



JRC Newsletter

News Events Open positions

JANUARY 2010



Towards a new strategic orientation of the JRC

The positive assessment of the JRC during FP6, by the independent panel of experts, chaired by Sir David King, was very satisfying. I believe that the JRC has made significant progress in consolidating its

mission, strengthening relations with its stakeholders and gaining wider international recognition. In the ten years since the adoption of its mission, the JRC has demonstrated its ability to adapt its scientific and technical work programme to match the evolving policy agenda of the EU. The JRC has an increasingly important role to play as much of today's complex EU legislation, such as on energy, security or genetically modified organisms, must be based on robust scientific and technical expertise.

“The JRC has demonstrated its ability to adapt its scientific and technical work programme to match the evolving policy agenda of the EU”

Looking to the future, the evaluation panel recommendations are particularly interesting, proposing a range of initiatives which could benefit the JRC. The recommendation to develop and implement an effective rolling five-year strategy is particularly challenging. The JRC will always have limits to its resources and there will always be competing demands on those resources. It is vital that, in a new corporate strategy, the JRC has an appropriate reference for making the difficult choices in setting priorities in its work programme.

I am impressed with the response of JRC management, which has acted without delay, to seek to implement the recommendations. It has embarked upon a major exercise to define a strategy looking towards a time horizon of 2020.

Following internal discussions in expert work groups in the key competence areas, the JRC is consulting with its main stakeholders on the draft strategy.

As with any sensitive decision regarding the JRC's structure, budget, programming or senior management appointment, the development of a strategy is discussed with the Board of Governors. The Board, composed as it is of high level representatives from each of the Member States, the Accession States and the Associated Countries, provides a useful sounding board and source of advice to the JRC in its planning process. I see another key role of Board members in the provision of a strategic link with their countries and their administrations (while at the same time better involving them in the steering of the organisation).

To assist the JRC in the development of corporate strategy, the Board has set up a working group, chaired by Prof. Hans Peter Jensen, Deputy Chairman of the Board, to provide recommendations to the Board and to JRC throughout the strategy formulation process. The consultations with stakeholders and with the Board of Governors are well advanced in the task and hopefully the new corporate strategy can be announced in the first quarter of 2010.

Besides the development of a corporate strategy, the JRC is also seeking to implement the other recommendations of the evaluation panel, which include the improvement of its recruitment procedures, upgrading its research facilities and infrastructure and building up efficient mechanisms for the coordination of the activities among its seven institutes.

DR KILLIAN HALPIN
Chairman of the JRC Board of Governors

GLOBAL WARMING

<http://peseta.jrc.ec.europa.eu/>***Potential economic impacts of global warming on agriculture and on tourism***

After the recent release of the final report of the PESETA project on the impact of climate change in Europe, the JRC's Institute for Prospective Technological Studies (IPTS) is launching a series of monographic reports with more information on each of the sector specific studies of the project.

The first such report, "Impacts of climate change in agriculture in Europe" concludes that if the climate expected in the 2080's occurred today, European agriculture would face lower crop yields of up to 10%, which would translate into yearly GDP losses of 0.32%.

All climate scenarios studied (with temperature increases in a range between 2.5°C and 5.4°C) would entail crop productivity decreases in Southern Europe caused by shortening of the growing period, with subsequent negative effects on grain filling. On the other hand, the study predicts an increase in the agricultural production in Northern Europe due to lengthened growing season, decreasing cold effects on growth, and extension of the frost-free period. It is important to note that the simulations considered no restrictions in water availability for irrigation or in the use of nitrogen fertilizer. However, farm-level adaptation measures such as change of crops or crop management have been taken into account.

The report "Impacts of climate change in tourism in Europe" highlights the potential shift of areas with good conditions for summer tourism in Europe towards the North. As a consequence, the South of Europe could lose up to €5 billion in revenues from tourism per year. The study uses an index that classifies the conditions for tourism of a given area, ranging from those that are ideal through excellent, very good, acceptable and marginal to those that are unfavourable. The index reflects the maximum and average daily temperature, humidity, precipitation, sunshine and wind.

