Bulletin of
The Environmental Physics Group

Volume 3, No. 2 — Summer 1997

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Editorial.

This edition of the bulletin contains a much longer listing of conferences, etc. than previous editions. We intend to continue this, and hope that you will find it useful. The content of the listing reflects the interests of the editors, and the literature that we are exposed to. There are surely many more relevant conferences that we are not aware of. If you are organizing a conference that you would like listed, or are aware of one that you think will be of interest to other readers, please let us know. We can also publish short calls for papers, although we do not want the Bulletin to become dominated by this feature.

This Bulletin also sees a rearrangement of the Committee of the Environmental Physics Group, and the co-opting of a new member — we welcome Dr. Quintin Rayner. We also thank the outgoing officers for all their hard work, on behalf of all of the Committee, and look forward to working with the new officers in their new capacities. The addresses of all members of the committee are printed at the back of this Bulletin. If you have any suggestions, comments or queries regarding the running of the Group, its aims and methods, or any other relevant matter, feel free to contact the Honorary Secretary or any other committee member. And, as usual, contributions to the Bulletin are very welcome — please contact either of the editors.

This Bulletin is available on the internet at the following URL:

http://www.nerc-essc.ac.uk/~dwcp/htmls/epg_top.html

as is (belatedly) Vol. 3, No. 1. For brevity, the "http:/" part of Internet addresses is omitted through the rest of this Bulletin. If you would like to receive the full text by email, please contact D. Pearson (dwcp@mail.nerc-essc.ac.uk).

David Pearson, Ranjeev Sokhi (Editors).

The views expressed in this editorial are those of the editors, and do not necessarily reflect those of the Institute of Physics or of the Environmental Physics Group. All contacts, deadlines and dates in this Bulletin should be confirmed and not relied upon. URLs (Internet addresses) are in some instances case-sensitive, in others not so.

The Institute of Physics Annual Congress and EPG AGM, 1997 (at the University of Leeds, 24 - 27 March, 1997).

Report on Environmental Physics at the Congress.

On 26 March a one day meeting on Measuring the Environment took place as part of the annual Congress. Thirty or so attendees heard a wide ranging selection of papers from six invited speakers that comprised an interesting and informative day.


Congress & AGM

We heard about measurement techniques applied to practical questions about the atmosphere, biosphere, water bodies, and ground water, representing all the major compartments of the environment. The presentations covered novel techniques, such as the use of electrokinetics to determine aquifer permeability and ground water resources and improvements in the routine airborne surveillance of shipping lanes for oil spills and of aquatic contamination of coastal waters. Other papers were about developments in the measurement of rainfall by radar, the measurement of micrometeorological fluxes by observing optical scintillation and satellite remote sensing of vegetation and crops.

The presentations all addressed important needs of society, were of high standard and two at least attracted media interest.

John Garland

Minutes of the Annual General Meeting of the Environmental Physics Group.

University of Leeds, 26 March 1997.

Committee Members present: Richard Clarke, John Garland, Peter Hodgson, Alastair McCartney, Douglas Peirson, Edward Youngs

1. Welcome.

Vice-Chair, Douglas Peirson welcomed the attendees (approx. 30 people) to the meeting.

2. Chairman's and Bulletin Editors' Reports.

Douglas Peirson presented the reports outlining the Group's activities over the last year on behalf of the Chairman and the Bulletin Editors (see pages 4 and 6 below).

3. Election of Officers.

Nominations for the officers of the Environmental Physics Group Committee 1997-98 were:

Chair: Prof. Edward Youngs, Cranfield University
Vice-Chair: Dr. Alastair McCartney, IACR-Rothamsted
Honorary Secretary: Dr. Peter Hodgson, Institute of Hydrology

These members were elected to the posts unopposed. No new nominations for Ordinary

Members of the Committee were received and the existing Committee was re-elected. It was agreed to co-opt Dr. Quintin Rayer on to the Committee.

4. Discussion.

A discussion followed, in which the main point that arose was the role of the Environmental Physics Group. In particular the position of the Group in relation to sensitive or political environmental issues was discussed. The majority felt that it was important for the group as a whole to maintain its neutrality, and to contribute by providing the opportunities for scientific discussions on such topics to take place. The meeting was reminded that members were encouraged to contribute articles to the Environmental Physics Group Bulletin in which individual opinions could be expressed. A further point raised was the future format of the meeting at the IoP Annual Congress, in particular how to get more students involved. This will be discussed at the next Committee Meeting.

5. Close.

The in-coming chair, Edward Youngs, led a vote of thanks to the outgoing officers for their sustained and highly valued efforts over the last few years, a factor which has played a large part in the success of the Group.

Peter Hodgson
Honorary Secretary

Chairman’s Report, 1996–97

This has been another good year for the Environmental Physics Group. The Committee organised a number of meetings. As part of the 1996 Physics Congress held at Telford the EPG organised a one day meeting on Physics and the Environment: Processes and Applications. Also, Professor John Monteith presented one of the plenary lectures titled What is Environmental Physics? which generated some controversy. In July a very successful international meeting on Urban Air Quality was held at the University of Hertfordshire. In June a few members availed themselves of the opportunity of a visit to Dax in Power Station, organised by the EPG. In December the new Headquarters of the Institute of Physics was opened by Her Majesty the Queen. The EPG was asked to mount one of six exhibits on different aspects of how “Physics Benefits Mankind” to be inspected by the Queen. I had the honour to man the EPG’s exhibit and explain to the Queen how satellite data are being used to provide information required for developing a Water Strategy for Zimbabwe. In February the EPG organised a very interesting half day meeting on Environmental Physics and Risk in Relation to the Decommissioning of Offshore Platforms at the Institute of Physics Headquarters.

