Global Astronomy Survey : Venezuela

First Submission : Cesar Briceno (SPoC) [see human resources section] 24 July 2009

SPoC Approval : Yes

1. Professional (Research) Astronomy:

1.1. Number of universities offering Astronomy:

In Venezuela, Astronomy at the undergraduate level is pursued as a

specialization for physics or mathematics students. No universities offer Astronomy

as a separate career at the undergraduate level.

Several universities in Venezuela offer Astronomy courses as optional

for physics or mathematics students that want to major in Astronomy.

These students usually also complete a senior undergraduate thesis (a full semester's work)

in Astronomy.

These universities are: Universidad Central de Venezuela

Universidad de los Andes

Universidad Simón Bolívar

Universidad del Zulia

Universidad de Carabobo

Several universities also offer Astrophysics within their Physics Graduate programs,

such that graduate students will obtain a Science Doctorate or Ph.D. in Physics-Astrophysics.

Universities with graduate Physics programs which include Astrophysics are:

Universidad Central de Venezuela (UCV)

Universidad de los Andes (ULA)

Universidad Simón Bolívar (USB)

Universidad del Zulia (LUZ)

Instituto venezolano de Investigaciones Científicas (IVIC)(*)

(*) IVIC, though a research institute and not an university, does have a graduate (Ms.Sc., PhD)

program in the basic sciences, including Physic/Astrophysics.

The astronomers at Centro de Investigaciones de Astronomia (CIDA), the sole public research institute

devoted to Astronomy, which also administers and operates de National Astronomical Observatory

of Venezuela, are visiting professors of the graduate Physics programs at UCV and ULA, teaching the

Astronomy/Astrophysics courses. Though CIDA does not grant degrees, it mantains a modest amount of

undergraduate and graduate students (roughly between 5 - 15) each year who are doing research

internships, or doing their senior undergraduate, masters or PhD thesis work under the advisorship

of one of CIDA's astronomers. CIDA has a student fellowship budget to support students conducting

their intership/thesis at the institute.

1.2. Number of universities offering Physics (and their names):

Universidad Central de Venezuela (UCV)

Universidad de los Andes (ULA)

Universidad Simón Bolívar (USB)

Universidad del Zulia (LUZ)

Universidad de Carabobo (UC)

Universidad de Oriente (UDO)

1.3. Number of academics who have been trained in Astronomy (ideally with their names and levels of qualification)

There are 19 venezuelan astronomers registered in the IAU (all havin a PhD degree).

Of these, 14 are active in research/teaching in venezuelan institutions:

1) Abad Hiraldo Carlos (CIDA)

2) Briceno Cesar (CIDA)

3) Bruzual Gustavo R. (CIDA)

4) Falcon Veloz Nelson L. (UC)

5) Ferrin Ignacio (ULA)

6) Fuenmayor Francisco J. (ULA)

7) Hernandez Jesus O. (CIDA)

8) Ibanez S. Miguel H. (ULA)

9) Magris Gladis C. (CIDA)

10) Mendoza Claudio (IVIC)

11) Parravano Antonio (ULA)

12) Rosenzweig-Levy Patrica (ULA)

13) Sigalotti Leonardo G. (IVIC)

14) Vivas Anna Katherina (CIDA)

In addition, the following are academics at various venezuelan universities, and have at least

a Masters degree in Astronomy/Astrophysics, or its equivalent (are doing their PhD thesis work):

1) Jeanette Stock (LUZ)

2) Neyda Añez (LUZ)

3) Juan Mateu (UC)

4) Faviola Diaz (ULA)

5) Orlando Naranjo (ULA)

6) Edgar Guzmán (ULA)

7)

1.4. Number of astronomical facilities (observatories, telescopes, etc) and as much detail about each as possible (websites/contact details)

Venezuela has a single professional, research quality observatory: the National Astronomical Observatory of

Venezuela (NAOV).

It is located at 8 deg 47 min North latitude, 70 deg 52 min West longitude, at an elevation of 3600m in

the venezuelan Andes, some 70km north of the city of Merida (about 500,000 inhabitants).

