Fang Zhang

Doctoral Researcher

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About

Title of PhD: Impacts on Health of Heat Waves in UK Cities Enhanced by Climate Change and the Urban Heat Island Effect

Supervisors: Dr Xiaoming Cai (/staff/profiles/gees/cai-xiaoming.aspx) and Professor John Thornes

Fang Zhang is currently undertaking doctoral research into the impact of the Urban Heat Islands (UHIs) and heatwaves on heath using a range of statistical techniques, MODIS satellite sensors and the UK Climate Projections (UKCP09) across the UK cities. She has been involved with academic activities such as 2011 Research Poster Conference and International Conference on Environment and Health, incorporating the SEGH 28th European Conference 2011 in Edge Hill University.

Qualifications

BSc (Hons) Ocean and Earth Sciences, University of Liverpool, UK (2006-2009)

MSc (Hons) Applied Meteorology and Climatology, University of Birmingham, UK (2009-2010)

PhD Geography and Environmental Sciences, University of Birmingham, UK (2010-2013)

Biography

Fang Zhang achieved her MSc degree in Applied Meteorology and Climatology at the University of Birmingham after completing her BSc in Ocean and Earth Sciences at the University of Liverpool. She went on to undertake a PhD project investigating the health impacts of the UHI and heatwaves since October 2010. In the meantime, she attended several academic conferences and symposium. She was also allocated as a module demonstrator at the University of Birmingham and worked for Worcestershire County Council performing data analysis.

Research

Main research fields

The Urban Heat Island (UHI), Heatwave, Health, Climate Change, GIS, UK Climate Projections (UKCP09)

PhD project: “Impacts on Health of Heat Waves in UK Cities Enhanced by Climate Change and the Urban Heat Island Effect”

Exposure to climate change can affect human health directly through changing weather patterns (such as more frequent and intense extreme events) and indirectly through changes in water, air, food quality and quantity, ecosystems, agriculture, livelihoods and infrastructure. These direct and indirect exposures can cause death, disability and suffering. However, human health is also affected by other environmental conditions, social conditions and health system conditions, which have a modifying influence on human health. Many questions arise concerning the likely impact of climate change on health.

- Which of the health impacts apparently due to climate change will be adverse, and which might be beneficial?
- Will the number of increased heat-related deaths be offset by reduction in cold-related deaths?
- Has the urban heat island in cities helped to already acclimatise residents to climate change?

This project is concerned with trying to quantify the links between climate change, urban heat island (UHI) and health in a range of UK cities. The research will identify which health impacts of climate change and the UHI will be positive and which will be negative in terms to mortality and morbidity. Health and climate data from a cross section of cities (e.g. London, Birmingham, Manchester and Glasgow etc) will be analysed. The research will build on the recent report "Health Effects of Climate Change in the West Midlands (2010)" published by the Health Protection Agency.

- Develop a mortality-temperature model that can be used for a range of UK cities
- Utilise and expand existing GIS data for UK city urban structures to identify vulnerable communities
- Incorporate UKCP09 climate change scenario data to run mortality predictions for a selection of UK cities up to the year 2100
- Attempt to quantify the likely impact of urban heat island compared to other confounding factors such as acclimatisation, air pollution, use of air-conditioning, ethnic populations, age structure etc

Other activities

Fang Zhang worked as a data analyser for the research into heatwaves and mortality rates conducted by Worcestershire County Council. She has been allocated as a demonstrator for the Module - MSc Met – ADPA. She was also successful in winning the Birmingham Brief Competition related to the Research Poster Conference.

Publications

The paper title “Assessment of regional air flow in the West Midlands and its influence on health, 2001-2005” has been accepted by the Journal of Environmental Geochemistry and Health (EGH) Special Edition. It is in the journal editorial process now.

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