Again the Education Sub-Committee has had a busy and fruitful year. They are developing a textbook on Environmental Physics that is suitable for sixth-formers and their teachers, to complement the Environmental Physics module that is now available to some ‘A’-level Physics students. After all their hard work it was very gratifying to hear that over a thousand students had opted to take the Environmental Physics module in the first year it was available.

Finally, as I step down from the Chair of the Committee, I would like to thank all the Members of the Committee and particularly the Honorary Secretary, Alastair McCartney, for all their hard work and many useful ideas, which have ensured that the EPG runs smoothly and, I consider, successfully. I wish the new Chairman, Ed Youngs, the best of luck.

John B. Stewart
Outgoing Chair

Comment from the New Chairman.

I have been a member of the Committee of the Environmental Physics Group for six years and take over the Chair now the group has been in existence for seven years and is well established. Being retired from a career in research with the Agricultural Research Council and its successors, I continue my research interests on the physics of water and solute movement in soils and on its applications at Silsoe College, where I am a Visiting Professor in the School of Agriculture, Food and Environment of Cranfield University. Soil physics is just one challenging field of activity in environmental physics. The Environmental Physics Group is for everyone whose activities impinge on any aspect of environmental physics.

A feature of the Group is the diverse interests of its members, each having his or her own idea of what environmental physics entails. Professor John Monteith’s considered opinion, as given in his book Principles of Environmental Physics and argued in his plenary lecture at the 1996 Physics Congress, is that environmental physics is “the measurement and analysis of interactions between organisms and their physical environment”. That would seem to exclude the processes that form the environment for the organisms and that affect the interactions, but could include some aspects of biophysics. In contrast to John Monteith’s definition is that of E. Boeker and Rein van Grondelle who state in their book Environmental Physics that it is “the physics concerning the identification and measurement of environmental problems”. There is an obvious difficulty here for anyone enquiring about the subject when two basic textbooks on environmental physics cover quite different topics. The definition given in the Group’s introductory leaflet was “the application of the principles of physics to environmental processes and problems”, which may be considered by some to be too broad and begs the question as to how far the subject encompasses meteorology, hydrology, oceanography and geophysics. Hopefully a leaflet which has just been prepared by some of the committee members will be more helpful.

It is undisputed that physics has a major role to play in solving many of the environmental problems facing the world, and it remains the aim of our Group to heighten the awareness of this, both to members of the Institute and to the general public. Through the Education Group we focus particularly on schools. It is good that many ‘A’-level students can now study parts
of environmental physics. The leaflet on environmental physics mentioned above will be
distributed to schools with the intention that this will enhance the interest in the subject
and an awareness of the possibility of pursuing some aspect of environmental physics as a career.

Over the years of its existence the Environmental Physics Group has organised meetings,
mostly jointly with other Groups and Societies where interests overlap. For three years we
have participated at the Annual Physics Congress, and this we intend to continue to do, not
necessarily every year. For the committee of the Group to arrange useful meetings for our
members who have such a wide field of interests, we need feedback, so please communicate
your views and ideas to the committee members. Suggestions of subjects for meetings and of
speakers are always welcome. The Institute now has a very comfortable Headquarters on
Portland Place for members, that houses an impressive lecture theatre in which we can hold
our meetings at a reasonable cost. The Group also arranges visits to places of interest —
again, suggestions of possible venues are always welcome.

E.G. Youngs
Incoming Chair

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Bulletin Editors’ Report.

Over the last several years changes have been introduced to the Bulletin. Apart from the change
in the format and the name from the “EPG Newsletter”, the editors have encouraged research
articles and news/information items from the membership. In this respect we have seen some
success and articles are now being forwarded regularly. This we would like to encourage even
more. As there is increasing pressure on research organisations to attract more and more
external income the editors felt that the Bulletin could help by having a section on ‘Research
Funding News’, covering national as well as international sources of funding. This we hope
has been of some help to the membership. In addition to these changes a regular item on the
Internet has been introduced to inform the readership of some relevant and interesting WWW
sites. By having two editors working together it has been possible to introduce a wider range of
topics and this we will continue to do. None of this is possible without the help of the
membership and we would like to take this opportunity to pass on our sincere thanks.

Ranjeet S. Sokhi and David Pearson.

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Research Notes.

Douglas Peirson* — The Radioactivity from Nuclear Weapon Tests Used as
a Tracer of Environmental Processes.

For some decades after 1950 it was necessary to observe and measure the radioactive debris
from nuclear weapon explosions, that arrived within the human environment. Knowledge of
the quantity and type of radioactivity could be used to estimate the hazard to human beings;
that of the distribution in space and time could be used to determine the environmental
processes involved and to guide the prediction of effects in the future.

The debris was injected into the troposphere by smaller explosions and into the stratosphere
by the large ones. The radioactivity consisted of a large variety of fission products, having a
wide range of decay times, and other radioactive material.

What follows is a historical sketch of the transfer of radioactive material, measured as specific
radio-isopes, from the stratosphere to the troposphere, which are separated by the
tropopause ranging from ~11 km above ground level at the poles to ~18 km at the equator.
The tropopause, defined as the level where the temperature gradient changes from negative
below to zero or slightly positive above in the stratosphere, is a changeable feature exhibiting
gaps, particularly at mid-latitude. Then there was fallout onto the land and sea and hence into
the biosphere, where the radioactivity was incorporated into plants and animals, and
eventually into human beings.

