

LESC NEWS

Standing Committee for Life, Earth and Environmental Sciences (LESC)

Editorial : Better Exploratory Workshops



Dr. Olgeir Sigmarsson

Icelandic representative on the LESCS Standing Committee and member of the Core Group

Scientists like to share their latest findings with their colleagues, to discuss and debate preferred interpretations and resulting inferences that may emerge from a particular study. In a constructive environment, lively speculation about new findings and the potential implications of such results on current thinking can be most rewarding and lead to new avenues of research.

The common venue for such an exchange of ideas is either general or more specific conferences where sessions dedicated to a given subject attract the interested scientists. The success of these sessions depends on who is attending and how well they are chaired, in addition to the quality of the presentations.

However, much too often very little discussion takes place due to the limited time allocated for questions and responses. Frequently, only a single question can be asked and too often the speaker does not even have enough time to give proper answers. This can result in a rather superficial discussion of the content of a given presentation. The potentiality of a lively debate, from which everybody could gain new insights, is lost.

The Exploratory Workshops (EW) of the European Science Foundation (ESF) are one of the best answers to these shortcomings, offering the potential to create an in-depth scientific debate on a particular topic. The workshops are limited to approximately 25 individuals and allow ample time for discussions so that a pertinent evaluation of current state-of-knowledge can emerge. The outcome of a well executed workshop is in most cases the identification of the most needed future research that can lead to a collaborative application for important future projects. Moreover, many ideas emerging from the EW can and are being used for strategic purposes inside the ESF.

Because of their great success and of their importance as an appropriate science-strategic instrument, the ESF should perhaps consider giving the EW increased value by augmenting the funds allocated for this particular instrument. Obviously, the capacity of the ESF office should be maintained at a level which would allow it to continue serving and setting European science and its corresponding agenda in the best possible way.

LESC Sends you



www.esf.org/bestwishes2009

Interview

With the new LESC Chair: Professor Reinhart Ceulemans



Professor Ceulemans, associated with the University of Antwerp in Belgium, was appointed the new LESC Chair last October; yet another task in his broad portfolio of scientific, strategic and science policy matters.

Q1. What do you expect personally from the LESC Chairmanship?

Because of several emerging breakthroughs in the life sciences, the dramatic changes in our environment and a growing awareness of the importance of biogeosciences for our planet, the scientific domains of LESC have gained a lot of visibility in our society today. I look forward to seeing LESC identifying and selecting challenging ideas and proposals that can be of relevance in these areas. Also, I have always enjoyed the very constructive and cordial atmosphere in the Standing Committee (SC) and Core Group (CG) meetings of LESC. I will try to keep it that way in the future. I also have the intention of developing close links with the LESC unit in Strasbourg, since it is there that most of the work behind the scenes is being prepared.

Q2. Which changes do you envisage during your term?

First of all, I would like to continue stimulating the SC members to provide input for strategic developments and suggestions for new ideas in the domain of the life, earth and environmental sciences. But I would also like to intensify the links between our Standing Committee and other Standing or Expert

Committees, and between the Standing Committee and the Member Organisations. In LESC we also have a long-standing synergetic interaction with several COST Domain Committees, which I will continue in the future.

Q3. Which ESF instrument do you consider most useful in the ERA (European Research Area) as it exists today?

In LESC we will carry on using all ESF instruments to reach our goals and to identify emerging domains of research and innovative ways of addressing a variety of challenges. I consider all ESF instruments as useful and appropriate tools for improving the involvement of the scientific community in the ERA. The Forward Looks have a particular potential for identifying new areas of research or streamlining emergent fields. Networking programmes bridge different research groups in the scientific community and will help consolidate and strengthen ongoing research. Without any doubt policy issues will occupy a larger portion of our activities in the future since the ESF wants to have a leading voice in Europe and play a significant role in the ERA.

