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

Newsletter 67 – October 2007

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

Contributions to this newsletter are gratefully received at any time.

PLEASE WOULD NATIONAL LIAISONS
DISTRIBUTE THIS NEWSLETTER
IN THEIR COUNTRIES

Triennal reports from National Liaisons have been edited, collated, and placed on the C46 website (see below).

This newsletter is available at the following website
http://astronomyeducation.org
http://iau46.obspm.fr/

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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 2008 issue the copy date is **Friday 14 March 2008**. If you can include photos or illustrations with any material, please do so. Feel free to approach others to submit material – anything with an astronomy education or development aspect will be considered.

IAU C46 NEWSLETTER – GUIDANCE FOR CONTRIBUTORS

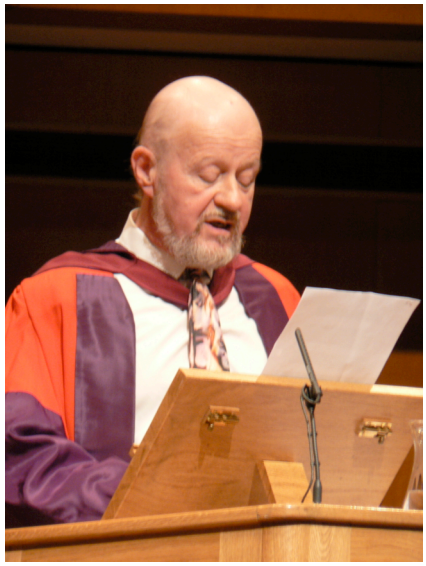
> The editor is happy to accept articles on any aspect of astronomy education and development, including obituaries and other articles on people. 500-2000 words are the approximate upper and lower limits. Shorter contributions, up to a few hundred words, such as meeting announcements, meeting reports, and other news items, are also welcome.
>
> Send contributions to me by email, at b.w.jones@open.ac.uk. You can either send a Microsoft Word attachment (preferred) or include the text in the body of the email. Illustrations should be sent as separate, individual files, preferably as JPEGs or TIFs up to about 1 Mbyte each.

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 rare cases is heavier editing necessary.

Important – the C46 website

As I reported in the last Newsletter, the C46 website was to be transferred from thr Open University Department of Physics & Astronomy to elsewhere. This transfer was completed in September, and the handsome new website is now at the Observatoire de Paris. The new URL is on the title page of this Newsletter. I'm grateful to Chantal Balkowski, Ahmed Rharda, Marie-france Landrea, Magda Stavinschi, Rosa Ros, and Jay Pasachoff for their various roles in establishing this new website.

Please note that the transfer of the C46 website does *not* affect my role as Newsletter Editor. I will continue as editor until the IAU General Assembly in 2009, but not thereafter. I retired in October 2006, and though I'm still active in research and teaching, I will shed some of my activities. In 2009 I will have completed just over 10 years as editor, which is enough.



The editor, at the award of an Emeritus Professorship in Astronomy in May 2007

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

MESSAGE FROM THE PRESIDENT

The period between the previous Newsletter and the present one has seen, as in every year, intense activity – that of the final year exams – followed by a calmer period, that of the vacation. Each period has its role in the teaching of astronomy, the activity of our Commission included.

There were very active working groups – the World Wide Development of Astronomy, the International School for Young Astronomers (see their reports below) – less active ones, and others about to be set up, such as the Education and Astronomy Heritage in collaboration with UNESCO.

The approaching International Year of Astronomy 2009 is an exceptional opportunity of stimulating astronomical education in the world. IYA2009 gives all of us the chance to attract the attention of the public in general and especially that of the education ministries and authorities in order to maintain or introduce astronomy in the school curricula, because we cannot speak of the future of our planet in the absence of at least the elementary notions concerning its place in the Universe.

Commission 46 is looking forward to your national programmes for IYA2009 and to hearing your actual proposals for activities specific to us.

Several programs can already be adopted by the Commission, namely, Astronomy Belongs to the Culture, 24 Hours of Astronomy, Dark Sky Protection, and Bringing the Universe back to the Earth. Special programs can be proposed for disabled children. A special session proposal has already been made for the next General Assembly of the IAU, namely, Integrating Efforts in Teaching and Learning Astronomy. In other special sessions we have agreed to collaborate, namely, The Role of History in Teaching Astronomy, Accelerating the Rate of Astronomical Discovery, and Mathematics and Astronomy: a Joint Long Journey

A special role is played by special education reunions. An example: the European Astronomical Society already has a tradition in the organization of special sessions on Astronomy Education in Europe. The last one took place in JENAM in Yerevan (see below) and we hope that the next one will take place in Vienna in 2008.

A particular problem to which our Commission should pay attention is the International Olympics. This year, in Seimiz took place the 12th International Astronomy Olympiad (29 September to 7 October), http://www.issp.ac.ru/iao/, and previously the first International Olympiad on Astronomy and Astrophysics in Chiang Mai, Thailand, 30 November to 9 December 2007, http://www.ioaa.info/index.php?option=com_frontpage&Itemid=1.

It is difficult for children to travel over such great distances on account of the general lack of financial support. Maybe “continental” olympics would be more useful, namely European, Asian, American, Australian. We intend to introduce on our website a column which should inform the teachers and the pupils both about the place and the dates of future contests, as well as about the results and the topics of the previous ones. We are looking forward to hearing your opinions about this.

And because we have mentioned the website, we are very pleased to announce that it has been taken over by a team led by Dr Chantal Balkowski of Paris Observatory, from Barrie Jones, whom we extend our warmest thanks for his extremely meticulous and elaborate activity, and who will continue to support us as the Editor of future Newsletters.

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

ASTRONOMY IN URUGUAY

(This article is derived from a report, dated 01 August 2007, to the IAU Executive Committee and to the C46 President by Hugo Levato, Professor of Astronomy, University of San Juan, Argentina, and member of the C46 Program Group for the Worldwide Development of Astronomy. Editor)

Summary

A report is presented on astronomy in Uruguay, based on my visit to this country in April 2007, sponsored by the International Astronomical Union (IAU). The visit was hosted by the Department of Physics of the Universidad de la República.

