

## **Managing the real-world environmental impacts of transport: Advances in pervasive sensing and on-demand modeling**

*Dr. Robin North*

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Location: Room 601, Skempton (Civil Eng) Bldg, Imperial College London

### **Abstract**

Over the past century we have experienced an explosion in the level of mobility supported by the development of motorised transport. This has brought enormous benefits, but our reliance on fossil fuels as the primary energy source has also brought about environmental challenges at both global and local scales. Awareness is growing of the significance of transport pollutant emissions and their effects on human health and climate change, and yet, unlike many other sectors, transport emissions are forecast to increase in the coming years. This presents a substantial challenge to regulators and policy makers as the economic benefits of increased mobility are very strong, especially in urban areas, yet these must be evaluated alongside the environmental and social costs of increased traffic and obligations to comply with national and international regulations on air quality and greenhouse gas emissions.

Recent advances have developed methods to understand the links between transport activity and environmental impacts at a level of resolution and fidelity that enables the development, implementation and evaluation of effective policies. This seminar presents a combination of empirical monitoring and modelling techniques i) for the evaluation of real-world tailpipe emissions (Foresight Vehicle LINK "VPEMS" Project) and ii) for the identification and mitigation of local air pollution hotspots (EPSRC/DfT "MESSAGE" Project) through pervasive sensing of air pollution and on-demand simulation of alternative strategies. These methodologies provide a significant step forwards in the state of the art and permit the assessment of more subtle interventions than has thus far been possible.

### **Biography**

Dr North has been recently appointed as Lecturer in Transport and Environmental Planning at Imperial College London. Prior to this appointment he has worked at the Centre for Transport Studies for the past 7 years, taking a leading role in the development of two real-world environmental monitoring systems: for the evaluation of real-world tailpipe emissions (Foresight Vehicle LINK "VPEMS" Project) and for the identification and mitigation of local air pollution hotspots (EPSRC/DfT "MESSAGE" Project). He has been instrumental in building the CTS' strong international reputation in this field. He has a strong interest in Intelligent Transport Systems (ITS) and in Transport Telematics for their ability to both monitor the current performance of the system, and to enable the implementation of alternative control strategies or road-user

charging policies that may reduce the environmental impacts of the network. In recent times, this interest has led me to work on projects investigating new technologies and their implications for transport, travel and behaviour patterns and on the concept of co-operative interactions between vehicles and infrastructure (EC FP7 "CVIS" Project). From his earlier industrial experience at Automobiles Peugeot-Citroen he also retains an interest in hybrid vehicles and their operation and is part of the Imperial Electric and Hybrid Vehicle Network (EHVN).