Nowadays, summer is the best season for most types of outdoor tourism for most countries in Europe. Excellent conditions (in particular for beach tourism) can be found around the Mediterranean Sea. However, with the predicted increases of temperature for the 2080's (between 2.5°C and 5.4°C without adaptation measures), the zone of good conditions would expand towards the North in summer, at the expense of Southern regions. Conditions become excellent throughout the northern part of the Continent, as well as in Finland, southern Scandinavia, southern England and along the eastern Adriatic coast. At the same time, climatic conditions in southern Europe would deteriorate significantly. In parts of Spain, Italy, Greece and Turkey, the index's scores decrease by tens points, sometimes dropping from excellent or ideal to marginal conditions.

In spring, good conditions would expand to the North, but also in the South itself: they would become very good to excellent in most of the Mediterranean and more frequently in France and the Balkans. Similar effects are expected in autumn. Projected scores improve throughout Europe, with excellent conditions covering a larger part of southern Europe and the Balkans. Conditions in the northern parts of Europe would remain less favourable than in the south but the improvements would be significant.

In winter most of Europe will remain unattractive for tourism (except for winter sports). Only in the very South of Spain conditions would improve from being unfavourable to marginal or even acceptable.

The PESETA project, financed by the JRC, has been coordinated by IPTS with contribution by the JRC's Institute for the Environment and Sustainability (IES). The monograph on tourism was produced by the International Centre for Integrated assessment and Sustainable development (ICIS) at Maastricht University.



Impacts of climate change on agriculture will vary considerably by region

CLIMATE CHANGE

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

GHG emission sources and amounts: new visualisation tool

The JRC has developed a high resolution digital view of man-made green house gas (GHG) emissions for any 10 km x 10 km square area in the world. Using JRC's work on emissions and Google Earth™, this new tool allows the visualisation of the levels of emissions locally from 1970 to 2005 and the identification of the main sources.

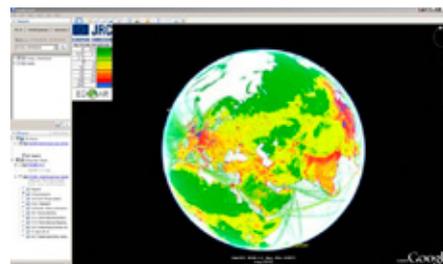
Scientists from the JRC Institute for Environment and Sustainability (IES) have made it possible to visualise the distribution of GHG emissions all over the world at local level through an add-on layer to Google Earth™. Their grid size is a tenth of a geographical degree of latitude by the same extension in longitude, or simplified, a square about

10 km x 10 km, roughly the size of central Paris. Data used in the visualisation come from JRC and the Netherlands Environmental Assessment Agency's (PBL) Emission Database for Global Research (EDGAR), and its dataset released in May 2009 (EDGAR v4.0).

This application brings environmental information closer to the world's citizens. By simply entering a city name, the amount of greenhouse gases released since 1970 can be visualized. In addition, the main sources of GHG emissions in the year 2005 can be identified: industries (fuel combustion, process and waste emissions in energy and manufacturing industries); transport (road, rail, shipping); residential

fuel combustion and waste handling; and agriculture.

The visualisation shows, on a large scale, how emissions are unevenly distributed over the globe, even within countries, as well as the varying evolution of emissions in the world over time.



Digital view of man-made green house gas emissions in Europe, Africa and Asia

ENERGY EFFICIENCY

<http://re.jrc.ec.europa.eu/energyefficiency>

EU energy efficiency measures contribute to stabilise electricity consumption

Energy efficiency measures introduced across the European Union are already contributing to stabilise electricity consumption. A combination of labelling, minimum efficiency standards and voluntary agreements, together with national policies and incentives, have flattened the energy and electricity consumption in recent years.

The 'Electricity Consumption and Efficiency Trends in the European Union' report, issued by the by the JRC Institute for Energy (IE), calculates the market share of energy-efficient appliances and equipment and the energy consumption by sector in 2007. It also identifies the appliances in

which energy efficiency has the largest potential: domestic, street and office lighting; televisions and stand-by appliances in households, as well as electric motors in industry.

The report presents the results of an in-depth survey conducted on electricity consumption across the EU-27 for 2007, focusing on commonly used electrical appliances and equipment. It also includes the main findings of the first preparatory studies for implementing the Eco-design Directive, which provide EU-wide rules for the design of energy-using products.

The results show that over the period 2004-2007, EU's energy and electricity consumption trends in the residential sector remained stable. For the first time since 1990, the final electricity consumption in 2007 was lower than in the previous year in this sector and almost constant in the tertiary sector. However, global electricity end-use consumption rose in the same period (+4.46%); although only at about half the rate of economic growth (+8.23%), as opposed to 2006 when it grew at a similar percentage to overall GDP (10.8%).

