



**COMMISSION 46**  
**ASTRONOMY EDUCATION AND DEVELOPMENT**  
*Education et Développement de l'Astronomie*

**Newsletter 63 – October 2005**

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**Commission 46 seeks to further the development and improvement of  
astronomical education at all levels throughout the world.**

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**Contributions to this newsletter are gratefully received at any time.**

**PLEASE WOULD NATIONAL LIAISONS  
DISTRIBUTE THIS NEWSLETTER  
IN THEIR COUNTRIES**

**This newsletter is also available at the following websites**

<http://astronomyeducation.org>  
<http://physics.open.ac.uk/IAU46>

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### **News of meetings and of people**

Professor Shirin Haque

3<sup>rd</sup> SERC school, 14 March-15 April 2005, Kerala, India

10<sup>th</sup> Vatican Observatory summer school, 12 June-08 July 2005, Castel Gandolfo, Italy

Communicating astronomy with the public 2005, 14-17 June 2005, ESO, Garching, Germany

JENAM-2005, parallel education session 6 July 2005, Liège, Belgium

28<sup>th</sup> International school for young astronomers, 25 July-12 August 2005, Puebla, Mexico

Young astronomers' events at the IAU General Assembly, August 2006, Prague, Czech Republic

Special Session SpS2 at the IAU General Assembly, 17-18 August 2006, Prague, Czech Republic

Special Session SpS5 at the IAU General Assembly, 21-22 August 2006, Prague, Czech Republic

### **Useful websites for information on astronomy education and outreach meetings**

**Information to be found on the IAU C46 website**

**Officers & Organizing Committee of Commission 46**

## EDITORIAL

Thanks to everyone who has made a contribution to this edition of the Newsletter. For the March 2006 issue the copy date is **Friday 10 March**. If you can include photos or illustrations with any material, please do so.

Here is general guidance for material for the Newsletter.

### IAU C46 NEWSLETTER - GUIDANCE FOR CONTRIBUTORS

The editor is happy to accept articles on any aspect of astronomy education and development, including obituaries and other articles on people. 500-2000 words are the approximate upper and lower limits. Send contributions to me by email, at [b.w.jones@open.ac.uk](mailto:b.w.jones@open.ac.uk), copied to [t.j.moore@open.ac.uk](mailto:t.j.moore@open.ac.uk)

You can either send a Word attachment (preferred) or include the text in the body of the email. Illustrations should be sent as separate, individual files, preferably as JPEGs up to about 1 Mbyte.

Shorter contributions, up to a few hundred words, such as meeting announcements, meeting reports, and other news items, are also welcome.

I try to edit as lightly as possible, and I certainly don't care whether US English or British English is used. I also leave local turns of phrase untouched unless the meaning is obscure. Clarity, conciseness, and being interesting or informative are what I like. Only in a few cases is heavier editing necessary.

National Liaisons should now be preparing their **triennial reports** for submission to me by 31 January 2006, and covering astronomy education and development in their countries during the period since the last reports. I published these 02 January 2003 (see the C46 website), and they covered up to about December 2004 in some cases, but an earlier date in others. This time I don't want early reports. Please cover the period up to 31 December 2005.

In gathering information for the reports, please bear in mind that reports should normally be organized under some or all of the following headings ...

- Overview (optional)
- Elementary (primary) school
- Secondary school
- College and University
- Education conferences
- Observatories and planetaria
- Other public events

Improvement of the C46 website is an ongoing process. Peoples' time is presently a strong constraint, but I'm hoping that in the not-too-distant future we can devote more time to it. I thank Tracey Moore for implementing (most of) the various suggestions various people have made.

Finally, among the excellent material in this issue is an account of astronomy in Ethiopia, by our new National Liaison for Ethiopia, Legesse Kebede, whom we welcome warmly.

Barrie W Jones

(for contact details see Officers & Organizing Committee of Commission 46)

## MESSAGE FROM THE PRESIDENT

The activities of the Commission are mixed, with looking backward and looking forward. In the former category is the book based on the proceedings of our special session at the Sydney International Astronomical Union General Assembly in August 2003. Edited by John Percy and me, it is now finally in press at Cambridge University Press and due to appear shortly (December 2005), as 'Teaching and Learning Astronomy: Effective Strategies for Educators Worldwide'. See <http://www.cambridge.org/catalogue/catalogue.asp?isbn=052184262X> Whether or not you get your own copy, perhaps as a speaker, please ask your institution's library to get a copy.

Looking forward, we are pleased that the IAU has approved two special sessions for our Commission at the 2006 General Assembly in Prague, each to run two days. On Thursday and Friday 17-18 August, Rosa Maria Ros and I are arranging Special Session 2 'Innovation in Teaching/Learning Astronomy' [http://www.communicatingastronomy.org/innovation\\_2006](http://www.communicatingastronomy.org/innovation_2006)

(We thank Lars Christensen of the European organization for Hubble, one of the chairs of the Working Group on Communicating Astronomy that was set up recently outside our commission, for collaborating with us and for making the beautiful and useful Website.) John Hearnshaw is arranging Special Session 5 'Astronomy for the Developing World' on Monday and Tuesday 21-22 August. The link to his program is available through our Commission's Website at <http://www.astronomyeducation.org>

It is also excellent that George S Greenstein and Bruce Partridge, both experienced American educators, are organizing a morning's sessions 'The Training of Astronomers', as our Commission's scientific session, on Wednesday, 16 August.

I hope to see you all at those events. I know everyone is very busy at the IAU going to meetings of all kinds, but I hope we are able to have substantial interactions of a large fraction of our membership.

We will soon be collecting the triennial reports from the National Liaisons, of which there are approximately 80. We are also collecting reports from our various Program Groups, which have made progress over the triennium in supporting visiting astronomers and in encouraging new national members of the IAU, with visits from John Hearnshaw and others, to Mongolia, Cuba, and elsewhere.

This year marks the retirement of Syuzo Isobe (Japan), the Past President of our Commission. I know I speak for all of us in wishing him the best in his retirement. He is continuing his work on asteroid encounters ([isobe@spaceguard.or.jp](mailto:isobe@spaceguard.or.jp)) though he has turned over his position as National Liaison for Japan to Junichi Watanabe, whom we welcome.

My own program group deals with public education at the times of solar eclipses. I have just returned from Spain, where I observed the eclipse alongside 1,000 spectators at the fabulous new planetarium in Valencia on 03 October. I hear that 15000 spectators watched the eclipse at the planetarium in Madrid. I hope that we have big turnouts for the eclipse of 29 March 2006, though the sites across Africa (especially Nigeria, Niger, Libya, and western Egypt), Turkey, Kazakhstan, and Russia, and for the 01 August 2008 total eclipse over Mongolia and northern China, will host many fewer people than will be able to observe the 22 July 2009, total solar eclipse from Shanghai in China. In any case, I was very pleased to be able to arrange filter material for people in Nigeria and Ethiopia, and I hope to be in further liaison about public information from other countries in the path on 29 March. Still, it is difficult to convince various school officials how valuable it can be to student inspiration to allow students to view the eclipse, whether it is partial phases or totality.

I would be glad to hear from as many National Liaisons as possible and I hope that you can all plan to meet in Prague in August.

Jay M Pasachoff, President  
(for contact details see Officers & Organizing Committee of Commission 46)

## ASTRONOMY IN ETHIOPIA

Ethiopia, known as Abyssinia until the 20<sup>th</sup> century, is the oldest independent nation in Africa. It has a history which goes as far back as 100 BC when the Queen of Sheba travelled to Israel to visit King Solomon.

Ethiopia is a land-locked country located in the Horn of Africa between 3 and 15 degrees North latitude and 33 and 48 degrees East longitude. It is bordered on the north and northeast by Eritrea, on the east by Djibouti and Somalia, on the south by Kenya, and on the west and southwest by the Sudan. The total surface area of the country is about 1 127 127 km<sup>2</sup> of which 1 119 683 km<sup>2</sup> is land and the remaining 7 444 km<sup>2</sup> is covered with water. The surface area of its landmass is almost as big as France and Spain combined, or almost twice the state of Texas in the US. Ethiopia covers most of the Horn of Africa, which is known to contain almost all of the highest peaks in the continent.

