

Div. XII/Comm. 46/PG International Schools for Young Astronomers – ISYA

## **The 32nd ISYA, at Byurakan Observatory, Armenia, 12 Sept. - 3 Oct. 2010**

Excerpt from a report by Jean-Pierre De Greve, Chairman PG ISYA

### *Introduction*

The 32nd ISYA 2010, held at Byurakan Observatory, Armenia, was characterized by a very large number of applicants (more than 100) from a large number of countries from the region. Because of the close connections between the observatory and research groups in France and Germany and the fact that for students of those countries grants were available outside the ISYA funding, it was decided also to accept a few students from these countries in order to enlarge the international character of the student body.

The following organisations sponsored the ISYA programme: Armenian Astronomical Society (ArAS), Armenian National Academy of Sciences (NAS RA), Armenian State Committee for Science (SCS), Byurakan Astrophysical Observatory (BAO), German Academic Exchange Service (Deutscher Akademischer Austausch Dienst, DAAD), International Astronomical Union (IAU), Norwegian Academy of Science and Letters (NASL), United Nations Educational, Scientific and Cultural Organization (UNESCO).

The IAU allocated funds provided by the NASL to cover the travel expenses of the participants (visa, insurance, and air fare, local transport, and cultural trips). BAO, ArAS, NAS RA, SCS, and UNESCO provided accommodation for students at the observatory hotel and for lecturers in Yerevan hotels, meals and coffee breaks during the school, as well as other expenses (social events, participants' kits, administration expenses). DAAD provided travel grants for three German students.

### *Location*

The Byurakan Observatory is one of the main observational centers of the former Soviet Union and an important observatory with modern facilities in the Middle East region. It was founded in 1946 by V.A. Ambartsunian and is well known for its large spectroscopic surveys: the First and Second Byurakan Surveys (FBS and SBS). The student accommodation was in a hotel on the observatory domain. Breakfast, lunch and dinner were provided in the restaurant of the observatory. Except for the ISYA director, Jean-Pierre De Greve, who had a room in the hotel with the students, all other professors were housed at the Academy of Sciences in Yerevan, approximately 40 minutes from the campus. The lecturers were transported to and from campus on a daily basis.

### *Students*

Out of 104 candidates, 48 were selected for participation including the Armenian students. There were in total students from 21 countries participating, including several from outside the region (France, Germany, India). The gender distribution was 56% female, 44% male.

### *Opening reception of the ISYA.*

The Opening Ceremony, on Monday, 13 September, was attended by representatives of the Academy of Sciences (co-organiser of the School), UNESCO (as one of the important

sponsors) and the Ministry of Education. National television was present to record the event for the news. A welcome dinner was held in the evening.

### *Programme*

In total, there were 18 lecturers from 11 countries. A special guest lecture was given by Prof. Gennady Bisnovaty-Kogan, one of the members of the international jury of the Ambartsumian Prize. Lectures started at 9:30 am and finished at 6:00 pm. Several lectures were also followed by labs to exercise the presented material. Each lecture or lab lasted 90 minutes. There were two teaching slots in the morning, and two in the afternoon, each separated by a coffee/tea break of 30 minutes. The lunch break lasted from 1:00 pm till 2:30 pm.

Thanks to the Faulkes Foundation, ISYA had access to the 2 meter robotic Faulkes telescopes on Maoui, Hawai (FTN) and in Australia (FTS), (with special thanks to the appreciated support of Paul Roche). Unfortunately, due to weather conditions, maintenance, and extra-curricular school activities, only one 1:30 hour slot out of the four that were scheduled could be used on FTN. As extra support, we were also allowed to use the Australian back-up for that night, adding an extra hour on FTS.

Additionally, students could carry out observations at night, using the spectrograph on the 0.5 m telescope of the observatory (27 hrs, thanks to Arthur Amirkhanian, Head of small telescopes), and in the last week, using also the 2.6 m telescope.

In the last week, students could give a talk, either individually or in group, in two dedicated slots of 1:30 hours. Several of the students consulted Jean-Pierre De Greve for the content of their powerpoint presentation. The presentations took place on 2 slots of 1.5 hours on Thursday 30 Sept. and Friday 1 Oct. For each student, 15 minutes were foreseen for the presentation and the discussion.

Additionally, two students from Turkey, Hüsne Dereli and Evrin Kiran, gave a presentation of their research on Monday 27 Sept. The lecturers agreed that the presentations were well prepared and of high quality.

A special seminar was given on 2 topics related to the scientific career: "How to write and publish a research paper," and "Applying for a position" (J.P. De Greve, Belgium)

### *Closing and evaluation*

On the last day, students completed a 4 page evaluation sheet. A selection of the best photos taken by the students, composed by one of the students, was shown. In the following closing ceremony, the students received their certificate of participation in the ISYA-2010. Many prizes were also awarded for special actions: most active student, winner of the quiz, winning team in the sport competition, best presentation, best photograph ....

### *Social programme*

The social programme included a tour of the Byurakan Astrophysical Observatory (Monday, 13 Sept., 16:30-18:30), the welcome dinner (Monday, 13 Sept., 19:00-21:00), the Viktor Ambartsumian International Prize Award Ceremony in Yerevan (Saturday, 18 Sept., 11:00-12:00), the ISYA-2010 banquet (Thursday, 30 Sept., 19:00-22:00), Armenian sightseeing excursions (two weekends, 18-19 and 25-26 Sept.), as well as sports games and competitions.

The tours organized for the weekends were the following:

**YEREVAN CITY TOUR** (Saturday, 18 Sept.).

**LAKE SEVAN** (Sunday, 19 Sept.). Lake Sevan, the gem of Armenia, is a wonder of nature, located 60 km from Yerevan up a highway which cuts northward through mountains and rocks, at 2000 m above sea level.

**GARNI and GEGHARD** (morning of Saturday, 25 Sept.). The Sun Temple of Garni (built in the Roman style, very like the Greek Parthenon) is 28 km from Yerevan. There is an architectural complex of the 3rd century B.C. The temple itself was built in the 1st century A.D. by the Armenian King Tiridates. 6 km from Garni, there is a fantastic example of medieval Armenian architecture, the Geghard Cave Monastery. Its first mention is found in the 4th century, but the main cathedral was built in 1215.

**ECHMIATZIN and ZVARTNOTS** (afternoon of Saturday, 25 Sept.). This excursion explored the old city of Echmiatzin, the former capital of the Kingdom of Armenia (in the II-IV centuries). Echmiatzin is 20 km from Yerevan, in the Ararat Valley - the granary of Armenia. The Cathedral is Echmiatzin's main attraction. Echmiatzin is the centre of the Armenian Apostolic Church and all the Armenian eparchies.

**AMBERD, TEGHER, and ORGOV** (Sunday, 26 Sept.). There are wonderful sightseeings in the Ashtarak District, around Byurakan. There is the famous picturesque Amberd fortress. In 10-11 centuries it was a well-built settlement and one of the important military strong points of the Armenian Bagratouni kings. Here in 1026, the St. Astvatzatzin church was built. Amberd is at a height of 2,300 metres above sea level. The Institute of Radiometric Measurements is located in Orgov. Its main instrument is a 54 m Spherical Radio telescope, which is correlated with a 2.6 m optical telescope, working as a radio-optical telescope (ROT). The institute has also a 16 m radio dish, time service, etc



*The 32nd ISYA, at Byurakan Observatory, Armenia in 2010*