Stratosphere
The radioactive debris injected into the stratosphere, which received the overwhelming
proportion, was measured directly, after sampling from balloons and aircraft. Of more
importance to the human environment was the behaviour of the radioactivity when it had
returned through the troposphere to the Earth’s surface. Two significant features have
emerged, based upon observations within the troposphere near ground level.

There was a marked peak in the concentration near ground-level of long-lived radioactivity
(cesium-137, half-life 30 years) in air and rain each year in the spring [1]. In addition the
concentration and deposition of radioactivity (strontium-90, 28 years) in rain peaked at mid-
latitude (~40°) with a minimum at the equator [1]. These observations applied essentially to
the northern hemisphere where the bulk of the nuclear explosions had occurred. A possible
explanation of these features lies in the subsidence of air over the pole in mid-winter bringing
the debris into the lower stratosphere. From there it would settle through the tropopause with
a preference for its mid-latitude gap.

Two other characteristics of the stratosphere were uncovered by observation of the
radioactive debris. Mean residence time in the (lower) stratosphere was ~16 months.

* Formerly at the Environmental and Medical Sciences Division, AERE, Harwell. Chairman then Vice-Chairman

Bull. EPG 3, No. 2, 1997
Research Notes

Troposphere
The mean residence time in the troposphere was typically one month. This was similar to the transit time around mid-latitudes. The "washout factor" was of the order of 700, expressed as the ratio of radioactivity in equal masses of rain and air [1]. For dry deposition, the "dry deposition velocity" was typically 2mm/sec (for particle sizes less than a micron), given by the surface deposition rate divided by the volumetric concentration in air near ground level.

Of the radioactivity injected directly into the troposphere it was possible to link the trajectories with routine meteorological data [1].

Land (and sea).
The rate of deposited radioactivity exhibited the seasonal and latitudinal variation described above. The accumulated radioactivity could be measured directly or computed from the incremental measurements: the measured amount of global deposition can be compared with the amounts injected into the atmosphere [5].

Biosphere
Plants, animals and humans were exposed to the fallout of the radioactive debris: as with the atmosphere the transfer across interfaces could be studied for the significant fission products. Plants (including foodstuffs) took up current deposition as well as that accumulated in the soil [4] (or water). Animals and humans were exposed to external radiation from the ground, by inhalation of air and by ingestion of food. For humans the content was recorded, with time, of long-lived fission products such as caesium-137 [5] and stronitium-90 in bone [6].

Overall, the history of the passage of radioactive debris through the environment demonstrates, quantitatively, the interaction of the various compartments. It is interesting to attempt a simple estimate of the throughput. Thus the total production of (say) caesium-137 in the atmosphere would have been dispersed according to time, season and latitude in the manner indicated. A fraction of the order 10^-4 had appeared in the human body in the UK by 1970. The radiation dose from this body burden would have been a small fraction of that from the natural content of potassium-40 [5].

References
This is a restricted list of references, chosen for accessibility. However, the citations herein will extend the range of reference.

Education/Funding

Education.
The GLOBE Programme — Global Learning and Observations to Benefit the Environment.

"The GLOBE Programme is a hands-on environmental science and education programme that joins students, educators and scientists from around the world in studying the global environment.

Age-appropriate GLOBE educational materials have been developed by international environmental educators for use in GLOBE schools. GLOBE teachers attend regional workshops to learn how to teach the measurement procedures, how to use the GLOBE data reporting technology, and how to use GLOBE images as instructional materials. Over 2,500 US schools are participating in the GLOBE programme."

For more information contact The GLOBE Programme, 744 Jackson Place, Washington DC 20503, USA. Email info@globe.gov, internet www.globe.gov/.

The Air Quality Programme of the UK's Atmospheric Research and Information Centre (ARIC).

This covers three main areas: school acid rain surveys; production and distribution of educational resources; and teaching and student supervision in higher education institutes. For full information on ARIC and this programme, contact ARIC, Dept of Environmental and Geographical Sciences, Manchester Metropolitan University, Chester Street, Manchester, M1 5GD, UK. Tel (0161) 247 1990, fax (0161) 247 6332, email aric@mmu.ac.uk, internet www.doc.mmu.ac.uk/arie/ariehome.html.

Research and Other Funding.

Public Understanding of Science — Grants.

Seed grants of up to £3000 are considered twice a year, with an additional round in connection with SET98. Closing dates are 31 October (and 31 March), plus 30 September for SET98 grants.

Development grants of up to £20,000 are considered, but the closing date has passed (30 June).

More information is available from Cheryl Davies, Public Understanding of Science Grants,
Joint Research Equipment Initiative — Call for Proposals.

The following ad was published in the THES, 7 March 1997.

There is to be a second Joint Research Council/Funding Council/DENI research equipment initiative. The aim is to contribute generally to the physical research infrastructure and to enable high-quality research to be undertaken, particularly in strategic science and technology priority areas such as the generic Foresight priorities. Funds will be made available to support equipment bids to go with funding from other external sponsors of research (e.g. industry, charities, Government bodies). The initiative will be run as two competitions:

**Competition A** — to fund bids for scientific and engineering research equipment with a total cost of up to £200,000. A sum of £5 million has been set aside for this competition. It is to be funded and run through four of the Research Councils: BBSRC, EPSRC, MRC and NERC. Applications should be made to the most appropriate of these four Research Councils.

