

LESC NEWS

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

Editorial

The Standing Committee for Life, Earth and Environmental Sciences (LESC), composed of leading scientists nominated by the ESF Member Organisations, is responsible for identifying scientific priorities, formulating strategies and developing the research agenda in its research area.

At a time when the life sciences, geosciences and environmental issues that affect our planet have gained increased visibility, LESC is striving to integrate many of these challenges into its short- and mid-term goals. The White Paper that we developed just over a year ago emphasised many of the strategies that were approved at the last ESF General Assembly. Our objectives include excellence in science and relevance to sustainable development, and we will continue to interact with the other ESF Standing Committees, Expert Boards and the COST Domain Committees to integrate our efforts and avoid duplication of initiatives.

LESC will use the available instruments to identify emerging domains of research and innovative ways of addressing a variety of challenges. These include topics such as monitoring of our planet and ecosystems, sustainable production of energy, advanced food systems, innovative diagnostic tools and the frontiers of modern biology and bioengineering. These can be illustrated by some of the most recently-approved Exploratory Workshops (e.g. Model organism proteomics; Biominalisation: from biology to materials; and Econometric time-series analysis applied to climate change), Research Conferences, Forward Looks and the latest EUROCORES: TOPO-EUROPE, RNA Quality, EuroMARC and EuroDEEP.

Policy issues will in future occupy a larger portion of our activities in the effort to become a leading voice in Europe on the research domains that LESC covers. Regular reports on our strategic and scientific activities will be featured in the LESC newsletter, to be published three times per year.



Professor Alex Quintanilha

Chair of the Standing Committee for the Life, Earth and Environmental Sciences

LESC Core Group meets in the Azores



Members of the LESC Core Group: Alex Quintanilha, Chair, Reinhart Ceulemans, Olgeir Sigmarrsson, Julian Dow and Salvatore Cannistraro (pictured from left to right) Members not pictured are Mark Stitt and Rudy Rabbinge

A very fruitful meeting of the LESC Core Group took place on 5 February 2007 in one of the western-most parts of Europe, on Terceira Island in the Azores. The meeting was hosted by José Gabriel do Álamo de Meneses, the Regional Secretary for Education and Science of the Azores, and created enough local interest to be featured on the Azores television news.

The Core Group, appointed by the LESC Standing Committee, assists the Chair with detailed Committee business and prepares the Committee's twice-yearly plenary sessions. The Core Group normally meets four times a year. This was its 40th meeting.

The main focus of this meeting was ESF Forward Look activities, with a general update on the ongoing Forward Looks relevant to LESC: Systems Biology, European Food Systems in a Changing World, Lincei initiative and Urban Science, and the selection of the proposals received in response to the 2006 call. Out of the 15 eligible proposals put forward by the Member Organisations, five were in the remit of LESC. The LESC Core group ranked the proposals for the Forward Look Committee, which will make the final recommendations to the ESF Governing Council for decision.

After consultation with the Standing Committee members, the Core Group decided to support, together with COST and Eureka, The Aquaculture Twin event, to be held in Patras, Greece, on 24-25 May 2007. LESC is providing funds for young

scientists to attend this conference. The call for applications will be launched by end March with a deadline for applications on 3 May. Information will be available at www.esf.org/aqua2007.



Geese over Speyside (photo: Calum Davidson)

LESC-COST synergy

The motto of LESG is “**Action together – make it happen!**”. LESG-COST synergy exemplifies this motto. Joint activities with COST previously focused mainly on Earth and environmental sciences but life and social sciences have recently also become an integral part of the synergy actions, in particular on aquaculture, genetically modified organisms and plant genomics.

Policy issues were discussed at a joint LESG-COST workshop on “Determining environmental information needs for improved policy formation, setting agendas on the science policy interface” in November 2006. The general theme of the workshop, how the science-policy dialogue can be enhanced to the mutual benefit of both communities, was further elaborated by determining what helps and what hinders the setting of environmental research agendas relevant to policy formulation. And when discussing environmental issues, many players are involved in technology policy, meaning that the issues are often very complex. Complexity can be used as an excuse to do nothing. This is, however, not the case of LESG; with its trans-disciplinary coverage, it is well-placed to take up the challenge and provide policy advice for Europe.

