X-ray Polarimeter Satellite (XPoSat)
Announcement of Opportunity
First Cycle

October 2025

Science Programme Office

ISRO HQ, Bengaluru

XPoSat Mission

Announcement of Opportunity (AO) soliciting proposals for First AO cycle observations

1. Criteria for applying:

This announcement is open to Indian scientists / researchers residing and working at institutes/universities/colleges in India, who

- are involved in research in the area of astronomy and
- are equipped to submit proposals as Principal Investigators (PIs) for specific target observations with necessary scientific and technical justification and
- can analyse the data, if the target is observed based on approvals.

2. Introduction and Schedule

XPoSat (X-ray Polarimeter Satellite) is India's first dedicated X-ray polarimetry mission to study various dynamics of astronomical sources in extreme conditions. The mission was launched on Jan 1, 2024 by ISRO rocket PSLV C-58 from Satish Dhawan Space Centre (SDSC) SHAR, Sriharikota, the spaceport of India. The XPoSat provides a space astronomy observatory operated by the Indian Space Research Organisation (ISRO). The spacecraft is at 650 km near-equatorial orbit with 6-degree orbital inclination and carries two scientific payloads. The primary payload POLIX (Polarimeter Instrument in X-rays) measures the polarimetry parameters (degree and angle of polarization) in medium X-ray energy of 8-30 keV photons from astronomical sources. The XSPECT (X-ray Spectroscopy and Timing) payload provides spectroscopic and timing information in the energy range of 0.8-15 keV.

Further details about the mission are available on ISRO website (https://www.isro.gov.in/XPoSat.html)

As the AO is now open only for XSPECT based proposal, only the XSPECT User Handbook is made available and is accessible from the website of Indian Space Science Data Centre (ISSDC)/ISTRAC/ISRO (https://www.issdc.gov.in/xposat.html). The XSPECT User Handbook provides the technical details of the XSPECT payload as well as details on how to analyse XSPECT data (see also - https://arxiv.org/html/2506.09918v1 for details of XSPECT performance).

A significant amount of observation time is allocated for XSPECT/XPoSat observation for Indian guest observers. The availability of XPoSat time will be made through Announcements of Opportunity (AO). Electronic submission of proposals through XPoSat Proposal Processing System (XPPS) software at ISSDC website will be

required to submit a proposal in response to this AO. Submitted proposals will be reviewed by the XPoSat Time Allocation Committee (XTAC) for scientific merit and technical feasibility.

The observations will be planned as per mission scheduling. The Principal Investigator (PI) will be informed, after the completion of successful observation for the downloading of processed Level-1 data. After the 6 months' proprietary period, which starts from the day Level- 1 data is made available to the PI, the archived data will be open to registered users and will be available in ISSDC.

This AO soliciting proposal for the first AO cycle is for Indian proposers only to utilise XPoSat time for XSPECT based proposals. The observations will be carried out between Jan, 2026 to Dec, 2026. All announcements regarding exact dates and proposal submission will be available at the Indian Space Science Data Centre (ISSDC) website (https://www.issdc.gov.in/)

For all matters related to a proposal, the Principal Investigator (PI) of the proposal is the single point of contact for ISRO. The PI will be informed through e-mail about the status of the submitted proposals. It is expected that necessary facilities for carrying out the AO project will be provided by respective host institutions.

The deadline for submission of proposals for the first AO cycle is November 30, 2025.

3. Observing Cycles

In this first AO cycle, 60% of total observing time is available for Indian AO proposals for XSPECT based proposals only. In this first AO cycle, no observation time is allocated for POLIX based proposals. Rest of the observation time in this cycle is allocated for Target of Opportunity (ToO) proposals for XSPECT, Calibrations and for POLIX observation by POLIX team.

3.1 AO cycle

XPoSat is operated in a pre-planned manner i.e. proposers are not present at Missions Operations Complex during the execution of their observations. Thus, all observations must be specified in full details in advance.

- The percentage of observing time for executing AO proposals during January, 2026 to December 2026 is 60 % and is termed as First AO cycle. During this AO cycle only XSPECT based proposal shall be accepted for review and associated scheduling, if approved after finding suitable based on scientific justification and technical feasibility.

