



European Space Sciences Committee (ESSC-ESF)

Briefing to CAA Washington, DC, 1 April 2015

Pierre Binétruy
APC, Université Paris Diderot



YEARS
1974-2014

European Science Foundation



ESF is an independent association of 66 Member Organisations

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

in 29 countries



YEARS
1974-2014

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 ”*



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European Space Sciences Committee



- **ESSC is funded by 19 organisations (space agencies, research councils) from 14 European Countries**
- **ESSC is supported by a secretariat of four staff**
- **ESSC is composed by 25 experts across four panels**
 - *Nominated ad-personam*
 - *Large turn-over at next meeting*
- **Two plenary meetings/year**

- 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*



ESSC Chair: Athena Coustenis

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

- **XXXXX**, Fundamental physics, (**Chair**)
- **Pierre Binétruy**, 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 Käab**, Earth Observation and satellite-based glaciology
- **Vinciane Lacroix**, GMES and disaster management
- **Pieter Levelt**, Atmospheric physics and chemistry
- **Mathias Schardt**, Soil remote sensing



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ESSC Representation



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 programme executives

- COSPAR Science Advisory Committee (ex-Officio)
- UN Office of Outer Space Affairs (NEO Action Team 14)

- US National Academies Space Studies Board (ex-Officio)

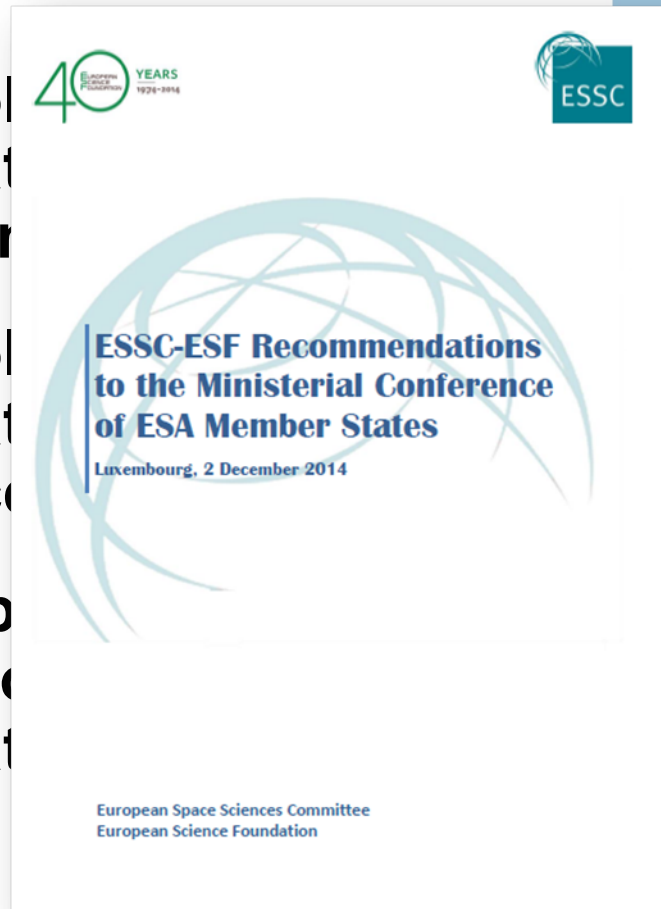


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1974-2014

Overarching Science Policy Advice



- High level policy recommendations to the Council at ministerial level
- High level policy recommendations to the Ministerial Conference of ESA Member States
- *Pro-Active* space communication recommendations to national institutions



- 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*



Technological Breakthroughs for Scientific Progress

TECHBREAK



The TECHBREAK report was published and distributed last summer.

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



9 joint reports over 32 years



ESA « Cosmic Vision » 2015-2035

M~0.6 B€, L~1.2 B€

L2

Athena

C:2014,L:2028

M7
C:2022,L:2035

M6
C:2020,L:2032

L3

Gravitational
Wave
Observatory

C<2020,L:2034

M5

C:2015/6,L:2030

S1,S2

M4

C:2014,L:2026

M3

PLATO
L:2024

M2

EUCLID
L:2020

L1

JUICE

L:2022

M1 Solar
Orbiter

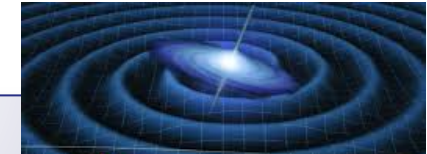
JWST

BEPI COLOMBO

ESA « Cosmic Vision » 2015-2035



LISA Pathfinder
L: end September 2015



L3
**Gravitational
Wave
Observatory**
C<2020,L:2034



L2
Athena
C:2014,L:2028

M7
C:2022,L:2035

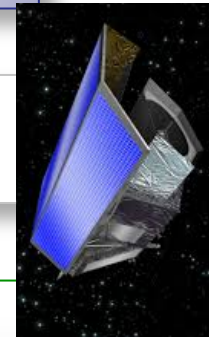
M6
C:2020,L:2032



CHEOPS S1,S2

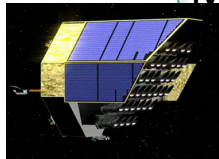
M4
C:2014,L:2026

M2
EUCLID
L:2020

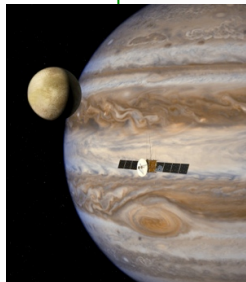


M5
C:2015/6,L:2030

M3
PLATO
L:2024



L1
JUICE
L:2022



M1 Solar
Orbiter

JWST

BEPI COLOMBO



[*www.esf.org/space*](http://www.esf.org/space)