Kai'aleleiaka — THE MILKY WAY

Issue 10 — 14 August 2015

Wally Pacholka / AstroPics.com

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INTERNATIONAL YEAR OF LIGHT 2015

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GA BUSINESS MEETING II

Resolution, Not Revolution, for the Next Triennium

By PAMELA L. GAY, *Kaʻaleleiaka*

The second Business Meeting of the IAU XXIX General Assembly was held on Thursday afternoon, 13 August, with outgoing President Norio Kaifu and outgoing General Secretary Thierry Montmerle presiding. The session began with acknowledgement of the nearly 1,200 new Individual Members admitted by the Executive Committee (page 3), followed by a minute of silence to honor the 348 members whose deaths were learned of during the last triennium (some had passed away earlier, but word hadn't reached the IAU till more recently).

A highlight of the Business Meeting for Individual Members was the opportunity to vote on the four Resolutions submitted for their consideration earlier this summer:

- Resolution B1: Continuation of the IAU Strategic Plan to 2021.
- Resolution B2: Zero points for the absolute and apparent bolometric magnitude scales.
- Resolution B3: Nominal units for selected stellar and planetary properties.
- Resolution B4: Protection of radio astronomy observations in the frequency range 76 to 81 GHz.

Members cast their votes in favor of four Resolutions on topics as diverse as the IAU Strategic Plan and the zero point of the bolometric magnitude scale. *[Rick Fienberg, Kaʻaleleiaka]*

Attendees voted to approve all four Resolutions with little debate or discussion and with only a handful of abstentions. In addition, the National Representatives approved or ratified (according to the Union's rules) the proposed slates of candidates for several key IAU committees:

- Division Presidents and Vice-Presidents (page 10)
- Commission Presidents and Vice-Presidents (page 17)
- Finance, Membership, Resolutions, Special Nominating, and Executive Committees

A report on the IAU's financial health was received and discussed, and revisions to the agreement between the IAU and the South African National Research Foundation for operation of the IAU Office of Astronomy for Development (OAD) were explained. Finally, in the only truly dramatic moment of the session, the location of the XXXI General Assembly, 16–27 August 2021, was announced: Busan, Republic of Korea (i.e., South Korea). ✿

Kaʻaleleiaka THE MILKY WAY

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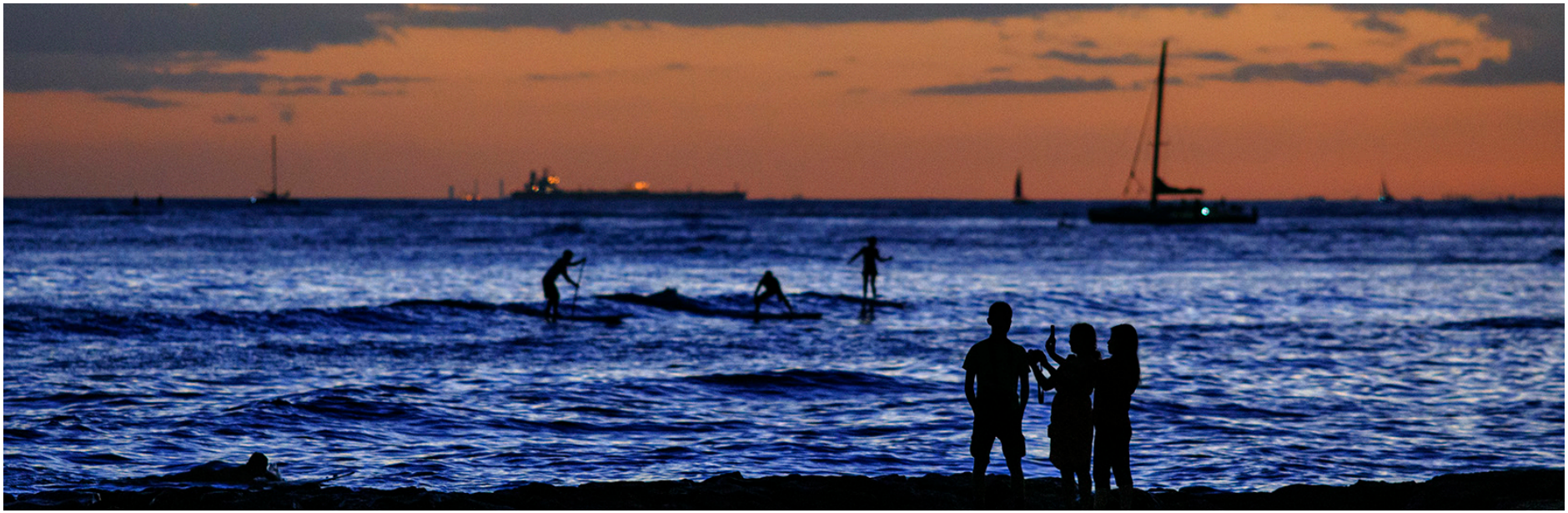


[IAU/B. Tafreshi, twanight.org]

A New Tally of Individual IAU Members

By RICK FIENBERG, *Kaʻaleleiaka*

As of today, the IAU has a record 12,450 Individual Members representing 79 countries. That's an increase of more than 10% since yesterday, when nearly 1,200 astronomers from 61 countries were admitted to the Union at the second Business Meeting of the XXIX General Assembly.

One new National Member joined the IAU this triennium — Colombia — bringing the total country count to 73 (not including Bolivia, which has no Individual Members and is currently inactive in Union affairs).

The table on the next page lists, for each country, the number of new Individual Members admitted yesterday, the number of existing members as of the previous day, and the new total. For additional information, see the Geographical Distribution of Individual Members on the IAU website.

IAU Members as of 14 August 2015.

Country	New	Existing	Total
Argentina	8	138	146
Armenia	7	19	26
Australia	49	282	331
Austria	4	63	67
Azerbaijan*	2	8	10
Belgium	9	138	147
Brazil	23	183	206
Bulgaria	9	59	68
Canada	42	270	312
Chile	13	114	127
China Nanjing	37	616	653
China Taipei	9	65	74
Colombia**	25	2	27
Costa Rica	0	2	2
Croatia	7	18	25
Cuba	0	7	7
Czech Republic	14	108	122
Denmark	7	79	86
Egypt	26	44	70
Estonia	1	29	30
Ethiopia	1	2	3
Finland	7	72	79
France	73	766	839
Georgia	0	12	12
Germany	50	632	682
Greece	9	110	119
Honduras	0	2	2
Hungary	12	57	69
Iceland	1	5	6
India	22	260	282
Indonesia	0	17	17
Iran	10	31	41
Ireland	3	46	49
Israel	8	90	98
Italy	62	605	667
Japan	63	664	727
Kazakhstan	7	3	10
Korea (North)	0	19	19
Korea (South)	24	135	159
Latvia	0	16	16
Lebanon	0	5	5
Lithuania	0	20	20
Macedonia*	1	1	2
Malaysia	1	8	9
Mauritius*	1	3	4
Mexico	24	125	149
Mongolia	0	6	6
Morocco	0	8	8
Netherlands	17	218	235
New Zealand	1	37	38
Nigeria	0	10	10
Norway	2	38	40
Pakistan*	1	1	2
Panama	0	5	5
Peru	0	3	3
Philippines	0	6	6
Poland	10	155	165
Portugal	21	43	64
Romania	2	31	33
Russian Federation	31	400	431
Saudi Arabia	0	12	12
Serbia	12	39	51
Singapore*	1	3	4
Slovakia	6	42	48
Slovenia*	1	7	8
South Africa	21	95	116
Spain	31	348	379
Sweden	16	123	139
Switzerland	6	131	137
Tajikistan	0	7	7
Thailand	9	22	31
Turkey	20	61	81
Ukraine	14	187	201
United Kingdom	53	654	707
United States	241	2,567	2,808
Unknown***	3	14	17
Uruguay	0	5	5
Vatican	1	8	9
Venezuela	4	19	23
Viet Nam	0	9	9
Grand Total	**1,195**	**11,264**	**12,450**

**Non-Member Country, ** New Member Country, ***Country Unknown*

IAU Signs Agreements for Five New Coordinating Offices

By LARS LINDBERG CHRISTENSEN

The IAU Office of Astronomy for Development (OAD) has established new coordinating offices in Armenia, Colombia, Jordan, Nigeria, and Portugal. These offices support the use of astronomy as a tool for development in specific regions and languages. The new partnerships align with the IAU's Strategic Plan, which aims to realize the societal benefits of astronomy.

Ferney Rodriguez (left), Dean of Science at Universidad de Los Andes, and Kevin Govender (right), Director of the OAD, following the signing of the agreement establishing the Andean Regional Office of the OAD. *[IAU]*

The agreements were signed at the Hawai'i Convention Center during the IAU XXIX General Assembly, with final signatures made during a press conference yesterday morning.

These new regional offices of the OAD (i.e., ROADs) will perform two important functions. First, they'll coordinate astronomy-for-development activities in their parts of the world. Second, Language Expertise Centers will coordinate across shared languages and/or cultural aspects. Each office is hosted by a local institution or consortium and is supported by regional partners. The new coordinating offices of the OAD are as follows:

1. The South West Asian Regional Office, hosted at the Byurakan Astrophysical Observatory in Armenia.
2. The Andean Regional Office, hosted jointly by the University of Los Andes, Colombia; Explora Park and Planetarium of Medellín, Colombia; and the Chilean Society of Astronomy, Chile.
3. The Arab Regional Office and Arabic Language Expertise Center, hosted by the Arab Union for Astronomy and Space Sciences and located at the United Nations Regional Centre for Space Science and Technology Education in Jordan.
4. The West African Regional Office, hosted at the Center for Basic Space Science, National Space Research and Development Agency, Nigeria.
5. The Portuguese Language Expertise Centre, hosted at Núcleo Interactivo de Astronomia, in collaboration with the Institute of Astrophysics and Space Sciences, Portugal.

These five sites bring the total OAD network to eight regional and three language nodes. These new facilities join the East Asian Regional Office and Chinese Language Expertise Centre in China; the East African Regional Office in Ethiopia; the South East Asian Regional Office in Thailand; and the Southern African Regional Office in Zambia.

