the vertical thermodynamics of an urban boundary layer with high-rise buildings. *Urban Climate* 46 101301.

Chen Y, Shan B, Yu X, Zhang Q, Ren Q (2022) Comprehensive effect of the three-dimensional spatial distribution pattern of buildings on the urban thermal environment. *Urban Climate* 46 101324.

Chen Y, Feng M (2022) Urban form simulation in 3D based on cellular automata and building objects generation. *Building and Environment* 226 109727.

Chen L, Qi Q, Wu H, Feng D, Zhu E (2023) Will the landscape composition and socio-economic development of coastal cities have an impact on the marine cooling effect? *Sustainable Cities and Society* 89 104328.

Chen Y, Yang J, Yu W, Ren J, Xiao X, Xia JC (2023) Relationship between urban spatial form and seasonal land surface temperature under different grid scales. *Sustainable Cities and Society* 89 104374.

Chen G, Hua J, Shi Y, Ren C (2023) Constructing air temperature and relative humidity-based hourly thermal comfort dataset for a high-density city using machine learning. *Urban Climate* 47 101400.

Chen G, He H, Chen Y, Zhao L, Cai Y, Ma Y (2023) Applying a diagnostic equation for maximum urban heat island intensity based on local climate zones for Guangzhou, China. *Building and Environment* 228 109817.

Chen S, Wong N, Zhang W, Ignatius M (2023) The impact of urban morphology on the spatiotemporal dimension of estate-level air temperature: A case study in the tropics. *Building and Environment* 228 109843.

Chen H, Huang JJ, Liang H, Wang W, Li H, Wei Y, Jiang AZ, Zhang P (2023) Can evaporation from urban impervious surfaces be ignored? *Journal of Hydrology* 616 128582.

Chen S, Zhu Z, Yang L, Liu X (2022) Vegetation cover variations associated with climate change and human activities in Nanjing metropolitan area of China. *Environmental Science and Pollution Research*

Cheng X, Liu Y, Dong J, Corcoran J, Peng J (2023) Opposite climate impacts on urban green spaces? Cooling efficiency around their coverage change thresholds in major African cities. *Sustainable Cities and Society* 88 104254.

Cheng Q, Jin H, Ren Y (2023) Enlightenment from mitigation of human-perceived heat stress risk in Southwest China during the period 1961–2019. *Journal of Cleaner Production* 385 135707.

Cheng W-C, Yang Y (2023) Scaling of Flows Over Realistic Urban Geometries: A Large-Eddy Simulation Study. *Boundary-layer Meteorology* 186 125-144.

Cheng Y, Shen L, Teng M, Liu H, Cheng W, Zhang B, Wu C (2023) How to use lake breeze circulations to improve urban natural ventilation: A case study in a typical inland multi-lake megacity. *Landscape and Urban Planning* 230 104628.

Cheung PK, Jim CY, Tapper N, Nice KA, Livesley SJ (2022) Daytime irrigation leads to significantly cooler private backyards in summer. *Urban Climate* 46 101310.

Cheval S, Dumitrescu A, Amihăesei V, Irașoc A, Paraschiv M-G, Ghent D (2023) A country scale assessment of the heat hazard-risk in urban areas. *Building and Environment* 229 109892.

Chiang Y-C, Liu H-H, Li D, Ho L-C (2023) Quantification through deep learning of sky view factor and greenery on urban streets during hot and cool seasons. *Landscape and Urban Planning* 232 104679.

Chiu CTF, Wang K, Paschalis A, Erfani T, Peleg N, Fatichi S, Theeuwes N, Manoli G (2022) An analytical approximation of urban heat and dry islands and their impact on convection triggering. *Urban Climate* 46 101346.

Chowdhury A, Uddin M, Baul T, Akhter J, Nandi R, Karmakar S, Nath T (2022) Quantifying the potential contribution of urban trees to particulate matters removal: A study in Chattogram city, Bangladesh. *Journal of Cleaner Production* 380 135015.

Chung J-H, Buswala B, Keith M, Schwanen T (2022) Climate mobilities into cities: A systematic review of literature from 2011 to 2020. *Urban Climate* 45 101252.

Coburn M, Xie Z-T, Herring S (2022) Numerical Simulations of Boundary-Layer Airflow Over Pitched-Roof Buildings. *Boundary-layer Meteorology* 185 415-442.

Colaninno N, Morello E (2022) Towards an operational model for estimating day and night instantaneous near-surface air temperature for urban heat island studies: outline and assessment. *Urban Climate* 46 101320.

Cooper JEJ, Plummer KE, Siriwardena GM (2023) Using species-habitat models to predict bird counts from urban. *Landscape and Urban Planning* 230 104629.

Cotterill DF, Pope JO, Stott PA (2022) Future extension of the UK summer and its impact on autumn precipitation. *Climate Dynamics*

Coury BS, Masiero E, Kruger E (2022) Confounding effects of harvesting on urban heat island intensity in a mid-sized city in brazil. *Urban Climate* 46 101276.

Crespo NM, da Silva NP, Palmeira RMdJ, Cardoso AA, Kaufmann CLG, Lima JAM, Andrioni M, de Camargo R, da Rocha RP (2022) Western South Atlantic Climate Experiment (WeSACEx): extreme winds and waves over the Southeastern Brazilian sedimentary basins. *Climate Dynamics*

Cummins DP, Stephenson DB, Stott PA (2022) Could detection and attribution of climate change trends be spurious regression? *Climate Dynamics* 59 2785-2799.

Cunningham CX, Liston GE, Reinking AK, Boelman NT, Brinkman TJ, Joly K, Hebblewhite M, Boutin S, Czetwertynski S, Sielecki LE, Prugh LR (2022) Human and animal movements combine with snow to increase moose-vehicle collisions in winter. *Environmental Research Letters* 17 125007.

Darbani ES, Rafieian M, Parapari DM, Guldmann J-M (2023) Urban design strategies for summer and winter outdoor thermal comfort in arid regions: The case of historical, contemporary and modern urban areas in Mashhad, Iran. *Sustainable Cities and Society* 89 104339.

Das M, Das A, Momin S (2022) Quantifying the cooling effect of urban green space: A case from urban parks in a tropical mega metropolitan area (India). *Sustainable Cities and Society* 87 104062.

Das B, Dursun ÖO, Toraman S (2022) Prediction of air pollutants for air quality using deep learning methods in a metropolitan city. *Urban Climate* 46 101291.

de-Magalhães RF, de Moura Ferreira Danilevicz Â, de Souza JS, Echeveste ME (2022) The risk management tools'role for urban infrastructure resilience building. *Urban Climate* 46 101296.

Deng X, Gao F, Liao S, Li S (2023) Unraveling the association between the built environment and air pollution from a geospatial perspective. *Journal of Cleaner Production* 386 135768.

Deng Z, Wang Z, Wu X, Lai C, Liu W (2023) Effect difference of climate change and urbanization on extreme precipitation over the Guangdong-Hong Kong-Macao Greater Bay Area. *Atmospheric Research* 282 106514.

Dewa DD, Buchori I (2023) Impacts of rapid urbanization on spatial dynamics of land use-based carbon emission and surface temperature changes in the Semarang Metropolitan Region, Indonesia. *Environmental Monitoring and Assessment* 195 259.

Dhawan S, George MP, Jayachandran KS, Khare M (2023) Tropospheric ozone variability in delhi during pre & post monsoon periods: Decoding influence of seasonal variation, diurnal variation, short-range and long-range transport. *Urban Climate* 47 101374.

Diao Y, Zhao Q, Weng Y, Huang Z, Wu Y, Gu B, Zhao Q, Wang F (2022) Predicting current and future species distribution of the raccoon dog (Nyctereutes procyonoides) in Shanghai, China. *Landscape and Urban Planning* 228 104581.

Di Bernardino A, Mazzarella V, Pecci M, Casasanta G, Cacciani M, Ferretti R (2022) Interaction of the Sea Breeze with the Urban Area of Rome: WRF Mesoscale and WRF Large-Eddy Simulations Compared to Ground-Based Observations. *Boundary-layer Meteorology* 185 333-363.

Ding W, Chen H (2022) Urban-rural fringe identification and spatial form transformation during rapid urbanization: A case study in Wuhan, China. *Building and Environment* 226 109697.

Ding W, Wu J (2023) Interregional economic impacts of an extreme storm flood scenario considering transportation interruption: A case study of Shanghai, China. *Sustainable Cities and Society* 88 104296.

Doan Q-V, Chen F, Kusaka H, Wang J, Kajino M, Takemi T (2022) Identifying a New Normal in Extreme Precipitation at a City Scale Under Warmer Climate Regimes: A Case Study of the Tokyo Metropolitan Area, Japan. *Journal of Geophysical Research-atmospheres* 127 e2022JD036810.

Doeffinger T, Rubinyi S (2023) Secondary benefits of urban flood protection. *Journal of Environmental Management* 326 116617.

Domingo D, Van Vliet J, Hersperger AM (2023) Long-term changes in 3D urban form in four Spanish cities. *Landscape and Urban Planning* 230 104624.

Dong B, Sutton RT, Wilcox LJ (2022) Decadal trends in surface solar radiation and cloud cover over the North Atlantic sector during the last four decades: drivers and physical processes. *Climate Dynamics*

Dong Z, Parteli EJR, Wang L, Baccolo G, Wu R (2022) Editorial: The impacts of atmospheric and environmental changes of Urban Cities and suburbs on the Tibetan Plateau and other Northern hemispheric cryosphere. *Frontiers in Environmental Science* 10 1051979.

Donmez B, Donmez K, Diren-Ustun DH, Unal Y (2022) Urbanization-induced changes in convective and frontal precipitation events in Ankara. *Urban Climate* 46 101316.

Dougherty TR, Jain RK (2023) Invisible walls: Exploration of microclimate effects on building energy consumption in New York City. *Sustainable Cities and Society* 90 104364.

Duan Y, Xiong J, Cheng W, Li Y, Wang N, Shen G, Yang J (2022) Increasing Global Flood Risk in 2005-2020 from a Multi-Scale Perspective. *Remote Sensing* 14 5551.

Duan G, Nakamae K, Takemi T (2023) Impacts of urban morphometric indices on ventilation. *Building and Environment* 229 109907.

Duchêne F, Hamdi R, Van Schaeybroeck B, Caluwaerts S, De Troch R, de Cruz L, Termonia P (2022) Downscaling ensemble climate projections to urban scale: brussels's future climate at 1.5 °c, 2 °c, and 3 °c global warming. *Urban Climate* 46 101319.

Emeis S, Fallmann J (2022) Unsatisfying Transfer of Climate Research to Urban Planning: The Regulatory Trap in the Triple Helix. *Triple Helix* 1-21.

Esperon-Rodriguez M, Tjoelker MG, Lenoir J, Baumgartner JB, Beaumont LJ, Nipperess DA, Power SA, Richard B, Rymer PD, Gallagher V R (2022) Climate change increases global risk to urban forests. *Nature Climate Change* 12 950+.

Esperon-Rodriguez M, Ordonez C, van Doorn NS, Hirons A, Messier C (2022) Using climate analogues and vulnerability metrics to inform urban tree species selection in a changing climate: The case for Canadian cities. *Landscape and Urban Planning* 228 104578.

Estalkhsari BM, Mohammad P, Razavi N (2022) Change detection in a rural landscape: A case study of processes and main driving factors along with its response to thermal environment in Farim, Iran. *Environmental Science and Pollution Research*

Fabregat A, Vernet A, Vernet M, Vázquez L, Ferré JA (2022) Using Machine Learning to estimate the impact of different modes of transport and traffic restriction strategies on urban air quality. *Urban Climate* 45 101284.

Fan Y, Wang Z, Li Y, Wang K, Sun Z, Ge J (2022) Urban heat island reduces annual building energy consumption and temperature related mortality in severe cold region of China. *Urban Climate* 45 101262.

Fan Y, Zhang Y, Wang S, Wang X, Lu J, Ge J (2023) A numerical rotating water tank can reproduce the Coriolis effect on the urban heat dome flow. *Building and Environment* 229 109894.

Fascì ML, Mazzotti Pallard W, Lazzarotto A, Claesson J (2023) Temperature of energy boreholes accounting for climate change and the built environment – A new model for its estimation. *Renewable Energy* 202 1479-1496.

Fatima S, Mishra SK, Kumar U, Ahlawat A, Dabodiya TS, Khosla D (2023) Role of morphology and chemical composition of pm for particle deposition in human respiratory system: A case study over megacity-delhi. *Urban Climate* 47 101344.

Feijoo M, Solman S (2022) Convection-permitting modeling strategies for simulating extreme rainfall events over Southeastern South America. *Climate Dynamics* 59 2549-2569.

Fellini S, Marro M, Del Ponte A, Barulli M, Soulhac L, Ridolfi L, Salizzoni P (2022) High resolution wind-tunnel investigation about the effect of street trees on pollutant concentration and street canyon ventilation. *Building and Environment* 226 109763.

Feng C, Zhang X, Xu J, Yang S, Guan S, Jia K, Yao Y (2022) Comprehensive assessment of global atmospheric downward longwave radiation in the state-of-the-art reanalysis using satellite and flux tower observations. *Climate Dynamics*

Fernandez K, Ikegaya N, Ito K, Chen Q (2022) Age of air, purging flow rate, and net escape velocity in a cross-ventilation model sheltered by urban-like blocks using LES. *Building and Environment* 226 109759.

Ferner KS, Boettcher M, Schluenzen KH (2022) Modelling the heterogeneity of rain in an urban neighbourhood with an obstacle-resolving model. *Meteorologische Zeitschrift*

Flores S, Van Mechelen C, Vallejo JP, Van Meerbeek K (2022) Trends and status of urban green and urban green research in Latin America. *Landscape and Urban Planning* 227 104536.

