

# Astronomical Public Activities in Armenia

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## Abstract

The Byurakan Astrophysical Observatory (BAO) founded by the outstanding scientist Viktor Ambartsumian in 1946 is one of the famous astronomical centers in the world, and particularly in the Eurasian area. Along with large scientific, scientific-organizational, and educational activities, public outreach is also very active. The paper gives an overview of BAO public activities in Armenia and in the region. We emphasize the significance of public activities in raising awareness among public on the topics of astronomy and science in general. BAO serves as a regional center for the IAU initiative Astronomy for Development and hosts the IAU South West and Central Asian (SWCA) ROAD, which has a number of activities, including many public ones.

## Introduction

Armenia actively participates in the programmes of the **IAU Office of Astronomy for Development** (OAD, we have established a regional office in Armenia, ROAD, Director Areg Mickaelian; see the corresponding section), **Astronomy Outreach** (the IAU Office for Astronomy Outreach (OAO) has its Armenian National Coordinator (NOC) Sona Farmanyan and Co-NOC Lilit Darbinyan) and **Astronomy Education** (the IAU Office for Astronomy Education (OAE) has its Armenian contact points, Marietta Gyulzadyan, Sona Farmanyan and Armine Patatanyan).

BAO and Armenian Astronomical Society (ArAS) also give importance to the development of amateur astronomy. There is “Goodricke John” amateur astronomers’ organization created by Ruben Buniatyan, which puts efforts in the field development and in 2009 reached the recognition of 18 September (Viktor Ambartsumian’s birthday) as Astronomy Day in Armenia. ArAS created a section for amateur astronomy on its webpage (further to establish Armenian Amateur Astronomical Society, ArAAS), as well as a Facebook group, where one can register as an amateur astronomer.

Along with its scientific, organizational and educational activities, BAO conducts a number of public activities as well: scientific journalism, scientific/astro tourism, popular publications, public events, and other activities. We give an overview on BAO activities related to IAU SWCA ROAD, Scientific Journalism, Scientific/Astro Tourism, Publications, and other public activities.

It is worth mentioning that BAO is the only scientific/research institution in Armenia having Public Relations Department and positions of the head of the department, press-secretary, visits coordinator and event and project manager.

## IAU SWCA ROAD

The International Astronomical Union (IAU) announced its Strategic Plan on Astronomy for Development in 2009, during the International Year of Astronomy (IYA-2009). One of its main components was the creation of the Office of Astronomy for Development (OAD) and corresponding Regional Offices (ROADs) for implementation and coordination of its aims. The OAD was created in Cape Town, South Africa and later on ROADs were created in 11 regions.

Since 2015, Armenia hosts one of these ROADs, IAU South West Asian (SWA), later renamed to **South West and Central Asian (SWCA) ROAD**. At present, already 6 countries have officially joined (Armenia, Georgia, Iran, Kazakhstan, Tajikistan, and Turkey), but the Office serves for a rather broad region, from Eastern Europe to Central Asia. Armenia’s geographical location and its historical role in astronomy

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(both for well-known archaeoastronomical heritage and the presence of the famous Byurakan Astrophysical Observatory (BAO) serve as a link between Europe and Eastern Partnership countries, Middle East and Asia in general.

We run activities in 3 directions, Task Forces (TF):

- TF1 Universities and Research (Professional Astronomy),
- TF2 Children and Schools (Astronomical Education),
- TF3 Public Outreach (Astronomy for the whole community).

Each TF has its people in charge, and this way we also coordinate the activities in the Regional countries. Besides, we are active in the IAU Flagship Programmes, namely Scientific/Astro Tourism is being widely promoted and developed.

Beside activities for the regional countries, IAU SWCA ROAD also encourages and strengthens collaboration with other regions and countries. Especially, promising are contacts with three neighboring ROADS: East Asian (based in Beijing, China), Arab World (based in Amman, Jordan) and European (E-ROAD; Leiden, Netherlands). The first one is coordinating a huge region (China, Mongolia, North Korea) and is especially interested in the development of Silk Road projects that also relate to Armenia. Arab World ROAD is in fact in the same big region (Middle East) and is our closest neighbor (an official agreement was signed between SWCA and Arab World ROADS). The more recently established E-ROAD involves also Armenia and Turkey, as the astronomical societies of these countries are among EAS Affiliated Societies unified by E-ROAD. We have discussed possibilities to tighter collaborate in all areas (TFs) and establish new programs.

## Scientific journalism

Scientific journalism (science journalism or science writing) is one of the many public activities conducted by BAO. Big efforts have been made for the development of Scientific Journalism in Armenia during recent years, namely starting from 2009, the International Year of Astronomy (IYA-2009).