The report summarizes the current state of astronomical education in Uruguay, highlights some of the research being done, and makes relevant comments about future developments and how the IAU can usefully support the development of astronomy in this country in the coming years.

Introduction

This report is based on my visit to the Department of Physics of the Universidad de la República in April 2007.

At the present time there are about three research astronomers in Uruguay, working on Solar System studies. In addition there are about 200 teachers who teach astronomy at high school level.

Uruguay joined the IAU in August 1970. Now it has four individual members of the Union.

Itinerary in Uruguay

During my time in Uruguay, I visited the Department of Physics of the Universidad de la República, gave one lecture to students and scientists, and one lecture at the Planetarium in Montevideo City. I also visited the Los Molinos Astronomical Observatory.

I arrived at Montevideo Airport in the morning of 16 April, and departed from the same airport on 21 April. The travel to Los Molinos Observatory was by road, and is a distance of about 22 km to the north of Montevideo City. The Department of Astronomy provided a car for the travel ,and I am grateful to Dr Fernandez who made this possible

The Universidad de la República

The Universidad de la República was founded in 1849, has 14 faculties, several institutes and a hospital. There are also several schools, for Arts, Music, and a library. I visited the Institute of Physics where three astronomers with PhD degrees are working in astronomy. They are Dr Julio Fernandez, Dr Tabaré Gallardo and Dr Gonzalo Tancredi.

Uruguay has only one public university, the University of the Republic (also known as the University of Montevideo). The number of university students is today around 75000.

The Institute of Physics and the Department of Astronomy

The Institute of Physics is part of the Science Faculty and is divided into three departments: Theoretical Physics, Applied Physics and Materials and Astronomy. Around ten people are working in the Department of Astronomy. Three of them have PhD degrees. I talked with all of them about the problems they encountered in developing and consolidating astronomy in Uruguay. The Physics Institute has a PhD program in physics that includes astronomy as a specialization.

Los Molinos Observatory

The observatory operates a telescope of 35 cm aperture and a Centurion Telescope, of 46 cm, used generally in the search for supernovae, and for observations of asteroids and comets. The latter telescope became operative in 2002. An SBIG camera (ST9) is operating on this telescope. The observatory has also basic installations for living and some office space.

Several observing programs on asteroids and comets are routinely done at Los Molinos.

Conclusions and Recommendations

There is a strong interest in the Physics Department at the Universidad de la República in Uruguay in consolidating astronomy research in the country with the help of the IAU and foreign colleagues.

Drs Fernandez, Tancredi and Gallardo are the human resources prepared to do the job.

I recommend that

1. The IAU supports the visits of professors to Uruguay to help with the ongoing PhD programs. The PhD program should be supported.
2. A small amount of money should help in improving the instrumentation at Los Molinos Astronomical Observatory.
3. IAU Commission 46 should consider supporting the three astronomers with PhDs and some of the students for observing trips to the nearest observing facility, Complejo Astronómico El Leoncito, in Argentina, to gather data for their programs. The authorities at the Complejo Astronómico are willing to waive lodging expenses for Uruguayan colleagues.
4. The IAU should help in providing access to the astronomical literature through the consortia available at Argentina (SECYT) or Brazil (CAPES). Access to the astronomical literature is a problem at present.

The consolidation of astronomy in Uruguay may take around 5 to 7 years, with three or four new students that may get some training abroad and return to the country. The Universidad de la República should take the responsibility of developing opportunities for them to return.

Uruguay has no site with the astronomical climate needed to develop a medium size astronomical facility, but Internet connectivity is well developed and the usage of the Virtual Observatory concept should be encouraged, as well as the usage of international facilities located in South America.

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ASTRONOMICAL SOCIETY OF THE CONGO

(*Here is an appeal from Floris Javerdin of the Astronomical Society of the Congo. Editor*)
The Astronomical Society of the Congo is a non-governmental and non-profit association, based in Pointe-noire (Brazzaville). Its objects are to promote and to advance in Africa public education in the science of astronomy and all branches of scientific research. Despite the lack of materials to work with, we are requesting help for tutorials such as: computers (desk or laptop), books, and observational instruments in whatever quantity or quality you might provide. We shall be very grateful. We have a brief constitution for our society. Wishing to hear from you soon.

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SOUTH EAST ASIAN ASTRONOMY NETWORK

I would like to draw your attention to the very recently established South East Asia Astronomy Network (SEAAN). The first meeting of SEAAN was held in Bangkok last March, where astronomers from Thailand, Malaysia, the Philippines, Laos, and Indonesia were gathered. The outcome of that meeting was an agreement among south east Asian countries to create a sub-regional network in astronomy and science education. Four working groups, in Optical Astronomy, Radio Astronomy, Astrophysics & Cosmology, and Solar Physics have been outlined. The IYA, the IHY, and the 2.4 metre telescope in Thailand (under construction, first light is planned in 2009) are to be the main arena of SEAAN. Soon, Singapore and Vietnam will join SEAAN. I have a strong feeling that sub-regional networks will be proliferating in the Asia-Pacific area (e.g the East Asian Meeting on Astronomy) and should be accommodated, for example, in a special session on astronomical networks and collaboration, in the Asian-Pacific Regional IAU Meetings on Astronomy. If the SOC could agree to have this session, the SEAAN would like to present their planned activities, along with other groups.

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HANOI ASTROPHYSICAL SCHOOL

The Hanoi Astrophysics School took place 20-25 August 2007 at the Hanoi National University of Education (HNUE). The school was sponsored by the TAD program group of IAU Commission 46.

There were about 45 students enrolled in the school; they came from a wide variety of different levels. Some were PhD students in physics, or MSc students, whilst others were senior undergraduates, and a few were still at high school. Some of the participants were high school teachers and others were university academics. The local organizer was Dr Nguyen Quynh Lan from HNUE; she was responsible for arranging the whole program, and for liaising with the IAU and the lecturers.