Freeman R, Pye S (2022) Socio-technical modelling of UK energy transition under three global SSPs, with implications for IAM scenarios. *Environmental Research Letters* 17 124022.

Friess DA, Gatt YM, Fung TK, Alemu JB, Bhatia N, Case R, Chua SC, Huang D, Kwan V, Lim KE, Nathan Y, Ow YX, Saavedra-Hortua D, Sloey TM, Yando ES, Ibrahim H, Koh LP, Puah JY, Teo SL-M, Tun K, Wong LW, Yaakub SM (2023) Blue carbon science, management and policy across a tropical urban landscape. *Landscape and Urban Planning* 230 104610.

Gaisie E, Cobbinah PB (2023) Planning for context-based climate adaptation: Flood management inquiry in Accra. *Environmental Science and Policy* 141 97-108.

Galán-Madruga D, Cárdenas-Escudero J, Broomandi P, Cáceres J, González M (2023) Evaluating urban indoor and outdoor PM10-bound organochlorine pesticides. Air quality status and health impact. *Building and Environment* 228 109818.

Gamero-Salinas J, Kishnani N, Sánchez-Ostiz A, Monge-Barrio A, Benitez E (2022) Porosity, openness, and exposure: Identification of underlying factors associated with semi-outdoor spaces' thermal performance and clustering in tropical high-density Singapore. *Energy and Buildings* 272 112339.

Gao H, Liu J, Lin P, Li C, Xiao Y, Hu G (2022) Pedestrian level wind flow field of elevated tall buildings with dense tandem arrangement. *Building and Environment* 226 109745.

Garcia-Franco JL, Chadwick R, Gray LJ, Osprey S, Adams DK (2022) Revisiting mechanisms of the Mesoamerican Midsummer drought. *Climate Dynamics*

Garshasbi S, Feng J, Riccardo P, Jonathan-Duverge J, Bartesaghi-Koc C, Arasteh S, Khan A, Santamouris M (2023) On the energy impact of cool roofs in australia. *Energy and Buildings* 278 112577.

Geng X, Zhang D, Li C, Yuan Y, Yu Z, Wang X (2023) Impacts of climatic zones on urban heat island: Spatiotemporal variations, trends, and drivers in China from 2001-2020. *Sustainable Cities and Society* 89 104303.

Ghamkhar M, Roustaei F, Ebrahimi-Khusfi Z (2022) Spatiotemporal variations of internal dust events in urban environments of Iran, Southwest Asia. *Environmental Science and Pollution Research*

Giannaros C, Agathangelidis I, Papavasileiou G, Galanaki E, Kotroni V, Lagouvardos K, Giannaros TM, Cartalis C, Matzarakis A (2022) The extreme heat wave of July-August 2021 in the Athens urban area (Greece): Atmospheric and human-biometeorological analysis exploiting ultra-high resolution numerical modeling and the local climate zone framework. *Science of the Total Environment* 857 159300.

Giner M-E, Tellez-Cañas SA, Giner CL (2023) Assessing the impact of wastewater infrastructure along the Texas-Mexico Border: Did we make a difference on contagious diseases? *Environmental Science and Policy* 141 126-137.

Ginesta M, Yiou P, Messori G, Faranda D (2022) A methodology for attributing severe extratropical cyclones to climate change based on reanalysis data: the case study of storm Alex 2020. *Climate Dynamics*

Girolamini L, Brattich E, Marino F, Pascale M, Mazzotta M, Spiteri S, Derelitto C, Tositti L, Cristino S (2023) Cooling towers influence in an urban environment: A predictive model to control and prevent Legionella risk and Legionellosis events. *Building and Environment* 228 109891.

Grabowski ZJ, McPhearson T, Pickett STA (2023) Transforming US urban green infrastructure planning to address equity. *Landscape and Urban Planning* 229 104591.

Gradinaru SR, Paraschiv M, Iojă CI, Vliet JV (2023) Conflicting interests between local governments and the European target of no net land take. *Environmental Science and Policy* 142 1-11.

Gradinaru SR, Onose DA, Oliveira E, Slave AR, Popa AM, Gravrilidis AA (2023) Equity in urban greening: Evidence from strategic planning in Romania. *Landscape and Urban Planning* 230 104614.

Grzyb T, Kulczyk S (2023) How do ephemeral factors shape recreation along the urban river? A social media perspective. *Landscape and Urban Planning* 230 104638.

Guan Qf, Yao Y, Ma T, Hong Y, Bie Y, Lyu J (2022) Under the Dome: A 3D Urban Texture Model and Its Relationship with Urban Land Surface Temperature. *Annals of the American Association of Geographers* 112 1369-1389.

Guido Z, Allen T, Mason S, Mendez-Lazaro P (2022) Hurricanes and Anomalous Heat in the Caribbean. *Geophysical Research Letters* 49 e2022GL099740.

Guo A, Yue W, Yang J, He T, Zhang M, Li M (2022) Divergent impact of urban 2d/3d morphology on thermal environment along urban gradients. *Urban Climate* 45 101278.

Gupta RS, Steinschneider S, Reed PM (2022) A multi-objective paleo-informed reconstruction of western US weather regimes over the past 600 years. *Climate Dynamics*

Guthula VB, Shrotriya S, Nigam P, Goyal SP, Mohan D, Habib B (2022) Biodiversity significance of small habitat patches: More than half of Indian bird species are in academic campuses. *Landscape and Urban Planning* 228 104552.

Hachaichi M (2022) Cities: Allocating climate change responsibilities at planetary scale. *Urban Climate* 46 101329.

Hakim WL, Fadhillah MF, Park S, Pradhan B, Won J-S, Lee C-W (2023) InSAR time-series analysis and susceptibility mapping for land subsidence in Semarang, Indonesia using convolutional neural network and support vector regression. *Remote Sensing of Environment* 287 113453.

Hamunyela E, Hipondoka M, Persendt F, Sevelia Nghiyalwa H, Thomas C, Matengu K (2022) Spatio-temporal characterization of surface water dynamics with Landsat in endorheic Cuvelai-Etosha Basin (1990–2021). *ISPRS Journal of Photogrammetry and Remote Sensing* 191 68-84.

Han L, Zhao J, Zhang T, Zhang J (2022) Urban ventilation corridors exacerbate air pollution in central urban areas: Evidence from a Chinese city. *Sustainable Cities and Society* 87 104129.

Han Y, Ye X (2022) Examining the effects of flood damage, federal hazard mitigation assistance, and flood insurance policy on population migration in the conterminous us between 2010 and 2019. *Urban Climate* 46 101321.

Han L, Zhou W, Li W, Qian Y (2022) Challenges in continuous air quality improvement: An insight from the contribution of the recent clean air actions in china. *Urban Climate* 46 101328.

Han D, Zhang T, Zhang X, Tan Y (2022) Study on spatiotemporal characteristics and influencing factors of pedestrian-level pm2.5 concentrations in outdoor open spaces of harbin in winter, using a generalized additive model (gam). *Urban Climate* 46 101313.

Han D, An H, Wang F, Xu X, Qiao Z, Wang M, Sui X, Liang S, Hou X, Cai H, Liu Y (2022) Understanding seasonal contributions of urban morphology to thermal environment based on boosted regression tree approach. *Building and Environment* 226 109770.

Han W, Tao Z, Li Z, Cheng M, Fan H, Cribb M, Wang Q (2023) Effect of Urban Built-Up Area Expansion on the Urban Heat Islands in Different Seasons in 34 Metropolitan Regions across China. *Remote Sensing* 15 248.

Han S, Hou H, Estoque R, Zheng Y, Shen C, Murayama Y, Pan J, Wang B, Hu T (2023) Seasonal effects of urban morphology on land surface temperature in a three-dimensional perspective: A case study in Hangzhou, China. *Building and Environment* 228 109913.

Hang J, Chen G (2022) Experimental study of urban microclimate on scaled street canyons with various aspect ratios. *Urban Climate* 46 101299.

Hang J, Liang J, Wang X, Zhang X, Wu L, Shao M (2022) Investigation of O3–NOx–VOCs chemistry and pollutant dispersion in street canyons with various aspect ratios by CFD simulations. *Building and Environment* 226 109667.

Hasegawa Y, Lau S-K, Chau CK (2022) Potential mutual efforts of landscape factors to improve residential soundscapes in compact urban cities. *Landscape and Urban Planning* 227 104534.

Hashad K, Yang B, Gallagher J, Baldauf R, Deshmukh P, Zhang KM (2023) Impact of roadside conifers vegetation growth on air pollution mitigation. *Landscape and Urban Planning* 229 104594.

Haupt W, Kern K (2022) Explaining climate policy pathways of unlikely city pioneers: The case of the German city of Remscheid. *Urban Climate* 45 101220.

Hawari NSSL, Latif MT, Hamid HHA, Leng TH, Othman M, Mohtar AAA, Azhari A, Dominick D (2022) The concentration of BTEX in selected urban areas of Malaysia during the COVID-19 pandemic lockdown. *Urban Climate* 45 101238.

He BJ (2022) Green building: A comprehensive solution to urban heat. *Energy and Buildings* 271 112306.

He Y, Tablada A, Deng JY, Shi Y, Wong NH, Ng E (2022) Linking of pedestrian spaces to optimize outdoor air ventilation and quality in tropical high-density urban areas. *Urban Climate* 45 101249.

He Y, Liu Z, Ng E (2022) Parametrization of irregularity of urban morphologies for designing better pedestrian wind environment in high-density cities – A wind tunnel study. *Building and Environment* 226 109692.

He X, Gao W, Wang R, Yan D (2023) Study on outdoor thermal comfort of factory areas during winter in hot summer and cold winter zone of China. *Building and Environment* 228 109883.

Heikkinen M, Korhonen O, Ylä-Anttila T, Juhola S (2022) Climate partners of Helsinki: Participation-based structures and performance in a city-to-business network addressing climate change in 2011–2018. *Urban Climate* 45 101250.

Hernández-De-Torres J, Ávila-Montoya C, Lastras-Martínez LF, Lastras-Martínez A, Flores-Jiménez DE, Cárdenas A, Algara-Siller M (2023) Remote sensing of atmospheric nitrogen dioxide in an urban area in central northern Mexico. *Atmosfera* 36 317-327.

Hernandez-Santin C, Amati M, Bekessy S, Desha C (2023) Integrating biodiversity as a non-human stakeholder within urban development. *Landscape and Urban Planning* 232 104678.

Higashino M, Hayashi T, Aso D (2022) Temporal variability of daily precipitation concentration in japan for a century: Effects of air temperature rises on extreme rainfall events. *Urban Climate* 46 101323.

Hino K, Yamazaki T, Iida A, Harada K, Yokohari M (2023) Productive urban landscapes contribute to physical activity promotion among Tokyo residents. *Landscape and Urban Planning* 230 104634.

Hong S, Hui ECM, Lin Y (2022) Relationships between carbon emissions and urban population size and density, based on geo-urban scaling analysis: A multi-carbon source empirical study. *Urban Climate* 46 101337.

Hooyberg A, Michels N, Allaert J, Vandegehuchte MB, Everaert G, De Henauw S, Roose H (2022) `Blue' coasts: Unravelling the perceived restorativeness of coastal environments and the influence of their components. *Landscape and Urban Planning* 228 104551.

Hou Y, Di J, Li R, Li G, Wang Q, Wang J (2022) Influence of height ratio in groups of buildings of unequal height on micrositing of urban-SWTs. *Journal of Wind Engineering and Industrial Aerodynamics* 231 105218.

Hu C, Li H (2022) Reverse Thinking: The Logical System Research Method of Urban Thermal Safety Pattern Construction, Evaluation, and Optimization. *Remote Sensing* 14 6036.

Hu T, Mallick K, Hulley GC, Planells LP, Gottsche FM, Schlerf M, Hitzelberger P, Didry Y, Szantoi Z, Alonso I, Sobrino JA, Skokovic D, Roujean J-L, Boulet G, Gamet P, Hook S (2022) Continental-scale evaluation of three ECOSTRESS land surface temperature products over Europe and Africa: Temperature-based validation and cross-satellite comparison. *Remote Sensing of Environment* 282 113296.

Hu Y, Tang R, Jiang X, Li Z-L, Jiang Y, Liu M, Gao C, Zhou X (2023) A physical method for downscaling land surface temperatures using surface energy balance theory. *Remote Sensing of Environment* 286 113421.

Huang H, Wang Z, Guo J, Wang C, Zhang X (2022) Composition, seasonal variation and sources attribution of volatile organic compounds in urban air in southwestern china. *Urban Climate* 45 101241.

Huang SL, Lee YC, Chiang LY (2022) Assessing the synergies and trade-offs of development projects in response to climate change in an urban region. *Journal of Environmental Management* 319 115731.

Huang J, Reitberger R, Banihashemi F, Lang W (2023) A novel risk-based design framework for urban heat island: A case study of Kempten, Germany. *Building and Environment* 228 109671.

Huangfu J, Tang Y, Wang L, Chen W, Huang R, Ma T (2022) Joint influence of the quasi-biennial oscillation and Indian Ocean basin mode on tropical cyclone occurrence frequency over the western North Pacific. *Climate Dynamics* 59 3439-3449.

Hursh SH, Bauder JM, Fidino M, Drake D (2023) An urban cast of characters: Landscape use and cover influencing mammal occupancy in an American midwestern city. *Landscape and Urban Planning* 229 104582.

Hwang R-L, Chen W-A (2022) Identifying relative importance of solar design determinants on office building façade for cooling loads and thermal comfort in hot-humid climates. *Building and Environment* 226 109684.

