



Essay Prize Winners 2009: (L-R) Sophie Mead (The Leys School, Cambridge), Dr Chris Knight (Faculty of Life Sciences, Manchester University), Ruth Mitchell (Geography Department, Lancaster University)

Contents

Contents.....	2
News	3
Congratulations.....	3
Chair's Report for 2009 AGM	3
Group Meetings & Visits	3
Events in 2009	4
Other Proposed Events	4
Essay Competition.....	4
Other Activities & News	5
Thanks	5
Group Committee Changes.....	6
Reports from previous events.....	8
Sustainable Energy: New Solutions from Physics & Engineering (IoP London, 29th October 2008).....	8
Bumps in Britain, Catastrophe in China (Sheffield, 28 th October 2008)	9
Environmental Physics Day (IoP London, 25 th March 2009).....	10
The Effects of Sea-Level Rise (IoP London, 25 th March 2009)	12
European Geophysical Union (Vienna, 19 th -24 th April 2009).....	13
Forthcoming Events	15
Environmental Electrostatics III: Measurements and modelling of charges in the environment (IoP London, 24 th June 2009)	15
Computer Simulation and the Environment (IoP London 10 th September 2009)	16
EPG Committee	17

News

Congratulations



Congratulations are due to EPG member Charles Clement who has been made a 2008 International Aerosol Fellow. This prestigious award is conferred every two years by the International Aerosol Research Assembly (IARA). This award recognizes outstanding research, technical development, education and service contributions to aerosol science and technology. The 2008 recipients at the European Aerosol Conference were Professor

Gerhard Kasper, editor-in-chief of the *Journal of Aerosol Science* (nominated by Alfred P. Weber) and Dr. Charles F. Clement (nominated by Ian J. Ford). Charles received the award for his varied work in aerosol science over the last 50 years, most of which was carried out at Harwell, (following a substantial, ongoing contribution after his early retirement), which includes nucleation and aerosol formation, as well as aerosol science relevant to nuclear physics, convection, filtration and leakage.

A full citation can be found in the *Journal of Aerosol Science*, 40, pp 477-478 (2009) doi: [10.1016/j.jaerosci.2009.02.001](https://doi.org/10.1016/j.jaerosci.2009.02.001)

Chair's Report for 2009 AGM

Welcome to the Chair's report. Once again, I'm pleased to be able to start this report by saying that the previous year was another excellent one for the Group. I see the primary role of the committee as being to organise events for our members and the wider community who have an interest in environmental physics. Although 2007 was a hard one to follow, in terms of the number and quality of events, I think the programme in 2008 was also of genuinely high merit, with a series of meetings of differing format and in a variety of locations that I hope the community finds relevant and accessible. Of particular note I think, was the achievement of organising a meeting in response to significant environmental events (earthquakes in February & May), within a relatively short timescale, despite the requirement for us now to have planned and budgeted for the current year's activities before the end of September in the previous year.

Group Meetings & Visits

Thanks to all who contributed to the programme of events in 2008, including speakers, organisers and those who supported with their attendance. We had

hoped to organise meetings in all corners of the British Isles during the year, but unfortunately Wales missed out in the end. Nevertheless, we did achieve a good spread.

Table 1: 2008 Meetings

Date	Title	Type	Venue	Joint with ...
04/02/08	<i>Severe weather</i>	Eve	Southampton	South Central Branch
28/02/08	<i>Climate Change – the physical basis</i>	Eve	Dublin	Irish Branch
29/02/08	<i>Condensation Physics</i>	Day	Dublin	Irish Branch & Aerosol Society
14/05/08	<i>Members' Meeting</i>	½ day	London	
14/05/08	<i>Windscale fire 50th anniversary</i>	Eve	London	
29/08/08	<i>Optical Environmental Sensing VI</i>	½ Day	Edinburgh	Optical Group
28/10/08	<i>Earthquakes: Bumps in Britain, Catastrophe in China</i>	Eve	Sheffield	Yorkshire Branch

The Group also supported several other events, including the Applied Physics & Technology Division's meeting on Sustainable Energy in October.

Events in 2009

Events for the current year include:

Environmental Physics Day, London, 25th March 2009

Environmental Electrostatics III, 24th June 2009

Computing & the Environment, London, 10th September 2009

Other proposed events are:

Ice in the Environment

Media reporting of environmental news stories.