The lectures were all delivered in English and four lecturers delivered them. There was Professor Pierre Darriulat, from France but now resident in Hanoi and teaching at the Hanoi University of Science; his lectures at the School were on general relativity and cosmic ray physics. We also had Professor Ed Guinan from Villanova University in the USA. He lectured on binary stars and the search for extrasolar planets. Professor Michele Gerbaldi from the Institut d'Astrophysique in Paris lectured on stellar atmospheres. Finally I came from the University of Canterbury in New Zealand. I had planned lectures on stellar atmosphere theory and line formation in stellar spectra. However, I decided just before my third lecture to change my course completely to suit the level of ability of the audience, and instead talked about age measurements in astronomy, gravitational microlensing, element nucleosynthesis, and the physics of the interstellar medium.

The school ran for six days from 09:00 to 17:30. It was therefore very intensive, and each of the four lecturers gave a 90-minute lecture every day. Most of the students seemed to cope with this reasonably well, although the level of astrophysics was moderately high (we had all expected the audience to be entirely graduate students) and the demands on the students' linguistic skills were also high.

Overall the school can be judged as a considerable success. Many of the students were exposed to advanced astrophysics for the first time. They absorbed much interesting new material, and their ability to listen to talks in English and to communicate in English markedly improved by the end of the week. It was a great experience for both students and lecturers to interact in such a good way.

After the School, Michele Gerbaldi, Ed Guinan, my wife and I all went to Halong Bay (three hours from Hanoi on the coast) and had a wonderful overnight cruise on one of the many luxury junks that cruise in the region. Halong Bay has some 3000 exotic and beautiful islands and is a renowned World Heritage site. We had perfect weather and a memorable experience.

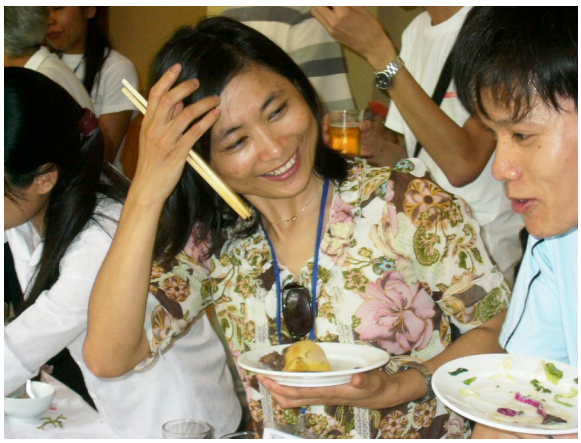
Our memories of Hanoi are those of a beautiful city with many tree-lined boulevards, lots of people (mainly on motor bikes), very hot weather (often around 34 °C), and wonderful food. We enjoyed many classical Vietnamese meals, including the hospitality of the president of HNUE at Hanoi's splendid Drum Restaurant.

Vietnam is not at present a member of the IAU, but we hope that the stimulus of the Astrophysics School will encourage the small astronomical community in Vietnam's universities to apply for IAU membership in the near future.

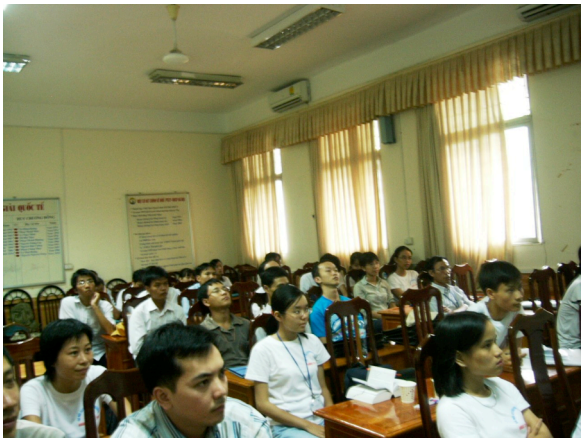
John Hearnshaw and Nguyen Quynh Lan, the school's organizer from HNUE

Dinner at Hanoi's Drum Restaurant. From left, Pierre Darriulat (4th), Nguyen Quynh Lan (6th), Michele Gerbaldi (7th), Ed Guinan (8th), HNUE President (9th) and John Hearnshaw (11th)

Students at the School hosted a lunch in the HNUE Department of Physics on 25 August



Nguyen Quynh Lan at the Department of Physics lunch



Participants in the lecture room at the Hanoi Astrophysics School

Cruising amidst countless beautiful islands at Halong Bay, Vietnam

John Hearnshaw, University of Canterbury, New Zealand, Chair C46 Program Group GWWDA
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RELATIVITY IN BASIC ASTRONOMY EDUCATION

Nowadays it seems to be reasonable that standard astronomical education includes a course in general relativity. Although the applications of general relativity in astrophysics and in fundamental astronomy are different, the physical background and ideas are much the same. I would like to stress that the basic understanding of relativistic models in fundamental astronomy is valuable for all young astronomer sand requires probably 1-2 lectures in a standard course on general relativity.

In St Petersburg State University we did it in the opposite way. Since about 1988 we have had a course Relativity in Astrometry and Celestial Mechanics, which is very often attended by students in astrophysics. About 75% of the course is a basic introduction to general relativity and its mathematical formalism. A normal astrophysical course would continue then with more details on black holes, gravitational waves and/or gravitational lensing. In the course the last 25% are devoted to relativistic models in fundamental astronomy. The course is about 28 hours and requires no previous knowledge of general relativity and differential geometry. The content of the course can be found at
http://rcswww.urz.tu-dresden.de/~klioner/lectures.html

Sergei Klioner, Lohrmann Observatory, Dresden Technical University
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PUBLIC BROADCASTING OF ASTRONOMY IN THE USA

Seeing in the Dark, a dramatic new PBS special, by award-winning journalist and author Timothy Ferris, premiered at 20:00 on 19 September 2007 on most PBS stations. It explores the delights and rewards of amateur astronomy and chronicles the contributions that amateurs are making to the science and art of astronomy. The program was produced in state-of-the-art high definition and features beautiful images and animations that range from the planets to the depths of space.

