

Chairman's Report: AGM 2007

Welcome to this, my first report as Chair of the EPG. It is an ever more interesting time for environmental physics, with such high profile arguments over climate change, its presentation, and effects on business and politics. I am delighted to say that the Environmental Physics Group is contributing in its own way to the debate and has secured one of the lead authors of the latest IPCC report, Jonathan Gregory, to talk at our meeting on 13th June. Of course the interests of the EPG go much further than climate and we continue to be active in other areas and organise events, both for the specialist and more general audience, which reflect this.

Group Meetings and Visits

Three scientific meetings were held during 2006 (see Table 1), all of which were well attended.

Table 1: 2006 Meetings

Date	Title	Type	Venue	Joint with ...
10/05/06	<i>Members' Meeting</i>	Day	Portland Place	
05/07/06	<i>Environmental Electrostatics II</i>	Half-day	Portland Place	Electrostatics Group
06/09/06	<i>Optical Environmental Sensing</i>	Day	Photon06, Manchester	Optical Group

Events in 2007

The Committee is continuing its policy of seeking to hold more meetings in regional centres and to this end has initiated a programme of events with the IOP Branches. The fruits of this exercise are to be seen in the programme for 2007, with EPG organised events having already taken place in the north of England and a further planned for June with the Scottish Branch. Organising meetings jointly with Branches, whose events naturally include those for a more general audience, would seem to address the needs of those members of the EPG not necessarily engaged professionally in environmental physics, but who take a keen interest in the physics behind environmental issues.

Other Meetings in Planning

Condensation Physics, joint with the History of Physics Group and the Aerosol Society.

Physics of the Cryosphere, possibly joint with IGS British Branch

Communication with members

Two Newsletters were sent out to members during 2006. My thanks to Karen Aplin for editing these. The Group also continues to use email to contact members when appropriate.

The web-pages of all IOP Groups were moved to a new site during the course of 2006 and after some difficulties, the new pages are now up and running. Thanks to Paul Williams for keeping the EPG web-pages up to date.

Division of Applied Physics and Technology

The EPG is a member of the Division of Applied Physics and Technology. Karen Aplin represents us at DAPT committee meetings. The Divisional conference, Novel Applications of Surface Modification, will be held in September 2007. Members of the Group are encouraged to consider presenting at or attending the conference.

Other Activities

The Group is exploring ways in which we can work with Institute of Physics staff in supporting the development of educational resources for environmental physics.

One EPG travel bursary was awarded in 2006 and financial support was also provided to the West Lancashire Scout troop, to assist with their expedition to Greenland.

Thanks

The last year has been one of significant change for all Institute Groups, through the implementation of a new funding mechanism. I would like to thank the Treasurer, Giles Harrison, for seeing us through these changes. Finally, I would like to thank all members of the Committee for their considerable time and effort over the past year and in particular our Secretary, Pat Goodman.

Peter Hodgson (Chair)
May 2007



News and Other Reports

Call for Applied Physics Division Student Prize Nominations

Did you know that the Environmental Physics Group is a member of the Applied Physics Division? The Division has a prize which it awards annually to a student who has made an outstanding contribution to a Group within the Division. If you know of a student who may be eligible, please send a short case in support of the student to Karen Aplin, the Divisional Representative.

EPG Travel Bursaries

Travel Bursaries are usually available for Group members in financial need to attend meetings. Please contact Peter Hodgson for further information.

Institute of Physics Benevolent Fund

The primary aim of the Benevolent Fund is to provide members of the Institute of Physics or their dependents facing a critical need that cannot otherwise be met, with assistance that will help improve their prospects of continuing to lead a fulfilling life.

The category of people we can help

- * Members or their families in need due to disability, illness death or unforeseen problems.
- * Members facing critical career issues.
- * Members facing problems in employment.
- * Students of physics facing hardship through illness, disability or other unforeseen problems.