The IAU is open to proposals for new Regional Offices and Language Expertise Centers. ✿

LARS LINDBERG CHRISTENSEN is IAU Press Officer, Head of the education and Public Outreach Department (ePOD) at the European Southern Observatory in Garching, Germany, and former President of IAU Commission 55.

On the ROAD in Armenia

By AREG M. MICKAELIAN & SONA V. FARMANYAN

We are delighted to announce that Armenia will host the South West Asian (SWA) Regional Office of Astronomy for Development (ROAD). The founding agreement for this new office was signed between the IAU and Byurakan Astrophysical Observatory (BAO) on 13 August at the XXIX General Assembly (page 5).

The history of astronomy in Armenia goes back to ancient times, when Armenians recorded this heritage in their landscape and culture through rock art, ancient observatories, calendars and chronology, historical records of astronomical events, medieval sky maps, and astronomical terms.

Located in the Southern Caucasus region, Armenia is uniquely situated to develop and promote astronomy education and knowledge. The non-Arabic nations in this region are making great strides to advance astronomy. These include Georgia, Azerbaijan, Iran, Turkey, and Israel; Arabic countries in the region have developed their own project for a similar center). In addition, Armenia is a former republic of the Soviet Union, and its astronomical community maintains close relations with other former Soviet republics, including other South Caucasus nations such as Russia, Ukraine, Belarus, and Moldova, as well as the Baltic and Central Asian states. (Some of the Central Asian countries may also join SWA ROAD.) Many European countries regard Armenia as a bridge between Europe and the East within the framework of the European Eastern Partnership program.

Recently we have conducted a number of new activities related to astronomy for development. For instance, in October 2014 the BAO and Armenian Astronomical Society organized the meeting "Relation of Astronomy to Other Sciences, Culture, and Society"

Byurakan Astrophysical Observatory in Armenia. *[BAO]*

in Byurakan. The meeting was important from the point of view of increasing the visibility of astronomy as a leader in interdisciplinary and multidisciplinary sciences. Activities related to archaeoastronomy and astronomy in culture were initiated as well.

We have begun efforts to strengthen collaborations with neighboring countries. A number of research projects have been accomplished between Armenian and Georgian astronomers, and many Georgian astronomers have defended their Ph.D. work at the BAO. This builds on the history of Armenian–Georgian astronomical colloquia. Since 1974, 14 meetings have been held at the Byurakan and Abastumani observatories. Each year, approximately 15 astronomers from one nation visit the other nation for scientific talks, joint discussions, and friendly competitions.

A new Armenian–Iranian Astronomical Workshop is planned for October 2015 to strengthen our scientific relations and establish new collaborations. We plan to organize similar workshops annually. Armenian–Iranian astronomical collaboration will include collaborative research grants, mutual visits for joint research work, organization of joint meetings as part of the collaborations, a summer school with participation by Iranian students, observations on joint projects with the Byurakan 2.6-meter telescope, and joint archaeoastronomical and cultural studies. ✿


AREG M. MICKAELIAN is Director of the South West Asian ROAD and Co-President of the Armenian Astronomical Society. He is also Lead Scientist at Byurakan Astrophysical Observatory. SONA V. FARMANYAN is the manager of Task Force 3, Astronomy for the Public, in the IAU South West Asian ROAD and serves as the IAU's Armenian National Coordinator.

COMMISSION C1

Astronomy Education and Development

By BEATRIZ GARCIA

Imagine a girl writing this list in her notebook: starlight, supermassive black hole, neutron star collision, 2nd law. Is this research? Is it homework? Not at all — these are the titles of songs by a British rock band called Muse. We are living in an era in which science and technology are everywhere, not just in universities, research institutions, and observatories.

The recent creation of Commission C1, Astronomy Education and Development, presents us with a unique opportunity to integrate programs, demonstrate the power of astronomy in everyday life, and play a fundamental role in the development of science education. After centuries of scientific endeavor, humans have developed powerful ways of explaining the workings of the universe. Ideas like elementary particles, general relativity, ships to planets or comets, and habitable zones or black holes in the galactic center, are everyday subjects of press articles, children's conversations, TV shows, cartoons, anime, clothes, and even songs by groups such as Muse. As astronomers we daily deal with new technologies and new discoveries, but we are we prepared to handle the public and educational aspects of astronomy?

In 2012, Commission 46 went through a revision as a result of the establishment of the Office of Astronomy for Development (OAD) and the corresponding transfer of activities of several Program Groups to the OAD. Moreover, the fact that the new IAU structure has no Program Groups has provoked a serious process of renovation and innovation.

The reorganized Commission prompted a new mission statement on education in astronomy, one that emphasized both the

Muse album covers. *[Muse]*

uniqueness of C46, which it was replacing, and its importance in the IAU structure: "The Commission seeks to further the development and improvement of scientific research into education and specifically astronomical education at all levels throughout the world, through stimulating, gathering, and exchanging scientific research in the field. This research should address epistemological questions, as well as innovative teaching and learning processes appropriate to the needs of astronomy education. The Commission will further encourage and develop efforts to disseminate this information at all levels, including people with special educational needs, or people with visual, hearing. and/or motor disabilities."

The main purpose of the new Commission C1 is to work on educational problems that support activities in the different Task Forces of the OAD. It realizes its mission through a thoroughly renewed structure with Working Groups on: Theory and Methods in Astronomy Education (WG1), the Network for Astronomy School Education (WG2), and the Working Group on Astronomy and Inclusion (WG3). It fosters projects that emphasize astronomy across disciplines, and research into how astronomy can improve the scientific literacy of youngsters.

The strategy developed in the past has proved to be quite successful, and the first step to realize our mission is the support of the IAU Symposium 326," Research in Astronomy Education: Far Reaching Impacts and Future Directions" to be held in October 2016.

As we look to the future, our immediate challenge is to coordinate the work of many people in the IAU and beyond who are promoting the adoption of successful educational programs such as Global Hands On Universe (GHOU), the Galileo Teacher Training Program (GTTP), the Association for Science Education (ASE), and Universe Awareness (UNAWE). The Commission can foster best practices in education, support diversity, defend identity, and help create a repository for resources, thus giving visibility to many anonymous collaborators. Ultimately, education in astronomy can help us to defend one of the great world heritages: the starry sky. ✿

BEATRIZ GARCIA is an astrophysicist and professor at the National Technological University, Faculty Mendoza, Argentina. She is the Chair of the IAU Working Group on Astronomy and Inclusion and President of Commission C1 for the period 2015-2018.

Applause for Every Shiny Meteor

An excursion to see the Perseid meteor shower from O'ahu's dark North Shore.

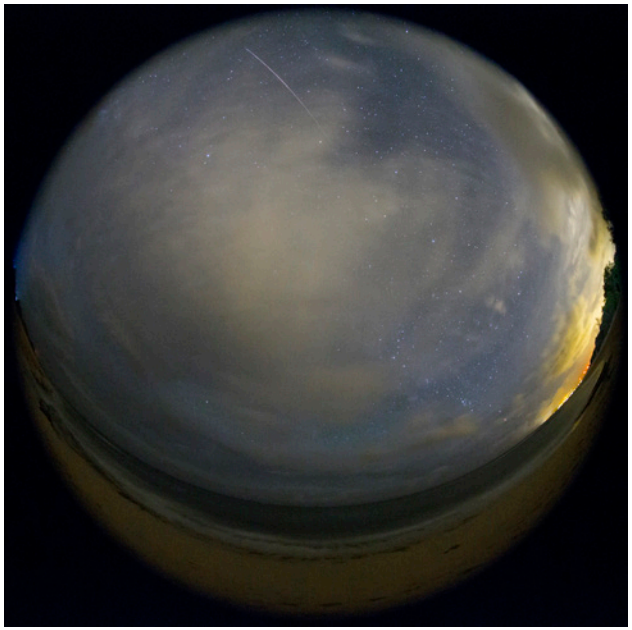
By IRIS NIJMAN, *Kai'aleleiaka*

In the night of 12–13 August, a group of 11 General Assembly attendees, including astrophotographer Babak Tafreshi, drove to Ka'ena Point on the North Shore of O'ahu to see the Perseid meteor shower. We brought blankets, chips, Japanese cookies, beer, cameras, and music — we would survive.

Lying on the beach, we could see the Milky Way prominently. While clouds didn't bother us too much, there was still some light pollution even though we were in one of the darkest spots on O'ahu. Hawai'i wasn't at the optimal longitude for this year's Perseids; the shower's peak occurred earlier in the day, favoring the U.S. East Coast. Nevertheless, we still saw more than 50 meteors, including a very bright streak behind the clouds, close to the horizon in the north — not a fireball but still impressive.

Left to right: Hidehiko Agata, Ramasamy Venugopal, Silvia Verdolini, Lucia Marchetti, Tibisay Sankatsing Nava, Ricardo García, Pedro Russo, Sze-leung Cheung, Iris Nijman, and Kevin Govender. *[Babak Tafreshi, twanight.org]*

Since our group consisted of people from almost every continent on Earth, interesting discussions came up about where one can see the best parts of the Milky Way, and some of us saw the stars in the northern sky — and a meteor shower — for the first time. We applauded loudly for every shiny meteor. Someone guessed, "The next one will show us the direction of where the 2021 General Assembly will be held!" A lot of them went northwest. It was a successful shooting star party! ✿



[Babak Tafreshi, twanight.org]

New IAU Division Steering Committees

By SUSANNA KOHLER & RICK FIENBERG, *Kai'aleleiaka*

The table on the next page lists the members of the IAU Division Steering Committees (DSCs) for the 2015–2018 triennium, reflecting the results of the recent elections. For additional information, including statistics on voter turnout, see Announcement ann15021 on the IAU website. Congratulations to all IAU members who won election to a Division Steering Committee!

