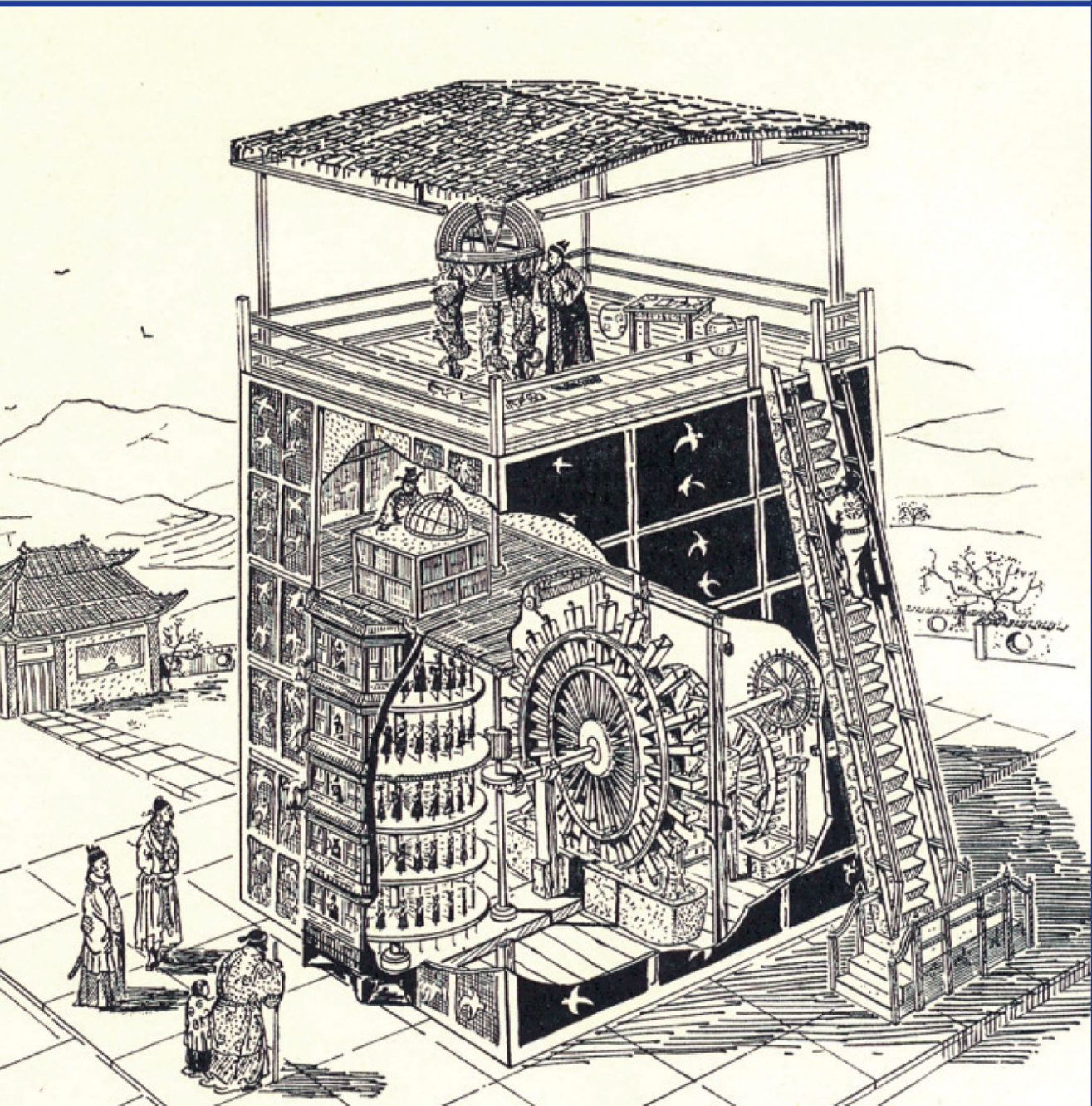


INTERNATIONAL
ASTRONOMICAL
UNION

UNION
ASTRONOMIQUE
INTERNATIONALE

INFORMATION BULLETIN JANUARY 2012



IAU EXECUTIVE COMMITTEE

PRESIDENT

Robert Williams

Space Telescope Science
Institute - STScI
3700 San Martin Drive
Baltimore, MD 21218-2410
USA
Tel +1 410 338 4963
Fax +1 410 338 2617
wms@stsci.edu

GENERAL SECRETARY

Ian F. Corbett

IAU
98bis, bd Arago
FR-75014 Paris
France
Tel +33 1 43 25 83 58
Fax +33 1 43 25 26 16
icorbett@eso.org

ADVISERS

Catherine J. Cesarsky

CEA Saclay
Bâtiment Siège
FR-91191 Gif-sur-Yvette
France
Tel +33 1 64 50 20 75
Secretariat: 1 64 50 23 03
Fax +33 1 64 50 16 63
catherine.cesarsky@cea.fr

PRESIDENT-ELECT

Norio Kaifu

National Astronomical
Observatory of Japan
2-21-1 Osawa, Mitaka-shi
JP-Tokyo 181-8588
Japan
Tel +81 42 675 5150
Fax +81 42 675 4967
kaifunorio@aol.com

ASSISTANT GENERAL SECRETARY

Thierry Montmerle

Institut d'astrophysique de
Paris - IAP
98bis bd Arago
F-75014 Paris
Tel +33 1 43 25 83 58
Fax +33 1 43 25 26 16
montmerle@iap.fr

Karel A. van der Hucht

SRON Netherlands Institute
for Space Research
Sorbonnelaan 2
NL-3584 CA Utrecht
The Netherlands
Tel +31 88 777 5729
Fax +31 88 777 5601
K.A.van.der.Hucht@sron.nl

VICE-PRESIDENTS

Matthew Colless

Anglo-Australian
Observatory
PO Box 296
AU-Epping NSW 1710
Australia
Tel +61 2 9372 4812
Fax +61 2 9372 4880
colless@aao.gov.au

Martha P. Haynes

Astronomy Dept.
Cornell University
530 Space Sciences Bldg
Ithaca, NY 14853-6801
USA
Tel +1 607 255 0610
Fax +1 607 255 8803
haynes@astro.cornell.edu

George K. Miley

Leiden Observatory
Leiden University
PO Box 9513
NL-2300 RA Leiden
The Netherlands
Tel +31 71 5275 849
Fax +31 71 5275 743
miley@strw.leidenuniv.nl

Jan Palouš

Academy of Sciences of
Czech Republic
Astronomical Institute
Boční II 1401
CZ-141 31 Praha 4
Czech Republic
Tel +420 267 103 065
Fax +420 272 769 023
palous@ig.cas.cz

Marta G. Rovira

CONICET
Avenue Rivadavia 1917
AR-Buenos Aires 1033
Argentina
Tel +54 11 5983 1400
Fax +54 11 4951 8552
mrovira@conicet.gov.ar

Giancarlo Setti

Dipto di Astronomia
Università di Bologna
Via Ranzani 1
IT-40127 Bologna
Italy
Tel +39 051 6399 365
Fax +39 051 2095 700
setti@ira.inaf.it

*Preface***EVENTS & DEADLINES**

1. XXVIII General Assembly, Beijing, 20-31 August 2012	
1.1 Progress Report from the LOC	7
1.2 Administrative Programme	9
1.3 Scientific Programme	
- Invited Discourses	10
- Symposia	11
- Joint Discussions	17
- Special Sessions	22
1.4 Related activities and events	
1.4.1 Special Lunchtime Lectures & Screenings	33
1.4.2 Women in Astronomy	33
1.4.3 Young Astronomers	34
1.4.4 IAU/UNAWWE Workshop & Day Camp	34
1.4.5 Workshop for Journal Authors and Referees	36
2. Future General Assemblies	
2.1 XXIX IAU General Assembly, 2015	36
2.2 XXX IAU General Assembly, 2018	36
3. Restructuring the IAU Divisions	37
4. Educational Activities	
4.1 OAD	
4.1.1 Highlights: 1 st April to 31 st December 2011	44
4.1.2 1 st Stakeholders' Workshop	48
4.2 Commission 46	
4.2.1 International School for Young Astronomers – ISYA	49
4.2.2 Network for Astronomy School Education – NASE	50
4.2.3 WWDA	
- Brunei Darussalam	58
- Republic of Kazakhstan	62
- Republic of Fiji	70
5. Delegates to other organisations	
5.1 62nd International Astronautical Congress – IAC	74

5.2	UTC for the 21 st Century – Discussion meeting	77
5.3	The International Space Weather Initiative (ISWI)	79
6.	IAU Executive Committee	
6.1	Officers’ Meeting OM2012	79
6.2	Executive Committee EC90, 18-20 April 2012, Paris	80
7.	Prizes and Awards	80
-	The Gruber Foundation Cosmology Prize	
-	The Gruber Foundation Fellowship Award 2012	
-	Nobel Prize winner at GA2012	
8.	Regional Meetings, July – December, 2011	79
-	APRIM2011	
9.	Meetings in 2012	
9.1	Symposia outside the General Assembly	85
9.2	Co-sponsored Meetings 2012	86
9.3	Other meetings of astrophysical interest	86
10.	IAU Publications	87
10.1	IAU <i>Highlights of Astronomy and Transactions</i>	
10.2	IAU Symposia Proceedings	
11.	Deceased Members	89

Preface

The IAU never seems to stand still, and 2012 is already bidding to be a major year of change. The Office of Astronomy for Development (OAD) held a very successful 'stakeholders' meeting in December 2011 during which the next stage in the evolution of the OAD was mapped out, with many enthusiastic volunteers offering their services. The OAD is issuing a call for proposals to host IAU Regional Nodes and Language Expertise Centres and its activities are expected to ramp up appreciably in 2012.

The last few months have seen preparations for this year's 28th General Assembly in Beijing, 20-31 August, advancing rapidly. The scientific programme has been fixed for some time, and the programmes of business meetings and social events are coming together. The deadline for Early Registration has been extended to Friday 17th March to give as many people as possible the opportunity to benefit from the substantially reduced registration fee.

The GA will be the major event of 2012, and there is one very important item of business in the formal sessions. Over the past year or so, a Task Group formed by the Executive Committee has been considering the structure of the Union, which has been in place since 1994. The present proposal is the result of discussions within the Task Group and further consultations with the EC at large and with Division Presidents. This group has now come up with a series of proposals, set out in this Information Bulletin, which are designed produce a scientifically more coherent and focussed Union and to enhance the role of the Divisions and the Division Presidents. The proposal will be considered by the IAU Executive Committee (EC) at its meeting on 18-20 April 2012 and, if endorsed by the EC, will be presented to the 2012 General Assembly (GA) in Beijing for a vote through a formal motion, which will be sent to members on 20th April.

In contrast, the evolution of Commissions is the responsibility of the Divisions (Statutes, Sect. 22), and is not subject to a vote at the GA. However, the impact of the proposed new Divisional structure on Commissions is already under discussion with the Divisions. The details of the transition from the current structure to the new structure, if approved, are currently being developed in consultation with the Divisions and will be presented to the GA.

This is a major change to the IAU and will have some impact on all members. Comments should be sent to Division Presidents not later than 1st April, in time for a synthesis to be forwarded to the Task Group for discussion within the EC.

Finally, it is with great sadness that we report the death of Franco Pacini on 25th January 2012. He served as President of the International Astronomical Union between 2001 and 2003, and was the inspiration behind the International Year

of Astronomy 2009, a huge success for scientific outreach and increasing the awareness of astronomy around the world. He will be missed by his many friends and colleagues.

Once again it is my pleasure to thank my colleagues on the Executive Committee, the Division Presidents, and Vivien Reuter and Jana Žilová in the IAU Secretariat, without whose contribution the IAU would be a much less effective organisation.

*Ian Corbett
General Secretary
Paris, January 2012*

EVENTS AND DEADLINES

2012

- 21 Jan-3 Feb ***IAUS 287 Cosmic masers - from OH to HO***
Stellenbosch, South Africa
- 23-25 Jan Officer's Meeting (OM2012) in Paris
- 6-26 Feb ***ISYA – International School for Young Astronomers***
Cape Town, South Africa
- 21 Feb GA2012: Deadline for submission of scientific and administrative Resolutions with no financial implications to the General Secretary
- 29 Feb GA2012: Deadline for submission of grant applications
- 12-16 Mar ***IAUS 279 Gamma-Ray Bursts, Nikko, Japan***
(postponed from 18-22 April, 2011, because of the tsunami)
- 1 Apr Deadline for Proposals to host the XXXth GA in 2018
- 18-20 Apr Executive Committee Meeting EC 90 in Paris
- 20-31 Aug ***IAU XXVIIIth General Assembly, Beijing, China***
EC 91, part I Sunday 19 August
EC 91, part II Thursday 23 August
EC 91, part III Wednesday 29 August
EC 92, Saturday 1 September
- 1 Sept Deadline for Letters of Intent for 2014 Symposia
- 30 Nov Due date for applications for the Gruber Foundation Fellowships 2013
- 15 Dec Deadline for submission of Proposals for 2014 Symposia
- 15 Dec Deadline for nominations for the Gruber Foundation Cosmology Prize 2013

2013

- 1 Sept Deadline for Letters of Intent for 2015 Symposia (GA Year)
- 30 Nov Due date for applications for the Gruber Foundation Fellowships 2014
- 15 Dec Deadline for submission of Proposals for 2015 Symposia
- 15 Dec Deadline for nominations for the Gruber Foundation Cosmology Prize 2014

2015

- 3-14 Aug ***IAU XXIXth General Assembly, Honolulu, Hawai'i, USA***

1. XXVIII General Assembly, Beijing, 20-31 August 2012

1.1 Progress Report from the LOC

From 20 to 31 August 2012, over 3,000 astronomers from around the world are expected to gather in Beijing, to exchange the latest reports on progress in all fields of astronomy and to discuss the future development of astronomy worldwide. This is a major event in the history of Chinese astronomy, and it is the first time to host such an important event since the establishment of the Chinese Astronomical Society. It will have a profound impact on the development of Chinese astronomy, and promote and expand the international exchanges. Within the six intervening years, from winning the bid to staging the event, this will be with top priority for the Chinese Astronomical Society and the whole astronomical community in China. Till now, the local organising committee has made enormous efforts in planning and preparing for the General Assembly. This report will outline all important progress as of January 2012.

Communication and collaboration with the IAU

In October of 2011, the Local Organising Committee (LOC) welcomed a delegation from the IAU, including General Secretary Dr. Ian Corbett, Assistant General Secretary Dr. Thierry Montmerle and office representative Mrs. Vivien Reuter. During the week-long session, the LOC presented detailed planning efforts and discussed outstanding issues jointly together with IAU delegation. Outcomes were that planning efforts are well under way, and that the XXVIII General Assembly promises to become one of the largest gatherings of astronomers ever. On a monthly basis, the LOC conducts meetings to discuss planning efforts and outstanding issues.

Venue and Accommodation

After long-term negotiation with the venue, appropriate collaboration with the China National Convention Center has been established. The venue will be an excellent host to the intensive scientific and social programmes. The LOC has secured hotel rooms in the direct vicinity of the Convention Center in various price ranges. Reservations can be made directly to the hotels.

Meanwhile, the 23rd International Congress of Theoretical and Applied Mechanics (ICTAM 2012) will be held on 19-24 August 2012, and this may challenge the adequacy of hotel rooms. Therefore, the LOC strongly encourages participants to reserve rooms as soon as possible to be able to benefit special booking conditions and availability.

For students, budget accommodation is available. As these budget hotels do not provide an online reservation possibility in English, the LOC can facilitate a reservation upon request to astronomy2012@mci-group.com. We will verify applicable rates at the hotel and provide you with booking information.

Registration, abstract submission and visa application

Online registration for the 2012 IAU GA has been available since 1st September 2011, with the early registration extended to 17th March 2012. To date, the LOC has received many registrations both from China and outside.

Based on the LOC budget and the charge for a copy of the Proceedings of one Symposium or Highlights, the early registration fee will be 4220 CNY (3800 registration plus 420 Proceedings); while the normal registration fee will be 4556 CNY (4000 registration plus 556 Proceedings).

Early registrants can optionally buy additional copies of the Proceedings of a Symposium at the concessionary price of 315 CNY and normal registrants at 420 CNY if they order at time of registration. The registration fee for students and seniors does not include a copy of the Proceedings, but they will have the option to purchase a copy at either 420 or 556 CNY, depending on the time of registration.

Abstract submission is also available on the General Assembly web pages. The deadline for abstract submission is 29th February 2012. Accepted abstract submitters will be notified by 5th May 2012.

If so required, the LOC is able to prepare and distribute official visa invitation letters. Participants are advised to check with the Chinese embassies in their respective countries if such a visa is required. Most countries will grant a visa together with flight and hotel itineraries.

Webpage and publicity

The official website for the 2012 IAU GA www.astronomy2012.org features the latest scientific programme of the General Assembly, as well as social programme and general information.

On 6 August 2011, a press conference was held at CNCC, officially announcing the 2012 IAU GA to the media and the public. The conference attracted a large number of relevant media and exposure.

A poster campaign was launched with a distinct branding featuring a Chinese landscape background image, combining elements of Chinese ink painting and the Great Wall. The top left is the Suzhou Stone-carved Star Map from 13th century China, representing astronomical achievements in ancient China. On the right, the poster features the Guoshoujing Telescope (LAMOST), representing the latest development in astronomy in contemporary China. The silk belt in red and blue, flowing from on the top right to the left bottom, and connecting the IAU logo with the stars, the Great Wall, the Suzhou Stone-carved Star Map, and LAMOST, symbolizes a new concept “silk road” connecting astronomy of past and present, as well as West and East. Posters are available for download on www.astronomy2012.org or upon request to the organisers.

Social Programme

The Local Organising Committee has announced the official banquet will be celebrated on the special date of the Qixi Festival, which falls on the seventh day of the seventh lunar month on the Chinese calendar. In late summer, the stars Altair and Vega are high in the night sky, and the Chinese tell an incredible love story during this festival. While the official venue will still be announced, the banquet will be a great evening celebrating this story. Tickets for the dinner can be purchased upon registering. Participants are advised to book early to ensure a seat.

Besides the official banquet, the general assembly will feature a number of social elements to enhance networking among participants, including the opening- and closing ceremony and opening reception at the CNCC.

Tours

An exciting number of optional tours for General Assembly participants and accompanying persons have been made available by the Local Organising Committee. These tours have been specifically designed to allow a taste and insight of Chinese culture, architecture, scenery and lifestyle. During the GA, tours will focus on Beijing and its surrounding famous sites, while pre- and post-congress tours will take participants to other astronomically relevant sites in China. Information is available on www.astronomy2012.org.

Upcoming Activities

In the coming months, the LOC and its partners will work diligently to finalise logistical arrangements for the General Assembly and ensure that participants will have a great experience in Beijing, 2012. Announcements of the meeting will be made wherever possible.

1.2 Administrative Programme

Monday 20th August

14h	National Representatives meeting
15h	Finance Committee meeting
16h	Nominations Committee meeting

Tuesday 21st August

14h	Opening Ceremony
16-18h	First GA business session

Wednesday 29th August

14h	National Representatives meeting
15h	Finance Committee meeting
16h	Nominations Committee meeting

Thursday 30th August

14-15h30 Second GA business session 15.30

16h Closing Ceremony

1.3 Scientific Programme (*status: January 2012*)

For updates, see: <http://www.astronomy2012.org/>

INVITED DISCOURSES

- ID1** “The Zoo of Galaxies” Karen Masters
Monday, 20th August
- ID2** “Supernovae, the Accelerating Cosmos, and Dark Energy”
Brian Schmidt, *Wednesday, 22nd August*
- ID3** “The Herschel View of Star Formation” Philippe André
Wednesday, 29th August
- ID4** “Past, Present and Future of Chinese Astronomy” Cheng Fang
Thursday, 30th August

ID Abstracts to date:

ID3 The Herschel View of Star Formation

*Philippe André, Laboratoire AIM Paris-Saclay, CEA Saclay,
France*

Abstract

Star formation is one of the most fundamental, most complex, and least understood processes in astrophysics. Recent studies of the nearest star-forming clouds of the Galaxy at submillimeter wavelengths with the Herschel Space Observatory have provided us with unprecedented images of the initial conditions and early phases of the star formation process.

The Herschel images reveal an intricate network of filamentary structure in every interstellar cloud. These filaments all exhibit remarkably similar widths - about one third of a light year - but only the densest ones contain prestellar cores, the seeds of future stars. The Herschel results suggest favor a scenario in which interstellar filaments and prestellar cores represent two key steps in the star formation process: first turbulence stirs up the gas, giving rise to a universal web-like structure in the interstellar medium, then gravity takes over and controls the further fragmentation of filaments into prestellar cores and ultimately protostars. This scenario provides new insight into the inefficiency of star formation, the origin of stellar masses, and the global rate of star formation in galaxies. Despite an apparent complexity, global star formation may be governed by relatively simple universal laws from filament to galactic scales.

ID4 Past, Present and the Future of Chinese Astronomy

*Cheng Fang, School of Astronomy & Space Science, Nanjing University,
Nanjing, China*

Abstract

In ancient history, Chinese astronomers had got tremendous achievement. Since the main purpose of the ancient Chinese astronomy was to study the correlation between man and the universe, all the Emperors made ancient Chinese astronomy the highly regarded science throughout the history. After brief introduction of the achievement of ancient Chinese astronomy, I describe the beginnings of modern astronomy research in China in the 20th century. Benefited from the fast development of Chinese economy, the research in astronomy in China has made remarkable progress in the recent years. The number of astronomer has doubled in the past ten years, and the number of graduated students has grown over 1500. The current budget for astronomy research is ten times larger than that ten years ago. The research covers all fields in astronomy, from galaxy to the Sun. The recent progress in both the instruments, such as the *Large Sky Area Multi-Object Fiber Spectroscopic Telescope* (LAMOST), and the theoretical research will be briefly presented. The ongoing and the future projects on the space- and ground-based facilities will be described, including *Five Hundred Meter Aperture Spherical Radio Telescope* (FAST), “*Chang E*” project (Lunar mission), *Hard X-ray Modulate Telescope* (HXMT), *Deep Space Solar Observatory* (DSO), *Chinese Antarctic Observatory* (CAO), and *Chinese Spectral Radio-heliograph* (CSRH) etc.

