

ESSC-ESF BRIEFING

SSB Plenary Meeting, 3-4 April 2014, Washington DC

Current context

- Chair renewal process (almost) completed
 - Chair nominee Athéna Coustenis, to be endorsed by ESF Governing Council on 15 April
 - Change of Chair in October-November timeframe
- Next period marked by evolution of ESF (closure + independent successor or transformation into successor) and establishment of hosting entity for ESF Expert Boards and Committees (could be the transformed ESF)
- Next ESSC Strategic Plan 2015-2018
→ towards a European Space Board?

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|---|---|---|---|
|  |  |  |  |
| Harrie MASSEY [†] United Kingdom 1975-1979 | Johannes GEISS Switzerland 1979-1987 | Heinrich J. VÖLK Germany 1987-1993 | François BECKER France 1993-1997 |
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| J. Leonard CULHANE United Kingdom 1997-2002 | Gerhard HAERENDEL Germany 2002-2007 | Jean-Pierre SWINGS Belgium 2007-2014 | Athena COUSTENIS France-Greece 2014-2017 |

Expert Boards and Committees

Voices for European science

Nuclear Physics European Collaboration Committee



European Space Sciences Committee



European Marine Board



European Polar Board



Committee on Radio Astronomy Frequencies



Materials Science and Engineering Expert Committee



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 ”

Ex officio representation

- **European Space Agency**
 - Council at Ministerial level
 - High-level Science Policy Advisory Committee
 - Scientific advisory committees at programme level
- **European Commission**
 - FP7 Space Advisory Group (individuals)
 - SAG Exploration sub-committee (individuals)
- **US National Academies**
 - Space Studies Board
 - Discipline committees of the SSB (CAPS)
- **Other representations**
 - COSPAR Science Advisory Committee (ex officio)
 - UKSA's SPAC
 - UN Office of Outer Space Affairs (NEO Action Team 14)
- **Past representations**
 - OECD (NEO work group)

- Process on hold due to ESF situation and upcoming Chair renewal
- Background work to be re-activated to implement a SP 2015-2018, comprising 3 steps:
 - Input from ESSC (to be discussed at plenary meetings)
 - Expectations/SWOT from stakeholders
 - Synthesis by ESSC (key strategic elements and future models for ESSC)
- Final approval of SP by fall 2014 – Financial Plan to follow

ESSC Chair: Jean-Pierre Swings

Solar System and Exploration

- **Ian Crawford**, Moon (**Chair**)
- **Ester Antonucci**, Solar physics
- **Doris Breuer**, Mars
- **Kari Muinonen**, Small bodies
- **Hermann Opgenoorth**, Earth sciences and space physics
- **Petra Rettberg**: Exobiology, biology

Research in Weightlessness

- **Gregor Morfill**, Complex plasmas (**Chair**)
- **Gilles Clément**, Neurophysiology
- **Dominique Langevin**, Fluid physics and foam
- **Michael Lebert**, Biology

Astronomy and Fundamental physics

- **Roberto Battiston**, Fundamental physics, (**Chair**)
- **Pierre Binetruy**, Fundamental physics
- **Paolo de Bernardis**, IR/sub-mm astronomy
- **Jørgen Christensen-Dalsgaard**, Exoplanets and astroseismology,
- **Jean-Pierre Swings**, Astronomy
- **Jordi Torra**, Galactic astronomy and astrometry
- **Stéphane Udry**, Exoplanets

Earth Sciences

- **Frans von der Dunk**, Space law and policy, (**Chair**)
- **Heiko Balzter**, Land-atmosphere interface
- **Ian Brown**, Glaciology
- **Andreas Kääb**, Earth Observation and satellite-based glaciology
- **Vinciane Lacroix**, GMES and disaster management
- **Pieter Levelt**, Atmospheric physics and chemistry
- **Mathias Schardt**, Soil remote sensing