Meeting on health / air quality

Low NO_x combustion, with the Combustion Physics Group, Spring 2010.

Essay Competition

The 4th EPG essay competition was launched in the autumn of 2008 and once again there was a good number of high quality entries. The winner was Chris

Knight of the University of Manchester, who wrote an excellent, topical piece on the subject of geo-engineering. Ruth Mitchell, of the University of Lancaster was the runner-up, with her entry on 'magnetic trees', which contained some excellent examples of the application of physics to an environmental problem. Sophie Mead's essay on solar power was highly commended and was a notable achievement, as she is only 14 years old. The winners each received a certificate and shared prize money of £450. Publication of the winning essays is now being sought.

Other Activities & News

The Environmental Physics Group submitted a response to the 'Wakeham' Review of UK Physics in 2008. The theme of broadening physics to include important strategic areas, including health, energy and the environment, came through very strongly in the Review and in our view was one of its key strengths. We also welcomed the recognition at the highest level that high quality physics in these important fields is often conducted outside of university physics departments and felt it was valuable that the implications of this for recruitment into physics undergraduate courses from school and from undergraduate physics into these specialisms was also recognised. In terms of addressing these issues, the recommendation to broaden the base of physics to include (or reclaim) the more applied aspects of physics was especially welcome.

Two Newsletters were published by the Group during the year (thanks to Karen Aplin); as before, this (along with the web-pages) is the key means by which the Group's activities are publicised and contributions from members are always welcome. MyIOP was also launched in 2008, but we have yet to see how useful this will prove to be for our members.

Thanks

Finally, I would like to thank all members of the EPG committee, who give up a great deal of time and effort to further the aims of the Group. This year, three of our 'elder statesmen' are stepping down from the committee and I would particularly like to express my gratitude to John Garland, Derek Rose and Alastair McCartney for their considerable contribution to the work of the Group, going back (in at least one case) to its formation almost 20 years ago. My thanks go also to Pat Goodman, whose term as Secretary comes to an end this year.

Peter Hodgson

Group Committee Changes

The Annual General Meeting of the EPG was held on 25th March 2009 and there have been several changes to the committee. Derek Rose, John Garland, Alastair McCartney, Keith de Blanger and Ian Rutt have resigned. Paul Williams has replaced Pat Goodman as Group Secretary, though Pat remains a committee member.

We welcome Alec Bennett and Hugh Mortimer, who have been elected to the committee. Brief biographies of the new members of the committee are given below, including Curtis Wood who joined the committee in 2008.

Dr Alec Bennett

Alec Bennett's interest in environmental physics started when he made his first weather station at the age of 13. After completing a degree in Geophysical Sciences at Southampton University in 2003, he went on to Reading University to do a Masters in Applied Meteorology, then a PhD in Atmospheric Electricity (2007). He now works for the UK Met Office, as a Senior Scientist in Observations Research and Development, where he is involved with research into long-range thunderstorm detection and other surface-based remote sensing such as cloud radar.

Dr Hugh Mortimer

Hugh Mortimer started his career at the National Physical Laboratory in the Optical and Environmental Metrology group where he worked for four years on various different and exciting projects, including the development of an infrared spectroscopy calibration facility based on Fourier Transform spectrometry. Following this, he returned to university in 2004, to complete a doctorate (2008) at Oxford. His work in the Atmospheric, Oceanic and Planetary Physics group was in the development of a miniaturised Fourier Transform spectrometer for space based remote sensing of planetary atmospheres. This work fuelled Hugh's enthusiasm for space research, and so he is now happily employed as a research scientist in the Molecular Spectroscopy Group of the Space Science and Technology Department, Rutherford Appleton Laboratory. His main research interests are in instrumentation development, specifically in the area of infrared spectroscopy, but he is also involved with various other projects including calibration of radiometers for Earth Observation satellites e.g. the Sea and Land Surface Temperature Radiometer.



Dr Curtis Wood

Curtis Wood has two degrees in Meteorology from the University of Reading. His interdisciplinary PhD research was a three-way collaboration between the University, Rothamsted Research and the Met Office (on the biometeorology of high-altitude insect layers using radar). Subsequently, Curtis has held teaching

posts at the University of Reading, and has been a post-doctoral researcher on an inter-disciplinary urban dispersion project (DAPPLE) funded by the Home Office. Curtis currently holds a post-doctoral position on the 'Advanced Climate Technology, Urban Atmospheric Laboratory' project (ACTUAL).

