



INTERNATIONAL
ASTRONOMICAL
UNION

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95



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PREFACE

The daily run of the IAU's affairs is steady, also in the years between the General Assemblies, and demanding on the small staff of the secretariat in Paris. The Union and this GS are very fortunate to have two very competent and hard working associates, Monique Léger-Orine and Claire Vidonne, to serve them.

We have been receiving comments from concerned members of the IAU that the Union should strive to become more democratic. The IAU leadership is entrusted to run and develop the Union in the best interest of its members and it listens seriously to such advice. Good communication between members and between the IAU and its members is also a precondition for a democratic Union. An updated membership database, including current e-mail addresses, coupled with a user-friendly web server, is being implemented for such purpose. The Executive Committee's recent decision to start issuing a semi-regular IAU Newsletter should further stimulate members' interest for and participation in the Union's activities.

Today's scientific publishing is strongly influenced and shaped by the global electronic network that now has become a household tool. Speed and accessibility are attractive features made possible by fully electronic manuscript handling and publishing. This new tool does not, however, guarantee higher quality of the published science. Of course, a high quality IAU Proceedings series still is the result of creative, hard working astronomers and stimulating interactions at meetings. By updating its publishing policy and routines the IAU seeks to take advantage of available technology. A timely production of Proceedings from IAU meetings in 2003 and 2004 is the result of Karel A. van der Hucht's good coordination of this work in close contact with the two Publishers and Proceedings Editors.

The Union's educational programs remain a high priority activity and responsibility. I had the privilege to meet with an enthusiastic group of students attending the recent ISYA in Morocco. Our many colleagues who take part in the International School for Young Astronomers (ISYA), Teaching for Astronomy Development (TAD) and Exchange of Astronomers (EA) programs shall be gratefully acknowledged and thanked for their invaluable contribution to growth and positive development of astronomy worldwide.

Oddbjørn Engvold, General Secretary

1. MAIN DEADLINES AND EVENTS FOR COMPLETE & UPDATED INFORMATION

please see: <http://www.iau.org/IAU/News/deadlines.html>

Submission of proposals for IAU Symposia, Joint Discussions, Special Sessions and Colloquia in 2006 must reach the Assistant General Secretary
See <http://www.iau.org/IAU/Organization/officers.html#AGS>
no later than January 3, 2005!
in order to be considered at the 80th Executive Committee meeting.
See <http://www.iau.org/IAU/Activities/meetings/>

2005

Jan	3	Submission of proposals for IAU Symposia, Joint Discussions, Special Sessions and Colloquia in 2006
	31	Request for room(s) for meeting(s) of Divisions, Commissions, Working Groups, during the XXVth General Assembly in Prague
Mar	14-18	IAUC 198 Near-Field Cosmology with Dwarf Elliptical Galaxies (<i>Switzerland</i>)
		IAUC 199 Probing Galaxies through Quasar Absorption Lines (<i>China Nanjing</i>)
Avr	18-20	80th Meeting of the Executive Committee in Rome, Italy
		Final selection by the Executive Committee and Division Presidents of proposals for IAU Symposia, Joint Discussions, Special Sessions and Colloquia in 2006
May	16-20	IAUS 227 Massive Star Birth: A Crossroads of Astrophysics (<i>Sicily, Italy</i>)
	23-27	IAUS 228 From Lithium to Uranium: Elemental Tracers of Early Cosmic Evolution (<i>France</i>)
July	26-29	9th Asian-Pacific Regional IAU Meeting (APRIM-2005) (<i>Bali, Indonesia</i>)
Aug	7-12	IAUS 229 Asteroids, Comets, Meteors - ACM 2005 (<i>Brazil</i>)
	15-19	IAUS 230 Populations of High-Energy Sources in Galaxies (<i>Ireland</i>)
Aug	29-Sept 2	IAUS 231 Astrochemistry throughout the Universe: Recent Successes and Current Challenges (<i>USA</i>)
Oct	3-7	IAUC 200 Direct Imaging of Exoplanets: Science and Techniques (<i>France</i>)
Nov	14-18	IAUS 232 The Scientific Requirements for Extremely Large Telescopes (ELTs) (<i>South Africa</i>)
Nov	15	Proposals for new Members due by Divisions or EC Working Groups Submit Resolutions type A with financial implications Submit Resolutions type B with financial implications
Dec	15	Proposals for new Members due by National Members

2006

Apr	30	Applications for Peter Gruber Foundation fellowship
May	31	Inform the IAU Secretariat of title(s) for Division/Commission/Working Group Meetings
Aug	14-25	XXVth IAU General Assembly (<i>Praha, Czech Republic</i>)

2009

Aug	2-15	XXVIIth IAU General Assembly (<i>Rio de Janeiro, Brazil</i>)
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2. SCIENTIFIC MEETINGS

please also see: <http://www.iau.org/IAU/News/futmeet.html>

2.1. FUTURE IAU SYMPOSIA

IAUS 224: The A-Star Puzzle
July 8-13, 2004, Poprad, Slovakia

Scientific Organizing Committee:

Saul J. Adelman (USA), Stefano Bagnulo (ESO, Chile), Luis A. Balona, (South Africa), Corinne Charbonnel (France), Margarida Cunha (Portugal), Francesca D'Antona (Italy), Ivan Hubeny (USA), Friedrich Kupka (UK), Gautier Mathys (ESO, Chile), Georges Michaud (Canada), Arlette Noels (Belgium), Mudumba Parthasarathy (India), Tanya A. Ryabchikova (Russian Federation), Hiromoto Shibahashi (Japan), Christiaan Sterken (Belgium), Gregg A. Wade (Canada), Werner W. Weiss (Co-Chair, Austria) & Juraj Zverko (Co-Chair, Slovakia).

Local Organizing Committee: Jozef Ziznovsky (Chair).

Principal Topics:

- Convection.
- Diffusion, the primary process for elemental segregation, accretion and stellar winds.
- Magnetic fields.
- Rotation.
- "Normal" A-type stars and chemically peculiar A, Fm and HgMn stars.
- Delta Scuti stars, Lambda Bootis stars and Gamma Doradus stars.
- Pre-main-sequence stars, evolved stars related to A-stars.
- Instrumentation.

Editors: J. Zverko, W.W. Weiss, J. Ziznovsky, & S.J. Adelman.

Contact address: Juraj Zverko

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Email: IAUS224LOC@ta3.sk - URL: <http://www.ta3.sk/IAUS224>

IAUS 225: Gravitational Lensing Impact on Cosmology
July 19-23, 2004, Lausanne, Switzerland

Scientific Organizing Committee:

Danielle Alloin (Chile), Roger D. Blandford (USA), Shashikumar M. Chitre (India), Masataka Fukugita (Japan), Nicholas Kaiser (USA), Yannick Mellier (Co-Chair, France), Georges Meylan (Co-Chair, USA), John A. Peacock (UK), Peter Schneider (Germany), Rachel L. Webster (Australia) & Xiang-Ping Wu (China Nanjing).

Local Organizing Committee: Pierre North (Chair).

Principal Topics:

- Cosmological parameters Ω , Λ , σ_8 and power spectrum.
- Time delays and Hubble constant.
- QSO-galaxy correlations.
- Redshift surveys of quasars (2dF, SDSS).
- Clusters of galaxies (Chandra, XMM-Newton).
- Sunyaev-Zel'dovich effect.
- Lensing on the CMB.
- Giant arcs and arclets in clusters of galaxies.
- Wide-field imaging and deep spectroscopic surveys (ACS on HST, Megacam at CFHT).

Surprime-Cam at Subaru, Virmos at the VLT, Deimos at KECK, NOAO northern and southern surveys).

- Comparison between X-ray and weak lensing.
- Cosmic shear.
- Galaxy halos.
- Galaxy-galaxy lensing.
- Lensing as a natural telescope.
- Strongly magnified galaxies at high redshifts (CELT, GSMT, TMT, JWST, ALMA, VST, VISTA, SNAP, OWL), lensing at millimeter wavelengths.

Editors: Y. Mellier & G. Meylan.

Contact address: Yannick Mellier

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Tel: +33 1 44 32 81 40/80 00 - Fax: +33 1 44 32 80 01

Email: IAUSymp225@obs.unige.ch - URL: <http://obswww.unige.ch/IAUSymp225>

IAUS 226: Coronal and Stellar Mass Ejections

Sept. 13-17, 2004, Beijing, China Nanjing

Scientific Organizing Committee:

Spiro K. Antiochos (USA), Volker Bothmer (Germany), Jean-Louis Bougeret (France), Andrew Cameron (UK), Hilary Cane (Australia), Ilya Chertok (Russian Federation), Kenneth P. Dere (Co-Chair, USA), Cheng Fang (China Nanjing), Terry G. Forbes (USA), Richard Harrison (UK), Hugh S. Hudson (USA), Russell A. Howard (USA), Donald V. Reames (USA), Rainer Schwenn (Germany), Kazunari Shibata (Japan), Sami K. Solanki (Germany), Bruce T. Tsurutani (USA), P. Venkatakrishnan (India) & Jingxiu Wang (Co-Chair, China Nanjing).

Local Organizing Committee: Y.H. Yan (Chair).

Principal Topics:

- Source regions (magnetic/coronal structure).
- Observed properties of CMEs.
- Theoretical models of CMEs.
- Comparisons of theories and observations.
- CMEs in the heliosphere.
- CMEs and energetic particles.
- CMEs and geomagnetic storms.
- Stellar ejecta.

Editors: K.P. Dere & J. Wang.

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Email: dere@halcyon.nrl.navy.mil - cme2004@bao.ac.cn

URL: <http://srg.bao.ac.cn/IAUS226/index.html>

IAUS 227: Massive Star Birth: A Crossroads of Astrophysics

May 15-19, 2005, Catania, Sicily, Italy

Scientific Organizing Committee:

Edward Churchwell (Co-Chair, USA), Peter S. Conti (Co-Chair, USA), Philippe R.J. Eenens (Mexico), Marcello Felli (Italy), Guido Garay (Chile), Yasuo Fukui (Japan), Suzana Lizano (Mexico), C. Malcolm Walmsley (Italy) & Hans Zinnecker (Germany).

Local Organizing Committee: Marcello Felli (Chair).