Iaria J, Susca T (2022) Analytic hierarchy processes (ahp) evaluation of green roof- and green wall- based uhi mitigation strategies via envi-met simulations. *Urban Climate* 46 101293.

Jacob AT, Jayakumar A, Gupta K, Mohandas S, Hendry MA, Smith DKE, Francis T, Bhati S, Parde AN, Mohan M, Mitra AK, Gupta PK, Chauhan P, Jenamani RK, Ghude S (2023) Implementation of the urban parameterization scheme in the Delhi model with an improved urban morphology. *Quarterly Journal of the Royal Meteorological Society* 149 40-60.

Jalali Z, Ghaffarianhoseini A, Ghaffarianhoseini A, Donn M, Almhafdy A, Walker C, Berardi U (2022) What we know and do not know about New Zealand's urban microclimate: A critical review. *Energy and Buildings* 274 112430.

Jay J, Heykoop F, Hwang L, Courtepatte A, de Jong J, Kondo M (2022) Use of smartphone mobility data to analyze city park visits during the COVID-19 pandemic. *Landscape and Urban Planning* 228 104554.

Jeon J, Woo A (2023) Deep learning analysis of street panorama images to evaluate the streetscape walkability of neighborhoods for subsidized families in Seoul, Korea. *Landscape and Urban Planning* 230 104631.

Jia S, Wang Y, Wong N, Chen W, Ding X (2022) Influences of the thermal environment on pedestrians' thermal perception and travel behavior in hot weather. *Building and Environment* 226 109687.

Jiang N, Jiang W, Zhang J, Chen H (2022) Can national urban agglomeration construction reduce PM2.5 pollution? Evidence from a quasi-natural experiment in China. *Urban Climate* 46 101302.

Jiang L, Liu S, Liu L, Liu C (2022) Revealing the spatiotemporal characteristics and drivers of the block-scale thermal environment near a large river: Evidences from Shanghai, China. *Building and Environment* 226 109728.

Jiang B, Yang Y, Chen L, Liu X, Wu X, Chen B, Webster C, Sullivan WC, Larsen L, Wang J, Lu Y (2022) Green spaces, especially nearby forest, may reduce the SARS-CoV-2 infection rate: A nationwide study in the United States. *Landscape and Urban Planning* 228 104583.

Jiao B, Li Q, Sun W, Martin W (2022) Uncertainties in the global and continental surface solar radiation variations: inter-comparison of in-situ observations, reanalyses, and model simulations. *Climate Dynamics* 59 2499-2516.

Jon K, Luo Y, Sin C, Cui P-Y, Huang Y-D, Tokgo J (2023) Impacts of wind direction on the ventilation and pollutant dispersion of 3D street canyon with balconies. *Building and Environment* 230 110034.

Joshi P, Raju NJ, Siddaiah NS, Karunanidhi D (2022) Environmental pollution of potentially toxic elements (ptes) and its human health risk assessment in Delhi urban environs, India. *Urban Climate* 46 101309.

Kabošová L, Chronis A, Galanos T, Kmeť S, Katunský D (2022) Shape optimization during design for improving outdoor wind comfort and solar radiation in cities. *Building and Environment* 226 109668.

Kalisa E, Adams M (2022) Population-scale Covid 19 curfew effects on urban black carbon concentrations and sources in Kigali, Rwanda. *Urban Climate* 46 101312.

Karuppasamy MB, Natesan U, Ramasamy K, Govindasamy H, Seshachalam S (2022) Seasonal variation of atmospheric total gaseous mercury and urban air quality in South India. *Global Nest Journal* 24 370-381.

Kato-Huerta J, Geneletti D (2023) A distributive environmental justice index to support green space planning in cities. *Landscape and Urban Planning* 229 104592.

Kearl Z, Vogel J (2023) Urban extreme heat, climate change, and saving lives: Lessons from washington state. *Urban Climate* 47 101392.

Khalvandi R, Karimimoshaver M (2023) The optimal ratio in the street canyons: Comparison of two methods of satellite images and simulation. *Building and Environment* 229 109927.

Khera G, Irshad SM (2023) From environmental management to risk governance: air pollution case of Delhi, India. *International Journal of Environmental Technology and Management* 26 135-152.

Kiavarz M, Hosseinbeigi SB, Mijani N, Shahsavary MS, Firozjaei MK (2022) Predicting spatial and temporal changes in surface urban heat islands using multi-temporal satellite imagery: A case study of Tehran metropolis. *Urban Climate* 45 101258.

Kim J, Kang SM, Xie S-P, Xiang B, Kim D, Zheng X-T, Wang H (2022) Large-scale climate response to regionally confined extratropical cooling: effect of ocean dynamics. *Climate Dynamics*

Kirby MG, Scott AJ, Luger J, Walsh CL (2023) Beyond growth management: A review of the wider functions and effects of urban growth management policies. *Landscape and Urban Planning* 230 104635.

Ko K-C, Hsu H-H, Liu J-H (2022) Impact of global warming on summertime submonthly wave patterns and tropical cyclone activity in the western North Pacific. *Climate Dynamics* 59 3535-3554.

Koklu R, Turkmen BA, Deveci EU, Gonen C (2022) Impact of Covid 19 restrictive precautions on air quality case of Zonguldak Turkey. *International Journal of Environmental Technology and Management* 25 406-426.

Konduru RT, Mrudula G, Singh V, Srivastava AK, Singh AK (2023) Unravelling the causes of 2015 winter monsoon extreme rainfall and floods over chennai: Influence of atmospheric variability and urbanization on the hydrological cycle. *Urban Climate* 47 101395.

Konisky DM, Carley S, Graff M, Memmott T (2022) The persistence of household energy insecurity during the COVID-19 pandemic. *Environmental Research Letters* 17 104017.

Koopmans S, van Haran R, Theeuwes N, Ronda R, Uijlenhoet R, Holtslag AAM, Steeneveld G-J (2023) The set-up and evaluation of fine-scale data assimilation for the urban climate of Amsterdam. *Quarterly Journal of the Royal Meteorological Society* 149 171-191.

Korpilo S, Nyberg E, Vierikko K, Nieminen H, Arciniegas G, Raymond CM (2023) Developing a Multi-sensory Public Participation GIS (MSPPGIS) method for integrating landscape values and soundscapes of urban green infrastructure. *Landscape and Urban Planning* 230 104617.

Kumar S, Panda J, Paul D, Guha BK (2022) Impact of environmental variables on the North Indian Ocean tropical cyclones radial parameters. *Climate Dynamics*

Kwakwa PA, Adzawla W, Alhassan H, Oteng-Abayie EF (2022) The effects of urbanization, ICT, fertilizer usage, and foreign direct investment on carbon dioxide emissions in Ghana. *Environmental Science and Pollution Research*

Labzovskii LD, Hey JV, Romanov AA, Golovatina-Mora P, Belikov D, Lashkari A, Kenea ST, Hekman E (2023) Who should measure air quality in modern cities? The example of decentralization of urban air quality monitoring in Krasnoyarsk (Siberia, Russia). *Environmental Science and Policy* 140 93-103.

Lachapelle JA, Krayenhoff ES, Middel A, Coseo P, Warland J (2023) Maximizing the pedestrian radiative cooling benefit per street tree. *Landscape and Urban Planning* 230 104608.

Lai D, Liu Y, Liao M, Yu B (2023) Effects of different tree layouts on outdoor thermal comfort of green space in summer shanghai. *Urban Climate* 47 101398.

Lam C, Weng J, Liu K, Hang J (2023) The effects of shading devices on outdoor thermal and visual comfort in Southern China during summer. *Building and Environment* 228 109743.

Lee C-C, Wang F, Lou R, Wang K (2023) How does green finance drive the decarbonization of the economy? Empirical evidence from China. *Renewable Energy* 204 671-684.

Lee S, Park S-Y, Kim J-J, Kim MJ (2023) Thermal effects on dispersion of secondary inorganic aerosols in an urban street canyon. *Urban Climate* 47 101375.

Lee S, Lee RJ, Scherr S (2023) How tree canopy cover can reduce urban suicide attempts: A geospatial analysis of the moderating role of area deprivation. *Landscape and Urban Planning* 230 104606.

Lee J-C, Shirzaei M (2023) Novel algorithms for pair and pixel selection and atmospheric error correction in multitemporal InSAR. *Remote Sensing of Environment* 286 113447.

Lee S, Lee C, Nam JW, Moudon AV, Mendoza JA (2023) Street environments and crime around low-income and minority schools: Adopting an environmental audit tool to assess crime prevention through environmental design (CPTED). *Landscape and Urban Planning* 232 104676.

Lei Y, Wang Z, Zhang X, Che H, Yue X, Tian C, Zhong J, Guo L, Li L, Zhou H (2022) Avoided population exposure to extreme heat under two scenarios of global carbon neutrality by 2050 and 2060. *Environmental Research Letters* 17 094041.

Lei Y, Huang X, Li X, Feng C (2023) Impact of aging, precipitation, and orientation on performance of radiative cooling for building envelope: A field investigation. *Energy and Buildings* 279 112716.

Lei C, Yu Z, Sun X, Wang Y, Yuan J, Wang Q, Han L, Xu Y (2023) Urbanization effects on intensifying extreme precipitation in the rapidly urbanized tai lake plain in east china. *Urban Climate* 47 101399.

Li X, Chen H, Hua W, Ma H, Li X, Sun S, Lu Y, Pang X, Zhang X, Zhang Q (2022) Modeling the effects of realistic land cover changes on land surface temperatures over China. *Climate Dynamics*

Li J, Niu J, Mak CM (2022) Study of pedestrians' mixed thermal responses when experiencing rapid and simultaneous variations in sun and wind conditions in urban continuums. *Sustainable Cities and Society* 87 104169.

Li Y, Xia M, Ma Q, Zhou R, Liu D, Huang L (2022) Identifying the Influencing Factors of Cooling Effect of Urban Blue Infrastructure Using the Geodetector Model. *Remote Sensing* 14 5495.

Li Q, Vilela P, Tariq S, Nam K, Yoo C (2022) Multiple land-use fugacity model to assess the transport and fate of polycyclic aromatic hydrocarbons in urban and suburban areas. *Urban Climate* 45 101263.

Li X, Hou J, Pan Z, Li B, Jing J, Shen J (2022) Responses of urban flood processes to local land use using a high-resolution numeric model. *Urban Climate* 45 101244.

Li T, Zhu Z, Wang Z, Roman MO, Kalb VL, Zhao Y (2022) Continuous monitoring of nighttime light changes based on daily NASA's Black Marble product suite. *Remote Sensing of Environment* 282 113269.

Li H, J. Grant R (2022) Climate gentrification in Miami: A real climate change-minded investment practice? *Cities* 131 104025.

Li L, Zhou Q-J, Chan P-W, Yang H-L (2023) Variation of virtual temperature and wind in the atmospheric boundary layer over the pearl river estuary during 2011-2020. *Frontiers in Environmental Science* 10 1104553.

Li B, Zhang B, Yin L, Chang J (2023) Assessing heat risk for residents of complex urban areas from an accessibility-based perspective. *Sustainable Cities and Society* 88 104278.

Li Y, Osei FB, Hu T, Stein A (2023) Urban flood susceptibility mapping based on social media data in Chengdu city, China. *Sustainable Cities and Society* 88 104307.

Li J, Pan Y, Li Q, Lenschow DH, Zhou M, Xiao X, Wang Y, Cheng Z (2023) Observational analyses of a penetrating sea-breeze front in the Beijing-Tianjin-Hebei urban agglomeration. *Urban Climate* 47 101353.

Li Z, Zhao Y, Hu D (2023) Evaluating the impacts of three-dimensional building morphology on urban near-surface energy fluxes: A case study in beijing china. *Energy and Buildings* 279 112690.

Li Y, Zhou W-H, Shen P (2023) Flood risk assessment of loss of life for a coastal city under the compound effect of storm surge and rainfall. *Urban Climate* 47 101396.

Li Z, Ming T, Shi T, Zhang H, Wen C-Y, Wu Y, Wang C, Yin K, de Richter R, Li W (2023) Cfd modeling of traffic tidal flow: Assessment of pollutant dispersion. *Urban Climate* 47 101380.

Li R, Sun T, Tian F, Ni G-H (2023) SHAFTS (v2022.3): a deep-learning-based Python package for simultaneous extraction of building height and footprint from sentinel imagery. *Geoscientific Model Development* 16 751-778.

Li X, Yang B, Liang F, Zhang H, Xu Y, Dong Z (2023) Modeling urban canopy air temperature at city-block scale based on urban 3D morphology parameters– A study in Tianjin, North China. *Building and Environment* 230 110000.

Li R, Zeng F, Zhao Y, Wu Y, Niu J, Wang L, Gao N, Shi X (2023) CFD simulations of the tree effect on the outdoor microclimate by coupling the canopy energy balance model. *Building and Environment* 230 109995.

Li Y, Yabuki N, Fukuda T (2023) Integrating GIS, deep learning, and environmental sensors for multicriteria evaluation of urban street walkability. *Landscape and Urban Planning* 230 104603.

Li S, Sorland SL, Wild M, Schaer C (2022) Aerosol sensitivity simulations over East Asia in a convection-permitting climate model. *Climate Dynamics*

Liang X, Liu D, Wang Z, Wang J (2022) Characterizing the dynamics of wildland-urban interface and the potential impacts on fire activity in Alaska from 2000 to 2010. *Landscape and Urban Planning* 228 104553.

Liao W, Guldmann J-M, Hu L, Cao Q, Gan D, Li X (2023) Linking urban park cool island effects to the landscape patterns inside and outside the park: A simultaneous equation modeling approach. *Landscape and Urban Planning* 232 104681.

