



European Space Sciences Committee (ESSC-ESF)

Briefing to SSB Irvine, 3 November 2015

ESF Member Organisations



ESF is an independent association of 66 Member Organisations

- research funding organisations
- research performing organisations
- academies and learned societies

in 29 countries

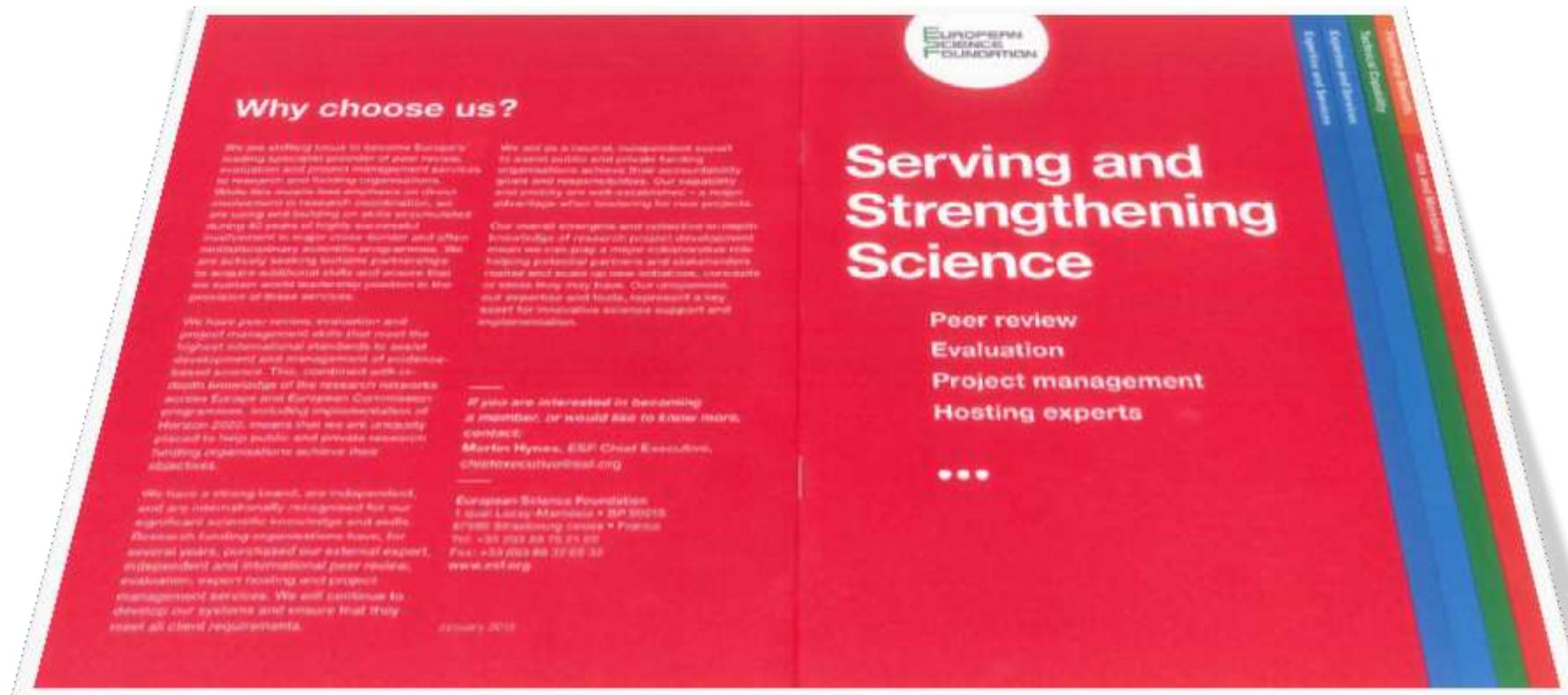


ESF situation



- ESF will stop its science networking activities at the end of 2015
- The consulting company carrying out the **viability check** of the ESF successor and associated business plan has delivered its report in June 2015. **The outcome is positive!**
- That report was approved by Governance in June 2015: **ESF will therefore be evolving into a science services based organisation as of 2016** (peer-review, evaluation, joint programming support, coordination support to the community, etc.)
- The final go-ahead needs to be ratified at the 2015 Annual Assembly (11/19)
- ESF was previously given the mandate by Governance to continue hosting Expert Boards (CRAF, EMB, ESSC, MatSEEC, NuPECC) and provide them with adequate support (accounting, legal, communications) until 2015
- **The ESF successor can/will become the hosting platform for these five Expert Boards and Committees as of 2016 (NuPECC, CRAF,...)**

ESF Successor Organisation



Why choose us?