Principal Topics:

- Introductory framework: the role of massive stars in astrophysics; Orion, the nearest massive star birth region.
- Star birth sequence, the environments: chemistry as a tracer of high-mass star birth; molecular envelopes and deeply embedded YSOs; Modelling protostellar SEDs; hot cores; jets from hot cores; dissipation of stellar discs; hypercompact HIM; radio observations of UCHII regions; IR observations of UCHII regions; SPITZER observations of MSF regions.
- Star birth sequence, the stars: stellar evolution before the ZAMS; the role of magnetic fields in star formation; accretion processes; binary mergers; massive star outflows; CHANDRA observations of massive star birth; X-ray studies of young protostars; parameters of ZAMS Stars; parameters of massive YSOs; winds in ZAMS O-type stars.
- Star birth in a cluster environment: molecular clouds and clusters; molecular cloud cores/clusters in the Magellanic clouds; IR studies of newly formed clusters; turbulence and star birth; SPITZER studies of newly formed clusters; proto clusters: massive/low mass star formation; NIR studies of GHII region clusters; star birth clusters; Population III massive Stars.

Editors: Edward B. Churchwell & C. Malcolm Walmsley.

Contact address: Peter S. Conti

Email: pconti@jila.colorado.edu - URL: <http://www.arcetri.astro.it/iaus227/>

IAUS 228: From Lithium to Uranium: Elemental Tracers of Early Cosmic Evolution

May 23-27, 2005, Paris, France

Scientific Organizing Committee:

Tom Abel (USA), Nobuo Arimoto (Japan), Beatriz Barbuy (Brazil), Roger Cayrel (Chair, France), Alessandro Chieffi (Italy), Bengt Gustafsson (Sweden), Amina Helmi (the Netherlands), Vanessa Hill (France), Poul E. Nissen (Denmark), Keith A. Olive (USA), Max Pettini (UK), Francesca Primas (Germany), Christopher Sneden (USA), Friedrich-Karl Thielemann (Switzerland) & Simon D.M. White (Germany).

Local Organizing Committee: Vanessa Hill (Chair).

Principal Topics:

- Historical context and tribute to F. & M. Spite.
- Primordial nucleosynthesis: lithium the "Spite Plateau"; lithium and the Big Bang nucleosynthesis.
- First stars: First stars formation; IMF of the first stars; stellar evolution at $Z=0$.
- Extremely metal-poor stars: Search for Pop. III stars and metallicity distribution of EMPS; observed abundances from C to iron-peak elements.
- Nucleosynthesis and yields: massive stars and SNe yields predictions; intermediate-stars yields; constraints on yields from direct observations of ejecta (SNe, PNe).
- The globular cluster-field relation: observed abundances in old field stars; abundances in globular clusters and formation scenarios.
- Heavy elements: r-process production and observations; s-process production and observations; thorium and uranium as cosmo-chronometers.
- Linking the halo with its surroundings: abundances in nearby dwarf spheroidal galaxies; the chemical-kinematics connection.
- The high-redshift connection: abundances in damped Lyman-alpha systems; abundances in the intergalactic medium; abundances in high-redshift star-forming galaxies.

Editors: Vanessa Hill, Patrick Francois & Francesca Primas.

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Email: Vanessa.Hill@obspm.fr - URL: <http://wwwgepi.obspm.fr/symp228/index.php>

IAUS 229: Asteroids, Comets, Meteors - ACM 2005*August 8-12, 2005, Rio de Janeiro, Brazil***Scientific Organizing Committee:**

Richard P. Binzel (USA), Angioletta Coradini (Italy), Julio A. Fernández (Co-Chair, Uruguay), Sylvio Ferraz-Mello (Co-Chair, Brazil), Gerhard Hahn (Germany), Dimitrij Lupishko (Ukraine), Alessandro Morbidelli (France), Jana Ticha (Czech Republic), Jun-ichi Watanabe (Japan) & Iwan P. Williams (UK).

Local Organizing Committee: Daniela Lazzaro (Chair).

Principal Topics:

- Internal structure of asteroids and comets: binaries and satellites, gravitational aggregates, cometary nuclei structure.
- Trans-Neptunian Objects (TNOs): physical properties, structure of the Kuiper belt.
- Connections between asteroids, cometary nuclei and trans-Neptunian objects: differences and similarities.
- Connections between asteroids and meteorites: mineralogical characterization.
- Connections between comets, meteor showers and interplanetary dust.
- Minor bodies dynamics: origin of comets, transitions between populations, non-gravitational forces, asteroid families.
- Collisions and impacts: cratering, breakup, collisional evolution, hazards, bolides and super bolides, evolution of life.
- Near-Earth Objects (NEOs): searching, statistics, origin, physical characterization.
- Origin and evolution of our Solar System and extra-solar planetary systems: implications from minor bodies studies.

Editors: Daniela Lazzaro, Sylvio Ferraz-Mello & Julio A. Fernández.

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Email: lazzaro@on.br - URL: <http://www.on.br/acm2005/>

IAUS 230: Populations of High-Energy Sources in Galaxies*August 15-19, 2005, Dublin, Ireland***Scientific Organizing Committee:**

L. Bassani (Italy), Brian McBreen (Ireland), You-Hua Chu (USA), C. Done (UK), Giuseppina Fabbiano (Co-Chair, USA), Günther Hasinger (Germany), Gloria Koenigsberger (Mexico), Katsuji Koyama (Japan), Vladimir M. Lipunov (Russian Federation) & Evert J.A. Meurs (Co-Chair, Ireland).

Local Organizing Committee: B. McBreen (Chair).

Principal Topics:

- Key source categories in our Galaxy.
- High-energy processes in the ISM relevant to population evolution.
- Detailed population studies in Magellanic Clouds, Local Group, nearby galaxies.
- Source classes that emerge when sampling over galaxies; feedback on stellar evolution scenarios.
- Overall population characteristics.
- High-energy population synthesis modelling.
- The high-redshift context.

Editors: Evert J.A. Meurs & Giuseppina Fabbiano.

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Email: ejam@halley.dunsink.dias.ie URL: <http://www.dunsink.dias.ie/IAUS230/index.html>

IAUS 231: Astrochemistry throughout the Universe: Recent Successes and Current Challenges

August 29-September 2, 2005, Monterey, CA, USA

Scientific Organizing Committee:

Louis J. Allamandola (USA), John H. Black (Sweden), Geoffrey A. Blake (USA), Paola Caselli (Italy), Ewine F. van Dishoeck (Chair, the Netherlands), Pascal Ehrenfreund (the Netherlands), Guido Garay (Chile), Michel Guelin (France), Chris Henkel (Germany), Eric Herbst (USA), Uffe G. Jorgensen (Denmark), John P. Maier (Switzerland), Karl M. Menten (Germany), Tom J. Millar (UK), Young Chol Minh (Korea, Rep of (South Korea)), Masatoshi Ohishi (Japan), Alejandro C. Raga (Mexico), Johnatan M.C. Rawlings (UK), Bertrand R. Rowe (France) & Jongmann Yang (China Nanjing).

Local Organizing Committee: *Thomas G. Philips* (Chair).

Principal Topics:

- Star formation.
- Complex molecules in the universe.
- Energetic interfaces (PDRs, shocks, turbulence, masers).
- Connection with the solar system.
- Basic molecular processes.
- Diffuse and translucent clouds.
- Extragalactic chemistry.
- Current and future challenges.
- The formation of molecular hydrogen.

Editors: Dariusz C. Lis, Geoffrey A. Blake & Eric Herbst.

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Email: herbst@mps.ohio-state.edu - URL: <http://asilomar.caltech.edu/>

IAUS 232: The Scientific Requirements for Extremely Large Telescopes (ELTs)

November 14-18, 2005, Cape Town, South Africa

Scientific Organizing Committee:

Arne L. Ardeberg (Sweden), Yuri Yu. Balega (Russian Federation), Beatriz Barbuy (Brazil), David A.H. Buckley (South Africa), Philip A. Charles (South Africa), Matthew Colless (Australia), Xiang-Qun Cui (China Nanjing), Michel Dennefeld (Co-Chair, France), Gerard F. Gilmore (UK), Isobel M. Hook (UK), Masanori Iye (Japan), Rolf-Peter Kudritzki (USA), Bruno Leibundgut (Germany/ESO), Jeremy R. Mould (USA), Andreas Quirrenbach (the Netherlands), Virginia L. Trimble (Co-Chair, USA) & Patricia A. Whitelock (South Africa).

Local Organizing Committee: *Philip A. Charles* (Chair).

Principal Topics:

- Major achievements (and shortcomings) of 8-10m class projects.
- General features of the various ELT projects.
- Scientific goals of ELT's.
- Distant galaxies and cosmology.
- Nearby galaxies, ISM, stellar populations.
- Stars, planets and planetary systems.
- Links with other Large Facilities (ALMA, JWST, SKA, ...).
- Confrontation with technical possibilities and instrumentation plans.

Editors: Michel Dennefeld & Patricia A. Whitelock.

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Email: dennefel@iap.fr - URL: <http://www.saao.ac.za/IAUS232/>

2.2. FUTURE IAU COLLOQUIA

IAUC 197: Dynamics of Populations of Planetary Systems

Aug. 31-Sept. 4, 2004, Belgrade, Serbia & Montenegro

Scientific Organizing Committee:

Joseph A. Burns (USA), Rudolf Dvorak (Austria), Sylvio Ferraz-Mello (Brazil), Claude Froeschle (France), John D. Hadjidemetriou (Greece), Zoran Knezevic (Co-Chair, Serbia & Montenegro), Anne Lemaitre (Belgium), Andrea Milani (Co-Chair, Italy), Vladimir Porubcan (Slovakia) & Giovanni B. Valsecchi (Italy).

Local Organizing Committee: Ivan Pakvor (Chair).

Principal Topics:

- Dynamical behavior of entire populations of celestial bodies, observed and simulated.
- The populations: small solar system bodies (asteroids, comets, meteoroid streams, rings and interplanetary dust); artificial objects (space debris); known and hypothetical extra-solar planets; virtual objects representing the uncertain orbit of a newly discovered object.
- Connections with similar problems in stellar dynamics.
- The methods: analytical, semi-analytical and synthetic theories of proper elements, high-performance numerical integration, approximate integrators, advanced computer graphics, including color coded maps and animations.

Editor: Zoran Knezevic.

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Email: zoran@aob.bg.ac.yu - URL: <http://www.aob.bg.ac.yu/IAUCol197/>

IAUC 198: Near-Field Cosmology with Dwarf Elliptical Galaxies

March 14-18, 2005, Les Diablerets, Switzerland

Scientific Organizing Committee:

Bruno Binggeli (Co-Chair, Switzerland), Nelson Caldwell (USA), Jonathan I. Davies (UK), Enrico V. Held (Italy), Helmut Jerjen (Co-Chair, Australia), Igor D. Karachentsev (Russian Federation), John Kormendy (USA), Mario Mateo (USA), Ben Moore (Switzerland), Joseph Silk (UK), Eline Tolstoy (the Netherlands), & R. Brent Tully (USA).

