

The 20th Anniversary of the Environmental Physics Group



The 20th Anniversary
Special Edition

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EPG Committee**29-30**



Welcome to our very special **20th anniversary edition of the Environmental Physics Group newsletter**. This bumper, extended newsletter reflects a spring and summer of successful events and increasing membership numbers.

Changes to the EPG committee have seen Peter Hodgson step down as Chair to make way for Pat Goodman, while Giles Harrison steps down from Vice-Chair and Treasurer, allowing Karen Aplin to take charge of the finances. We would like to take this opportunity to say thank you for all their hard work. Also, congratulations to Peter Hodgson and Karen Aplin who have both recently become Fellows of the IOP.

In light of the retirement of valued EPG committee member Edward Youngs, we lose a great wealth of experience and knowledge, as Edward started as an elected committee member in 1992. However we gain three new members, Alison Buckley, Chris Lavers and Mhairi Coyle. Each year we work out the mean age and standard deviation of committee members, and this is now 37 years, with a standard deviation of 9 years.

Finally we would like to announce that the **6th annual Environmental Physics Group essay competition** is now open. With large cash prizes to be won and a closing date of 31st December 2010, we would like to encourage anyone with a passion for the environment and a flare for writing to apply.

If you have any news or an idea for an event – please let us know.



Sally Brown and Hugh Mortimer

EPG News

Message from Pat Goodman, the new chair of the EPG.



Dear Members of the Environmental Physics Group,

In May I took over as Chair of the EPG, and there have been a number of other changes to the committee. Firstly, I would like on your behalf to thank Prof. Edward Youngs for his many years of service to the EPG. However, if he thinks he can get away that easily, I can assure him that we will be asking for his advice and guidance from time to time! I would also like to thank him for the historical material he has provided, which is included within this copy of the newsletter (see pages 10-13).

Secondly, the recent AGM also saw changes to the officers of the EPG committee. Our Chair, Peter Hodgson has stepped down, but will remain as a committee member. I would like to thank him for all his work as chairperson, and to also congratulate him on becoming a Fellow of the IOP. Similarly our treasurer, Prof. Giles Harrison has also come to the end of his term of office. Giles will also remain as a committee member. He certainly managed our finances extremely well and this will be a hard act to follow. Karen Aplin has taken over as treasurer, and I wish her well in her post. She has recently been elected to the Group Coordinating Committee (GCC) of the IOP. Karen has also recently become a Fellow – congratulations.

We have also had a number of new members elected to the committee, and on your behalf I would like to welcome them. They are Christopher Lavers, Alison Buckley, and Mhairi Coyle (see pages 9-10 for a mini-biography).

We seem to be at a point in time where environmental physics has a significant role to play in science. Therefore I invite all members of the EPG to communicate with the committee, and **if you have any ideas/suggestions for meetings or advice as to what we should be doing for you as members, please tell us.**

You will see that we have been active in organising events, and have a number of meetings planned for later this year and early next year.

Sincerely

Pat

Winners of the 2009 essay competition

Congratulations to the 2009 winners of the annual essay competition. We once again had a very successful competition, and some of the winners were able to give a presentation and receive their prizes at our annual Environmental Physics Day last May. See page 7 for this year's announcement.

Overall winner

Pam Dugdale, "Students to solve the world's energy problems!"

Runner up

Sophie Webb, "To what extent can orbital forcing still be seen as the main driver of global climate change?"

Joint third place

Katie Atkinson, "Las Vegas' Water Supply: The stakes are beginning to rise"

Chris Holt, "The Roots of Power".

Highly commended

Caleb Leung, "LED: A new way to brighten both our homes and our future"

Evan Bailey, "What will happen to vehicles without fossil fuels?"



Essay winners Pam Dugdale, Caleb Leung and Katie Atkinson at May's Environmental Physics Day when they received their prizes.

The 6th Annual Environmental Physics Group Essay Competition.

Closing date – 31st December 2010



Entries are now invited for this year's EPG Essay Competition. The aim of the competition is to encourage and recognise excellence in communicating the significance, value and rewarding nature of engaging with environmental physics. Entries should cover any aspect encompassed by the Group's interests in environmental physics, which include, but are not limited to: atmosphere and climate; hydrology; plant physics; glaciology; waste; energy; the built environment.

- **prize money totals £500;**
- a certificate will also be awarded to the winning author(s);
- the winning entry will be considered for publication (previous winners have been published in Physics Education);
- all entrants will be **offered 3 months free membership** of the Group and of the IOP;
- the competition is **open to all**, but entries from students are particularly welcome;
- essays must be **no more than 2,000 words** long;
- the closing date is **31st December 2010**.

Entries must be original and will be judged on writing quality and content. Essays adopting a purely scientific, policy-related or some other perspective will be welcomed. It is anticipated that presentations will be made by the winning author(s) at the Group's Environmental Physics meeting in the Spring of 2011.

Entries should be sent to: env.essay@physics.org, preferably as a pdf file, along with full contact details and student status if appropriate. Entries may be also be submitted by post to:

Environmental Physics Group (essay competition),
c/o Science Support Officer,
The Institute of Physics,
76 Portland Place,
London. W1B 1NT

Further details are available on the Group's web site or from env.essay@physics.org.

Secretary's Report: 2009-2010 from the 19th Annual General Meeting held on 26th May 2010

Membership

There has been a 14% growth in the Group's membership over the past year, up to 643 members from 562 at the 2009 AGM. This growth is likely to be accounted for simply by the fact that Institute of Physics members may now join as many groups as they like without paying additional subscription fees. Since this new regime has been in place for well over a year, the Group's membership numbers appear to be very healthy.

