

# IAUC NEWSLETTER

INTERNATIONAL ASSOCIATION FOR URBAN CLIMATE

Issue No. 22  
April, 2007.



[www.urban-climate.org](http://www.urban-climate.org)

## President's Column

The Board of the International Association for Urban Climate is delighted to announce that the **Seventh International Conference on Urban Climate (ICUC-7)** will be held in Yokohama (Japan) in fall 2009 with local organization guided by Dr. Manabu Kanda (Dept. Intl. Development Engineering, Tokyo Institute of Technology, Tokyo, Japan). The IAUC Board found it difficult to make a decision because it was presented with four truly excellent final proposals (the others being from Cambridge, Foz do Iguassu and San Juan) and no overwhelming consensus emerged in polling the membership of the Association via the web. As arrangements for ICUC-7 are finalized, further information will be posted on the IAUC website and via the meturbclim distribution list. Please mark your calendars now for what promises to be a scientifically stimulating and culturally interesting conference.

This **newsletter** enjoys wide readership and is made popular and interesting by contributions from individual members. It is a great place to announce urban climate related events, stories and preliminary research results from any part of the world. I therefore urge you to keep sending items to the editor (Gerald Mills) or the respective subeditors of the various categories.

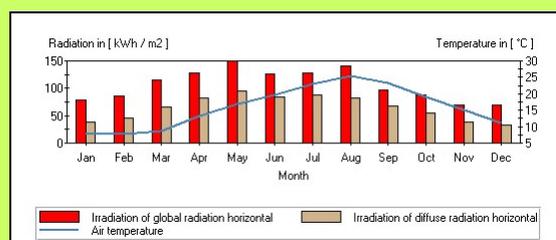
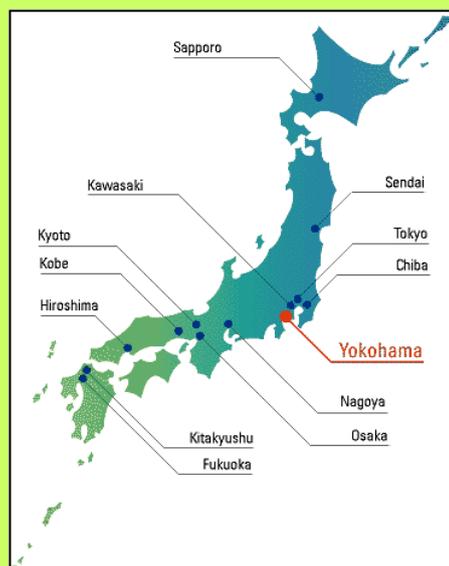
Matthias Roth  
[geomr@nus.edu.sg](mailto:geomr@nus.edu.sg)



## ICUC-7 Yokohama, Japan.



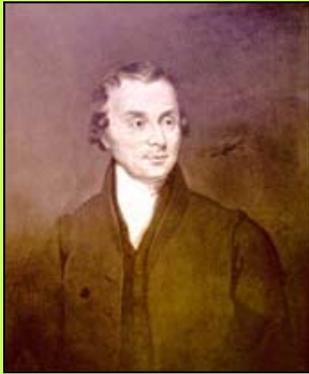
The port of Yokohama  
(Source: [www.city.yokohama.jp](http://www.city.yokohama.jp))



Yokohama's monthly temperature and radiation climate (source: Meteororm V4).

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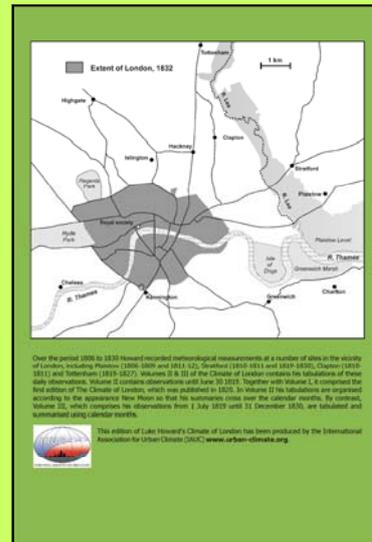
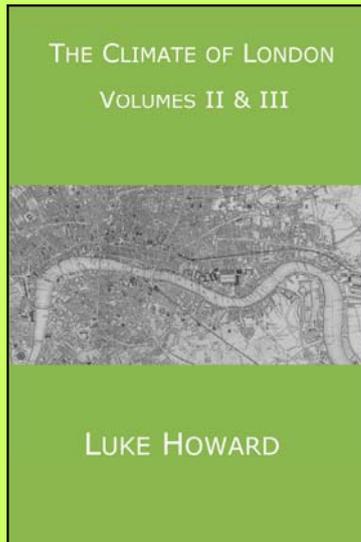
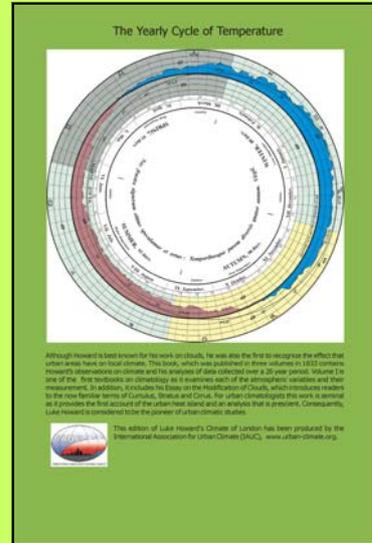
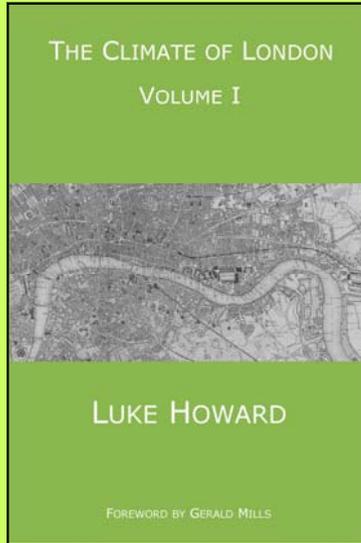
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## Luke Howard THE CLIMATE OF LONDON

