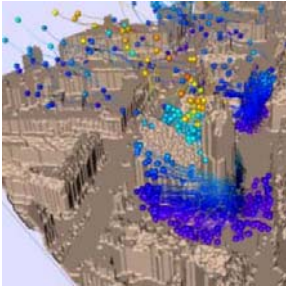




Department of Architecture, The Chinese University of Hong Kong  
Professional Green Building Council, Hong Kong



# An Expert Forum on UCMap & CFD for Urban Wind Studies in Cities

Air Ventilation Assessment (AVA) is important for projects in Hong Kong. Studies of the urban climatic environment and air ventilation of ultra high density city are the focus of this expert forum. The scientific methodologies of Urban Climatic Mapping will firstly be introduced, demonstrated and discussed. This will be followed by presentations and discussions using CFD (Computational Fluid Dynamics) for wind studies in the urban environment. Experts from Germany, Japan and UK, and invited local speakers will share their technical experiences.

If you have technical and advanced user experience to share AND/OR are clients/professionals with related experience wishing to table your practical perspective, we welcome you.

Date: **17 Oct 2006 (Tuesday)**  
Time: **2 pm – 6 pm**  
Venue: **Hong Kong Institute of Architects**  
19/F, One Hysan Avenue, Causeway Bay, Hong Kong

## Speakers

### **Professor Lutz Katzschner**

Chairman, WG for a national guideline on urban climate, Germany

### **Dipl.- Ing. Jochen Mulder**

Research Engineer, University of Kassel, Germany

### **Professor Phil Jones**

Professor and Head of School, Cardiff University, UK

### **Dr Hiroto Kataoka**

Scientist, Technical Research Institute, Obayashi Corp., Japan

### **Professor Kenny Kwok**

Director, CLP Power Wind/Wave Tunnel Facility, HKUST

### **Dr Raymond Yau**

Director, Ove Arup and Partners (HK) Ltd.

### **Professor Akashi Mochida**

Chairman, WG on CFD in Urban Wind Studies, AIJ, Japan

### **Professor Ryuichiro Yoshie**

Wind Engineering Research Center, Tokyo PolyU, Japan

### **Dipl.- Met. Marcus Letzel**

Research Engineer, University of Hanover, Germany

## Forum Chairman

### **Professor Edward Ng**

CUHK Department of Architecture

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Limited seats available; ALL participants must make prior registration by returning the application form with a cheque of HK\$1,000 payable to "Chinese University of Hong Kong". Attn to Ms Cecilia Chan, Dept of Architecture, CUHK, Shatin, NT, HK. Fax: 2603 5267. Successful & invited participants will be notified.

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## Reply Slip

To: Ms Cecilia Chan, Department of Architecture, CUHK, Shatin, NT. Fax: **2603 5267**

I would like to apply to be a participant of the expert forum.  
I enclose a cheque of HK\$ 1,000 payable to “Chinese University of Hong Kong”.

(Successful applicant will be notified. Cheque will not be cashed and will be destroyed if your application is not successful).

Name: \_\_\_\_\_

Organization: \_\_\_\_\_

Position: \_\_\_\_\_

Telephone: \_\_\_\_\_

Fax: \_\_\_\_\_

Email: \_\_\_\_\_

Address: \_\_\_\_\_

Relevant experience: \_\_\_\_\_

Reason for joining the expert forum: \_\_\_\_\_

\_\_\_\_\_

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# An Expert Forum on UCMap & CFD

## for Urban Wind Studies in Cities

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### Moderator



### **Professor Edward Ng**

CUHK Department of Architecture

*BA(Hons) Nott, BArch(Distinction) Manc, MBA(Distinction) Warwick, PhD Cantab  
RegArch (UK), RegArch (HK), RIBA, HKIA, IESNA, MSL, FHKMetS, FRSA*

Prof Edward Ng is an Architect and a Professor at the Chinese University of Hong Kong (CUHK). He obtained his PhD from Cambridge University. Since then he has been practicing as an architect and lecturing in various universities. His specialty is in Environmental Design. He is director of the MSc Sustainable and Environmental Design Programme at CUHK. As a consultant to the Hong Kong SAR government, he developed the special performance based daylight design building regulations for Buildings Department HKSAR, he also developed the Air Ventilation Assessment (AVA) Guidelines for city planning in Hong Kong. Edward is a daylight and solar energy expert advisor to the Chinese Government. As a visiting professor at Xian Jiaotong University, China, he is designing ecological schools, and building sustainable projects in the region.

