

Frequently Asked Questions (version 27 January 2021)

If you have a question that is not answered here, please contact unoosa-access-to-space@un.org

Q: What is the collaboration between UNOOSA and KIAM about?

A: The United Nations Office for Outer Space Affairs (UNOOSA) and the [Keldysh Institute of Applied Mathematics](#) (KIAM) (Russian Academy of Sciences), signed a Memorandum of Understanding (MoU) on 14 June 2019.

The overall objective of this collaboration is to assist involved developing countries with the development of research and education programmes in astronomy.

Q: What will be the opportunity about?

A: The objective of this opportunity is to provide small telescopes to selected academic and research institutions in developing countries and training to operate them free of charge. It is a great opportunity for developing countries to start in the exciting field of astronomy supported by the experience of the [Keldysh Institute of Applied Mathematics](#).

Applicants are expected to make the link between their application and the [2030 Agenda for Sustainable Development](#) and its [17 Sustainable Development Goals](#) and are also expected to contribute to broaden space activities and applications and to foster capacity-building in space science and technology.

Q: What are the benefits of this opportunity?

A: International cooperation has always been at the heart of big astronomical projects. Observations that requires covering the complete sky stimulate large international cooperation and are fundamental for many scientific fields.

The selected institutions will become a part of the International Scientific Optical Network (ISON), an open international project consisting telescopes at more than 20 observatories in different countries. In addition, KIAM staff members will provide training on the use of the telescopes provided to obtain the best research results. The selected institutions will also take part in ISON observation campaigns and research papers based on their data. The institutions can take advantage up to 50 percent of telescope observing time for their own research projects.

Q: Should the participant take care of all the necessary regulatory clearances?

A: Applicants need to ensure compliance with all applicable domestic and/or international regulations.

Q: Do you take into consideration in the application the meteorological conditions of the location that will welcome the telescope?

A: Yes, the meteorological conditions will be considered, detailed information see AO-10(B), but only extremely bad conditions will lead to ineligibility, such as very few clear hours per year or very severe light pollution, for instance, located in the middle of the big city. Applicants are required to provide the weather condition within application form (See AF-5.1).

Q: What does the applicant have to provide?

A: The applicant has to provide an infrastructure to the telescope installation or the firm commitment to provide this infrastructure on the date of the telescope installation.

Q: Where is the list of eligible countries?

A: This Opportunity is open to entities located in developing countries that are Member States of the United Nations. The list of developed countries, economies in transition and developing countries used for this opportunity can be found in the statistical annex (tables A.1, A.2 and A.3) of the "World Economic Situation and Prospects 2020" report. (https://www.un.org/development/desa/dpad/wp-content/uploads/sites/45/publication/WESP2020_FullReport_web.pdf)

Q: May I know what type of telescope will be provided?

A: The telescope is a small wide field-of-view telescope (about 3 x 3 degrees), including an optical tube having an aperture of about 20 cm, telescope mount, CCD/CMOS camera (if necessary), focuser (if necessary).

Q: Who should fill in the application form?

A: The application form has to be signed by both Project coordinator and the head of the applying organization, but the whole form contains many technical aspects, so it may require technical staff to fill in the application form.

Q: How many telescopes are going to be distributed?

A: In the first round of opportunity, two telescopes will be distributed.

Q: Is there a maximum limit on the elevation angle of the objects on horizon?

A: The limit could come from many aspects, such as obstacles in specific direction. There are no stringent limits on the maximum height of these objects but overall visibility for the place where telescope proposed to install will be taken into account.

Applicants will provide an azimuth elevation diagram to evaluate the presence of obstacles.

Q: How do you determine the azimuth diagram for the site?

A: There are several ways to do that. Everything depends on the instruments available to you.