Of the 73 million inhabitants of this old nation, over 50% are young people. These have very little or no knowledge of basic astronomy. They are neither taught astronomy during their school years nor do they have the means to expose themselves to the most interesting field on the face of the earth, a field that describes to them the make up of their cosmic roots, tells them about the ultimate fate of the Solar System which they call home, challenges their all-roundedness in subjects related to science, and lifts their aspiration to attain the technological know-how to reach the heavens. We have tried to organize this stranded force into a society by the name 'The Ethiopian Space Science Society'. The society is now a legalized civic unit which started functioning in October 2004 as a force determined to change the scientific outlook of the people.

The links this old nation has to astronomy is almost as old as astronomy itself. Indicators for this are the names of such constellations as Andromeda, Cassiopeia etc. whose meanings bear the name Ethiopia in one form or another. For example Andromeda means 'Princess of Ethiopia' and Cassiopeia means 'Queen of Ethiopia'. However, as it is the case with most underdeveloped nations, constraints due to environment, belief, and culture have not helped this branch of science to grow beyond the mythical ideas and concepts about the Solar System and the Universe at large that are being held by the large majority of the people.

In the past there have been very few attempts made to change this situation but without much success. The biggest obstacle has been and still is the educational policy of the government, which has squeezed such disciplines as astronomy and space science education as well as research out of the school curricula. This has cut all the links the various educational institutions could possibly build with outside agencies in the hope of attracting support to the cause of astronomy in the country.

However, currently there is an active theoretical group in astrophysics working from the Physics Department at Addis Ababa University. Members of the group help in the dissemination of astronomy lessons to the public on national radio, which is carried out twice a week and for 15 minutes each time. One of the weekly private newspapers in the capital city, Addis Ababa, also publishes astronomy lessons for the group. This group collaborates with another small research group working in the area of solar physics at the Bahir Dar University.

There is a growing interest in establishing a research program in observational astronomy focused on the utilization of the country's rich natural resources in this area. Our recent application to the Japanese Cultural Aid Program for a small sized telescope is pending.

The high central plateau covering over 70% of the country varies from 1800 to 3000 metres above sea level, with some mountains reaching over 4600 metres. Elevation extremes are the Danakil Depression in the Ethiopian branch of the Great East African Rift Valley at a depth of 125 metres below sea level and Ras Dashen Mountain at an elevation of 4629 metres. The elevation of the plateau is generally highest just before the point of descent to the Rift Valley, which splits the plateau diagonally. A

number of rivers cross the plateau, notably the Blue Nile rising from Lake Tana. The plateau gradually slopes to the lowlands of the Sudan on the west and the Somali-inhabited plains to the southeast.

A good number of the Ethiopian heights and the surrounding localities are climatically classified as semi-arid/arid areas mainly for the reason that these heights are found bordering the Rift Valley. They are normally exposed to 9 to 10 months of uninterrupted dry-spells in any one given year. The prevailing dry weather in the country is also one other factor for the aridity of these regions.

These prevailing climatic conditions in the Ethiopian heights and the surrounding localities makes them attractive for astronomical observation sites with potentially very good seeing. This is in addition to the country's unique location on the globe allowing it to play a crucial supportive role to other ground based observations on this latitude. Also the country's position in the equatorial latitudes indicated above provides astronomers a unique opportunity for accessing, in any given night, both the Northern and Southern Hemisphere from its heights.

Legesse Kebede, [legessek@yahoo.com](mailto:legessek@yahoo.com)

## THE FAULKES TELESCOPE PROJECT

The Faulkes Telescope Project (FTP) offers access to research-grade, 2-metre telescopes in Hawaii and Australia. Users carry out their live observations from anywhere with an Internet connection, or submit targets to the offline queue. Each telescope is equipped with a scientific-grade CCD and a filter set consisting of u'BVRi' plus Hydrogen Alpha and Oxygen III. Spectrographs will become available in future, opening up exciting new possibilities to all FT users.

Apart from rapid acquisition of extremely high quality images, the FTP offers access to the southern sky from Australia, and the opportunity to collaborate in a range of research projects. Research projects already running involve objects as distant as gamma-ray bursts and galaxy clusters or as close as near-Earth objects (NEOs) – in the latter case, we can track these fast-moving targets to greater distances than almost any other regular observer, contributing vital data.



Spiral galaxy NGC1232 in Eridanus, the so-called Turbine Galaxy.

A beautiful face-on spiral that fits nicely in the Faulkes Telescope's 4.6 x 4.6 arcminute field of view.

Image by Nik Szymanek.

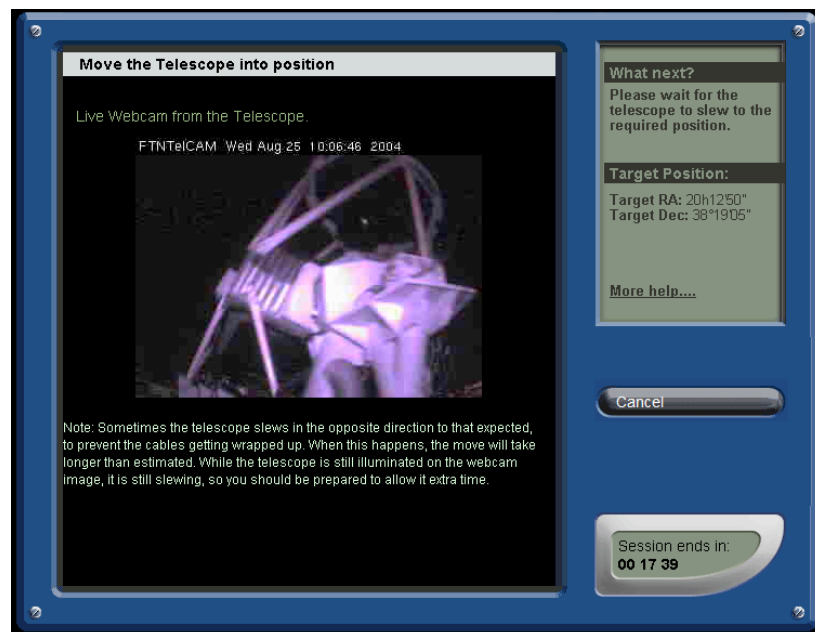
Access is free for UK educational groups, but the telescope is available to any subscribers, although in most cases it will be used by UK schools and universities. Interested amateur astronomers or societies

can use it for their own projects, as can overseas users, although priority will usually be given to UK users if demand is high. The project aims to involve users in 'real research' projects, with schools gathering data on behalf of professional astronomers. The recent NASA Deep Impact mission demonstrated the power of this approach, with the first ground-based images of the Tempel-1 impact being obtained by Hawaiian and UK school students using FT North on Maui. The FTN images were widely featured in the UK press and media, and the schools involvement was highlighted as a key feature of the science programme.

### *Observing with the Faulkes Telescopes*

Once allocated a user name and password, you can browse the FT Project website, which is very user-friendly and accessible. There is plenty of good information here regarding the use of the telescope, including hints on how to plan your observing session, altitude pointing limits, Moon avoidance during imaging, and telescope and CCD characteristics. Also here are ideas for research projects and getting the best out of your data. A very realistic telescope simulator can be used to plan your observing session and it's definitely worth doing this to be sure that all your targets will be visible and to account for telescope slewing time.