The climate for improved energy efficiency in the EU has been significantly enhanced over the last decade, as new industry standards and agreements have been introduced and significant legislation has come into force or is under assessment. For example, the Eco-design Directive (2005/32/EC) set conditions and criteria to help manufacturers develop electrical products that are more environmentally friendly.



Labelling has contributed to curbing electricity consumption

AWARDS & PRIZES

Fuel cells

Ivan Dimitrov Radev from the JRC Institute for Energy (IE) obtained the First Rank Award for best scientific achievements of PhD students graduated in 2008 in Bulgaria for his PhD thesis entitled "Facilities and methods for optimization of membrane electrode assemblies (MEAs)". This annual award is given by the Higher Attestation Commission, the Federation of Scientific and Technical Unions, and the Union of Scientists in Bulgaria.

ENVIRONMENT

<http://www.norman-network.net>

Chemicals in European rivers and ground waters

The latest research results on the European-wide river and ground water monitoring campaigns were presented by the JRC Institute for Environment and Sustainability (IES) to European experts of NORMAN, the network of reference laboratories for monitoring of emerging environmental pollutants which was established under FP6 in 2005.

The results of the presented analysis of polar organic chemicals in European rivers and ground waters show the importance of multi-residue analytical methods for analysing chemical mixtures. In total, 77 different organic chemical compounds were analysed in the ground water samples. The most relevant compounds found in European ground waters in terms of frequency of detection and maximum concentration levels were Bentazone, Nonylphenol, Bisphenol A, Benzotriazole, DEET (an insecticide) and Carbamazepine. In addition, many important metabolites or degradation products of environmental concern were identified like NPE₁C (nonylphenoxy acetic acid) which is degraded in surface water but stable in oxygen-free ground water.

Multi-compound analysis is mandatory for compliance with the European groundwater quality standard of 0.5 micrograms/L for pesticides.

ENVIRONMENT

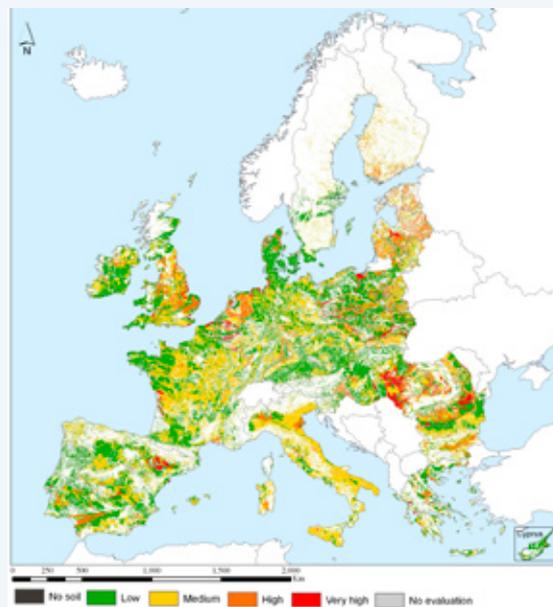
<http://eussoils.jrc.ec.europa.eu/>

Two new EU soil maps

Two new pan-European soil maps have been released to the general public through the EU Soil Portal: the Saline and sodic soil map of Europe and the Soil compaction map of Europe.

The first map shows the area distribution of naturally saline or sodic soils and potentially salt affected areas within the European Union. Salinisation is the accumulation of soluble salts of sodium, magnesium and calcium in soil to the extent that soil fertility is severely reduced. The soil compaction map of Europe shows the natural susceptibility of agricultural soils to compaction when the weight of livestock or heavy machinery compresses the soil, causing it to lose pore space. Affected soils become less able to absorb rainfall, thus increasing runoff and erosion. Plants have difficulty growing in compacted soil because the mineral grains are pressed together, leaving little space for air and water, which are essential for root growth.

The European Soil Data Centre, established by an agreement in 2005 and finalized in 2009, is hosted by the JRC's Institute for Environment and Sustainability (IES). It is the thematic centre for soil related data and information in Europe and provides a wide array of soil related, freely accessible products including datasets, documents, maps and graphs.



