



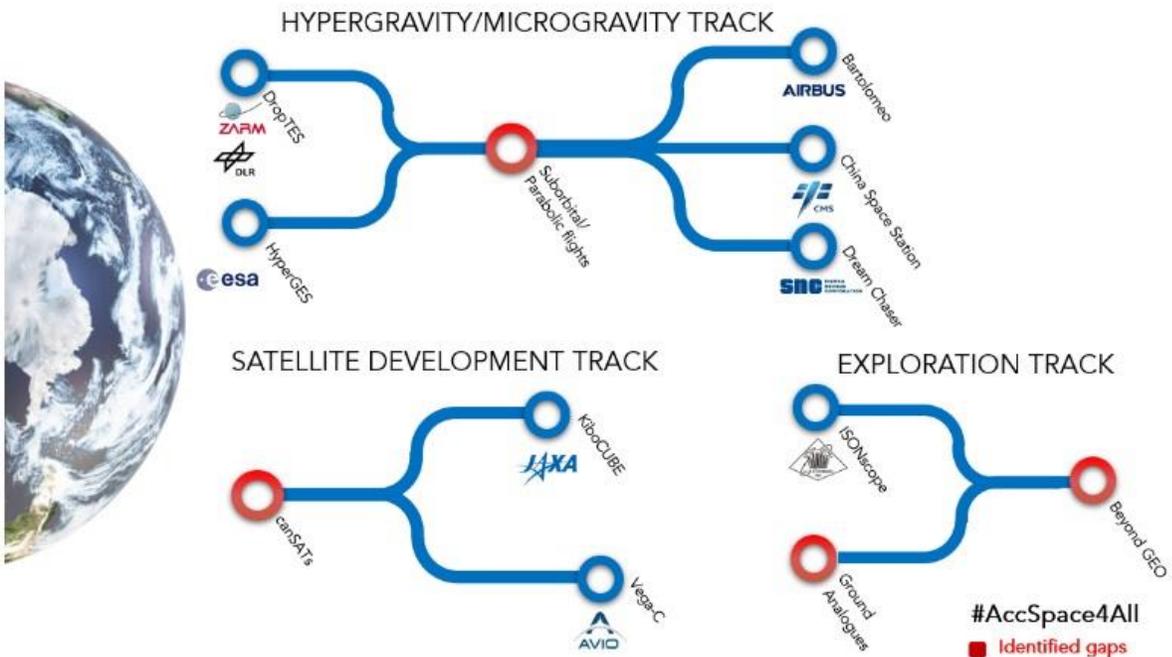
**ISONscope Cooperative Program of UNOOSA and  
the Keldysh Institute under the Access to Space for All Initiative**

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## Access to Space for All Initiative

A single opportunity has limited impact but a structured initiative has long-lasting effects permeating all societal pillars



ISONscope is a joint program of Keldysh Institute of Applied Mathematics of the Russian Academy of Sciences and the United Nations Office for Outer Space Affairs within the memorandum of understanding signed between the Keldysh Institute and the UN in 2019.

ISONscope is a part of the Exploration Track of the Access to Space for All Initiative of UNOOSA.

It is envisioned that ISONscope will facilitate optical observations of space objects in the geosynchronous region and beyond for scientific and applied research in developing countries of the winner entities.

The United Nations Office for Outer Space Affairs (UNOOSA) has conducted capacity-building activities such as conferences and training courses for almost 50 years. However, we have noticed an increasing demand for hands on expertise related to access to space. To answer to the increasing demand for hands-on capacity-building, UNOOSA started to provide hands on opportunities in collaboration with various partners back in 2012 and, in 2018, launched the Access to Space for All Initiative which organizes all the hands-on opportunities offered by UNOOSA in three different tracks of increasing complexity, aiming at developing capacity in different space-related areas from A to Z.

Jump to the specific pages of the opportunities listed in the table below or continue reading to get practical advice to improve your application.

### Hypergravity/Microgravity Track

[DropTES](#)

[HyperGES](#)

[Bartolomeo](#)

[China Space Station](#)

[Dream Chaser](#)

### Satellite Development Track

[KiboCUBE](#)

[Vega-C](#)

### Exploration Track

[ISONscope](#)

# Content of ISONscope

Two opportunities available through the selection process under the first round of ISONscope in 2021. Each opportunity includes:

- provision of a small-aperture optical telescope and all related equipment and software;
- training of staff members of the selected organization on the telescope operation and data processing;
- technical support;
- participation in campaigns of the Keldysh Institute on optical observations of objects orbiting the Earth and minor planets;
- up to 50 per cent of the telescope observation time for research purposes of the selected entity.



