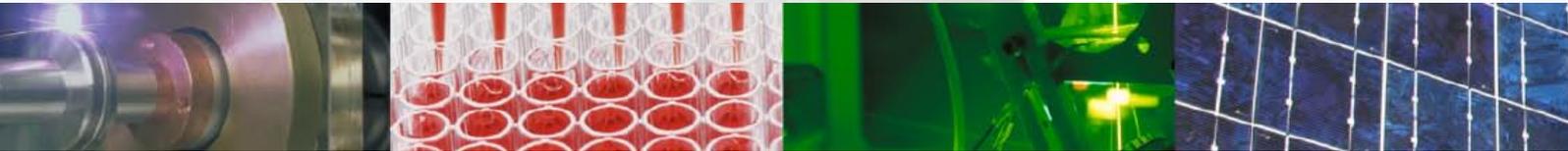




JRC Newsletter

EUROPEAN COMMISSION

November/December 2008



Editorial



The seventh edition of the **JRC Excellence Awards** took place in Ispra on 15 December. The event is now an established tradition and the awards have come to represent an important means for the JRC to demonstrate, both to itself and to the outside world, the high levels of scientific excellence it achieves in its everyday work in support of European policy making.

Scientific excellence remains the cornerstone for the JRC as an organisation whose role is to provide robust scientific evidence and advice to policy makers facing difficult decisions on delicate issues ranging from sustainable energy and climate change to food safety and health. It is vital to our function as an effective and trustworthy reference centre of science and technology for the EU, closely linked to the policy-making process but independent of private and national interests.

Excellence is the key to our reputation and to the continued recognition of our expertise, recognition obtained this month, for example, when one of our scientists was named as lead author of the forthcoming Intergovernmental Panel on Climate Change (IPCC) special report on Renewable Energy Sources and Climate Change Mitigation.

But the JRC's scientific excellence is only half of the story, for it would be impossible without technical and administrative support. Without, for example, the supervision of our quality managers who ensure that efficient and transparent processes are guaranteed. Or the work of our communicators who ensure that our science reaches those interested in it and that it continues to attract future generations of Europe's best researchers.

This year, for the first time, an award category for administrative and support activities has thus been added to the various awards for scientific excellence.

This has come at the request of the JRC's staff, who felt that we need to better reflect and celebrate outstanding achievements in all areas of our work.

The numbers and high quality of submissions for all categories of this year's awards are a testimony to our staff's enthusiasm and hard work. Along with the JRC Exploratory Research Symposium, which recognises research that assists the development of future policy requirements, the Excellence Awards are a source of motivation, providing opportunities for recognition within and beyond the JRC. The JRC Scientific Committee, which advises the Director-General on questions of scientific and technical nature relating to our activities, deserves particular credit for its role in this area.

I hope that each and every one of these awards – whether it be for a young scientist, a peer reviewed scientific paper, support to EU policy, technical assistance or transfer, quality management or communication – demonstrating the best our organisation has to offer, will inspire others to surpass themselves and strive for excellence in all they do.

My best wishes for the holidays,

KRZYSZTOF MARUSZEWSKI
Director of programmes and stakeholder relations

Editorial	01
JRC Excellence Awards 2008	02
News	05
New JRC/World Bank Global accessibility map	05
Higher education rankings: are they statistically reliable?	05
Photovoltaics Status Report	06
JRC scientist named lead author of IPCC renewable energies report	06
More news	06
Recent and forthcoming events	06

JRC Excellence Awards 2008
Ispra, Italy, 15 December

In his opening address at the 2008 JRC Excellence Awards ceremony, JRC Director-General Roland Schenkel stated that he was particularly happy that the competition now offered recognition of the achievements and contributions of staff across all categories of the JRC's work with the introduction of a new award category for "Administrative and Support Activities".

This brings the number of award categories to six, the others being: Best Young Scientist, Best Peer-reviewed scientific Paper, Support to EU policy, Technical Assistance and Technological Transfer.

Mr Schenkel extended his thanks to the JRC Scientific Committee for their hard work in the difficult task of selecting the award winners.

And the winners are...