- All the 60% observation time is exclusive for Indian proposers as Principal Investigators (PIs) to utilise XSPECT payload time. They could be interested researchers, scientists and astronomy community at large, involved in scientific research in the field of astronomy and are equipped to submit proposals as Principal Investigators (PIs) for specific target observations with necessary scientific and technical justification and can analyse the data, if the target is observed based on approvals.
- All efforts will be taken to schedule the selected AO proposals into this first AO observing schedule. However, few observations approved in this AO cycle may be scheduled outside of the above period, in case there is operations requirement, which will be provided by XPoSat Mission.

4. Overview of proposal preparation, validation, submission and selection

PIs of proposals will have to submit proposals to ISRO by the deadline November 30, 2025 using XPoSat Proposal Processing System (XPPS) software. XPPS is available online through: https://xpps.issdc.gov.in/web/. XPPS is not downloadable and cannot be used off-line. An XPPS proposer's guide is available in ISSDC website which elaborates on the proposal submission procedure. A summary is provided in this section.

4.1 Brief instructions for proposal preparation

Proposers will need to use the XPoSat Proposal Processing System (XPPS) (website: https://xpps.issdc.gov.in/web/) to create, prepare and submit proposals. The XSPECT proposers guide available online provides a description of XSPECT proposal preparation. The following things to be noted:

1. Before preparing the proposal, decide on your target list, and ensure that the targets can be observed with XPoSat as described below.
2. Ensure that the targets are visible to XPoSat for the A01 cycle observing period (January 2026 to December 2026). Proposers can use the XPoSat visibility tool "XPoViewer" available at https://webapps.issdc.gov.in/XPoViewer/. If your science case (NOT the visibility windows) requires time constraints, ensure that the time constraints are covered by the visibility windows. Output in the pdf format from XPoViewer tool to be uploaded in the XPPS as attachment.
3. Estimate exposure time, count rates, signal-to-noise ratio etc based on the specifications of XSPECT provided in the XSPECT User handbook and by using suitable online tools such as XSPEC etc.

4. Prepare scientific justifications using Latex template available on ISSDC website. Proposals are evaluated based on the expected science, choice of targets, justification of exposure time, technical and scientific feasibility. Hence the associated sections need to be carefully prepared. The scientific feasibility should be established based on spectral/timing simulations, signal-to-noise calculations etc as per the case may be.
5. Login to XPPS and create a proposal for A01 cycle. Select one of the proposal types Regular or ToO proposals as per the requirement.
6. Fill the mandatory fields such as the title, abstract, investigators etc.
7. In the "Targets configuration page", add target(s). Use target names recognized by NED/Simbad if available. The RA/Dec of the targets to be provided in degrees in J2000 frame of reference. Enter the fields target-type and scientific category.
8. In the “Instruments Configuration Page”, XSPECT to be selected as the Primary Instrument.
9. In the “Observation Time Settings Page”, enter the duration of the proposal in terms of days/weeks. Kindly note that this is the overall time with all the overheads, the satellite would be dedicating to this proposal. Typically, the achieved source exposure would be 15-25 % of this duration based on the source visibility. Hence, the proposer shall refer to XPoViewer for ascertaining the required observation time.
10. Upload the PDF files of science justification and the output of XPoViewer for source visibility.
11. In the “Verify and Submit Page”, verify the target settings and observation time settings, click on “Validate” and if required, edit the proposal and upon successful validation, submit the proposal.

4.2 XPPS Instructions

Instructions to fill various entries within XPPS to prepare proposals are available online. XPPS proposer’s guide can also be referred for this purpose. Queries on XPPS can be mailed to (**issdc@istrac.gov.in**) for proposal preparation and submission. Queries will be answered on best effort basis.

4.3 Proposal Preparation Tools

Proposers can use the following tools in order to prepare an XSPECT/XPoSat proposal.

- XPoViewer to determine XPoSat visibility period for a target of interest.

4.3.1 XPoViewer- Tool to aid Celestial Source Viewing

This tool gives the view periods per day of a selected celestial source. Also, the view periods that satisfy all the mission constraints are provided day wise so that the PIs of proposals can plan their observations accordingly. The tool generates the day-wise visibility duration (in minutes) with days. It also provides a table that details the day wise source visibility duration.

The XPoViewer tool is available on internet (https://webapps.issdc.gov.in/XPoViewer). The User guide and various constraints applied for the computation of view periods are also available on the above webpage. The tools only work from internet and there is no off-line version of this tool.

Note:

- Verify the last plot from XPoViewer to verify visibility of the target.
- Add the plots created by XPoViewer before uploading the pdf to XPPS.