Accompanying the show is a new interactive web site http://www.pbs.org/seeinginthedark/

Among the many things you can do at the web site are:

1. view or print "Your Sky Tonight", a chart of any part of the sky, showing planets, stars, and deep space objects, as seen from any location and time you wish to set

2. watch introductory "how-to" videos with Timothy Ferris on getting started with the hobby of astronomy
3. take a photo of any object in the northern sky using the Seeing in the Dark Internet Telescope and have it sent to you by e-mail (restricted to students)
4. read more about the astronomers featured in the show and get basic background information about the astronomy it covers (including such topics as planets around other stars, the exploration of Mars, and how light serves as a cosmic time machine)
5. explore a series of classroom tested, hands-on activities for students in grades 2 through 12, ready for teachers to use (even if they don't have a strong background in astronomy)
6. browse through a gallery of beautiful color images of the cosmos, taken by the astronomical photographers who contributed to the show
7. find a star whose light started its journey toward us in the year you were born
8. discover some fun projects and games for families who want to do astronomy together (both indoors and outdoors)
9. watch the amazing special effects videos from Seeing in the Dark on your computer
10. browse through links to some of the best websites for learning more about astronomy, and finding an astronomy club near you.

The website was made possible through support from the National Science Foundation.

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ASTRONOMY EDUCATION REVIEW

Astronomy Education Review (AER), the web-based journal/magazine for everyone involved in astronomy education and outreach, is pleased to announce the on-line publication of its 11th issue, full of new ideas and practical help for educators. It is now ready on the web site: http://aer.noao.edu

The papers in the just completed issue are listed below. We especially want to call everyone's attention to the second paper, by Robert O'Connell, which is in essence a handbook for new instructors and teaching assistants, and summarizes the experience and practical advice of the teaching faculty in a major department.

We also want to announce a new project that we are undertaking at AER. We are planning to do a special section (or even perhaps a special issue) that will contain short papers and research relating to astronomy demonstrations. We are inviting colleagues to write up innovative or improved demos for classroom and informal science education use. Full information on how to submit your favorite demo can be found in an announcement in the new issue (Volume 6, no. 2) that we have just opened.

The featured papers and articles in the just completed issue include

1. Regulations and Ethical Considerations for Astronomy Education Research by Erik Brogt, (University of Arizona), et al.
2. Facts of Life for New Teachers in the Astronomy Non-majors Curriculum by Robert W O'Connell (University of Virginia)
3. Bachelor of Science in Astronomy Technology: A Model by Jesus Rodrigo F Torres (Rizal Technological University, Philippines)
4. Survey of Introductory Astrophysics Textbooks by David Bruning (University of Wisconsin-Parkside)
5. A Theoretical Background on a Successful Implementation of Lecture-Tutorials by Erik Brogt (University of Arizona)

6. Using Literacy Techniques to Teach Astronomy to Non-Science Majors by C A Garland, (Castleton State College) and D L Ratay (Cortana Corporation)
7. Science and Nonscience Students' Ideas about Basic Astronomy Concepts in Preservice Training for Elementary School Teachers by Hüseyin Kalkan and Kasim Kiroglu (Ondokuz Mayis University, Turkey)
8. Arecibo Observatory for All by P. Bartus (University of Puerto Rico), et al.
9. Estimating the Solar Apex Using Stellar Radial Velocities: A Spreadsheet and Graphical Exercise for College-Level Astronomy Classes by Russell Sampson (Eastern Connecticut State University)
10. Analysis of the Astronomy Diagnostic Test by Erik Brogt (University of Arizona), et al.
11. Good Reading from Other Sources on Astronomy Education and Outreach by Andrew Fraknoi (Foothill College)
12. New Media Technologies: Proposing An Integrated Approach by Aaron Price (AAVSO)

When you go to the AER site, you will see that the next issue is already under way. You can find the full 11th issue by clicking on "back issues" and then on "vol. 6, no. 1."

AER actively solicits interesting papers and articles on all aspects of space science education and outreach. The journal gets between 130 000 and 270 000 hits per month from every state of the USA and over 90 other countries.

Sidney Wolff and Andrew Fraknoi
Editors

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NEWS OF C46 PROGRAM GROUPS

(*The first three news reports are taken, with minor layout and other alterations, from IAU Excerpts IB100 July 2007. Editor*)

INTERNATIONAL SCHOOL FOR YOUNG ASTRONOMERS

The 29th International School for Young Astronomers (ISYA) took place in Malaysia (Selangor and Langkawi Island), 5-23 March 2007. ISYA 2007 was organized by the International Astronomical Union (IAU) with the Universiti Kebangsaan Malaysia (UKM) and with the cooperation of the National Space Agency of Malaysia (ANGKASA), the Ministry of Science Technology and Innovation (MOSTI), and the Universiti Malaya (UM). It must be strongly emphasized that this ISYA benefited from ANGKASA at a level of involvement and financial support never met before in any ISYA.

The School began at the University Kebangsaan Malaysia (UKM) at Selangor (5-9 March 2007) and then moved to the MARA Junior Science College, Langkawi Island, where is located the National Observatory (10-23 March 2007).

The members of the National Organizing Committee ISYA 2007 were

1. Prof Dr Mazlan Othman, Director General of ANGKASA, Secretary General of Academy of Sciences of Malaysia. *Chairperson*
2. Mr Mhd Fairos Asillam, Science Officer in ANGKASA. *Secretary*
3. Prof Dr Mohd Zambri Zainuddin, Head of Space Science Laboratory and Deputy Dean of Malaya University
4. Prof Dr Baharudin Yatim, Director of Space Science Institute, National University of Malaysia
5. Mr Kassim Bahali, Head of Astronomy Programme, Al-Khawarizmi Observatory, Malacca.

The number of selected participants were 38 (female 9, male 29), 10 Malaysian, and 28 foreigners from 11 countries: China (2), DPR Korea (3), India (3), Indonesia (7), Nepal (1), New Zealand (1), Philippines (4), Shri Lanka (1), Taiwan (1), Thailand (3), and Vietnam (2). The students had very mixed academic backgrounds and experience, ranging from an MSc degree to having finished their PhD.

