

LESC NEWS

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

Editorial: ERC – do the figures add up?

There are a plethora of pan-European funding schemes. The Framework programmes have many components, some good and some bad. The ESF provides lower-level networking funds, and has moved into funding some of the research itself, contingent on the participation of the member organisations that support it. Most recently, the European Research Council has started funding the kind of science we recognise, but across the constituency of the whole European Union. Compared with the Framework programmes, this seems welcome, because its emphasis on basic, peer-reviewed science avoids the joint stigmata of 'juste retour', ministerial meddling in 'priority areas', and extraordinary bureaucracy. The academics leading the ERC are world-class, and the headline funding (4 billion €) certainly attracts attention. So does the ERC live up to its billing, and who will apply?

The complexity of FP applications, the low success rates, the protracted negotiations, the administrative burden if funded, and the exposure substantial financial losses incurred by partners with non-Euro currencies (if the currencies fluctuate over the 5-year framework window after the contracts are agreed), mean that Framework funding is rarely a first resort in countries with real responsive mode funding prospects. In the UK, both the Wellcome Trust and the Research councils are presently funding around 15-20% of proposals, and so my institution (like most in the UK) offer only guarded support for FP applications, and informally prohibit us from co-ordinating projects. Will similar arguments restrict applications to the new ERC?

It is too early to obtain statistics on the Advanced grant scheme – the first round closed only recently - but the 2007 Starting Grant competition attracted 9167 applications, and around 280 are likely to be funded: a success rate of 3%. As the ERC is an offshoot of FP7, byzantine complexity remains the order of the day: even the stage 1 proposal is as complex as a full-blown UK research proposal, and for the 559 invitees to stage two, an even longer proposal with further supporting documentation is required. Now that the scale of the task is

known, which Head of Department could seriously suggest that a junior colleague applied for such a scheme unless there were absolutely no national alternatives?

So perhaps there are two conclusions to draw. ERC funding from FP7 needs to increase at least 3-fold before it becomes a funding stream of first resort in the larger research nations; and meanwhile, ESF and LESG are continuing to provide an original alternative funding mechanism for exciting European research.



Professor Julian Dow

Outgoing UK
representative on the
Core Group of the
Standing Committee of
LESC

LESC Standing Committee meets in Warsaw

The LESG Core Group and Standing Committee met on 18-19 October 2007 in Warsaw, Poland. The meetings were kindly hosted by Professor Bogdan Ney, member of the Presidium, Polish Academy of Sciences. Special thanks are expressed to Ms. Renata Kuskowska for the practical arrangements.

The main focus of the 21st LESG Standing Committee meeting was the recommendation and ranking of the 50 Exploratory Workshop proposals of relevance to LESG. Exploratory Workshops are small, interactive group sessions, one to three days, aiming at opening up new directions in research and exploring emerging frontier research fields with potential impact on new developments in science. A LESG *rapporteur*, most often a Standing Committee member, attends the workshop, and the chair of the workshop sends a written report to the Standing Committee after the event. The Standing Committee recommended that ESF

follows up on Exploratory Workshops and keeps a record of resulting actions or initiatives.

The LESC Core Group ranked the top 21 Exploratory Workshop proposals, which were ratified by the LESC Standing Committee. After the meeting of the five chairs of ESF Standing Committees on 28th November in Strasbourg, 16 proposals in LESC's remit, 54 in total, were approved for funding. These events will be held during 2008 all over Europe.

An update on the ESF Forward Look on *European Food Systems in a Changing World* was given by John Ingram, Oxford University Centre, UK. The final conference took place in Budapest on 5-6 November and the outcome of this conference will be a Food Systems Science Policy Briefing with key recommendations for a research agenda for Europe. A follow-up activity for this Forward Look has also been planned; a conference on Environment, Climate Change and Food in Oxford, United Kingdom, in April 2008 www.foodsecurity.elsevier.com/.

The LESC Standing Committee decided to support a strategic workshop on *Impacts of Ocean Acidification* planned together with the EUROCORES Programme EuroCLIMATE. LESC will also support keynote speakers in an international conference on *Livestock and Global Climate Change* organised by the British Society for Animal Science with several partners such as INRA (France) in May 2008 www.bsas.org.uk/Meetings_&_Workshops/Livestock_&_Global_Climate_Change/. Moreover, the Standing Committee decided to continue the LESC young scientists travel grant activity during 2008.