Local Organizing Committee: Bruno Binggeli (Chair).

Principal Topics:

- Dwarf galaxy surveys.
- Faint-end luminosity function: implications for CDM models.
- Distance and velocity measurements, spatial distribution.
- Luminosity structure and morphological variety.
- Star clusters and nuclei.
- From gas to stars: content and structure of dwarf ellipticals.
- Galaxy transformation processes: outflows, winds, and the fate of dwarfs.
- Kinematics and dynamics, DM halos.
- Star-formation histories of dEs and their possible contribution to faint galaxy counts.
- Models for the formation of early-type dwarfs.

Editors: Helmut Jerjen & Bruno Binggeli.

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Email: jerjen@mso.anu.edu.au - URL: <http://www.mso.anu.edu.au/IAUC198>

IAUC 199: Probing Galaxies through Quasar Absorption Lines*March 14-18, 2005, Shanghai, China Nanjing***Scientific Organizing Committee:**

Jacqueline Bergeron (France), Jiansheng Chen (China Nanjing), Stefano Cristiani (Italy), Brice Ménard (Co-Chair, USA), Houjun Mo (USA), Max Pettini (UK), Huub Röttgering (the Netherlands), David A. Turnshek (Co-Chair, USA) & Simon D.M. White (Germany).

Local Organizing Committee: Chenggang Shu (Chair).

Principal Topics:

- Absorber spectroscopy: absorption line surveys; results from high-resolution spectroscopy.
- The Absorber-galaxy connection: galaxy-absorber cross-correlation functions; deep imaging of absorber systems; cosmological evolution of absorbers and galaxies.
- Chemical evolution and feedback into the IGM: latest observational constraints; metal-rich systems; galaxy evolution; confrontations against galaxy formation models.
- Lyman-alpha systems: the nature of Ly-alpha clouds; the connection to galaxies; chemical evolution; kinematics of DLAs; modelling galaxy formation at high z.
- Spatial distribution of absorbers and galaxies: absorber clustering; galaxy clustering from observations (SDSS, 2dF, ...).
- Probing re-ionisation with quasar absorption lines.

Editors: Peter R. Williams, Chenggang Shu & Brice Ménard.

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Email: menard@ias.edu - URL: <http://center.shao.ac.cn/qsoals>

IAUC 200: Direct Imaging of Exoplanets: Science and Techniques*October 3-7, 2005, Nice, France***Scientific Organizing Committee:**

Claude Aime (Co-Chair, France), Malcolm Fridlund (Sweden), Thomas Henning (Germany), Anne-Marie Lagrange (France), Andreas Quirrenbach (the Netherlands), Roberto Ragazzoni (Italy), Daniel Rouan (France), Jean Schneider (Co-Chair, France), Sara Seager (USA), Michael Shao (USA), Motohide Tamura (Japan) & Wesley A. Traub (USA).

Local Organizing Committee: Farrokh Vakili (Chair).

Principal Topics:

The topic of the colloquium will be the detection and analysis of photons directly coming from terrestrial and giant exoplanets by means of coronagraphic and interferometric techniques. It will address the interest of such a detection for a physical characterization of the planets (spectrum, polarization, temporal variation, bio signatures,...) and instrumental requirements. Instrumental techniques for detecting exoplanets will be considered on a general basis (monolithic and diluted apertures, infrared and visible, diffraction and interferometric techniques, ground (AO) and space observations, theory and experiment). An important part will be left for advanced active or passive techniques, such as active reduction of residual speckles in coronagraphy or passive image processing. It is expected that the approach of detection and estimation (in terms of signal processing) will allow better comparison of the techniques between them (theoretical benchmarks).

Editors: Claude Aime & Farrokh Vakili.

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2.3. FUTURE REGIONAL MEETING

9th Asian-Pacific Regional IAU Meeting (APRIM-2005)

July 26-29, 2005, Nusa Dua, Bali, Indonesia

Scientific Organizing Committee:

Brian J. Boyle (Australia), Leonardo Bronfman (Chile), Cheng Fang (China Nanjing), John B. Hearnshaw (New Zealand), Bambang Hidayat (Indonesia), John P. Huchra (USA), Satoru Ikeuchi (Japan), Norio Kaifu (Japan), Iraida S. Kim (Russian Federation), Sun Kwok (China Taipei), Hyung Mok Lee (Korea, Rep of (South Korea)), Shin Mineshige (Japan, Co-Chair), Iratio Radiman (Indonesia), Ding-Qiang Su (China Nanjing), Winardi Sutantyo (Co-Chair, Indonesia), Russell Taylor (Canada), Jayant Vishnu Narlikar (India) & Gang Zhao (China Nanjing).

Local Organizing Committee: Premana W. Premadi (Chair).

Principal Topics:

- Solar physics, planetary systems and extra solar planets.
- Stellar evolution, activities, binaries.
- Compact objects, AGNs and high-energy/cosmic ray astrophysics.
- The Milky Way, interstellar matter, star formation.
- Galaxies, large scale structure, cosmology.
- Gravitational lensing.
- Cosmology.
- Numerical astrophysics.
- Astronomical instrumentation.
- Education and popularization of astronomy.

Editors: Winardi Sutantyo, Shin Mineshige & Premana W. Premadi.

Contact address: Premana W. Premadi

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2.4. CALL FOR PROPOSALS FOR IAU SYMPOSIA, JOINT DISCUSSIONS (JDs), SPECIAL SESSIONS (SPSs) AND COLLOQUIA IN 2006

The International Astronomical Union encourages its members to submit proposals for IAU Symposia, Joint Discussions, Special Sessions and Colloquia for the year 2006, in close consultation with IAU Commissions and Divisions. In 2006 the XXVIth IAU General Assembly (GA) will take place in Prague, the capital of the Czech Republic, from 14 to 25 August. See: <http://www.astronomy2006.com/index.htm>.

As stated in the *Rules and Guidelines for IAU Scientific Meetings* given in <http://www.iau.org/IAU/Activities/meetings/meetrules.html>:

"In years when a GA is held, most or all **Symposia** are scheduled within the scientific program of the GA and held at the same venue. In these cases, the GA Local Organizing Committee (LOC) handles the local organization, and the General Secretary (GS) in consultation with the organizers of the individual Symposia coordinates the financial support allocated for the Symposia."

"**Joint Discussions** are organized during GAs to address scientific themes of interest to more than one Commission."

"...**Special Sessions** normally last between 0.5 to 1.5 days at the GA..."

"In the years of a GA, **Colloquia** are, as a rule, scheduled no closer than three months to the GA itself."

Should IAU members decide to propose an IAU Symposium, Joint Discussion, Special Session or Colloquium for the year 2006, the following is the way to proceed:

- Please read the instructions for IAU Meeting Proposals given on the website <http://www.iau.org/IAU/Activities/meetings/meetrules.html>.
- Next, observe the "Main Deadlines and Events" given on [this IB p3](#) and on the website <http://www.iau.org/IAU/News/deadlines.html>.
- Thus, the first step is to send a one-page Letter of Intent to the IAU Assistant General Secretary <K.A.van.der.Hucht@sron.nl> before September 1, 2004, giving name, dates, venue, candidate SOC chair, candidate LOC chair and list of topics of the foreseen Symposium or Colloquium.
- The last step is to submit your final proposal to the IAU Proposal Server at <http://solarphys.uio.no/IAU/>, before January 3, 2005.

3. DIVISION MATTERS

3.1. NEWS FROM EC WORKING GROUPS

F. Pacini, President of the Working Group on "2009, the Year of Astronomy" reports the contact he had in Italy at the governmental level. The next step will be to ask the government to contact UNESCO. A circular letter will be sent to UNESCO National Members, letter which could be supported by each EC member in her/his respective country.

The EC proposes also that, in addition to the President of Commission 41 (History of Astronomy) and to representatives to regions, some individuals accustomed to the work of big agencies be implied in the preparation of this event. The following names are proposed:

- E. Chaisson (North America)
- J. Fiero (South America)
- A. Gurshtein (Pt C 41)
- S. Isobe (Asia)
- S. Maran (NASA)
- R. West (ESO)

The following steps are proposed:

- Diffusion of pictures in real time;
- Some activities related to Astronomy in relation with particular parts of the world;
- Identify some people who would like to work on this issue;
- Focus on one day or one week (some magic day, magic night);
- etc.

3.2. NEWS FROM IAU DIVISIONS & DIVISION WORKING GROUPS

Division I

As regards the IAU Resolutions concerning Coordinates and Time Resolutions adopted by the IAU in 1997 & 2000, the IAU will be given the possibility to present them at a Special Meeting of the AAS organized by USNO on May 2004 on "The Reference Frames Resolutions of the IAU".

Division III

The proposal to create a Working Group on the "Definition of a Planet" is accepted, with the following Organizing Committee:

Kaare Aksnes, President of the Working Group on "Planetary System Nomenclature" (WGPSN); Jana Ticha, President of the Committee on Small Body Nomenclature (CSBN); Brian Marsden, President of the "Minor Planet Centre Advisory Committee" and Alan Stern, Member of Commission 16.

Division XII

The Working Group on "Communicating Astronomy with the Public" has been accepted through e-mail by the Executive Committee, with D. Crabtree and I. Robson as Co-Presidents.

3.3. NEWS FROM IAU COMMISSIONS & COMMISSION WORKING GROUPS

Commission 6

Annual Report 2003 of the Central Bureau for Astronomical Telegrams (CBAT)

A total of 220 *IAU Circulars* were issued in 2003, down slightly from the 259 published in 2002 and the 229 published in 2001. Fifty-four preliminary "Central Bureau Electronic Telegrams" (CBETs) were also issued in 2003, the first full year of implementation of this new feature that permits easier dissemination of urgent information than the *Circulars* (see last year's Annual Report). The use of CBETs especially helps when the Director is traveling; indeed, no *IAUCs* were issued during the Director's presence at the IAU General Assembly in Sydney in July, all information in that 2-week span being issued via CBETs (with full details published later on the formal *IAUCs*).

The most common topics covered again were supernovae (for which 316 designations for 2003 discoveries, 40 designations for 2002 discoveries, and 20 designations for earlier discoveries were announced on the year's *Circulars*, though three 2003 designations were found later to not be supernovae). Follow-up text on supernovae amounted to an additional 124 titles on *IAUCs* during 2003. The brightest supernova of the year, SN 2003hv in NGC 1201 (found in early September at unfiltered CCD mag 12.5 by the Lick Observatory Supernova Search project), was surprisingly little observed. Two visual discoveries by Robert Evans of Australia (SN 2003gd in M74 in June, and SN 2003gs in NGC 936 in July) reached mag 13-13.5. At the opposite end of the brightness range, a third of the supernovae receiving designations in 2003 were fainter than mag 20 at discovery. Though not the same subset, a full third of the objects given supernova designations in 2003 had no spectroscopic confirmation. Of the objects assigned some spectroscopic classification (some tentatively) during the year, 86 were categorized as type II, 153 as type Ia, and 27 as type Ib or Ic.

