

Highlights in Education, Outreach and Heritage

Accomplishments from 2012-15

Mary Kay Hemenway (President)

Steering Committee 2012-2015

Hakim Luthfi Malasan (Vice President)

Rajesh Kochhar (Secretary, President of Commission 41)

Kimberly Kowal Arcand

Juan Antonio Belmonte Aviles

Lars Lindberg Christensen (President of Commission 55)

Jean-Pierre de Greve (President of Commission 46)

Beatriz Elena Garcia

Michele Gerbaldi

Raymond P. Norris

Kazuhiro Sekiguchi

Division C membership

- Total membership: 1528
- Commission 41: 377
- Commission 46: 451
- Commission 55: 243

Division Actions

- Role of the Division within IAU structure
- Instigation of Division Days at GA
- Reform of Commissions
- Selection of symposia
- Promotion of education and outreach activities at symposia
- Interactions with OAD/OAO
- Election of new Division Steering Committee

Advances in our Fields

- In education, more emphasis on meaningful qualitative and quantitative evaluation to inform practice.
- In outreach, more emphasis on professional development for providers.
- In history, a growing appreciation by some historians of scientists' investment in their historical legacy
- In heritage, advancement of UNESCO agreement and approval of new commission.
- In all areas: productive uses of Internet resources

History of Astronomy

President of Commission 41: Rajesh Kochhar

Vice-President: Xiaochun Sun

Organizing Committee:

Juan Antonio Belmonte Aviles

Brenda Corbin

Eugene Milone

Raymond Norris

Luisa Pigatto

Mitsuru Soma

Secretary: David Valls-Gabaud

Historical Instruments WG

Conference and activities:

1. August 2012: Beijing/China, GA of IAU Scientific Meeting “Historical Astronomical Instruments, Observatories, and Sites”, jointly organized with Astronomy and World Heritage WG, followed by an investigation tour to the Palace Museum instrument-collection and the Old Observatory in Beijing.
2. July 2013: WG members presented papers on the 24th International Congress on the History of Science, Technology and Medicine.
3. April 2014: Hefei/China, “The 8th International Conference on Oriental Astronomy: Astronomy and Cultural Heritages in the Asia-Pacific Regions”, jointly with organized with the ICOA Working Committee. Proceedings in Press.

JOHANNES KEPLER WG

(www.iac.es/proyecto/johanneskepler/)

About 3/4 of our stated objectives have now been achieved, but some important ones remain to be tackled. The main highlights are the following:

1. The Bavarian Academy of Sciences is now well-represented on the WG and has nearly finished digitizing the Collected Works of Kepler ().
2. Davis, Field & Mahoney are currently editing a textbook for hist. sci. Undergraduates for Springer: *Reading the Mind of God: Johannes Kepler and the Reform of Astronomy*.
3. Principal future goal: establishing contact with the Russian Academy of Sciences to discuss the possibilities of digitizing their Keplerian MS collection. Getting both the Collected Works and the MSS digitized would provide a much-needed boost to Kepler studies.

WG Archives - Ileana CHINNICI (WG Chair from 2006 to 2012), *chinnici@astropa.inaf.it*

It was established in **1991 GA** in Buenos Aires, in order:

1. *to establish a register of the whereabouts of all extant astronomical archives of historical interest;*
2. *to impress on observatories and other institutions their responsibility for the preservation, conservation, and where possible, cataloguing of such archives;*
3. *to search for an institution that will allocate space and funds for maintaining such a register and publishing it."* (C41 Resolution, *Proceedings of the 21st GA*, p.77).

- 1992-1995: progress in compiling national inventories of astronomical archives.
- **1994 GA** in The Hague: Two Resolutions proposed by C41 were adopted , presentation of papers on archival researches, discussions regarding the IAU archives.
- **1997 GA** in Kyoto: One Resolution adopted at the C41 Business Meeting
- **2000 GA** in Manchester: a half-day Special Session on "Inventory and Preservation of Astronomical Archives, Records and Artifacts" was held.
- **2003, 2006 and 2012 GAs** in Sydney, Prague and Rio de Janeiro: WG Meetings were held.