4.4 Preparing an XPoSat Proposal

First time proposers will need to register into the XPPS before they can prepare proposals. Proposers may go through the XPPS User Guide and XPoViewer User Guide before submitting the proposal.

4.5 Proposal handling in XPPS

The receipt of each incoming proposal will be automatically acknowledged. At the end of submission date, the proposals will be forwarded to XTAC for scientific review by Mission Scientist- XPoSat. All the committees are constituted by Chairman, ISRO/Secretary, DOS.

The XTAC will assign priorities to each proposal as A, B and C (and, as needed, grade individual observations within a proposal). The XTAC may ask some proposers to reduce the observing time or the number of targets in a proposal. Such proposals will be made available for revision to the PIs. The proposers will be able to submit a revised proposal before the set deadline only for changes recommended by the XTAC. Such proposals, if not revised before the deadline, will be excluded from the list of successful proposal.

The technical feasibility of making the observations will also be conducted by XTAC. One of the parameters used to plan which observations will be carried out during a particular day, is the priority of the observations as allocated by the XTAC.

However, for operational reasons, no guarantee can be given that a particular observation will in fact be executed, regardless of its grade.

5. Data Processing, data rights and publications

After the completion of observation, the raw data received will be converted to Level-1 and Level 2 data by Payload Operation Centre (POC) of XSPECT. XSPECT-POC is located at Space Astronomy Group (SAG), URSC/ISRO Bengaluru. The higher-level data is sent to ISSDC. ISSDC is responsible for governing the ingest, Quick Look Display (QLD), archival (all levels, along with the auxiliary data) and dissemination of payload data. The data will be in standard FITS format.

The PI will be informed, after the completion of successful observation for downloading of processed Level-1 and/or Level-2 data. Level-1 and Level-2 data can be downloaded from the ISSDC website by the Principal Investigators (PIs) of the proposals for science analysis. Sample data, software and utilities are provided in the ISSDC website.

The standard pipeline software from Level-1 to Level-2 and any other higher level standard products will be made available to the PIs of proposals through ISSDC website.

5.1 Proprietary period

There shall be a Proprietary period associated with observational data from XSPECT during the first AO cycle. This "proprietary period" would begin from the date the Level-1 data is made available to the PIs of AO proposal.

During this proprietary period, the data will NOT BE USED by any persons or teams other than the PI and team who submitted the proposal(s) for the observations, except in cases where the PIs of proposals themselves involve such other persons.

The proprietary period for AO cycle data is 6 months. After the proprietary period, all data will be made public in ISSDC public archive which is accessible both nationally and internationally. Target of Opportunity (ToO) observations will be processed immediately to Level 1 data and will be placed in ISSDC archive. ToO data are non-proprietary and are open to public immediately after observation.

5.2 Data rights and obligations

The Principal Investigators (PIs) of all the proposals will have exclusive rights to XSPECT data during the proprietary period for the source that are observed with XPoSat against their proposals. Data rights for other objects detected within the observed field of observation (if any) also belong to the PI of the proposal, unless they communicate not to have it. At present there is no way to separate target data and field data. The PI may collaborate with XSPECT teams (and vice versa) for analysis

of data on field objects other than primary target. During this AO cycle, any POLIX data will not be provided exclusively to the proposers.

Any PI has the right to reduce the proprietary period by sending an email to '**issdc@istrac.gov.in**' with a copy to '**sspo@isro.gov.in**', recommending for placing the data in ISSDC data archive before the end of the proprietary period.

5.3 Publications and Acknowledgement

The proposers shall make available the salient results of the data analysis to the scientific community through publication in appropriate journals. All the publications shall acknowledge the XPoSat data, by including a phrase "XPoSat -along with the name of the payload(s), (in present case XSPECT)" whose data is used for analysis/ interpretation in the abstract.

When publishing a paper using XPoSat data, please include the following acknowledgment.

"This publication uses the data from the XPoSat mission of the Indian Space Research Organisation (ISRO), archived at the Indian Space Science Data Centre (ISSDC)".

If a user has used already published XPoSat results and carried out further interpretation or modelling, the following statement may be included in the acknowledgment. ***"The research is based (partially or to a significant extent) on the results obtained from the XPoSat mission of the Indian Space Research Organisation (ISRO), archived at the Indian Space Science Data Centre (ISSDC)".***

ISRO may use any/all results that are derived from XPoSat data and published through academic papers in journals or any other publications by the user, for its own use, in its reports and publications with due reference/ acknowledgments to such journals and publications.