After much discussion between the CBAT Director and the 'supernova community' about what to do regarding the increasingly numerous spectroscopically unconfirmed faint supernovae (which many in the supernova community do not want given the formal supernova designations that bright or confirmed objects receive), a plan enthusiastically adopted by the new IAU Supernova Working Group (SNWG) in Sydney in July to establish a new CBAT/SNWG webpage for the posting of such problem objects apparently is still in the construction phase (hopefully to be implemented sometime in 2004); unconfirmed objects will then receive preliminary designations based on date of discovery, to be followed later by the standard, final supernova designation on *IAUCs* if and when confirmed.

Five galactic novae were reported on *IAUCs* during 2003, none evidently getting brighter than mag 7.7 (reached by DE Cir in October). Also, nineteen separately titled follow-up items to these novae appeared during the year. Twenty items were reported on *IAUCs* regarding novae in other galaxies, 32 items appeared concerning other unusual Galactic variables, and 41 items were published on the *Circulars* concerning non-optical transient astronomical objects. Late in the year, an unusual 3-magnitude outburst was reported of a quasar (*IAUC* 8258). GRB 030329 received considerable attention on the *Circulars* in 2003, its optical signature eventually given the supernova designation 2003dh (*IAUC* 8114).

Comets continued in 2003 to have a standard presence in the CBAT publications, with non-spacecraft discoveries and re-discoveries appearing under 49 titles, and follow-up information appearing under 55 additional titles. Comet C/2003 A2 (Gleason) set a new record for perihelion distance of a known comet, with $q = 11.4$ AU. SOHO near-sun

discoveries appeared under eleven separate titles during the year (due to personnel changes in SOHO staff, there was a significant lull in reporting of such finds in the latter part of 2003). Three long-lost comets were rediscovered and numbered during the year (comets 156P/Russell-LINEAR, 157P/Tritton, and 158P/Kowal-LINEAR, on *IAUCs* 8118, 8128, 8215, and 8247); further, a link to comet 104P/Kowal was made with a previously unconfirmed comet that had been reported by amateur Leo Boethin to the CBAT in early 1973 (*IAUC* 8255). The Lincoln Near-Earth Asteroid Research (LINEAR) CCD-search project again netted by far the most ground-based comet discoveries in 2003, with thirty credited finds on *Circulars* published during the year. The Jet Propulsion Laboratory's Near-Earth-Asteroid Tracking (NEAT) program was second with ten. The annual Edgar Wilson Award for comet discovery by amateurs was also announced by the Central Bureau, with five recipients in 2003.

Comet P/2003 A1 has not yet been named, because it may not be possible to determine whether or not it is identical with comet D/1783 W1 (Pigott) until it is recovered after aphelion (orbital period 7.1 years). The CBAT Director worked with his fellow members in the IAU Committee on Small Bodies Nomenclature during the previous IAU triennium to produce an extensive set of comet-naming guidelines that was adopted in 2003, covering the many complications that have arisen in the last two triennia due to the rise of the CCD surveys and web-based posting of data. The Director also provided the chairman's report in Sydney for the subcommittee on comet magnitudes, and there Commission 20 approved his recommendations to introduce a new scheme in this current triennium to:

- a. add codes for aperture sizes and band passes (replacing the old 'total' and 'nuclear' magnitudes), and
- b. use default exponent values of $n = 3$ for the heliocentric term in the standard power-law equation for ephemerides of newly discovered comets having intermediate or long orbital periods (and to state clearly the magnitude parameters used in ephemerides).

Several *IAUCs* during 2003 covered the discoveries of numerous satellites of both major and minor planets, plus some purported binary nature reports of other minor planets. Twenty-one new satellites of Jupiter, one of Saturn, five of Neptune, and three of Uranus were announced during the year (along with a rediscovery of a lost Uranian satellite first discovered in 1986 and some small objects near Jupiter V found in Galileo spacecraft data). Also, new names of satellites approved at the IAU General Assembly were announced in August on *IAUC* 8177.

The CBAT has a notable presence on the World Wide Web, with its *Circulars* posted freely for some years now, usually after a short delay (several weeks) following publication, which paying subscribers demand. A useful "Headlines" webpage (<http://cfa-www.harvard.edu/iau/Headlines.html>) lists standard objects for which the CBAT is charged with the announcement and assignment of designations (comets, satellites, novae, supernovae). Much of the CBAT website is interlinked with the MPC website.

The number of paid subscribers to the printed edition of the IAU *Circulars* continued to fall, from 216 at the end of 2001, and 193 at the end of 2002, to 179 at the end of 2003. In addition, there were 37 free (complimentary or exchange) subscriptions to the printed *IAUCs* at the end of 2003. The printed *IAUCs* go to 62 addresses within North America and 117 outside of North America. The number of subscribers to the Computer Service (shared by the CBAT with the MPC) remained very stable, at around 470, as did that to the Extended Computer Service, at around 70. Line charges for non-amateur contributions published on the *IAUCs* that do not pertain to discoveries and

confirmations of comets, novae, supernovae, and satellites have been important to the funding of the Central Bureau for several decades, and will continue to be important.

As noted in the report of the Commission 6 meeting in Sydney (*IAU Transactions*), Minor Planet Center (MPC) Associate Director G. V. Williams, who has continued to serve as CBAT webmaster (and has been responsible for the Web CS dissemination of the *IAUCs*), was appointed as Assistant Director of the CBAT. As in recent years, most of the *Circulars* in 2002 were prepared by the undersigned, with very helpful editorial backup by Director Emeritus B. G. Marsden (who prepared the occasional Circular during the year and helped to proof read and critique most of the rest prior to issuance). New MPC staff member Kyle Smalley helped monitor CBAT activity occasionally in the Director's absence from Massachusetts. Numerous referees worldwide, especially some who are Commission 6 members, are also to be thanked for their great help with many items published on *Circulars* in 2003 (causing, unfortunately, quite a number of contributions to be rejected), continuing the long practice of the *IAUCs* being a refereed publication. At SAO, Muazzez Lohmiller has continued to handle the accounts, addressing of envelopes, and other administrative matters. Dan Wooldridge continues, as he has for years, with the fine printing of the *IAUC* cards.

Daniel W. E. Green, Director of the Central Bureau for Astronomical Telegrams

Commission 20

Annual Report 2003 of the Minor Planet Center (MPC)

During 2003 the Minor Planet Center completed a quarter-century of operation from the Smithsonian Astrophysical Observatory, following the move from its birthplace at the Cincinnati Observatory. Year by year since that move, the volume of activity of the MPC has increased. The most impressive contribution during the past quarter-century has come, of course, from observers, in testament to whom I note that the MPC file of observations, just 189 shy of 21 million at the end of 2003, had grown by a factor of almost exactly 100 during that time. The number of objects with at least a tolerably meaningful orbit solution has increased perhaps 50-fold to 232 470, while the number of numbered minor planets, now 73 636, has increased by a factor of more than 35 since the Cincinnati days.

Nevertheless, by almost all measures, the activity this past year was for the first time significantly *less* than during the previous year. The file of observations increased by only 4.9 million in 2003, some 13 percent less than in 2002. Worse, the 24~000 increase in the total size of the orbit file in 2003 was just under *half* the increase in *each* of the preceding *three* years. Although the reason for the reduction in the observing rate is quite mundane, that for the reduction in the orbit rate is presumably an illustration of the limitations of the technology currently used. Since this technology is principally that used for NEA searches, the drops in NEA and PHA discoveries during the year, from 485 to 443 and from 89 to 82, respectively, rather confirm this conclusion, these drops being not so extreme use of the continuing steady supply of intrinsically faint objects sufficiently close to the earth to render discovery possible. However, since the production of the highest-quality orbit computations requires the acquisition of continuing observations over time, it is not surprising that the 21~412 permanent numberings of minor planets during 2003 should again be a record, almost 10 percent over the previous record numbering addition in 2002.

There was also a decrease in the number of discoveries of transneptunian objects and centaurs, from 176 to 134, bringing the total to 909. Since these discoveries depend on the availability and use of time on large telescopes, this reduction principally reflects simply a lack of activity. Indeed, 2003 was instead a bumper year for the detection of faint outer

satellites of the giant planets. No fewer than 23 new satellites of Jupiter were discovered during the year (two of them not being announced until early 2004). There were also announcements of three new outer satellites of Uranus and five of Neptune, in each case with observations at multiple oppositions, and there was a single new satellite of Saturn.

The combined number of printed pages of the *Minor Planet Circulars* and *MPS* and *MPO* observation and orbit supplements published during the year was 44~698, also a reduction, but only by 5 percent, from the record year of 2002. The *MPCs* themselves were issued in 10 essentially monthly batches, although five were "mini-batches" that did not contain observations or orbits of minor planets and were therefore not accompanied by *MPOs*. On the other hand, the frequency with which "midmonth" batches of *MPSs* were issued was dramatically increased, basically to a batch every Sunday (with some exceptions), from May onward. The number of *Minor Planet Electronic Circulars* issued, 1608, was practically identical with the number issued in 2002.

The number of subscribers to the Computer Service the Minor Planet Center shares with the Central Bureau for Astronomical Telegrams remained very stable, at around 470, as did that to Extended Computer Service, at around 70. Subscriptions to the printed *MPCs* continued to drop steadily, from 139 to 125 during the year. Donations were very gratefully received from M. Dawson (Luxembourg), D. Dixon (New Mexico), F.~K.~Edmondson (Indiana), F. R. Santore (California), L.~K.~Sloan (California) and an anonymous donor. Continuing support from the U.S.\ National Aeronautics and Space Administration, as well as from the IAU, is also very much appreciated.