The Committee met four times, on 25 March 2009 (10 attendees), 24 June 2009 (12 attendees), 23 September 2009 (8 attendees), and 6 January 2010 (4 attendees). (Attendance at the January 2010 meeting was low because of severe adverse weather.) The AGM was held on 25 March 2009 (30 attendees).

Committee composition

The current committee composition (before the May elections) is listed below. In a change from the previous constitution, all newly elected officers and ordinary members will serve for three years.

<i>name</i>	<i>status</i>	<i>start</i>	<i>expiry</i>
Peter Hodgson (Chair)	officer	2006	2010
Giles Harrison (Vice Chair & Hon Treasurer)	officer	2006	2010
Paul Williams (Hon Secretary)	officer	2009	2012
Karen Aplin	ordinary	2007	2011
Sally Brown	ordinary	2007	2011
Curtis Wood	ordinary	2008	2012
Ian Colbeck	ordinary	2009	2013
Pat Goodman	ordinary	2009	2013
Alec Bennett	ordinary	2009	2013
Hugh Mortimer	ordinary	2009	2013
Edward Youngs	co-opted	2007	2010
Mhairi Coyle	co-opted	2009	2012

Many thanks are owed to all the committee members for their dedicated service. Special thanks to Peter Hodgson (outgoing Chair) and Giles Harrison (outgoing Vice Chair & Treasurer), who have led the group through a very successful four-year period. Special thanks also to Edward Youngs, who leaves the committee today after many years' devoted service to the Group.

Paul Williams
Honorary Secretary

Profile of New Committee Members

Alison Buckley

Alison Buckley's interest in environmental physics was sparked after straying to the 5th floor of the University of Bristol's Physics Department during the final year of her Physics degree in 2005 where she discovered the intriguingly named Human Radiation Effects Group. This led to her spending three years sitting under powerlines for a PhD in Atmospheric Aerosol Physics investigating the attachment of corona ions to aerosol particles near HV transmission lines (2009) and an interest in submicron aerosol dynamics and measurement techniques. Alison now works at the Health Protection Agency where she is the aerosol physicist for the newly established National Nanotoxicology Research Centre.



Mhairi Coyle



Dr Mhairi Coyle studied Applied Physics at Napier University which focused on instrumentation and computing. She took a temporary position at the Centre for Ecology and Hydrology (then the Institute for Terrestrial Ecology) after graduating in 1995 to assist in the production of a Photochemical Oxidants Review Group Report. This led onto a permanent post and PhD with Edinburgh University studying the land-atmosphere exchange of ground-level ozone and deposition to external plant surfaces. Mhairi's work involves the application of micrometeorology to measure and model the exchange of gases at the surface. Some days she can be found in front of the PC analysing data, writing data logging/analysing/modelling software or on other days in the lab fiddling with instrumentation or, weather permitting, out in the field installing or maintaining equipment. To date she has mainly worked on ozone, CO₂/H₂O, NH₃ and NO_x but more recently she has started working with a CIMS - Chemical Ionisation Mass Spectrometer which can measure a variety of species depending on which reagent ion it is supplied with. The aim is to develop the instrument to do fast eddy-correlation measurements of HNO₃ and PAN.

Chris Lavers

Dr Chris Lavers gained two Physics degrees from Exeter University and then held a post-doctoral position at Southampton University in Biosensors, developing planar optical sensors for biochemical environmental applications. Subsequently he has held junior and senior teaching posts at Britannia Royal Naval College, and currently lectures at the University of Plymouth in Remote Sensing and Radar modules as well as being Subject Matter Expert (Radar and Telecommunications) for the Naval College. Chris's research interests focus on application of military technologies for civil environmental applications, especially wildlife thermal imaging and high resolution satellite imaging. Chris's varied public outreach activities include a travelling thermal wildlife imaging exhibition (seen by over 60,000 in the South of England), working with schools and interactions with the media (BBC Radio 4, BBC Devon and Plymouth Sound Radio).



Celebrating 20 Years of the EPG

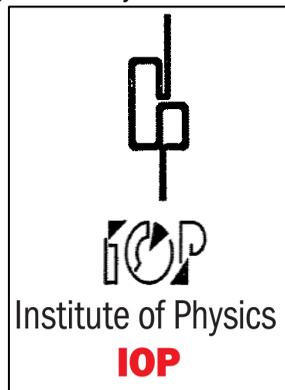
This year marks the 20th Anniversary of the Group, and to put that into perspective Edward Youngs provides here a fascinating overview of the history, activities of the EPG and where physics is heading in the future.

The Environmental Physics Group: 1990 –2010

The Council of the Institute formally approved the formation of the Environmental Physics Group in July 1990, following a meeting of interested parties at a meeting in the autumn of 1989, and it was publicly launched at the British Association's Annual General meeting in Swansea on 23rd August that year. At the Environmental Physics Day meeting at the Institute of Physics on 26th May 2010 our Chairman cut the cake celebrating twenty years of successful activity of the Group.

The stated aim of the Environmental Physics Group was "to promote physics within the context of environmental science". Its objectives were:

1. To provide a forum for discussions of physics as it applies to the environment.
2. To encourage application and development of physical methods to environmental research.