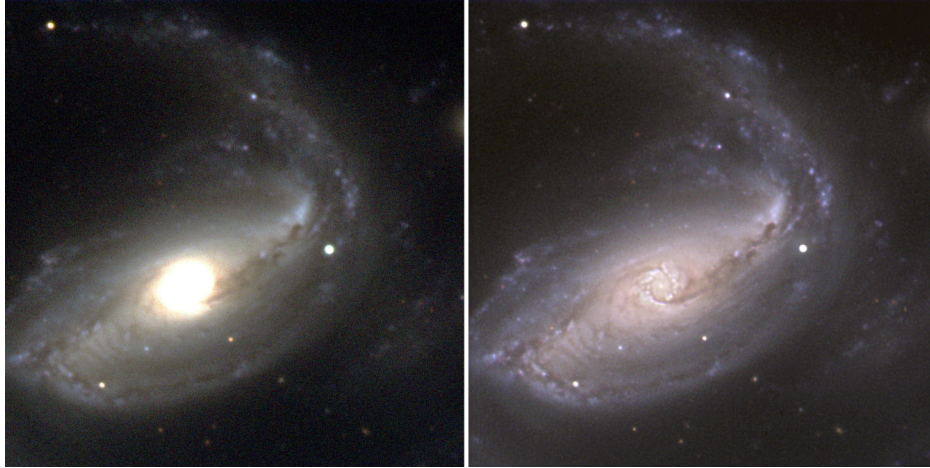
Time is allocated on the FT in blocks of 30 minutes. Due to the phenomenal sensitivity of the system, it's possible to get typically 6-8 great colour images during this period. Registered subscribers can view the current or latest images taken with the telescope and which is useful for gauging the quality and steadiness of the sky prior to starting a session. Weather information is displayed on the Web site with up-to-date readout on temperature and humidity. If the weather is cloudy during an observing run then the time lost is re-allocated (unlike professional observers who go to the bottom of the queue if their time is lost to bad weather!).



This screenshot shows the Faulkes telescope operating software. The telescope has been instructed to slew to a target and the left hand picture shows the telescope in mid slew as viewed by an infrared Webcam.

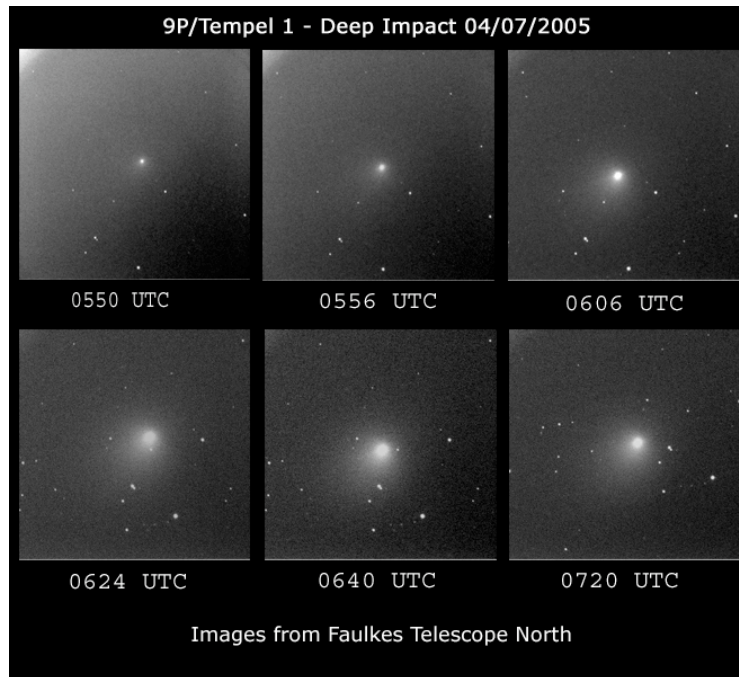
Images from Faulkes Telescope Project.

JPEG images are returned in real time by the telescope control software, and the raw FITS data can typically be downloaded within an hour of the observation. Once processed, the quality of the FT images is apparent, and image processing can produce some spectacular results. A variety of images produced with FT North by Nik Szymanek accompanies this article, showing the results that can be obtained using FT data and suitable image processing software.



Spiral galaxy NGC 1097 in the southern constellation of Fornax. On the left is the pipeline-processed JPEG file that is sent immediately after the image set is acquired by the telescope, and consists of just three 45-second exposures. On the right is a processed version for which the digital development algorithm has been used to extract detail from the galaxy's core – this image consists of 5 one-minute exposures with the BVR filters.

Images by Nik Szymanek.



A selection of images from FT North for the Deep Impact mission, taken over 90 minutes that covered the impact of the probe with comet Tempel 1. Images were obtained by a team of professional astronomers and school students working on Maui and in London. Images from Faulkes Telescope Project.

For more information on the project, please visit the website at <http://www.faulkes-telescope.com> or contact the project director Paul Roche.

Paul Roche, [paul.roche@faulkes-telescope.com](mailto:paul.roche@faulkes-telescope.com)

## **ONLINE ASTRONOMY COURSES FOR SECONDARY AND PRIMARY SCHOOL STUDENTS**



Carter Observatory's online astronomy courses are certainly attracting the attention of students around New Zealand. Over 30 students a month are enrolling for one of the courses and this number is steadily increasing.

Each NCEA (National Certificate of Educational Achievement) course is designed to take about 40 hours of work to complete. The three courses are 'Our Solar System', 'The Milky Way and Other Galaxies', and 'Space Exploration'. Each stage of the courses is assessed, with questions (some writing, some single answers and some multiple choice) as the student progresses through the course. The student's progress is monitored by Carter Observatory specialist teachers, so that they know how well they are doing.

NCEA is New Zealand's main national qualification for secondary school students and part of the National Qualifications Framework. NCEA is for secondary school students in their eleventh and twelfth school years.

The course 'Our Solar System' includes the topics: our Sun, Mercury, Venus, Earth, Mars, Asteroids, Jupiter, Saturn, Uranus, Neptune, Pluto, other possible planets, meteors, comets, and the importance of the Solar System to people. The course 'The Milky Way and Other Galaxies' includes the topics: our place in the Milky Way, our galaxy - the Milky Way, neighbouring galaxies, what galaxies look like, the composition of galaxies, the life cycle of stars, black holes, and the life cycle of galaxies. The course 'Space Exploration' includes the topics: the early dream, first experiments, major space missions, space stations, problems of space flight and humankind's prospects in space.

The new primary children's course 'Astronomy for Little Stars' has been running for several weeks. It is designed for children of age 10/11, but some younger children have done it. It is a basic astronomy course. It introduces fundamental concepts in an interesting way. As this course is in its infancy, it will be adapted and improved as comments are received from teachers and children.

For more information about all our online courses see <http://www.carterobservatory.net> or contact Anna Honore [Anna.Honore@carterobservatory.org](mailto:Anna.Honore@carterobservatory.org)

Brian Carter, [brian.carter@carterobservatory.org](mailto:brian.carter@carterobservatory.org)

## **ASTRONOMY OUTREACH – A UNIVERSE IN THE CLASSROOM**

Next to dinosaurs, kids love space the best! It's a fact, ask any teacher. So why isn't it being taught in schools as a mainline subject, after all this is the 'space age' isn't it? The answer is basically there isn't enough room in the curriculum for anything more than a brief overview, at least for the majority of levels in Australian schools.

Little did I know that a year and a half ago that fact would lead me on a journey which would eventually cover countless kilometres, take me to dozens of towns throughout New South Wales, and introduce me to thousands of eager, excited schoolkids all keen to learn about the night sky.

In January 2004 I developed a program called 'Astronomy Outreach' to address the learning gap. After consulting a number of primary and secondary school teachers I designed a unique three-tiered audio-visual presentation detailing the evolution of the Universe and the history of the space program, giving kids a refreshing new look at the latest discoveries in astronomy and space science. In effect, it was taking the Universe into the classroom, and making it fun to learn.



Australian primary school children, with the author, enjoying astronomy

But I wanted more than that! Giving the talks was fine but what then? What do we do with all that pent up enthusiasm generated? I wanted to leave a telescope behind for each school to start and actively run their own astronomy club, so I approached a good friend of mine, Glen Jobson of Astronomy Online, for assistance. Glen contacted Kevin Johnson of Tasco Sales Australia who saw merit in the idea and immediately donated fifty 'Galaxee' 114 mm reflector telescopes to kick start the program. I was stoked, thanks to Glen and Kevin we were ready to go!