Considering its importance as a tool that makes science available to people and brings them close to science, BAO became the initiator of the field development and made big efforts for that in Armenia. For that purpose, Facebook group of Scientific Journalists of Armenia was formed by Areg Mickaelian in 2010, aiming at gathering journalists around this particular field and enhancing its development. At present, among group members there are around 200 journalists and 500 scientists. Already since 2009 several seminars have been organized. Later on, Sona Farmanyan and Meline Asryan took the responsibility for the development of BAO scientific journalism.

In frame of these activities, Annual Awards have been granted to journalists by BAO. The first Scientific Journalism prizes in Armenia were awarded in 2009 on the occasion of the International Year of Astronomy: having nominations for the most active scientific journalist 2009 and the best scientific paper. Later, prizes were awarded in 2011, which was jointly established by ArAS and the Oxford Armenian Society (OxArm), and the tradition continued in 2014, 2016 (BAO-70) and special prizes were awarded to ARMACAD scientific network and the Armenian Scientific Cooperation (ARMSCOOP) for popularization of science. In summer of 2019 we again attempted to bring journalists together by hosting a seminar on scientific journalism. The journalists, who had significant contribution in disseminating information about science on their own initiative by the end of the year, were nominated for the prizes, hoping to encourage the others to dedicate themselves to this work as well. The Scientific Journalism Prizes 2019 were awarded in 3 nominations: the best printed/online article, the best audio/video news coverage, and the most active journalist. The tradition continued in 2020 and 2021.

Scientific journalism publication activities are given in the Section “Publications”.

## Scientific/Astro tourism

Armenia and the whole South West and Central Asia, as the Middle East, are areas with rich history, as well as high-level science. They are rich in scientific, particularly in astronomical sites, among which

archaeological sites related to science, medieval universities, modern scientific institutions and science related museums can be mentioned. Examples of archaeological sites are ancient observatories, petroglyphs (rock art) of astronomical nature, as well as intangible heritage, such as Armenian and other calendars and chronology tightly related to the astronomical knowledge. Modern observatories and astronomical institutions having tools or laboratories which can be presented in terms of tourism, are considered as astronomical tourism sites as well. Space museums are astronomy and space science related museums. Despite the fact that Astronomical (Astro) Tourism is a new direction, it has great perspectives, and Armenia and the neighboring countries have a great potential in this field.

**Scientific Tourism** is a new area not only in Armenia but also in the world. It involves visiting science-related centers. In order to be well organized, it is necessary that the scientific center has proper infrastructure to be able to present the center to the public and in an interesting way. Despite the fact that scientific tourism is a new direction, it has great prospects, and Armenia has great potential in this field. It is very important to present Armenia from this perspective, both science-related archaeological sites and modern institutions and museums. We have created and published the Scientific Tourism map of Armenia, based on our cognitive tours, studies, and also Internet resources.

**Astro Tourism.** BAO is also actively engaged in Astronomical Tourism, being one of the leading institutions of Armenia. BAO has run projects called “Development of Astro Tourism in South West and Central Asia” and “Scientific Tourism in Armenia” (also involving Astro tourism). The objectives of the projects are to develop Scientific and Astro tourism in South West and Central Asia. Astro Tourism may significantly contribute to education by involving school pupils and students in cognitive tours to research organizations offering society a tight connection with science. In BAO, there are several forms of visits, including both day and night tours, Viktor Ambartsumian house-museum, etc.

More information is given at BAO and ArAS Scientific and Astro Tourism webpages and the Facebook group:

- Facebook group “*Scientific Tourism in Armenia*”: <https://www.facebook.com/groups/617695955026936>
- BAO as Scientific Tourism centre: <https://www.aras.am//BAO/SciTourism/eng/index.php>
- IAU OAD project 2016 “Astro Tourism in South West Asia”: <http://iau-swa-road.aras.am/eng/AstroTourism/studyvisits.php>
- IAU SWCA regional Astro tourism official webpage at: <http://astrotourism.aras.am/index.php>
- BAO visits page: <https://www.bao.am/visits/visits.php>

## Publications

The scope of BAO publications is quite wide, both printed and online.