IAU Division Steering Committees as of August 2015

Division A: Fundamental Astronomy

President: Anne Lemaître
Vice-President: Daniel Hestroffer
Elected Members (1st Term): Elisa Arias, Fernando Roig, Ralph Gaume
Elected Members (2nd Term): Nicole Capitaine, Sylvio Ferraz-Mello, Susan Stewart
Ex-Officio Members (Commission Presidents): Anthony Brown, Richard Gross, Catherine Hohenkerk, Cristian Beaugé, C.X2 Representative TBD
Advisor (Past President): Sergei Klioner

Division B: Facilities, Technologies and Data Science

President: Pietro Ubertini
Vice-President: Michael Burton
Elected Members (1st Term): Ana I. Gómez de Castro, Peter Quinn, Wenwu Tian
Elected Members (2nd Term): Gloria Dubner, Lisa Storrie-Lombardi
Ex-Officio Members (Commission Presidents): Simon F. Portegies Zwart, Michael Wise, Eric D. Feigelson, Gabriele Giovannini, Farid Salama, Saul J. Adelman, Richard F. Green
Advisor (Past President): David Silva

Division C: Education, Outreach and Heritage

President: John Hearnshaw
Vice-President: Susana Deustua
Elected Members (1st Term): Katrien Kolenberg, Linda Strubbe, Pamela L. Gay, Saeko S. Hayashi
Elected Members (2nd Term): Michèle Gerbaldi, Kazuhiro Sekiguchi
Ex-Officio Members (Commission Presidents): Beatriz Garcia, Pedro Russo, Xiaochun Sun, Clive Ruggles
Advisor (Past President): Mary Kay Hemenway

Division D: High Energy Phenomena and Fundamental Physics

President: Chryssa Kouveliotou
Vice-President: Elena Pian
Elected Members (1st Term): Anna Watts, Isabelle Grenier, Tadayasu Dotani
Elected Members (2nd Term): Anna Wolter, John Kirk, Xavier Barcons
Ex-Officio Members (Commission Presidents): Neil Gehrels, C.X1 Representative TBD
Advisor (Past President): Diana Worrall

Division E: Sun and Heliosphere

President: Yihua Yan
Vice-President: Sarah Gibson
Elected Members (1st Term): Toshifumi Shimizu, Eduard Kontar, Nandita Srivastava
Elected Members (2nd Term): Marc DeRosa, Rudolf von Steiger, Arnab Rai Choudhuri
Ex-Officio Members (Commission Presidents): Natalie A. Krivova, Lyndsay Fletcher, Ingrid Mann
Advisor (Past President): Lidia van Driel-Gesztelyi

Division F: Planetary Systems and Bioastronomy

President: Nader Haghighipour
Vice-President: Gonzalo Tancredi
Elected Members (1st Term): Maria Barucci, Daniela Lazzaro, Athena Coustenis
Elected Members (2nd Term): Paul Chodas, William Irvine, Didier Queloz
Ex-Officio Members (Commission Presidents): Jiri Borovicka, Alain Lecavelier des Etangs, Sun Kwok, C.X2 Representative TBD
Advisor (Past President): Giovanni Valsecchi

Division G: Stars and Stellar Physics

President: Corinne Charbonnel
Vice-President: David Soderblom
Elected Members (1st Term): Tabetha Boyajian, Geraldine J. Peters, Pierre Kervella
Elected Members (2nd Term): Francesca D'Antona, Virginia Trimble, Martin Asplund
Ex-Officio Members (Commission Presidents): Andrej Prsa, Artemio Herrero, John Lattanzio, Simon Jeffery, Ivan Hubeny
Advisor (Past President): Ignasi Ribas

Division H: Interstellar Matter and Local Universe

President: Bruce Elmegreen
Vice-President: Leonardo Testi
Elected Members (1st Term): Eva Schinnerer, Francisca Kemper, Cristina Chiappini
Elected Members (2nd Term): Holger Baumgardt, Diego Mardones, Michael Meyer
Ex-Officio Members (Commission Presidents): Eva K. Grebel, Thomas J. Millar, Letizia Stanghellini, Richard de Grijs
Advisor (Past President): Ewine van Dishoeck

Division J: Galaxies and Cosmology

President: Claus Leitherer
Vice-President: Matthew Malkan
Elected Members (1st Term): Leslie Hunt, Marcella Carollo, Jeremy Mould
Elected Members (2nd Term): Stephane Courteau, Andy Bunker, Monica Rubio
Ex-Officio Members (Commission Presidents): Denis Burgarella, Avery A. Meiksin, C.X1 Representative TBD
Advisor (Past President): Françoise Combes

A New Paradigm in Academic Publishing

PonoPubs is changing academic publishing to benefit authors and readers.

By INGE HEYER, *Kai'aleleiaka*

Have you ever wanted to publish a monograph on your research or a new astronomy teaching tool but found that no traditional publisher will take a risk on it because "there just isn't a market for this sort of thing?" Sure you have. Yet your friends and colleagues keep asking you for copies of your notes. So there *is* a market — you just can't be sure how big it is.

This is where Stephanie Slater comes in. She's the owner and Managing Editor for Pono Publications, a small independent publisher that uses innovative print-on-demand techniques to create both physical and electronic versions of your work. Slater has a platform for rapidly marketing and quickly distributing your product. Pono Publications has science editors, copy editors, and layout, design, and graphics experts to make your book or e-book look exactly the way you want.

Asked for the philosophy of her approach to publishing, Slater explains, "Pono is a rich Hawaiian word that loosely translates as 'being righteous and harmonious,' so Pono Publications is built upon the idea of helping people learn and share knowledge to be harmonious with the world. Practically, this means working closely with the authors and producing results that the readers find useful and enjoyable."

If you work with Pono Publications, you become an integral part of the team that works on your book, so spreading the word is partially up to you. The more you tell people about your work

Stephanie Slater explains to local Hawaiian teachers how to use Galileo's Classroom at the Pono Publications booth in the IAU Exhibit Hall. *[Inge Heyer, Kai'aleleiaka]*

Congratulations to

Farid Salama!

You have won a
FirstScope 76-mm reflector (value: $50) from Celestron in Torrance, California.

Redeem your prize at Exhibit Hall Booth 336

— not only through traditional means such as conferences and websites, but also via social media — the more people will know about it, the more instructors are likely to adopt your work for their classrooms, and the more profit you'll make. The cost of publishing with a small press is generally lower than the cost of working with a larger "legacy" publisher. This benefits both the author (who makes more money) and the reader (who pays less for the product).

If this concept of a small publishing house appeals to you, visit Booth 306 in the Exhibit Hall and talk to Slater and her team. You can take the opportunity to look at the books Pono has already published and talk to some of their highly satisfied authors. ✿

COMMISSION F3

A New Commission on Astrobiology

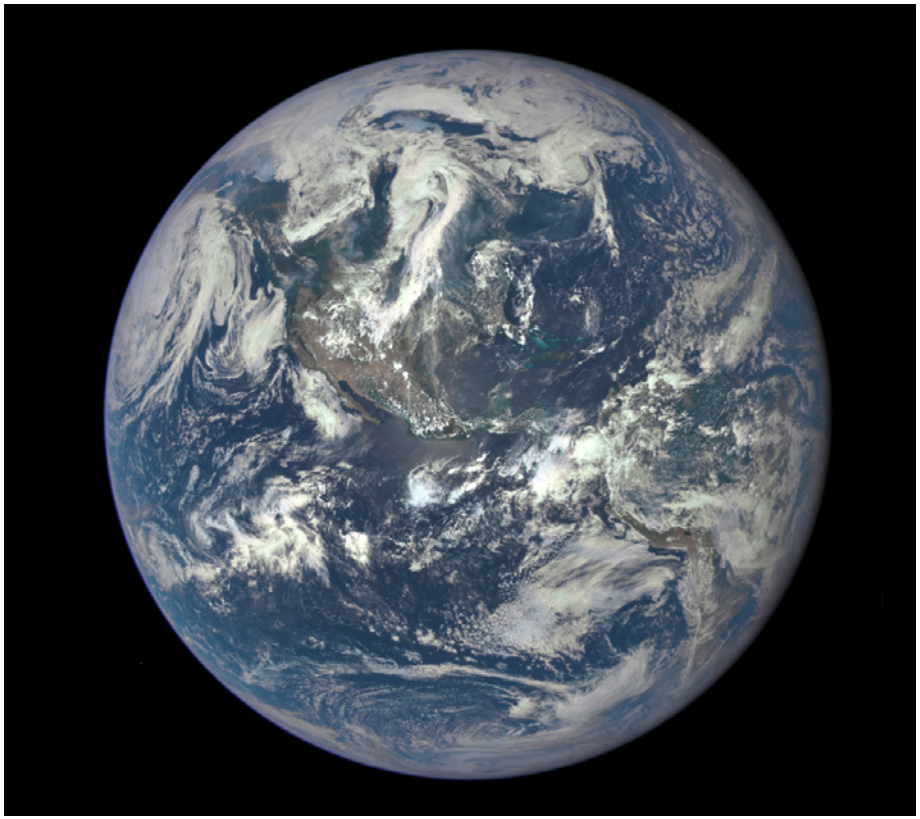
By SUN KWOK

Astrobiology is an interdisciplinary subject that encompasses research in astronomy, biology, chemistry, geology, and planetary science. It integrates results obtained from space missions to planets, planetary satellites, comets, and asteroids with laboratory studies of meteorites and with spectroscopic observations of circumstellar and interstellar molecules and solids, protoplanetary disks, and exoplanets. In also ties together theorists and observers, along with scientists performing laboratory simulations on the formation of organics in the space environment and laboratory studies on chemical pathways to life.

The grand goal of astrobiology is to paint a coherent picture of the synthesis of the basic ingredients of life (as we know it) in circumstellar envelopes, the interstellar medium, the solar system, and other planetary systems — and to correlate these findings with studies of the early Earth. Through these interdisciplinary efforts, astrobiology expands our understanding of the origin of life on Earth and the possibility of life elsewhere in the universe.

The new Commission F3 evolved from the previous IAU Commission 51, Bioastronomy. C51 has organized interdisciplinary conferences every three years since 1984, and C.F3 plans to continue this tradition.

Beside conferences, Commission F3 plans to have an active education program. Since there is a great deal of public inter-



The Deep Space Climate Observatory (DSCOVR) is revealing the Earth and its rich biosphere in amazing detail. A major goal of astrobiology is to determine whether our planet is unique as an abode for life. *[NASA]*

est in astrobiology, the C.F3 hopes to serve as an authoritative resource for answering public questions on the implications of new findings from space missions relating to extraterrestrial life, and for debunking pseudo-scientific theories that often appear in the popular press. We will also seek to establish astrobiology as an attractive and exciting field of research for our fellow scientists. ✿

SUN KWOK, of the University of Hong Kong, China–Nanjing, works on the synthesis of organic compounds in the late stages of stellar evolution. He acknowledges assistance with this article from Edwin Bergin and Pascale Ehrenfreund, his co-chairs on the Scientific Organizing Committee of Focus Meeting 15, held during the first week of the IAU XXIX General Assembly in Honolulu.