There was also generous support this year from three U.S.\ foundations, namely, the Tamkin Foundation, the Brinson Foundation, and especially from the Steven and Michele Kirsch Foundation. In particular, the Kirsch support allowed the MPC to continue to employ Kyle Smalley as a contractor after NEO Technical Specialist Tim Spahr returned from a four-month leave of absence. In addition, MPC Associate Director writes most of the MPC's computer programs, serves as system manager and processes extensive batches of observations, while the undersigned carries out most of the work on transneptunian objects, comets and satellites. Having what amounts to a basic staff of four has made it easier for the MPC at least to attempt to maintain a 16/7 operation (although computers are working 24/7), considered essential in order to attend appropriately to discovery and follow-up reports of NEAs, although extraordinarily long days of work continue to prevail for all concerned. Further, by publishing the verified, routine observations on what is essentially a weekly basis, those of comets being in the *MPECs*, the MPC appears to be better meeting the perceived need of the community. The drawback, of course, is that by expending extra effort on this, the formal *MPC* publication with credits to observers, and even the assignment of new numberings of minor planets, must necessarily become less frequent, and it is likely that the issuance of full batches of *MPCs* will routinely be no more frequent than quarterly in the future.

Muazzez Lohmiller continued to be responsible for mailing the *MPCs* and maintaining the subscriber accounts and address lists. Billy Duggan oversaw the printing, collating and stapling of the *MPCs* in the SAO's print shop. Syuichi Nakano again liaised with many Japanese observers, and Susan Russell again gave extensive help with the editing of the citations for new namings of minor planets.

Brian G. Marsden, Director of the Minor Planet Center

Terms of reference of the Minor Planet Center (MPC)

The document has been revised and should be signed by NASA and SAO in a near future.

**Commission 46
Program Group for the World Wide Development of Astronomy (PGWWDA)**

Astronomy in the People's Republic of Mongolia

1. Introduction

I visited Mongolia for one week in mid-March 2004 as chairperson of the IAU Commission 46 Program Group for the World-wide Development of Astronomy (PGWWDA). The purpose of my visit was to assess the current situation in Mongolia concerning astronomical teaching and research and to make appropriate recommendations to the IAU on possible future development of astronomy in that country.

The host for my visit was Professor G. Batsukh, professor of geophysics at the National University of Mongolia. He is one of three academics at NUM who are involved with the teaching of astronomy at undergraduate level. Although Mongolia has seven state universities, NUM is the most prestigious, and its program encompasses a wide range of technical and scientific fields. NUM was founded in 1942 and has some 10,000 students and 600 academic staff.

Mongolia is a vast land-locked country lying between China and Russia in eastern Asia. The country is some 1300 km from north to south and 2400 km from east to west and comprises 1,556,500 square km. The population is only 2.6 million, making the average population density one of the lowest in the world. The terrain varies from arid (Gobi desert) in the south-east, to lightly forested in the north. The west is very mountainous, but mountains occur throughout much of the country.

The climate is continental and exceedingly harsh. In January the mean temperature is -28°C , in July it is $+25^{\circ}\text{C}$. For March when I was there the day-time temperature was within a few degrees of zero. Mongolia has a climate most conducive for observational astronomy; there are some 250 sunny days a year, the air is always very dry and industrial and light pollution are mainly almost absent.

One quarter of the population lives in Ulaanbaatar; there are a few other cities, but of lesser importance. A large fraction of the population is nomadic herdsmen who live in tents (gers) and who own horses, sheep, yaks, goats, cattle or camels. In spite of that, the literacy rate is fairly high at nearly 90 per cent.

Although Mongolia is a Buddhist nation, religious activities do not dominate everyday life. In particular, Mongolian women appear to be very emancipated and they play a full and active role in university life and in society in general. Mongolia has a long and proud cultural history dating back to Ghengis Khan in the 12th to 13th centuries, and it was a monarchy for several centuries until 1921. The last king was the eighth Bogd Khan, whose former palace in U.B. is now a museum. Included in this Buddhist cultural tradition there is a reverence for astronomy and learning.

The country, which is now a parliamentary democracy (since 1991), is developing fast, and this is especially obvious in Ulaanbaatar, where there is much construction going on. Many western experts are providing technical expertise and advice under various aid programs.

2. *Astronomy in Mongolia*

a) National University of Mongolia (NUM)

The National University of Mongolia is in central U.B. on a site comprising about four large buildings. The infrastructure and facilities appeared to be good for a developing country. Certainly there were a large number of desktop personal computers everywhere I went, and the technology of laptops and data projectors was readily available for presentations.

NUM has a School of Physics and Electronics within which is located the Department of Geophysics of which Prof. Batsukh is head. Prof. Batsukh and two other staff members teach astronomy at undergraduate level. One of these is Dr. Ulaanbaatar (his name is the same as the capital city!) and another is Prof. Lhagvajav, who is head of the School of Physics and Electronics.

There are some 80 undergraduates majoring in geophysics and these graduate with a bachelor's degree after four years. Astronomy and astrophysics courses are compulsory credits for this degree. In addition there are four optional courses in astronomy that can be taken. They are planetology, astronomy of galaxies, stellar astronomy and applied astrophysics.

The Geophysics Department was founded in 1978 and atmospheric physics research has been a major interest since that time. However new fields of research are opening up, and remote sensing using satellite data was one new area being currently pursued. The Geophysics Department is divided into four sections: atmospheric research, plate geophysics, the laboratory for geophysical data, and the astronomical laboratory. The last section operates a small 20-cm aperture catadioptric telescope on the roof of the department, which can be used by students for astronomical viewing.

At the present time there are no graduate students at either MSc or PhD levels doing theses in astronomy at NUM. That situation could in principle change at any time, as the basic requirements of potential supervisors and a reasonably good infrastructure in terms of computers and internet access already exist. In the School of Physics and Electronics (which includes the Dept. of Geophysics) there are however at present 20 PhD students and 25 MSc students. In the university as a whole, these numbers are respectively 224 and 404. Therefore the graduate student tradition is well established at this university.

I saw various publications produced by NUM astronomy staff. One was a textbook in Mongolian published in 2002 for teaching astronomy at undergraduate level. It is written by Prof. C. Lhagvajav and by Prof. N.-U. Tugjsuren, who is professor of physics at the Mongolian Technical University in U.B.

Prof. Batsukh also gave me a reprint of a paper by himself and others on the number of hours usable for astronomical observation at several sites in Mongolia (G. Batsukh et al., *A&A Suppl Ser.* 113, 341 (1995)). The paper analyses the number of clear night-time hours at nine potential astronomical sites distributed throughout Mongolia, as well as giving other relevant climatic data. Mongolia has several outstanding sites suitable for optical astronomy, with on average over 2000 clear night-time hours per year (this excludes hours within astronomical twilight), comparable with La Silla or Cerro Tololo in Chile. One of the sites tested was Khurel Togoot near U.B., which is already the site of Mongolia's only astronomical observatory.

b) The Research Center of Astronomy and Geophysics and the Khurel Togoot Observatory

The Research Center of Astronomy and Geophysics (RCAG) is one of 15 research centres or institutes run by the Mongolian Academy of Sciences. It is independent of any of the universities. RCAG operates the Khurel Togoot Observatory on a small mountain about 20 km east of U.B. The altitude is 1620 m above sea level, and they enjoy a mean number of hours suitable for astronomical observations of 1900 annually, which is high by international standards.

I visited Khurel Togoot during a mild snow storm (the only time of less than perfect weather during my week in Mongolia). Access over an unsealed road up the mountain was not easy, given about 30 cm of snow on the ground. I was shown round by Dr. D. Batmunkh, chief scientist and a solar physicist on the observatory staff.

The observatory was founded in 1957, the International Geophysical Year, when it was known as the Ulaanbaatar Observatory. The research areas of Khurel Togoot in astronomy are solar activity, and astrometry of asteroids in the solar system. They have a 20-cm solar coronagraph by East German Zeiss, installed in 1961. This is equipped with a large Ha filter but no CCD camera. Photographs of solar active regions are recorded, and a small solar spectrograph is used for line profile studies. Another instrument is a modern 40-cm Meade catadioptric computer-controlled telescope with a small CCD camera used for astrometry. The RCAG also has interests in geophysics, mainly seismology and terrestrial magnetism. The director of RCAG is Dr B. Bekhtur.

My impression of Khurel Togoot is that it is an excellent site for astronomy, even though slightly better sites exist in Mongolia. Khurel Togoot has an average of 1900 hours suitable for night-time astronomy per year. A substantially larger astronomical telescope would be justified in such a good site, certainly in the 2-metre class. That would enable the start of a research program in stellar and nebular astronomy in Mongolia, which at the present time is lacking.

The RCAG has started publishing a research journal *Geophysics and Astronomy* (not to be confused with *Astronomy and Geophysics* published in the U.K.!). The first issue was in 2001 and contains 17 papers variously in Russian, Mongolian and English. It is published twice a year, and several of the scientists prominent in Mongolian geophysics and astronomy are on the editorial board.

3. *Recommendations to the International Astronomical Union*

There is a strong interest at NUM and in the Mongolian Academy of Sciences in developing astronomy in Mongolia with the assistance of the IAU. They are aware that astronomy is often not a high priority of a government in any developing country. However they also recognize that astronomy at undergraduate level is an excellent subject for attracting students to studying physics and other natural sciences. This is the case already in Mongolia.

It is accordingly recommended as follows:

1. That the highest priority is for Mongolia to join the International Astronomical Union. An application through the Mongolian Academy of Sciences could be prepared in 2004-2005, with a view to this being presented to the Union and ratified at the 2006 General Assembly in Prague.
2. The Teaching for Astronomy Development (TAD) Program Group of IAU Commission 46 should send an expert astronomer to Mongolia in 2005, to spend several weeks visiting NUM, to encourage that university to develop astronomy further and to enrol graduate students in astronomy.

3. Mongolia is very interested in the possibility of hosting an IAU International School for Young Astronomers (ISYA) in Ulaanbaatar at an early opportunity, possibly in 2006, or perhaps 2007. Students coming to an ISYA in U.B. would almost certainly come from neighbouring countries, such as China, Russia, Korea and Japan. A possible theme for an ISYA could be remote sensing and planetary exploration, as this links to the significant interests already being developed at NUM in satellite remote sensing.
4. Mongolia would benefit by sending one of its scientists to another country for research experience for several months under the IAU's Exchange of Astronomers (EA) program within Commission 46. It is proposed that consideration be given to at least one such overseas visit by a Mongolian astronomer in the years 2005-2007 under the auspices of the IAU's Exchange of Astronomers program.
5. If the above developments take place, then Mongolia will become a country with a viable and even a strong future for astronomy, and it will then be an obvious place for a future IAU Asian-Pacific Regional Meeting. Mongolia should be considered for the tenth IAU APRM in Ulaanbaatar in 2008.
6. One of the biggest problems for Mongolian astronomy at the present time is the lack of a modern telescope of medium size (for example in the 2-metre class) which would take advantage of the exceptionally good climate for optical observational astronomy in the country. It would also be a key facility for the training of future graduate students. Since providing the capital for such an instrument may be beyond the means of Mongolia at the present time, the IAU should promote collaborations between Mongolia and nearby countries such as Japan or South Korea, which have significantly less good observing conditions but have substantially greater means of funding new projects.

