

Popularising science through astronomy, an Algerian experience in grassroot activism and its academic spin-off

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Abstract. We relate the success story of an amateur astronomy association based at Constantine, which has spearheaded the efforts of spreading astronomy and scientific culture in Algeria. This association has organised throughout the past decade many activities from large national yearly gatherings to a weekly radio program, through public sighting campaigns. It has been instrumental in the establishment of a pluri-university graduate study program in astrophysics, the so called Ecole Doctorale d'Astrophysique (EDA), the first of its kind in Algeria. We describe in particular how astronomers from various parts of Algeria involved in amateur astronomy have known each other, and banded together to the point of constituting a critical size group able to set up such a national graduate program with plans for the establishment of the first observatory in our country, the Aurès Observatory in Eastern Algeria Aurès mountain range. A strong interest for the project has been shown by the astronomical community, some site testing undertaken, and international collaboration sought. With some dedicated support, its foundation could take place within the year 2009. Could IAY2009 be turned into an annus mirabilis for Algeria and a showcase for the astronomy community worldwide with behind it a textbook case of synergy between amateur astronomy and academic endeavor in the astronomical sciences?

Keywords. graduate studies, astrophysics, amateur, outreach

1. Post-independence astronomy in Algeria

1.1. *The legacy of the Bouzaréah observatory*

Algerian independence in 1962 was followed by a massive exodus of the French settlers, and among them the astronomers working at the Bouzaréah observatory near Algiers, none of them of Algerian extraction. The observatory situated at a modest altitude facing the bay of Algiers was the second historical observatory in Africa after the one at Cape Town, and it has participated in the international *Carte du Ciel* project at the end of the nineteenth century (Sadat 1998). That not a single Algerian astronomer could be trained during a century of the observatory's existence is no doubt an indictment of the French presence in Algeria. Astronomy survived throughout the sixties till the eighties at a modest level and some research work was carried out by visiting scientists mainly from France and Egypt. Furthermore, an astronomy course (*Certificat d'astronomie*) was still taught at the Physics department of Algiers University in the sixties. What notoriously contributed to its low key existence was its adjunction to a larger structure pompously called the CRAAG (*Centre de Recherche en Astronomie, Astrophysique et Géophysique*) attached to the Interior Ministry for which earthly things are more important than the celestial ones, in view of the important seismic activity in Algeria. The problem was not only that it was mostly a geophysics center, but that its lack of direct link with the



Figure 1. Bouzaréah Observatory at Algiers. It is the second oldest observatory in Africa.

academic world which was unhealthy by itself (weak output, no peer review, ...) pushed it further into the limb of marginality.

1.2. *Astronomy in the nineties and the slashed hopes*

A development worth mentioning was the flourishing of astronomy at Emir Abdelkader University of Islamic Sciences at Constantine in the late eighties through the teaching of astronomy as a yearly compulsory course to all first year students, a unique course taught in Algeria (Guessoum 1996; Guessoum *et al.* 1999). This teaching gave to thousands of theology and law students through its five years of existence some background in Astronomy and its applications in Islamic jurisprudence. A project of a large planetarium associated with the University regional vocation reached an advanced stage of planning. This led to the ambitious idea of setting up an institute of astronomical sciences brought for by the University vice-president, a nuclear physics graduate from MIT, and which was to make use of a handful of astrophysicists which were just coming back from abroad. The project was unfortunately the casualty of political strife but the idea was not lost as N. Zettilli became President of Blida University where he initiated in the early nineties a similar graduate program in astrophysics. Yet, the harsh realities of the Algerian political scene at that time put an end to this ambitious venture which stopped after the graduation of the first promotion of students at the master level. Two of the Faculty members tragically lost their lives and the remaining ones migrated to Gulf universities. This brain drain affected also seriously the CRAAG which lost several newly recruited astrophysicists.

2. The Rising of Sirius

The *Sirius Astronomy Association* (<http://www.siriusalgeria.net>) is one of the Algerian amateur astronomy associations, but with a special slant. It has become throughout its 12 years of activities a reference in Algeria and beyond to what amateur astronomy –even with little means– can bring to the people. It is dedicated to bringing astronomy to the public and in spreading scientific culture through it. Its activities include: (1) In-house training for its 60-strong members; (2) Lecturing at various institutions including high schools, cultural centers, scouts associations, universities, ...; (3) Organising public astronomy fairs and exhibitions; (4) Running a successful weekly radio program.

Let us mention a few examples of successful activities carried out by *Sirius* over the past few years.