3. To encourage the education and training of physicists in the environmental sciences.
4. To foster cooperation with other national and international organisations' activities, be they (a) scientific; (b) economic and social; (c) industrial.
5. To advise Council as and when requested on environmental issues.
6. To inform the public, in an accessible manner, about the contribution of physics to the environmental sciences.



Peter Hodgson, the then Chair of the EPG cutting the 20th anniversary cake

The wide range of interests of environmental physicists was reflected in the composition of the initial Steering Committee setting up the Group with physicists working in industry, geophysics, atmospheric science, education, ecology, medical physics, environmental processes, oceanography, hydrology and agriculture. This was replaced by an elected committee at its first Annual General Meeting in May 1992. Within a year membership of the Group was over 100, reaching 400 the following year, and has since topped over 600. From the start it was recognised that environmental physicists more often than not work in multidisciplinary teams, perhaps as the sole physicist in the group, so that as a matter of policy it was decided that the EPG should collaborate wherever possible with other bodies when organising meetings. This has been a feature over the last twenty years with the majority of meetings

held in conjunction with other Groups and scientific societies. Besides holding lectures and meetings on specific environmental topics, the Group participated alone or in other years with other groups, such as the Combustion Group and Medical Physics Group in sessions at the Institute's Physics Congress. Besides these scientific meetings a few visits to facilities concerned with aspects of environmental physics have been arranged.

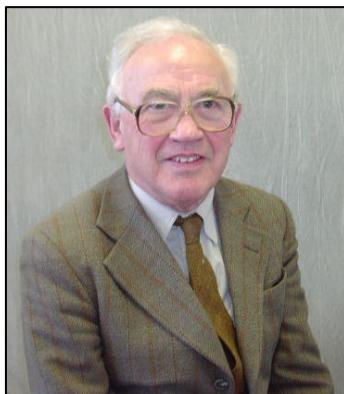
The diverse interests of environmental physicists are shown in the different definitions of "environmental physics" in books that have been published in the last two decades. In John Monteith's "Principles of Environmental Physics", it was defined as "the measurement and analysis of interactions between organisms and their physical environment", while Egbert Boeker and Rienk van Grondelle in their "Environmental Physics" state "environmental physics is defined in a broad sense as the physics concerning the identification and measurement of environmental problems". In Nigel Mason's and Peter Hughes' "Introduction to Environmental Physics" they consider that "environmental physics can be defined as the response of living organisms to their environment within the framework of the

physics of environmental processes and issues". Yet again, Clare Smith in her "Environmental Physics" aims just to provide "an introduction to the physical principles that underlie environmental issues and to show how they contribute to environmental science as a whole". At the Congress of the Institute of Physics at Telford in 1996, John Monteith defended his narrow definition in his plenary lecture entitled "What is environmental physics?" The Environmental Physics Group Committee responded to the debate by issuing a leaflet with the same title, indicating a consensus of a broader definition.

To celebrate the tenth anniversary of the formation of the Group, a Members' Day was held in May 2000 at which Members were invited to describe their work and to have the opportunity to meet each other. The meeting was entitled "The Diversity of Environmental Physics", reflecting the different facets of our subject, and included lectures, posters and a photographic exhibition recording some of the personalities, activities, locations and instrumentation involved in environmental physics, which demonstrated the scope and breadth of our subject area. The success of this meeting has led to it being held regularly since.

In 1990 a small education sub-committee was set up, since it was considered that study of the environment was an excellent way of introducing and interesting children to science, particularly physics. The Environmental Physics Group Committee advised on course work and held meetings with teachers. Allied to this was the setting up in 2006 of an Environmental Physics Essay Competition that has been held every year since. It has attracted entries from retired members, researchers, teachers, students and even school children. The standard of entries has been generally high, showing an encouraging interest in environmental physics. Winners have been awarded their prizes at the Environmental Physics Day event where they have presented talks on their entries.

It has long been felt that a directory of Members' interests would be invaluable to the Committee in arranging its programme of activities and in framing reports on environmental matters, but various attempts over the years to compile this have come to nought. Nevertheless, the Group has contributed to several Institute of Physics submissions, including those for the House of Lords Select Committee and for other Government enquiries, most recently for Wakeham's Review of UK Physics, an important recommendation of which was to broaden the base of physics to include (or reclaim) the more applied aspects of physics. Other recent



Prof Edward Youngs

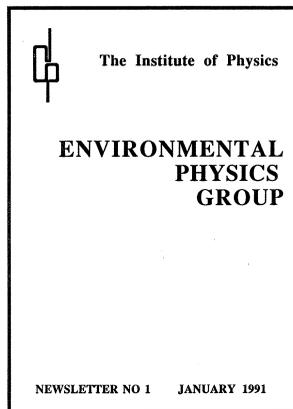
initiatives of the Group include organising topical meetings in rapid response to environmental incidents such as earthquakes, and putting on events at locations with a wide geographical spread. Also, the Group nominated (with a successful outcome) Joseph Farman, Brian Gardiner and Jonathon Shanklin of the British Antarctic Survey for the Institute's Charles Chree medal in 2001 for their discovery of the ozone hole.

We now look forward to many more years' activity of the Group. With fewer physics graduates teaching in our schools and with the closure of many university physics departments, scientists with physics degrees who want to pursue a career in environmental physics will probably be fewer in number. Because of the interdisciplinary nature of our subject, interest in environmental physics will more and more be in engineering departments and departments devoted to general environmental science and geography. There will often be a lack of a physics background and understanding. Somehow the Environmental Physics Group must take up the challenge that this provides and embrace this change. With the increase in world population that is accompanied by increased demand of natural resources by human activity, environmental physicists will play an ever-increasing role in society.

