



# Telescopes donation under International Scientific Optical Network (ISON) Project

Igor Molotov

Keldysh Institute of Applied Mathematics,  
Russian Academy of Sciences

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# International Scientific Optical Network (ISON)

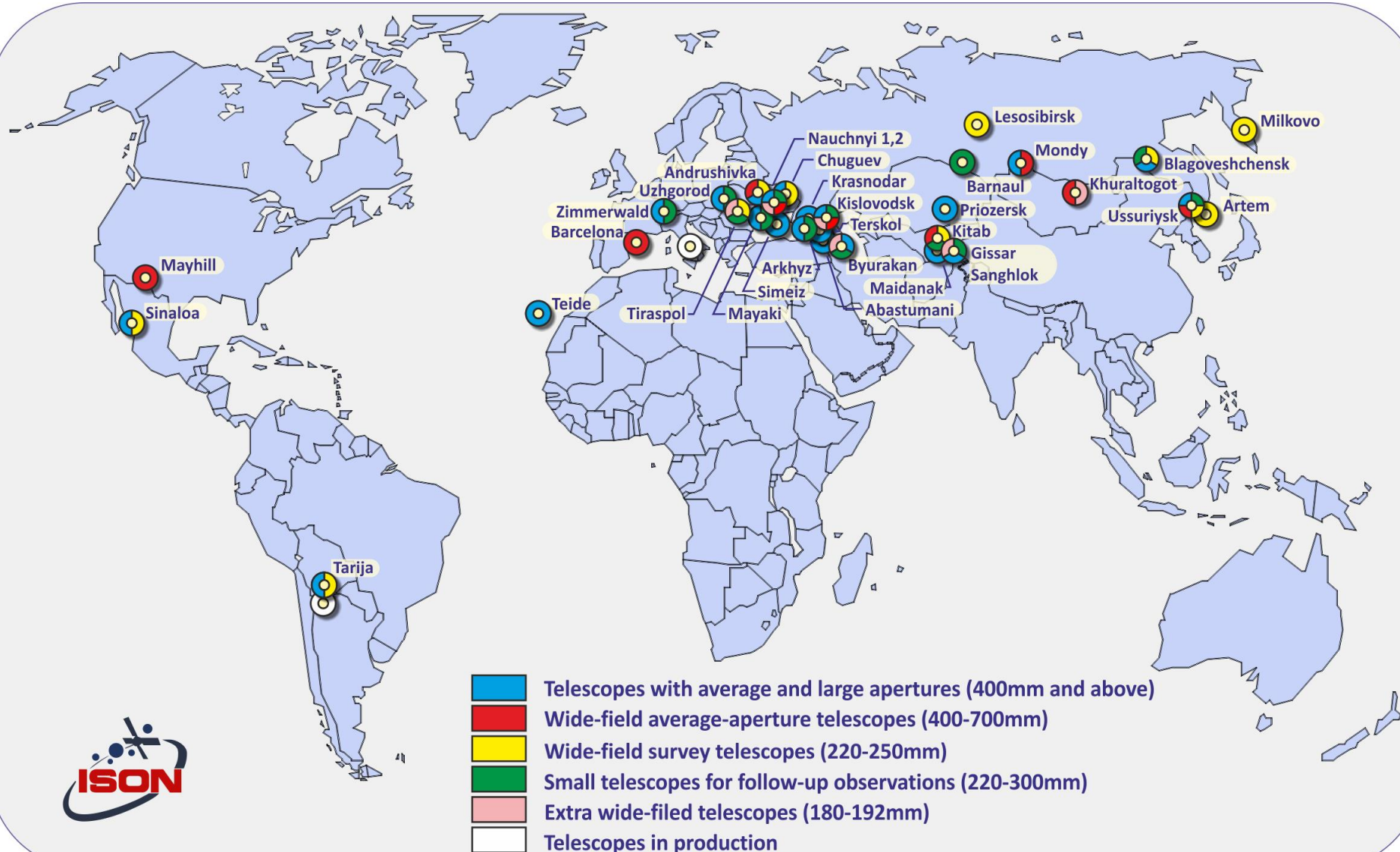
- ISON is an open international project developed to be an independent source of data about natural and artificial space objects for scientific and applied purposes
- Initial goal of the project is capacity building of astronomical observatories of the former Soviet Union countries and development wide international collaboration
- ISON network is coordinated by Keldysh Institute of Applied Mathematics of the Russian Academy of Sciences (KIAM)
- ISON cooperates with 35 optical observatories and observation facilities with 70 telescopes in 15 countries



