Global Astronomy Survey : Trinidad and Tobago

First Submission : Mr. Jourdain (Derick) Cornwall [see human resources section] 3 April 2009

1. Professional (Research) Astronomy:

i. Number of universities offering Astronomy (and their names)

There are no universities offering Astronomy as a degree.

The University of the West Indies in St. Augustine (UWI) currently offers Astronomy as half (12 hours) of an advanced undergraduate physics course entitled “Optics and Astronomy”.

There is a course restructuring currently underway that will result in two full Astronomy courses. These courses will be called “Fundamentals of Astronomy” and “Introduction to Astronomy”. Fundamentals of Astronomy will be offered as a first year course while Introduction to Astronomy will replace the current course Optics and Astronomy, which is being split into two courses, one on Astronomy and the other on Optics.

ii. Number of universities offering Physics (and their names)

There is only one university offering Physics as a degree. It is the University of the West Indies, St. Augustine campus. Physics is offered at the graduate and undergraduate levels.

Another recently formed university, the University of Trinidad and Tobago, employs several physicists who offer courses in physics but there is no degree program as yet. This is expected to change within the next academic year or two.

Website of universities: http://www.utt.edu.tt/ and http://sta.uwi.edu/

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

There is presently one academic who has been trained in Astronomy. Her name is Shirin Haque-Copliah. She has an MPhil in Physics (Astronomy) and a PhD in Physics (Astronomy) from the University of the West Indies. She is currently serving as the chair of the Physic department at the University of the West Indies (St. Augustine)

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

SATU observatory: This observatory is located on the rooftop of the natural sciences building of the University of the West Indies, St. Augustine. The telescope is a 0.4m Meade LX200 (classic). The main detector is an SBIG STL-1001E CCD. The observatory itself is a metal shed mounted on tracks allowing it to be rolled back exposing the telescope to the sky. Since December 2007 the observatory has not been used. Its primary purpose before this date was to monitor the quasar OJ287 as part of a global program spearheaded by the University of Tuorla Finland.

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SEAS observatory: This is a privately owned observatory located on the island of Tobago. Its main telescope is a 0.3m Meade LX200 (classic) mounted on a steel pier for Alt-Az operation. The Observatory has a Technical Innovations 15' Fiberglass Dome mounted on a dedicated building. The site is located on a hill (110m above sea level) which over looks the Caribbean Sea. The facility has electricity, telephone and Internet connectivity and can accommodate observers for several nights at a time. The main detector at this time is an SBIG STV camera.

SEAS is presently building a second site in Trinidad which will house a 0.5m Meade RCX telescope mounted on a MAX mount also from Meade. First light at this new site is expected to occur by June 2009.

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v. 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.)

RATING: Phase 2

Trinidad and Tobago has a small research community in Astronomy. There is only one permanent Astronomer at the university of the West Indies and none at the University of Trinidad and Tobago. This Astronomer is presently the chair of the Physics department and as such has very little time for research.

The research community, as it currently stands, is made up of three graduate students studying for Mphils in Physics (Astronomy) and Chemistry. Two of these students (Physics and Chemistry) are working in the field of Astrobiology while the third (Physics) is working on characterizing extrasolar planet candidates. Graduate level courses have never been offered at UWI due to a lack of competence at this level.

There is no coherent research focus of the community. Graduate students are required to have an external supervisor to oversee their research. Such supervisors are chosen by the students based on contacts that they would have made at international summer schools. As a result there is very little synergy present within the research community as the students are all working in different areas.

This situation can improve dramatically with the addition of one or two permanent positions in Astronomy in either of the two main universities.

2. Public Understanding of Astronomy:

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

The National Institute for Higher Education Research, Science and Technology (NIHERST) operates the only science centre in the country – the NIHERST/NGC National Science Centre. The Science Centre is the main driver of science popularization and outreach for the national community.

Some of their main programs include:

Community Science Weeks: Week long events that occur within communities across the country. Program includes exhibits from the science centre, various workshops for students and teachers, lectures and telescope viewing sessions.

Sci-Techno Fest: A bi annual, ten day festival dedicated to celebrating science and technology.

Caribbean Youth Science Forum: Annual event bringing together high school students from across the Caribbean for an intensive weeks of educational, social and cultural activities.

AstroClub: Regular telescope viewing sessions and educational activities in Astronomy.