Old copies of the EPG's newsletters – we need your help!

How long do you keep your newsletters for?

Well, Prof Edward Youngs keeps them for 20 years! Edward has kindly donated all his newsletters to the EPG which start in January 1991. There are a few editions missing (volume 2 in 1991 and there is only one edition in 1999 – there may be another) – do you have any at home? If you do, please contact Sally Brown (sb20@soton.ac.uk), who will copy and return any editions sent. Sally plans to scan all the old newsletters to create an electronic record – an update will be provided in our next newsletter.



Reports from EPG Previous Events

Combustion and NO_x in the Environment

East Midlands Conference Centre, University of Nottingham

Wednesday 21st April 2010.

Peter Hodgson describes the joint meeting hosted by the Combustion and Environmental Physics Groups.

Nitrogen oxides are major pollutants from combustion and their emission is strictly regulated by law and technologically challenging to reduce. This meeting focused on the fundamentals and practical aspects of low NO_x combustion technologies and the impacts of NO_x in the environment, through a series of invited presentations. Although deprived of the talk on fundamentals of NO_x chemistry by the effects of the Icelandic volcano on air travel, the 30 or so attendees enjoyed the remainder of the planned programme. With the combustion and environmental physics communities coming together in this way to address sources and impacts of NO_x and associated legislation, a stimulating meeting resulted. This is a model that is worth pursuing for future joint meetings between the two Groups.

Environmental Physics Day

Phillips Room, Institute of Physics, 76 Portland Place, London.

Wednesday 26th May 2010

Sally Brown reports on the 20th Anniversary meeting of the Environmental Physics Group.



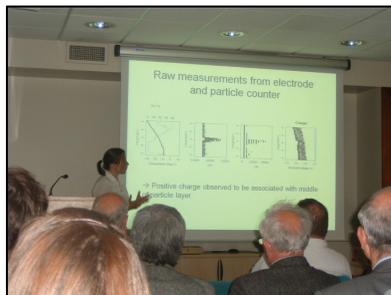
This meeting saw a medley of presentations from a wide range of research relating to environmental physics. First to present was Claire Neil, a PhD student from the University of Strathclyde. Claire is studying suspended material concentrations in shallow seas. Her talk focused on measurements of “sandy-mud” or “muddy-sand” (oceanographers apparently understand these terms!) in the Irish Sea, using satellite measurements. Part of this

talk was presented at ‘Oceans from Space’ in Venice. The IOP was pleased to help by funding Claire’s trip via the student conference fund (see page 28). Her full report on the conference can be found on pages 18-19.

This year it has been a pleasure to have a presenter from outside the UK and Ireland as Thuraya Saeed joined us from the Public Authority of Applied Education and Training, Kuwait. Whilst we get an occasional dusting of Sahara sand, in Kuwait dust is commonplace. Despite Kuwait being a dusty place, dust is still not very well understood. Thuraya's mission is therefore to understand dust better by measuring dust particle concentration. Dust is important - it affected the invasion of Iraq in May 2003, and since 1990 the probability of a dust storm happening in the area has increased to five fold due to heavy military vehicles crushing soil making it easy to create dust.

Next was Giles Harrison, who presented a talk on 'Atmospheric electricity coupling between earthquake regions and the ionosphere'. Predicting earthquakes is an impossible task with no clear universal indicator of when and where one will occur. However, there are a range of possible earthquake precursors including electrical ion gases such as radon, IR emissions and changes to radio signals. Using satellite measurements, Giles's research has found that radon which is released prior to an earthquake alters the local electrical properties in the surrounding air, thus lowering the potential gradient and increasing conductive currents. This is particularly sensitive in polluted urban environments.

Finally, many of us were affected by the Icelandic volcanic plume, and may have been stuck abroad, or have known someone who was unable to get back home. Keri Nicoll of Reading University who bravely managed to pronounce 'Eyjafjallajökull' (try saying "ay-yah-FYAH'-plah-yer-kuh-duhl" or "AY-yah-fyah-lah-YOH-kuul", it's a real tongue-twister!) explained the work that she had undertaken with Giles Harrison in measuring the ash plume. They were fortunate enough to take in situ measurements to discover the plume's extent, particle size distribution and charge. They found a layer of increased particle concentrations 3.7 km to 4.5 km up in the atmosphere – a layer predicted by the UK Met Office. In this zone particle concentrations measured 0.3mg/m^3 , whereas 0.2mg/m^3 is the safe level for flying. This helped explain to me that whilst the entire country air fleet was grounded, small low-flying pleasure planes were able to operate, noisily circulating above my local airport (near to my house)!



These talks left us all wondering how they manage to cope with dust storms in Kuwait, yet why we are unable to cope with ash from a volcano. Now that research has been undertaken, scientists can understand the situation better than before. For more information, see:

Harrison, R.G., Nicoll, K.A., Ulanowski, Z. and Mather, T.A. 2010. Self-charging of the Eyjafjallajökull volcanic ash plume. *Environmental Research Letters*, 5, 024004.

Environmental Physics Day Evening Lecture: Cosmic Rays and Clouds

Prof Sir Arnold Wolfendale

Institute of Physics

Wednesday 26th May 2010

Professor Giles Harrison reports on Arnold Wolfendale's evening lecture which was held jointly between the Environmental Physics Group and the London & South East Branch.