The faculty members and lectures were

1. Prof N Udaya Shankar, India, Raman Research Institute: *Radioastronomy*
2. Assoc Prof Mamoru Doi Japan University of Tokyo: *Galaxies*
3. Dr Chenzhou Cui, China, National Astronomical Observatory: *Virtual Observatory*
4. Prof Dr K R Lang, USA, Tufts University: *the Sun*
5. Prof Dr Jean-Pierre De Greve, Belgium, Free University Brussels: *Binary stars, evolution with massive components*
6. Prof Dr Mohd Zambri Zainuddin Malaysia, Universiti Malaya: *Astronomy*
7. Prof Dr Edward Guinan, USA, Villanova University: *Binary stars*
8. Dr Hakim L Malasan, Indonesia, Institut Teknologi Bandung: *Stellar observations*
9. Assoc Prof Mark Rast, USA, University of Colorado: *Solar astrophysics*
10. Prof Dr Michèle Gerbaldi, France, Institut d'Astrophysique de Paris: *Stellar atmospheres*.

The ISYA students were encouraged to describe their current research. Six sessions were organized for the 27 talks given, each talk was for 15 minutes plus 5 minutes for questions. Emphasis was put on the Virtual Observatory and database concepts by Dr Chenzhou Cui. For that purpose a network of 22 computers under LINUX/Windows was set up and image processing software installed. The practical classes were based on access to real data. The participants also had to conduct optical observations. Six observing sessions took place at the Langkawi National Observatory for imaging and spectroscopy with the robotic 0.5 metre telescope. These observing sessions were directed by Dr Hakim L Malasan

with M Ridwan Hidaya, Mrs Lau Chen Chen and M Karzaman Ahmad. Reduction of the images and spectra taken were done under the guidance of Dr Chenzhou Cui and Dr Hakim L Malasan.

A half day session was devoted to solar observations at the Langkawi Solar Observatory. Solar images with Hα and CaII-K line filters were taken under the direction of Assoc Prof Mark Rast and Prof Dr Edward Guinan. Besides the academic programme of the ISYA, the lecturers gave several conferences at the National Science Museum and National Planetarium, at Kuala Lumpur, at the MARA Science College, Langkawi, and at the Terengganu University. Besides the intensive academic programme, the students also had the opportunity to experience the environment of the Langkawi island through a series of cultural visits at the weekends.

This ISYA is the starting point for the development of new programmes in Malaysia, in particular related to the use of the Langkawi National Observatory in both stellar and solar domains.

Prof Dr Mazlan Othman, Chairperson NOC ISYA 2007
Mr Mhd Fairos Asillam, Science Officer ANGKASA, Secretary NOC ISYA 2007
Dr Michèle Gerbaldi, chairperson for the 29th IAU ISYA educational programme
Paris, France, 22 May 2007

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TEACHING ASTRONOMY FOR DEVELOPMENT

The IAU Commission 46 Program Group on Teaching Astronomy for Development (TAD) has identified several countries which have expressed interest in receiving support for activities, in accord with the stated mission of TAD, aid in "the enhancement of the country's astronomy education and astronomical research in support of education."

The programs that TAD plans to support in 2007-8 are activities in Vietnam, Mongolia, Morocco, Nicaragua, Kenya/South Africa, Trinidad & Tobago, and the Philippines. More recently a possible new TAD initiative was added for the Democratic People's Republic of Korea (DPRK). We briefly summarize these programs below.

Vietnam

Support for Hanoi, Vietnam, School on Astrophysics and the Universe. 21-30 August 2007. Organized by the Department of Physics, Hanoi National University of Education and the Vietnamese Astronomical Society. 30-40 participants expected.
Contact: Nguyen Quynh Lan nquynhlan@hnue.edu.vn

The final program for the School is being worked out with Dr.Lan and TAD co-chair Ed Guinan. Three IAU representatives will attend, and present lectures: John Hearnshaw (New Zealand), Ed Guinan (USA) and Michèle Gerbaldi (France). Partial support also will be provided for some of the expenses of local participants that include travel to Hanoi and living expenses. Joel Weisberg, Carleton College (USA), is visiting Vietnam in June 2007, on a family trip, and may deliver lectures and establish additional contacts with the Vietnamese astronomers. The TAD program will provide modest support, and may look for his help in establishing continuing contacts.

Mongolia (initial TAD program)

An invitation has been extended to Batsukh Garmaa (bats_g@yahoo.com), National University of Mongolia, to visit the USA in the fall of 2007 or winter of 2008 to observe astronomy and astrophysics classes at Gettysburg and Villanova Universities. He will also learn about CLEA

activities in astronomy, have an opportunity to use modern CCD cameras at the Gettysburg Observatory, and possibly visit other astronomical sites in the area (such as Green Bank and STScI). In future years, we expect to reciprocate by sending TAD representatives to Mongolia to lecture.

More recently Tsolmon Renchin (tsolmon@num.edu.mn) of MUN has invited Larry Marschall to visit Ulaanbaatar to give lectures and to discuss future TAD activities in Mongolia. This visit was under consideration for June or July of 2007.

Philippines

TAD is supporting the travel of astronomers between Gunma Astronomical Observatory in Japan and the visiting staff of PAGASA (Philippine Atmospheric, Geophysical, and Astronomical Administration) to give Philippine scientists experience in astronomy research and to give lectures. Contact: Cynthia Celebre, chief, Astronomy Research and Development Section (AsRDS), PAGASA cynthia_celebre@hotmail.com

Nicaragua

TAD is supporting the Los Cursos Centroamericanos de Astronomía y Astrofísica (CURCAA), for a series of lectures in astronomy and astrophysics to be held in Managua, Nicaragua, 25-29 June 2007. See http://www.unan.edu.ni/oaunan/xicurcaa/XICURCAA101.htm. The support will include sending at least one and possibly two IAU representatives as well as providing travel support for some professors and students. Contact is Maria Cristina Pineda de Carias, Chair, Central America Suyapa Astronomical Observatory, National Autonomous University of Honduras, mcarias@cablecolor.hn. We are awaiting the final program for this meeting.

We plan to use this opportunity to urge the participating countries to join the IAU. It is possible that a representative from the IAU EC will join to discuss IAU issues and IAU National Membership.