Dr. Arja Kallio
Head of the ESF LESG Unit

LESC and EGU 2007

The European Geosciences Union (EGU) General Assembly annually brings together geoscientists from all over Europe and the rest of the world into one meeting covering all disciplines of the Earth, Planetary and Space Sciences. The EGU General Assembly 2007 will be held in Vienna, Austria on 15-20 April and ESF/LESC activities will again be well represented.

Four LESG EUROCORES Programmes are organising topical open sessions:

- EUROMARGINS - “Processes of rifting, sediment transport, fluid flow and biogenic activity”
- EuroCLIMATE - “Climate variability and the carbon cycle (past, present and future): multi-proxy reconstructions and coupled climate models at European and regional scales”, with the V.I. Vernadsky Medal Lecture
- EuroMinSci - “Mineral properties and behaviour”, with the European Mineralogical Union Research Excellence Medal Lecture
- EuroDIVERSITY - “Biodiversity science in Europe: new tools and strategies”.

An interdisciplinary Union Symposium, on “Prospective views for European Cooperation in Geosciences and Environmental Sciences: Contributions in a global context” is being organised under ESF/LESC auspices on 16 April 2007. The issue of international, interdisciplinary cooperation in Europe will be addressed through a series of stimulating keynote talks, presented by leaders in a wide range of scientific fields, directly involved in international programmes or high-quality, innovative initiatives in Europe. The planned outcome of this Symposium is the elaboration of a few key recommendations on improving synergy and further strengthening international, inter-disciplinary cooperation in the European Research Area, especially within the field of Geosciences and Environmental Sciences. The Union Symposium audience will include scientists, but also science managers, science policy makers and representatives from the media.

During the EGU week, topical sessions/meetings will also be held in relation to the ESF/LESC Research Networking Programmes EPICA, MedCLIVAR, and ArchEnviron.

In addition, the ESF/LESC corporate presence will be reinforced through the ESF booth in the exhibition area.

<http://meetings.copernicus.org/egu2007>

EuroBioFund has launched its second Call to the scientific and funding communities to submit Expressions of Interest identifying future challenges in life sciences research, which require a coordinated European approach for their financing and implementation. EuroBioFund is a strategic initiative set up by the European Science Foundation in 2006 with support from the European Commission to identify such future challenges.

This new Call marks an important step in a process which will result in the selection of six Expressions of Interest addressing future life sciences challenges for discussion with scientists and funding organisations at the second annual EuroBioForum, scheduled to take place on 5-7 December 2007 in Lisbon, Portugal.

By bringing together key stakeholders in life sciences, EuroBioForum will set the scene for the future financing and implementation of new research programmes via public and/or private partnerships.

EuroBioForum 2007 follows on the success of the first annual EuroBioForum which took place in Helsinki on 14-15 December 2006. That event attracted over 150 participants from 25 European countries, including representatives from national and intergovernmental research-funding bodies, leading research scientists, policy makers and representatives from the European Commission, foundations, industry and patient organisations.

The deadline for submitting Expressions of Interest is 28 May 2007. For further information see <http://www.esf.org/eurobiofund> or contact:



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TOPO-EUROPE Call open

The European Science Foundation has launched a Call for Outline Proposals for Collaborative Research Projects (CRPs) to be undertaken within the EUROCORES Programme “4-D Topography Evolution in Europe: Uplift, Subsidence and Sea Level Change” (TOPO-EUROPE), which is supported by 19 countries. The deadline for submission of Outline Proposals is 9 May 2007.

The TOPO-EUROPE Programme is concerned with the geoscience of coupled deep Earth and surface processes and their effects on the evolution of the topography of continents and their margins. In addition to addressing world-class issues of Earth-System sciences, TOPO-EUROPE has considerable societal relevance, since topography directly affects humanity as a result of secular landscape changes that have a direct bearing on environmental change and geohazards. TOPO-EUROPE intends to investigate the 4-D topography evolution of the European continent, its margins, and adjacent parts of North Africa, Asia and the Middle East. This requires an interdisciplinary approach that integrates research in the subdisciplines of geomorphology, geochronology, geology, tectonics, geochemistry, petrology, geophysics, hydrology, geodesy, remote sensing and various branches of geotechnology.

This ESF EUROCORES initiative is a unique opportunity to establish a world-class programme based on Europe’s strengths in integrated Solid-Earth sciences.

