

DIVISION C **COMMISSION 46**

ASTRONOMY EDUCATION AND DEVELOPMENT *ÉDUCATION ET DÉVELOPPEMENT POUR L'ASTRONOMIE*

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C46 'ASTRONOMY EDUCATION AND DEVELOPMENT': A PECULIAR COMMISSION

1. Introduction

C46 was a Commission of the Executive Committee of the IAU under Division XII (Union-Wide Activities), then after 2012 under Division C (Education, Outreach, and Heritage). It was the only commission dealing exclusively with astronomy education; a previous Commission 38 (Exchange of Astronomers), which allocated travel grants to astronomers who needed them, and a Working Group on the Worldwide Development of Astronomy, have been absorbed by Commission 46.

The commission aimed at improvement of astronomy education and research at all levels worldwide (through the various projects it initiated, maintained, and developed), as well as through the dissemination of information.

The Commission was somewhat different from other IAU Commissions in two facets:

- a. Its substructure were Program Groups (PG's), not Working Groups.
- b. Annually, all the Program Groups received funding from the Executive Committee to execute and implement their activities (see below).

C46 was managed by an Organizing Committee, composed of President, Vice-President and Past President, together with members who were at the same time chairing the Program Groups.

These Program Groups are listed in the following sections.

2. PG for the Worldwide Development of Astronomy (WWDA)

The role of this PG was to visit countries with some astronomical expertise at tertiary (i.e., post high school) level, which are not necessarily IAU member countries, but which

would welcome some development of their capabilities in teaching, and/or research, in astronomy. For example, as a result of a visit, Mongolia joined the IAU in 2006 and received advice on broadening its astronomy programs.

Other examples were:

2009: Paraguay

2010: Senegal, Tajikistan, Panamá, Costa Rica, Ghana, Ethiopia, Philippines

2011: Brunei, Nicaragua, Guatemala, Kazakhstan, Bolivia, Colombia, Fiji, Nepal

2012: Tunisia, Algeria.

3. PG for Teaching Astronomy for Development (TAD)

TAD aimed at enhancing astronomy in countries with currently underdeveloped astronomy education, or weak astronomy research infrastructure in support of education. TAD operated on the basis of a proposal from a professional astronomy organization, or on the basis of a contract between the IAU and an academic or governmental institution, usually a university. The capabilities of the TAD program were limited to assistance with university-level activities, such as :

- the creation of university-level astronomy/astrophysics courses and the faculty training and equipment associated with the development and first offering of such courses;
- a basic, largely educationally oriented research capability for faculty and students;
- travel (i.e. transportation) costs of foreign visiting lecturers and of students invited for study at foreign universities, and
- professional preparations needed as a prerequisite for plans to offer astronomy in schools and for the public.

TAD provided advice about education of school teachers, but no financial support. The training of school teachers and the actual performance of school teaching and public outreach is considered to be part of the national resources.

Typical examples were:

2009: Korea (Democratic People's Republic of: DPR), Bolivia, East Africa Astronomy-Workshop (Kenya), Palestine (West Bank/ Gaza)

2010: Burkina Faso (with NASE, see below), Nicaragua, Senegal (with PGWWDA), Rwanda

2011: Ethiopia, Vietnam, Mauritius, Palestine (Gaza)

2012: East Africa Astronomy Workshop (Uganda, Nov. 2012), Uganda, Gaza, Lebanon, Korea (DPR), Philippines.

4. PG for International Schools for Young Astronomers (ISYA)

The International School for Young Astronomers was a project of the International Astronomical Union (IAU), established in 1967, which still continues under the auspices of an "Office for Young Astronomers" (OYA), funded by the Norwegian Academy of Sciences and Letters, and the IAU. The IAU provides financial support for travel of students and faculty, both within the host country and international. The host institution must obtain the funds to cover local expenses during the ISYA. An ISYA school usually lasts for three weeks. ISYA seeks the participation of young astronomers mainly, but

not exclusively, from astronomically developing countries. Participants have generally completed their first degree studies.

The program aimed at broadening the participants' perspective on astronomy by lectures from an international faculty on selected topics of astronomy, seminars, practical exercises and observations, and exchange of experiences.

Typical examples of locations for the School were:

2009: Trinidad and Tobago
2010: Armenia
2011: China
2012: South Africa.

5. PG for Network for Astronomy School Education (NASE)

For introducing more astronomy in the school it is necessary to educate teachers in an appropriate way promoting observation. All schools in all countries have an 'astronomy lab': the courtyard of the school. The teachers with enough instruction can use it as observatory.

The NASE PG was organised every year in two or three new schools for primary and secondary school teachers in different parts of the world. After the course, a small group of teachers were put together, in coordination with the NASE PG, and could then continue organizing courses every year in the country.

Most of the courses and material are produced in several languages: English and Spanish at present, Arabic and Portuguese or French in the future

More precisely, the NASE PG trained teachers in primary and secondary level in astronomy, in a theoretical and practical framework. It provided teachers with practical tools for astronomy, and instructed them to apply astronomy techniques in areas such as mathematics, physics, chemistry, biology, geography, history, philosophy. NASE promoted the teaching of astronomy in different space sciences, and encouraged the teaching/learning process in astronomy through models and observations of natural phenomena.

In each place that required the service of a NASE course, the program created local-groups composed of local teachers, who then gave basic courses and prepared materials for the web site of the program.

Typical training places were:

2010: Barranquilla (Colombia), Managua (Nicaragua), Lima (Peru), Rosario (Argentina), Cañada de Gómez (Argentina)
2011: Venado Tuerto (Argentina), Rafaela (Argentina), Tegucigalpa (Honduras), Managua (Nicaragua), Panama City (Panama), Barranquilla (Colombia), Asuncin (Paraguay), Reconquista (Argentina)
2012: Lima (Peru), Managua (Nicaragua), Tegucigalpa (Honduras), Guatemala (Guatemala), Quito (Ecuador), La Paz (Bolivia), Barranquilla (Colombia), Santa Fe (Argentina), Asuncin (Paraguay), Montevideo (Uruguay).

6. PG for Public Understanding at the times of Solar Eclipses and Transit Phenomena (PUTSE)

This PG gave timely advice for countries that could experience a solar eclipse, and organized the outreach of the events.

7. PG for Newsletter and National Liaisons

The C46-Newsletter was part of the formal activities in Education supported by the IAU and reported on activities in educational research, on astronomy education in general, and provided comments on books that are relevant for astronomy education and outreach. The database <http://iaucomm46.frm.utn.edu.ar/newsletters/> contains all Newsletters since 1992 (starting with number 34). Older editions were in hardcopy.

This PG also kept in touch with the national liaisons for education, from whom it received reports and information.

8. PG for Collaborative Programs

This Program Group worked on activities co-sponsored by UNESCO, COSPAR, the UN, ICSU, etc., and carried out interactions with other international organizations.

9. The last period of C46 (2012 – 2014)

This period was characterized by various changes. These were partly caused by the establishment of the Office of Astronomy for Development (OAD; as part of the Strategic Plan of the IAU 2010-2020) that led to the disappearance of most of the Program Groups (some remained, but as Working Groups), and the introduction of new Working Groups (Theory and Methods in Astronomy Education, and Astronomy and Inclusion).