



**Announcement of Opportunity for  
Membership of the  
Science Working Group  
of the SOLAR-C mission**

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## 1 INTRODUCTION

The SOLAR-C space mission has been selected in 2020 by ISAS/JAXA and aims to provide coverage of the entire solar atmosphere with very high spatial and temporal resolution, spectral coverage and sensitivity across a wide EUV wavelength range. The mission is composed of an EUV High-Throughput Spectroscopic Telescope (EUVST) with a slit-jaw imaging system. The payload is complemented by the EUV Solar Spectral Irradiance Monitor (SoSPIM).

The mission is planned to be launched on an Epsilon-S rocket by July 2028. SOLAR-C will operate on a 98° inclination, circular, dawn-dusk polar Sun synchronous orbit, which will provide nearly continuous observing for most of the year. A two-year baseline mission is planned after the launch, early operation, and verification phase.

The EUVST spectrometer and context imager will contribute to provide answers to a key question in solar physics: what are the fundamental plasma processes that drive solar activity? The most significant examples of these processes are atmospheric heating and coronal mass ejections.

Thus, the primary science goals for SOLAR-C are to:

- Understand how underlying physical processes, acting on small scales, lead to the formation of the outer solar atmosphere and the solar wind;
- Understand how the solar atmosphere becomes unstable, releasing the energy that drives solar flares and eruptions;

At the heart of these science goals are the fundamental processes that control energy release and transport in magnetised plasmas throughout the universe.

To achieve these science goals SOLAR-C will improve on previous instrumentation by providing, for the first time, the broad temperature coverage and high spatial, spectral, and temporal resolution needed to observe the solar atmosphere as a coupled system. SOLAR-C will:

- Obtain spectroscopic information on the dynamics of elementary processes taking place in the solar atmosphere;
- Seamlessly and simultaneously observe all temperature regimes of the solar atmosphere from the chromosphere to the corona;
- Probe elemental structures throughout the solar atmosphere with sufficient spatial resolution (about 300 km) and cadence (down to 0.5 s) to track their rapid evolution;
- Obtain solar EUV irradiance measurements with sub-second time cadence.

SOLAR-C is an international mission, with the launch, spacecraft, EUVST telescope components, and mission operations provided by JAXA, while some EUVST components for spectroscopy and

imaging, thermal vacuum test and calibration are provided by European partners (Germany, Italy and France) and NASA. The Solar Spectral Irradiance Monitor (SoSPIM) is provided by Switzerland, with the participation of Belgium.

ESA's main hardware contribution will be the short wavelength (SW) camera for the EUVST spectrograph instrument. In addition, ESA will provide high-latitude ground station coverage to the mission.

Through this Announcement of Opportunity (AO) ESA solicits proposals for membership of the SOLAR-C Science Working Group (SWG). Up to three members of the SWG will be appointed through the present AO. The ESA-selected members will serve for a renewable term of three years.

ESA plans to issue at a later stage other AOs for the selection of up to three scientists per year in the mission planning.

## **2 SOLAR-C SCIENCE MANAGEMENT**

The SOLAR-C project team is supported by an international Science Working Group (SWG), consisting of Japanese, US, and European scientists. The main tasks of the SWG are: to provide scientific advice to the SOLAR-C project team and to promote science activities world widely, including science operations and data analysis, and steer the scientific community to maximize SOLAR-C scientific output.

More specifically, the SWG reviews operations and science activities regularly and gives guidelines and advice to the SOLAR-C international instrument Team. The entire framework of the mission operation and science planning is discussed and developed by the Mission Operation and Data Analysis (MO&DA) Working Group, to be organized under the SWG. The Science Schedule Coordinators (SSCs), organised under the SWG, receive and review the proposals for observations, and schedule the approved proposed observations. The SWG conducts coordination with ground-based observatories. The SWG is chaired by the JAXA appointed Project Scientist.