The natural susceptibility of soil to compaction

ENVIRONMENT

<http://www.sae.org/servlets/works/committeeHome.do?comtID=TEAE31>

Developing new emissions standards for aircraft engines

The Society of Automotive Engineers (SAE) standardises methods for measuring emissions from aircrafts. In November, the SAE subcommittee 31, responsible for identifying measurement methodologies in view of new emissions standards for aircraft engines to limit non-volatile PM emissions, met at the European Aviation Safety Agency (EASA) headquarters in Cologne.

EASA invited the JRC Institute for Environment and Sustainability (IES)

to present a measuring procedure developed in the automotive field from its Particle Measurement Programme (PMP). The procedure developed for ground vehicles can easily be adapted to aircraft engines and the studies already conducted in the framework of the PMP programme are promising.

IES experts have thus been invited to join the relevant EASA working groups defining emission measurement procedures.

FOOD SAFETY

http://irmm.jrc.ec.europa.eu/html/activities/cocoa_butter_calculation_toolbox/

JRC method to detect chocolate fraud becomes international standard

EU countries are the biggest consumers of chocolate confectioneries in the world. A technique developed by the JRC Institute for Reference Materials and Measurements (IRMM) to measure vegetable fats in milk chocolate has become the first such method to be adopted as a standard by the International Organisation for Standardisation (ISO). It has been developed to enable the enforcement of the so-called 'Chocolate Directive', which stipulates that European chocolate must not contain more than 5% vegetable fats, other than cocoa butter.

European legislation allows the addition of up to 5% of vegetable fats other than cocoa butter in chocolate products and stipulates that consumers be informed by appropriate labeling of the product. The threshold of 5% is also an essential requirement for these products to move freely within the internal market.

Prior to the development of the JRC method, no validated methodology existed in this field. It was therefore not straightforward to check whether manufacturers were correctly reporting the amount of vegetable fats other than cocoa butter in milk chocolate, as their chemical composition and physical properties resemble those of cocoa butter very closely, thus making them extremely difficult to quantify or even detect. This left the door open for disputes and uncertainty as to whether or not milk chocolate products fulfilled legal requirements.

The reliable analytical method to detect and quantify so-called cocoa-butter equivalents (CBEs) in milk chocolate, successfully developed at IRMM, has now been adopted as standard ISO 11053:2009.

To help analytical chemists implement the testing methods for chocolate



European chocolate must not contain more than 5% vegetable fats, other than cocoa butter

products correctly, JRC-IRMM has also developed a set of so-called toolboxes, which can be freely downloaded from the JRC-IRMM website. The toolbox comprises the method descriptions, electronic evaluation sheets, and links to the appropriate cocoa butter reference materials which can be ordered via JRC-IRMM's online catalogue. A similar method for plain (black) chocolate had already been developed by the same group at IRMM in 2004.

CRISIS MANAGEMENT

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

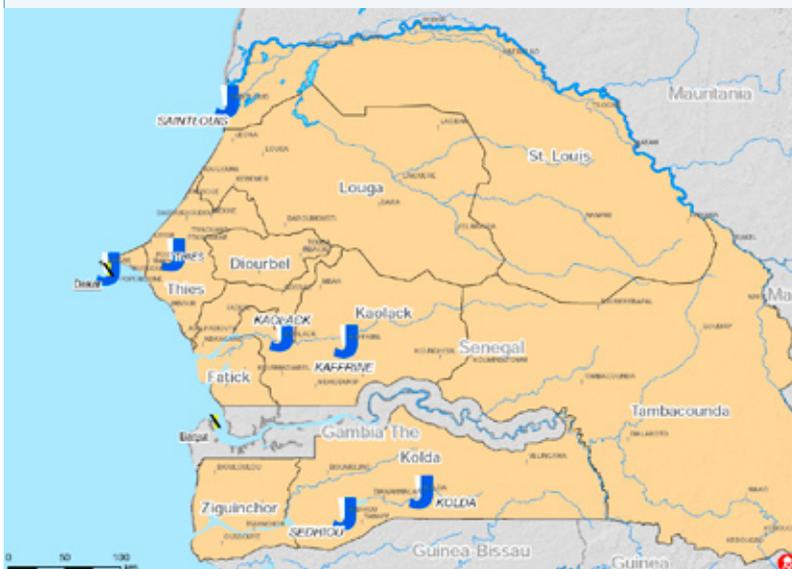
Post Disaster Needs Assessment for Senegal and El Salvador

Following heavy rains and flooding in Senegal and floods and landslides caused by Hurricane Ida in El Salvador, the JRC Institute for the Protection and Security of the Citizen

(IPSC) participated in the post disaster need assessments missions requested by the two governments and organised by the Commission's Directorate-General for External Relations as part of the joint UN-Commission-World Bank collaboration.