Li H, Wang P, Li Z, Jin S, He J (2022) Summertime surface mass balance and energy balance of Urumqi Glacier No. 1, Chinese Tien Shan, modeled by linking COSIMA and in-situ measured meteorological records. *Climate Dynamics*

Li Y, He T, Wang Y, Sun L, Yan Y, Zhao G (2022) Spatiotemporal variations, influence factors, and simulation of global cooling degree days. *Environmental Science and Pollution Research*

Lin X, Wu S, Chen B, Ziyu L, Yan Z, Chen X, Yin G, You D, Wen J, Liu Q, Xiao Q, Liu Q, Lafortezza R (2022) Estimating 10 m land surface albedo from Sentinel 2 satellite observations using a direct estimation approach with Google Earth Engine. *ISPRS Journal of Photogrammetry and Remote Sensing* 194 1-20.

Lin K, Yuwei D, Siru C, Luke C, Hau H-L, Tsz H-H, Yihao Z, Yijun Z, Aiqiang P, Chi Y-T (2022) Nanoparticle-polymer hybrid dual-layer coating with broadband solar reflection for high-performance daytime passive radiative cooling. *Energy and Buildings* 276 112507.

Lin W, Green A, Ledo-Gomis L, Kokogiannakis G, Cooper P (2023) Thermal effects of dew on cool roofs and conventional roofs in building performance simulations. *Energy and Buildings* 279 112645.

Lin J, Qiu S, Tan X, Zhuang Y (2023) Measuring the relationship between morphological spatial pattern of green space and urban heat island using machine learning methods. *Building and Environment* 228 109910.

Lind P, Belusic D, Medus E, Dobler A, Pedersen RA, Wang F, Matte D, Kjellstrom E, Landgren O, Lindstedt D, Christensen OB, Christensen JH (2022) Climate change information over Fenno-Scandinavia produced with a convection-permitting climate model. *Climate Dynamics*

Lira-Loarca A, Besio G (2022) Future changes and seasonal variability of the directional wave spectra in the Mediterranean Sea for the 21st century. *Environmental Research Letters* 17 104015.

Lis A, Zalewska K, Pardela L, Adamczak E, Cenarska A, Blawicka K, Brzegowa B, Matiiuk A (2022) How the amount of greenery in city parks impacts visitor preferences in the context of naturalness, legibility and perceived danger. *Landscape and Urban Planning* 228 104556.

Liu S, Fu J-X, Wen Z, Zhang P (2022) Diverse controlling mechanisms and teleconnections of three distinctive MJO types. *Climate Dynamics*

Liu Z, Zhan W, Bechtel B, Voogt J, Lai J, Chakraborty T, Wang Z-H, Li M, Huang F, Lee X (2022) Surface warming in global cities is substantially more rapid than in rural background areas. *Communications Earth & Environment* 3 219.

Liu X, Tian G, Feng J, Hou H, Ma B (2022) Adaptation strategies for urban warming: Assessing the impacts of heat waves on cooling capabilities in Chongqing, China. *Urban Climate* 45 101269.

Liu Z, Zhou X, Tian W, Liu X, Yan D (2022) Impacts of uncertainty in building envelope thermal transmittance on heating/cooling demand in the urban context. *Energy and Buildings* 273 112363.

Liu L, Cai Y, Jin L, Zhu Y, Gao Y, Ding Y, Xia J, Zhang K (2022) Landscape pattern optimization strategy of coastal mountainside greenway from a microclimatic comfort view in hot and humid areas. *Urban Climate* 46 101297.

Liu J, Zhang M, Xia Y, Zheng H, Chen C (2022) Using agent-based modeling to assess multiple strategy options and trade-offs for the sustainable urbanization of cultural landscapes: A case in Nansha, China. *Landscape and Urban Planning* 228 104555.

Liu Y, Cleary A, Fielding KS, Murray Z, Roiko A (2022) Nature connection, pro-environmental behaviours and wellbeing: Understanding the mediating role of nature contact. *Landscape and Urban Planning* 228 104550.

Liu T, Fan C (2023) Impacts of disaster exposure on climate adaptation injustice across U. S. cities. *Sustainable Cities and Society* 89 104371.

Liu K, Xu X, Zhang R, Kong L, Wang W, Deng W (2023) Impact of urban form on building energy consumption and solar energy potential: A case study of residential blocks in Jianhu, China. *Energy and Buildings* 280 112727.

Liu R, Han Z, Li J, Li J, Liang L, Wu Y (2023) The impacts of urban anthropogenic heat and surface albedo change on boundary layer meteorology and air pollutants in the Beijing-Tianjin-Hebei region. *Urban Climate* 47 101358.

Liu J, Yang C (2023) A modified method of the standard effective temperature SET based on the extended mean skin temperature index EMSTI. *Energy and Buildings* 279 112682.

Liu Z, Liu X, Zhang H, Yan D (2023) Integrated physical approach to assessing urban-scale building photovoltaic potential at high spatiotemporal resolution. *Journal of Cleaner Production* 388 135979.

Liu S, Shi K, Wu Y, Cui Y (2023) Suburban greening and suburbanization changing surface urban heat island intensity in China. *Building and Environment* 228 109906.

Liu M, Wang Y, Liu R, Ding C, Zhou G, Han L (2023) How magnitude of PM2.5 exposure disparities have evolved across Chinese urban-rural population during 2010–2019. *Journal of Cleaner Production* 382 135333.

Liu S, Liu Z, Duan Q, Huang B (2022) The performance of CMIP6 models in simulating surface energy fluxes over global continents. *Climate Dynamics*

Liu X, Yang M, Wang H, Liu K, Dong N, Wang H, Zhang L, Fan W (2022) Moisture sources and atmospheric circulation associated with the record-breaking rainstorm over Zhengzhou city in July 2021. *Natural Hazards*

Lopes HS, Remoaldo PC, Ribeiro V, Martín-Vide J (2022) A comprehensive methodology for assessing outdoor thermal comfort in touristic city of Porto (Portugal). *Urban Climate* 45 101264.

López-Silva D, Méndez-Alonzo R, Sauceda-Carvajal D, Sigala-Meza E, Zavala-Guillén I (2022) Experimental comparison of two extensive green roof designs in Northwest Mexico. *Building and Environment* 226 109722.

Luo J, Zhao T, Cao L, Biljecki F (2022) Semantic Riverscapes: Perception and evaluation of linear landscapes from oblique imagery using computer vision. *Landscape and Urban Planning* 228 104569.

Lyu R, Pang J, Tian X, Zhao W, Zhang J (2023) How to optimize the 2D/3D urban thermal environment: Insights derived from UAV LiDAR/multispectral data and multi-source remote sensing data. *Sustainable Cities and Society* 88 104287.

Ma L, Jiang Z (2022) Impacts of the strengthened Atlantic meridional overturning circulation on the North Atlantic sea surface temperature: mean state. *Climate Dynamics*

Ma T, Chen T (2022) Outdoor ventilation evaluation and optimization based on spatial morphology analysis in macau. *Urban Climate* 46 101335.

Ma Z, Oude Elberink S, Lin Y, Xu P, Xiang B, Koch B, Weinacker H (2023) Strict rule-based automatic training data extraction using Mobile laser scanning in urban area. *ISPRS Journal of Photogrammetry and Remote Sensing* 195 313-334.

Ma H, Cheng W-C (2023) Effects of unstable thermal stratification on the flow characteristics in an idealized rural-to-urban transition region: A large-eddy simulation study. *Building and Environment* 230 109971.

Ma X, Zheng G, Chi X, Yang L, Geng Q, Li J, Qiao Y (2023) Mapping fine-scale building heights in urban agglomeration with spaceborne lidar. *Remote Sensing of Environment* 285 113392.

Ma D, Wang Y, Zhou D, Zhu Z (2022) Cooling effect of the pocket park in the built-up block of a city: a case study in Xi'an, China. *Environmental Science and Pollution Research*

Madi M, Hafnaoui MA, Hachemi A (2023) Risk evaluation and mitigation against flood danger in an arid environment. A case study (El Bayadh region, Algeria). *Environmental Monitoring and Assessment* 195 280.

Malone M, Hamlin S, Richard SI (2023) Uprooting urban garden contamination. *Environmental Science and Policy* 142 50-61.

Manavvi S, Rajasekar E (2023) Assessing thermal comfort in urban squares in humid subtropical climate: A structural equation modelling approach. *Building and Environment* 229 109931.

Manciu A, Rammig A, Krause A, Quesada BR (2022) Impacts of land cover changes and global warming on climate in Colombia during ENSO events. *Climate Dynamics*

Marazuela MA, Garcia-Gil A, Garrido E, Santamarta JC, Cruz-Perez N, Hofmann T (2022) Assessment of geothermal impacts on urban aquifers using a polar coordinates-based approach. *Journal of Hydrology* 612 128209.

Marlon JR, Wang X, Bergquist P, Howe PD, Leiserowitz A, Maibach E, Mildenberger M, Rosenthal S (2022) Change in US state-level public opinion about climate change: 2008-2020. *Environmental Research Letters* 17 124046.

Masiwal R, Sharma C, Shukla DK, Radhakrishnan SR, Pandey K, Uniyal SK, Ranjan A (2022) Influence of precursors and meteorology on ambient ozone over indian western himalayas. *Urban Climate* 45 101239.

Mei S-J, Zhao Y, Talwar T, Carmeliet J, Yuan C (2023) Neighborhood scale traffic pollutant dispersion subject to different wind-buoyancy ratios: A LES case study in Singapore. *Building and Environment* 228 109831.

Meixler MS, Piana MR, Henry A (2023) Modeling present and future ecosystem services and environmental justice within an urban-coastal watershed. *Landscape and Urban Planning* 232 104659.

Melo A, Santos J, Reis N.C. J, Castro I, V Goulart E, Xie Z (2023) Influence of wind direction and source location on peak-to-mean concentration ratios in urban environments. *Journal of Wind Engineering and Industrial Aerodynamics* 232 105264.

Mendes LMMC, Carvalho VSB, Martins FB, De-Almeida-Albuquerque TT (2023) Patterns related to pollutant concentrations in the Metropolitan Area of Belo Horizonte, Brazil. *Atmosfera* 36 329-341.

Mentes Y, Yilmaz S, Qaid A, Yilmaz H (2022) Assessment of the impact of the different settlement patterns on the summer land surface temperature: Elazig. *Environmental Science and Pollution Research*

Miao C, He X, Gao Z, Chen W, He B-J (2023) Assessing the vertical synergies between outdoor thermal comfort and air quality in an urban street canyon based on field measurements. *Building and Environment* 227 109810.

Michau Y, Lemonsu A, Lucas-Picher P, Caillaud C (2023) Evaluation of the urban heat island of 12 cities of France in a high-resolution regional climate model simulation. *Urban Climate* 47 101386.

Ming Y, Liu Y, Gu J, Wang J, Liu X (2023) Nonlinear effects of urban and industrial forms on surface urban heat island: Evidence from 162 Chinese prefecture-level cities. *Sustainable Cities and Society* 89 104350.

Mirabi E, Davies PJ (2022) A systematic review investigating linear infrastructure effects on Urban Heat Island (UHIULI) and its interaction with UHI typologies. *Urban Climate* 45 101261.

Mishra AK, Kumar P, Dubey AK, Tiwari G, Sein V D (2022) Impact of air-sea coupling on the simulation of Indian summer monsoon using a high-resolution Regional Earth System Model over CORDEX-SA. *Climate Dynamics* 59 3013-3033.

Mishra V, Sadhu A (2023) Towards the effect of climate change in structural loads of urban infrastructure: A review. *Sustainable Cities and Society* 89 104352.

Mitchell MGE, Devisscher T (2022) Strong relationships between urbanization, landscape structure, and ecosystem service multifunctionality in urban forest fragments. *Landscape and Urban Planning* 228 104548.

Mitincu C-G, Niţă M-R, Hossu C-A, Iojă I-C, Nita A (2023) Stakeholders' involvement in the planning of nature-based solutions: A network analysis approach. *Environmental Science and Policy* 141 69-79.

Mohamed NA, Wachemo AC, Karuppannan S, Duraisamy K (2022) Spatio-temporal variation of groundwater hydrochemistry and suitability for drinking and irrigation in Arba minch town, Ethiopia: An integrated approach using water quality index, multivariate statistics, and GIS. *Urban Climate* 46 101338.

Mohammad P, Goswami A (2022) Predicting the impacts of urban development on seasonal urban thermal environment in Guwahati city, northeast India. *Building and Environment* 226 109724.

Mohammadi S, Saber M, Amini S, Mostafavi MA, McArdle G, Rabiei-Dastjerdi H (2022) Environmental Conditions in Middle Eastern Megacities: A Comparative Spatiotemporal Analysis Using Remote Sensing Time Series. *Remote Sensing* 14 5834.

Mohammadzadeh N, Karimi A, Brown R (2023) The influence of outdoor thermal comfort on acoustic comfort of urban parks based on plant communities. *Building and Environment* 228 109884.

Morone P, D'Adamo I, Cianfroni M (2022) Inter-connected challenges: an overview of bioeconomy in Europe. *Environmental Research Letters* 17 114031.

Muluneh MG, Worku BB (2022) Contributions of urban green spaces for climate change mitigation and biodiversity conservation in dessie city, northeastern ethiopia. *Urban Climate* 46 101294.

Mushtaq Z, Bangotra P, Banerjee S, Ashish A, Suman (2023) Study of elemental concentration, surface morphology and chemical characterization of atmospheric aerosols and trace gases in an urban environment (india). *Urban Climate* 47 101377.

