

30th IADC Meeting

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ISON network development in 2011-2012

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Roscosmos delegation**

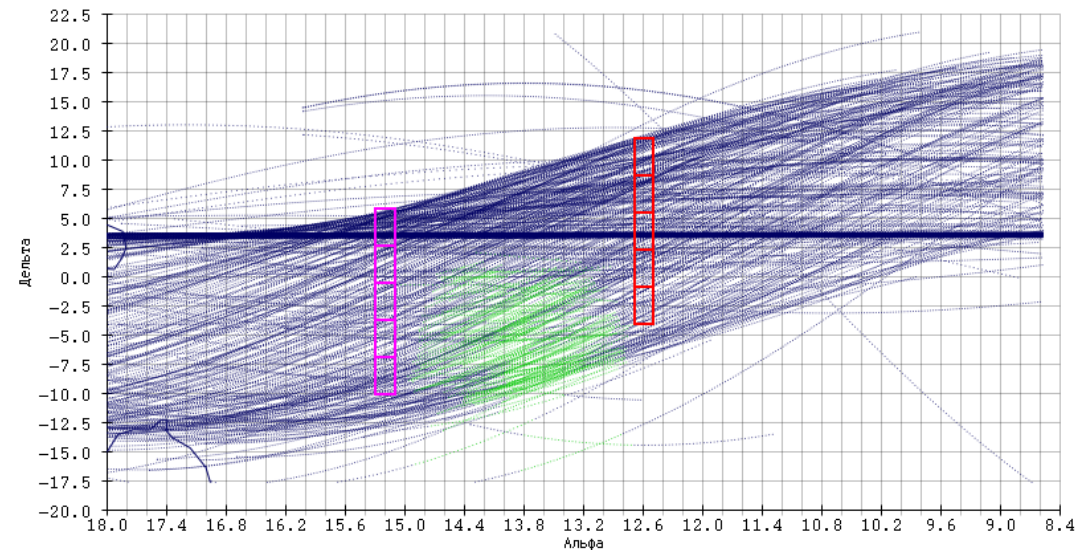
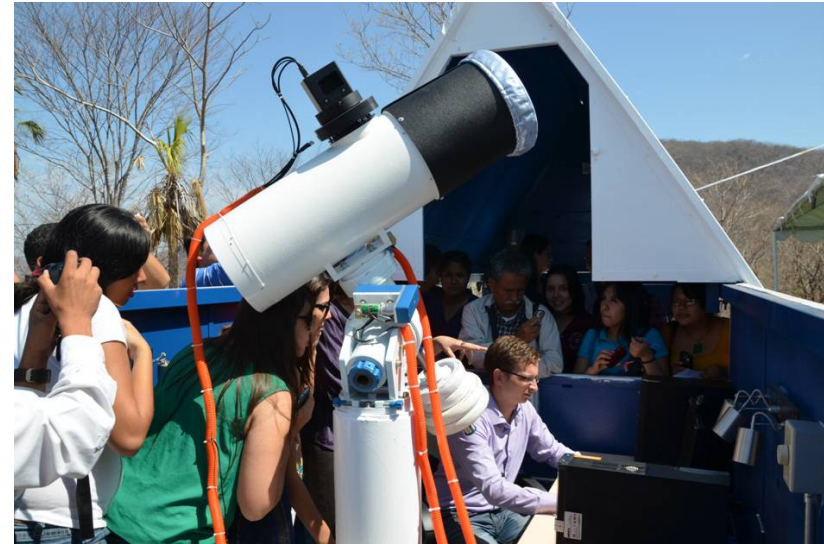
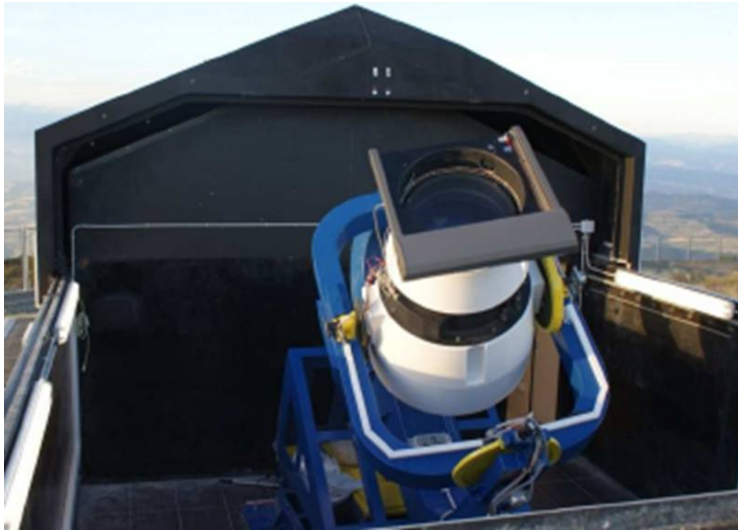
Directions of ISON development