Both companies also provided me with an 8 inch Tasco Skywatcher reflector and large Vixen binoculars on a tripod for public viewing nights at the schools, *plus* a new digital camera to record it all on. Believing in the program, Astronomy Online then supplied a Tasco 70 mm Skywatcher refractor to use in fundraising as a raffle prize. At last, this dream was about to become a reality! I'm happy to report that, since its inception, the Astronomy Outreach program has exceeded even my initial expectations. To date, we have visited over 70 Australian schools across a wide region. The program has received nothing but praise from all the teachers we've spoken to, and other schools have made enquiries with us based on their recommendations.

Indeed, our feedback shows that a number of schools have already started their own astronomy clubs and are actively involved on a group level. All of the schools visited have expressed a desire to return again with the program in 2005, which we are now doing. Over the past fifteen months the program and its sponsors have received widespread publicity on radio and through the press Australia wide.

Audience participation is an integral part of the astronomy Outreach program. Students not only see and hear about space from an experienced science educator, they actually take part in the show through various role-playing activities devised to hold their interest. *See*, astronomy can be fun! After 40 years of talking mainly to adult groups I can tell you it's a rather different situation standing in front of an audience of perhaps 100 or so young students as dozens of eager hands go up in reply to a question, and the questions keep coming even after the lecture has finished. Kids can ask some pretty curly questions (Can we see Heaven from here?), it make the whole thing just that much more worthwhile!

For project material each student receives a number of 'Astronomy Fact Sheets' with lots of interesting information on the universe. Teachers aren't forgotten. As a bonus, they receive a special 'Teachers Resource Pack' containing specially prepared science CD ROMs, including one from Macquarie University, a copy of the latest issue of SKY & SPACE Magazine, information leaflets, *plus* a copy my popular CD Rom 'THE UNIVERSE' used world-wide as an astronomy and space reference teaching source.

The program has even attracted overseas support. A donation of a rare meteorite has been made to the program by Joel Schiff from New Zealand, the publisher of 'Meteorite Magazine'. Having such a fine specimen adds a new dimension to our program and gives students a first hand look at what the early solar system was formed from. Kids eyes boggle when they actually pick this up for the first time – that is, after I convince them it is *real*, and not some rock we've picked up from the local quarry!



Girls at Sydney High School, Australia, with the author, examining a rare meteorite

SKY & SPACE Magazine have been behind the program from the outset with their support and encouragement. They've kindly supplied a large quantity of space stickers and pencil sharpeners for us to use as prizes during our presentations as well as a large number of promotion leaflets and magazines to hand out. Thanks to a large donation of first class astronomical posters from Peter Reedman of GeoSpace we now have a dynamic and colourful set of display boards for students, teachers and the general public to peruse.

Besides the companies mentioned, sponsorship for the program has also been enthusiastically received from other well known retailers of astronomical equipment in Australia including Skylab Astronomy Software who have generously provided 50 copies of their popular 'Star Atlas Pro' software for each school.

In all, we are donating around \$700 in goods and services to Australian schools through the program, courtesy of our sponsors. To cope with the enquiries I have now appointed a school liaison and booking partner, Darrell Howarth. Together we look forward to not only continuing the program throughout 2005 but expanding it into other states as well.

Dave Reneke, News Editor SKY & SPACE Magazine, and Director, Astronomy Outreach, [dave.reneke@skyandspace.com.au](mailto:dave.reneke@skyandspace.com.au)

## **UN COMMITTEE ON THE PEACEFUL USES OF OUTER SPACE**

The United Nations General Assembly, in its resolutions 45/72 of 11 December 1990 and 50/27 of 6 December 1995, endorsed the recommendation of the Committee on the Peaceful Uses of Outer Space (COPOUS) that regional Centres for space science and technology education should be established on the basis of affiliation to the United Nations, in developing countries.

The goal of the Centres is to develop, through in-depth education, an indigenous capability for research and applications in the core disciplines of remote sensing and geographical information systems, satellite communications, satellite meteorology and global climate, space and atmospheric sciences, as well as data management

Under the auspices of the United Nations, through its Office for Outer Space Affairs (UN-OOSA), four regional Centres were established on the basis of regions that correspond to the United Nations Economic Commissions: Asia and Pacific (India), Latin America and the Caribbean (Brazil and Mexico) and Africa (Morocco, Nigeria). All of these Centres are officially affiliated to the United Nations through UN-OOSA. A fifth Centre in Western Asia (Jordan) will be established in the future. These Centres use existing facilities and expertise already installed in education and other research institutions in their respective regions.

The overall policy-making body of each Centre is its Governing Board, and consists of member states (within the region where the Centre is located), that have agreed, through their endorsement of the Centre's agreement, to the goals and objectives of the Centre.

The United Nations Programme on Space Applications, with the support of prominent educators, has developed a set of standard curricula, which were adopted by the Centres for each topic of the core disciplines.

#### *Centre for Space Science and Technology Education in Asia and the Pacific*

The Centre for Space Science and Technology Education in Asia and the Pacific (CSSTEAP), which was established in India in 1995, pioneered the UN initiative in creating educational Centres in developing countries. The Centre is headquartered in Dehradun, in India, and its programmes are executed by staff of the Department of Space at campuses in Dehradun and Ahmedabad. The Centre has access to the facilities, infrastructure and expertise of the Indian Institute of Remote Sensing (IIRS) in Dehradun, the Space Applications Centre and the Physical Research Laboratory (PRL), both at Ahmedabad. Its Governing Board comprises 14 members from 14 countries in the Asia and Pacific region and two observers. To date, CSSTEAP has conducted 21 long-term postgraduate courses and 16 short-term programmes in the core disciplines. These programmes have benefited 46 countries and more than 600 scholars in the Asia and Pacific region and beyond. Since 1999, CSSTEAP has achieved the status of an institution of excellence and in 2005 is celebrating the tenth anniversary of its establishment.

#### *African Centre for Space Science and Technology (in French)*

The African Centre for Space Science and Technology – French – (CRASTE-LF) was established in Morocco in 1998. It is based at the Mohammadia School of Engineers at the University Mohammed V Agdal in Rabat. Important national institutions such as the Royal Centre of Space Remote Sensing, Scientific Institute, Agronomic Institute and Veterinary Hassan II, National Institute of Telecommunications, and Directorate of National Meteorology, actively support the educational programmes offered by the Centre. The Governing Board of CRASTE-LF is composed of 16 members from 13 countries in the region and one observer from UN-OOSA. The Centre has already carried out six long-term postgraduate courses and 10 short-term programmes. The long-term programmes were attended by 80 scholars from 16 countries in the region. In 2005 the Regional Centre will also host two workshops sponsored by the USA (Landsat Images) and European Space Agency (ESA). Both events will focus on 'Natural Resources Management and Environment Monitoring'.

#### *African Regional Centre for Space Science and Technology Education (in English)*

The African Regional Centre for Space Science and Technology Education – English (ARCSSTE-E) was inaugurated in Nigeria in 1998. It operates under the auspices of the National Space Research and Development Agency and is located at Obafemi Awolowo University (OAU) campus, Ile-Ife. The Centre's facilities are mainly provided by departments from OAU and the Regional Centre for Training in Aerospace Surveys, which is also located at the OAU campus. ARCSSTE-E has already offered six postgraduate courses and eight short-term programmes. About 30 scholars from nine countries in the region attended the long-term courses.

#### *Regional Centre for Space Science and Technology Education for Latin America and the Caribbean – Brazil and Mexico campuses (CRECTEALC)*

The Regional Centre for Space Science and Technology Education for Latin America and the Caribbean - Brazil and Mexico campuses (CRECTEALC) was established in 1997 after Brazil and Mexico signed an agreement recognizing the Centre with a campus located in each country. The campus in Brazil benefits from the facilities made available to it by the National Institute for Space Research (INPE), a renowned Brazilian research institution in space science and technology. Similar high quality facilities are found at the campus in Mexico that is supported by the National Institute of Astronomy, Optics and Electronics. The Governing Board of CRECTEALC is chaired alternatively by Mexico and Brazil. The Campus Brazil has already conducted two postgraduate courses and four short-term programmes in remote sensing and geographical information systems. These postgraduate courses have benefited 25 scholars from 10 countries in the region. The Mexican campus is planning to offer its first postgraduate programme during 2005.