The IAUC's edition of THE CLIMATE OF LONDON is now available at [www.LULU.com](http://www.LULU.com). It is based on the second edition of Howard's work published in London in 1833, which comprised three volumes. In the IAUC edition, Volume 1 has been produced as a single book (288 pages), whereas Volumes 2&3 have been combined (714 pages). Although all the tables and graphs have been redrawn and the text has been reformatted, the IAUC edition preserves the 'look' of the original.

Although Howard's work is widely acknowledged to be the first examination of the urban effect on climate, it is a rare book that is not widely available. This project was conceived as a means of 'resurrecting' Howard's work. For reasons of price and access, publishing through LULU, an online publishing company, was the best option. Authors supply the text in ready to print format and set the price. Each time a book is ordered, it is printed. There is no inventory to manage and copies can be ordered directly from the website.



The front covers The Climate of London.

In the table below, all the information on the IAUC edition of THE CLIMATE OF LONDON is presented. The book is available in both hardback and as a 'pdf' download. The costs of the books includes the manufacturing cost and a margin of €6.25. This is comprised of a €5 charge set by the IAUC to recover the costs of reproducing the book and €1.25 profit for LULU (calculated as one-quarter of the €5 charge).

Title	ISBN	Lulu Id	Hardback	Download
The Climate of London (I)	978-1-1905254-19-4	817320	€22.86	€6.25
The Climate of London (II&III)	978-1-1905254-20-0	627046	€29.27	€6.25

# Urban Climate News

Reports on the health consequences of global warming for urban residents.  
The following are abstracted from web-based newspapers.

The Age  
<http://www.theage.com.au/>

Health costs of global warming  
Carol Nader  
April 28, 2007

IN THE big city, it's called the heat-island effect. As the city sweats and swelters, heat is trapped and retained because of a mass of concrete and tar and scant green space. The temperature dips in the evening in the outer suburbs and the country, but there is no such reprieve in the city.

Endure this heatwave over a long period of time and it begins to pose problems. Problems for which Australian governments seem ill prepared. For the frail and elderly, very hot days can kill, or at least trigger serious health problems such as heart attack and stroke. The number of people aged over 65 who will die because of more frequent and severe heatwaves could at least double by the middle of the century, predicts Professor Tony McMichael, director of the National Centre for Epidemiology and Population Health at the Australian National University. And that's just in Australia's capital cities.

Across the nation, the changing climate is expected to result in increases in respiratory problems and infectious diseases, as well as problems due to water shortages and poorer water quality, at least in some areas. Then there is the psychological impact of living in a less-predictable, less-secure world.

And while the greatest and most immediate impacts of a warmer, drier world are likely to be in the developing world, experts warn that developed nations such as Australia are far from immune. Witness the extraordinary European heatwave in 2003, in which 35,000 people died, many of them in France.

In Australia, much of the focus on climate change has been on the scientific evidence of a drying and warming environment. Only recently has attention turned to its effects. And even then, there has been very little consideration given to the impact climate change will have on human health — or the extent to which the health system will be able to cope with the many challenges it will bring.

There is a lot to do. Tony McMichael is one of the top experts on the health impacts of climate change and the review editor of the health chapter of the Intergovernmental Panel on Climate Change report, which was put together by the world's top climate scientists. He has compiled a comprehensive list of ways that climate change will affect human health.

There are things governments can do. McMichael reels off a list. They need to urgently support more research into the impact of climate change on human health. And they need to start planning now to ensure the health system is prepared for the anticipated impacts.

The health workforce, for instance, needs to be better prepared. There needs to be early warnings about heatwaves. Hospitals, ambulances and other emergency services all need to focus attention on the issue. And there is a need for urban design that can better handle extreme heat. One way is by having more green space in the inner city, which has a cooling effect.

"We need greener and better ventilated urban space and we need better insulated buildings and houses," McMichael says. "Unfortunately, Australian houses tend to have lost their external shade facilities. We don't have verandas and shades the way we used to, we just rely on internal air-conditioning, which is basically a very unsustainable way of building houses. It commits us to enormous energy dependency for keeping our houses cool."

