New study could bring relief to sweltering city slickers

June 4 2007

Sweltering summers in the city may become more bearable in future years, thanks to a new study probing the heat contributed by buildings, roads and traffic.

Researchers at The University of Manchester will use a small plane and a car fitted with advanced equipment to map out the surface temperature of central areas of Manchester and Sheffield.

The data collected will be combined with climate change forecasts to produce a detailed picture of how urban 'heat islands' push up the temperature during the hottest months.

One of the aims of the three-year study is to produce a series of tools, that will help planners, designers and engineers decide the best way of adapting the urban landscape to bring greater human comfort during hot and sticky spells.

The SCORCHIO project (Sustainable Cities : Options for Responding to Climate Change Impacts and Outcomes), is being led by The School of Mechanical, Aerospace and Civil Engineering (MACE) at The University of Manchester.

The Universities of Newcastle, Sheffield and East Anglia, The Met Office Hadley Centre and The Tyndall Centre, are all working closely with researchers from Manchester on the £550,000 Engineering and Physical Sciences Research Council (EPSRC) funded project.

Local authorities, planners, designers and engineers will be working with researchers to help realise the project goals.

As well as increasing levels of human comfort, adapting buildings will also help reduce harmful carbon emissions.

For example, reducing the amount of exterior glass could lower temperatures and cut the demand for electricity-hungry air conditioning systems and desk fans.

At the moment neither the effects on the urban landscape or the heat released by human activities within cities are considered in standard climate change research. But they have been shown to be potentially very significant.

The 2003 heat wave is considered responsible for around 14,800 excess deaths in France and around 2,045 excess deaths in England and Wales – and researchers believe that projected rates of urban growth may mean that the health risk will increase as the impact of climate change becomes greater.

Research conducted at the Met Office Hadley Centre suggests that the occurrence of such hot summers is now twice as likely as it would have been without human-caused climate change.

Project leader Professor Geoff Levermore, Professor of the Built Environment at The University of Manchester and lead author of the IPCC Fourth Assessment Report Working Group Three Chapter on Buildings said: “Our urban and city areas are becoming increasingly unhealthy, dangerous and uncomfortable to work and live in, and are remarkably vulnerable to global warming.

“Actions by planners, designers and building owners are required in the

short term if cities are to avoid becoming ever more vulnerable in the long term.

“For climate change adaptation strategies to be developed for cities and regions in the UK, there is an urgent need for decision support tools to appraise and design adaptation options.

“The science and practice of adaptation of the built environment to climate change is still in its infancy. We hope this project will pave the way for further research and work to address this very important issue.”

It’s hoped the work will provide a blueprint for the development of computer map-based (GIS) systems, allowing planners and designers to examine possible changes and see the wider impact on the climate of a city or urban area.

Researchers are also aiming to create a new heat and human comfort vulnerability index for typical buildings and their surroundings. This would help identify areas of a city that might become most uncomfortable during a hot spell.

The SCORCHIO project will initially focus on the central areas of Manchester and Sheffield, although other cities have expressed an interest in becoming involved.

Source: University of Manchester