

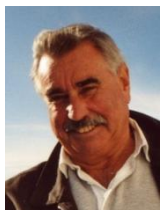
European Space Sciences Committee (ESSC)

Editorial

This issue of the ESSC Newsletter covers several new and interesting developments in the evolution of the Committee and of the ESF Space Sciences Unit. On 4 May the Unit will comprise five staff members whose salaries are funded, either through the ESSC budget, or by external contracts with ESA or the European Commission. This should be compared to the situation 2 years ago, with 1.5 persons on the Unit's payroll at the time. This is of course the result of a substantial increase in our activity and coverage of various domains that led us to assume responsibility for 3 major external contracts. The challenge ahead is now to be able to stabilise this workforce in the longer term.

Another major development is our desire to change the operating mode of the annual meetings of our Funding organisations (EFOs). Up to now, EFOs have been operating in an essentially passive mode, reacting to suggestions made by the Committee and the Space Sciences Unit. What we propose today is for EFOs to appoint a Chairperson of annual meetings on a rotating basis and to take a leading role in these meetings. In that context, the ESSC Chair and the Space Sciences Unit would act as supporting Executive to the EFOs, and many issues discussed could be provided by EFOs.

We would be grateful to receive feedback on this newsletter. Thank you in advance for providing suggestions and comments.



Jean-Pierre Swings
Chair of ESSC



Jean-Claude Worms
Head, Space Sciences Unit

Highlights

ESA Ministerial Conference



As is the case since 1999 ESSC was invited to attend the 25-26 November 2008 ESA Ministerial Conference with an observer status: the ESSC delegation consisted of J.P. Swings and J.C. Worms. The Chair made an oral statement during the meeting, emphasising the recommendations prepared and approved by the Committee members. Overall we welcome the efforts made by the ESA Member States in the following domains: ExoMars (although the mission is still not fully funded); GMES and MTG; transportation and human exploration; future launchers development for the period 2009-2012.

This satisfaction is more limited in other areas. First, the ELIPS programme did not get the proposed 395 million € asked by the Executive, although the funds granted were much higher than in 2005. It is indeed important that Europe starts reaping the investments made in the ISS and Columbus. Then, the mandatory science programme received an increase of 3.5% per annum; this is welcomed although we recommended that the budget should reach 500 million € per annum. We would like to stress that this creates risks of delays or cancellations of some components of the Cosmic Vision programme. Finally, the climate change initiative was launched and funded, albeit at less than 50% of the Executive's request.

Finally we reaffirm that ways must be found in Europe (i.e. with the EU/EC) to support space data management.

ESSC Funding Organisations

The 5th edition of the annual meeting of ESSC Funding Organisations (EFOs) took place in Strasbourg on 27 February 2009. At this meeting the Chairman launched a discussion on a possible new format for the annual EFO meetings. He indicated that he was not in the best position to chair these meetings, stressing the similarity with ESA Programme Boards, with their “owners” (Member States in the case of ESA, and EFOs in our case) on the one hand, and the “Executive” (ESA or ESSC-ESF) on the other hand. The idea therefore was for EFOs to consider appointing a Chairperson on a rotating basis and play a leading role in the annual meetings. In that context, the Chair and the Unit would act as supporting Executive to the EFOs, and some of the issues discussed at each meeting could be provided by EFOs.

This would not change anything in the role and mode of action of the ESSC: committee members would still retain their scientific independence. EFOs could thus define the agenda of the meetings upon proposal by the Executive and/or the ESSC, and bring their national perspectives and needs into the discussion. This proposal was met with interest and will now be discussed at national level.

COSPAR

Jean-Pierre Swings was invited to attend the 4th COSPAR Scientific Advisory Committee (CSAC) meeting on 18 March, where he presented the ESSC, its mandate, mode of operation and ongoing activities at European and international level. He also described the COSPAR-ESSC relationship, recalling that the COSPAR President has been an *ex officio* member of ESSC since 1998, and emphasising the benefit for both organisations of a joint approach in various areas (e.g. exploration). As a result the present COSPAR Chair Roger Bonnet has invited the ESSC Chairman to become a member of CSAC, and its Vice-President as of 2010.