The Gazette  
MICHELLE LALONDE  
Friday, April 06, 2007  
[mlalonde@thegazette.canwest.com](mailto:mlalonde@thegazette.canwest.com)  
© The Gazette (Montreal) 2007

Unless the world finds a way to drastically reduce greenhouse gas emissions, more frequent and severe heat waves caused by climate change will kill hundreds of elderly Montrealers before their time each summer, an official with Montreal's public health department predicted yesterday.

The world's best climate scientists are expected to make public a report today detailing the expected effects of climate change on humans and eco-systems around the world.

But yesterday, Norman King, an epidemiologist with the urban environment and health sector of the Montreal public health department, explained some of the most significant health effects global warming will have on Montrealers.

"The major health impact that will affect those living in the Montreal region will be the occurrence of more frequent and more severe heat waves," King told The Gazette in an interview.

Elderly people suffering from such chronic diseases as cardiovascular or respiratory conditions cannot cope as efficiently with intense heat as healthy people, he explained. Heat waves killed an estimated 15,000 people in France in 2003, most of them elderly.

The report to be issued in Brussels today by the United Nations Intergovernmental Panel on Climate Change is a follow-up to the assessment report made public in February, which concluded human activity such as the burning of fossil fuels is almost certainly the cause of dangerous climate change.

Montreal's public health department recently completed a study on the impact of heat waves on mortality in the city between 1984 and 2004.

During that period, the study concluded, three extreme heat waves caused an average of 120 premature deaths each. These deadly heat waves occurred on July 13-14, 1987, June 18-19, 1994, and July 3, 2002.

"We are not talking about people who would have died anyway a few days later," King said.

"Researchers have looked at this and we are talking about people who should have lived for months longer."

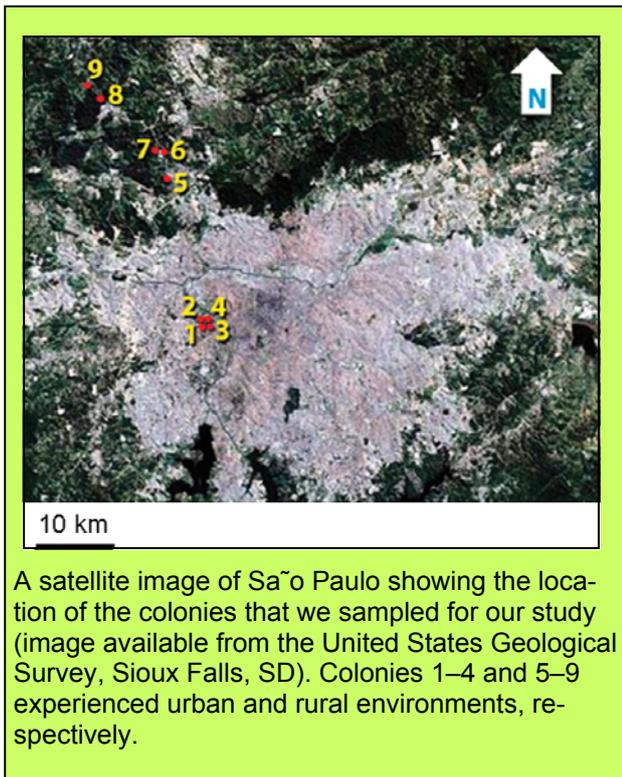
He said the department has been concerned with the issue of heat waves for the last few years and has made recommendations to the city of Montreal and other levels of government to take measures to reduce greenhouse gas emissions associated with global warming.

"We've been advocating for redesigning the city in ways that will encourage more people to leave their cars at home and take public transit or ride their bikes or walk.

"We've been calling for better financing of public transit, better urban planning, programs to encourage car pooling, showers at work so people can ride their bikes and take a shower when they get there," King said