LESC activities

Highlights from the LESC Standing Committee meeting, November 2008



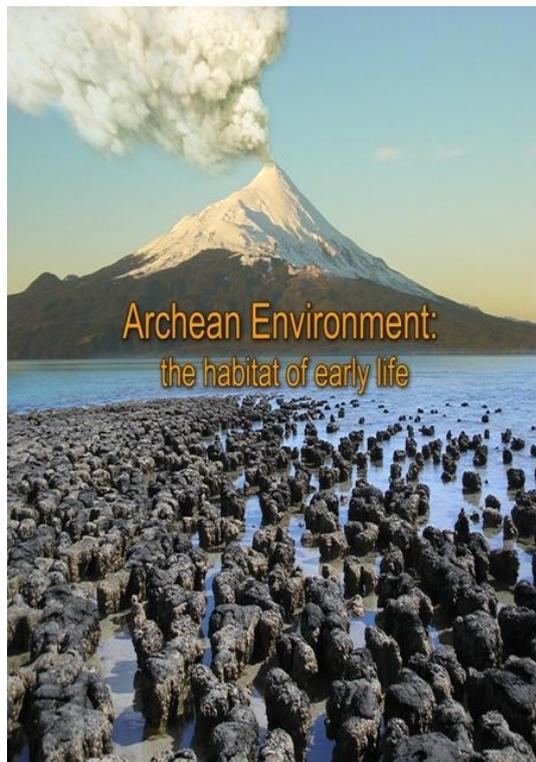
ESF Marnesia building, Strasbourg

Prof. Reinhart Ceulemans – nominated on 9 October 2008 as the new Chair of LESC – opened the LESC Standing Committee meeting which took place in Strasbourg from 4-5 November 2008.

He invited Professor Marja Makarow, the ESF Chief Executive, to present her views on the ESF in the context of the European Research Area. She described the ESF as a multinational complement to national and supranational organisations and activities. The “chain” of ESF instruments – the wide range of ESF activities – serves the various priorities of ESF Member Organisations and acts as a link between themselves and the researchers. Marja Makarow reminded those present that international cooperation is also one of the crucial elements emphasized in the EuroHORCS ESF [vision paper](#).

A statutory review of each ESF SC has been requested by the ESF Governing Council. An international Review Panel will be set up to undertake this review based on the self-assessment of each SC. These self-assessments should highlight the achievements, the progress made based on the 2002 recommendations and the future directions of LESC science. The period to be reviewed runs from 2003 to 2008. Based on a SWOT analysis and the questions asked by the Governing Council, the exercise should include a self-assessment of each SC member; the Chair; the LESC office and the SC as a whole. The recommendation of the Review Panel will be presented at the April 2010 Governing Council meeting. The Standing Committees have to submit their contributions to the Review by 31 May 2009. The Review Panel is expected to complete its work by 31 December 2009. It should cover the directions, strategy and priorities taken by the SC since the last Review, the gaps in activities and elements not achieved, and a prospective plan for the future.

Two Research Networking Programmes presented their mid-term reports at the meeting, namely **Archean Environmental Studies: the Habitat of Early Life (ArchEnviron)**, represented by Nick Arndt (Steering Committee Chair) and **Workshops on Marine Research Drilling (Magellan Workshop Series)**, represented by Judy McKenzie (Steering Committee member). The SC was very positive about the continuation of both Programmes. For instance ArchEnviron was described as “*an appealing and promising effort*”, and the SC encouraged “*Magellan to be involved as much as possible with the development of the European-led IODP proposals and with the future of IODP itself*”.



A few recommendations were suggested to reinforce their value and impact, such as reaching out to the relevant science communities as much as possible; using all aspects of the RNPs, also through the enlargement of the science community potentially involved in the RNPs; the further development of travel grants for young scientists and the organisation of large conferences.

ArchEnviron: www.esf.org/archenviron
Magellan: www.esf.org/magellan

LESC Core Group meetings Sept-Nov 2008

The LESC Core Group (CG) met twice this autumn. At the Vienna meeting from 1-2 September the main task was to rank the EUROCORES Theme Proposals. The meeting was kindly hosted by the Austrian Member Organisation *Fonds zu Förderung der wissenschaftlichen Forschung (FWF)*. It was the last meeting chaired by Professor Alex Quintanilha, and a beautiful farewell dinner with live music was organized by the host in his honour.



Vienna Town Hall. Photo by Gryffindor

Out of the total 38 EUROCORES Theme Proposals received by the ESF, 15 were in the LESC remit. The CG decided to recommend three of these, one of which is a joint proposal with the Standing Committee of Physical and Engineering Sciences (PESC). All three were considered to be excellent proposals, but the ESF Science Advisory Board recommended during its meeting on 26 September that only two of them be sent to the Member Organisations for their commitment due to the fact that one proposal, although excellent, overlaps too much with an existing programme funded by the European Commission.

