Evening Technical Meeting

At the

INSTITUTION OF CIVIL ENGINEERS
ONE GREAT GEORGE STREET, LONDON, SW1P 3AA

Wednesday 18th May 2016 at 6.15pm
This meeting will be preceded by the WES AGM at 6.00pm
(Refreshments available from 5.30pm in the Brasserie)

“WIND EFFECTS ON TRANSPORTATION SYSTEMS”

PROFESSOR CHRIS BAKER CEng, FICE, FIHT, FHEA, FRMets
UNIVERSITY OF BIRMINGHAM

CHAIRMAN: MARK STERLING

Please note there is no charge and non-members of the Society are always welcome to attend.
For further information or to express an interest in attending, please contact Tim Fuller at the ICE on:
Tel: 020 7665 2234 Email: tim.fuller@ice.org.uk

It is our intention to transmit a webcast of the technical meeting.
Further details of this will be circulated to WES members prior to the event.
Abstract

The talk will give a general overview of the wide variety of wind effects on road and rail transportation systems, and will also briefly describe some ongoing research in this area.

At the design stage of railway vehicles and infrastructure, there is a body of European regulations concerning the safety of trains in high cross winds that have to be satisfied. The design process will be described, including the nature of the wind tunnel tests required and the calculation of accident risk.

In normal railway operation wind warning systems are required, which result in train speed reductions, and the nature of these warning systems will be discussed. The effect of cross winds on high sided road vehicles is not often explicitly considered in design, but needs to be considered when these vehicles traverse exposed sites such as long span bridge, and recent work in this area will be discussed.

In addition to these major safety issues, there are a number of other areas that are becoming to be of increasing concern - the dispersion of atmospheric pollutants from road and rail vehicles by both wind and vehicle movements, particularly in major transport interchanges; wind effects on the pantograph and overhead line system; wind effects on train drag; wind effects on train slipstreams etc. – and recent work in these areas will be briefly considered.

Finally, the inclusion of wind effects in system wide models of road and rail vehicle resilience in major storms will be discussed, and the shortcomings of current methods set out.

Bio

**Chris Baker** graduated from his doctoral studies at the University of Cambridge, before beginning a Research Fellowship there at St Catharine’s College and the Department of Engineering.

In the early 1980s he worked in the Aerodynamics Unit of British Rail Research in Derby, before moving to an academic position in the Department of Civil Engineering at the University of Nottingham.

He remained there till 1998 where he was a lecturer, reader and professor with research interests in vehicle aerodynamics, wind engineering, environmental fluid mechanics and agricultural aerodynamics.

In 1998 he moved to the University of Birmingham as Professor of Environmental Fluid Mechanics in the School of Civil Engineering.

In the early years of the present century he was Director of Teaching in the newly formed School of Engineering and Deputy Head of School.

From 2003 to 2008 he was Head of Civil Engineering and in 2008 served for a short time as Acting Head of the College of Engineering and Physical Sciences.

He was the Director of the Birmingham Centre for Railway Research and Education 2005-2014.

He is currently undertaking a 30% secondment to the Transport systems Catapult Centre in Milton Keynes, as Science Director.