Acknowledgements

I am grateful to the International Astronomical Union for support, which enabled me to visit Mongolia. I am also grateful to the members of the Department of Geophysics at NUM who hosted my visit, and made my time in Mongolia such a memorable experience.

John Hearnshaw, University of Canterbury, New Zealand

President of Commission 46, PG for the World-wide Development of Astronomy

4. REPORTS OF THE IAU REPRESENTATIVES TO INTERNATIONAL ORGANIZATIONS 2003-2006

OECD Global Science Forum

Ron Ekers reports on the meeting held in München last December on "Large Scale Programs and Projects in Astronomy and Astrophysics" for the next-30 years and commented on the usefulness of such meetings.

He also mentioned a meeting in Berlin last February with representatives of the satellite communications industry, the scientific community, and spectrum regulators concerning the impacts to the science of radio astronomy by the deployment of large constellations of new non-geostationary orbiting (NGSO) satellites for telecommunications, navigation and Earth observation, and the proliferation of new, high-power broadcasting and telecommunication satellites in geostationary (GSO) orbits and mentions the Report by the "Task Force on Radio Astronomy and the Radio Spectrum" on this subject.

The possibility to organize such type of meetings at the General Assemblies.

ICSU

IAU representative to ICSU (O. Engvold) reports from the interunion meeting in Paris February 9-10, 2004, where a number of issues of relevance to IAU were discussed.

Capacity building programs remains high priority for both IAU and ICSU and one took special note of that the earlier ICSU Committee on Science and Technology in Developing Countries (COSTED) is being replaced by ICSU Regional Offices with the aim to promote the further development and strengthening of science of developing countries. Mexico and South Africa have already been selected as host countries, and it is advised that the Unions establish close links with these offices.

Several delegates of the ICSU interunion meeting expressed concern by the problem that Chinese scientists have difficulties obtaining visa in time for attending meetings in USA. This problem has also been noted for Chinese astronomers and the EC wishes to warn organizers of IAU meetings about the lengthy procedures in getting visa to USA for scientists from Asian countries and to start the application process soonest possible. IAU will contact the US National Academy of Sciences on this matter.

UN/COPUOS

Past-GS Johannes Andersen and AGS Karel A. van der Hucht participated in the 41st Session of the UN Committee on the Peaceful Uses of Outer Space (COPUOS), in particular its Scientific and Technical Subcommittee, in Vienna, Austria, February 16-27, 2004. The IAU welcomes the progress in the implementation of the recommendations of UNI-SPACE III. The IAU contributes to three issues:

- Near Earth Objects;
- Preservation of the Space Environment; and
- Education and Capacity Building.

SCOSTEP

SCOSTEP works within the ICSU framework to encourage cross-disciplinary conferences and to facilitate cross-project cooperation and multi-national research collaboration. SCOSTEP conducts programs with a scientific goal to advance quantitative understanding of coupling mechanisms responsible for the transfer of mass and energy throughout the solar-terrestrial system. The practical goal is to improve predictability of the effects of the variable components of solar energy and disturbance on the terrestrial environment.

These disturbances range from interference with satellite and aircraft communications systems to blackouts of electric power grids.

SCOSTEP's Bureau is comprised of a President, Vice-President, Scientific Secretary, and representatives from each ICSU Participating Body (COSPAR, SCAR, IAMAP, IAGA, IAU, IUPAP, and URSI). The SCOSTEP General Council consists of representatives from 30 subscribing Adherents, Brazil was added in June 2001 and scientific Discipline Representatives (47). Other council members are Chairs of the program Steering Committees, Working Groups, and Panels.

In June 2003, ISCS (International Solar Cycle Study) was the fourth SCOSTEP focused program during 1998-2002; it ended in 2002 along with S-RAMP, EPIC, and PSMOS. The final ISCS scientific meeting was held in Tatranska Lomnica, Slovak Republic. The meeting title was "Solar Variability as an Input to the Earth's Environment." Some 160 participants from 34 countries attended. The European Space Agency has published a Proceedings that is available on-line (see ISCS website and ESA SP publication 506, 2003). In July 2003, SCOSTEP met at the IUGG General Assembly in Sapporo, Japan to hold a special meeting of the CAWSES SSG and Theme leaders as well as Bureau and General Council meetings. These are the normal biennial meetings of SCOSTEP.

Bureau member Dr. Brigitte Schmieder attended the IAU meeting in Sydney, Australia and spoke about CAWSES at the Division II meeting, as well the other bureau members in their own Union during their General assembly in 2002 and 2003.

CAWSES ("Climate and Weather of the Sun-Earth System") is the SCOSTEP science program for the period 2004-2008. CAWSES Working Groups are now being established in the thematic areas:

- Solar Influence on Climate;
- Space Weather: Science and Applications;
- Atmospheric Coupling Processes; and
- Climatology of the Sun-Earth System.

A crosscutting programmatic area crucial to the overall success of CAWSES is Capacity Building and Science Education. At the IAU Division II meeting was created a new working group on Space Weather (chairman N. Gopalswamy), which is directly connected with the Space Weather theme of CAWSES. The CAWSES steering committee met in AGU (dec 2003), where new actions were defined i.e; a global campaign of observations in March and April 2004).

SCOSTEP provides information about scientific topics involving Sun and Earth relations in publications and on-line. They also distribute information and presentations to teachers and students on CD-ROM. They provide active links from their website to those of NOAA, NASA, and University programs as well as websites operated by individual SCOSTEP programs.

IVS (*Report by Patrick Wallace*)

Operating as a service of the International Association of Geodesy and of the International Astronomical Union, the IVS works closely with the International Earth Rotation and reference frame Service and is a member of the Federation of Astronomical and Geophysical data analysis Services. It comprises 70 components, representing 37 Organizations in 15 countries, and operates the following facilities:

27	Network Stations	21	Analysis Centers
3	Operation Centers	6	Technology Development Centers
6	Correlators	1	Coordinating Center
5	Data Centers		

The IVS observing program for 2004 is similar to those carried out in the previous two years, there being no new antenna observing time available. The totals are about 175 session days (3.5 days per week) and 1100 station days. About 1 petabyte of data will be recorded during 2004 in total. Improved standard hardware (Mark 5) is gradually coming into service, new disc-based recording replacing the tape recorders, and towards the end of the year most stations will have been upgraded. The improved hardware has reduced "processing" time to about 1.5 times "record" time. There have been some teething problems but overall the project has been very rapid and efficient. In fact the upgrades have increased the efficiency of the correlators so much that they could handle a heavier workload, and ways of exploiting this spare capacity are being investigated. For example, it could be worth adding stations that occasionally become available to participate in a 24-hour session.

There are at present six of the Analysis Centers that contribute to the Earth Orientation Parameters combination product. The agreement between different sources of EOPs is at the 100 microarcsecond level.

The Third IVS General Meeting was held during February 9-11, 2004 in Ottawa, Canada and was preceded by a meeting of the IVS Directing Board.

The VLBI community has been most encouraged by the award of the Descartes Prize to a team led by Véronique Dehant that proposed studies of nutation, and the Directing Board sent Prof. Dehant a letter expressing congratulations from IVS.

In the Analysis Workshop following the General Meeting, plans were developed for a new "European subset of IVS" group, for European partners in the IAG's Integrated Global Geodetic Observing System. The new group has the working title of "EVG" (European VLBI Group for Geodetic Applications). Axel Nothangel is the chair, with Ruediger Haas as secretary.

The IVS DB chair, Wolfgang Schlueter has met with his Laser Ranging and GPS counterparts. These three services share many similarities and face similar problems. A major concern is what happens if a major player reduces support, as NASA has just done for ILRS (a major talking point). The three chairs are preparing a document describing how the services operate, collaborate and are organized, and how each agency contributes, forming a resource of arguments that the supporting agencies can turn to when needed.

Work is going on to implement the new precession.

ITU-R (*Report by Tomas Gergely and Masatoshi Ohishi*)

World Radiocommunications Conference (WRC) - 2003

WRC-03 was held between 9 June and 4 July 2003 in Geneva, Switzerland. Over 2200 delegates, 17 radio astronomers among them, participated. The Conference considered some 2500 proposals related to 50 Agenda items.

Ten agenda items were of interest to radio astronomers, most involved allocations to satellite downlinks that are adjacent or close to radio astronomy allocations. One of the most controversial agenda items was the consideration of regulatory measures to protect radio astronomy from unwanted emissions, in particular from transmissions from space. Studies were carried out within ITU-R Task Group (TG) 1/7 for the last three years on this topic and the results were summarized in Recommendation ITU-R SM.1633. While Recommendation ITU-R SM.1633 represents some minor progress towards the protection of radio astronomy bands from unwanted emissions, it does not represent a solution to the problem. Studies related to these issues will continue within a newly formed group (TG 1/9) within the ITU-R. Other WRC-03 actions had to do with protection of the 1.6 GHz, 5 GHz, 14.5 GHz, 31 GHz and 43 GHz radio astronomy

bands, through adoption of footnotes in the Radio Regulations. The WRC also approved new allocations for satellite uplinks and downlinks near the 1400-1427 MHz radio astronomy band. Use of these allocations was conditioned, however, to a demonstration that the satellite systems that wish to use the band can adequately protect the HI radio astronomy band. Finally, the WRC placed the issue of allocations between 275 GHz and 1 THz on the Agenda of the 2010 WRC, but refused to consider a future agenda item dealing with establishing international radio quiet zones.

Extension of the ITU Mandate to include Optical Frequencies

The Plenipotentiary Assembly of the ITU extended the mandate of the ITU to all frequencies, by allowing future world radiocommunication conferences to include in agendas for future conferences items relevant to the regulation of frequencies above 3 000 GHz and urged member states to participate in work taking place on the use of spectrum above 3 000 GHz.

Work in ITU-R Study Groups

Work relevant to radio astronomy continue within Working Party 7D (WP 7D) the specific ITU-R group dealing with radio astronomy issues under the Chairmanship of Dr. Masatoshi Ohishi, in TG 1/9, as referred to above, and TG 1/8 on UWB (Ultra Wideband). A detailed account of the work of these groups is beyond the scope of this report, but more participation by interested astronomers is very much needed and welcome. Those interested in more details should contact one of the authors of this report. The next meeting of WP 7D is planned for September 28-October 1, 2004 in Geneva.

IERS (Report by Jan Vondrák)

The main purpose of the trip was to attend the 38th meeting of the Directing Board of the International Earth Rotation and Reference Frames Service (IERS), in which I represent the IAU and whose chair I was elected in 2001.