Prof Sir Wolfendale presented his recent interdisciplinary work investigating links between cosmic rays, clouds and climate. His perspective on environmental physics was lively, unique and fascinating, rooted in a long and distinguished career in cosmic ray physics and he is now one of the "phalanx of physicists" underpinning climate science. Blackett's opening PhD advice at Manchester to the young Wolfendale in 1948 was to study cosmic rays, which he continues vigorously and broadly. The constraints of an evening lecture restricted his presentation to much of the lifetime of the universe, the whole range of atmospheric electric fields and particle energies spanning keV (in Chernobyl radioactivity) to at least PeV (high energy cosmic rays).

As a former Astronomer Royal who, during his term of office, kept the realm clear of comets, the contentious matter of the sun's challenge to the realm through climate is of great interest. The sun's importance in this context depends on whether its small corpuscular and radiative variations drive climate change as has sometimes been claimed, as little effect on climate change might then be expected from concerted global socio-political action. Solar modulation of ionising galactic cosmic rays provides one route for a solar "signal" to reach the lower atmosphere, but, by a series of comparisons of atmospheric conditions around natural radioactivity "hot spots", the Chernobyl reactor disaster, and the "Bravo" nuclear test, Sir Arnold illustrated that cosmic ray ionisation did not cause dramatic or appreciable changes in clouds. Effects of the charge released are nevertheless expected on atmospheric electricity, but these are insufficient to explain the global temperature changes observed.

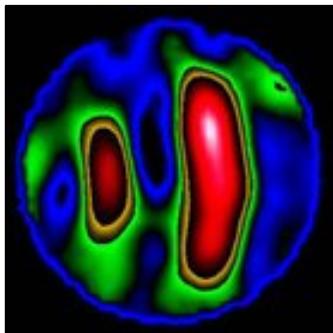
In terms of identifying greater effects for cosmic rays on the atmosphere and biological systems, Sir Arnold discussed lightning discharges and, separately, the origin of life. Lightning discharges occur when thunderstorm charging processes

are sufficiently active to generate large electric fields. However the breakdown process (“lightning”) occurs at fields smaller than breakdown fields of air, which provides a possible role for cosmic rays in triggering lightning in suitably highly electrified (“ripe”) thunderclouds. There is much active work in this area internationally, and intriguing further support for this hypothesis may be concealed in text book photographs of lightning, as the angle to the vertical in many lightning images is similar to that of the Extensive Air Showers generated by high energy cosmic rays.

Lightning releases nitrous oxides, which in turn modulate atmospheric chemistry, and no doubt have always done so throughout the evolution of life. One route previously suggested for the original formation of the complex molecules of life is by sustained electrical discharges occurring within a primitive gas mixture, demonstrated experimentally in the 1950s by Miller and Urey. This provides a link through environmental physics, from cosmic rays to life.

Photon10 Conference - Optical Environmental Sensing VII **University of Southampton.** **Monday 23rd – Friday 27th August 2010.**

Hugh Mortimer reports on the 7th Optical Environmental Sensing session held at the Photon10 conference at Southampton University.



The Optical Environmental Sensing session was held at the Photon10 conference, one of premier optics and photonic events in the UK. This was held over the week 23rd – 26th August at the beautiful surroundings of Southampton University.

This event is part of the larger biennial conference organised by the Optics and Photonics Division of the IOP, (formerly the Applied Optics Division) and brings together researchers in the fields of the Optical, Materials and Characterisation, Instrument

Science and Technology.

This year saw a 50 strong audience enjoy four presentations on a delightfully diverse range of topics that spanned lidars to laser diodes. The invited presentation, given by Fabrizio Innocenti from the National Physical Laboratory, was especially well received. His talk, ‘Pollution emissions monitoring using differential absorption lidar’, demonstrated how photonics plays an important role in the area of environmental physics and which on the whole encapsulated the overall aim of the session: to fostering and promote links between optical and environmental science research.

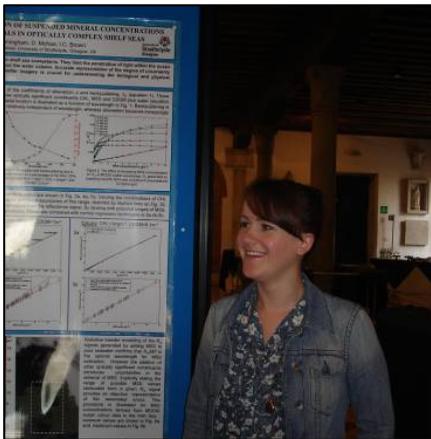
Reports from Other Previous Events

Oceans from Space

Venice, Italy

26th – 30th April 2010.

This report was written by Claire Neil (claire.neil@strath.ac.uk), a student at University of Strathclyde who received an IOP bursary to help her to attend this meeting (for bursary information, see page 28). Claire also won a prize for her poster at the event – Congratulations!



Famed for its grand canals and water avenues, Venice was the location for the 4th Oceans from Space decennial symposium, bringing together scientists and engineers from the field of satellite oceanography. The symposium programme covered all aspects of oceanographic remote sensing, ranging from small scale current dynamics and front detection to global issues such as climate change. Invited lectures were delivered by prominent scientists and debate and plenary discussions ensured there was never a dull moment. Ocean optics sessions were of particular interest

to me, due to their relevance with my topic of research, and an historical overview of ocean colour remote sensing, as told by a world leader in the industry, was a real treat.