BEST YOUNG SCIENTIST

In the Best Young Scientist category two promising young scientists shared the award, both from the JRC Institute for Transuranium Elements (ITU).

Ondřej Beneš received an award for his work as a PhD grant holder at the ITU, during which he developed



Roland Schenkel congratulates Ondřej Beneš

innovative ideas for approaching the complex issue of molten salt fuel chemistry from an experimental as well as theoretical point of view. His contribution to the JRC's role in

the Sixth Framework for Research Programme's European Molten Salt Reactor project (ALISIA) and to the GEN IV initiative was greatly appreciated by his colleagues.

Based on his work at the JRC, Ondřej obtained his PhD degree from the Institute for Chemical Technology in Prague two weeks ago. He has demonstrated that he is a highly promising young researcher with a drive for scientific excellence. The results of his work are being published in several key peer-reviewed journals in the fields of nuclear engineering and physical sciences.

Nicola Magnani is a young physicist with both solid theoretical knowledge and a keen interest in experiments. His publication list reflects the highest quality of his work, having published more than 50 papers in international peer-reviewed journals and presenting contributions at various international conferences. At the ITU Nicola used his skills to explore new and important aspects of research on actinide elements.



Nicola Magnani

Nicola briefly presented to the awards ceremony audience one aspect of his most interesting work addressing the so-called "hidden order" in neptunium dioxide. His most unexpected finding has been that elementary magnets in condensed matter are not necessarily simple, atomic "compass needles" as previously thought but can display more complex properties.

BEST PEER-REVIEWED SCIENTIFIC PAPER

Three peer-reviewed scientific papers from three different JRC institutes were rewarded for their outstanding nature.

Stephan Oberstedt and **Nikolai Kornilov** from the JRC Institute for Reference Materials and Measurements (IRMM) were awarded for their contribution to the paper



Stephan Oberstedt

"Identification of a Shape Isomer in ^{235}U ", published in *Physical Review Letters*. The paper refers to a method for the precise determination of fission barrier parameters



Inspection of magnet at JRC-IRMM's Van de Graaff accelerator

for improved modelling of neutron-induced reaction cross sections (the statistical probability of nuclear reaction under bombardment by neutrons).

The paper was presented at the awards ceremony by Stephan, who joined the IRMM as a nuclear physics research scientist in 2000. A major focus of his work is investigation of fission fragment characteristics and the implementation of innovative particle spectrometers.

Maurice Whelan from the JRC Institute for Health and Consumer Protection (IHCP) was awarded for his contribution to the scientific paper “Optical signatures of small nanoparticles in a conventional microscope”, published in *Small* journal. The paper addresses the challenge of how to visualise individual nanoparticles without resorting to use of highly complex imaging systems like electron microscopes.

Maurice is responsible for the High Throughput Screening facilities at IHCP used for toxicological testing of chemicals. He won the JRC Best Young Scientist prize in 2002.

Marijn van der Velde and **Fayçal Bouraoui** of the JRC Institute for Environment and Sustainability (IES) were awarded for their paper “Pan-European regional-scale modelling of water and efficiencies of rapeseed cultivation for biodiesel production”, published in *Global Change Biology*.



Marijn van der Velde

Together with Alberto Aloe, the pair have been working on the interaction of European agriculture with a changing environment, performing pan-European simulations of crop production to identify future nutrient and water constraints and to assess the environmental benefits and pressures arising from European agriculture.

The paper presents a regionalised simulation of current rapeseed cultivation that allows for an evaluation of water and nutrient use efficiency. It also identifies those regions most suitable for rapeseed and oilseed cultivation and assesses consequent environmental pressures. The approach combines a pan-European simulation with sufficiently detailed modelling to allow informed decision making.

SUPPORT TO EU POLICY

In the Support to EU Policy category, three JRC teams were rewarded for their outstanding work.

FORESTRY ISSUES WITHIN CLIMATE CHANGE NEGOTIATIONS

Frédéric Achard, Giacomo Grassi, Hugh Eva, Philippe Mayaux, Suvi Monni and **Hans-Jürgen Stibig** from JRC-IES were rewarded for their excellent policy support in relation to forestry issues within climate change negotiations for a post-Kyoto agreement.