The NAOV is a national facility, open to all venezuelan astronomers and astronomy students

through a 4-times per year proposal system; it is administered and operated by CIDA. CIDA is the sole public

research institute in Venezuela devoted to Astronomy; CIDA is attached to the Ministry of Science, Technology

and Intermediate Industries of Venezuela, from which its budget comes. CIDA's headquerters are located in Merida.

CIDA's research staff is presently 7 astronomers, with an additional 3 expected to be hired by late 2009.

The technical and computing staff are 15, with 6 telescope operators.

The NAOV contains 4 instruments:

1) A 1m effective aperture, Schmidt-type telescope equipped

with a 8k x 8k CCD Mosaic Camera (QUEST-I) camera (Baltay et al. 2002, PASP, Vol.114, p.780) , which is routinely

used to conduct large scale, optical photometric variability surveys of the equatorial sky (e.g. Briceno et al. 2001, Science, Vo.291, p.93; Ferrin et al. 2001, ApJ Lett., Vol.548, p.243; Vivas et al. 2004, AJ,127, 1158;

Rengstorf et al. 2004, ApJ, Vol.617, p.184).

This CCD Mosaic Camera is presently being equipped with new state-of-the-art detectors, built specifically for this

instrument by e2v Inc. from the UK, with a total investment of nearly US$ 900,000.

The telescope control system is fully computerized, and operated from a control room below the dome level;

the system was originally designed in Mexico, in the mid-nineties, and since then modified and improved by

the technical department at CIDA.

2) A 1m f/21 Coude reflector equipped with a 2k x 2k CCD camera, and a slit spectrograph. A new f/5 prime

focus for this telescope was designed and built at CIDA, and is expected to be comissioned this year.

This telescope control system is fully computerized, and operated from a control room below the dome level;

the entire system was designed and built at CIDA.

3) A 50cm Double Astrograph, currently being used to do astrometry of geostationary satelites.

4) A 65cm refractor, used for public viewing on weekends and holidays.

In addition to the NAOV, there is now an initiative to establish cosmic ray detectors at an elevation

of ~4700m in the venezuelan Andes, as part of a network of high energy observatories connected with

the Pierre Auger Observatiry in Argentina. The researchers involved in this project are

physicists mainly

from ULA and UCV.

Finally, CIDA has recently purchased a large computational equipment with a ~30 Tb capacity, to

hold the increasing data produced by the surveys conducted with the CCD Mosaic camera at the Schmidt

telescope, and to push forward its Virtual Observatory initiative.

1.5. Self evaluation (according to the different phases above, how would you rate your country in terms of Professional Astronomy? Please include any other relevant information to motivate your choice.)

I would say that despite the small size of the astronomical professional community in Venezuela, Astrophysics

is one of the leading scientific disciplines in the country, in terms of its productivity and the impact

of the science done in the country. Venezuelan astronomers have created a solid worldwide reputation in

subjects like Stellar Population Synthesis, Galactic Structure and Star Formation. The specialized astronomy

library at CIDA is one of the most complete in Latin America. CIDA is currently investing nearly US$ 1 million

in new equipment at the NAOV and computing resources for the Venezuelan Virtual Observatory initiative.

Paticipation of Venezuela in a major international consortium is among one of our priorities in the near future.

Our current problem is

how to attract more students to pursue astronomy at a professional level, and establish larger, more solid

groups in several of the country major universities. As the institution hosting most of the professional

astronomers at present, CIDA is conducting efforts to establish stronger ties with major universities like

UCV, ULA, USB, LUZ, UC, in order to create early interest in astronomy among university students in their

freshman and sophomore years, and to offer attractive prospects to graduate students from physics,

mathematics, and engineering (which can be interested in instrumentation and computing/data mining).

As mentioned in item 1, CIDA is trying to obtain more funds for fellowships to support students that

want to pursue an internship, or thesis work at CIDA.

Over the years, Venezuelan astronomy students have been quite successful in obtaining funding to

attend international astronomy schools. In particular, venezuelan students have attended virtually

every one of the widely known Vatican Astronomy Summer Schools (VOSS), since 1988. Several of the newer

generation of venezuelan professional astronomers are ex-VOSS alumni.