In the triennium **2006-2009**, the WG has launched a **Working Plan** (see: *Transactions IAU*, Vol. XXVIII A, 2009) regarding **a survey of the archival materials related to the establishment of IAU** in founder countries. In spite of the lack of resources, it has been prolonged in the triennium **2009-2012** and some reports have been published (see: *Transactions IAU*, Vol. XXVIII A, 2012) and are available in the C41 webpage.

The WG intends to continue this survey - especially considering that the **centenary of IAU** is approaching (2019) - and to promote actions in defense of the archival astronomical heritage, in the spirit of the original resolution of 1991, whose aims are still living and compelling.

C40/41 Working Group on Historical Radio Astronomy

- The WG on HRA was formed in 2003 as a joint WG of C40/41 to
 - Document the progress of radio astronomy and radio telescopes
 - Work to preserve radio telescopes of historical interest
 - Document the passing of deceased radio astronomers and preserve their memory
 - Maintain a bibliography of historical publications in radio astronomy.
- WG Status and Recent Activities
 - 25 active members representing 12 countries
 - Publication of 2009-2012 Triennial Report
 - Preparation of 2012-2015 Triennial Report
 - Preservation of Karl Jansky's site and historical monument
 - WG members published more than 20 papers and books on the history of radio astronomy
 - The WG recorded 14 Biographical Memoirs
 - The WG has had an active scientific program at each of the past 3 GAs as well as splinter sessions at the 2015 GA.
 - Continued support of WG web site <http://rahist.nrao.edu/>

WGAAC: IAU Working Group for Archaeoastronomy and Astronomy in Culture

- A discussion group for
 - Researchers in Archaeoastronomy and Astronomy in Culture,
 - Mainstream Astronomers interested in the topic
- Primary motivation:
 - to facilitate interactions between these researchers.
- Formed: November 2014
- First meeting (part of Div C meeting), IAU GA, Aug. 2015
- Chair: Ray Norris, Australia
- Membership: 79 members from 30 countries

Transits of Venus Working Group (2000–2015)

- **Formed** in 2000 to (1) encourage research on historic transits of Venus; (2) maintain an up-to-date bibliography of transit of Venus publications; (3) help organize seminars, meetings and conferences; (4) inventory, mark and preserve historic sites where transit observations occurred.
- **WG Meetings** were held at the next three IAU GAs
- In 2004 an **international conference** was held in Preston (England)
- Much **new research** has been carried out, and published, mainly in books or in the *Journal of Astronomical Data* and the *Journal of Astronomical History and Heritage*
- A number of excellent **web sites** were set up
- A number of **commemorative monuments and plaques** were erected
- Six **WG Reports** (including lists of new publications) were published in the *Journal of Astronomical History and Heritage*
- **Successive Chairs:** Wayne Orchiston (Australia), Steve Dick (USA), Hilmar Duerbeck (Germany), Wayne Orchiston (Thailand)
- **~50 active members** (IAU + ICHA)
- **Evaluation:** “During its 15-yr existence the WG has been very active in fulfilling the objectives outlined at its formation, and has helped make the historic transits of Venus much more widely known amongst astronomers and members of the general public.” (Orchiston, 2014).