SYMPOSIA**IAUS 288 Astrophysics from Antarctica
20-24 August**

Coordinating Division: IX - Optical & Infrared Techniques

Contact: Michael Burton m.burton@unsw.edu.au

URL: <http://www.phys.unsw.edu.au/IAUS288>

SOC Co-Chairs: Michael Burton (Australia), Xiangqun Cui (China Nanjing)

SOC Members:

Leo Bronfman (Chile), Nicolas Epchtein (France), Peter Gorham (USA), Takashi Ichikawa (Japan), Doug Johnstone (Canada), John Kovac (USA), Silvia Masi (Italy), Young Minh (Korea, Rep of), Klaus Strassmeier (Germany), Ji Yang (China Nanjing), Zhaohui Shang (China Nanjing)

Editors of Proceedings: Michael Burton (Australia), Xiangqun Cui (China Nanjing), Nick Tothill (Australia)

Topics:

- Astrophysics from Antarctica (Plenary overview)
- Understanding the Antarctic Environment: the advantages & disadvantages
- Cosmic Microwave Background Radiation
- Neutrinos
- High Energy Astrophysics
- Sub-millimeter and Terahertz Astronomy
- Optical and Infrared Astronomy
- Antarctic Stations and their Observatories
- The Arctic Analogue
- Facilities for the Future

**IAUS 289 Advancing the physics of cosmic distances
27-31 August**

Coordinating Division: VII - Galactic System

Contact: Richard de Grijs grijs@pku.edu.cn

URL: <http://www.mporzio.astro.it/IAUS289>

SOC Co-Chairs: Richard de Grijs (China Nanjing), Giuseppe Bono (Italy)

SOC Members:

Susan Cartwright (UK), Robin Ciardullo (USA), Andrei Dambis (Russian Federation), Michael Feast (South Africa), Wendy Freedman (USA), Wolfgang Gieren (Chile), Martin Groenewegen (Belgium), Jeremy Mould (Australia), Carme Jordi (Spain), Mark Reid (USA), Myung-Hyun Rhee (Korea, Rep of), Don VandenBerg (Canada), Rogier Windhorst (USA), Ye Xu (China Nanjing)

Editors of Proceedings: Richard de Grijs (China Nanjing), Giuseppe Bono (Italy)

Topics:

- The solar neighborhood (mostly direct methods, focus on physics in all cases)
- From the Milky Way to the Local Group (direct and indirect methods; calibration of distance tracers)
- Reaching Virgo cluster distances and beyond (more general methods applicable to galaxy systems)
- From nearby galaxies to cosmological distances (distance measurements beyond the reasonably robust regime)

- Common uncertainties and pitfalls; Exciting new developments and future prospects in the era of new technological developments

IAUS 290 Feeding compact objects: Accretion on all scales
20-24 August

Coordinating Division: XI - Space & High Energy Astrophysics

Contact: Chengmin Zhang zhangcm@bao.ac.cn

URL: <http://iaus290.bao.ac.cn/>

SOC Co-Chairs: Tomaso Belloni (Italy), Mariano Méndez (Netherlands), Zhang Chengmin (China Nanjing), Zhang Shuangnan (China Nanjing)

SOC Members:

Roger Blandford (USA), Chryssa Kouveliotou (USA), Ramesh Narayan (USA), Günther Hasinger (Germany), Brian Warner (South Africa), Donald Melrose (Australia), Rashid Sunyaev (Russian Federation), Gustavo Romero (Argentina), Jean-Pierre Lasota (France), Bozena Czerny (Poland), Chris Done (UK), Ken Ebisawa (Japan), Zhang Chengmin (China Nanjing)

Editors of Proceedings: Tomaso Belloni (Italy), Mariano Méndez (Netherlands), Zhang Chengmin (China Nanjing), Zhang Shuangnan (China Nanjing)

Topics:

- Accretion phenomenon in AGN, X-ray binaries, CVs
- Probing General Relativity through accreting systems
- Multi-wavelength coverage from radio to gamma rays
- Magnetic environments around compact objects
- Large scale properties of accretion
- Accretion-ejection connection
- Jets & outflows
- Time variability across electromagnetic spectrum
- Scaling properties & unified models
- Instrumentation for next decade

IAUS 291 Neutron stars and pulsars: Challenges and opportunities after 80 Years, 20-24 August

Coordinating Division: XI - Space & High Energy Astrophysics

Contact: Richard Manchester dick.manchester@csiro.au

URL: <http://www.pulsarastronomy.net/IAUS291/>

SOC Co-Chairs: R. N. Manchester (Australia), Renxin Xu (China Nanjing)

SOC Members:

Sarah Buchner (South Africa), Yashwant Gupta (India), Jinlin Han (China Nanjing), Rick Jenet (USA), Vicky Kaspi (Canada), Michael Kramer (Germany), Maura McLaughlin (USA), Andreas Reisenegger (Chile), Roger Romani (USA), Shinpei Shibata (Japan), Marten van Kerkwijk (Canada), Joeri van Leeuwen (Netherlands), Nina Wang (China Nanjing), Silvia Zane (UK)

Editor of Proceedings: Joeri van Leeuwen (Netherlands)

Topics:

- Pulsar genesis and neutron-star structure
- X-ray and gamma-ray emission from pulsars, especially recent results from Fermi
- Pulsar diversity – relationship of magnetars, INS, CCOs, RRATs to radio pulsars
- Pulsar astronomy with large radio telescopes – looking forward to FAST and the SKA
- Toward a census of Galactic neutron stars – Galactic distribution and evolution
- Magnetospheric structure – pair creation and currents, magnetic decay, pulsar braking
- Non-thermal emission physics – giant radio pulses, mode changing, high-energy emission
- Binary pulsars – eclipsing systems, post-Newtonian physics, stellar masses
- Pulsar Timing Arrays – detection of gravitational waves and a pulsar time standard
- Pulsars as probes of the interstellar medium

IAUS 292 Molecular Gas, Dust, and Star Formation in Galaxies
20-24 August

Coordinating Division: VIII - Galaxies & the Universe

Contact: Martin Bureau bureau@astro.ox.ac.uk

URL: <http://www.a.phys.nagoya-u.ac.jp/IAUS292/>

SOC Co-Chairs: Martin Bureau (United Kingdom), Yasuo Fukui (Japan)

SOC Members:

Kate Brooks (Australia), Leonardo Bronfman (Chile), Daniela Calzetti (USA), Paola Caselli (UK), Françoise Combes (France), François Boulanger (France), Erwin de Blok (South Africa), Yu Gao (China Nanjing), Mark Krumholz (USA), Jürgen Ott (USA), Linda Tacconi (Germany), Enrique Vazquez-Semadeni (Mexico), Tony Wong (USA)

Editors of Proceedings: Tony Wong (USA), Jürgen Ott (USA)

Topics:

- (Giant) molecular clouds (distribution, structure, mass, kinematics, lifetime, formation/evolution) and star formation in the Milky Way
- ISM properties and diagnostics (physical conditions, excitation mechanisms, atomic-molecular transition, PDRs, XDRs, chemistry)
- Atomic and molecular gas in galaxies (Magellanic Clouds; nearby dwarfs, spirals, early-types; cooling flows; radio galaxies; high-redshift galaxies; epoch of reionisation)
- Dust (formation and evolution, PAHs, FIR/sub-mm lines)
- Comparison with other star formation tracers (X-ray, UV, optical/NIR emission lines, etc)
- Star Formation (star formation laws, efficiency, history)
- Gas accretion, feedback, outflows

IAUS 293 Formation, detection, and characterisation of extrasolar habitable planets, 27-31 August

Coordinating Division: III - Planetary Systems Sciences

Contact: Nader Haghighipour nader@ifa.hawaii.edu

URL: www.ifa.hawaii.edu/iau293

SOC Co-Chairs: Nader Haghighipour (USA), Ji-Lin Zhou (China Nanjing)

SOC Members:

Alan Boss (USA), Rudolf Dvorak (Austria), Pascale Ehrenfreund (Netherlands), Sylvio Ferraz-Mello (Brazil), Muriel Gargaud (France), Krzysztof Gozdziewski (Poland), Caitlin Griffith (USA), Shigeru Ida (Japan), Doug Lin (USA), Rosemary Mardling (Australia), Frédéric Masset (Mexico), Karen Meech (USA), Stéphane Udry (Switzerland), Gang Zhao (China Nanjing)

Editors of Proceedings: Nader Haghighipour (USA), Ji-Lin Zhou (China Nanjing)

Topics:

- Formation of terrestrial/habitable planets
- Water on Earth and in other Solar System bodies
- Methods of detecting habitable planets (RV, Transit, TTV, Microlensing, Astrometry) and mass determination
- Processes affecting close-in planets (tides, tidal-locking, radiation)
- Habitability and habitable zone
- Interior dynamics of habitable planets
- Atmospheric models and habitability
- Planetary magnetic field and its connection to habitability

- Prospects of the detection of biosignatures of extrasolar habitable planets
- Habitability in extreme planetary systems (e.g., systems with: multiple planets, giant planets in close-in and/or eccentric orbits, binary star systems, Habitable moons, Trojan planets)

IAUS 294 Solar and astrophysical dynamos and magnetic activity
27-31 August

Coordinating Division: II - Sun & Heliosphere

Contact: Alexander Kosovichev sasha@sun.stanford.edu

URL: <http://sun.stanford.edu/IAUS294/>

SOC Co-Chairs: Alexander Kosovichev (USA), Yihua Yan (China Nanjing), Lidia van Driel-Gesztelyi (France), Elisabete de Gouveia Dal Pino (Brazil)

SOC Members:

Rainer Beck (Germany), Axel Brandenburg (Sweden), Gianna Cauzzi (Italy), Arnab Rai Choudhuri (India), Louise Harra (UK), Maarit Korpi (Finland), Vladimir Kuznetsov (Russian Federation), Aimee Norton (Australia), Kristof Petrovay (Hungary), Nikolai Piskunov (Sweden), Takashi Sekii (Japan), Nataliya Shchukina (Ukraine)

Editors of Proceedings: Alexander Kosovichev (USA), Yihua Yan (China Nanjing), Lidia van Driel-Gesztelyi (France), Elisabete de Gouveia Dal (Brazil)

Topics:

- Solar dynamo and activity cycles: observations, theories and predictions
- Stellar dynamos and cycles
- Local dynamo: ubiquitous small-scale magnetic fields and “hidden magnetism”
- Role of magnetic dynamos in energizing the solar/stellar atmospheres and coronal activity
- Planetary dynamos
- Dynamos in accretion disks, galaxies, ISM, IGM
- Advances in dynamo theories, numerical simulations and experiments
- Critical physical ingredients for dynamos: turbulence and instabilities
- Current and future observing programmes from the ground and space
- New frontiers in understanding of the origins of cosmic magnetism

IAUS 295 *The intriguing life of massive galaxies*
27-31 August

Coordinating Division: VIII - Galaxies & the Universe

Contact: Daniel Thomas daniel.thomas@port.ac.uk

URL: <http://www.icg.port.ac.uk/IAUS295>

SOC Co-Chairs: Daniel Thomas (UK), Anna Pasquali (Germany),
 Ignacio Ferreras (UK)

SOC Members:

Roger Davies (UK), Avishai Dekel (Israel), Richard Ellis (USA), Yipeng Jing (China Nanjing), Xu Kong (China Nanjing), Shude Mao (UK), Eric Peng (China Nanjing), Alvio Renzini (Italy), Rachel Somerville (USA), Ian Smail (UK), Linda Tacconi (Germany), Christy Tremonti (USA), XianZhong Zheng (China Nanjing)

Editors of Proceedings: Daniel Thomas (UK), Anna Pasquali (Germany),
 Ignacio Ferreras (UK)

Topics:

- The first galaxies in the very early Universe
- Massive galaxies at high and intermediate z
- Luminous red galaxies at recent epochs
- Early-type galaxies in the local Universe
- Brightest cluster galaxies
- Stellar populations and chemical enrichment
- Dark matter and supermassive black holes
- The environment of massive galaxies
- Galaxy formation modelling and mass assembly
- Supernova and AGN feedback, cold accretion

JOINT DISCUSSIONS

JD1 *The highest-energy gamma-ray universe observed with Cherenkov telescope arrays, 20-21 August*

Coordinating Division: XI - Space & High Energy Astrophysics

Contact: Diego F. Torres dtorres@icec.uab.es

URL: <http://www.ice.csic.es/research/JD-IAU>

SOC Co-Chairs: Catherine Cesarsky (France), Stefan Wagner (Germany)

SOC Members:

Aya Bamba (Japan), Zhen Cao (China Nanjing), Dainis Dravins (Sweden), Brenda Dingus (USA), Tadayasu Dotani (Japan), Luke Drury (Ireland), Anne Green (Australia), Felix Mirabel (France), Helene Sol (France), Diego F. Torres (Spain), Meg Urry (USA), Shuang-Nan Zhang (China Nanjing)

Editors of Proceedings: Diego F. Torres (Spain), Catherine Cesarsky (France), Helene Sol (France), Stefan Wagner (Germany)

Topics:

- Space and High-energy astrophysics
- gamma-ray astronomy
- radio astronomy
- X-ray astronomy
- Galaxies and the Universe
- Galactic Systems
- Stars
- Interstellar medium
- Cosmic rays

JD2 **Very massive stars in the local universe**
20-22 August

Coordinating Division: IV - Stars

Contact: Jorick Vink jsv@arm.ac.uk

URL: <http://www.arm.ac.uk/IAU>

SOC Chair: Jorick S. Vink (United Kingdom)

SOC Members:

Artemio Herrero (Spain), Alexander Heger (USA), Dany Vanbeveren (Belgium), Anthony Moffat (Canada)

Editor of Proceedings: Jorick S. Vink (United Kingdom)

Topics:

- Weighing the most massive stars from their binary motions
- Stellar spectra of O and Wolf-Rayet stars
- Mass determinations from stellar spectroscopy and model atmosphere analysis
- Formation of the most massive stars
- Mass loss mechanisms, incl. eruptions of Luminous Blue Variables
- Stellar structure and evolution
- The fate of the most massive stars (over cosmological time)
- Mass and energy return to the interstellar medium (ISM)

JD3 3-D views of the cycling Sun in stellar context
20-22 August

Coordinating Division: II - Sun & Heliosphere

Contact: Lidia van Driel-Gesztelyi Lidia.vanDriel@obspm.fr

URL: http://www.mssl.ucl.ac.uk/iau_c10/iau28ga_jd03.html

SOC Co-Chairs: Lidia van Driel-Gesztelyi (France), Carolus J. Schrijver (USA), Gibor B. Basri (USA)

SOC Members:

Gianna Cauzzi (Italy), Peng-Fei Chen (China Nanjing), Katalin Olah (Hungary), Rachel Osten (USA)

Editor of Proceedings: Lidia van Driel-Gesztelyi (France)

Topics:

- Driving magnetic activity: differential rotation from seismology and patterns in surface activity – Observations and theory
- Magnetic activity from microflares to megaflares – Observations and theory
- 3-D views of the Sun and active stars – surfaces and interiors
- 3-D views of the Sun and active stars – atmospheres and astrospheres
- Solar and stellar cycles

JD4 Ultraviolet emission in early-type galaxies
20-22 August

Coordinating Division: VIII - Galaxies & the Universe

Contact: Sugata Kaviraj s.kaviraj@imperial.ac.uk

URL: http://astroweb1.physics.ox.ac.uk/~Kaviraj/IAU2012_JD4/home

SOC Co-Chairs: Sugata Kaviraj (UK), Suhyoung Yi (Republic of Korea), Martin Bureau (UK)

SOC Members:

Beatriz Barbuy (Brazil), Joss Bland-Hawthorn (Australia), Daniela Calzetti (USA), Matthew Colless (Australia), J. Jesus Gonzalez (Mexico), Genevieve Graves (USA), Zhanwen Han (China Nanjing), Robert O'Connell (USA), C Megan Urry (USA)

Editors of Proceedings: Sugata Kaviraj (UK), Suhyoung Yi (Republic of Korea), Martin Bureau (UK)

Topics:

- Observational evidence for enhanced UV emission in early-type galaxies
- Extended horizontal branch, post-asymptotic giant branch, and binary stars
- Young stars and star formation
- Globular clusters and Helium enhancement
- Active galactic nuclei
- UV detectors and telescopes

**JD5 From meteors and meteorites to their parent bodies:
Current status and future developments, 22-24 August**

Coordinating Division: III - Planetary Systems Sciences

Contact: Jun-ichi Watanabe jun.watanabe@nao.ac.jp

URL: http://chiron.mtk.nao.ac.jp/IAUXXVIIIIGA_JD5/

SOC Co-Chairs: Peter Jenniskens (USA), Jin Zhu (China Nanjing), Iwan Williams (UK)

SOC Members:

Michael A'Hearn (USA), Peter Brown (Canada), Tadeusz Jopek (Poland), Karen Meech (USA), Sho Sasaki (Japan), Caroline Smith (UK), Mitsuru Soma (Japan), Pavel Spurny (Czech Republic), Jérémie Vaubaillon (France), Hitoshi Yamaoka (Japan), Makoto Yoshikawa (Japan), Hajime Yano (Japan), Masateru Ishiguro (Republic of Korea), Daisuke Kinoshita (China Taipei)

Editor of Proceedings: Peter Jenniskens (United States)

Topics:

- Source of meteorites, meteors, & IDPs
- Parent bodies & their interrelations
- Historic records of comets, meteors & meteorite falls
- Meteoroid streams & NEOs
- Results from Hayabusa, EPOXI, DAWN etc.
- Meteorite types & asteroid classes
- Volatiles in the asteroid belt comets
- Future space mission and ground-based survey
- Recovery of meteorites of 2008TC8 etc.
- Role of CBAT & Outreach activities

JD6 The connection between radio properties and high-energy emission in AGNs, 23-24 August

Coordinating Division: X - Radio Astronomy

Contact: Gabriele Giovannini ggiovann@ira.inaf.it

URL: <http://www.ira.inaf.it/meetings/iau2012jd6/>

SOC Co-Chairs: Gabriele Giovannini (Italy), Xiaoyu Hong (China Nanjing), Laura Maraschi (Italy)

SOC Members:

Teddy Cheung (USA), Ed Fomalont (USA), Luigi Foschini (Italy), Marcello Giroletti (Italy), Seiji Kamenno (Japan), Matthias Kadler (Germany), Yuri Kovalev (Russian Federation), Thomas Krichbaum (Germany), Alan Marscher (USA), Raffaella Morganti (Netherlands), David Paneque (Germany), Maria Rioja (Australia), Eduardo Ros (Spain), Lukasz Stawarz (Japan), Meg Urry (USA), Anton Zensus (Germany)

Editors of Proceedings: Gabriele Giovannini (Italy), Teddy Cheung (USA), Marcello Giroletti (Italy), Laura Maraschi (Italy)

Topics:

- The AGN population as seen in the radio and gamma-ray bands
- High resolution core and jet properties
- Multi-wavelength correlations and variability
- Jet physics and the role of BH spin and BH accretion

JD7 Space-time reference systems for future research 27-29 August

Coordinating Division: I - Fundamental Astronomy

Contact: Dennis McCarthy dennis.mccarthy@usno.navy.mil

URL: <http://maia.usno.navy.mil/jd7.index>

SOC Co-Chairs: Nicole Capitaine (France), Sergei Klioner (Germany), Dennis McCarthy (USA)

SOC Members:

George H. Kaplan (USA), Zoran Knezevic (Republic of Serbia), Dafydd Wyn Evans (UK), Harald Schuh (Austria), Richard N. Manchester (Australia), Gérard Petit (France)

Editors of Proceedings: George Kaplan (USA), Dennis McCarthy (USA)

Topics:

- Space-time reference systems compatible with general relativity
- Accurate planetary ephemerides and time references for space missions and pulsar investigations
- Development of radio reference frames for space missions and astronomy
- Development of optical reference frames for exoplanet investigations

SPECIAL SESSIONS**SpS1 Origin and complexity of massive star clusters***20-24 August*

Coordinating Division: VII - Galactic System

Contact: Giampaolo Piotto giampaolo.piotto@unipd.it**URL:** http://www.physics.drexel.edu/~sps1_2012/

SOC Co-Chairs: Giampaolo Piotto (Italy), Enrico Vesperini (USA)

SOC Members:

Antonio Aparicio (Spain), Beatrice Barbay (Brazil), Kenji Bekki (Australia), Torsten Boeker (Netherlands), Corinne Charbonnel (France), Cathie Clarke (UK), Francesca D'Antona (Italy), Licai Deng (China Nanjing), Bruce Elmegreen (USA), Raffaele Gratton (Italy), Young Wook (Republic of Korea), Steven Majewski (USA), Eline Tolstoy (Netherlands), Hans Zinnecker (USA)

Editors of Proceedings: Enrico Vesperini (USA), Giampaolo Piotto (Italy)

Topics:

- Multiple stellar populations in Galactic and extragalactic globular star clusters
- Multiple population star cluster formation and dynamical evolution
- Stellar evolution and the chemical evolution of star clusters
- Relation between globular clusters, dwarf galaxies, nuclear star clusters
- Relation between globular cluster stellar populations and Galactic halo, disk and bulge stars

SpS2 Cosmic evolution of groups and clusters of galaxies*20-24 August*

Coordinating Division: XI - Space & High Energy Astrophysics

Contact: Jan Vrtilek jvrtilek@cfa.harvard.edu
URL: <http://hea-www.cfa.harvard.edu/IAU/program.html>

SOC Co-Chairs: Jan M. Vrtilek (USA), Laurence P. David (USA)

SOC Members:

Monique Arnaud (France), Paulo Lopes (Brazil), D. J. Saikia (India), Omar Lopez-Cruz (Mexico), Eugene Churazov (Russian Federation), Sabine Schindler (Austria), Diana Worrall (UK), Matthew Colless (Australia), Noam Soker (Israel), Manolis Plionis (Greece), Yipeng Jing (China Nanjing), Jeremy Lim (China Nanjing)

Editors of Proceedings: Jan Vrtilek (USA), Laurence David (USA)

Topics:

- Cluster Surveys
- Structure formation: Comparison between observations and simulations
- Cluster and group mass measurements (X-ray, optical, and lensing)
- Gas Mass Fraction and Missing Baryons
- Cooling and AGN Feedback
- Star Formation in the Central Dominant Galaxy in Clusters
- Chemical Enrichment over Cosmic Times
- Radio halos (mini, large-scale, relics)
- Impact of new radio observatories (LOFAR, ALMA, SKA)
- Clusters as laboratories for studying the effects of environment on galaxy evolution

SpS3 Galaxy evolution through secular processes
20-24 August

Coordinating Division: VIII - Galaxies & the Universe

Contact: Ron Buta rbuta@bama.ua.edu

URL : <http://bama.ua.edu/~rbuta/iau-2012-sps3/>

SOC Co-Chairs: Ronald J. Buta (USA), Daniel Pfenniger (Switzerland)

SOC Members:

John Kormendy (USA), Simon White (Germany), Kenneth C. Freeman (Australia), Xiaolei Zhang (USA), Robert C. Kennicutt (UK), Eija Laurikainen (Finland), Jerry Sellwood (USA), Juntao Shen (China Nanjing), Reynier Peletier (Netherlands), Lourdes Verdes-Montenegro (Spain), Johan Knapen (Spain), Lia Athanassoula (France), Bruce G. Elmegreen (USA), Françoise Combes (France)

Editors of Proceedings: Ronald J. Buta (USA), Daniel Pfenniger (Switzerland)

Topics:

- Observational evidence of secular evolution in Milky Way/other galaxies
- Influence of internal/external perturbations
- bulges/disks stellar populations
- Star formation, recycling, chem evol.
- Early vs late-type galaxies
- Theoretical mechanisms
- Lambda-CDM model vs secular evolution
- Role of collective effects
- Results of numerical simulations
- Implications new instruments/surveys

SpS4 New era for studying interstellar and intergalactic magnetic fields, 20-23 August

Coordinating Division: X - Radio Astronomy

Contact: JinLin Han hjl@nao.cas.cn

URL: <http://iau2012sps4.csp.escience.cn>

SOC Co-Chairs: JinLin Han (China Nanjing), Marijke Haverkorn (Netherlands), Robert Braun (Australia)

SOC Members:

Rainer Beck (Germany), Robert Braun (Australia), Jo-Anne Brown (Canada), Elisabete de Gouveia Dal Pino (Brazil), Torsten Ensslin (Germany), Luigina Feretti (Italy), Bryan M. Gaensler (Australia), Tom Troland (USA), Alex Lazarian (USA), Giles Novak (USA), Eve Ostriker (USA), Dongsu Ryu Chungnam (Republic of Korea), Kandaswamy Subramanian (India)

Editors of Proceedings: Marijke Haverkorn (Netherlands), JinLin Han (China Nanjing)

Topics:

- Magnetic fields through new generation of instruments
- Magnetic fields in molecular clouds and star formation
- Magnetic fields and dynamics in interstellar medium
- Magnetic fields in the Galactic diffuse medium
- Magnetic fields in diverse nearby galaxies
- Magnetic fields in intra-cluster medium
- Magnetic fields in cosmic structure and early universe

SpS5 The IR view of massive stars: the main sequence and beyond
23-24 August

Coordinating Division: IV - Stars

Contact: Margaret Hanson hansonmm@ucmail.uc.edu

URL : http://www.gaphe.ulg.ac.be/IAU_XXVIII/index.html

SOC Chair: Yaël Nazé (Belgium)

SOC Members:

Jura Borrisova (Chile), Margaret Hanson (United States), Fabrice Martins (France), Paco Najarro (Spain), Barbara Whitney (United States)

Editor of Proceedings: Yaël Nazé (Belgium)

Topics:

- Obscured and distant clusters, with subtopics
 - massive stars near the Galactic Centre
 - newly discovered young clusters
 - distant massive stars
- Stellar and wind parameters, with subtopics
 - improvement in atomic data
 - results from atmosphere modelling
 - results from interferometry studies
- Matter ejection and feedback, with subtopics
 - observed LBV and WR nebulae
 - implications on the mass-loss evolution
 - dust in SNe

SpS6 Science with large solar telescopes
22-24 August

Coordinating Division: II - Sun & Heliosphere

Contact: Gianna Cauzzi gcauzzi@arcetri.astro.it

URL: <http://www.arcetri.astro.it/IAUSpS6/>

SOC Co-Chairs: Gianna Cauzzi (Italy), Alexandra Tritschler (USA), Yuanyong Deng (China Nanjing)

SOC Members:

Tom Berger (USA), Manolo Collados (Spain), Phil Goode (USA), Siraj Hasan (India), Fernando Moreno Insertis (Spain), Jiong Qiu (USA), Goran Scharmer (Sweden), Wolfgang Schmidt (Germany), Manfred Schuessler (Germany), Steve Tomczyk (USA), Saku Tsuneta (Japan)

Editors of Proceedings: Gianna Cauzzi (Italy), Alexandra Tritschler (USA)

Topics:

- Key science problems for large solar telescopes.
- Connections to modeling and simulations.
- Advanced instrumentation and observing techniques for high-resolution observations of the solar atmosphere.
- Status and operation of existing and future large solar telescopes.
- Synergies and strategies for optimized scientific return from large facilities

**SpS7 The impact hazard: current activities and future plans
29-31 August**

Coordinating Division: III - Planetary Systems Sciences

Contact: G. Valsecchi giovanni@iasf-roma.inaf.it

SOC Co-Chairs: G. Valsecchi (Italy), A. Milani (Italy), W. Huebner (USA)

SOC Members:

S. Chesley (USA), A. Harris (Germany), R. Jedicke (USA), D. Koschny (Netherlands), S. Larson (USA), A. Mainzer (USA), R. McMillan (United States), A. Milani (Italy), D. Morrison (USA), H. Rickman (Sweden), B. Shustov (Russian Federation), M. Yoshikawa (Japan)

Editors of Proceedings: W. Huebner (USA), A. Milani (Italy), H. Rickman (Sweden), G. Valsecchi (Italy)

Topics:

- Current and Next Generation Surveys & enabled science
- Forecasting Impacts (orbit calculation and impact prediction)
- Non-gravitational forces and effect on impact prediction
- IAU Role in supporting the Minor Planet Centre
- Mitigating impacts
- The Operational Chain of NEO Hazards
- General Political Issues

SpS8 Calibration of star-formation rate measurements across the electromagnetic spectrum, 27-30 August

Coordinating Division: XI - Space & High Energy Astrophysics

Contact: Andreas Zezas azezas@physics.uoc.gr

SOC Co-Chairs: Andreas Zezas (Greece), Ann Hornschemeier (USA),
Daniela Calzetti (USA)

SOC Members:

Almudena Alonso-Herrero (Spain), Matthew Ashby (USA), Eric Bell (USA),
Alessandro Boselli (France), Véronique Buat (France), Roberto Cid Fernandes
(Brazil), Michael Dopita (Australia), Lisa Kewley (USA), Xu Kong (China
Nanjing), Robert Kennicutt (UK), Pavel Kroupa (Germany), Yanchun Liang
(China Nanjing), Daniel Schaerer (Switzerland), Thaisa Storchi-Bergmann
(Brazil), Vivienne Wild (UK)

Editors of Proceedings: Andreas Zezas (Greece), Ann Hornschemeier (USA),
Daniela Calzetti (USA)

Topics:

- Update on the status of classical SFR indicators
- New SFR indicators
- Comparisons between SFR indicators calibrated on different spacial scales
- Results from new missions and expectations from future missions
- Physical biases, uncertainties and cross-calibration of the different tracers
- Definition of a “best use” framework
- SF tracers at high redshifts; cosmological applications

SpS9 Future Large Scale Facilities

27-28 August

To be organised by the Executive Committee Working Group:

R. Davies (Chair) - Oxford, UK
I. Corbett - General Secretary
R. Ekers - CSIRO, Australia
N. Gehrels - NASA/GSFC, USA
R. Green - NAOA, USA
M. Iye - NAOJ, Japan
L. Tacconi - MPE, Germany
M. Tarengi - ESO, Germany
C. Wilson - McMaster, Canada
G. Zhao - NAOC, China Nanjing

Contact R. Davies rld@astro.ox.ac.uk
Editors of Proceedings: R. Davies, I. Corbett

SpS10 Dynamics of the star-planet relations
27-30 August

Coordinating Division: II - Sun & Heliosphere

Contact: Jean-Louis Bougeret jean-louis.bougeret@obspm.fr

SOC Co-Chairs: Jean-Louis Bougeret (France), Abraham C.-L. Chian (Brazil), Xueshang Feng (China Nanjing), Merav Opher (USA)

SOC Members:

Alan P. Boss (USA), Sandra C. Chapman (UK), Christopher J. Corbally (Vatican City State), Cheng Fang (China Nanjing), Nat Gopalswamy (USA), Zoran Knezevic (Republic of Serbia), Alexander Kosovichev (USA), Valentin Martinez Pillet (Spain), Karen J. Meech (USA), Heike Rauer (Germany), Kazunari Shibata (Japan), David F. Webb (USA)

Editors of Proceedings: Merav Opher (USA), Abraham C.-L. Chian (Brazil), Jean-Louis Bougeret (France), Xueshang Feng (China Nanjing)

Topics:

- Perspectives of the dynamics of the Sun-Earth and star-planet relations
- Fundamental physical processes in the stellar-planetary environment
- Stellar-solar variability
- Sun-Earth and star-planet interactions
- Stellar-solar winds: Physics of the asterospheres and the heliosphere
- Interactions of stellar-solar winds with the Local Interstellar Medium
- Prospects: Ground facilities and space missions, theory and simulations
- Star-Planet Relation and Public Outreach

SpS11 IAU Strategic Plan and the Global Office of Astronomy for Development, 27-28 August

Contact: Kevin Govender kg@astro4dev.org

URL: <http://www.astro4dev.org/index.php/oadevents/iauga>

SOC Chair: Kevin Govender (South Africa)

SOC Members:

George Miley (Netherlands), Khotso Mokhele (South Africa), Kaz Sekiguchi (Japan), Megan Donahue (USA), Claude Carignan (Canada), Patricia Whitelock (South Africa)

Editors of Proceedings; Kevin Govender (South Africa), George Miley (Netherlands)

Topics:

- IAU Strategic Plan “Astronomy for the Developing World”
- The IAU Global Office of Astronomy for Development
- Regional nodes for “Astronomy for Development” activities
- Sector Task Forces
- Volunteers and volunteer opportunities

SpS12 Modern views of the interstellar medium

27-30 August

Coordinating Division: VI - Interstellar Matter

Contact: You-Hua Chu yhchu@illinois.edu

URL: http://crescent.astro.illinois.edu/IAU_SpS12/

SOC Co-Chairs: You-Hua Chu (USA), Dieter Breitschwerdt (Germany)

SOC Members:

Michael Burton (Australia), Miguel de Avillez (Portugal), Erwin de Blok (South Africa), Elisabete de Gouveia Dal Pino (Brazil), Ralf-Jürgen Dettmar (Germany), Edith Falgarone (France), Tom Hartquist (UK), Bon-Chul Koo (Korea, Rep of), Naomi McClure-Griffiths (Australia), Eve Ostriker (USA), J. Xavier Prochaska (USA), Laszlo Viktor Toth (Hungary), Enrique Vazquez-Semadeni (Mexico), Keiichi Wada (Japan), Mark Wolfire (USA), Ji Yang (China Nanjing)

Editors of Proceedings: You-Hua Chu (USA), Dieter Breitschwerdt (Germany)

Topics:

- Physical Structure and phase distribution of the ISM in a galaxy
- Multi-wavelength observations of ISM in the Galaxy and nearby galaxies
- Recent theory/MHD simulation of ISM in a galaxy: magnetic field and turbulence
- Integrated picture of interstellar structure in a galaxy: relation among gas, dust, magnetic fields, cosmic rays, etc.
- The interstellar disk-halo connection in galaxies.
- Interplay between stars and ISM: star formation and feedback
- Observations vs. Theory of the ISM
- How does the Galactic ISM help us understand the ISM in other galaxies?
- How does the nearby ISM help us understand the ISM in the distant past?

**SpS13 High-precision tests of stellar physics from high-precision
Photometry, 27-31 August**

Contact: David Soderblom drs@stsci.edu

URL: <http://www.stsci.edu/institute/conference/iausps13>

SOC Co-Chairs: David Soderblom (USA), Andrea Dupree (USA)

SOC Members:

Conny Aerts (Belgium), Martin Asplund (Germany), Annie Baglin (France), Timothy Bedding (Australia), Jadwiga Daszynska-Daszkiewicz (Poland), LiCai Deng (China Nanjing), Fabio Favata (Italy), Jianning Fu (China Nanjing), Marc Pinsonneault (USA), Ignasi Ribas (Spain), Sylvie Vauclair (France), Werner Weiss (Austria), Suzanne Aigrain (UK)

Editors of Proceedings: Lucianne Walkopwicz (USA), David Soderblom (USA)

Topics:

- The current state of stellar models
- What physical parameters can be learned from high-precision photometry
- Properties of evolved stars
- Tests of the interior physics of solar-type stars
- Singular and unusual phenomena on stars
- New insights into pulsating stars
- Compact stars (including white dwarfs)
- Stellar interiors and magnetic fields, convection, and activity.

**SpS14 Communicating astronomy with the public for scientists
29-31 August**

Coordinating Division: XII - Union-Wide Activities

Contact: Dennis Crabtree Dennis.Crabtree@nrc-cnrc.gc.ca

URL: www.communicatingastronomy.org/meetings/iauga2012-sps14/

SOC Co-Chairs: Dennis Crabtree (Canada), Lars Lindberg Christensen (Germany)

SOC Members:

Andrew Cohen (UK), Antonieta Garcia (Chile), Avivah Yamani (Indonesia), Carine Briand (France), Dirk Lorenzen (Germany), Doris Daou (USA), Hong-Kyu Moon (Republic of Korea), Ian Robson (UK), Kaz Sekiguchi (Japan), Pamela Gay (USA), Patricia Whitelock (South Africa), Pedro Russo (Netherlands), Rob Thacker (Canada), Wei-Hsin Sun (China Taipei)

Editors of Proceedings: Dennis Crabtree (Canada), Lars Lindberg Christensen (Germany), Pedro Russo (Netherlands)

Topics:

- Identifying public communication opportunities
- Knowing your audience
- Public presentations
- Telling a science story
- Using journalists
- How to access the media
- Choosing the right medium
- Writing a good press release
- Making the best of your images
- How to be interviewed
- Making the best of new media.

SpS15 Data intensive astronomy
28-31 August

Coordinating Division: XII - Union-Wide Activities

Contact: Masatoshi Ohishi masatoshi.ohishi@nao.ac.jp

URL: <http://www.adc.nao.ac.jp/SpS15/index.html>

SOC Chair: Masatoshi Ohishi (Japan)

SOC Members:

Kirk Borne (USA), Janet Drew (UK), Robert Hanisch (USA), Melaine Johnston-Hollitt (New Zealand), Nick Kaiser (USA), Ajit Kembhavi (India), Oleg Malkov (Russian Federation), Bob Mann (UK), Raffaella Morganti (Netherlands), Paolo Padovani (Germany), Hu Zhan (China Nanjing)

Editor of Proceedings: Masatoshi Ohishi (Japan)

Topics:

- Near- and far-future telescopes and survey projects that will produce large-scale data
- Scientific insights from large-scale observations in broad fields in astronomy
- Advanced data analyses, such as data mining, in deriving scientific knowledge from large-scale data
- Data management and data access with and beyond virtual observatories to ensure data-intensive astronomical research
- Synergy of data-intensive astronomy with other fields, such as mathematics/statistics and informatics
- Education, Public Outreach and Others

SpS16 Unexplained spectral phenomena in the interstellar medium
27-28 August

Coordinating Division: VI - Interstellar Matter

Contact: Sun Kwok sunkwok@hku.hk

URL: <http://www.scifac.hku.hk/SpS16>

SOC Chair: Sun Kwok (China Nanjing)

SOC Members:

Peter Bernath (UK), Walt Duley (Canada), Pascale Ehrenfreund (Netherlands), Thomas Henning (Germany), Christine Joblin (France), Aigen Li (USA), John P. Maier (Switzerland), Vito Mennella (Italy), Takashi Onaka (Japan), Peter Sarre (UK), Kris Sellgren (USA), Adolf Witt (USA)

Editor of Proceedings: Sun Kwok (China Nanjing)

Topics:

- Unidentified Infrared Emission features
- Extended Red Emission
- 217.5 nm extinction feature
- Diffuse interstellar bands
- 21 and 30 micron emission features

SpS17 Light Pollution: Protecting Astronomical Sites and Increasing Global Awareness through Education
29-31 August

Coordinating Division: XII - Union-Wide Activities

Contacts: Beatriz García beatrigarciautn@gmail.com , Richard Green rgreen@lbto.org

URL: <http://iau.iteda.org/>

SOC Co-Chairs: Richard Green (USA), Beatriz García (Argentina), Constance Walker (USA), Xue Sui Jian (China Nanjing)

SOC Members:

Rosa Ros (Spain), WenJing Jin (China Nanjing), Stephen Pompea (USA), Elizabeth Alvarez del Castillo (USA), Russell Cannon (Australia), David Galadí-Enríquez (Spain), Brijesh Kumar (India), Malcolm Smith (Chile), Richard Wainscoat (USA), Jay Pasachoff (USA), Edward Guinan (USA), Mary Kay Hemenway (USA), Michèle Gerbaldi (France), Wim van Driel (France), Ramotholo Sefako (South Africa)

Editors of Proceedings: W. Scott Kardel (USA), Elizabeth Alvarez del Castillo (USA), Rosa Ros (Spain), Magda Stavinschi (Romania)

Topics:

- Media and Dark-Skies Images Worth 1000 Words
- Public Outreach on Light Pollution by Amateur Astronomers
- Role of Planetaria & Science Centers in Outreach on Light Pollution
- Light Pollution's Effects on Wildlife and Health Issues
- Light Pollution Education. The role of the School to change the social vision of this global problem
- Education through Global Star-Hunting & “Nights of Darkness” Campaigns
- Dark Skies Measurements for Education and Site Monitoring
- Dark Sky Places, Starlight Reserves and Astro-Tourism
- Light Pollution Education and Protecting Observatory Sites
- Progress and Action Plan for Implementing IAU Resolution 2009 B5
- Spectra of Artificial Blue-Rich Sources
- Observational Studies Most Impacted by Contamination below 500 nm
- Astronomical Input to Lighting Industry Development; Prospects for Success

SpS18 “Hot Topics” for each week, *24 August & 31 August*

Contact: Thierry Montmerle, AGS montmerle@iap.fr

Editor: Thierry Montmerle, AGS

1.4 Related activities and events

1.4.1 Special Lunchtime Lectures & Screenings

“Chinese Ancient Astronomy” Xiaochun Sun
Tuesday, 21st and Thursday, 30th August

It is possible that there will be several lunch-time screenings of the film “Saving Hubble,” produced by David Gaynes

1.4.2 Women in Astronomy

The Women in Astronomy lunch will be on Monday 27th August followed by an evening session in the nearby National Observatories of China building. For more information please contact Sarah Maddison smaddison@swin.edu.au

1.4.3 Young Astronomers

There will be two events of interest to Young Astronomers: a lunch event on Thursday, 23 August, starting at 11.00, and the Norwegian Academy of Science and Letters Astronomy Education lunch on Wednesday, 29 August. Both of these require registration and are by invitation only.

1.4.4 IAU/UNAWE Workshop & Day Camp

Pedro Russo, global coordinator of IYA2009, is now the International Project Manager of the UNAWE programme, with headquarters in Leiden, Netherlands. He is planning a Universe Awareness Workshop for the duration of the General Assembly and has submitted this preliminary project plan:

Introduction

Following recommendations from the IYA2009 “She is an astronomer” Cornerstone Project, IAU, in collaboration with the educational programme Universe Awareness, is organising a day-camp for children of astronomers attending the IAU General Assembly. This programme will allow parents to attend the conference in a family friendly environment combining professional duties and family needs. The day-camp will offer a rich programme of science and cultural activities, also involving Beijing schoolchildren – a truly multicultural experience. The programme will include hands-on science activities, games, social activities, 2-3 excursion per week (Planetarium, Ancient Observatory, Science Centre...), lunch and snack and a presentation of their activities on the last day of the IAU General Assembly. In order to overcome the language issue, monitors will be recruited among international students and multilingual staff; groups will be formed based on language and age.

Who can participate?

The day camp is addressed to the children of IAU GA attendants, aged 5-11 (date of birth between 20/8/2005 and 31/8/2001).

Where?

The day camp will take place in dedicated rooms in the conference venue. Weather permitting, the children can play in the park outside the rooms. The programme will include excursions to local sites for children.

Staff and monitors

The camp is organised by IAU in collaboration with Universe Awareness and Sterrenlab. All staff have previous experience with children and science education programmes.

Safety

The day camp will be run in a safe and healthy environment:

- the camp venue is safe and appropriate for children's activities
- monitors (>19 years old) and staff have previous experience with children
- parents will be asked to fill a form about health status (e.g. allergies) of their child(ren)
- contact with first aid at the conference and local hospital
- insurance that covers accidents and liability
- parents can contact the staff at any time of the day

Dates

week I: 20-25 August 2012

week II: 26-31 August 2012

The camp opens 15 minutes before the first session and closes 30 minutes after the last one. Children **must** be collected by parent(s) before the camp closes.

Children can be registered for week I, week II or both.

Maximum number of participants each week is 25.

Fee

The day-camp cost per child per week is 200 €.

Fee includes:

- lunch, 2 snacks per day
- monitors (1 every 10 children) and staff
- material for activities
- 2-3 excursions per week
- insurance

Withdrawal policy: no refunds can be made if a child is withdrawn after 5th August.

Rules

Upon submitting the pre-registration form, parents will receive the camp rules to be signed.

Information

mail: info@unawe.org

1.4.5 Workshop for Journal Authors and Referees

*Project outline submitted by Chris Biemesderfer, Director of Publishing,
American Astronomical Society*

The major astronomical journals in North America and Europe are co-sponsoring a workshop for journal authors and referees at the XXVIII General Assembly of the IAU. The workshop is aimed mainly at young astronomers and astronomers from Asian and developing countries. The topics that will be covered in the workshop include how to write a good paper, how to be an effective reviewer, and how the modern scholarly journal system works. The one-day workshop will be offered four different times during the General Assembly in Beijing, on four different days. The course content is intended to be taken in a single day by participants in the workshop.

Persons who would like to participate in one of these workshops may indicate their interest in the Section “Special Events” on the General Assembly registration form. A separate registration for the workshop will be required. Interested persons will be contacted by workshop organisers via email in March 2012, at which time they will receive more information about the workshop as well as a link to the workshop registration page.

2. Future General Assemblies

2.1 XXIX IAU General Assembly, 2015

The XXIX IAU GA will be held in *Honolulu*, Hawai'i, USA,
2-14 August, 2015.

The AAS has reserved a website at <http://astronomy2015.org>

2.2 XXX IAU General Assembly, 2018

Proposals to host the XXX IAU GA in 2018 must be submitted by
1st April 2012.

3. IAU DIVISIONS

Restructuring the IAU Divisions

This note describes a proposal to reform the Divisional structure of the IAU. It has been prepared by the Executive Committee “*Task Group on Divisional Structure*” (TG) whose members comprised T. Montmerle, Assistant General Secretary, Chair; N. Kaifu, Pres.-Elect; M. Haynes, G. Setti, Vice-Presidents; C. Corbally, F. Genova, C. Jones, R. Taylor, Division Presidents. The proposal is now presented to the IAU community for comments.