Participation at this event allowed me to present my research on the retrieval of mineral suspended solid concentrations from satellite imagery to a wider remote sensing community, building networks for future collaborations and contacts with potential employers. It was incredibly motivating to see first hand, other scientists' interest in my work and to view its significance from a wider perspective in the field. To my delight, I was awarded a distinguished prize for my efforts at the conference.



I would like to sincerely thank The Institute of Physics and the Environmental Physics Group for their financial support which allowed me to contribute to an excellent conference. It has been a wonderful experience and one which I believe will prove extremely beneficial as I pursue a career in satellite oceanography.

Forthcoming Environmental Physics Group Events

Alternative Pathway to Clean Energy

LT21, E-floor, Sir Hadfield Building, Sheffield University.

Wednesday 27th October 2010, 2pm.

Prof Cywinski is the speaker for this seminar, which is run jointly with the Energy Institute. For more information, please contact Peter Hodgson. His contact details are on page 30.

Spectral Imaging V

The International Centre, St Quentin Gate, Telford, TF3 4JH

Wednesday 3rd November 2010



This meeting is aimed at bringing together participants from all fields of spectral imaging. Spectral imaging combines conventional imaging with spectroscopy to enable enhanced classification or quantification based on variations in spectral signatures. Spectral imaging is now being developed for a range of

applications including medicine, biology, surveillance, remote sensing and industrial inspection. Important issues for spectral imaging are associated with developing instrumentation that can demonstrate the required performance criteria, the development of algorithms for calibration and exploitation of spectral data.

For more information, visit the website: www.photonex.org/conference/siv.php

Physics in the Animal World,
Institute of Physics, Portland Place, London.
Wednesday 24th November 2010. 1.30pm-5.20pm.

An open meeting (including non-members) discussing the physics behind the animal world. The day's programme is below:



Basking Shark



Fall Armyworm Moth

- 1330-1400 Arrival (with tea and coffee)
- 1400-1435 Orientation mechanisms of high-altitude insect migrants
Jason Chapman, Rothamsted
- 1445-1520 Dynamics and control of eagle flight
Graham Taylor, Oxford
- 1530-1600 Coffee
- 1600-1635 Iridescence in animals
Peter Vukusic, Exeter
- 1645-1720 Levy flights and the search behaviour of predators
*David Sims, Marine Biological Association
(Plymouth)*

- Register by email: Curtis@Physics.org
- Poster presentations by advance request: Curtis@Physics.org

Clouds and the Earth's Radiation Balance – Observational Evidence, Including Evening Lecture

Prof Paul Hardaker Chief Executive of the RMetS

Edinburgh City Chambers, Edinburgh

Wednesday 16th March 2011, 1:30-5:30pm and evening lecture, 6.30-7.15pm.



Royal Meteorological Society

The science programme for this event is organised by Richard Allan and Curtis Wood, joint with the IOP Scottish Branch and the Royal Meteorological Society Speakers include:

- Dr Richard Allan, University of Reading.
- Prof. John Harries, Imperial College and Chief Scientific Adviser for Wales.
- Dr Mark Ringer, Hadley Centre
- Dr Jonathan Shonk, University of Reading
- Dr Jim Haywood, Met Office

After a short break, Prof Paul Hardaker, Chief Executive of the RMetS will speak on 'The challenges of predicting the weather and climate' from 6.30pm-7.15pm.

As we may not have another newsletter out before March (although further details will be sent out via email), please register your interest with Curtis Wood at Curtis@Physics.org, or see his details at the back of the newsletter. Further information and maps concerning all meetings is available from the Royal Meteorological Society at www.rmets.org. Non-members are welcome to attend.

Extreme Weather

Northumbria University: Ellison Building

Ross Reynolds, Reading University

Thursday 14th April 2011 at 7 pm.

Run jointly with the North East Branch, Ross's presentation will look at the origin, nature and prediction of severe weather in both the USA and UK, focusing on tornadic storms, hurricanes and explosive depressions. These phenomena have been and are still studied intensively, offering a significant challenge to researchers and operational meteorologists alike. For further information, contact the NE Branch Secretary, Gareth Roberts (Gareth.Roberts@newcastle.ac.uk).



<http://www.fas.org>

Aerosols and the Environment

Institute of Physics, London.

Tuesday 19th April 2011. From 10am.

This one-day meeting is organised by the Environmental Physics Group and The Aerosol Society. Invited presentations will cover a variety of areas exploring the significance of aerosol particles within environmental physics.



Oral presentations to include:

- Biogenic influences on marine primary and secondary particle formation - recent advances (Prof Colin O'Dowd, National University of Ireland Galway).
- Current understanding of aerosol nucleation in the environment (Prof Ian Ford, University College London)
- Indoor Aerosols (Prof Ian Colbeck, University of Essex).
- Aerosol effects of the 2010 Eyjafjallajökull eruption.

Poster submissions relating to any aspect of aerosol environmental physics are also welcome. Please send a title and brief one-paragraph abstract, with no figures or references, to Dr Karen Aplin (k.aplin1@physics.ox.ac.uk) by 31 December 2010.

Forthcoming IOP Events

Wind Energy - Challenges for Materials, Mechanics and Surface Science

Institute of Physics, London, UK

Thursday 28th October 2010.