Honolulu Almanac 14 August 2015

Sunrise / set	6:10 am / 7:02 pm
Twilight[1] start / end	4:51 am / 8:20 pm
Moonset / rise	6:17 am / 7:12 pm
Moon phase[2]	● New (0% illum.)
Evening planet[3]	Saturn (SSW)
Morning planet[3]	Mars (E)
Special event	New Moon (exact at 4:53 am)

[1]Astronomical twilight (Sun 18° below horizon). [2]At meridian crossing [3]Naked-eye planets. Source: timeanddate.com

A bright Perseid meteor streaks across the sky on Thursday morning, 13 August, as seen from O'ahu's North Shore. *[Babak Tafreshi, twanight.org]*

Astronomy Outreach Challenged by a Data Tsunami

By PEDRO RUSSO

Astronomy communication has evolved rapidly during the past few years, as new techniques and technologies have been adopted. Research astronomy has also visibly changed, as the automation of survey systems and the launch of new telescopes have produced a tsunami of big data sets. We are still defining the best techniques to prevent important knowledge from being drowned out by the sheer volume of content.

With an average of 40 scientific papers published on the astro-ph preprint server every day, it is necessary to curate and develop new and innovative ways of steering both professional astronomers and the public through the huge amounts of research output. There have been some successful initiatives designed to research the best practices for using new technologies to communicate science, ranging from using social media to reach new audiences, to engaging the public through citizen science.

Focus Meeting 19, Communicating Astronomy with the Public in the Big Data Era, was a forum to discuss best practices and lessons learned, and to address how we can stay ahead of the new challenges for the field of astronomy communication. FM 19 combined traditional invited talks with extensive discussion-based workshops.

Invited speakers tackled a diversity of topics. Rick Fienberg (AAS and Editor in Chief of this newspaper) discussed the challenges of career recognition for astronomy researchers and communicators who engage in education and public outreach (EPO). He cited the "Sagan effect" — the attitude that contact with the public is inversely proportional to academic achievement. He suggested that it's less prevalent among young scientists than older ones, but that since older ones still do most of the hiring, the Sagan effect still causes problems for early-career astronomers.

Karen Masters (University of Portsmouth, U.K.) presented results from her project Volunteer and Crowdsourcing Economics (VOLCROWE), which investigates the relationship between people's participation in science and their motivations. They found that citizen-science projects with a higher scientific impact engage more with their volunteers.

Marta Entradas (University Institute of Lisbon & London School of Economics) stressed the need for a better understanding of the public through science-communication research and the need to support astronomy communicators through research. Mathieu Isidro (SKA) outlined the challenges to communicate a global project in the new social-media landscape and emphasized the need for a strong and trustworthy relationship between the communication team and the research team for successful EPO initiatives.

How to Say It in Hawaiian

- Kilo hōkū: astronomer
- Lewa: sky, space
- Nāhiku: Big Dipper
- Makaliʻi: Pleiades
- Ukalialiʻi: Mercury
- Hōkūloa: Venus
- Kaʻāwela: Jupiter

Vowels are generally pronounced as follows: a "ah," e "eh," i "ee," o "oh," u "oo." If a vowel has a little horizontal line over it (a kahakō), it means you hold the sound an extra beat. A **6**-shaped apostrophe, or ʻokina, signals a glottal stop. Source: Ulukau Hawaiian Dictionary.

Discussion groups explored ideas around the use of data for informal learning, public understanding of data, data visualization, EPO training for researchers and future communicators, and using data to build digital engagement initiatives. A comprehensive report of these discussions will be published by Cambridge University Press in the publication *Focus on Astronomy*.

It is clear that scientists and communicators must work together to engage the public with science and safely navigate this data flood. The next couple of decades will be exciting for astronomy — we just need to make sure that we will be able to bring that excitement to the public. ✿

PEDRO RUSSO is International Project Manager for Universe Awareness at Leiden University, the Netherlands, and the President of IAU Commission C2, Communicating Astronomy with the Public.

Book 'em, Danno!

Reporting from the streets of Honolulu at the filming of the TV show "Hawaii Five-0."

By INGE HEYER, *Kaiʻaleleiaka*

Many people recognize "Book 'em, Danno!" as the signature catchphrase of Commander Steve McGarrett, leader of the special investigative team in the TV show *Hawaii Five-0*. The original series ran for 12 seasons, from 1968 to 1980, and featured a team of four police investigators solving crimes throughout Hawaiʻi. McGarrett was played by Jack Lord, who stayed in Hawaiʻi after the series' end and whose statue you can visit at the Kahala Mall in Honolulu, outside the entrance to Macy's.

The TV series was revived in 2010, with new actors playing the familiar roles, albeit with some character changes and new additions to the team. The new series, like the original, is filmed entirely in the state of Hawaiʻi, bringing in revenue and providing work for local film and TV crews.

While my brother-in-law, who lives here, tends to complain whenever the filming causes traffic jams, most folks in Hawaiʻi take the occasional disruptions by McGarrett and his team in stride. Tourists, on the other hand, find it fascinating, if Wednesday's scene at the Sheraton Waikīkī is anything to go by.

The film crew had set up at the Edge Bar, one of the poolside watering holes on the oceanfront Sheraton property. Each scene was carefully planned by the crew and the "second team," standins for the principal actors. When everything was ready, taking light, wind, and noise from occasional passing airplanes or boats into account, the actors came out and shot the scene.

Filming *Hawaii Five-0* on location: McGarrett (played by Alex O'Loughlin) and Kalākaua (played by Grace Park). *[Inge Heyer, Kaiʻaleleiaka]*

Wednesday afternoon's filming involved McGarrett (now played by Alex O'Loughlin) and officer Kono Kalākaua (played by

Actors Alex O'Loughlin and Willie Garson in discussion. *[Inge Heyer, Kai'aleleiaka]*

The badge carried by all Five-0 members. *[Inge Heyer, Kai'aleleiaka]*

The scene at The Edge Bar. *[Inge Heyer, Kai'aleleiaka]*

Grace Park) arresting a guest character (played by Willie Garson). The crew filmed the same scene several times from a few different angles, both long shots and close-ups. The production assistants moved among the crowd, trying to keep the tourists from taking pictures, which was like trying to herd cats. This reporter, playing tourist, employed stealth techniques to get a few shots of the action while the cameras weren't rolling.

A second scene was set up after sunset at the Rum Fire restaurant, also on the Sheraton grounds. This scene involved the *Five-0* team getting together with some associates for dinner. The second team set up the scene, then the actors came in to take their places while waitresses brought them refreshments. McGarrett and Kalākaua were now joined by Detective Chin Ho Kelly (played by Daniel Dae Kim), Captain Lou Grover (played by Chi McBride), intrepid shrimp-truck operator Kamekona (played by Taylor Wily), conspiracy expert Jerry Ortega (played by Jorge Garcia), and surprisingly, the previously arrested guest character. Notably absent was Detective Danny Williams (played by Scott Caan). Sadly it was then too dark to take a photo of this group from my location, so my days as a stealth paparazzi photographer were over.

Hawaii Five-0's sixth season premieres on 25 September on CBS, so it shouldn't be too long before you can watch the episode that was filmed in Honolulu this week. ✿

New IAU Commission Organizing Committees

By SUSANNA KOHLER & RICK FIENBERG, *Kai'aleleiaka*

The following tables list the members of the IAU Commission Organizing Committees (OCs) for the 2015–2018 triennium, reflecting the results of the recent elections. For additional information, including statistics on voter turnout, see Announcement ann15024 on the IAU website. Congratulations to all IAU members who were elected to a Commission Organizing Committee!

IAU Commission Organizing Committees as of August 2015

C.A1: Astrometry

President: Anthony G.A. Brown; **Vice-President**: Jean Souchay; **Members**: Norbert Zacharias, Dafydd Evans, Alexandre Humberto Andrei, Stephen C. Unwin, Yoshiyuki Yamada

C.A2: Rotation of the Earth

President: Richard Stewart Gross; **Vice-President**: Florian Seitz; **Members**: Jose Ferrandiz, Vladimir Zharov, Alberto Escapa, Daniela Thaller

C.A3: Fundamental Standards

President: Catherine Y. Hohenkerk; **Vice-President**: Brian Luzum; **Members**: Nicole Capitaine, Dennis Mc-Carthy, Charles H. Acton, John A. Bangert

C.A4: Celestial Mechanics and Dynamical Astronomy

President: Cristian Beaugé; **Vice-President**: Alessandra Celletti; **Members**: Jacques Laskar, Daniel Scheeres, Douglas P. Hamilton, Eiichiro Kokubo, Bonnie Alice Steves

C.B1: Computational Astrophysics

President: Simon F. Portegies-Zwart; **Vice-President**: Dmitrij Bisikalo; **Members**: Sungsoo Kim, Mike Shara, Christian M. Boily, Irina N. Kitiashvili, Garrelt Mellema

C.B2: Data & Documentation

President: Michael Wise; **Vice-President**: Anja C. Schröder; **Members**: Robert J. Hanisch, Chenzhou Cui, R. Elizabeth M. Griffin, Arnold H. Rots, Rob Seaman

C.B3: Astroinformatics and Astrostatistics

President: Eric D. Feigelson; **Vice-President**: Prajval Shastri; **Members**: Eric B. Ford, Alan Heavens, Fionn Murtagh, Saeqa Dil Vrtilek, Yanxia Zhang

C.B4: Radio Astronomy

President: Gabriele Giovannini; **Vice-President**: Anthony Beasley; **Members**: Xiaoyu Hong, Nicholas Seymour, Joseph Lazio, Jan van der Hulst, Wim van Driel, Tony H. Wong

C.B5: Laboratory Astrophysics

President: Farid Salama; **Vice-President**: Helen J. Fraser; **Members**: Paul Barklem, Thomas Henning, Harold Linnartz, Gianfranco Vidali, Feilu Wang