2. Public Understanding of Astronomy:

2.1. What governmental astronomy/science outreach programmes for the public take place (co-ordinated either by government departments or national facilities)

Institution City Scope Programme name/Description

CIDA Mérida National Universe Awareness (UNAWE)-CIDA Workshops CIDA Méri
da
National

Astronomy booths & portable planetarium shows in National Science Fairs

CIDA Mérida Local/National Visitor Center at the National Astronomical Observatory of Venezuela (NAOV)

CIDA	Mérida	National	Itinerant Mobile Planetarium Program
CIDA	Mérida	National	Astronomy Outreach Program in Schools (AOPS): mobile planetarium, puppet shows, talks, group activities, story-telling, visits to the NAOV.
CIDA	Mérida	Local/State	Visits to communities with portable planetarium, telescope, and talks
CIDA	Mérida	Local	Monthly Lecture Cycle: An Instant in the Universe (Mérida city)
CIDA	Mérida	National	Special An Instant in the Universe 2-3 day lecture cycles. In one or two other major cities, once or twice a year.
CIDA	Mérida	National	Support to amateur astronomy groups (e.g. printed material, lectures, etc)
CIDA	Mérida	National	Astronomy booklets for kids, and educational material on Astronomy.
Humboldt	Caracas	Local/National	Planetarium shows, astronomy courses, workshops (for children & adults)
Planetarium			

Simón Bolívar Maracaibo Local/National Planetarium shows, astronomy courses, workshops (for children & adults)

Planetarium

It is worth mentioning that CIDA has pioneered the implementation of the UNAWE IYA 2009 key project in Latin America,

with Venezuela being the first country in which this initiative has been started, well before IYA 2009.

2.2. What non-governmental astronomy/science outreach programmes for the public take place (NGO activities or international programmes that your country is involved in)

Multiple outreach activities are routinely undertaken by amateur astronomy groups, as well as astronomy

departments or astronomers teaching at several of the major universities indicated in section 1.1 above.

These include astronomy courses, workshops, public lectures, sky observing sessiones, radio and TV programs

(mostly in local TV and radio stations), and astronomy-related articles in local and national press.

There are some 10 active amateur astronomy groups throughout Venezuela. The Venezuela IYA 2009 National Node

web page has links to these various groups and associations (www.astronomia2009.org.ve).

2.3. Comment on the presence of astronomy in the media (TV, radio, newspapers). Is it very prominent? Are there specific programmes on astronomy? Is the media generally willing to publish news on astronomy?

Astronomical discoveries tend to be of interest to the mass media, both radio, TV and printed press in Venezuela.

There are no routine radio or TV programs at the moment, though CIDA hosted for a time a translation of

an US astronomy radio program, that was aired for several years in a local FM radio station in Mérida city.

CIDA is currently preparing several radio and TV short astronomy programs, locally produced -in spanish,

that we hope to air in various government TV and radio station countrywide. Other groups (from universities

or amateur clubs) have at one moment or other aired astronomy programs, in other major cities like

Caracas, Maracaibo, Barquisimeto, Maturin, Barinas.

The media are normally quite willing to publish astronomy news, specially if they are related to

discoveries involving the National Astronomical Observatory or venezuelan scientists.

Several discoveries made at the NAOV have been widely publicized in the national newspapers, and

follow up radio or local TV inteviews to the venezuelan astronomers involved usually follow.

2.4. Comment on the presence of astronomy/science in the general culture of the people. Are there any specific challenges or setbacks? Is astronomy a welcome subject of conversation?

In Venezuela astronomy, or science, are not a usual subject of conversation. Interest rises among people

at times, when occurences like the influenza pandemic, or special astronomical events like a solar/lunar eclipse,

captures the public's attention. When an event like an eclipse is bound to take place over Venezuela,

we start getting calls at our institute from journalists in newspapers, radio and TV stations.

Still, without doubt, among scientific topics, astronomy is certainly

one of those subjects on which people are most likely to be interested and talk about, though many

times it is to manifest their own superstitions and make talk on "urban legends"; like "do eclipses

affect peoples health?", "will Mars really become as large as the Full Moon"?

Most people have a very low scientific background. Many do not fully understand why the Moon has phases,

the cause of tides, eclipses; but at the same time love to hear about the Big Bang, black holes, ans so on.