For more detailed information on each Centre and the curricula of the core disciplines, see <http://www.oosa.unvienna.org/SAP/centres/centres.htm>

Hans-joachim Haubold, Hans-joachim [Haubold@chello.at](mailto:Haubold@chello.at)

## **ASTRONOMY ACTIVITIES IN ROMANIA**

During the last General Assembly, IAU approved the special Resolution on the Value of Astronomy Education. It was the result of the effort of many astronomers in the world, the Romanian ones included. In spite of these efforts, astronomy is not yet taught in the Romanian schools.

Paradoxically, the pupils take part in the international olympiads of astronomy with very good results (see the Olympiad of 1-9 October 2004, Simeiz, Ukraine). Another group is just training for the X<sup>th</sup> International Astronomy Olympiad to be held in Beijing (China) 25 October to 02 November 2005. It is to the merit of some teachers who are training them for the program.

The yearly Open Day at the Astronomical Institute and the Venus campaign in 2004 constituted good opportunities to attract the large public to a better knowledge of the universe. At the same time we continue to convince our authorities that the building constructed specially for a Planetarium in the Capital has to be endowed with a projector.

In the context of our efforts to improve the astronomy education, we mention the first three parallel sessions organized during JENAM: JENAM 2003, Budapest, 25-30 August 2003, 'Astronomy Education in Europe', convenor Magda Stavinschi; JENAM 2004, Granada, 13-17 September 2004, 'Teaching and communicating astronomy', convenors G Bernabeu, M Stavinschi, V Martinez; JENAM 2005, Liège, 4-7 July 2005, 'Astrophysics, and how to attract young people into Physics', convenors Naze Yael, Magda Stavinschi, Martine Vanherck

Other educational meetings co-organized by us: astronomy summer school 'South Eastern Europe Youth at the Telescope', 4-11 July 2003, Belogradchik (Bulgaria); Yale Summer Workshop 'Basic Astrometric Methods', 18-22 July 2005, Yale University, New Haven, USA, co-organized by W F van Altena, M Stavinschi, E P Horch. A meeting will be organized in Bucharest, under the aegis of the Astronomical Institute and UNESCO-ROSTE, 'Scientific Programs and Astronomy Education in SEE and Ukraine!'

Main publications: 'Lecons d'astronomie', editors S Collin, M Stavinschi, Ars Docendi, Bucharest, 2003; the special issue on 'Astronomy Education in Europe' from the European Astronomical Society 'Teaching of Astronomy in Asian-Pacific Region', Bulletin 19, Mitaka Tokyo, Japan, 2003.

Magda Stavinschi [magda@aira.astro.ro](mailto:magda@aira.astro.ro)

## **ASTRONOMY EDUCATION REVIEW**

In this seventh issue there is a special section about the implications of creationism and intelligent design for the astronomy teacher, plus a new 'Opinion' section on topics of educational interest. The papers on creationism and intelligent design, which list resources for further reading, are

- dealing with disbelieving students on issues of evolutionary processes and long time scales
- the challenge of creationism and intelligent design
- AAS statement on the teaching of evolution

A summary of the rest of the table of contents in this issue is given below. When you go to the AER site, you may see that the next issue is already under way. If so, you can find the full 7<sup>th</sup> issue by clicking on 'back issues' and then on volume 4, number 1.

The journal actively solicits interesting papers and articles on all aspects of space science education and outreach. The site gets between 150 000 and 200 000 hits per month from 91 different countries.

Sidney Wolff and Andrew Fraknoi, Editors  
fraknoiandrew@fhda.edu  
<http://aer.noao.edu>

## **ARTICLES NEEDED FOR RELEA**

We are pleased to announce the release of the second issue (pdf) of the 'Latin-American Journal of Astronomy Education' (RELEA), available at the site <http://www.iscafaculdades.com.br/relea/>. Once again, we acknowledge the collaboration and valuable support that we have received.

We would like to request, not only wide advertising of this issue, but also articles submitted to our Journal. In this respect, we also ask you to read, in particular, our reflections and concerns in the editorial of this second issue.

Any comments and suggestions may be sent directly to Prof Paulo Bretones.

Paulo S Bretones, Luiz C Jafelice, Jorge H Horvath  
[bretones@mpc.com.br](mailto:bretones@mpc.com.br) or [observatorio@iscafaculdades.com.br](mailto:observatorio@iscafaculdades.com.br)

## **NEWS OF MEETINGS AND OF PEOPLE**

### **PROFESSOR SHIRIN HAQUE**

Professor Shirin Haque (Trinidad & Tobago) has received the 2004 Distinguished Teacher Award from the Association of Atlantic Universities, and the 2005 Vice-Chancellor's Award of Excellence from her university, the University of the West Indies. Professor Haque is the driving force behind astronomy in the Caribbean, including the Caribbean Institute of Astronomy (CARINA) which promotes school and public outreach in astronomy, as well as the training of astronomers, and astronomical research.

John Percy, [jpercy@utm.utoronto.ca](mailto:jpercy@utm.utoronto.ca)

### **3<sup>RD</sup> SERC SCHOOL, 14 MARCH-15 APRIL 2005, KERALA, INDIA**

This School, 'Special functions and functions of matrix argument: recent developments and recent applications in statistics and astrophysics', was sponsored by The Department of Science and Technology (DST), Government of India, New Delhi, conducted by the Centre for Mathematical

Sciences Pala Campus, and hosted by St Thomas College Pala, Kerala, India. The Course Director was Dr A M Mathai, and the Co-Director was Dr K K Jose.



Some of those running the 3<sup>rd</sup> SERC School

The Indian Science and Engineering Research Council (SERC) Schools are fully financed by the DST. The first SERC School on 'Special functions and their applications' was held in 1995 for six weeks in Trivandrum, Kerala, India. The second SERC School on 'Special functions and functions of matrix argument' was conducted in 2000 for five weeks, also in Trivandrum, Kerala, India. This third School was conducted for five weeks at Pala from 14 March to 15 April 2005.

These SERC Schools are aimed at young faculty members, below 35 years of age, in the universities and colleges all across India. Minimum qualification is an MSc degree in Mathematics or Statistics or Theoretical Physics. Usual participants are young lecturers, post-doctoral fellows, PhD students, MPhil and MSc graduates. Participants are selected from all across India through open competition. There are 30 seats on the basis of merit and up to 10 can be nominated by the Course Director. For the first three schools the participants were selected purely on the basis of merit and there were no nominated participants. Information about the School is sent through circulars to all Departments of Mathematics/Statistics/Theoretical Physics in colleges and universities across India. It is also advertised in the journal 'Current science' and the Government news bulletin 'Employment news'. Also, DST places advertisements in newspapers in India.

The Director of the School is Dr A M Mathai, Emeritus Professor of Mathematics and Statistics, McGill University, Montreal, Canada and the Director (Hon) of the Centre for Mathematical Sciences (CMS), Trivandrum and Pala campuses in India. The School is conducted under the auspice of CMS. The Third SERC School was conducted by CMS Pala Campus and hosted by St. Thomas College Pala, a first-grade post-graduate college under Mahatma Gandhi University, Kerala, India. So far, these SERC schools are not open to foreign participants due to the fact that the schools are fully financed by the DST for the benefit of young faculty members in India.

All participants stay at the same hostel/guest house, provided and paid for by the School. Classes start at 08:30 am and go until 18:00, Monday through Friday. The first lecture is from 08:30 to 10:30, followed by a problem session from 10:30 to 13:00. The second lecture is from 14:00 to 16:00, followed by problem session from 16:00 until 18:00. On every Friday from 16:00 to 17:00 there is a written closed-book examination followed by individual quizzes from 17:00 to 18:00. Both the written examination and quizzes are given grades, and the accumulated grades of all the five sets of tests appear in the final certificate issued to the participants.

