

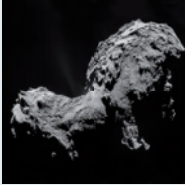


EUROPEAN  
SCIENCE  
FOUNDATION

Expert Committee  
European Space  
Sciences Committee <sup>ESSC</sup>

# Expert Committee

## European Space Sciences Committee



Mosaic of four images taken by Rosetta's navigation camera (NAVCAM) on 19 September 2014 at 28.6 km from the centre of comet 67P/Churyumov-Gerasimenko. The images used for this mosaic were taken in sequence as a 2x2 raster over an approximately 20 minute period, meaning that there is some motion of the spacecraft and rotation of the comet between the images.

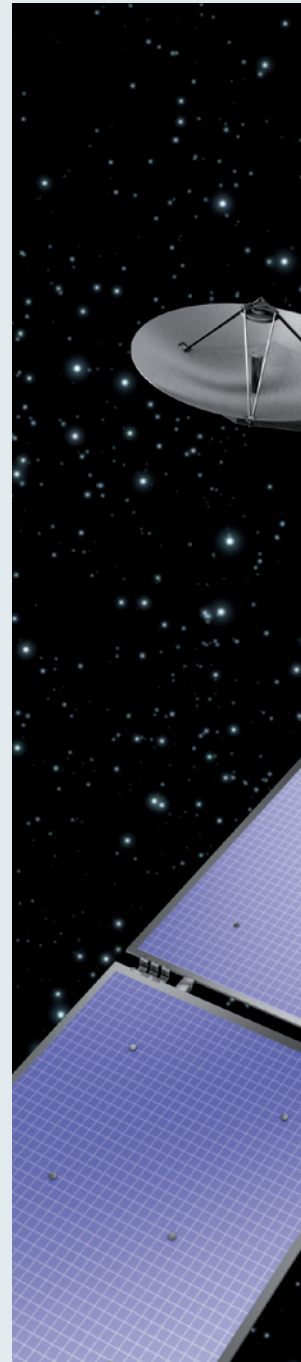
© ESA/Rosetta/NAVCAM

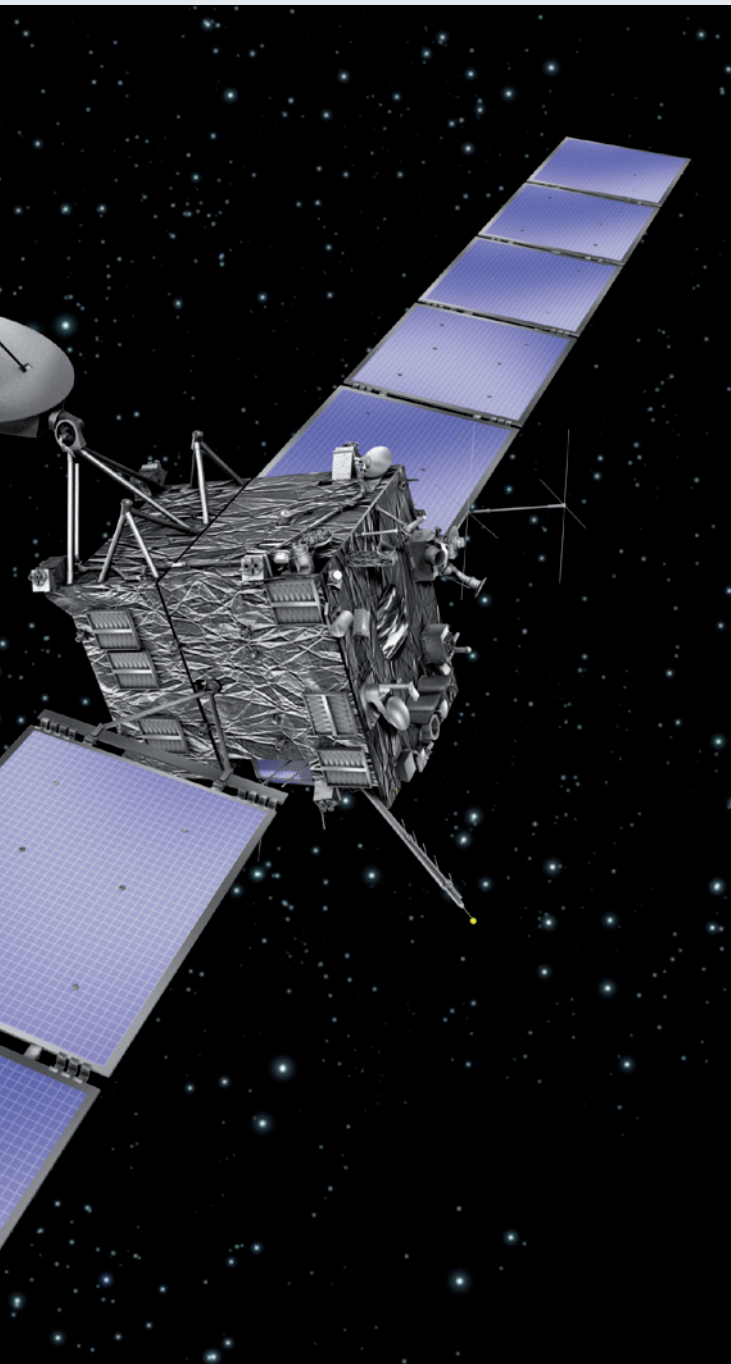
### What is the European Space Sciences Committee?