Astronomy is by large the science that most fascinates people and

captures their attention, as opposed to physics, chemistry, or even biology.

Specialized astronomy programs on cable-TV (e.g. History channel, Discovery channel, NatGeo channel)

have sparkled a lot of interest in astronomy, specially during IYA 2009, and mostly among children.

Though not every family has yet cable-tv in Venezuela, the estimate is that roughly 60% of the

population has access to cable-tv. Thus, the impact of these specialized programscannot be underestimated.

It has been common in these past few years that teachers in primary schools pick astronomy as the

science subject to work on during the year, specially on subjects like the Solar System, Galaxies,

and the like.

2.5. Self evaluation (according to the different phases above, how would you rate your country

in terms of Public Understanding of Astronomy? Please include any other relevant information to motivate your choice.)

I would rate Venezuela as average among latin-american countries in public understanding of astronomy.

Probably well below average compared with countries like Germany, Netherlands, UK, Sweden, Japan, but possibly

not too far below countries like the US.

3. Astronomy in Schools:

3.1. What governmental astronomy/science education and outreach programmes for schools take place (co-ordinated either by government departments or national facilities)

Institution	City	Scope	Programme name/Description
CIDA	Mérida	National	Universe Awareness (UNAWE)-CIDA Workshops CIDA

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ocal/National Visitor Center at the National Astronomical Observatory of Venezuela (NAOV)

CIDA Mérida National Astronomy Outreach Program in Schools (AOPS): mobile planetarium,

puppet shows, talks, group activities, story-telling, visits to the NAOV.

CIDA Mérida Local Monthly Lecture Cycle: An Instant in the Universe (Mérida city)

CIDA Mérida National Special An Instant in the Universe 2-3 day lecture cycles.

In one or two other major cities, once or twice a year.

CIDA Mérida National Astronomy booklets for kids, and educational material on Astronomy.

Humboldt Caracas Local/National Planetarium shows, astronomy courses, workshops (for children & adults)

Planetarium

Simón Bolívar Maracaibo Local/National Planetarium shows, astronomy courses, workshops (for children & adults)

Planetarium

3.2. What non-governmental astronomy/science education and outreach programmes for schools take place (NGO activities or international programmes that your country is involved in)

Multiple outreach activities specially aimed at shools and primary school children are routinely

undertaken by amateur astronomy groups (see 2.2 above), as well as astronomy departments or astronomers

teaching at several of the major universities indicated in section 1.1 above.

3.3. Comment on the presence of astronomy in the school curriculum. Is it part of the school curriculum? Is it very prominent? What age groups?

Astronomy is not yet part of the school curriculum in Venezuela. However, the Ministries of Education and

of Science & Technology are very interested in the idea, and have charged CIDA with preparing a proposal

of subjects and material that should be incorporated. Later on a specialized comittee will incorporate the

pedagogical aspects into the proposal.

3.4. Comment on the status of astronomy/science in schools. Are there any specific challenges or setbacks? Sufficient number of students studying maths and science? General interest in maths/science/astronomy in schools?

Astronomy comes into schoolsthrough teachers that on their own interest select astronomical subjects

to work on at class throuhout the school year. Through the CIDA-UNAWE workshops and the AOPS, the

number of teachers involved with astronomy has multiplied in recent years, and thus the audience of children

to which astronomy is now reaching out. Between 2008 and july 2009 over 50 workshops have been held, attended

by some 2000 teachers that have access to nearly 80000 children in their classrooms, nationwide.

3.5. Self evaluation (according to the different phases above, how would you rate your country in terms of Astronomy in Schools? Please include any other relevant information to motivate your choice.)

Astronomy in venezuelan schools is yet at a very incipient stage, despite the efforts by CIDA and other

institutions. Much progress has been made, but we are still a long way from having astronomy being a

subject commonly present, widely across the country, in children's classroom activities. We expect

that once astronomy is officially part of the curriculum in primary public schools this sutuation will improve.

Any other general comments or information that you feel would be useful for this survey?

Thank you for your input. This will most be valuable in developing astronomy in each of our countries.

Cesar Briceno

Centro de Investigaciones de Astronomia (CIDA)

IYA 2009 SpOC for Venezuela