**Competition B** — to fund bids for research equipment with a total cost of over £200,000. At least £16 million has been set aside for this competition, which HEFCE, HEFCW, SHEFC and DENI are funding. Applications should be sent to the most appropriate of the six Research Councils listed below. In this competition, running costs can be bid for (see guidelines) but the £200,000 threshold applies to the cost of the equipment only.

Both competitions are open to researchers in all UK higher education institutions funded by either a Higher Education Funding Council or the Department of Education for Northern Ireland. Applications will be peer reviewed by the Research Councils. The same proposal may not be submitted to more than one Research Council.

The closing date for receipt of applications is 31 July 1997. Guidelines are available now and should be sought from the relevant Research Council/Funding Council home page on the website. The JREI application form is available from the Research Council home pages.

Contacts are:

**BBSRC:** Dr. Colin Miles, tel (01793) 413359, email colin.miles@bbsrc.ac.uk

**EPSRC:** Mr. John Farrow, tel (01793) 444111, email john.farrow@epsrc.ac.uk

**ESRC:** Mr. Martin Kender, tel (01793) 413017, email martin.kender@esrc.ac.uk

**MRC:** Dr. Sue Cooper, tel (0171) 636 5422 x6447, email susan.cooper@headoffice.mrc.ac.uk

**NERC:** Dr. David Brown, tel (01793) 411797, email dab@wpo.nerc.ac.uk

ESF Exchange Grants — European Ice Sheet Modelling Initiative (EISMI)

"Exchange grants are offered during 1997 within the ESF Scientific Programme 'European Ice Sheet Modelling Initiative (EISMI)' to scientists wishing to initiate or to further develop a collaborative project related to EISMI activities."

For information on how to submit a proposal, contact Philippa Pirra, EISMI/ESF Foundation, 1 Qual Lezay-Marne, 67080 Strasbourg, Cedex, France. Tel: +33 3 88 76 71 29, fax: +33 3 88 37 05 32, eismi@esf.org; Internet: www.esf.org/eismi or see page 35 of The Journal of the European Science Foundation (ESF Communications), No. 36, April 1997. The next deadline is 15 October 1997.

ESF Travel Grants and Study Visits — Programme in Plant Adaptation (1997–2001)

"Grants for short visits for doctoral students and for visits for senior scientists are being offered to enable scientists working in the field of plant adaptation to travel to a laboratory in another European country. For more information, contact Joanne Dalton, European Science Foundation, 1 Qual Lezay-Marne, 67080 Strasbourg, Cedex, France. Tel: +33 3 88 76 71 22, fax: +33 3 88 37 05 32, email j dalton@esf.org. Or see page 35 of The Journal of the European Science Foundation (ESF Communications), No. 36, April 1997. The deadline for visits to begin from 1 January 1998 is 1 October 1997."
Framework IV: INCO-DC. Research and Technological Development, Including Demonstration, in the Field of Cooperation with Third Countries and International Organisations (INCO): AREA C.

“Area C” is scientific and technological cooperation with developing countries. Relevant sectors are:
- Sustainable management of natural resources
- Sustainable improvement of agricultural and agro-industrial production
- Health
- Information technologies
- Biotechnology
- Materials and Production technologies


An information pack on INCO-DC, including application forms, etc., is available from the European Commission, DG XII/B-4, INCO-DC, (SDME), Rue de la Loi/Wetstraat 200, B-1049 Brussels. Fax +32 2 296 6252, email inco-dc@dg12.cec.be, internet www.cordis.lu/cgi/build_doclist.pl
(Scroll down to INCO and select “Information package for Part C”).

Proposals should be sent by post or courier service to the Commission postmarked no later than 11 September 1997 (12.00 local time), or delivered by hand no later than this date and time at the address given above, or to one of the offices of the Commission, in which case a date-marked acknowledgement will be issued.


“Area A” is scientific and technological cooperation in Europe, “A2” is cooperation with the countries of central and eastern Europe (CEE) and the new independent states of the former Soviet Union (NIS). Relevant sectors are:
- Environmental protection
- Environmental and health consequences of ionising radiation
- Health research activities
- Non-nuclear energy (demonstration projects)
- Non-nuclear energy (research projects): fossil fuels
- Advanced communications and telematics applications
- Information technologies

Events, Meetings, Conferences.

EPG Events and visits.

Visit to Alcan Recycling, Warrington, Cheshire.

Date and time of visit: 24/07/97, 3 pm to 5 pm.
Alcan Recycling's dedicated aluminium can recycling plant, the first of its kind in Europe, was opened in Warrington, Cheshire, in November 1991. The plant produces ingots from used beverage cans; these ingots subsequently being rolled into sheet at another mill and then supplied to can makers to be made into cans again. With a capacity of over 60,000 tonnes each year, there is enough capacity to recycle all the aluminium cans collected in the UK for the foreseeable future. Alcan's capital investment in the plant alone amounted to some £28 million, of which some £5 million was used to install state of the art emission abatement equipment to minimise the impact on the environment.

To take part in this visit please fill in the form on page 28 of the Bulletin.

Other events in the pipeline — watch this space!