- **BAO Press Releases.** In March 2019, we started the list of BAO press releases, touching upon various topics connected to BAO and Astronomy in general, including scientific and sky events, BAO scientific and educational activities, etc. (more than 100 press releases yearly in Armenian, but many are also in English). The press releases are available on BAO official website and BAO Facebook and Instagram pages. Moreover, they are occasionally distributed to mass media representatives interested in Scientific Journalism. We should note that BAO closely cooperates with mass media keeping the mailing list constantly updated. This collaboration brings forth to dozens of publications, interviews, press-conferences and articles in Armenian and other languages communicating science to a broad audience. Moreover, BAO has recently been in the center of attention of international mass media companies as well, which once again highlights the legacy it has in science today. Namely, mass media from USA, France, Germany, Switzerland, Poland, Romania, Russia, Latvia, Australia, Kazakhstan, Iran, Lebanon have covered BAO during the last years.
- **BAO Interviews.** Since 2019, we have initiated BAO interviews to cover various topics of great importance that present interest for the general public and have not received enough coverage by mass media or otherwise. The interviewers are BAO well-known scientists. A number of popular articles (ex. in the NAS RA journal “In the World of Science”), press-conferences, radio/TV programs and films are being produced every year as well.

- **ArAS Electronic newsletters (“ArASNews”).** Since 2002, via this newsletter, members of the Armenian Astronomical Society (ArAS) community get notified of important events connected to the activities of the society itself and those of BAO. It should be noted, that ArAS has a great role in developing scientific journalism in Armenia: ArAS webpage contains information, regular press-releases, etc.
- **Astghagitak** (“Star Expert”) e-journal. “Astghagitak” contains information on astronomy and provides the links to the materials for the users of all ages. It is different from other classical journals and collects articles available online or includes new scanned articles on various topics. The main topics include: History of Astronomy, Telescopes and Observatories, Astronomy in Armenia, Armenian astronomers, Solar System, Extrasolar planets and Astrobiology, Stars and Nebulae, Galaxies, Cosmology and Cosmogony, Multiwavelength astronomy, Extraterrestrial civilizations, Space flights, Space catastrophes, Astrology, Amateur astronomy, and Astronomical Education.
- **Calendar of astronomical events.** Since 2012, at the beginning of every year, we release a bilingual online calendar of notorious celestial events occurring during the given year all over the world. It has three main sections: *Sky (celestial) events*, *International astronomy events*, and *Armenian astronomy events*. In addition, we have compiled the lists of all *Solar and Lunar eclipses*, *Triple conjunctions* and *Periodic comets* for 2001-2050, to keep active the recent events and to follow the forthcoming ones at least for the present generations.
- **Brochures, calendars and other promotional materials** are also published by BAO. Together with the Armenian Ministry of Communications and Transport (and later: Ministry of High-Tech Industry), we have organized the publication of astronomy related postmarks “Viktor Ambartsumian” (2008), “Beniamin Markarian” (2013), “IAU SWCA ROAD” (2016), “BAO-75” postmark (2021) together with a themed postcard and Grigor Gurzadyan (2022).

## Other public activities

- **Public Events.** BAO organizes various events on Astronomy and related fields, namely public events, like open door events, movie screenings, exhibitions, seminars, conferences, etc. It is important to note that some 24,000 people (Armenian and other citizens) visit BAO annually.
- **Films.** We have produced a number of short documentary films on BAO and astronomy. In addition, many TV companies are interested in BAO and its activities, and they have produced 9 films during the last 3-4 years. Among them are: “Our Archive” by the Armenian Public TV, 2021, “Byurakan Astrophysical Observatory”, by Iranian TV, 2019; “On the Armenian roads: Byurakan”, by the Armenian Public TV, 2019; “The Cornerstone: Byurakan”, by the Armenian Public TV, 2019; “Viktor Ambartsumian”, by Artak Avetyan, 2019; “Viktor Ambartsumian: Episode of Life”, by Shoghakat TV, 2018; “The giant star”, by Cultural TV of Armenia, 2018; “BAO”, by Yerkir Media TV, 2018; “A Universe in the Universe: Viktor Ambartsumian”, by the Armenian Public TV, 2017; “BAO”, by Geographic TV, 2017.
- **Public Lectures.** Since 2012, BAO astronomers visit various organizations (schools, universities, army, private companies, etc.) to give popular lectures on various topics of astronomy, such as: Our understanding of the Universe from ancient times to nowadays; Byurakan Astrophysical Observatory and its achievements; Viktor Ambartsumian’s life and activity; Beniamin Markarian and Byurakan surveys; Armenian astronomers in the world; Astronomy and Mythology; Solar System; Extrasolar planets; Stars and Nebulae; The World of Galaxies; Large-scale structure of the Universe and Cosmology; Cosmic catastrophes and “End of the World”; Extraterrestrial Civilizations; Astronomy and Astrology; Astronomer’s tools; Space Astronomy; Astronomy and Culture, and others.
- **Production of astronomical souvenirs.** For promotional activities, BAO produces a number of varieties of astronomical promotional materials and souvenirs. These are leaflets, fliers, postcards, posters, calendars, cups, pens, coasters, magnets, etc. They are being distributed to amateurs, students, pupils, and the public.

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