We are a strong, successful European science funding authority, provider of peer review, evaluations and project management services to research and funding organisations. We are a leading provider of science funding and project management in Europe. Our evaluations and peer reviews are highly regarded and are being used leading science programmes during the process of finding successors. Our experience in major science funding and project management authority assessments programmes. We are actively seeking suitable partners to increase our global skills and ensure that our customer world leadership position in the provision of these services.

We have peer review, evaluation and project management skills that meet the highest international standards in order to develop and manage projects of academic-based science. This, combined with extensive knowledge of the research networks across Europe and European Commission programmes, including implementation of Horizon 2020, means that we are uniquely placed to help public and private research funding organisations achieve their objectives.

We have a strong brand, are independent, and are internationally recognised for our significant scientific knowledge and skills. Research funding organisations have, for several years, purchased our external expert, independent and international peer review, evaluations, expert hosting and project management services. We will continue to develop our systems and ensure that they meet all client requirements.

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Peer review
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Project management
Hosting experts

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January 2015



Expert Boards and Committees

Voices for European science



Committee on Radio Astronomy Frequencies

CRAF

European Marine Board

**MARINE
BOARD**

European Space Sciences Committee

The logo of the European Space Sciences Committee (ESSC), featuring a stylized globe icon and the acronym 'ESSC' in white text.

Materials Science and Engineering Expert Committee

MatSEEC

Nuclear Physics European Collaboration Committee

The logo of the Nuclear Physics European Collaboration Committee (NuPECC), featuring the acronym 'NuPECC' in white text on a dark background.



ESSC

Voice for European space science



Committee on Radio Astronomy Frequencies

CRAF

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European Space Sciences Committee



Materials Science and Engineering Expert Committee

MatSEEC

Nuclear Physics European Collaboration Committee

NuPECC

ESSC Mission Statement

*“ The mission of the ESSC is to provide an **independent** European voice on European space research and policy. It is the ESF’s expert body on space research ”*

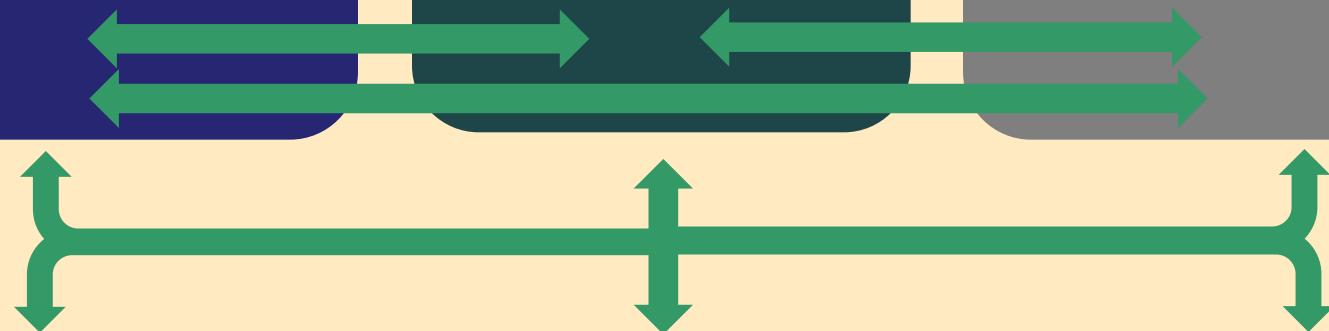
European Space Sciences Context

International Environment

**European
Union
28 Member
States**

**National Space
Agencies
(and/or equivalent)**

**ESA
21 Member
States**



Space Research Institutes/Labs

Scientific Community



European Space Sciences Committee



- **ESSC is funded by 18 organisations (space agencies, research councils) from 14 European Countries, plus ESA**
- **ESSC is supported by a secretariat of four staff**
- **ESSC is composed of 27 experts across four panels and 12 countries**
 - *Nominated ad-personam*
 - *Large turn-over since 2014*
- **Two plenary meetings/year**