The mandate of CSAC is to review the evolution of space research and the international context over a 20 year time frame; to compile the visions of main space organisations; to review how COSPAR fulfils its missions and responds to the needs of the science community and of society; to analyse and suggest new approaches to international cooperation; and to suggest improvements or modifications to its structure and the possible setting of new tools. CSAC meets once a year. Current members are J.E. Blamont, J.L. Culhane, L.

Fisk (Chair), K. Kasturirangan, M.E. Machado, H. Matsuo, R. Pellinen, J. Wu, and L. Zelenyi, plus the COSPAR President and Vice-Presidents, ICSU and UNESCO representatives, and the Chairs of the eight COSPAR Scientific Commissions. Other experts are called upon whenever necessary.

THESEUS

This acronym stands for “*Towards Human Exploration of Space: a European Strategy*”, and is a proposal for an EC Coordination and Support Action to be developed within the Space theme of the Commission’s 7th Framework programme. The proposal consortium is coordinated by ESF-ESSC and comprises 5 other institutional partners: CNRS-IPHC (Strasbourg), DLR (Köln), MEDES (Toulouse), SCK-CEN (Mol), and the University of Sheffield.

The objective of THESEUS is to develop an integrated life sciences research roadmap enabling European human space exploration in synergy with the ESA strategy, taking advantage of the expertise available in Europe and identifying the potential of non space applications and dual research and development. This should be achieved by (a) identifying disciplinary research priorities; (b) focussing on fields with high terrestrial application potential; and (c) building a European network as the core of this strategy.

The proposal was submitted on 3 December 2008 in the frame of the FP7-SPACE-2009-1 Call and was evaluated since then. We have recently received the initial information on the outcome of this evaluation: THESEUS was deemed eligible and received a total mark of 13.5 out of 15 (threshold set at 9), with 4.5 out of 5 for each of the three criteria used in the evaluation (scientific and technological excellence; quality and efficiency of implementation and management; potential impact). This puts the proposal mid-way between “very good” (4) and “excellent” (5) for each of the criteria. This mark does not however prejudice the final outcome of the process. The Commission services are now ranking in priority order those proposals that passed all the evaluation thresholds, and will then take a decision on the lists of proposals for which negotiations of the grant agreement can proceed. For information, in this particular call it is estimated that funds will be available to support around 24 projects out of the 88 that have passed all evaluation thresholds.

International collaboration initiatives

Despite different terms of reference, procedures and operating styles, the US Space Studies Board

(SSB) and the ESSC have a “...long history of fruitful interchange and a shared vision of (space) science as a global activity...” (1998 report on joint collaboration in space science). This interaction enabled for instance the flagship mission Cassini-Huygens, through the setting-up in 1980 of an SSB-ESSC Joint Working Group on cooperation in planetary exploration, including an Outer Planets Study Team. The various joint events that followed until 1994 established cooperation mechanisms that helped salvage the mission when it was in danger of being cancelled (cf. letter from J.M. Luton to A. Gore 1994). Nine joint reports were produced over 32 years and excellent relationships have ensued between ESSC-ESF and SSB and, later, with similar bodies or individuals in Japan and China. A direct product of the joint ESSC-SSB report in 1998 is for instance the definition of the “8 habits of successful cooperation”, or key elements to be used to test whether an international mission is likely to be successful, i.e. scientific support through peer-review; historical foundation built on existing communities, partnership and shared scientific experiences; shared objectives incorporating interests of scientists, engineers and managers; clearly-defined responsibilities and roles for partners; agreed-upon process for data calibration and validation, access and distribution; sense of partnership recognising unique contributions of each participant; beneficial characteristics of cooperation; and recognition of the importance of reviews for cooperative activities at conceptual, development, active or extended mission phases, particularly for large missions. It is questionable though whether these elements are actually used as guidelines in current and planned cooperative projects by space agencies throughout the world.

One important remaining blocking point concerns the “ITAR rules” (International Traffic in Arms Regulations), although recent discussions on the US side could offer some hope for changes. ITAR rules are not only detrimental at economic level: they also introduce frustration and mistrust between allies. Furthermore if no improvement is offered, Europe could move towards becoming more and more “ITAR-free”. Overall international cooperation in space has been and remains mandatory for Europe. Nevertheless it is also mandatory for the USA for large-scale projects such as Mars Sample Return. Cooperation could well be the only way to manage such large-scale projects in the future. Hence, and with the recent changes at political level, would this be the right time to foster enhanced international collaboration

(at scientific level) and cooperation (at agency level) and what should be our next steps? Which international cooperation model to use for, e.g. the various exploration programmes?