- Global GEO-survey subsystem completion
- Adjustment of faint fragment surveys
- Start of surveys of high-elliptical objects
- New subsystem for tracking bright GEO and HEO objects
- Series of dedicated mini-observatories under Roscosmos grants

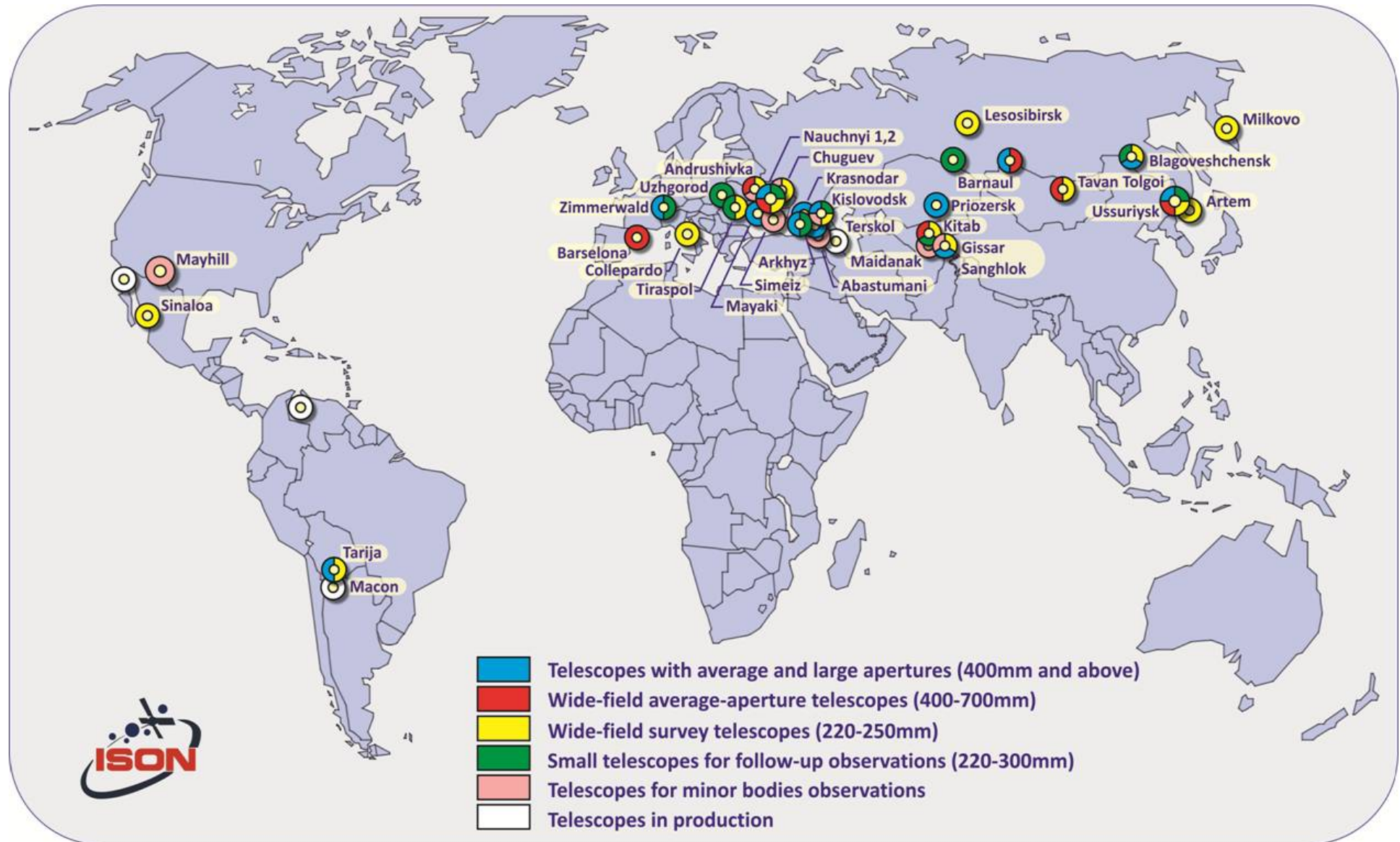
Global GEO-survey subsystem completing

- Two more 25-cm survey telescopes are installed (**Chuguev** near Kharkov, Ukraine and **Cosala**, Sinaloa state, Mexico)
- 50-cm telescope TFRM near **Barselona** started observations within the framework of ISON
- Standard strategy of GEO survey scheduling is implemented for all survey telescopes - productivity of ISON network is increased 1.5 times (1,155,446 measurements in 150570 tracks in 1st quarter 2012)
- Thus, global GEO-survey subsystem of 14 automated telescopes is completed