- Matra Marconi, Bristol: watch construction of the Envisat Earth-observation satellite in Europe's largest integration facility (necessary because Envisat is as big as a bus stood on end);
- The Building Research Establishment;
- The Transport and Road Research Laboratory;
- Environmental Physics Summer School, Summer 1998: residential meeting for school teachers, EPG Education Sub-Committee and the Institute of Physics.

Other Items of Interest.

Main Society Meetings of the Royal Meteorological Society.

Wednesday Meetings — Normally held at 2.00 pm in Lecture Theatre 1, Blackett Laboratory, Imperial College, Prince Consort Road, London SW7.

15 October: Urban Meteorology, organised by Dr. S. Bolcher, University of Reading.
19 November: Meeting to coincide with Bjerknes' Birth Centenary, organised by Dr. M.A. Pedder, University of Reading.
10 December: Broadcast Meteorology, organised by Dr. A. Eccleston, The Weather Department Limited.

Saturday Meetings — pre-registration is advised. Contact the RMS to arrange this.

15 November: Weather and Aviation Accidents. An all-day meeting in Lecture Theatre 1, organised by Emeritus Professor L. Symons and Dr. A. Perry, University of Wales, Swansea.
25 April 1998: Weather, Climate and Horticulture. An all-day joint meeting with the Royal Horticultural Society in Lecture Theatre 1, organised by Dr. J. Mayes, Roehampton Institute, London.


IEEE Geoscience and Remote Sensing Society, 2610 Lakeway Drive, Seabrook TX 77586, USA. Tel +1 210 291 9222, fax +1 210 291 9224, email tsefin@phoenix.net, Internet www.phoenix.net/~tsefin/igarss/.


A.H. El-Shaarawi, National Water Research Institute, PO Box 5050, Burlington, Ontario, Canada L7R 4A6. Tel +1 905 336 4584, fax +1 905 336 4989, email abdel.el-shaarawi@cw.ca.


Miss S.K. Newcombe, Summer School Secretary, Dundee Centre for Coastal Zones Research, Department of Applied Physics and Electronic and Mechanical Engineering, University of Dundee, Dundee, Scotland, DD1 4HN. Tel (01382) 344933, fax (01382) 345415, email s.k.newcombe@dundee.ac.uk


Indian Environmental Society, U-112, (3rd Floor), Vikas Marg Shaktipur, Delhi—110 092, India. Tel +91 11 222 3311 or +91 11 245 0749, fax +91 11 331 7301.


Dr. Ivo Kupka, European Forest Institute, Tarikatu 34, FIN-80100 Joensuu, Finland. Tel +358 9 1911, fax +358 73 124 393, email kupka@efi.joensuu.fi.

SPSS97 General Secretariat, CASI, #818-130 Slater St., Ottawa, Ontario, Canada. Email casi@casi.ca.


V.A. Koptyug. Email evag@ifor.krasnoyarsk.su, tel +7 3832 354 846.

Seventh International Symposium on Paleoclimatology.

J. Merkt. Fax +49 511 643 3667, email merkt@ gate. bg r.de 400.de.


Prof. Dr. Carmenida Cavaco, Centro de Estudos Geograficos, Faculdade de Letras, Alameda da Universidade, 1699 Lisboa Codex, Portugal. Tel +351 1 796 5469, fax +351 1 793 8690, email ceg@mail.telepac.pt.


Prof. Themistocles Lekkas, Conference Secretariat, 10 Aegean Str., GR 151 22 Maroussi, Greece. Tel/fax +301 80 51 824.


Prof. Dr. B.W. Flemming, Senckenberg Institute, Schleusenstrasse 39a, 26382 Wilhelmshaven, Germany. Fax +49 4421 947 5 50, email liebeszeit@ terramar.e fh-wilhelmshaven.de.


Prof. J. McManus, Dept. of Geology, University of St. Andrews, St. Andrews, Fife, KY16 9ST, Scotland. Tel (01334) 476161, email j.mcm anus@st-andrews.ac.uk.


International Water Resources Association, 1101 West Peabody Drive, Urbana, IL 61801-4723, USA.


RSS97, Department of Geography, University of Reading, Whiteknights, Reading, RG6 6AB. Tel (0118) 931 8733, fax (0118) 975 5865, email rss97@ geography. rcg.ac.uk, internet www. rcg.ac.uk/AcaDepts/sg/Geog/pages/rss97/rss97.html.


Major Events Department, British Association, 23 Savile Row, London, W1X 2NB. Tel (0171) 973 3076, fax (0171) 973 3051.


Michael I. Biggerstaff, Dept. of Meteorology, Texas A&M University, College Station, TX 77843-3150, USA. Tel +1 409 847 9090, fax +1 409 862 4466.

Includes a special session on Atmospheric Electricity, same place and dates.

William H. Beasley, Committee on Atmospheric Electricity, School of Meteorology, University of Oklahoma, Norman, OK 73019, USA. Email wbeasley@ou.edu.
Events


Zena Hickinson, AB Technology Transfer, Dept. of Civil Engineering, The University, Leeds, LS2 9JT. Tel (0113) 233 2308, fax (0113) 233 2243, email z.hickinson@leeds.ac.uk.


Organised by the Static Electrification Group, co-sponsored by the Environmental Physics Group and the IChemE.

Care of the Environment is an issue which is constantly in the news. Legislation and economic pressures are increasing year by year. Electrostatics has an important role in improving the environment. This meeting will provide an opportunity for the exchange of information and ideas regarding electrostatics in environmental cleanliness.