Research Networking Programmes

Research Networking Programmes (RNPs) make it possible to create a common platform for nationally funded research groups to address, at the European level, major scientific and research infrastructure issues in order to advance the frontiers of existing science. These long-term programmes, subject to selection through an open call (next deadline 23 October 2008) and an international peer review process, deal with high-quality science and demonstrate the added value of cooperation at the European level. RNPs are funded *à la carte* by ESF Member Organisations interested in supporting those activities according to their strategic priorities and interests.

Together with the EUROCORES and the ESF Research Conferences, the ESF Research Networking Programmes bring together excellent scientists at all stages of their careers to collaborate and to advance the science agenda for Europe. These activities aim to encourage and stimulate cooperation between researchers and Member Organisations for new directions in research, and to plan and implement European-level research.

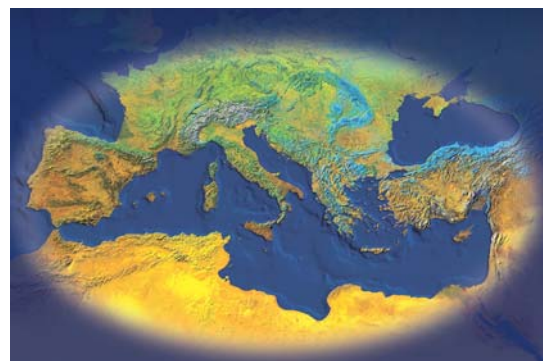
The LESC Standing Committee currently has 14 on-going RNPs and the following five in the pipeline:

- Frontiers of Speciation Research (FroSpects);
- Natural molecular structures as drivers and tracers of terrestrial C fluxes (MOLTER);
- Climatic change - Manipulation experiments in terrestrial ecosystems (CLIMMANI);
- Evolution of Social Cognition: Comparisons and integration across a wide range of human and non-human animal species (CompCog);
- Functional Genomics in *Aspergillus Fumigatus* and New Strategies to Fight Against the First Fungal Pathogen in Europe (Fuminomics)

www.esf.org/programmes

Mediterranean Climate Variability and Predictability (MedCLIVAR)

The Mediterranean region is an area of great interest because of the complex mechanisms determining its climate, the wealth of available data, and its sensitivity to climate change. It is a transitional region, between mid-latitude and subtropical climate regimes. The Mediterranean Sea itself strongly influences its surrounding environment, and its response to external forcing and its global role as salt supplier for the Atlantic Ocean constitute important climate-related issues. Simulations of future climate



scenarios agree that, due to an increase of anthropogenic greenhouse gas concentrations, temperatures will strongly increase, precipitations will significantly decrease and the inter-annual variability of both temperature and precipitation will be enhanced. Such changes could have a major impact on populations and ecosystems.

In fact, progress in the understanding of the Mediterranean climate has important environmental, socio-economical implications, as this region is characterized by large cultural, economical, political and demographic gradients in a state already under environmental stress (heat waves, highly variable precipitation, limited water resources, drought, floods). Inadequacy or lack of strategies for mitigation/adaptation could result in critical situations, in particular in connection with impacts of future climate change.

MedCLIVAR (May 2006 - April 2011) aims to coordinate and promote the study of the Mediterranean climate, to provide reliable and substantiated information on it, and to establish a network of European, Middle-East and North African institutes and scientists exchanging data and expertise, and cooperating on common research projects. The scientific priorities of MedCLIVAR are the understanding of underlying dynamics and mechanisms of the past and present Mediterranean climate systems (including both atmospheric and marine components), the provision of future regional climate trends and scenarios, and the study of potential climate change impacts. Supported activities include workshops, science meetings, schools, grants for scientific visits, the development of dedicated metadatabases and bibliography archives.

Professor Piero Lionello
Chair of MedCLIVAR Programme

www.esf.org/medclivar and www.medclivar.eu

Archean environment: the habitat of early life (ArchEnviron)

Peering into the Cradle of Life

Life appeared on Earth some 4 billion years ago, most probably on the ocean floor. Except for a few zircon crystals, nothing survives from the earliest part of Earth history, but conditions on the surface of the young Earth can be inferred by studying the oldest well-preserved volcanic and sedimentary sequences. The task of the ESF Research Networking Programme *Archean environment: the habitat of early life* is

to stimulate and coordinate research on this subject. In a recent meeting in Rio Tinto, Spain (12-14 April), "Archean Oceans: the first habitat of life on Earth", for example, participants in the program discussed the temperatures and compositions in the early oceans.