The second CG meeting took place in Strasbourg from 3-4 November. Firstly the CG welcomed the new Chair of LESC, Reinhart Ceulemans, who was himself a LESC SC member for five years and a CG member for two years. The main item for the CG was to rank LESC Exploratory Workshop proposals and to discuss the budgets for 2008 and 2009.

This year 79 Exploratory Workshops out of 338 eligible proposals were in the LESC remit. Twenty EW proposals, covering a wide range of LESC fields, were considered to be excellent and an additional seven were considered to be worth funding. After a lively discussion, the LESC SC approved the ranking the next day. The final list of ESF Exploratory Workshops for 2009 was decided at the SC Chairs meeting on 26 November.

The CG made suggestions to the LESC SC on how to use the remaining strategic funds for 2008, and it planned the budget for 2009. Some 2008 activities had been postponed or cancelled and that is why there were some funds still available for this year.

COST-LESC Synergy

Water and Life Workshop

A Frontiers of Science event on “*Complex Systems and Chances: Water and Life*”, organized by ESF/LESC and COST from 29-31 October in Taormina, Sicily, was a great success. New and cutting-edge science was discussed among young and experienced scientists and the goal of interdisciplinary approach was well achieved.



Taormina. Photo courtesy of Inge Jonckheere

Below are some examples of the topics presented at the event.

- Mars science can give clues about how life started on Earth. Understanding the context of early life from the evidence on Earth is difficult because there is very little surface rock remaining from the time when life originated. It seems that at that time there was liquid water on Mars too, and a similar environment in many respects. The oldest areas on Mars have hydrated minerals, like clays, which contain water within the mineral structure. They also show signs of surface flows like river networks. But about 3.8 billion years ago, the Martian atmosphere declined and the planet went into a deep freeze, becoming a potential archive for early life on earth.
- It is known that life can exist in some very extreme environments but Earth continues to surprise us. It has been recently discovered that productive ecosystems apparently exist in two places where life was not known before, namely under the Antarctic ice sheet, and above concentrated salt lakes beneath the Mediterranean. In both cases, innumerable microbes are fixing or holding onto quantities of organic

carbon large enough to be significant in the global carbon cycle.

- Observations from satellites now allow monitoring changes to water levels in the sea, in rivers and lakes, in ice sheets and even under the ground. As the climate changes, this information will be crucial for monitoring its effects and predicting future impacts in different regions. Sea level rise is one of the major consequences of global warming, but it is much more difficult to model and predict than temperature. Since the 1990s a number of altimeter satellites have been measuring the height of the ocean surface and this has dramatically improved our understanding of sea level rise. These measurements show that since 1993, sea level has been rising by 3.3 mm a year, almost double the rate of the previous 50 years.
- Microorganisms in rivers and streams play a crucial role in the global carbon cycle that has not previously been considered: microorganisms such as bacteria and single-celled algae in rivers and streams decompose organic matter as it flows downstream and convert the carbon it contains into carbon dioxide, which is then released to the atmosphere. This flux has not been taken into account in the models of the global carbon cycle used to predict climate change.

www.esf.org/waterlife



This 1/4-inch-long (0.5 mm) crustacean, *Hyaella azteca*, is common in aquatic systems and is used by scientists as an indicator of environmental health and water quality in streams, lakes, and other bodies of water. Photo by Scott Bauer.

Science Policy Briefing

Harnessing Solar Energy for the Production of Clean Fuel



Participants at the ESF Science Policy Conference

The **ESF Science Policy Briefing no 34 on Harnessing Solar Energy for the production of Clean Fuel** was completed and launched during the ESF Science Policy Conference in Stockholm, Sweden, 26-27 November. It is the outcome of a thinking process among leading European scientists in the field of solar-to-fuel energy conversion. It presents a common scientific view on technologies to harness solar energy and how to meet the challenges for Europe today. The document recommends the prioritized development of novel biosynthetic solar-to-fuel and biomimetic photosynthetic technologies for a sustainable energy economy if Europe is to become the leader in the field.