One day in the weekend, either Saturday or Sunday, is used to give the participants special training in the use of TEX and LATEX, and in statistical packages such as SAS. There is also training in computer programs such as Matlab, Mathematica and Maple.



Some of the students at the 3<sup>rd</sup> SERC school

The Third SERC School was inaugurated on 14 March 2005 at the conference hall of the new library building of St Thomas College Pala by Professor Dr Hans J Haubold of the Office for Outer Space Affairs of the United Nations, drawing on Einstein's perception that teaching should be such that what is offered is perceived as a valuable gift and not as a hard duty. His excellency Dr Joseph Kallarangattu, the Bishop of Pala, a scholar in Eastern Religions, chaired the inaugural session. Dr. A.M. Mathai, Director of the School introduced the Chief Guests. The participants and guests were welcomed by Dr Mathew Maleparambil, the Principal of St Thomas College Pala. Dr A K Singh of DST, New Delhi, represented the Government of India. CMS was represented by its Chair Dr A Sukumaran Nair, the former Vice-Chancellor of Mahatma Gandhi University. All spoke on this occasion, and Dr K K Jose, Head of the Department of Statistics, St Thomas College Pala and the leader of the stochastic process research group in Kerala, India, expressed the vote of thanks.

Researchers in the field are lined up as the main lecturers. Then there are subsidiary lecturers and problem session leaders. For the Third SERC School on Special Functions the main lecturers were

- Professor Dr Hans J Haubold of the Office for Outer Space Affairs of the United Nations
- Professor Serge, Provost of the University of Western Ontario, Canada
- Professor Dr R K Saxena of Jodhpur, India,
- Professor S Bhargava of Mysore, India
- Professor A M Mathai, McGill University, Montreal, Canada

Subsidiary lectures were given by several others. The Lecture Notes were prepared in TEX and supplied in advance on the first day itself.

Along with the main sequence of lectures, subsidiary programs were held for scientists from various institutions around Pala area. A Haubold of Columbia University, USA, conducted an intensive one-week training program on the computer program Matlab. Hans Haubold gave a talk 'The Centenary of Einstein's annus mirabilis' in the Department of Physics at St Thomas College Pala.

The valedictory session was held from 14:00 to 15:30 pm 15 April 2005. The chief guests of the occasion were Dr B D Acharya of DST, Advisor to the Government of India, and Dr V N Rajasekharan Pillai, Vice-Chairman of the University Grants Commission, New Delhi. The session was chaired by Rev Fr O P Enas, the Manager of the Educational Institutions in the Diocese of Pala. The certificates were distributed to the participants by Dr B D Acharya and the prizes by Dr Rajasekharan Pillai. The session was concluded with a high tea followed by a grand vegetarian dinner in the evening.

Hans J Haubold, [hans@neutrino.aquaphoenix.com](mailto:hans@neutrino.aquaphoenix.com)



## 10<sup>th</sup> VATICAN OBSERVATORY SUMMER SCHOOL, 12 JUNE-08 JULY 2005, CASTEL GANDOLFO, ITALY

Astrobiology – is that really science yet? Is 'the search for our origins and life elsewhere' a suitable topic for one of our summer schools?

Happily the answers to both were, "yes", though it took a bit of persistence from the proposers of this topic. The result was a truly glorious Tenth Vatican Observatory Summer School held at Castel Gandolfo, Italy, from 12 June to 8 July, 2005. We had a first rate and generous faculty (see below), and 25 fine students at the early graduate level from 19 countries worldwide. These students were chosen from the near 200 applicants, so we knew we were getting quality scholars. They also had the ability to play most sociably and responsibly, so that taking them on the various field trips – to the K-T boundary at Gubbio, to Galileo's Florence for a weekend, to the origin of Benedictine monasticism at Subiaco, to the Vatican's Pontifical Academy of Sciences, Museum, and Tower of the Winds – was a real pleasure. A help to our pleasure was a regular supply of gelati, very welcome given the Italian heat (it was a *summer* school after all!).



The VOSS'05 outside the Castel Gandolfo main door. Credit E. Carreira

The academic program for the School was chaired by Jonathan Lunine, aided by myself as dean, with George Coyne as the overall director. Fellow faculty from the University of Arizona were Chris Impey and Neville Woolf, while from the University of Washington came John Baross and Woodruff Sullivan. From locally we were glad to have Angioletta Coradini of the Centro Nazionale di Ricerca, Rome.

Every morning, the group gathered on the first floor at the Papal Palace and heard two lectures from the faculty. Topics that were discussed included the search for life on Mars and Europa, bioethics and planetary protection, biology for astronomers, and evolution of life and Earth's climate through time. Each student also was invited to present his/her current research project that they are conducting at their home institute.



The VOSS'05 getting acquainted with the K-T boundary at Gubbio. Credit C Corbally.

In the afternoons and evenings the students had opportunities to observe with the Vatican telescopes at Castel Gandolfo (yes, we do also have a beautiful, donated H- $\alpha$  solar telescope). Each student worked in a small group on one or two projects chosen from making Galileo Galilei-type observations of Jupiter's satellites, searching out phylogenetic trees, working on Cassini/Huygens data, and determining parameters for the host stars of extrasolar planets. They presented their findings at the end of the school. The afternoons were also ideal for exploring Rome and swimming in Lake Albano.



The VOSS'05 after picnic lunch, by the Pontifical Academy of Sciences in the Vatican Gardens. Credit B. Ehlmann

One student wrote, when thanking the faculty upon returning home ...

"In this moment, I am going back over my studies and work, but I am also full of new plans and ideas for the (short and long term) future. I am realizing all the things I learnt on the school (in the academic and personal level) and the good friends I have now all over the world. I also found some kind of new strength in myself, that I know I owe to the school."

We would seem to have succeeded once again in challenging the curiosity of the students and in fostering new friendships that will enhance their careers in astronomy and astrobiology.

Christopher Corbally [corbally@as.arizona.edu](mailto:corbally@as.arizona.edu)

**COMMUNICATING ASTRONOMY WITH THE PUBLIC 2005, 14-17 JUNE 2005, ESO, GARCHING, GERMANY**

This conference brought together the producers of astronomical information (research scientists), public information officers (connected with large observatories and space missions), and mediators (science reporters and writers, staff members from museums and planetariums). About 100 people attended. The key topics were as follows.

- Case studies: what does and doesn't work
- Communication in the virtual observatory era
- New technologies
- Communication ethics
- Audiovisuals
- Non-traditional ways of communicating astronomy to the public
- General themes
- Hands-on displays

The specific goals were as follows.

- To maintain the momentum generated by the earlier Tenerife and Washington meetings (see previous Newsletters)
- To improve the collaboration and communication of the various constituencies
- To bring to a focus the progress on
  - adoption of the Washington Charter
  - specific deliverable goals of the IAU WG Communicating Astronomy with the Public
- To provide a platform for future developments

This information was provided by the co-chair of the SOC, Ian Robson [eir@roe.ac.uk](mailto:eir@roe.ac.uk)  
See <http://www.communicatingastronomy.org/cap2005/>

Barrie W Jones

(for contact details see Officers & Organizing Committee of Commission 46)

## **JENAM-2005, PARALLEL EDUCATION SESSION 6 JULY 2005, LIÈGE, BELGIUM**

### **Astrophysics, and how to attract young people into Physics**

During the last General Assembly, the IAU approved a Special Resolution on the Value of Astronomy Education. However, the situation has not improved yet. What more can we do? Maybe an exchange of ideas, of experiences acquired by different astronomers – professionals, amateurs or teachers – would be welcome. This was the reason for which the last three JENAM meetings included parallel sessions devoted to astronomy education.

The recent one was held in Liège, 6 July 2005. Taking into account that 2005 is the International Year of Physics, its title was 'Astrophysics, and how to attract young people into Physics' (convenors: Naze Yael, Nazé Yaël, Magda Stavinschi, Martine Vanherck). Even though it was held in parallel with another important meeting of very large interest – European Cooperation and Projects in Astronomy – the session attracted about 30 participants. The 10 communications given by 15 authors focused on different topics, including the outreach and education in important international organizations such as ESO. They were followed by a very animated round table discussion focused on the future events, especially attracting young people to astronomy.