Kenya/South-Africa Astronomer Training and Education Program

The program is co-sponsoring (with IAU C46 PG Exchange of Astronomers) the visit to South Africa of Paul Baki of Kenya to learn first hand astronomical instruments, data acquisition and reduction techniques. The plan is for him to return to Kenya and transfer his training and experience to his students and colleagues. South Africa is contributing financial and logistical support for the visit The Contact: Peter Martinez, SAAO, peter@saao.ac.za

Trinidad and Tobago & Caribbean Region, Outreach & Education Program

The TAD program enthusiastically supports this project to develop a television-based Astronomy Education and Public Outreach program for Trinidad & Tobago and the surrounding Caribbean region. Shirin Haque (University of the West Indies, St Augustine Campus, Trinidad) has requested TAD for funds to partially support the production of this program. This program is expected to reach over one million prospective viewers in the Caribbean region.
Contact: Shirin Haque shirin@tstt.net.tt

Continuation of the TAD program in Morocco

Hassane Darhmaoui, Associate Professor School of Science & Engineering, Al Akhawayn University in Ifran, Morocco, has requested TAD support for a visit to Ifran of Ghassan Yassin of Oxford University (UK). Ghassan Yassin is working with the cosmology group in Oxford. Last summer, he supervised the capstone project and internship of Moroccan student Hassan Bourhrous. The title of his research there under Yassin's supervision is A Planar Switch for Cosmology Instruments. Yassin is also visiting Morocco to investigate opportunities for additional Moroccan students to study at Oxford and work with him and the Oxford Group. TAD approves this project.

Democratic People's Republic of North Korea: a possible TAD initiative

During the 29th ISYA program in Malaysia (March 2007) promising contacts were established with a DPR Korea Embassy representative in Kuala Lumpur. This opportunity was used to discuss a possible TAD program for the DPR Korea, and the possibility that the DPR Korea wishes to re-join the IAU in the near future. TAD is considering providing astronomy text books and proceedings to astronomical institutes in the DPR, and supporting participation of astronomers from the DPR to attend the 8th Pacific Rim Conference on Stellar Astrophysics (PRCSA 2008), to be held in Phuket, Thailand, 5-9 May 2008.

Ed Guinan, Larry Marschall, co-chairs TAD
29 March 2007
edward.guinan@villanova.edu marschal@gettysberg.edu

WORLDWIDE DEVELOPMENT OF ASTRONOMY

I recently undertook an astronomical tour to Thailand and Laos, sponsored by IAU Commission 46, as part of the activities of the Program Group for the World Wide Development of Astronomy (PG-WWDA).

Thailand has just joined the IAU as its latest National Member. It is a strongly developing country, both economically and astronomically. The recent decision by the Thai government to establish the National Astronomical Research Institute of Thailand (NARIT) means that in the coming 5 to 10 years, Thailand can be expected to become a strong regional centre for astronomical research and education. By the end of 2008, a 2.4 metre optical telescope should be installed on Doi Inthanon (2550 metres), Thailand's highest mountain, near Chiang Mai in the north of the country. This will be the largest optical telescope in Asia when it is completed. In addition, Thailand hopes to train four new PhD students in astronomy at overseas universities each year for the next several years, in order to create a pool of talent to staff the new institute. The new institute in Chiang Mai is directed by Professor Boonrucksar Soonthornthum, who completed his MSc in astronomy in New Zealand in 1980 and who hosted my visit to Chiang Mai.

I visited four universities in Thailand in January 2007 and gave a series of lectures. These were the universities of Chiang Mai, Naresuan (in Phitsanulok), Khon Kaen and Mahidol (in Bangkok). All of these employ astronomers in physics departments, and research interests are in optical stellar astronomy, cosmology and solar physics. Chiang Mai has the strongest involvement in terms of numbers, with several astronomers and a small observatory (Sirindhorn Observatory) which is operated just out of the city. Mahidol University has an active research group in solar physics and cosmic rays, headed by expatriate American, Prof David Ruffolo.

In Laos I visited the National University of Laos in Vientiane, and had a very cordial reception by the Physics Department there, and my host there was Dr Khamphouth Phomassone, a geophysicist and Assistant Dean of Science. Two astronomers with MSc degrees from Chiang Mai University in Thailand are employed to teach astronomy to physics students as part of the bachelors' program in physics at NUL.

The university is on a pleasant and spacious campus in the north-east part of the city. At this stage no graduate program in physics or astronomy exists, though one is planned in the next few years. The university would benefit from many more computers (students have limited or no Internet access) and a small telescope would do wonders for the teaching of astronomy. Laos is a much less affluent country than Thailand, although the two share very similar languages, culture and ethnicity. But economically they are a long way apart. In spite of that, the biggest asset is, as in many developing

countries, the students, and I found a tremendous enthusiasm for astronomy and learning, perhaps just as strong in Laos as in Thailand, if not more so.

For further information, refer to my full report to the IAU, to be found at
http://www2.phys.canterbury.ac.nz/~jhe25//pgwwda/index.html
This gives contact information for astronomers in the two countries.

John B Hearnshaw, University of Canterbury, New Zealand, Chair IAU Div XII/C46/PG-WWDA
26 February 2007
john.hearnshaw@canterbury.ac.nz

PUBLIC INFORMATION AT THE TIME OF ECLIPSES

We have endeavoured to help people around the world to observe partial and total solar eclipses.

At the 29 March 2006 total solar eclipse, we provided information especially to Dr Pius Okeke in Nigeria and arranged first a donation and then a purchase of enough solar filter material to make 400 000 filters.

During 22-26 March 2007 I visited Dr Yihua Yan of the Beijing Observatory, the Chinese solar astronomer in charge of their arrangements for the forthcoming total eclipses. We travelled together with Dr Jin Zhu, Director of the Beijing Planetarium, to Shanghai and then explored the region between Shanghai and Hangzhou at which there will be approximately 5 minutes and 50 seconds of totality during the total solar eclipse of 22 July 2009. Since both Shanghai and Hangzhou will be in the zone of totality, tens of millions of people will be able to see the total eclipse, and the billions others in China, India, Japan, and southeast Asia will be able to see a partial eclipse. All will need education, and I started a conversation on that matter.