Two JRC staff members participated in the disaster assessment training prior to collecting data in order to edit the Damages and Losses Assessment (DaLA). Local organisations were provided with technical assistance on satellite image analysis, GPS data collection and in the elaboration of supporting cartographic information products.

In addition, geographical information system (GIS) analyses allowed the JRC to produce a table showing the percentage of urban areas flooded for each district. This work helped to extrapolate damages and losses to all affected districts and the results were integrated in the final disaster assessment report presented to the two affected governments and the donors.



Senegal: Floods (as of 09 Sep 2009)

COMPETITIVENESS

<http://www.proinno-europe.eu/metrics>

2009 Regional Innovation Scoreboard: diversity across Europe

The level of innovation in regions varies considerably across almost all EU countries. This is one of the main findings of the 2009 Regional Innovation Scoreboard (RIS), published by the JRC's Institute for the Protection and Security of the Citizen (IPSC), together with the Commission's Directorate-General for Enterprise and Industry and the Maastricht University (MERIT).

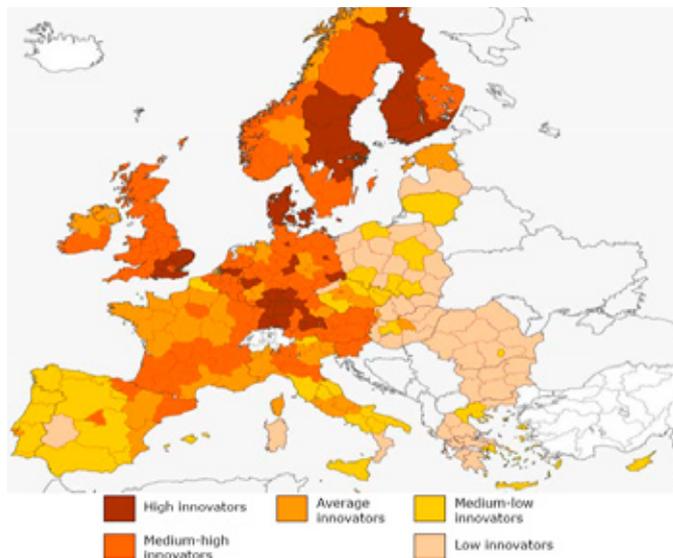
The 2009 RIS, based on the European Innovation Scoreboard (EIS) approach and methodology, assesses innovation performances across 201 regions in the EU and Norway.

Spain, Italy and the Czech Republic are the most heterogeneous countries, where innovation performance varies from low to medium-high. While on average the pattern of innovation is quite stable between 2004 and 2006, several regions, in particular in Spain and France, have improved their innovation performance. The report also shows that the most innovative regions are typically in the most innovative countries, although some regions outperform their country level.

2009 RIS clusters the regions in five groups, ranging from the highest to the lowest overall innovators:

In Austria, Belgium, Finland, Sweden, Denmark and Luxembourg all regions display high and medium-high innovation performance (the latter two countries comprising only one region each).

In Germany, The Netherlands, United Kingdom and Norway almost all regions are high and medium-high performers. Medium-low and low innovation regions dominate in Bulgaria, Greece, Poland and Romania (all regions), in Hungary, Portugal and Slovakia (all regions but one), in the Czech Republic and Spain (about 65% of the regions) and in Italy



2009 Regional Innovation Scoreboard: aggregate of indicators per region

(about half of the regions). Cyprus, Latvia, Lithuania, and Malta – all comprising one region each due to their small size, are also members of this group.

In an intermediate position are Estonia, Ireland, France and Slovenia.

The report marks a significant step forward in measuring regional innovation performance although it also shows that more progress is needed on the availability and quality of innovation data at regional level. The results confirm the value of measuring innovation performance at regional level to complement the national level and emphasize the need for policies to reflect regional contexts.

MODELLING

<http://sensitivity-analysis.jrc.ec.europa.eu/>

JRC's Global Sensitivity Analysis subject to international collaboration

Sensitivity analysis is more and more frequently adopted by scientists to understand numerical models that are employed to simulate and predict natural and social-economic phenomena. Sensitivity analysis is the study of how the variation in the output of a model can be appor-tioned, qualitatively or quantitatively, to different sources of variation.