<http://www.esf.org/topoeurope>

Networking activities

EuroDEEP: “Ecosystem functioning and biodiversity in the deep sea”

The aim of the new EUROCORES Programme EuroDEEP: “Ecosystem functioning and biodiversity in the deep sea”, following the agreement of funding agencies from 9 European countries, is to further explore the deep-sea

environment, to further describe the biological species and communities that inhabit it, and to better understand the physical and geochemical processes that shape the environment in which these communities live. The final goal is to describe, explain and predict variations of biodiversity within and between deep-sea habitats, their consequences for deep-sea ecosystem functioning and the interactions of the deep sea with the global biosphere.



EuroDEEP is a programme for deep-sea biology and ecology that strongly depends and requires collaboration between taxonomists, microbiologists, ecologists, physical and chemical oceanographers and geologists. The Programme will run for three to four years and is currently in the funding finalization phase. The start of networking activities in this multidisciplinary EuroDEEP Programme is foreseen in June 2007. The EuroDEEP programme fosters pan-European collaborative research, networking and training as well as dissemination of scientific results and activities developed in the frame of this programme.

<http://www.esf.org/eurodeep>

Challenges of Marine Coring Research (EuroMARC)

Following agreement with 12 funding agencies from 11 European countries, 8 recommended projects within the EUROCORES programme EuroMARC: "Challenges of Marine Coring Research" will start during spring/summer 2007.

The EuroMARC Programme activities will focus on the major science themes: Earth's surface environmental change, processes and effects; the deep biosphere and sub-seafloor ocean; solid Earth cycles and geodynamics. Obtaining key cores from the sub-seafloor is crucial to progress in the Earth and environmental sciences because the oceans regulate climate, cover the sites of fundamental geodynamic, geochemical and biological processes and preserve high-resolution records of the Earth history.

EuroMARC is an essential enabling tool to boost European leadership in the planning of marine drilling and coring expeditions and the execution of European proposals, hence ensuring the effective exploitation of research opportunities.

EuroMARC is also an important contribution to the European participation both in the International Marine Past Global Change Study (IMAGES) and in the Integrated Ocean Drilling Program (IODP), in liaison with the European Consortium for Ocean Research Drilling (ECORD).

<http://www.esf.org/euomarc>

Quality Control of Gene Expression – RNA Surveillance (RNA Quality)

RNA quality control has only recently emerged as a new field of RNA research and is now one of the most exciting areas of molecular biology. ESF will promote research on this cutting-edge topic through the EUROCORES Programme RNAQuality, which is envisaged to be launched early summer 2007.

Europe has a tradition in RNA research and many of the worldwide leaders in the field of RNA quality control are European. Each of these research groups has specific profiles and expertise in different technologies and model organisms. ESF, together with the 17 funding agencies/research performing agencies which signed up for this EUROCORES from 15 European countries, will set the stage for European researchers to join forces and coordinate their efforts across Europe within the framework of the RNAQuality Programme.

This EUROCORES Programme is the first European-wide Programme to address the next big challenges in quality control of gene expression.

<http://www.esf.org/rnaquality>

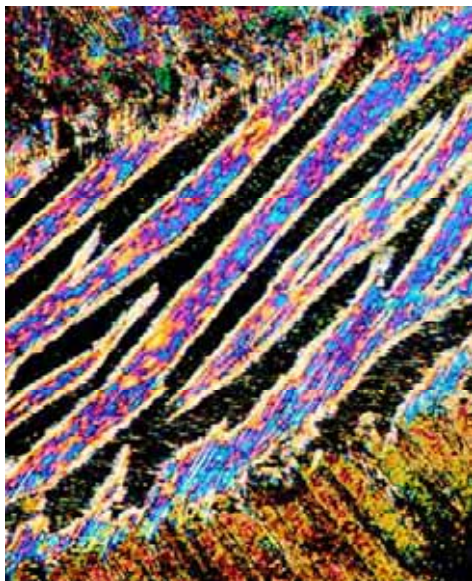
1st EuroMinSci Conference

The first Conference of the EUROCORES Programme EuroMinSci: "European Mineral Sciences Initiative" will be held in La Colle-sur-Loup (near Nice), France on 26-29 March 2007.