# ISON key scientific areas – asteroids, space debris and GRB afterglow

- Search of new asteroids and comets
- Investigations of physical properties of NEAs (searching for binary asteroids and determining parameters of the binary systems, studying YORP-effect, support radar observations, providing support to Gaia project)
- Research of population of artificial objects (estimation of real population at high geocentric orbits, risk assessment, improvement of motion models)
- Alert observations of GRB afterglows

# Map of ISON observatories



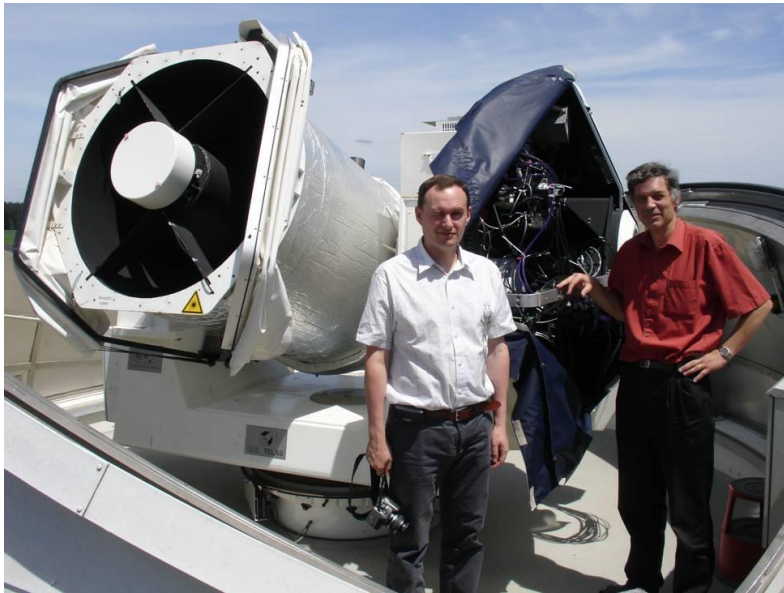
# Forms of collaboration with ISON



- Providing access to elaborated technological solutions for space objects observations – any team obtaining ISON telescope & software is able to provide reliable scientific output
- Joint observation and data analysis campaigns, exchange the obtained results
- Installation of ISON telescopes and sharing the obtained data
- Production of telescopes under scientific grants for future joint observations
- Education and training courses for observers and researchers (including dedicated workshops)

# Joint observation and data analysis campaigns, exchange the obtained results

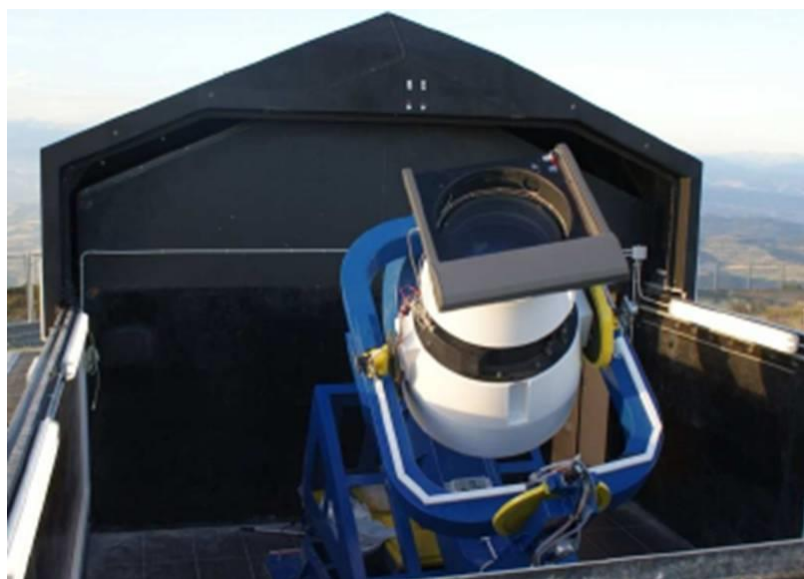
## Joint observation campaigns with telescopes of Zimmerwald observatory of AIUB are carried out since 2004