Curtis's interests and publications cover a range of the atmospheric sciences including: boundary layers, urban meteorology, dispersion, biometeorology, atmospheric physics and the weather.

Curtis's public outreach activities have included working directly with schools and the media (e.g. BBC Berkshire), and through outlets such as climateprediction.net, Science Week, RCUK and the BA Festival of Science.



Research Student Conference Fund

Providing financial support to research student members, to attend international conferences and major national meetings.

Apply for up to £250 during the course of your PhD.

Applications are considered on a quarterly basis and should reach the Institute by: 1 March, 1 June, 1 September or 1 December

For further information see www.iop.org or contact supportandgrants@iop.org

IOP Institute of Physics

Reports from previous events

Sustainable Energy: New Solutions from Physics & Engineering (IoP London, 29th October 2008)

This meeting aimed to highlight new scientific and engineering developments that are beginning to realise solutions for new, low carbon energy sources and energy efficient designs. Organised by the Applied Physics & Technology Division of the Institute of Physics, several of the component Groups of the Division, including the Environmental Physics Group, contributed to the programme by putting forward speakers.

Energy Sources

It has been suggested that up to 35% of the UK's electricity generation should come from renewable sources by 2020, in order to help meet challenging targets for the reduction in national greenhouse gas emissions. Against this background, a number of low-carbon energy technologies were discussed throughout the day, including wind, wave, photovoltaics and fuel cells, all of which will have a role to play. Some of the trends and the physics and engineering aspects surrounding these technologies were explored. The largest wind towers are currently 80m high and generate 6MW, but designs for 10MW are now being considered, which will require novel, lightweight materials in order to meet the exacting stresses likely to be experienced over the lifetime of these structures. Requiring a different set of novel materials, nuclear fusion was the subject of the last talk of the day, in which Professor Steven Cowley of the Culham Laboratory, emphasised the role of engineering and materials to its success, now that the scientific challenges are largely understood. In another enlightening talk, the prospect and implications of retrieving methane from deep sea deposits for combustion were explored.

Energy Efficiency

Several talks discussed technologies for energy efficiency. Dr. Jamie Taylor of the University of Edinburgh introduced a hydraulics system for the efficient transfer of energy generated from an irregular source such as waves, into grid electricity. Dr. Mark Gee of the National Physical Laboratory explained recent developments in surface engineering and their application in a diverse range of sectors. Thermal barrier coatings contribute to greater fuel efficiency through enabling turbine operation at higher temperatures and low friction coatings find application in transport systems and in manufacturing processes such as machining. Two talks addressed the problem of improving the energy efficiency of buildings, including

through better glazing design, founded on a sound understanding of spectroscopy and heat transfer principles.

The meeting, which included a small poster session, was attended by over 70 people and stimulated some excellent discussion on the challenges in energy supply and consumption, as well as show-casing the contribution that physics is making in several arenas.

Peter Hodgson

Bumps in Britain, Catastrophe in China (Sheffield, 28th October 2008)

The Market Rasen earthquake, in February 2008, was the largest in Britain for 25 years and was felt sufficiently strongly by your correspondent to cause some alarm, at least for a short period. In this meeting, organised jointly with the Yorkshire Branch, Dr Brian Baptie (British Geological Survey – BGS) sought to put this and other British earthquakes into context, through a talk that also discussed the much more catastrophic event of three months later, in the Sichuan region of China.

Fittingly for an audience in the physics department of the University, the first part of Dr Baptie's talk explained how some techniques with strong links to physics are used to infer information about the source of the earthquake. These methods include time of flight measurement, tensor analysis and modelling of coupled forces. As well as determining the focus and magnitude of the earthquake, it is possible, through such techniques as spectral analysis of the seismic waves, to derive a quite detailed picture of the fault itself, including its orientation and the surface area involved in the slip. The results of the BGS on-line questionnaire, by which people could submit their experience of the earthquake, were also shown. More qualitative in nature, these data are also proving useful in understanding the accounts of historical earthquakes going back centuries.