The proposal will be considered by the IAU Executive Committee (EC) at its meeting on 18-20 April 2012 and, if endorsed by the EC, will be presented to the 2012 General Assembly (GA) in Beijing for a vote through a formal motion, which will be sent to members on 20 April. This vote is in accordance with the Statutes of the IAU (Sect. 20): “Divisions are created or terminated by the General Assembly on the recommendation of the Executive Committee.”

In contrast, the evolution of Commissions is the responsibility of the Divisions (Statutes, Sect. 22), and is not subject to a vote at the GA. However, the impact of the proposed new Divisional structure on Commissions is already under discussion with Divisions. Therefore, some ideas of the Task Group on Commissions are also presented.

The details of the transition from the current structure to the new structure, if approved, are currently being developed in consultation with the Divisions, and will be presented to the GA as part of the introduction to the formal motion.

Comments should be sent to Division Presidents not later than April 1st, in time for a synthesis to be forwarded to the Task Group for discussion within the EC.

1. Proposal to the community for a new Divisional structure

After many consultations and face-to-face meetings, including the Division Presidents and the Executive Committee, the following new Divisional structure, reducing the current number of Divisions from 12 to 9, is proposed. **This is the structure that will be put to a vote at the Beijing GA.**

<i>New Division</i>		<i>Estimated membership</i>
Division A	Space & Time Reference Systems	800
Division B	Facilities, Technologies, & Data Science	1400
Division C	Education, Outreach, & Heritage	800
Division D	High Energies & Fundamental Physics	800
Division E	Sun & Heliosphere	1000
Division F	Planetary Systems & Bioastronomy	1200
Division G	Stars & Stellar Physics	2100
Division H	Interstellar Matter & Local Universe	1300
Division J	Galaxies & Cosmology	1900

Notes: (i) The alphabetical lettering is for working purposes only. It is expected that roman numbering will be reintroduced if the new structure is adopted. (ii) The names of the Divisions are those proposed by the Task Group. They may evolve as the new structure falls into place. (iii) The membership has been estimated as a result of rearranging existing Commissions in a “simple” way, from the “old” to the “new” topics, and summing up their membership, as shown in Appendix A. The fact that the sum of the new Division members exceeds the total IAU membership results from multiple Commission membership.

2 Historical background and motivation for change

The current divisional structure of the IAU has been essentially unchanged from its creation. The original structure, with 12 Divisions, was introduced at the XXIInd General Assembly (GA) in The Hague (1994), and formally adopted at the XXIIIrd GA in Kyoto (1997), following internal preparatory work and consultations by the IAU Executive Committee (EC) in the 1991-1994 period.

The idea in 1994 was to group the 40 existing Commissions (as today) with common or neighboring interests into Divisions, with no Division dominating the others in terms of membership. This was largely an administrative reform. Nine of the Divisions were classified as “Scientific” (including a “General” Division 9 gathering History, Education, and “Search for Extraterrestrial Life”); two as “Technically Oriented” (optical and radio), and one “Mixed” (space/high-energy). A few Commissions did not fit easily in this classification scheme, and the possibility was raised “to attach them directly to the EC, or to Division 9.”

Since then the IAU demography, and astronomy in general, have undergone major changes. The IAU individual membership has risen from 7839 at The Hague in 1994 to 10144 at Rio de Janeiro in 2009, and nearly 800 new members now join every triennium.

In parallel, astronomy maintains its tremendous impact on the public, as the 2009 International Year of Astronomy (IYA) has vividly shown, and the IAU is now engaged in high-profile initiatives for the development of astronomy

worldwide, outlined in its Strategic Plan and the recent creation of the OAD (Office for Astronomy Development) at the South African Astronomical Observatory (SAAO) in Cape Town, South Africa.

The conservative approach would be to conclude that no change is required. But the current divisional structure can be expected to change as astronomy evolves.

The success of the International Year of Astronomy 2009 and the adoption of the Strategic Development plan have modified priorities within the IAU. In practice, this suggests that the IAU Divisional structure should evolve to a more “scientific” one so that the IAU promotes a visibly scientific image. More specifically, in addition to Science, Education and Development as already prioritised by the Strategic Plan, the TG proposes that more weight and visibility be given to instrumental research and development (“R&D”) and to engineering, both on the ground and in space. The TG also proposes that the IAU pays increased attention to the emergence of new fields, such as astroparticle physics, that are now being investigated essentially by physicists, and which can be expected to flourish and become part of astrophysics in a decade or so. This is the goal of the proposed changes.

The Executive Committee, at its 88th meeting in Baltimore (2009) established a *Task Group on Divisional Structure* as a first step to evaluate the need for reform and how it might best be achieved. This group developed a draft proposal, the core of which was the establishment of new Divisions, and the reduction of the number of Divisions from 12 to 9. After discussion by the EC and Division Presidents (in consultation with their “Organising Committees”) this draft was approved in principle at the 89th EC meeting in Prague in May 2011. The original Task Group was then enlarged to include the President-Elect and four Division Presidents, to reflect on the possible consequences for Commissions and Working Groups.

The present proposal is the result of discussions within the new Task Group and the result of further consultations with the EC at large and with Division Presidents. Appendix A shows a provisional and indicative assignment of the existing Commissions within the new divisional structure, to illustrate the “look” of the proposed new divisional structure, and to serve as a starting point for reforming the Commissions and Working groups during the 3-yr interim period between the Beijing GA this year, and the Honolulu GA in 2015.

3. Complementary comments

3.1. The enhanced role of Divisions

The traditional role of Divisions has been mostly administrative (“umbrella” for topically close Commissions and Working Groups). Their Presidents, in

consultation with their “Organising Committees” (OC), constitute a selection committee for Symposia, and make recommendations to the EC for the final selection.

In the present exercise, Division Presidents (DPs) have gone much further: they have worked jointly with the EC to discuss the first steps of the proposed IAU restructuring, after having widely consulted their OC. In the context of the proposed “gradual evolution” of Divisions, the role of the OCs would become more scientific, as think tanks for the status and future evolution of their Divisions and related Commissions and Working Groups. Therefore The TG proposes to reflect this change by transforming OCs into ***Division Steering Committees*** (DSC).

As a consequence DPs helped by their respective DSCs would act as advisers to the EC on the evolution of the IAU structure, with a broad mandate beyond their own area of scientific expertise. Divisions would therefore have an enhanced role: they would act as two-way “points-of-contact” for communication and interaction between the outside world, the community, and the EC.

3.2. The evolution of Divisions

The TG proposes that Divisions themselves should be reviewed regularly, by the EC and the Division Presidents, on a long term basis commensurate with the broad evolutions of astronomy, say 9-12 yrs. In this way the IAU will be able to evolve in a gradual fashion, and respond faster to scientific (and societal) evolution.

3.3. Relations between Divisions and Commissions

Each Commission “belongs” to at least one “parent” Division (its primary Division) but due to the diversity of the fields it covers, a Division (contrary to the current situation) is not, and should not be, the exact sum of its Commissions (or Working Groups, if created directly by this Division).

In the present proposal, in view of the enhanced role of Divisions, the evolution of the IAU divisional structure should mostly be the result of the evolution of their Commissions, which they will supervise interactively. Therefore, the role of the Commissions remains essential to the IAU as a whole, and not only to their parent Divisions.

This is why the TG proposes that the evolution of Commissions (termination, continuation, creation, etc.) should be approved not only by the parent (or primary) Division, but by the whole “IAU Advisory Committee” (i.e. the 9 Division Presidents). As at present, any change(s) would have to be ratified by the EC.

Consequently the TG proposes that the **prime affiliation of IAU members should be with one Division (the “primary”)**, and up to two “secondary” others (e.g., Education, and Large Facilities), and not with Commissions. Members can also be affiliated to the Commission(s) or WG of their choice but they can simply be Division members.

3.4. Redefining the role of Commissions

Commissions continue to play a central role in the IAU. The TG suggest that Commissions should provide a service to the community and proposes the creation of two categories of Commissions:

(i) **“Topical Commissions” (TC)**. These are essentially identical in scope to the current Commissions, but they focus and provide expertise on medium-term, evolving issues, of importance both for the specialists and for the community at large. Consistent with the present bye-laws, their lifetime would be limited.

(ii) **“Functional Commissions” (FC)**. The TG recognises that some activities continue over long periods of time. This is the case of “service activities,” like those currently under the auspices of Div. I but could be extended more broadly in the form of “functional activities” for the community. Their main responsibility would be to provide (possibly via “Functional Working Groups”) state-of-the-art deliverables: standards, references; tools for education, related software (VO), etc., with an official IAU stamp, for universal use.

All Divisions have the potential to create FCs, and should be encouraged to do so. FCs would be reviewed every triennium, and based on the need and continuity of the services they provide, could be continued.

Appendix A - Proposed New IAU Divisional Structure with existing Commissions assigned for illustrative purposes only.

The following table is an example illustrating how current Commissions might fit into the new divisional structure.

Division A – Space & Time Reference Systems

Commission 4	Ephemerides
Commission 7	Celestial Mechanics & Dynamical Astronomy
Commission 8	Astrometry
Commission 19	Rotation of the Earth
Commission 31	Time
Commission 52	Relativity in Fundamental Astronomy

Division B – Facilities, Technologies, & Data Science

Commission 5 Documentation & Astronomical Data

Commission 6 Astronomical Telegrams

Commission 14 Atomic & Molecular Data

Commission 40 Radio Astronomy

Commission 54 Optical & Infrared Interferometry

*See Note b***Division C – Education, Outreach, & Heritage**

Commission 41 History of Astronomy

Commission 46 Astronomy Education & Development

Commission 50 Protection of Existing & Potential Observatory Sites

Commission 55 Communicating Astronomy with the Public

*See Note c***Division D – High Energies & Fundamental Physics**

Commission 44 Space & High Energy Astrophysics

*See Note d***Division E – Sun & Heliosphere**

Commission 10 Solar Activity

Commission 12 Solar Radiation & Structure

Commission 49 Interplanetary Plasma & Heliosphere

Division F – Planetary Systems & Bioastronomy

Commission 15 Physical Study of Comets & Minor Planets

Commission 16 Physical Study of Planets & Satellites

Commission 20 Positions & Motions of Minor Planets,
Comets & Satellites

Commission 22 Meteors, Meteorites & Interplanetary Dust

Commission 51 Bio-Astronomy

Commission 53 Extrasolar Planets

*See Note f***Division G – Stars & Stellar Physics**

Commission 25 Stellar Photometry & Polarimetry

Commission 26 Double & Multiple Stars

Commission 27 Variable Stars

Commission 29 Stellar Spectra

Commission 30 Radial Velocities

Commission 35 Stellar Constitution

Commission 36 Theory of Stellar Atmospheres

Commission 42 Close Binary Stars

Commission 45 Stellar Classification

Division H – Interstellar Matter & Local Universe

Commission 33 Structure & Dynamics of the Galactic System

Commission 34 Interstellar Matter

Commission 37 Star Clusters & Associations

*See Note h***Division J – Galaxies & Cosmology**

Commission 21 Galactic and Extragalactic Background Radiation

Commission 28 Galaxies

Commission 47 Cosmology

Notes**Note b.** This Division would include new topics such as:

- Computational astrophysics
- Large surveys
- Astrostatistics
- High-energy instrumentation
- Astroparticle detectors

Note c. This Division could also include two existing WG:

- Historic Radio Astronomy
- Communicating Heliophysics

Note d. This Division would include astroparticle topics at the boundary with fundamental physics, such as non-electromagnetic “messengers” (cosmic rays, neutrinos, gravitational waves, etc.), the nature of dark matter and dark energy, etc.**Note f.** “Bioastronomy” is chosen here for two reasons: (i) there is already a well-established Commission with that name; (ii) more importantly, other popular names (in reality created by NASA) like “Astrobiology,” “Exobiology,” meet strong resistance from biologists, since there is no “biology” known so far beyond Earth, and astronomers are not biologists. “Bioastronomy” is therefore to be understood as a branch of astronomy, as “biophysics” is a branch of physics and “biochemistry” is a branch of chemistry. Note that “astrochemistry” is also largely a branch of chemistry.**Note h.** This Division would include, for instance, “ecosystems” (structure, stellar populations, interplay between stars and the ISM, etc.) of resolved, nearby galaxies, e.g., the Local Group, nearby starbursts, etc., compared with our Galaxy.

4. Educational Activities

4.1 Office of Astronomy for Development – OAD

4.1.1 Highlights: 1st April to 31st December 2011

Launch: The Minister of Science and Technology Naledi Pandor officially opened the OAD at an event on 16th April 2011, attended by several dignitaries from around the world and delegates of the 2nd Middle East and Africa Regional Meeting. This was followed by the 1st meeting of the OAD Steering Committee.

Office Infrastructure: Several major renovations were done on the OAD building, telephone and internet services were installed, and the major furnishing was completed during the first quarter.

Website and email addresses: OAD website content and email addresses were set up during the first quarter with assistance from the SAAO IT department. Two URLs www.astronomyfordevelopment.org and www.astro4dev.org were registered. Email addresses for OAD staff set up as initials@astro4dev.org. Mailing lists have also been set up to keep stakeholders informed.

Staffing: Appointment of 2nd OAD staff member completed – Nuhaah Solomon, Administrative Assistant, began work in June 2011. Appointment process to find 3rd staff member – a Project Officer – has been unsuccessful to date. Process has been documented and reported to the Steering Committee. Search for Project Officer ongoing – interim solutions will be sought in January 2012.

Volunteers: To date there have been around 340 volunteers who have registered via the OAD website. All volunteers have been sent regular communication in the build up towards the OAD workshop and they were invited to participate via the live stream. The detailed evaluation of the volunteer database will be conducted in early 2012 and volunteers will be individually contacted on the basis of outcomes of the OAD workshop.

Awards and grants:

- OAD Director awarded Science Communication prize from the National Science and Technology forum for his work over the last 5 years.
- OAD Director selected as one of the top 200 young professionals in South Africa.
- Royal Astronomical Society has committed up to £5000 towards astronomer exchange programmes in partnership with the OAD. Details to be finalised after OAD workshop.
- The International Science Programme of Uppsala University has awarded the OAD a grant of \$9000 to explore the use of virtual tools for doing research in underdeveloped regions.

- UNESCO provided full funding for the OAD Director's attendance of the World Science Forum in Budapest.

OAD Stakeholders Workshop: This was the most significant event for the OAD thus far and much of the activities to date have been building up towards this workshop which took place from 11-14 December 2011. See report below. The workshop was followed by the 2nd OAD Steering Committee meeting where some of the workshop discussions were consolidated. Much follow up remains to be done in January 2012.

Visitors to the OAD in 2011

- 19 Jul-10 Aug: Willem de Pous, PhD student from the Netherlands visited the OAD as a volunteer wanting to use astronomy to benefit local communities. Spent 3 weeks in Sutherland and produced a report to encourage others around the world to volunteer in developing countries.
- 18-20 Aug: Rosa Maria Ros, chair of Commission 46 and NASE, visited the OAD to discuss the future of NASE programmes. Conducted a small NASE workshop in collaboration with SAAO and OAD.
- 22-23 Aug: Linda Strubbe, a post doc from Canada, visited the OAD to explore ways of using astronomy for development as part of her post doc work.
- 12-16 Sept: Pedro Russo, International Coordinator for UNAWWE and previous coordinator for IYA2009, visited the OAD for many useful discussions on sustaining the IYA2009 momentum.
- 16 Sep: High level delegation from Ethiopia visited the OAD to discuss their interest in establishing a regional node as well as the establishment of the Entoto Observatory, an example of a new observatory in a developing country.
- 9-16 Dec: Several collaborators from around the world visited Cape Town for the OAD Stakeholders Workshop in December 2011 and used the opportunity to discuss collaborations with the OAD.

Travel/Conferences/Meetings in 2011:

- 10-11 Mar: Building the Scientific Mind: Stellenbosch (Conference entitled "Learning for Sustainable Futures" – invited OAD presentation - from previous collaborations)
- 27-29 Mar: Visit to IAP (IAU headquarters) and UNESCO: Paris (investigation of history of IAU astronomy-for-development activities and potential UNESCO links)
- 29-30 Mar: Presentation at ESO communication seminars: Garching (ESO was host to the IYA2009 secretariat – much to learn from them)
- 30 Mar-1 Apr: Visit to Leiden University for EUNAWWE project: Netherlands (Universe Awareness remains an important partner for the OAD)

- 2-6 Apr: Visits to Oxford, Open University and Royal Astronomical Society: UK (to explore collaborations – all had expressed interest in the activities of the OAD prior to visits)
- 10-15 Apr: Presentation at 2nd Middle East and Africa Regional IAU Meeting: Cape Town (important meeting for the region – OAD was the opening talk)
- 18 Apr: Presentation to Department of Science and Technology: Pretoria (this meeting was related to the EUNAWA FP7 project but also an opportunity to talk about the OAD in side meetings)
- 19 Apr: Presentation to National Research Foundation: Pretoria (presentation to the staff of the NRF about the OAD)
- 17-21 May: Presentation at SKA Human Capital Development Workshop: Carnarvon (SKA Africa has close links with 8 partner countries and potentially more “associate” countries – very important collaborators for African astronomy development)
- 26 May: Presentation to South African Agency for Science and Technology Advancement: Pretoria (public presentation to the education and outreach community of South Africa about the OAD)
- 21-22 Jun: Meeting with US Embassy during visit of Michelle Obama: Johannesburg (US embassy has been the closest of the embassies to the OAD – mainly because of personal contacts – very useful for US collaborations with the OAD)
- 4-8 Jul: Presentation at the International SKA Forum: Canada (last of the forums before the announcement of the SKA site – objective was to network with the international SKA community and place development on the SKA agenda)
- 12-16 Jul: Presentation at South African Institute of Physics Conference: Johannesburg (biggest meeting of South African scientists – objective was to inform the scientific community of the OAD)
- 25-29 Jul: Presentation and exhibition at Asia-Pacific Regional Meeting, Chiang Mai: Thailand (important meeting for the region – excellent networking opportunity and promotion of the OAD)
- 4-8 Sep: Presentation at 6th Science Centre World Congress: Cape Town (biggest global meeting of science centres and informal learning stakeholders – objective was to put astronomy on the agenda of science centres – well received by science centre community)
- 17 Sep: Meeting with NASA Astronaut Ellen Baker: Cape Town (another connection through the US embassy – she was able to link us with other astronauts especially regarding potential astronaut tours to developing countries)
- 19-22 Sep: Visit to Mozambique for teacher training workshop and meeting with Minister of Science and Technology: Maputo (in support of activities by Pedro Russo, Valerio Ribeiro and Claudio Paulo to develop astronomy in Mozambique – built on efforts by the SKA Africa project)

- 29 Sep: Opening presentation at Space Generation Congress: Cape Town (OAD was invited to give opening presentation – delegates included heads and representatives of various space agencies around the world)
- 3-7 Oct: Exhibition at the International Astronautical Congress: Cape Town (aimed to build relationships with players in the space industry to realise developmental benefits from the field)
- 7 Oct: Presentation at the Galaxy Forum: Cape Town (hosted by the International Lunar Observatory Association – the association has good ideas and networks but implementation was not impressive)
- 10-14 Oct: Presentation at the Communicating Astronomy with the Public Conference: Beijing (main international conference on public communication of astronomy - coordinated by IAU Commission 55)
- 16 Oct: Meetings at the Nishi Harima Public Observatory: Sayo, Japan (one of the largest public observatories in the world – the public is allowed to view objects through the 2m class telescope, which is also used for research)
- 17-18 Oct: Presentation and meetings at the National Astronomical Observatory of Japan: Mitaka (NAOJ is an important partner for the OAD as they will be hosting the IAU Office for Public Outreach – their international development programmes have also been most impressive. Norio Kaifu is the incoming president of the IAU)
- 19-21 Oct: Presentation and meetings at the University of the Philippines: Manila (this visit was as a result of contacts made during the APRIM2011 meeting in July and served as a good opportunity not only to stimulate activities in the Philippines but also to explore the impact of WWDA visits)
- 21 Oct: Meetings at the Philippine Atmospheric, Geophysical and Astronomical Services Administration (PAGASA): Manila (PAGASA is the custodian of astronomy in the Philippines and is led by dedicated individuals who were very active during IYA2009)
- 21 Oct: Public presentation at the Mall of Asia Planetarium: Manila (this public event was hosted by one of the biggest businessmen in the Philippines who has a passion for astronomy and aims to build planetaria in many of his 42 malls)
- 24-28 Oct: Presentation and meetings at the Institut Teknologi Bandung: Bandung, Indonesia (the OAD was invited to deliver a presentation at an anniversary event of the Institut Teknologi Bandung. There were also discussions following meetings about the South East Asia region at APRIM2011)
- 7 Nov: Attended re-launch of the Southern African Large Telescope: Sutherland (this event was to launch full science operations)

- 11 Nov: Exhibition and informal presentations during the Carnegie visit to the SAAO (this visit consisted of the G8+5 Ministers of Science & Technology or their representatives – the visit to the SAAO was a side event to their deliberations in the days to follow)
- 16-19 Nov: Presentation on the OAD at the World Science Forum upon invitation of the World Association of Young Scientists: Budapest (this trip was upon invitation of Lidia Brito of UNESCO – an excellent networking opportunity)
- 21 Nov: Attended the SKA Bursary Conference Opening Event: Stellenbosch (this was a good networking opportunity with the Minister of Science & Technology and her advisor, as well as delegates from SKA Africa partner countries)
- 23-29 Nov: Hosted several “pre-workshop” Skype conferences in preparation for the OAD stakeholders workshop.
- 9 Dec: Presentation on the OAD at the meeting of the IAU National Committee for South Africa: Cape Town

4.1.2 1st Stakeholders’ Workshop

12 – 14 December 2011, SAAO, Cape Town, South Africa
*Report by Kevin Govender, OAD Director and George Miley, Chair,
 OAD Steering Committee*

The IAU OAD held its first stakeholders’ workshop 12-14 December 2011 at the SAAO in Cape Town. 56 participants attended from all over the world, with representatives of relevant C46 PGs, C55, other IAU-endorsed activities (GTTP and UNAWE) and external organisations interested in contributing to implementation of the IAU Strategic Plan “Astronomy for the Developing World.” The workshop was streamed via the web.

In his welcome address, Kevin Govender announced that more than 340 potential volunteers had already registered in reply to the call issued to IAU members. The format of the meeting mostly consisted of several five-minute talks followed by extensive discussions, focusing on such matters as governance of the various envisaged Task Forces, the nature of Regional Nodes and future fund raising campaigns. Additional topics such as the role of distance learning, institute twinning and evaluation in future capacity building programmes were also talked about at length.