This Science Policy Briefing describes steps to a European action plan for Harnessing Solar Energy for the production of Clean Fuel. The report aims to contribute to a better understanding of challenges related to the clean fuel research and to initiate a debate among the relevant actors at national and European level on how to shape Europe's leadership in this domain.

The document has undergone external international peer review and has been approved by the Standing Committees for Physical and Engineering Sciences (PESC), for Life, Earth and Environmental Sciences (LESC) and for Social Sciences (SCSS).

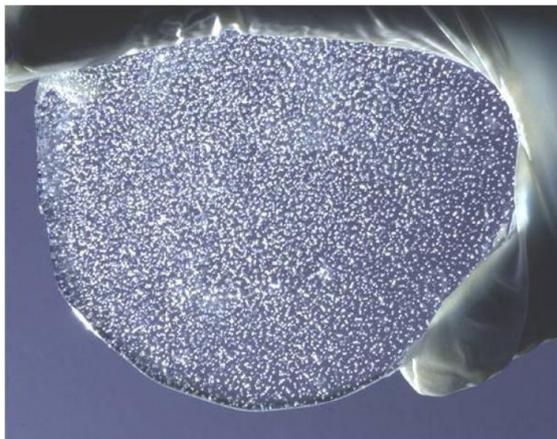
<http://www.esf.org/publications/policy-briefings.html>

Additional information can be found at <http://www.esf.org/publications.html>

EPICA (European Project for Ice Coring in Antarctica)

Recent Events

Two recent events took place concerning the research programme EPICA, one of the ESF's most successful and longest running Research Networking Programmes. The EPICA project - carried out by twelve institutions from ten European nations - was successful in retrieving past climate records of great impact for the assessment of our current climate change. Temperature and greenhouse gas concentrations over the last 800,000 years could be measured. The results have shown that the recent rise in greenhouse gas concentrations is beyond any historical comparison, leading to climate change at an unprecedented rate. Furthermore, the ice cores allowed scientists to study the coupling of the northern and southern hemispheres in detail.



Ice core sample distinctly showing the air bubbles which will be analyzed in the laboratory to reconstruct the past climate and atmospheric composition (Photo by British Antarctic Survey, UK)

The EPICA 2008 conference '*Quaternary Climate: from Pole to Pole*' took place in Venice, Italy, from 10-13 November 2008. This conference celebrated a 15-year project which has so far produced more than 200 papers including 14 in *Nature* or *Science*. The scientific topics covered by the conference included the climate of the last million years; its forcings and feedbacks; the past interglacials; the thermohaline circulation; the methods for palaeoclimate reconstruction; the ice instabilities and sea level; and the causes for glacial/interglacial climate change. The conference was a unique occasion to stress

that a lot of scientific questions related to past climate events remain unanswered and that a lot of work is still needed to understand the climate and atmospheric composition variability during the Quaternary.

EPICA was also represented at the ESF Science Policy Conference '*Global challenges and the need for cooperation: lessons learnt from Global Chance*' in Stockholm. The genesis of the EPICA project and an overview of the main scientific findings and technological accomplishments were presented by Jean Jouzel and Hubertus Fischer respectively. In addition, Eric Wolff presented the future projects of the EPICA community, namely the IPICS and EuroPICS projects aiming in particular at coring the oldest ice and reconstructing the climate of the past 1.5 million years within a 2007-2017 timeframe.

Perspectives for Food Sciences and Innovation – Drivers and Challenges for Europe

The ESF Science Policy Conference held in Stockholm was the stage for a series of discussion sessions. One of them was co-organised by the ESF-LESC Unit and the COST Food and Agriculture Domain Committee. The Vice Chair of the Domain Committee, Prof. Peter Raspor, chaired the session. Dr. Christian Patemann, Dr. Prem Bindraban and Prof. Jana Hajslova addressed different aspects of the global challenges that we are facing in the field of Food Systems. It was obvious that the complexity of the food system, with its variety of drivers and actors, would only allow speakers to briefly touch upon a few aspects during this meeting.

Two major challenges presented were the protection of health and environment and a sustainable production system that would secure sufficient and safe food for a growing world population.