C.B6: Astronomical Photometry and Polarimetry

President: Saul J. Adelman; **Vice-President**: Antonio Mario Magalhaes,; **Members**: Carme Jordi, Kevin Volk, Pierre Bastien, Richard Ignace, J. Allyn Smith

C.B7: Protection of Existing and Potential Observatory Sites

President: Richard F. Green; **Vice-President:** Constance Elaine Walker; **Members:** Ramotholo Sefako, David Galadí-Enríquez, Harvey Steven Liszt, Yongheng Zhao

C.C1: Astronomy Education and Development

President: Beatriz Elena Garcia; **Vice-President:** Paulo Sergio Bretones; **Members:** Jean-Pierre de Greve, Amelia Ortiz Gil, Kathleen DeGioia Eastwood, Christopher David Impey, Nicoletta Lanciano

C.C2: Communicating Astronomy with the Public

President: Pedro Russo; **Vice-President:** Rick Fienberg; **Members:** Lars Lindberg Christensen, Megan Kirsty Argo, Carol Ann Christian, Kingsley C. Okpala, Sylvie D. Vauclair

C.C3: History of Astronomy

President: Xiaochun Sun; **Vice-President:** Wayne Orchiston; **Members:** Ray Norris, David Valls-Gabaud, Owen Gingerich, Jay M. Pasachoff, Christiaan L. Sterken

C.C4: World Heritage and Astronomy

President: Clive L.N. Ruggles; **Vice-President:** Gudrun Wolfschmidt; **Members:** Mikhail Marov, Malcolm Smith, Roger Ferlet, Siramas Komonjinda

C.D1: Gravitational Wave Astrophysics

President: Neil Gehrels; **Vice-President:** Marica Branchesi; **Members:** Pierre Binetruy, Richard Manchester, Federico Ferrini, David H. Shoemaker, Robin Stebbins

C.E1: Solar Radiation and Structure

President: Natalie A. Krivova; **Vice-President:** Alexander Kosovichev; **Members:** Gianna Cauzzi, Natalia Shchukina, Michele Bianda, Nicolas Labrosse, Yoshinori Suematsu

C.E2: Solar Activity

President: Lyndsay Fletcher; **Vice-President:** Paul S. Cally; **Members:** Karel Schrijver, Philippa K. Browning, Jongchul Chae, Manolis K. Georgoulis, Amy R. Winebarger

C.E3: Solar Impact Throughout the Heliosphere

President: Ingrid Mann; **Vice-President:** Carine Briand; **Members:** Olga Malandraki, Dibyendu Nandi, Margit Haberreiter, Kanya Kusano, Ilya G. Usoskin

C.F1: Meteors, Meteorites, and Interplanetary Dust

President: Jiri Borovicka; **Vice-President:** Diego Janches; **Members:** Petrus Matheus Marie Jenniskens, Galina O. Ryabova, David J. Asher, Margaret D. Campbell-Brown, Jérémie J. Vaubaillon

C.F2 Exoplanets and the Solar System

President: Alain Lecavelier des Etangs; **Vice-President:** Jack J. Lissauer; **Members:** Mark Lemmon, Regis Courtin, Patrick Michel, Alessandro Morbidelli, Feng Tian, Paul A. Wiegert

C.F3: Astrobiology

President: Sun Kwok; **Vice-President:** Masatoshi Ohishi; **Members:** Muriel Gargaud, Nils Holm, Jesus Martinez-Frias, Joseph A. Nuth, Sergio Pilling

IAU Commission Organizing Committees as of August 2015

C.G1: Binary and Multiple Star Systems

President: Andrej Prsa; **Vice-President**: Virginia Trimble; **Members**: Brian Mason, Robert D. Mathieu, Terry Oswalt, John Southworth, Christopher Adam Tout, Tomaž Zwitter

C.G2: Massive Stars

President: Artemio Herrero Davo; **Vice-President**: Jorick S. Vink; **Members**: Gregor Rauw, Nicole St-Louis, You-Hua Chu, Asif ud-Doula, Jose H. Groh

C.G3: Stellar Evolution

President: John C. Lattanzio; **Vice-President**: Marc Howard Pinsonneault; **Members**: Marco Limongi, Zhanwen Han, Franz Kerschbaum , Marcella Marconi, Gražina Tautvaišiene, Jacco Th. Van Loon

C.G4: Pulsating Stars

President: Christopher Simon Jeffery; **Vice-President**: Jaymie Matthews; **Members**: Karen Pollard, Denis Stello, Saskia Hekker, Joyce Ann Guzik, Hiromoto Shibahashi

C.G5: Stellar & Planetary Atmospheres

President: Ivan Hubeny; **Vice-President**: Carlos Allende Prieto; **Members**: France Allard, Katia Cunha, Adam Showman, John D. Landstreet, Thierry Lanz, Lyudmila I. Mashonkina

C.H1: Local Universe

President: Eva K. Grebel; **Vice-President**: Dante Minniti; **Members**: Gang Zhao, Evangelie Athanassoula, Sofia Feltzing, Yasuo Fukui, Vanessa M. Hill, Margaret Meixner

C.H2: Astrochemistry

President: Thomas J. Millar; **Vice-President**: Edwin A. Bergin; **Members**: Satoshi Yamamoto, Paola Caselli, Yuri Aikawa, Maria R. Cunningham, Jes K. Jørgensen

C.H3: Planetary Nebulae

President: Letizia Stanghellini; **Vice-President**: Albert Zijlstra; **Members**: Arturo Manchado, Karen B. Kwitter, Orsola De Marco, Miriam Pena

C.H4: Stellar clusters throughout Cosmic Space and Time

President: Richard De Grijs; **Vice-President:** Amanda I. Karakas; **Members:** Francesca D'Antona, André Moitinho, Jan Palouš, Ernst Paunzen, Alison I. Sills

C.J1: Galaxy Spectral Energy Distributions

President: Denis Burgarella; **Vice-President:** Cristina Carmen Popescu; **Members:** Amy Barger, Rob Kennicutt, Asantha R. Cooray, Daniel Schaerer, Toru Yamada

C.J2: Intergalactic Medium

President: Avery Abraham Meiksin; **Vice-President:** Hsiao-Wen Chen; **Members:** Nissim Kanekar, Joop Schaye, Valentina D' Odorico, Jason X. Prochaska

C.X1: Supermassive Black Holes, Feedback and Galaxy Evolution

President: William Richard Forman; **Vice-President:** Thaisa Storchi-Bergmann; **Members:** Judith H. Croston, Sebastian Heinz, Roberto Maiolino, Sera B. Markoff, Hagai Netzer, Marta Volonteri

C.X2: Solar System Ephemerides

President: Andrea Milani Comparetti; **Vice-President:** William M. Folkner; **Members:** Jean-Eudes Arlot, Steven R. Chesley, Elena V. Pitjeva, Paolo Tanga

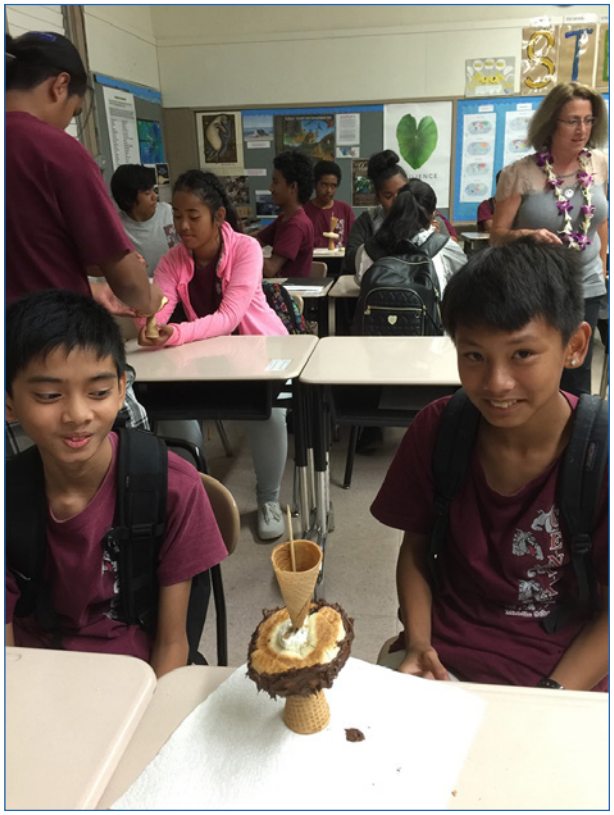
The Subaru and Keck I telescopes on Maunakea at sunset. *[Babak Tafreshi/NAOJ]*

What Does an Active Galaxy Taste Like?

By LYNN COMINSKY

On Thursday, 6 August, I visited more than 120 eighth-grade students (ages 13-14 years old) at Central Middle School in downtown Honolulu during their Earth science classes. Throughout the day I helped students develop a taste for active galaxies by building models out of familiar food items, including bagels, ice-cream cones, marshmallows, chocolate frosting, and chocolate sprinkles.

I augmented this popular classroom activity with the *Active Galaxy Pop-Up Book* produced by NASA's Fermi Gamma-ray Space Telescope mission and with a video slideshow to help students understand the difference between fact and fiction when it comes to black holes. Once the models were built, the students could view them from different angles and compare what they saw to astronomical images of active galaxies. This helps them to understand that distant galaxies with supermassive black holes in their cores can appear quite different depending upon your viewing angle.



Students sit with their edible active galaxy model. The bagel plays the role of the galaxy's disk, while the ice-cream cones represent energetic jets. *[Becky Moylan]*

I always love doing this activity with kids, as black holes are one of the few astronomical phenomena that are familiar to almost everyone, but much of what students have learned about them is scientifically inaccurate. Plus, kids love activities that include food, and everyone is always happy to eat their models once they're done learning about them!

The students' teacher, Becky Moylan, said, "It is so exciting for the students to make a black-hole model using food. They are so lucky to have a real astronomer come and visit the classroom!"