Global GEO-survey subsystem completion – Barcelona, Sinaloa and Chuguev

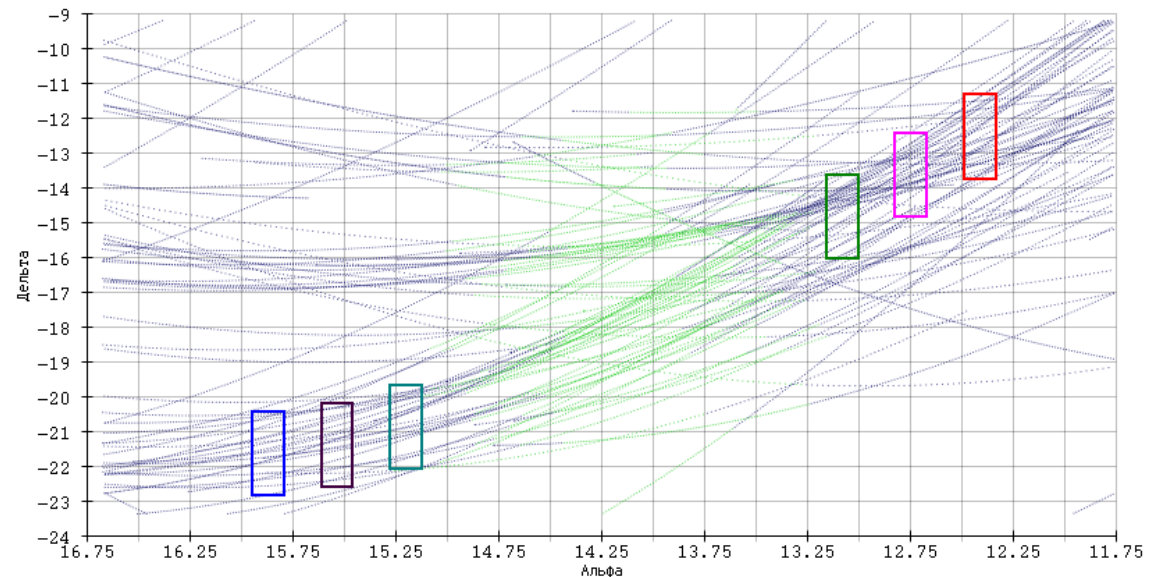


Map of ISON observatories



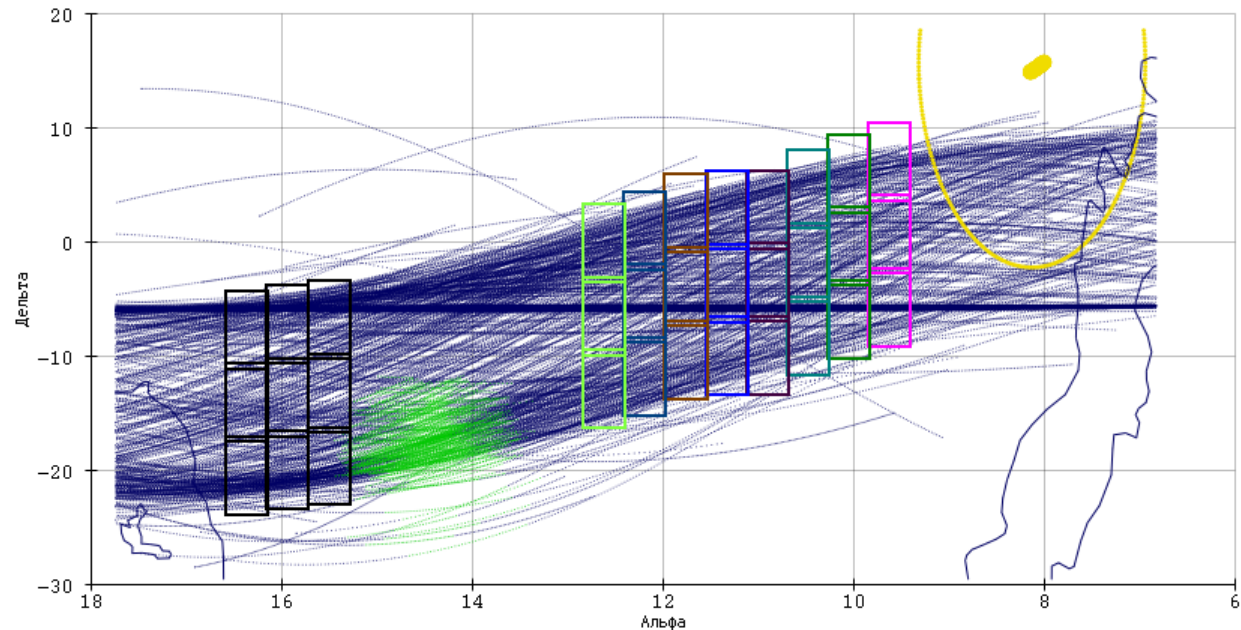
Adjustment of faint fragment survey

- Installation of CCD camera with 50-mm chip at 50-cm ORI-50 telescope resulted in 2.5×2.5 deg FOV and provided ability to cover fields with the highest density of known fragment trajectories
- Ussuriysk ORI-50 participated in discovering of about 100 non-catalogued objects during 2011



Start of surveys of high-elliptical objects

- 19.2 cm VT-78e and 18 cm VT-52c telescopes with 7x7 degree FOV are installed in Sanglok and Nauchnyi-1
- **Sanglok** carries out extended GEO survey (14000 measurements in 2000 tracks for 700 objects per a survey, including up to 150 HEO objects)