The physical and chemical properties of the Earth and terrestrial planets depend largely on the properties of their constituent minerals. Major advances in the use of physics-based experimental techniques and atomistic computer simulation now make it possible to understand the relation between the structure and properties of minerals. The EuroMinSci Programme focuses on the atomistic understanding of structures, properties and processes of minerals. More than 80 researchers from 13 countries collaborate within and across nine interdisciplinary projects, on topics ranging from the internal dynamics of the Earth system to the emergence of life as we know it.

The 1st EuroMinSci Conference will focus mainly on the following topics:

- Mineral Physics of the Earth's Mantle and Core;
- Microstructure and Mineral Behaviour;
- Atomistic Understanding of Minerals;
- Elements and Alloys at Extreme Conditions;
- Reactivity and Structure of Surfaces and Interfaces;
- Defects and Disorder in Minerals



Crossed-lamellar structure of aragonite in a gastropod shell (polarized light) – Field view 50 μm (photo: BioCalc – Jean-Pierre Cuif)

<http://www.esf.org/eurominisci>

Research Networking Programmes

Magellan Workshop Series

As a complementary activity to the EUROCORES Programme "Challenges of Marine Coring Research" ([EuroMARC](#); see page 4), the Research Networking Programme "Workshops on Marine Research Drilling" (Magellan Workshop Series) offers opportunities for the full development of pan-European marine drilling science. The ESF Magellan Workshop Series Programme is a mechanism to stimulate and support European leadership in the planning of marine drilling expeditions and the use of drilling platforms. Among the ESF Magellan Workshops funded in 2006, an excellent example is the Workshop on "Drilling through an active caldera, offshore Campi Flegrei, Eastern Tyrrhenian margin", held in November 2006.

The study of volcanic continental margins and/or island arc volcanism is fundamental in the understanding of Solid Earth cycles and geodynamics. In particular, knowledge of volcanic hazards has become a dominant issue for the scientific and social community worldwide. Active calderas are major volcanic features of the Earth's crust associated with shallow magma reservoirs, high geothermal gradients, and geodynamic unrest often documented through historical time. Explosive caldera-forming eruptions are also among the most catastrophic geologic events that may affect the Earth's surface.

The workshop has been among the first European efforts to assess volcanic hazard in an integrative way. The peculiar setting and features of the partially submerged Campi Flegrei Caldera makes it an ideal natural laboratory for future research within the joint framework of both the International Continental Scientific Drilling Program (ICDP) and the Integrated Ocean Drilling Program (IODP).

<http://www.esf.org/magellan>

New LESC Programmes

Two new Research Networking Programmes are being launched in early 2007, as a result of the 2005 Call for Proposals.

Body-size and ecosystem dynamics (SIZEMIC)

A new Research Networking Programme, "Body-size and ecosystem dynamics: integrating pure and applied approaches from aquatic and terrestrial ecology to support an ecosystem approach (SIZEMIC)", will be launched for four years in May 2007, starting with the first meeting of the SIZEMIC Steering Committee.

Body size and species identity both contribute to the complex webs of interaction that determine the structure and function of ecosystems. SIZEMIC will attempt a synthesis of size and species-based approaches for describing structure and energy flux in ecosystems and seek to understand how the properties of individuals lead to observed patterns of size structure and diversity. This synthesis, building on recent theoretical developments in aquatic and terrestrial ecology, will be used to develop and test size-based models that might be used to assess and monitor the impacts of human activities on ecosystems.



Large seal attacks small prey (photo: Simon Jennings)

The Programme will provide a focus for collaboration between theoretical and applied ecologists working on terrestrial and aquatic ecosystems and provide opportunities for young European scientists to work across existing research boundaries. To date, 11 contributing organisations in 10 countries have agreed to support the Programme.

<http://www.esf.org/sizemic>

European Networking Summer School (Plant Genomics and Bioinformatics)

A second new Research Networking Programme in the LESC domain, "European Networking Summer School (Plant Genomics and Bioinformatics)", is expected to be launched in Spring 2007.

Plant genome research has developed into one of the most dynamic disciplines of molecular life sciences. Plants are recognised as the basis of a bio-based economy and play a fundamental role in sustaining our environment. European countries regroup their efforts in the field in national and regional research programmes, some of which have already developed sustainable co-operations with joint research projects. But many of these activities are currently limited to Western Europe. The fundamental idea of this new RNP is to support research networks all over Europe by training young investigators and enhancing the exchange of knowledge and technological insights. Existing deficits in the access to technologies, resources but also skills and know-how will be addressed and solutions sought.