Scientists at the JRC's Institute for the Protection and Security of the Citizen (IPSC) have been working on developing a new paradigm for sensitivity analysis, called global

sensitivity analysis. The most recent evidence for the world-wide recognition of the innovative methodologies developed at the JRC has been the invitation by the prestigious Los Alamos National Laboratory (LANL, New Mexico) to Marco Ratto and Stefano Tarantola to hold a two-day training course on Global Sensitivity Analysis and Uncertainty Quantification (GSA-UQ). The course, held in Santa Fe on 18-19 November 2009, attracted 35 senior researchers from LANL, Sandia Labs (Albuquerque) and Lawrence Livermore National Lab (Livermore, California) involved in

research and technology for national security related projects.

The course programme focused on screening techniques, variance-based methods, techniques for building emulators with practical demonstrations of the JRC-IPSC software. The interest in this topic was confirmed by the start up of two co-operation projects with Los Alamos and Sandia Labs for the upcoming JRC conference on sensitivity analysis, to be held at the University Bocconi in Milan in July 2010.

MEDIA WORKSHOP: ENERGY TECHNOLOGIES - THE KEY TO CLIMATE CHANGE

PETTEN , 26 Nov 2010

NL

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

On 26 November, the JRC Institute for Energy (IE) hosted a media workshop in Petten on the topic "Energy Technologies – The key to Climate change". Journalists coming from most of the EU Member States participated in fruitful discussions, presentations and guided tours to obtain first-hand information on a range of scientific subjects.

In particular, IE's work in the fields of photovoltaics, biofuels, nuclear energy, hydrogen as well as energy efficiency and security was presented. In addition, journalists had a guided tour of the IE facilities, where most participants

chose to visit the fuel cell and biofuel research gasifier laboratories, as well as the high flux reactor (HFR). This was complemented by a presentation of the Commissions Strategic Energy Technology (SET) Plan and the SET-Plan Information System (SETIS). The Energy Research Centre of the Netherlands (ECN) presented the European Energy Research Alliance (EERA).

The JRC regularly organises journalist visits and on-site briefings to present its work and the European policy context, to interested media representatives.

UPCOMING

GEOSS, INSPIRE AND GMES: BRINGING THE INITIATIVES TOGETHER

IT

ISPRA, 26- 27 JAN

<http://www.thegigasforum.eu/workshops/shaping-2010/>

The workshop "Opportunities for shaping a convergent evolution of GEOSS, INSPIRE and GMES", hosted by the JRC Institute for Environment and Sustainability, is intended to give stakeholders of GEOSS, INSPIRE or GMES the opportunity to gain insight into and to influence the development of arrangements for interoperability within and between

the initiatives. The aim is to achieve a common understanding of how to perform a concerted adoption of activities to influence and shape the evolution of GEOSS, INSPIRE, and GMES towards convergence. This will be discussed on both the strategic and technical levels.

SCIENTIFIC FORUM FOR THE COMMUNITY REFERENCE LABORATORIES OF THE EU

BE

http://irmm.jrc.ec.europa.eu/html/events/events/1002_CRL_forum.htm

GEEL, 09-10 FEB

From 2004 to 2006, the European Commission's Directorate-General for Health and Consumers appointed 40 Community Reference Laboratories (CRL). These CRLs, together with the national reference laboratories, lead the harmonisation efforts across the EU for analytical methodology within a given field. The CRLs cover three main areas: feed and food law, animal health and animal welfare rules. While each topic is specific, CRLs do face a number of common issues.

The scientific forum is organised by the JRC's Institute for Reference

Materials and Measurements to identify and address topics of common interest, including new challenges. It will give the leaders of CRLs the opportunity to share experiences and exchange views with each other as well as with representatives of the Commission. The expected outcome will be to identify which approaches are used, which general problems the CRLs face in the scientific part of their work, as well as priorities for the future. Particular emphasis will be placed on the organisation of proficiency tests, with examples from different types of CRLs.

JRC STAFF NEWS

<http://ec.europa.eu/dgs/jrc/index.cfm?id=2790>



As from 1 January, Jean-Pierre Michel has been appointed Director of the "Resources" Directorate. Jean-Pierre Michel joined

the Commission in 1980 at JRC-ITU in Karlsruhe, where he spent most of his career. In 2007 he became Head of the Unit "Management Support" at the JRC headquarters in Brussels, and assumed the function of Director for Resources *ad interim* in May 2009.