## Urban Physiology: City Ants Possess High Heat Tolerance

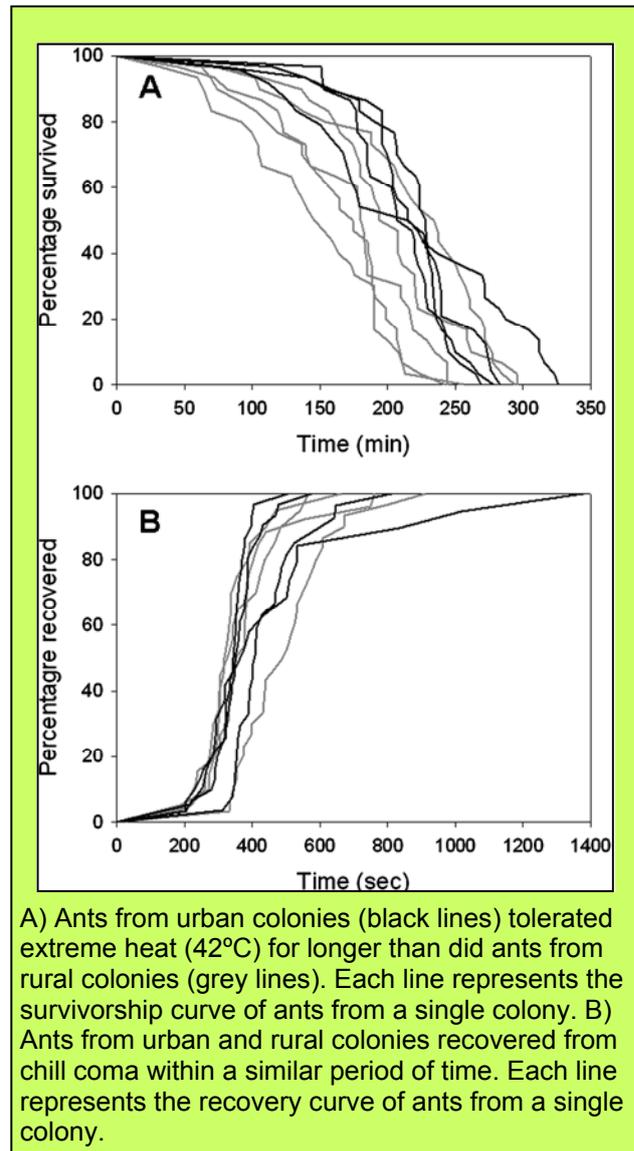
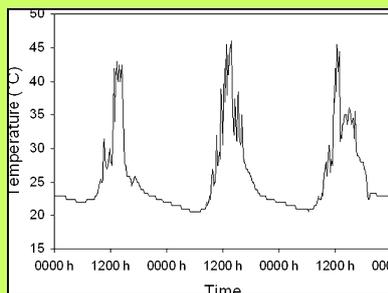
Michael J. Angilletta Jr<sup>1\*</sup>, Robbie S. Wilson<sup>2</sup>, Amanda C. Niehaus<sup>2</sup>, Michael W. Sears<sup>4</sup>, Carlos A. Navas<sup>3</sup>, Pedro L. Ribeiro (1 Department of Ecology and Organismal Biology, Indiana State University, Terre Haute, Indiana, United States of America, 2 School of Integrative Biology, University of Queensland, St Lucia, Queensland, Australia, 3 Department of Physiology, Institute of Biosciences, University of Sa˜o Paulo, Sa˜o Paulo, Brazil, 4 Department of Zoology and Center for Ecology, Southern Illinois University, Carbondale, Illinois, United States of America). Citation: Angilletta MJ, Wilson RS, Niehaus AC, Sears MW, Navas CA, et al (2007) Urban Physiology: City Ants Possess High Heat Tolerance. PLoS ONE 2(2): e258. doi:10.1371/journal.pone.0000258



A satellite image of Sa˜o Paulo showing the location of the colonies that we sampled for our study (image available from the United States Geological Survey, Sioux Falls, SD). Colonies 1–4 and 5–9 experienced urban and rural environments, respectively.

Urbanization has caused regional increases in temperature that exceed those measured on a global scale, leading to urban heat islands as much as 12°C hotter than their surroundings. Optimality models predict ectotherms in urban areas should tolerate heat better and cold worse than ectotherms in rural areas. We tested these predications by measuring heat and cold tolerances of leaf-cutter ants from South America’s largest city (Sa˜o Paulo, Brazil). Specifically, we compared thermal tolerances of ants from inside and outside of the city.

Trail temperatures exceed the critical thermal maximum for leaf-cutter ants for several hours per day. These data were recorded by an iButton Thermochron (Dallas Semiconductors) that was placed in full sun on the surface of an active trail. Data were collected during the week preceding our study (19–22 March 2006); this same trail should be even hotter during the middle of summer



A) Ants from urban colonies (black lines) tolerated extreme heat (42°C) for longer than did ants from rural colonies (grey lines). Each line represents the survivorship curve of ants from a single colony. B) Ants from urban and rural colonies recovered from chill coma within a similar period of time. Each line represents the recovery curve of ants from a single colony.

Knock-down resistance and chill-coma recovery were used as indicators of heat and cold tolerances, respectively. Ants from within the city took 20% longer to lose mobility at 42°C than ants from outside the city. Interestingly, greater heat tolerance came at no obvious expense of cold tolerance; hence, our observations only partially support current theory. Our results indicate that thermal tolerances of some organisms can respond to rapid changes in climate. Predictive models should account for acclimatory and evolutionary responses during climate change.

# Urban Climate News



On March 30, an article on 'terraforming' by Geoff Wilson appeared on the Science Alert website.

## Terraforming the new economy

Australian cities can be "terraformed" so that they become part of a climate-change response, rather than being a cause of it.

Terraforming is "Earth-shaping" of a planet, moon, or other body. It is the hypothetical process of deliberately modifying atmosphere, temperature, or ecology to resemble those of habitable by humans.

In this context the term describes the transformation of a city's built environment by sowing its wasted space – its roofs and walls - with growing plants, so that it more closely resembles a rural countryside in terms of environmental advantages. Terraforming is a convenient term for a most convenient truth.

North America and Europe now have 15 green roof infrastructure national associations. They consist of urban planners, built-environment educators, engineers, architects, horticulturalists, developers, specialist builders and municipal government. Their international organization is the World Green Roof Infrastructure Network (WGRIN), which next meets early in May, 2007 in Minneapolis, United States, to launch a worldwide campaign that aims to lead a global trend to terraform much of the world's built environment.

Australia has formed a member organisation of WGRIN – Green Roofs for Healthy Australian Cities. WGRIN plans to include many Asian, African and South American countries in its work – notably China and India. This has significance for our credibility as a player in the new terraforming world economy that is emerging as a response to climate change.