Roland Schenkel and Philippe Mayaux

SUPPORT TO THE DEVELOPMENT OF A COUNCIL DIRECTIVE ON CRITICAL INFRASTRUCTURES

Sara Bouchon, Carmelo di Mauro, Christiaan Logtmeijer, Jean-Pierre Nordvik, Russel Pride, Bastiaan Schupp and **Michael Thornton**, from the JRC Institute for the Protection and Security of the Citizen (IPSC) were recognised for their policy support to the development of a Council Directive on Critical Infrastructures.

Our society depends on a number of critical infrastructures and earlier



Sara Bouchon

in December the Council adopted a new Directive to identify and protect these structures whose failure would have serious consequences. The JRC team contributed to the development of criteria and guidelines to be used by Member States in identifying these infrastructures.

SUPPORT FOR THE DEVELOPMENT OF AN EU BIOFUELS POLICY

A cross-institute JRC team including **Robert Edwards** (JRC Institute for Energy), **Vincent Mahieu** (JRC-IES), **Szabolcs Szekeres** and **Frederik Neuwahl** (JRC Institute for Prospective Technological Studies)



Szabolcs Szekeres

were rewarded for excellence in their collaborative support for the development of an EU biofuels policy. The team also works on the Biofuels Task Force and was involved in the JRC’s report on biofuels earlier this year.



10% of EU transport fuels must be green alternatives by 2020

While the calculation of emissions and costs of biofuels carried out by Robert and Vincent has become an official source of data for draft legislation, Szabolcs pioneered the cost-benefit analysis of the proposed biofuels policy and Frederik supported the joint action with input-output modelling by computing the proposal's probable impact on employment. The importance of their studies in the Commission inter-service consultation and the subsequent impact assessment has already been recognised by customers including the Commission's Directorate General for Transport and Energy.

TECHNICAL ASSISTANCE

Jean-Yves Colle, Roberto Tedeschi and Bernd Müller from JRC-ITU won the Technical Assistance category award following their innovative work in an area where new inventions are few and far between: the development of a simplified and improved furnace technology for high temperature measurements.



Roberto Tedeschi

The work is considered “a major contribution to technology for experimental investigations at very high temperatures”, solving a number of problems that earlier temperature measurement methods failed to eliminate.

TECHNOLOGY TRANSFER

In this category, **David Bottomley, John Ejton and Daniel Freis** from JRC-ITU won the prize for their involvement in technology transfer of the cooling finger apparatus to the Pebble Bed Modular Reactor (PBMR) Company in South Africa. The agreement with PBMR was

concluded in close collaboration with the JRC's Intellectual Property and Scientific Co-operation Unit and involved detailed negotiations.



David Bottomley

This agreement also lays down a framework for other such transfers and a separate agreement with the JRC Institute for Energy is already in preparation.

ADMINISTRATIVE AND SUPPORT ACTIVITIES

QUALITY MANAGEMENT

Michael Bickel and Josephine McCourt were the representatives of two award winning teams in the Quality Management category: the JRC-IRMM Quality Group and SHES Sector (Safety, Health, Environment and Security). Both teams have received recognition for their contribution to obtaining integrated management certification in respect of quality, environmental protection and occupational health and safety.



Michael Bickel and Josephine McCourt

Omer Cromboom, Andreas Bitterhof, Juergen Lauer and Jaroslava Pravdova, were rewarded for their development and implementation of the “Integrated Management System”, a management approach that applies a range of management system standards to best satisfy the



Omer Cromboom

needs of JRC-ITU as well as those of its stakeholders.

COMMUNICATION

In the Communication category **Danae Ortega** received an award for the impressive quantity and consistent high quality of her work,



Danae Ortega

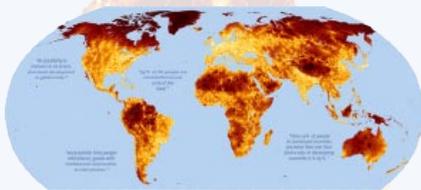
both as the Communication Correspondent for the JRC Institute for Prospective Technological Studies (IPTS) and for her contribution to the Institute's reporting and support activities.