We regard the workshop as having been a great success and an essential stepping-stone on the road to implementing the IAU Strategic Plan. The second meeting of the OAD Steering Committee was held directly following the workshop and devoted considerable time to discussing the next stage in implementing the Plan. Among the actions planned for the OAD during the next few months are:

- Issuing a call for proposals for the IAU regional nodes
- Instigating the 3 Task Forces (Universities & Research, Schools and Children and Outreach to the Public)
- Setting up study groups to investigate some relevant topics, such as distance learning.

For the IAU Strategic Plan, see:

http://iau.org/static/education/strategicplan_091001.pdf

For IAU Office of Astronomy for Development see:

<http://www.astronomyfordevelopment.org/>

OAD Call for Volunteers:

<http://www.astronomyfordevelopment.org/index.php/volunteers>

4.2 Commission 46

4.2.1 International School for Young Astronomers – ISYA

6 -26 February, 2012, South African Astronomical Observatory (SAAO), Cape Town, South Africa

<http://isya2012.saa.ac.za/>

Organisers:

Petri Vaisanen (SAAO/SALT), Patrick Woudt (UCT), Patricia Whitelock (SAAO/UCT), Jean-Pierre De Greve (VUB), Michele Gerbaldi (IAP), Nuhaah Solomon (OAD)

Lecturers

- Sudhanshu Barway, SAAO
- Claude Carignan, University of Cape Town
- Steve Crawford, SAAO/SALT
- Jean-Pierre De Greve, Vrije Universiteit Brussel, IAU
- Michel Dennefeld, Institut d'Astrophysique de Paris
- Michele Gerbaldi, Institut d'Astrophysique de Paris
- Amanda Gulbis, SAAO/SALT
- Kam-Ching Leung, University of Nebraska
- Roy Maartens, University of the Western Cape
- Kartik Sheth, National Radio Astronomy Observatory
- Petri Vaisanen, SAAO/SALT
- Patrick A. Woudt, University of Cape Town

Sponsors

- International Astronomical Union
- South African Astronomical Observatory
- Southern African Large Telescope

- University of Cape Town
- The Norwegian Academy of Science & Letters /KAVLI Foundation

4.2.2 Network for Astronomy School Education – NASE

By Rosa M. Ros, NASE President, Spain

Beatriz García, NASE Vice-president, Argentina

Implementation in 2011

The NASE PG organised 8 courses for primary and secondary school teachers in the Latin America region. Some courses are second or more editions of the first one. In other countries we introduce our courses for first time.

Countries 1st courses:

Honduras, Panama and Paraguay

Countries 2nd courses or more:

Argentina, Colombia, Nicaragua and Peru

Countries interested but we cannot organise courses due to lack of funds:

Costa Rica, Guatemala, Venezuela and Belize.

After the course, a small group of teachers was put together, in coordination with the NASE Programme Group, so they could then continue organising courses and other activities in their countries. More details at:

http://www.iaucomm46.org/web_nase/coursesnase.html

Some ideas after 2 years running

At the beginning we plan to visit each country twice. The first time three visitors of NASE will teach the course to teachers and use the course to educate a set of five or six people in each country who are meant to be the people that will repeat the courses in the future. We plan to visit the country again, but only one person in order to check that everything is fine; afterwards they will work on their own.

This method has been very useful. Promote that teachers learn a new method to teach and they enjoy what they are doing and enjoy the materials that we give. They feel happy with the contents and methodology.

In countries where teachers have a good level of knowledge in sciences this method is sufficient because they need training in astronomy. But in other countries, where the general teachers' level in science is not satisfactory, we discovered that we need to repeat the visit at least a couple of years more.

We are planning to use local members of NASE for neighboring countries. This new idea is an excellent solution from two points of view: 1) It is a good moti-

vation for these members and some of their colleagues and 2) it reduces travel expenses in NASE PG and we can carry on our tasks in other countries in the best conditions.

Summary of the main activities during 2010-2011

NASE PG is a programme for post-graduates. The main objective of NASE is to educate new generations of teachers and re-educate the current ones. We work with university professors in order to train future teachers and we cooperate with the departments of education in order to train experienced primary and secondary school teachers. NASE created a basic course for training teachers aiming at:

- teaching astronomy to teachers
- teaching teachers how to teach astronomy

At the same time, we work with university professors to introduce them to new methods of teaching astronomy.

The topics of “the basic NASE course” are as follows: position astronomy, solar system, exoplanets, spectrography, photometry, spectroscopy, determination of absolute magnitudes, potency of stars, nucleosynthesis, star evolution and cosmology.

Yet NASE is not only about visiting a country once and leaving the scene. The main goal is to set up in each country a local group of NASE members who can carry on teaching “the basic NASE course” every year and create new courses by using NASE materials. Some of these NASE Groups organise monographic courses themselves (Argentina, Nicaragua or Honduras) or create small planetariums (Colombia).

Since 2010, NASE is active in Center and South America, where it has created:

NASE	Basic Course 2010	Teachers involved 2010	Basic course 2011	Teachers involved 2011	Students involved	Other courses
Group Atlántico (Colombia)	1	51	1	45	29 400	4
Group Nicaragua	1	59	1	45	32 600	1
Group Lima-Perú	1	34	1	30	19 600	
Group Santa Fé (Argentina)	2	83	3	115	48 200	12
Group Honduras			1	51	10 200	3

Group Panamá			1	48	9 600	
Group Paraguay			1	48	9 600	

In total, 13 basic courses were organised, including a total of 609 participants and about 160 000 students who received materials and were given tuition (on average we consider that each teacher has 200 students per year). Seven NASE Groups were created in seven different countries. It is not possible to estimate the number of teachers and students that receive information by means of activities other than the basic course.

We generated a 280 page book that includes all the materials for the basic course and a CD with the contents in color and all the power points for the course. Both are written in Spanish and English.

NASE has also created a repository website for astronomy materials for teachers, which include activities, animations, articles, photos, games, simulations, interactive programmes and videos.

Main Goals in 2011

After teaching the NASE course several times, we revised it and we introduced some changes in Spanish and we finished its translation into English. In particular we changed the order of several lectures and workshops and also we changed a working group into a workshop for practical reasons. Currently, the course includes 4 lectures, 10 workshops and 2 working groups. Authors and titles of the activities are as follows

Lectures	Solar System	Magda Stavinsky (Romania)
	Stellar Evolution	John Percy (Canada)
	History of Astronomy	Jay Pasachoff (USA)
	Cosmology	Julieta Fierro (Mexico)
Workshops	Local Horizons and Sundials	Rosa M. Ros (Spain)
	Stellar, Solar and Lunar Demonstrators	Rosa M. Ros (Spain)
	Earth-Moon-Sun System: Phases & Eclipses	Rosa M. Ros (Spain)
	Planets and Exoplanets	Rosa M. Ros (Spain)

	Solar Spectrum and Sunspots	Alexandre Costa (Portugal) Beatriz García (Argentina) Ricardo Moreno (Spain)
	The Life of Stars	Alexandre Costa (Portugal) Beatriz García (Argentina)
	Astronomy outside the Visible	Beatriz García (Argentina) Ricardo Moreno (Spain)
	The Universe Expansion	Susana Deustua (USA) Ricardo Moreno (Spain)
	Young Astronomer Briefcase	Rosa M. Ros (Spain)
	Preparing Observations	Ricardo Moreno Beatriz García Francis Berthomieu Rosa M. Ros

- WG1 - Astronomy in the city or Archaeo-astronomy
- WG2 - Discussion about astronomy teaching in the host country. Poster session to show the experience of teacher participants. Exhibition of astronomy books

We produced the Proceedings for each course: in total 8 books and 8 CD in 2011. Complementary material had been added for Spanish and English courses. At present there are 232 complementary activities in Spanish (147 for primary school students and 85 for secondary school students) and 201 complementary activities in English (51 for primary school and 150 for secondary school) and we will continue working in this area. Complementary activities include practical experiments, exercises, interactive projects, videos, stories and games. We prepared supplementary material for secondary school level in cooperation with EAAE (European Association for Astronomy Education) and Mary Kay Hemingway.

We organised 8 courses in Spanish:

Venado Tuerto, Argentina, 26-28 May, 2011 (3rd course in the country)
http://www.iaucomm46.org/web_nase/venado_eng.html

- Course in cooperation with the “Ministerio de Educación de la Provincia de Santa Fe,” “Secretaría de Estado de Ciencia, Tecnología e Innovación de Santa Fe” and “CONICET”
- NASE members who visited Venado Tuerto: Beatriz García (Argentina).

- NASE Working Group Santa Fe members: Jorge Coghlan, Néstor Marinozzi, Daniel Mendicini, Hugo Missio, Claudia Romagnoli and Vivian Sebben
- Number of participants 41 primary and secondary school teachers
- Evaluation, questionnaire, conclusions and photos on the website

Rafaela, Argentina, June 22-25, 2011 (4th course in the country)

http://www.iaucomm46.org/web_nase/rafaela_eng.html

- Course in cooperation with the “Ministerio de Educación de la Provincia de Santa Fe”, “Secretaría de Estado de Ciencia, Tecnología e Innovación de Santa Fe” and “CONICET”. NASE members who visited Rafaela, Beatriz García (Argentina)
- NASE Working Group Santa Fe members: Jorge Coghlan, Néstor Marinozzi, Daniel Mendicini, Hugo Missio, Claudia Romagnoli and Vivian Sebben
- Number of participants 32 secondary school teachers
- Evaluation, questionnaire, conclusions and photos on the website

Tegucigalpa, Honduras, 11- 14 July, 2011 (1st course in the country)

http://www.iaucomm46.org/web_nase/tegucigalpa_eng.html

- Secretaria de Educación de Honduras, Universidad Autónoma Nacional de Honduras, Observatorio de Suyapa and Facultad de Ciencias Espaciales.
- NASE members who visited Tegucigalpa: Susana Deustua (USA), Ricardo Moreno (Spain), Rosa M. Ros (Spain)
- NASE Working Group Honduras: Joel Alemán, Edward Milla, Ricardo Pastrana, M. Cristina Pineda, M. Jesus Quiroz
- Collaboration agreement signed
- Number of participants 51 primary school teachers
- Evaluation, questionnaire, conclusions and photos on the website

Managua, Nicaragua, 12-16 July, 2010 (2nd course in the country)

http://www.iaucomm46.org/web_nase/managua3_eng.html

- Course in cooperation with the “Universidad Nacional Autónoma de Managua,” “Ministerio de Educación de Nicaragua” and “Observatorio de la Universidad de Managua”
- NASE members who visited Managua: Beatriz García (Argentina)
- NASE Working Group Nicaragua members: Lúgia Arias, Humberto García, Luís Gámez and Noel Zelaya
- Collaboration agreement signed
- Number of participants 45 secondary school teachers.
- Evaluation, questionnaire, conclusions and photos on the website

Panama, Panama, 18-22 July, 2011 (1st course in the country)

http://www.iaucomm46.org/web_nase/panama_eng.html

- Ministerio de Educación de Panama y Universidad Nacional de Panama.
- NASE members who visited Panama: Susana Deustua (USA), Ricardo Moreno (Spain), Rosa M. Ros (Spain)
- NASE Working Group Panama members: Eduardo Chung, Vicente Forero, Adams Martínez, Etelevina Medina, Eduardo Sáenz
- Collaboration agreement signed
- Number of participants 48 primary and secondary school teachers
- Evaluation, questionnaire, conclusions and photos on the website

Barranquilla, Colombia, 21-24 July, 2011 (2nd course in the country)

http://www.iaucomm46.org/web_nase/barranquilla3_eng.htm

- Course in cooperation with the “Secretaría de Educación del Departamento del Atlántico.”
- NASE members who visited Barranquilla: Beatriz García (Argentina)
- NASE Working Group Colombia-Atlántico members: Jose D. Florez, Alfonso Hiram, Orlando Méndez, Mario Solarte, Erquinio Taborda y Carlos Torres
- Collaboration agreement signed
- Number of participants 45 secondary school teachers
- Evaluation, questionnaire, conclusions and photos on the website

Asunción, Paraguay, 27-30 July, 2011 (1st course in the country)

http://www.iaucomm46.org/web_nase/asuncion_eng.html

- Universidad Nacional de Asunción, Facultad de Ciencias Exactas y Naturales and Facultad Politécnica
- NASE members who visited Asunción: Beatriz García (Argentina), Rosa M. Ros (Spain), Viviana Sebben (Argentina)
- NASE Working Group Panama members: Fredy Doncel, José M. Gómez, Carlos González, Marta Navarro, Miguel Angel Vázquez
- Collaboration agreement signed
- Number of participants 48 primary and secondary school teachers
- Evaluation, questionnaire, conclusions and photos on the website

Reconquista, Argentina, 2- 5 November, 2011 (5th course in the country)

http://www.iaucomm46.org/web_nase/Reconquista_eng.html

- Course in cooperation with the “Ministerio de Educacion de la Provincia de Santa Fe,” “Secretaría de Estado de Ciencia, Tecnología e Innovación de Santa Fe” and “CONICET”
- NASE members who visited Reconquista: Beatriz García (Argentina)

- NASE Working Group Santa Fe members: Jorge Coghlan, Néstor Marinozzi, Erica Panella, Silvina Robatta, Claudia Romagnoli, Vivian Sebben
- Number of participants 40 secondary school teachers
- Evaluation, questionnaire, conclusions and photos on the website

Lima, Peru, 18- 21 January, 2012 (3rd course in the country)

- Course in cooperation with the Universidad Nacional San Marcos, Facultad de Educación
- NASE members who visited Lima: Beatriz García (Argentina)
- NASE Working Group Peru: Jorge Rivera, M. Luisa Aguilar, Rafael Carlos, Teofilo Vargas, Juan Pablo Villanueva.
- Number of participants 59 secondary school teachers

We visited the OAD in South Africa in August 2011 in order to prepare a number of courses in Africa for 2012. On this occasion we participated in short course for secondary school teachers in English, jointly with the South African Astronomical Observatory:

Cape Town, South Africa, August 2011 (course in cooperation)

- Course in cooperation with OAD and SAAO
- NASE members who visited Reconquista: Rosa M. Ros (España)
- Number of participants 20 secondary school teachers

Projects generated from NASE courses

We have got results in countries where we began to work in July 2010; of course, there was not enough time to get results from the courses begun in July 2011.

Colombia:

We organised courses for secondary school students related to astronomy and rockets. An inflatable Planetarium, using NASE complementary materials, was built. We planned to set up a model of the Solar System in the city of Barranquilla; this project was presented to the municipality. Students gave a performance on astronomy. The students themselves wrote the plot: a group of pupils won a fight against a witch by using a whole range of astronomical instruments. They played it several times in their school and in other schools of Barranquilla and during the NASE course in July 2011. More details:

http://www.iaucomm46.org/web_nase/cursosposteriores_colombia.html

Nicaragua:

Several courses on astronomy (Earth-Moon-Sun system and Solar System) were organised in the University Nacional Autonoma for first-year students.

http://www.iaucomm46.org/web_nase/cursosposteriores_nicaragua.html

Honduras:

We organised courses involving teachers from Honduras and NASE members connected by skype. This was a special facility which has given good results and we plan to use it in other countries too. More details:

http://www.iaucomm46.org/web_nase/cursosposteriores_honduras.html

Argentina

The NASE Programme was recognised by the Asociación Argentina de Astronomía (AAA) as one of the most important activities in education in Argentina. We were invited to give an oral talk during the 53rd Annual Meeting of the AAA, in September 2010, in Salta.

In 2011, several courses were organised in secondary schools from various towns. We considered the possibility of building a model of Solar System in Cañada de Gomez in cooperation with the municipality. They are planning to place a “Solar Systems Walk” in a square and avenue in the center of the town. More details: www.iaucomm46.org/web_nase/cursosposteriores_argentina.html

The NASE’s material was presented in the local fair “Feria de la Ciencia 2011, región VII.” The Ministry of Education has bought two Meade telescopes to support the task of training courses NASE teaching of astronomy given in collaboration with SECTel

The Local NASE team has produced a website summarizing their activities. See: <https://sites.google.com/site/naseiau/>

Plans for 2012

We are also planning to continue several Latin America courses in 2012 (in the countries in which we have already begun working) and in the countries where we could not organise in 2011 due to financial problems.

We plan to begin courses in English in Africa. We have the materials in English ready and the members of the PG are mainly English speakers. The list of countries contacted in Africa, by means of OAD, is Kenya, Rwanda, Uganda and South Africa.

During the GA in China we are planning to organise a NASE course with the members of the NASE group that will be in China for the GA.

In 2013 and 2014, we will continue in Latin America supporting the countries where we have already begun working in previous years and we plan to increase our presence in other countries in Africa.

Members of NASE (status 30th October 2011)*LAU Members*

Robert Arquilano (Argentina)	Jorge Coghlan (Argentina)
Susana Deustua (USA)	Alexandre da Costa (Portugal)
Rosa Doran (Portugal)	Fredy Doncel (Paraguay)
Kathy Eastwood (USA)	Jose D. Florez (Colombia)
Julieta Fierro (Mexico)	Humberto García (Nicaragua)
Vicente Forero (Panama)	José M. Gómez (Paraguay)
Beatriz García (Vice-Chair, Argentina)	Carlos González (Paraguay)
Michèle Gerbaldi (France)	Alfonso Hiram (Colombia)
Kevin Govender (South Africa)	Néstor Marinozzi (Argentina)
Mary Kay Hemenway (USA)	Adams Martínez (Panama)
Peter Kammeyer (USA)	Daniel Mendicini (Argentina)
Donald Lubowich (USA)	Etelvina Medina (Panamá)
Estela Malaroda (Argentina)	Orlando Méndez (Colombia)
Carolina Odman (Netherlands)	Edward Milla (Honduras)
M. Cristina Pineda de Vargas (Honduras)	Ricardo Moreno (Spain)
Jay Pasachoff (USA)	Marta Navarro (Paraguay)
Rosa M. Ros (Chair, Spain)	Erica Panella (Argentina)
Cecilia Scorza (Germany)	Ricardo Pastrana (Honduras)
Magda Stravinschi (Romania)	M. Jesus Quiroz (Honduras).
Ederlinda Viñuales (Spain)	Ben Nessib Riadh (Tunisia)*
Bill Zealey (Australia)	Silvina Robatta (Argentina)
	Claudia Romagnoli (Argentina)
	Eduardo Sáenz (Panama)
	Vivian Sebben (Argentina).
	Mario Solarte (Colombia)
	Carlos Torres (Colombia)
	Leonardo Ubeda (USA)
	Miguel Angel Vázquez (Paraguay)
	Noel Zelaya (Nicaragua)

Associates

Joel Alemán (Honduras)
 Lígia Arenas (Nicaragua)
 Francis Berthomieu (France)
 Eduardo Chung (Panamá)

4.2.3 WWDA**4.2.3.1 WWDA Visit to Brunei Darussalam**

Report by Boonrucksar Soonthornbum, National Astronomical Research Institute of Thailand, Ministry of Science & Technology, Thailand

Background Information

Brunei Darussalam is a small Kingdom in South-East Asia located on the northern shore of the island of Borneo. The state's major industry on petroleum makes Brunei Darussalam a prosperous and progressive country, with a popula-

tion of approximately 400,000 (July 2010). Brunei has the second highest Human Development Index among South East Asia nations, after Singapore, and is classified as a Developed Country.

Boonrucksar Soonthornthum visited Brunei Darussalam during July 13-19, 2011 and Hakim Malasan, during July 16-19, 2011, with the following objectives:

- To introduce the roles of South-East Asian countries for promoting and supporting the missions of World Wide Development in Astronomy (WWDA)
- To introduce the recent development of Astronomy in South-East Asia especially the initiation of South-East Asian Astronomy Network (SEAAN) and the establishment of the National Astronomical Research Institute of Thailand, which will serve as a national institute in astronomy in Thailand and one of the center for the international collaboration in astronomy in the South-East Asian countries
- To promote the activity on the International Olympiad on Astronomy and Astrophysics (IOAA) and encourage Brunei Darussalam to organise a national competition on Astronomy and Astrophysics Olympiad and send the national team to join the IOAA
- To explore the astronomical activities organised in Brunei Darussalam, to promote astronomy to this country and to seek for the possible future collaboration both astronomy education and research

This visit to Brunei Darussalam was hosted by the Kolej Universiti Perguruan Ugama, Seri Begawan (KUPU SB) and the Faculty of Science, University of Brunei Darussalam (UBD).

- **Visit to the Seri Begawan Religious Teaching University College, Kolej Universiti Perguruan Ugama, Seri Begawan (KUPU SB)**

I was received by Dr. Haji Norarfan bin Haji Zainal, Assistant Rector of KUPU SB. On 14 July, we met with Prof Abdullah Awang Lampoh, the Deputy Rector, and staff of KUPU SB. I gave a presentation on the IAU and explained how the PGWWDA and related programme groups such as TAD, ISYA and EA can help to promote and develop astronomy and conversely: how South-East Asian countries can support IAU and PGWWDA to achieve their missions. I also presented the establishments of the South-East Asian Astronomy Network (SEAAN) and the National Astronomical Research Institute of Thailand (NARIT) and convinced them to join.

KUPU SB does not yet offer any course in astronomy and has no faculty staff who can teach astronomy. As a university focuses on religious and teacher education, it is possible that astronomy can be introduced at the university as a general astronomy course for teachers and astronomy course which include contents in Islamic Astronomy and History in Astronomy.

- **Visit to the University of Brunei Darussalam (UBD)**

My visit to the UBD on 15 July was hosted by Prof Dato Haji Mohamed Abdul Majid, Dean of the Faculty of Science of UBD. We met with his Deputy Deans, Dr. Pg.Mohd. Iskandar Pg.Hj.Petra and Dr. Jose H.Santos. I gave a similar presentation to that given at KUPU SB concerning the IAU and PGWWDA, the establishment of SEAAAN and NARIT.

The Faculty of Science of UBD has about 30 undergraduate students majoring in Physics, Chemistry, Biology and Information Technology. Like KUPU SB, the UBD does not offer any course in astronomy and has no faculty staff in astronomy. They are interested in joining astronomical activities with SEAAAN and hope to have an astronomy course or astronomical research offers at the Faculty of Science in the future.

From the discussion, it emerged that UBD would like to explore the possibility of sending some of their 3rd or 4th -year Physics students to be trained in astronomy and astronomical instrumentation at NARIT in Thailand. It was agreed that NARIT and UBD will discuss this further. Since the regional observatory for publics of NARIT in the Southern Thailand, which is close to Brunei, will be constructed in Songkla Province by the end of 2011, it can be visited by UBD staffs and students as well as related institutes in Brunei.

I also visited the undergraduate Physics Laboratory of the Faculty of Science, UBD. There are a number of small telescopes (about 20 refracting telescopes with diameters of 2-4 inches) which are used for telescope's alignment teaching but not much for the astronomical observation purpose.