Interdisciplinarity

- The four ESSC panels allow cutting across all/most domains of space sciences
- Members' interests declared
- Consensual positions and recommendations from ESSC are endorsed by representatives from various disciplines
 - *No bias*
 - *Stronger positioning*



Solar System and Exploration

- Hermann Opgenoorth, Earth sciences and space physics (Panel Chair)
- Athena Coustenis, outer planets
- Franck Montmessin, terrestrial planets
- Mahesh Anand, Moon
- Gerhard Paar, robotics
- Kari Muinonen, small bodies
- Ester Antonucci, solar physics
- Petra Rettberg: astro/exobiology, biology

Astronomy and Fundamental physics

- Stéphane Udry, exoplanets, (Panel Chair)
- Conny Aerts, asteroseismology
- XX, high-energy physics **TO IDENTIFY**
- Pierre Binetruy, fundamental physics
- Paolo de Bernardis, Ir/sub-mm astronomy
- Jordi Torra, galactic astronomy & astrometry

Research in Weightlessness

- Dominique Langevin, fluid physics and foams (Panel Chair)
- Anne Pavy-Le Traon, neurology
- Alexander Chouker, integrated physiology
- Berndt Feuerbacher, solid state physics
- Hubertus Thomas, complex plasmas
- Helen J. Fraser, ices & physical sciences
- XX, biology **TO IDENTIFY**
- Peter Preu, materials
- Roberto Piazza, colloids

Earth Sciences

- Ian Brown, glaciology (Panel Chair)
- Heiko Balzter, land-atmosphere interface
- Andreas Kääb, EO and satellite based glaciology
- XX, space law **TO IDENTIFY**
- XX, climate **TO IDENTIFY**
- Pepijn Veefkind, Sentinel algorithms and climate
- Maarten Krol, atmos. Phys. & chemistry, climate
- Laurence Eymard, ocean/atmosphere

International Environment

European Union

- FP7 Space Advisory Group (individuals)
- FP7/H2020 stakeholder consultations
- Direct interactions with programme executives

National Space Agencies

- Annual meeting with ESSC Funding Organisations
- UKSA's SPAC
- Swedish national committee

ESA

- Council at Ministerial level
- High-level Science Policy Advisory Committee (ex-Officio)
- Scientific advisory committees at programme level (ex-Officio)
- Meetings with DG and programme executives

- COSPAR Science Advisory Committee (ex-officio)
- UN Office of Outer Space Affairs (exchange of observers and NEO Action Team 14)

- US National Academies' Space Studies Board (ex-officio)

Overarching Science Policy Advice

- **High level policy recommendations to ESA council at ministerial level (→ 2016)**
- **High level policy recommendation to EC on space sciences related matters**
- **Pro-Active specific communications and recommendations expressed to institutions**



Specific Scientific Advice

- When specialist targeted independent advice is required
- Setting up of *ad-hoc* committees and panels
- Commissioned Studies
 - *Evaluation of ESA Microgravity Programme*
 - *Strategic advice on planetary protection*
- Pro-Active disciplinary foresight - Roadmaps
 - *Astrobiology and life in extreme environments*
 - *Human space exploration*
 - *Nuclear propulsion*
 - *Technology development*



Views of the European Space Sciences Committee of the European Science Foundation :

- **As concerns the European Union and ESA relationships.** There are several options on the table on how to proceed, but a better integration at the European level of publicly-funded programmes is mandatory to achieve increased cost-effectiveness and optimal scientific return. Space efforts need long-term continuity and this can only be achieved through an improved integration of the support provided by the stakeholders. The ESSC favours the resolution for a step-wise evolution of ESA that would enhance the coordination on space projects within Europe.
- **On the International Space Station.** Major funding cuts in the European Life and Physical Sciences Programme (ELIPS) have endangered the timely realisation and exploitation of several European experiments and Europe's leading role worldwide in the fields of Life and Physical Sciences. The ESSC thus strongly recommends that the full additional subscriptions necessary for the ELIPS Programme Period 4 be approved at this meeting. This would guarantee Europe's return on investment until 2020 - and beyond, should Europe decide to continue its commitment after that date.