Rossella Speroni and Enrico Ben from JRC-IHCP also saw their hard work recognised with an award for their excellent organisation of the first Global Conference on GMO analysis, which gathered six hundred participants from seventy countries, in Como, Italy, in June 2008.

JRC and World Bank publish global urbanisation and accessibility map

A new global map released by the JRC on 17 December and published in the World Bank's World Development Report 2009 measures urbanisation in the new perspective of travel time to 8,500 major cities. The map fills an important gap in our understanding of economic, physical and social connectivity.



Travel time to major cities

In the absence of agreement on the meaning of "urbanisation", the European Commission and the World Bank are proposing a new definition based on a unique

mapping of "accessibility" called the Agglomeration Index. In this context, the new map, developed at the JRC's Institute for Environment and Sustainability (IES), uses travel-time as a unit of measurement, representing accessibility through the easily understood concept of "how long will it take to get there?" Accessibility links people with places, goods with markets and communities to vital services. Accessibility - whether it is to markets, schools, hospitals or water - is a precondition for the satisfaction of almost any economic need. Furthermore, accessibility is relevant at all levels, from local development to global trade.

Key findings demonstrated in the map:

- more than half of the world's population lives less than one hour from a major city, but the breakdown is 85% of the developed world and only 35% of the developing world;

- 95% of the world's population is concentrated on just 10% of the world's land; but
- only 10% of the world's land area is classified as "remote" or more than 48 hours from a large city.

How does the mapping work?

Digital maps of road, river and rail transport networks, population data, satellite-derived maps of land cover and terrain and information on border crossing times are combined using advanced geographical modelling techniques. For example, the time it takes an individual to travel to a city 100 km away is calculated from precise knowledge of the terrain he or she must cross whether it be by foot, road, rail or river.

<http://gem.jrc.ec.europa.eu/gam/index.htm>

Higher education rankings: are they statistically reliable?

On 11 December the European Commission launched a call for tenders for the design and testing of a new multi-dimensional university ranking system with global outreach.

A recent study by the JRC cast doubt on the substance of statistics upon which the widely referenced Academic Ranking of World Universities, carried out annually by Shanghai's Jiao Tong University (SJTU), is based. The JRC study, carried out by researchers at the Centre for Research on Lifelong Learning (CRELL) and published in September, asks whether the Jiao Tong ranking serves its intended purpose and compares it with the most widely cited European alternative, Britain's The Times Higher Education Supplement (THES).

The results of the JRC report, written by Michaela Saisana and Beatrice D'Hombres and entitled *Higher Education Rankings: Robustness Issues and Critical Assessment*, show that neither ranking actually succeeds when it comes to assessing Europe's universities. The Jiao Tong system is statistically robust only in the

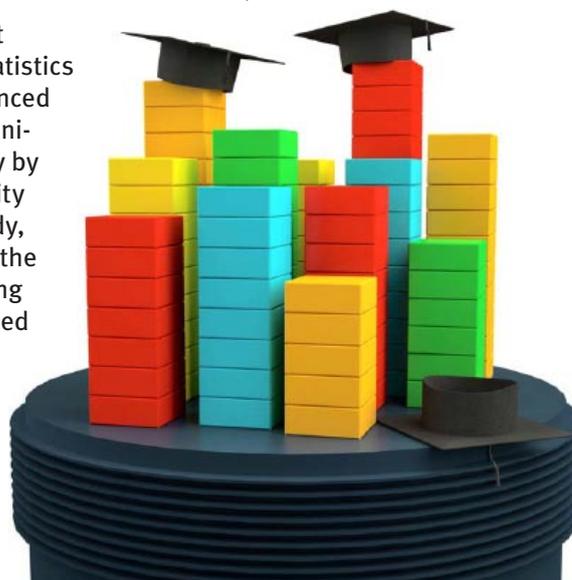
identification of "top performers" either side of the Atlantic and is found to be quite unreliable in its classification of other institutions.

The JRC report points to the need for a ranking system suited to European universities in order to make institutions more accurately comparable, encourage student mobility and facilitate the implementation of the European Research Area.