2.1. *The National Fair in Popular Astronomy*

Sirius organises every year since 2002 a National Fair in Popular Astronomy which brings together the most active amateur astronomy associations around the country as well



Figure 2. Some of the grass-root activities of Sirius: teaching star hopping to scouts (*left*), and lecturing at a University student residency (*right*).



Figure 3. The annual National Fair in Popular Astronomy.

as well-known astronomy associations from abroad like the Société Astronomique de France, the Jordanian Astronomical Society, the Association Jeunes Science from Tunis, Astronomers Without Borders from the USA, etc. It has become throughout the years the focal point of the dynamical amateur astronomy community in Algeria and a much sought-after rendezvous that no amateur would like to miss. In addition, and crucial to our story, it brings together most of what the professional astronomy community has of members as lecturers. Activities involve, in addition to the Fair itself, lectures, workshops, observation nights, etc.

2.2. The 5 October 2005 annular eclipse from Batna: saving the day for millions of school kids

Organising a public event to observe some astronomical phenomenon is a real challenge for anybody who has tried it. Planning it for a whole city is an order of magnitude more challenging. You need dedicated volunteers to stand with them, watch over the equipment, and readily explain things, all while the phenomenon is unfolding. Where are you going to get this help, not from the amateurs who are busy first and foremost in ‘saving the phenomenon’? This is though just what we did for the October 5, 2005 annular eclipse for which the band of centrality went through Algeria after having darkened a strip of Spain (<http://www.siriusalgeria.net/eclipse2005/index.htm>).

The unfolding of the eclipse was broadcasted live from there non-stop on national TV as other parts of Algeria were cloudy. Our Astronomical Association “created the news”



Figure 4. ‘*Envahissement de terrain*’ at the Seffouhi municipal stadium at Batna for the October 5, 2005 annular eclipse.



Figure 5. (Left): The ‘Treasure’ dual use map. (Right): The Science Radio Club show.

by sighting the eclipse from the city of Batna in Eastern Algeria, along with a dozen of other astronomy associations that we invited there for the sighting. But there was more drama to the action! Since it was the only region along the path of the eclipse which was cloudless, the National Algerian TV (the only existing one) covered it live for nearly three hours, instead of the expected few minutes! It was seen by some 12 million viewers especially youngsters, since the day of the eclipse was declared holiday, so that pupils would stay at home watching the eclipse on TV instead of “risking their sight” outside. All the official sites and in particular the one from the Bouzaréah observatory near Algiers were overcast on that morning. Were it not for the Batna’s viewing site where we invited the national TV to cover the event, those millions of kids would have been very frustrated!

2.3. *A treasure map*

An exquisite large-size map was prepared by our Association in coordination with the *Institut National de Cartographie* at Algiers and the CRAAG. It may well be a world première that such a dual astronomical-geographical map was produced by an amateur association! It includes also a handy –yet rather detailed– description of the eclipse phenomena.

This dual use geographical map “Special Eclipse” of rather large size (100 cm × 80 cm), was distributed free of charge to hundreds of schools, cultural institutions and mosques throughout the country. This is why it was chosen to be in Arabic as it is the language readily understood by the young generation in Algeria. It was also available at a subsidised price for the general public. The CRAAG, who participated also in some aspects of its conception, generously paid for the printing. As for the eclipse flyer that *Sirius*



Figure 6. The *Starshine* experience: skilful hands and space adventure

conceived, some 20,000 copies were printed and distributed nationwide. It contains vital data about the eclipse, the times of passage, as well as advice and caution when observing the eclipse. This, we believe, is public service at its best!

2.4. *The Science Club Radio Show: A 10-year-long experience in broadcasting science on local radio*

Conceiving and managing a broadcasting program on science over the local radio for more than 10 years is certainly a feat than any astronomy amateur astronomy would be proud of.

This programme, organised by Sirius members, is called the Science Club and has produced so far some 250 30-minutes-long radio shows which are heard over much of Eastern Algeria (see <http://www.siriusalgeria.net/radio.htm>). It brings weekly breaking scientific news and live interviews with leading personalities from arts and sciences. Certainly a unique experience in the amateur world, at least in developing countries, steadily going on for more than 10 years. Topics range from simple astronomy concepts expounded in simple terms, to the latest trends in cosmology, to other scientific areas like geology, medical sciences, including at times some social and cultural issues, dealt from a unique perspective.