The experience of a large event, the Venus Transit in 2004, pushed us to find another one. This could be a yearly event such as the European Astronomy Day, proposed for October 20, Friday, 2006.

New colloquia on education will be held during the next IAU GA in Prague: SpS2 and SpS5 – see below.

Magda Stavinschi, [magda@aira.astro.ro](mailto:magda@aira.astro.ro)

## **28<sup>th</sup> INTERNATIONAL SCHOOL FOR YOUNG ASTRONOMERS, 25 JULY-12 AUGUST 2005, PUEBLA, MEXICO**

The Instituto Nacional de Astrofísica, Óptica y Electrónica (INAOE) in Tonantzintla, Puebla, Mexico, hosted the 28<sup>th</sup> International School for Young Astronomers (ISYA) from 25 July to 12 August 2005. The school was financially supported primarily by the IAU and INAOE, with an additional contribution from the Instituto de Astronomía de la Universidad Nacional Autónoma de México (IA-UNAM).

The 28th ISYA was a great success due to the organization and careful planning by the Local Organizing Committee (LOC) and the general support offered by many departments at INAOE including the computing technical department, the Public Relations Office, and the secretary of the Guillermo Haro Programme at INAOE. The LOC included Itziar Aretxaga (INAOE – LOC chair), Alberto Carramiñana (INAOE - Head of the Astrophysics Dept), Esperanza Carrasco (INAOE), José Franco (IA-UNAM - Director), José Guichard (INAOE - General Director) and Francisco Soto (INAOE - Research and Teaching Director)

A total of 154 applications to attend the school were received, out of which 47 were selected from the following countries: 20 (6 female, 14 male) from Brazil, Chile, Colombia, Cuba, Honduras, Peru, Salvador, Trinidad and Tobago, and Venezuela; and 27 (11 female, 16 male) from Mexican institutions (IA-UNAM Ensenada, Universidad de Guanajuato, CRyA-UNAM, IA-UNAM Mexico City, INAOE, and Universidad de Sonora). The students had very mixed academic backgrounds and experience ranging from final-year undergraduates to PhD students.

Although English is the official language of the ISYA, the majority of students were Spanish-speaking. The Latin American ISYA students however observed the policy to speak English to ensure that their fellow students from Brazil and Trinidad & Tobago were not excluded from both casual conversations and more formal discussions.

The faculty members and lectures were as follows.

Rodolfo Barbà, Universidad de La Serena, Chile.  
(Astronomical Databases and Virtual Observatories: Surfing the Tsunami of Data)

Enrique Gaztañaga, Institut d'Estudis Espacials de Catalunya, Spain  
(Cosmology and Large-Scale Structure)

Michèle Gerbaldi, Institut d'Astrophysique de Paris, France  
(Stellar Atmospheres: from Observations to Theoretical Challenges)

Edward Guinan, University of Villanova, USA  
(Extrasolar Planets: Properties and Future Possibilities)

Rafael Guzmán, University of Florida, USA.  
(The Universe According to Optically-Selected Galaxies)

David Hughes, INAOE, Mexico.  
(The Hidden Universe Revealed at Millimetre Wavelengths)

Susana Lizano, Universidad Nacional Autónoma de México, México  
(Theory of Galactic Star Formation)

Claudia Mendes de Oliveira, Universidade de São Paulo, Brazil.  
(Groups and Clusters of Galaxies)

Manuel Peimbert, Universidad Nacional Autónoma de México, México  
(The Chemical History of the Universe )

Massimo Turatto, Osservatorio di Padova, Italy.  
(Supernovae: from Stellar Evolution to Cosmology)

Guillermo Tenorio-Tagle, INAOE, Mèxico.  
(Feedback and Hydrodynamics of the Interstellar Medium)

Elena Terlevich and Vahram Chavushyan, INAOE, Mexico.  
(Optical/IR Observational Techniques)

William Wall and David Hughes, INAOE, Mexico  
(Millimetre-Wavelength Observational Techniques)

Three of these topics were designed to be taught through practical laboratories, with more than 30 hours devoted to data mining, reduction and analysis. These practical classes were based on access to real data and fully-equipped PCs with all the necessary data-reduction and image processing software pre-installed. The students had 24-hour daily access to the PCs. As part of the practical assignments, the students also had to conduct optical observations with the 1m telescope of the Observatorio Astronómico Nacional in Tonantzintla (which is operated by IA-UNAM on an adjacent campus to INAOE). The ISYA students were divided into small groups and had two opportunities to make optical imaging and spectroscopic observations.

In addition to the practical classes, several scientific tours were also arranged during the ISYA. During the 3-week school, groups of about 20 students and lecturers rotated visits to the Large Millimetre Telescope (LMT), which is operated by INAOE and the University of Massachusetts in Amherst (USA) which is currently being built on top of Sierra Negra at an elevation of 4600m, also to the INAOE Schmidt Camera and Solar Telescope, and to the INAO Eoptical aspheric laboratory and workshop.

The ISYA students were encouraged to describe their current research interests in poster format: 35 scientific posters were presented, from which 8 were selected to give 15 minute short oral presentations during a general session.

Apart from the intensive academic programme, the students also had the opportunity to experience the archeological, artistic and scientific environment of the central valleys of Mexico through a series of cultural visits to local towns and historical sites at the weekends, and through public lectures and films during the weekday evenings at the INAOE auditorium.

Michèle Gerbaldi, Chair of the ISYA, [gerbaldi@iap.fr](mailto:gerbaldi@iap.fr)

### **YOUNG ASTRONOMERS' EVENTS AT THE IAU GENERAL ASSEMBLY, AUGUST 2006, PRAGUE, CZECH REPUBLIC**

A 'young astronomer' is someone either with a PhD for less than 3 years, or has been accepted in a PhD programme.

Two specific events will take place during the General Assembly at Prague, August 2006. The first one, a Young Astronomer Lunch-Debate, will be organized on 15 August, just before the Opening Ceremony of the GA. For this event a pre-registration will be required through the IAU GA website <http://www.astronomy2006.com/>

The second initiative is to have a Young Astronomer Consulting Service during the whole GA. The purpose is to have a clearly identified office where young astronomers may, by arranged appointments, meet with senior astronomers to seek advices on their CV, thesis, jobs, etc. during one-to-one discussions.

More information will be given in due time on the Commission 46 website  
<http://astronomyeducation.org>

Michèle Gerbaldi, Chair of the ISYA, [gerbaldi@iap.fr](mailto:gerbaldi@iap.fr)

## **SPECIAL SESSION SPS2 AT THE IAU GENERAL ASSEMBLY, 17-18 AUGUST 2006, PRAGUE, CZECH REPUBLIC**

### **SpS2 Innovation in Teaching/Learning Astronomy Methods**

Astronomy educates people, and gives very important opportunities to young people. In astronomy, science and technology have a relationship, both the technology used in obtaining observations and the technology used in teaching. Both topics are essential to maintain the quality of life in various countries. Astronomy also leads to an understanding of the history and the nature of science, distinguishing science from pseudoscience.

Since astronomy attracts young people to education in science and technology, we should struggle to make the maximum advantage of the situation. But in many countries, astronomy is not in the standard curricula and teachers do not receive adequate education and support. Still, many scientific and educational societies as well as government agencies have produced materials and educational resources in astronomy for all educational levels.



The chairs of the SpS2, Rosa M Ros and Jay Pasachoff, meeting in Barcelona in August 2005 to work on plans for the meeting in August 2006.

In the IAU resolution on the Value of Astronomy Education, passed by the General Assembly in 2003, it was recommended:

- a) to include astronomy in school curricula
- b) to assist schoolteachers in their training
- c) to inform teachers about available resources
- d) to contribute to the training of teachers.

The aims of this Special Session will be to contribute to the implementation of these recommendations, introducing some innovative points of view in teaching/learning methods. Astronomers from all countries – developed or developing – will be equally interested.