In the meantime, the JRC report suggests that an assessment of university performance based on a hybrid set of the twelve indicators used in the THES and SJTU rankings may provide a more reliable average ranking of the institutions.

CRELL is a part of the JRC Institute for the Protection and Security of the Citizen (IPSC).

<http://crell.jrc.ec.europa.eu/>



Photovoltaics Status Report: 60% jump in solar panel production

The latest Photovoltaics Status Report, released 11 December by the JRC Institute for Energy (IE), shows a continued increase in the yearly growth rate of photovoltaic solar panel production, averaging 40% over five years and peaking at 60% in 2007. Current world electricity production from photovoltaic systems is approximately ten TWh (ten billion kWh), of which half comes from the EU. While solar energy still accounts for only 0.2% of total electricity consumption in Europe, the net effect is four million fewer tonnes of CO₂ being released.

Photovoltaic (PV) solar energy is one of fourteen different energy technologies that the JRC is currently assessing within the context of the Strategic Energy Technology Plan, a key element of current EU energy policy. The annually published PV Status Report combines analysis of up-to-date international manufacturing and market implementation data

throughout 2007 with subsequent strategic and political developments up to September 2008.

<http://re.jrc.ec.europa.eu/refsys/htm>

JRC Scientist named lead author of IPCC renewable energies report

JRC scientist Arnulf Jäger-Waldau of the Institute for Energy (IE) has been named as lead author for the forthcoming Intergovernmental Panel on Climate Change (IPCC) special report on *Renewable Energy Sources and Climate Change Mitigation*. More than two hundred experts from around the world have been selected to participate in the preparation of the report and Arnulf's selection as lead author can be considered recognition of his expertise in the field.

The IPCC, the world's leading authority on climate change and joint winners of the 2007 Nobel Peace Prize, has recently highlighted the importance of issues related

to the use of renewable energy sources. The panel decided to support the preparation of a special report on the issue and, following consultation and the nomination of international experts, it was agreed that the report was to be completed by the end of 2010.

The "Special Report" on renewable energy will aim to provide better understanding of energy resources in different regions and the impact of climate change on these resources.

For several years now the JRC and in particular its Climate Change and Global Environmental Monitoring teams at the Institute for Environment and Sustainability (IES), have been involved in the IPCC's work in assessing and tackling the issue of climate change. Recently, JRC scientists were involved as authors in the IPCC Fourth Assessment Report and are currently participating in planning for the fifth such report.

<http://www.ipcc.ch/>

RECENT AND FORTHCOMING EVENTS

2008 e-Inclusion Ministerial Conference

Vienna, Austria, 30 November – 2 December

The JRC Institute for Prospective Technological Studies (IPTS) coordinated three sessions at the 2008 e-Inclusion conference, Europe's biggest event in this area. E-Inclusion



means using Information and Communication Technology (ICT) to combat social exclusion. The sessions were on gender and ICT; investment, social networks and social enterprise; and ICT, migrants and ethnic minorities in Europe. JRC-IPTS also chaired a session on inclusive ageing and contributed to organising a workshop on the role of large 'Third Sector' organisations in e-Inclusion.

The IPTS also presented a report entitled *Overview of Digital Support Initiatives for/by Immigrants and Ethnic Minorities in the EU27* and in the framework of the event's "navigation showcase", the JRC Institute for the Protection and Security of the Citizen (IPSC) demonstrated its Sesamonet project, which involves the use of Radio-frequency Identification (RFID) chips for guiding visually impaired people.

http://ec.europa.eu/information_society/events/e-inclusion/2008/

Nuclear Security in the Caucasus Karlsruhe, Germany, 2-4 December

Following seizures of radioactive materials in countries of the

Caucasus region in recent years and in order to better prepare responses to such incidents, the European Commission, the US Department of State and Moscow's International Science and Technology Centre have joined forces – along with Armenia, Azerbaijan, Turkey and Georgia – to organise a dedicated workshop on International cooperation in nuclear forensics and law enforcement.