The European Space Sciences Committee (ESSC), established in 1975, grew from the need to give European space scientists a voice in the space arena at a time when successive US space science missions and NASA's Apollo missions dominated space research. Almost 40 years later, the ESSC actively collaborates with the European Space Agency (ESA), the European Commission, national space agencies and the ESF Member Organisations. This has made ESSC a reference name in space sciences within Europe.

The mission of the ESSC today is to provide an independent forum for scientists to debate space sciences issues. The ESSC is represented *ex officio* in all ESA's scientific advisory bodies, in ESA's High-level Science Policy Advisory Committee advising its Director General, it had members in the EC's FP7 space advisory group, and it has observer status in ESA's Ministerial Council. At the international level, ESSC maintains strong relationships with the National Research Council's (NRC) Space Studies Board in the US.

*The ESSC is an Expert Committee of the European Science Foundation (ESF). The ESF was established in 1974 to provide a common platform for its Member Organisations – the main research funding and research performing organisations in Europe – to advance European research collaboration and explore new directions for research. ESF provides valuable services to the scientific and academic communities – such as peer review, evaluation, career tracking, conferences, implementation of new research support mechanisms and the hosting of high-level expert boards and committees – with the aim of supporting and driving the future of a globally competitive European Research Area. ESF currently has 66 member organisations in 29 countries.*





## ESSC mission

As the European Space Policy develops, the role of the ESSC will be amplified and diversified to set up a high-level independent body aimed at providing advice and expertise in the European space arena, by:

**Underlining** the role of space sciences and technology as basic pillars of the European space venture.

**Supporting** European visibility and advising for a role for Europe in global space initiatives.

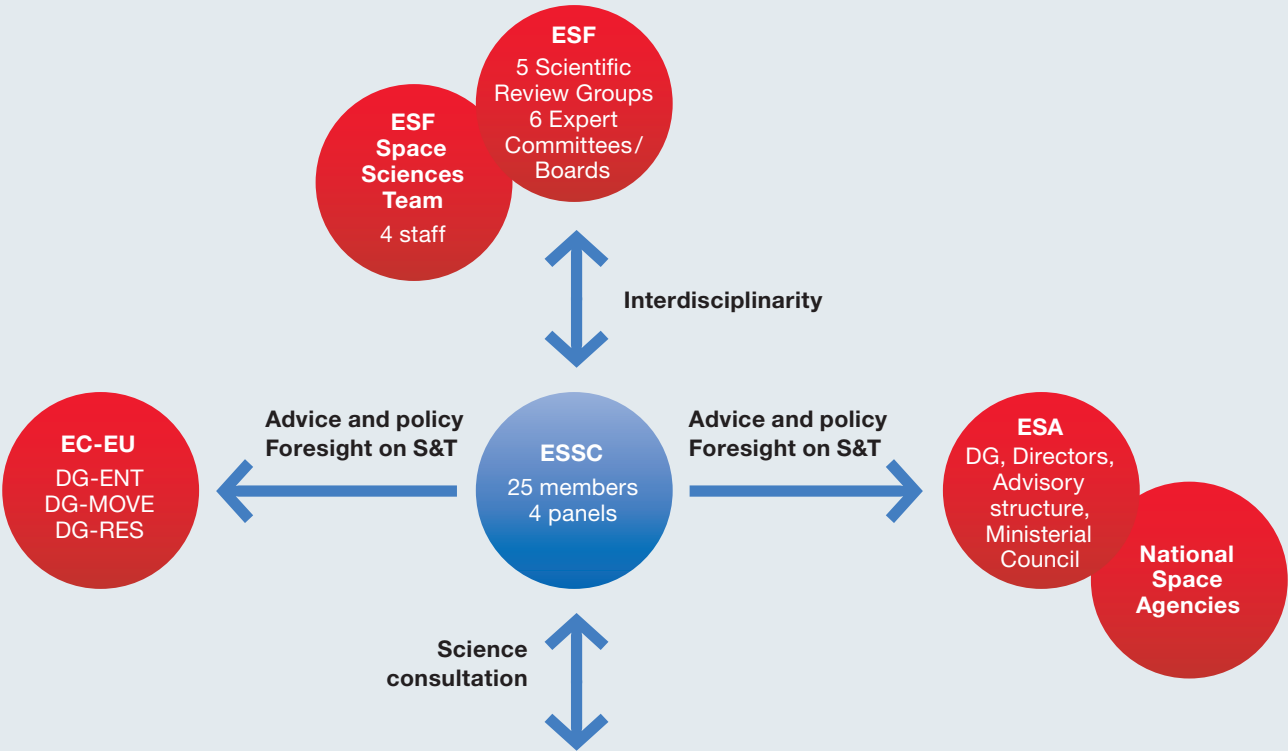
**Assessing** the status and perspectives of European space activities on a regular basis.