There is one other total solar eclipse, somewhat shorter, before the 2009 eclipse, which is the longest in the saros and therefore much anticipated. On 01 August 2008 a total solar eclipse will cross Siberia, the western tip of Mongolia, and China almost down to Shanghai (at sunset). I visited Dr Iraida Kim of Moscow University in July, and continued to inspect a prospective eclipse site near Novosibirsk, the Siberian city that is the third largest city in Russia. Weather predictions are overall favourable. Partial eclipses, with educational needs, will be visible in Europe except for the Iberian Peninsula and the boot of Italy, and also in the Middle East, and all of Asia except for its eastern rim.

Maps of these eclipses can be found through links at our Program Group's website http://www.eclipses.info

For details of the 01 August 2008 eclipse, see information from Fred Espenak of NASA at http://sunearth.gsfc.nasa.gov/eclipse/SEmono/TSE2008/TSE2008.html

For details of the 22 July 2009 eclipse, see
http://sunearth.gsfc.nasa.gov/eclipse/SEmono/TSE2009/TSE2009.html

For past eclipse images from my expeditions, see http://www.williams.edu/astronomy/eclipse

Jay M Pasachoff, Chair PG for Public Information at the Time of Eclipses
eclipse@williams.edu

NEWS OF MEETINGS AND OF PEOPLE

ASTRONOMY FOR THE DEVELOPING WORLD, IAU GENERAL ASSEMBLY, 14-25 AUGUST 2006, PRAGUE

The proceedings of the Special Session SpS5, Astronomy for the Developing World, held at the IAU General Assembly in Prague in August 2007, have now been published by Cambridge University Press. Details are as follows.
Astronomy for the Developing World (IAU XXVI General Assembly Special Session 5)
Series: Proceedings of the International Astronomical Union Symposia and Colloquia
http://www.cambridge.org/us/series/sSeries.asp?code=IAUP
Edited by John Hearnshaw, University of Canterbury, Christchurch, New Zealand, and Peter Martinez South African Astronomical Observatory, Cape Town.
Hardback ISBN-13: 9780521876575
Published October 2007
$110.00 (US)

This volume presents papers concerning astronomy education and research in developing countries presented at a special session at the IAU 26th General Assembly in Prague. It gives a picture of the present state of astronomy in five major developing regions of the world: Latin America, Africa, Central Asia, the Far East and Eastern Europe. The book covers education and research, and also public outreach. New astronomy projects in developing countries are described, and initiatives to promote astronomy and space science from the UN and organizations other than the IAU are also covered. It finishes with a discussion of the future role of virtual observatories in developing countries and the concept of a Third World Astronomy Institute. This volume will be a useful resource and reference for astronomers interested in promoting and supporting astronomy and space science around the world.

Contents

Preface
1. Overview to Astronomy in the Developing World
2. Astronomy in Latin America and the Caribbean
3. Astronomy in Africa
4. Astronomy in Eastern Asia and the Pacific
5. Astronomy in the Middle East and Central Asia
6. Astronomy in Eastern Europe
7. Astronomy Education in Developing Countries
8. Promoting Astronomy in Developing Countries through the UN, IHY and COSPAR
9. The Virtual Observatory and Developing Countries

Subject Index
Author Index.

Details
* 36 line diagrams, 126 half-tones, 25 tables
* 346 pages
* Size: 247 x 174 mm
* Weight: 0.844 kg

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REPORT ON HANDS-ON UNIVERSE, EPSC MEETING, 20-24 AUGUST 2007, POTSDAM

The astronomy teaching project, Hands-On Universe (HOU), will increase its worldwide presence following a decision taken in July 2007 at the Annual Conference in Tokyo. The Portuguese astronomer Rosa Doran, who presented plans at the second European Planetary Science Congress in Potsdam on 23 August 2007, will be responsible for restructuring a scheme that is already in use in 20 countries and for making Hands-On Universe a global reality.

Hands-On Universe provides a new approach to the teaching and learning of astronomy by bringing frontline interactive technology to the classroom for use by both teachers and students. Its goals are to promote the use of these technologies and also to reawaken students' enthusiasm for science, technology, engineering and maths related issues. At this moment, HOU is divided into four regional centres that coordinate the activities of neighbouring countries: North America (Berkeley, California), Europe (Paris), Pacific (Beijing), Africa (Kenya), soon to be joined by a fifth in South America, based in Brazil.

The decision to restructure and expand the entire organisation of this project to develop the Global Hands on Universe (GHOU) comes from the need to keep pace with the growth and expansion to new countries. Within seven years, GHOU could have a presence in about 100 countries, reaching millions of students. This new format will allow the development of common projects and improvements in the sharing of resources. This process will take place during next year, in time to prepare the activities for the International Year of Astronomy 2009.

The project is based on real observations, acquired by the teachers or pupils themselves using networks of robotic telescopes operated via the Internet, a web cam system developed by HOU, or using a remotely operate radio telescope. These observations can be manipulated in classrooms with specific software designed to be pupil-friendly. Activities are supported by teaching resources developed through collaborations between researchers and teachers. According to Rosa Doran, training teachers through pilot projects is the key to the success of the scheme. About 1000 teachers have already received the training and are now instructing others themselves, in a snowball effect.

The latest challenge for GHOU is Universe Quest, an online game in which students will have to form international teams to carry out research, such as searching for asteroids. Rosa Doran said "The Universe Quest game is an exciting and innovation teaching tool. It also has a serious aspect, as the goal of the game is to make real scientific discoveries. The next asteroid could be discovered by schoolchildren!"

Further information and images are at www.handsonuniverse.org and http://www.euhou.net/
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Issued by EPSC press officers

JOINT EUROPEAN AND NATIONAL ASTRONOMY MEETING, 20-25 AUGUST 2007, YEREVAN

This year's JENAM was held at the Yerevan State University, Yerevan, Armenia, 20-25 August 2007. Institutions that contributed to its organisation were the European Astronomical Society, the Armenian Astronomical Society, Yerevan State University, and the Byurakan Astrophysical Observatory. The 15-strong Scientific Organising Committee was drawn from 10 countries, all European except the USA. In was co-chaired by Areg Mickaelian of Armenia and Joachim Krautter of Germany.