I chaired the meeting that took place in Marriott Hotel on December 8, 2003. The most important topics (that are of interest to IAU) that the DB discussed were as follows:

- New interactive tools for users of products (mostly Earth Orientation Parameters) of the IERS EOP Product Center which are being established on the web of Paris Observatory.
- The future of SOFA (Standards of Fundamental Astronomy) that is threatened by an expected withdrawal of funding in UK next year. In spite of the fact that the supporting letter sent by the IAU General Secretary was not successful, the IERS will try again and will prepare a similar letter of support. Its draft will be prepared by Dennis McCarthy, and the letter will be signed and sent by the chairman of the IERS DB.
- The IERS DB accepted a new satellite technique of observation - DORIS, handled by the newly established IAG service - International Doris Service, as the IERS Technique Center.
- Three new Working Groups were set up, and their Terms of Reference discussed (WG on Combination, WG on Site co-location, and WG on Datum definition of global terrestrial reference frames).
- The Pilot Project on Rigorous Combination of different techniques is launched, with the first results expected during the next year. A workshop will be organized in Germany, most probably in October 2004.
- A project of establishing an IERS database in BKG (Frankfurt a.M.), in which all IERS products would be accessible for users in standard formats, was presented.

I also reported on some of the decisions and meetings of the 25th IAU General Assembly in Sydney that might be relevant for the IERS. Namely I reported on the new Statutes and

Bye-Laws, meetings of Division I and Commission 19, and Joint Discussion 16.

Since IERS is a joint service of the IAU and IUGG, combining the efforts of astronomers, geodesists and geophysicists, I took the opportunity of being in San Francisco to attend the meetings of the Geodetic Section of the American Geophysical Union Fall meeting (December 8-12) that are relevant for the work of IERS. Namely, I attended the sessions "Reference Frame Definition and Modeling and Influence of Geophysical Fluids", "Effects of Atmosphere and Ocean on Geodesy and Geodynamics", and "Core Dynamics: From Geomagnetism to Geodesy".

The EC has approved the nomination of Nicole Capitaine as the new representative to the IERS starting January 2005.

SCAR (*Report by John W.V. Storey*)

Astronomical activities within SCAR are coordinated by the AAA (Antarctic Astronomy and Astrophysics) Expert Group. An Action Group with AAA called PASTA (Plateau Astronomical Site Testing in Antarctica) coordinates the efforts of various nations to understand better the site conditions and their implications for astronomy. Both groups are under the auspices of the Standing Scientific Group on Physical Sciences, one of three Standing Scientific Groups within the organization.

A combined meeting of AAA and PASTA was held at Taronga Zoo, Sydney, on 19 July 2003. Called "Future Visions for Antarctic Astronomy", the meeting attracted 49 people from eleven different countries.

SCAR itself meets every two years, with the next meeting to be held in Bremen (Germany) in July 2004. This meeting will include a keynote address on "Astronomy from Antarctica", a half day open science forum on "Astronomy from the Antarctic", and a full-day meeting of the AAA and PASTA groups.

FAGS (*Report by Nicole Capitaine*)

Following the recommendation of the CSPR Assessment Panel on Environment and its Relation to Sustainable Development, ICSU recommends that IUGG, IAU, and URSI take responsibility for "Federation of Astronomical and Geophysical Data Analysis Services" (FAGS), which would then cease to be an ICSU Interdisciplinary Body. The representatives of these three Unions reviewed and discussed the new situation and formulated alternative scenarios forwarded to their respective liaisons to the FAGS Council for consideration at its meeting last April.

The EC encourages its FAGS representatives to continue to search for a legal niche funded by URSI, IGGU and IAU.

5. MEETINGS OF THE IAU EXECUTIVE COMMITTEE

5.1. 79th MEETING OF THE EXECUTIVE COMMITTEE May 24-26, 2004, UNAM, Mexico City, Mexico

The 79th meeting of the EC was held at the venue of Instituto de Astronomia, UNAM, Mexico City on May 24-26, 2004. All members of the EC were in attendance with the exception of Kenneth A. Pounds who was unable to attend. The IAU Executive Assistant, Monique Leger-Orine, and Administrative Assistant Claire Vidonne, attended the meeting. The IAU President, Ron Ekers, thanked Silvia Torres-Peimbert for her kind invitation to hold this meeting in Mexico. The President reminisced the sad death of Lucia Padrielli, past President of IAU Division X.

A major agenda item was the selection of IAU sponsored scientific meetings in 2005. Based on evaluation and rankings made by the IAU Division Presidents, the EC decided to offer IAU support to six Symposia and three Colloquia in 2005 (See § 2.1 and 2.2 pp 4-9). In addition, funding was allocated for the [9th Asian-Pacific Regional IAU Meeting \(APRIM-2005\)](#) to be held July 26-29, 2005 in Nusa Dua, Bali, Indonesia.

The EC was invited to discuss strategies for a well functioning IAU, which included the authority of the EC to make decisions in the years between General Assemblies, IAU's policy on public outreach and how to ensure a democratic IAU in the best interest of its members.

The EC wishes to take advantage of its updated membership database and will issue an IAU Newsletter at semi-regular intervals, in addition to its Information Bulletin that is issued twice per year.

The IAU Working Rules have been revised in order to be harmonized with the new Statutes and Bye-Laws. A draft of the revised Working Rules was reviewed and discussed by the EC and will soon be posted on the IAU website.

The EC reviewed the planning of the IAU General Assembly in Prague in 2006 based on a recent visit by representatives of the IAU.

The EC resolved that in the best interest of future hosts of IAU General Assemblies and the IAU, contracts will be negotiated with potential hosts in preparation for the decisions to be made by the General Assemblies.

5.2. 80th MEETING OF THE EXECUTIVE COMMITTEE April 18-20, 2005, Rome, Italy

The 80th Meeting of the EC will take place on April 18-20, 2005, in Rome, Italy, at the invitation of Franco Pacini, past IAU President. The IAU Division Presidents will be invited to attend this meeting.

A major item on the agenda will be the selection of the scientific program for the General Assembly XXVI in Prague, August, 2006 and IAU Colloquia in 2006.

Any matter to be placed on the agenda should reach the General Secretary before February 15, 2005.

6. IAU PUBLISHING

6.1. THE IAU PUBLISHER 2004-2008

On 28 February 2004 the IAU signed a contract with its new Publisher, Cambridge University Press, for the years 2004-2008, for publication of the Proceedings from its Symposia, Colloquia, its Transactions A and B, and Highlights of Astronomy that contains Proceedings from Joint Discussion at General Assemblies. These IAU Proceedings will be published both electronically and as paper versions. The IAU aims for a high quality and timely publication series. It is the goal to complete the IAU Proceedings, electronically on-line and on paper, within 6 months of the meetings.

6.2. THE IAU EDITORIAL BOARD

To assist the Proceedings Editors in their important and demanding work, the IAU Executive Committee has established a coordinating Editorial Board consisting of Proceedings Editors that will be board members for the one year period they serve as Editors. In addition, three advisors with scientific and editorial experience will serve for periods from 3 to 5 years.

The Board constitutes a forum for support and guidance to the Proceedings Editors in their work with the Proceedings of their meeting. The board members will gain and share experience which also will enable the IAU to further develop a good publication strategy and modus operandi in best interest of its members. The Chair of the Board who normally will be the Assistant General Secretary who also will coordinate the publication scheduling in close contact with the Publisher. It shall be noted that all matters concerning the science of a given Proceedings lies in the hands of its Proceedings Editor(s), and is not a matter for the Editorial Board.

Members of the IAU Editorial Boards:

Chair

Karel A. van der Hucht Assistant General Secretary,

Members

Oddbjørn Engvold	General Secretary
Michelle Storey	(2004-2008)
Eugene de Geus	(2004-2007)
Patricia A. Whitelock	(2004-2006)
Thaisa Storchi Bergmann	S222
Alexander V. Stepanov	S223
Juraj Zverko	S224
Yannick Mellier	S225
Kenneth P. Dere	S226
Antonaldo Diaferio	C195
Donald W. Kurtz	C196
Zoran Knezevic	C197

7. EDUCATIONAL ACTIVITIES

7.1. PG ON TEACHING FOR ASTRONOMY DEVELOPMENT (TAD)

TAD has current operations in Vietnam, Costa Rica, El Salvador, and Honduras, and Morocco, a mature program which will be expanded this summer to include a second university: the memorandum of understanding will be signed in Ifrane on the same day the 2004 ISYA begins there.

New TAD operations are already being considered in the following countries: Nigeria, which submitted a proposal for TAD assistance last year, Mongolia, which was visited just weeks ago by John Hearnshaw, Chair of the Program Group for the World-Wide Development of Astronomy (also Commission 46), and Rwanda, following a recommendation to TAD from Charles McGruder (USA) for consideration of a new operation there. Unfortunately TAD cannot support all countries that approach it, so careful consideration based upon reports and analyses submitted to TAD by visiting astronomers, is always given to the likelihood of good outcomes in a given country.

7.2. PG ON INTERNATIONAL SCHOOL FOR YOUNG ASTRONOMERS (ISYAs)

The 27th ISYA will be held in Ifrane, Morocco, July 2-23, 2004.

The 28th ISYA will be held in Tonantzintla, Puebla, Mexico, July 25-August 12, 2005

A Workshop on National Telescopes of Iran as been held in January 2004, under the auspices of the IAU. This workshop is a follow up of the ISYA held in Iran in 1997.

7.3. PG ON WORLD WIDE DEVELOPMENT OF ASTRONOMY (PGWWDA)

J. Hearnshaw reported about a trip he made to Mongolia (See Commission 46, § 3.3 p 18). His recommendations are the following:

- That Mongolia join the IAU through the Mongolian Academy of Sciences this application being submitted to the vote of the General Assembly in Prague. In 2006.
- That the TAD Program Group of IAU Commission 46 send an expert astronomer to Mongolia in 2005.
- That an ISYA be organized in Ulaanbaatar at an early opportunity, possibly in 2006, or perhaps 2007. Students coming to an ISYA in U.B. would almost certainly come from neighbouring countries, such as China, Russia, Korea and Japan.
- That the Exchange of Astronomers (EA) program be used for Dr T. Galbaatar or Dr R. Tsolmon who would clearly benefit from such an exchange.
- If the above developments take place, then Mongolia will become a country with a viable and even a strong future for astronomy, and it will then be an obvious place for a future IAU Asian-Pacific Regional Meeting. The next [Asia-Pacific Regional Meeting \(no. 9\)](#) will be in Indonesia in 2005; Mongolia should be considered for the tenth IAU APRM in Ulaanbaatar in 2008.
- That the promote collaborations between Mongolia and nearby countries such as Japan or South Korea, which have significantly less good observing conditions but have substantially greater means of funding new projects.