JOBS AT THE JRC

<http://www.jrc.ec.europa.eu/jobs>

RECENTLY PUBLISHED

(Applicants must submit their application no later than the indicated deadline.)

Ispira, Italy

Trainee

- IPSC: 51 trainee positions in various fields – *14/01/2010 – 27/01/2010*

Grantholder (Post-Doc researcher)

- Building a dynamic model to estimate the consequences of infrastructure failure – *16/01/2010*
- Geomatics – *31/01/2010*
- Human settlement analysis from optical VHR imagery – *31/01/2010*
- Long-term performance of advanced photovoltaics – *31/01/2010*
- Sustainable energy development in Africa: rural electrification and renewable energy – *31/01/2010*
- Describing micro level consequences of infrastructure failure – *12/02/2010*

Petten, The Netherlands

Deadline for all 31/01/2010:

Trainee

- Development of the next generation nuclear reactors training course syllabus
- Rietveld refinement of diffraction data on complex hydrides
- Investigation of the effect of high-energy ball milling on hydrogen sorption properties of materials
- Testing of air-and moisture-sensitive hydrogen storage materials

Grantholder (PhD Student)

- Advanced methods for stress corrosion cracking investigations of materials in super-critical water environment
- Modelling the transition to a low carbon energy system
- Research into electrochemical methods for process monitoring in clean power plants
- Security of energy systems: smart-grids and storage

Grantholder (Post-Doc researcher)

- Cogeneration of power & heat: technologies, potential and EU policies –
- High Flux Reactor decommissioning plan
- HySaST - Hydrogen for Storage and Safe Transport "Numerical investigation of safety issues of hydrogen technologies"
- Materials validation for V/HTR reactors and process heat applications
- Modelling of fuel cells and software code development & validation
- Energy technology innovation - monitoring, measurement and assessment

Grantholder (Senior researcher)

- In-service inspection of nuclear components
- Nuclear power plants operational experience feedback systems

Seville, Spain

Grantholder (Post-Doc researcher)

- Sustainable agriculture - analysis of policy effects – *24/01/2010*

Karlsruhe, Germany

Trainee

- Interaction of actinides oxides with sodium – *15/01/2010*
- Development / setup of a software for data acquisition and transfer to the LIMS – *22/01/2010*
- Studies of phosphate compounds under high pressure – *22/01/2010*

Research fellow (*all 29/01/2010*)

- Accident testing of HTR fuel elements
- Development of a TRANSURANUS version for GEN-IV fuel for fast spectrum reactors
- First principles study about solid FP behaviour in MX fuels
- Interaction of radioactive micro particles with the environment
- Actinide-containing molecular nanomagnets
- Mechanistic studies of the inhibition of radiolytic oxidation of UO₂ in presence of hydrogen
- Studies of physical properties of actinide compounds under high-pressure conditions
- Synthesis and characterization of poly-metallic actinides complexes

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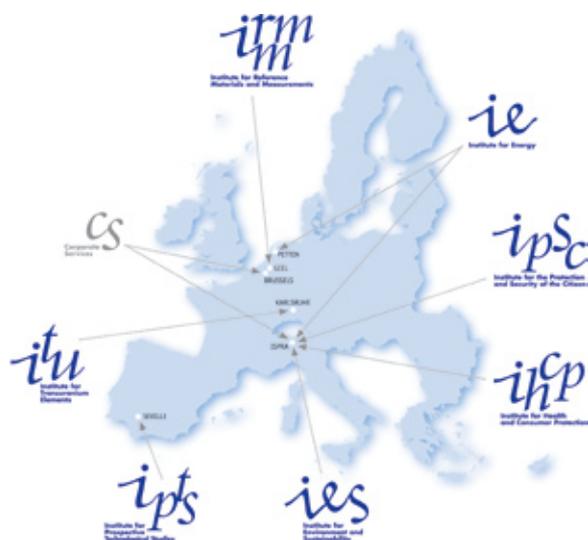
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 p. 2: Nauris Paulins (straw field)
 p. 5: Salina Hainzl (Chocolate)
 International Federation of Red Cross And Red Crescent Societies (IFRC) / UN Office for the Coordination of Humanitarian Affairs - ReliefWeb (Senegal floods)



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