There were 8 symposia and 6 special sessions, one of which, JENAM SpS5, Astronomy Education in Europe, was convened by our President, Magda Stavinschi.

For further detail see
http://www.aras.am/JENAM-2007/index.htm

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

DIVISION FOR PLANETARY SCIENCES, AAS, EDUCATION PROGRAM, 7-12 OCTOBER 2007, ORLANDO

For the last ten years, the DPS has been engaged in education outreach programs in the form of pre-college student involvement at its annual meetings. Elementary and middle school students are brought in for a "field trip". The number of students involved and types of activities are dependent on the location of the meeting and the time of year it is held.

In recent years, we have developed a core of presenters, supported by local expertise. For the last two years, we have had more students come to the meeting than registered members. Last year in Pasadena, California, we had nearly 1100 students and this year in Orlando, Florida, we had over 900 students. Our emphasis is on hands-on activities and, as much as possible, connecting the presentations to the meetings themselves.

This year, students (20-40 in a group) were involved in two of the four activities described below:

The Orlando Science Center did a tour of the Solar System with dry ice, liquid nitrogen, etc., representing the surfaces and atmospheres of the planets. They also used a Magic Planet Digital Globe to model the dynamic nature of planetary atmospheres.

The Kennedy Space Center Educator Resource Center presented a number of humans-in-space related activities including the heating of shuttle tiles, models of the shuttle, space gloves (with student participation), and space food.

Astronomy to Go, one of the core presenters, showcased Visitors from Space – Meteorites. The students were shown and were able to handle a variety of actual meteorites during a presentation on asteroids, meteors, and meteorites, and the work being done by the scientists at the meeting.

I presented What is a Planet. Students were asked to sort a variety of balls and see that they can be sorted by size, color, texture, weight/density, etc. and then to come up with the things that make a planet a planet: atmosphere, surface, orbit around the Sun, etc. They then can see for themselves that there may be more than one right answer. I discussed how science is done, why scientists needed a definition of a planet, and how this resulted in our current configuration of eight planets, dwarf planets, and small Solar System bodies.

I would like to thank Csaba Palotai and Humberto Campins of the University of Central Florida, and Jaydeep Mukherjee of the Florida Space Grant Consortium for all of the work they did in organizing the event. I would also like to thank the local presenters: Michael, Tony, Chris, and Linda. Finally, I would like to thank Bob Summerfield, co-owner of Astronomy to Go, for his continuing support of the outreach efforts of the DPS. I could not do this without him.

Larry Lebofsky
Outgoing DPS Education Officer
lebofsky@lpl.arizona.edu

EDUCATION IN ASTRONOMY, XII REGIONAL LATIN AMERICAN MEETING, 22-26 OCTOBER 2007, VENEZUALA

(*This article was submitted just as I was completing the Newsletter. I could not find the acronyms CIDA and LARIM under Google, and there was no time to request the author to supply them. Editor*)

here follows account of the Education in Astronomy sessions and related talks held within the XII Regional Latin American Meeting of the IAU, at Margarita Island, Venezuela, 22-26 October. There was one invited talk (30 minutes) and almost a full day of contributed talks (23 October). This is in addition to several posters.

Additionally, CIDA has organized a full week of public talks to be held at three cities in the island of Margarita – Pampatar, La Asuncion and Porlamar. We called it ¨Astronomy Week at Margarita¨. We held 15 talks, 3 every night (one at each location), given by astronomers participating at the LARIM, and CIDA staff. The link to the web page describing these activities is: http://www.margarita2007.org/divulgacion01.html

Invited talk
Julieta Fierro, Instituto de Astronomía, UNAM, Ciudad de México, México, La Educación Informal en Ciencia (Informal Education in Science), see http://www.margarita2007.org/pdf/677.pdf

Education in Astronomy session, 10 contributed talks (Tuesday AM)

- Francisco Diego (University College, London UK), Astronomy in the Media
- Enrique Torres (CIDA, Merida, Venezuela), National Program for Astronomy Outreach in School
- Horacio Tignanelli (Universidad de La Punta, San Luis, Argentina), Integral Programme of Basic Astronomic Literacy Development
- Gonzalo Santos (CIDA, Merida, Venezuela), Development of a Venezuelan Planetarium

Education in Astronomy session, 10 contributed talks (Tuesday PM)

- Oscar Alvarez (Ministerio de Ciencia, Tecnología y Ambiente. La Habana, Cuba), Using Astronomy for the Formation of a Scientific Culture in the General Public
- Erquinio Taborda (Secretaria de Educación del Departamento del Atlántico. Barranquilla, Colombia), Education Experiments in Astronomy across the Seedbeds of Investigation in Sciences
- Johnny Cova (CIDA, Merida, Venezuela), Sign Language in Astronomy and Space Sciences
- Gilbert Sánchez (Comite Organizador Concurso Bautizo Espacial 2007, Barquisimeto, Venezuela), Space Baptism: Put in orbit your school
- Pedro Chalbaud (ULA, Merida, Venezuela), Attempts to Establish an Astronomical Observatory in the Universidad de Los Andes (Venezuela) During the Last 100 Years: Difficulties, Projects and Realities
- Domingo Sánchez (Fundación de Estudios Indígenas. Puerto Ordaz, Venezuela), Astronomical and Related Knowledge of Venezuelan Indigenous Population

If you need more information, such as the talk abstracts, please contact me..

César Briceño
IYI 2009 SpoC for Venezuela
briceno@cida.ve cbriceno@cfa.harvard.edu

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 send me by email 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.redthreat.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 Organizing 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 2003 IAU General Assembly
- Commission 46 Terms of Reference, Rules & Guidelines

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Officers & Organizing Committee

The officers 2006-2009 are: the President, the Vice-President, and the Retiring President. Details of the Organizing Committee, and membership of the Program Groups are at http://astronomyeducation.org or http://iau46.obspm.fr/

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

These are listed at http://astronomyeducation.org or http://iau46.obspm.fr/