In discussing the Sichuan earthquake, Dr Baptie related seismic activity in this region to the collision of the Indian and Eurasian tectonic plates (responsible for the uplift of the Himalayan mountain range) and showed GPS data to indicate the rate of land movement across the whole region. Somewhat surprisingly, the devastating Sichuan earthquake (magnitude 7.8) occurred in a region where this rate of movement is significantly lower than in much of the surrounding area. Analysis indicated that the main rupture moved at approximately 2,500 m / s over a distance of 300km, as the stresses in the rocks were transferred along the length of the fault. From further analysis and mapping of these stresses, it is

sometimes possible to infer something about future earthquake activity, although accurate prediction is unlikely in the foreseeable future.

Returning closer to home, the speaker finished by discussing the reasons for earthquake activity in the British Isles, with a particular focus on the spatial distribution. Our distance from the edges of our own tectonic plate leads us to look for other explanations for British earthquakes and Dr Baptie explained how some of the activity can be attributed to factors such as the relief of stresses built up during the last Ice Age. Why there are no earthquakes in Ireland however, is one of the many unknowns that continue to make this subject a fascinating and rewarding one to study.

Peter Hodgson

Environmental Physics Day (IoP London, 25th March 2009)

The meeting began after lunch and much active networking, with a talk by Corwin Wright, a DPhil Student at Oxford University's Atmospheric, Oceanic and Planetary Physics who presented his research on the detection of stratospheric gravity waves, (atmospheric waves causing pressure, temperature, density and velocity to fluctuate together) using data from the HIRDLS limb sounding instrument carried on the AURA earth observation satellite. Gravity waves are important for atmospheric momentum transport yet are poorly simulated in climate models. Corwin explained both the practical and theoretical difficulties of satellite data interpretation, from the "Kapton correction" caused by a problematic piece of tape obscuring the instrument's field of view, to the scientific interpretation of stratospheric observations, such as changes in stratopause height, in terms of gravity waves.

Next Anthony Denman (Northampton Hospital/University College Northampton) discussed the problems of radon accumulations in domestic environments. High radon concentrations have been shown to cause lung cancers in uranium miners, and as this disease has one of the lowest survival rates of any cancers (20% after one year), it is clearly advantageous to reduce high radon concentrations in homes. Average indoor radon concentrations are 20 Bqm^{-3} , providing 50% of the natural radiation dose, and an "action level" has been defined for dwellings where concentration exceed 200 Bqm^{-3} which can occur in parts of the UK with naturally high radon concentrations such as North Oxfordshire, Northamptonshire, North Somerset, and (highest of all), Cornwall. 30% of homes in Northamptonshire were tested for radon, at a cost of £35 per house, but, interestingly, only 15% of the homeowners whose homes were over the Action Level decided to pay the £750 needed for remediation action. New homes in Northamptonshire are fitted with

radon-proof membranes, but elevated radon concentrations were still found in about half these houses. Comparison with the standard cost-benefit analyses carried out by the National Institute of Clinical Excellence was fascinating, illuminating how decisions are made in terms of cost per year of life gained. It turns out that there is a demonstrable risk for some homes with radon $< 200 \text{ Bqm}^{-3}$, but for those it is not judged cost effective to intervene in the UK. (However, this action level varies internationally, from 150 to 1000 Bqm^{-3} .) Anthony summarised by pointing out that it would be more beneficial for a smoker to give up smoking than act to remediate high radon concentrations at home, but that radon remained the second most important cause of lung cancer in the UK.

Hugh Mortimer (Rutherford Appleton Laboratory) then spoke about the use of microalgae to remove carbon dioxide from the air by bio-fixation. Many carbon capture and storage technologies have substantial associated problems, such as high costs, and unforeseen risks due to their novelty (often related to poor linkage between physical science and biological science, for example, the inadvertent production of dioxins through attempts to seed oceanic algae growth). Viewed in this light, this bio-engineering approach appears viable due to its speed of fixation and high efficiency. The cost is estimated at \$0.22/litre for an optimised facility, which could be further reduced by selling algal products of the biofixation for animal feedstock, oil and chemical processing. (Care must however be taken to target the use of the by-products so that they do not contribute to CO_2 emission). Hugh's biofixation work was in the use of reflectance spectroscopy to optimise the growth rate of the microalgae, e.g. by overcoming the saturation effect of photo-inhibited growth, which can occur when large quantities of biomass are used. Another application of the reflectance spectroscopy work is to optimise the optical transmission properties of the bio-reactor, to permit the most effective wavelengths to reach the algae, and identifying suitable LEDs to reduce power requirements.