Astronomy Education and Development

President of C46:

Jean-Pierre de Greve

Vice-president:

Beatriz Elena Garcia

Organizing Committee:

Roger Ferlet

Michele Gerbaldi

Edward Guinan

John Hearnshaw

Larry Marshall

George Miley

Jay Pasachoff

Rosa Ros

Magda Stavinschi

Silvia Torres-Peimbert

Comm. 46 Working and Program Groups

- WG: The IAU Dictionary of Astronomical Concepts
- PG: Collaborative Programs
- PG: Commission Newsletter
- PG: International Schools for Young Astronomers (ISYAs)
- PG: National Liaison on Astronomy Education and Newsletter
- PG: Network for Astronomy Education (NASE)
- PG: Public Understanding at the Times of Solar Eclipses and Transits
- PG: Teaching for Astronomy Development
- PG: World Wide Development of Astronomy (PGWWDA)

IAU Comm 46 - 2012-2015

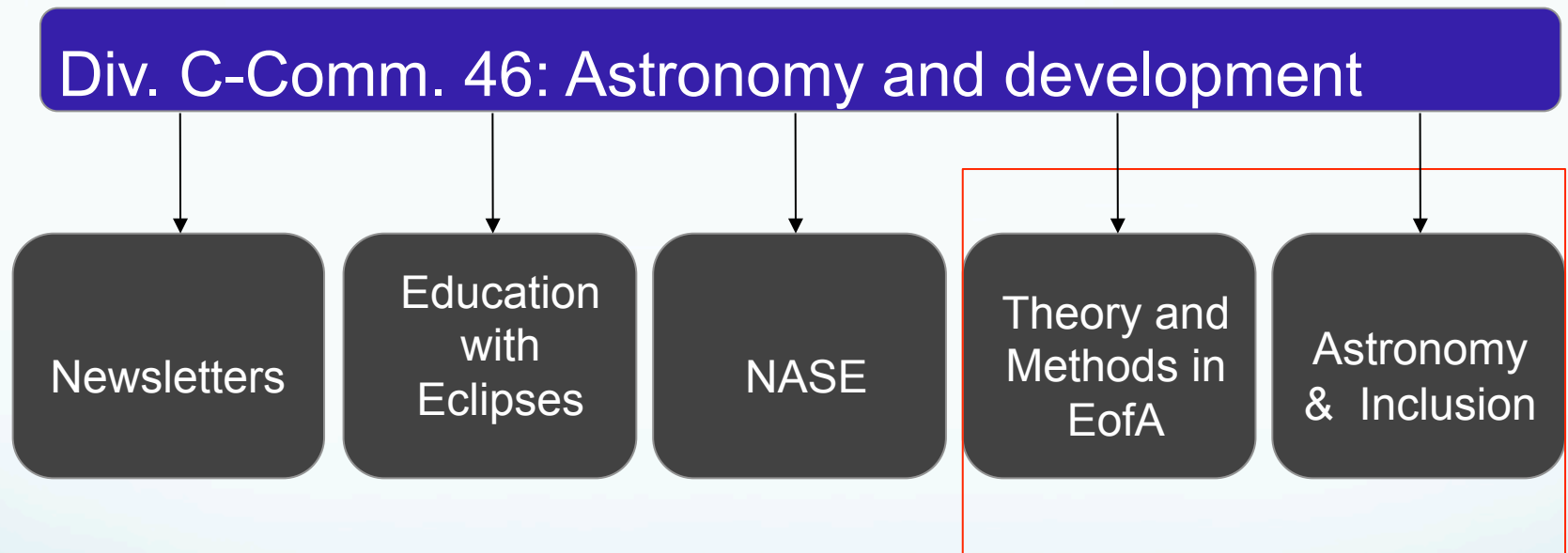
In 2012 Commission 46 has gone through a revision as a result of the establishment of the OAD, and corresponding transfer of activities of several PGs to the OAD.

The new IAU structure has no PGs but Working Groups, this provoked a serious process of ‘renovation’ and ‘innovation’.

The OC adopted a new mission statement, but also supports both the uniqueness of C46 and its place in the IAU structure.

2012-2015 creation of three interdisciplinary WG

- Theory and Methods in EofA
- Astronomy & Inclusion
- Astronomical Terms Dictionary



- NASE and Eclipse Education were supported
- The Newsletter (Larry Marschal Ed.) and the Web site (VP Ed.) were actualized and improved.