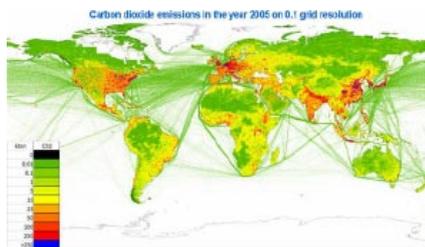
With the participation of the International Atomic Energy Agency (IAEA) and the competent authorities in the above countries, the workshop's purpose was the identification of deficiencies in nuclear security measures in Caucasus countries and the elaboration of proposals aimed at improving performance through international cooperation.

<http://itu.jrc.ec.europa.eu/>

JRC contributes to UN climate change conference

Poznań, Poland, 1-12 December

The United Nations Climate Change Conference held in Poznań from 1-12 December 2008 in the context of the United Nations Framework Convention on Climate Change (UNFCCC), was a milestone for international processes launched under the Bali Road Map, which marked the beginning of negotiations on strengthened international action on climate change, set to conclude at the 'COP 15' meeting in Copenhagen next year.



Global gridded CO₂ emissions in the year 2005

Scientists from the Institute for Environment and Sustainability (IES) attended the conference and contributed to a side event on methodologies for Reducing Emissions from Deforestation and Forest Degradation (REDD) in developing countries. The side event presented

an updated version of the *Global Observation for Forest and Land Cover Dynamics (GOFC-GOLD) REDD sourcebook* of which IES scientists Frederic Achard and Giacomo Grassi are co-editors.

Frederic Achard chaired the first part of this side event and introduced the update to the sourcebook. The second part of the side-event included discussions with key negotiators from European and developing countries as well as international organisations such as the UN Food and Agriculture Organization and the World Bank.

IES scientists John van Aardenne and Suvi Monni organised another side event on global emissions of greenhouse gases in collaboration with the Netherlands Environment Assessment Agency.

<http://unfccc.int/2860.php>

Interested in
working for the JRC ?
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www.jrc.ec.europa.eu/jobs

UPCOMING

AAAS Annual Meeting 2009

Chicago, USA, 12-16 February 2009

The theme of the 2009 AAAS Meeting is "Our Planet and Its Life: Origins and Futures". It recognises the 200th anniversary of Charles Darwin's birth and the 150th anniversary of the publication of his book, *On the Origin of Species by Means of Natural Selection*. New understanding of the processes that fascinated Darwin remains the focus of intense research today.

The JRC is contributing to this event with five sessions:

- New Approaches to the Therapy of Infectious Diseases (Topical lecture)
- Keeping the Lights on: The Revival of Nuclear Energy for Our Future
- Life Beneath Our Feet: Research Challenges in Soil Biodiversity
- Preimplantation Genetic Diagnosis: Beyond Natural Selection?
- Nanofood for Healthier Living?

<http://www.aaas.org/meetings/>

The JRC Newsletter is a monthly publication intended to provide JRC customers, stakeholders and other interested parties with an overview of recent highlights from the JRC's scientific achievements, policy support, contributions to events and other news.

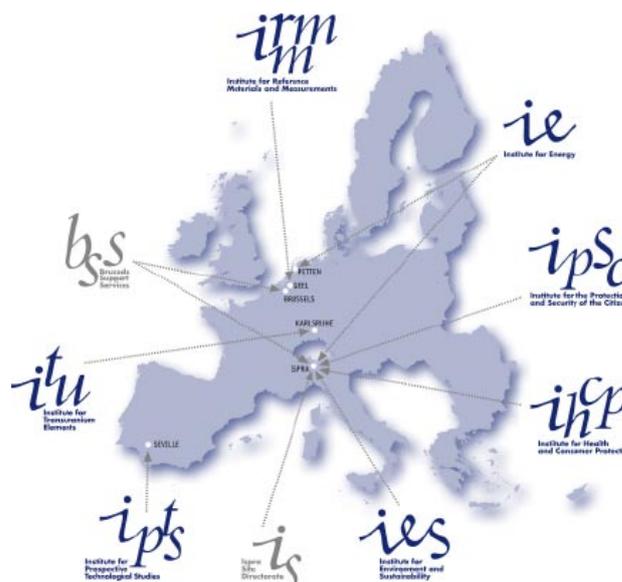
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