2.5. *Starshine: bringing the space excitement to Algerian schools*

Under the supervision of the *Sirius* association, some 50 educational institutions (middle schools and high schools as well as scout sections) were involved in the *Starshine 2* and *Starshine 3* satellite programmes, two school satellites launched by the Space Shuttle. We held two workshops with the teachers and the students to explain the procedure of polishing mirrors to a high level of accuracy so as to be mounted on those school satellites. In addition to the polishing part, the project consisted of observing the satellites at dusk by naked eyes and chart they decay rate, monitoring in an indirect way, the insolation's rôle in expanding the Earth atmosphere (see <http://www.siriusalgeria.net/starshinep.htm>). *Starshine 4* and *5* could unfortunately not be launched after the *Challenger* catastrophe and the program was stopped. Yet, tens of Algerian students benefited from this unique experience through which was placed the product of their hands in space, before even the launching in 2004 of *Alsat1*, the first Algerian satellite.

2.6. *A lifetime adventure for 50 bucks*

Sirius organised a trip for some fifty young Algerians to observe the March 29, 2006 solar eclipse from Jalu (Libya), crossing some 2,500 km by land through three countries to reach the observing sight in the middle of the desert (Fuentes 2008). This trip of a lifetime, thanks to a rigorous scout-like management, did cost no more than USD 100, and half of it paid by each participant (see <http://www.siriusalgeria.net/eclipse2006/index.htm>).



Figure 7. An EDA course at Constantine University.

2.7. Crescent sighting and astronomical predictions

Sirius has spearheaded throughout the last decade the nationwide efforts to take seriously the astronomical predictions for the sighting possibility of the Ramadan crescent through a vigorous media campaign (<http://www.siriusalgeria.net/ramadhan.htm>). A recurrent problem in Muslim countries is indeed claims of crescent sighting while the Moon is deemed invisible by astronomical criteria. A testimony of the *Sirius* credibility is that the Ministry of Religious Affairs in Algeria has come to take into consideration the *Sirius* press release on the astronomical sighting possibility before making the announcement of the start and end of the fasting month of Ramadhan, a rather unique situation in the Muslim world.

More amateur astronomy ventures with *Sirius* can be found on the website of the association at <http://www.siriusalgeria.net>.

3. Amateur gatherings as the trigger: Bottom-up Astronomy

These various astronomy gatherings where professionals mingled freely with members of the amateur community have constituted the meeting ground whereby they got in touch with each other, discussed astronomy in Algeria and finally banded together to propose a national graduate program in astrophysics in 2006, known as the *Ecole Doctorale d'Astrophysique* (EDA).

It is no wonder that the team which designed and ultimately became in charge of the program is made of the very people who have for years lectured at those amateur gatherings. In a sense those large amateur gatherings have been the trigger for the development of the professional astronomy. Thus opened in 2008 the first graduate study program in Algeria after the one in Blida in the early 1990s (Guessoum & Mimouni 2001). It is the fruit of the collaboration of four institutions, two universities (Constantine and Batna), and two research centers (CRAAG of Algiers and the Centre des Techniques Spatiales (CTS) at Arzew). It opened with an intake of some 12 students in the first year from various parts of Algeria and is now at its second year of activity. Participating in the teaching and supervising is a number of Algerian expatriates from Europe and the Gulf. The EDA has further generated a series of astrophysics workshops which bring together the Algerian astrophysics community as well as all what Algerian universities count of people working in fields related to the various branches of Astronomy (see <http://astrophysique.110mb.com>).

4. What Next? The Aurès National Observatory project

In the wake of this graduate program in Astronomy, came the idea of setting up an astronomy observatory in the region: the Aurès observatory project. The Aurès mountain range in Eastern Algeria has indeed the highest mountain tops of Northern Algeria and is situated close to Batna University, an important partner in the EDA, but has also Universities located nearby such as the ones at Constantine, Annaba, Sétif, Biskra, some of which have indeed strong connections with the EDA. This project, which has already obtained the agreement of principle from the Ministry of Higher Education, is pursued vigorously and is now in the phase of site testing prior to the drafting of a comprehensive proposal.

5. Conclusions

We have described a probably unique case of synergy between amateur astronomy and professional astronomy, whereby involvement of astrophysicists at the grass-root level led to the constitution of a critical size group of professionals and the establishment of an ambitious graduate program in astrophysics. May the celebration of the International Year of Astronomy 2009 build up momentum for the budding development of the astrophysical and lead to its blossoming, in particular with respect to the setting up of the Aurès National Observatory.

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