Australia made a serious start in green roof development with the construction of the new Parliament House in Canberra in the 1980s. Its three hectares of lawns on a concrete structure should have triggered much more interest among urban designers than they in fact did.

The major benefits of green roofs and green walls regarding climate change are:

- Lower city temperatures and energy savings of at least 7-8%.
- Storm-water management. Reduced runoff of rainfall at peak times enables drainage infrastructure to cope extreme events without massive and costly upgrades.
- Urban heat island effects can sometimes be five to 10 degrees Celsius above nearby rural temperatures. The City of Toronto estimates that having 8 per cent of its buildings green-roofed would lower its heat island effect by up to 2 degrees.
- In Australia lower rooftop temperatures from vegetated roofs and walls mean that air entering air conditioners will be up to 5 degrees C colder than air from a traditional roof, saving large amounts of energy now used for cooling.



Greenroofs.com ([www.greenroofs.com/](http://www.greenroofs.com/)) is an internet news media organization: the international greenroof industry's resource and online information portal.

*Our Goal is to inform, promote and inspire the earth friendly technology of organic greenroof architecture through the interchange of ideas, projects, news, travel, research, organization and government updates, marketing opportunities & exclusive features via our website. We recognize that each reader, project, and perspective is unique.*

*Our Mission is to facilitate information, and as "The Greenroof Industry Resource Portal," Greenroofs.com serves an important role as the information database and clearinghouse for the greenroof movement worldwide. Founded in 1999, the website has evolved to better reflect the needs and desires of our ever growing readership while continuing to provide an interactive platform of greenroof learning.*

The site includes details of greenroof projects such as that presented below.



## ZinCo International

The new Riedel-Baustoff-Recycling office, was constructed from the steel framework of an old CEBIT exhibition stand, re-decked in timber recycled from building demolition, then waterproofed with a single ply membrane. To protect the single ply membrane, and in keeping with the recycling concept, a green roof was installed using only recycled materials (substrate as well as drainage elements are made from recycled materials).

Other benefits of green roof and wall terraforming include air and water cleaning, longer roof life and lower maintenance costs, noise and electromagnetic insulation, visual beauty, habitat for songbirds, fire resistance, food production, a new sources of income from the building and a more valuable building. The plants, being permanent, also contribute by locking up carbon dioxide.

# Urban Climate News



International Institute for Environment and Development  
Media Release 28 March 2007

Climate change:  
study maps those at greatest risk from cyclones and rising seas

The first global study to identify populations at greatest risk from rising sea levels and more intense cyclones linked to climate change will be published next month in the peer-reviewed journal *Environment and Urbanization*.

The research shows that 634 million people - one tenth of the global population - live in coastal areas that lie within just ten metres above sea level.

It calls for action to limit the effects of climate change, to help people migrate away from risk and to modify urban settlements to reduce their vulnerability. But it warns that this will require enforceable regulations and economic incentives, both of which depend on political will, funding and human capital.

Key findings of the study by Gordon McGranahan of the International Institute for Environment and Development (UK) and his colleagues, Deborah Balk and Bridget Anderson, at the City University of New York and Columbia University, are that:

- Nearly two-thirds of urban settlements with more than 5 million inhabitants are at least partially in the 0-10 metre zone.
- On average, 14 percent of people in the least developed countries live in the zone (compared to 10 percent in OECD countries).

- 21 percent of the urban populations of least developed nations are in the zone (11 percent in OECD countries).
- About 75% of people in the zone are in Asia. 21 nations have more than half of their population in the zone (16 are small island states).
- Poor countries — and poor communities within them — are most at risk.

The study will be published on 14 April along with papers that focus on specific cities, including Cotonou (Benin), Dhaka (Bangladesh), Mumbai (India) and Shanghai (China).

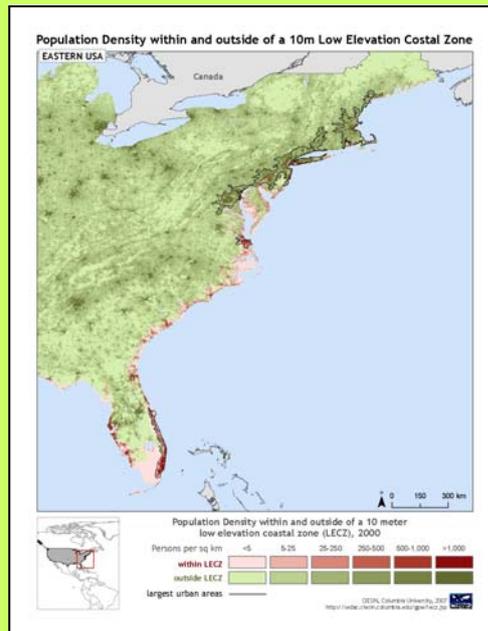
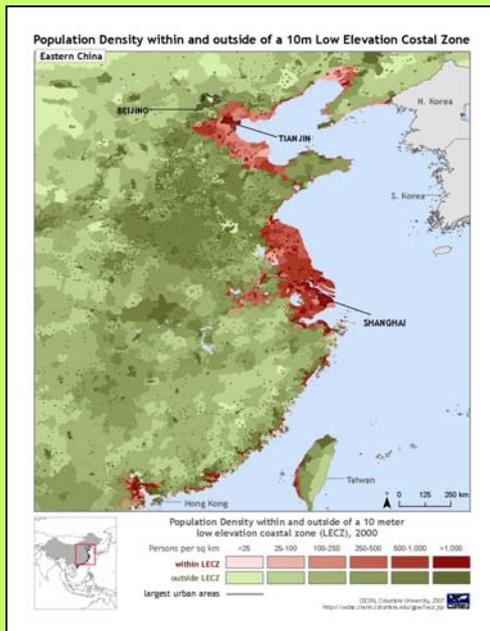
"Urban development in the coastal zone brings multiple risks," says McGranahan. "It exposes people to seaward hazards such as storms, flooding and cyclones, and it can damage sensitive ecosystems including those such as mangrove forests that protect the coastline."