Wind energy is now an established means of alternative energy generation. Wind energy farms are a regular feature of the landscape in many countries, and large off shore wind turbine farms are being raised in many places as well. However, the hunt for more efficient means of wind energy generation continues. The seminar focuses on the challenges for Physics and Engineering surrounding materials technology, tribology and mechanical sciences. A principal factor in increasing efficiency is blade length, blade design and appropriate material selection. In addition, the mechanics of the drive trains and energy conversion systems play a key role in the efficiency of the wind power plant. In the move to

the offshore environment, maintenance becomes a driving factor along with corrosion and other features associated with surfaces. The seminar aims to identify the key challenges for future development and target areas for future research and development investment. Expert international speakers have been invited to reflect the diverse challenges associated with wind energy generation.

For further details, see:

<https://www.eventsforce.net/iop/frontend/reg/thome.csp?pageID=27682&eventID=79>

Doing Outreach and Extending Your Outreach

These one day workshops aim to give Institute members an introduction to outreach and enable participants to develop their own outreach and public engagement ideas.

Institute of Physics, London

Monday 8th November 2010: Extending Your Outreach

An opportunity for members with some experience of taking part in public engagement and outreach activities to work with others to develop ideas for their own events, consider ways of reaching different audiences and discover what funders are looking for.

Science Studios, Reading

Tuesday 9th November 2010: Doing Outreach

An introduction to public engagement and outreach activities for members wanting to build confidence and find out how to get involved.

For more information, and to book a place on a workshop, please see:
http://www.iop.org/membership/cpd/training/outreach/page_38196.html

How to be a Successful Physicist

Manchester Metropolitan University, Manchester

Wednesday 24th November 2010

The Institute of Physics strongly encourages continuous personal and professional development of its members. Hence the London and South East Branch together with Manchester and District Branch are organising a one day conference which will take place at the Manchester Metropolitan University on the 24 November 2010. The target audience are young scientists and final year PhD students. The aim of the conference is to give advice via presentations by

prominent physicists who will share their visions and useful tips on victorious strategies in science. As a practical exercise, the participants will work in teams at the workshop to practice writing an Engineering and Physical Sciences Research Council (EPSRC) grant application.

The number of participants is limited to 100 in total (no more than 10 per institution) on a first come - first served basis. The event is free and for further information including how to reserve your place, visit the website (<http://www.iop.org/events/scientific/conferences/y/10/physicist/index.html>)

Sensors and their Applications XVI

Clarion Hotel, Cork, Ireland

Monday 12th - Wednesday 14th September 2011.

Organised by the IOP Information, Science and Technology Group.

The sixteenth in the series of conferences on Sensors & their Applications (S&A XVI) will be hosted by Tyndall National Institute at University College Cork, Ireland in September 2011. This popular event follows previous conferences in the series that began in Manchester in 1983 and included the first of the highly successful Eurosensors conference at Cambridge in 1987 and at Southampton in 1998.

The S&A series of conferences provides an excellent opportunity to bring together scientists and engineers from academia, research institutes and industrial establishments to present and discuss the latest results in the field of sensors, instrumentation and measurement.

Abstract submission for this conference is now open, with a deadline of 18th March 2011. For more information, including conference themes, see: <http://instituteofphysics.createand4.com/t/r/l/ahuhuk/kltkkihityd>

Other Forthcoming Events

Global warming and its Effect on the Arabian Peninsula

PAAET, Kuwait

Wednesday 24th – Thursday 25th November 2010.

This conference covers many aspects of climate change around the Arabian Peninsula. Sessions include atmospheric changes, impact assessments, health, resources, energy, technology and remote sensing. Further information may be obtained from Thuraya Saeed (thurmoh@yahoo.com)



Weather Radar and Hydrology

University of Exeter

Monday 18th April – Thursday 21st April 2010.



The theme of the 2011 Symposium will place emphasis on user applications of weather radar for flood forecasting and water management. All sessions will aim to combine developments in weather radar with advances in its hydrological application. The conference aims to promote a strong interchange between researchers, practitioners in the water industry and those making advances in weather radar technology. For further information, see: www.wrah2011.org

Other Activities

European Open Science Forum



Dr Paul Williams (right) of the University of Reading and the secretary of the EPG recently represented the Institute of Physics at the European Open Science Forum in Turin, Italy. The Forum is dedicated to scientific research and innovation, and is fundamentally international and multi-disciplinary in its structure. The seminars which the IOP ran, offered a unique platform

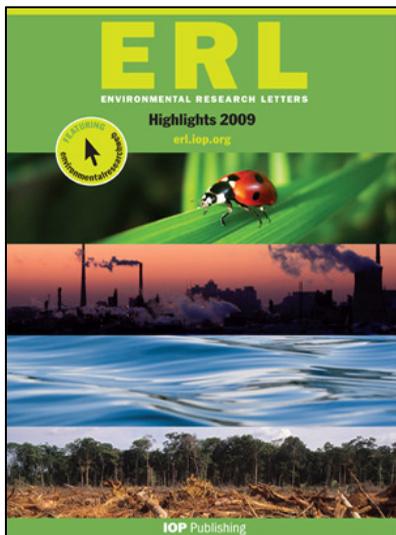
for a very real debate taking place at the highest level of European institutions, and IOP was happy to help promote the campaign further at a well-attended press conference. In this session, Paul's talk (with Martin Wattenbach and Jane Desbarats) 'Climate prediction models: what's the point?' presented the scientific evidence showing the man-made effect on the Earth's climate, looking at patterns through history and the rapid rise in temperature since the beginning of the industrialised era, through to the laws of atmospheric physics and finally contemporary European policy attitudes. The session was rather controversial, sparking debate into the support of climate change. Overall, the IOP's presence showed the organisation's and scientists' commitments and enthusiasm to cutting-edge science. Further information can be found:

http://www.iop.org/news/page_44279.html

<http://www.iopblog.org/iop-european-science-open-forum-2010/>

Environmental Research Letters (ERL)

Environmental Research Letters covers all of environmental science, providing a coherent and integrated approach including research articles, perspectives and editorials. You may already know about some of the benefits of publishing in one of the fastest growing journals in the field of environmental research, such as fast publication times, efficient peer review, broad readership and high editorial standards.