The final presentation in this part of the meeting, on phase change materials, was given by Gideon Susman (Buro Happold/Brunel University). Phase change materials take in large amounts of energy when they melt, and include ice, and hydrated salts. The motivation for research into these materials is to improve cooling systems, which consume a great deal of energy globally. Phase change materials can reduce cooling costs by up to 35%, but their efficiency can still be improved, which motivated the project Gideon described. A range of different phase change material designs were tested for internal/external cooling applications, based on convective and radiative heating. The material chosen, a paraffin, gave a surprisingly wide range of melting temperatures for its heat capacity, with acceptable fire risks. External cooling was found to increase heat flow, and there were appreciable radiative changes. This technology offers a new approach to cooling systems, and is popular with architects designing new buildings, however some work remains to be done to convince buildings

engineers of their efficacy before phase change materials become more widely used.

The essay competition winners then presented their work. Chris Knight (Manchester University, Biology Department) gave an overview of his essay on geoengineering. Chris's perspective as a biologist gave novel ways of thinking about an area close to the heart of many environmental physicists. He used an interesting analogy of geoengineering as a medicine to alleviate the symptoms but without curing the illness. Extending this analogy, the doctors are not the scientists, who have no real power to change things, but the politicians who are in a position to write the "prescription" needed. The essay by Ruth Mitchell, a PhD student at Lancaster University, had the arresting title of "magnetic trees". Pollution deposited on leaves changes their magnetisation, and Ruth is working on using leaf magnetism as a proxy for particulate pollution. Leaves have the advantage for sampling that they are already installed on numerous roadside sites (trees) though there are issues with inter-species differences and seasonal effects (e.g. from deciduous trees). Early findings using this method suggest that particulate pollution levels are higher at the head height of a toddler (0.3m) than the sampling height of 3m which is often used conventionally for air pollution measurements. Finally Sophie Reed spoke about solar power, the difficulties with its use in mid to high latitude countries like the UK, and future plans for its implementation and improvement. Had someone not known that Sophie is a year 10 pupil at The Leys School, Cambridge, I doubt that it would have been guessed, as her delivery was a model of mature clarity. Just to underline the immediacy of her topic, Sophie's school house is already setting a serious example by generating 80% of its hot water through solar thermal heating.

Giles Harrison/Karen Aplin

The Effects of Sea-Level Rise (IoP London, 25th March 2009)

To conclude Environmental Physics Day, Professor Robert Nicholls from the University of Southampton gave an insightful evening lecture into sea-level rise. His talk was divided into three parts: investigating and defining sea-level rise, results from the most recent (4th) Intergovernmental Panel on Climate Change (IPCC AR4), published in 2007 (where he was a co-ordinating lead author), and finally the implications of sea-level rise on national and regional scale.

With climate change, sea levels are expected to rise due to contributions from thermal expansion and the melting of ice sheets, ice caps and glaciers. Relative sea-level rise includes a rise in water levels combined with relative land movement, such as earthquakes or water abstraction. Any future rises in relative

sea-levels are important to predict as there is much investment in the coastal zone – 23% of the world's population live there.

A core part of the talk was the main conclusions from IPCC AR 4. Professor Nicholls related that relative sea-level rise will result in an increased exposure and additional stress and have a wide range of impacts on the natural coastal system. The immediate effect of this is submergence and increased flooding of coastal land, as well as saltwater intrusion of surface waters. Longer-term effects also occur as the coast adjusts to the new environmental conditions, including increased erosion and saltwater intrusion into groundwater. In addition to mean sea-level effects, changes in extreme sea levels were presented, such as potential changes to storm tracks. For instance, a global map showing tropical cyclones from 1985 to 2005, revealed a single track east of Brazil. This is extremely unusual, but with changing and warming conditions it may become more common in the future. Humans will need to adapt to this and the challenge will be greatest in developing rather than developed countries.

Professor Nicholls went on to explain how natural system changes have many important direct socio-economic impacts on a range of sectors. For instance, flooding can damage key coastal infrastructure, the built environment, and agricultural areas, while erosion can lead to loss of buildings with adverse consequences on sectors such as tourism and recreation. Examples from the North Norfolk coast were given. Thus, sea-level rise has the potential to produce a cascade of direct and indirect impacts through the socio-economic system at a variety of geographical scales.