Photo by Peggy Greb USDA/ARS

When zooming in on one of the drivers, healthcare, one can observe that the world faces not only a growing population but also an ageing one. This implies an increasing need for not only more food but also food that copes with dietary and age-related diseases.



For Europe, a healthier lifestyle and fresher, healthier and safe foods, lower on fats, seem to be part of the answer. It takes incorporating new ingredients, bioactive components, with enhanced availability to

improve health. In summary, strong research efforts to foster innovation in the food chain towards personalised nutrition would be needed to meet the demands of the Western population. Personalized nutrition means applying individual genetic profiling and systems biology knowledge in order to provide tailored food products and/or dietary recommendations as a contribution for personalized healthcare and disease prevention.

When looking at other parts of the world like Africa and Asia a different challenge becomes eminent. There is a discontinuity in the food production that increases the amount of people who are not secure of daily food. It takes good international governance to secure food- and fuel production that meets the economic and non-economic demands. The poor part of the world will pay the price if there is no increase in land that is cleared for agriculture. South America may have the potential to feed other parts of the world but we have to respect the ecological principles of production.

A third aspect that was highlighted during the session was food safety. In a struggle to produce the food that is needed to feed the world the food safety is often neglected or ignored. This may lead to contamination of the food-chain and risks for human and animal health. Not only chemical contaminants, e.g. pesticides, but increasingly natural components like mycotoxins cause a serious threat. More insight into metabolism is needed to enable the early detection of potentially harmful substances in the food-chain.

Technological innovation and a regulatory mechanism for more adequate quality control will then be needed to implement the knowledge in the global food production systems.

EUROCORES

Ocean Drilling in EuroMARC

The oceans are our climate regulators, cover the sites of fundamental geodynamic, geochemical and biological processes and have high-resolution records of the Earth's history in store for us. Scientific marine drilling and coring is crucial to cast light on both the deep and shallow (sub-) seafloors to advance our knowledge in the Earth and environmental sciences.



Marine core survey cruise during which marine sediments will be extracted for further analysis

The EUROCORES Programme EuroMARC is an essential tool to boost European leadership in the planning of international marine coring expeditions and the preparation of IODP (Integrated Ocean Drilling Program) or IMAGES (International Marine Past Global Change Study) proposals. The first EuroMARC conference took place in La Colle-sur-Loup, France, from 15-17 September 2008.

The programme consists of seven collaborative research projects with principal investigators from nine countries. The scientific focus is manifold: reconstructions of the meridional overturning circulation in both high and low latitudes and of the spatial and temporal structure of the interglacials peaks and demises are made using thick marine sediment sections. For instance, fossil reef and carbonate mounds cores are extracted to reconstruct sea-level and environmental changes. Current ocean dynamics and sediment fluxes are investigated with the help of sediment traps, and hydrothermal processes of deep biosphere at mid-ocean ridges get explored.

Marine coring and drilling is a challenging endeavour. International marine coring expeditions are divided into several parts, the pre-, cruise and post-cruise activities. It is crucial to be a hundred percent prepared for the coring, which means planning way ahead, starting with getting a slot on one of the few drilling ships, obtaining permits to work in the national economic or territorial waters, making sure all the required equipment is on board and assembling a good scientific team. *"We had organisational meetings even before EuroMARC started"* said Catherine Kissel from the French Atomic Energy Commission (CEA) who was the chief scientist of the AMOCINT (Atlantic Meridional Overturning Circulation during Interglacials) cruise that took place this summer.

Often, a site survey cruise helps to identify the best spots for the actual coring and to get the drill sites approved by bodies like IODP. In order to map the topography of the seafloor, a multi-beam echo sounder system can be used, which is a fan-like beam covering a huge swath of the seafloor. Besides the seismics, autonomous underwater vehicles are often used for more local surveys. *"To make sure we won't damage any living ecosystem, we drop an underwater camera to see the nature of the seafloor just around the potential drilling site"* explained Gilbert Camoin from CNRS, who is the chair of EuroMARC's Scientific Committee.