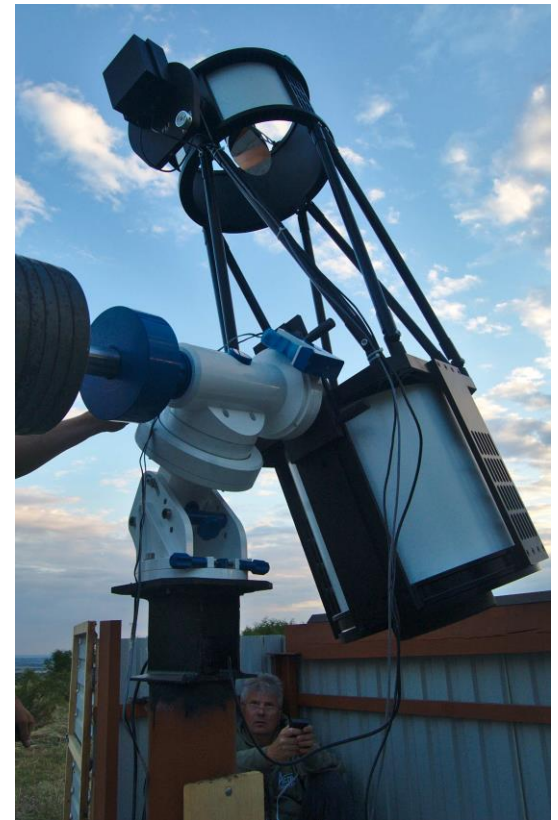
# Providing software, elaborated under ISON project, for further coordinated activities

ISON provides the APEX software for CCD images processing and prepares survey schedules for the team of 50 cm telescope Fabra ROA Montsec project near Barcelona



# Standard ISON telescopes that may be installed:

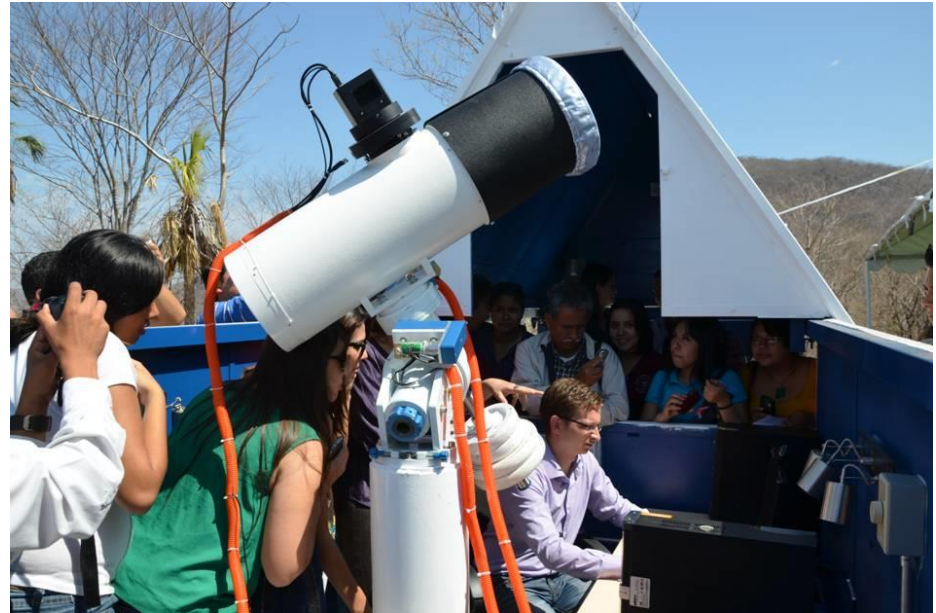
19.2-cm (7 deg), 25-cm (3.5 deg), 40-cm (1 deg.)





# Installation of ISON telescopes

- Bolivian observatory in Tarija - in 2009
- Mexican observatory in Cosala - in 2012



# Production of telescope under grants for future joint observations

30-cm (4.5 - 11 degree), 40-cm (2.3 – 7 deg),  
50-cm (1.8 - 4 deg), 65-cm (1.8 – 3.5)



# Production of telescope under grants for future joint observations (2)

- 50-cm telescope is produced under grant of Moscow Physical-Technical Institute in 2008
- 40-cm telescope is produced under grant of Mongolian Academy of Sciences in 2012





# Modernization of non-operational obsolete telescopes

Modernization of 60-cm Zeiss-600 in Tarija (Bolivia) and Sanglokh (Tajikistan), 80-cm telescopes in Terskol (Russia) and Mayaki (Ukraine)

Start of modernization of 2.6-m ZTA and 1-m AZT-10 in Byurakan (Armenia)



# Criteria for ranking of proposals to install ISON telescope

- Site with good astroclimate (many observation nights, high altitude, minimal light pollution etc..)
- Site with good geographical position (Western and Sothern Hemisphere, close to equator etc..)
- A team wishing to cooperate in ISON scientific areas
- Sharing efforts – domes, computers etc..



# Participation in ISON workshops

- ISON arranges the workshops on regular basis (6 meetings were to the date)



# Conclusion

- ISON project elaborated inexpensive technological solutions for observations of space objects already using for capacity building in international cooperative researches
- ISON project is open to the collaboration with any team that would like to be involved in joint activities in observation of natural and artificial space objects, and that corresponds to some criteria
- ISON research areas are topical for the UN COPUOS and the UN BSSI