Honolulu Weather Forecast 14–15 August 2015

FRIDAY, 14 AUGUST		***High: 87°F / 30°C Low: 76°F / 24°C***
Morning	**Afternoon**	**Evening**
Partly cloudy	Partly cloudy	Partly cloudy
15% chance of rain	20% chance of rain	10% chance of rain
SATURDAY, 15 AUGUST		***High: 87°F / 30°C Low: 76°F / 24°C***
Morning	**Afternoon**	**Evening**
Partly cloudy	Partly cloudy	Partly cloudy
25% chance of rain	10% chance of rain	10% chance of rain

Extended forecast: Extended forecast: Temperatures will be cooler over the coming week. On Friday gusty winds will develop during the afternoon, then after Sunday the chance of rain will increase to between 50% and 75% until Thursday, 20 August. By then, of course, most General Assembly attendees will no longer be in Honolulu. We hope you enjoyed your time in beautiful Hawai'i! Source: Weather Underground.

For details of other classroom activities on active galaxies and black holes, please take a look at the Fermi Telescope Teacher Resources webpage. If you would like to receive a copy of the *Active Galaxy Pop-Up Book* and the accompanying educator's guide, please email me with your postal address. ✿

LYNN COMINSKY is Professor and Chair of the Physics and Astronomy Dept. at Sonoma State University (SSU) in California. She is also Director of the SSU Education and Public Outreach Group, which develops innovative school curricula for primary-school, secondary-school, and college classrooms.

The IAU Office for Astronomy Outreach

By SZE-LEUNG CHEUNG

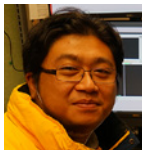
During the International Year of Astronomy 2009 (IYA 2009), the European Southern Observatory hosted a coordinating office on behalf of the IAU Secretariat. Based on the incredible success of this office and the endeavors it facilitated, in 2012 the IAU Executive Committee funded the establishment of the IAU Office for Astronomy Outreach (OAO). The OAO is hosted by the National Astronomical Observatory of Japan (NAOJ) in Tokyo.

The OAO is the IAU's hub for coordinating public-outreach activities worldwide. The aim is to build networks to support and disseminate information to the amateur-astronomy and public-outreach communities, and to ultimately make it easier for the public to access information about our universe.

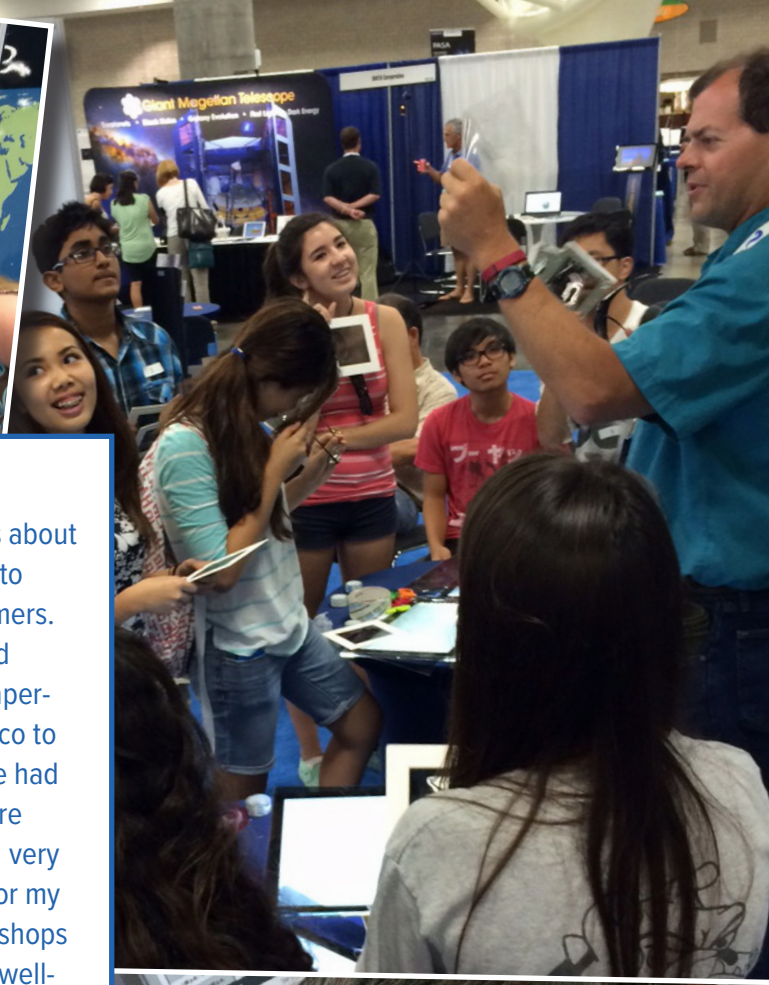
One of the key goals of the OAO is to build a global network of astronomy-related organizations through two channels: the National Outreach Contacts (NOCs) and the IAU Directory of World Astronomy. Ultimately we hope to build a global astronomy network that connects all interested astronomers, observatories, amateurs, educators, and teachers. The OAO will leverage the NOCs network to reach diverse local communities. To date we have registered more than 600 organizations in the IAU Directory of World Astronomy, but we do need help recruiting more organizations.

The next phase of development will include the launch of an events calendar to serve as a portal for worldwide astronomical activities. This builds on the OAO's goal of distributing and promoting global astronomical events and outreach news through the IAU Astronomy Outreach Newsletter. Please subscribe online to get astronomy-outreach information delivered to your inbox.

The OAO has been responsible for the implementation of two flagship outreach programs: the Cosmic Light projects for the International Year of Light 2015 and the NameExoWorlds contest to engage the public in naming exoplanets. ✿



SZE-LEUNG CHEUNG, originally from Hong Kong, is the International Outreach Coordinator at the IAU Office for Astronomy Outreach, based at the National Astronomical Observatory of Japan in Tokyo.



Hooray for Hands-on Science!

On Wednesday the IAU Exhibit Hall was busier than usual as about 200 local primary- and secondary-school students came by to engage in hands-on activities and ask questions of astronomers. Sponsored by Associated Universities, Inc., the event proved extremely popular with both the children and their adult chaperones. “Thank you for making it possible for my nephew Marco to attend today’s student activities,” wrote the boy’s uncle. “He had a great time and came back with many stories and even more questions. It was a true learning experience that he enjoyed very much.” “Thank you so much for a phenomenal experience for my girls,” wrote their mother. “We thoroughly enjoyed the workshops and appreciate all the hard work that everyone put into the well-run program.” *[Top left: Carey & Ivan Yen; bottom right: Linda Baek Cho; all others: Debbie Kovalsky, AAS]*

— Rick Fienberg, Kaiʻaleleiaka

Don’t Miss CAP 2016 in South America!

Join us in Colombia for “Communicating Astronomy with the Public 2016” next May.

By OANA SANDU

Join members of IAU Commission C2 and other astronomy communicators in Medellín, Colombia, for the CAP 2016 conference next 16–20 May. *[Parque Explora]*

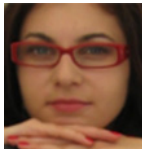
Research astronomers with an interest in science communication and outreach, as well as professional communicators, press officers, science journalists, amateur astronomers, and facilitators engaging different audiences with science and technology are invited to Colombia from 16 to 20 May 2016 to discuss the latest challenges in astronomy communication and public outreach.

The IAU, in cooperation with the Explora Park Science Center, will organize the Communicating Astronomy with the Public (CAP) 2016 conference in Medellín, Colombia. This is the eighth in a series of meetings organized by IAU Commission 2 (formerly C55). CAP 2016 will be the first such gathering in South America.

At the conference you’ll have the opportunity to participate in workshops and hands-on activities on three main themes: public engagement, media relations, and challenges in astronomy communication. Public-engagement topics are designed to address the needs of informal audiences and include using entertainment to communicate science, developing a visitor center, global networking campaigns, and citizen science. The media-relations programming is designed to train professionals in a variety of fields in writing press releases, talking with the media, and getting media exposure on a low budget. Finally, recognizing that communications isn’t always straightforward, the final track addresses issues of management and crisis communications as well as fundraising.

Also on the CAP 2016 agenda will be opportunities to meet others from around the world who share your interests in astronomy communication, as well as chances to meet the people behind some of the most popular, original, and unconventional astronomy outreach campaigns.

To register your interest in CAP 2016, please join the conference mailing list. We encourage you to follow our Facebook page and keep an eye on the Twitter hashtag #CAP2016. Registration will open soon. ✿



OANA SANDU is Community Coordinator for ESO’s education and Public Outreach Department (ePOD), where she works on social-media management, promotion and distribution, and networks and partnerships. She is Co-Chair of C.C2’s CAP Conferences Working Group.

Inspiring Every Child with Our Wonderful Universe

By GEORGE MILEY, TIBISAY SANKATSING NAVA & IRIS NIJMAN

Universe Awareness (UNAWE), a pioneering global science-education program, has developed a lot since its international office was founded in Leiden, the Netherlands, in 2006. UNAWE uses the beauty and grandeur of the universe to encourage young children — particularly those from underprivileged backgrounds — to take an interest in science and technology and to foster their sense of global citizenship. Our network has grown to involve 61 countries, has been endorsed by the IAU, and is an integral part of the IAU's Strategic Plan) — a blueprint that aims to use astronomy to foster education and provide skills in science and technology throughout the world, particularly in developing countries.

In the past four years, UNAWE has produced more than 10,000 inquiry-based learning resources and trained more than 2,300 teachers — reaching 81,000 students through direct and indirect activities. Other major achievements include the development and distribution of 10,000 Earth balls; the development and distribution of 1,000 Universe in a Box astronomy kits for primary-school teachers; and the creation of Space Scoop, an astronomy news service for children.

A new follow-up project, EU Space Awareness, has been welcomed to the fold, thanks to 2 million euros in funding from the European Union, which will also facilitate limited continuation of UNAWE activities for an additional three years. EU Space Awareness will use the excitement of space science to attract young people to science and technology, while also stimulating European and global citizenship. Unlike UNAWE, this project will also have activities for teenagers. The project will highlight opportunities offered by careers in space science and engineering and inspire children at a moment in their lives when their curiosity is high and their value systems are being formed. EU Space Awareness is a three-year project; it began in March 2015 with 10 partner organizations and 15 network nodes in 17 European countries, with global dissemination by the IAU Office of Astronomy for Development (OAD) in South Africa.