- **The Visit at Astronomical Society of Negara Brunei Darussalam**

On 16 July, I visited the Astronomical Society of Negara Brunei Darussalam; in Malay: Persatuan Astronomi Negara Brunei Darussalam or PABD. My visit was hosted by Mr. Julalhi Hj. Zamal, Vice President, Mr. Hazarry Hj. Ali Ahmad, Secretary, Pg. Shahdani Bin Pg. Anom, Assistant Secretary, Dr. Ratna Suria Pg. Dato Hj. Hamzad, Treasurer and Ms.Salmah Binti Hj. Muhammad from Ministry of Education, member of PABD.

PABD was officially registered in 2003. It is a non-profit organisation managed by an executive committee. Its objectives are

- to promote and encourage astronomy especially Islamic astronomy for Brunei Darussalam
- to channel information on issues relating to astronomy
- to advise and give consultation relating to astronomy
- to organise astronomical related activities

- to facilitate and disseminate knowledge and information in all aspects of astronomy

PABD has four categories of membership that are open to residents of Brunei Darussalam: ordinary, student, corporate and honorary. PABD organises activities such as sidewalk astronomy, eclipse watching and new moon watching, etc. Information on its current activities is available through its website.

I presented PABD the information about IAU, PGWWDA, SEAAN and NARIT. They are interested in becoming the individual members of the IAU but unfortunately that there is still no professional astronomer at all in the country. I invite them to join the SEAAN where they can participate in astronomical activities with the South-East Asian countries, eg. NARIT, ITB etc. PABD can also organise trips to Thailand, Indonesia and Malaysia to experience some astronomical infrastructures and activities of those countries. Through the internet, PABD can access some facilities of NARIT especially the regional observatory for publics in Songkla (Southern Province of Thailand).

- **Public Lectures in Astronomy at KUPU SB**

On 18 July, the Seri Begawan Religious Teaching University College, Kolej Universiti Perguruan Ugama Seri Begawan (KUPU SB), in collaboration with the Astronomy Unit, Survey Department, Ministry of Development organised a programme of Al-Ihya Al-Diniyyah outreach “Islamic Astronomy and Astronomy Education Convention” with a theme of Education and the Development of Astronomy and Astronomy Syar’ie. The Minister of Religious Affairs of Brunei presided over the opening ceremony and participated on the public lectures. There were over a hundred audiences on this seminar.

Three public lectures in astronomy were presented:

- “Islamic Astronomy,” Baharuddin Zainal , Universiti Islam Sultan Zainal Abidin, Malaysia
- “Space Science Education and Research,” Boonrucksar Soonthornthum, Director of Research of the National Institute of Thailand
- “Importance of Study Astronomy,” Hakim Malasan, Director of Bosscha Observatory, Bandung, Indonesia

In addition, the convention also held astronomy and space science exhibitions and sky-watching activities at night in collaboration with the Astronomical Unit, Department of Survey and the Astronomical Society of Brunei.

I am informed by KUPU SB that the Minister of Religious has now assigned KUPU SB to open an astronomy course in the undergraduate programme.

- **Visit to the Survey Department, Ministry of Development**

On 16 July, Hakim Malasan and I visited the Survey Department, Ministry of Development. Our visit was hosted by Mohd Jamil Ali, Surveyor General and staff of the Astronomy Unit of the Survey Department which is in charge by Mahadi Tahir, Senior Surveyor and Haji Julaihi Bin Haji Lamat, Surveyor.

A moon sighting station under the operation of the Astronomy Unit is located at Bukit Agok (Latitude $4^{\circ} 54' 50''.9$ N, Longitude $114^{\circ} 47' 12''.7$ E) at the altitude of 105 meters above the mean sea level. Small telescopes, binocular and theodolites are used for observations. A new observatory with a 40-cm RC telescope and 5-meter diameter dome is planned to build at the moon sighting station at Bukit Agok. At present, two students are studying astronomy at undergraduate level in U.K. After graduation, they will be back to work at the Survey Department.

Comments

There are several positive signs for the development of astronomy in Brunei Darussalam. Astronomy is currently introduced through Islamic astronomy, and there is significant public interest in astronomy. With more support and follow up by the IAU and other countries, I believe that astronomy will be well established in the near future. Our suggestions are as follows:

- To introduce TAD programme to universities: KUPU SB and UBD
- To encourage Brunei Darussalam to join the South-East Asia Astronomy Network (SEAAN)
- To encourage Brunei Darussalam to join with Malaysia and Indonesia on the “Moon Sighting Observations”
- To give opportunities to students and staff in the universities to join the IAU international astronomy conference, seminar and school ie: ISYA, APRIM etc.

4.2.3.2 WWDA Visit to Kazakhstan

Report by Kazuhiro Sekiguchi, NAOJ, Japan

Summary

A report is presented on astronomy in Kazakhstan, based on a week visit there by the writer in August 2011, sponsored by the IAU and the NAOJ. The visit was hosted by the V.G. Fesenkov Institute of Astrophysics, which is a part of the National Center of Space Researches & Technologies (NCSRT) under the auspices of the Kazakhstan National Space Agency (Kazkosmos). This visit was a follow up of the earlier IAU TAD programme visit by Marina Romanova and Richard Lovelace (Cornell University, USA) in August, 2008.

During my stay in Kazakhstan, I visited the Kamenskoe Plateau Observatory, Tyan-Shan Observatory, National Scientific, Educational and Health Center “Bobek” (all in Almaty) and the National Space Agency (in Astana). I gave talks

on the latest astronomy topics and the NAOJ activities. I met with the National Space Agency Chairman Talgat A. Musabayev and Deputy Chairman Yerkin Shaimagambetov at Astana, and we discussed the possibility of Kazakhstan joining the IAU as a National Member.

Arising from this visit, recommendations are made to the IAU for developing astronomical teaching and research in Kazakhstan. The key recommendations are that the IAU Commission 46 should organise an International School for Young Astronomers (ISYA) for young researchers in Central Asia and neighbouring countries in Almaty within the next two years and should express its support for the Kazakhstan's new Large Telescope programme.

Introduction

Kazakhstan is one of five post-Soviet Central Asian states with the size of Western Europe and a population of over 16.4 million (2010 estimate). 2011 marked the 70th year of modern astronomy in Kazakhstan. On 21st September 1941, a total solar eclipse observation was made at Alma-Ata (now Almaty) Kazakhstan by an astronomer group led by Russian Academician Vasilii Grigorievich Fesenkov. One month later, the Academy of Science of the USSR approved the organisation of the Institute of Astronomy and Physics attached to the Kazakhstan branch of the Academy and nominated V.G. Fesenkov as the director of the institute. In March 1946, Soviet Government allocated the observatory site and construction commenced in 1947. In 1950, the Institute of Astronomy and Physics was divided into the Institute of Astrophysics (now the V.G. Fesenkov Institute of Astrophysics) and the Physical-Technical Institute.

Many scientists, who studied in Moscow and at other Russian universities worked at the V.G. Fesenkov Institute, and thus they had very close ties with the Russian astronomy community. The institute operates three observatories:

- **Kamenskoe Plateau Observatory** (in Almaty, at the altitude of 1,450 m)
- **Tyan-Shan Observatory** (at 2,600m)
- **Assy-Turgen Plateau Observatory** (at 2,750m)

Kamenskoe Plateau Observatory is the Institute's headquarters, located close to the city of Almaty (population of over 1.3 million in 2008). There are four telescopes, a 60cm, a 70cm, and a 50cm (Cassegrain), plus a 50cm (Maksutov) on the grounds, and they are used for observations of bright objects. Two of the larger telescopes are also open to the public on a regular basis.

Tyan-Shan Observatory is located about 30km to the South of Almaty. Moscow State University had a plan to build two 1m telescopes there during the 1980-90s. The plan was aborted after completing the domes, and the telescopes were left uninstalled. Recently, one of these telescopes was installed by the Institute's astronomer, Dr. Anatoliy Kusakin (Candidate of Science). He is con-

ducting photometric observations using a CCD camera. According to Anatoliy, the site is 1/3 photometric with some seasonal variations (bad in spring and good in late summer to early October). Also, there is an old 30cm telescope used for the public viewing.

- **Assy-Turgen Plateau Observatory** is the Institute's main observation station, located in the Tian Shan mountain range about 85 km to the east of Almaty. There is a 1m Karl Zeiss telescope (built in 1981) with a CCD camera and a spectrograph. There was a plan to install a 1.5m reflector, but the breakup of the USSR suspended this plan. Construction of the dome and tower were completed but the telescope was not installed (in mothballs!). At the latest, the Institute has a plan to build a new 3.6m telescope at Assy-Turgen Plateau Observatory. The plan and its budget proposal have been submitted to the Kazakhstan government through the Kazakhstan Space Agency.

The V.G. Fesenkov Institute has been conducting various observation programmes, including spectrophotometric observations of standard stars and some planetary nebulae at Kamenskoe Plateau Observatory using a spectrum scanner attached to the 50cm Cassegrain telescope. The latest spectrophotometric catalog of stars (Ver. 2011) contains the absolute energy distributions in the 3225 to 7575 Angstroms range for 1,273 stars of different spectral types and luminosity classes. In addition to those observations, there are archives of >7,000 plates of photometric standards, comets, asteroids and galaxies in Virgo taken with the 50 cm Maksutov telescope.

The latest spectrophotometric catalog of standard stars was published in 2011. Currently, the Institute has several directions of research programmes, including active galactic nuclei, young stellar objects, exo-planets, stellar atmospheres of the giants, cosmology, stellar dynamics, N-body simulations and solar physics. Several young researchers are sent to study in the US and in Europe. There are on-going research collaborations with Russian, German, and Korean institutions.

Kazakhstan's education system

Kazakhstan suffered major economic and educational setbacks in the years immediately following the breakup of the USSR. However, the country is rich in natural resources, giving the Kazakhstan government the opportunity to reform its education system to meet the needs of a modern competitive economy. Significant progress has been made in the reform of the education system in Kazakhstan since independence in 1991.

Kazakhstan has 11 years of compulsory education, starting at the age of six or seven. Until recently, the higher education system was organised according to the Russian style with three main levels: basic higher education equivalent to the Bachelor degree; specialised higher education (Specialist's Diploma); and scien-

tific-pedagogical higher education (Master's Degree). Postgraduate education leads to the Kandidat Nauk (Candidate of Sciences) and the Doctor of Sciences. Reform of the education system targeting a new structure of tertiary education based on the Bologna process is on-going.

Studying abroad for Kazakhstan students is sponsored by various programmes organised by the state, religious, and international organisations. There is a very generous state financial support programme called “The Bolashak Scholarship.” The scholarship pays for all costs related to education, including tuition and fees, costs of travel, and a living stipend. About 3,000 students are awarded this scholarship every year. While the graduate portion of the programme will be expanded, the undergraduate portion will be discontinued within one or two years, and its mission will be taken over by Nazarbayev University (see the next section).

Kazakhstan has the highest percentage of students per capita among all Central Asian countries. Kazakhstan’s young people have high literacy levels, good language skills and a culture of living harmoniously with others of different races and religions. Thus, Kazakhstan has a great potential of international collaborations for development of astronomy education and research.

Astronomy at the Universities

At present, there are four universities in Kazakhstan which have astronomers as their faculty members.

- Al-Farabi Kazakh National University (Almaty) is the leading university in Kazakhstan. More than 20,000 students (including 4,000 postgraduate students) study at Al-Farabi Kazakh National University. There are more than 2,500 faculty members working at the university, including 400 DSc and more than 800 Candidates of Sciences (equivalent to Ph.D.). The university has an undergraduate astronomy course in the Physics Faculty. There are 60 students admitted to the astronomy course in 2011. There are 2 to 3 (depending on the definition) astronomy faculty members, and a few astronomers from V.G. Fesenkov Institute teach astronomy classes.
- M.Kozybaev, The North Kazakhstan State University (Petropavlovsk) is a major university at the northern border city of Petropavlovsk. There are 5 astronomers and a 60cm telescope for the education and research purposes.
- Abai Kazakh National Pedagogical University (Almaty) is one of the major higher educational institutions of Kazakhstan. It has 10 faculties and about 25,000 students study in full-time, part-time, distance learning and evening departments of the university. It offers astronomy classes in the Physics & Mathematical Science Department.

- M. Auezov, the South Kazakhstan State University is situated at historical city of Shymkent. There is one astronomer just about starting to teach astronomy.

In 2010, Kazakhstan opened a new university, Nazarbayev University (named after Kazakhstan's president, Nursultan Nazarbayev), in the capital, Astana. It aims to offer a world-class education to about 20,000 students per year. Teaching is in English, and the most of the professors are foreigners. The university is working closely to develop the programmes with foreign (mainly American) institutions such as Carnegie Mellon, Duke and Harvard. At the moment, astronomy programme is offered.

Astronomy at the Secondary schools

National Scientific, Educational and Health Centre "Bobek":

This centre, established in 1997, is under the patronage of the First Lady Mrs. Sara Alpysova Nazarbayeva. Astronomy is one of the main experimental fields.

In 2009, Bobek established a new educational centre for children in Almaty. The center includes Planetarium/Observatory complex, equipped with a Zeiss opto-mechanical projection system (model SKYMASTER ZKP 4), a Halfmann's 60cm Cassegrain telescope (model ALT-AZ 600) and synchronised astrodome. Dr. Vera Zagainova is the current Director of the observatory. She organises several astronomy camp programmes, and the secondary school children from all over Kazakhstan stay at the center for one month to study astronomy during the summer time. The XVI International Astronomy Olympiad took place at the centre in September 2011.

Amateur activities

There is a very active amateur astronomy club, Kazakhstan Amateur Astronomy Club, which is based in Almaty. The club originated in the 1980s, when it was associated with the Young Palace and the Schoolchildren's Palace promoting science and technology for schoolchildren and young people. After the difficult period of the country's independence, the club reactivated in 2003. In 2009, it became a Public Organisation. The club organises regular observation trips to their observation sites, including the Assy-Turgen Plateau Observatory. They have a strong connection with the Russian amateur astronomy community. They submit their works (pictures) and reports to Russian astronomy magazines. They were actively involved in the IYA2009.

Recommendations for the LAU

The recent developments in astronomical research in Kazakhstan cannot be separated from the dramatic changes associated with independence and the gradual transition to a market economy. The initial economic crisis made it

difficult for the government to design and implement cohesive and long-term policies in the R&D sector, including research in astronomy. Furthermore, there is almost no contact between the astronomy community and the Kazakh National Academy of Sciences, which is very inactive at the moment.

However, in 2007, the Kazakhstan government created the National Space Agency (Kazkosmos), which aimed to develop and implement space technology and space science. Space research in Kazkosmos is mainly carried out by the National Center of Space Researches & Technologies (NCSRT), which is a branch of Kazkosmos and it consists of four research institutes; the V.G. Fesenkov Astrophysical Institute, the Institute of Ionosphere, the U.M. Sultan-gazin Space Researches Institute, and the Institute of Space Engineering and Technology. This was a very positive move for the astronomy research in Kazakhstan. Kazkosmos is willing to enhance astronomical research activities at the V.G. Fesenkov Astrophysical Institute in coming years.

At a meeting with the National Space Agency Chairman, Prof. Talgat A. Musabayev and the Deputy Chairman, Yerkin Shaimagambetov, I learned that Kazkosmos supports a programme to build a new 3.6m telescope at Assy-Turgen Plateau Observatory. They also support the NCSRT application to join the IAU as a National Member. Therefore, the situation for astronomical research in Kazakhstan looks very promising.

On the other hand, astronomy education at the tertiary and the post-graduate levels in Kazakhstan is in some confusion. They are in the middle of the education system reform. This year, they introduced the Ph.D. system replacing the Candidate of Sciences, and it is not clear to the university faculty members, how this affects the astronomy degree.

Next, there is a problem of organising the astronomical community in Kazakhstan. There is the Astronomical Society of Kazakhstan, which is a part of the wider ex-soviet nations' astronomical society. However, there has been no activity (i.e. no meetings, no organisation and no office) in the last ten years or so. Therefore, they have very little inter-institutional contact between researchers.

A national association or inter-institutional committee composed of astronomers of research and educational institutions should be created, or the Astronomical Society should be reactivated, to share experiences, engage in professional development activities and further the development of international collaboration as a profession. Then, Kazakhstan astronomy should be more actively and visibly represented in relevant international fora and international astronomy organisations such as the IAU.

Given these circumstances the following recommendations are made:

- 1) The IAU should make contact with the Kazakhstan National Space Agency (Kazkosmos) and with the National Center of Space Researches & Technologies (NCSRT) to discuss about Kazakhstan's application to join the IAU.
- 2) It would be very important for the IAU to promote astronomy in Kazakhstan and in the Central Asia by organising an ISYA within the next two years. With help from the V.G. Fesenkov Astrophysical Institute, an ISYA for 40-50 young astronomers from the Central Asia and the neighboring countries and perhaps some participants from Russia and from Europe can be held in Almaty.
- 3) Support (not financial, but moral and technical) by the IAU for the V.G. Fesenkov Astrophysical Institute's new large telescope project is recommended. They need advice from experts designing the telescope system and planning the observatory operations. Also, the IAU should contact the Kazkosmos to express, as the international astronomy community, support for the project.
- 4) Another TAD programme in Kazakhstan is, also, recommended. A week or two-long general astronomy courses with observation experiences at the observatory will be very beneficial to the post-graduate students at universities in Kazakhstan.

In addition to the above recommendations, there are very good opportunities for collaborations with Kazakhstan astronomers. It is pity that the new telescopes of 1m and 1.5m are in mothballs, especially as there are domes already built for them. Considering the longitude of Kazakhstan, the 1m or 1.5m telescope could be very useful for continuous monitoring of variable and transient objects. International collaborative partnerships among institutions should be fostered in order to offer joint programmes which could utilise these telescopes.

Schedule of my visit

- Aug 16 (Tue) Arrive @Almaty at late night.
- Aug 17 (Wed) @ The V.G. Fesenkov Astrophysical Institute
Talks entitled "Why Kazakhstan should support astronomy" and "Introduction to the National Astronomical Observatory of Japan" were given both in English (translated into Russian by Dr. Emmanuel Vilkoviskij) at the auditorium. There were about 20 attendants.
- Aug 18 (Thu) visit the National Scientific, Educational and Health Center "Bobek"
- Aug 19 (Fri) visit Tien-Shan Observatory
- Aug 20 (Sat) @ The V.G. Fesenkov Astrophysical Institute
- Aug 21 (Sun) Lv. Almaty to Astana
- Aug 22 (Mon) visit the National Space Agency of the Republic of Kazakhstan
- Aug 23 (Tue) Lv. Astana to Tokyo

*Contacts in Kazakhstan***Director, Dr. OMAROV Chingis**

Fessenkov Astrophysical Institute
 Observatory 23
 050020, Almaty
 tel: +7-727-2607590
 chingis.omarov@gmail.com

**Kazakhstan Amateur
 Astronomy Club**

Maxim Krugov (Secretary)
 221 office, 2 Zhandosova str.,
 Almaty, 050040
 Kazakhstan
 Tel/fax +7 727 2502932
 Cell. +7 701 7200505
 http://www.astroclub.kz
 mkrugov@astroclub.kz

Dr. MUSABAYEV Talgat

Chairman,
 National Space Agency of
 the Republic of Kazakhstan
 Dom Ministerstv
 ul. Orengburgskaya, 8
 010000, Astana
 tel: 8-7172-742450
 http://www.kazcosmos.kz

Prof. ZHANTAYEV Zhumabek

President,
 National Center of Space
 Researches and Technologies
 Shevchenko 15,
 050010, Almaty
 nckit@spaceres.kz
 tel. +7 (727) 293-88-23,
 fax: +7 (727) 293-88-20

*Additional information***IAU Individual members of
 Kazakhstan**

Denisyuk, Edvard
 Genkin, Igor
 Karygina, Zoya
 Kharitonov, Andrej
 Omarov, Tuken
 Rozhkovskij, Dimitrij
 Tejfel, Viktor
 Vilkoviskij, Emmanuil

**The V.G. Fessenkov Astrophysical
 Institute (Almaty)**

Director: Dr. Omarov Chingis
 Total # of staff: 102 of which 7 DSC
 26 Candidate of Sciences (3 overseas)
 14 engineers, 7 technicians
 6 lab assistants, 11 administration
 staff + 31 support staff
 Budget (2011): ~1.5 million US\$/year
 (in four years, it should increase 4
 times more.)

Acknowledgements

I thank Dr. Omarov Chingis, the director of the V.G. Fessenkov Astrophysical Institute, for inviting me to Kazakhstan and, especially, for making arrangements and for accompanying me to visit the National Space Agency in Astana to meet with Chairman, Prof. Talgat A. Musabayev. I, also, thank Dr. Emmanuil Vilkoviskij for making arrangements for my visit to the National Scientific, Educational and Health Centre "Bobek" in Almaty.

4.2.3.3 WWDA visit to the Republic of Fiji

*Report by John Hearnshaw, University of Canterbury, New Zealand
Chair, C46 Programme Group for the World-wide Development of
Astronomy*

Summary

A report is presented on a visit to universities in Fiji, based on a week-long visit in October 2011, sponsored by the IAU. The visit was hosted by the School of Engineering and Physics of the University of the South Pacific in Suva. Visits were also made to the newly founded Fiji National University.

At present there is no astronomy at Fijian universities, nor is there an astronomical society for the amateur community. Probably the most useful way for IAU astronomers to help Fiji would be to give advice and encouragement to initiate such programmes and activities.

Introduction

Fiji is a small island nation about 2150 km north of Auckland, New Zealand in the South Pacific Ocean. There are two main islands (Viti Levu and Vanua Levu) and over 332 other smaller islands in the archipelago. Viti Levu, the main island which I visited, lies at about 18°S, so is within the tropics (coordinates are 178.5° E, 18.1° S). The dimensions of Viti Levu are about 146 km EW and 106 km NS. Viti Levu's population is some 600,000. The population of the whole country is about 890,000, with 54 per cent being native Fijians of Melanesian ethnicity, and 38 per cent Fijian Indians. The remainder are Chinese, other Pacific islanders or European. The indigenous Fijians are mainly Methodist Christians, the Fijian Indians are Hindu or, to a lesser extent, Muslim. There are three official languages: English, Fijian and Hindi. Having gained independence from Britain in 1970, Fiji has been a republic since 1987, though Queen Elizabeth is still the paramount chief and widely respected.

The topography of Viti Levu is mainly mountainous, the highest point being 1394m above sea level. The mountains are densely forested. Fiji's economy is based on forestry, fishing, sugar, tourism, hydroelectricity and some mineral resources. Fiji's economy is the most developed of the small South Pacific island nations; however, the GDP per capita is only \$US4300.