Nardino M, Cremonini L, Crisci A, Georgiadis T, Guerri G, Morabito M, Fiorillo E (2022) Mapping daytime thermal patterns of Bologna municipality (Italy) during a heatwave: A new methodology for cities adaptation to global climate change. *Urban Climate* 46 101317.

Nasehi S, Yavari A, Salehi E, Emmanuel R (2022) Role of local climate zone and space syntax on land surface temperature (case study: Tehran). *Urban Climate* 45 101245.

Neckel A, Oliveira MLS, Maculan LS, Bodah BW, Gonçalves AC, Silva LFO (2023) Air pollution in central european capital (budapest) via self-made passive samplers and sentinel-3b syn satellite images. *Urban Climate* 47 101384.

Neset T-S, Navarra C, Graça M, Opach T, Wilk J, Wallin P, Andersson L, Santos Cruz S, Monteiro A, Rød JK (2022) Navigating urban heat: Assessing the potential of a pedestrian routing tool. *Urban Climate* 46 101333.

Nguyen TH, Hung NT, Nagashima T, Lam YF, Doan Q-V, Kurokawa J, Chatani S, Derdouri A, Cheewaphongphan P, Khan A, Niyogi D (2022) Development of current and future high-resolution gridded emission inventory of anthropogenic air pollutants for urban air quality studies in Hanoi, Vietnam. *Urban Climate* 46 101334.

Nie Y, Zhang Y, Zuo J, Wang M, Wu J, Liu Y (2022) Dynamical processes controlling the evolution of early-summer cut-off lows in Northeast Asia. *Climate Dynamics*

Nie T, Lai D, Liu K, Lian Z, Yuan Y, Sun L (2022) Discussion on inapplicability of universal thermal climate index (UTCI) for outdoor thermal comfort in cold region. *Urban Climate* 46 101304.

Nimac I, Herceg-Bulić I, Žuvela-Aloise M (2022) The contribution of urbanisation and climate conditions to increased urban heat load in Zagreb (Croatia) since the 1960s. *Urban Climate* 46 101343.

Noe EE, Stolte O (2023) Dwelling in the city: A qualitative exploration of the human-nature relationship in three types of urban greenspace. *Landscape and Urban Planning* 230 104633.

Nowak AM, Snow S, Horrocks N, Glencross M (2022) Micro climatic variations and their impact on domestic energy consumption – systematic literature review. *Energy and Buildings* 277 112476.

Oh S-G, Han J-Y, Min S-K, Son S-W (2022) Impact of urban heat island on daily and sub-daily monsoon rainfall variabilities in East Asian megacities. *Climate Dynamics*

Ou C, Li F, Zhang J, Hu Y, Chen X, Kong S, Guo J, Zhou Y (2022) Multiple driving factors and hierarchical management of PM2.5: Evidence from Chinese central urban agglomerations using machine learning model and GTWR. *Urban Climate* 46 101327.

Pal SK, Masum MMH, Salauddin M, Hossen MA, Ruva IJ, Akhie AA (2022) Appraisal of stormwater-induced runoff quality influenced by site-specific land use patterns in the south-eastern region of Bangladesh. *Environmental Science and Pollution Research*

Pan Y, Wu H, Zhao T, Yang L, Wei L, He Y, Su H, Zhang Y, Cui X, Song L, Ma Y, Li C, Zhou L, Ye L (2022) Health risk assessment of heavy metal(loid)s in PM2.5 in two cities in Jilin province, China, 2016–2020. *Urban Climate* 46 101318.

Park C, Jeong S, Park H, Sim S, Hong J, Oh E (2022) Comprehensive assessment of vertical variations in urban atmospheric CO2 concentrations by using tall tower measurement and an atmospheric transport model. *Urban Climate* 45 101283.

Park CY, Choe H, Thorne JH (2023) Mapping urban cool air connectivity in a megacity. Urban Climate 47 101362.

Perillo C, Klein D, Djellouli R (2022) Polar jet stream fluctuations in an energy balance model. *Climate Dynamics*

Pfautsch S, Wujeska-Klause A, Walters JR (2023) Measuring local-scale canopy-layer air temperatures in the built environment: A flexible method for urban heat studies. *Computers Environment and Urban Systems* 99 101913.

Pludow BA, Murray AT (2023) Accounting for spatial spillover benefits in neighborhood wildfire risk mitigation. *Landscape and Urban Planning* 233 104684.

Possega M, Aragao L, Ruggieri P, Santo MA, Di Sabatino S (2022) Observational evidence of intensified nocturnal urban heat island during heatwaves in European cities. *Environmental Research Letters* 17 124013.

Pourtaherian P, Jaeger JAG (2022) How effective are greenbelts at mitigating urban sprawl? A comparative study of 60 European cities. *Landscape and Urban Planning* 227 104532.

Prein AF, Ban N, Ou T, Tang J, Sakaguchi K, Collier E, Jayanarayanan S, Li L, Sobolowski S, Chen X, Zhou X, Lai H-W, Sugimoto S, Zou L, ul Hasson S, Ekstrom M, Pothapakula PK, Ahrens B, Stuart R, Steen-Larsen HC, Leung R, Belusic D, Kukulies J, Curio J, Chen D (2022) Towards Ensemble-Based Kilometer-Scale Climate Simulations over the Third Pole Region. *Climate Dynamics*

Preston PD, Dunk RM, Smith GR, Cavan G (2023) Not all brownfields are equal: A typological assessment reveals hidden green space in the city. *Landscape and Urban Planning* 229 104590.

Pumo D, Francipane A, Alongi F, Noto LV (2023) The potential of multilayer green roofs for stormwater management in urban area under semi-arid Mediterranean climate conditions. *Journal of Environmental Management* 326 116643.

Purio MA, Yoshitake T, Cho M (2022) Assessment of Intra-Urban Heat Island in a Densely Populated City Using Remote Sensing: A Case Study for Manila City. *Remote Sensing* 14 5573.

Qi J, Lin ES, Tan PY, Ho RCM, Sia A, Olszewska-Guizzo A, Zhang X, Waykool R (2022) Development and application of 3D spatial metrics using point clouds for landscape visual quality assessment. *Landscape and Urban Planning* 228 104585.

Qi J, Ding L, Lim S (2023) Application of a decision-making framework for multi-objective optimisation of urban heat mitigation strategies. *Urban Climate* 47 101372.

Qian J, Du Y, Yi J, Liang F, Huang S, Wang X, Wang N, Tu W, Pei T, Ma T (2022) Regional geographical and climatic environments affect urban rainstorm perception sensitivity across China. *Sustainable Cities and Society* 87 104213.

Qingjuan Y, Wanyi S, Ziqi L (2022) A microclimate model for plant transpiration effects. *Urban Climate* 45 101240.

Quinton J, Nesbitt L, Czekajlo A (2022) Wealthy, educated, and... non-millennial? Variable patterns of distributional inequity in 31 Canadian cities. *Landscape and Urban Planning* 227 104535.

Rafati N, Hazbei M, Eicker U (2023) Louver configuration comparison in three Canadian cities utilizing NSGA-II. *Building and*

Environment 229 109939.

Rahaman SN, Ahmed SMM, Zeyad M, Zim AH (2023) Effect of vegetation and land surface temperature on NO2 concentration: A Google Earth engine-based remote sensing approach. *Urban Climate* 47 101336.

Raimondi A, Di-Chiano MG, Marchioni M, Sanfilippo U, Becciu G (2022) Probabilistic modeling of sustainable urban drainage systems. *Urban Ecosystems* 25 1-10.

Rajagopal P, Priya RS, Senthil R (2023) A review of recent developments in the impact of environmental measures on urban heat island. *Sustainable Cities and Society* 88 104279.

Rakholia R, Le Q, Vu K, Ho BQ, Carbajo RS (2022) Ai-based air quality pm2.5 forecasting modeis for developing countries: a case study of Ho Chi Minh City, Vietnam. *Urban Climate* 46 101315.

Rana IA, Lodhi RH, Zia A, Jamshed A, Nawaz A (2022) Three-step neural network approach for predicting monsoon flood preparedness and adaptation: Application in urban communities of Lahore, Pakistan. *Urban Climate* 45 101266.

Raneng J, Howes M, Pickering CM (2023) Current and future directions in research on community gardens. *Urban Forestry & Urban Greening* 79 127814.

Raney MA, Daniel E, Jack N (2023) Impact of urban schoolyard play zone diversity and nature-based design features on unstructured recess play behaviors. *Landscape and Urban Planning* 230 104632.

Reddy BR, Srinivas CV, Venkatraman B (2023) Impact of sea-breeze circulation on the characteristics of convective thunderstorms over southeast India. *Meteorology and Atmospheric Physics* 135 5.

Reed K, Sun F (2022) Investigating the potential for cool roofs to mitigate urban heat in the Kansas City metropolitan area. *Climate Dynamics*

Ren F, Qiu Z, Liu Z, Bai H, Gao H (2023) Trees help reduce street-side air pollution: A focus on cyclist and pedestrian exposure risk. *Building and Environment* 229 109923.

Ren X (2023) Combined effects of dominant sounds, conversational speech and multisensory perception on visitors' acoustic comfort in urban open spaces. *Landscape and Urban Planning* 232 104674.

Requena-Mullor JM, Brandt J, Williamson MA, Caughlin TT (2023) Human population growth and accessibility from cities shape rangeland condition in the American West. *Landscape and Urban Planning* 232 104673.

Resquin MD, Lichtig P, Alessandrello D, De Oto M, Gomez D, Rossler C, Castesana P, Dawidowski L (2023) A machine learning approach to address air quality changes during the COVID-19 lockdown in Buenos Aires, Argentina. *Earth System Science Data* 15 189-209.

Reu-Junqueira J, Serrao-Neumann S, White I (2022) Using green infrastructure as a social equity approach to reduce flood risks and address climate change impacts: A comparison of performance between cities and towns. *Cities* 131 104051.

Ricciardi G, Ellena M, Barbato G, Giugliano G, Schiano P, Leporati S, Traina C, Mercogliano P (2023) Climate change adaptation cycle for pilot projects development in small municipalities: The northwestern Italian regions case study. *City and Environment Interactions* 17 100097.

Rodriguez-Gomez F, Fernandez-Canero R, Perez G, Del Campo-Avila J, Lopez-Rodriguez D, Perez-Urrestarazu L (2022) Detection of unfavourable urban areas with higher temperatures and lack of green spaces using satellite imagery in sixteen Spanish cities. *Urban Forestry & Urban Greening* 78 127783.

Rohmat FIW, Sa'adi Z, Stamataki I, Kuntoro AA, Farid M, Suwarman R (2022) Flood modeling and baseline study in urban and high population environment: A case study of Majalaya, Indonesia. *Urban Climate* 46 101332.

Rozer V, Mehryar S, Surminski S (2022) From managing risk to increasing resilience: a review on the development of urban flood resilience, its assessment and the implications for decision making. *Environmental Research Letters* 17 123006.

Rubin Y, Sohn S, Alpert P (2023) High-Resolution Humidity Observations Based on Commercial Microwave Links (CML) Data-Case of Tel Aviv Metropolitan Area. *Remote Sensing* 15 345.

Rufat S, Howe PD (2022) Small-Area Estimations from Survey Data for High-Resolution Maps of Urban Flood Risk Perception and Evacuation Behavior. *Annals of the American Association of Geographers* 113 425-447.

Rusca M, Savelli E, Di Baldassarre G, Biza A, Messori G (2023) Unprecedented droughts are expected to exacerbate urban inequalities in Southern Africa. *Nature Climate Change* 13 98+.

Sabrin S, Karimi M, Nazari R (2022) Modeling heat island exposure and vulnerability utilizing earth observations and social drivers: A case study for Alabama, USA. *Building and Environment* 226 109686.

Saeedi M, Nabaei S, Kim H, Tavakol A, Lakshmi V (2023) Performance assessment of SM2RAIN-NWF using ASCAT soil moisture via supervised land cover-soil-climate classification. *Remote Sensing of Environment* 285 113393.

Sagar US, Singh Y, Mahalingam A, Malladi T (2022) Future impacts of Urban and Peri-urban agriculture on carbon stock and land surface temperatures in India. *Urban Climate* 45 101267.

Saha M, Kafy AA, Bakshi A, Faisal AA, Almulhim AI, Rahaman ZA, Al Rakib A, Fattah MA, Akter KS, Rahman MT, Zhang M, Rathi R (2022) Modelling microscale impacts assessment of urban expansion on seasonal surface urban heat island intensity using neural network algorithms. *Energy and Buildings* 275 112452.

Salim SN, Menon HB, Kumar NVPK, Rajeev K (2023) Study of micrometeorological characteristics of the atmospheric surface layer over a tropical coastal station in Goa. *Meteorology and Atmospheric Physics* 135 3.

Samuel S, Mathew N, Sathiyamoorthy V (2022) Characterization of intertropical convergence zone using SAPHIR/Megha-Tropiques satellite brightness temperature data. *Climate Dynamics*

Sankalp S, Sahoo BB, Sahoo SN (2023) Uncertainty and sensitivity analysis of deep learning models for diurnal temperature range (DTR) forecasting over five Indian cities. *Environmental Monitoring and Assessment* 195

Sarif MO, Gupta RD, Murayama Y (2023) Assessing Local Climate Change by Spatiotemporal Seasonal LST and Six Land Indices, and Their Interrelationships with SUHI and Hot-Spot Dynamics: A Case Study of Prayagraj City, India (1987-2018). *Remote Sensing* 15 179.