Sally Brown

European Geophysical Union (Vienna, 19th-24th April 2009)



I would like to thank the Environmental Physics Group, and the Institute of Physics, for helping support my attendance at the 2009 General Assembly of the European Geosciences Union, held in Vienna, Austria.

The EGU General Assembly is one of the largest gatherings of geoscientists in the world. Over five days, around 9 000 attendees present around 13 000 talks and posters, on topics ranging from biology to petrology and vulcanology.

I had initially applied to give a talk at the conference on some of my recent research. This is focused on the

analysis of data from the HIRDLS instrument on NASA's Aura satellite for the detection of gravity waves in the terrestrial stratosphere, a type of fluid-dynamical wave in which the restoring force is gravity. A talk on this was also given to the Environmental Physics Group in March 2009. However, after submitting the application, I was notified that I had instead been accepted to give a poster at the Conference. In hindsight, however, I found this to be significantly more useful than giving a talk would have been – timings for talks were very tight, and there was very little time for questions or discussion during the oral sessions.

The most useful parts of the conference for me were the oral and poster sessions on gravity waves. These provided the opportunity to discuss my current and future work with several prominent scientists in the field who I would not otherwise have encountered. I felt these discussions gave me some very useful ideas for my DPhil thesis. I was also able to attend parts of the session on sudden stratospheric warmings, on which I have been doing some work recently and which proved very informative, and the general sessions on atmospheric science, which provided much-needed context for my research.

The key benefit of the EGU General Assembly is its breadth. If there's a gap in the talks on your field, there are always talks from other fields, from Ocean Sciences to Solid Earth Geophysics, which are likely to be interesting. It's great for personal breadth and understanding of how the other disciplines of the geosciences interact to attend some of these talks, even if it isn't directly applicable to your own work at the time. The highlights of the conference in this regard are the Medal Lectures: these were talks given by those who've been awarded medals by EGU, and are invariably of a high standard.



Corwin Wright

Forthcoming Events

Environmental Electrostatics III: Measurements and modelling of charges in the environment (IoP London, 24th June 2009)

This half-day event will continue the triennial series of meetings investigating the modelling and measuring the effects of ions and charged particles in the environment. It will have an emphasis on modelling the effects of charged particles and ions, but methods for monitoring changes in the planetary atmospheric electrical environment will also be discussed.

Outline programme:

- *Instrumentation for long term continuous measurement of ground level atmospheric electric fields* John Chubb (Infostatic Ltd, Cheltenham) Ian Pavey (Chilworth Technology, Southampton)
- *Influences on the atmospheric aerosol charge distribution: natural variation, HV powerlines and rain* (Alison Buckley, Department of Physics, University of Bristol)
- *Radiative properties of charged dust clouds* (Joseph Ulanowski, University of Hertfordshire)
- *Modelling the global electric circuit, lightning, sprites, jets and elves* (Michael Rycroft, Centre for Space, Oceanic and Atmospheric Science, University of Bath)
- *EGATEC - a high-resolution engineering model of the global atmospheric electric circuit* (Anna Odzimek, Department of Physics and Astronomy, University of Leicester)
- *Do cosmic rays have any significant effect on climate?* (Arnold Wolfendale, University of Durham)

To register for information about the meeting, contact: Denise Hargreaves (d.e.hargreaves@reading.ac.uk)

Meteorological Science in time and space - from local weather to global climate (University of Reading, 29th June-2nd July 2009)



The Royal Meteorological Society's 2009 Conference will be held at the University

of Reading, UK, from Monday 29 June to Thursday 2 July. There are three conference themes:

- *The Water Cycle*: from local rainfall to global changes in the hydrological cycle.
- *Predicting Hazards and Risk*: from local weather forecasts to dangerous climate change.
- *Ecosystems, Atmospheric Composition, Weather and Climate*: from urban air quality to earth system processes.

The conference will be running poster sessions and workshops on the three themes. For more information visit www.rmets.org/events/conference/conference-2009.php

Computer Simulation and the Environment (IoP London, 10th September 2009)

This one-day meeting will focus on state-of-the-art computer simulations of all aspects of the physical environment. The morning session will be devoted to the software aspects of high-performance distributed computing, and the afternoon session will cover the next generation of hardware.