The principal beneficiary will be the members of the Institute of Physics and members of IPEM (The Institute of Physics and Engineering in Medicine), however, in exceptional circumstances help can be provided to those who are not in membership.

If you would like further details or if you feel you might meet these criteria, or know someone else who might, please contact me at the following address:
Mrs Susan Dowling, Secretary of the Benevolent Fund, Crosswinds,
Grovehurst Road, Iwade, Kent, ME9 8RE or email
suemdowling@yahoo.co.uk

Any correspondence will, of course, be treated as confidential.

Celebrity MP Spotting

'Celebrity MP Spotting' is not a common pastime practised by your average researcher, but when presenting research to MPs at the House of Commons it is. Science doesn't creep easily into politics, so when an opportunity came to present a poster on my research into coastal erosion last March I jumped at the chance.

Exposing MPs to science may seem a daunting task, but for the past nine years the organisation SET (Science, Engineering and Technology) for Britain has encouraged early-stage researchers to present their research in the House of Commons. The aim of this special reception is to encourage interaction between young researchers and to engage MPs in the challenging world of science.

After completing and submitting the rather rigorous application form, which felt more like a job application, I was delighted to be selected from 320 applicants to present my research. The following three weeks flew by as I made my poster and contacted MPs.

From the morning snow to the views of the House of Commons, the day was exhilarating, but very tiring. Around 160 other researchers presented their work, from the science behind lie detectors to lung tumours. Environmental and physics themed posters included soil erosion, oceanography, nanotechnology and lasers. During the day I was privileged to have the opportunity to explain my research to two of the MPs I invited to the reception. Presenting my research in such a high-profiled location was extremely challenging but rewarding. A unique experience, it allowed me to meet similarly minded people who were able to explain their work in a simple and enjoyable way, whilst 'rubbing shoulders' (quite literally – it was a small room!) with my local MP.

Another reception will be held for physicists next October. Further information is available at: <http://www.setforeurope.org/Physics2007/phys07/index.htm>. If you would like any advice on applying, you are welcome to contact me (msb20@soton.ac.uk).

Well, how did I fare with 'Celebrity MP spotting'? Although several were on the attendance list, the only one I saw was Clare Short, the former Labour Cabinet Minister who resigned over the Iraq war.

Sally Brown



Event Organisation

Dear colleagues & members

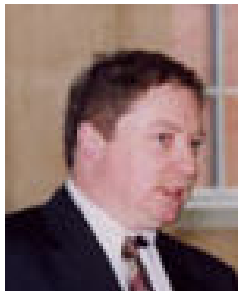
The committee of the EPG have been trying to organise events in conjunction with the various IOP branches, so that we can bring environmental physics to our members, instead of the members having to travel.

For the 2006/07 year we have Ross Reynolds giving a lecture at the Yorkshire Branch and the North East Branch. Plus we are jointly organising a half day seminar with the Scottish Branch to be held on the 2nd June. We also have an evening lecture with the London and SE branch scheduled for our members day on 2nd May at IOP Portland Place, and a further half-day seminar on condensation process is planned for Dublin in October/November 2007.

As a group we hope that we will be able to continue this process of jointly organising events with the branches, and so hopefully providing a better service to our members.

We would welcome suggestions of speakers and topics that would be appropriate for delivery within your branch.

Pat Goodman



Autumn 2006 Essay Competition

The 2006 Essay Competition, launched in the autumn, attracted 16 entries, 5 fewer than the inaugural event in 2005, from as far afield as St Andrews and Sumatra. The judges (Peter Hodgson, Alastair McCartney, Derek Rose and Edward Youngs) agreed that, although the range of topics was as wide as in 2005, the overall standard was not as high and it was difficult to select an outright winner.