A mountain of chert (siliceous sedimentary rock) in the Barberton Greenstone Belt. This type of rock contains a record of some of the earliest life on Earth (photo: Nicholas Arndt)

One of the best sites to obtain concrete information is the Barberton greenstone belt in South Africa where a 300 million year record of volcanic eruption and sediment deposition is preserved in some of the world's oldest rocks. To recover this record requires that the rocks be sampled through scientific drilling and the ESF network is currently coordinating a project to drill the sequence in late 2008, with the support of European funding agencies and possibly the International Continental Drilling Program. In late September 2008, a field workshop sponsored by the ArchEnviron programme brought together geologists with expert knowledge of the Barberton area with specialists in diverse fields, all of whom were eager to bring their expertise to bear on problems relating to the broad geological evolution of the greenstone belt. Nine scientific disciplines were represented, ranging from hard-core geological subjects like petrology, sedimentology, paleontology and tectonics, through geochemistry and paleomagnetic studies, to biochemistry, remote sensing and data management. The interaction between the groups was very productive and contributed to several notable advances related to the eruption of volcanic rocks, hydrothermal fluid circulation through volcanic and sedimentary sequences and nature of some of the earliest life on Earth.

www.esf.org/archenviron

Professor Nicholas T. Arndt
Chair of ArchEnviron Programme

ConGen successfully passed the mid-term review – some highlights

In 2004, the Research Networking Programme *ConGen*¹ set out to build a framework in which experimental population genetics would bridge the gap between theoretical models and natural populations. Crucial to achieving this aim are the establishment of a consolidated network of research groups across European countries which work towards the integration of different methodological approaches employed in conservation genetics.

Over the last two years the Programme has made major achievements:

- At an explorative Science Meeting with invited experts from different disciplines of the conservation genetics field and *ConGen* Steering Committee members, the current status of the research field was discussed, strengths and weaknesses analysed, and a decision taken on which areas need strengthening and improved integration. The meeting discussions resulted in a review paper in the Journal *Biodiversity and Conservation*, which highlights the problems and challenges in conservation genetics.
- The Programme's strong training component has already strengthened collaborative research in the field. Specifically, some of the selected grants have by now generated long-term collaborations, and several scientific publications are on their way.

¹ *ConGen* – Integrating population genetics and conservation biology: merging theoretical, experimental and applied approaches

www.esf.org/congen

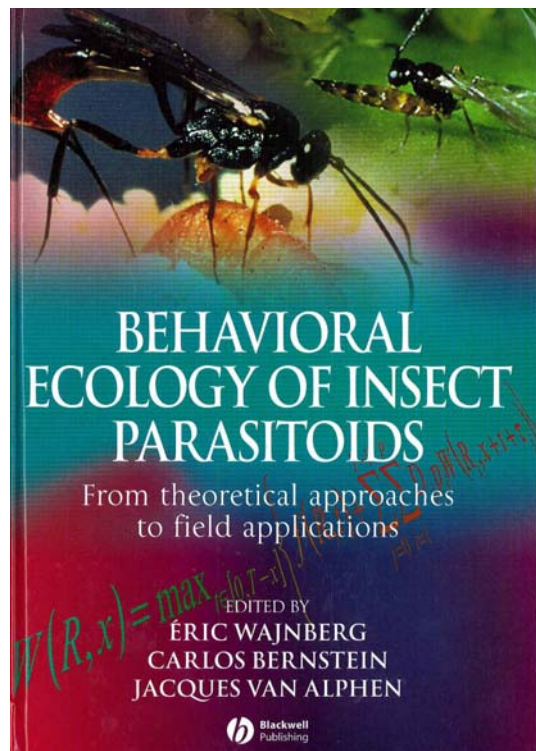
BEPAR: overall an excellent programme with some major success stories – even mid-term

After only two-and-a-half years of activity, the *Behavioural Ecology of Insect Parasitoids - from theoretical approaches to field applications* Programme, chaired by Dr. Eric Wajnberg, is already internationally recognized as an important and efficient means for developing research on the behavioural ecology of insect parasitoids and for proposing more efficient biological control programmes against crop pests.