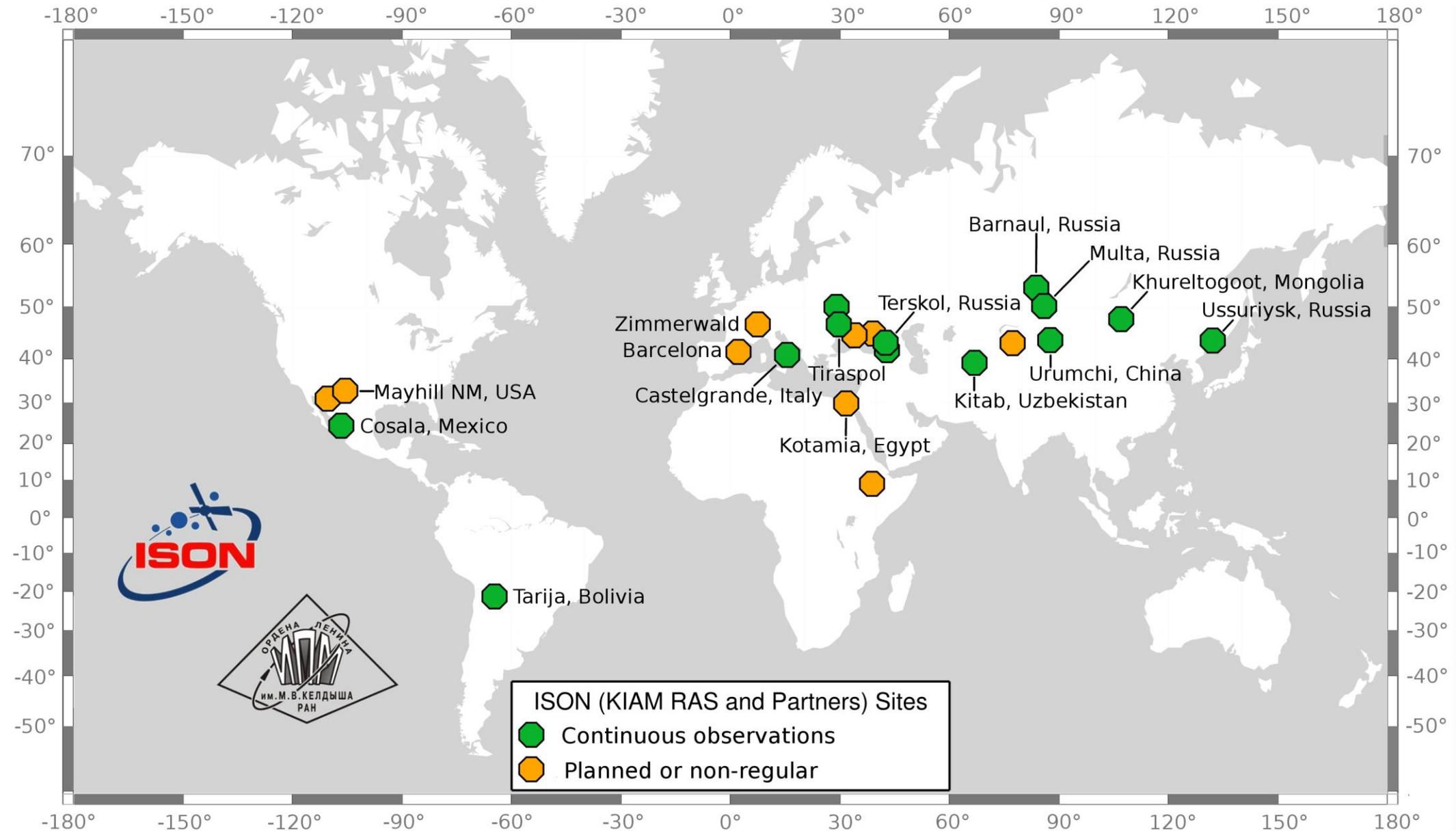
# Specifications of the Equipment to be Provided

- Telescope optical tube: reflector, aperture from 20 cm to 35 cm, a field of view from  $2^\circ \times 2^\circ$  to  $4^\circ \times 4^\circ$  with no significant aberrations in CCD/CMOS images.
- CCD/CMOS camera: monochrome, ASCOM compatible, 50 mm minimum sensor diagonal, 2048 x 2048 pixels minimum sensor size, cooling at least  $30^\circ\text{C}$  below ambient, PPS time synchronization, frame read time no more than 6 seconds.
- Telescope mount: equatorial, ASCOM compatible, not less than  $1^\circ/\text{sec}$  slewing speed for each axis, not less than 100 arcsec/sec maximum supported tracking speed for each axis.
- Single-frequency GPS receiver.
- Motorized focuser: ASCOM compatible.

# Observing Campaigns of the Keldysh Institute

- ISON, or International Scientific Optical Network, is an initiative of the Keldysh Institute's research fellows to coordinate international campaigns of optical observations. ISON mainly focuses on anthropogenic space objects orbiting the Earth and Near-Earth objects.
- ISON involves the wide field of view telescopes 20 to 80 cm in diameter at more than 20 sites. Some telescopes are operating by staff members of the Keldysh Institute, some by staff members of hosting organizations.
- Selected entities of ISONscope will become a part of ISON, participate in joint observing campaigns, be able to obtain data and observation time of other telescopes of the network.