"One in ten people, and one out of every eight urban dwellers, live on the coast no more than ten metres above sea level, but that number is increasing," says McGranahan. "People are running towards risk, particularly in China but also in other parts of the world such as Bangladesh, where more 40% of the land area is within ten metres above sea level."

China's economic boom has been driven by policies that promote coastal development and which have encouraged one of the largest coastward migrations ever. The study says that unless action is taken that China's economic success will be placed at risk.

Last month the Intergovernmental Panel on Climate Change's (IPCC) latest report warned that sea levels could rise by tens of centimetres this century, making

## Population Distribution Maps



Source: [sedac.ciesin.columbia.edu/gpw/lec2.jsp](http://sedac.ciesin.columbia.edu/gpw/lec2.jsp)

coastal populations more vulnerable to flooding and storm surges. It also predicted more intense tropical cyclones (typhoons and hurricanes).

"The IPCC is aware that there are high population densities in coastal areas, but it has not yet recognised the links to urbanisation, and the implications for adaptation to climate change," says co-author Deborah Balk, the acting associate director of the Institute for Demographic Research at the City University of New York.

The new study highlights the importance of "the three Ms": mitigation, migration and modification.

"It is too late to rely solely on a reduction in greenhouse gas emissions to mitigate climate change, although this is clearly an imperative," says McGranahan. "Migration away from the zone at risk will be necessary but costly and hard to implement, so coastal settlements will also need to be modified to protect residents."

"Of the more than 180 countries with populations in the low-elevation coastal zone, 130 of them — about 70% — have their largest urban area extending into that zone," adds Bridget Anderson, research associate at Columbia University's Center for International Earth Science Information Network.

"Furthermore, the world's large cities — those with more than 5 million residents — have, on average, one-fifth of their population and one-sixth of their land area within this coastal zone."

Many of the countries with the most people in the 0-10 metre zone are large Asian nations with densely populated river deltas, while many nations with the greatest proportion of their people in the zone are small island states.

"Climate change is not a natural disaster but has largely been caused by wealthy countries emitting greenhouse gases during their industrialisation," says McGranahan. "Yet the poorest countries that have contributed least to the problem are most vulnerable to its effects. It is therefore incumbent on rich nations to help poorer ones to adapt to the changes ahead."

McGranahan and colleagues analysed the GRUMP (Global Rural-Urban Mapping Project) databases of fine-scale information on population and urban extent along with elevation data derived from NASA's Satellite Radar Topography Mission, and World Bank data on national income.

"Carefully combining spatial data layers allows us to calculate the distribution of each country's population and urban settlements by elevation along a narrow coastal strip of land in most places," notes Balk. "These kinds of estimates are impossible to derive from national-level data."

"The ability to map both human activities and environmental conditions globally has revolutionary possibilities — and is very timely given the emergence of global environmental challenges such as climate change."

## MUMBAI Newsline

cities.expressindia.com

### Heat island effect: City paying for growing energy appetite By Kavitha Iyer

Mumbai, April 3: Every time he walks in or out of his office at the Indian Institute of Technology, Powai, this professor glances at a console attached to a flatscreen monitor on the table outside. A component of the weather station that is monitoring rainfall data on his roof-as on the roofs of 30 civic offices and fire stations-this digital equipment also displays temperatures. Late in March, it showed a sweltering 41.2 degrees Celsius one afternoon, in Powai, once one of the city's greenest pockets. That's when Kapil Gupta, associate professor in IIT's civil engineering department, did a double take.

It was 35 degrees even at 8 pm, plus the unit had recorded 37.9 degrees on March 26 and 36.8 degrees on March 27, apart from 38.4 degrees on March 16. "This can be explained by the urban heat island effect," says Gupta, who proposes to undertake a detailed study based on the data.

Urban heat islands are areas significantly warmer, by 2 degrees Celsius to 6 degrees Celsius in summer, than their surrounding countryside. "The hypothesis is clear, now we need to back it with the data." There are two weather stations at IIT, apart from the 30 decentralised stations monitored by the civic disaster control cell.

This summer, when Mumbai is faced with load-shedding, the implication is that the city may be paying for its voracious energy appetite with rising mercury levels. Then, as it gets warmer, a vicious circle ensues, says Gupta. "The electricity used for airconditioning increases with each degree and it takes longer to cool the room. And as more energy is used to cool the inside, the atmospheric temperature rises outside."

