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# Vivien Bright

Doctoral Researcher

**School of Geography, Earth and Environmental Sciences (/schools/gees/index.aspx)**

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## About

**Title of PhD:** Street Canyon Atmospheric Composition: Coupling Dynamics and Chemistry

**Supervisors:** Dr William Bloss (/staff/profiles/gees/bloss-william.aspx) and Dr Xiaoming Cai (/staff/profiles/gees/cai-xiaoming.aspx)

Vivien Bright's doctoral research concerns the composition of the atmosphere in urban environments, particularly within "street canyons" formed from roads running between rows of buildings in towns and cities. Here at Birmingham a Large Eddy Simulation (LES) model has been developed by Dr Xiaoming Cai, which can accurately simulate the atmospheric motion and mixing which result from background air flowing over a street canyon, and the chemical interactions between various species present. Vivien's research has involved developing this model, to include a more detailed chemical reaction scheme, and to use the enhanced model to investigate the combined effects of mixing and chemical reactions upon urban air quality.

Vivien's doctoral research is funded by a school scholarship awarded by the School of Geography, Earth and Environmental Sciences.

## Qualifications

2005-2006 MSc Applied Meteorology, Distinction (University of Reading)

2001-2004 BSc (Hons) Marine Geography, First Class (Cardiff University)

## Biography

Following a BSc in Marine Geography at Cardiff University, Vivien undertook an MSc in Applied Meteorology at the University of Reading and was awarded an MSc scholarship by the Royal Meteorological Society (RMetS). Following the completion of her MSc in 2006, Vivien joined the Met Office and trained as a weather forecaster at the Met Office College. In 2008, Vivien decided to return to academia and pursue a Ph.D in Atmospheric Science here at the University of Birmingham.

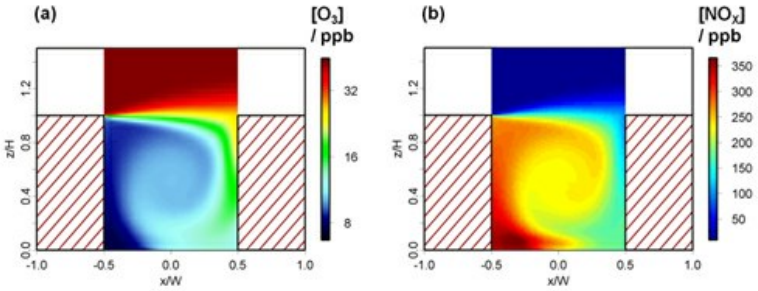
## Research

**Research group**

**Environmental Health Sciences (/research/activity/environmental-health/index.aspx)**

**Research interests**

- Atmospheric composition and chemistry
- Computational Fluid Dynamics
- Atmospheric dispersion and turbulence characteristics
- Micro-meteorology
- Boundary-layer meteorology




## Other activities

- Royal Meteorological Society (Associate fellow)
- Royal Society of Chemistry (Affiliate member)
- Member of the American and European Geophysical Unions
- Member of the organising committee for the RMetS student conference (2011; 2010)

- Member of the organising committee for the BEAR post-graduate conference (2010)
- Assistant project advisor, field course assistant and postgraduate demonstrator for a number of BSc and MSc modules including: Atmospheric Composition and Physics; Environmental Chemistry and Physics; Atmospheric Data Processing and Analysis (Fortran component)

## Publications

Bright, V.B., Bloss, W.J. and Cai, X.-M. Urban street canyons: coupling dynamics, chemistry and atmospheric pre-processing. *Atmospheric Environment.* (In preparation).

Bright, V.B., Bloss, W.J. and Cai, X.-M. (2011). Modelling atmospheric composition in urban street canyons. *Weather,* 66:106-110.

Bright, V.B., Bloss, W.J. and Cai, X.-M. (2011). Street canyon atmospheric composition: coupling dynamics and chemistry. In: D.G. Steyn and S.T. Castelli (eds.). *Air Pollution Modeling and its Application XXI*. NATO Science for Peace and Security Series C: Environmental security.

Bright, V.B., Bloss, W.J. and Cai, X.-M. (2010). Street canyon atmospheric composition: coupling dynamics and chemistry. *Royal Society of Chemistry. Environmental Chemistry Group Bulletin.* 1758-6224.

**Selected conference presentations**

Bright, V.B., Bloss, W.J. and Cai, X.-M., 2011. Urban street canyons: coupling dynamics, chemistry and atmospheric pre-processing (oral). European Geophysical Union (EGU), April 2011, Vienna, Austria.

Bright, V.B., Bloss, W.J. and Cai, X.-M., 2010. Street canyon atmospheric composition: coupling dynamics and chemistry (poster). American Geophysical Union (AGU), December 2010, San Francisco, USA.

Bright, V.B., Bloss, W.J. and Cai, X.-M., 2010. Street canyon atmospheric composition: coupling dynamics and chemistry (poster). NATO/SPS International Technical Meeting (ITM) on Air Pollution Modelling and its Application September 2010, Torino, Italy.

**Awards**

RMetS legacies fund (2010, 2011)

American Geophysical Union student travel grant (2010)

National Centre for Atmospheric Science (NCAS) 2$^{nd}$ place student poster prize (2010)

BEAR conference 3$^{rd}$ place oral presentation (2010)

NCAS conference registration bursary (2010)

RMetS 1$^{st}$ place student poster prize (2009)

NCAS bursary to attend summer school in Atmospheric Measurement, Arran (2010)

Ph.D school scholarship (2008-2011)

RMetS MSc scholarship (2005-2006)

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