### *List of Topics to be considered at SpS2*

Some of these topics were considered in the Special Session at the 25<sup>th</sup> General Assembly in Sydney, but it is necessary to continue and extend the work started then in order to increase the quality and quantity of astronomy in schools.

#### THEME 1: General strategies for effective teaching

- Connecting astronomy with the environment
- Availability of new designs in planetariums, digital and opto-mechanical
- Presenting classic topics by means of more simplified methods
- Using interdisciplinary presentations
- Mixing with cultural background or/and history of astronomy
- Astronomy knowledge borders teaching at the school

#### THEME 2: Effective Use of Instruction and Information Technology

- Information on newly implemented facilities, including remote observing that allows school students to use telescopes in other time zones and in good observing locations
- Modern technology as a tool for current teaching/learning
- Availabilities on new technologies in different schools.

#### THEME 3: Learning Science by Doing Science

- Introducing new results from astronomy education research
- Interaction with 2006 as the International Year of Physics
- Mixing with cultural background or/and history of astronomy
- Future education and public information projects from astronomical institutions – such as NASA, ESA, and major ground-based observatories – involving schools

#### THEME 4: Astronomy Communication

- Role of Public Information offices of observatories and space missions
- Planetarium attendance and astronomical content
- Television and radio media
- Role of light pollution in liaison with the public
- Interaction with 2006 as the International Year of Physics
- 2009 International Year of Astronomy

#### THEME 5: Practical issues connected with the implementation of the 2003 IAU Resolution

- What is the situation in different countries three years later for implementing
  - the inclusion of astronomy in school curricula
  - assisting schoolteachers in their training
  - informing teachers about available resources
  - contributing to the training of teachers
- New suggestions after three years of experience

Also

- Astrobiology
- Astronomy Knowledge borders

All IAU members are invited to participate. There will be oral contributions and poster presentations. Please submit your abstracts to the web site of the General Assembly <http://www.astronomy2006.com/>. The deadline for this is under discussion, but we would prefer the papers as soon as possible, with our internal deadline set at 01 April 2006 even if the formal IAU deadline is later.

The organizers have asked the IAU GA secretariat for financial support; we do not have a formal reply with an amount, but we expect at least some.

For more details visit the website of our meeting  
<http://www.communicatingastronomy.org/innovation2006/>

or contact the chairs:

Rosa M Ros ([ros@mat.upc.es](mailto:ros@mat.upc.es)) and Jay Pasachoff ([jay.m.pasachoff@williams.edu](mailto:jay.m.pasachoff@williams.edu))

## **SPECIAL SESSION SPS5 AT THE IAU GENERAL ASSEMBLY, 21-22 AUGUST 2006, PRAGUE, CZECH REPUBLIC**

### **SpS5 Astronomy for the Developing World**

You are warmly invited to participate in SpS5. There will be invited speakers, contributed oral sessions and posters. If you wish to participate, to present a paper or if you require further information, contact John Hearnshaw

email: [john.hearnshaw@canterbury.ac.nz](mailto:john.hearnshaw@canterbury.ac.nz) fax: +64 3 3642469

The website gives additional information ...

[http://www2.phys.canterbury.ac.nz/~jhe25/SPS5\\_website.pdf](http://www2.phys.canterbury.ac.nz/~jhe25/SPS5_website.pdf)

The list of topics to be covered at SpS5 is as follows.

- The training of astronomers in developing countries (John Percy, Julieta Fierro, Jay Pasachoff)
- Distance learning in astronomy as an option for developing countries (Barrie Jones)
- Public outreach programs in astronomy for developing countries (Lars Christensen)
- The proposal for a Third World Institute of Astronomy, or for a Third World Astronomical Network (TWAN) (Jayant Narlikar, John Hearnshaw)
- Developing countries and the virtual observatory (including remote telescope access via the internet for students (Ajit Kembhavi))
- Developing countries and the work of UNOOSA (Hans Haubold)
- Developing countries and the work of COSPAR (Peter Willmore)
- Developing countries and the International Heliophysical Year 2007 (David Webb)
- The development of astronomy in specific regions of the third world: Astronomy in Iraq (Athem Alsabti, UK and Iraq); Astronomy in Africa (Peter Martinez, South Africa); Astronomy in Latin America (Hugo Levato, Argentina; Julieta Fierro, Mexico); Astronomy in Asia (Boonrucksar Soonthornthum, Thailand); Astronomy in Iran (Yousef Sobouti, Iran; Ed Guinan, USA)
- Progress and future prospects for the Japanese ODA (Official Development Assistance) program (Masatoshi Kitamura)
- Progress and future work of IAU Comm. 46 Program Groups relevant to the developing world: PGWWDA, World-wide development of astronomy (John Hearnshaw, NZ); TAD, Teaching for astronomy development (Jay White, USA); ISYA, International School for Young Astronomers (Michèle Gerbaldi, France)

#### *Scientific organizing committee*

John Hearnshaw (New Zealand, chair); Athem Alsabti (UK/Iraq); Julieta Fierro (Mexico); Michele Gerbaldi (France); Hans Haubold (Germany, UNOOSA); Barrie Jones (UK); Ajit Kembhavi (India); Hugo Levato (Argentina); Peter Martinez (South Africa); Jayant Narlikar (India); Jay Pasachoff (USA); John Percy (Canada); Boonrucksar Soonthornthum (Thailand); Peter Willmore (UK, COSPAR); Jay White (USA).

#### *Supporting IAU Commissions and Divisions*

- Commission 46 Astronomy Education and Development (President, Jay Pasachoff)
- Division XII Union-wide Activities (President, Virginia Trimble)
- Division II Sun and Heliosphere (President, David Webb)

#### *Editors of the proceedings*



The special session will publish its proceedings. The editors will be John Hearnshaw (New Zealand) and Peter Martinez (South Africa).

John Hearnshaw, [john.hearnshaw@canterbury.ac.nz](mailto:john.hearnshaw@canterbury.ac.nz)

## USEFUL WEBSITES FOR INFORMATION ON ASTRONOMY EDUCATION AND OUTREACH MEETINGS

The following websites contain information on future (and recent) meetings and conferences on, or very relevant to, astronomy education and development. In compiling this short list I am well aware of a strong European bias. **Please email me URLs for relevant websites in other areas of the world.**

### UK

The Association for Astronomy Education <http://www.aae.org.uk>  
The British Association of Planetaria <http://www.bap.redthreathreat.co.uk>  
The National Schools Observatory <http://www.schoolsobservatory.org.uk>

### Europe

The European Association for Astronomy Education <http://www.eaae-astro.org>  
The European Astronomical Society <http://www.iap.fr/eas>  
The European Southern Observatory <http://www.eso.org/outreach/eduoff>

### USA

(among several other good sites)  
The Astronomical Society of the Pacific <http://www.astrosociety.org>

Barrie W Jones

(for contact details see Officers & Organizing Committee of Commission 46)

## INFORMATION TO BE FOUND ON THE IAU C46 WEBSITE

The IAU C46 website <http://astronomyeducation.org> (or <http://physics.open.ac.uk/IAU46>) contains the following information.

- Overview (of C46, in English, French, and Spanish)
- Offices and Organising Committee
- Program Groups
- National Liaisons (directory)
- Online Newsletters
- Presidents and Current Vice-President
- Resolution on the Value of Astronomy Education (passed by the IAU General Assembly 2003)
- IAU Working Group on Communicating Astronomy
- External links
- Announcements/News
- Minutes from the last IAU General Assembly
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## OFFICERS & ORGANIZING COMMITTEE OF COMMISSION 46

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**Organizing Committee (OC)**

The officers 2003-2006 are: the President, the Vice-President, the Retiring President, and three former Presidents in active liaison – Julieta Fierro, Derek McNally, and John Percy. For details of the Organizing Committee, and for the other members of the Program Groups, see the website <http://astronomyeducation.org> (and <http://physics.open.ac.uk/IAU46>)

**National Liaisons**      **Barrie W Jones (PG Chairperson)**  
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