They decided to award joint first prizes (£250 each) and a third prize of £100, each cash prize to be accompanied by a certificate from the IoP. The joint winners spanned the generations: “Energy from the Oceans” by Chris Holt, a retired member of IoP, showed how it was possible to extract enormous amounts of clean energy using the world’s largest solar collector – the oceans; ‘Physics: Saviour of the Planet’ by Felix Holt, a second-year student at Oxford University, interwove physics and politics with an apt analogy of the prisoners’ dilemma to demonstrate that it was in every country’s interests to co-operate in efforts to mitigate climatic change. Third prize went to Bethan White, a third-year undergraduate at Bristol University, for ‘Physics in the Current Climate’, a succinct overview of the current status of global climatic modelling.

Publication of the winning essays was a key objective when the competition was set-up and negotiations with Physics Education are at an advanced stage in getting the latest winners into print. It is the intention of the EPG Committee that the competition continues on an annual basis in its current form, although this is threatened by new Institute of Physics financial rules.

The committee thanks all those who entered the competition, offers congratulations to the winners and hopes that those who were unsuccessful will not be discouraged from further attempts – it paid off for Bethan White this year. The prize winners will be invited to present their work at the Members’ Day on Wednesday 2 May.

Derek Rose



Forthcoming Events

IOP | Institute of Physics
In Scotland

Celebration of Physics and AGM

**Discovery Point, Dundee, DD1 4XA
Saturday 2 June 2007**

Costs (subsidised by IOP in Scotland):
£10 for the day only (free for students)
£20 for dinner, £30 for day and dinner

**Theme: Environmental Physics, in association with the IOP
Environmental Physics Group.**

Schedule

- | | |
|-------------------|---|
| 1100-1130 | Arrival and welcome: Coffee and biscuits |
| 1130-1245 | Fossil fuels, global warming and the threat to our way of life
Professor Arthur P Cracknell – University of Dundee |
| 1245 -1315 | Tropospheric Ozone: pollutants and greenhouse gases
Dr Mhairi Coyle – Centre for Ecology and Hydrology |
| 1315-1430 | Buffet lunch. |
| 1430-1530 | Ocean Colour Scenes: the physics of marine remote sensing
Dr Alex Cunningham - University of Strathclyde |
| 1530-1630 | Climate Change and the Gulf Stream
Dr Paul Williams – University of Reading |
| 1630-1730 | IOP in Scotland AGM |
| 1730-1900 | Drinks reception and tour on Royal Research Ship
Discovery |
| 1900-2300 | Dinner in Discovery Point Centre |

Booking form on page 13

Climate Change 2007: the Physical Science Basis

6:30pm, Wednesday 13 June 2007
Institute of Physics, 76 Portland Place, London W1B 1NT

Evening lecture by Professor Jonathan Gregory, University of Reading

What recent progress has been made in understanding and attributing climate change? What do observations of the atmosphere, oceans, sea level, snow and ice tell us? What are the projections of future changes?

The Intergovernmental Panel on Climate Change (IPCC) is the world's leading authority on climate change. Its next assessment report, due to be published in mid-May, will provide the latest answers to the above questions and more. Jonathan Gregory, one of the lead authors, will explain the key findings and their implications.

Tea and coffee will be served from 6pm, with refreshments after the talk.

Please notify Beverley Harker if you plan to attend, to ensure there is adequate catering (B.J.Harker@open.ac.uk, 01908 655 253).
Further information from Paul Williams (p.d.williams@reading.ac.uk).

Organised by the Environmental Physics Group and the London and South East Branch.

Oceans of Technology

Aberdeen, 18-21 June 2007

Our oceans present a complex and diverse environment providing us with a vast resource which plays a major role and impacts on all our lives. Indeed, the oceans cover over 70% of the planet's surface, 80% of all life on earth is found in the oceans, and yet 90% of the ocean floor has yet to be explored. No wonder that our marine, sub-sea, and oceanic engineers never tire of the challenges that such rich diversity brings.

It is without doubt that technology has played, and will continue to play a very important role in probing the ever extending frontiers of our knowledge of the oceans. Our very earliest ocean navigators explored their understanding of the winds, currents, and oceanography. Yet it is only in very recent history (1960) that man explored the deepest part of the ocean; and it was the technology embedded in the manned submersible the *Trieste* that took man over 10,000 metres down to the bottom of the Mariana Trench. Now underwater technology is moving forward in strides with an increasing sophistication as we combine computing power, imaging systems, and modern communications and equipment to better understand this vast global environment.