The Science Centre also posses a planetarium which is currently being upgraded with a digital projection system.

website: www.niherst.gov.tt

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

The Trinidad and Tobago Astronomical Society (TTAS) is a 40 year old organization dedicated

to promoting astronomy in the country. There are monthly meetings followed by telescope viewing. Membership is open to anyone regardless of age or educational background. TTAS also runs several workshops and short courses on astronomy during the year for members of the general public. Activities are generally limited to Trinidad only.

The Caribbean Institute of Astronomy (CARINA) is a registered NGO operating in the area of astronomy popularization and outreach. Activities include an annual star party, workshops and courses. CARINA also operates a website geared towards developing the national and regional community of astronomy enthusiasts.

iii. 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?

There are several TV stations, radio and newspapers present in Trinidad and Tobago. As a general rule they are always willing to publish articles relating to astronomy or astronomical events. Several of the daily newspapers carry astronomy and science related articles off of the international news feeds whenever they are available. Television and radio stations routinely interview members of the astronomy community where ever there is a notable event taking place. There are however, no locally produced programmes in astronomy in the media. Due to the widespread availability of cable and satellite services, science and astronomy oriented programing via channels such as Discovery, National Geographic etc are widely available to the general public.

iv. 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?

There are no challenges or setbacks to astronomy or science in the general culture of the population. Astronomy is a welcomed subject of conversation and general interest in the field is high as can be observed from the consistently large turn-out at astronomy related events.

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.)

Rating: Phase 2.

Progress has been made over the last few years in furthering the general public understanding in astronomy but there still remains a lot of ground to cover. There is an inadequate distribution of astronomy related activities across the country. More work needs to be done to bring

astronomy related activities to Tobago and south Trinidad. Furthermore the community of astronomy enthusiasts are not as coherent or vibrant as they could be.

3. Astronomy in Schools:

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

The National Science Centre has astronomy exhibits and activities that school children are exposed to whenever their schools visit. There are also a series of day long workshops on Astronomy that are run during the July – August vacation period for children and teenagers. These workshops are based loosely on the Project Astro work books produced by the Astronomical Society of the Pacific.

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

The Trinidad and Tobago Astronomical Society has in the past conducted Astronomy workshops and camps for school children and teachers. Recently, they formed a separate group geared towards high school students from some of the elite schools in the country. Members have also in the past visited schools during the daytime to give lectures and conduct viewing sessions at night.

The Caribbean Institute of Astronomy (CARINA) has also worked, when invited to, with teachers on improving the content and delivery of astronomy in the classroom. CARINA's major involvement in this area however, has been in providing technical training to the staff of the National Science Centre and assisting with the development of execution of some of their workshops and exhibits.

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

There is very limited astronomy in the school curriculum at the primary and secondary levels. At the primary level (ages 5 – 11) children have some exposure to the nature and composition of the solar system and phases of the moon. The set curriculum for lower secondary level (ages 11 – 14) has basic understanding of the solar system as one of its objectives. This objective is realized in the general science component. At the upper secondary level (14 -16) students pursue individual subjects defined by a rigid syllabus. Limited amounts of astronomy are indirectly present in the syllabus of the physics and geography subjects. These two subjects are not compulsory and are therefore not studied by all students. There is an advanced secondary level (16 – 18) where some students pursue fewer subjects in greater depth. Astronomy and Astrophysics was, until a few years ago, present as an option in the Physics examination. But this has since been removed following a change in examining body responsible for the Advanced level examinations.

iv. 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 has a very limited exposure to schools in this country. The main challenge is the lack of astronomy on the syllabus. This is because there no real training available to teachers for them to feel confident enough to teach astronomy (at least at the primary and lower secondary levels). At the upper levels the issue of teacher training is also very pertinent however, there is the added concern that there is not enough time for students to cover any additional material before their examinations, since the syllabus is very packed as it is.

Science and math education is particularly strong component of the education system in this country. The majority of children receive primary, lower and upper secondary education. Mathematics is a compulsory subject at all levels of study (except advance secondary). Students are also exposed to study science through out the primary and secondary levels with the national requirement being that a student pursue at least one science subject for upper secondary examinations.

Notwithstanding the general lack of astronomy on the school curriculum, several schools throughout the country have formed astronomy clubs.

v. 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.)

Rating: Phase 3

The lack of any substantive astronomy on the school curriculum is a leading cause of the under exposure of children to astronomy in schools. This deficit is mainly due to an absence of adequate teacher training in astronomy which follows from the lack of astronomy in the university curriculum. Teachers are generally willing to exposure their students to astronomy by way of support from the local astronomy community. This willingness however, is constrained by the pressures of demanding subject syllabi and short preparation time before examinations.