It is hoped that the following topics will be included:
- Precipitation of airborne pollution;
- Removal of pollution in liquids;
- Recycling of used materials;
- Control of domestic pollution — dust, mites, etc.;
- Product/packaging design to inhibit dust deposition;
- Relevant codes of practice and standards.

The deadline for submissions has passed. To register, please contact the Institute of Physics.


The Conference Manager, ERP Environment, PO Box 75, Shipley, West Yorkshire, BD17 6EZ. Tel (01274) 530408, fax (01274) 530409.

Air Pollution ’97 — “Modelling, Monitoring and Management of Air Pollution”. 16–18 September 1997, Bologna, Italy.

Helen Fisher, Wessex Institute of Technology, Ashurst Lodge, Ashurst, Southampton, SO4 7AA, UK. Email hfisher@wessex.witcmi.ac.uk, internet www.witcmi.ac.uk/.


The Conference Manager, ERP Environment, PO Box 75, Shipley, West Yorkshire, BD17 6EZ. Tel (01274) 530408, fax (01274) 530409.


Professor Nicola Senesi, XIII ISEB, Instituto di Chimica Agraria, Universita di Bari, Via Amendola 165/A, 70126 Bari, Italy. Tel +39 80 544 2853, fax +39 80 544 2813, email nsenesi@mail2.clio.it.


Steve Neeck: tel +1 301 286 3017, email Steve.Neeck@gsfc.nasa.gov.


Helen Fisher, Wessex Institute of Technology, Ashurst Lodge, Ashurst, Southampton, SO4 7AA, UK. Email hfisher@wessex.witcmi.ac.uk, internet www.witcmi.ac.uk/.


Conference Organising Committee, ECAM-97, Deutscher Wetterdienst, Frankfurter Strasse 135, 63067 Offenbach, Germany. Fax +49 69 8062 2488.

Fifth International Congress of the Brazilian Geophysical Society. Sao Paulo, Brazil, 28 September–2 October 1997.

Icaro Viorello or Antonio Padilha, tel +55 123 25 6784 or +55 123 25 6807, fax +55 123 25 6810, email icaro@dge.inpe.br or padilha@das.inpe.br.


Madeline Pooley, Am Kavalierssand 31, D-64295 Darmstadt, Germany. Tel +49 6151 807 606, fax +49 6151 807 612.


Bashir Saleh: tel +9 203 560 2578, fax +9 203 560 2915, email ruan@syria.org, or Nader Nada: tel +9 730 995 1626, fax +9 730 993 3729, email nnada@osf1.gmu.edu. Internet www.fccu.eun.org/WWW/conference/aast.html or www.cesr.gmu.edu/newa.html.

ECOSUD 97 — Ecosystems and Sustainable Development. Castle of Pensciosa, Spain, 14–16 October 1997.

Liz Kerr, ECOSUD 97, Wessex Institute of Technology, Ashurst Lodge, Ashurst, Southampton, SO40 7AA. Fax (01703) 292853, email liz@wessex.witwmi.ac.uk.


Internet www.cnes.fr/actualites/OCEAN97/index.uk.html.


David Easterling, NOAA/NCDC, 151 Patton Avenue, Asheville, NC 28801, USA. Tel +1 704 271 4311, fax +1 704 271 4328, email deasterle1@ncdc.noaa.gov.

The First World Climate Research Programme (WCRP) International Conference on Reanalyses. Silver Spring, Maryland, USA, 27–31 October 1997.

International GEWEX Project Office, Suite 1210, 1100 Wayne Avenue, Silver Spring, MD 20910, USA. Tel +1 301 427 2089 ext. 33, fax +1 301 427 2222, email gewex@cais.com.


20.


ERIM/Geologic Conference, PO Box 134001, Ann Arbor, MI 48113-4001, USA. Fax +1 313 994 5123, email wallman@erim.org, Internet www.erim.org/CONF/FRS.html.


Prof. Abha Lakshmi Singh, Department of Geography, Aligarh Muslim University, Aligarh 202002, India.


UNFCCC Secretariat, PO Box 260 124, D-53153 Bonn, Germany. Tel +49 228 815 1000, fix +49 228 815 1999, email secretariat@unfccc.de, Internet www.unfccc.de/index.html.

First International Conference on Asian Monsoon and Pollution Over the Monsoon Environment. New Delhi, India, 2–5 December 1997.

T.N. Krishnamurti, Dept. of Meteorology, Florida State University, Tallahassee, FL 33306-3034, USA, tel +1 904 644 2210, fax +1 904 644 9642; or R.K. Datta, 48 A, Pkt. C, Gangotri Enclave, Alaknanda, New Delhi-1100019, India, tel +91 11 6448155, fax +91 11 4699216.


There are so many parallel conferences, that we can only recommend the original reference: Bull. Amer. Meteor. Soc., 78, 557–565–563 (1997).


This conference covers fusion of Earth data: merging point measurements, raster maps and remotely sensed images. Fusion Conference Office, Groupe Télédétection & Modélisation.


21.
Ecole des Mines de Paris, BP 207, F-06904 Sophia Antipolis cedex, France. Fax +33 4 91 95 75 35, email fusion@cenerg.cma.fr, internet www.datafusion.cma.fr/.

GCTE-LUCC Science Conference (Global Change in Terrestrial Ecosystems—Land Use/Cover Change). Barcelona, Spain, 14–18 March 1998.