Since 1987 there have been a series of coups in Fiji. The present government is run by Commodore Frank Bainimarama, who staged a military takeover in 2006. The political situation may have resulted in a flat or contracting economy; however, the situation in Fiji is entirely peaceful. The people I spoke to were happy not to have elections at present, as political parties tend to exacerbate underlying racial tensions, which the present government has been working hard to overcome. For example the term 'Fijian' now applies to anyone of Fijian citizenship; previously it was reserved only for the indigenous Fijians.

I arrived at Nadi International Airport on Sunday 16 October, and soon afterwards took a 30-min flight on Air Pacific from Nadi to Suva. I returned to Nadi by air on the morning of Friday October 21. Lautoka, Fiji's second city, is about half an hour by taxi north of Nadi airport.

Universities in Fiji

Fiji has three universities: the University of the South Pacific (USP) with its main campus at Laucala near Suva, the capital city on Viti Levu, the Fiji National University (FNU), formed in 2010 after the amalgamation of six institutions, including the Fiji Institute of Technology, and the University of Fiji, a small private university near Lautoka, founded in 2005 and offering courses in commerce, computer science, language and literature, law and medicine.

I visited campuses of USP and FNU on my visit, as these universities teach physics and natural sciences. No universities in Fiji offer any astronomy, and I was told that I am probably the first astronomer ever to come to Fiji and give lectures in this subject.

The University of the South Pacific (USP)

USP has 14 campuses in 12 Pacific island nations, but the Suva campus in Fiji is the largest. USP was founded in 1968, and at the Suva campus in the suburb of Laucala, the School of Engineering and Physics (SEP) acted as my host. USP has over 20,000 students, about half of them enrolled in Suva. Some campuses, like Tokelau (58 students) and Niue (60 students) are tiny but effective distance learning centres using the internet to connect them with the main hub.

My main contact in Fiji was Sushil Kumar of the SEP within the Faculty of Science, Technology and the Environment. He is an associate professor of physics and does research in very low frequency radio signals arising in the atmosphere from lightning strikes around the world.

Fiji National University (FNU)

The other main university in Fiji is FNU. Although it is more vocational than USP, they teach physics, chemistry and biology as pure sciences in the College of Engineering, Science and Technology. FNU has about 25,000 students distributed throughout a dozen campuses in Fiji. I visited those in Suva (Samabula and Riwai campuses) and in Lautoka (near Nadi, and Fiji's second largest city after Suva, the capital city).

My host contacts at FNU were Narendra Prasad, professor of mathematics based at the Samabula campus near Suva, and Rajendra Prasad (no relation), professor of inorganic chemistry based at the Lautoka campus on the west side of Viti Levu.

Schedule of visit

During my time in Fiji I gave six lectures, as follows:

- Mon 17 Oct (a.m.): *Time and evolution in the cosmos*. USP Laucala. An account of how astronomers measure the age of objects and events in the universe. Delivered to about 50 undergraduate students.
- Mon 17 Oct (p.m.): *Is there life elsewhere in the universe?* USP Laucala. Public lecture with about 100 attending. USP's Office of Marketing and Communications issued a media report on this lecture, which can be found on the internet at www.usp.ac.fj/news/story.php?id=893
- Wed 19 Oct (a.m.): *The lives of the stars*. FNU Samabula campus. Lecture on basic stellar properties and astrophysics. Delivered to about 50 undergraduate students.
- Wed 19 Oct (p.m.): *The search for planets beyond our solar system*. FNU Riwai campus. Public lecture; only 8 people turned up, despite extensive advertising! Large buffet meal post-lecture for 100 people went largely wasted. The one disappointing outcome of my visit.
- Thu 20 Oct (evening): *Stars, planets and the universe*. USP Laucala campus, organised jointly by USP and the South Pacific Physics Society. A popular lecture on the sort of problems today's astronomers are tackling. Delivered to about 50 high school students from local high schools in and around Suva. Afterwards, I handed out nice Hubble Space Telescope images and posters to every student. A plan to follow the lecture with night observing with a small telescope was cancelled owing to clouds. Instead I showed them the night sky using a sky plotting software programme (StarCalc). The whole session was a great success and lasted two hours.
- Fri 21 Oct (afternoon): *Time and evolution in the cosmos*. FNU Lautoka campus. Delivered to about 50 undergraduate students.

In addition I had meetings and visits as follows:

- 17 Oct: Discussions with Dr Atul Raturi, head of USP School of Engineering and Physics.
- 17 Oct: Morning tea with staff of USP School of Engineering and Physics. Meet with about 15 staff and we have a lively round-table discussion.
- 17 Oct: Meet with USP Pro-Vice Chancellor for Planning and Quality, Dr Michael Gregory.
- 18 Oct: Visit USP's Laucala campus; campus tour. Visit physics undergraduate laboratories. Visit research labs. Visit Japan-Pacific IT Centre.
- 18 Oct: Meet with Neil Singh, a young physics lecturer, who has a considerable interest in astronomy. For IYA2009 he organised public stargazing sessions. The School of Engineering and Physics acquired a small 100-mm Maksutov telescope on a tripod but no drive at that time, and I was shown this telescope by Neil Singh.
- 18 Oct: Meet with Sushil Kumar, Narendra Prasad and about half a dozen academics from USP or FNU plus their spouses at Dr Kumar's home in evening.

- 19 Oct: At FNU Samabula campus, meeting with Dr Frances Mani (chemistry), Head of the School of Applied Sciences in CEST, Josua Mataika, Head of the College of Engineering, Science & Technology (CEST) and Apisai Ralulu, Head of the School of Automotive Engineering in CEST.
- 21 Oct: Meeting with Prof Rajendra Prasad at FNU Lautoka, and a number of academics at that campus.

Some planned events did not in the end take place. A public lecture sponsored by the Indian High Commission in Suva was called off. Also a public lecture at FNU Lautoka campus, billed for Saturday, 22 Oct, did not go ahead. I was to meet with the Dean of the Faculty of Science, Technology and the Environment at USP (the Faculty within which the School of Engineering and Physics is located), Prof Surendra Prasad, but he was recently hospitalized and hence unavailable at the time of my visit.

Recommendations to the IAU

My visit to Fiji was my first visit to a developing country with the support of the IAU where there are no professional astronomers at all, nor has there ever been. Despite this lack of experience and expertise in Fiji, I still feel my visit achieved much good, because there is still widespread interest in astronomy amongst students and the public, and the level of education in Fiji is very good, with two excellent universities of international standard.

Under the circumstances, my discussions did not focus on the possibility of Fiji joining the IAU nor even of encouraging individuals to seek IAU membership. But there are some positive things that Fiji could accomplish with some more encouragement. These are:

- Introduce a popular astronomy course at an introductory (probably first-year) level into the science curriculum at USP and/or FNU.
- Encourage high school teachers to introduce astronomy into the science curriculum in Fijian secondary schools, even if this is an optional subject taught at only a few schools.
- Encourage the formation of an amateur society for astronomy in Fiji. I spoke to Neil Singh about this, and he certainly has the enthusiasm to consider launching this idea to make it happen.
- Fiji probably needs another visit from an IAU astronomer, possibly someone in radio astronomy (as the climate is not conducive for optical observing, and there is an interest in radiophysics at USP). This is something that the IAU's Office for Astronomical Development might consider in the next few years. Such a visit would concentrate on encouraging some (or all) of the ideas listed above to be actually implemented.

Principal contacts in Fiji

- Assoc. Prof Sushil Kumar, School of Engineering and Physics, USP, Laucala, Suva. kumar_su@usp.ac.fj

- Prof Narendra Prasad, FNU Samabula campus, mathematics
- Prof Rajendra Prasad, FNU Lautoka campus, inorganic chemistry.
rajendra.prasad@fnu.ac.fj

Acknowledgements

I wish to thank my principal host, Dr Sushil Kumar, in the School of Engineering and Physics at the USP Laucala for making all the arrangements for my visit to Fiji. Thanks, also, to the School of Engineering and Physics, including its head, Dr Atul Raturi, and the College of Science, Technology and the Environment for acting as hosts for my visit at USP. I thank Professors Narendra Prasad and Rajendra Prasad at FNU Samabula and Lautoka campuses respectively for hosting my visits to FNU.

5. Delegates to other organisations

5.1 62nd International Astronautical Congress – IAC

Cape Town, South Africa, 3-7 October, 2011

Report by Jeffrey A. Hoffman, LAU Representative to the IAF

At the request of the IAU Executive Committee, I am serving as the IAU representative to the International Astronautical Federation (IAF) from 2009-2012. This year's IAC is the second that I have attended in this capacity.

Last year, I established contact with Berndt Feuerbach, current president of the IAF, to inform him of the IAU's interest in IAF activities. Berndt welcomed the IAU's interest and recommended that the most promising areas of overlapping activities would be in Space Astronomy and in Education/Outreach.

Like the IAU, the IAF is organised into numerous committees. I attended meetings and symposia organised by the both Space Astronomy and the Education/-Outreach Technical Committees. Reports on IAF activities and suggestions for possible cooperation with the IAU in these areas follow:

Space Astronomy Technical Committee

The IAF's Space Astronomy Technical Committee (SATC), chaired by Sergio Volonte, is new. Space Astronomy used to be covered by the IAF's Space Exploration Technical Committee. 2010 was the first time that the SATC organised a session for papers at an IAC. While the 2010 session was limited in extent, the SATC set itself the task of organising a significant Space Astronomy symposium during the 2011 IAC.

The results of SATC's efforts were mixed. The committee put together an impressive list of talks in three major areas, "Long Term Perspective," "Technology Needs," and "Lessons Learned."

Long Term Perspective

- The NASA Astrophysics Program
- ESA Cosmic Vision
- Current Projects and Future Plan of Space Astronomy in China
- Canadian Space Astronomy: Observations and Opportunities
- Science Drivers for Community Driven Space Astronomy Missions (this last delivered by Carol Christian of the STScI)

Technology Needs

- Technology Needs for Gamma Ray Astronomy
- Technology Development Needed for Future X-Ray Astronomy Missions
- Japanese Plans and Technologies for Future High-Energy Astrophysics
- Black Hole Detection Techniques Using Space-Based Observational Systems in High Earth Orbit
- New Technologies for Future Space Infrared Missions
- Space Astronomy and our Understanding of Massive Star Formation
- Panel Setting Error Modal Analysis for Precision Radio Telescopes
- The Canadian Contribution to the James Webb Space Telescope: The Fine Guidance Sensor (FGS) and the Tunable Filter Imager (TFI)
- A Smooth-Walled Feedhorn Antenna Design for Astrophysical Instrumentation in Space
- Feasibility Study of a Radio Telescope Array and Communication System Development on the Far Side of the Moon
- Space-Time Metrology and Fundamental Physics from Space
- The Space-Time Explorer and Quantum Test of the Equivalence Principle Mission
- Technology for Future Exoplanet Missions
- The Solar Magnetism Explorer (SOLMEX) Satellite Design
- Coherence-Based Speckle Identification through Deformable Mirror Perturbations

Lessons Learned

- Spacecraft Status and Progress for GAIA, the Next ESA Science Cornerstone Mission
- Lessons Learned from the Herschel/Planck Program
- High Temperature and Irradiance Technologies for Bepi Colombo and Solar Orbiter Missions
- A Challenge for Industry: Space Science Payloads Example – The XMM/Newton Mission

- Round Table on How to Cope with Technical Challenges for Future Space Astronomy Missions: Industry, the Scientific Community and Space Agencies

A lot of work went into organising these symposia, which were designed to attract people from both science and engineering backgrounds and from academia, industry and agencies. Unfortunately, attendance at many of the sessions was disappointing. As I mentioned in my report last year, the IAF tends to attract participants with interests more in space technology than in science.

On the positive side, the committee presented one of three “Highlight Lectures” for the IAC: “A Road Map for Space Astronomy in the Next Decades,” delivered by Pietro Ubertini of INAF, Italy. This lecture was well attended, with a lively Q&A afterwards.

The committee is going to have to reconsider what an appropriate selection of talks should be for next year’s IAC in Naples, Italy.

Space Education/Outreach Technical Committee

The IAF Education & Outreach Technical Committee (SEOC) has been active for many years and continues to be led by Lyn Wigbels. When I attended the meeting last year, Lyn was extremely receptive to the idea of cooperation with the IAU, and she suggested that Robert Williams should liaise with the IAF via Carol Christian, who works at the STScI.

I attended numerous SEOC events. They had eight sessions in their area, covering K-12 education, university education, outreach to the general public, workforce development, and other topics. The highlight was a standing-room only symposium keynote lecture delivered by Bill Nye (the “Science Guy”).

The SEOC has for several years been sponsoring youth grants to allow selected students, mostly from developing countries, to attend the IAC. They have decided to make this a permanent activity. Arianespace USA will be starting up an IAF Youth Foundation to help with this. In the future, SEOC will recognise every year 5 outstanding young professionals (<35 years old) as potential leaders in aerospace.

This year, SEOC organised “Virtual Forum,” where people presented papers and fielded questions via a WebEx connection. I attended one of these sessions and was impressed with the number of students listening in and actively participating. There was some concern that making IAC lectures available on-line might reduce paid registration. Initial feedback, however, has been an indication that many of the participants are now considering attending future IACs in person.

In addition to specific SEOC-sponsored talks, the IAC created a special programme for students. The IAC had a separate written programme specifically for students and organised an International Student Zone. There was a special presentation by heads of space agencies just for students, and several prizes were awarded for student papers. Some special evening social activities were organised for students. IAC is very interested in attracting the next generation of aerospace professionals, and I found its student-oriented activities to be quite impressive. My opinion was confirmed by the six MIT graduate students who attended the IAC.

I hope that Robert Williams and Carol Christian can discuss the student-oriented activities of the IAF and IAU and perhaps find areas where each can learn from the other.

*Respectfully submitted,
Jeffrey A. Hoffman*

5.2 UTC for the 21st Century – Discussion meeting

3-4 November 2011, Royal Society Kavli International Centre

*Organised by Terry Quinn, Emeritus Director of BIPM, and Felicitas Arias,
Director of the BIPM Time Department*

Among the participants from around the world were invited experts from the International Telecommunication Union (ITU) and its relevant Study Groups and Working Parties, other international organisations with interests in time and frequency, astronomical organisations and observatories, satellite navigation systems, universities and national metrology institutes. Among the points discussed were the following:

1. Needs for precise timing

There exists a broad spectrum of needs for precise timing, extending from the most demanding requirements of satellite navigation systems for a continuous atomic time scale accurate at the level of nanoseconds, through the increasing number of precise time-stamping or dating systems working at the level of milliseconds, to the far end of this spectrum where space geodesy, space navigation and astronomy require the orientation of the Earth at the level of microseconds. In the middle of these, of course, is the essential need for a common world civil time scale. It is impossible to meet all these needs with just one time scale for the obvious reason that an atomic time scale is uniform while the rotation of the Earth is not. Nevertheless, the atomic time scale UTC and the time scale of the rotating Earth, UT1, must be securely linked together, which they are and will continue to be at the level of microseconds.

2. *The proposal to abolish leap seconds in UTC*

The proposal at the ITU to abolish leap seconds in UTC stems essentially from two reasons:

- a. The great difficulty of using an atomic time scale that includes occasional but not accurately predictable one-second steps in satellite navigation systems which has resulted in the use of different continuous atomic time scales such as GPS time and in the future Galileo time and BeiDou time. This may complicate unnecessarily not only their inter-operability but also their reliability.
- b. Difficulties foreseen in ensuring the security and reliability of the increasing range of timing systems at all levels of accuracy if they have to operate in the presence of one-second step changes. The problem of ensuring completely unambiguous time information at the instant of the step change is not easy to solve. A broad range of infrastructural systems, communications, power grids, air traffic control all depend critically on precise and reliable timing. The public is becoming more and more demanding as regards the safety and reliability of these systems.

3. *The continued use of UTC for civil time in the absence of leap seconds*

Taking all this into account, we are of the opinion, and this reflects the majority view expressed at the Discussion Meeting, that if the proposal to abolish the leap second in UTC is adopted, it will continue to be legitimate in the UK, for example, or in the time zone centred on the Greenwich meridian, to represent civil time by the atomic time provided by the National Physical Laboratory, namely UTC(NPL). The additional small but, nevertheless increasing, offset that will result from the abolition of leap seconds will remain insignificant compared to the already existing annual variations in local solar time on the Greenwich meridian. These variations, which amount to plus and minus about sixteen minutes, are due to the orbit of the Earth around the Sun being an ellipse rather than a circle and to it being inclined with respect to the Equator. In addition, there exists the range of local solar times across the UK from East to West which amount to some thirty minutes.

UTC will continue to be securely linked to the rotation of the Earth since difference UT1- UTC will be available at the level of microseconds from the relevant international service.

4. *Further expected improvements foreseeable for UTC*

Among other topics that were presented and noted by the participants were:

- Time laboratories being equipped with better clocks;
- New primary frequency standards, in particular optical clocks;
- Improved time and frequency comparisons using fibre- optic links and other possible solutions;

- Improved algorithms for time scale calculation;
- More frequent publication of UTC by the BIPM.

All of these taken together are expected to reduce the uncertainty of UTC from its present level of about 4 parts in 10^{16} to approaching 1 part in 10^{17} , with all the advantages and possibilities that this will bring.

At its meeting in Geneva on 19 January 2012 the ITU Radiocommunication Assembly decided to defer the development of a continuous time standard in order to address the concerns of countries that use the current system of the leap second in Coordinated Universal Time (UTC). Further details can be found at http://www.itu.int/net/pressoffice/press_releases/2012/03.aspx

5.3 The International Space Weather Initiative (ISWI)

Excerpted from a report by David Webb, IAU Representative for the ISWI

The 2nd international ISWI workshop was held in Abuja, Nigeria, 17-21 Oct, 2011 and was for the European and African regions. The 3rd Workshop is planned for Ecuador in Oct 2012. A Solar Radio Workshop under the auspices of ISWI is planned for 23-25 Nov 2011 at Pune University, India.

Following the six highly successful space science schools operated during the IHY, a Space Science School programme is being promoted through ISWI. In 2011 these ISWI-sponsored schools have taken place: The Second in Abuja, Nigeria in Aug 2011, the Third in Lomnica Tatranska, Slovakia in Aug 2011, and the Fourth school in Kinshasa, Democratic Republic of Congo in Sept 2011. The Fifth will be in Rabat, Morocco, 5-16 December.

Continuing projects for ISWI include: (1) Identifying appropriate sites for new instrument deployments, (2) Identifying additional instruments for deployment, and (3) Utilizing these new instrument data sets in modeling and predictions and through the Science Programme. Additional information on ISWI can be found at <http://iswi-secretariat.org> and on Twitter: ISWINews.

6. IAU Executive Committee

6.1 Officers' Meeting OM2012

The Officers met at the IAU Secretariat. The principal items discussed were preparations for the 2012 General Assembly and remaining issues to be resolved, progress with the OAD and the Strategic Plan, proposed changes to the

Statutes and Bye-Laws, and the proposed new Divisional Structure and the process for its approval and implementation.

It was agreed that the General Secretary and Executive Assistant should visit Beijing in March to complete arrangements for the payment of grants, and other matters, at the General Assembly. The proposed new Divisional Structure will be discussed at the Executive Committee meeting in April and then put to the General Assembly in the form of a motion or resolution.

6.2 Executive Committee EC90 – 18-20 April 2012, Paris

The main items on the agenda will be the 2012 General Assembly, progress with the OAD and the Strategic Plan, proposed changes to the Statutes and Bye-Laws, the proposed new Divisional Structure and the process for its approval and implementation and the selection of the Symposia for 2013.

7. PRIZES & AWARDS

The Gruber Foundation Cosmology Prize “honors a leading cosmologist, astronomer, astrophysicist or scientific philosopher for theoretical, analytical, conceptual or observational discoveries leading to fundamental advances in our understanding of the universe.” The Prize for 2011 was awarded to Marc Davis, George Efstathiou, Carlos Frenk, and Simon White for their work on numerical simulations which provided a powerful new tool for comparing theory and observation on cosmological scales. This was used to validate the “cold dark matter” theory of cosmic growth.

The IAU nominates 3 members to the Advisory Selection Board.

The deadline for nominations for the 2102 Prize was 15th December 2011. The Prize will be awarded during the first Business session of the Beijing General Assembly and the awardee(s) will give the Gruber Prize Lecture on Wednesday, 22nd August, at 12h45.

The Gruber Foundation Fellowship Award 2012

Six applications for the Gruber Foundation Fellowship Award 2012 have been received. The awardee will be announced shortly.

2011 Nobel Prize Winner at GA2012

The 2011 Nobel Prize for Physics was awarded to Saul Perlmutter, Brian Schmidt and Adam Riess for their work with supernovae and their discovery that the Universe is expanding at an ever-accelerating rate. Note that Brian will be giving the Invited Discourse at 18h on Wednesday, 22nd August, at the Beijing General Assembly.

8. Regional Meetings, July – December, 2011

11th Asian Pacific Regional IAU Meeting – APRIM2011

25 - 29 July 2011, Empress Hotel & Convention Centre, Chiang Mai, Thailand

Report by LAU President-elect Norio Kaifu

General

The 11th APRIM was held with great success under the full support of National Astronomical Research Institute of Thailand (NARIT), directed by Dr. Boonrucksar Soonthorntham who was SOC chair of the meeting. Also Dr. Busada Hutawarakorn Kramer worked as SOC co-chair, and the LOC chair was Dr. Saran Poshychinda. The meeting was sponsored by Chiang Mai University and Institute for the Promotion of Teaching Science and Technology (IPST). The whole venue for the meeting was beautifully prepared. Participants were about 460 from 31 countries, including Thai school teachers invited by above sponsors. Due to the LOC reports 76 invited papers, 101 contributed oral presentations and 123 poster papers were presented. This was certainly the largest and most successful APRIM ever.

Registration and Reception (25 July)

Registration was well arranged and smooth, probably with very few troubles. Reception in the evening was a full banquet with sufficient good meals, drinks, and high-level traditional dances and music. Participants enjoyed the reception very much.

Opening Ceremony (26 July Morning)

Welcome addresses were given by Boonlacksar Soothornthum, Chair of SOC, and by Norio Kaifu, President-elect of the IAU (see below). Minister of Science and Technology, Dr. Virachai Virmeteeke, gave a keynote and opening address. The ceremony was beautifully and carefully handled.

Plenary Sessions (26, 27, 28 July)

Plenary sessions were organised every morning of 26, 27 and 28 July with three 30-min. talks each. Talks and speakers were selected by the SOC to have sufficient varieties in scientific fields and locality. The level of the talks was reasonably high. The plenary sessions were quite successful, and my comments to the future APRIM is that to keep the plenary sessions for this size but to consider more talks (about 50 % of the session, may be) on recent developments of astronomy in this region (new large facilities, excellent achievements in education/-outreach etc.) so that the attendants could grasp the status and developments of astronomy in the region.