- **FP7 Coordination Actions (Coordinator/Project Office)**
 - MEGAHIT* (2013-2014) and ASTROMAP (2013-2015)
 - MASE (2013-2016)
 - * with Russia
- **Commisionned studies (ESA)**
 - Ongoing discussion (at EUB level) on possibility to study scientific use of ISS after 2020
 - Ongoing discussion to continue Planetary Protection guidelines evaluation for ESA (Mars Sample Return 2012) with D-TEC (review of input prior to COSPAR categorisation level for Phobos sample return mission)
 - Foresight on breakthrough technologies TECHBREAK (in press)

TECHBREAK (in press)

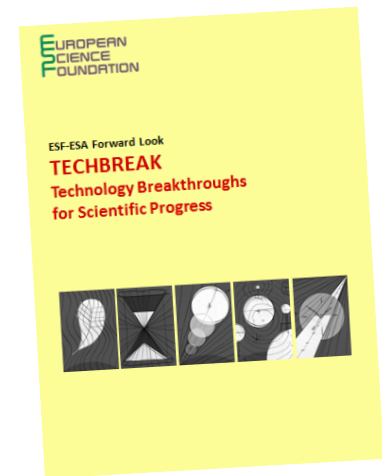
A first step towards an integrated, long-term vision for ESA on science and its enabling technologies

•HiSPAC Grand Science Themes

- 1- Terrestrial & cosmic climate
- 2- Understanding gravity
- 3- Life in the Universe
- 4- Cosmic radiation & magnetism
- + grand astronomical challenges, enabling technology clusters for future science missions (e.g. cold atom devices, large ultra-stable structures, large monolithic telescopes and mirrors)

•ESSC TECHBREAK “Overwhelming Drivers”

- 1- Reduce mass, maintain stiffness
- 2- Build a spacecraft and space missions that can last 50 years
- 3- Deploy a 30m+ telescope into space
- 4- Autonomous geophysical survey of planets
- 5- Enable humans to stay in space for more than 2 years





RECENT REPORTS AND PUBLICATIONS

ESSC support to EC in H2020

- New ESSC Strategic Plan will highlight increased advisory role towards the EU (upcoming H2020 Call language, Strategic Research Cluster future bids)
- Strategic scientific and policy issues to be elaborated with the community to advise EC, in liaison with ESA & Member States
- Support to scientific communities in coordinating specific projects as well as science-oriented SRCs
- EC to support such advisory role by ESSC
- Towards a European Space Board!

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

9 joint reports over 32 years



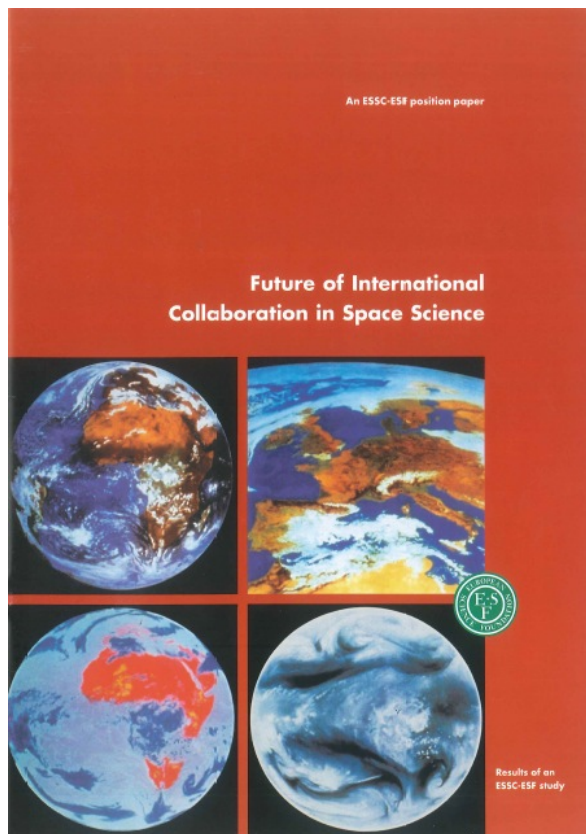
With SSB, after Leicester plenary meeting...