## Speaker



### Professor Lutz Katschner

Professor for urban climate and planning, physics of the atmosphere, clean air programmes and bioclimatology within the courses for architecture and urban planning, University Kassel, Director of the Research Institute for Environmental Meteorology at the University of Kassel

Chairman, WG for a national guideline on urban climate, Germany, Vice-President Commission on Environmental Meteorology Germany

#### Degrees and professional affiliations

Prof Lutz Katschner is Meteorologist at the Architecture Faculty University Kassel Germany responsible for the subjects He obtained PhD in Urban Climatology at the University of Kassel and followed up the item in a post Doctorate Urban Climate Evaluation Processes together with the environmental research institute of global climate change. He worked as invited Professor in urban climate in Salvador Brazil and Buenos Aires Argentina. He developed guidelines for urban climate research within the European Community. A specification was continued in thermal conditions.

#### Title of Lecture

Urban climatology and Urban Planning

#### Abstract of lecture

Urban climate analysis are a major tool for a sustainable urban development. Ventilation conditions heat island aspects have a great influence on health and humans well being. In the same time air pollution is effected by the meteorological parameters.

Main focus in the course is given to both: the thermal aspect and air pollutions problems. There will be an introduction to urban climatology and how to use results for planning. The link between urban planners, architect and urban climatologist is described and the planning level defined.

Introduction to urban climate maps and there use. Presentation of different investigation tools such as calculations or even assumptions. Presentation of results.

#### OBJECTIVES

- understanding of the physics in urban climatology
- knowledge of investigation methods, calculations and measurements
- evaluation use of meteorological urban climate data
- understanding of the principles in applied urban climatology











## Speaker



### **Professor Ryuichiro Yoshie**

Wind Engineering Research Center, Tokyo Polytechnic University, Japan

#### Degrees and professional affiliations

- Academic Degrees:
  - Doctor of Engineering from University of Tokyo, 1996
  - Bachelor of Engineering from Kyoto University, 1984
- Work Experience
  - 2004- Professor, Tokyo Polytechnic University
  - 1984-2003 Maeda Corporation (General Contractor)
- Affiliation
  - Member of AIJ (Architectural Institute of Japan)
  - Member of JAWE (Japan Association for Wind Engineering)
  - Member of SHASE (The Society of Heating, Air-conditioning and Sanitary Engineering of Japan)
- Principal Technical Interest Areas:
  - Numerical Simulation of Turbulent Flow in and around Building
  - Computational and Experimental Wind Engineering
  - HVAC System Utilizing Natural Energy

#### **Title of Lecture 1**

AIJ guideline for practical applications of CFD to wind environment around buildings

#### **Abstract of lecture 1**

The guideline for CFD prediction of wind environment around buildings was proposed by Working Group of the Architectural Institute of Japan (AIJ). The guideline is based on the many comparative and parametric studies on several building configurations. Some of the calculation results and the contents of the guideline will be introduced in this lecture.

#### **Title of Lecture 2**

Velocity ratios in a built-up area with densely jammed high-rise buildings

#### **Abstract of lecture 2**

Wind tunnel experiments for investigating the pedestrian wind velocity ratios in closely-packed high-rises were carried out. A model of cityscape of Mong Kok in Hong Kong was used for the experiment. The average wind velocity ratio for this model was much lower than that of the Japanese high-rise areas.

## Speaker



### **Dipl.-Met. Marcus Letzel**

Research Associate, Inst Meteorol. & Climatol., Leibniz Univ Hannover, Germany

*Dipl.-Met. Hannover (Germany), MSc Weather, Climate & Modelling (Distinction)  
Reading (UK)*

Mr Letzel is a Meteorologist at the Leibniz University of Hannover. He has eight years research experience in boundary layer meteorology over heterogeneous surfaces. Recently he has started to “urbanize” the state-of-the-art CFD model PALM, a parallelized large-eddy simulation (LES) model developed by PD Dr Raasch at the Leibniz University of Hannover. In 2001/02, he visited Prof Kanda at the Tokyo Institute of Technology, Japan, for one year to compare meteorological field measurements and virtual LES measurements. Since then he has specialized in urban LES and has initiated a research cooperation and student exchange with Prof Kanda. He is expected to obtain his PhD early next year and to continue urban LES research with a new project focussing on urban roughness sublayer turbulence.

### **Title of Lecture**

Parallel large-eddy simulation – A new dimension of urban CFD applied to Tain Sha Tsui, Hong Kong

### **Abstract of lecture**

Mr Letzel presents the “urbanized” version of the parallelized large-eddy simulation (LES) model PALM and describes its new features and its performance on current supercomputers. Validation shows that PALM is in line with experimental and other LES results, i.e. superior to conventional Reynolds-averaged CFD models. The “new dimension” of urban CFD that LES offers is to forecast instantaneous fluctuations and peak values e.g. of wind velocity or pollutant concentration.

PALM's strengths are state-of-the-art parallel computing and parallel, on-the-fly graphics processing. Mr Letzel demonstrates this with a passive tracer turbulent dispersion animation of the Tain Sha Tsui Site in downtown Hong Kong.