Speakers include:








- Carl Christensen, Chief Software Architect for climateprediction.net, School of Earth Sciences, Stanford University
- Hiro Yamazaki, Project Coordinator for climateprediction.net, Department of Physics, Oxford University
- Matthew Piggott, Grantham Reader in Ocean Modelling, Imperial College London
- Lois Steenman-Clark, Head of the Computational Modelling Service, National Centre for Atmospheric Science
- Simon Appleby, UK Sciences Segment Manager, Silicon Graphics (SGI)
- Akira Asato, Research and Development Section, Fujitsu Laboratories, Japan






Places are limited and registering to attend is essential. Registration will open shortly at http://www.iop.org/activity/groups/subject/env/envp_calendar. There will be a small registration fee to cover lunch and tea/coffee.

This is a joint event between the Environmental Physics Group and the Computational Physics Group. Both groups intend to award travel bursaries of up to £250 through the Institute of Physics' Research Student Conference Fund. Eligible research students should apply by 1 June at <http://www.iop.org/activity/grants>.

Enquiries to Paul Williams (p.d.williams@reading.ac.uk) or Andrew Horsfield (a.horsfield@imperial.ac.uk).

EPG Committee

Chair: Dr Peter Hodgson		Environment Department, Corus RD&T, Swinden Technology Centre, Rotherham S60 3AR Tel: 01709 825478, Fax: 01709 825400 e-mail: peter.hodgson@corusgroup.com
Vice-Chair: Prof. R. Giles Harrison		Dept. of Meteorology, The University of Reading, PO Box 243, Earley Gate, Reading, RG6 6BB. Tel: 0118 9316690, Fax: 0118 378 8316 e-mail: r.g.harrison@reading.ac.uk
Hon. Secretary: Dr Paul Williams		NERC Centre for Global Atmospheric Modelling, Dept. of Meteorology, The University of Reading, PO Box 243, Earley Gate, Reading, RG6 6BB. Tel: 0118 987 5123 x7901, Fax: 0118 378 8316, e-mail: p.d.williams@reading.ac.uk
Editor: Dr Karen Aplin		Space Science and Technology Department, Rutherford Appleton Laboratory, Chilton, Didcot, Oxon, OX11 0QX. Tel: 01235 445844, Fax: 01235 445848 e-mail: Karen.aplin@stfc.ac.uk
Dr Alec Bennett		The Met Office, FitzRoy Road, Exeter, Devon EX1 3PB Tel: 01392 884076, Fax: 01392 885681 e-mail: alec.bennett@metoffice.gov.uk
Dr Sally Brown		School of Civil Engineering & the Environment, University of Southampton, Highfield, Southampton, SO17 1BJ. Tel: 02380 592883, Fax: 02380 677519 e-mail: sb20@soton.ac.uk
Prof. Ian Colbeck		Institute for Environmental Research, Dept. of Biological and Chemical Sciences, University of Essex, Wivenhoe Park, Colchester CO4 3SQ. Tel: 01206 872 203, Fax: 01206 872592, e-mail: colbi@essex.ac.uk

Dr Pat Goodman		Physics Department, Dublin Institute of Technology, Kevin Street, Dublin 8 Tel: + 353 1 4024782, Fax: + 353 1 4024988 e-mail: pat.goodman@dit.ie
Mr. Peter Hughes		Westminster Kingsway College, Sidmouth Street, London WC1H 8JB. Tel: 0207 306 5786, Fax: 0207 306 5800 e-mail: peter.hughes@westking.ac.uk
Dr A. Hugh Mortimer		Space Science and Technology Department, Rutherford Appleton Laboratory, Chilton, Didcot, Oxon, OX11 0QX. Tel: 01235 446746, Fax: 01235 446434 e-mail: hugh.mortimer@stfc.ac.uk
Dr Curtis Wood		Dept. of Meteorology, The University of Reading, PO Box 243, Earley Gate, Reading, RG6 6BB. Tel: +44 (0) 118 378 6721 Fax: 0118 378 8316 e-mail: c.r.wood@reading.ac.uk
Prof. Edward Youngs		9 Roundwood Park, Harpenden, Herts AL5 3AB. Tel: 01582 460859 or 01525 863330, Fax: 01525 863344, e-mail: e.g.youngs@btinternet.com

This newsletter is also available on the web and in larger print sizes

The contents of this newsletter do not necessarily represent the views or policies of the Institute of Physics, except where explicitly stated.

The Institute of Physics, 76 Portland Place, W1B 1NT, UK.

Tel: 020 7470 4800

Fax: 020 7470 4848