8. THE COSMOLOGY PRIZE OF THE PETER GRUBER FOUNDATION (PGF)

Members of the PGF Cosmology Prize Advisory Board representing the IAU are:

V. Radhakrishnan (2003-04)
R.E. Williams (2003-05)
J. Bell Burnell (2003-05)

9. MEMBERSHIP

The General Secretary regrets to report the names of former and current IAU members whose death has been communicated to the Secretariat since the previous list published in IB 94 :

Nikolaj S. Chernykh	Rafael Cid Palacios *	Leverett Davis Jr
Jerzy Dobrzycki	Thomas Gold *	Michael J. Ledlow *
Jacques Lévy *	J. Virginia Lincoln	Alexander M. Lozinskij
Ljubisa A. Mitic *	Vasilij I. Moroz	C.A. Muller Jr *
Yurij P. Pskovskij *	Jürgen D. Stock	Aleksandr A. Stotskii
Dirk Ter Haar	Paul Verbeek	Boris F. Yudin
Shigeru Yumi		

* Death announced after the publication of IB 95 (paper version).

10. IAU PUBLICATIONS

PRICING of IAU books made by Cambridge University Press (CUP)

Prices in UDS for Year **2004** **2005**

Series Subscriptions

On-line + Print

Institution	900	995
IAU Member	450	495

On-line only

Institution	765	820
IAU Member	250	270
On-line only, if no Print offered	800	885

Print only

Institution	810	890
IAU Member	405	445

Individual Volumes (Symposia, Colloquia, Transactions and Highlights)

On-line + Print	130	140
On-line only	35	40
Print only	90	100

Bulk Order (Symposia/Colloquia attendees)

On-line + Print	65	70
On-line only	20	20
Print only	45	50

PRICING* of IAU books made by the Astronomical Society of the Pacific (ASP)**1. Symposia**

Non-Member/Library/Institution: USD 95.00 - IAU Member/Attendee: USD 42.00

2. Transactions

Non-Member/Library/Institution: USD 125.00 - IAU Member: USD 80.00

3. Highlights

Non-Member/Library/Institution: USD 95.00 - IAU Member/Attendee: USD 56.00

* Note: Discounts are for IAU Individual Members ONLY.

If you would like to establish a standing order for the IAU Publications, please email the ASP at: service@astrosociety.org**10.1. IAU SYMPOSIA (Astronomical Society of the Pacific)****IAUS 221 Star Formation at High Angular Resolution**

Sydney, Australia, July 22-25, 2003

Eds. M. Burton, R. Jayawardhana & T. Bourke

ASP, ISBN 1-58381-161-3, 2004

IAUS 220 Dark Matter in Galaxies

Sydney, Australia, July 21-25, 2003

Eds. S.D. Ryder, D.J. Pisano, M.A. Walker & K.C. Freeman

ASP, ISBN 1-58381-167-2, 2004

IAUS 219 Stars as Suns: Activity, Evolution and Planets

Sydney, Australia, July 21-25, 2003

Eds. A.K. Dupree & A.O. Benz

ASP, ISBN 1-58381-163-X, 2004

IAUS 218 Young Neutron Stars and their Environment

Sydney, Australia, July 14-17, 2003

Eds. F.M. Camilo & B.M. Gaensler

ASP, ISBN 1-58381-178-8, (Sept.) 2004

IAUS 217 Recycling Intergalactic and Interstellar Matter

Sydney, Australia, July 14-17, 2003

Eds. P-A. Duc, J. Braine & E. Brinks

ASP, ISBN 1-58381-166-4, 2004

IAUS 215 Stellar Rotation

Cancun, Mexico, November 8-12, 2002

Eds. A. Maeder & P.R.J. Eenens

ASP, ISBN 1-58381-157-5, 2004

IAUS 214 High Energy Processes and Phenomena in Astrophysics

Suzhou, China Nanjing, August 6-10, 2002

Eds. X.D. Li, V. L. Trimble & Z.R. Wang

ASP, ISBN 1-58381-157-5, 2003

IAUS 213 Bioastronomy 2002: Life Among the Stars

Hamilton Island, Great Barrier Reef, Australia, July 8-12, 2002

Eds. R.P. Norris & F. Stootman

ASP, ISBN 1-58381-180-X, 2004

10.2. IAU COLLOQUIA

IAUC 195 **Outskirts of Galaxy Clusters: Intense Life in the Universe**

Torino, Italy, March 12-16, 2004
Ed. A. Diaferio
Cambridge University Press, in prep.

IAUC 194 **Compact Binaries in the Galaxy and Beyond**

La Paz, Mexico, November 17-22, 2003
Eds. G. Tovmassian & E.M. Sion
RevMexAA-SC, in prep.

IAUC 193 **Variable Stars in the Local Group**

Christchurch, New Zealand, July 6-11, 2003
Eds. D.W. Kurtz & K.R. Pollard
ASP-CS Vol. 310, ISBN 1-58381-162-1, 2004

IAUC 192 **Supernovae (10 Years of SN1993J)**

Valencia, Spain, April 22-26, 2003
Eds. J.M. Marcaide & K.W. Weiler
RevMexAA-SC, in prep.

IAUC 191 **The Environments and Evolution of Double and Multiple Stars**

Merida, Yucatan, Mexico, February 3-7, 2003
Ed. C. Scarfe
Springer Verlag, in prep.

IAUC 190 **Magnetic Cataclysmic Variables**

Cape Town, South Africa, December 8-13, 2002
Eds. S. Vrielmann & Mark Cropper
ASP-CS 315, ISBN 1-58381-170-2, 2004

11. OTHER PUBLICATIONS RECEIVED

Some publishers send copies of recent astronomy books to the IAU Secretariat. These books are to be donated upon request, on a first come first serve basis, to astronomical groups in countries lacking the financial resources to purchase them.

ASP Conference Series: <http://www.astrosociety.org/pubs/cs/confseries.html>

303 **Symbiotic Stars Probing Stellar Evolution**

La Palma, Spain, May 27-31, 2002
Eds. R.L.M. Corradi, J. Mikolajewska & T.J. Mahoney
ISBN 1-58381-152-4, 2003.

305 **Magnetic Fields in O, B and A Stars**

Eds. L.A. Balona, H.F. Henrichs & R. Medupe
ISBN 1-58381-154-0, 2003.

307 **Solar Polarization 3**

Eds. J. Trujillo Bueno & J. Sánchez Almeida
ISBN 1-58381-156-7, 2003.

311 **AGN Physics with the Sloan Digital Sky Survey**

Princeton, NJ, USA, July 27-30, 2003
Eds. G. T. Richards & P.B. Hall
ISBN 1-58381-164-8, 2004.

Cambridge University Press: <http://www.cambridge.org>

Astronomy Methods: A physical Approach to Astronomical Observations

Ed. H. Bradt

ISBN 0-521-36440-X, 2003

(HB: GBP 80.00/USD 110.00 - PBK: GBP 33.00/USD 60.00)

Practical Statistics for Astronomers

Eds. J.V. Wall and C.R. Jenkins

ISBN 0-521-45616-9, 2003

(HB: GBP 19.99/USD 35.00 - PBK: GBP 55.00/USD 85.00)

Cosmic Company: The Search for Life in the Universe

Eds. S. Shostak & A. Barnett

ISBN 0-521-82233-5, 2003

(HB: GBP 19.99/USD 29.00)

The Life and Science of Léon Foucault, The man Who proved the Earth Rotates

Ed. W. Tobin

ISBN 0-521-80855-3, 2003

(HB: GBP 40.00/USD 60.00)

Exploring the Starry Sky

Eds. R. Burnham & W. Tirion

ISBN 0-521-80251-2, 2003

(PBK: GBP 7.99/USD 12.00)

Visions of the Cosmos

Eds. C. Collins Petersen & J.C. Brandt

ISBN 0-521-81898-2, 2003

(HB: GBP 25.00/USD 40.00)

The Clementine Atlas of the Moon

Eds. B. Bussey & P. Spudis

ISBN 0-521-81528-2, 2004

(HB: GBP 50.00/USD 80.00)

Advanced Astrophysics

Ed. N. Duric

ISBN 0-521-81967-9, 2003

(HB: GBP 80.00/USD 110.00 - PBK: GBP 30.00/USD 60.00)

The Dark Universe: Matter, Energy and Gravity

Ed. M. Livio

ISBN 0-521-82227-0, 2004

(HB: GBP 60.00/USD 90.00)

Introduction to Comets

Eds. J.C. Brandt & R.D. Chapman

ISBN 0-521-80863-4, 2004

(HB: GBP 75.00/USD 110.00 - PBK: GBP 35.00/USD 60.00)

A Walk Through the Heavens: A Guide to Stars and Constellations and their Legends

Eds. M.D. Heifetz & W. Tirion

ISBN 0-521-54415-7, 2004

(PBK: GBP 8.99/USD 12.00)

Urban Astronomy

Ed. D. Berthier

ISBN 0-521-53190-X, 2004

(PBK: GBP 11.99/USD 17.99)

A Visitor's Guide to the Kitt Peak Observatories

Eds. L. Sage & G. Aschenbrenner

ISBN 0-521-53190-X, 2004

(PBK: GBP 12.99/USD 15.00)

Cosmochemistry: The Melting Pot of the Elements

Eds. C. Esteban, R.J. Garcia Lopez, A. Herrero & F. Sanchez

ISBN 0-521-82768-X, 2004

(HB: GBP 65.00/USD 100.00)

Cometography: A Catalogue of Comets (Vol. 2: 1800-1899)

Ed. G.W. Kronk

ISBN 0-521-58505-8, 2003

(PBK: GBP 120.00/USD 185.00)

12. OTHER MEETINGS ON ASTRONOMICAL TOPICS

See Websites:

<http://cadwww.dao.nrc.ca/meetings/><http://www.iau.org/IAU/Activities/meetings/othermeet.html>

The IAU Divisions

DIVISION I

Fundamental Astronomy

Toshio Fukushima
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Galaxy Triplet NGC 6769-71 (VT M101A + V101B).
Composite image obtained on April 1, 2004, in the imaging mode of the Visible Multi-Object Spectrograph (VIMOS) on M81, at the Paranal Observatory (Chile).
The two upper galaxies are NGC 6769 (right) and NGC 6770 (left), while NGC 6771 (below) is connected with a faint bridge.
Credit: ESO PR Photo 12/04
See: <http://www.eso.org/outreach/press-rel/pr-2004/photo-12-04.html>