1. The simplest way is using a theodolite in daytime. You can directly measure both azimuth and height angles for the position when threads intersection visible in theodolite coincides with the boundaries of obstacles. To that end, you may ask your land surveying company or service.
2. For another method, you can use your own telescope as a theodolite. Aim it daytime (be careful, avoid the direction towards the Sun) or during the night to the boundaries of obstacles and write down two angles (right ascension and declination or azimuth and height depending on the construction of your mount). You can find these angles directly on the mount, if there is no azimuth scale on your mount, you may try to use a compass to estimate azimuth. It is important to correctly put an equatorial mount towards the North or the South (in the southern hemisphere), for alt-azimuth mounts necessary to align azimuth circle with the actual direction to the North using a compass. Using known right ascension and declination of the telescope, latitude and longitude, and sidereal time for your site (Local Sidereal Time) you can calculate azimuth and zenith angle (or height) of the direction where are you pointing the telescope. To ease this process, you can find a star with coordinates (right ascension and declination) close to the position of your telescope in amateur sky atlas programs, usually they also provide information of azimuth and height of a star (be sure that geographical coordinates of your site and time are correct).
3. We also would like to propose one more straightforward, rough but acceptable method. You could draw an azimuth circle using a compass, to estimate heights of obstacles boundaries you may use a laser in the dark moving it along a protractor that is perpendicular to your azimuth circle. Position of a protractor will give you azimuth, position of a laser, which light crosses tips of obstacles, their heights.

It is worth to note that for this estimation there is no practical need to know height angle with an accuracy of better than 2 degrees and an azimuth angle with an accuracy of better than 5 degrees.

Q: Does the telescope need to be installed or is it portable?

A: Yes, the telescope has to be installed in the specific location, which will be determined in the agreement on scientific and technical cooperation between Keldysh Institute of Applied Mathematics and the winner.

Q: What is the value of the telescope which is going to be distributed?

A: The value of the telescope varies between different countries. Optical tube of the telescope and some other its components custom-made in Russia. However, the value of the training and support from KIAM are hard to quantify and also the impact of being part of a renowned astronomical scientific network as ISON (International Scientific Optical Network). Winners will benefit from the opportunity much more than the just monetary value of the telescope.

Q: Can the telescope be programmed to auto locate celestial bodies of interest?

A: Yes, it is possible to point the telescope to celestial bodies if we know their approximate position, for example, asteroids or space debris during ISON observation campaigns. However, we would like to mention that the telescope has a wide field of view and it could be more efficient in sky survey mode for some tasks like observing space debris in the geostationary region.

Q: Does this telescope need to be always connected to the Internet?

A: It's not necessary but desirable to have an Internet access during the observation.

Q: Could an NGO apply or apply associated with the university?

A: Yes, according to the Announcement of opportunity, research organizations, higher education institutions and universities, regional or international organizations in developing countries are eligible to apply.

Q: Once selected, can we access to other telescopes' data?

A: Yes, it is possible in some cases, details need to be discussed and reflected in the agreement between KIAM and winner.

Q: For the type of project to be proposed, does it have to be related to surveillance of space debris or does it have to be a short or long term project? Can it be monitoring objects in a specific group of objects like binary stars, exoplanets, variable stars, or transient objects?

A: ISON mainly focuses on collection observational data on space debris and near-Earth objects. These data used by KIAM for space situational awareness and precise determination of near-Earth object orbits. Nevertheless, besides observing campaigns related to ISON, the winner can get up to 50% of observation time for its own research, which can be related to other interests.

Q: How could an applicant determine the light pollution of the targeting observation area?

A: Usually, a long-term study of astro-climate with narrowband filters precedes building a large observatory. However, you can use amateur pocket devices or check light pollution maps on websites for a rough estimate.

Q: What is the power requirement for the telescope?

A: The telescope, camera, and other equipment will require around 700 watts while running, but we suggest having at least 5 kilowatts power capability in-situ to be able to perform construction and repair works.

Q: Is there a platform that applicant could use to get funding for the infrastructure like a control room?

A: Applicants do not have to own the infrastructure when they are applying the opportunity, we would suggest applicants describe it in the Application Form, section 8: Budget, and a plan on getting funding before the installation of the telescope.