It's not a new phenomenon, and is quite simple to understand: Energy demand is greater in urban heat islands, thanks to a heightened demand for airconditioning. And, as more fossil fuels burn, temperatures rise, pollution levels rise and so do energy costs due to steeper investments in generating more electricity.

"Remember also the great increase in the number of fully-airconditioned buildings in Mumbai —malls, multiplexes, etc," says Roshni Udayavar, head of the environmental architecture department at the Rachana Sansad, Prabhadevi. "Plus there are the steel and glass buildings that reflect the sun and heat and the traffic congestion to contend with."

Udayavar says the heat island effect in Mumbai is actually mitigated by the sea-breeze, something policy-makers must ensure continues flowing into Mumbai, highly vulnerable to the heat island effect thanks to the less than 3 per cent of land available as open spaces. "Aerodynamic buildings to let the sea-breeze in and not covering the coastline with tall buildings are priorities," she says.

"It's also interesting to see heat islands affect Mumbai's local precipitation during the monsoon," Gupta says. An expert in urban hydrology, he studied monsoon patterns in Hyderabad a few years ago and found that there was an increase of 34 mm in average rainfall recorded in two consecutive 14-year periods. Meanwhile, the Indian Institute of Energy Conservation and the University of Pune are formulating guidelines for an eco-housing programme for the Brihanmumbai Municipal Corporation-one of the 80-odd guidelines pertains to vegetation and green roofs to reduce the effects of urban heat island effects.

"Incentivising green buildings is something tested successfully by, for example, Portland, Oregon," says Gupta. But first, for a city that's more polluted and more starved for electricity everyday, it might be worth finding out why it's getting so warm.

Source: [cities.expressindia.com/fullstory.php?newsid=229978](http://cities.expressindia.com/fullstory.php?newsid=229978)

**The 4th Polish Conference  
URBAN CLIMATE AND BIOCLIMATE**  
29 November - 1 December 2007, Łódź, Poland

The 4th Polish Conference on URBAN CLIMATE AND BIOCLIMATE organized by Department of Meteorology and Climatology University of Łódź and Łódź Branch of Polish Geophysical Society under the auspices of Professor Timothy Oke (Doctor honoris causa of University of Łódź)

Organizing Committee: Kazimierz Kłysik (Chair), Krzysztof Fortuniak (Chair of Łódź Branch of Polish Geophysical Society), Joanna Wibig (scientific secretary), Iwona Gajda-Pijanowska (organizing secretary), Agnieszka Podstawczyńska, Piotr Piotrowski, Włodzimierz Pawlak, Mariusz Siedlecki, Marcin Rzepa, and Jerzy Neuhorn

Conference Site: The University of Łódź Training and Conference Centre, Łódź, Kopcińskiego 16/18 (<http://www.csk.uni.lodz.pl/eng/index.php>)

Main conference topics:

- spatial variability of meteorological parameters on urban areas
- structure of the urban boundary layer,
- exchanges of momentum, mass and heat between urban surface and its boundary layer,
- bioclimate of towns,
- climatic performance of urban green areas,
- air pollution and air quality at urban areas,
- anthropogenic heat emission,
- building climates,
- cities and global climate changes,
- urban climate and urban planning.

Conference languages: Polish and English (simultaneous interpretation not available).

Conference fee: 450 PLN (~115 EUR) (including conference materials, social programme and publication in post-conference volume).

Accommodation: The University of Łódź Training and Conference Centre, ul. Kopcińskiego 16/18  
single room - 140-155 PLN (~35-40 EUR)  
twin room - 2 x 105 PLN (2 x ~25 EUR)  
or in various hotels in the city (do not hesitate to contact with Organizing Committee if you need any help/suggestions)

Conference calendar:

- 30 May 2007 - pre-registration and abstract submission (150 words)
- 31 October 2007 - deadline for registration fee
- 1 December 2007 - full text submission

You will be able to obtain more information from the second circular.

**Research Positions  
in Urban Climatology**

Department of Geography,  
National University of Singapore (NUS), Singapore

**Post-doctoral position in urban climatology**

I am seeking applicants with experience in micro-meteorology or a related field to work on an ongoing project which examines the urban-atmosphere exchange of energy and carbon dioxide. Maintenance of turbulence sensors, day-to-day running of an urban flux tower and analysis of turbulence statistics will be the main responsibilities. Qualified applicants should have a background in experimental micrometeorology, analytical and programming skills. Complementary expertise and interest in other areas of urban climatology such as thermal remote sensing, modelling or urban air quality are also welcome. The development and completion of own research agenda, leading to scientific publications is strongly encouraged. The position is pending budgetary approval and will be available in autumn 2007 for the duration of three years.

For informal inquiries or to apply for this position (needed are curriculum vitae, names and contact information of three referees and a statement of research interests) please contact Matthias Roth at [geomr@nus.edu.sg](mailto:geomr@nus.edu.sg).

**Graduate student opportunities  
in urban climatology**

Fully funded (through competitive research scholarships) MA and PhD opportunities exist for graduate students interested in urban climatology (e.g. measurement of energy and CO<sub>2</sub> exchange, urban heat island studies, thermal remote sensing, air quality, etc.). Interested students with a strong science background as well as those with prior training in atmospheric sciences, climatology or physical geography are encouraged to apply. More information about the graduate program at NUS and financial support can be found at <http://www.fas.nus.edu.sg/prospective/grad/index.html>.