BEPAR recently went through its mid-term evaluation. Beyond the typical framework of exchange visits and topical workshops, the

main successes identified so far in BEPAR are as follows:

A successful international conference organized in September 2006 resulted in a book entitled *Behavioural Ecology of Insect Parasitoids: From Theoretical Approaches to Field Applications*, recently published by Blackwell Publ. / John Wiley & Sons (ISBN 140516347X). This book is considered as “an impressive achievement” and the chapter topics are wide-ranging, pertinent and ambitious, with some of them breaking new ground. It represents an up-to-date synthesis that will make a strong impact and attract a large readership.



A BEPAR-related documentary film intended for universities and education TV channels at the European level is currently under development, to focus on behavioural ecology of insect parasitoids.

The programme has achieved a commendably and impressively broad geographical range to its activities, with, for example, representation from many teams across Europe and beyond (26 countries involved, including 12 non-European countries).

www.esf.org/bepar or <http://bepar.sophia.inra.fr>

VOCBAS science meeting

Biogenic Volatile Organic Compounds (BVOCs): Sources and Fates in a Changing World

Studies on climate change factors indicate negative feedbacks of rising CO₂ and ozone levels on emissions of isoprene, the main Biogenic Volatile Organic Compound (BVOC) emitted by terrestrial vegetation. More evidence is being collected, revealing important ecological roles of BVOCs in plant protection against biotic and abiotic stresses. Finally, studies supporting BVOC involvement in aerosol chemistry are now available.

The ESF Research Networking Programme *Volatile Organic Compounds in the Biosphere-Atmosphere System* (VOCBAS) held a science meeting on “Biogenic Volatile Organic Compounds (BVOCs): Sources and Fates in a Changing World” in Montpellier (France), on 2-5 October 2007. The event consisted of four thematic sessions, one of which was co-funded by the ESF Research Networking Programme *Interdisciplinary Tropospheric Research: from the Laboratory to Global Change* (INTROP).



A tower to measure VOC fluxes at a field campaign in Castelporziano, Rome (photo: Francesco Loreto)

Overall, the meeting confirmed that BVOCs are key players in biosphere-atmosphere interactions, and indicated that knowledge of BVOC sources and fates will allow better understanding of interactions between global change factors, air quality and biodiversity. It was agreed that more concerted efforts on a multidisciplinary scale are needed to achieve

further visible advances in this area. The leading role of pan-European research networks on BVOC research was clearly presented at the meeting, but it was also recommended that European coordinated research within and beyond European borders be further implemented. These findings served as the basis for the proposal of a new EUROCORES theme EUROVOC⁴ – see below.

www.esf.org/vocbas

EUROCORES News

New activities launched

The Call for new EUROCORES Themes closed in early June 2007 and 33 proposals were assessed. Following the ranked recommendations of theme proposals made by the disciplinary Standing Committees, the newly-established ESF Science Advisory Board took especially into account the scientific quality and the specific European scientific added value as selection criteria, and recommended six EUROCORES Themes, later approved by the ESF Governing Council, for further development as EUROCORES Programmes.

Preparatory workshops took place in November 2007 for the drafting of the scientific part of the Call, while in parallel a common workshop focused on the administrative and financial details of the Calls with the representatives of the interested funding agencies.

All ESF Member Organisations and other appropriate funding organisations have been invited to communicate their final commitment to the various EUROCORES Programme Calls by the end of February 2008.

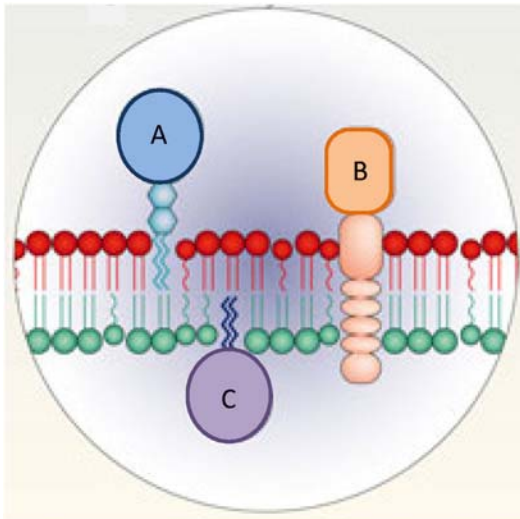
Two Calls are within the LESC remit:

EuroVOC⁴

The *Biogenic Volatile Organic Compounds (BVOC) in the Carbon-Chemistry-Climate System: Present, Past, and Future Projections* (EuroVOC⁴) programme will provide informed knowledge on the biochemical, physiological and ecological controls of BVOC emissions and their interactions with atmospheric and climatic processes. Using experimental work, satellite data and modelling studies, EuroVOC⁴ will investigate the species-specific, ecosystem, regional and global BVOC emission patterns in past, present and projected future climates.

EuroMEMBRANE

The aim of the EUROCORES Programme *Membrane Architecture and Dynamics* (EuroMEMBRANE) is to answer long-standing questions in membrane biology using cutting-edge technologies. These will address functional problems in a quantitative manner bringing together experimental tools with theoretical approaches. There will be a special emphasis on lipid-lipid and (glyco)lipid-protein interactions in the plane of the membrane in health and disease. This type of research requires a strong interdisciplinary collaboration that covers biological, chemical, physical and computational aspects of membranology over a broad dynamic range of time and length.



Modelled structure of the plasma membrane

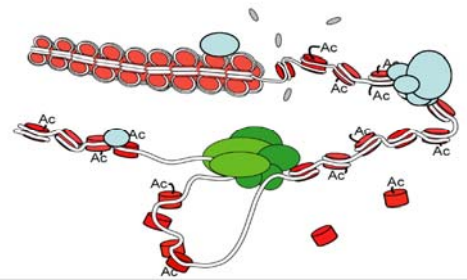
Networking activities

Biologists meet physicists and chemists head-on

A roundtable meeting on 4-5 December 2007 in Lisbon brought together 15 scientists from the life sciences, chemistry and physics with the aim of exploring new directions of research which could be worked out into a future research programme. This event was a continuation of an initiative launched in 2006 by the EUROCORES EuroDYNA¹, which brought together investigators from EuroDYNA and SONS², a EUROCORES Programme in the Physical Sciences. The 2006 meeting had two major outcomes: learning each others' "language" and establishing ties between two different scientific communities with subsequent collaborations, and introducing a short-term visit scheme for young researchers participating in the EUROCORES Programmes.

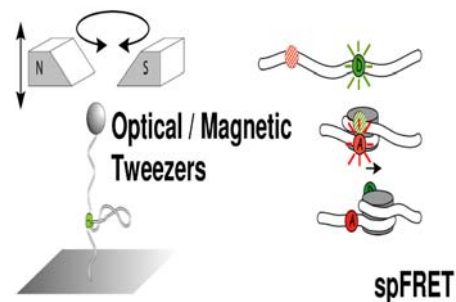
The Lisbon meeting successfully built on last year's results: with the participation of additional experts, the attendees looked into which are the major scientific questions to be tackled in their broad research field and where the other, complementary disciplines could help advance research at large. The brainstorming session yielded first fruit with the identification of topics at the interface of biology, chemistry and physics such as optical labchip, synthetic biology, artificial cells, biomimetics, self-assembly and many more. In consultation with their peers, a lead team composed of a EuroDYNA and SONS investigator will elaborate further on one of more of these subjects, with the aim of developing a scientific programme.

Example for interdisciplinary research



Challenges in chromatin research:

- highly dynamic and heterogeneous in composition
- many species of proteins involved
- bridge gap between physical models and in vivo situation



(Single-pair fluorescence resonance energy transfer)

Approaches:

- structural and dynamical analysis at single molecule level
- nano-scale visualisation in living cells
- purification and analysis of natively assembled structures vs. in vitro assembly

Images: John van Noort, University of Leiden

¹ Dynamic Nuclear Architecture and Chromatin Function www.esf.org/eurodyna

² Self-Organised Nanostructures www.esf.org/sons

EUROMARGINS Workshop on “Cold Seeps and Carbonates Mounds”

The *Cold Seeps and Carbonates Mounds* (SEECAM) workshop in September 2007 in Rimini, Italy, succeeded in bringing together scientists studying modern and fossil fluid flow features from both marine and terrestrial environments. Over two days, discussions touched on themes like mechanisms and processes of seabed seepage, rooting structures (how deep is the source?), formation of extrusive edifices over time (periodicity), and 2D and 3D seismic imaging of cold seep and carbonate mound structures. Discussions were stimulated by presentations of research from both present-day marine and terrestrial environments and from the geological record. The overall achievement of the SEECAM workshop was to provide a platform for a diverse group of scientists studying cold seeps and carbonate mounds to consider the current state of the art and future research directions.