On the main cruise, the coring itself takes place as well as first measurements and part of the sampling, provided the type of ship allows for it. Short cores of less than 1.5 m are often used to drill coral reefs, and if you have high sedimentation rates you need long cores. Box coring is used for taking surface samples as is

the so-called "multicores" instrument with four short cores, where even the water above the sediment is captured and subsequently the interface analyzed. As not all techniques can be run on board, the sampling is either done in the individual labs or as a joint activity in form of a science sampling party. *"Everyone is sampling for everyone else. So it's really a collaborative activity with everyone having a different task"* explained Dr. Camoin.

EuroMARC is a programme in a truly collaborative fashion. *"The great benefit for us is to work in a real network, to exchange data, but also to intercalibrate the results among the lab,"* said Dr. Camoin. *"EuroMARC is multidisciplinary, multilab, and this is how science works now and it's very enriching for us to collaborate with other people,"* added Dr. Kissel.

www.esf.org/euromarc

LESC Research Networking Programmes

Evolution of Social Cognition: Comparisons and integration across a wide range of human and non- human animal species (CompCog)

Keep a close eye upon your dog, because it is certainly watching you. Hounds and poodles and lapdogs alike show signs of being able to read their owner's intentions. This is called social cognition. Humans have it, and dogs may share it because dogs and humans have co-evolved for more than 10,000 years.



But wolves that hunt in packs also need to anticipate each other's moves. So perhaps this mysterious talent existed long before a wolf first tagged along behind a group of Palaeolithic humans during the last Ice Age. To answer such questions, researchers from 11 nations have joined forces to compare social cognition in humans, animals and even automata – robots need a rudimentary awareness too - in the ESF Research Networking Programme CompCog, led by the Social Sciences Unit.

“We want to try and find the basis of social cognitive skills: that is the purpose of this network. It is absolutely fundamental for us to understand where we sit as humans within it all, in order to understand animals from a more compassionate point of view,” states Professor Daniel Mills, a member of the CompCog network. He suspects that some conditions that psychiatrists call behavioural disorders may have their beginnings in normal behaviour, taken to an extreme form.

He learns from dogs, especially those that have become too dependent on human company. “If you take a traditional line like Labradors, and then start selecting them to be better pets – because people want dogs that will be more affectionate – you actually move the whole population. Even if you shift the mean by a couple of percentage points, there is a much larger increase in the extreme of over-attachment. You end up with dogs that cannot cope without human contact and become extremely distressed.” “However, just because dogs behave in human-like ways doesn't mean they do it using human-like mechanisms and that is the fundamental issue that needs to be addressed.”

His research could deliver fresh understanding of some human psychiatric conditions: it could certainly pay off in a more compassionate approach to animal suffering. The argument is that humans, like dogs, wolves and horses, have been shaped by the evolutionary biology, and humans share some of their social cognition with other animals. “We have to stop thinking that humans are the ultimate in everything. We are just part of biology.”

www.esf.org/compcog

Exploratory Workshop

Large-scale and long-term functional biodiversity research in Europe

The study of functional consequences of biodiversity change for ecosystem processes and services is a major research priority. However, so far these feed-back effects of biodiversity on ecosystem processes have only been studied in model experiments, not in real landscapes. At the landscape level, changes in land use have been identified as the major driver of biodiversity, but a comprehensive understanding of its effect on many functionally important taxa, on genetic diversity, on biological interactions among taxa, and on the relationship between diversity and ecosystem processes is still lacking. In order to guarantee comparable results that can be generalised across European landscapes, there is a need to unify the different research approaches to arrive at a common agenda for functional biodiversity research in Europe.



ESF-Workshop participants in Werder, Germany

Twenty-five scientists from twelve countries met in June 2008 in Werder, Germany to present and discuss current national and international initiatives on large-scale and long-term functional biodiversity research in Europe as e.g. CARBO-EUROPE, and planned research infrastructures such as LIFE WATCH.

Facilities and infrastructures required to facilitate the joint investigation of the drivers of biodiversity and the consequences that changes in biodiversity have on the functioning and services of ecosystems were discussed. It was agreed upon the need for a common research agenda that covers all the relevant

habitat types in Europe and involves a common statistical design and shared methodological approaches. What is needed now, are long-term biodiversity research platforms across Europe on a landscape scale to capture the relevant processes acting at that scale, open to all scientists and amenable to experimental manipulations to ensure mechanistic understanding rather than mere description. Only by bringing together biodiversity and ecosystem researchers we will be able to unravel the functional consequences that changes in land use may have on ecosystems.