The policy for SOLAR-C science data foresees that they will be made publicly available with no proprietary time. At the start of the mission, there will be a 6-month period in which the instrument teams and SWG will have exclusive use of the data to validate instrument calibration, and to have first use of the data.

The SOLAR-C SWG will meet regularly to discuss mission status, relevant science topics, and to plan mission science related activities. It is anticipated that the SWG will meet 1 – 2 times per year and have other interactions via teleconferences, and will meet more frequently as launch approaches.

## **3 APPOINTMENT REQUIREMENTS AND CONDITIONS**

This call is open to scientists affiliated with institutes located in the ESA Member States and is for membership in the Science Working Group (SWG) for the SOLAR-C mission.

Proposals should demonstrate the candidate's expertise in one or more of the SOLAR-C science objectives and the expected contribution to the mission science in general. The proposals should also

include an explicit mention of the time commitment to the SOLAR-C activities and the endorsement and support from the head of the applicant's institution to their application.

Proposals should clearly indicate the candidate's contribution to the activities of the Science Working Group (SWG).

Following evaluation of the proposals by ESA, the Director of Science will appoint, in concurrence with JAXA, the successful European candidates to the SOLAR-C SWG. The appointments will be *ad personam*.

Selected candidates are expected to attend the meetings of the SOLAR-C Science Working Group and participate in the other activities of the group. ESA will cover the cost of travel and subsistence in connection with these meetings (maximum two per year); the participation will be subject to ESA approval.

Each ESA-appointed SOLAR-C SWG member will be required to submit an annual report of performed SOLAR-C related activities to ESA. At the end of the three-year interval, the Director of Science will decide, in concurrence with JAXA, whether or not to extend the appointment for a further term. The Director of Science may decide to discontinue the appointment at any time, based on the evolution of the SOLAR-C mission.

#### **4 PROPOSAL CONTENTS**

Proposals submitted in response to the AO are limited in length to 8 A4 pages (minimum font size 11 pt), and must contain the following information:

- A cover page including the applicant's contact information (max. 1 page);
- A description of the proposer's scientific expertise and experience that is relevant to the SOLAR-C science objectives and of the experience in leading and coordinating scientific collaborations (max. 2 pages);
- A description of the proposed contributions to SOLAR-C activities and a statement concerning the time availability of the proposer (max. 4 pages);
- A Letter of Endorsement of the application signed by the proposer's Head of Institute. If the proposal needs specific resources to accomplish its activities which are to be provided by the proposer's institute then the endorsement should include these too (max. 1 page).

The application should not contain a list of publications, but rather it should explicitly list the applicant's five "notable achievements" that in the applicant's opinion make him/her particularly suited for consideration. These might be specific publications the applicant has authored, responsibility in the development of projects relevant for science themes related to SOLAR-C, etc.

Details of the personal data protection measures that apply to this Call can be found in the privacy notice on the submission website.

## 5 EVALUATION CRITERIA

The following criteria will be used (in no particular order) in assessing and evaluating individual proposals:

- The proposer's competence and experience in fields related to the SOLAR-C science objectives;
- The importance and relevance of the proposed contributions to the SOLAR-C science objectives;
- The proposer's ability to help lead and coordinate the activities of a scientific team of experts;
- Adequacy of the time that the proposer intends to devote to activities related to the SOLAR-C Science Working Group, and;
- Adequacy of any resources required by the proposer to carry out activities related to the SOLAR-C Science Working Group role.

## 6 PROPOSAL SUBMISSION

Proposals must be submitted electronically in PDF format (file size cannot exceed 10 MB) according to the instructions on the following webpage:

<https://www.cosmos.esa.int/web/solar-c-swg-2022>

and according to the deadlines listed in Table 1.

Proposers will receive confirmation upon successful receipt of their Proposals.

**Table 1: AO schedule and deadlines**

<b>Date</b>	<b>Event</b>
3 October 2022	Release of this AO
3 November, 12:00 (noon) CET	Proposals due
End of 2022	Appointment of European SWG members

Enquiries regarding this AO should be addressed to:

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