The structure of the ESSC reflects the variety of space-related disciplines throughout its four panels (astronomy and fundamental physics, Earth sciences, research in weightlessness, solar system and exploration). It thus has a unique position in Europe and is an asset to space agencies and decision makers because it can provide unbiased and expert advice on space research.

### 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 Strategic Board on space research.





- DG-ENT**  
EC Directorate General Industry and Entrepreneurship
- DG-MOVE**  
EC Directorate General for Mobility and Transport
- DG-RES**  
EC Directorate General Research, Innovation and Science
- COSPAR**  
Committee for Space Research
- CSAC**  
COSPAR Science Advisory Committee
- NRC-NAS**  
National Research Council – National Academy of Sciences
- SAG**  
Space Advisory Group for FP7 and H2020
- S&T**  
Science and Technology



## Main activities

### EU Framework Programmes

ESSC-ESF advises the European Commission Directorate General for Transportation and Space on the shaping of future calls for the Space Theme in H2020.

### AstRoMap

This Coordination and Support Action intends to provide a networking and foresight platform for the European scientific community involved or interested in astrobiology and planetary exploration research. To achieve its objective of strengthening coordination on the European landscape, the project organises expert workshops and community consultations to support the identification and integration of scientific priorities. The project also intends to develop an accurate mapping of the European scientific landscape considering the expertise, the infrastructures but also education aspects. This will allow a snapshot of European strengths on the international scene. It is funded through the EC-FP7 programme for the period 2012-2015.

### MASE

MASE is a collaborative research project supported for four years (2014-2017) by the EC-FP7 programme, with the goal of gaining knowledge on Mars habitability and on adaptation of life to extremes and present opportunities to optimise mission operations and life detection. MASE will isolate and characterise anaerobic micro-organisms from selected sites that closely match environmental conditions on early Mars, study their responses to environmental stresses and investigate their potential for fossilisation on Mars and their detectability.

### DEMOCRITOS

This coordination action intends to continue the work of the previously led ESF FP7 proposal, MEGAHIT, that established a European roadmap for nuclear electric propulsion. DEMOCRITOS will develop detailed design plans for three demonstrator activities in regard to the aforementioned roadmap: a ground-based test bench for elements of power conversion and propulsion, a nuclear core

simulation for investigation on power production and a space component that will include spacecraft architecture and demonstration mission proposals for elements that need to be demonstrated in space. DEMOCRITOS is a H2020 project that is scheduled to start in January 2015, with a duration of two years.