Parallel Sessions (26, 27, 28 July)

The following nine sessions were organised by the SOC. Those sessions were held by using 5 rooms with average time slot of 800 min.

- Session 1: Solar Physics and Sun-Earth Interaction
- Session 2: Planets in the Solar System and Beyond
- Session 3: Stellar Astrophysics and Binary System
- Session 4: Compact Objects and High Energy Astrophysics
- Session 5: The Milky Way, Interstellar Matter and Star Formation
- Session 6: Galaxies, Their Active Nuclei and Cosmology
- Session 7: New Instruments, Challenges in Data Processing and Virtual Observatories
- Session 8: Astronomy Education and Popularisation of Astronomy
- Session 9: From Grote Reber to the SKA

Some sessions had very few attendants. The details will be provided in the formal report to the IAU by organisers, but my quick feeling is that the SOC had organised too many sessions. We also have to carefully analyze the direction of development of astronomy in the region to attract attendants.

Public Lectures (26, 27 July)

“Will the World End in 2012? Astronomical Evidence” by Jocelyn Bell Burnell, and “Grote Reber: The First Radio Astronomer” were given in the evenings of 26 and 27 July each to the public. This was also very successful event. More than 500 school students had visited and enjoyed the talks.

Exhibitions

More than 20 exhibitions were displayed by industries, astronomical institutes and projects. Participants and school students enjoyed those exhibitions, and the mixture of astronomers, amateurs, public and school students made the atmosphere of the meeting place pleasant and active.

Place of the 12th APRIM

During the meeting the SOC called proposals for the host of next APRIM: 12th APRIM in 2014 and Taiwan (China Taipei) and Korea (Republic of Korea) submitted proposals. Both of them were excellent candidates, and finally the SOC selected Korea as candidate of the host country of the 12th APRIM, which should be approved by the IAU-EC later. The KASI, possible host institute in Korea, will celebrate its 40 years anniversary in 2014 so it will also be a good occasion for them. The detailed dates and place will be proposed by Korea later.

Additional Comments

- LOC invited nearly 100 school teachers to join the APRIM, especially to the session 8; Education and Popularisation of Astronomy. Thanks to sponsors, and such invitation should be considered in future regional

- meetings.
- LOC also invited many middle school students to public lectures and to general exhibitions. Students seemed enjoying the public talks and exhibitions a lot. This also provided a good chance of education/outreach of astronomy.
 - Education and popularisation session is becoming to be more and more important in the IAU regional meetings, It should be carefully and widely organised by inviting more professional astronomers. The cooperation with the Global Development Office should be considered in the course of the meeting organisation.

As a whole, the APRIM-2011 was a very successful and fruitful regional meeting. I am grateful to Drs. Soonthorntham, Kramer, Poshyachinda and all Thai friends and SOC members for their tremendous efforts.

Welcome Address by IAU President-elect Norio Kaifu

Honorable Dr. Virachai Virameteekul, distinguished guests, ladies and gentlemen, and all friends of astronomy,

On behalf of the International Astronomical Union I welcome all participants to the 11th Asia Pacific Regional IAU Meeting; the APRIM 2011. Unfortunately Ian Corbett, general secretary of the IAU who was supposed to give welcome address could not come because of illness of his family, so I am here to give a welcome address from the IAU.

I express many thanks to all SOC and LOC members, especially to Dr. Boonruksar Soonthornthum and Dr. Busada Hutawarakorn Kramer as SOC chairs, and Dr. Saran Poshyachinda as a LOC chair, for tremendous efforts to realize the APRIM2011 to be such a wonderful condition and environment we see here today.

It is one of the important tasks of the IAU to holding several regional meetings in intermediate years of General Assembly. For example the 2nd Middle East - Africa Regional Meeting was held in April this year successfully, and 13th Latin American Regional Meeting was held in November 2010.

Among those regions of the IAU the Asia-Pacific is the largest and most massive region. If we adopt the United Nations' way it covers more than 250 degrees in longitude. Population of this area is nearly 50% of the world population without counting the North America countries. However if we look into the current contribution of this region to astronomy, we see the number of the IAU member in this region is about 20% of the total.

On the other hand, I tried to count the involvements of this region into the International Year of Astronomy 2009, and found that the most of countries in this region including many non-IAU member countries had formally joined the IYA2009 activities. Almost 98% of population in this region was exposed to the IYA2009 activities to some extent. We therefore understand that the Asia Pacific Region has tremendous potential of developing astronomy.

Succeeding to the extremely successful IYA2009 the IAU started a historical decadal plan "Astronomy for the Developing World" in 2010, thanks to George Miley and lot of activities in the IAU to prepare this new programme. The mission statement of this plan is simple: "Astronomy for a better world." We already recognise the power of astronomy in promoting science and technology, and the essential role of education and popularisation in developing scientific research. The Asia Pacific Region should be an important player of this IAU decadal programme.

The IAU Office for Astronomy Development, OAD, had been established in coordination with South Africa Observatory, and we have the first OAD director Kevin Govender here. We will hear and discuss more detailed plan and progress on this new IAU programme as well as numbers of reports of scientific, education and popularisation activities in this region through the APRIM2011.

We will have more than 400 papers during this meeting, according to the LOC. We expect to learn many exciting scientific results and new progress, exchange more information and make more friends. We are also looking forward to visit the 2.4m telescope site at the end of this meeting. Congratulations, all Thai astronomers, for very successful establishment of NARIT and construction of new telescope and public observatories.

Finally I like to mention that the next IAU General Assembly will take place in Beijing in August 2012. We expect to see all of you also in Beijing.

Thanks to organisers again, and I wish to enjoy the very successful ARIM2011 together.

Thank you for your attention.

9. Meetings in 2012

9.1 Symposia outside the General Assembly

IAUS 287 Cosmic masers - from OH to Ho

Date and place: 29 Jan. - 3 Feb. 2012, Stellenbosch, South Africa
 Coordinating Division: X - Radio Astronomy
 Chairs of SOC: R Booth (South Africa) rbooth@ska.ac.za
 E. Humphreys (Chile), V. Vlemmings (Germany)

Members of SOC: A. Bartkiewicz (Poland), V. Bujarrabal (Spain),
 J.M. Chapman (Australia), S. Ellingsen (Australia), M. Elitzur (USA),
 Y. Gomez (Mexico), M.D. Gray (UK), M. Honma (Japan), A.J. Kemball (USA),
 K.-T. Kim (S. Korea), H.J. van Langevelde (Netherlands), J.M. Moran (USA)

Chairs of LOC: R. Booth, S. Goedhart (South Africa)
 Members of LOC: K. de Boer, M. Gaylard, J. van der Waalt,
 P. Whitelock, (South Africa)

Editors of Proceedings: V. Vlemmings (Germany), E. Humphreys (Chile),
 R. Booth (South Africa)

Topics

- Advances in MASER theory
- Polarisation and Magnetic Fields
- Masers and Star Formation
- Stellar Masers
- Maser Surveys
- Cosmology and the Hubble Constant
- Astrometry with Masers
- AGN and Mega Masers
- New Masers and Maser Physics
- Observations of masers with the new facilities

IAU S279 Death of Massive Stars: Supernovae and Gamma-Ray Bursts

Date and Place: 12 - 16 March 2012, in Nikko, Japan
Postponed from 18-22 April, 2011, because of tsunami
 Coordinating Division: XI - Space & High Energy Astrophysics
 Chairs of SOC: Nobuyuki Kawai (Japan), Elena Pian (Italy),
 Peter Roming (USA)

Members of SOC: Zi-Gao Dai (China Nanjing), Massimo Della Valle (Italy),
 Johan Fynbo (Denmark), Neil Gehrels (USA), Sheila McBreen (Ireland),

Maryam Modjaz (USA), Ehud Nakar (Israel), Ken'ichi Nomoto (Japan), Paul O'Brien (United Kingdom), Sandra Savaglio (Germany), Brian Schmidt (Australia), Stephen Smartt (United Kingdom), Alicia Soderberg (USA), Shoichi Yamada (Japan)

Chair of LOC: Keiichi Maeda (Japan)

Members of LOC: Katsuaki Asano, Masaomi Tanaka (Japan)

Editors of Proceedings: Peter Roming (USA), Nobuyuki Kawai (Japan), Elena Pian (Italy)

Topics

- 1 - Progress in our understanding of core collapsed supernovae (CCSNe) & gamma-ray bursts (GRBs)
- 2 - GRB-SNe connection
- 3 - Environments of CCSNe & GRBs
- 4 - Progenitors of CCSNe & GRBs
- 5 - CCSNe & GRB mechanisms and early evolution
- 6 - Continuum between CCSNe & GRBs?
- 7 - CCSNe & GRBs as cosmological tools

Contact: Pete Roming proming@swri.edu

9.2 Co-sponsored Meetings 2012

10th Arab Conference on Astronomy and Space Sciences

5 - 8 February, 2012, in Oman

Organised by the Arab Union of Astronomy & Space Science (AUASS)

Contact: Hamid M.K.Al-Naimiy, University of Sharjah
alnaimiy@sharjah.ac.ae

COSPAR 39th Scientific Assembly and Associated Events

14 - 22 July, 2012, in Mysore, India

Scientific Programme Chair: U.R. Rao, Department of Space, India

URL: www.cospas-assembly.org

9.3 Other meetings of astrophysical interest

SPIE Astronomical Telescopes and Instrumentation 2012

1 - 6 July, 2012, Amsterdam, Netherlands

URL: http://spie.org/astronomical-instrumentation.xml?WT.mc_id=CAL-AS

10. IAU PUBLICATIONS

10.1 IAU *Highlights of Astronomy and Transactions*

*Transactions XXVIII*A will be published by CUP in 2012.

10.2 IAU Symposia Proceedings

2010 Symposia Proceedings published since IB108:

IAUS 269 – Galileo's Medicean Moons: their impact on 400 years of discovery

Padova, Italy, 6-9 January, 2010

Eds. Cesare Barbieri, Marcello Coradini, Supriya Chakrabarti

Cambridge University Press

ISBN:9780-521-19556-0

IAUS 271 – Astrophysical Dynamics: from Stars to Galaxies

Nice, France, 21-25 June 2010

Eds. Nic Brummell, Allan Sacha Brun, Yannick Ponty, Mark S. Miesch

Cambridge University Press

ISBN 9780-521-19739-7

IAUS 272 – Active OB stars: structure, evolution, mass loss, and critical limits

Paris, France, 19-23 July 2010

Eds. C. Neiner, G. Wade, G. Meynet, G. Peters

Cambridge University Press

ISBN: 9780-521-19840-0

IAUS 273 – The Physics of Sun and Star Spots

Los Angeles, USA, 22-26 August 2010

Eds. Debi Choudhary, Klaus Strassmeier

Cambridge University Press

ISBN 9780-521-76062-1

IAUS 276 – The Astrophysics of Planetary Systems: Formation, Structure, and Dynamical Evolution

Torino, Italy, 10-15 October 2010

Eds. A. Sozzetti, M.G. Lattanzi, A.P. Boss

Cambridge University Press

ISBN 9780-521-19652-9

IAUS 277 – Tracing the Ancestry of Galaxies (on the land of our ancestors)

Ouagadougou, Burkina Faso, 13-17 December 2010

Eds. Claude Carignan, Ken Freeman, Françoise

Cambridge University Press

ISBN 9780-521-76602-9

2011 Symposia Proceedings published to date:

IAUS 278 – Archaeoastronomy and Ethnoastronomy: Building Bridges between Cultures

Lima, Peru, 5-14 January 2011

Ed. Clive Ruggles

Cambridge University Press

ISBN: 9781-107-01978-2

IAUS 280 – The Molecular Universe

Toledo, Spain, 30 May -3 June 2011

Eds. J. Cernicharo, R. Bachiller

Cambridge University Press

ISBN: 9781-107-01980-5

To access the CUP IAU *Symposium Proceedings* go to

<http://journals.cambridge.org/action/displayJournal?jid=IAU>

For a complete list of IAU Symposium and Colloquium Proceedings, see:

<http://www.iau.org/science/publications/iau/symposium/list/>

<http://www.iau.org/science/publications/iau/colloquium/list/>

11. Deceased Members

The Union is saddened to learn that the following IAU members and former members passed away, as has been reported to the Secretariat:

Efraim Lazarevich **AKIM** (1929 – 2010), Russian Federation, 13 Sept 2010
 Shinko **AOKI** (1927 – 2011), Japan, 9 October 2011
 W. Ian **AXFORD** (1933 – 2010) Germany, 13 March 2010
 Dipak **BASU** (1941 – 2011), Canada, 8 July 2011
 William P. **BIDELMAN** (1918 – 2011), United States, 3 May 2011
 Francois **CUISINIER** (1968 – 2011), Brazil, 26 August 2010
 Ocker C. **DE JAGER** (1961 – 2010), South Africa, 14 December 2010
 Hilmar W. **DUERBECK** (1948 – 2012), Germany, 5 January 2012
 Uldis **DZERVITIS** (1935 – 2011), Latvia, 30 December 2009
 Andrej M. **FINKELSTEIN** (1942 – 2011), Russian Federation, 18 Sept 2011
 Friedrich J. **FIRNEIS** (1940 – 2011), Austria, 3 August 2011
 Michael **FRIEDJUNG** (1941 – 2011), France, 22 October 2011
 Stanislaw **GASKA** (1930 – 2010), Poland, 5 March 2010
 Tom **GEHRELS** (1925 – 2011), United States, 11 July 2011
 Stanislaw **GORGOLEWSKI** (1927 – 2011), Poland, 23 April 2011
 Kimmo **INNANEN** (1937 – 2011), Canada, 3 August 2011
 Khabibrachman **KHALIULLIN** (1942 – 2011), 24 December 2011
 Hugh M. **JOHNSON** (1923 – 2011), United States
 Jun **JUGAKU** (1927 – 2011), Japan, 14 September 2011
 Kinaki **KAWABATA** (1928 – 2011), Japan, 8 November 2011
 Thomas H. **LEGG** (1929 – 2011), Canada, 14 June 2011
 Ekaterina **MAKARENKO** (1929 –), Ukraine
 Lyssimachos **MAVRIDIS** (– 2011), Greece,
 Franco **PACINI** (1939 – 2012), Italy, 25 January 2012
 Prof. Karl **RAKOS** (1925 – 2011), Austria, 31 October 2011
 Eric Harvey **RICHARDSON** (1927 – 2011), Canada, 20 November 2011
 Jorma **RIIHIMAA** (1929 – 2011), Finland, 10 November 2011
 William K. **ROSE** (1935 – 2010), United States, 30 September 2010
 Zenonas **RUDZIKAS** (1941 – 2011), Lithuania, 8 June 2011
 Fredrik **SCHÖIER** (1969 – 2011), Sweden, 14 January 2011
 Richard D. **SCHWARTZ** (1942 – 2011), United States, 28 July 2011
 Ladislav **SEHNAL** (1931 – 2011), Czech Republic, 26 November, 2011
 Alfonso **SERRANO** (1950 – 2010), Mexico, 12 July 2010

Nikolay M. **SHAKHOVSKOJ** (1932 – 2011), Ukraine, 31 January 2011
Leonid I. **SNEZHKO** (1940 – 2011), Russian Federation, 19 May 2011
Konstantin Yankov **STAVREV** (1945 – 2011), Bulgaria, 1 October 2011
Anita **SUNDMAN** (1943 – 2010), Sweden, 31 March 2010
Keiya **TAKAKUBO** (1926 – 2011), Japan, 3 March 2011
E. A. **TANDBERG-HANSEN** (1921 – 2011), United States, 22 July 2011
Antonin **TLAMICHA** (1932 – 2011), Czech Republic, 31 October 2011
Ioan **TODORAN**, (1927– 2010), Romania, 29 August 2010
Tibor **TORO**, (1931 – 2010), Romania, 17 October 2010
Nguyen Mau **TUNG** (– 2011), Vietnam, 25 February 2011
Sueo **UENO** (1911 – 2011), Japan, 19 October 2011
Kojiro **WAKO** (1928 – 2011), Japan, 5 April 2011
François **WESEMAEL** (1954 – 2011), Canada, 28 September 2011
Gisbert **WINNEWISSER** (1936 – 2011), Germany, 21 March 2011
Andrzej **WOSZCZYK** (1935 – 2011), Poland, 17 July 2011
Y. **YEIVIN** (1923 –), Israel

A special tribute to Franco Pacini, President of the International Astronomical Union from 2001 to 2003, will be published in the next issue of the IAU Information Bulletin.

THE IAU DIVISIONS & THEIR PRESIDENTS

DIVISION I

Fundamental Astronomy

Dennis D. McCarthy
US Naval Observatory
3450 Mass. Ave NW
Washington DC 20392-5420
USA
Tel +1 202 762 1837
Fax +1 202 762 1563
dennis.mccarthy@
usno.navy.mil

DIVISION IV

Stars

Christopher Corbally
University of Arizona
Steward Observatory
Vatican Observatory
Research Group
Tucson, AZ 85721, USA
Tel +1 520 621 3225
Fax +1 520 621 1532
corbally@as.arizona.edu

DIVISION VII

Galactic System

Despina Hatzidimitriou
University of Crete
Department of Physics
P.O. Box 2208
GR-710 03 Heraklion
Greece
Tel +30 2 810 394 212
Fax +30 2 810 394 201
dh@physics.uoc.gr

DIVISION X

Radio Astronomy

A. Russell Taylor
University of Calgary
Dept. of Physics and
Astronomy
2500 University Dr NW
Calgary AB T2N 1N4
Canada
Tel +1 403 220 5385
Fax +1 403 289 3331
russ@ras.ucalgary.ca

DIVISION II

Sun & Heliosphere

Valentin Martínez Pillet
Instituto de Astrofísica de
Canarias
C/ Vía Láctea s/n
ES-38200 La Laguna,
Tenerife, Spain
Tel +34 922 605 237
Fax +34 922 605 210
vmp@iac.es

DIVISION V

Variable Stars

Steven D. Kawaler
Iowa State University
Dept. of Physics & Astronomy
A323 Zaffarano Hall
Ames, IA 50011-3160
USA
Tel +1 515 294 9728
Fax +1 515 294 6027
sdk@iastate.edu

DIVISION VIII

Galaxies & the Universe

Elaine M. Sadler
University of Sydney
School of Physics A28
AU-Sydney NSW 2006
Australia
Tel +61 2 9351 2622
Fax +61 2 9351 7726
ems@physics.usyd.edu.au

DIVISION XI

Space & High Energy Astrophysics

Christine Jones
Harvard Smithsonian CfA
High Energy Astrophysics
Division MS 3
60 Garden Street
Cambridge, MA 02138-1516
USA
Tel +1 617 495 7137
Fax +1 617 495 7356
cjf@cfa.harvard.edu

DIVISION III

Planetary Systems Sciences

Karen J. Meech
University of Hawaii Honolulu
Institute for Astronomy
2680 Woodlawn Drive
Honolulu, HI 96822, USA
Tel +1 808 956 6828
Fax +1 808 956 9580
meech@ifa.hawaii.edu

DIVISION VI

Interstellar Matter

You-Hua Chu
University of Illinois Urbana
Astronomy Department
103 Astronomy Building
1002 W Green St
Urbana, IL 61801, USA
Tel +1 217 333 5535
Fax +1 217 244 7638
yhchu@illinois.edu

DIVISION IX

Optical & Infrared Techniques

Andreas Quirrenbach
Universität Heidelberg
Landessternwarte
Koenigstuhl 12
DE-69117 Heidelberg
Germany
Tel +49 6221 54 1792
Fax +49 6221 54 1702
a.quirrenbach@
lsw.uni-heidelberg.de

DIVISION XII

Union-Wide Activities

Françoise Genova
Observatoire Astronomique
de Strasbourg
11, rue de l'Université
FR-67000 Strasbourg
France
Tel +33 3 68 85 24 76
Fax +33 3 68 85 24 32
francoise.genova@
astro.unistra.fr

INTERNATIONAL ASTRONOMICAL UNION UNION ASTRONOMIQUE INTERNATIONALE

The International Astronomical Union (IAU) was founded in 1919 to promote and safeguard the science of astronomy in all its aspects through international cooperation. Operating through its scientific bodies - 12 Divisions, 40 Commissions and some 75 Working and Programme Groups, the IAU covers the whole spectrum of astronomy. The IAU currently has over 10,000 individual members distributed over 91 countries, of which 68 are National Members. The IAU is member of the International Council for Science (ICSU).

The organisation of scientific meetings is the IAU's key activity. Every year, the IAU sponsors nine international Symposia. The IAU Symposium Proceedings series is the flagship of the IAU publications. Every three years, the IAU holds its General Assembly. Six of the IAU Symposia of that year are incorporated in the scientific programme of the GA. Each General Assembly further offers some 25 Joint Discussions and Special Sessions, the proceedings of which are published in the Highlights of Astronomy series. The reports of the GA Business Meetings are published in the Transactions of the IAU - B series. All IAU proceedings are published by Cambridge University Press.

Among the other tasks of the IAU are the definition of fundamental astronomical and physical constants; unambiguous astronomical nomenclature; promotion of educational activities in astronomy; and early informal discussions on the possibilities for future international large-scale facilities. Furthermore, the IAU is the sole internationally recognised authority for assigning designations and names to celestial bodies and their surface features.

The IAU works to promote astronomical education and research in developing countries through its "Office for Astronomy Development" (OAD), through its Programme Groups "International Schools for Young Astronomers" (ISYA), "Network for Astronomy School Education" (NASE), "Teaching for Astronomy Development" (TAD), and "World Wide Development of Astronomy" (WWDA), as well as through joint educational activities with COSPAR and UNESCO.

The IAU web site provides on-line information on the Union's activities and links to the web sites of the IAU Divisions, Commissions, Working Groups, and Programme Groups. Contact with the IAU membership is maintained through this Information Bulletin, published twice per year, with a paper version as well as an e-version, available via the IAU web site.

Contact address:

IAU-UAI Secretariat

98bis bd Arago • F-75014 Paris, France

Tel: +33 (01) 43 25 83 58 • Fax: +33 (01) 43 25 26 16

E-mail: iau@iap.fr • URL: www.iau.org



Cover picture: Mechanical Astronomical Clock

Pictorial reconstruction of the astronomical clock-tower built by Su Song (1020-1101) and his collaborators at Kaifeng. Original drawing by John Christiansen, 1956.

From: Joseph Needham, Wang Ling, Derek J. de Solla Price,
Heavenly Clockwork – The great astronomical clocks of medieval China.
1960, Cambridge University Press