Will Steffen, GCTE Core Project Office, CSIRO Division of Wildlife and Ecology, PO Box 84, Lynchem, ACT 2602, Australia. Fax +61 1 241 2362, email wls@cbr.dwe.csiro.au.


C. Caseldine, Department of Geography, University of Exeter, Exeter EX4 4QJ. Tel (01392) 263263, fax (01392) 263108.


ASPRS, 5410 Grosvenor Lane – Suite 210, Bethesda, MD 20814, USA. Tel +1 301 493 0290, or call the RTI on +1 970 223 3770.


EGS Office, Max Planck-Str. 1, 37191 Katenburg-Lindau, Germany. Email egse@gisx1.mpae.gwdg.de.

Third International Symposium on Spatial Accuracy Assessment in Natural Resources and Environmental Sciences. Québec City, Canada, 20–22 May 1998.

3rd Spatial Accuracy Symposium, Centre de recherche en géomatique, 0722 Pavilion Casual, Université Laval, Québec (Québec) G1K 7P4, Canada. Tel +1 418 656 5491, fax +1 418 656 3607, email spatial.accuracy@scg.ulaval.ca, internet www.crg.ulaval.ca. Deadline for abstracts is 15 August 1997.

Events


Marie Colton, Office of Naval Research, Code 321SR, 800 N. Quincy Street, Arlington, VA 22217-5000. Tel +1 703 696 1291, fax +1 703 696 2007.


27th International Symposium on Remote Sensing of Environment, Norwegian Space Centre, PO Box 113 Skøyen, N-0212 Oslo, Norway. Fax +47 22 51 18 01, email and Internet israe@spacecentre.no www.spacecentre.no

Deadline for abstracts is October 15, 1997.


Dr. Bruce Webb, Dept. of Geography, University of Exeter, Amory Building, Rennes Drive, Exeter, Devon, EX4 4RJ. Fax (01392) 263342, email b.w.webb@exeter.ac.uk.


Five parallel sessions are planned, with poster sessions and an exhibition of related products and services. Invited lectures on all the main topics will be given by recognised experts from around the world, and the remainder of the formal presentations will be from submitted papers. A series of workshops and tutorials is also planned.

The submission of papers in the following topic areas is invited:

- Aerosol Physics
- Aerosol Chemistry
- Atmospheric Aerosols
- Indoor Aerosols
- Combustion Aerosols
- Bioaerosols
- Nuclear Aerosols
- Health Related Aerosols
- Ultrathine Aerosols
- Coarse Dusts
- Environmental Effects
- Standardisation
- Gas Cleaning & Separation
- Instrumentation
- Aerosol Generation
- Sampling

Events

There will be a second and final call for papers in the autumn of 1997, and the closing date for receipt of abstracts is 31 January 1998.

The Aerosol Society, PO Box 34, Portishead, Bristol, BS20 9NR, UK. Tel (01275) 843357, fax (01275) 817428, email admin@aerosol-soc.org.uk, internet www.aerosol-soc.org.uk.

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Robert Rauber, Dept. of Atmospheric Sciences, University of Illinois, 105 S. Gregory Avenue, Urbana, IL 61801. Tel +1 217 333 2835, fax +1 217 244 4393, email r-rauber@uiuc.edu, internet www.atmos.uiuc.edu/cloud_phys_conf/cloud_phys_conf.html.

Deadline for abstracts is 1 March 1998.

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Patricia Quinn, NOAA/PME/OCRD, Building 3, 7600 Sand Point Way NE, Seattle, WA 98115, USA. Fax +1 206 526 6744, email quinn@pmel.noaa.gov, internet saga.pmel.noaa.gov/cacgp98/.

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Tony Grainger, Box 9006 University Station, University of North Dakota, Grand Forks, ND 58202, USA. Tel +1 701 777 3170, fax +1 701 777 5032, email grainger@aeo.und.edu. Deadline for abstracts is 5 January 1998.

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Susan Boland, Climatic Research Unit, University of East Anglia, Norwich, NR4 7TJ. Tel (01603) 456161, fax (01603) 507784, email s.boland@uea.ac.uk.

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Events/Publications

Workshop on the Assessment of EMEP Activities Concerning Heavy Metals and Persistent Organic Pollutants and their Further Development. Moscow, Russia, 24–26 September 1998.

Marina Vasygina, Meteorological Synthesising Centre East, Kadrova str. 8.K.1, R-117 292 Moscow, Russian Federation. Tel +7 095 124 4758, fax +7 095 310 7093.

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Val Johnston-Jones, Society of Petroleum Engineers, 4 Mandeville Place, London, W1M 5LA. Tel (0171) 487 4230, fax (0171) 487 4229, email vjohnston-jones@london.spe.org.

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A workshop to bring remote sensing scientists and decision makers together. ENAMORS, Finnish Geodeitise Institute, Geodeetuirinte 2 (PL 15), FIN-02431 MASALA, Finland. Tel +358 9 295 550, fax +358 9 295 55200, email enamors@fqi.fi, internet neutrino.pc.helsinki.fi/joumi/ENAMORS/ws97.html.

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Eighth Conference on Mountain Meteorology. Somewhere in the USA, sometime in 1998 — to be determined.

Teddie Keller, NCAR, PO Box 3000, Boulder, CO 80303, USA. Tel +1 303 497 8428, fax +1 303 497 8401, email tkeller@ncar.ucar.edu.

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Books, Reports and Other Publications.

The TIGER’S Tale — Achievements of the NERC Research Programme Terrestrial Initiatives in Global Environmental Research.