Further recent additional benefits include:

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Enhance your article by publishing your data alongside at no extra cost

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This year our impact factor jumped from 1.719 to 3.342*. We have also seen our monthly downloads soar to an average of 26,600 in the first six months of 2010 alone. More information and online submission can be found at <http://erl.iop.org>

*As listed in the ISI 2009 Journal Citation Report.

environmentalresearchweb

environmentalresearchweb is a unique site for the entire environmental science community. It provides analysis and commentary on all areas of environmental research including policy and sustainable technology. News and editorials are integrated with research articles from the journal Environmental Research Letters. The latest news and sign-up form for the weekly newswire can be found at <http://environmentalresearchweb.org>

IOP Conference Series: Earth and Environmental Science

IOP Conference Series: Earth and Environmental Science (EES) provides a fast, flexible and affordable proceedings service. As an open-access title, EES will make conference papers available to researchers worldwide, reaching the widest possible readership in academia and industry. Our experienced conference-

publishing team can help you find a proceedings solution that meets editorial objectives within financial constraints.

From 2010 the Assignment of Copyright form is being replaced by the IOP Proceedings Licence under which authors retain their copyright. The full text of the licence is available online. Recent conference publications include:

International Conference on Planetary Boundary Layer and Climate Change
26–28 October 2009, Cape Town, South Africa

17th National Conference of the Australian Meteorological and Oceanographic Society, 27–29 January, 2010, Canberra, Australia

Further information and descriptions of EES services are available on <http://iopscience.iop.org/ees>

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- 18 new courses will be added throughout 2010.

For more information, see:

http://www.iop.org/membership/cpd/training/learning/page_43176.html

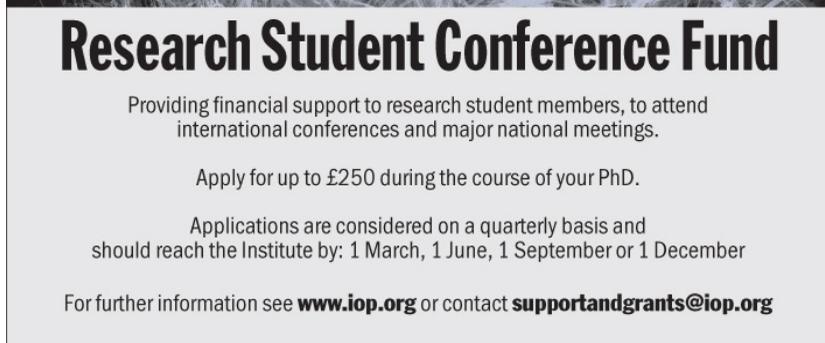
Research Student Conference Fund

For further details, check online at:

http://www.iop.org/about/grants/research_student/page_38808.html



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

IOP Institute of Physics

EPG Committee

Chair: Prof. 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
Treasurer: Dr Karen Aplin		Physics Department, University of Oxford, Denys Wilkinson Building, Keble Road, Oxford, OX1 3RH. Tel: 01865 273491 Fax: 01865 273418 e-mail: k.aplin1@physics.ox.ac.uk
Hon. Secretary: Dr Paul Williams		National Centre for Atmospheric Science, Dept. of Meteorology, The University of Reading, PO Box 243, Earley Gate, Reading, RG6 6BB. Tel: 0118 378 8424, Fax: 0118 378 8316. e-mail: p.d.williams@reading.ac.uk
Communication (Newsletter): Dr Sally Brown		School of Civil Engineering & the Environment, University of Southampton, Highfield, Southampton, SO17 1BJ. Tel: 02380 594796, Fax: 02380 677519 e-mail: sb20@soton.ac.uk
Communication (Web): 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 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 Alison Buckley		Centre for Radiation, Chemical and Environmental Hazards Health Protection Agency Chilton Oxfordshire OX11 0RQ Tel: 01865 822640 e-mail: alison.buckley@hpa.org.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 Mhairi Coyle		CEH Edinburgh, Bush Estate, Penicuik, Midlothian, EH26 0QB. Tel: +44(0) 131 445 8574. Fax: +44(0) 131 445 3943 e-mail: mcoy@ceh.ac.uk

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
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
Dr Chris Lavers		University of Plymouth at Britannia Royal Naval College, College Way, Dartmouth, Devon, TQ6 OHJ. Tel: 01803 677218 Fax: 01803 677015 e-mail: brnc-radarcomms1@nrta.mod.uk
Dr Curtis Wood		Dept. of Meteorology, The University of Reading, PO Box 243, Earley Gate, Reading, RG6 6BB. Tel: 0118 378 6721 Fax: 0118 378 8316. e-mail: c.r.wood@reading.ac.uk

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

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

Tel: 020 7470 4800

Fax: 020 7470 4848