# ISON Optical Telescope Network



# Observing Campaigns of the Keldysh Institute

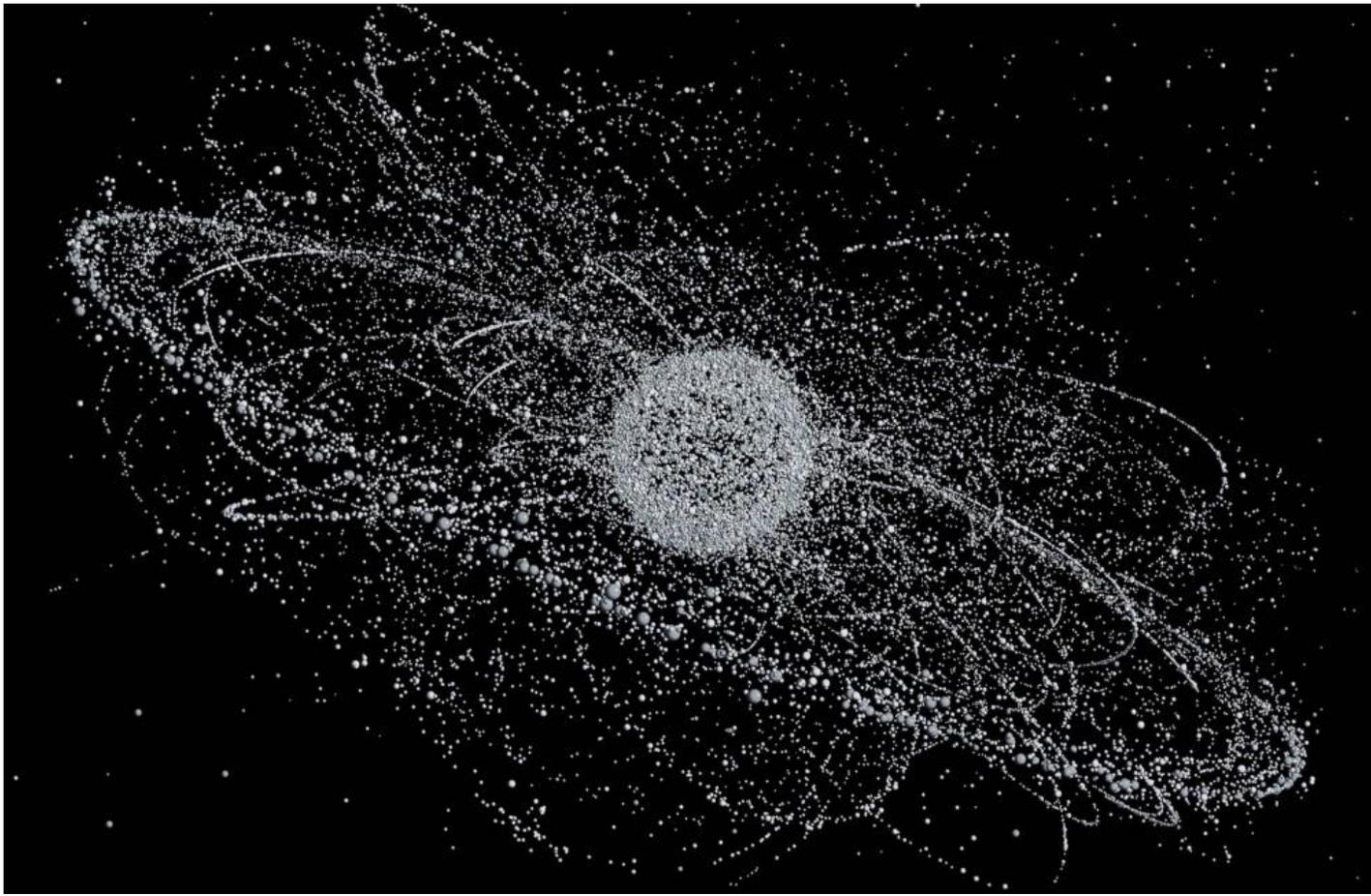
- Optical astrometric observations and cataloguing of objects in the geosynchronous zone and high orbits of the Earth, monitoring of events in the geosynchronous region.
- Photometric studies of objects orbiting the Earth in all types of orbits.
- Search of new asteroids and comets (missed in the dedicated asteroid surveys with large telescopes).
- Observations of asteroids and comets for studying their physical properties.
- Follow-up observations of newly discovered minor planets.
- Participation in the International Asteroid Warning Network campaigns.

# ISONscope Eligibility



Applying organizations from developing countries, if selected, shall ensure:

- a site in accordance with data specified in the application form and minimum requirements on the number of clear night hours per year and sky brightness;
- a shelter for the telescope, reliable power supply and internet connection;
- its staff for the telescope operation and feasible technical support.



ISONscope aims at contributing to achieving the Sustainable Development Goals, in particular, by promoting studies of space objects based on optical observations as well as enhancing the inclusiveness in addressing the space debris problem and planetary defense.



Thank you for your attention!