Sattari F, Hashim M, Sookhak M, Banihashemi S, Pour AB (2022) Assessment of the TsHARP method for spatial downscaling of land surface temperature over urban regions. *Urban Climate* 45 101265.

Saulnier A, Bleu J, Boos A, Millet M, Zahn S, Ronot P, El-Masoudi I, Rojas ERR, Uhlrich P, Del-Nero M, Massemin S (2022) Reproductive differences between urban and forest birds across the years: importance of environmental and weather parameters. *Urban Ecosystems* 25 1-16.

Scheuer S, Jache J, Kicic M, Wellmann T, Wolff M, Haase D (2022) A trait-based typification of urban forests as nature-based solutions. *Urban Forestry & Urban Greening* 78 127780.

Schibuola L, Tambani C (2022) A monthly performance comparison of green infrastructures enhancing urban outdoor thermal comfort. *Energy and Buildings* 273 112368.

Schwaab J (2022) Sprawl or compactness? How urban form influences urban surface temperatures in Europe. *City and Environment Interactions* 16 100091.

Segura R, Krayenhoff ES, Martilli A, Badia A, Estruch C, Ventura S, Villalba G (2022) How do street trees affect urban temperatures and radiation exchange? Observations and numerical evaluation in a highly compact city. *Urban Climate* 46 101288.

Sengupta A, Vissa NK, Roy I (2022) Seasonal variations in the dynamic and thermodynamic response of precipitation extremes in the Indian subcontinent. *Climate Dynamics*

Sexton AN, Benton S, Emery SM (2023) Urbanization and plant diversity influence different aspects of floral phenology. *Urban Ecosystems* 26 1-8.

Seyedabadia MR, Karrabi M, Abdollahi J, Kazemian H (2022) Optimising and investigating the effect of leaf area index, soil depth, and water content on energy conservation and pollutant reduction in green roof systems case study mashhad city. *International Journal of Environmental Technology and Management* 25 351-365.

Shah I, Soh B, Lim C, Lau S-K, Ghahramani A (2023) Thermal transfer and temperature reductions from shading systems on opaque facades: Quantifying the impacts of influential factors. *Energy and Buildings* 278 112604.

Shahfahad, Naikoo MW, Talukdar S, Das T, Rahman A (2022) Identification of homogenous rainfall regions with trend analysis using fuzzy logic and clustering approach coupled with advanced trend analysis techniques in mumbai city. *Urban Climate* 46 101306.

Sharma K, Janardhana Raju N, Singh N, Sreekesh S (2022) Heavy metal pollution in groundwater of urban delhi environs pollution indices and health risk assessment. *Urban Climate* 45 101233.

Shen Y-S, Lin Y-C, Cheah W, Lin J, Xu L, Li Y (2022) Influences and pathways of urban form and lifestyle on carbon emission reduction. *Urban Climate* 46 101325.

Shen P, Wang M, Liu J, Ji Y (2023) Hourly air temperature projection in future urban area by coupling climate change and urban heat island effect. *Energy and Buildings* 279 112676.

Shen L, Han Y, Lihua M, Xu L, Xu G, Cai CS (2023) Assessment of the influences of post-construction facilities on pedestrian-level wind environment: An experimental study in Changsha, China. *Urban Climate* 47 101366.

Shi W, Hou J, Shen X, Xiang R (2022) Exploring the Spatio-Temporal Characteristics of Urban Thermal Environment during Hot Summer Days: A Case Study of Wuhan, China. *Remote Sensing* 14 6084.

Shi T, Yang Y, Zheng Z, Tian Y, Huang Y, Lu Y, Shi C, Liu L, Zi Y, Wang Y, Wang Y, Lu G, Wang G (2022) Potential Urban Barrier Effect to Alter Patterns of Cloud-To-Ground Lightning in Beijing Metropolis. *Geophysical Research Letters* 49 e2022GL100081.

Shi Q, Liu M, Marinoni A, Liu X (2023) UGS-1m: fine-grained urban green space mapping of 31 major cities in China based on the deep learning framework. *Earth System Science Data* 15 555-577.

Shin JY, Kim KR, Lee YH (2022) Spatial prediction of outdoor thermal comfort using an operational NWP model for city and regional scales: A case study in Korea. *Urban Climate* 45 101286.

Shrestha M, Mitra C, Rahman M, Marzen L (2023) Mapping and pedicting land cover changes of small and medium size cities in Alabama using machine learning techniques. *Remote Sensing* 15 15010106.

da Silva Espinoza N, dos Santos C, de Oliveira M, Silva M, Santos C, Silva R, Mishra M, Ferreira R (2023) Assessment of urban heat islands and thermal discomfort in the Amazonia biome in Brazil: A case study of Manaus city. *Building and Environment* 227 109772.

Sinsel T, Simon H, Ouyang W, dos Santos Gusson C, Shinzato P, Bruse M (2022) Implementation and evaluation of mean radiant temperature schemes in the microclimate model ENVI-met. *Urban Climate* 45 101279.

Siqi J, Yuhong W, Ling C, Xiaowen B (2023) A novel approach to estimating urban land surface temperature by the combination of geographically weighted regression and deep neural network models. *Urban Climate* 47 101390.

Small GE, Martensson N, Janke BD, Metson GS (2023) Potential for high contribution of urban gardens to nutrient export in urban watersheds. *Landscape and Urban Planning* 229 104602.

Smith RK, Chang D-C, Guijarro JA, Chen Y (2023) Quantifying the evolving role of intense precipitation runoff when calculating soil moisture trends in east Texas. *Meteorology and Atmospheric Physics* 135 8.

Solins JP, de Lucas AKP, Brissette LEG, Grove JM, Pickett STA, Cadenasso ML (2023) Regulatory requirements and voluntary interventions create contrasting distributions of green stormwater infrastructure in Baltimore, Maryland. *Landscape and Urban Planning* 229 104607.

Song C, Yang J, Wu F, Xiao X, Xia J, Li X (2022) Response characteristics and influencing factors of carbon emissions and land surface temperature in Guangdong province, China. *Urban Climate* 46 101330.

Song B, Park K, Kim T, Seo G (2022) Analysis of spatiotemporal PM2.5 concentration patterns in Changwon, Korea, using low-cost PM2.5 sensors. *Urban Climate* 46 101292.

Sorkhabi OM, Shadmanfar B, Al-Amidi MM (2023) Deep learning of sea-level variability and flood for coastal city resilience. *City and Environment Interactions* 17 100098.

Souverijns N, De Ridder K, Veldeman N, Lefebre F, Kusambiza-Kiingi F, Memela W, Jones NKW (2022) Urban heat in Johannesburg and Ekurhuleni, South Africa: A meter-scale assessment and vulnerability analysis. *Urban Climate* 46 101331.

Sreelakshmi S, Bhaskaran PK (2022) Swell wave propagation and its characteristics while approaching the Indian Coast. *Climate Dynamics*

Stanley K, Leps N, Haensel S, Klippel L, Imbery F, Walter A (2023) Recent hot and dry summers in Germany in comparison to climate projections. *Meteorologische Zeitschrift*

Su Y, Wang Y, Wang C, Zhao Q, He Y, Zhou D, Zhou N (2022) The influence of spatiotemporal radial road on the outdoor thermal environment. *Urban Climate* 45 101280.

Subiza-Perez M, Anabitarte A, Babarro I, Jimeno-Romero A, Delclos C, Vich G, Delclos-Alio X, Rueda-Garcia C, Miralles-Guasch C, Lertxundi A (2023) On pathways and agreement: Objective and perceived accounts of neighbourhood attributes and their associations with mental health during pregnancy. *Landscape and Urban Planning* 230 104612.

Suchá L, Vaňo S, Jančovič M, Aubrechtová T, Bašta P, Duchková H, Lorencová EK (2022) Collaborative scenario building: Engaging stakeholders to unravel opportunities for urban adaptation planning. *Urban Climate* 45 101277.

Sugianto S, Arabia T, Rusdi M, Syakur S, Trishiani M (2023) Spatial distribution vegetation density, land surface temperature, and land surface moisture of Banda Aceh, Indonesia after 17 years of tsunami: a multitemporal analysis approaches. *Environmental Monitoring and Assessment* 195 213.

Sun Y, Li J, Wang H, Li R, Tang X (2022) Extreme rainfall in Northern China in September 2021 tied to air-sea multi-factors. *Climate Dynamics*

Sun M, Han C, Nie Q, Xu J, Zhang F, Zhao Q (2022) Understanding building energy efficiency with administrative and emerging urban big data by deep learning in Glasgow. *Energy and Buildings* 273 112331.

Sun L, Yu H, Sun M, Wang Y (2023) Coupled impacts of climate and land use changes on regional ecosystem services. *Journal of Environmental Management* 326 116753.

Suriya, Natsagdorj N, Aorigele, Zhou H, Sachurila (2023) Prediction of PM2.5 concentration in Ulaanbaatar with deep learning models. *Urban Climate* 47 101357.

Sylla M, Swiader M, Vicente-Vicente JL, Arciniegas G, Wascher D (2022) Assessing food self-sufficiency of selected European Functional Urban Areas vs metropolitan areas. *Landscape and Urban Planning* 228 104584.

Tao H, Hashim BM, Heddam S, Goliatt L, Tan ML, Sa'adi Z, Ahmadianfar I, Falah MW, Halder B, Yaseen ZM (2022) Megacities' environmental assessment for Iraq region using satellite image and geo-spatial tools. *Environmental Science and Pollution Research*

Tariq A, Mumtaz F (2022) Modeling spatio-temporal assessment of land use land cover of Lahore and its impact on land surface temperature using multi-spectral remote sensing data. *Environmental Science and Pollution Research*

Tariq A, Mumtaz F, Majeed M, Zeng X (2023) Spatio-temporal assessment of land use land cover based on trajectories and cellular automata Markov modelling and its impact on land surface temperature of Lahore district Pakistan. *Environmental Monitoring and Assessment* 195 114.

Tewari K, Mishra SK, Salunke P, Ozawa H, Dewan A (2022) Potential effects of the projected Antarctic sea-ice loss on the climate system. *Climate Dynamics*

Thao S, Garvik M, Mariethoz G, Vrac M (2022) Combining global climate models using graph cuts. *Climate Dynamics* 59 2345-2361.

Thompson KL, Pauli JN, Erker T, Kucharik CJ, Schatz J, Townsend PA, Zuckerberg B (2022) Urban greenspaces promote warmer soil surface temperatures in a snow-covered city. *Landscape and Urban Planning* 227 104537.

Tian Z, Gai M (2022) New PM2.5 forecasting system based on combined neural network and an improved multi-objective optimization algorithm: Taking the economic belt surrounding the Bohai Sea as an example. *Journal of Cleaner Production* 375 134048.

Trajer AJ, Sebestyen V, Domokos E, Abonyi J (2022) Indicators for climate change-driven urban health impact assessment. *Journal of Environmental Management* 323 116165.

Tu Y, Chen B, Yang J, Xu B (2023) Olympic effects on reshaping urban greenspace of host cities. *Landscape and Urban Planning* 230 104615.

Umer Y, Jetten V, Ettema J, Steeneveld G-J (2023) Assessing the Impact of the Urban Landscape on Extreme Rainfall Characteristics Triggering Flood Hazards. *Hydrology* 10 15.

Van Tol Z, Ellis A (2023) Analysis of urban heat island intensity through air mass persistence: A case study of four United States cities. *Urban Climate* 47 101345.

Varentsov M, Konstantinov P, Repina I, Artamonov A, Pechkin A, Soromotin A, Esau I, Baklanov A (2023) Observations of the urban boundary layer in a cold climate city. *Urban Climate* 47 101351.

Varotsos KV, Dandou A, Papangelis G, Roukounakis N, Kitsara G, Tombrou M, Giannakopoulos C (2022) Using a new local high resolution daily gridded dataset for Attica to statistically downscale climate projections. *Climate Dynamics*

Venter ZS, Gundersen V, Scott SL, Barton DN (2023) Bias and precision of crowdsourced recreational activity data from Strava. *Landscape and Urban Planning* 232 104686.

Vera-Valdés JE, Rodríguez-Caballero CV (2023) Air pollution and mobility in the Mexico City Metropolitan Area in times of COVID-19. *Atmosfera* 36 343-354.

Verma N, Nagendra SMS (2022) Long-term trend analysis of criteria pollutants in megacity of delhi: Failure or success of control policies. *Urban Climate* 45 101254.

Vogel J, Afshari A, Chockalingam G, Stadler S (2022) Evaluation of a novel WRF/PALM-4U coupling scheme incorporating a roughness-corrected surface layer representation. *Urban Climate* 46 101311.

Vox G, Blanco I, Convertino F, Schettini E (2022) Heat transfer reduction in building envelope with green façade system: A year-round balance in Mediterranean climate conditions. *Energy and Buildings* 274 112439.

Wang Y, Wang L, Feng J, Song Z, Wu Q, Cheng H (2022) A statistical description method of global sub-grid topography for numerical models. *Climate Dynamics*

Wang P, Chen W-Q, Cui X, Li J, Li W, Wang C, Cai W, Geng X (2022) Critical mineral constraints in global renewable scenarios under 1.5 degrees C target. *Environmental Research Letters* 17 125004.

Wang H, Zheng F, Diao Y, Li J, Sun R, Tang X, Sun Y, Li F, Zhang Y (2022) The synergistic effect of the preceding winter Northern Hemisphere annular mode and spring tropical North Atlantic SST on spring extreme cold events in the mid-high latitudes of East Asia. *Climate Dynamics* 59 3175-3191.

Wang Z, Yang S, Luo H, Li J (2022) Drying tendency over the southern slope of the Tibetan Plateau in recent decades: role of a CGT-like atmospheric change. *Climate Dynamics* 59 2801-2813.