The SEECAM workshop was the last workshop organized within the EUROMARGINS Programme. The goal of the workshop was to link the results of several EUROMARGINS projects focusing on present and future European research on fluid flow processes on continental margins. It included a one-day field trip to the Italian Apennines near Modena to visit the Salse di Nirano, a nature reserve containing small active mud volcanoes, as well as the Sasso della Streggha, a fossil cold seep.



SEECAM participants behind one of the calderas of the Salse di Nirano (Modena) (photo: Fun Meeuws)

www.esf.org/euromargins

Departing LESC Standing Committee members

Stella Canna-Michaelidou

State General Laboratory, Nicosia, Cyprus

Salvatore Cannistraro (Core Group)

Dipartimento di Scienze Ambientali, Università della Tuscia, Viterbo, Italy

Julian Dow (Core Group)

IBLS - Division of Molecular Genetics, University of Glasgow, United Kingdom

Rudy Rabbinge (Core Group)

University of Wageningen, Netherlands

The LESC Standing Committee thanks them warmly for their input and support, and wishes them well for the future.

Changes in LESC Unit



Kai Rankenburg joined the LESC unit in November 2007. He is scientific co-ordinator for EUROCORES Programmes Topo-Europe and EuroMinScl. He

has a background in Geology/Paleontology and Geochemistry; he carried out his postdoctoral research in the field of cosmochemistry at NASA's Johnson Space Center in Houston, Texas, and the National High Magnetic Field Laboratory in Tallahassee, Florida.

Following Daniela Turk's departure, Didier Hauglustaine is now the scientific coordinator for the EuroCLIMATE EUROCORES.

LESC Unit

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Forthcoming meetings

January – April 2008

- **Impacts of Ocean Acidification**
Strategic Workshop
28-30 January - Gran Canaria (ES)
- **FFG Workshop: TOPIM'08 (Hot Topics in Molecular Imaging): Imaging of Nano-objects**
4-8 February - Les Houches (FR)
- **NinE Steering Committee meeting**
5-6 February – Hamburg (DE)
- **MAGELLAN Steering Committee meeting**
7-8 February - Hameln (DE)
- **EUROMARGINS Wrap-up meeting**
18-19 February - Brussels (BE)
- **NinE Conference: Reactive Nitrogen and the European Greenhouse Gas Balance**
20-21 February - Ghent (BE)
- **CALCAS Workshop**
25-27 February - Vico Equense (Naples) (IT)
- **Molecular Bioenergetics of Cyanobacteria**
ESF Research Conference
29 March - 3 April - Sant Feliu de Guixols (ES)
- **MedCLIVAR Steering Committee meeting**
31 March - Paris (FR)
- **EuroMinSci: Second Programme Conference**
31 March – 2 April - Giens (FR)
- **SIZEMIC Workshop: Trophic dynamics in ecosystems: feeding interactions, species identity and body size**
4-7 April - Cambridge (UK)
- **FFG Conference: Antiviral applications of RNA Interference**
5-10 April - Sant Feliu de Guixols (ES)
- **FFG: 2nd European Farm Animal Functional Genomics Conference**
7-9 April - Edinburgh, Scotland (UK)
- **ArchEnviron: Mid-term Conference: Peering into the Cradle of Life: Processes and Habitats on the Archean Earth**
11-12 April - Vienna (AT)
- Topical sessions in the **European Geosciences Union (EGU) General Assembly 2008**
14-18 April – Vienna (AT)
- **FFG Workshop: Non-Coding RNAs: Computational Challenges and Applications**
28-30 April - Antalya (TR)

- **LESC/COST Synergy meeting**
14 February – Strasbourg (FR)
- **LESC Core Group meeting**
15 February – Strasbourg (FR)
- **LESC Core Group and Standing Committee meetings**
10-11 April – Crete (GR)

LESC sends you warm festive greetings and best wishes for 2008!

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 78 Member Organisations across 30 countries.