This, and other, aspects were debated during an SSB policy workshop held in Irvine in November 2008, and to which ESSC participated. Workshop participants identified the need for US scientists and executives to adopt a different posture towards international partners and considered setting up joint forums between SSB, ESSC and possibly other partners as well, in order to identify findings from the past and extract lessons for the future and propose such new models for international collaboration. This concept is currently under discussion with the SSB and ESA.

CAREX

CAREX is an FP7 Coordination Action funded for the period 2008 to 2010. This project tackles the issues of enhancing coordination of life in extreme environments research in Europe by



providing networking and exchange of knowledge opportunities to the scientific community and by developing a strategic European research agenda in the field. CAREX has recently developed a unique database and networking tool dedicated to research on life in extreme environments, gathering and making available information on experts, projects and research infrastructures. In November and December 2008, CAREX organised two workshops (cf. Newsletter n°3), following the recommendations emerging from the ESF-ILEE conference. These two events gathered key European and international experts to discuss and identify future science and technology priorities and express recommendations; the report will be available in June 2009.

At the same period CAREX will hold its third strategic workshop on “*Identification of model organisms in extreme environments*”. CAREX is currently developing a survey of European Funding Agencies’ priorities in the field of life in extreme environments, for the period 2009-2014. This survey aims at identifying (i) the European funding organisations having an interest on research on life in extreme environments; and (ii) their foreseeable funding priorities for science and technology in this field. Once gathered and synthesised, the result of the survey will be targeted to the scientific community in order to provide it with a better

visibility. The perspective provided will also be of great interest for national programme managers.

More information at www.carex-eu.org
Project Manager, Nicolas Walter, nwalter@esf.org

Launch of peer-review activities for ESA

After more than a year and a half of preparation, the ESF-ESSC is ready to support the peer-review activity related to the first three Research Announcements to be launched by ESA in May 2009. This will encompass an International Life Sciences Research Announcement (experiments on the ISS) where NASA, CSA, JAXA and NSAU will participate, and two European Research Announcements in the areas of physical sciences, bed-rest studies, and life sciences preparatory activities not conducted on the ISS.

The announcements should be made at the beginning of May, with a call deadline in early August. ESSC and ESF will then start and identify the necessary peers using the ESF database and Pool of Reviewers. Review Panel meetings should take place in November 2009. The ESF-ESSC has hired two persons in 2009 to deal especially with this project.

Forward Look proposals

Humans in Outer Space.

ESSC and the ESF Humanities Standing Committee (SCH) launched an inter-disciplinary activity in 2007 to reflect on the humanities-related aspects of space exploration. One workshop was held in Genoa in March 2007 and a second conference was held in Vienna in October 2007. This activity provided a unique perspective by identifying various needs and interests of humanities linked to space exploration. A joint position paper was published in April 2008, aimed at expressing the main results from this original ESF initiative.

Following this SCH and ESSC decided to launch a Call for Expressions of Interest in order to identify key challenging topics from any discipline in this area and investigate the best ways to explore them. 21 replies were selected out of 51 received and their authors were invited to an ESF-sponsored conference held on 2-3 April 2009 in La Palma.

The conference was a very successful event that ended with a fantastic field trip and visit to the Observatorio del Roque de Los Muchachos where "Grantecan", the world's largest single telescope is located. The conference participants provided a starting point for an ESF Forward Look, aiming to provide a social sciences and humanities-based

framework for decisions and events that are expected to happen in the next decades in solar system exploration by humans.



Technological breakthroughs for scientific progress.

This proposal came as a request from ESA (Cabinet of the Director General) and from the HiSPAC committee. The development of innovative technologies opens new fields of research and provides sophisticated new tools for scientists, but a conservative approach to technology is too often followed and self-censorship is often applied regarding technologies that are not yet fully proven, perhaps for fear of losing in competitive assessment phases. The result is that evolution is gradual and breakthroughs do not happen as frequently as they could.