- **Nauchnyi-1** – both extended GEO survey and targeted survey of HEO objects



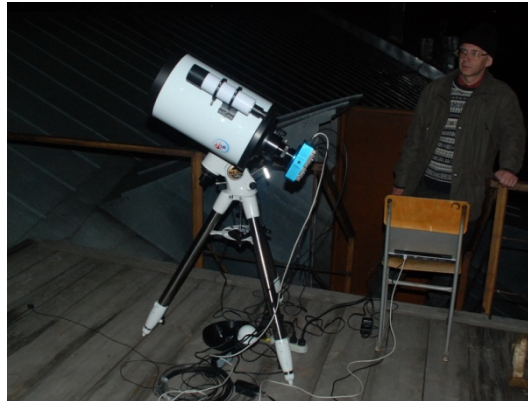
New subsystem of 9 telescopes for tracking bright GEO and HEO objects

- to follow up newly discovered objects
- to observe objects on long measuring arc in order to produce more precise orbit if necessary (i.e. in case of conjunctions)
- for brightness measurements

Installation of TAL-250 in Barnaul and RC-360 in Kitab

Involvement of AZT-28 in Priozersk and Sazhen-TM in Arkhyz

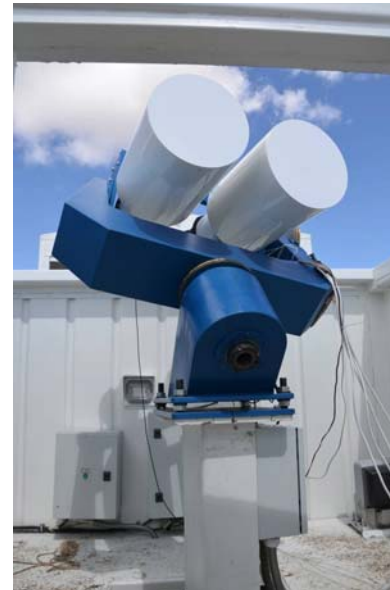
New telescopes for subsystem from 9
telescopes for tracking bright GEO and HEO
objects – 36-cm RC-360 in Kitab, 25-cm TAL-250
in Barnaul, 25-cm Sazhen-TM in Arkhyz, 50-cm
AZT-28 in Priozersk



