Brazilian plans for the IYA2009

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Abstract

I present a list of activities we are planning for the year 2009. We have just started the work, which will be updated online[1].

Introduction

Brazil is a large country in South America, with 190 million people. Unlike its neighbours who speak Spanish, our language is Portuguese. Most of the children attend public schools and the government gives support (money) for families who keep their children attending classes, but generally there are huge problems in the education system: ~30% of the adults are not literate, teachers receive low salaries, and internet connections are almost nonexistent in public schools. Our primary problems for social inclusion are not driven by the segregation of minorities, but by the poverty of a large fraction of the population and low investment in public education. Textbooks for elementary schools contain only a few chapters on astronomy and are frequently plagued by misconceptions. Students and the general public love astronomy, but, as for other sciences, the press doesn't treat news on scientific discoveries well; coverage is not frequent enough and the explanations are not easy to follow. The number of books and magazines containing astronomy is also very small. In modern times, the impact of science and technology on society is huge and people must have a scientific perspective in order to influence the government to make the best choices.

Astronomy in Brazil

The modern era of astronomy in Brazil started in the 1970s. Previous activities had been isolated and institutions short lived. The situation changed after the first graduate courses started. The rate of growth of professional activities (number of papers in refereed journals, number of citations, number of PhDs, number of jobs) has increased by around 15% each year. This was mainly possible because the federal government built a national facility (a 1.6-m telescope managed by the Laboratório Nacional de Astrofísica), whilst several founding agencies put money into large projects, such as Gemini and SOAR telescopes, as well as supporting the construction of modern instruments. Currently we have 300 PhD astronomers and 35% are women. The gender balance is better than in most countries, but our goal is to reach 50%. We have a national association,

[1] www.astronomia2009.org.br

SAB — the Brazilian Astronomical Society, affiliated to IAU — that comprises almost all astronomers in the country (400 members) and has had annual Meetings since 1974. The fact that we have a young and continuously growing astronomy community was one of the driving forces behind the IAU's decision to organise the 2009 General Assembly (GA) in Brazil (Rio de Janeiro).

With the inception of professional activities, the diffusion of astronomy through TV and magazines has improved significantly. The situation has also improved teaching at graduate courses in physics institutes; the benefits of this were seen in terms of the number of students selecting astronomy as a career. At the elementary level, however, the situation is changing very slowly. Teachers have no training at all in the subject, are not motivated to learn because all their time is consumed by teaching, salaries are low and courses to train in astronomy are rare. On the other hand, students are enthusiastic about the sky. This year 345,657 children took part in the 10th National Olympiad of Astronomy (OBA). The prize was a visit to the Laboratory of Satellite Integration and Tests and the winners were interviewed by the biggest TV channel, showing a lot of excitement. Thus we have a fertile terrain to explore and IYA2009 is a great opportunity to strengthen our connection with the public at several levels.

Coordinating committees

We have organised our work in four areas, grouping the programmes by the target public and by human resources. In this way, the programmes defined by IAU for the IYA can be adapted to the situation of our people and to what we can do with such meagre resources.

Research

In order to continue growing, Brazilian astronomy needs continuing support for student fellowships, infrastructure for building instruments and data analysis facilities. In 2009 we plan to show the public and the government what we have been doing with the investments they made and our plans for the next decade. In our area, research has proven to be the source for improving public education and science diffusion. News about discoveries made by Brazilian astronomers is followed with special interest. Our main goals are:

- To develop a strategic plan for Brazilian professional astronomy: observational and computational facilities, professional training, science education and diffusion.
- Talks on recent large impact developments in astronomy: this is devoted mainly to physicists, students, educated public and has the potential to attract young people for a career in astronomy.
- Talks on broader astronomical subjects; astronomy history as well as key questions raised by the public. We have named this project *Talk with an astrophysicist*.

Coordinator: Kepler Oliveira — Instituto de Fisica da Universidade do Rio Grande do Sul

Schools

Schools are where we have the biggest problems because of the large education system. Public schools have no internet connection, making it difficult for the Galileo Teachers programme to be

adapted and there are no good channels of contact with the schools. Even so, the 10th OBA (Brazilian Astronomy Olympiad) reached 4891 schools, involving 36,487 teachers. It is possible to use the link opened by the OBA in 2009 to distribute kits and printed material. The federal government is looking to make the programme *One Laptop per Child* a reality and this may open up a great opportunity to offer educational materials in an electronic format. Our goals are:

- To improve communication with teachers in public schools.
- To distribute experimental kits and electronic books to be used by children in public schools.
- To bring the International Olympiad of Astronomy to Brazil in 2009.

Coordinator: Jaime Villas da Rocha — Universidade Federal do Rio de Janeiro

Science centres

We have a small number of science centres, museums and planetariums. They are very important, as they offer the opportunity of a longer and deeper exposure to science subjects and employ well trained people. Our main goals are:

- To develop and distribute astronomy programmes for planetariums and science centres. To circulate an exhibition of astronomical images.
- Talks on the Latin American Indian astronomy in all planetariums/science centres. The magnificent Milky Way allowed the local Indians create the “dark constellations”, based on black spots and stars.
- Megashow with popular songs inspired in astronomical themes to be held in Rio de Janeiro, during the IAU2009 General Assembly.

Coordinator: Alexandre Cherman — Fundação Planetário do Rio de Janeiro

Amateurs

Amateur astronomers will be essential to the success of IYA2009 in Brazil. They have good instruments, skills in showing and explaining astronomy to the general public and a lot of enthusiasm. Our goals:

- To connect Brazilian amateurs in a network. Presently 70 clubs are nodes of the IYA2009 and we expect to double this number.
- To get 1,000,000 people looking through a telescope in 2009.
- To increase the number of (small) public observatories and trained amateurs.

Coordinator: Tasso Napoleão — Clube de Astronomia de São Paulo

The Gallileoscope programme could be important for us, since not many people have telescopes or binoculars. However, it is particularly difficult to organise. Since the country and population is so huge, it would make sense to have more than 1 million Gallileoscopes distributed though we haven’t yet figured out who could sponsor the project and what company could build the instruments.