The "European Networking Summer School" will organise an annual summer course pursuing the training aspect, the exchange of ideas and the creation of an active and living network between European scientists, research organisations and research programmes. The networking and training activity course will combine the latest theoretical knowledge with practical lessons. An annual published brochure on the latest developments, lectures given and practical exercises will maximize the knowledge transfer to a wider group of interested scientists.

The LESC Unit

The LESC Unit at the ESF office is currently comprised of five science officers and eight administrators.

The Science team

Dr. Arja Kallio
Head of Unit



Dr. Bernard Avril
Geosciences and
Environmental
Sciences

Dr. Inge Jonckheere
Environmental Sciences



Dr. Astrid Lunkes
Life Sciences

Dr. Daniela Turk
Geosciences and
Environmental Sciences



Science Support



The EUROCORES Administrators : *(from left to right)* Jackie McLelland, Anne-Sophie Gablin, Cindy Hury and Eléonore Piémont



Administrative support for the Standing Committee, Exploratory Workshops, Forward Looks and Research Networking Programmes is provided by : *(from left to right)* Céline Seewald, Pat Cosgrove, Jane Swift and Sarah Renay

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Forthcoming meetings

- **Thermal adaptation in ectotherms (THERMADAPT) workshop and Steering Committee meeting**
15-18 March – Barcelona (ES)
 - **Non-protein-coding RNA workshop**
Frontiers of Functional Genomics (FFG)
17-19 March – Carry-le-Rouet (FR)
 - **INTROP workshop on State-of-the art in off-line characterization of the organic content in atmospheric aerosol**
26-28 March – Boraas (SE)
 - **First EuroMinSci Conference**
26-29 March – La Colle sur Loup (FR)
 - **Second BioCreative Challenge Evaluation: Assessment of Text Mining Methods in Molecular Biology workshop**
Frontiers of Functional Genomics (FFG)
2-4 April – Madrid (ES)
 - **SIBAE Spring School - Stable Isotopes in Ecology**
2-13 April – Vienna (AT)
 - **ArchEnviron workshop on Archean Oceans: the first habitat of life on Earth**
11-14 April – Nerva (ES)
 - **LESC at the European Geosciences Union (EGU) General Assembly**
15-20 April – Vienna (AT)
 - **MedCLIVAR Steering Committee meeting**
21 April – Vienna (AT)
 - **INTROP Conference on Aerosols – Properties, Processes and Climate**
22-24 April – Heraklion (GR)
 - **Palaeo-databases: their role in modelling and reconstructing palaeoclimate and understanding palaeoenvironments workshop**
EuroCLIMATE/ EuroDIVERSITY
8-12 May - Aix-en-Provence (FR)
 - **Mining of High-Throughput Data in Functional Genomics workshop**
Frontiers of Functional Genomics (FFG)
8-9 May – Coleraine, Northern Ireland (UK)
 - **Magellan: Exploring Escarpment Mud Mound Systems and Mud Volcanoes with new European strategies for sustainable mid-depth coring workshop**
10-13 May - Murten (CH)
 - **Frontiers of Functional Genomics (FFG) Steering Committee meeting**
17-18 May - Warsaw (PL)
 - **SIZEMIC First Steering Committee meeting**
24-25 May (*tbc*) – Strasbourg (FR)
 - **BEPAR Parasitoid symposium in the 5th international conference on Butterfly Ecology**
2-7 July - Rome (IT)
 - **EuroDIVERSITY Co-sponsored Summer Courses in the International Association for Landscape Ecology (IALE) Congress**
8-12 July - Wageningen (NL)
 - **INTROP School on Basic Aerosol Science Applied to Atmospheric Aerosols**
16-22 July – Vienna (AT)
 - **BEPAR Summer School**
20-25 August - Bremen (DE)
- **LESC Standing Committee Spring meeting**
19-20 April – Tallinn (EE)
 - **LESC/COST Synergy meeting**
11 June – Brussels (BE)
 - **LESC Core Group and Member Organisations meeting**
14-15 June – Prague (CZ)

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 75 Member Organisations across 30 countries.



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