First dedicated space debris mini-observatory under Roscosmos grant

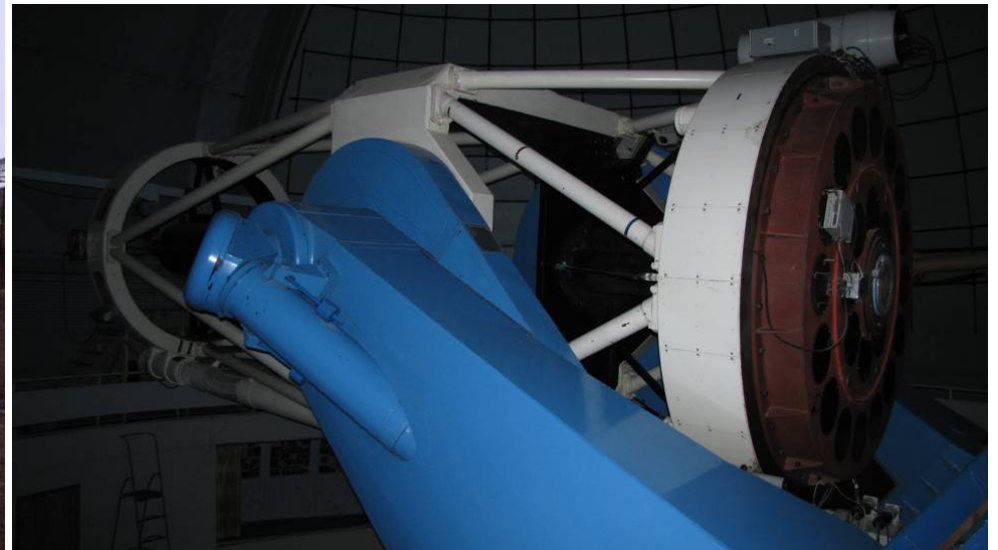
- faint GEO and HEO fragments search and tracking
- GEO surveys
- HEO surveys
- adjustment of LEO object observations
- EOP-1 (first of 4 mini-observatories) with 3 telescopes (40-cm, 25-cm and 2x19.2 cm) and 50-cm telescope are installed near Kislovodsk, North Caucasus, Russia

First dedicated mini-observatory EOP-1 near Kislovodsk: 40-cm, 25-cm and 2x19.2 cm telescopes, and 50-cm telescope

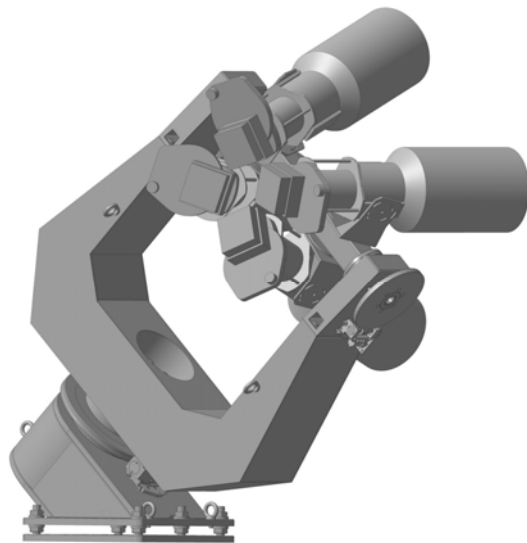
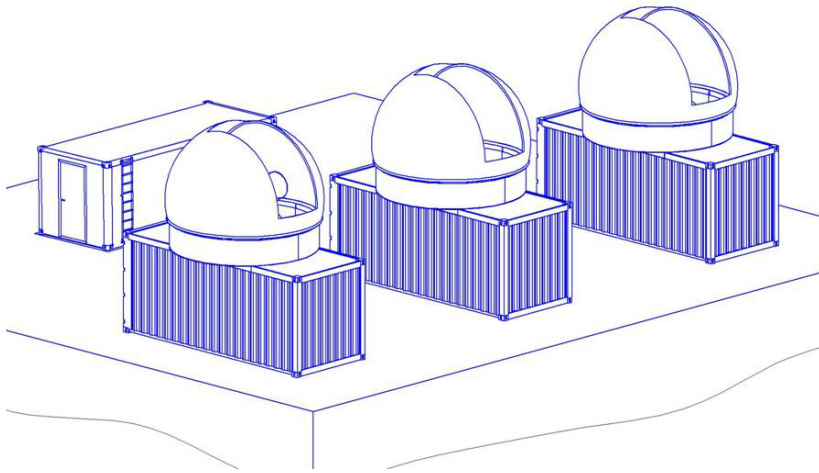


Second dedicated mini-observatory EOP-1 will be installed at Byurakan, Armenia

Also 2.6-m ZTA and 1-m Schmidt telescopes will be modernized to support the very faint GEO fragments research



Dedicated mini-observatory EOP-2: 65-cm, 40-cm and 4x19.2 cm telescopes



Conclusions

- Two ISON subsystems (survey and bright objects follow up) are completed
 - 5 dedicated mini-observatories (3 EOP-1 and two EOP-2) will be installed soon
 - New observatories will be opened in Mongolia and Argentina
 - Two large telescopes (2.6-m and 1-m) will be modernized to participate in the ISON project
- All these works will allow to complete two other ISON subsystems (faint fragment tracking and HEO objects survey), and to start research of the very faint fragments on a regular basis
 - Creation of new ISON subsystem (for LEO objects observations) will be started soonest