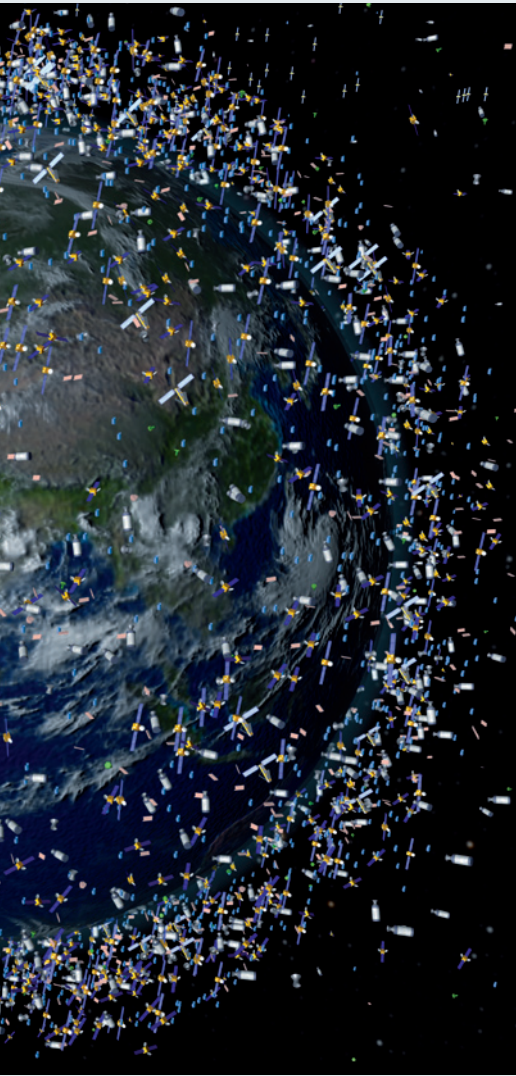
### Mars Special Regions

ESF has been tasked by ESA to carry out a follow-up study to the 2010 ESF study on planetary protection. The object of the new study is the investigation on Mars Special Regions. A Special Region is defined as a region within which terrestrial organisms are likely to replicate or any region with a high potential for the existence of extant Martian life forms. The study will review the current requirements for Special Regions and, based on newly acquired data, will investigate whether such regions exist in the Meridiani Planum landing site. This is a joint study with the Space Studies Board of the USA. The joint publication that will record the results is expected by mid-2015.

## ESSC Membership (2014)

- **Jean-Pierre Swings**  
(Chair, until November 2014)  
Institut d'Astrophysique et de  
Géophysique, Liège, Belgium
- **Athéna Coustenis** (Chair Elect)  
CNRS, France
- **Ester Antonucci**  
INAF, Torino Observatory of Astronomy,  
Italy
- **Heiko Balzter**  
CERES, Leicester, United Kingdom
- **Paolo de Bernardis**  
La Sapienza University, Roma, Italy
- **Pierre Binetruy**  
Université Paris Diderot, France
- **Doris Breuer**  
DLR-IPR, Berlin, Germany
- **Ian Brown**  
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- **Andreas Kääb**  
Oslo University, Norway
- **Vinciane Lacroix**  
École Royale Militaire, Brussels,  
Belgium
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- **Michael Lebert**  
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KNMI, De Bilt, University of Technology  
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University and Observatory of Geneva,  
Switzerland
- **Frans von der Dunk**  
Black Holes B.V. & College of Law,  
Leiden, The Netherlands





Debris objects – mostly debris –  
in low Earth orbit (LEO)

70% of all catalogued objects are in low-Earth orbit (LEO), which extends to 2000 km above the Earth's surface. To observe the Earth, spacecraft must orbit at such a low altitude. The spatial density of objects increases at high latitudes.

Note: The debris objects are shown at an exaggerated size to make them visible at the scale shown.

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## ESSC funding organisations

- **Fonds zur Förderung der wissenschaftlichen Forschung in Österreich**  
Austrian Science Fund (FWF), Austria
- **Fonds voor Wetenschappelijk Onderzoek-Vlaanderen**  
Research Foundation - Flanders (FWO), Belgium
- **Fonds de la Recherche Scientifique**  
Fund for Scientific Research (FNRS), Belgium
- **Forsknings- og Innovationsstyrelsen**  
Danish Agency for Science, Technology and Innovation (FIST), Denmark
- **European Space Agency (ESA)**
- **Suomen Akatemia/Finlands Akademi**  
Academy of Finland, Finland
- **Centre National d'Études Spatiales**  
National Centre for Space Studies (CNES), France
- **Deutsches Zentrum für Luft-und-Raumfahrt**  
German Aerospace Centre (DLR), Germany
- **Fonds National de la Recherche**  
National Research Fund (FNR), Luxembourg
- **Agenzia Spaziale Italiana**  
Italian Space Agency (AS), Italy
- **Nederlandse Organisatie voor Wetenschappelijk Onderzoek**  
Netherlands Organisation for Scientific Research (NWO), The Netherlands
- **Netherlands Institute for Space Research**  
SRON, The Netherlands
- **Norges Forskningsråd**  
Research Council of Norway, Norway
- **Norsk Romsenter**  
Norwegian Space Centre, Norway
- **Consejo Superior de Investigaciones Científicas**  
Council for Scientific Research (CSIC), Spain
- **Ministerio de Economía y Competitividad**  
Ministry of Economic Affairs and Competitiveness (MINECO), Spain
- **Vetenskapsrådet**  
Swedish Research Council (VR), Sweden
- **Schweizerischer Nationalfonds**  
Swiss National Science Foundation (NF), Switzerland
- **Science and Technology Facilities Council**  
STFC, United Kingdom

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