"TIGER was established as a research programme of the Natural Environment Research Council to study global environmental changes at the land surface. TIGER engaged some 300 researchers at 60 different universities and research institutes in its five years of activity at a cost of over £20 million."

On the cover of this booklet is a beautiful photograph of a running tiger. Two nodes are clearly visible in its undulatory motion: one in the torso, another in the tail.

Publications

Available from NERC, Polaris House, North Star Avenue, Swindon, SN2 1EU. Tel (01793) 411742.

Understanding Our Planet — The International Council of Scientific Unions (ICSU).

For more information or a copy of the brochure, contact International Council of Scientific Unions, 51 Blvd. de Montmorency, Paris 75016, France. Tel +33 1 4355 0329, fax +33 1 4288 9431, email icsu@mcp.jussieu.fr.

DATA!

Radiosonde data, Ozone hole data and ECMWF data are available from the British Atmospheric Data Centre.

For more information, see www.badc.rl.ac.uk/.


Available from the Global Environmental Change Programme, Mantell Building, University of Sussex, Brighton, BN1 9RF. Tel (01273) 678935, fax (01273) 604483, email gec@sussex.ac.uk, internet www.sussex.ac.uk/Units/gec.

Environmental Data — A Key Resource. Catalogue of NERC’s data holdings.

The Natural Environment Research Council, Polaris House, North Star Avenue, Swindon, Wiltshire, SN2 1EU. Tel (01793) 411500.

SCOPE Newsletter — Scientific Committee on Phosphates in Europe.

Current issue discusses "The impact of agricultural phosphorus", "How does phosphorus move?", and other things. To get on the mailing list, contact E.C.U. (European Communications Unit), 20 rue de l’Arcade, 75008 Paris, France. Tel +33 1 44 94 80 70, fax +33 1 44 94 81 01, email scu@net.asi.fr, internet www asi.fr/scope.

Publications/Other Items/Committee

Free access to journals online.

HEFCE has bought a 3-year licence to IDEAL, the Academic Press online library. If you are a member of a HEFCE-funded UK academic institution, you now have full access rights to this online library. Journals include Waste Management and Research, Theoretical Population Biology, and many more. For full details of how to login to IDEAL, contact your university's or college's librarian. See also www.janet.idealibrary.com, or contact S J Haggis at Academic Press: shaggis@apuk.co.uk.

Other Information.

Send faxes free using the Internet.

This service is available at the following URL, which also contains instructions. There do not appear to be any strings attached, but the fax as received will have an advertisement attached to it. Also, there is a limit on the usage by any user in each hour. [Use it regularly — Ed.]

www.tpc.int/tpc_home.html

The Committee of the EPG.

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<th>Chair:</th>
<th>9 Roundwood Park, Harpenden, Herts. AL5 3AB. Tel. (01522) 640859 or (01522) 863300, fax (01522) 863001, email <a href="mailto:e.g.youngs@cranfield.ac.uk">e.g.youngs@cranfield.ac.uk</a></th>
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<td>Prof. Edward Youngs</td>
<td></td>
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<tr>
<td>Vice-chair:</td>
<td>Dept. Of Crop and Disease Management, Institute of Arable Crops Research, Rothamsted, Harpenden, Herts. AL5 2QJ. Tel (01522) 763133, fax (01582) 760981, email <a href="mailto:alastair.mccartney@rbcr.ac.uk">alastair.mccartney@rbcr.ac.uk</a></td>
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<td>Dr. Alastair McCartney</td>
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<td>Honorary secretary:</td>
<td>BIRAL, PO Box 2, 1 Beach Road West, Portishead, Bristol BS20 9JB. Tel (01275) 817077, fax (01275) 817277, email <a href="mailto:p_hodgson@biral.com">p_hodgson@biral.com</a>.</td>
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<td>Dr. Peter Hodgson</td>
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<td>Editors:</td>
<td>Environmental Systems Science Centre (ESSC), Whiteladies, University of Reading, Reading, Berkshire. Tel. (0118) 987 5133, email <a href="mailto:dwp@ncl.nerc-essc.ac.uk">dwp@ncl.nerc-essc.ac.uk</a>.</td>
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<td></td>
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<td>Dr. R.S. Solhi</td>
<td>Dept. Of Environmental Sciences, The University of Hertfordshire, College Lane, Hatfield, Herts. AL10 9AB. Tel. (01707) 254520, fax (01707) 255528, email <a href="mailto:r.s.solhi@herts.ac.uk">r.s.solhi@herts.ac.uk</a></td>
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<td>The Environment Agency, Rivers House, 21 Park Square South, Leeds LS1 2QG. Tel. (0113) 2440191</td>
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<td>Dr. Quintin Rayer</td>
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<td>Dr. Neil Roberts</td>
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<td>Dr. John B. Stewart</td>
<td>34 Tavistock Avenue, Southampton, SO15 5NP.</td>
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<tr>
<td>Ms. Alexandra Wilson</td>
<td>Research and Development, Ove Arup &amp; Partners, 13 Fitzroy Street, London W1P 6BQ. Tel. (0171) 465 3045, fax (0171) 465 3669, email <a href="mailto:alexandra.wilson@arup.com">alexandra.wilson@arup.com</a></td>
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**Form.**

**Alcan's Recycling Plant, Warrington**

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Please return this form to: Alexandra Wilson, Research and Development, Ove Arup and Partners, 13 Fitzroy Street, London W1P 6BQ.