The next step is the establishment of a task force formulating concrete research proposals and identifying types of landscapes and habitats which are particularly relevant in Europe. A roadmap is being worked including an ESF Research Networking Programme proposal to establish a multi-scale European set of research sites on functional biodiversity research.

Professor Markus Fischer, Chair of ESF Exploratory Workshop on "[Large-scale and long-term functional biodiversity research in Europe](#)"

Scientists meet to debate Climate Change

Livestock and Global Climate Change Conference, Tunisia, 17- 20 May, 2008



Delegates examine forage crops

This conference, which LESC sponsored through travel grants, attracted over 70 topical papers on animal science and climate change. More than 130 delegates from 36 countries attended. The breadth of the delegates' experience and background significantly contributed to the debate and discussions. It was very satisfying to see participants from developed and emerging countries realising that they were facing the same problems.



Photos courtesy of Scott Bauer USDA/ARS

The meeting considered the background to global climate change, including the contribution from livestock. It examined the actual and potential impact of climate change on livestock and livestock production systems including possible strategies to reduce or mitigate negative aspects. A series of case studies for different climatic zones and production systems presented examples of possible solutions in terms of how adaptation can protect livelihoods and how mitigation can reduce the impact on the environment. The workshops discussed the problems being faced by farmers and policy makers and what research was needed.

Hammamet was an ideal venue as the Tunisians were able to show the problems they face and some of the solutions being tried in an arid environment. This gave a vision of future environmental conditions that delegates from both developed and emerging countries could discuss.

The impact of this conference is already being recognized globally and discussions on collaborative climate change ventures are underway. Workshop outputs and the proceedings are available at www.bsas.org.uk

Mr. Mike A Steele
BSAS Office

Departing LESC Standing Committee members

François Gaill

CNRS - Université Pierre et Marie Curie, Paris, France

Marek Konarzewski

Institute of Biology, University of Bialystok, Poland

Zeljko Kucan

Department of Chemistry, University of Zagreb, Croatia

Alex Quintanilha

Institute of Molecular and Cell Biology, Porto, Portugal

Angheluta Vadineanu

National University Research Council, Bucharest, Romania

Changes in LESC Unit



Anne Garel joined the LESC unit in October 2008 to replace Anne-Sophie Gablin who is currently on maternity leave.

Anne is the Administrator for the EUROCORES Programmes EuroMARC and EuroMinSci.

Forthcoming meetings

January – April 2009

- **VOCBAS: Induced BVOC Emissions: Processes and Feedback Mechanisms from Cells to Atmosphere**
15-19 January – Tartu (EE)
 - **Magellan Workshop: COld-Water CARbonate Reservoir systems in Deep Environments-COCARDE**
21-25 January, Fribourg (CH)
 - **CONGEN: Climate Change, Fragmentation, Genetic Consequences**
29 January-1 February – Debrecen (HU)
 - **Magellan 4th Steering Committee meeting**
12 February – Graz (AT)
 - **CALCAS** workshops with science users and stakeholders + internal CALCAS meeting
17-20 February – Brussels (BE)
 - **FUNCDYN: Functional Dynamics**
Third ESF Research Conference
2-5 March – Cascais (Lisbon), (PT)
 - **FFG Workshop: Affinity Proteomics: 4th ESF Workshop on Ligand Binders Against the Human Proteome**
23-25 March – Alpbach (AT)
 - **FFG: Harmonised Biobank Research: Experiences and Visions**
25-27 March – Brussels (BE)
- ESF and LESC-sponsored sessions at the [European Geosciences Union General Assembly 2009](#)**
19-24 April – Vienna (AT)

- **LESC Core Group meeting**
5-6 February – Rome (IT)
- **LESC Core Group and Standing Committee meetings**
15-17 April – Piestany (SK)

The European Science Foundation (ESF) provides a platform for its Member Organisations to advance European research and explore new directions for research at the European level.

Established in 1974 as an independent non-governmental organisation, the ESF currently serves 77 Member Organisations across 30 countries.



1 quai Lezay-Marnésia • BP 90015
67080 Strasbourg cedex • France
Tel: +33 (0)3 88 76 71 00 • Fax: +33 (0)3 88 37 05 32
www.esf.org