- **On the question of launchers.** The ESSC supports a flexible approach to the development and upgrading of a family of European Ariane launchers; an approach that is compatible with both the competitiveness of the European industry on the world telecommunications satellite market, as well as with the independent capacity to launch government-supported science payloads.
- **As concerns Europe's Exploration programme.** The ESSC supports Europe's participation to the Luna-Resurs and Lunar Sample Return missions with Russia, as an integral part of ESA's broader exploration strategy. ESSC continues to recognise the importance of the ExoMars missions and in particular urges ESA member states to ensure that funding is sufficient for the launch of the ExoMars rover in 2018. The ESSC also emphasizes the great scientific value of other mission concepts such as the network mission to Mars and the Phobos sample return mission and recommend that they proceed into the next phase.
- Finally, the ESSC underlines the importance of the **Copernicus** Space Component to Europe's economic competitiveness and the technological advances that give its space industry a leading position in many areas. The ESSC therefore strongly recommends that participants maintain or increase their commitments to GSC-2 to ensure the successful delivery of the programme and also that ESA Member States consider entering or maintaining their involvement in the GSC-3 programme phase.

Attendance of ESA Advisory Committees HESAC (1/20/15)



- HESAC had previously commented on a report on the development of **nuclear power** sources for European space missions, which will enable a number of missions where solar power is inadequate or impossible to use (e.g. deep space beyond Jupiter and long-term in-situ operations in dark areas e.g. shadowed lunar polar craters).
 - The Committee was pleased with the progress achieved to date which confirmed the suitability of Am²⁴¹ as an energy source. The next stages of development would necessarily require the scaling up of the process to larger quantities with many issues of technical feasibility now resolved. Recognising the pressure from the robotic and human and exploration programmes for electrical and thermal power sources which can sustain instruments and platforms on planetary missions, HESAC expressed strong support for the continued development of nuclear power technology for space exploration.
- ESSC expressed support to this project.

Collaborations : NSSC



- On April 11, 2014, the ESSC Chair visited National Space Science Center (NSSC) to seek potential collaborations with the Chinese Space Science Community.
- Prof. Wu Ji, Director General of NSSC, introduced the history of Chinese space science and the current as well as the planned space science missions
- The ESSC Chair made an introduction of the current structure, the work mechanism, the mission of the ESSC as well as its strategic plans and expressed her wish to find the common interests with NSSC, which promises possible cooperation opportunity in the future.
- Both parties exchanged opinions on the roadmap study, mission selection procedures and the possibility to share the expertise. Since then we have had many interactions with Wu Ji who attends now our meetings and we are proceeding towards common projects.

Collaborations : COSPAR CSAC

- The Secretary of COSPAR CSAC is ex-officio member of ESSC and the ESSC Chair sits in the CSAC
- ESSC contributes to discussions centering on
 - the 2016 Assembly in Istanbul
 - Strategy and relations with space agencies and other bodies like ICSU, IAF, ISL, GEO and UNESCO
- In relation to ESSC:
 - Roadmaps and the coordination between agencies necessary to avoid duplication
 - Planetary protection and a new report or at least some coordination from COSPAR
 - Space Weather and situational awareness (in support to their recent report and to say express the request from the community to see more coordination and better definitions of this evolving subject)

Collaborations : ISSI



- Several discussions with the ISSI Executive Board
 - Common ground for facilitating interactions among international scientific teams
 - Interactions on establishing in Bern or in Beijing venues and fora to enhance opportunities for collaborative projects

Collaborations : SSB of the US NAS

- Long-term interactions and appreciation
- Common reports
- ESSC involved in committees and advisory bodies
- Current projects
 - PPOSS activity under EC contract (planetary protection of outer solar system bodies)
 - SSB Office is observer



Cooperation and collaboration in space discussed between SSB & ESF since 1976



10 joint reports
over 39 years



Upcoming/starting activities

- Strategic Plan 2016-2019
- Consolidate Expert Boards position and activities in « new » ESF (joint session at December plenary)
- ESA Ministerial Council 2016
- ExoMars landing site PP review for ESA D-TEC



www.esf.org/space

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