WG IYA 2012-2015

→ **35th ISYA Bandung, Indonesia, 26 Aug. - 13 Sep., 2013.**

Commemorating 50th anniversary of Indonesia National Institute of Aeronautics and Space (LAPAN).

Organized by the Space Science Center of LAPAN and the IAU, the Astronomy Division, Faculty of Mathematics and Natural Sciences, Institut Teknologi Bandung (ITB), and thanks to the support of the Norwegian Academy of Sciences and Letters (NASL).

106 candidates, the final number of participants was 39, from Indonesia, Cambodia, Philippines, Taiwan (R.O.C.), China, Nepal, Malaysia, Vietnam, Thailand, India, Sri Lanka.

→ **36th ISYA Chiang Mai and Doi Inthanon, Thailand, 23 Nov. - 13 Dec. 2014.**

Co-hosted National Astronomical Research Institute of Thailand, NARIT, and Yunnan Astronomical Observatory, Chinese Academy of Sciences.

152 applicants, final students accepted 41 from There came from 11 countries: Argentina 1, Armenia 1, Cambodia 2, China 12(Mainland 10, Hong Kong 1 Taiwan 1), Philippines 2, India 2, Indonesia 3, Malaysia 2, Nepal 2, Pakistan 2, Sri Lanka 1, Thailand 9, and Vietnam 2.

IAU Commission 46 initiatives

Theory and Methods in Astronomy Education (WG1)

The main objectives of this proposal were:

- Develop a promotional strategy for enhancing Astronomical Educational Research (AER)
- Promote, in different regions and continents, literature reviews summary reviews of scholarly production that already exists on PhD and MSc Thesis, Proceedings of Meetings and Published Papers in Journals on Physics and Science Education.
- Promote structures and well succeeded practices such as GHOU, GTTP, NASE, UNAWE etc.
- Promote Meetings, Journals and Courses in regions and continents to enhance AER.

IAU Commission 46 initiatives

Network for Astronomy School Education - NASE (WG2)

The main objective is:

➤ educate new generations of teachers and re-educate the current ones.

NASE created a basic course for training teachers aiming at:

1. teaching astronomy to teachers
2. teaching teachers how to teach astronomy.

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

b. WG2 Network for Astronomy School Education (NASE)

NASE MISSION

Training Teachers in primary and secondary level in Astronomy, in a theoretical and practical framework.

Provide teachers practical tools for Astronomy, applying the techniques in areas such as mathematics, physics, chemistry, biology, geography, history, philosophy.

Promote the teaching of Astronomy in different Science spaces.

Encourage the teaching / learning process in Astronomy by models and observation of phenomena.

Constitute in each place that requires the Service of NASE course, local groups integrated by local teachers that give the basic course and prepare materials for the web site of the program, continuously.

b. WG2 Network for Astronomy School Education (NASE)

NASE VISION

NASE Program aims to be a worldwide referent for secondary level professors training in Didactics of Astronomy

In the past period 2012-2015, we performed 48 courses in almost all the continents



country	period	NASE LWG	teachers	students
Argentina	2010-2014	3	336	250 800
Bolivia	2012-2014	2	249	78 800
Brazil	2013-2014	3	123	49 200
China	2013-2014	1	45	18 000
Colombia	2009-2014	3	286	110 800
Cuba	2014	1	24	4 800
Ecuador	2009-2014	1	155	111 000
Ghana	2013-2014	1	50	14 800
Guatemala	2012-2014	1	163	53 400
Honduras	2011-2014	1	199	111 800
Kenya	2013-2014	1	20	8 000
Nicaragua	2010-2014	1	160	423 000
Mexico	2013-2014	1	51	20 400
Panama	2011-2014	1	48	38 400
Paraguay	2011-2014	1	110	58 400
Peru	2009-2014	2	238	180 400
Romania	2014	1	45	8 600
Uruguay	2012-2014	1	69	46 400
TOTAL		26	2 369	1 555 000

NASE International courses distribution

IAU Commission 46 initiative

Astronomy & Inclusion (WG3)

A&I WG astronomers work together with technicians, educators and disability specialists,.