| Topic | Sponsor | With SSB? |
|--------------------------------|-----------------------------------|--|
| Science on ISS after 2020 | ESA D-HSO | X |
| European data management in EO | ESA D-EOP and EC, other agencies? | Input to US decadal survey in EO |
| Planetary protection | ESA D-TEC (+ NASA) | X (+ COSPAR?) |
| Space weather | ? | X (+ COSPAR, CAS, NATO, national ?) |
| SSB CBPSS | NASA HEOMD | ESSC to suggest names + stronger interface |

How to improve international coordination of agencies' programmes?

- As discussed during the March Space Science Week, international collaboration at scientist level and bi-/multi-lateral talks between agencies are the norm
- What is lacking is a better coordination of programme planning at the international level, to achieve better complementarity of options, integration of roadmaps, and reduce programme duplication
- Agencies do listen to SSB (and ESSC) but can be reluctant to include scientists during that phase
- A hallmark of good coordination and planning is the IACG at the time of comet Halley – could this be re-activated and how?
- ESSC (with participating SSB experts) recommended in 2000 to implement a new IACG incorporating scientists (“Inter Agency-Science Coordination Working Group”)
- One aim could be to incept some kind of international decadal survey process – “ a formal setting for informal discussion”

Report in 2000



Recommendations

Proposed operational structure

- It is proposed to establish an Inter-Agency Scientific Collaborations Working Group (IA-SCWG), which would include responsible agency executives from, e.g. ESA, NASA, Japan, Russia.
- The aim of this IA-SCWG would be, on a regular basis, to:
 - ⇒ provide a global forum for discussing collaboration on large missions (observatories, planetary exploration, data exploitation)
 - enable coordination of focused science missions (e.g. Explorer E-type and national missions) within the roadmaps.
- The necessary input to the IA-SCWG would be provided by thematic panels; this would enable a "bottom-up" scientific input.
- In addition to the agency representation, scientific membership in this working group could be decided after consultation and advice from independent scientific advisory bodies, e.g. SSB, ESSC, SRC and others.
- The meeting cycle of the IA-SCWG should be annual.

www.esf.org/essc

BACKUP SLIDES

**Advice and policy
foresight on S&T in
FP7 and H2020
FP7 contract coordination**

**Science base
Inter-disciplinarity**

ESF

5 Scientific
Review Groups
6 Expert
Boards

ESF

Science
Support
Office
23 staff

ESSC

40 years old
25 members
4 panels

ESA

Advisory
Committees
DG, Directors

National
Space
Agencies

EC-EU
SAG in FP7
H2020
DG-ENT,
DG-RES

Science consultation

**U.S.
NAS**

SSB
ASEB

Science
community
COSPAR
(CSAC)

**Advice and policy
foresight on S&T**

- **ESF in its current form is expected to be wound down after 2015.**
However no formal decision to this regard will take place before 11/2014.
- **The new Brussels-based organisation *Science Europe* has announced** that it will not deal with funding research programmes and networks. It will not host Expert Boards and Committees but will not duplicate them.
- **ESF will therefore aim at evolving into a science services based organisation after 2015** (peer-review, evaluation, joint programming support, coordination support to the community, etc.)
- **ESF was given the mandate by its governance** to continue to host Expert Boards (ESSC, MB, EPB, MatSEEC, NuPECC, CRAF) until 2015, and provide it with adequate support (accounting, legal, communications/media)
- **A new legal structure would be created** after 2015 should ESF default
- **If the successor to ESF is set up**, it would become the hosting platform for Expert Boards and Committees
- **EBCs and Science Europe have started to engage into discussion to establish future partnerships.**