Wang Y, Ao Y, Li Z (2022) Evapotranspiration Characteristics of Different Oases and Effects of Human Activities on Evapotranspiration in Heihe River Basin. *Remote Sensing* 14 6283.

Wang Z, Sui L, Zhang S (2022) Generating Daily Land Surface Temperature Downscaling Data Based on Sentinel-3 Images. *Remote Sensing* 14 5752.

Wang B, Wu J, Xu X, Li Y (2022) Hourly population exposure index for PM2.5 in urban street canyons. *Urban Climate* 45 101242.

Wang G, Peng W, Xiang J, Ning L, Yu Y (2022) Modelling spatiotemporal carbon dioxide emission at the urban scale based on DMSP-OLS and NPP-VIIRS: a case study in China. *Urban Climate* 46 101326.

Wang P, Zhang Y, Wang J, Wang Y, Huang L (2022) Projected attributable mortality of characteristic populations related to different definitions of heat: Evidence from Jiangsu province, China. *Urban Climate* 45 101259.

Wang Y, Li C, Liu M, Cui Q, Wang H, Lv J, Li B, Xiong Z, Hu Y (2022) Spatial characteristics and driving factors of urban flooding in Chinese megacities. *Journal of Hydrology* 613 128464.

Wang D, Chen Y, Hu L, Voogt JA, He X (2022) Satellite-based daytime urban thermal anisotropy: A comparison of 25 global cities. *Remote Sensing of Environment* 283 113312.

Wang Y, Yang X, Wu K, Mei H, De-Smedt I, Wang S, Fan J, Lyu S, He C (2022) Long-term trends of ozone and precursors from 2013 to 2020 in a megacity (Chengdu), China: Evidence of changing emissions and chemistry. *Atmospheric Research* 278 106309.

Wang L (2022) Exploring a knowledge map for urban resilience to climate change. *Cities* 131 104048.

Wang D, Zhou T, Sun J (2022) Effects of urban form on air quality: A case study from China comparing years with normal and reduced human activity due to the COVID-19 pandemic. *Cities* 131 104040.

Wang P, Yang Y, Ji C, Huang L (2023) Positivity and difference of influence of built environment around urban park on building energy consumption. *Sustainable Cities and Society* 89 104321.

Wang A, Zhang M, Ren B, Zhang Y, Al Kafy A, Li J (2023) Ventilation analysis of urban functional zoning based on circuit model in Guangzhou in winter, China. *Urban Climate* 47 101385.

Wang D, Li P, He X, He S (2023) Exploring the response of shallow groundwater to precipitation in the northern Piedmont of the Qinling mountains, China. *Urban Climate* 47 101379.

Wang J, Li C, Huang S, Zheng Q, Xiao Y, Ou J (2023) Large eddy simulation of turbulent atmospheric boundary layer flow based on a synthetic volume forcing method. *Journal of Wind Engineering and Industrial Aerodynamics* 233 105326.

Wang X, Zhang X, Zhu S, Ren J, Causone F, Ye Y, Jin X, Zhou X, Shi X (2023) A novel and efficient method for calculating beam shadows on exterior surfaces of buildings in dense urban contexts. *Building and Environment* 229 109937.

Wang Y, Zhong K, Hu J, Kang Y (2023) An anisotropic prediction model of the resistance coefficient in porous media model for simulating wind flow through building arrays. *Building and Environment* 228 109807.

Wang C, Li C, Xie L, Wang X, Chang L, Wang X, Li H, Liu Y (2023) Thermal environment and thermal comfort in metro systems: A case study in severe cold region of China. *Building and Environment* 227 109758.

Wang H, Li D (2023) Emergency department visits for mental disorders and the built environment: Residential greenspace and historical redlining. *Landscape and Urban Planning* 230 104568.

Wang J, Fleischmann M, Venerandi A, Romice O, Kuffer M, Porta S (2023) EO plus Morphometrics: Understanding cities through urban morphology at large scale. *Landscape and Urban Planning* 233 104691.

Wang R, Wang L, Xue M, Chen N, Zhang L, Ling Z, Li T, Tao M, Wang Y (2023) New insight into formation mechanism, source and control strategy of severe O3 pollution: The case from photochemical simulation in the Wuhan Metropolitan Area, Central China. *Atmospheric Research* 284 106605.

Wang S, Wang H, Liu Y (2023) Climate gentrification: A conceptual framework and empirical evidence in the City of Gold Coast, Australia. *Cities* 132 104100.

Wang Y, Gao C, Xu J, Zhang W, She L, Zhang Q, Bao R (2022) Assessing the mechanism for flood control: a case of plain river network cities under extreme rainfalls. *Environmental Science and Pollution Research*

Wohland J (2022) Process-based climate change assessment for European winds using EURO-CORDEX and global models. *Environmental Research Letters* 17 124047.

Wood DA (2023) Ozone air concentration trend attributes assist hours-ahead forecasts from univariate recorded data avoiding exogenous data inputs. *Urban Climate* 47 101382.

Wu B, Ding S (2022) Cold-Eurasia contributes to arctic warm anomalies. *Climate Dynamics*

Wu Y, Mashhoodi B, Patuano A, Lenzholzer S, Zertuche LN, Acred A (2022) Heat-prone neighbourhood typologies of European cities with temperate climate. *Sustainable Cities and Society* 87 104174.

Wu J, Zhang D, Chen Y, Zhao Y (2022) A coupled multi-model framework for waterlogging projection: Towards achieving sustainable development goal 11.5. *Urban Climate* 46 101305.

Wu AN, Biljecki F (2023) InstantCITY: Synthesising morphologically accurate geospatial data for urban form analysis, transfer, and quality control. *ISPRS Journal of Photogrammetry and Remote Sensing* 195 90-104.

Wu Y, Chen H (2023) The diffusion of traffic pollutants in different residential blocks based on spatial morphological clustering. *Building and Environment* 228 109860.

Wu X, Lu Y, Jiang B (2023) Built environment factors moderate pandemic fatigue in social distance during the COVID-19 pandemic: A nationwide longitudinal study in the United States. *Landscape and Urban Planning* 233 104690.

Wu Y, Hu X, Li Z, Cai M, Lu M, Yang S (2022) Remote effect of model systematic bias in tropical SST on the cold bias over the Tibetan Plateau. *Climate Dynamics*

Xi C, Wang D, Cao S-J (2023) Impacts of trees-grass area ratio on thermal environment, energy saving, and carbon benefits. *Urban Climate* 47 101393.

Xiao K, Yao X, Ren X, Zhang X, Fu N, Shi Q (2023) Transmission characteristics, source apportionment and health risk assessment of PM2.5 in a typical industrial city in northwest China. *Urban Climate* 47 101367.

Xie X, Luo Z, Grimmond S, Blunn L (2023) Use of wind pressure coefficients to simulate natural ventilation and building energy for isolated and surrounded buildings. *Building and Environment* 230 109951.

Xiufan Z, Decheng F (2023) Collaborative emission reduction research on dual-pilot policies of the low-carbon city and smart city from the perspective of multiple innovations. *Urban Climate* 47 101364.

Xu G, Li J, Shi Y, Feng X, Zhang Y (2022) Improvements, extensions, and validation of the Urban Weather Generator (UWG) for performance-oriented neighborhood planning. *Urban Climate* 45 101247.

Xu W, Yao L, Fu X, Wang Y, Sun S (2022) Response of PM2.5 variations to changing urbanization process in different climatic backgrounds of China. *Urban Climate* 45 101273.

Xu P, Wang Y, Fu X, Singh VP, Qiu J (2023) Detection and attribution of urbanization impact on summer extreme heat based on nonstationary models in the Yangtze river delta, China. *Urban Climate* 47 101376.

Xue D, Zhang Y, Wang P, Sun F, Yin J (2022) Distinct influences of cold vortex over Northeast China on local precipitation in early summer and midsummer. *Climate Dynamics* 59 3701-3716.

Yamamoto Y, Ichii K, Ryu Y, Kang M, Murayama S (2022) Uncertainty quantification in land surface temperature retrieved from Himawari-8/AHI data by operational algorithms. *ISPRS Journal of Photogrammetry and Remote Sensing* 191 171-187.

Yan Z, Zhou D (2023) Rural agriculture largely reduces the urban heating effects in China: A tale of the three most developed urban agglomerations. *Agricultural and Forest Meteorology* 331 109343.

Yan T, Jin Y, Jin H (2023) Combined effects of the visual-thermal environment on the subjective evaluation of urban pedestrian streets in severely cold regions of China. *Building and Environment* 228 109895.

Yang Y, Liu Y, Hu Z, Yu H, Li J, Xie Y, Yang Q (2022) Impact of the leading atmospheric wave train over Eurasia on the climate variability over the Tibetan Plateau during early spring. *Climate Dynamics*

Yang R, Wang Y, Dong J, Wang J, Zhang H, Bao H (2022) Association between ambient temperature and cause-specific respiratory outpatient visits: A case-crossover design with a distributed lag nonlinear model in Lanzhou, China. *Urban Climate* 46 101303.

Yang H, Chen T, Zeng Z, Mi F (2022) Does urban green space justly improve public health and well-being? A case study of Tianjin, a megacity in China. *Journal of Cleaner Production* 380 134920.

Yang S, Ding L, Prasad D (2022) A multi-sector causal network of urban heat vulnerability coupling with mitigation. *Building and Environment* 226 109746.

Yang C, Kui T, Zhou W, Fan J, Pan L, Wu W, Liu M (2023) Impact of refined 2D/3D urban morphology on hourly air temperature across different spatial scales in a snow climate city. *Urban Climate* 47 101404.

Yang Y, Ma F, Han Q (2023) Reconstruction of boundary layer wind field at the SEG plaza based on dual-lidar measurement and numerical simulation. *Journal of Wind Engineering and Industrial Aerodynamics* 233 105298.

Yang H, Zhou X, Yang Q, Li Y (2022) Roles of climate feedback and ocean vertical mixing in modulating global warming rate. *Climate Dynamics*

Yao Q, Li H, Gao P, Guo H, Zhong C (2022) Mapping Irregular Local Climate Zones from Sentinel-2 Images Using Deep Learning with Sequential Virtual Scenes. *Remote Sensing* 14 5564.

Yao X, Zhu Z, Zhou X, Shen Y, Shen X, Xu Z (2022) Investigating the effects of urban morphological factors on seasonal land surface temperature in a "Furnace city" from a block perspective. *Sustainable Cities and Society* 86 104165.

Yao L, Xu Y, Sun S, Wang Y (2022) Revisiting PM2.5 pollution along urban-rural gradient and its coupling with urbanization process, a new perspective from urban pollution island analysis. *Urban Climate* 45 101270.

Yao R, Wang L, Huang X, Cao Q, Wei J, He P, Wang S, Wang L (2023) Global seamless and high-resolution temperature dataset (GSHTD), 2001-2020. *Remote Sensing of Environment* 286 113422.

Yarnvudhi A, Leksungnoen N, Andriyas T, Tor-Ngern P, Premashthira A, Wachrinrat C, Marod D, Hermhuk S, Pattanakiat S, Nakashizuka T, Kjelgren R (2022) Assessing the Cooling and Air Pollution Tolerance among Urban Tree Species in a Tropical Climate. *Plants* 11 3074.

Ye X, Rasoulinezhad E (2023) Assessment of impacts of green bonds on renewable energy utilization efficiency. *Renewable Energy* 202 626-633.

Yee M, Kaplan JO (2022) Drivers of urban heat in Hong Kong over the past 116 years. *Urban Climate* 46 101308.

Yin S, Hua J, Ren C, Liu S, Lin H, Huang S, Wang K, Ma J, Xiao Y (2023) Impact of synoptic condition on urban microclimate variation: A measurement study in a humid subtropical city during summer season. *Urban Climate* 47 101350.

Yoo W, Clayton M, Yan W (2023) ESMUST: EnergyPlus-driven surrogate model for urban surface temperature prediction. *Building and Environment* 229 109935.

Yu R, Gao S, Sun L, Chen G, Shen X (2022) Multiscale mechanisms for the modulation of the Pacific Meridional Mode on tropical cyclone genesis over the western North Pacific: a comparison between 2004 and 2011. *Climate Dynamics*

Yu M, Wu H, Yin J, Liang X, Miao S (2022) Improved Delineation of Urban Hydrological Processes in Coupled Regional Climate Models. Water *Resources Research* 58 e2022WR032695.

Yu M, Lafarge F, Oesau S, Hilaire B (2022) Repairing geometric errors in 3D urban models with kinetic data structures. *ISPRS Journal of Photogrammetry and Remote Sensing* 192 315-326.

Yu S, Kong X, Wang Q, Yang Z, Peng J (2023) A new approach of Robustness-Resistance-Recovery (3Rs) to assessing flood resilience: A case study in Dongting Lake Basin. *Landscape and Urban Planning* 230 104605.

Yuan C, Zhu R, Tong S, Mei S, Zhu W (2022) Impact of anthropogenic heat from air-conditioning on air temperature of naturally ventilated apartments at high-density tropical cities. *Energy and Buildings* 268 112171.

Zhan W, Liu Z, Bechtel B, Li J, Lai J, Fu H, Li L, Huang F, Wang C, Chen Y (2022) Urban-Rural Gradient in Urban Heat Island Variations Responsive to Large-Scale Human Activity Changes During Chinese New Year Holiday. *Geophysical Research Letters* 49 e2022GL100689.