Our ocean scientists and engineers are now seeking new horizons as they tackle challenges as diverse as new treatments for diseases (including cancer) and the impact of energy on our climate. In doing so, new technologies are emerging all the time. New hybrid remotely operated and autonomous underwater vehicles are being developed to penetrate the most remote regions of our oceans. The development of underwater acoustic, digital, and holographic imaging allows our improved resolution of areas never before seen. Better manoeuvrability of underwater vehicles and increasing complexity and reliability of manipulative equipment allows more controlled collection of ocean samples for laboratory research.

The oceans offer a wealth of resources that would not be available without the technology to exploit them. Precious minerals such as diamonds always provide a strong incentive for underwater exploration. Many diamonds have been recovered offshore South Africa using technology developed in other areas of ocean research, and areas off the Australian coast are resorting back to the principles of physics coupled with modern positioning technologies. The offshore oil and gas industry has driven many advances in underwater technology in our quest for 'black gold'. The first offshore oil was recovered in shallow water near the coastline, but as our shallow water discoveries begin to diminish exploration moves in to deep waters.

Whether we recognise it or not the oceans play a major role in our lives and equally human activities on a global level have, and will continue to have, an impact on conservation of the ocean resources and our future economic viability. From coastline to deep sea the oceans provide our marine, subsea, and oceanic engineers with many challenges in their drive to understand the complexities of the world's oceans, and all that this diverse environment holds for us.

Whilst exploiting the oceans' resources it behoves us to foster their protection in a sustainable manner. As part of this process, *Oceans '07* aims to bring together the more experienced players with the new and developing young skills to foster the continuing allure, exploitation, and necessary protection of this environment.

Oceans '07 is a major international event and is being run under the auspices of the *Oceanic Engineering Society* (OES) and its parent organisation *The Institute of Electrical and Electronic Engineers* (IEEE). This prestigious "Oceans" conference and exhibition is being held in association with The University of Aberdeen with major support from sub-sea UK, BP, Aberdeen City Council, Fugro, Shell, Kongsberg and the Office of Naval Research. This is the first time that this event has been held in the UK and only the second time in Europe.

The long-established worldwide pedigree of *Oceans* will make Aberdeen, Scotland the focus for many leading international industrialists and academics in 2007 and our remit is to promote and disseminate knowledge, understanding and awareness of all the engineering, science, and technology of the oceans and its impact on our lives and environment.

"Marine Challenges: Coastline to Deep Sea" is the *Oceans '07* theme and will highlight the significant challenges facing marine, sub-sea, and oceanic

engineers in their drive to understand the complexities of the world's oceans. These challenges start from the shallowest waters around our coastlines and stretch to the deepest sub-sea trenches and cover not only science, technology and sub-sea exploration, but also preservation and sustainability, extraction and protection of resources (mineral and natural), policy and education, and finance and funding.

We expect a host of international speakers to address the "Challenges" theme, and to fill a wide-ranging technical programme and exhibition. If you would like to play your part in this event, we invite the world's marine policy makers, ocean scientists, sub-sea engineers, and technologists to come to Aberdeen, Scotland on 18-21 June 2007 to present and discuss the challenges for the future. Have a look at our website for more details www.oceans07ieeeaberdeen.org.

We promise to give you a traditional Scottish welcome that will leave you wanting more.

Meeting Reports

Environmental Physics Group Secretary's Report: 2005-2006 15th Annual General Meeting, 10th May 2006

Membership

The Environmental Physics group currently has 424 members (May 2006). For comparison, the membership in 2004 was 490 and 504 in 2003. This slight decline (~30 members annually) is something we are actively seeking to reduce, through new initiatives such as the Environmental Physics leaflet and the Essay competition.