The main objectives of this proposal were:

- develop new teaching and learning strategies devoted to generating resources of high impact among disabled populations, which are usually away from astronomy;
- Collect the available resources on the globe to create a reservoir.

Members of this WG participated in different meetings about the subject, such as the ICTP Science and disabled workshop (Trieste, 2014),

Outreach

Remarks by the President of Commission 55:
Communicating Astronomy with the Public

“It is the responsibility of every practicing astronomer to play some role in explaining the interest and value of science to our real employers, the taxpayers of the world.”

C55 Organizing Committee Members

- President: Lars Lindberg Christensen (EU, ESO)
- Vice-President: Pedro Russo (NL/EU, Leiden University)
- Secretary: Richard Tresch Fienberg (USA, American Astronomical Society)

C55 Organizing Committee Members

- IAU Astronomy Outreach Coordinator: Sze-leung Cheung (Japan) *ex officio*
- Chair of OAD Task Force 3: Ian Robson (UK) *ex officio*
- Vice-chair of OAD Task Force 3: Carolina Ödman-Govender (South Africa) *ex officio*
- Kimberly Kowal Arcand (USA, Chandra X-ray Center)
kkowal@cfa.harvard.edu
- Kazuhiro Sekiguchi (Japan, NAOJ) kaz.sekiguchi@nao.ac.jp
- Jin Zhu (China, Beijing Planetarium) jinzhu@bjp.org.cn
- Pete Wheeler (Australia)

Working Groups

- CAPjournal
- CAP Conferences
- Outreach Professionalization & Accreditation
- Public Outreach Information Management
- Washington Charter*
- New Media*
- New Ways*
- Communicating Heliophysics*

WG1 Communicating Astronomy with the Public Journal (CAPj)

- **Chair:** Georgia Bladon, Editor in Chief
- **Created:** 1 June 2007
- **Mission:** To publish a free (to readers) peer-reviewed journal for astronomy communicators.
- **Deliverables:** 3 issues/year

- An open-access, peer-reviewed journal for astronomy communicators.
- The current publication frequency is three issues per year.
- 2100 copies printed copied of each issue are distributed, with several thousand additional copies distributed as PDFs.
- The IAU funds the printing costs and the cost of the Editor in Chief. ESO funds the distribution, the proofreading and other miscellaneous costs.
- The publication of the *CAPjournal* is a core function of C55.



<http://www.capjournal.org>),

WG2 Communicating Astronomy with the Public Conferences

- **Chairs:** Sze-leung Cheung and Oana Sandu
- **Created:** 1 March 2005
- **Mission:** To regularly convene producers of astronomical information, public information officers, and mediators worldwide for the interchange of ideas and practices.
- **Deliverables:** An international conference at least every 2 years (including sessions during IAU General Assemblies, where applicable).
- **Mission:** To regularly convene producers of astronomical information, public information officers, and mediators worldwide for the interchange of ideas and practices.
- This WG organizes the Communicating Astronomy with the Public (CAP) Conference, held approximately every other year (skipping years with an IAU General Assembly)
- CAP Conferences bring together members of all the C55 communities for week-long interchanges of ideas and best practices.
- Past conferences have been held in the United States, Germany, Greece, South Africa, China, and Poland.
- CAP Conferences typically attract 100 to 300 active astronomy communicators and are lively, packed with information, and energizing for all participants.
- The next CAP conference will be in Medellin, Columbia in 2016. The planning is well under way and the conference is promising to be very exciting.



Communicating Astronomy with the Public

CAP 2016

Medellín, Colombia, 16-20 May 2016

What? An IAU Commission 55 conference with the goal of facilitating the exchange of ideas and best practices in the field of astronomy and space communication.