UNAWE's educational toolkit Universe in a Box features a variety of activities to stimulate interest and learning in science, technology, engineering, and mathematics. *[UNAWE]*

EU Space Awareness will develop and distribute educational resources, organize teacher training, and sponsor a high-impact event for teachers and policy makers at the European Parliament. It will leverage extensive European school networks and science museums to reach teachers, schools, and the general public and will work closely with the European Space Agency (ESA). Particular attention will be paid to stimulating interest among girls and ethnic minorities, reaching children in underprivileged communities, where a lot of talent is currently unrecognized. ✿



GEORGE MILEY is the founder of UNAWE and Professor of Astronomy at Leiden University in Leiden, the Netherlands. TIBISAY SANKATSING NAVA is National Project Manager for UNAWE in the Netherlands. IRIS NIJMAN studied biomedical sciences at Leiden University and now works in the UNAWE office as a science writer. She is also on the staff of *Kaiʻaleleiaka*.

The Social Network

Newly added to the General Assembly this year, the IAU Networking Reception was held on Wednesday evening, 12 August, in the Rainbow Room at the Hilton Hawaiian Village resort. Packed with hundreds of attendees, it provided a great opportunity to catch up with colleagues in an informal setting, meet new friends, and enjoy top-notch food and drink. *[All photos: Jennifer Cline, AAS]*

COMMISSION H1

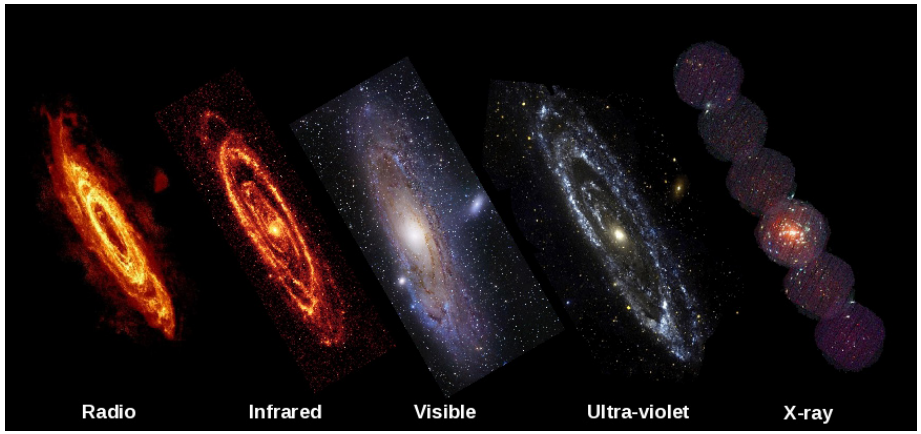
Exploring the Local Universe

By EVA GREBEL

The new Commission H1, Local Universe, concerns "near-field cosmology" — how galaxies form and evolve based on high-resolution observations of the Milky Way and nearby galaxies. The field is supported by a wide range of recent, ongoing, and forthcoming surveys in all wavelength ranges, by novel observing capabilities of high resolution and sensitivity, and by substantial advances in theoretical modeling.

We live in the era of massive ground-based and space-based photometric, spectroscopic, and astrometric surveys of resolved stellar populations. These efforts are complemented by extensive campaigns to map the properties of dust and the multiphase interstellar medium across a wide range of temperatures. Other efforts focus on high-energy sources or on searches for dark-matter signals from nearby dwarf galaxies.

In the longer term, major new facilities will play key roles, including the Large Synoptic Survey Telescope (LSST), the European Extremely Large Telescope (E-ELT), the Giant Magellan Telescope (GMT), the Thirty Meter Telescope (TMT), the James Webb Space Telescope (JWST), Euclid, the Wide Field Infrared Survey Telescope (WFIRST), the Square Kilometre Array (SKA), the Cerenkov Telescope Array (CTA), the extended Röntgen Survey with an Imaging Telescope Array (eROSITA), and the Advanced Telescope for High ENergy Astrophysics (ATHENA). Complex cosmological and chemo-dynamical simulations combining dark matter and baryons are now approaching the resolution required to realistically model disk and even dwarf galaxies.



A multiwavelength view of M31 and two of its satellite galaxies, NGC 205 and M32. Understanding galaxy evolution requires deciphering star-formation history as traced by stellar populations of different ages and the interplay between stars, gas, dust, dark matter, and the galactic environment. *[Radio: WSRT, R. Braun; IR; NASA, Spitzer, K. Gordon; Visible: Robert Gendler; UV: NASA, GALEX; X-ray: ESA, XMM, W. Pietsch]*

The exploration of the nearby universe is a vibrant, growing field that combines and indeed requires coordinated efforts in a wide range of astronomical disciplines. Commission H1 continues the functions of the old Commission 33 while at the same time adopting a more modern definition of its focus, including the multiwavelength approach. H1 is a Commission of Division H, Interstellar

Matter and Local Universe, and currently has 292 members.

Our main goals are near-field cosmology and the understanding of galaxy evolution in the local universe. Hence we are interested in the use of massive stars (C.G2), planetary nebulae (C.H3), pulsating stars (C.G4), and star clusters (C.H4) as tools for understanding galaxy evolution, though their detailed study in their own right is not within the purview of our Commission. Similarly, methods of, e.g., astrochemistry (C.H2), astrometry (C.H1), photometry and polarimetry (C.B6), or computational astrophysics (C.B2) are essential tools towards those goals, which opens avenues for fruitful exchanges and cooperation between these Commissions, including joint Working Groups.

Dante Minniti introduced C.H1 during the Division H meeting on Friday, 7 August. The coming years promise exciting breakthroughs in understanding the local universe and offer new opportunities for international collaboration and new scientific endeavors — efforts that will be accompanied by future IAU meetings around the world. We look forward to discussing and working with you. ✿

EVA GREBEL is a full professor of astronomy at Heidelberg University and director of the Astronomical Calculation Institute. She studies how galaxies form and evolve using resolved stellar populations to conduct galactic archaeology.

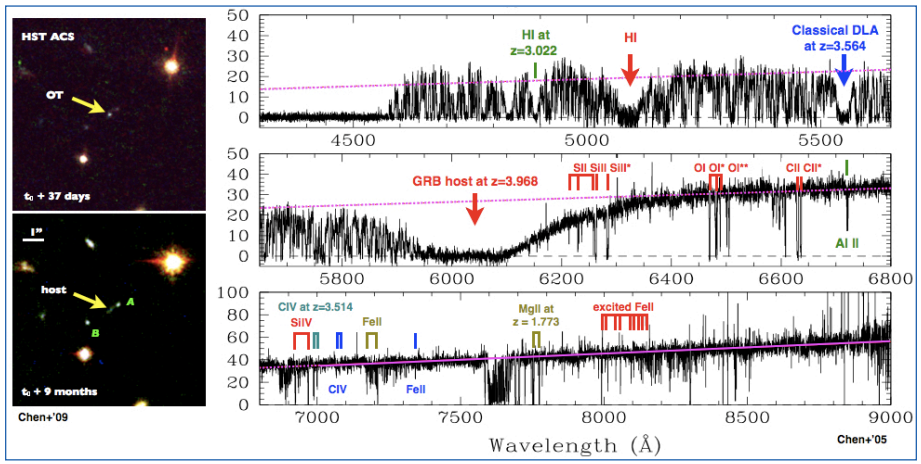
COMMISSION J2

The Intergalactic Medium

By AVERY MEIKSIN

Over the past 50 years, the subject of the intergalactic medium (IGM) has flourished into a major branch of cosmological structure formation. Early pioneering surveys revealed the IGM through its hydrogen absorption lines imprinted on spectra of bright background quasars. Since then, activity in this field has grown exponentially, including measurements of intergalactic helium and metal-enrichment patterns revealed by metal-absorption features. Observational studies of the IGM continue to thrive. Gamma-ray bursts and bright galaxies have now been added to quasars as background sources revealing the structure of the IGM.

Study of the IGM is an interdisciplinary subject of wide international interest, a trend that will continue to grow as facilities become increasingly international and connect the IGM to an increasingly large array of astrophysical phenomena. Numerical simulations have demonstrated that the structures of the IGM arise naturally as part of cosmological structure



Many gamma-ray bursts (GRBs) are followed by long-wavelength "afterglow" emission. At visual wavelengths, GRB afterglows are known to be brighter than the brightest quasars for a few hours after the initial burst! Similar to QSOs, GRB afterglows serve as bright background sources for probing intervening gas. Because of their transient nature, however, optical afterglows do not interfere with follow-up studies of absorbing galaxies close to the sightlines, enabling a new means of establishing the connection between star-forming galaxies and their gaseous surroundings. *[H.-W. Chen]*

formation in a cold-dark-matter-dominated universe with a cosmological constant. Together with advances in IGM observations, simulations have allowed the various contributions to the UV metagalactic ionizing background to be quantified over a broad range of redshifts. This informs our understanding of the process of hydrogen and helium reionization, and simulations have become an essential tool for relating metal-absorption systems to galaxy formation. New radio facilities are poised to revolutionize our understanding of reionization through 21-cm measurements of neutral hydrogen during the epoch of reionization.

While the IGM has never had its own Commission before, the diversity of questions it now addresses has justified a new IGM Commission of its own. C.J2 covers a broad range of topics, including the structure of the IGM, tests of cosmological models, the galaxy–IGM connection, and the epoch of reionization. We anticipate three or four IAU conferences discussing these and other topics over the next several years. Commission J2 will also provide a forum to launch discussion and planning papers. ✿

AVERY MEIKSIN is President of Commission J2, Intergalactic Medium, and Chair of Theoretical and Computational Astrophysics at the University of Edinburgh, U.K.

Hawaiian, Oceanic, and Global Cultural Astronomy

The UNESCO World Heritage Commission and the International Year of Light (IYL) Committee are hosting a cultural astronomy conference in Hilo, Hawai'i, 16 to 20 August 2015, right after the IAU General Assembly in Honolulu. This meeting, "Hawaiian, Oceanic, and Global Cultural Astronomy: Tangible and Intangible Heritage," is still open for registration.

The conference will bring together astronomers, archaeologists, and linguists to discuss the nature of cultural astronomy throughout the Pacific Basin. The chair of the Scientific Organizing Committee is archaeoastronomer Clive Ruggles, Past President of Division C, Commission 41, and co-author of the just-revised work on Hawaiian astronomy *Nā Inoa Hōkū: Hawaiian and Pacific Star Names*.

