UNIVERSITY OF LEEDS

Mini-symposium on 'Air Quality and Climate Change: Atmospheric Science in a policy context'

2 pm, Wednesday 3rd December

Lecture theatre A, School of Chemistry, University of Leeds.

A mini-symposium titled '**Air Quality and Climate Change: Atmospheric Science in a policy context**' will be jointly hosted by the School of Chemistry and the Institute for Climate and Atmospheric Science (ICAS) in the University of Leeds on Wednesday 3rd December, 2008.

This event is in honour of Prof. Mike Pilling who will be awarded a CBE by the Queen in recognition of his services to chemistry later in December. The theme of the symposium will be on the atmospheric science that influences air quality and climate change policy.

All are welcome and please feel free to pass this advert on to anyone who might be interested. Please email Ben Murray (B.J.Murray@Leeds.ac.uk) if you plan to attend in order that we can make appropriate catering arrangements.

The programme

2 pm Introduction

2.05 pm Prof. Mike Pilling, University of Leeds, **Air quality – current scientific issues and policy implications**

2.45 pm Dr David Stevenson, University of Edinburgh, **Global atmospheric chemistry models as tools for policymakers: The case of tropospheric ozone**

3:20 pm Tea/coffee break, Chaston Chapman Library

3:50 pm Prof. John Pyle, University of Cambridge, **Atmospheric halogens and chemistry/climate interactions**

4:30 pm Prof. Piers Forster, University of Leeds, **Drivers of climate change and their relation to atmospheric chemistry Piers Forster**

5:10 Wine reception, Chaston Chapman Library

Abstracts

Air quality – current scientific issues and policy implications

Mike Pilling
School of Chemistry, University of Leeds

The main air pollutants of current concern for human health are particulate matter (PM), ozone and nitrogen dioxide. Over the past few years, the Air Quality Expert Group (AQEG), set up to advise the UK Government through Defra, has reported on all of these pollutants; AQEG also produced a report on the interactions between climate change and air quality.

Within this period, the Department for Transport, DfT, established panels to propose a methodology whereby DfT could assess the impact of the third runway at Heathrow on local air quality. The methodology was subsequently adopted, at least in part, and the results of the assessment are currently under consideration. There has also been a more recent examination of air quality impacts of aviation, in a global context, by the Committee on Aviation Environmental Protection, which is part of the UN International Civil Aviation Organization.

The talk will draw examples for all of these activities. Emphasis will be placed on the scientific basis, within the context of policy implications.

Global atmospheric chemistry models as tools for policymakers: The case of tropospheric ozone

David Stevenson
School of GeoSciences, The University of Edinburgh

Tropospheric ozone is a ubiquitous global air pollutant, threatening human health and vegetation. Recent work[1] attributes 50,000 premature mortalities per year to current levels of European ozone, with the majority of deaths occurring outside Europe. One estimate[2] of global economic losses related to ozone damage to crops, pasture and forests over the 21st century is $8 trillion. Ozone is also a greenhouse gas, with increases in its concentration since 1750 causing a radiative forcing of about 21% of that from increases in CO_2. Policymakers are understandably keen to control ozone. Ozone has a lifetime of days to weeks, similar to many meteorological processes, including mid-latitude circum-hemispheric transit times. Consequently, ozone is strongly influenced by the weather and undergoes long-range transport. Ozone is not directly emitted, but forms by photo-oxidation of carbon monoxide and volatile organic compounds, catalysed by nitrogen oxides. Ozone's precursors have a variety of natural and anthropogenic sources, and the chemistry of its production and loss is complex. Downwards transport from the stratosphere is an important source of tropospheric ozone. Ozone strongly interacts with the biosphere – its major boundary layer sink is deposition to vegetation. To understand and explore the controls on ozone, we need models that include all these processes. Over the last 10-15 years, several groups around the world have developed such models, and there have been various international efforts to intercompare and evaluate global models (e.g., OxComp, ACCENT, HTAP, AC&C). I will summarise the progress made and the future outlook.

[1]Duncan et al (2008) The influence of European pollution on ozone in the Near East and northern Africa, Atmos. Chem. Phys., 8, 2267-2283
[2]Felzer et al. (2007) Impact of ozone on trees and crops, Comptes Rendus Geosciences, doi:10.1016/j.crte.2007.08.008

Atmospheric halogens and chemistry/climate interactions

John Pyle
Department of Chemistry, University of Cambridge

TBA

Drivers of climate change and their relation to atmospheric chemistry

Piers Forster
School of Earth and Environment, University of Leeds

This talk will give an overview of where atmospheric chemistry features in the IPCC fourth assessment report. It will cover drivers of climate change, and biogeochemical cycles. A particular focus will be how greenhouse gases interact with the radiation field and the role of aviation emissions.