For whom? professional communicators, research astronomers, press officers, science journalists, science & technology facilitators etc.

Keywords: public outreach, media relations, social media, science & art, multimedia, new media, fundraising, crisis communication, networking.

Objectives:

1. Expand your skills in science communication by taking part in workshops
2. Share your experience and learn from other communicators
3. Connect with professionals in similar or different fields and build a strong network

More information:

www.capcolombia2016.org

facebook.com/CAPconference

#CAP2016



Communicating Astronomy with the Public
16-20 May 2016, Medellín, Colombia

WG3 Outreach Professionalization & Accreditation

- **Chair:** Rick Fienberg
- **Created:** 31 August 2012
- **Mission:** To bring a sense of professionalism and professional respect to the field of astronomy communication, to advocate for our needs as professional communicators, and to serve as a means for information sharing and networking.
- **Deliverables:** A procedure to handle requests for IAU associate membership (presumably including several levels of accreditation) and methods/standards/requirements for achieving accreditation.
- The original motivation for the establishment of this WG was to explore the possibility of establishing a professional society for astronomy communicators. Such an organization would help bring a sense of professionalism and professional respect to the field, to advocate for our needs as professional communicators, to develop standards for outreach accreditation, and to serve as a means for information sharing and networking. As we explored our options, though, we realized that, to some extent, the ability to incorporate astronomy communicators into the IAU and C55 as Associates obviated the need for a separate organization.
- This WG's primary goal switched to developing a procedure to handle requests for IAU C55 Associate status. This was done successfully, and we then added a number of very active astronomy communicators as Associates of C55.
- With the Commission reform the issue of Associates is being re-discussed and will need some focused attention of this WG.

WG4 Public Outreach Information Management

- **Chair:** Pedro Russo
- **Created:** 31 August 2012
- **Mission:** To act as a facilitator enabling the small outreach information management community to gather around a common technical framework optimizing the synergy in the community
- **Deliverables:**
 - Describe one possible standard for EPO content management systems.
 - Decide on standards for astronomy EPO products metadata.
 - Write CAPj article.
 - Bringing the major players in EPO information management together in an informal network.
 - Arrange the first workshop for this network.
- A key outcome of the CAP 2003 Conference was the establishment of an online repository of astronomy-communication resources, which has now evolved into the Virtual Astronomy Multimedia Project, or [VAMP http://www.communicatingastronomy.org/repository/index.htm](http://www.communicatingastronomy.org/repository/index.htm)).
- Building on this experience, C55 established a new WG to act as a facilitator, enabling the small outreach information management community to gather around a common technical framework.
- The WG issued a seminal reference report on metadata standards for astronomical images, which are now used by ESO, NASA, and others
- An IAU/ESO/UNAWA/ESA Workshop on Public Outreach Information Management in Astronomy in March 2013.
- The work is being continued by Robert Hurt at IPAC, USA, for the Astropix project and at the ESO Supernova in Garching, Germany.

Division C oral and poster presentations

Today

02:00-03:30 PM Outreach

04:00-06:00 PM Education I

06:00-07:30 PM Education II

Poster Papers Series I

Monday

08:30-10:00 AM History

10:30 AM-12:30 PM Cultural Astronomy

02:00-03:30 PM Interdisciplinary Topics

04:00-06:00 PM IAU initiatives and the future of Division C –
with new Commission Presidents

Poster Paper Series II

Relevant Focus Meetings

- Completed this week, **FM 19: Communicating Astronomy with the Public in the Big Data Era**
- 11-12 August, **FM2, Astronomical Heritage: Progressing the UNESCO-IAU Initiative**
- 11-13 August, **FM 21: Mitigating Threats of Light Pollution & Radio Frequency Interference**
- 13-14 August, **FM 20: Astronomy for Development**