This goes much beyond space sciences and addresses various fields of physics and engineering. The objectives of this proposal could include establishing breakthrough scientific objectives, identifying the associated technology development, considering forecast for technologies that would enable the achievement of these scientific objectives, identifying partnership schemes (space/non-space), and facilitating the spin-in of top non-space technologies. Space actors often do not have the knowledge of non-space domains and vice-versa. The Forward Look format would enable such interactions. A preparatory ("scoping") workshop took place on 3 December 2008 in Paris.

European Parliament Hearing



On 26 March an ESSC delegation was hosted by the European Parliament's Science and Technology Options Assessment Panel (STOA), chaired by MEP Philippe Busquin, and also had a separate meeting with MEP Catherine Trautmann, Vice-Chair of the EP's Committee on



Industry, Research and Energy (ITRE). We presented the ESSC and the ESF Space Sciences Unit, their role, activities, and advisory or policy role we could play vis-à-vis STOA and ITRE. This was met with interest and with a large number of questions from panel members. There will be a new legislature in the autumn but it was agreed that a potential advisory role for ESSC should continue to be discussed with STOA, and that the panel could create new links with the ESF at large.

In addition, Mrs. Trautmann proposed that a similar hearing should be organised with the ITRE Committee later in 2009.

SAG Sub-Commission on Exploration


Given the increasing part of exploration-related potential projects in the 7th Framework Programme Space Calls, the European Commission's Space Advisory Group has set up a Sub-Commission on Exploration, chaired by Gerda Horneck, former ESSC member and Chair of the then Life and Physical Sciences in Space panel of ESSC.


Jean-Pierre Swings, who is also sitting in SAG, is participating to the work of this Sub-Commission, which will meet in Brussels on 14 May. The ESSC Chair was invited to present the outcome of our related study published in 2007.


Events 2009


- **Launch of Herschel-Planck**
6 May, 15.20 UTC – Kourou **LAUNCH DELAYED**
- **ESSC 38th plenary meeting**
7-8 May – Garching b. München (Germany)
- **SSB-ASEB joint meeting**
12-15 May – Washington, DC (USA)
- **EC-FP7-SAG sub-commission on exploration**
14 May – Brussels (BE)
- **ESA information workshop (ELIPS AO)**
3-4 June (TBC) – ESTEC Noordwijk (NL)
- **17th IAA Humans in Space Symposium**
7-11 June – Moscow (RU)
- **Paris Air Show**
14-21 June – Paris Le Bourget (FR)
- **Identification of model organisms in extreme environments (CAREX workshop)**
16-18 June, Sasbachwalden (DE)
- **EU Ministerial conference on exploration**
23 June (TBC) – Prague (CZ)
- **ESSC 39th plenary meeting**
20 October – Luxembourg (LU)
- **SSB meeting and policy workshop**
2-4 November – Irvine, CA (USA)

Unit and Committee

- **Eleni Zachari** is the new Administrator in the Unit, and she will work on the basis of 60% on CAREX and 40% on ESSC. Eleni has a background in law and has studied and worked in Greece, Germany and France. 

- **Johanne Martinez-Schmitt** is the new Administrator dealing with the ESA peer-review contract. Johanne transferred from the EMRC unit where she stayed two years, working on EUROCORES. Previously she was working in the ESF Corporate Communication unit. 

- **Olivier White** is the new Science Officer dealing with the ESA peer-review contract. Olivier was until now Research Officer in Bangor University (UK). He has a PhD in Systems Engineering and Applied Mechanics from the Université Catholique de Louvain. 

- **Nicolas Walter** who is the Science Officer in charge of the CAREX project in the Space Sciences Unit since 2007, will now share his time between managing CAREX and dealing with prospective activities for the Unit and for the ESSC. 

- We welcome **thirteen new ESSC members**. Doris Breuer, Jørgen Christensen-Dalsgaard, Gilles Clément, Luigi Colangeli, Ian Crawford, Eigil Friis-Christensen, Hanns-Christian Gunga, Michael Lebert, Pieternel Levelt, Gregor Morfill, Jouni Pulliainen, Sami Solanki, and Frans von der Dunk were appointed as of 1 January 2009 with a term ending on 31 December 2011. Four other members will be appointed in the course of 2009 in the areas of Earth sciences (oceanography, soil remote sensing, GMES) and fundamental physics.

The Committee currently has **25 members** coming from **10 European countries**.