Geography at NUS: The successful candidate will join a small but active and growing physical geography team (we are currently also looking for two new faculty members with expertise in environmental change dynamics and GIS). NUS is a modern university located in a multicultural, exotic and safe environment. More information about NUS and the Department of Geography can be found at <http://www.nus.edu.sg/> and <http://www.fas.nus.edu.sg/geog/>. Specific information about the urban climate research can be found at <http://courses.nus.edu.sg/course/geomr/front/fresearch/fres.htm>.

Matthias Roth. ([geomr@nus.edu.sg](mailto:geomr@nus.edu.sg))

# IAUC Committee Reports

## Bibliography

Thanks to everyone for their contributions this month. Please send any further references to papers published since January 1 2005 for inclusion in the next newsletter to [j.salmond@auckland.ac.nz](mailto:j.salmond@auckland.ac.nz). As before, please mark the header of your email with 'IAUC Publications 2006'. In order to facilitate entering the information into the data base please use the following format:

Author:  
Title:  
Journal:  
Volume:  
Pages:  
Dates:  
Keywords:  
Language:



We look forward to hearing from you soon! Jennifer Salmond and Evyatar Erell

### Recent publications in Urban Climatology

(Languages are specified where the publication is known to be in a language other than in English.)

Jennifer Salmond  
[j.salmond@auckland.ac.nz](mailto:j.salmond@auckland.ac.nz)

Recent publications in Urban Climatology  
(Languages are specified where the publication is known to be in a language other than in English.)

Brazel, A., P. Gober, et al. "Determinants of changes in the regional urban heat island in metropolitan Phoenix (Arizona, USA) between 1990 and 2004." *Climate Research* 33(2): 171-182.

Chou, C. C., C. T. Lee, et al. (2007). "Lidar observations of the diurnal variations in the depth of urban mixing layer: A case study on the air quality deterioration in Taipei, Taiwan." *Science of the Total Environment* 374(1): 156-166.

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Jiang, W.-M. and Y. Chen (2007). "The Impact of Anthropogenic Heat on Urban Boundary Layer Structure." *Chinese Journal of Atmospheric Sciences* 31(1): 37-47. (In Chinese)

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Khaikine , M. N., I. N. Kuznetsova, et al. (2006). "Influence of a high aerosol concentration on the thermal structure of the atmospheric boundary layer." *Izvestia , Atmospheric and Oceanic Physics* 42(6): 778-784.

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# IAUC Committee Reports

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## Newsletter Contributions

The next edition will appear in early April. Items to be considered for the next edition should be received by **May 31, 2007**. The following individuals compile submissions in various categories. Contributions should be sent to the relevant editor:

<u>News:</u>	Dr. J. Marshall Shepherd marshall.shepherd@nasa.gov
<u>Conferences:</u>	Jamie Voogt javoogt@uwo.ca
<u>Websites:</u>	Gerald Mills gerald.mills@ucd.ie
<u>Bibliography:</u>	Jennifer Salmond j.salmond@bham.ac.uk
<u>Urban Projects:</u>	Sue Grimmond sue.Grimmond@kcl.ac.uk

General submissions should be relatively short (1-2 A4 pages of text), written in a manner that is accessible to a wide audience and incorporate figures and photographs where appropriate. In addition we like to receive any images that you think may be of interest to the IAUC community.

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  - Benedicte Dousset (Hawai'i Institute of Geophysics and Planetology, USA): 2006-2010
  - Rohinton Emmanuel (University of Moratuwa, Sri Lanka): 2006-2010
  - Krzysztof Fortuniak (University of Lodz, Poland): 2003-2007
  - Kevin Gallo (National Oceanic and Atmospheric Administration (NOAA), USA): 2006-2010
  - Sue Grimmond (King's College London, UK): 2000-2003, President 2003-2006, Past President 2007-2009\*
  - Manabu Kanda (Tokyo Institute of Technology, Japan): 2005-2009, ICUC-7 Local Organizer 2007-2009
  - Wilhem Kuttler (University of Essen, Germany): 2004-2008
  - Sven Lindqvist (Göteborg University, Sweden): ICUC-6 Local Organizer 2004-2006\*
  - Gerald Mills (University College Dublin, Ireland): 2003-2007
  - Matthias Roth (National University of Singapore, Singapore): 2000-2003, Secretary 2003-2006, Acting-Treasurer 2006-2007, President 2007-2009
  - Jennifer Salmond (University of Auckland, NZ): 2005-2006, Secretary 2007-2009
  - Tim Oke (University of British Columbia, Canada): President 2000-2003, Past President 2003-2006, Emeritus President 2007-2009\*
  - James Voogt (University of Western Ontario, Canada): 2000-2006, Webmaster 2007-\*
- \* appointed members (non-voting)

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- Arie Bitan (Tel Aviv University, Israel): 2000-2006
- Bob Bornstein (San Jose State University, USA): 2000-2006, Treasurer 2005-2006
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- Kazimierz Klysik (University of Lodz, Poland): ICUC-5 Local Organizer 2001-2006
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