The Environmental Physics Group Committee met on 7th September 2005 (12 attendees), 30th November 2005 (12 attendees) and 8th March 2006 (9 attendees). The November meeting was held at Dirac House, Bristol, which was a successful alternative venue.

Committee composition

The committee had one resignation during the year (Andrew Rowley). The current committee, with the individuals' expiry dates, is listed below. (Officers serve 3 years, and Ordinary members 4 years.)



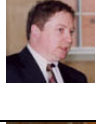









<i>name</i>	<i>status</i>	<i>start</i>	<i>expiry</i>
Karen Aplin	Co-opted	Co-opted May 2005	2007
Alastair McCartney (chairman)	officer	Elected May 2003	2006
Derek Rose	ordinary	Elected May 2005	2009
Edward Youngs	ordinary	Elected May 2003	2007
Giles Harrison (secretary)	officer	Elected May 2004	2007
Ian Colbeck	ordinary	Elected May 2005	2009
John Garland	ordinary	Elected May 2005	2009
Peter Hodgson (vice chairman)	officer	Elected May 2003	2006
Peter Hughes	ordinary	Elected May 2005	2009
Pat Goodman	ordinary	Elected May 2004	2008
Paul Williams	ordinary	Elected May 2004	2008
Ian Rutt	ordinary	Elected May 2005	2009

I am grateful to our retiring Chairman, Alastair McCartney, for all his effort and leadership. He has made outstanding contributions to our group over a long time.



Giles Harrison
May 2007

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: Dr. R. Giles Harrison		Dept. of Meteorology, The University of Reading, PO Box 243, Earley Gate, Reading, RG6 6BB. Tel: 01189 316690, e-mail: r.g.harrison@reading.ac.uk
Hon. Secretary: 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
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: K.L.Aplin@rl.ac.uk
Ms Sally Brown		School of Civil Engineering & the Environment, University of Southampton, Highfield, Southampton, SO17 1BJ, Tel: 023 8059 4652, Fax: 023 8067 7519 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. John Garland		48 Priory Orchard, Wantage, Oxon., OX12 9EL. Tel: 01235 762361, Fax: 01235 770059, e-mail: john_garland@online.rednet.co.uk
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
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Dr. Ian Rutt		Department of Geography, University of Wales, Swansea Singleton Park, Swansea, SA2 8PP Tel: 01792 602685, Fax: 01792 295955, e-mail: i.c.rutt@swansea.ac.uk
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
Prof. Edward Youngs		9 Roundwood Park, Harpenden, Herts AL5 3AB. Tel: 01582 460859 or 01525 863330, Fax: 01525 863344, e-mail: e.g.youngs@ukgateway.net

BOOKING FORM

IOP Scotland Day of Environmental Physics and AGM:

Venue: Discovery Point, Dundee, DD1 4XA

Saturday the 2nd of June 2007

From 1100 to 2300 hours

Day and Dinner

I wish to attend the whole day and dinner at a cost of £30.00.

I will/will not be accompanied by my Partner (Cost £30.00), making a total of ... person(s).

Day only

I wish to attend the day only at a cost of £10.00.

I will/will not be accompanied by my Partner (Cost £10.00), making a total of ... person(s).

Dinner only

I wish to attend the dinner only at a cost of £20.00.

I will/will not be accompanied by my Partner (Cost £20.00), making a total of ... person(s).

Personal Details:

Name:

Address:

.....

.....

I enclose a cheque for £.....

Special dietary or other requirements.....

Please return your form, together with payment, to:

Alison McLure, Institute of Physics in Scotland, 22-26 George Street,

Edinburgh, EH2 2PQ to arrive **before Monday the 14th of May 2007.**

Cheques should be made payable to the Institute of Physics in Scotland

Further information on the venue can be found at <http://www.rrsdiscovery.com/>

A selection of accommodation can be found at

<http://www.scottishaccommodationindex.com/dundee.php>

For further details contact Alison McLure, alison.mclure@iop.org,

07917855940.