Zhang X, Wu B, Ding S (2022) Combined effects of La Nina events and Arctic tropospheric warming on the winter North Pacific storm track. *Climate Dynamics*

Zhang B, Zhong C, Gao Q, Shabrina Z, Tu W (2022) Delineating urban functional zones using mobile phone data: A case study of cross-boundary integration in Shenzhen-Dongguan-Huizhou area. *Computers Environment and Urban Systems* 98 101872.

Zhang H, Zhang J, Fang H, Yang F (2022) Urban flooding response to rainstorm scenarios under different return period types. *Sustainable Cities and Society* 87 104184.

Zhang M, Liu D, Wang S, Xiang H, Zhang W (2022) Multisource Remote Sensing Data-Based Flood Monitoring and Crop Damage Assessment: A Case Study on the 20 July 2021 Extraordinary Rainfall Event in Henan, China. *Remote Sensing* 14 5771.

Zhang Y, Wang Y, Ding N (2022) Spatial Effects of Landscape Patterns of Urban Patches with Different Vegetation Fractions on Urban Thermal Environment. *Remote Sensing* 14 5684.

Zhang D, Zhou C, He BJ (2022) Spatial and temporal heterogeneity of urban land area and PM2.5 concentration in China. *Urban Climate* 45 101268.

Zhang Y, Xiao F, Mei H, Li Y, Liu C, Qiu X (2022) Comprehensive analysis of climate-related comfort in southern china: Climatology, trend, and interannual variations. *Urban Climate* 46 101349.

Zhang J, Hu D (2022) Research of practical heat mitigation strategies in a residential district of Beijing, North China. *Urban Climate* 46 101314.

Zhang Y, Zhai S, Huang J, Li X, Wang W, Zhang T, Yin F, Ma Y (2022) Estimating high-resolution PM2.5 concentration in the Sichuan Basin using a random forest model with data-driven spatial autocorrelation terms. *Journal of Cleaner Production* 380 134890.

Zhang X, Yang L, Luo R, Wu H-Y, Xu J, Huang C, Ruan Y, Zheng X, Yao J (2022) Estimating the outdoor environment of workers' villages in East China using machine learning. *Building and Environment* 226 109738.

Zhang L, Nikolopoulou M, Guo S, Song D (2022) Impact of LCZs spatial pattern on urban heat island: A case study in Wuhan, China. *Building and Environment* 226 109785.

Zhang M, Zhang F, Chen D, Tan M, Chan N (2022) Urban local surface temperature prediction using the urban gray-green space landscape and vegetation indices. *Building and Environment* 226 109723.

Zhang Y, Rao F, Xue J, Lai D (2023) Dependence of urban park visits on thermal environment and air quality. *Urban Forestry & Urban Greening* 79 127813.

Zhang M, Kafy AA, Xiao P, Han S, Zou S, Saha M, Zhang C, Tan S (2023) Impact of urban expansion on land surface temperature and carbon emissions using machine learning algorithms in wuhan, china. *Urban Climate* 47 101347.

Zhang Q, Liu L, Yang G, Sun W, Lu H, Feng T (2023) Effects of wintertime haze on regional thermal environment and urban heat island in the Yangtze river delta, China. *Urban Climate* 47 101354.

Zhang X, Gao Y, Tao Q, Min Y, Fan J (2023) Improving the pedestrian-level wind comfort by lift-up factors of panel residence complex: Field-measurement and CFD simulation. *Building and Environment* 229 109947.

Zhang S, Zhang X, Niu D, Fang Z, Chang H, Lin Z (2023) Physiological equivalent temperature-based and universal thermal climate index-based adaptive-rational outdoor thermal comfort models. *Building and Environment* 228 109900.

Zhang Y, Wang K (2023) Global precipitation system scale increased from 2001 to 2020. *Journal of Hydrology* 616 128768.

Zhang B, Hu S, Wang H, Zeng H (2023) A size-adaptive strategy to characterize spatially heterogeneous neighborhood effects in cellular automata simulation of urban growth. *Landscape and Urban Planning* 229 104604.

Zhao Y, Xue Y, Mei S, Chao Y, Carmeliet J (2022) Enhancement of heat removal from street canyons due to buoyant approaching flow: Water tunnel PIV-LIF measurements. *Building and Environment* 226 109757.

Zhao T, Liang X, Tu W, Huang Z, Biljecki F (2023) Sensing urban soundscapes from street view imagery. *Computers Environment and Urban Systems* 99 101915.

Zhao J, Chen G, Yu L, Ren C, Xie J, Chung L, Ni H, Gong P (2023) Mapping urban morphology changes in the last two decades based on Local Climate Zone scheme: A case study of three major urban agglomerations in China. *Urban Climate* 47 101391.

Zhao J, Dong J, Zhang X, Na Y, Jiang C, He F, Cui Q, Liu J (2023) Field measurement of microclimate of sunken square and its effect on indoor environment of underground metro station in subtropical region. *Building and Environment* 228 109873.

Zheng L, Lu W, Wu L, Zhou Q (2023) A review of integration between BIM and CFD for building outdoor environment simulation. *Building and Environment* 228 109862.

Zheng X, Chen L, Yang J (2023) Simulation framework for early design guidance of urban streets to improve outdoor thermal comfort and building energy efficiency in summer. *Building and Environment* 228 109815.

Zhong X, Zhao L, Wang J, Zhang X, Nie Z, Li Y, Ren P (2022) A retrieval method for land surface temperatures based on UAV broadband thermal infrared images via the three-dimensional look-up table. *Building and Environment* 226 109793.

Zhou P, Shao M, Ma M, Ou T, Tang J (2022) WRF gray-zone dynamical downscaling over the Tibetan Plateau during 1999-2019: model performance and added value. *Climate Dynamics*

Zhou Q, He Y, Wu H, Li Y (2022) Environmental carrying capacity of green resource city ecological landscape supported by GIS. *International Journal of Environmental Technology and Management* 25 519-543.

Zhou X, Zhang S, Liu Y, Zhou Q, Wu B, Gao Y, Zhang T (2022) Impact of urban morphology on the microclimatic regulation of water bodies on waterfront in summer: A case study of Wuhan. *Building and Environment* 226 109720.

Zhou H, Gu J, Liu Y, Wang X (2022) The impact of the "skeleton" and "skin" for the streetscape on the walking behavior in 3D vertical cities. *Landscape and Urban Planning* 227 104543.

Zhou H, Xu C, Pu H, Nie Y, Sun J (2023) Influence of urban surface compositions on outdoor thermal environmental parameters on an urban road: A combined two-aspect analysis. *Sustainable Cities and Society* 90 104376.

Zhou Y (2023) Climate change adaptation with energy resilience in energy districts: A state-of-the-art review. *Energy and Buildings* 279 112649.

Zhu M, Yao T, Thompson LG, Wang S, Yang W, Zhao H (2022) What induces the spatiotemporal variability of glacier mass balance across the Qilian Mountains. *Climate Dynamics* 59 3555-3577.

Zhu W, Cao Z, Luo P, Tang Z, Zhang Y, Hu M, He B (2022) Urban Flood-Related Remote Sensing: Research Trends, Gaps and Opportunities. *Remote Sensing* 14 5505.

Zhu X, Duan S-B, Li Z-L, Wu P, Wu H, Zhao W, Qian Y (2022) Reconstruction of land surface temperature under cloudy conditions from Landsat 8 data using annual temperature cycle model. *Remote Sensing of Environment* 281 113261.

Zhu S, Causone F, Gao N, Ye Y, Jin X, Zhou X, Shi X (2023) Numerical simulation to assess the impact of urban green infrastructure on building energy use: A review. *Building and Envir* 228 109832.

Firenze (David Pearlmutter)

Upcoming Conferences...

JOINT URBAN REMOTE SENSING EVENT (JURSE)
Heraklion, Crete, Greece • May 17-19, 2023
http://jurse2023.org

ASIA OCEANIA GEOSCIENCES SOCIETY (AOGS) 20TH ANNUAL MEETING: SESSION ON "CITIES, EXTREME WEATHER, AND CLIMATE CHANGE"
Singapore • July 30 - August 4, 2023
https://www.asiaoceania.org/aogs2023/

17TH NATIONAL MEETING OF ENVIRONMENTAL COMFORT IN THE BUILT ENVIRONMENT AND 13TH LATIN AMERICAN MEETING OF ENVIRONMENTAL COMFORT IN THE BUILT ENVIRONMENT
São Paulo, Brazil • October 25-27, 2023
https://www.encac2023.com/en

6TH INTERNATIONAL CONFERENCE ON COUNTERMEASURES TO URBAN HEAT ISLANDS
Melbourne, Australia • December 4-7, 2023
https://www.ic2uhi2023.com

Calls for Papers...

Special issue on "Recent progress in atmospheric boundary layer turbulence and implications to surface-atmosphere exchange" in *JGR Atmospheres*

Open for Submissions: September 1, 2022
Submission Deadline: August 31, 2023

https://agupubs.onlinelibrary.wiley.com/hub/jgr/journal/21698996/features/call-for-papers

---

Special Issue on "Understanding urban climates with artificial intelligence and Earth observation" in the *International Journal of Applied Earth Observation and Geoinformation*

Submission Deadline: October 1, 2023

https://www.journals.elsevier.com/international-journal-of-applied-earth-observation-and-geoinformation/call-for-papers/understanding-urban-climates-with-artificial-intelligence-and-earth-observation

ELEVENTH INTERNATIONAL CONFERENCE ON URBAN CLIMATE (ICUC-11)
University of New South Wales (UNSW)
Sydney, Australia • August 28 - September 1, 2023
Conference website: https://icuc11.com/


Negin Nazarian and Melissa Hart, Conference Co-chairs

ICUC11 update: Registration is now open

ICUC11 preparations are moving along nicely, with over 780 abstracts received. Those who submitted an abstract would have now received their outcome; please do accept, or decline if you can no longer attend, this offer of presentation as soon as possible . We have planned 5 days of presentations in 5 parallel sessions (~420 presentations), however, given the large number of abstracts we have had to move many who requested an oral presentation to a poster. We do hope you all understand that with a conference this size we simply cannot have everyone present orally, even with five parallel sessions. However, we will have engaging and interactive poster sessions, and as I am sure many of you found, presenting a poster can often result in more options for feedback and discussions with colleagues than presenting in a parallel oral session (also it's worth noting that the chairs and organizing committee are all doing poster presentations).

You can now see a skeleton of the conference program on our website. Meanwhile we have been busy with post-it notes and complicated spreadsheets as we build the detailed program so that you can go to as many sessions as possible. We hope to have this finalised in the coming weeks.

You will note the program consists not only of keynote presentations from thought leaders in our field, but also two sessions we are calling "Australian Stories". During these sessions we will showcase Australian research in the areas of Air Quality and Urban Overheating. We will also end the conference with an exciting panel discussion on the role of urban climate in the larger context of climate change discourse. This discussion includes authors from all three IPCC Working Groups.

Registration is now open. Be sure to also register for our Gala Dinner, which will take place on a boat on beautiful Sydney Harbour.

Looking forward to seeing you all in Sydney!

IAUC Board Members & Terms

- **President**: Ariane Middel (Arizona State University, USA), 2022-2026
- **Secretary**: Benjamin Bechtel (Ruhr-University Bochum, Germany), 2022-2026
- **Treasurer**: Dev Niyogi (University of Texas at Austin, USA), 2022-2026
- Alexander Baklanov (WMO, Switzerland), *WMO Representative*, 2018-2022**
- Andreas Christen (Albert-Ludwigs Universität Freiburg, Germany), 2018-2022
- Jorge Gonzalez (CUNY, USA): *ICUC10 Local Organizer*, 2016-2021
- Melissa Hart (University of New South Wales, Australia), 2020-2024
- Simone Kotthaus (Institut Pierre Simon Laplace, France), 2020-2024
- Dan Li (Boston University, USA), 2023-2026
- Zhiwen (Vincent) Luo (University of Reading, UK), 2022-2026
- Negin Nazarian (University of New South Wales, Australia): *ICUC-11 Local Organizer, 2020-24*
- David Pearlmutter (Ben-Gurion University, Israel), *Newsletter Editor*, 2008-*
- Victoria Ramsey (UK Met Office, UK), 2023-2026
- David Sailor (Arizona State University, USA), *Past Secretary* 2014-2018*
- Nigel Tapper (Monash University, Australia), *Past President* 2018-2022*
- Natalie Theeuwes (Royal Netherlands Meteorological Institute, the Netherlands), 2021-25
- James Voogt (University of Western Ontario, Canada), *Past President* 2014-2018.**

* non-voting, ** non-voting appointed member

IAUC Committee Chairs

- **Editor, IAUC Newsletter**: David Pearlmutter
  - News Editor: Dragan Milosevic
  - Urban Projects Editor: Melissa Hart
  - Conferences Editor: Joe McFadden
- **Outreach Committee**: Mathias Demuzere
- **Engagement Committee**: Natalie Theeuwes
- **Bibliography Committee**: Chenghao Wang
- **Teaching Resources**: Gerald Mills
- **Awards Committee**: Helen Ward

Urban Climate News – The Quarterly Newsletter of the International Association for Urban Climate

Editor: David Pearlmutter
davidp@bgu.ac.il

Urban Projects: Helen Ward
Helen.Ward@uibk.ac.at

News: Dragan Milosevic
dragan.milosevic@dgt.uns.ac.rs

Conferences: Joe McFadden
mcfadden@ucsb.edu

The next edition of *Urban Climate News* will appear in late June. Contributions for the upcoming issue are welcome, and should be submitted by May 31, 2023 to the relevant editor.

Submissions should be concise and accessible to a wide audience. The articles in this Newsletter are unrefereed, and their appearance does not constitute formal publication; they should not be used or cited otherwise.

Bibliography: Chenghao Wang and BibCom members
chenghao.wang@ou.edu