The Hawaiian cultural site Pā Lehua on the island of O'ahu is thought to have astronomical relevance. *[Inge Heyer, Kaiʻaleleiaka]*

For more information on this cultural-astronomy conference, please visit the Portal to the Heritage of Astronomy website.

— Stephanie Slater (CAPER Team, USA)

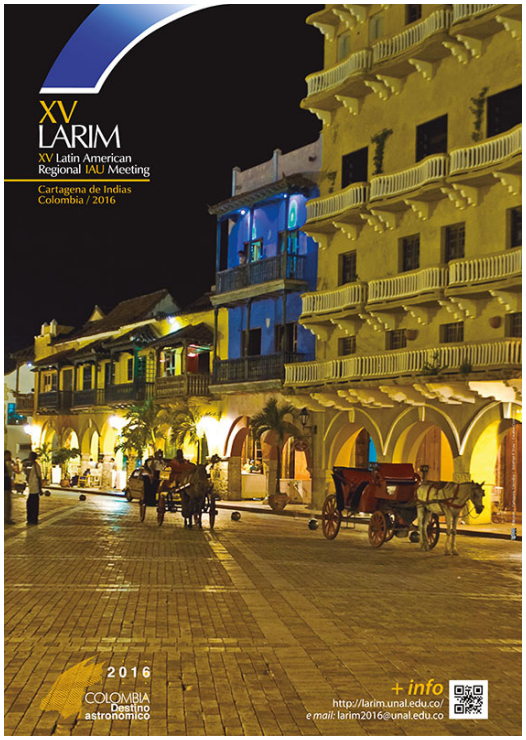
XV Latin American Regional IAU Meeting in Cartagena

By MARIO ARMANDO HIGUERA GARZÓN

From 3 to 7 October 2016, Colombia is hosting the XV Latin American Regional IAU Meeting (LARIM 2016). This is the most important meeting for the astronomy and astrophysics community in Latin America and represents an important milestone for Colombia, which this week became the IAU's newest National Member.

More than two centuries ago, José Celestino Mutis and Francisco José de Caldas led the first astronomical expeditions to Colombia. Following in their footsteps, Colombia now has a community of more than 30 astronomers linked to six institutions nationwide; another 35 Colombian students and researchers work elsewhere around the world.

Some prime examples of the continuing growth of astronomy and astrophysics in Colombia are the creation of the under-



graduate program in astronomy at the University of Antioquia; the establishment of astronomy courses at the University of the Andes; the offering of a Master of Science in Astronomy and a planned Ph.D. in Astronomy at the National Astronomical Observatory of the National University of Colombia; and the astronomy postgraduate program at the Industrial University of Santander. More than 100 contributions by Colombian researchers have been published in recent international astronomy journals, and there have so far been five published editions of the Colombian Congress of Astronomy and Astrophysics. The Colombian astronomy and astrophysics community is linked with Colombian diaspora researchers worldwide through an active mailing list: astrocol@yahoo-groups.com.

LARIM 2016 in Cartagena has been organized to recognize the growing internationalization of research in astronomy and astrophysics and to further the development of scientific talent in Latin America. Furthermore, the regional meeting provides an opportunity for the public and private sectors to join in providing logistical and financial support for astronomy in our region. Finally, LARIM offers an important arena for consolidating the research agenda of Latin American researchers, educators, and students under the generous sponsorship of the IAU. Colombia is proud to host this latest in an ongoing series of meetings spanning more than 30 years.

LARIM will draw attendees from Latin America, Europe, Asia, and North America. We welcome students in astronomy programs (undergraduate, master's, and doctorate) from Colombia and the wider Latin American community. We are planning for an attendance of about 500 people and invite everyone in the astronomical community to join and support our Latin American meeting. For more information about LARIM 2016, visit the conference website and the IAU website. ✿

MARIO ARMANDO HIGUERA GARZÓN is a professor at the National Astronomical Observatory, National University of Colombia and Chair of the Local Organizing Committee for the XV Latin American Regional IAU Meeting, to be held in Cartagena, Colombia, in October 2016.

IAU XXX GENERAL ASSEMBLY 2018

Join Us in Vienna for the IAU XXX General Assembly

By GERHARD HENSLER

Austrian astronomers invite our colleagues from around the world to the IAU XXX General Assembly in Vienna, Austria, from 20 to 31 August 2018.

Vienna, Austria's capital, is located in the very heart of Europe and easily reachable from all over the world. Many major international organizations, such as the United Nations Organization (UNO), the United Nations Industrial Development Organization (UNIDO), the International Atomic Energy Agency

University of Vienna. *[© University of Vienna]*

(IAEA), and the Organization of Petroleum Exporting Countries (OPEC) are based in this city.

Vienna is a model city, meeting strict environmental criteria for water supply and wastewater management, waste disposal, clean air management, and ecological balance. Vienna is renowned as a steward of the environment, ranking among the most livable cities worldwide.

Vienna is well known for its historical role as an imperial city, exemplified by the splendid baroque Schönbrunn Palace, the Spanish Riding School, the magnificent buildings along the Ring Boulevard, and the Imperial Palace of the former Habsburg Empire. Moreover, the city is regarded as a metropolis of music: more famous composers have lived here than in any other city. In Vienna, music is literally in the air.

Vienna has a long history of pioneering scientific and medical research. It has developed into a hub of learning, harboring nine universities. The most prominent of these, the University of Vienna, looks back on a long tradition of excellent science research and education, having hosted many Nobel-Prize winners. Its foundation goes back to 1365, which means that it celebrates its 650th anniversary in 2015.

Vienna has established an outstanding reputation as conference city. For six years in a row, it has been the first-choice destination worldwide for association meetings. Its Austria Center Vienna (ACV) is the largest conference center in Austria and one of the largest and most modern in Europe.

Austrian astronomy has a long tradition. It began to flourish at the University of Vienna with Georg von Peuerbach (1423–1461) and Johannes Müller von Königsberg ("Regiomontanus," 1436–1476). Johannes Kepler (1571–1630) in Graz and Linz, Maximilian Hell (1721–1792) at the Vienna University Observatory, and Carl Ludwig von Littrow (1811–1877) kept Austria

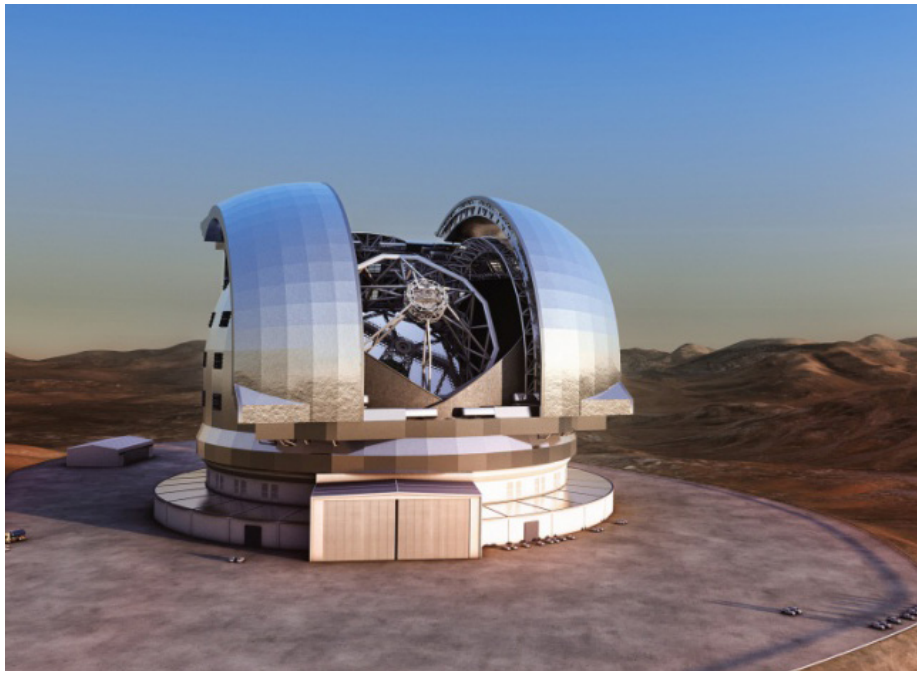
Austria Center Vienna. *[© ACV]*

at the forefront of astronomy. In addition to astronomers, many historical Austrian physicists also deserve to be mentioned, including Erwin Schrödinger (1933 Nobel Prize in Physics), Victor Hess (1936 Nobel Prize in Physics), Lise Meitner, Ludwig Boltzmann, Christian Doppler, Johann Josef Loschmidt, and Ernst Mach.

Today, astronomy teaching and research is carried out not only in Vienna but also at the University of Graz, Academy Institute of Space Research, and at the University of Innsbruck.

Full access to state-of-the-art telescopes and instruments of the 21st century was achieved in 2008 when Austria joined the European Southern Observatory (ESO). In 2018, Austrian astronomers will celebrate the 10th anniversary of ESO membership. This giant leap has spawned an unprecedented range of collaborations, consortia memberships, and the development of expertise in astronomical data processing and instrumentation. Austrian researchers are now involved in the development of current and future ESO instrumentation, particularly for the European Extremely Large Telescope. At the same time, Austria has essentially doubled the number of full professors in astrophysics.

Being a member of the European Space Agency (ESA) since its inception, Austria has made significant contributions to space-telescope missions, including ISO, Herschel, Rosetta, and Gaia. Austrian astronomers are also involved in future missions like BepiColombo, Solar Orbiter, Cheops, Plato, and Athena. Moreover, bilateral satellite projects like CoRot and BRITE (the first Austrian minisatellites) were initiated by Austria.



European Extremely Large Telescope. *[© ESO]*

Local organization of IAU XXX will be carried out by the Austrian Society for Astronomy and Astrophysics (ÖGA2). Founded in 2002, this society is affiliated with the European Astronomical Society and the German Astronomical Society and brings together both professional and amateur astronomers. Among many other tasks, it promotes public outreach and research meetings. ✿

GERHARD HENSLER is Professor for Theoretical Astronomy at the Department of Astrophysics at the University of Vienna. He is the initiator and organization chair of the 2018 IAU General Assembly.